FINAL ENVIRONMENTAL IMPACT REPORT FOR IMPLEMENTATION OF THE 1995 BAY/DELTA WATER QUALITY CONTROL PLAN

State Clearinghouse Number 97-122056

TECHNICAL APPENDICES

VOLUME 2

November 1999

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Volume 2

Technical Appendices

Appendix 1. Persons Contacted and Water Right Hearing Service List

Appendix 1 contains the list of parties contacted throughout the proceeding. The SWRCB maintains three separate Bay/Delta mailing lists. In this appendix, the shorter active party list and the longer interested party list are combined. The water right hearing service list is also included. In addition to parties identified in this appendix, a postcard mailing was sent to all appropriative water right holders in the Central Valley advising that a Notice of Preparation had been prepared and was available upon request. Persons expressing interest as a result of this mailing were added to the Bay/Delta mailing list.

Appendix 2. Modeling Assumptions

Appendix 2 contains the assumptions used to model the Flow Alternatives, the Joint Point of Diversion Alternatives, and the Cumulative Impacts analysis. The descriptions of the modeling assumptions were drawn from the DWRSIM web site maintained by the Department of Water Resources. The web site containing the assumptions and all modeling output can be found at http://wwwhydro.water.ca.gov/swrcb.html.

Appendix 3. Water Right Calculations for Flow Alternatives 3 and 4

Appendix 3 contains the information used in the water right calculations for Flow Alternatives 3 and 4. The general methodology for the calculations is described in Chapter IV, section G of the final EIR.

Appendix 4. Watershed Flow Obligation Calculations for Flow Alternative 5

Appendix 4 contains data used in the calculation of watershed flow obligations under Flow Alternative 5. The general methodology for the calculation is described in Chapter II, section E.1.e.

Appendix 5. Aquatic Resources Analysis Modeling Data

Appendix 5 contains DWRSIM model output and spreadsheet calculations for: (1) the Sacramento River fall-run, late fall-run, winter-run, yearling spring-run, and young-of-the-year spring-run salmon smolt survival model, (2) the San Joaquin river fall-run salmon smolt survival model, (3) the striped bass model, (4) the water temperature analysis (5) the range of variability analysis (RVA), and (6) reservoir habitat index calculations. The salmon and striped bass models are described in Chapter IV, section F of the final EIR. The water temperature model is described in Chapter IV, section E. The RVA is described in Chapter VI, section C.3.a. The reservoir index methodology is described in Chapter VI, section C.3.b.

EIR Analyses and Corresponding DWR Studies

USBR Joint POD Alternatives		SWRCB Flow Alternatives		Cumulative Impacts	
Alternative	Study	Alternative	Study	Analysis	Study
Alt 1	467[1]	Alt 1	467[1]	Cumulative Impacts	492
Alt 2	469[2]	Alt 2	468		
Alt 3	501	Alt 3	506		
Alt 4	501a	Alt 4	507		
Alt 5	524	Alt 5	513		
Alt 6	525	Alt 6	485		
Alt 7	526	Alt 7	519		
Alt 8	526a	Alt 8	622a		
Alt 9	634				

1. For the salmon smolt survival models, Alternative 1 corresponds to D1485 conditions, and not those contained in DWRSIM study 467.
2. Study 469 was the precursor study for flow alternatives 3 and 4.

DWRSIM output may be downloaded from the following web site: http://wwwhydro.water.ca.gov/swrcb.html

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Appendix 2

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Assumptions Used in DWRSIM Modeling of Various Alternatives

Dates of DWRSIM Modeling Requests from SWRCB to the DWR

Alternatives	DWRSIM Study	Dates		
		Original Request	Revisions	
Flow				
1	467	February 15, 1996	April 8, 1997	
2	468	February 15, 1996	April 8, 1997	
3	506	February 15, 1996*	March 14, 1997	April 8, 1997
4	507	February 15, 1996*	March 14, 1997	April 8, 1997
5	513	January 10, 1997	March 5, 1997	April 30, 1998
6	485	November 15, 1996	December 4, 1996	
7	519	November 15, 1996**	July 23, 1997	
8	622a	February 20, 1998	March 10, 1998	
Joint POD				
1	467	February 15, 1996		
2	469*	February 15, 1996		
3	501	August 6, 1996***		
4	501a	August 6, 1996***		
5	524	August 6, 1996***		
6	525	August 6, 1996***		
7	526	August 6, 1996***		
8	526a	August 6, 1996***		
9	634	February 20, 1998	March 10, 1998	
Cumulative Impacts				
	492	November 15, 1996	January 14, 1997	

* Flow Alternatives 3 and 4 were originally modeled as DWRSIM study 469.
** Flow Alternative 7 was originally modeled as DWRSIM study 482.
*** Dates indicate requests from the DWR to the SWRCB.

DWR PLANNING SIMULATION MODEL (DWRSIM) ASSUMPTIONS FOR SWRCB BASE STUDY WITH D-1485 DELTA STANDARDS (FLOW ALTERNATIVE 1 AND JOINT POINT OF DIVERSION ALTERNATIVE 1) 1995C6FSWRCB-467

In addition to meeting D-1485 Delta standards, Base Study 467 meets selected upstream ESA requirements and CVPIA flow criteria.

I. New Model Features

A new DWRSIM version with the following enhancements is employed:

- A new SWP and CVP south-of-Delta delivery logic uses (i) runoff forecast information and uncertainty (not perfect foresight), (ii) a delivery versus carryover risk curve and (iii) a standardized rule (Water Supply Index versus Demand Index Curve) to estimate the total water available for delivery and carryover storage. The new logic updates delivery levels monthly from January 1 through May 1 as water supply parameters become more certain. Refer to Leaf and Arora (1996) for additional information on the new delivery logic.

- An expanded network schematic includes more details in the Delta and along the DMC and SWP-CVP Joint Reach facility.

- A network representation of the San Joaquin River basin was adapted from USBR's SANJASM model. The San Joaquin River basin schematic was expanded to include (i) the Tuolumne River upstream to Hetch Hetchy and Cherry/Eleanor Reservoirs, (ii) the Merced River upstream to Lake McClure, (iii) the Chowchilla and Fresno Rivers upstream to Eastman and Hensley Lakes, respectively, and (iv) the San Joaquin River upstream to Millerton Lake.

- Contra Costa Water District's "G" model is used to relate Delta flows and salinities. Refer to Denton (1993) for additional information on the procedure.

- References:

    - Leaf, R.T. and Arora, S.K. (1996). "Annual Delivery Decisions in the Simulation of the California State Water Project and Federal Central Valley Project using DWRSIM." Proceedings 1996 North American Water and Environment Congress, ASCE, C.T. Bathala, Ed.

    - Denton, R.A. (1993). "Accounting for Antecedent Conditions in Seawater Intrusion Modeling - Applications for the San Francisco Bay-Delta." Proceedings 1993 National Conference on Hydraulic Engineering, ASCE, H.W. Shen, Ed.

II. Instream Flow Requirements

- Trinity River minimum fish flows below Lewiston Dam are maintained at 340 TAF/year for all years, based on a May 1991 letter agreement between the USBR and the U.S. Fish and Wildlife Service.

- Sacramento River navigation control point (NCP) flows are maintained at 5,000 cfs in wet and above normal water years and 4,000 cfs in all other years. This criteria is relaxed to 3,500 cfs when Shasta carryover storage drops below 1.9 MAF and is further relaxed to 3,250 cfs when Shasta carryover storage drops below 1.2 MAF.

- Feather River fishery flows are maintained per an agreement between DWR and the Calif. Dept. of Fish & Game (August 26, 1983). In normal years these minimum flows are 1,700 cfs from October through March and 1,000 cfs from April through September. Lower minimum flows are allowed in low runoff years and when Oroville storage drops below 1.5 MAF. A maximum flow restriction of 2,500 cfs for October and November is maintained per the agreement criteria.

- Stanislaus River minimum fish flows below New Melones Reservoir range from 98 TAF/year up to 302 TAF/year, according to the interim agreement (dated June 1987) between the USBR and the Calif. Dept. of Fish & Game. The actual minimum fish flow for each year is based on the water supply available for that year. Additional minimum flow requirements are imposed in June through September (15.2 - 17.4 TAF per month) to maintain dissolved oxygen levels in the Stanislaus River. Channel capacity below Goodwin Dam is assumed to be 8,000 cfs. CVP contract demands above Goodwin Dam are met as a function of New Melones Reservoir storage and inflow per an April 26, 1996 letter from USBR to SWRCB.

- Tuolumne River minimum fishery flows below New Don Pedro Dam are maintained per an agreement between Turlock and Modesto Irrigation Districts, City of San Francisco, Dept. of Fish & Game and others (FERC Agreement 2299). Base flows range from 50 cfs to 300 cfs. Base and pulse flow volumes depend on time of the year and water year type.

- Instream flow requirements are maintained in accordance with CVPIA criteria (see Item III) at the following locations: below Keswick Dam on the Sacramento River, below Whiskeytown Dam on Clear Creek and below Nimbus Dam on the American River.

III. CVPIA Flow Criteria

The following CVPIA flow criteria are in accordance with an April 26, 1996 letter from USBR to SWRCB:

- Flow objectives between 3,250 cfs and 5,500 cfs are maintained below Keswick Dam on the Sacramento River. Flow requirements during October through April are triggered by Shasta carryover storage.

- Flow objectives between 52 cfs and 200 cfs are maintained below Whiskeytown Dam on Clear Creek, depending on month and year type.

- Flow objectives between 250 cfs and 4,500 cfs are maintained below Nimbus Dam on the American River. Flow requirements during October through February are triggered by Folsom carryover storage. Flow requirements during March through September are triggered by previous month storage plus remaining water year inflows.

IV. Trinity River Imports

Imports from Clair Engle Reservoir to Whiskeytown Reservoir (up to a 3,300 cfs maximum) are specified according to USBR criteria. Imports vary according to month and previous month Clair Engle storage.

V. Hydrology (HYD-C06F)

A new 1995 level hydrology, HYD-C06F, was developed similar to HYD-C06B described in a June 1994 memorandum report entitled "Summary of Hydrologies at the 1990, 1995, 2000, 2010 and 2020 Levels of Development for Use in DWRSIM Planning Studies" published by DWR's Office of State Water Project Planning. HYD-CO6B was based on DWR Bulletin 160-93 land use projections and simulates the 71 year period 1922-92. HYD-C06F, developed through consultation with USBR to address differences in San Joaquin basin hydrology, simulates two additional years (through 1994) and includes the following major modifications compared to HYD-C06B:

- Stand-alone HEC-3 models of the American, Yuba and Bear River subsystems were updated and extended through 1994. Yuba River minimum fishery flows below Bullards Bar Dam were not modified to reflect new FERC requirements. According to consultants for the Yuba County Water Agency, water supply impacts of the new requirements are not substantially different from those modeled in HYD-C06B.

- Mokelumne River minimum fishery flows below Camanche Dam are modeled in HYD-C06F per an agreement between EBMUD, U.S. Fish and Wildlife Service, and Calif. Dept. of Fish & Game (FERC Agreement 2916). Base flows range from 100 cfs to 325 cfs from October through June, depending on time of the year and water year type. Base flows are maintained at 100 cfs from July through September for all water year types. Water year types are determined by reservoir storage and unimpaired runoff. For the months of April through June, additional pulse flows are maintained up to 200 cfs depending on water year type and reservoir storage.

- Historical 1993-94 land use was estimated by linear interpolation between 1990 and 2000 normalized projected levels.

VI. Pumping Plant Capacities, Coordinated Operation & Wheeling

- SWP Banks Pumping Plant average monthly capacity with 4 new pumps is 6,680 cfs (or 8,500 cfs in some winter months) in accordance with USACE October 31, 1981 Public Notice criteria. Pumping is limited to 3,000 cfs in May and June and 4,600 cfs in July to comply with D-1485 criteria for striped bass survival. Additionally, per a January 5, 1987 interim agreement between DWR and the Calif. Department of Fish & Game, SWP pumping is limited to 2,000 cfs in any May or June in which storage withdrawals from Oroville Reservoir are required.

- CVP Tracy Pumping Plant capacity is 4,600 cfs, but constraints along the Delta Mendota Canal and at the relift pumps (to O'Neil Forebay) can restrict export capacity as low as 4,200 cfs. Pumping is limited to 3,000 cfs in May and June in accordance with D-1485 criteria for striped bass survival.

- CVP/SWP sharing of responsibility for the coordinated operation of the two projects is maintained per the Coordinated Operation Agreement. Storage withdrawals for in-basin use are split 75 percent CVP and 25 percent SWP. Unstored flows for storage and export are split 55 percent CVP and 45 percent SWP.

- Wheeling of CVP water through SWP facilities to San Luis Reservoir is permitted as needed to offset the CVP Tracy Pumping Plant's compliance with D-1485 criteria in May and June. SWP pumping capacity is made available so that CVP wheeling is completed in July and August of each year.

- CVP water is not wheeled to meet Cross Valley Canal demands.

- Enlarged East Branch aqueduct capacities are assumed from Alamo Powerplant to Devil Canyon Powerplant.

VII. Target Reservoir Storage

- Shasta Reservoir carryover storage is maintained at or above 1.9 MAF in all normal water years for winter-run salmon protection per the NMFS biological opinion. However, in critical years following critical years, storage is allowed to fall below 1.9 MAF to 1.2 MAF (and lower in extremely dry years).

- Folsom Reservoir storage capacity was reduced from 1010 TAF down to 975 TAF due to sediment accumulation as calculated from a 1992 reservoir capacity survey.

- Folsom flood control criteria are in accordance with the December 1993 USACE report "Folsom Dam And Lake Operation Evaluation". This criteria uses available storage in upstream reservoirs such that the maximum flood control reservation varies from 400 TAF to 670 TAF.

VIII. SWP Demands, Deliveries & Deficiencies

- Deficiencies are imposed as needed per Monterey Agreement criteria and are calculated from the following 1996 Table A entitlements assuming zero entitlements and deliveries to Santa Barbara and San Luis Obispo Counties through the Coastal Aqueduct:

Agricultural Entitlements	1,175 TAF/year
M & I Entitlements	2,869 TAF/year
Recreation & Losses	64 TAF/year
Total Entitlements	4,108 TAF/year

- Maximum SWP Contractor deliveries are designed to vary in response to local wetness indexes. As such, maximum deliveries are reduced in the wetter years, assuming greater availability of local water supplies.

    1. Deliveries to San Joaquin Valley agricultural contractors are reduced in wetter years using the following index developed from annual Kern River inflows to Lake Isabella:

	Dry/Avg.	Above	Wet
Kern River flow (TAF/year)	<1,000	1,000-1,400	1,400
Max. Ag delivery (TAF)	1,175	1,100	915

    2. Deliveries to Metropolitan Water District of Southern California are reduced in wetter years using the 10-station, two-year average precipitation index:

	Dry	Avg.	Above	Wet
S. Calif. Precipitation (in/yr)	<15	15-17.9	18-20.9	20.9
Max. MWDSC delivery (TAF)	1,433	1,183	883	783

    3. Maximum deliveries to all other SWP M&I Contractors are NOT adjusted for a wetness index, and are set at 857 TAF/year in all years. As a result of the use of these wetness indexes, the total maximum delivery to all SWP Contractors varies by year, ranging between 3,529 TAF in the dry-average years down to 2,619 TAF in the wetter years, as follows:

	Dry/Avg.	Avg.	Above	Wet
Max. Ag delivery	1,175	1,175	1,100	915
Max. MWDSC delivery	1,433	1,183	883	783
Max. Other M&I delivery	857	857	857	857
Fixed Losses & Recreation	64	64	64	64
Total Maximum SWP Delivery	3,529	(total varies)		2,619

  A range of maximum SWP deliveries is possible as the two wetness indexes are independent of each other. Thus a given year may be classified as "average" for agricultural deliveries by the Kern River flow index, and at the same time be classified as "above average" or "wet" for MWDSC deliveries by the Southern California precipitation index.

- When available, "interruptible" water is delivered to SWP south-of-Delta contractors in accordance with the following assumptions based on the Monterey Amendment White Paper redraft dated September 28, 1995:

    1. Interruptible water results from direct diversions from Banks Pumping Plant. It is not stored in San Luis Reservoir for later delivery to contractors.

    2. A contractor may accept interruptible water in addition to its monthly scheduled entitlement water. Therefore, the contractor may receive water above its Table A amount for the year. Interruptible water deliveries do not impact entitlement water

allocations.

3. If demand for interruptible water is greater than supply in any month, the supply is allocated in proportion to the Table A entitlements of those contractors requesting interruptible water. The maximum demand assumed for interruptible water is 84 TAF per month.

IX. CVP Demands, Deliveries & Deficiencies

- 1995 level CVP demands, including canal losses but excluding wildlife refuges are assumed as follows (see Item IXB below for refuge demands):

Contra Costa Canal	=	140 TAF/year
DMC and Exchange	=	1,561
CVP San Luis Unit	=	1,260
San Felipe Unit	=	196
Cross Valley Canal	=	128
Total CVP Delta Exports	=	3,285 TAF/year

  Including wildlife refuges, total CVP demand is 3,563 TAF/year. CVP Delta export demands are reduced in certain wet years (in the San Joaquin River Basin) when "James" bypass flows are available in the Mendota Pool.

- Sacramento Valley refuge demands are modeled implicitly in the hydrology through rice field and duck club operations. Sacramento Valley refuges include Gray Lodge, Modoc, Sacramento, Delevan, Colusa and Sutter. Level II refuge demands in the San Joaquin Valley are explicitly modeled at an assumed level of 288 TAF/year. San Joaquin refuges include Grasslands, Volta, Los Banos, Kesterson, San Luis, Mendota, Pixley, Kern and those included in the San Joaquin Basin Action Plan.

- CVP South-of-Delta deficiencies are imposed when needed by contract priority. Contracts are classified into four groups: agricultural (Ag), municipal and industrial (M&I), Exchange and Refuge. Deficiencies are imposed in accordance with the Shasta Index and sequentially according to the following rules:

  1. Ag requests are reduced up to a maximum of 50 percent.

  2. Ag, M&I and Exchange requests are reduced by equal percentages up to a maximum of 25 percent. At this point, cumulative Ag deficiencies are 75 percent.

  3. Ag, M&I and Refuge requests are reduced by equal percentages up to a maximum of 25 percent. At this point, cumulative Ag and M&I deficiencies are 100 percent and 50 percent, respectively.

  4. M&I requests are reduced until cumulative deficiencies are 100 percent.

  5. Further reductions are imposed equally upon Exchange and Refuge.

- Deficiencies in the form of "dedicated" water and "acquired" water to meet 800 TAF/year

CVPIA demands are not imposed.

X. Delta Standards

- Delta water quality standards are maintained at Contra Costa Canal intake (M&I), Emmaton and Jersey Point (agriculture), and Antioch, Chipps Island and Collinsville (fish & wildlife) in accordance with D-1485. A "buffer" was added to insure that the M&I standard at Contra Costa Canal is maintained on a daily basis. Thus, DWRSIM uses a value of 130 mg/L for the 150 mg/L standard and a value of 225 mg/L for the 250 mg/L standard. The following water quality objectives are not modeled:

    1. The 250 mg/L M&I chloride standards at Cache Slough, Clifton Court Forebay and Tracy Pumping Plant

    2. The agriculture EC standards on the Mokelumne River (at Terminous) and on the San Joaquin River (at San Andreas Landing)

    3. The fish and wildlife EC standards on the San Joaquin River (at Prisoner's Point)

- Minimum Sacramento River flow (at Rio Vista) and Delta outflow requirements (at Chipps Island) are maintained in accordance with D-1485. Water year classifications are determined using the Sacramento River Index as published in DWR Bulletin 120.

- Delta cross channel gates are closed in January through May when the Delta Outflow Index is greater than 12,000 cfs in accordance with D-1485. Additionally, the gates are closed in any month when upstream Sacramento River flows are greater than 25,000 cfs.

- The D-1422 San Joaquin River water quality objective at Vernalis (500 ppm TDS) is maintained by releasing water from New Melones Reservoir. A 70 TAF/year cap on reservoir releases is not imposed. If New Melones Reservoir storage drops to 80 TAF (per an April 26, 1996 letter from USBR to SWRCB), additional water is not provided for salinity control and the water quality standard is violated.

DWR PLANNING SIMULATION MODEL (DWRSIM) ASSUMPTIONS FOR SWRCB STUDY WITH MAY 1995 WQCP DELTA STANDARDS (FLOW ALTERNATIVE 2) 1995C6F-SWRCB-468

Base Study 467 (Flow Alternative 1) assumptions are modified as follows to meet SWRCB's May 1995 Water Quality Control Plan (Plan).

I. Water Year Classifications

- The Sacramento Valley 40-30-30 Index (as defined on page 23 of the Plan) is used to determine year types for Delta outflow criteria and Sacramento River system requirements unless otherwise specified in the Plan.

- The San Joaquin Valley 60-20-20 Index (page 24) is used to determine year types for flow requirements at Vernalis.

- The Sacramento River Index, or SRI (Footnote 6, page 20), is used to trigger relaxation criteria related to May-June Net Delta Outflow Index (NDOI) and salinity in the San Joaquin River and western Suisun Marsh.

- The Eight River Index (Footnote 13, page 20) is used to trigger criteria related to (i) January NDOI, (ii) February-June X2 standards and (iii) February export ratio.

II. Agricultural Water Quality Objectives (Table 2, page 17)

- EC standards at Vernalis are maintained as specified in the Plan (0.7 EC in April through August and 1.0 EC in September through March). A 70 TAF/year cap is not imposed on additional upstream releases from New Melones Reservoir to meet salinity requirements.

- The export area 1.0 EC standards at Clifton Court Forebay and Tracy Pumping Plant are not modeled.

III. Fish & Wildlife Water Quality Objectives: SJR Salinity (Table 3, page 18)

- The 0.44 EC standard is maintained at Jersey Point in April and May of all but critical years. Per Footnote 6 (page 20), this criteria is dropped in May if the projected SRI is less than 8.1 MAF.

- The salinity requirement at Prisoners Point is not modeled.

IV. Fish & Wildlife Water Quality Objectives: Suisun Marsh Salinity (Table 3, page 18)

- The western Suisun Marsh salinity standard is not modeled.

V. Fish & Wildlife Water Quality Objectives: Delta Outflow (Table 3, page 19)

- Minimum required NDOI (cfs) is maintained as follows:

Year Type	Oct	Nov	Dec	Jan	Feb-Jun	Jul	Aug	Sep
Wet	4,000	4,500	4,500	*	**	8,000	4,000	3,000
Above Normal	4,000	4,500	4,500	*	**	8,000	4,000	3,000
Below Normal	4,000	4,500	4,500	*	**	6,500	4,000	3,000
Dry	4,000	4,500	4,500	*	**	5,000	3,500	3,000
Critical	3,000	3,500	3,500	*	**	4,000	3,000	3,000

* January: Maintain either 4,500 cfs or 6,000 cfs if the December Eight River Index was greater than 800 TAF (per Footnote 13 page 20).

** February-June: Maintain 2.64 EC standards (X2) as described in Item V.B below.

- For February through June, outflow requirements are maintained in accordance with the 2.64 EC criteria (also known as X2) using the required number of days at Chipps Island (74 km) and Roe Island (64 km). See Footnote 14 for Table 3 (Table A) page 26.

  1. At the Confluence (81 km), the full 150 days (February 1 - June 30) of 2.64 EC is maintained in all years, up to a maximum required flow of 7,100 cfs. This requirement is dropped in May and June of any year for which the projected SRI is less than 8.1 MAF. In those years when the criteria is dropped, a minimum outflow of 4,000 cfs is maintained in May and June.

  2. The criteria -- "If salinity/flow objectives are met for a greater number of days than the requirements for any month, the excess days shall be applied to meeting the requirements for the following month" -- is not modeled. See Footnote "a" of Footnote 14 for Table 3 (Table A).

  3. The Kimmerer-Monismith monthly equation is used to calculate outflow required (in cfs) to maintain the EC standard (average monthly position in kilometers). In this equation the EC position is given and Delta outflow is solved for.

     ```
     EC position = 122.2 + [0.3278 * (previous month EC position in
     km)] - [17.65 * log10(current month Delta outflow in cfs)]
     ```

     In months when the EC standard is specified in more than one location (e.g. 19 days at the confluence and 12 days at Chipps Island), required outflow for the month is computed as a flow weighted average of the partial month standards.

- C. Additional details on the 2.64 EC criteria are modeled as follows:

  1. The trigger to activate the Roe Island standard is set at 66.3 km from the previous month, as an average monthly value.

  2. The maximum required monthly outflows to meet the 2.64 EC standard are capped at the following limits: 29,200 cfs for Roe Island; 11,400 cfs for Chipps Island; and 7,100 cfs for the Confluence.

3. Relaxation criteria for the February Chipps Island standard is a function of the January Eight River Index as follows:

    1. X2 days = 0 if the Index is less than 0.8 MAF

    2. X2 days = 28 if the Index is greater than 1.0 MAF

    3. X2 days vary linearly between 0 and 28 if the Index is between 0.8 MAF and 1.0 MAF

VI. Fish & Wildlife Water Quality Objectives: River Flows (Table 3, page 19)

- Minimum Sacramento River flow requirements (cfs) at Rio Vista are maintained as follows:

Year Type	Sep	Oct	Nov	Dec
Wet	3,000	4,000	4,500	4,500
Above Normal	3,000	4,000	4,500	4,500
Below Normal	3,000	4,000	4,500	4,500
Dry	3,000	4,000	4,500	4,500
Critical	3,000	3,000	3,500	3,500

- From February 1 through June 30, minimum flows on the San Joaquin River at Vernalis are maintained per the table below. For each period, the higher flow is required whenever the 2.64 EC Delta outflow position is located downstream of Chipps Island (<74 km). If the 2.64 EC Delta outflow position is upstream of Chipps Island (74 km), then the lower flow requirement is used.

	Minimum Flows at Vernalis (cfs)	
Year Type	Feb1-Apr14 & May16-Jun30	April15-May15
Wet	2,130 or 3,420	7,330 or 8,620
Above Normal	2,130 or 3,420	5,730 or 7,020
Below Normal	1,420 or 2,280	4,620 or 5,480
Dry	1,420 or 2,280	4,020 or 4,880
Critical	710 or 1,140	3,110 or 3,540

- For the month of October, the minimum flow requirement at Vernalis is 1,000 cfs in all years PLUS a 28 TAF pulse flow (per Footnote 19, page 21). The 28 TAF pulse (equivalent to 455 cfs monthly) is added to the actual Vernalis flow, up to a maximum of 2,000 cfs. The pulse flow requirement is not imposed in a critical year following a critical year. These two components are combined as an average monthly requirement as follows:

October Minimum Flows at Vernalis (cfs)	
Base Flow	Required Flow
<1,000	1,455
1,000-1,545	Base Flow + 455
1,545	2,000

- The above flow requirements at Vernalis are maintained primarily by releasing additional water from New Melones Reservoir. In years when New Melones Reservoir drops to a minimum storage of 80 TAF (per April 26, 1996 letter from USBR to SWRCB), additional water is not provided to meet the Vernalis flow requirements. Pulse and salinity requirements may be violated when New Melones drops to minimum storage.

VII. Fish & Wildlife Water Quality Objectives: Export Limits (Table 3, page 19)

- A. Ratios for maximum allowable Delta exports are specified as a percentage of total Delta inflow as follows:

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
65	65	65	65	45-35	35	35	35	35	65	65	65

  - In February the export ratio is a function of the January Eight River Index per Footnote 25, page 22 as follows:

    4. 45% if the Jan. 8-River Index is less than 1.0 MAF

    5. 35% if the Jan. 8-River Index is greater than 1.5 MAF

    6. Varies linearly between 45% and 35% if the January Eight River Index is between 1.0 MAF and 1.5 MAF.

  - For this ratio criteria, total Delta exports are defined as the sum of pumping at the SWP Banks and CVP Tracy Pumping Plants. Total Delta inflow is calculated as the sum of river flows from the Sacramento River, Yolo Bypass, total from the Eastside stream group, and San Joaquin River inflow. Delta area precipitation and consumptive uses are not used in this ratio.

- Based on Footnote 22 page 21, April and May total Delta export limitations are modeled as follows:

  7. April 15 - May 15 exports are limited to 1,500 cfs OR 100 percent of the San Joaquin River flow at Vernalis, whichever is greater.

  8. April 1-14 and May 16-31 export limits are controlled by either the export/inflow ratio (35%) or pumping plant capacity, whichever is smaller.

VIII. Fish & Wildlife Water Quality Objectives: Delta Cross Channel (Table 3, page 19)

- The Delta Cross Channel is closed 10 days in November, 15 days in December and 20 days in January for a total closure of 45 days per Footnote 26, page 22.

- The Delta Cross Channel is fully closed from February 1 through May 20 of all years and is closed an additional 14 days between May 21 and June 15 per Footnote 27, page 22.

DWR PLANNING SIMULATION MODEL (DWRSIM) ASSUMPTIONS FOR SWRCB STUDY WITH MAY 1995 WQCP DELTA STANDARDS (FLOW ALTERNATIVE 3) 1995C6F-SWRCB-506

Study 469 (Joint POD Alternative 2) assumptions are modified in accordance with the SWRCB Revised Modeling Request dated April 8, 1997. The Central Valley Project and the State Water Project are operated to achieve full compliance with all objectives in the 1995 Bay-Delta Plan.

1. San Joaquin River flows are modified with revised releases from New Melones, Don Pedro, Lake McClure, Eastman Lake and Hensley Lake as per Table No's 1 to 5 for Alternative 3, provided in the Request. These quantities of water must be released at these reservoirs and conveyed to Vernalis and the Delta.

2. San Joaquin River flows are modified by holding back monthly quantities of water which are not diverted in the San Joaquin Basin as a result of curtailment of direct diversion as per Table No's 10 to 16 for Alternative 3, provided in the Request. The values in these tables are subtracted from actual diversions at the indicated Control Points. If the values in these tables exceeded the modeled diversions, the modeled diversions are set to Zero.

3. If the additional water provided upstream of the Stanislaus is insufficient to meet the SWRCB's May 1995 Water Quality Control Plan flow objectives at Vernalis, additional releases are made from New Melones Reservoir.

4. In years when New Melones Reservoir approaches its minimum storage of 80 TAF, additional water is not provided to meet salinity requirements and violations are possible.

DWR PLANNING SIMULATION MODEL (DWRSIM) ASSUMPTIONS FOR SWRCB STUDY WITH MAY 1995 WQCP DELTA STANDARDS (FLOW ALTERNATIVE 4) 1995C6F-SWRCB-507

Study 469 (Joint POD Alternative 2) assumptions are modified in accordance with the SWRCB Revised Modeling Request dated April 8, 1997. The Central Valley Project and the State Water Project are operated to achieve full compliance with all objectives in the 1995 Bay-Delta Plan.

1. San Joaquin River flows are modified with revised releases from New Melones, Don Pedro, Lake McClure, Eastman Lake and Hensley Lake as per Table No's 1 to 5 for Alternative 4, provided in the Request. These quantities of water must be released at these reservoirs and conveyed to Vernalis and the Delta.

2. San Joaquin River flows are modified by holding back monthly quantities of water which are not diverted in the San Joaquin Basin as a result of curtailment of direct diversion as per Table No's 10 to 16 for Alternative 4, provided in the Request. The values in these tables are subtracted from actual diversions at the indicated Control Points. If the values in these tables exceeded the modeled diversions, the modeled diversions are set to Zero.

3. If the additional water provided upstream of the Stanislaus is insufficient to meet the SWRCB's May 1995 Water Quality Control Plan flow objectives at Vernalis, additional releases are made from New Melones Reservoir.

4. In years when New Melones Reservoir approaches its minimum storage of 80 TAF, additional water is not provided to meet salinity requirements and violations are possible.

DWR PLANNING SIMULATION MODEL (DWRSIM) ASSUMPTIONS FOR SWRCB STUDY WITH MAY 1995 WQCP DELTA STANDARDS (FLOW ALTERNATIVE 5) 1995C06H-SWRCB-513

Study 1995C06F-SWRCB-469 assumptions are modified in accordance with the SWRCB Revised Modeling Request dated January 10, 1997 and subsequent request of March 5, 1997. The Central Valley Project and the State Water Project are operated to achieve full compliance with all objectives in the 1995 Bay-Delta Plan.

1. This alternative applies to the following major water users.

   1) Water users with storage in foothill reservoirs that control downstream flow to the Delta.

   2) Water users with upstream reservoirs that have a cumulative capacity of at least 100 thousand acre-feet (TAF) and who use water primarily for consumptive uses.

2. The major tributaries with water users who meet the above criteria are listed in SWRCB's January 10, 1997 request. The minimum flow requirements for the major tributaries to the Delta based on the flow objectives and the tributaries' average unimpaired flow to the Delta, were provided by SWRCB in January 10, 1997 request. Minimum flow objectives for the three tributaries, the Yuba, Bear, and Tuolumne rivers, were revised as per SWRCB's March 5, 1997 request.

3. The flows for the Sacramento, Feather, and American rivers are assumed to be controlled by SWP and CVP reservoirs that provide export supplies and the reservoirs are not operated to meet the minimum flow requirements specified for these rivers in the January 10, 1997 memo. Instead, the project reservoirs are operated to insure that the May 1995 Water Quality Control Plan outflow objectives are achieved.

4. The 40-30-30 and 60-20-20 indices are used in applying these objectives to the Sacramento River and the San Joaquin River watersheds, respectively in October and February thru June. For the remaining months, use the 40-30-30 index for both watersheds.

5. In preparing DWRSIM study for Alternative #5, the hydrology input was modified to reflect the minimum flows imposed on selected watersheds, as outlined in the memorandums from the SWRCB to DWR dated January 10, 1997, March 5, 1997, revisions dated July 14, 1997, and conversations between DWR and SWRCB staff. The new 1995 level hydrology developed is called HYD-C06h and reflects changes made to the base 1995 level hydrology HYD-C06f.

In the Sacramento Valley and Eastside Streams areas, monthly minimum flows by water year type were imposed on the following watersheds:

Stony Creek
Yuba River
Bear River
Cosumnes River
Calaveras River
Mokelumne River

For Stony Creek, Cosumnes River, and Calaveras River watersheds, the minimum flows were built into the Depletion Analysis directly. For the Yuba River and Bear River watersheds, the minimum flows were imposed on selected control points in the respective HEC-3 models. Diversions (exports and depletions) were reduced to meet the minimum flows. For the Mokelumne River watershed, an operation for Pardee/Camanche reservoirs reflecting the SWRCB minimum flows on the Mokelumne river was obtained from EBMUD at the request of SWRCB staff. The operation was then included in the hydrology development process.

6. San Joaquin River Basin minimum flow requirements are met at the confluence of the San Joaquin River with its major tributaries modeled by DWRSIM and are carried through the system to the San Joaquin River at Vernalis. Additional minimum flows are as follows: A minimum inflow into New Don Pedro Reservoir is specified as detailed in the March 5, 1997 SWRCB memo. Existing minimum flow requirements on the Merced, Tuolumne and Stanislaus Rivers are met in addition to flows specified below. Flows are met downstream of each specified location. Deficiencies are applied to upstream demands if necessary to meet the minimum flow requirements. The table below lists the DWRSIM control point numbers where minimum flows are met and the upstream control points where deficiencies (if any) are applied.

DWRSIM Minimum Flow and Deficiency Control Points

Tributary	Minimum Flow Control Point Number	Deficiency Control Point Number
San Joaquin River	610	602
Fresno River	626	624
Chowchilla River	634	634
Merced River	649	645
Tuolumne River	665	659 & 662
Stanislaus River	675	670 & 16

7. If the additional water provided upstream of the Stanislaus is insufficient to meet the SWRCB's May 1995 Water Quality Control Plan flow objectives at Vernalis, New Melones Reservoir was operated to ensure that the Vernalis salinity objectives are met. In years when New Melones Reservoir approaches its minimum storage of 80 TAF, additional water is not provided to meet salinity requirements and violations are possible.

DWR PLANNING SIMULATION MODEL (DWRSIM) ASSUMPTIONS FOR SWRCB STUDY WITH MAY 1995 WQCP DELTA STANDARDS (FLOW ALTERNATIVE 6) 1995C6F-SWRCB-485

Study 468 (Flow Alternative 2) assumptions are modified as follows:

In addition to Vernalis X2 and pulse requirements specified in the 1995 WQCP (see December 4, 1996 memo from SWRCB to DWR), following South Delta flow requirements are also imposed at Vernalis:

Month	Flow (cfs)
June	1120
July	1400
August	1330
September	1060
November	760
December	720
January	570

Recirculation water is provided from the Delta Mendota Canal, if necessary, to meet all flow objectives at Vernalis (I.e. February-June and October WQCP requirements as well as the South Delta flow requirements outlined above).

1. While South Delta flow obligations could be shared among all San Joaquin Basin tributaries, it is assumed for simplicity that DMC recirculation water meets the entire obligation.
2. Wheeling of CVP water through SWP facilities to CVP San Luis Reservoir is permitted, as needed, without adversely impacting SWP operations.
3. When DMC conveyance capacity is limiting, CVP deliveries are reduced, as necessary, to provide recirculation water to meet Vernalis requirements on a priority.
4. Recirculation water salinity is assumed to be equal to 70 percent of Rock Slough salinity, as determined by the CCWD's G- model.

DWR PLANNING SIMULATION MODEL (DWRSIM) ASSUMPTIONS FOR SWRCB STUDY WITH MAY 1995 WQCP DELTA STANDARDS (FLOW ALTERNATIVE 7) 1995C6F-SWRCB-519

Study 468 (Flow Alternative 2) assumptions are modified as follows in accordance with the document "Hydrological and Biological Explanation of the Letter of Intent Among Export Interests and San Joaquin River Interests to Resolve San Joaquin River Issues Related to Protection of Bay-Delta Environmental Resources." and are in accordance with the SWRCB Revised Modeling Request dated July 23, 1997.

1. Additional water is provided from the San Joaquin River upstream of its confluence with the Stanislaus, if necessary, to maintain the following minimum flows at Vernalis:

Month(s)	Critical Years	Dry Years	Below Normal Years	Above Normal & Wet Years
October	1,000 cfs	1,000 cfs	1,000 cfs	1,000 cfs
November 1 - February 14	-----	-----	-----	-----
February 15- April 30	1,000 cfs	1,000 cfs	1,000 cfs	1,000 cfs
May	2,000 cfs	3,000 cfs	4,000 cfs	5,000 cfs
June - September	-----	-----	-----	-----

(a) As shown in the above schedule, April-May pulse flow requirements were placed entirely in May to compute additional water to be provided upstream of the Stanislaus River. This additional water was uniformly distributed in the period April15-May15.

(b) Responsibility to provide additional water upstream of the Stanislaus River is shared among the Tuolumne (New Don Pedro Reservoir) and Merced (Lake McClure) River basins, as per January 13, 1997 letter from Marc Van Camp to SWRCB. The order of contributions is as follows.

1. 25,000 AF - Merced Irrigation District
2. 10,000 AF - Oakdale/South San Joaquin Irrigation Districts
3. 5,000 AF - San Joaquin River Exchange Contractors
4. 10,000 AF - Modesto/Turlock Irrigation Districts
5. 6,000 AF - Merced Irrigation District
6. 2,400 AF - Oakdale/South San Joaquin Irrigation Districts
7. 1,200 AF - San Joaquin River Exchange Contractors
8. 2,400 AF - Modesto/Turlock Irrigation Districts.

Note that due to modeling complexities exchange contractors allocated share

was not modeled.
Note that Modesto/Turlock Irrigation Districts and Merced Irrigation District obligations are met directly by reoperation of New Don Pedro Reservoir and Lake McClure.

2. Stanislaus R. minimum fishery flows below Goodwin Dam are maintained as follows:

Month(s)	Critical Years	Dry & Below Normal Years	Above Normal & Wet Years
October	225 cfs	225 cfs	250 cfs
November - April	225 cfs	240 cfs	275 cfs
May	650 cfs	960 cfs	1,070 cfs
June	200 cfs	200 cfs	200 cfs
July - September	50 cfs	50 cfs	75 cfs
Annual Minimum	156,000 acre-ft	181,000 acre-ft	206,000 acre-ft

Note that May pulse requirement was uniformly distributed in the period April15-May15.

3. Tuolumne R. minimum fishery flows below New Don Pedro Dam are maintained as follows:

Month(s)	Critical Years	Dry Years	Below Normal Years	Above Normal & Wet Years
October	125 cfs	150 cfs	207 cfs	397 cfs
Nov - April (*)	150 cfs	150 cfs	180 cfs	299 cfs
May	322 cfs	725 cfs	920 cfs	1,761 cfs
June - Sept (**)	50 cfs	75 cfs	75 cfs	250 cfs
Annual Minimum	94,000 acre-ft	125,700 acre-ft	152,200 acre-ft	300,700 acre-ft

Note that May pulse requirement was uniformly distributed in the period April15-May15.

(*) February requirement in critical years is 160 cfs.
(**) June and September requirements in below normal and dry years are 76 cfs.

4. 49 TAF/yr is delivered to CVP contractors on the Stanislaus River above Goodwin Dam in wet and above normal water years. No deliveries are made in other water years.

5. Water quality releases from New Melones Reservoir are capped at 70 TAF/year.

DWR PLANNING SIMULATION MODEL (DWRSIM) ASSUMPTIONS FOR SWRCB STUDY WITH MAY 1995 WQCP DELTA STANDARDS AND VERNALIS ADAPTIVE MANAGEMENT PLAN (VAMP) ALTERNATIVE 8 (1995C06F-SWRCBDS-622A

Study 468 (Flow Alternative 2) assumptions are modified as follows in accordance with the SWRCB Modeling request dated February 20, 1998, revised March 10, 1998, for Vernalis Adaptive Management Plan (VAMP) Modeling. Note all other Accord flow requirements at Vernalis are not imposed.

A. Responsibility for meeting Vernalis objectives is allocated per Vernalis Adaptive Management Plan (VAMP) described below in Section C. The State Water Project and the Central Valley Project are responsible for meeting all other Bay-Delta objectives.

B. The Stanislaus River is operated according to the U. S. Bureau of Reclamation's New Melones Interim Operational Plan except that the minimum annual fish release cannot be less than 98 TAF.

C. Vernalis Adaptive Management Plan (VAMP) Objectives are as follows.

1. The April 15 to May 15 out-migration pulse flow target will be the Test Flow Target immediately greater than the Existing Flow at Vernalis, as given below. Test Flow Target from May 1 to May 15 is set at the same level as April 15 to April 30 target.

Existing Flow at Vernalis (cfs)	Test Flow Target (cfs)
0 to 1,999	2,000
2000 to 3,199	3,200
3,200 to 4,449	4,450
4,450 to 5,699	5,700
5,700 to 7,000	7,000

2. Double-step the Test Flow Target when the sum of the current year and the previous year 60-20-20 indicator is 7 or greater. In other words, if the existing flow is 5,000 cfs, double step to a 7,000 cfs Test Flow Target.

60-20-20 Year Type	Indicator
Wet	5
AN	4
BN	3
D	2
C	1

3. In years when the sum of the current year's 60-20-20 indicator and the two previous years indicators is 4 or less, the San Joaquin River Group will not be required to provide supplemental flows above Existing Flows.

4. Water provided for VAMP by the San Joaquin River Group during the pulse flow period of any year shall not exceed the amount of water necessary to achieve the Test Flow Target or 110,000 acre-feet, whichever is less.

5. Supplemental water provided for VAMP (up to 110,000 acre-feet) will be provided from San Joaquin River Group in the following order.

Entity	**Quantity (TAF)**	**Cumulative (TAF)**
Merced ID	25.0	
OID/SSJID	10.0	
Exchange Contr.	5.0	
MID/TID	10.0	50.0
Merced ID	11.5	
OID/SSJID	4.6	
Exchange Contr.	2.3	
MID/TID	4.6	73.0
Merced ID	8.5	
OID/SSJID	3.4	
Exchange Contr.	1.7	
MID/TID	3.4	90.0
Merced ID	10.0	
OID/SSJID	4.0	
Exchange Contr.	2.0	
MID/TID	4.0	110.0

Note that due to modeling complexities exchange contractors allocated share was not modeled.
Note that Modesto/Turlock Irrigation Districts and Merced Irrigation District obligations are met directly by reoperation of New Don Pedro Reservoir and Lake McClure.

D. Merced Irrigation District will supplement its Existing Flow during October by 12,500 acre-feet in all years.

E. Oakdale Irrigation District will provide upto 26,000 acre-feet in each year. Up to 11,000 acre-feet of this quantity is OID's contribution towards the VAMP 110,000 acre-feet described above (for the pulse flow period). The remainder of the 26,000 acre-feet is retained in the New Melones Reservoir and is available for use by the CVP any time of the year.

F. During the pulse flow period (April 15 to May 15), exports are limited to the following quantities:

a) When Vernalis flows are less than or equal to 4,450 cfs, combined CVP + SWP exports are limited to 1,500 cfs;

b) When Vernalis flows are greater than 4,450 cfs or less than or equal to 5,700 cfs, CVP + SWP exports are limited to 2,250 cfs;

c) When Vernalis flows are greater than 5,700 cfs or less than or equal to 7,000 cfs, CVP + SWP exports are limited to either: 1,500 cfs when San Luis Reservoir is at least 2 MAF of storage on April 1, or 3,000 cfs when San Luis Reservoir storage is less;

d) When Vernalis flows are greater than 7,000 cfs, combined CVP + SWP exports may not exceed Vernalis flows.

G. In years when New Melones Reservoir approaches its minimum storage of 80 TAF, additional water is not provided to meet salinity requirements and violations are possible.

DWR PLANNING SIMULATION MODEL (DWRSIM) ASSUMPTIONS FOR SWRCB STUDY WITH MAY 1995 WQCP DELTA STANDARDS (JOINT POD ALTERNATIVE 2) 1995C6F-SWRCB-469

Study 468 (Flow Alternative 2) assumptions are modified as follows:

Additional water is provided from the San Joaquin River upstream of its confluence with the Stanislaus, if necessary, to meet salinity and pulse flow objectives at Vernalis. Additional water requirements are shared equally between the Tuolumne (Don Pedro Reservoir) and Merced (Lake McClure) River basins. If these sources are insufficient to meet objectives at Vernalis, nominal deficiencies are applied to upstream demands. Additional releases from the Tuolumne and Merced Rivers are assumed to be of fresh water quality (50 ppm TDS). Furthermore, it is assumed that these additional releases do not incur losses between the reservoirs and Vernalis.

DWR PLANNING SIMULATION MODEL (DWRSIM) ASSUMPTIONS FOR JOINT POINTS OF DIVERSION WHEELING STUDY (JOINT POD ALTERNATIVE 3) 1995C06F-SWRCBJ-501

This study meets SWRCB'S May 1995 Water Quality Control Plan (Plan) and includes selected upstream ESA requirements and CVPIA flow prescriptions. Assumptions are identical to Study 468 except CVP is authorized to use the SWP's point of diversion in the Delta to deliver contract water to the Cross Valley Canal, Musco Olive, Tracy Golf Course and the VA cemetery.

Study 469 (SWRCB Alternative 3) assumptions are modified as follows:

1. USBR would continue to provide CVP water deliveries to the Cross Valley Canal, Musco Olive, Tracy Golf Course and VA cemetery through wheeling via State Water Project Banks Pumping Plant.

2. Authorized amount of wheeling through Banks Pumping Plant is 129 taf for CVP use every year irrespective of needs.

DWR PLANNING SIMULATION MODEL (DWRSIM) ASSUMPTIONS FOR JOINT POINT OF DIVERSION COMBINED USE (JOINT POD ALTERNATIVE 4) 1995C06F-SWRCBJ-501A

This study meets SWRCB's May 1995 Water Quality Control Plan (Plan) and includes selected upstream ESA requirements and CVPIA flow prescriptions. Assumptions are identical to Study 468 except CVP is authorized to use the SWP's point of diversion in the Delta to deliver contract water to the Cross Valley Canal, Musco Olive, Tracy Golf Course and the VA cemetery.

Study 469 (SWRCB alternative 3) assumptions are modified as follows:

1. USBR would continue to provide CVP water deliveries to the Cross Valley Canal, Musco Olive, Tracy Golf Course and VA cemetery through wheeling via State Water Project Banks Pumping Plant.

2. The SWP may wheel an unlimited amount for the CVP.

3. From April 15 - May 15 (Pulse Flow Period) 50% of San Joaquin River were use in calculation of Total allowable export from Delta for all water year type.

DWR PLANNING SIMULATION MODEL (DWRSIM) ASSUMPTIONS FOR JOINT POINT OF DIVERSION COMBINED USE (JOINT POD ALTERNATIVE 5) 1995C06F-SWRCBJ-524

Study 469 (Joint POD Alternative 2) assumptions are modified as follows:

1. Combined use of SWP and CVP points of diversion in Delta is limited by SWP and CVP water rights terms and conditions that specify permitted diversion rates of the projects in delta.

2. The SWP may wheel an unlimited amount for the CVP.

DWR PLANNING SIMULATION MODEL (DWRSIM) ASSUMPTIONS FOR JOINT POINT OF DIVERSION COMBINED USE (JOINT POD ALTERNATIVE 6) 1995C06F-SWRCBJ-525

Study 519 (Flow Alternative 7) assumptions are modified as follows:

1. Combined use of the SWP and CVP points of diversion in the Delta is limited by SWP and CVP water rights terms and conditions that specify permitted diversion rates of the projects in Delta.

2. The SWP may wheel an unlimited amount for the CVP.

DWR PLANNING SIMULATION MODEL (DWRSIM) ASSUMPTIONS FOR JOINT POINT OF DIVERSION COMBINED USE (JOINT POD ALTERNATIVE 7) 1995C06F-SWRCBJ-526

Study 469 (Joint POD Alternative 2) assumptions are modified as follows:

1. Combined use of SWP and CVP points of diversion in Delta limited by SWP and CVP water rights terms and conditions that specify permitted diversion rates of the projects in Delta.

2. Diversion rates are 10,300 cfs at SWP Banks Pumping Plant.

3. The SWP may wheel an unlimited amount for the CVP

DWR PLANNING SIMULATION MODEL (DWRSIM) ASSUMPTIONS FOR JOINT POINT OF DIVERSION COMBINED USE (JOINT POD ALTERNATIVE 8) 1995C06F-SWRCBJ-526A

Study 469 (Joint POD alternative 2) assumptions are modified as follows:

1. Combined use of SWP and CVP points of diversion in Delta limited by SWP and CVP water rights terms and conditions that specify permitted diversion rates of the projects in Delta.

2. Diversion rates are 10,300 cfs at SWP Banks Pumping Plant.

3. The SWP may wheel an unlimited amount for the CVP.

4. 2020 Level (3.6 MAF) CVP Demand.

DWR PLANNING SIMULATION MODEL (DWRSIM) ASSUMPTIONS FOR SWRCB STUDY WITH MAY 1995 WQCP DELTA STANDARDS PLUS VERNALIS ADAPTIVE MANAGEMENT PLAN (VAMP) AND JOINT POINT DIVERSION (JOINT POD ALTERNATIVE 9) 1995C06F-SWRCBJP-634

Study 622A assumptions are modified as follows in accordance with the SWRCB Modeling request dated February 20, 1998, revised March 10, 1998, for Vernalis Adaptive Management Plan (VAMP) Modeling.

1. Combined use of SWP and CVP points of diversion in the Delta is limited by SWP and CVP water rights terms and conditions that specify permitted diversion rates of the projects in the Delta.

2. Use of the SWP point of diversion is further limited by the U. S. Army Corps of Engineers Public Notice 5820-A, as amended.. This notice limits the SWP Delta diversions to 6,680 cfs except from December 15 to March 15 when higher diversion rates are allowed under specified San Joaquin River flow conditions.

3. The SWP may wheel an unlimited amount for the CVP.

DWR PLANNING SIMULATION MODEL (DWRSIM) ASSUMPTIONS FOR SWRCB STUDY WITH MAY 1995 WQCP DELTA STANDARDS (CUMULATIVE IMPACTS ANALYSIS) 1995C6F-SWRCB-492

Study 492 assumptions are identical to those in the CALFED "Benchmark" Study 472 with the following exceptions: (i) Banks Pumping Plant capacity is 10,300 cfs, (ii) CVP water is wheeled to meet unmet demands when unused capacity in Banks Pumping Plant is available, and (iii) a cap on New Melones Reservoir releases for salinity control is not imposed.

I. New Model Features

A new DWRSIM version with the following enhancements is employed:

A. A new SWP and CVP south-of-Delta delivery logic uses (i) runoff forecast information and uncertainty (not perfect foresight), (ii) a delivery versus carryover risk curve and (iii) a standardized rule (Water Supply Index versus Demand Index Curve) to estimate the total water available for delivery and carryover storage. The new logic updates delivery levels monthly from January 1 through May 1 as water supply parameters become more certain. Refer to Leaf and Arora (1996) for additional information on the new delivery logic.

B. An expanded network schematic includes more details in the Delta and along the DMC and SWP-CVP Joint Reach facility.

C. A network representation of the San Joaquin River basin was adapted from USBR's SANJASM model. The San Joaquin River basin schematic was expanded to include (i) the Tuolumne River upstream to Hetch Hetchy and Cherry/Eleanor Reservoirs, (ii) the Merced River upstream to Lake McClure, (iii) the Chowchilla and Fresno Rivers upstream to Eastman and Hensley Lakes, respectively, and (iv) the San Joaquin River upstream to Millerton Lake.

D. Contra Costa Water District's "G" model is used to relate Delta flows and salinities. Refer to Denton (1993) for additional information on the procedure.

E. References:

Leaf, R.T. and Arora, S.K. (1996). "Annual Delivery Decisions in the Simulation of the California State Water Project and Federal Central Valley Project using DWRSIM." *Proceedings 1996 North American Water and Environment Congress*, ASCE, C.T. Bathala, Ed.

Denton, R.A. (1993). "Accounting for Antecedent Conditions in Seawater Intrusion Modeling - Applications for the San Francisco Bay-Delta." *Proceedings 1993 National Conference on Hydraulic Engineering*, ASCE, H.W. Shen, Ed.

II. Instream Flow Requirements

A. Trinity River minimum fish flows below Lewiston Dam are maintained at 340 TAF/year for all years, based on a May 1991 letter agreement between the USBR and the U.S. Fish and Wildlife Service.

B. Sacramento River navigation control point (NCP) flows are maintained at 5,000 cfs in wet and above normal water years and 4,000 cfs in all other years. This criterion is relaxed to 3,500 cfs when Shasta carryover storage drops below 1.9 MAF and is further relaxed to 3,250 cfs when Shasta carryover storage drops below 1.2 MAF.

C. Feather River fishery flows are maintained per an agreement between DWR and the Calif. Dept. of Fish & Game (August 26, 1983). In normal years these minimum flows are 1,700 cfs from October through March and 1,000 cfs from April through September. Lower minimum flows are allowed in low runoff years and when Oroville storage drops below 1.5 MAF. A maximum flow restriction of 2,500 cfs for October and November is maintained per the agreement criteria.

D. Stanislaus River minimum fish flows below New Melones Reservoir range from 98 TAF/year up to 302 TAF/year, according to the interim agreement (dated June 1987) between the USBR and the Calif. Dept. of Fish & Game. The actual minimum fish flow for each year is based on the water supply available for that year. Additional minimum flow requirements are imposed in June through September (15.2 - 17.4 TAF per month) to maintain dissolved oxygen levels in the Stanislaus River. Channel capacity below Goodwin Dam is assumed to be 8,000 cfs. CVP contract demands above Goodwin Dam are met as a function of New Melones Reservoir storage and inflow per an April 26, 1996 letter from USBR to SWRCB.

E. Tuolumne River minimum fishery flows below New Don Pedro Dam are maintained per an agreement between Turlock and Modesto Irrigation Districts, City of San Francisco, Dept. of Fish & Game and others (FERC Agreement 2299). Base flows range from 50 cfs to 300 cfs. Base and pulse flow volumes depend on time of the year and water year type.

F. Instream flow requirements are maintained in accordance with CVPIA criteria (see Item III) at the following locations: below Keswick Dam on the Sacramento River, below Whiskeytown

Dam on Clear Creek and below Nimbus Dam on the American River.

III. CVPIA Flow Criteria

The following CVPIA flow criteria are in accordance with an April 26, 1996 letter from USBR to SWRCB. (This information is preliminary. It is envisioned that when significant changes occur within the CVP/SWP system, the criteria will be reviewed and possibly revised):

A. Flow objectives between 3,250 cfs and 5,500 cfs are maintained below Keswick Dam on the Sacramento River. Flow requirements during October through April are triggered by Shasta carryover storage.

B. Flow objectives between 52 cfs and 200 cfs are maintained below Whiskeytown Dam on Clear Creek, depending on month and year type.

C. Flow objectives between 250 cfs and 4,500 cfs are maintained below Nimbus Dam on the American River. Flow requirements during October through February are triggered by Folsom carryover storage. Flow requirements in other months are triggered by previous month storage plus remaining water year inflows.

IV. Trinity River Imports

Imports from Clair Engle Reservoir to Whiskeytown Reservoir (up to a 3,300 cfs maximum) are specified according to USBR criteria. Imports vary according to month and previous month Clair Engle storage.

V. Hydrology (HYD-C06F)

A new 1995 level hydrology, HYD-C06F, was developed similar to HYD-C06B described in a June 1994 memorandum report entitled "Summary of Hydrologies at the 1990, 1995, 2000, 2010 and 2020 Levels of Development for Use in DWRSIM Planning Studies" published by DWR's Office of State Water Project Planning. HYD-CO6B was based on DWR Bulletin 160-93 land use projections and simulates the 71 year period 1922-92. HYD-C06F, developed through consultation with USBR to address differences in San Joaquin basin hydrology, simulates two additional years (through 1994) and includes the following major modifications compared to HYD-C06B:

A. Stand-alone HEC-3 models of the American, Yuba and Bear River subsystems were updated and extended through 1994. Yuba River minimum fishery flows below Bullards Bar Dam were not modified to reflect new FERC requirements. According to consultants for the Yuba County Water Agency, water supply impacts of the new requirements are not substantially different from those modeled in HYD-C06B.

B. Mokelumne River minimum fishery flows below Camanche Dam are modeled in HYD-C06F per an agreement between EBMUD, U.S. Fish and Wildlife Service, and Calif. Dept. of Fish & Game (FERC Agreement 2916). Base flows range from 100 cfs to 325 cfs from October through June, depending on time of the year and water year type. Base flows are maintained at 100 cfs from July through September for all water year types. Water year types are determined by reservoir storage and unimpaired runoff. For the months of April through June, additional pulse flows are maintained up to 200 cfs depending on water year type and reservoir storage.

C. Historical 1993-94 land use was estimated by linear interpolation between 1990 and 2000 normalized projected levels.

VI. Pumping Plant Capacities, Coordinated Operation & Wheeling

A. Facilities required to obtain a permit to operate Banks Pumping Plant at 10,300 cfs capacity (South Delta Improvements) are assumed.

B. CVP Tracy Pumping Plant capacity is 4,600 cfs, but physical constraints along the Delta Mendota Canal and at the relift pumps (to O'Neil Forebay) can restrict export capacity as low as 4,200 cfs.

C. CVP/SWP sharing of responsibility for the coordinated operation of the two projects is maintained per the Coordinated Operation Agreement (COA). Storage withdrawals for in-basin use are split 75 percent CVP and 25 percent SWP. Unstored flows for storage and export are split 55 percent CVP and 45 percent SWP. In months when the export-inflow ratio limits Delta exports, the allowable export is shared equally between the CVP and SWP. (The COA sharing formula is based on D-1485 operations, not on May 1995 Water Quality Control Plan operations. The sharing formula will likely be modified to conform with Water Quality Control Plan operations. Such a change has unknown, but potentially significant, operational implications.)

D. CVP water is wheeled through SWP facilities to meet unmet demands when capacity is available in Banks Pumping Plant.

E. Enlarged East Branch aqueduct capacities are assumed from Alamo Powerplant to Devil

Canyon Powerplant.

VII. Target Reservoir Storage

A. Shasta Reservoir carryover storage is maintained at or above 1.9 MAF in all normal water years for winter-run salmon protection per the NMFS biological opinion. However, in critical years following critical years, storage is allowed to fall below 1.9 MAF.

B. Folsom Reservoir storage capacity was reduced from 1010 TAF down to 975 TAF due to sediment accumulation as calculated from a 1992 reservoir capacity survey.

C. Folsom flood control criteria are in accordance with the December 1993 USACE report "Folsom Dam And Lake Operation Evaluation". This criteria uses available storage in upstream reservoirs such that the maximum flood control reservation varies from 400 TAF to 670 TAF.

VIII. SWP Demands, Deliveries & Deficiencies

A. 2020 demand level is assumed to be fixed at full entitlement of 4.2 MAF. MWDSC's monthly demand patterns assume an Eastside Reservoir and an Inland Feeder pipeline in accordance with a July 26, 1995 memorandum from MWDSC.

B. Deficiencies are imposed as needed per the draft "Monterey Agreement" criteria and are calculated from the following Table A entitlements for year 2020:

Agricultural Entitlements	1,175 TAF/year
M&I Entitlements	2,958 TAF/year
Recreation & Losses	64 TAF/year
Total Entitlements	4,197 TAF/year

C. When available, "interruptible" water is delivered to SWP south-of-Delta contractors in accordance with the following assumptions based on the Monterey Amendment White Paper redraft dated September 28, 1995:

1. Interruptible water results from direct diversions from Banks Pumping Plant. It is not stored in San Luis Reservoir for later delivery to contractors.

2. A contractor may accept interruptible water in addition to its monthly scheduled entitlement water. Therefore, the contractor may receive water above its Table A amount for the year.

Interruptible water deliveries do not impact entitlement water allocations.

3. If demand for interruptible water is greater than supply in any month, the supply is allocated in proportion to the Table A entitlements of those contractors requesting interruptible water.

IX. CVP Demands, Deliveries & Deficiencies

A. 2020 level CVP demands, including canal losses but excluding San Joaquin Valley wildlife refuges are assumed as follows (see Item IX.B below for refuge demands):

Contra Costa Canal	=	202 TAF/year
DMC and Exchange	=	1,561 TAF/year
CVP San Luis Unit	=	1,447 TAF/year
San Felipe Unit	=	196 TAF/year
Cross Valley Canal	=	128 TAF/year
Total CVP Delta Exports	=	3,534 TAF/year

Including wildlife refuges, total CVP demand is 3,822 TAF/year. The Contra Costa Canal monthly demand pattern assumes Los Vaqueros operations in accordance with a July 11, 1994 e-mail from CCWD.

B. Sacramento Valley refuge demands are modeled implicitly in the hydrology through rice field and duck club operations. Sacramento Valley refuges include Gray Lodge, Modoc, Sacramento, Delevan, Colusa and Sutter. Level II refuge demands in the San Joaquin Valley are explicitly modeled at an assigned level of 288 TAF/year. San Joaquin Valley refuges include Grasslands, Volta, Los Banos, Kesterson, San Luis, Mendota, Pixley, Kern and those included in the San Joaquin Basin Action Plan.

C. CVP south-of-Delta deficiencies are imposed when needed by contract priority. Contracts are classified into four groups: agricultural (Ag), municipal and industrial (M&I), Exchange and Refuge. Deficiencies are imposed in accordance with the Shasta Index and sequentially according to the following rules:

1. Ag requests are reduced up to a maximum of 50 percent.

2. Ag, M&I and Exchange requests are reduced by equal percentages up to a maximum of 25 percent. At this point, cumulative Ag deficiencies are 75 percent.

3. Ag, M&I and Refuge requests are reduced by equal percentages up to a maximum of 25 percent. At this point, cumulative Ag and M&I deficiencies are 100 percent and 50 percent, respectively.

4. M&I requests are reduced until cumulative deficiencies are 100 percent.

5. Further reductions are imposed equally upon Exchange and Refuge.

D. Deficiencies in the form of "dedicated" water and "acquired" water to meet 800 TAF/year CVPIA demands are not imposed.

X. Delta Standards

In the following assumptions related to Delta standards, reference is made to the SWRCB's May 1995 Water Quality Control Plan (Plan):

A. Water Year Classifications

1. The Sacramento Valley 40-30-30 Index (as defined on page 23 of the Plan) is used to determine year types for Delta outflow criteria and Sacramento River system requirements unless otherwise specified in the Plan.

2. The San Joaquin Valley 60-20-20 Index (page 24) is used to determine year types for flow requirements at Vernalis.

3. The Sacramento River Index, or SRI (Footnote 6, page 20), is used to trigger relaxation criteria related to May-June Net Delta Outflow Index (NDOI) and salinity in the San Joaquin River and western Suisun Marsh.

4. The Eight River Index (Footnote 13, page 20) is used to trigger criteria related to (i) January NDOI, (ii) February-June X2 standards and (iii) February export ratio.

B. M&I Water Quality Objectives (Table 1, page 16)

1. The water quality objective at Contra Costa Canal intake is maintained in accordance with the Plan. A "buffer" was added to insure that the standard is maintained on a daily basis. Thus, DWRSIM uses a value of 130 mg/L for the 150 mg/L standard and a value of 225 mg/L for the 250 mg/L standard.

2. The M&I water quality objectives at Clifton Court Forebay, Tracy Pumping Plant, Barker Slough and Cache Slough are not modeled.

C. Agricultural Water Quality Objectives (Table 2, page 17)

1. Water quality objectives on the Sacramento River at Emmaton and on the San Joaquin River at Jersey Point are maintained in accordance with the Plan.

2. Plan water quality objectives on the San Joaquin River at Vernalis are 0.7 EC in April through August and 1.0 EC in other months. These objectives are maintained primarily by releasing water from New Melones Reservoir. **A 70 TAF/year cap on water quality reservoir releases is not imposed. If New Melones Reservoir storage drops to 80 TAF (per an April 26, 1996 letter from USBR to SWRCB), additional water is not provided for salinity control and the water quality standard is violated.**

3. The interior Delta standards on the Mokelumne River (at Terminous) and on the San Joaquin River (at San Andreas Landing) are not modeled.

4. The export area 1.0 EC standards at Clifton Court Forebay and Tracy Pumping Plant are not modeled.

D. Fish & Wildlife Water Quality Objectives: Salinity (Table 3, page 18)

1. The 0.44 EC standard is maintained at Jersey Point in April and May of all but critical years. Per Footnote 6 (page 20), this criteria is dropped in May if the projected SRI is less than 8.1 MAF. The salinity requirement at Prisoners Point is not modeled.

2. The following EC standards are maintained at Collinsville for eastern Suisun Marsh salinity control:

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
EC - Ave. High Tide	19.0	15.5	15.5	12.5	8.0	8.0	11.0	11.0

The corresponding EC standards for other locations in the eastern and western Suisun Marsh are not modeled.

E. Fish & Wildlife Water Quality Objectives: Delta Outflow (Table 3, page 19)

1. Minimum required NDOI (cfs) is maintained as follows:

Year Type	Oct	Nov	Dec	Jan	Feb-Jun	Jul	Aug	Sep
Wet	4,000	4,500	4,500	*	**	8,000	4,000	3,000
Above Normal	4,000	4,500	4,500	*	**	8,000	4,000	3,000
Below Normal	4,000	4,500	4,500	*	**	6,500	4,000	3,000
Dry	4,000	4,500	4,500	*	**	5,000	3,500	3,000
Critical	3,000	3,500	3,500	*	**	4,000	3,000	3,000

* January: Maintain either 4,500 cfs or 6,000 cfs if the December Eight River Index was greater than 800 TAF (per Footnote 13 page 20).

** February-June: Maintain 2.64 EC standards (X2) as described below.

2. For February through June, outflow requirements are maintained in accordance with the 2.64 EC criteria (also known as X2) using the required number of days at Chipps Island (74 km) and Roe Island (64 km). See Footnote 14 for Table 3 (Table A) page 26.

a. At the Confluence (81 km), the full 150 days (February 1 - June 30) of 2.64 EC is maintained in all years, up to a maximum required flow of 7,100 cfs. This requirement is dropped in May and June of any year for which the projected SRI is less than 8.1 MAF. In those years when the criteria is dropped, a minimum outflow of 4,000 cfs is maintained in May and June.

b. The criteria -- "If salinity/flow objectives are met for a greater number of days than the requirements for any month, the excess days shall be applied to meeting the requirements for the following month" -- is not modeled. See Footnote "a" of Footnote 14 for Table 3 (Table A).

c. The Kimmerer-Monismith monthly equation is used to calculate outflow required (in cfs) to maintain the EC standard (average monthly position in kilometers). In this equation the EC position is given and Delta outflow is solved for.

EC position = 122.2 + [0.3278 * (previous month EC position in km)] -

[17.65 * $\log_{10}$(current month Delta outflow in cfs)]

In months when the EC standard is specified in more than one location (e.g. 19 days at the confluence and 12 days at Chipps Island), required outflow for the month is computed as a flow weighted average of the partial month standards.

3. Additional details on the 2.64 EC criteria are modeled as follows:

a. The trigger to activate the Roe Island standard is set at 66.3 km from the previous month, as an average monthly value.

b. The maximum required monthly outflows to meet the 2.64 EC standard are capped at the following limits: 29,200 cfs for Roe Island; 11,400 cfs for Chipps Island; and 7,100 cfs for the Confluence.

c. Relaxation criteria for the February Chipps Island standard is a function of the January Eight River Index as follows:

(i) X2 days = 0 if the Index is less than 0.8 MAF

(ii) X2 days = 28 if the Index is greater than 1.0 MAF

(iii) X2 days vary linearly between 0 and 28 if the Index is between 0.8 MAF and 1.0 MAF

F. Fish & Wildlife Water Quality Objectives: River Flows (Table 3, page 19)

1. Minimum Sacramento River flow requirements (cfs) at Rio Vista are maintained as follows:

Year Type	Sep	Oct	Nov	Dec
Wet	3,000	4,000	4,500	4,500
Above Normal	3,000	4,000	4,500	4,500
Below Normal	3,000	4,000	4,500	4,500
Dry	3,000	4,000	4,500	4,500
Critical	3,000	3,000	3,500	3,500

2. From February 1 through June 30, minimum flows on the San Joaquin River at Vernalis are maintained per the table below. For each period, the higher flow is required whenever the 2.64

EC Delta outflow position is located downstream of Chipps Island (<74 km). If the 2.64 EC Delta outflow position is upstream of Chipps Island (>74 km), then the lower flow requirement is used.

Minimum Flows at Vernalis (cfs)

Year Type	Feb1-Apr14 May16-June30	April15-May15
Wet	2,130 or 3,420	7,330 or 8,620
Above Normal	2,130 or 3,420	5,730 or 7,020
Below Normal	1,420 or 2,280	4,620 or 5,480
Dry	1,420 or 2,280	4,020 or 4,880
Critical	710 or 1,140	3,110 or 3,540

3. For the month of October, the minimum flow requirement at Vernalis is 1,000 cfs in all years PLUS a 28 TAF pulse flow (per Footnote 19, page 21). The 28 TAF pulse (equivalent to 455 cfs monthly) is added to the actual Vernalis flow, up to a maximum of 2,000 cfs. The pulse flow requirement is not imposed in a critical year following a critical year. These two components are combined as an average monthly requirement as follows:

October Minimum Flows at Vernalis (cfs)

Base Flow	Required Flow
<1,000	1,455
1,000-1,545	Base Flow + 455
1,545	2,000

4. The above flow requirements at Vernalis are maintained primarily by releasing additional water from New Melones Reservoir. In years when New Melones Reservoir drops to a minimum storage of 80 TAF (per April 26, 1996 letter from USBR to SWRCB), additional water is provided equally from the Tuolumne and Merced River systems to meet the Vernalis flow requirements. If these sources are insufficient to meet objectives at Vernalis, nominal deficiencies will be applied to upstream demands.

G. Fish & Wildlife Water Quality Objectives: Export Limits (Table 3, page 19)

1. Ratios for maximum allowable Delta exports are specified as a percentage of total Delta inflow as follows:

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
65	65	65	65	45-35	35	35	35	35	65	65	65

a. In February the export ratio is a function of the January Eight River Index per Footnote 25, page 22 as follows:

(i) 45% if the Jan. 8-River Index is less than 1.0 MAF

(ii) 35% if the Jan. 8-River Index is greater than 1.5 MAF

(iii) Varies linearly between 45% and 35% if the January Eight River Index is between 1.0 MAF and 1.5 MAF.

b. For this ratio criteria, total Delta exports are defined as the sum of pumping at the SWP Banks and CVP Tracy Pumping Plants. Total Delta inflow is calculated as the sum of river flows from the Sacramento River, Yolo Bypass, total from the Eastside stream group, and San Joaquin River inflow. Delta area precipitation and consumptive uses are not used in this ratio.

2. Based on Footnote 22 page 21, April and May total Delta export limitations are modeled as follows:

a. April 15 - May 15 exports are limited to 1,500 cfs OR 100 percent of the San Joaquin River flow at Vernalis, whichever is greater.

b. April 1-14 and May 16-31 export limits are controlled by either the export/inflow ratio (35%) or pumping plant capacity, whichever is smaller.

H. Fish & Wildlife Water Quality Objectives: Delta Cross Channel (Table 3, page 19)

1. The Delta Cross Channel (DCC) is closed 10 days in November, 15 days in December and 20 days in January for a total closure of 45 days per Footnote 26, page 22.

2. The DCC is fully closed from February 1 through May 20 of all years and is closed an additional 14 days between May 21 and June 15 per Footnote 27, page 22.

Appendix 3
Data Used in the Water Rights Calculations for Delta Outflow Alternatives 3 and 4

Annotated Table of Contents

Pages A3-4 to A3-13 present data files for equations presented in Chapter IV of the EIR. All but one of the tables in Appendix 3 are in units of TAF.

Pages A3-14 to A3-16 contain the cumulative direct diversion (DD) tables used in allocating the Vernalis and the Delta outflow objective. The base data in these tables comes from reports of permit and license filed by individual water right holders. Irrigated acreage was considered to be the most reliable data source. Consumptive use factors obtained from the DWR were applied to the acreage to obtain depletion and diversion amounts for each water right. In some cases reported use was used in lieu of acreage. Friant direct diversion was calculated directly from DWRSIM output.

Pages A3-18 to A3-22 present data obtained from the USBR and used to calculate inbasin obligations. Each contractor was classified by depletion Study Area (DSA), and the priority of their water right(s) determined for assignment of priority group. Contractors with no identifiable basis in right are designated as WRX, those with identifiable rights as WR, and those without rights receiving CVP project water under contract with the USBR as WS. The period 1982 to 1989 (excluding 1983, an abnormally wet year) was chosen as the reference period for the analysis, as it represents a period of full delivery unaffected by cutbacks arising from biological opinions.

The inbasin obligation (IO) for a priority group is the sum of the 1982-1989 average monthly depletions for all contractors within the group. When deficiency conditions are in effect (see A3-27) the inbasin obligation is calculated as percentage reduction in base and/or project supply, or the average depletion, whichever is less.

Pages A3-28 to A3-34 present diversion to storage for each priority group. Cumulative tables were generated for the allocation calculations.

The following four worksheets present the allocation calculations in which water right and priority group cutoff numbers were determined for Alternatives 3 and 4. Some abbreviations:

Direct Diversion (DD), New Melones (NM), Vernalis (Vern), Delta Outflow (DO), San Joaquin (SJ), Inbasin Obligation (IO), Friant Obligation for Vernalis to be met at New Melones (FOv).

Pages A3-111 to A3-142 contain the data input tables given to DWR for modeling of Alternatives 3 and 4. The resulting DWRSIM study numbers are 506 and 507.

Important tables derived from the allocation process. Water right cutoff number and priority group number refer to Tables II-6 and II-5 respectively in the EIR. The diversion curtailment frequency in Chapter V is derived from these tables.

In allocating Delta outflow, a priority group is not invoked until no water is available for the entire group. The following tables represent the amount of water which is not allocated and is presumed to be a SWP/CVP obligation.

STUDY: 1995C06F-SWRCB-469 DWRSIM: 8.18, 27 Nov 96

Alternative 3 - Supplemental Water for Vernalis Objective (Add(3)) (TAF)

Add Water from Don Pedro and Lake McClure (CP 677 Downstream Flow) + New Melones Release for Vernalis Pulse and X2 Flow

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	6	0	0	0	0	0	29	108	0	0	0	0	143
1923	0	0	0	0	0	52	52	109	0	0	0	0	213
1924	0	0	0	0	0	0	18	43	0	0	0	0	61
1925	27	0	0	0	0	0	23	70	0	0	0	0	120
1926	27	0	0	0	0	32	34	88	8	0	0	0	189
1927	27	0	0	0	0	0	24	113	90	0	0	0	254
1928	0	0	0	0	0	0	39	91	2	0	0	0	132
1929	27	0	0	0	0	0	0	23	0	0	0	0	50
1930	27	0	0	0	0	0	15	20	0	0	0	0	62
1931	0	0	0	0	0	0	23	45	0	0	0	0	68
1932	0	0	0	0	0	0	0	68	32	0	0	0	100
1933	0	0	0	0	0	0	31	57	23	0	0	0	111
1934	27	0	0	0	0	0	10	42	0	0	0	0	79
1935	27	0	0	0	0	0	0	0	0	0	0	0	27
1936	0	0	0	0	0	0	0	49	13	0	0	0	62
1937	0	0	0	0	0	0	0	0	0	0	0	0	0
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	45	12	0	0	0	57
1940	23	0	0	0	0	0	0	62	91	0	0	0	176
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	11	0	0	0	0	11
1943	0	0	0	0	0	0	0	0	46	0	0	0	46
1944	0	0	0	0	0	0	0	25	0	0	0	0	25
1945	14	0	0	0	0	0	0	11	0	0	0	0	25
1946	0	0	0	0	0	0	26	11	18	0	0	0	55
1947	0	0	0	0	0	23	85	62	19	0	0	0	189
1948	27	0	0	0	12	0	21	59	27	0	0	0	146
1949	27	0	0	0	0	0	59	46	4	0	0	0	136
1950	26	0	0	0	0	0	56	100	5	0	0	0	187
1951	25	0	0	0	0	0	107	143	33	0	0	0	308
1952	8	0	0	0	0	0	0	0	0	0	0	0	8
1953	0	0	0	0	0	0	67	95	49	0	0	0	211
1954	23	0	0	0	21	0	3	82	0	0	0	0	129
1955	25	0	0	0	36	33	31	44	9	0	0	0	178
1956	27	0	0	0	0	0	95	0	0	0	0	0	122
1957	0	0	0	0	0	0	77	86	44	0	0	0	207
1958	18	0	0	0	0	0	0	0	0	0	0	0	18
1959	0	0	0	0	0	0	35	67	23	0	0	0	125
1960	28	0	0	0	0	0	9	14	0	0	0	0	51
1961	27	0	0	0	0	0	17	39	0	0	0	0	83
1962	0	0	0	0	0	0	0	85	8	0	0	0	93
1963	27	0	0	0	0	44	0	62	53	0	0	0	186
1964	0	0	0	0	21	33	37	58	20	0	0	0	169
1965	27	0	0	0	0	0	14	137	33	0	0	0	211
1966	0	0	0	0	0	0	92	68	11	0	0	0	171
1967	19	0	0	0	0	0	0	0	0	0	0	0	19
1968	0	0	0	0	0	0	78	59	17	0	0	0	154
1969	21	0	0	0	0	0	0	0	0	0	0	0	21
1970	0	0	0	0	0	0	80	129	32	0	0	0	241
1971	11	0	0	0	0	0	83	102	51	0	0	0	247
1972	25	0	0	0	37	29	101	74	27	0	0	0	293
1973	27	0	0	0	0	0	0	16	0	0	0	0	43
1974	0	0	0	0	0	0	0	31	52	0	0	0	83
1975	0	0	0	0	0	0	0	79	0	0	0	0	79
1976	0	0	0	0	0	0	8	33	0	0	0	0	41
1977	0	0	0	0	0	0	30	45	0	0	0	0	75
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	2	68	21	0	0	0	91
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	51	53	17	0	0	0	121
1982	19	0	0	0	0	0	0	0	0	0	0	0	19
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	99	143	29	0	0	0	271
1985	12	0	0	0	0	0	21	54	14	0	0	0	101
1986	20	0	0	0	0	0	0	0	0	0	0	0	20
1987	0	0	0	0	0	0	0	26	0	0	0	0	26
1988	28	0	0	0	0	0	14	34	0	0	0	0	76
1989	0	0	0	0	0	0	21	23	0	0	0	0	44
1990	0	0	0	0	0	0	14	39	0	0	0	0	53
1991	0	0	0	0	0	0	0	13	0	0	0	0	13
1992	0	0	0	0	0	0	0	26	0	0	0	0	26
1993	0	0	0	0	35	34	165	85	0	0	0	0	319
1994	0	0	0	0	0	0	3	16	0	0	0	0	19
AVG:	10	0	0	0	2	4	26	48	13	0	0	0	103
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	28	0	0	0	37	52	165	143	91	0	0	0	319

Alternative 3 - Supplemental Water for Delta Outflow (SW(3)) (TAF)

SW(3) = (Total Storage Release (3 Reservoirs) + Trinity River Imports) - Total Exports (Banks + Tracy + Contra Costa + N. Bay)
Negative numbers set to zero and adjusted for surplus delta conditions. IO(n) set to zero.

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	0	0	0	0	0	0	0	0	349	183	0	532
1923	0	0	0	0	0	0	0	0	330	556	299	0	1185
1924	0	0	0	0	0	0	159	319	555	473	222	0	1728
1925	0	0	0	0	0	0	0	0	353	512	236	0	1101
1926	0	0	0	0	0	0	0	95	685	733	386	0	1899
1927	0	0	0	0	0	0	0	0	0	477	276	0	753
1928	0	0	0	0	0	0	0	0	521	827	413	0	1761
1929	0	0	0	0	0	0	0	0	199	504	257	0	960
1930	0	0	0	0	0	0	0	0	536	563	237	0	1336
1931	0	0	0	0	0	0	156	157	425	424	290	0	1452
1932	0	0	0	0	0	0	0	0	137	436	196	0	769
1933	0	0	0	0	0	0	0	0	136	438	281	0	855
1934	0	0	0	0	0	0	0	85	479	450	226	0	1240
1935	0	0	0	0	0	0	0	0	0	520	233	0	753
1936	0	0	0	0	0	0	0	0	9	620	345	0	974
1937	0	0	0	0	0	0	0	0	154	651	344	0	1149
1938	0	0	0	0	0	0	0	0	0	6	58	0	64
1939	0	0	0	0	0	0	122	85	730	602	320	0	1859
1940	0	0	0	0	0	0	0	0	269	686	346	0	1301
1941	0	0	0	0	0	0	0	0	0	233	119	0	352
1942	0	0	0	0	0	0	0	0	0	190	112	0	302
1943	0	0	0	0	0	0	0	0	0	510	244	0	754
1944	0	0	0	0	0	0	0	0	494	630	328	0	1452
1945	0	0	0	0	0	0	0	0	154	641	291	0	1086
1946	0	0	0	0	0	0	0	0	397	555	244	0	1196
1947	0	0	0	0	0	0	0	134	459	708	330	0	1631
1948	0	0	0	0	0	0	0	0	0	410	299	0	709
1949	0	0	0	0	0	0	0	0	561	644	288	0	1493
1950	0	0	0	0	0	0	0	0	196	508	172	0	876
1951	0	0	0	0	0	0	0	0	392	703	210	0	1305
1952	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0	0	174	59	0	233
1954	0	0	0	0	0	0	0	51	250	708	153	0	1162
1955	0	0	0	0	0	0	0	0	524	659	319	0	1502
1956	0	0	0	0	0	0	0	0	0	128	0	0	128
1957	0	0	0	0	0	0	0	0	112	544	168	0	824
1958	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	654	708	288	0	1650
1960	0	0	0	0	0	0	0	0	608	664	339	0	1611
1961	0	0	0	0	0	0	0	0	552	719	372	0	1643
1962	0	0	0	0	0	0	0	0	242	654	283	0	1179
1963	0	0	0	0	0	0	0	0	0	380	101	0	481
1964	0	0	0	0	0	0	0	0	401	677	324	0	1402
1965	0	0	0	0	0	0	0	0	0	374	0	0	374
1966	0	0	0	0	0	0	0	39	607	666	274	0	1586
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	580	641	0	0	1221
1969	0	0	0	0	0	0	0	0	0	27	0	0	27
1970	0	0	0	0	0	0	0	0	301	536	113	0	950
1971	0	0	0	0	0	0	0	0	0	133	25	0	158
1972	0	0	0	0	0	0	0	0	615	677	201	0	1493
1973	0	0	0	0	0	0	0	0	421	598	119	0	1138
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	75	0	0	75
1976	0	0	0	0	0	0	0	79	690	489	34	0	1292
1977	0	0	0	0	189	0	311	116	516	420	126	0	1678
1978	41	0	0	0	0	0	0	0	0	443	189	0	673
1979	0	0	0	0	0	0	0	0	636	520	101	0	1257
1980	0	0	0	0	0	0	0	0	0	223	75	0	298
1981	0	0	0	0	0	0	0	0	699	639	206	0	1544
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	191	495	0	0	686
1985	0	0	0	0	0	0	0	275	763	655	261	0	1954
1986	0	0	0	0	0	0	0	0	41	582	163	0	786
1987	0	0	0	0	0	0	0	228	971	666	369	0	2234
1988	0	0	0	0	0	0	0	12	505	608	332	0	1457
1989	0	0	0	0	0	0	0	31	527	579	166	0	1303
1990	0	0	0	0	0	0	70	0	427	614	282	0	1393
1991	0	0	0	0	75	0	0	0	192	307	121	0	695
1992	0	0	0	0	0	0	0	143	500	418	269	0	1330
1993	0	0	0	0	0	0	0	0	0	367	7	0	374
1994	0	0	0	0	0	0	0	0	685	455	177	0	1317
AVG:	1	0	0	0	4	0	11	25	293	463	189	0	985
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	41	0	0	0	189	0	311	319	971	827	413	0	2234

Alternative 3 - Monthly Imports From the Trinity River (TAF)

(CP 3 Downstream Flow + CP 3 Diversions) - (CP 3 Local Inflow) Negative numbers set to zero.

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	174	100	69	46	42	81	95	122	117	121	59	48	1074
1923	64	56	46	31	28	50	21	91	88	90	53	27	645
1924	41	33	23	15	14	19	21	45	73	68	53	26	431
1925	41	11	23	15	14	20	21	45	88	90	60	48	476
1926	63	33	23	15	14	50	66	91	87	68	53	26	589
1927	41	33	23	31	28	81	96	122	118	121	90	70	854
1928	87	78	69	46	42	81	96	122	117	90	59	48	935
1929	64	56	46	31	28	50	21	45	73	68	53	26	561
1930	40	33	23	15	14	20	21	45	87	68	53	27	446
1931	40	33	23	15	14	20	21	45	74	68	53	26	432
1932	41	33	16	10	8	0	3	8	68	68	53	26	334
1933	40	33	23	7	7	0	0	40	73	68	53	26	370
1934	41	33	23	15	14	20	21	45	73	68	53	26	432
1935	41	33	23	15	14	20	0	45	73	68	53	26	411
1936	41	33	23	15	14	20	21	45	74	69	53	26	434
1937	40	33	23	15	14	20	21	45	89	90	59	26	475
1938	41	33	46	31	42	81	96	122	195	201	90	71	1049
1939	87	78	69	46	42	81	95	92	87	90	59	48	874
1940	40	33	23	15	28	81	96	122	117	121	90	71	837
1941	87	78	46	46	42	91	173	203	195	201	201	200	1563
1942	143	100	189	146	119	112	96	123	195	201	121	70	1615
1943	87	78	69	46	42	81	96	122	118	121	90	70	1020
1944	87	78	46	30	27	50	65	91	87	90	53	26	730
1945	40	33	23	15	27	50	65	92	88	90	60	48	631
1946	40	33	23	30	27	50	65	121	117	120	89	48	763
1947	63	55	46	30	27	50	65	90	88	90	54	25	683
1948	40	33	23	15	27	50	21	91	88	90	60	48	586
1949	63	55	46	30	28	19	65	91	87	90	60	48	682
1950	63	55	46	31	27	50	65	90	87	90	59	26	689
1951	40	55	46	46	41	81	95	122	117	121	90	70	924
1952	63	55	46	46	41	81	95	121	195	121	90	70	1024
1953	86	77	69	52	55	111	95	122	195	201	90	71	1224
1954	86	78	69	46	41	111	98	201	195	200	90	71	1286
1955	86	78	69	46	41	80	65	90	87	90	59	48	839
1956	63	55	46	46	41	80	95	122	194	201	90	70	1103
1957	86	77	69	46	41	81	95	122	117	121	90	70	1015
1958	87	77	69	46	149	202	195	201	195	201	160	169	1751
1959	132	100	69	46	41	81	95	122	120	120	90	71	1087
1960	86	77	46	31	27	81	65	122	117	121	59	48	880
1961	63	55	46	30	27	81	65	122	117	121	60	48	835
1962	63	55	46	30	28	50	65	91	87	90	60	48	713
1963	63	55	46	46	41	81	95	122	117	121	90	71	948
1964	87	78	69	46	41	81	65	91	88	90	59	48	843
1965	63	55	23	46	41	81	95	121	118	121	91	71	926
1966	86	78	69	46	41	81	95	121	120	121	90	70	1018
1967	86	77	69	46	41	81	96	122	118	201	90	70	1097
1968	86	77	69	46	41	111	95	122	117	121	91	71	1047
1969	86	78	46	46	41	81	95	121	195	201	90	71	1151
1970	86	77	69	169	193	200	172	122	123	121	90	70	1492
1971	86	78	69	46	41	111	95	122	195	201	90	70	1204
1972	86	77	69	46	41	80	95	121	126	120	90	70	1021
1973	86	78	69	46	41	81	95	121	117	120	90	70	1014
1974	86	146	203	203	191	194	195	201	194	201	120	157	2091
1975	125	100	69	46	41	81	95	121	194	200	120	69	1261
1976	86	77	69	46	41	80	95	120	87	89	59	48	897
1977	63	55	45	15	13	19	20	45	72	67	52	26	492
1978	40	33	23	15	27	50	65	121	116	120	89	70	769
1979	86	78	69	31	28	50	65	91	117	90	59	48	812
1980	63	55	46	31	41	81	95	122	117	121	90	70	932
1981	86	78	46	31	41	81	95	122	88	90	59	48	865
1982	63	33	46	46	41	81	95	122	195	121	90	70	1003
1983	86	78	69	97	131	202	196	202	195	201	201	199	1857
1984	220	187	169	200	89	112	95	122	117	121	90	70	1592
1985	86	78	69	46	41	81	95	122	88	90	59	48	903
1986	63	55	46	31	28	81	95	122	117	121	90	70	919
1987	86	78	69	31	28	50	65	122	88	90	59	48	814
1988	63	55	46	31	28	50	65	91	88	90	59	48	714
1989	40	33	23	15	14	19	65	91	88	90	59	48	585
1990	63	55	46	15	28	19	21	45	88	68	53	26	527
1991	40	33	23	15	14	19	21	45	73	68	53	26	430
1992	40	33	23	15	14	19	21	45	73	68	53	26	430
1993	40	33	23	15	14	19	21	91	117	121	90	70	654
1994	86	78	46	31	28	50	65	91	88	68	53	26	710
AVG:	72	62	52	41	40	69	75	104	116	115	77	58	881
MIN:	40	11	16	7	7	0	0	8	68	67	52	25	334
MAX:	220	187	203	203	193	202	196	203	195	201	201	200	2091

Alternative 4 - Obligation of Parties Other than Friant to Meet Vernalis Objective (SW(sj)) (TAF)

SW(sj) = Add(3) + SR(F) - (EX(F) + IO(Fn)), negatives set to 0, compared to Add(3), whichever is less. IO (Fn) set to zero.

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	0	0	0	0	0	7	0	0	0	0	0	7
1923	0	0	0	0	0	52	0	39	0	0	0	0	91
1924	0	0	0	0	0	0	7	27	0	0	0	0	34
1925	27	0	0	0	0	0	0	7	0	0	0	0	34
1926	10	0	0	0	0	32	0	18	8	0	0	0	68
1927	0	0	0	0	0	0	0	0	3	0	0	0	3
1928	0	0	0	0	0	0	5	74	2	0	0	0	81
1929	8	0	0	0	0	0	0	20	0	0	0	0	28
1930	24	0	0	0	0	0	0	0	0	0	0	0	24
1931	0	0	0	0	0	0	17	25	0	0	0	0	42
1932	0	0	0	0	0	0	0	0	0	0	0	0	0
1933	0	0	0	0	0	0	0	0	23	0	0	0	23
1934	16	0	0	0	0	0	0	0	0	0	0	0	16
1935	17	0	0	0	0	0	0	0	0	0	0	0	17
1936	0	0	0	0	0	0	0	0	10	0	0	0	10
1937	0	0	0	0	0	0	0	0	0	0	0	0	0
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	0	12	0	0	0	12
1940	21	0	0	0	0	0	0	0	91	0	0	0	112
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	31	0	0	0	31
1944	0	0	0	0	0	0	0	21	0	0	0	0	21
1945	0	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	18	0	0	0	18
1947	0	0	0	0	0	23	25	7	19	0	0	0	74
1948	12	0	0	0	1	0	0	59	27	0	0	0	99
1949	12	0	0	0	0	0	22	0	4	0	0	0	38
1950	13	0	0	0	0	0	17	31	5	0	0	0	66
1951	0	0	0	0	0	0	78	143	33	0	0	0	254
1952	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	33	95	49	0	0	0	177
1954	1	0	0	0	0	0	0	0	0	0	0	0	1
1955	11	0	0	0	7	33	0	0	9	0	0	0	60
1956	18	0	0	0	0	0	20	0	0	0	0	0	38
1957	0	0	0	0	0	0	8	17	14	0	0	0	39
1958	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	23	0	0	0	23
1960	28	0	0	0	0	0	0	0	0	0	0	0	28
1961	26	0	0	0	0	0	0	0	0	0	0	0	26
1962	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	42	0	0	2	0	0	0	44
1964	0	0	0	0	18	33	0	19	20	0	0	0	90
1965	27	0	0	0	0	0	0	99	0	0	0	0	126
1966	0	0	0	0	0	0	20	0	11	0	0	0	31
1967	9	0	0	0	0	0	0	0	0	0	0	0	9
1968	0	0	0	0	0	0	31	35	17	0	0	0	83
1969	21	0	0	0	0	0	0	0	0	0	0	0	21
1970	0	0	0	0	0	0	78	120	32	0	0	0	230
1971	0	0	0	0	0	0	51	88	51	0	0	0	190
1972	15	0	0	0	9	29	54	47	27	0	0	0	181
1973	2	0	0	0	0	0	0	0	0	0	0	0	2
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	33	0	0	0	0	33
1977	0	0	0	0	0	0	26	45	0	0	0	0	71
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	19	17	0	0	0	36
1982	10	0	0	0	0	0	0	0	0	0	0	0	10
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	57	112	29	0	0	0	198
1985	0	0	0	0	0	0	0	0	14	0	0	0	14
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	23	0	0	0	0	0	0	0	0	0	0	0	23
1989	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	22	0	0	0	0	22
1993	0	0	0	0	0	0	85	0	0	0	0	0	85
1994	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG:	5	0	0	0	0	3	9	17	8	0	0	0	42
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	28	0	0	0	18	52	85	143	91	0	0	0	254

Alternative 4 - Modified Exchange Contractor Delivery (Excm) (TAF)

Deliveries Capped at 840 TAF/Yr and Adjusted Inflow to Millerton Lake
Adjusted Millerton Inflow = CP 18 Local Inflow - CP 605 Diversion - CP 606 Diversion

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	34	12	3	6	34	78	98	108	129	140	135	64	840
1923	35	12	3	6	39	82	102	112	134	145	104	66	840
1924	37	13	3	6	30	18	51	59	52	55	52	52	428
1925	28	9	3	4	30	85	107	119	141	135	112	69	840
1926	37	13	3	6	30	79	99	111	108	93	69	65	713
1927	32	11	3	5	38	79	99	109	130	140	130	64	840
1928	37	13	3	6	40	85	106	117	113	69	66	62	717
1929	37	13	3	6	30	53	83	92	110	82	55	54	618
1930	29	11	3	4	33	74	105	102	101	78	57	69	666
1931	37	13	3	6	30	34	48	62	60	62	60	52	467
1932	28	9	3	4	33	80	99	110	132	142	136	64	840
1933	35	12	3	5	30	63	79	88	106	109	89	33	652
1934	28	9	3	4	30	74	80	84	73	84	77	54	600
1935	31	11	3	5	31	74	105	118	141	152	99	69	840
1936	35	12	3	7	35	80	100	110	132	142	120	65	840
1937	35	12	3	6	28	76	101	112	135	145	123	65	840
1938	34	12	3	6	38	78	97	108	129	139	134	63	840
1939	37	13	3	6	40	85	106	117	103	97	93	69	769
1940	37	13	3	6	33	85	106	119	142	128	93	69	834
1941	34	12	3	6	38	78	97	108	129	139	134	63	840
1942	34	12	3	6	38	78	97	108	129	139	134	63	840
1943	34	12	3	6	38	78	97	108	129	139	134	63	840
1944	36	13	3	6	32	82	103	114	136	138	110	67	840
1945	34	12	3	6	30	79	98	109	130	140	135	64	840
1946	36	13	3	6	40	82	103	113	135	127	116	67	840
1947	37	13	3	6	34	82	106	119	99	86	71	68	724
1948	37	13	3	6	30	65	97	124	148	110	88	72	793
1949	38	13	3	7	33	81	106	119	142	98	86	69	795
1950	37	13	3	6	36	85	106	118	140	107	107	69	827
1951	37	13	3	6	41	85	106	117	140	118	104	69	839
1952	34	12	3	6	38	78	97	108	129	139	134	63	840
1953	36	13	3	6	40	84	102	108	138	133	109	68	840
1954	37	13	3	6	41	85	106	117	140	101	83	69	801
1955	37	13	3	6	41	85	102	117	140	107	84	69	804
1956	34	12	3	6	38	78	97	108	129	139	134	63	840
1957	37	13	3	6	36	85	105	117	139	123	106	69	840
1958	34	12	3	6	37	78	98	108	129	139	134	63	840
1959	37	13	3	6	41	85	106	117	123	56	35	54	676
1960	29	13	3	6	30	73	97	98	93	91	98	69	700
1961	27	13	3	6	32	43	92	98	86	31	40	41	512
1962	12	12	3	6	31	81	101	114	136	145	132	66	840
1963	34	12	3	6	38	78	97	108	129	139	134	63	840
1964	37	13	3	6	41	68	92	107	134	99	111	69	780
1965	19	12	3	6	38	80	99	110	131	141	137	65	840
1966	37	13	3	6	41	85	106	117	124	92	71	47	742
1967	34	12	3	6	38	78	97	108	129	139	134	63	840
1968	37	13	3	6	41	79	99	86	96	103	98	69	730
1969	20	12	3	6	38	80	99	109	131	141	137	65	840
1970	36	13	3	6	40	83	103	114	136	134	106	67	840
1971	35	12	3	6	39	80	100	110	132	136	123	65	840
1972	37	13	3	6	41	85	93	96	120	87	84	46	711
1973	35	12	3	6	39	81	101	111	133	144	109	66	840
1974	34	12	3	6	38	78	97	108	129	139	134	63	840
1975	36	13	3	6	35	83	103	115	136	134	111	67	840
1976	37	13	3	6	31	65	58	36	57	49	68	53	476
1977	22	9	3	4	11	3	4	2	54	58	48	26	244
1978	0	5	1	3	40	82	103	114	136	147	142	67	840
1979	35	12	3	6	33	81	102	113	135	128	125	66	840
1980	34	12	3	6	35	78	98	108	129	140	134	64	840
1981	37	13	3	6	41	85	106	117	105	92	89	69	763
1982	34	12	3	6	38	78	97	108	129	139	134	63	840
1983	34	12	3	6	38	78	97	108	129	139	134	63	840
1984	34	12	3	6	38	79	98	108	130	140	128	64	840
1985	37	13	3	6	40	85	106	117	98	69	73	69	716
1986	35	12	3	6	33	80	100	111	132	143	120	65	840
1987	37	13	3	6	33	77	107	119	90	94	103	47	729
1988	31	13	3	6	34	68	85	94	89	92	61	47	623
1989	27	11	3	5	30	63	95	106	105	97	103	46	691
1990	33	12	3	5	33	74	92	92	52	112	64	43	615
1991	19	11	3	5	15	26	84	94	112	122	83	52	626
1992	23	11	3	5	25	52	53	48	23	45	37	26	351
1993	31	1	3	5	39	82	102	113	135	145	118	66	840
1994	37	13	3	6	36	75	94	104	104	96	94	61	723
AVG:	33	12	3	6	35	75	95	105	118	115	102	61	759
MIN:	0	1	1	3	11	3	4	2	23	31	35	26	244
MAX:	38	13	3	7	41	85	107	124	148	152	142	72	840

Alternative 4 - Friant Kern Canal Diversion to Export (EX(f)) (TAF)

CP 602 Diversion x Percent of Monthly FKC Deliveries Outside of the Kings River Basin (About 88%)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	44	21	4	9	93	36	152	154	199	210	231	135	1288
1923	78	30	26	33	102	118	78	148	168	164	193	56	1193
1924	32	19	4	0	56	41	36	40	38	71	63	36	435
1925	33	16	3	0	51	85	73	86	154	134	107	81	822
1926	47	17	4	0	56	84	43	94	159	138	83	36	760
1927	48	25	3	5	77	130	152	179	175	205	215	102	1316
1928	61	22	1	2	78	76	92	98	161	121	70	29	812
1929	26	2	3	7	54	40	36	70	90	96	108	25	557
1930	25	0	3	6	54	54	46	52	103	108	76	25	552
1931	24	0	4	6	50	38	38	39	46	74	73	40	432
1932	31	16	3	2	65	135	164	179	172	204	157	101	1228
1933	43	14	3	0	58	86	62	73	128	112	137	21	737
1934	33	16	3	0	67	67	37	39	50	93	91	25	521
1935	31	14	4	0	81	120	92	183	170	210	212	52	1169
1936	26	2	4	10	56	135	162	165	201	207	181	74	1222
1937	41	23	4	0	40	135	128	155	206	216	208	99	1255
1938	45	19	4	13	87	40	56	72	166	213	249	139	1103
1939	90	51	26	36	85	81	45	46	130	133	120	33	876
1940	41	18	4	3	117	134	165	159	175	180	147	47	1188
1941	27	15	4	14	95	131	176	192	143	210	241	139	1387
1942	83	31	26	42	111	134	163	203	208	222	224	131	1578
1943	59	25	3	0	128	35	152	139	214	195	179	105	1234
1944	49	19	4	0	55	113	78	114	145	105	88	95	865
1945	70	31	21	30	63	119	170	170	174	194	224	130	1395
1946	89	43	21	48	155	104	118	107	166	167	141	75	1235
1947	56	19	3	8	86	90	60	66	128	132	91	39	777
1948	26	1	4	9	61	31	45	139	170	191	71	61	807
1949	33	16	4	0	56	86	95	88	153	136	71	46	783
1950	43	19	4	0	72	108	90	87	146	142	128	58	896
1951	72	51	0	54	173	122	92	135	175	160	81	43	1158
1952	36	18	4	27	114	131	113	141	174	218	243	138	1358
1953	91	45	21	41	109	71	57	94	139	129	110	60	966
1954	41	21	4	0	74	85	98	94	151	148	129	29	875
1955	33	16	4	5	83	95	43	92	136	143	101	49	801
1956	34	16	22	54	109	42	172	182	140	210	237	138	1357
1957	93	45	24	28	75	58	47	67	157	185	180	38	997
1958	37	19	4	9	92	124	168	196	179	223	223	133	1405
1959	87	37	22	28	68	99	49	53	135	145	78	33	835
1960	28	13	0	0	36	58	39	50	93	74	92	60	543
1961	23	0	1	5	32	29	36	41	84	86	66	31	433
1962	10	6	0	6	30	132	160	124	174	199	212	96	1149
1963	54	22	4	0	52	71	80	177	174	201	244	137	1215
1964	72	18	0	12	61	53	42	53	121	159	136	53	780
1965	22	0	4	48	175	134	138	184	175	196	179	135	1389
1966	83	31	17	54	154	113	63	53	129	154	89	37	978
1967	29	13	5	43	113	126	161	77	174	212	249	161	1363
1968	93	56	24	42	81	68	43	50	105	133	119	52	865
1969	23	0	3	15	23	50	0	159	167	208	249	176	1073
1970	79	24	2	0	116	118	95	115	133	154	154	54	1045
1971	24	0	4	36	109	111	83	99	159	148	106	101	982
1972	46	15	4	9	83	93	39	54	80	148	87	38	695
1973	41	22	4	7	92	135	179	193	175	204	210	69	1331
1974	37	20	1	52	178	134	166	191	205	220	211	98	1512
1975	47	18	4	2	59	108	136	209	171	204	177	70	1204
1976	46	24	0	0	53	39	37	44	91	67	71	42	513
1977	26	2	0	3	13	58	0	0	50	46	45	27	270
1978	0	5	0	5	105	37	56	110	170	215	249	139	1089
1979	113	61	22	52	155	133	172	182	204	196	177	51	1520
1980	42	22	1	0	70	67	110	148	180	212	249	161	1263
1981	82	31	25	27	72	59	68	83	98	132	122	39	839
1982	33	16	4	36	121	130	80	163	193	222	249	136	1383
1983	112	50	8	38	0	39	0	0	125	211	173	116	872
1984	72	37	5	20	135	106	128	138	169	170	187	80	1248
1985	66	25	4	1	93	85	68	78	137	121	85	67	831
1986	46	24	3	16	42	64	88	186	190	223	231	106	1219
1987	68	31	25	24	49	29	38	40	87	133	125	25	674
1988	23	0	2	5	77	34	37	49	110	110	71	33	551
1989	22	0	1	4	43	56	48	45	99	145	115	25	602
1990	26	13	2	0	33	39	38	40	75	102	98	26	493
1991	23	1	0	4	26	76	55	74	92	118	107	30	605
1992	21	0	0	4	26	54	38	40	31	43	36	19	312
1993	35	3	0	0	131	134	171	209	156	209	242	138	1428
1994	86	34	25	26	56	31	39	48	123	117	100	44	730
AVG:	48	20	7	15	79	85	87	108	143	159	149	74	975
MIN:	0	0	0	0	0	29	0	0	31	43	36	19	270
MAX:	113	61	26	54	178	135	179	209	214	223	249	176	1578

Alternative 4 - Modified Friant Kern Canal Diversion to Export (EX(F)) (TAF)

EX(F) = EX(f) - Excm, negative values set to zero.

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	10	9	1	4	59	0	55	46	70	70	96	71	491
1923	42	17	23	28	62	37	0	36	34	19	89	0	387
1924	0	6	1	0	26	23	0	0	0	16	11	0	82
1925	5	7	0	0	21	1	0	0	13	0	0	12	58
1926	10	4	1	0	26	5	0	0	51	45	14	0	155
1927	16	14	0	1	39	51	54	70	45	65	85	38	476
1928	24	9	0	0	38	0	0	0	48	52	4	0	174
1929	0	0	0	1	24	0	0	0	0	14	53	0	92
1930	0	0	0	2	21	0	0	0	2	30	19	0	74
1931	0	0	1	0	20	4	0	0	0	12	13	0	50
1932	3	7	0	0	32	55	65	69	39	62	21	37	391
1933	8	2	0	0	28	23	0	0	22	3	48	0	134
1934	5	7	0	0	37	0	0	0	0	9	14	0	71
1935	0	3	1	0	50	46	0	65	28	58	113	0	364
1936	0	0	1	3	22	55	63	55	69	65	61	9	401
1937	7	11	1	0	12	59	28	43	71	72	85	34	420
1938	11	7	2	7	49	0	0	0	38	74	115	76	378
1939	53	38	23	30	45	0	0	0	27	36	27	0	280
1940	4	5	1	0	84	49	59	40	33	52	54	0	380
1941	0	3	2	8	58	53	78	85	15	71	107	76	554
1942	49	20	23	37	73	56	66	96	79	83	89	67	738
1943	25	13	0	0	90	0	55	31	85	57	45	42	443
1944	14	6	1	0	23	31	0	0	9	0	0	29	111
1945	36	19	18	24	32	41	72	61	44	53	89	66	555
1946	53	30	18	42	116	22	16	0	31	41	25	9	402
1947	19	6	0	2	52	8	0	0	29	46	20	0	182
1948	0	0	1	3	31	0	0	15	22	81	0	0	152
1949	0	3	1	0	23	5	0	0	11	38	0	0	80
1950	6	6	1	0	36	23	0	0	6	35	21	0	134
1951	35	38	0	48	132	37	0	18	35	42	0	0	385
1952	2	6	2	22	76	53	16	34	46	79	109	75	518
1953	54	33	18	35	69	0	0	0	1	0	0	0	211
1954	4	8	1	0	33	0	0	0	11	47	46	0	151
1955	0	3	1	0	42	10	0	0	0	36	17	0	109
1956	0	4	20	49	71	0	75	74	11	71	103	75	553
1957	57	32	21	22	39	0	0	0	17	61	74	0	324
1958	3	7	1	4	55	46	70	88	50	84	88	70	565
1959	50	24	19	22	27	14	0	0	12	89	43	0	300
1960	0	0	0	0	6	0	0	0	0	0	0	0	6
1961	0	0	0	0	0	0	0	0	0	55	26	0	81
1962	0	0	0	1	0	51	58	10	38	53	80	30	321
1963	20	10	1	0	14	0	0	70	46	62	110	74	406
1964	35	5	0	6	20	0	0	0	0	60	25	0	151
1965	3	0	1	42	136	54	39	74	44	55	42	70	562
1966	46	18	14	48	113	28	0	0	5	62	18	0	353
1967	0	1	3	38	75	48	63	0	46	73	115	97	558
1968	56	43	21	36	40	0	0	0	9	30	21	0	255
1969	3	0	0	10	0	0	0	50	36	66	112	111	389
1970	43	11	0	0	76	36	0	2	0	20	48	0	236
1971	0	0	2	31	71	31	0	0	28	12	0	36	209
1972	9	2	1	3	42	8	0	0	0	61	3	0	128
1973	5	10	1	2	53	54	79	82	42	60	101	4	491
1974	3	8	0	46	140	56	69	84	76	81	77	35	674
1975	11	5	1	0	24	25	33	94	35	70	67	3	368
1976	9	11	0	0	22	0	0	8	34	18	3	0	104
1977	4	0	0	0	2	55	0	0	0	0	0	1	62
1978	0	0	0	2	66	0	0	0	34	67	107	72	348
1979	77	49	19	47	123	52	71	69	69	68	52	0	695
1980	8	10	0	0	35	0	13	40	51	72	114	97	442
1981	45	18	22	21	31	0	0	0	0	40	33	0	211
1982	0	4	2	31	83	52	0	56	64	83	115	72	561
1983	78	38	5	32	0	0	0	0	0	72	39	53	318
1984	38	25	3	14	97	27	30	29	39	30	59	16	408
1985	29	12	1	0	53	0	0	0	39	52	12	0	199
1986	11	12	0	11	9	0	0	75	58	79	111	41	407
1987	31	18	22	18	16	0	0	0	0	39	22	0	166
1988	0	0	0	0	43	0	0	0	21	18	10	0	93
1989	0	0	0	0	13	0	0	0	0	48	12	0	73
1990	0	1	0	0	0	0	0	0	23	0	34	0	58
1991	4	0	0	0	11	50	0	0	0	0	24	0	89
1992	0	0	0	0	1	2	0	0	8	0	0	0	11
1993	4	2	0	0	92	52	69	96	21	64	124	72	596
1994	49	21	22	20	20	0	0	0	19	21	6	0	179
AVG:	17	10	5	12	45	20	18	24	27	46	48	23	295
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	6
MAX:	78	49	23	49	140	59	79	96	85	89	124	111	738

Alternative 4 - Millerton Lake Releases from Storage (SR(F)) (TAF)

SR(F) = CP18 Downstream Flow - CP18 Local Inflow

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	-14	-43	-71	-75	-8	-85	33	-93	-5	71	169	77	-44
1923	13	-26	-76	-59	22	47	-89	-34	29	48	165	-16	24
1924	-29	-27	-42	-44	21	37	-11	-16	16	64	29	-10	-12
1925	11	-20	-37	-36	-17	43	-63	-63	32	65	37	18	-30
1926	-7	-30	-43	-41	-13	44	-147	-70	120	124	46	-28	-45
1927	-14	-44	-69	-65	-76	-9	3	-50	-42	154	163	22	-27
1928	-1	-56	-69	-63	8	-14	-34	-17	118	121	24	-27	-10
1929	-19	-38	-40	-34	19	13	-61	-3	9	62	97	-27	-22
1930	-3	-38	-34	-34	10	13	-51	-36	53	80	49	-39	-30
1931	-10	-41	-33	-31	16	26	-6	-20	20	64	34	-3	16
1932	-2	-20	-69	-54	-83	46	21	-29	-87	126	71	33	-47
1933	-1	-27	-33	-45	11	33	-60	-62	36	50	104	-3	3
1934	-6	-23	-51	-53	18	22	-39	-42	13	71	49	-24	-65
1935	-10	-28	-45	-69	11	75	-117	-98	-62	163	197	-26	-9
1936	-16	-45	-47	-51	-115	5	-29	-69	66	165	129	-16	-23
1937	-23	-25	-57	-64	-107	-51	-39	-4	-2	172	163	31	-6
1938	-8	-32	-145	-114	0	76	49	169	-365	-30	198	38	-164
1939	23	-4	-51	-34	22	27	-68	-83	86	112	76	-55	51
1940	2	-27	-41	-121	-5	-7	13	-62	34	147	114	-13	34
1941	-24	-31	-108	-113	-19	-71	2	15	-44	34	177	62	-120
1942	25	-30	-81	-79	10	-20	-5	-39	-82	103	165	82	49
1943	-1	-41	-71	-151	4	-107	8	-14	70	143	103	34	-23
1944	-8	-28	-50	-40	-10	53	-30	-4	43	16	8	21	-29
1945	-4	-57	-63	-35	-114	-43	13	-33	-35	109	155	54	-53
1946	13	-46	-93	-65	73	15	-47	-101	56	123	79	-7	0
1947	-2	-49	-81	-66	9	42	-60	-55	86	118	55	-22	-25
1948	-15	-43	-45	-38	20	-25	-108	21	36	175	5	-11	-28
1949	-15	-30	-38	-42	5	44	-37	-61	56	106	10	-31	-33
1950	-7	-34	-48	-59	-22	63	-39	-69	45	107	72	-16	-7
1951	-19	-133	-117	-1	29	32	-29	24	113	124	-2	-42	-21
1952	-16	-34	-94	-120	-6	-37	37	131	-229	24	192	51	-101
1953	20	-40	-65	-63	42	22	-34	14	60	59	43	-7	51
1954	-18	-26	-50	-61	0	17	-40	-100	65	125	100	-41	-29
1955	-14	-37	-63	-67	13	60	-52	-46	29	103	57	-16	-33
1956	-9	-24	-224	-1	0	-88	0	74	-85	51	169	58	-79
1957	25	-24	-43	-31	4	-12	-69	-69	-13	146	147	-24	37
1958	-18	-35	-75	-76	-40	-57	-61	-2	-7	92	156	49	-74
1959	16	-44	-50	-24	-25	28	-84	-84	71	171	71	-14	32
1960	4	-4	-13	-22	-38	15	-51	-36	49	31	31	2	-32
1961	-1	-25	-39	-18	3	-4	-52	-52	44	116	40	-2	10
1962	-2	-8	-31	-18	-149	34	5	-118	-70	125	161	27	-44
1963	-9	-28	-28	-53	-157	-2	-95	-4	-5	58	175	49	-99
1964	37	-79	-93	-35	17	10	-42	-39	43	147	80	-19	27
1965	5	-39	-100	-131	19	9	-27	36	-52	85	94	45	-56
1966	21	-72	-122	-55	74	54	-72	-92	64	151	52	-3	0
1967	-10	-34	-125	-87	-4	-61	34	200	-236	-40	170	60	-133
1968	22	-21	-66	-23	-3	25	-47	-24	61	108	69	-12	89
1969	5	-40	-52	-183	145	10	143	-6	-386	-6	175	83	-112
1970	43	-54	-88	-86	0	25	-2	-7	44	92	108	-5	70
1971	-11	-54	-102	-69	12	57	-32	-14	82	64	17	26	-24
1972	-1	-29	-83	-61	14	27	-47	-27	6	139	36	-1	-27
1973	-20	-33	-69	-84	-66	-2	44	-128	-12	159	181	11	-19
1974	-24	-65	-124	-68	69	-25	-43	-58	-25	164	145	35	-19
1975	-7	-44	-62	-42	-26	31	-25	-14	-142	169	136	-16	-42
1976	-18	-63	-67	-40	8	-21	-15	17	81	76	26	-37	-53
1977	9	-17	-11	-8	3	89	-4	2	0	-10	7	-3	57
1978	0	-2	-48	-143	-119	37	151	30	-314	-6	137	31	-246
1979	41	-30	-56	-50	22	-34	7	-61	40	165	119	-13	150
1980	-18	0	-55	-198	0	8	-43	72	-135	-6	158	100	-117
1981	30	-28	-26	-28	-9	-9	-55	-34	42	110	83	-27	49
1982	-9	-37	-106	-104	0	-88	147	-71	-87	-6	143	18	-200
1983	36	-105	-19	-1	182	77	39	-2	-40	-290	-45	-28	-196
1984	83	-1	0	-1	0	-43	-12	-2	57	107	127	7	322
1985	1	-25	-55	-84	9	25	-98	-62	100	123	45	-3	-24
1986	-17	-50	-88	-81	14	-8	-112	40	-63	89	197	59	-20
1987	-4	-19	-10	-9	-2	-46	-65	-87	44	117	73	-17	-25
1988	-5	-33	-36	-60	34	-38	-48	-35	74	86	34	-8	-35
1989	-2	-28	-25	-28	10	-16	-75	-62	43	124	58	-16	-17
1990	-12	-19	-19	-23	0	-24	-53	-48	66	51	73	-12	-20
1991	7	-15	-16	-18	16	9	-33	-24	-15	13	66	-16	-26
1992	1	-13	-10	-13	-4	26	-9	-4	29	20	8	-3	28
1993	-4	2	-24	-176	-27	-60	-11	-98	-5	21	205	68	-109
1994	24	-20	-30	-13	12	-41	-50	-59	75	90	46	-17	17
AVG:	0	-34	-60	-59	-3	4	-27	-27	-3	85	95	7	-24
MIN:	-29	-133	-224	-198	-157	-107	-147	-128	-386	-290	-45	-55	-246
MAX:	83	2	0	-1	182	89	151	200	120	175	205	100	322

STUDY: 1995C06F-SWRCB-469 DWRSIM: 8.18, 27 Nov 96

Alternative 4 - Obligation of Friant to Meet Vernalis Objective (FO) (TAF)

FO = Add(Alt3) - SJO

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	6	0	0	0	0	0	22	108	0	0	0	0	136
1923	0	0	0	0	0	0	52	70	0	0	0	0	122
1924	0	0	0	0	0	0	11	16	0	0	0	0	27
1925	0	0	0	0	0	0	23	63	0	0	0	0	86
1926	17	0	0	0	0	0	34	70	0	0	0	0	121
1927	27	0	0	0	0	0	24	113	87	0	0	0	251
1928	0	0	0	0	0	0	34	17	0	0	0	0	51
1929	19	0	0	0	0	0	0	3	0	0	0	0	22
1930	3	0	0	0	0	0	15	20	0	0	0	0	38
1931	0	0	0	0	0	0	6	20	0	0	0	0	26
1932	0	0	0	0	0	0	0	68	32	0	0	0	100
1933	0	0	0	0	0	0	31	57	0	0	0	0	88
1934	11	0	0	0	0	0	10	42	0	0	0	0	63
1935	10	0	0	0	0	0	0	0	0	0	0	0	10
1936	0	0	0	0	0	0	0	49	3	0	0	0	52
1937	0	0	0	0	0	0	0	0	0	0	0	0	0
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	45	0	0	0	0	45
1940	2	0	0	0	0	0	0	62	0	0	0	0	64
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	11	0	0	0	0	11
1943	0	0	0	0	0	0	0	0	15	0	0	0	15
1944	0	0	0	0	0	0	0	4	0	0	0	0	4
1945	14	0	0	0	0	0	0	11	0	0	0	0	25
1946	0	0	0	0	0	0	26	11	0	0	0	0	37
1947	0	0	0	0	0	0	60	55	0	0	0	0	115
1948	15	0	0	0	11	0	21	0	0	0	0	0	47
1949	15	0	0	0	0	0	37	46	0	0	0	0	98
1950	13	0	0	0	0	0	39	69	0	0	0	0	121
1951	25	0	0	0	0	0	29	0	0	0	0	0	54
1952	8	0	0	0	0	0	0	0	0	0	0	0	8
1953	0	0	0	0	0	0	34	0	0	0	0	0	34
1954	22	0	0	0	21	0	3	82	0	0	0	0	128
1955	14	0	0	0	29	0	31	44	0	0	0	0	118
1956	9	0	0	0	0	0	75	0	0	0	0	0	84
1957	0	0	0	0	0	0	69	69	30	0	0	0	168
1958	18	0	0	0	0	0	0	0	0	0	0	0	18
1959	0	0	0	0	0	0	35	67	0	0	0	0	102
1960	0	0	0	0	0	0	9	14	0	0	0	0	23
1961	1	0	0	0	0	0	17	39	0	0	0	0	57
1962	0	0	0	0	0	0	0	85	8	0	0	0	93
1963	27	0	0	0	0	2	0	62	51	0	0	0	142
1964	0	0	0	0	3	0	37	39	0	0	0	0	79
1965	0	0	0	0	0	0	14	38	33	0	0	0	85
1966	0	0	0	0	0	0	72	68	0	0	0	0	140
1967	10	0	0	0	0	0	0	0	0	0	0	0	10
1968	0	0	0	0	0	0	47	24	0	0	0	0	71
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	2	9	0	0	0	0	11
1971	11	0	0	0	0	0	32	14	0	0	0	0	57
1972	10	0	0	0	28	0	47	27	0	0	0	0	112
1973	25	0	0	0	0	0	0	16	0	0	0	0	41
1974	0	0	0	0	0	0	0	31	52	0	0	0	83
1975	0	0	0	0	0	0	0	79	0	0	0	0	79
1976	0	0	0	0	0	0	8	0	0	0	0	0	8
1977	0	0	0	0	0	0	4	0	0	0	0	0	4
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	2	68	21	0	0	0	91
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	51	34	0	0	0	0	85
1982	9	0	0	0	0	0	0	0	0	0	0	0	9
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	42	31	0	0	0	0	73
1985	12	0	0	0	0	0	21	54	0	0	0	0	87
1986	20	0	0	0	0	0	0	0	0	0	0	0	20
1987	0	0	0	0	0	0	0	26	0	0	0	0	26
1988	5	0	0	0	0	0	14	34	0	0	0	0	53
1989	0	0	0	0	0	0	21	23	0	0	0	0	44
1990	0	0	0	0	0	0	14	39	0	0	0	0	53
1991	0	0	0	0	0	0	0	13	0	0	0	0	13
1992	0	0	0	0	0	0	0	4	0	0	0	0	4
1993	0	0	0	0	35	34	80	85	0	0	0	0	234
1994	0	0	0	0	0	0	3	16	0	0	0	0	19
AVG:	5	0	0	0	2	0	17	31	5	0	0	0	60
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	27	0	0	0	35	34	80	113	87	0	0	0	251

Alternative 4 - Supplemental Water to Meet Delta Outflow (SW(4)) (TAF)

SW(4) = SW(3) + SR(Friant) - (EX(F) IO(Fn)) + FO
Negative numbers set to zero and adjusted for surplus Delta conditions. IO(Fn) set to zero.

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	0	0	0	0	0	0	0	0	350	256	6	612
1923	0	0	0	0	0	0	0	0	325	585	375	0	1285
1924	0	0	0	0	0	14	159	319	571	521	240	0	1824
1925	6	0	0	0	0	0	0	0	372	577	273	6	1234
1926	0	0	0	0	0	0	0	95	754	812	418	0	2078
1927	0	0	0	0	0	0	0	0	0	566	354	0	920
1928	0	0	0	0	0	0	0	0	591	896	433	0	1920
1929	0	0	0	0	0	0	0	0	208	552	301	0	1061
1930	0	0	0	0	0	0	0	0	587	613	267	0	1467
1931	0	0	0	0	0	22	156	157	445	476	311	0	1566
1932	0	0	0	0	0	0	0	0	43	500	246	0	789
1933	0	0	0	0	0	0	0	0	150	485	337	0	973
1934	0	0	0	0	0	22	0	85	492	512	262	0	1373
1935	0	0	0	0	0	0	0	0	0	625	317	0	942
1936	0	0	0	0	0	0	0	0	9	720	413	0	1142
1937	0	0	0	0	0	0	0	0	81	751	422	0	1254
1938	0	0	0	0	0	0	0	0	0	0	141	0	141
1939	0	0	0	0	0	0	54	47	789	678	369	0	1936
1940	0	0	0	0	0	0	0	0	270	781	406	0	1458
1941	0	0	0	0	0	0	0	0	0	196	189	0	385
1942	0	0	0	0	0	0	0	0	0	210	188	0	398
1943	0	0	0	0	0	0	0	0	0	596	302	0	898
1944	0	0	0	0	0	0	0	0	528	646	336	0	1510
1945	0	0	0	0	0	0	0	0	75	697	357	0	1129
1946	0	0	0	0	0	0	0	0	422	637	298	0	1358
1947	0	0	0	0	0	0	0	134	516	780	366	0	1796
1948	0	0	0	0	0	0	0	0	0	504	304	0	808
1949	0	0	0	0	0	0	0	0	606	712	298	0	1616
1950	0	0	0	0	0	0	0	0	235	580	223	0	1038
1951	0	0	0	0	0	0	0	0	470	785	208	0	1463
1952	0	0	0	0	0	0	0	0	0	0	83	0	83
1953	0	0	0	0	0	0	0	0	0	233	102	0	335
1954	0	0	0	0	0	0	0	33	304	786	207	0	1329
1955	0	0	0	0	0	0	0	0	553	726	359	0	1638
1956	0	0	0	0	0	0	0	0	0	108	66	0	174
1957	0	0	0	0	0	0	0	0	112	629	241	0	982
1958	0	0	0	0	0	0	0	0	0	8	68	0	76
1959	0	0	0	0	0	14	0	0	713	790	316	0	1834
1960	4	0	0	0	0	0	0	0	657	695	370	2	1728
1961	0	0	0	0	0	0	0	0	596	780	386	0	1762
1962	0	0	0	0	0	0	0	0	142	726	364	0	1231
1963	0	0	0	0	0	0	0	0	0	376	166	0	542
1964	0	0	0	0	0	0	0	0	444	764	379	0	1587
1965	2	0	0	0	0	0	0	0	0	404	52	0	457
1966	0	0	0	0	0	0	0	15	666	755	308	0	1744
1967	0	0	0	0	0	0	0	0	0	0	55	0	55
1968	0	0	0	0	0	0	0	0	632	719	48	0	1400
1969	2	0	0	0	0	0	0	0	0	0	63	0	64
1970	0	0	0	0	0	0	0	0	345	608	173	0	1126
1971	0	0	0	0	0	0	0	0	0	185	42	0	227
1972	0	0	0	0	0	0	0	0	621	755	234	0	1610
1973	0	0	0	0	0	0	0	0	367	697	199	7	1270
1974	0	0	0	0	0	0	0	0	0	83	68	0	152
1975	0	0	0	0	0	0	0	0	0	174	69	0	243
1976	0	0	0	0	0	0	0	88	737	547	57	0	1429
1977	5	0	0	0	190	34	311	118	516	410	133	0	1717
1978	41	0	0	0	0	0	0	0	0	370	219	0	630
1979	0	0	0	0	0	0	0	0	628	617	168	0	1413
1980	0	0	0	0	0	0	0	0	0	145	119	0	264
1981	0	0	0	0	0	0	0	0	741	709	256	0	1706
1982	0	0	0	0	0	0	0	0	0	0	28	0	28
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	209	572	68	0	849
1985	0	0	0	0	0	0	0	267	824	726	294	0	2111
1986	0	0	0	0	0	0	0	0	0	592	249	0	841
1987	0	0	0	0	0	0	0	167	1015	744	420	0	2346
1988	0	0	0	0	0	0	0	11	558	676	356	0	1600
1989	0	0	0	0	0	0	0	0	570	655	212	0	1438
1990	0	0	0	0	0	0	31	0	470	665	321	0	1487
1991	3	0	0	0	80	0	0	0	177	320	163	0	743
1992	1	0	0	0	0	0	0	143	521	438	277	0	1380
1993	0	0	0	0	0	0	0	0	0	324	88	0	412
1994	0	0	0	0	0	0	0	0	741	524	217	0	1481
AVG:	1	0	0	0	4	1	10	23	307	512	237	0	1095
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	41	0	0	0	190	34	311	319	1015	896	433	7	2346

San Joaquin Basin - Cumulative Direct Diversion, TAF

Priority Group	Right Number	Appl Id	File Date	DSA	Last Name (Company)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	1	A014858B	07/18/88	39	U S BUREAU OF RECLAMATION (New Melones Lk)												
1	2	A027586	11/17/82	49	U S FISH & WILDLIFE SERVICE (Merced NWR)	0	0	0	0	0	0	0	0	0	0	0	0
1	3	A027546	09/30/82	49	NEW STONE WATER DISTRICT	0	0	0	0	0	0	0	0	0	0	0	0
1	4	A026875	06/16/81	49	MENEFEE RIVER RANCH COMPANY	0	0	0.2	0.3	0.4	0.4	0.4	0.4	0.3	0.1	0	0
1	5	A026757	03/19/81	49	MENEFEE HILL RANCH COMPANY	0	0	0.2	0.3	0.4	0.4	0.4	0.4	0.3	0.1	0	0
1	6	A023031	04/18/68	49	GRAVELY FORD WATER DISTRICT	0	0	0.2	0.3	0.4	0.4	0.4	0.4	0.3	0.1	0	0
1	7	A022980	02/07/68	40	PINE MOUNTAIN LAKE ASSOCIATION	0	0	0.2	0.3	0.4	0.4	0.4	0.4	0.3	0.1	0	0
1	8	A019304	03/11/60	39	U S BUREAU OF RECLAMATION (New Melones Lk)												
1	9	A019149	12/23/59	39	CALAVERAS COUNTY WATER DIST												
1	10	A018774	06/08/59	49	EL NIDO IRRIGATION DISTRICT	0	0	0.2	0.3	0.4	0.4	0.4	0.4	0.3	0.1	0	0
1	11	A018733	05/22/59	45	U S BUREAU OF RECLAMATION (Hidden Lake)												
1	12	A018714	05/15/59	43	U S BUREAU OF RECLAMATION (Eastman Lk)												
1	13	A017966	01/29/58	49	MCMULLIN RECL DISTRICT #2075	0	0	0.2	0.3	0.4	0.4	0.4	0.4	0.3	0.1	0	0
1	14	A016604	09/15/55	49	GALLO CATTLE COMPANY, A PARTNERSHIP	0	0	0.2	0.4	0.6	0.6	0.6	0.6	0.3	0.1	0	0
1	15	A016329	04/21/55	49	JOSEPH GALLO FARMS	0	0	0.5	1.1	1.3	1.4	1.4	1.3	1.0	0.3	0	0
1	16	A016186	12/23/54	41	MERCED IRRIGATION DISTRICT												
1	17	A016136	11/15/54	49	MENEFEE RIVER RANCH COMPANY	0	0	0.5	1.1	1.3	1.4	1.4	1.3	1.0	0.3	0	0
1	18	A015628	12/02/53	49	GALLO BEAR CREEK RANCH	0	0	0.5	1.6	2.2	2.6	2.6	2.4	1.4	0.5	0	0
1	19	A014858A	06/16/52	39	U S BUREAU OF RECLAMATION (New Melones L	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1	20	A014582	11/19/51	49	CA DEPT OF FISH & GAME (Los Banos Wildlife A	0	0	0.8	2.1	3.2	3.7	3.8	3.5	1.9	0.6	0	0
1	21	A014127	01/16/51	40	TURLOCK I D & MODESTO I D												
1	22	A013628	03/10/50	49	BROCCHINI	0	0	0.8	2.1	3.2	3.7	3.8	3.5	1.9	0.6	0	0
1	23	A013541	01/13/50	49	WEAVER	0	0	0.8	2.1	3.2	3.7	3.8	3.5	1.9	0.6	0	0
2	24	A013175	06/27/49	49	CHOWCHILLA WATER DISTRICT	0	0	6.3	7.6	8.7	9.2	9.3	3.5	1.9	0.6	0	0
2	25	A013091	05/13/49	39	CALAVERAS COUNTY WATER DIST												
2	26	A013093A	05/13/49	39	CALAVERAS COUNTY WATER DIST												
2	27	A012912	01/25/49	39	CALAVERAS COUNTY WATER DIST												
2	28	A012910	01/25/49	39	CALAVERAS COUNTY WATER DIST												
2	29	A012635	08/06/48	49	W P RODUNER CATTLE & FARMING CO	0	0	6.4	7.8	9.1	9.7	9.8	4.0	2.0	0.7	0	0
2	30	A012490	04/28/48	49	OAKDALE I D & SOUTH SAN JOAQUIN I D												
2	31	A011792B	03/24/47	39	CALAVERAS COUNTY WATER DIST												
2	32	A011687	01/08/47	49	U S FISH & WILDLIFE SERVICE (San Luis NWR)	0	0	6.4	7.8	9.1	9.7	9.8	4.0	2.0	0.7	0	0
2	33	A011688	01/08/47	49	U S FISH & WILDLIFE SERVICE (San Luis NWR)	0	0	6.4	7.8	9.1	9.7	9.8	4.0	2.0	0.7	0	0
2	34	A011653	12/10/46	49	W P RODUNER CATTLE & FARMING CO	0	0	6.4	7.8	9.1	9.7	9.8	4.0	2.0	0.7	0	0
2	35	A011105	07/13/45	49	OAKDALE I D & SOUTH SAN JOAQUIN I D												
2	36	A011047	05/09/45	49	CHOWCHILLA WATER DISTRICT	0	0	6.6	8.2	9.8	10.4	10.5	4.7	2.5	0.8	0	0
2	37	A011003A	03/09/45	49	TRIANGLE T RANCH INCORPORATED	0	0	6.6	8.2	9.8	10.4	10.5	4.7	2.5	0.8	0	0
2	38	A010978	02/10/45	49	OAKDALE I D & SOUTH SAN JOAQUIN I D												
3	39	A010872	08/30/44	49	OAKDALE I D & SOUTH SAN JOAQUIN I D												
3	40	A010572	12/11/42	49	MERCED IRRIGATION DISTRICT	0	0	6.6	8.2	9.8	10.4	10.5	4.7	2.5	0.8	0	0
3	41	A009997	09/06/40	49	TURLOCK I D & MODESTO I D	0	0	6.6	8.2	9.8	10.4	10.5	4.7	2.5	0.8	0	0
3	42	A009834	02/21/40	49	BROCCHINI	0	0	6.6	8.3	9.9	10.6	10.7	4.8	2.5	0.8	0	0
3	43	A009666	07/17/39	49	OAKDALE IRRIGATION DIST	0	0	6.6	8.3	10.0	10.7	10.8	4.9	2.6	0.9	0	0
3	44	A008892	02/03/37	49	OAKDALE IRRIGATION DIST	0	0	6.6	8.3	10.2	10.9	11.1	5.2	2.7	0.9	0	0
3	45	A008238	02/11/35	49	EL NIDO IRRIGATION DISTRICT	0.3	0.6	7.8	9.0	10.2	10.9	11.1	5.2	2.7	0.9	0	0
3	46	A007012	07/20/31	49	STEVINSON WATER DIST	0.3	0.6	7.8	9.0	10.2	10.9	11.1	5.2	2.7	0.9	0	0
3	47	A006963	05/19/31	49	BROCCHINI	0.3	0.6	7.8	9.1	10.4	11.2	11.3	5.4	2.8	0.9	0	0
3	48	A006807	09/27/30	49	EL NIDO IRRIGATION DISTRICT	0.3	0.6	8.0	9.3	10.4	11.2	11.3	5.4	2.8	0.9	0	0
3	49	A006711	06/25/30	49	TURLOCK I D & MODESTO I D	0.3	0.6	8.0	9.3	10.4	11.2	11.3	5.4	2.8	0.9	0	0
4	50	A006130	12/04/28	39	PACIFIC GAS & ELECTRIC COMPANY												
4	51	A006114	11/09/28	49	W P RODUNER CATTLE & FARMING CO	0.3	0.6	8.0	9.3	10.5	11.2	11.3	5.4	2.8	0.9	0	0
4	52	A006111	11/05/28	49	STEVINSON WATER DIST	0.3	0.6	8.0	9.3	10.5	11.2	11.3	5.4	2.8	0.9	0	0
4	53	A005724	10/17/27	49	STEVINSON WATER DIST	0.3	0.6	8.5	10.3	12.3	13.8	14.0	7.6	3.7	1.2	0	0
4	54	A005638	07/30/27	46	U S BUREAU OF RECLAMATION (Friant)												
4	55	A005648A	07/30/27	49	OAKDALE I D & SOUTH SAN JOAQUIN I D												
5	56	A005386	03/21/27	49	BANK OF AMERICA NT & SA	0.3	0.6	8.7	10.6	12.9	14.5	14.9	8.3	4.0	1.3	0	0

San Joaquin Basin - Cumulative Direct Diversion, TAF

Priority Group	Right Number	Appl Id	File Date	DSA	Last Name (Company)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
5	57	A005316	12/24/26	49	MCMULLIN RECL DISTRICT #2075	0.3	0.6	9.0	11.2	14.0	16.1	16.5	9.7	4.5	1.5	0	0
5	58	A004460	02/14/25	49	RIVER JUNCTION RECL DIST NO 2064	0.3	0.6	9.5	12.2	15.9	18.7	19.2	11.9	5.4	1.5	0	0
5	59	A004237	09/26/24	49	TWIN OAKS IRRIGATION COMPANY	0.3	0.6	9.7	12.6	16.8	19.9	20.4	12.9	5.8	1.6	0	0
5	60	A003648	09/24/23	49	TURLOCK I D & MODESTO I D	0.3	0.6	9.7	12.6	16.8	19.9	20.4	12.9	5.8	1.6	0	0
5	61	A003091	10/19/22	49	OAKDALE IRRIGATION DIST												
6	62	A002524	08/29/21	49	SOUTH SAN JOAQUIN IRRIGATION DIST												
6	63	A001987	08/27/20	49	WEST STANISLAUS IRRIGATION DIST	0.3	0.6	12.3	17.8	26.6	33.3	34.6	24.5	10.4	3.2	0	0
6	64	A001885	06/28/20	49	STEVINSON WATER DIST	0.3	0.6	12.5	18.2	27.5	34.5	35.9	25.6	10.9	3.3	0	0
6	65	A001476	10/10/19	49	EL SOLYO WATER DISTRICT	0.3	0.6	12.8	18.9	28.8	36.3	37.8	27.1	11.5	3.5	0	0
6	66	A001465	09/26/19	46	U S BUREAU OF RECLAMATION (Friant)												
7	67	A001233	04/08/19	40	TURLOCK I D & MODESTO I D												
7	68	A001224	03/26/19	49	MERCED IRRIGATION DISTRICT	0.3	0.6	12.8	18.9	28.8	36.3	37.8	27.1	11.5	3.5	0	0
7	69	A001195	02/26/19	49	CODDINGTON	0.3	0.6	13.1	19.4	29.7	37.5	39.1	28.2	11.9	3.7	0	0
7	70	A001081	09/20/18	49	OAKDALE I D & SOUTH SAN JOAQUIN I D												
8	71	A000234	01/19/16	46	U S BUREAU OF RECLAMATION (Friant)												
8	72	A000023	03/27/15	46	U S BUREAU OF RECLAMATION (Friant)												

Major Central Valley Water Right Cumulative Direct Diversion by Priority Group, TAF

Priority Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1	0.0	0.1	1.8	7.8	13.7	20.1	20.1	14.8	7.0	3.7	1.5	1.0	91.7
2	0.0	0.2	2.5	10.9	19.0	27.9	26.9	19.7	9.1	5.0	1.8	1.2	124.1
3	0.0	0.2	3.6	17.6	25.9	37.4	36.8	26.8	10.3	5.4	1.9	1.3	167.1
4	0.0	0.2	4.2	19.9	29.9	43.5	43.4	31.4	12.2	6.2	2.2	1.4	194.6
5	0.0	0.5	9.9	39.9	68.7	107.7	119.6	81.6	39.7	22.9	5.6	3.4	499.5
6	0.0	0.6	12.0	46.4	92.7	146.3	163.1	112.6	56.6	33.4	7.1	3.4	674.3
7	0.0	0.6	12.2	47.7	95.0	149.2	166.2	115.3	57.6	33.7	7.1	3.4	688.1
8	0.0	0.6	12.3	49.6	98.6	154.9	172.6	119.9	60.1	35.2	7.1	3.4	714.3

Major Water Right Holder Consumptive Use of Applied Water by DSA, TAF

DSA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
12	0	0	0	1.0	1.1	1.4	0.9	0.7	0.1	0.1	0	0	5.2
15	0	0	0.1	1.7	2.7	3.6	4.0	3.2	1.2	0.4	0	0	16.9
49	0	0	5.0	10.5	16.3	22.2	21.1	17.2	6.9	2.0	0	0	101.1
59	0	0	0	0.1	0.3	0.4	0.4	0.3	0.2	0	0	0	1.8
65	0	0	0	0.7	1.3	1.9	2.2	1.6	0.6	0.1	0	0	8.5
69	0	0	0.1	9.6	13.8	17.4	16.9	12.7	1.5	0.3	0	0	72.4
70	0	0	0	0.2	0.2	0.8	0.8	0.2	0	0	0	0	2.2
55	0	0.6	7.1	25.8	62.9	107.2	126.4	83.9	49.6	32.3	7.1	3.4	506.3
Total	0	0.6	12.3	49.6	98.6	154.9	172.6	119.9	60.1	35.2	7.1	3.4	714.3

Alternative 3 - Friant Direct Diversion (TAF)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	53	24	4	10	102	62	195	236	309	249	149	117	1510
1923	83	33	29	37	88	129	100	198	213	198	108	83	1299
1924	37	21	4	0	39	18	42	46	52	54	52	45	410
1925	33	17	3	0	56	92	93	117	188	135	112	90	936
1926	54	19	4	0	61	87	53	128	109	92	69	45	721
1927	58	28	3	6	84	191	200	238	266	159	140	126	1499
1928	72	25	1	2	76	122	120	135	113	69	66	37	838
1929	31	3	3	8	39	53	42	95	129	81	55	32	571
1930	29	1	3	7	47	74	56	69	102	78	57	32	555
1931	28	1	4	7	37	34	44	45	60	62	60	55	437
1932	36	18	3	2	71	134	200	237	267	183	150	114	1415
1933	50	16	3	0	52	97	78	99	150	108	89	32	774
1934	39	18	3	0	52	83	43	45	73	84	77	32	549
1935	37	16	4	0	77	103	119	243	269	157	101	78	1204
1936	31	3	4	11	62	180	204	247	239	151	126	109	1367
1937	50	26	4	0	44	175	177	245	310	155	131	113	1430
1938	52	21	5	14	94	0	80	0	271	303	154	161	1155
1939	86	56	29	40	70	94	57	60	104	96	93	41	826
1940	49	20	4	3	127	190	211	213	225	127	93	70	1332
1941	32	17	5	15	104	167	246	244	248	285	150	139	1652
1942	75	35	29	47	110	188	223	290	306	228	146	108	1785
1943	76	28	3	0	134	44	214	219	239	152	150	119	1378
1944	57	21	4	0	60	118	101	154	165	143	114	108	1045
1945	84	35	23	33	69	167	217	226	260	181	156	134	1585
1946	100	47	23	53	95	142	157	144	185	130	120	111	1307
1947	66	22	3	9	84	97	76	90	99	85	71	48	750
1948	30	2	4	10	47	44	55	162	209	110	88	81	842
1949	39	18	4	0	55	87	124	120	164	97	87	59	854
1950	53	22	4	0	79	100	116	119	164	106	107	76	946
1951	89	58	0	61	158	148	121	154	150	118	104	54	1215
1952	44	20	5	30	124	167	149	99	280	293	153	149	1513
1953	90	50	24	45	76	87	72	110	141	134	111	79	1019
1954	50	24	4	0	80	114	128	127	153	101	83	37	901
1955	40	18	4	5	77	88	52	125	168	106	84	64	831
1956	42	18	25	61	118	97	251	173	244	268	156	142	1595
1957	95	50	27	31	77	85	59	93	229	124	106	57	1033
1958	45	22	4	10	100	170	235	287	288	242	154	144	1701
1959	89	41	25	31	75	122	62	72	124	56	35	42	774
1960	30	15	0	0	40	73	48	65	93	91	98	75	628
1961	27	1	1	5	33	40	42	49	86	31	40	41	396
1962	12	8	0	7	33	152	209	166	259	172	138	112	1268
1963	63	25	4	0	57	108	107	236	260	243	155	150	1408
1964	57	20	0	13	49	68	52	72	135	99	110	79	754
1965	20	1	4	53	170	182	182	205	265	210	159	149	1600
1966	85	35	19	60	92	116	81	72	125	92	71	46	894
1967	34	15	6	48	123	183	162	0	277	302	185	170	1505
1968	89	62	27	46	89	79	54	66	96	102	98	67	875
1969	21	1	3	17	0	51	0	238	274	299	178	167	1249
1970	62	27	2	0	125	151	126	157	149	138	108	81	1126
1971	28	1	5	40	106	111	109	135	147	145	131	111	1069
1972	53	17	4	10	76	114	48	72	120	86	84	46	730
1973	49	25	4	8	100	187	205	256	268	152	115	90	1459
1974	44	23	1	57	123	190	206	276	308	166	152	108	1654
1975	54	20	4	2	65	131	185	277	269	138	113	105	1363
1976	55	27	0	0	49	55	45	35	57	49	68	52	492
1977	22	3	0	3	11	3	1	2	57	56	48	35	241
1978	0	5	0	5	115	21	0	163	277	308	194	170	1258
1979	100	68	25	59	146	176	226	261	255	133	131	77	1657
1980	51	24	1	0	76	95	200	164	290	317	184	130	1532
1981	70	35	28	30	79	83	90	114	105	92	89	48	863
1982	41	18	5	40	131	161	0	249	304	335	201	177	1662
1983	98	55	9	43	0	0	0	2	223	326	249	172	1177
1984	2	41	6	23	146	161	172	183	187	153	138	110	1322
1985	77	28	4	1	92	100	90	107	99	68	73	89	828
1986	55	27	3	18	30	93	149	236	299	245	126	96	1377
1987	81	34	28	27	54	37	47	46	90	94	103	32	673
1988	27	1	2	6	50	51	45	64	89	91	61	41	528
1989	26	1	1	4	38	89	61	57	105	96	103	32	613
1990	31	15	2	0	36	58	46	47	52	112	63	33	495
1991	19	2	0	4	12	108	69	101	143	148	83	38	727
1992	23	1	0	4	29	52	45	46	24	45	36	25	330
1993	41	1	0	0	143	178	256	280	262	297	123	132	1713
1994	87	38	28	29	48	39	48	61	104	96	94	57	729
AVG:	51	22	8	17	76	105	112	141	184	151	112	86	1065
MIN:	0	1	0	0	0	0	0	0	24	31	35	25	241
MAX:	100	68	29	61	170	191	256	290	310	335	249	177	1785

Annual CVP Deliveries To Sacramento Valley Contractors, af

Contractor	Contract	DSA	Status	1982	1983	1984	1985	1986	1987	1988	1989	7 Year Average
Alexander, Tom	7754A	10	WRX	0	0	0	0	0	0	22	22	6
Corning Water District	6575	10	WS	21,199	20,002	27,355	26,389	23,563	24,872	26,128	22,142	24,521
Freeman, Frank	2212A	10	WRX	16	16	16	0	16	16	16	16	14
Kirkwood Water District	W0056	10	WS	251	435	471	373	529	514	676	654	495
McLane, Robert	4446A	10	WRX	47	31	40	43	43	43	47	47	44
Nature Conservancy	3774A	10	WRX	0	0	0	0	0	0	0	41	6
Penner, Roger	0960A	10	WRX	180	180	180	180	180	180	180	180	180
Proberta Water District	7311	10	WS	4,759	6,138	6,312	5,685	5,453	5,122	6,583	5,498	5,630
Ramos, Mildred	2368A	10	WRX	16	16	16	16	16	16	16	16	16
Thomes Creek Water District	5271A	10	WS	6,956	3,552	6,273	8,292	8,227	8,445	7,708	5,167	7,295
Total DSA 10				**33,424**	**30,370**	**40,663**	**40,978**	**38,027**	**39,208**	**41,376**	**33,783**	**38,208**
4-M Water District (from Colusa Co.)	W0183	12	WS	3,021	2,481	3,510	3,273	2,136	2,572	2,578	2,609	2,814
Colusa County Water District	0304A	12	WS	21,974	19,135	31,904	37,945	42,325	61,582	61,169	53,927	44,404
Colusa Co. Water Dist (from Colusa Co	W0220	12	WS	0	0	0	0	1,491	1,491	2,058	5,965	1,572
Colusa Drain MWC	W0693	12	WR	0	0	0	0	0	0	38,707	48,915	12,517
Cortina Water District (from Colusa Co.	W0206	12	WS	1,510	1,046	1,431	1,733	1,447	1,954	1,814	1,628	1,645
Davis Water District	6001A	12	WS	4,727	2,138	4,804	5,373	5,328	4,478	6,061	6,396	5,310
Dunnigan Water District	0399A	12	WS	296	6,156	14,887	13,058	11,261	14,913	15,530	13,813	11,965
Glen Colusa I.D.	0855A	12	WR	750,289	595,538	830,464	802,252	787,250	771,641	720,359	765,668	775,418
Glenn Valley Water District	W0219	12	WS	892	440	841	375	771	817	1,261	1,197	879
Glide Water District	W0040	12	WS	11,647	5,706	13,366	13,704	13,237	13,225	13,526	12,873	13,083
Holthouse Water District (from Colusa (	W0224	12	WS	1,441	1,083	1,937	2,293	1,829	2,470	2,510	1,510	1,999
Kanawha Water District	0466A	12	WS	33,578	26,212	39,646	41,699	36,288	37,378	38,781	38,632	38,000
La Grande Water District	W0022	12	WS	5,237	4,220	5,000	5,000	5,715	5,000	5,000	5,000	5,136
La Grande Water Dist. (from Colusa Co	W0190	12	WS	2,301	0	1,388	1,899	550	1,293	1,817	786	1,433
Maxwell I.D.	6078A	12	WR	4,610	1,813	2,683	174	0	0	150	0	1,088
Myers-Marsh MWC (from Colusa Co.)	W0225	12	WS	209	49	304	684	652	414	365	440	438
Orland-Artois Water District	8382A	12	WS	46,968	48,379	74,407	73,364	69,590	77,675	84,127	67,573	70,529
Princeton-Codora-Glen I.D.	0849A	12	WR	53,879	37,017	55,033	61,978	52,257	56,476	51,942	53,032	54,942
Provident I.D.	0856A	12	WR	41,928	39,155	37,928	48,159	43,996	32,787	34,058	34,595	39,064
Westside Water District	8222	12	WS	24,572	22,012	25,000	25,000	24,681	29,511	25,000	24,604	25,481
Westside Water Dist. (from Colusa Co.)	W0182	12	WS	0	0	11,306	8,296	10,000	10,000	11,574	9,053	8,604
Total DSA 12				**1,009,079**	**812,580**	**1,155,839**	**1,146,259**	**1,110,804**	**1,125,677**	**1,118,387**	**1,148,216**	**1,116,323**
A & F Boeger Corp.	1053A	15	WR	2,294	1,464	2,591	1,276	2,220	2,373	1,724	1,365	1,978
Anderson, Ray	1726A	15	WRX	190	190	190	188	190	188	188	192	189
Andreotti, Arthur	1898A	15	WR	2,817	367	1,115	1,929	1,541	2,839	3,065	1,712	2,145

Annual CVP Deliveries To Sacramento Valley Contractors, af

Contractor	Contract	DSA	Status	1982	1983	1984	1985	1986	1987	1988	1989	7 Year Average
Baber, Jack	1604A	15	WR	2,750	2,227	3,648	2,382	1,023	467	940	1,721	1,847
Beckley, Ralph	8118A	15	WR	260	140	0	260	0	65	0	277	123
Broomieside Farms (Reynen)	1286A	15	WR	11,019	5,044	7,603	9,263	8,311	8,812	6,022	7,339	8,338
Buchholz, Bruce	0889A	15	WRX	200	200	200	200	200	179	0	179	165
Butler, Leslie	2365A	15	WRX	340	217	392	347	347	347	347	404	361
Butte Creek Farms #1	2851A	15	WRX	36	36	36	36	36	36	36	36	36
Butte Creek Farms #2	5206A	15	WRX	95	95	95	95	95	95	95	95	95
Butte Creek Farms #3	7744A	15	WRX	640	89	640	640	640	640	640	640	640
Cannell, Fred et al.	5210A	15	WRX	524	490	746	839	781	709	798	515	702
Carter, Jane F.	4617A	15	WR	740	545	129	975	874	741	643	1,029	733
Chesney, Carson	0930A	15	WRX	0	0	0	0	0	0	0	0	0
Churkin, Michael	7227A	15	WRX	0	0	130	130	130	130	130	133	112
Clauss, John	2045A	15	WR	2,094	1,959	1,747	1,740	1,643	2,367	2,033	1,558	1,883
Colusa Irrigation Co.	1086A	15	WRX	405	202	213	303	468	720	367	535	430
Colusa Properties, Inc.	2042A	15	WR	1,937	1,168	465	598	365	502	389	550	687
Cribari, Emile	5215A	15	WRX	35	35	35	35	35	35	35	35	35
Davis, Grover	1851A	15	WRX	0	0	0	0	0	0	0	0	0
Drew, Jerry	2250A	15	WRX	28	0	0	0	0	0	0	0	4
Driver, Gary	8595A	15	WR	30	30	30	30	30	30	30	30	30
Driver, John	2398A	15	WRX	16	16	16	16	16	0	0	16	11
Driver, John & Clare	1314A	15	WRX	230	189	189	101	101	101	101	230	150
Eggleston, Ronald	7339A	15	WRX	0	0	0	0	0	0	0	0	0
Ehrke, Allen	8330A	15	WR	311	0	311	345	311	276	345	311	316
Fargo & Haggerty	W0117	15	WRX	2,607	864	3,642	1,701	2,975	2,836	2,523	2,617	2,700
Fedora, Sibley	2916A	15	WR	210	208	210	208	12	210	0	220	153
Fory, David	7691A	15	WRX	1,873	1,210	1,369	1,876	1,300	1,888	2,014	1,472	1,685
Gillaspy, Fay	8117A	15	WR	203	147	0	203	177	0	203	187	139
Giusti, Frank	4076A	15	WR	1,610	1,610	1,610	1,610	1,610	1,610	1,610	1,610	1,610
Green Island Farms	W0001	15	WRX	820	0	820	529	0	0	0	487	379
Griffin, Joseph	2895A	15	WR	1,995	1,456	2,631	1,914	1,886	1,362	1,895	1,586	1,896
Hale & Marks	7572A	15	WRX	130	130	130	130	130	130	130	130	130
Hale & Marks	1638A	15	WRX	67	67	67	67	67	67	67	67	67
Henle, John	0932A	15	WR	93	70	103	36	46	278	170	172	128
Hiatt, Glen	0880A	15	WR	1,450	1,344	1,864	1,309	1,411	1,527	1,639	620	1,403
Hollins, Mariette	2993A	15	WR	1,527	1,291	1,578	1,465	1,496	1,420	1,422	1,531	1,491
Howald Farms	1042A	15	WRX	1,507	1,676	1,634	1,904	2,004	2,015	1,615	1,308	1,712
Kary, Carol	2520A	15	WRX	624	366	915	685	468	1,212	949	577	776
Lamb Family Trust	2486A	15	WR	303	0	173	0	0	260	0	0	105

Annual CVP Deliveries To Sacramento Valley Contractors, af

Contractor	Contract	DSA	Status	1982	1983	1984	1985	1986	1987	1988	1989	7 Year Average
Lockett & O.Brien	4105A	15	WR	321	366	742	685	468	952	949	577	671
Locvich, Paul	1945A	15	WRX	0	0	0	116	0	0	0	0	17
Lonon, Michael et al.	8658A	15	WRX	916	667	1,155	0	0	223	533	888	531
Martin, Andrew	1827A	15	WRX	0	0	0	0	0	0	0	0	0
Mayfair Farms	1976A	15	WRX	280	280	280	280	280	280	280	280	280
McLaughlin, Jack	2514A	15	WRX	0	0	0	0	0	0	0	0	0
Meridian Farms Water Co.	0838A	15	WR	21,907	24,340	26,426	29,212	23,645	27,774	26,107	25,367	25,777
Mirbach/Harff	7556A	15	WRX	68	0	134	0	0	0	0	0	29
ML Farms (Wakida)	5200A	15	WR	515	155	515	355	355	515	426	426	444
Munson, James	7049A	15	WR	139	137	139	139	139	139	139	139	139
M&T, Inc.	0940A	15	WR	3,909	228	1,309	5,070	5,718	6,743	7,115	9,007	5,553
Nelson, Thomas	1954A	15	WR	0	136	0	136	79	0	95	126	62
Odysseus Farms	1664A	15	WRX	309	147	678	349	274	529	684	472	471
Oji Brothers Farm	3753A	15	WR	969	1,402	1,443	1,695	1,444	2,478	1,553	1,468	1,579
Oji, Masanobu	2427A	15	WR	1,415	1,244	1,263	1,509	2,172	1,350	1,112	274	1,299
Olive Percy Davis Trust	2146A	15	WR	29,032	22,444	28,034	29,664	27,525	24,082	23,960	24,158	26,636
Pelger Mutual Water Co.	2073A	15	WR	4,525	1,760	3,520	3,490	4,172	3,656	4,160	2,271	3,685
Pires, Lawrence	7744A	15	WRX	1,200	649	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Premier Farmland Partners III	0931A	15	WR	3,756	3,236	5,479	3,046	609	5,122	3,693	3,763	3,638
Quad H Ranches	2153A	15	WR	500	500	500	500	500	500	500	0	429
Reclamation District #1004	0890A	15	WR	57,078	47,873	68,605	71,783	61,467	58,154	73,307	56,547	63,849
Reclamation District #108	0876A	15	WR	174,836	93,855	144,557	138,512	124,479	135,408	126,842	110,056	136,384
Reische, Laverne	1150A	15	WRX	483	483	520	462	493	509	520	520	501
Ritchey, Addie	1426A	15	WR	171	171	170	0	0	156	181	0	97
River Garden Farms Co.	0878A	15	WR	18,398	6,307	17,696	24,477	19,192	21,650	13,168	17,716	18,900
Roberts Ditch Irrigation Co.	0935A	15	WRX	2,838	1,096	2,261	2,065	1,579	2,237	2,000	2,221	2,172
Sartain Mutual Water Co.	2401A	15	WR	3,659	348	4,524	4,554	2,440	3,047	4,054	2,914	3,599
Seaver, Charles	3296A	15	WR	131	138	0	63	0	131	66	66	65
Spence, Ruth	4829A	15	WR	254	215	378	308	561	359	373	549	397
Stegeman Station Ranch, Inc.	5211A	15	WRX	0	0	0	0	0	636	274	655	224
Steidlmayer, Francis	0874A	15	WRX	616	0	1,224	608	608	608	1,248	1,248	880
Sutter Mutual Water Co.	0815A	15	WR	236,747	150,333	209,727	204,854	200,171	197,985	189,366	198,790	205,377
Swinford Tract Irrigation Co.	2145A	15	WRX	225	61	177	180	129	156	193	195	179
Tarke, James (Hulbert & Tarke)	1949A	15	WR	1,263	1,227	1,372	1,618	1,191	1,258	416	1,104	1,175
Thompson, Meryle	7206A	15	WRX	180	0	180	180	180	0	180	102	143
Tisdale Irrigation & Drainage Co.	2781A	15	WR	7,507	7,018	8,640	5,434	6,053	9,163	8,612	7,803	7,602
Tuttle, Charles	7296A	15	WR	0	0	0	0	0	0	0	0	0
Wakida, Masaru	1415A	15	WRX	325	325	325	246	0	287	325	325	262

Annual CVP Deliveries To Sacramento Valley Contractors, af

Contractor	Contract	DSA	Status	1982	1983	1984	1985	1986	1987	1988	1989	7 Year Average
Wells, Joyce	2896A	15	WRX	1,188	790	991	1,060	1,082	1,209	967	1,022	1,074
Westfall, Ralph	3591A	15	WRX	148	148	148	148	148	148	148	148	148
Young, Russell	2552A	15	WRX	10	10	10	10	10	0	0	10	7
Total DSA 15				**617,828**	**393,231**	**571,589**	**569,373**	**521,302**	**545,111**	**526,911**	**503,893**	**550,858**
Anderson Cottonwood I.D.	3346A	58	WR	146,035	135,919	152,872	151,435	139,539	158,825	144,943	121,033	144,955
Bella Vista Water District	0851A	58	WS	6,065	5,840	6,775	7,896	14,555	14,342	13,754	9,289	10,382
City of Redding	2871A	58	WR	7,712	6,383	9,831	11,465	9,616	13,337	12,144	10,942	10,721
City of Redding (Buckeye)	5272A	58	WS	1,423	1,429	1,609	1,321	1,901	2,245	2,167	2,017	1,812
City of Shasta Lake	2X	58	WS	0	0	0	0	0	0	0	0	0
Clear Creek CSD	0489A	58	WS	6,065	5,840	6,775	7,896	7,850	9,637	8,289	9,409	7,989
Daniel, Harry	4348A	58	WR	11	15	15	20	0	0	0	0	7
Diamond Lands, Corp.	8106A	58	WRX	425	425	425	425	425	425	425	425	425
Driscoll Strawberries, Inc.	4736A	58	WRX	820	820	820	820	820	820	820	820	820
Gjermann, Hal	4010A	58	WRX	12	12	12	12	12	12	12	12	12
High-Low Nursery	W0006	58	WRX	113	113	156	170	0	0	113	125	97
J.B. Unlimited, Inc.	2519A	58	WRX	0	0	0	408	0	0	0	0	58
Keswick CSD (CSA #25)	1307A	58	WS	55	62	74	91	140	156	129	114	108
Lake Calif. Property Owners Assoc.	4961A	58	WR	790	790	790	790	790	790	790	790	790
Leviathan, Inc.	7308A	58	WRX	0	700	700	700	700	700	700	700	600
Micke, Daniel	7995A	58	WRX	100	103	103	103	103	0	0	0	58
Mountain Gate CSD	6998A	58	WS	286	350	350	350	350	350	350	350	341
Riverview Golf & Country Club	8286A	58	WRX	280	280	280	280	280	280	280	280	280
Shasta County Water Agency	3367A	58	WS	125	143	201	277	269	606	620	598	385
Shasta CSD	0862A	58	WS	446	480	542	575	602	688	658	585	585
Shasta Dam Area PUD	4X	58	WS	1,516	1,543	1,601	1,515	1,573	1,840	1,432	1,964	1,634
Total DSA 58				**172,279**	**161,247**	**183,931**	**186,549**	**179,525**	**205,053**	**187,626**	**159,453**	**182,059**
Amen, Henry	1779A	65	WRX	660	188	660	304	0	415	660	660	480
City of West Sacramento	W0187	65	WR	0	0	0	0	0	0	0	3,521	503
Conaway Conservancy	7422A	65	WR	25,031	11,013	26,181	29,168	18,917	37,409	33,236	36,426	29,481
Deseret Farms (LDS Church)	2149A	65	WR	796	538	1,498	1,224	1,931	699	787	777	1,102
Driver, Clare et al.	0939A	65	WRX	176	180	180	180	180	180	180	180	179
Giovannetti, B.E.	0991A	65	WRX	0	520	0	520	434	520	520	520	359
Hershey Land Co.	7972A	65	WR	1,417	706	541	1,067	678	1,536	1,098	1,680	1,145
Kaiser Development Co.	4217A	65	WRX	526	526	0	0	0	0	0	0	75
Knaggs, Layton	2148A	65	WR	96	209	513	623	758	793	76	103	423
Riverby, Ltd.	0934A	65	WRX	500	500	102	365	271	0	452	466	308

Annual CVP Deliveries To Sacramento Valley Contractors, af

Contractor	Contract	DSA	Status	1982	1983	1984	1985	1986	1987	1988	1989	7 Year Average
Russell, Della	8322A	65	WR	430	106	430	278	337	127	198	192	285
Russell, Della	1616A	65	WRX	120	0	120	0	103	103	0	103	78
Wallace Construction, Inc.	4604A	65	WR	675	292	2,207	974	2,208	687	198	1,123	1,153
Williams Co., G.W.	2973A	65	WRX	0	0	0	0	0	0	0	0	0
Wilson Ranch Partnership	4520A	65	WR	330	412	675	624	428	0	0	0	294
Wilson, Neil	0906A	65	WRX	0	0	0	0	0	0	0	0	0
Total DSA 65				**30,757**	**15,190**	**33,107**	**35,327**	**26,245**	**42,469**	**37,405**	**45,751**	**35,866**
Feather Water District	0171A	69	WS	18,629	13,824	21,111	15,396	18,677	21,851	19,408	18,252	19,046
Jaeger, William	W0002	69	WRX	777	366	574	504	504	504	574	574	573
Morehead, Joseph	5789A	69	WRX	0	0	0	0	0	0	0	0	0
Total DSA 69				**19,406**	**14,190**	**21,685**	**15,900**	**19,181**	**22,355**	**19,982**	**18,826**	**19,619**
Chilton, Barbara	2065A	70	WRX	0	0	0	0	0	0	0	0	0
County of Sacramento	2404A	70	WR	750	435	750	750	750	750	714	660	732
ELH Sutter Properties	1364A	70	WRX	127	127	127	317	317	317	381	444	290
Furlan, Antonio	1595A	70	WR	427	159	0	263	189	376	269	0	218
Furlan, Emile	1175A	70	WR	920	660	354	920	920	283	585	778	680
Heidrick Family Trust	1176A	70	WR	0	0	0	0	0	0	0	0	0
Lauppe, Burton	1289A	70	WRX	432	468	468	540	540	360	360	540	463
Leal, Robert	8574A	70	WRX	625	630	0	630	630	630	0	630	449
Leiser, Wayne	4178A	70	WR	0	60	0	0	0	0	68	68	19
MCM Properties	7827A	70	WR	1,035	507	916	318	0	1,008	234	439	564
Natomas Central Mutual Water Co.	0885A	70	WR	105,202	63,573	107,048	90,583	76,938	81,171	84,717	79,974	89,376
Pleasant Grove-Verona MWC	5520A	70	WRX	15,781	9,510	13,230	12,387	12,878	14,056	15,866	15,106	14,186
Richter Brothers	4362A	70	WR	2,384	2,218	2,608	1,903	2,241	2,608	2,575	2,608	2,418
Univ. of CA (Natomas Central MWC)	7941A	70	WR	556	163	486	724	508	410	408	400	499
Verona Farming Co.	W0054	70	WRX	265	300	138	300	277	277	157	14	204
Willey, Edwin	3556A	70	WRX	0	0	0	0	0	0	0	0	0
Total DSA 70				**128,504**	**78,810**	**126,125**	**109,635**	**96,188**	**102,246**	**106,334**	**101,661**	**110,099**
Sacramento River Basin Totals				**2,011,277**	**1,505,618**	**2,132,939**	**2,104,021**	**1,991,272**	**2,082,119**	**2,038,021**	**2,011,583**	**2,053,033**

Sacramento Valley Inbasin Obligations, TAF (without deficiencies)

Sacramento River (USBR)

Priority Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	72.5	70.8	0.0	0.0	0.0	0.0	143.2
4	9.5	7.5	6.9	29.5	59.9	69.0	75.5	73.2	53.8	40.8	23.9	11.6	461.2
5	9.5	7.5	6.9	30.7	61.9	71.0	77.6	74.9	54.9	41.2	23.9	11.6	471.7
6	9.5	7.5	6.9	33.9	66.8	76.1	82.8	79.0	57.6	42.4	23.9	11.6	498.0
7	9.5	7.5	6.9	46.9	87.3	96.9	104.2	96.1	68.7	47.1	23.9	11.6	606.5
8	9.5	7.5	6.9	99.2	169.2	180.4	190.2	164.6	113.2	65.9	23.9	11.6	1,042.1
9	9.5	7.5	6.9	185.3	304.3	318.2	332.0	277.6	186.7	96.9	23.9	11.6	1,760.4

Feather River (DWR)

Priority Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1	0.0	0.0	0.1	0.2	0.5	1.0	0.8	0.6	0.3	0.0	0.0	0.0	3.7
2	0.0	0.0	0.1	0.2	0.5	1.0	0.8	0.6	0.3	0.0	0.0	0.0	3.7
3	0.0	0.0	0.1	0.2	0.5	1.0	0.8	0.6	0.3	0.0	0.0	0.0	3.7
4	0.0	0.0	0.2	0.3	0.5	1.0	0.9	0.6	0.3	0.0	0.0	0.0	4.1
5	0.0	0.0	0.2	0.3	0.5	1.0	0.9	0.6	0.3	0.0	0.0	0.0	4.1
6	0.1	0.0	0.5	0.8	3.4	3.6	3.5	2.9	1.2	0.2	0.2	0.1	16.6
7	0.1	0.0	0.5	0.8	3.4	3.6	3.5	2.9	1.2	0.2	0.2	0.1	16.6
8	0.1	0.0	0.6	1.2	4.7	5.1	5.3	4.0	2.0	0.3	0.3	0.1	23.9
9	1.4	0.0	5.9	36.1	128.9	124.4	137.0	119.9	43.7	29.6	16.5	9.2	652.7

American River (USBR)

Priority Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1	0.7	0.7	0.8	1.2	1.8	2.3	2.8	2.7	2.2	1.6	1.0	0.8	18.7
2	2.9	2.7	3.3	4.7	7.0	8.8	10.6	10.3	8.3	6.3	3.9	3.1	71.9
3	2.9	2.7	3.3	4.7	7.0	8.8	10.6	10.3	8.3	6.3	3.9	3.1	71.9
4	2.9	2.7	3.3	4.7	7.0	8.8	10.6	10.3	8.3	6.3	3.9	3.1	71.9
5	2.9	2.7	3.3	4.7	7.0	8.8	10.6	10.3	8.3	6.3	3.9	3.1	71.9
6	4.0	3.8	4.6	6.7	9.9	12.4	15.0	14.6	11.8	8.9	5.5	4.3	101.5
7	4.0	3.8	4.6	6.7	9.9	12.4	15.0	14.6	11.8	8.9	5.5	4.3	101.5
8	4.0	3.8	4.6	6.7	9.9	12.4	15.0	14.6	11.8	8.9	5.5	4.3	101.5
9	5.7	5.4	6.6	9.5	14.1	17.7	21.4	20.8	16.8	12.7	7.8	6.2	144.7

Total Sacramento Valley Project Inbasin Obligations

Priority Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1	0.7	0.7	1.0	1.5	2.3	3.3	3.6	3.2	2.5	1.6	1.0	0.8	22.4
2	2.9	2.7	3.4	5.0	7.5	9.8	11.5	10.9	8.7	6.3	3.9	3.1	75.6
3	2.9	2.7	3.4	5.0	7.5	9.8	83.9	81.7	8.7	6.3	3.9	3.1	218.8
4	12.3	10.2	10.4	34.5	67.4	78.8	87.1	84.2	62.5	47.1	27.8	14.7	537.1
5	12.3	10.2	10.4	35.8	69.4	80.9	89.2	85.8	63.6	47.6	27.8	14.7	547.7
6	13.6	11.4	12.0	41.4	80.1	92.1	101.3	96.5	70.5	51.5	29.5	16.1	616.0
7	13.6	11.4	12.0	54.4	100.5	112.9	122.7	113.6	81.6	56.2	29.5	16.1	724.5
8	13.6	11.4	12.1	107.0	183.8	198.0	210.5	183.2	127.0	75.0	29.6	16.1	1,167.5
9	16.6	13.0	19.3	231.0	447.2	460.3	490.3	418.3	247.2	139.2	48.2	27.1	2,557.8

Sacramento Valley Inbasin Obligations, TAF (with deficiencies imposed)

Priority Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Sacramento 25% base/50% project +Feather 25% base													
1	0.0	0.0	0.0	0.2	0.5	0.8	0.8	0.6	0.3	0.0	0.0	0.0	3.2
2	0.0	0.0	0.0	0.2	0.5	0.8	0.8	0.6	0.3	0.0	0.0	0.0	3.2
3	0.0	0.0	0.0	0.2	0.5	0.8	60.0	54.2	0.3	0.0	0.0	0.0	116.0
4	4.2	3.7	3.0	25.9	48.3	58.9	62.3	56.2	31.1	23.6	14.2	8.1	339.6
5	4.2	3.7	3.0	27.0	50.2	61.0	64.4	57.8	32.2	23.8	14.2	8.1	349.8
6	4.3	3.7	3.2	30.3	58.0	68.6	71.9	64.0	35.0	24.2	14.3	8.2	385.6
7	4.3	3.7	3.2	43.3	78.4	89.3	88.1	75.2	46.1	26.6	14.3	8.2	480.8
8	4.3	3.7	3.3	94.5	161.6	174.4	168.7	137.4	90.7	37.0	14.4	8.2	898.3
9	5.2	3.7	7.5	211.6	411.8	430.8	441.1	366.1	188.6	97.4	26.8	16.7	2,207.4
Sacramento 0% base/50% project + Feather 0% base													
1	0.0	0.0	0.1	0.2	0.5	1.0	0.8	0.6	0.3	0.0	0.0	0.0	3.7
2	0.0	0.0	0.1	0.2	0.5	1.0	0.8	0.6	0.3	0.0	0.0	0.0	3.7
3	0.0	0.0	0.1	0.2	0.5	1.0	60.5	53.4	0.3	0.0	0.0	0.0	116.1
4	4.2	3.7	3.0	26.5	48.7	59.6	63.2	55.6	31.5	23.6	14.2	8.1	342.0
5	4.2	3.7	3.0	27.7	50.7	61.7	65.3	57.2	32.6	24.0	14.2	8.1	352.3
6	4.3	3.7	3.2	31.1	58.4	69.3	72.9	63.4	35.8	24.3	14.3	8.2	388.9
7	4.3	3.7	3.2	44.1	78.8	90.1	92.4	78.1	46.9	27.3	14.3	8.2	491.5
8	4.3	3.7	3.3	96.6	162.1	175.1	178.3	143.0	92.3	39.9	14.4	8.2	921.4
9	5.6	3.7	8.6	217.7	421.3	432.2	451.8	371.8	207.4	100.3	30.7	17.3	2,268.5
Sacramento 25% base/50% project + Feather 50% base													
1	0.0	0.0	0.0	0.1	0.5	0.5	0.6	0.5	0.2	0.0	0.0	0.0	2.5
2	0.0	0.0	0.0	0.1	0.5	0.5	0.6	0.5	0.2	0.0	0.0	0.0	2.5
3	0.0	0.0	0.0	0.1	0.5	0.5	59.7	54.1	0.2	0.0	0.0	0.0	115.2
4	4.2	3.7	3.0	25.9	48.3	58.7	62.0	56.1	31.1	23.6	14.2	8.1	338.9
5	4.2	3.7	3.0	27.0	50.2	60.7	64.1	57.7	32.1	23.8	14.2	8.1	349.0
6	4.3	3.7	3.1	30.3	57.4	67.9	71.5	63.8	34.8	24.2	14.3	8.2	383.4
7	4.3	3.7	3.1	43.2	77.3	89.1	87.1	74.5	45.7	26.6	14.3	8.2	477.2
8	4.3	3.7	3.2	94.5	161.0	173.8	168.3	137.1	90.4	37.0	14.4	8.2	895.9
9	5.1	3.7	6.0	203.0	386.2	406.6	415.5	341.5	177.9	92.1	25.8	15.7	2,079.1
Sacramento 0% base/0% project + Feather 25% base													
1	0.0	0.0	0.0	0.2	0.5	0.8	0.8	0.6	0.3	0.0	0.0	0.0	3.2
2	0.0	0.0	0.0	0.2	0.5	0.8	0.8	0.6	0.3	0.0	0.0	0.0	3.2
3	0.0	0.0	0.0	0.2	0.5	0.8	73.3	71.3	0.3	0.0	0.0	0.0	146.5
4	9.5	7.5	7.0	29.7	60.5	69.8	76.5	73.8	54.1	40.8	23.9	11.7	464.8
5	9.5	7.5	7.0	31.0	62.4	71.8	78.6	75.5	55.1	41.3	23.9	11.7	475.3
6	9.5	7.5	7.2	34.7	70.2	79.5	86.3	82.0	58.7	42.6	24.0	11.8	513.9
7	9.5	7.5	7.1	47.7	90.7	100.2	107.7	99.0	69.8	47.3	24.0	11.8	622.4
8	9.6	7.5	7.3	100.3	173.9	185.3	195.5	168.7	115.2	66.1	24.2	11.8	1,065.3
9	10.4	7.5	11.5	217.5	433.1	442.4	469.0	397.5	226.4	126.6	36.5	20.3	2,398.6
Sacramento 0% base/50% project + Feather 25% base													
1	0.0	0.0	0.0	0.2	0.5	0.8	0.8	0.6	0.3	0.0	0.0	0.0	3.2
2	0.0	0.0	0.0	0.2	0.5	0.8	0.8	0.6	0.3	0.0	0.0	0.0	3.2
3	0.0	0.0	0.0	0.2	0.5	0.8	60.5	53.4	0.3	0.0	0.0	0.0	115.6
4	4.2	3.7	2.9	26.5	48.7	59.4	63.2	55.6	31.4	23.6	14.2	8.1	341.5
5	4.2	3.7	2.9	27.7	50.7	61.4	65.3	57.2	32.5	24.0	14.2	8.1	351.8
6	4.3	3.7	3.0	31.1	58.4	69.0	72.8	63.4	35.7	24.3	14.3	8.2	388.3
7	4.3	3.7	3.0	44.1	78.8	89.8	92.4	78.1	46.8	27.3	14.3	8.2	490.8
8	4.3	3.7	3.1	96.6	162.1	174.9	178.3	143.0	92.2	39.9	14.4	8.2	920.7
9	5.2	3.7	7.3	213.7	421.3	432.0	451.8	371.8	203.4	100.3	26.8	16.7	2,254.0

Alternative 4 - USBR San Joaquin Inbasin Obligation - Group 8 (IO(F8)) (TAF)

Total Madera Canal Depletions + FKC Inbasin Deliveries

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	8	2	0	1	8	23	69	71	96	101	81	56	516
1923	18	2	3	4	8	54	19	43	68	76	73	23	391
1924	4	2	0	0	5	13	4	3	27	44	16	7	125
1925	4	1	0	0	4	45	17	25	61	61	39	26	284
1926	6	1	0	0	5	43	8	28	63	72	29	7	262
1927	9	2	0	1	6	57	47	50	79	99	80	43	473
1928	10	2	0	0	6	41	24	30	65	63	19	6	266
1929	4	0	0	1	4	24	4	20	43	44	41	5	190
1930	3	0	0	1	4	30	8	12	47	46	28	5	185
1931	3	0	0	1	4	21	4	3	31	47	19	12	145
1932	4	1	0	0	5	43	52	50	84	96	59	43	439
1933	6	1	0	0	5	41	13	21	53	43	52	9	244
1934	5	1	0	0	5	35	4	3	33	57	33	5	180
1935	5	1	0	0	7	54	23	51	86	101	79	23	431
1936	4	0	0	1	5	48	37	71	96	100	69	31	461
1937	7	2	0	0	3	37	43	78	94	102	79	42	487
1938	6	2	1	1	7	9	66	47	92	78	94	56	458
1939	17	4	3	4	7	37	10	9	54	69	45	6	266
1940	8	1	0	0	9	52	54	45	76	88	55	20	411
1941	4	1	1	1	8	34	66	61	91	101	79	58	503
1942	17	3	3	5	9	50	53	75	86	101	81	56	538
1943	15	2	0	0	10	7	63	69	88	92	68	45	458
1944	7	2	0	0	4	53	20	33	58	50	31	32	290
1945	12	3	2	3	5	44	56	48	74	89	81	55	471
1946	23	3	2	5	13	49	34	31	68	80	53	32	393
1947	9	2	0	1	7	44	13	19	53	66	33	7	254
1948	3	0	0	1	5	11	8	40	69	87	21	17	262
1949	5	1	0	0	5	42	25	26	61	63	23	11	262
1950	8	2	0	0	6	52	23	26	58	66	47	16	304
1951	15	6	0	6	14	55	25	39	81	75	20	9	345
1952	7	1	1	3	9	34	66	80	92	92	92	58	535
1953	18	4	3	4	9	36	13	28	56	60	41	16	286
1954	7	2	0	0	6	43	26	28	61	72	49	6	300
1955	5	1	0	0	7	49	7	27	56	62	36	12	264
1956	6	1	3	6	9	48	71	59	90	101	80	58	532
1957	25	4	3	3	6	25	10	20	62	79	68	16	320
1958	7	2	0	1	7	43	60	81	95	103	81	56	536
1959	17	3	3	3	6	48	10	13	55	75	26	7	265
1960	4	1	0	0	3	28	6	11	45	44	34	16	193
1961	3	0	0	0	3	10	4	5	42	56	13	8	144
1962	1	1	0	1	2	51	49	36	73	90	80	40	425
1963	8	2	0	0	4	34	23	50	74	92	79	58	425
1964	20	1	0	1	5	24	8	13	51	79	51	23	277
1965	3	0	0	5	14	54	39	51	78	92	68	56	461
1966	22	3	2	6	12	53	15	13	54	81	32	7	300
1967	4	1	1	5	9	52	34	74	90	78	97	65	510
1968	18	5	3	4	7	33	8	11	48	71	44	13	266
1969	3	0	0	2	2	11	0	69	94	79	95	70	425
1970	23	2	0	0	9	54	27	34	55	70	58	23	355
1971	3	0	1	4	9	52	22	30	64	56	39	35	315
1972	6	1	0	1	7	45	7	13	42	72	30	7	232
1973	7	2	0	1	7	49	64	54	81	98	79	30	471
1974	6	2	0	5	14	52	36	73	90	101	79	42	501
1975	6	1	0	0	5	51	43	59	85	95	67	31	444
1976	8	2	0	0	4	15	6	8	43	53	21	8	168
1977	4	0	0	0	1	32	0	4	7	7	9	6	70
1978	0	0	0	0	9	20	29	75	94	81	76	58	442
1979	27	6	3	6	13	40	56	68	83	94	67	22	484
1980	7	2	0	0	6	33	79	79	96	91	86	65	544
1981	16	3	3	3	6	22	18	24	45	64	46	7	258
1982	6	1	1	4	10	29	22	74	97	99	87	57	487
1983	20	4	1	4	0	8	0	0	86	101	65	48	339
1984	12	3	1	2	11	50	39	39	68	84	71	34	414
1985	12	2	0	0	8	37	18	23	56	65	30	19	271
1986	8	2	0	2	3	26	54	81	95	103	85	46	505
1987	12	2	3	3	4	7	7	3	43	71	47	5	207
1988	3	0	0	1	6	15	6	11	49	62	22	6	181
1989	3	0	0	0	4	30	10	8	45	70	42	5	218
1990	4	1	0	0	3	17	6	4	39	55	36	5	170
1991	3	0	0	0	2	37	12	22	44	40	39	6	206
1992	3	0	0	0	2	22	6	4	19	20	8	4	89
1993	5	0	0	0	11	41	76	61	92	101	79	58	523
1994	23	3	3	3	5	7	7	9	51	63	36	10	220
AVG:	9	2	1	2	6	36	27	36	66	75	53	27	341
MIN:	0	0	0	0	0	7	0	0	7	7	8	4	70
MAX:	27	6	3	6	14	57	79	81	97	103	97	70	544

Alternative 4 - USBR San Joaquin Inbasin Obligation - Group 9 (IO(F9)) (TAF)

Modified Exchange Contractor Deliveries (Excm) X Basin Efficiency X Nonrecoverable loss factor (BE = 0.807; NRL = 10%)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	30	11	2	5	30	70	87	96	115	124	120	56	746
1923	31	11	3	5	35	72	90	100	119	129	92	59	746
1924	33	12	3	5	27	16	45	52	46	49	46	46	380
1925	25	8	3	4	27	75	95	105	126	119	99	61	746
1926	33	12	3	5	27	70	88	99	96	83	61	58	633
1927	28	10	2	4	34	70	88	97	116	125	116	57	746
1928	33	12	3	5	36	75	94	104	100	61	59	55	636
1929	33	12	3	5	27	47	74	82	98	73	49	48	549
1930	26	10	3	4	29	66	93	91	90	69	51	61	591
1931	33	12	3	5	27	30	43	55	53	55	53	46	415
1932	25	8	3	4	29	71	88	97	118	126	121	57	746
1933	31	11	3	4	27	56	70	78	94	97	79	29	579
1934	25	8	3	4	27	66	71	75	65	75	68	48	533
1935	28	10	3	4	28	65	93	105	126	135	88	61	746
1936	31	11	3	6	31	71	89	98	117	126	106	58	746
1937	31	11	3	5	25	68	89	99	119	129	109	58	746
1938	30	11	2	5	33	69	86	95	114	123	119	56	746
1939	33	12	3	5	36	75	94	104	91	86	83	61	683
1940	33	12	3	5	29	75	94	106	126	114	83	61	740
1941	30	11	2	5	33	69	86	95	114	123	119	56	746
1942	30	11	2	5	33	69	86	95	114	123	119	56	746
1943	30	11	2	5	33	69	86	95	114	123	119	56	746
1944	32	11	3	5	28	73	91	101	121	123	98	59	746
1945	30	11	2	5	27	70	87	97	116	125	120	57	746
1946	32	11	3	5	35	73	91	101	120	113	103	59	746
1947	33	12	3	5	30	73	94	106	88	76	63	60	643
1948	33	12	3	5	27	58	86	110	131	98	78	64	704
1949	34	12	3	6	29	72	94	106	126	87	76	61	706
1950	33	12	3	5	32	75	94	105	124	95	95	61	734
1951	33	12	3	5	36	75	94	104	124	105	92	61	745
1952	30	11	2	5	33	69	86	95	114	123	119	56	746
1953	32	11	3	5	36	74	91	96	122	118	97	60	746
1954	33	12	3	5	36	75	94	104	124	90	74	61	711
1955	33	12	3	5	36	75	91	104	124	95	75	61	714
1956	30	11	2	5	33	69	86	95	114	123	119	56	746
1957	33	11	3	5	32	75	94	104	124	110	95	61	746
1958	30	11	2	5	33	69	87	96	114	123	119	56	746
1959	33	12	3	5	36	75	94	104	109	50	31	48	600
1960	26	12	3	5	27	65	86	87	83	81	87	61	621
1961	24	12	3	5	28	38	82	87	76	28	36	36	455
1962	11	11	3	5	27	72	90	101	121	129	117	59	746
1963	30	11	2	5	33	69	86	95	114	123	119	56	746
1964	33	12	3	5	36	60	82	95	119	88	99	61	692
1965	17	11	2	5	34	71	88	97	116	126	121	57	746
1966	33	12	3	5	36	75	94	104	110	82	63	42	659
1967	30	11	2	5	33	69	86	95	114	123	119	56	746
1968	33	12	3	5	36	70	88	76	85	91	87	61	648
1969	17	11	2	5	34	71	88	97	116	125	121	57	746
1970	32	11	3	5	35	73	91	101	121	119	94	60	746
1971	31	11	3	5	34	71	89	98	117	121	109	58	746
1972	33	12	3	5	36	75	83	85	107	77	75	41	631
1973	31	11	3	5	35	72	90	99	118	128	97	58	746
1974	30	11	2	5	33	69	86	95	114	123	119	56	746
1975	32	11	3	5	31	73	91	102	121	119	98	59	746
1976	33	12	3	5	28	58	51	32	51	43	60	47	423
1977	20	8	3	4	10	3	4	2	48	51	43	23	217
1978	0	4	1	3	35	73	91	102	121	131	126	59	746
1979	31	11	3	5	29	72	90	100	120	114	111	59	746
1980	30	11	2	5	31	69	87	96	114	124	119	56	746
1981	33	12	3	5	36	75	94	104	93	82	79	61	677
1982	30	11	2	5	33	69	86	95	114	123	119	56	746
1983	30	11	2	5	33	69	86	95	114	123	119	56	746
1984	30	11	2	5	34	70	87	96	115	124	114	57	746
1985	33	12	3	5	36	75	94	104	87	61	65	61	636
1986	31	11	3	5	29	71	89	99	117	127	106	58	746
1987	33	12	3	5	29	68	95	106	80	83	91	42	647
1988	28	12	3	5	30	60	75	83	79	82	54	42	553
1989	24	10	3	4	27	56	84	94	93	86	91	41	613
1990	29	11	3	4	29	66	82	82	46	99	57	38	546
1991	17	10	3	4	13	23	75	83	99	108	74	46	556
1992	20	10	3	4	22	46	47	43	20	40	33	23	312
1993	27	1	3	4	35	73	91	100	120	129	104	59	746
1994	33	12	3	5	32	67	83	92	92	85	83	54	642
AVG:	29	11	3	5	31	66	85	93	105	102	91	54	673
MIN:	0	1	1	3	10	3	4	2	20	28	31	23	217
MAX:	34	12	3	6	36	75	95	110	131	135	126	64	746

Deficiency Periods (percent of supply)

Year	Period	Sacramento Base	Sacramento Project	Feather Base
1924	Jan-Feb	0	0	0
	Mar-Dec	25	50	25
1925	Jan-Feb	25	50	25
	Mar-Dec	0	0	0
1929	Jan-Feb	0	0	0
	Mar-Dec	25	50	25
1930	Jan-Feb	25	50	25
	Mar-Dec	0	50	0
1931	Jan-Feb	0	50	0
	Mar-Dec	25	50	25
1932	Jan-Feb	25	50	25
	Mar-Dec	0	50	0
1933	Jan-Feb	0	50	0
	Mar-Dec	25	50	25
1934	Jan-Feb	25	50	25
	Mar-Dec	25	50	50
1935	Jan-Feb	25	50	50
	Mar-Dec	0	0	0
1939	Jan-Feb	0	0	0
	Mar-Dec	0	0	25
1940	Jan-Feb	0	0	25
	Mar-Dec	0	0	0
1976	Jan-Feb	0	0	0
	Mar-Dec	25	50	25
1977	Jan-Feb	25	50	25
	Mar-Dec	25	50	50
1978	Jan-Feb	25	50	50
	Mar-Dec	0	0	0
1987	Jan-Feb	0	0	0
	Mar-Dec	0	50	0
1988	Jan-Feb	0	50	0
	Mar-Dec	0	50	25
1989	Jan-Feb	0	50	25
	Mar-Dec	0	50	0
1990	Jan-Feb	0	50	0
	Mar-Dec	0	50	0
1991	Jan-Feb	0	50	0
	Mar-Dec	25	50	25
1992	Jan-Feb	25	50	25
	Mar-Dec	25	50	25
1993	Jan-Feb	25	50	25
	Mar-Dec	0	0	0
1994	Jan-Feb	0	0	0
	Mar-Dec	25	50	25

Alternative 3 - Priority Group 1 Diversion to Storage (TAF)

McClure+Don Pedro+New Melones+Hensley+Eastman+New Bullards+Spaulding+Hell Hole+French Mdws+Camp Far West
Increased storage shown as a positive value; releases from storage set to zero.
Corrected for months in which diversion to storage has been curtailed to meet Vernalis objective.

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	25	156	167	635	455	272	881	824	0	0	0	3415
1923	5	46	158	202	230	137	299	452	171	0	0	0	1700
1924	0	15	37	40	62	17	65	13	0	0	0	0	249
1925	5	51	113	96	759	373	459	490	249	0	0	0	2595
1926	0	9	32	34	312	101	364	68	0	0	0	0	920
1927	2	84	118	164	670	307	320	327	254	0	0	0	2246
1928	7	78	83	78	156	623	133	280	4	0	0	0	1442
1929	0	19	35	29	93	83	93	214	78	10	15	0	669
1930	0	13	183	85	131	251	200	140	168	14	17	0	1202
1931	5	31	21	48	52	80	77	26	0	0	0	0	340
1932	1	25	322	274	629	325	244	611	395	0	0	0	2826
1933	4	15	37	49	83	108	107	170	294	0	0	0	867
1934	2	21	103	112	178	282	73	14	0	0	0	0	785
1935	3	48	81	281	277	275	814	504	486	0	0	0	2769
1936	4	24	38	206	755	350	513	483	214	0	0	0	2587
1937	2	19	46	76	396	261	319	622	304	0	0	0	2045
1938	10	38	427	112	298	471	445	295	524	5	2	0	2627
1939	2	6	10	31	23	195	285	37	0	0	0	0	589
1940	0	4	30	610	708	495	339	372	34	0	0	0	2592
1941	1	29	165	304	276	245	235	537	372	0	0	0	2164
1942	0	21	171	206	96	151	334	336	543	3	0	0	1861
1943	0	36	29	190	23	312	341	395	123	0	0	0	1449
1944	0	16	24	32	139	217	83	351	123	0	0	0	985
1945	2	121	127	125	585	187	283	472	429	0	0	0	2331
1946	4	67	349	88	25	189	262	386	24	0	0	0	1394
1947	0	49	73	62	151	210	122	108	10	0	0	0	785
1948	10	10	27	96	25	44	270	421	429	1	0	0	1333
1949	0	12	46	34	113	255	239	312	27	0	0	0	1038
1950	0	5	28	184	362	248	325	443	190	0	0	0	1785
1951	6	1145	1078	137	65	138	36	53	3	0	0	0	2661
1952	4	42	262	522	472	262	427	518	323	0	0	0	2832
1953	0	8	37	258	7	60	229	178	99	1	0	0	877
1954	3	16	45	77	145	370	369	429	21	0	0	0	1475
1955	0	12	70	167	103	13	59	288	114	0	0	0	826
1956	0	24	1618	459	152	163	106	561	361	0	0	0	3444
1957	9	23	30	46	178	191	122	269	274	0	0	0	1142
1958	3	18	65	178	556	276	444	666	373	0	0	0	2579
1959	0	23	6	73	106	121	122	53	7	0	0	0	511
1960	0	0	23	46	375	363	188	166	50	0	0	0	1211
1961	0	36	50	35	78	88	106	123	15	0	0	0	531
1962	0	20	48	47	714	316	497	273	380	0	0	0	2295
1963	167	22	38	159	680	150	365	459	371	0	0	0	2411
1964	4	94	53	100	69	14	96	175	33	0	0	0	638
1965	0	72	1424	270	135	121	306	209	222	0	0	0	2759
1966	0	75	80	69	61	145	234	136	0	0	0	0	800
1967	0	80	380	430	279	419	298	610	620	45	1	0	3162
1968	9	26	29	32	249	85	101	94	8	0	0	0	633
1969	3	69	149	1213	213	245	388	645	205	0	1	0	3131
1970	8	7	111	607	14	165	24	111	18	0	0	0	1065
1971	0	87	229	281	194	204	178	241	114	0	0	0	1528
1972	3	18	155	142	177	289	131	156	22	0	0	0	1093
1973	1	46	148	436	437	231	214	513	264	0	0	0	2290
1974	11	349	220	398	101	431	150	392	254	0	0	0	2306
1975	0	27	42	50	204	293	140	445	444	0	0	0	1645
1976	5	46	37	21	48	80	49	31	0	0	0	0	317
1977	18	14	13	10	5	4	17	21	0	0	0	0	102
1978	0	5	206	722	576	860	528	611	598	83	0	0	4189
1979	0	35	44	213	160	320	219	694	132	0	0	0	1817
1980	12	42	50	885	199	167	190	506	324	0	0	0	2375
1981	0	3	15	38	69	132	134	101	0	0	0	0	492
1982	6	467	719	301	478	165	425	347	217	0	0	0	3125
1983	31	19	75	0	114	476	128	611	422	0	0	2	1878
1984	9	248	290	10	17	146	8	131	0	0	0	0	859
1985	9	102	134	110	143	177	202	101	6	0	0	0	984
1986	0	45	140	283	1503	245	188	475	163	0	0	0	3042
1987	0	25	28	19	83	174	153	20	0	0	0	0	502
1988	0	9	90	127	95	105	68	29	0	0	0	0	523
1989	0	77	36	38	96	830	275	188	91	0	0	0	1631
1990	32	29	38	69	91	199	147	58	39	0	0	0	702
1991	0	8	25	1	5	408	146	268	166	0	0	0	1027
1992	7	16	37	45	264	189	255	61	0	1	0	0	875
1993	15	26	57	529	284	329	0	137	369	0	0	0	1746
1994	1	7	33	9	46	82	21	30	1	0	0	0	230
AVG:	6	62	158	187	250	240	225	301	183	2	0	0	1614
MIN:	0	0	6	0	5	4	0	13	0	0	0	0	102
MAX:	167	1145	1618	1213	1503	860	814	881	824	83	17	2	4189

Alternative 4 - Priority Group 1 Diversion to Storage (TAF)

McClure+Don Pedro+New Melones+Hensley+Eastman+New Bullards+Spaulding+Hell Hole+French Mdws+Camp Far West
Increased storage shown as a positive value; releases from storage set to zero.
Corrected for months in which diversion to storage has been curtailed to meet Vernalis objective.

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	25	156	167	635	455	328	1089	824	0	0	0	3679
1923	5	46	158	202	230	137	375	452	171	0	0	0	1776
1924	0	15	37	40	62	17	65	13	0	0	0	0	249
1925	5	51	113	96	759	373	483	490	249	0	0	0	2619
1926	0	9	32	34	312	101	484	68	0	0	0	0	1040
1927	5	84	118	164	670	307	398	466	329	0	0	0	2541
1928	7	78	83	78	156	623	156	280	4	0	0	0	1465
1929	0	19	35	29	93	83	93	214	78	10	15	0	669
1930	0	13	183	85	131	251	223	183	168	14	17	0	1268
1931	5	31	21	48	52	80	77	26	0	0	0	0	340
1932	1	25	322	274	629	325	244	786	516	0	0	0	3122
1933	4	15	37	49	83	108	131	218	294	0	0	0	939
1934	2	21	103	112	178	282	108	14	0	0	0	0	820
1935	3	48	81	281	277	275	814	714	486	0	0	0	2979
1936	4	24	38	206	755	350	513	668	214	0	0	0	2772
1937	2	19	46	76	396	261	319	830	304	0	0	0	2253
1938	10	38	427	112	298	471	445	603	524	5	2	0	2935
1939	2	6	10	31	23	195	285	63	0	0	0	0	615
1940	0	4	30	610	708	495	339	554	34	0	0	0	2774
1941	1	29	165	304	276	245	235	706	372	0	0	0	2333
1942	0	21	171	206	96	151	334	489	543	3	0	0	2014
1943	0	36	29	190	23	312	341	475	159	0	0	0	1565
1944	0	16	24	32	139	217	83	351	123	0	0	0	985
1945	2	121	127	125	585	187	283	611	429	0	0	0	2470
1946	4	67	349	88	25	189	380	466	24	0	0	0	1592
1947	0	49	73	62	151	210	122	108	10	0	0	0	785
1948	10	10	27	96	25	44	301	421	429	1	0	0	1364
1949	0	12	46	34	113	255	303	446	27	0	0	0	1236
1950	0	5	28	184	362	248	411	443	190	0	0	0	1871
1951	6	1145	1078	137	65	138	36	53	3	0	0	0	2661
1952	4	42	262	522	472	262	427	856	323	0	0	0	3170
1953	0	8	37	258	7	60	252	178	99	1	0	0	900
1954	3	16	45	77	187	370	398	530	21	0	0	0	1647
1955	0	12	70	167	103	13	61	398	114	0	0	0	938
1956	0	24	1618	459	152	163	129	642	361	0	0	0	3548
1957	9	23	30	46	178	191	122	329	274	0	0	0	1202
1958	3	18	65	178	556	276	444	976	373	0	0	0	2889
1959	0	23	6	73	106	121	170	68	7	0	0	0	574
1960	0	0	23	46	375	363	261	238	50	0	0	0	1356
1961	0	36	50	35	78	88	134	140	15	0	0	0	576
1962	0	20	48	47	714	316	497	424	401	0	0	0	2467
1963	168	22	38	159	680	150	365	699	371	0	0	0	2652
1964	4	94	53	100	69	14	109	175	33	0	0	0	651
1965	0	72	1424	270	135	121	397	349	310	0	0	0	3078
1966	0	75	80	69	61	145	250	198	0	0	0	0	878
1967	0	80	380	430	279	419	298	838	620	45	1	0	3390
1968	9	26	29	32	249	85	101	94	8	0	0	0	633
1969	3	69	149	1213	213	245	388	908	205	0	1	0	3394
1970	8	7	111	607	14	165	24	111	18	0	0	0	1065
1971	0	87	229	281	194	204	178	241	114	0	0	0	1528
1972	3	18	155	142	177	289	131	156	22	0	0	0	1093
1973	2	46	148	436	437	231	214	708	264	0	0	0	2486
1974	11	349	220	398	101	431	150	548	325	0	0	0	2533
1975	0	27	42	50	204	293	140	696	444	0	0	0	1896
1976	5	46	37	21	48	80	52	31	0	0	0	0	320
1977	18	14	13	10	5	4	17	21	0	0	0	0	102
1978	0	5	206	722	576	860	528	783	598	83	0	0	4361
1979	0	35	44	213	160	320	226	864	161	0	0	0	2023
1980	12	42	50	885	199	167	190	587	324	0	0	0	2456
1981	0	3	15	38	69	132	186	101	0	0	0	0	544
1982	6	467	719	301	478	165	425	516	217	0	0	0	3294
1983	31	19	75	0	114	476	128	780	422	0	0	2	2047
1984	9	248	290	10	17	146	8	186	0	0	0	0	914
1985	11	102	134	110	143	177	279	180	6	0	0	0	1142
1986	14	45	140	283	1503	245	188	536	163	0	0	0	3117
1987	0	25	28	19	83	174	153	36	0	0	0	0	518
1988	0	9	90	127	95	105	99	51	0	0	0	0	576
1989	0	77	36	38	96	830	376	241	91	0	0	0	1785
1990	32	29	38	69	91	199	199	61	39	0	0	0	757
1991	0	8	25	1	5	408	146	358	166	0	0	0	1117
1992	7	16	37	45	264	189	255	61	0	1	0	0	875
1993	15	26	57	529	759	651	65	273	369	0	0	0	2744
1994	1	7	33	9	46	82	24	66	1	0	0	0	269
AVG:	6	62	158	187	258	244	245	391	189	2	0	0	1743
MIN:	0	0	6	0	5	4	8	13	0	0	0	0	102
MAX:	168	1145	1618	1213	1503	860	814	1089	824	83	17	2	4361

Alternative 3 and 4 - Priority Group 2 Diversion to Storage (TAF)

Lake Valley+Loon Lake+Ice House
Increased storage shown as a positive value; releases from storage set to zero.

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	0	0	0	0	8	13	45	19	0	0	0	85
1923	0	0	0	0	0	10	18	37	21	0	0	0	86
1924	0	0	0	0	0	3	18	17	8	0	0	0	46
1925	0	0	0	4	10	10	27	40	12	0	0	0	103
1926	0	0	0	0	0	10	22	40	6	0	0	0	78
1927	0	0	0	0	0	9	24	34	16	0	0	0	83
1928	0	0	0	0	0	11	15	36	18	0	0	0	80
1929	0	0	0	0	0	5	16	43	18	0	0	0	82
1930	0	0	1	0	0	8	21	33	18	0	0	0	81
1931	0	0	0	0	0	7	22	10	7	0	0	0	46
1932	0	0	0	1	3	13	27	38	21	0	0	0	103
1933	0	0	0	0	0	5	19	34	25	0	0	0	83
1934	0	0	0	0	0	18	16	26	12	0	0	0	72
1935	0	0	0	0	7	2	27	39	12	0	0	0	87
1936	0	0	0	0	2	16	17	39	7	0	0	0	81
1937	0	0	0	0	0	5	24	47	9	0	0	0	85
1938	0	0	5	0	0	10	20	42	2	0	0	0	79
1939	0	0	0	0	0	9	24	23	8	0	0	0	64
1940	0	0	0	1	0	13	17	35	4	0	0	0	70
1941	0	0	0	0	0	13	18	40	2	0	0	0	73
1942	0	0	0	1	0	8	22	24	14	0	0	0	69
1943	0	0	0	0	0	12	24	30	2	0	0	0	68
1944	0	0	0	0	0	5	14	38	14	0	0	0	71
1945	0	0	1	2	8	9	20	37	13	0	0	0	90
1946	0	0	0	0	1	11	21	37	3	0	0	0	73
1947	0	0	0	0	1	13	20	25	13	0	0	0	72
1948	0	0	0	0	0	6	12	39	16	0	0	0	73
1949	0	0	0	0	0	8	24	39	10	0	0	0	81
1950	0	0	0	0	0	9	24	37	11	0	0	0	81
1951	0	25	9	3	2	6	15	27	16	0	0	0	103
1952	0	0	6	2	0	3	20	43	8	0	0	0	82
1953	0	0	0	1	0	5	20	30	21	0	0	0	77
1954	0	0	0	0	9	19	17	24	12	0	0	0	81
1955	0	0	0	0	0	5	15	40	22	0	0	0	82
1956	0	0	20	0	0	4	16	36	12	0	0	0	88
1957	0	0	0	0	0	8	21	36	17	0	0	0	82
1958	0	0	0	0	1	4	20	51	5	0	0	0	81
1959	0	0	0	0	0	8	24	25	12	0	0	0	69
1960	0	0	0	0	0	14	16	30	22	0	0	0	82
1961	0	0	0	10	0	4	20	25	20	0	0	0	79
1962	0	0	0	0	0	4	30	25	22	0	0	0	81
1963	1	0	0	2	15	4	16	33	22	0	0	0	93
1964	0	0	0	10	0	3	20	26	20	0	0	0	79
1965	0	0	36	1	2	5	15	28	14	0	0	0	101
1966	0	0	0	0	0	12	19	28	13	0	0	0	72
1967	0	0	0	0	1	12	6	38	16	0	0	0	73
1968	0	10	7	0	6	4	14	22	15	0	0	0	78
1969	0	0	16	0	0	6	20	36	10	0	0	0	88
1970	0	0	5	22	0	0	10	33	15	0	0	0	85
1971	0	5	3	0	0	5	13	32	20	0	0	0	78
1972	0	0	0	0	0	15	20	34	16	0	0	0	85
1973	0	0	1	1	0	7	23	41	11	0	0	0	84
1974	0	10	0	6	0	5	15	44	8	0	0	0	88
1975	0	0	0	0	0	4	8	43	26	0	0	0	81
1976	0	0	0	0	0	7	18	16	7	0	0	0	48
1977	0	0	0	0	1	3	12	21	16	0	0	0	53
1978	0	0	3	9	4	14	22	36	13	0	0	0	101
1979	0	1	5	0	6	7	21	43	0	0	0	0	83
1980	0	0	0	26	1	1	14	25	10	0	0	0	77
1981	0	0	0	0	0	9	24	25	10	0	0	0	68
1982	0	23	8	0	12	2	16	19	0	0	0	0	80
1983	1	1	1	0	1	14	15	32	9	0	0	0	74
1984	0	23	1	0	0	2	15	31	0	0	0	0	72
1985	0	0	0	0	0	6	25	19	12	0	0	0	62
1986	0	0	0	6	17	12	10	21	2	0	0	0	68
1987	0	0	0	0	0	8	18	21	5	0	0	0	52
1988	0	0	0	0	1	10	20	18	8	0	0	0	57
1989	0	0	0	0	0	16	28	18	12	0	0	0	74
1990	3	0	0	0	0	10	23	21	13	0	0	0	70
1991	0	0	0	0	0	12	9	21	7	0	0	0	49
1992	0	0	0	0	1	9	33	17	10	3	0	0	73
AVG:	0	1	2	2	2	8	19	32	12	0	0	0	77
MIN:	0	0	0	0	0	0	6	10	0	0	0	0	46
MAX:	3	25	36	26	17	19	33	51	26	3	0	0	103

STUDY: 1995C06F-SWRCB-469 DWRSIM: 8.18, 27 Nov 96

Alternative 3 and 4 - Priority Group 4 Diversion to Storage (TAF)

Stumpy Meadows (Lake Edson)
Increased storage shown as a positive value; releases from storage set to zero.

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	0	0	0	0	0	3	3	0	0	0	0	6
1923	0	0	2	2	1	2	0	0	0	0	0	0	7
1924	0	0	0	0	1	0	0	0	0	0	0	0	1
1925	0	0	0	0	5	4	5	1	0	0	0	0	15
1926	0	0	0	0	1	3	3	0	0	0	0	0	7
1927	0	0	0	1	5	5	0	0	0	0	0	0	11
1928	0	0	0	0	0	7	0	0	0	0	0	0	7
1929	0	0	0	0	0	1	2	1	0	0	0	0	4
1930	0	0	0	0	1	4	4	0	0	0	0	0	9
1931	0	0	0	0	0	1	0	0	0	0	0	0	1
1932	0	0	0	0	1	5	6	3	0	0	0	0	15
1933	0	0	0	0	0	0	3	3	0	0	0	0	6
1934	0	0	0	1	2	1	0	0	0	0	0	0	4
1935	0	0	0	0	0	1	10	3	0	0	0	0	14
1936	0	0	0	1	4	6	1	0	0	0	0	0	12
1937	0	0	0	0	1	3	3	0	0	0	0	0	7
1938	0	0	2	0	1	4	0	0	0	0	0	0	7
1939	0	0	0	0	0	2	2	0	0	0	0	0	4
1940	0	0	0	4	7	2	0	0	0	0	0	0	13
1941	0	0	1	1	4	2	0	0	0	0	0	0	8
1942	0	0	1	5	2	0	0	0	0	0	0	0	8
1943	0	1	3	2	0	0	0	0	0	0	0	0	6
1944	0	0	0	0	0	1	3	3	0	0	0	0	7
1945	0	1	1	1	6	0	0	0	0	0	0	0	9
1946	0	0	4	1	0	0	0	0	0	0	0	0	5
1947	0	1	1	0	2	3	0	0	0	0	0	0	7
1948	0	0	0	0	0	0	7	2	0	0	0	0	9
1949	0	0	0	0	0	0	8	0	0	0	0	0	8
1950	0	0	0	1	3	4	0	0	0	0	0	0	8
1951	0	6	0	0	0	0	0	0	0	0	0	0	6
1952	0	0	1	0	2	2	1	0	0	0	0	0	6
1953	0	0	0	1	1	2	0	0	0	0	0	0	4
1954	0	0	0	0	1	5	0	0	0	0	0	0	6
1955	0	0	0	0	1	2	3	2	0	0	0	0	8
1956	0	0	8	0	0	0	0	0	0	0	0	0	8
1957	0	0	0	0	2	5	0	0	0	0	0	0	7
1958	0	0	0	0	5	3	0	0	0	0	0	0	8
1959	0	0	0	1	2	3	1	0	0	0	0	0	7
1960	0	0	0	0	2	6	2	0	0	0	0	0	10
1961	0	0	0	0	0	1	0	0	0	0	0	0	1
1962	0	0	0	0	3	1	4	1	0	0	0	0	9
1963	1	0	0	3	5	1	2	0	0	0	0	0	12
1964	0	1	0	0	0	1	1	1	0	0	0	0	4
1965	0	0	6	0	0	0	0	0	0	0	0	0	6
1966	0	0	0	0	0	2	2	0	0	0	0	0	4
1967	0	0	2	2	2	1	0	0	0	0	0	0	7
1968	0	0	0	1	3	0	0	0	0	0	0	0	4
1969	0	0	0	6	0	0	0	0	0	0	0	0	6
1970	0	0	3	2	0	0	0	0	0	0	0	0	5
1971	0	0	1	1	1	3	0	0	0	0	0	0	6
1972	0	0	0	1	1	3	0	0	0	0	0	0	5
1973	0	0	1	4	2	0	0	0	0	0	0	0	7
1974	0	2	3	2	0	0	0	0	0	0	0	0	7
1975	0	0	0	0	1	3	0	0	0	0	0	0	4
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	1	6	2	5	4	1	0	0	0	0	19
1979	0	0	0	1	1	2	2	0	0	0	0	0	6
1980	0	0	0	6	0	0	0	0	0	0	0	0	6
1981	0	0	0	0	1	2	1	0	0	0	0	0	4
1982	0	2	3	3	1	0	0	0	0	0	0	0	9
1983	0	2	2	0	0	0	0	0	0	0	0	0	4
1984	0	3	0	0	0	0	0	0	0	0	0	0	3
1985	0	1	1	0	0	1	2	0	0	0	0	0	5
1986	0	0	1	2	3	0	0	0	0	0	0	0	6
1987	0	0	0	0	1	2	0	0	0	0	0	0	3
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	7	3	0	0	0	0	0	0	10
1990	0	0	0	0	0	2	1	0	0	0	0	0	3
1991	0	0	0	0	0	2	2	0	0	0	0	0	4
1992	0	0	0	0	1	1	0	0	0	0	0	0	2
AVG	0	0	1	1	1	2	1	0	0	0	0	0	7
MIN	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX	1	6	8	6	7	7	10	3	0	0	0	0	19

Alternative 3 and 4 - Priority Group 5 Diversion to Storage (TAF)

Fordyce Lake
Increased storage shown as a positive value; releases from storage set to zero.

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	0	0	0	0	0	1	36	0	0	0	0	37
1923	0	0	0	0	0	0	10	30	0	0	0	0	40
1924	0	0	0	0	0	0	5	1	0	0	0	0	6
1925	0	0	1	0	5	0	14	27	0	0	0	0	47
1926	0	0	0	0	3	0	16	16	0	0	0	0	35
1927	0	5	0	0	5	2	26	6	0	0	0	0	44
1928	0	0	0	0	0	9	25	4	0	0	0	0	38
1929	0	0	0	0	0	0	2	10	2	0	0	0	14
1930	0	0	6	0	0	2	11	21	0	0	0	0	40
1931	0	0	0	0	0	2	5	3	0	0	0	0	10
1932	0	0	2	0	1	2	2	25	16	0	0	0	48
1933	0	0	0	0	0	0	2	6	16	0	0	0	24
1934	0	0	0	0	0	4	6	1	0	0	0	0	11
1935	0	1	0	1	0	1	5	30	9	0	0	0	47
1936	0	0	0	1	1	0	12	26	0	0	0	0	40
1937	0	0	0	0	0	0	1	28	11	0	0	0	40
1938	0	0	4	0	0	5	13	17	0	0	0	0	39
1939	0	0	0	0	0	0	7	3	0	0	0	0	10
1940	0	0	0	6	3	12	25	1	0	0	0	0	47
1941	0	0	0	0	1	1	8	27	0	0	0	0	37
1942	0	0	1	0	1	0	13	18	0	0	0	0	33
1943	0	0	0	1	0	10	22	0	0	0	0	0	33
1944	0	0	0	0	0	0	1	19	9	0	0	0	29
1945	0	0	0	0	2	0	4	29	7	0	0	0	42
1946	0	0	0	0	0	0	8	31	0	0	0	0	39
1947	0	0	0	0	0	1	6	8	0	0	0	0	15
1948	0	0	0	2	0	0	4	21	19	0	0	0	46
1949	0	0	0	0	0	0	5	25	4	0	0	0	34
1950	0	0	0	2	1	0	6	30	3	0	0	0	42
1951	0	11	11	2	4	0	0	0	0	0	0	0	28
1952	0	0	0	0	0	0	7	30	0	0	0	0	37
1953	0	0	0	2	0	0	4	19	13	0	0	0	38
1954	0	0	0	0	0	1	15	22	0	0	0	0	38
1955	0	0	0	0	0	0	2	13	10	0	0	0	25
1956	0	0	16	8	0	1	10	5	0	0	0	0	40
1957	0	0	0	0	1	1	2	27	8	0	0	0	39
1958	0	0	0	0	3	0	5	31	0	0	0	0	39
1959	0	0	0	0	0	0	6	7	0	0	0	0	13
1960	0	0	0	0	4	3	9	16	3	0	0	0	35
1961	0	0	0	0	1	1	4	9	2	0	0	0	17
1962	0	0	0	0	3	0	6	23	14	0	0	0	46
1963	4	0	0	0	6	0	15	14	0	0	0	0	39
1964	0	0	0	0	0	0	2	16	8	0	0	0	26
1965	0	0	19	8	1	0	12	0	0	0	0	0	40
1966	0	0	0	0	0	0	7	21	0	0	0	0	28
1967	0	0	0	0	1	3	0	30	11	0	0	0	45
1968	0	0	0	0	0	5	7	15	0	0	0	0	27
1969	0	0	0	0	0	0	10	34	0	0	0	0	44
1970	0	0	0	21	0	0	0	19	0	0	0	0	40
1971	0	0	0	1	0	0	4	26	11	0	0	0	42
1972	0	0	0	0	0	4	3	32	0	0	0	0	39
1973	0	0	2	0	0	0	7	33	0	0	0	0	42
1974	0	10	0	7	0	0	1	29	0	0	0	0	47
1975	0	0	0	0	0	0	0	27	15	0	0	0	42
1976	0	0	0	0	0	0	2	5	0	0	0	0	7
1977	0	0	0	0	0	0	3	4	0	0	0	0	7
1978	0	0	2	2	0	4	7	32	0	0	0	0	47
1979	0	0	0	0	0	0	2	33	0	0	0	0	35
1980	0	1	0	17	4	0	13	9	0	0	0	0	44
1981	0	0	0	0	0	0	7	10	0	0	0	0	17
1982	0	20	18	0	11	0	3	0	0	0	0	0	52
1983	0	0	0	0	0	2	1	29	5	0	0	0	37
1984	0	15	0	0	0	0	5	5	0	0	0	0	25
1985	0	0	0	0	0	0	11	19	0	0	0	0	30
1986	0	0	0	3	19	20	2	0	0	0	0	0	44
1987	0	0	0	0	0	0	11	2	0	0	0	0	13
1988	0	0	1	0	1	3	6	3	0	0	0	0	14
1989	0	1	0	0	1	10	21	15	0	0	0	0	48
1990	0	0	0	0	0	2	10	11	0	0	0	0	23
1991	0	0	0	0	0	1	5	15	5	0	0	0	26
1992	0	0	0	0	2	3	12	0	0	0	0	0	17
AVG:	0	1	1	1	1	2	7	17	3	0	0	0	33
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	6
MAX:	4	20	19	21	19	20	26	36	19	0	0	0	52

Alternative 3 and 4 - Priority Group 6 Diversion to Storage (TAF)

Rollins+Combie+Scotts Flat+Bowman+Jackson Meadows
Increased storage shown as a positive value; releases from storage set to zero.

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	0	12	9	13	2	3	57	28	0	0	0	124
1923	0	0	2	1	1	1	20	38	13	0	0	0	76
1924	0	0	0	0	1	8	11	5	0	0	0	0	25
1925	0	0	4	15	63	2	23	33	6	0	0	0	146
1926	0	0	0	0	36	2	29	14	0	0	0	0	81
1927	1	27	22	15	9	14	26	54	26	0	0	0	194
1928	0	5	0	0	1	32	19	33	0	0	0	0	90
1929	0	0	0	0	3	12	10	44	10	0	0	0	79
1930	0	0	23	8	2	7	22	11	6	0	0	0	79
1931	0	0	0	0	1	3	13	12	0	0	0	0	29
1932	0	0	13	10	22	7	24	50	24	0	0	0	150
1933	0	0	0	0	0	7	6	34	36	0	0	0	83
1934	0	0	4	0	1	15	14	0	0	0	0	0	34
1935	0	6	3	1	1	1	8	45	19	0	0	0	84
1936	0	0	0	16	7	10	29	50	16	0	0	0	128
1937	0	0	0	0	23	4	9	52	11	0	0	0	99
1938	1	1	69	1	7	7	12	61	22	0	0	0	181
1939	0	0	0	0	0	3	19	4	0	0	0	0	26
1940	1	0	0	51	18	32	26	42	0	0	0	0	170
1941	1	0	16	3	6	10	13	59	5	0	0	0	113
1942	2	0	10	7	5	3	18	32	18	0	0	0	95
1943	1	0	2	12	3	14	41	17	0	0	0	0	90
1944	0	0	0	0	12	3	4	42	9	0	0	0	70
1945	1	4	8	2	28	4	13	43	11	0	0	0	114
1946	1	6	8	2	1	3	23	44	7	0	0	0	95
1947	1	3	6	0	4	5	12	17	2	0	0	0	50
1948	1	3	0	7	0	10	35	50	28	0	0	0	134
1949	0	0	0	0	0	18	16	45	5	0	0	0	84
1950	0	0	1	18	42	5	25	48	10	3	0	0	152
1951	3	46	16	4	4	4	4	13	0	0	0	0	94
1952	0	4	10	4	6	6	31	71	15	0	0	0	147
1953	0	0	0	4	1	5	23	34	28	0	0	0	95
1954	0	0	0	1	1	4	27	29	3	0	0	0	65
1955	0	0	5	8	0	0	4	36	28	0	0	0	81
1956	0	0	110	17	7	3	18	42	7	0	0	0	204
1957	0	0	0	0	3	6	11	36	19	0	0	0	75
1958	0	0	6	0	12	7	9	68	28	0	0	0	130
1959	1	0	0	4	3	3	13	11	0	0	0	0	35
1960	0	3	0	0	25	34	27	22	2	0	0	1	114
1961	0	0	0	2	3	1	8	22	3	0	0	0	39
1962	0	3	0	0	28	11	39	34	14	0	0	0	129
1963	29	0	3	10	31	3	5	34	0	0	0	0	115
1964	2	3	0	0	0	0	12	31	7	0	0	0	55
1965	0	0	114	10	3	2	18	28	2	0	0	0	177
1966	1	0	0	0	0	1	12	25	0	0	0	0	39
1967	0	7	30	20	1	15	1	43	53	0	0	0	170
1968	0	2	0	0	11	3	8	15	0	0	0	0	39
1969	0	1	12	47	4	2	20	69	16	0	0	0	171
1970	1	0	5	45	3	3	0	12	3	0	0	0	72
1971	0	12	3	2	1	3	12	42	39	0	0	0	114
1972	0	0	0	0	2	10	9	28	5	0	0	0	54
1973	0	12	14	7	4	2	15	48	7	0	0	0	109
1974	0	37	3	21	3	10	10	32	11	0	0	0	127
1975	0	0	0	1	8	1	0	43	50	5	0	0	108
1976	3	0	0	0	0	7	3	9	0	0	0	0	22
1977	0	0	0	1	3	2	1	11	6	0	0	0	24
1978	0	0	19	50	2	15	14	52	31	1	0	0	184
1979	0	0	5	8	2	2	9	41	4	0	0	0	71
1980	0	0	11	57	14	4	16	36	8	0	0	0	146
1981	3	0	0	4	3	3	12	11	0	0	0	0	36
1982	0	85	49	5	24	9	11	20	0	0	0	0	203
1983	1	5	2	4	5	17	2	50	36	0	0	0	122
1984	0	23	9	3	3	3	4	20	0	0	0	0	65
1985	0	1	0	0	1	2	21	25	0	0	0	0	50
1986	1	0	1	22	88	43	13	4	0	0	0	0	172
1987	0	0	0	0	3	15	21	5	0	0	0	0	44
1988	0	3	4	10	0	0	6	1	5	1	0	0	30
1989	2	3	1	5	1	68	14	17	3	0	1	0	115
1990	0	1	3	6	7	14	12	11	0	3	5	1	63
1991	0	3	0	0	0	49	8	0	11	0	3	2	76
1992	3	0	0	0	24	18	6	4	3	0	0	0	58
AVG:	1	4	9	8	9	9	15	31	11	0	0	0	97
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	22
MAX:	29	85	114	57	88	68	41	71	53	5	5	2	204

STUDY: 1995C06F-SWRCB-469 DWRSIM: 8.18, 27 Nov 96

Alternative 3 - Priority Group 8 Diversion to Storage (TAF)

Friant (A000234)
Increased storage shown as a positive value; releases from storage set to zero.
Corrected for months in which diversion to storage has been curtailed to meet Vernalis objective (X).

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	X	42	70	75	7	84	0	89	0	0	0	0	367
1923	0	26	75	59	0	0	87	31	0	0	0	14	292
1924	28	26	43	44	0	0	10	X	0	0	0	8	159
1925	X	19	36	36	16	0	61	61	0	0	0	0	229
1926	X	29	43	41	12	0	145	67	0	0	0	26	363
1927	X	43	68	65	68	8	0	46	37	0	0	0	335
1928	0	55	68	63	0	13	32	14	0	0	0	25	270
1929	X	37	40	34	0	0	60	0	0	0	0	25	196
1930	X	37	34	34	0	0	50	33	0	0	0	37	225
1931	9	40	33	31	0	0	5	X	0	0	0	1	119
1932	1	19	69	54	82	0	0	26	83	0	0	0	334
1933	0	26	32	46	0	0	59	59	0	0	0	1	223
1934	X	23	50	53	0	0	38	X	0	0	0	21	185
1935	X	27	44	69	0	0	116	94	58	0	0	24	432
1936	15	44	47	51	115	0	27	65	0	0	0	14	378
1937	22	24	58	64	106	50	36	0	0	0	0	0	360
1938	7	32	144	113	0	0	0	0	361	24	0	0	681
1939	0	3	50	34	0	0	67	79	0	0	0	53	286
1940	X	26	40	121	4	6	0	59	0	0	0	11	267
1941	23	31	107	113	17	70	0	0	39	0	0	0	400
1942	0	29	81	79	0	19	3	36	77	0	0	0	324
1943	0	40	71	151	0	106	0	10	0	0	0	0	378
1944	7	27	50	40	9	0	28	2	0	0	0	0	163
1945	X	56	63	35	113	42	0	29	30	0	0	0	368
1946	0	45	92	65	0	0	46	98	0	0	0	5	351
1947	1	48	80	66	0	0	X	52	X	0	0	20	267
1948	X	42	44	38	0	24	106	0	0	0	0	9	263
1949	X	29	38	42	0	0	36	58	0	0	0	28	231
1950	X	33	48	59	21	0	37	66	0	0	0	14	278
1951	X	132	116	0	0	0	X	X	0	0	0	40	288
1952	X	33	93	120	6	35	0	0	224	0	0	0	511
1953	0	39	64	63	0	0	32	X	0	0	0	5	203
1954	X	25	50	61	0	0	38	97	0	0	0	39	310
1955	X	36	62	67	0	0	X	43	0	0	0	14	222
1956	X	23	223	0	0	86	0	0	80	0	0	0	412
1957	0	23	42	31	0	11	X	66	8	0	0	22	203
1958	X	34	74	76	39	56	58	0	2	0	0	0	339
1959	0	43	49	24	24	0	82	X	0	0	0	11	233
1960	X	3	12	22	37	0	50	34	0	0	0	0	158
1961	X	24	38	18	0	3	51	49	0	0	0	0	183
1962	1	8	30	18	148	0	0	115	65	0	0	0	385
1963	X	27	28	53	156	1	93	0	0	0	0	0	358
1964	0	78	92	35	0	0	X	36	0	0	0	17	258
1965	X	39	100	130	0	0	25	0	48	0	0	0	342
1966	0	71	121	55	0	0	70	89	0	0	0	0	406
1967	X	33	126	86	3	60	0	0	232	34	0	0	574
1968	0	20	66	22	3	0	X	21	0	0	0	10	142
1969	X	39	51	182	0	0	0	4	382	0	0	0	658
1970	0	53	87	85	0	0	X	X	0	0	0	3	228
1971	X	53	103	68	0	0	X	X	0	0	0	0	224
1972	X	28	83	61	0	0	X	24	0	0	0	0	196
1973	X	32	68	84	65	1	0	125	6	0	0	0	381
1974	23	64	123	68	0	24	41	55	20	0	0	0	418
1975	6	43	62	42	26	0	23	11	138	0	0	14	365
1976	17	62	67	39	0	19	14	0	0	0	0	35	253
1977	0	17	10	8	0	0	X	X	0	7	0	2	44
1978	0	1	48	142	118	0	0	0	310	0	0	0	619
1979	0	29	55	50	0	33	0	57	0	0	0	11	235
1980	17	0	55	197	0	0	41	0	130	0	0	0	440
1981	0	27	26	28	8	8	53	31	0	0	0	25	206
1982	X	36	106	103	0	86	0	67	82	0	0	0	480
1983	0	104	18	0	0	0	0	0	37	285	40	24	508
1984	0	0	0	0	0	42	X	0	0	0	0	0	42
1985	X	24	55	84	0	0	96	59	0	0	0	1	319
1986	X	49	87	81	0	7	110	0	58	0	0	0	392
1987	3	19	9	9	1	44	64	83	0	0	0	15	247
1988	X	32	35	60	0	37	47	32	0	0	0	6	249
1989	1	27	25	28	0	15	74	59	0	0	0	14	243
1990	11	18	19	23	0	23	52	45	0	0	0	10	201
1991	0	14	16	18	0	0	31	22	12	0	0	13	126
1992	0	13	9	13	3	0	8	2	0	0	0	1	49
1993	4	0	23	176	26	59	9	94	0	0	0	0	391
1994	0	19	30	13	0	41	48	56	0	0	0	15	222
AVG:	3	34	60	59	17	15	31	34	35	5	1	9	301
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	42
MAX:	28	132	223	197	156	106	145	125	382	285	40	53	681

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1922	Add Water	6.0	x	x	x	0	0	29.0	108.0	0	x	x	x
	Right #	71.0	x	x	x	0	0	16.0	8.0	0	x	x	x
	From DD	3.6	x	x	x	0	0	1.1	0.5	0	x	x	x
	Friant Stor & DD	53.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	2.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	208.0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	107.5	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	100.5	0	x	x	x
	From Hensley	0	x	x	x	0	0	13.0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	13.0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	13.0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	13.0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	43.0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	1.9	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	41.1	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	41.1	100.5	0	x	x	x
	Water Generated	6.0	x	x	x	0	0	29.0	108.0	0	x	x	x
1923	Add Water	0	x	x	x	0	52.0	52.0	109.0	0	x	x	x
	Right #	0	x	x	x	0	12.0	16.0	11.0	0	x	x	x
	From DD	0	x	x	x	0	0.2	1.1	0.5	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	42.0	0	98.0	0	x	x	x
	NM for Vern	0	x	x	x	0	42.0	0	98.0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	5.0	3.0	16.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	5.0	3.0	10.5	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	5.5	0	x	x	x
	From Eastman	0	x	x	x	0	5.0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	5.0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	73.0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	47.9	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	25.1	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	25.1	5.5	0	x	x	x
	Water Generated	0	x	x	x	0	52.2	52.0	109.0	0	x	x	x
1924	Add Water	0	x	x	x	0	0	18.0	43.0	0	x	x	x
	Right #	0	x	x	x	0	0	24.0	71.0	0	x	x	x
	From DD	0	x	x	x	0	0	7.5	29.7	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	2.3	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	4.0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	4.0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	9.0	11.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	9.0	11.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	20.5	43.0	0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1925	Add Water	27.0	x	x	x	0	0	23.0	70.0	0	x	x	x
	Right #	71.0	x	x	x	0	0	8.0	8.0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0.3	0.5	0	x	x	x
	Friant Stor & DD	33.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	23.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	24.0	147.0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	22.7	69.5	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	1.0	77.5	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	1.0	77.5	0	x	x	x
	Water Generated	27.0	x	x	x	0	0	23.0	70.0	0	x	x	x
1926	Add Water	27.0	x	x	x	0	32.0	34.0	88.0	8.0	x	x	x
	Right #	71.0	x	x	x	0	8.0	16.0	21.0	24.0	x	x	x
	From DD	3.6	x	x	x	0	0.2	1.1	3.2	9.2	x	x	x
	Friant Stor & DD	60.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	23.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	47.0	4.0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	31.8	4.0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	15.2	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	5.0	5.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	5.0	5.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	1.0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	1.0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	110.0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	22.9	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	87.1	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	128.0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	79.8	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	48.2	0	x	x	x
	Stor avail for DO	0	x	x	x	0	15.2	87.1	48.2	0	x	x	x
	Water Generated	27.0	x	x	x	0	32.0	34.0	88.0	9.2	x	x	x
1927	Add Water	27.0	x	x	x	0	0	24.0	113.0	90.0	x	x	x
	Right #	71.0	x	x	x	0	0	8.0	8.0	16.0	x	x	x
	From DD	3.6	x	x	x	0	0	0.3	0.5	1.4	x	x	x
	Friant Stor & DD	73.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	20.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	3.0	x	x	x	0	0	78.0	139.0	21.0	x	x	x
	NM for Vern	3.0	x	x	x	0	0	23.7	112.5	21.0	x	x	x
	NM avail for DO	0	x	x	x	0	0	54.3	26.5	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	75.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	67.6	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	7.4	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	54.3	26.5	7.4	x	x	x
	Water Generated	27.0	x	x	x	0	0	24.0	113.0	90.0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1928	Add Water	0	x	x	x	0	0	39.0	91.0	2.0	x	x	x
	Right #	0	x	x	x	0	0	21.0	16.0	18.0	x	x	x
	From DD	0	x	x	x	0	0	2.1	1.4	2.5	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	17.0	70.0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	17.0	70.0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	78.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	19.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	58.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	23.0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	19.9	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	1.0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	1.0	58.4	0	x	x	x
	Water Generated	0	x	x	x	0	0	39.0	91.0	2.5	x	x	x
1929	Add Water	27.0	x	x	x	0	0	0	23.0	0	x	x	x
	Right #	71.0	x	x	x	0	0	0	16.0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	1.4	0	x	x	x
	Friant Stor & DD	50.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	21.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	2.0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	2.0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	6.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	6.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	21.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	15.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	5.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	5.4	0	x	x	x
	Water Generated	27.0	x	x	x	0	0	0	23.0	0	x	x	x
1930	Add Water	27.0	x	x	x	0	0	15.0	20.0	0	x	x	x
	Right #	71.0	x	x	x	0	0	16.0	21.0	0	x	x	x
	From DD	3.6	x	x	x	0	0	1.1	3.2	0	x	x	x
	Friant Stor & DD	34.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	20.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	3.0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	3.0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	3.0	2.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	3.0	2.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	20.0	9.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	10.9	9.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	9.1	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	32.0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	5.8	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	26.2	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	9.1	26.2	0	x	x	x
	Water Generated	27.0	x	x	x	0	0	15.0	20.0	0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1931	Add Water	0	x	x	x	0	0	23.0	45.0	0	x	x	x
	Right #	0	x	x	x	0	0	52.0	70.0	0	x	x	x
	From DD	0	x	x	x	0	0	9.3	29.7	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0.7	2.3	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	13.0	13.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	13.0	13.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	23.0	45.0	0	x	x	x
1932	Add Water	0	x	x	x	0	0	0	68.0	32.0	x	x	x
	Right #	0	x	x	x	0	0	0	8.0	8.0	x	x	x
	From DD	0	x	x	x	0	0	0	0.5	0.5	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	175.0	121.0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	67.5	31.5	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	107.5	89.5	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	107.5	89.5	x	x	x
	Water Generated	0	x	x	x	0	0	0	68.0	32.0	x	x	x
1933	Add Water	0	x	x	x	0	0	31.0	57.0	23.0	x	x	x
	Right #	0	x	x	x	0	0	24.0	24.0	16.0	x	x	x
	From DD	0	x	x	x	0	0	7.5	8.7	1.4	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0.3	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	3.0	4.0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	3.0	4.0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	24.0	45.0	87.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	24.0	45.0	17.6	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	69.4	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	69.4	x	x	x
	Water Generated	0	x	x	x	0	0	31.5	57.0	23.0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1934	Add Water	27.0	x	x	x	0	0	10.0	42.0	0	x	x	x
	Right #	71.0	x	x	x	0	0	16.0	71.0	0	x	x	x
	From DD	3.6	x	x	x	0	0	1.1	29.7	0	x	x	x
	Friant Stor & DD	46.0	x	x	x	0	0	0	85.0	0	x	x	x
	Friant Oblig at NM	19.4	x	x	x	0	0	0	12.3	0	x	x	x
	From NM	4.0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	4.0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	1.0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	1.0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	34.0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	7.9	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	26.1	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	26.1	0	0	x	x	x
	Water Generated	27.0	x	x	x	0	0	10.0	42.0	0	x	x	x
1935	Add Water	27.0	x	x	x	0	0	0	0	0	x	x	x
	Right #	71.0	x	x	x	0	0	0	0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0	0	x	x	x
	Friant Stor & DD	47.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	23.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	27.0	x	x	x	0	0	0	0	0	x	x	x
1936	Add Water	0	x	x	x	0	0	0	49.0	13.0	x	x	x
	Right #	0	x	x	x	0	0	0	8.0	8.0	x	x	x
	From DD	0	x	x	x	0	0	0	0.5	0.5	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	185.0	56.0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	48.5	12.5	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	136.5	43.5	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	136.5	43.5	x	x	x
	Water Generated	0	x	x	x	0	0	0	49.0	13.0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1937	Add Water	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1938	Add Water	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1939	Add Water	0	x	x	x	0	0	0	45.0	12.0	x	x	x
	Right #	0	x	x	x	0	0	0	63.0	44.0	x	x	x
	From DD	0	x	x	x	0	0	0	26.5	10.9	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	1.1	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	7.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	7.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	19.0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	19.0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	52.5	12.0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1940	Add Water	23.0	x	x	x	0	0	0	62.0	91.0	x	x	x
	Right #	71.0	x	x	x	0	0	0	8.0	21.0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0.5	3.7	x	x	x
	Friant Stor & DD	49.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	11.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	182.0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	61.5	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	120.5	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	8.0	x	x	x	0	0	0	0	18.0	x	x	x
	McClure for Vern	8.0	x	x	x	0	0	0	0	18.0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	142.0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	69.3	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	72.7	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	120.5	72.7	x	x	x
	Water Generated	23.0	x	x	x	0	0	0	62.0	91.0	x	x	x
1941	Add Water	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1942	Add Water	0	x	x	x	0	0	0	11.0	0	x	x	x
	Right #	0	x	x	x	0	0	0	8.0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0.5	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	153.0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	10.5	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	142.5	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	142.5	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	11.0	0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1943	Add Water	0	x	x	x	0	0	0	0	46.0	x	x	x
	Right #	0	x	x	x	0	0	0	0	16.0	x	x	x
	From DD	0	x	x	x	0	0	0	0	1.4	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	30.0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	30.0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	36.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	14.6	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	21.4	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	21.4	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	46.0	x	x	x
1944	Add Water	0	x	x	x	0	0	0	25.0	0	x	x	x
	Right #	0	x	x	x	0	0	0	16.0	0	x	x	x
	From DD	0	x	x	x	0	0	0	1.4	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	130.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	23.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	106.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	106.4	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	25.0	0	x	x	x
1945	Add Water	14.0	x	x	x	0	0	0	11.0	0	x	x	x
	Right #	71.0	x	x	x	0	0	0	8.0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0.5	0	x	x	x
	Friant Stor & DD	87.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	10.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	139.0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	10.5	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	128.5	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	128.5	0	x	x	x
	Water Generated	14.0	x	x	x	0	0	0	11.0	0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1946	Add Water	0	x	x	x	0	0	26.0	11.0	18.0	x	x	x
	Right #	0	x	x	x	0	0	16.0	8.0	21.0	x	x	x
	From DD	0	x	x	x	0	0	1.1	0.5	3.7	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	10.0	80.0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	10.0	10.5	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	69.5	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	1.0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	1.0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	108.0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	14.9	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	93.1	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	59.0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	13.3	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	45.7	x	x	x
	Stor avail for DO	0	x	x	x	0	0	93.1	69.5	45.7	x	x	x
	Water Generated	0	x	x	x	0	0	26.0	11.0	18.0	x	x	x
1947	Add Water	0	x	x	x	0	23.0	85.0	62.0	19.0	x	x	x
	Right #	0	x	x	x	0	8.0	71.0	16.0	58.0	x	x	x
	From DD	0	x	x	x	0	0.2	19.5	1.4	18.7	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	134.0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	26.5	0	0.3	x	x	x
	From NM	0	x	x	x	0	53.0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	22.8	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	30.2	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	39.0	81.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	39.0	60.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	20.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	30.2	0	20.4	0	x	x	x
	Water Generated	0	x	x	x	0	23.0	85.0	62.0	19.0	x	x	x
1948	Add Water	27.0	x	x	x	12.0	0	21.0	59.0	27.0	x	x	x
	Right #	71.0	x	x	x	8.0	0	16.0	16.0	8.0	x	x	x
	From DD	3.6	x	x	x	0	0	1.1	1.4	0.5	x	x	x
	Friant Stor & DD	44.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	15.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	8.0	x	x	x	20.0	0	9.0	45.0	53.0	x	x	x
	NM for Vern	8.0	x	x	x	12.0	0	9.0	45.0	26.5	x	x	x
	NM avail for DO	0	x	x	x	8.0	0	0	0	26.5	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	22.0	119.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	10.9	12.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	11.1	106.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	8.0	0	11.1	106.4	26.5	x	x	x
	Water Generated	27.0	x	x	x	12.0	0	21.0	59.0	27.0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1949	Add Water	27.0	x	x	x	0	0	59.0	46.0	4.0	x	x	x
	Right #	71.0	x	x	x	0	0	21.0	16.0	20.0	x	x	x
	From DD	3.6	x	x	x	0	0	2.1	1.4	3.7	x	x	x
	Friant Stor & DD	53.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	21.4	x	x	x	0	0	0	0	0.3	x	x	x
	From NM	2.0	x	x	x	0	0	0	17.0	0	x	x	x
	NM for Vern	2.0	x	x	x	0	0	0	17.0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	55.0	117.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	55.0	27.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	89.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	64.0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	1.9	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	62.1	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	62.1	89.4	0	x	x	x
	Water Generated	27.0	x	x	x	0	0	59.0	46.0	4.0	x	x	x
1950	Add Water	26.0	x	x	x	0	0	56.0	100.0	5.0	x	x	x
	Right #	71.0	x	x	x	0	0	16.0	8.0	16.0	x	x	x
	From DD	3.6	x	x	x	0	0	1.1	0.5	1.4	x	x	x
	Friant Stor & DD	59.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	22.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	28.0	119.0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	28.0	99.5	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	19.5	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	1.0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	1.0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	86.0	0	6.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	26.9	0	2.6	x	x	x
	McClure for DO	0	x	x	x	0	0	59.1	0	3.4	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	59.1	19.5	3.4	x	x	x
	Water Generated	26.0	x	x	x	0	0	56.0	100.0	5.0	x	x	x
1951	Add Water	25.0	x	x	x	0	0	107.0	143.0	33.0	x	x	x
	Right #	71.0	x	x	x	0	0	71.0	71.0	21.0	x	x	x
	From DD	3.6	x	x	x	0	0	19.5	29.7	3.7	x	x	x
	Friant Stor & DD	107.0	x	x	x	0	0	148.0	154.0	0	x	x	x
	Friant Oblig at NM	21.4	x	x	x	0	0	13.5	56.3	0	x	x	x
	From NM	0	x	x	x	0	0	27.0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	27.0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	47.0	57.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	47.0	57.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	41.0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	29.3	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	11.7	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	11.7	x	x	x
	Water Generated	25.0	x	x	x	0	0	107.0	143.0	33.0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1952	Add Water	8.0	x	x	x	0	0	0	0	0	x	x	x
	Right #	71.0	x	x	x	0	0	0	0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0	0	x	x	x
	Friant Stor & DD	59.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	4.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	8.0	x	x	x	0	0	0	0	0	x	x	x
1953	Add Water	0	x	x	x	0	0	67.0	95.0	49.0	x	x	x
	Right #	0	x	x	x	0	0	53.0	71.0	21.0	x	x	x
	From DD	0	x	x	x	0	0	10.3	29.7	3.7	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	110.0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0.7	44.3	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	33.0	2.0	39.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	33.0	2.0	39.0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	23.0	19.0	102.0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	23.0	19.0	6.3	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	95.7	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	95.7	x	x	x
	Water Generated	0	x	x	x	0	0	67.0	95.0	49.0	x	x	x
1954	Add Water	23.0	x	x	x	21.0	0	3.0	82.0	0	x	x	x
	Right #	71.0	x	x	x	8.0	0	8.0	8.0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0.3	0.5	0	x	x	x
	Friant Stor & DD	67.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	19.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	42.0	0	29.0	101.0	0	x	x	x
	NM for Vern	0	x	x	x	21.0	0	2.7	81.5	0	x	x	x
	NM avail for DO	0	x	x	x	21.0	0	26.3	19.5	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	21.0	0	26.3	19.5	0	x	x	x
	Water Generated	23.0	x	x	x	21.0	0	3.0	82.0	0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1955	Add Water	25.0	x	x	x	36.0	33.0	31.0	44.0	9.0	x	x	x
	Right #	71.0	x	x	x	8.0	21.0	71.0	16.0	16.0	x	x	x
	From DD	3.6	x	x	x	0	0.8	19.5	1.4	1.4	x	x	x
	Friant Stor & DD	53.0	x	x	x	0	0	103.0	0	0	x	x	x
	Friant Oblig at NM	21.4	x	x	x	0	0	9.5	0	0	x	x	x
	From NM	0	x	x	x	37.0	2.0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	36.0	2.0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	1.0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	4.0	0	7.0	3.0	x	x	x
	Hensley for Vern	0	x	x	x	0	4.0	0	7.0	3.0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	3.0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	3.0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	8.0	2.0	103.0	39.0	x	x	x
	McClure for Vern	0	x	x	x	0	8.0	2.0	35.6	4.6	x	x	x
	McClure for DO	0	x	x	x	0	0	0	67.4	34.4	x	x	x
	From Don Pedro	0	x	x	x	0	34.0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	15.2	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	18.8	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	1.0	18.8	0	67.4	34.4	x	x	x
	Water Generated	25.0	x	x	x	36.0	33.0	31.0	44.0	9.0	x	x	x
1956	Add Water	27.0	x	x	x	0	0	95.0	0	0	x	x	x
	Right #	71.0	x	x	x	0	0	21.0	0	0	x	x	x
	From DD	3.6	x	x	x	0	0	2.1	0	0	x	x	x
	Friant Stor & DD	50.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	18.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	5.0	x	x	x	0	0	1.0	0	0	x	x	x
	NM for Vern	5.0	x	x	x	0	0	1.0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	3.0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	3.0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	73.0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	73.0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	23.0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	15.9	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	7.1	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	7.1	0	0	x	x	x
	Water Generated	27.0	x	x	x	0	0	95.0	0	0	x	x	x
1957	Add Water	0	x	x	x	0	0	77.0	86.0	44.0	x	x	x
	Right #	0	x	x	x	0	0	71.0	21.0	16.0	x	x	x
	From DD	0	x	x	x	0	0	19.5	3.2	1.4	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	127.0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	56.5	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	82.0	57.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	82.0	42.6	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	14.4	x	x	x
	From Don Pedro	0	x	x	x	0	0	1.0	60.0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	1.0	0.8	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	59.2	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	59.2	14.4	x	x	x
	Water Generated	0	x	x	x	0	0	77.0	86.0	44.0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1958	Add Water	18.0	x	x	x	0	0	0	0	0	x	x	x
	Right #	71.0	x	x	x	0	0	0	0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0	0	x	x	x
	Friant Stor & DD	62.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	14.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	18.0	x	x	x	0	0	0	0	0	x	x	x
1959	Add Water	0	x	x	x	0	0	35.0	67.0	23.0	x	x	x
	Right #	0	x	x	x	0	0	16.0	71.0	63.0	x	x	x
	From DD	0	x	x	x	0	0	1.1	29.7	33.3	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	153.0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	22.3	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	48.0	15.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	33.9	15.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	14.1	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	14.1	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	35.0	67.0	33.3	x	x	x
1960	Add Water	28.0	x	x	x	0	0	9.0	14.0	0	x	x	x
	Right #	71.0	x	x	x	0	0	16.0	16.0	0	x	x	x
	From DD	3.6	x	x	x	0	0	1.1	1.4	0	x	x	x
	Friant Stor & DD	30.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	24.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	5.0	5.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	5.0	5.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	1.0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	1.0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	67.0	67.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	1.9	7.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	65.1	59.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	65.1	59.4	0	x	x	x
	Water Generated	28.0	x	x	x	0	0	9.0	14.0	0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1961	Add Water	27.0	x	x	x	0	0	17.0	39.0	0	x	x	x
	Right #	71.0	x	x	x	0	0	16.0	63.0	0	x	x	x
	From DD	3.6	x	x	x	0	0	1.1	26.5	0	x	x	x
	Friant Stor & DD	27.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	23.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	2.0	1.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	2.0	1.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	26.0	16.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	13.9	16.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	12.1	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	12.1	0	0	x	x	x
	Water Generated	27.0	x	x	x	0	0	17.0	43.5	0	x	x	x
1962	Add Water	0	x	x	x	0	0	0	85.0	8.0	x	x	x
	Right #	0	x	x	x	0	0	0	16.0	8.0	x	x	x
	From DD	0	x	x	x	0	0	0	1.4	0.5	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	66.0	21.0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	66.0	7.5	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	13.5	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	85.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	17.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	67.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	67.4	13.5	x	x	x
	Water Generated	0	x	x	x	0	0	0	85.0	8.0	x	x	x
1963	Add Water	27.0	x	x	x	0	44.0	0	62.0	53.0	x	x	x
	Right #	71.0	x	x	x	0	8.0	0	8.0	8.0	x	x	x
	From DD	3.6	x	x	x	0	0.2	0	0.5	0.5	x	x	x
	Friant Stor & DD	71.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	22.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	1.0	x	x	x	0	57.0	0	240.0	74.0	x	x	x
	NM for Vern	1.0	x	x	x	0	43.8	0	61.5	52.5	x	x	x
	NM avail for DO	0	x	x	x	0	13.2	0	178.5	21.5	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	13.2	0	178.5	21.5	x	x	x
	Water Generated	27.0	x	x	x	0	44.0	0	62.0	53.0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1964	Add Water	0	x	x	x	21.0	33.0	37.0	58.0	20.0	x	x	x
	Right #	0	x	x	x	8.0	36.0	71.0	24.0	21.0	x	x	x
	From DD	0	x	x	x	0	6.5	19.5	8.7	3.7	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	92.0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	1.5	4.5	0.3	0	x	x	x
	From NM	0	x	x	x	36.0	20.0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	21.0	20.0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	15.0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	2.0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	2.0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	3.0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	3.0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	1.0	13.0	49.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	1.0	13.0	49.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	1.0	0	0	28.0	x	x	x
	Pedro for Vern	0	x	x	x	0	1.0	0	0	14.3	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	13.7	x	x	x
	Stor avail for DO	0	x	x	x	15.0	0	0	0	13.7	x	x	x
	Water Generated	0	x	x	x	21.0	33.0	37.0	58.0	20.0	x	x	x
1965	Add Water	27.0	x	x	x	0	0	14.0	137.0	33.0	x	x	x
	Right #	(72+)	x	x	x	0	0	8.0	16.0	16.0	x	x	x
	From DD	3.6	x	x	x	0	0	0.3	1.4	1.4	x	x	x
	Friant Stor & DD	20.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	20.0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	91.0	132.0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	13.7	132.0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	77.3	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	140.0	88.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	3.6	31.6	x	x	x
	McClure for DO	0	x	x	x	0	0	0	136.4	56.4	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	77.3	136.4	56.4	x	x	x
	Water Generated	23.6	x	x	x	0	0	14.0	137.0	33.0	x	x	x
1966	Add Water	0	x	x	x	0	0	92.0	68.0	11.0	x	x	x
	Right #	0	x	x	x	0	0	24.0	24.0	36.0	x	x	x
	From DD	0	x	x	x	0	0	7.6	8.7	10.4	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0.6	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	74.0	62.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	74.0	62.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	16.0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	16.0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	97.6	70.7	11.0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1967	Add Water	19.0	x	x	x	0	0	0	0	0	x	x	x
	Right #	71.0	x	x	x	0	0	0	0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0	0	x	x	x
	Friant Stor & DD	43.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	13.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	2.0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	2.0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	19.0	x	x	x	0	0	0	0	0	x	x	x
1968	Add Water	0	x	x	x	0	0	78.0	59.0	17.0	x	x	x
	Right #	0	x	x	x	0	0	71.0	24.0	57.0	x	x	x
	From DD	0	x	x	x	0	0	19.5	7.6	16.1	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	99.0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	12.5	0	0.9	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	23.0	24.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	23.0	24.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	23.0	34.0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	23.0	34.0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	78.0	65.6	17.0	x	x	x
1969	Add Water	21.0	x	x	x	0	0	0	0	0	x	x	x
	Right #	71.0	x	x	x	0	0	0	0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0	0	x	x	x
	Friant Stor & DD	21.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	17.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	21.0	x	x	x	0	0	0	0	0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1970	Add Water	0	x	x	x	0	0	80.0	129.0	32.0	x	x	x
	Right #	0	x	x	x	0	0	71.0	71.0	21.0	x	x	x
	From DD	0	x	x	x	0	0	19.5	29.7	3.7	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	126.0	161.0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	58.5	5.3	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	2.0	94.0	2.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	2.0	94.0	2.0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	89.0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	26.3	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	62.7	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	62.7	x	x	x
	Water Generated	0	x	x	x	0	0	80.0	129.0	32.0	x	x	x
1971	Add Water	11.0	x	x	x	0	0	83.0	102.0	51.0	x	x	x
	Right #	71.0	x	x	x	0	0	71.0	71.0	16.0	x	x	x
	From DD	3.6	x	x	x	0	0	19.5	29.7	1.4	x	x	x
	Friant Stor & DD	38.0	x	x	x	0	0	139.0	146.0	0	x	x	x
	Friant Oblig at NM	7.4	x	x	x	0	0	56.5	9.3	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	1.0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	1.0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	1.0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	1.0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	7.0	63.0	60.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	7.0	63.0	47.6	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	12.4	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	12.4	x	x	x
	Water Generated	11.0	x	x	x	0	0	83.0	102.0	51.0	x	x	x
1972	Add Water	25.0	x	x	x	37.0	29.0	101.0	74.0	27.0	x	x	x
	Right #	71.0	x	x	x	8.0	8.0	71.0	16.0	63.0	x	x	x
	From DD	3.6	x	x	x	0	0.2	19.5	1.4	33.3	x	x	x
	Friant Stor & DD	54.0	x	x	x	0	0	94.0	0	0	x	x	x
	Friant Oblig at NM	21.4	x	x	x	0	0	61.5	0	0	x	x	x
	From NM	0	x	x	x	43.0	31.0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	37.0	28.8	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	6.0	2.2	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	15.0	75.0	4.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	15.0	72.6	4.0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	2.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	5.0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	5.0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	6.0	2.2	0	2.4	0	x	x	x
	Water Generated	25.0	x	x	x	37.0	29.0	101.0	74.0	37.3	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1973	Add Water	27.0	x	x	x	0	0	0	16.0	0	x	x	x
	Right #	71.0	x	x	x	0	0	0	8.0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0.5	0	x	x	x
	Friant Stor & DD	68.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	14.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	8.0	x	x	x	0	0	0	195.0	0	x	x	x
	NM for Vern	8.0	x	x	x	0	0	0	15.5	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	179.5	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	1.0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	1.0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	179.5	0	x	x	x
	Water Generated	27.0	x	x	x	0	0	0	16.0	0	x	x	x
1974	Add Water	0	x	x	x	0	0	0	31.0	52.0	x	x	x
	Right #	0	x	x	x	0	0	0	8.0	16.0	x	x	x
	From DD	0	x	x	x	0	0	0	0.5	1.4	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	156.0	16.0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	30.5	16.0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	125.5	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	55.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	34.6	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	20.4	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	125.5	20.4	x	x	x
	Water Generated	0	x	x	x	0	0	0	31.0	52.0	x	x	x
1975	Add Water	0	x	x	x	0	0	0	79.0	0	x	x	x
	Right #	0	x	x	x	0	0	0	16.0	0	x	x	x
	From DD	0	x	x	x	0	0	0	1.4	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	60.0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	60.0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	1.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	1.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	190.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	16.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	173.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	173.4	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	79.0	0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1976	Add Water	0	x	x	x	0	0	8.0	33.0	0	x	x	x
	Right #	0	x	x	x	0	0	24.0	63.0	0	x	x	x
	From DD	0	x	x	x	0	0	7.5	26.5	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	3.0	2.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	3.0	2.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	9.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	9.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	10.5	37.5	0	x	x	x
1977	Add Water	0	x	x	x	0	0	30.0	45.0	0	x	x	x
	Right #	0	x	x	x	0	0	(72+)	(72+)	0	x	x	x
	From DD	0	x	x	x	0	0	17.6	29.7	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	5.0	2.0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	5.0	2.0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	1.0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	1.0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	23.6	31.7	0	x	x	x
1978	Add Water	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1979	Add Water	0	x	x	x	0	0	2.0	68.0	21.0	x	x	x
	Right #	0	x	x	x	0	0	8.0	8.0	16.0	x	x	x
	From DD	0	x	x	x	0	0	0.3	0.5	1.4	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	7.0	170.0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	1.7	67.5	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	5.3	102.5	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	29.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	19.6	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	9.4	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	5.3	102.5	9.4	x	x	x
	Water Generated	0	x	x	x	0	0	2.0	68.0	21.0	x	x	x
1980	Add Water	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1981	Add Water	0	x	x	x	0	0	51.0	53.0	17.0	x	x	x
	Right #	0	x	x	x	0	0	16.0	16.0	57.0	x	x	x
	From DD	0	x	x	x	0	0	1.1	1.4	16.1	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0.9	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	1.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	1.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	52.0	70.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	49.9	50.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	1.0	19.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	1.0	19.4	0	x	x	x
	Water Generated	0	x	x	x	0	0	51.0	53.0	17.0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1982	Add Water	19.0	x	x	x	0	0	0	0	0	x	x	x
	Right #	71.0	x	x	x	0	0	0	0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0	0	x	x	x
	Friant Stor & DD	49.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	15.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	19.0	x	x	x	0	0	0	0	0	x	x	x
1983	Add Water	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1984	Add Water	0	x	x	x	0	0	99.0	143.0	29.0	x	x	x
	Right #	0	x	x	x	0	0	71.0	21.0	21.0	x	x	x
	From DD	0	x	x	x	0	0	19.5	3.2	3.7	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	182.0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	39.5	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	40.0	138.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	40.0	138.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	55.0	117.0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	1.8	25.3	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	53.2	91.7	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	53.2	91.7	x	x	x
	Water Generated	0	x	x	x	0	0	99.0	143.0	29.0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1985	Add Water	12.0	x	x	x	0	0	21.0	54.0	14.0	x	x	x
	Right #	71.0	x	x	x	0	0	16.0	16.0	53.0	x	x	x
	From DD	3.6	x	x	x	0	0	1.1	1.4	13.8	x	x	x
	Friant Stor & DD	77.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	6.4	x	x	x	0	0	0	0	0.2	x	x	x
	From NM	2.0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	2.0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	1.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	1.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	77.0	78.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	19.9	51.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	57.1	26.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	57.1	26.4	0	x	x	x
	Water Generated	12.0	x	x	x	0	0	21.0	54.0	14.0	x	x	x
1986	Add Water	20.0	x	x	x	0	0	0	0	0	x	x	x
	Right #	71.0	x	x	x	0	0	0	0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0	0	x	x	x
	Friant Stor & DD	72.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	2.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	13.0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	13.0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	1.0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	1.0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	20.0	x	x	x	0	0	0	0	0	x	x	x
1987	Add Water	0	x	x	x	0	0	0	26.0	0	x	x	x
	Right #	0	x	x	x	0	0	0	29.0	0	x	x	x
	From DD	0	x	x	x	0	0	0	9.1	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0.9	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	1.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	1.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	15.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	15.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	26.0	0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1988	Add Water	28.0	x	x	x	0	0	14.0	34.0	0	x	x	x
	Right #	71.0	x	x	x	0	0	16.0	53.0	0	x	x	x
	From DD	3.6	x	x	x	0	0	1.1	12.4	0	x	x	x
	Friant Stor & DD	31.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	24.4	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	3.0	1.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	3.0	1.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	28.0	21.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	9.9	21.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	18.1	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	18.1	0	0	x	x	x
	Water Generated	28.0	x	x	x	0	0	14.0	34.4	0	x	x	x
1989	Add Water	0	x	x	x	0	0	21.0	23.0	0	x	x	x
	Right #	0	x	x	x	0	0	16.0	16.0	0	x	x	x
	From DD	0	x	x	x	0	0	1.1	1.4	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	3.0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	3.0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	97.0	53.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	16.9	21.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	80.1	31.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	80.1	31.4	0	x	x	x
	Water Generated	0	x	x	x	0	0	21.0	23.0	0	x	x	x
1990	Add Water	0	x	x	x	0	0	14.0	39.0	0	x	x	x
	Right #	0	x	x	x	0	0	16.0	16.0	0	x	x	x
	From DD	0	x	x	x	0	0	1.1	1.4	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	1.0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	1.0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	51.0	53.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	11.9	37.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	39.1	15.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	39.1	15.4	0	x	x	x
	Water Generated	0	x	x	x	0	0	14.0	39.0	0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1991	Add Water	0	x	x	x	0	0	0	13.0	0	x	x	x
	Right #	0	x	x	x	0	0	0	16.0	0	x	x	x
	From DD	0	x	x	x	0	0	0	1.4	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	3.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	3.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	87.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	8.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	78.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	78.4	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	13.0	0	x	x	x
1992	Add Water	0	x	x	x	0	0	0	26.0	0	x	x	x
	Right #	0	x	x	x	0	0	0	18.0	0	x	x	x
	From DD	0	x	x	x	0	0	0	2.2	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	1.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	1.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	24.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	24.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	27.2	0	x	x	x
1993	Add Water	0	x	x	x	35.0	34.0	165.0	85.0	0	x	x	x
	Right #	0	x	x	x	8.0	8.0	21.0	16.0	0	x	x	x
	From DD	0	x	x	x	0	0.2	2.1	1.4	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	475.0	322.0	42.0	0	0	x	x	x
	NM for Vern	0	x	x	x	35.0	33.8	42.0	0	0	x	x	x
	NM avail for DO	0	x	x	x	440.0	288.2	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	9.0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	9.0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	9.0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	9.0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	96.0	136.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	96.0	83.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	52.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	65.0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	6.9	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	58.1	0	0	x	x	x
	Stor avail for DO	0	x	x	x	440.0	288.2	58.1	52.4	0	x	x	x
	Water Generated	0	x	x	x	35.0	34.0	165.0	85.0	0	x	x	x

Alternative 3
Allocation of "Add Water" for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1994	Add Water	0	x	x	x	0	0	3.0	16.0	0	x	x	x
	Right #	0	x	x	x	0	0	11.0	16.0	0	x	x	x
	From DD	0	x	x	x	0	0	0.3	1.4	0	x	x	x
	Friant Stor & DD	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From NM	0	x	x	x	0	0	0	0	0	x	x	x
	NM for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	3.0	2.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	2.7	2.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0.3	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	34.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	12.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	21.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Stor avail for DO	0	x	x	x	0	0	0.3	21.4	0	x	x	x
	Water Generated	0	x	x	x	0	0	3.0	16.0	0	x	x	x

Alternative 3
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1922	SW (Alt 3)	0	0	0	0	0	0	0	0	0	349.0	183.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	166.2	81.6	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	39.1	12.9	0
	From IO	0	0	0	0	0	0	0	0	0	122.7	85.8	0
	Water Generated	0	0	0	0	0	0	0	0	0	288.9	167.4	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	60.1	15.6	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	7.0	5.0	0
1923	SW (Alt 3)	0	0	0	0	0	0	0	0	330.0	556.0	299.0	0
	From Storage	0	0	0	0	0	0	0	0	192.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	43.5	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	78.8	210.5	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	314.3	383.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	15.7	172.9	70.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	4.0	8.0	7.0	0
1924	SW (Alt 3)	0	0	0	0	0	0	159.0	319.0	555.0	473.0	222.0	0
	From Storage	0	0	0	0	0	0	96.0	61.0	8.0	0	0	0
	From DD	0	0	0	0	0	0	19.9	95.0	154.9	172.6	112.5	0
	From Friant DD	0	0	0	0	0	0	0	0	52.0	54.0	0	0
	From SJ DD	0	0	0	0	0	0	10.3	29.7	37.5	39.1	27.2	0
	From IO	0	0	0	0	0	0	25.9	78.4	174.4	168.7	64.0	0
	Water Generated	0	0	0	0	0	0	141.8	234.4	389.3	395.3	176.5	0
	Proj Obligation	0	0	0	0	0	0	17.2	84.6	165.7	77.7	45.5	0
	Cutoff Group	0	0	0	0	0	0	4.0	7.0	8.0	8.0	6.0	0
1925	SW (Alt 3)	0	0	0	0	0	0	0	0	353.0	512.0	236.0	0
	From Storage	0	0	0	0	0	0	0	0	261.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	37.4	166.2	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	11.2	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	9.8	122.7	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	308.2	288.9	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	44.8	223.1	7.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	3.0	7.0	7.0	0
1926	SW (Alt 3)	0	0	0	0	0	0	0	95.0	685.0	733.0	386.0	0
	From Storage	0	0	0	0	0	0	0	0	6.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	119.8	0
	From Friant DD	0	0	0	0	0	0	0	0	109.0	92.0	69.0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	198.0	210.5	183.2	0
	Water Generated	0	0	0	0	0	0	0	0	467.9	475.1	372.0	0
	Proj Obligation	0	0	0	0	0	0	0	95.0	217.1	257.9	14.0	0
	Cutoff Group	0	0	0	0	0	0	0	(0)	8.0	8.0	8.0	0
1927	SW (Alt 3)	0	0	0	0	0	0	0	0	0	477.0	276.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	166.2	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	0	122.7	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	0	288.9	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	188.1	47.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	7.0	7.0	0

Alternative 3
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1928	SW (Alt 3)	0	0	0	0	0	0	0	0	521.0	827.0	413.0	0
	From Storage	0	0	0	0	0	0	0	0	22.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	119.8	0
	From Friant DD	0	0	0	0	0	0	0	0	113.0	69.0	66.0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	198.0	490.3	183.2	0
	Water Generated	0	0	0	0	0	0	0	0	487.9	731.9	369.0	0
	Proj Obligation	0	0	0	0	0	0	0	0	33.1	95.1	44.0	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	9.0	8.0	0
1929	SW (Alt 3)	0	0	0	0	0	0	0	0	199.0	504.0	257.0	0
	From Storage	0	0	0	0	0	0	0	0	96.0	10.0	15.0	0
	From DD	0	0	0	0	0	0	0	0	43.5	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	81.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	13.8	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	58.9	168.7	75.2	0
	Water Generated	0	0	0	0	0	0	0	0	198.4	432.3	205.5	0
	Proj Obligation	0	0	0	0	0	0	0	0	0.6	71.7	51.5	0
	Cutoff Group	0	0	0	0	0	0	0	0	4.0	8.0	7.0	0
1930	SW (Alt 3)	0	0	0	0	0	0	0	0	536.0	563.0	237.0	0
	From Storage	0	0	0	0	0	0	0	0	192.0	14.0	17.0	0
	From DD	0	0	0	0	0	0	0	0	149.2	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	78.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	90.1	178.3	78.1	0
	Water Generated	0	0	0	0	0	0	0	0	431.3	442.9	210.4	0
	Proj Obligation	0	0	0	0	0	0	0	0	104.7	120.1	26.6	0
	Cutoff Group	0	0	0	0	0	0	0	0	7.0	8.0	7.0	0
1931	SW (Alt 3)	0	0	0	0	0	0	156.0	157.0	425.0	424.0	290.0	0
	From Storage	0	0	0	0	0	0	112.0	49.0	7.0	0	0	0
	From DD	0	0	0	0	0	0	17.5	29.9	154.9	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	60.0	62.0	0	0
	From SJ DD	0	0	0	0	0	0	9.3	12.4	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0.2	48.3	174.4	168.7	75.2	0
	Water Generated	0	0	0	0	0	0	129.7	127.2	396.3	403.3	190.5	0
	Proj Obligation	0	0	0	0	0	0	26.3	29.8	28.7	20.7	99.5	0
	Cutoff Group	0	0	0	0	0	0	3.0	4.0	8.0	8.0	7.0	0
1932	SW (Alt 3)	0	0	0	0	0	0	0	0	137.0	436.0	196.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	166.2	112.5	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	39.1	27.2	0
	From IO	0	0	0	0	0	0	0	0	0	92.4	63.4	0
	Water Generated	0	0	0	0	0	0	0	0	0	258.6	175.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	137.0	177.4	20.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	(0)	7.0	6.0	0
1933	SW (Alt 3)	0	0	0	0	0	0	0	0	136.0	438.0	281.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	166.2	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	0	88.1	75.2	0
	Water Generated	0	0	0	0	0	0	0	0	0	254.3	190.5	0
	Proj Obligation	0	0	0	0	0	0	0	0	136.0	183.7	90.5	0
	Cutoff Group	0	0	0	0	0	0	0	0	(0)	7.0	7.0	0

Alternative 3
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1934	SW (Alt 3)	0	0	0	0	0	0	0	85.0	479.0	450.0	226.0	0
	From Storage	0	0	0	0	0	0	0	40.0	12.0	0	0	0
	From DD	0	0	0	0	0	0	0	25.9	154.9	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	73.0	84.0	0	0
	From SJ DD	0	0	0	0	0	0	0	10.5	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0.5	173.8	168.3	74.5	0
	Water Generated	0	0	0	0	0	0	0	66.4	413.7	424.9	189.8	0
	Proj Obligation	0	0	0	0	0	0	0	18.6	65.3	25.1	36.2	0
	Cutoff Group	0	0	0	0	0	0	0	3.0	8.0	8.0	7.0	0
1935	SW (Alt 3)	0	0	0	0	0	0	0	0	0	520.0	233.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	166.2	112.5	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	39.1	27.2	0
	From IO	0	0	0	0	0	0	0	0	0	122.7	96.5	0
	Water Generated	0	0	0	0	0	0	0	0	0	288.9	209.0	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	231.1	24.0	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	7.0	6.0	0
1936	SW (Alt 3)	0	0	0	0	0	0	0	0	9.0	620.0	345.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	151.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	0	210.5	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	0	534.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	9.0	85.9	116.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	(0)	8.0	7.0	0
1937	SW (Alt 3)	0	0	0	0	0	0	0	0	154.0	651.0	344.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	155.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	0	210.5	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	0	538.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	154.0	112.9	115.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	(0)	8.0	7.0	0
1938	SW (Alt 3)	0	0	0	0	0	0	0	0	0	6.0	58.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	2.0	0
	From DD	0	0	0	0	0	0	0	0	0	0	19.7	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	0	4.6	0
	From IO	0	0	0	0	0	0	0	0	0	0	10.9	0
	Water Generated	0	0	0	0	0	0	0	0	0	0	32.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	6.0	25.4	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	(0)	2.0	0
1939	SW (Alt 3)	0	0	0	0	0	0	122.0	85.0	730.0	602.0	320.0	0
	From Storage	0	0	0	0	0	0	0	63.0	8.0	0	0	0
	From DD	0	0	0	0	0	0	0	13.6	154.9	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	104.0	96.0	0	0
	From SJ DD	0	0	0	0	0	0	0	3.3	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0.5	442.4	195.5	99.0	0
	Water Generated	0	0	0	0	0	0	0	77.1	709.3	464.1	214.3	0
	Proj Obligation	0	0	0	0	0	0	122.0	7.9	20.7	137.9	105.7	0
	Cutoff Group	0	0	0	0	0	0	(0)	1.0	9.0	8.0	7.0	0

Alternative 3
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1940	SW (Alt 3)	0	0	0	0	0	0	0	0	269.0	686.0	346.0	0
	From Storage	0	0	0	0	0	0	0	0	129.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	43.5	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	127.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	13.8	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	78.8	210.5	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	251.3	510.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	17.7	175.9	117.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	4.0	8.0	7.0	0
1941	SW (Alt 3)	0	0	0	0	0	0	0	0	0	233.0	119.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	119.6	31.5	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	20.5	7.6	0
	From IO	0	0	0	0	0	0	0	0	0	89.2	84.2	0
	Water Generated	0	0	0	0	0	0	0	0	0	208.8	115.7	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	24.2	3.3	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	5.0	4.0	0
1942	SW (Alt 3)	0	0	0	0	0	0	0	0	0	190.0	112.0	0
	From Storage	0	0	0	0	0	0	0	0	0	3.0	0	0
	From DD	0	0	0	0	0	0	0	0	0	43.4	26.7	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	14.1	5.5	0
	From IO	0	0	0	0	0	0	0	0	0	87.1	81.7	0
	Water Generated	0	0	0	0	0	0	0	0	0	133.5	108.4	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	56.5	3.6	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	4.0	3.0	0
1943	SW (Alt 3)	0	0	0	0	0	0	0	0	0	510.0	244.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	166.2	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	0	122.7	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	0	288.9	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	221.1	15.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	7.0	7.0	0
1944	SW (Alt 3)	0	0	0	0	0	0	0	0	494.0	630.0	328.0	0
	From Storage	0	0	0	0	0	0	0	0	155.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	149.2	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	143.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	112.9	210.5	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	417.1	526.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	76.9	103.9	99.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	7.0	8.0	7.0	0
1945	SW (Alt 3)	0	0	0	0	0	0	0	0	154.0	641.0	291.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	181.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	0	210.5	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	0	564.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	154.0	76.9	62.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	(0)	8.0	7.0	0

Alternative 3
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1946	SW (Alt 3)	0	0	0	0	0	0	0	0	397.0	555.0	244.0	0
	From Storage	0	0	0	0	0	0	0	0	81.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	149.2	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	130.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	112.9	210.5	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	343.1	513.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	53.9	41.9	15.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	7.0	8.0	7.0	0
1947	SW (Alt 3)	0	0	0	0	0	0	0	134.0	459.0	708.0	330.0	0
	From Storage	0	0	0	0	0	0	0	0	25.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	149.2	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	85.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	112.9	210.5	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	287.1	468.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	134.0	171.9	239.9	101.1	0
	Cutoff Group	0	0	0	0	0	0	0	(0)	7.0	8.0	7.0	0
1948	SW (Alt 3)	0	0	0	0	0	0	0	0	0	410.0	299.0	0
	From Storage	0	0	0	0	0	0	0	0	0	1.0	0	0
	From DD	0	0	0	0	0	0	0	0	0	166.2	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	0	122.7	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	0	289.9	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	120.1	70.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	7.0	7.0	0
1949	SW (Alt 3)	0	0	0	0	0	0	0	0	561.0	644.0	288.0	0
	From Storage	0	0	0	0	0	0	0	0	109.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	149.2	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	97.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	112.9	210.5	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	371.1	480.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	189.9	163.9	59.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	7.0	8.0	7.0	0
1950	SW (Alt 3)	0	0	0	0	0	0	0	0	196.0	508.0	172.0	0
	From Storage	0	0	0	0	0	0	0	0	0	3.0	0	0
	From DD	0	0	0	0	0	0	0	0	0	172.6	31.5	0
	From Friant DD	0	0	0	0	0	0	0	0	0	106.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	39.1	7.6	0
	From IO	0	0	0	0	0	0	0	0	0	210.5	84.2	0
	Water Generated	0	0	0	0	0	0	0	0	0	492.1	115.7	0
	Proj Obligation	0	0	0	0	0	0	0	0	196.0	15.9	56.3	0
	Cutoff Group	0	0	0	0	0	0	0	0	(0)	8.0	4.0	0
1951	SW (Alt 3)	0	0	0	0	0	0	0	0	392.0	703.0	210.0	0
	From Storage	0	0	0	0	0	0	0	0	31.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	149.2	172.6	81.6	0
	From Friant DD	0	0	0	0	0	0	0	0	0	118.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	12.9	0
	From IO	0	0	0	0	0	0	0	0	112.9	210.5	85.8	0
	Water Generated	0	0	0	0	0	0	0	0	293.1	501.1	167.4	0
	Proj Obligation	0	0	0	0	0	0	0	0	98.9	201.9	42.6	0
	Cutoff Group	0	0	0	0	0	0	0	0	7.0	8.0	5.0	0

Alternative 3
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1952	SW (Alt 3)	0	0	0	0	0	0	0	0	0	0	0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	0	0	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	0	0	0
	From IO	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	0	0	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	0	0	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	0	0	0
1953	SW (Alt 3)	0	0	0	0	0	0	0	0	0	174.0	59.0	0
	From Storage	0	0	0	0	0	0	0	0	0	1.0	0	0
	From DD	0	0	0	0	0	0	0	0	0	43.4	19.7	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	14.1	4.6	0
	From IO	0	0	0	0	0	0	0	0	0	87.1	10.9	0
	Water Generated	0	0	0	0	0	0	0	0	0	131.5	30.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	42.5	28.4	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	4.0	2.0	0
1954	SW (Alt 3)	0	0	0	0	0	0	0	51.0	250.0	708.0	153.0	0
	From Storage	0	0	0	0	0	0	0	0	33.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	107.7	172.6	31.5	0
	From Friant DD	0	0	0	0	0	0	0	0	0	101.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	19.8	39.1	7.6	0
	From IO	0	0	0	0	0	0	0	0	80.9	210.5	84.2	0
	Water Generated	0	0	0	0	0	0	0	0	221.6	484.1	115.7	0
	Proj Obligation	0	0	0	0	0	0	0	51.0	28.4	223.9	37.3	0
	Cutoff Group	0	0	0	0	0	0	0	(0)	5.0	8.0	4.0	0
1955	SW (Alt 3)	0	0	0	0	0	0	0	0	524.0	659.0	319.0	0
	From Storage	0	0	0	0	0	0	0	0	211.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	149.2	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	106.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	112.9	210.5	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	473.1	489.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	50.9	169.9	90.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	7.0	8.0	7.0	0
1956	SW (Alt 3)	0	0	0	0	0	0	0	0	0	128.0	0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	36.8	0	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	11.4	0	0
	From IO	0	0	0	0	0	0	0	0	0	83.9	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	120.7	0	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	7.3	0	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	3.0	0	0
1957	SW (Alt 3)	0	0	0	0	0	0	0	0	112.0	544.0	168.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	172.6	31.5	0
	From Friant DD	0	0	0	0	0	0	0	0	0	124.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	39.1	7.6	0
	From IO	0	0	0	0	0	0	0	0	0	210.5	84.2	0
	Water Generated	0	0	0	0	0	0	0	0	0	507.1	115.7	0
	Proj Obligation	0	0	0	0	0	0	0	0	112.0	36.9	52.3	0
	Cutoff Group	0	0	0	0	0	0	0	0	(0)	8.0	4.0	0

Alternative 3
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1958	SW (Alt 3)	0	0	0	0	0	0	0	0	0	0	0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	0	0	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	0	0	0
	From IO	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	0	0	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	0	0	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	0	0	0
1959	SW (Alt 3)	0	0	0	0	0	0	0	0	654.0	708.0	288.0	0
	From Storage	0	0	0	0	0	0	0	0	19.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	124.0	56.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	198.0	210.5	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	495.9	439.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	158.1	268.9	59.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	8.0	7.0	0
1960	SW (Alt 3)	0	0	0	0	0	0	0	0	608.0	664.0	339.0	0
	From Storage	0	0	0	0	0	0	0	0	77.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	93.0	91.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	198.0	210.5	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	522.9	474.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	85.1	189.9	110.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	8.0	7.0	0
1961	SW (Alt 3)	0	0	0	0	0	0	0	0	552.0	719.0	372.0	0
	From Storage	0	0	0	0	0	0	0	0	40.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	119.8	0
	From Friant DD	0	0	0	0	0	0	0	0	86.0	31.0	40.0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	198.0	490.3	183.2	0
	Water Generated	0	0	0	0	0	0	0	0	478.9	693.9	343.0	0
	Proj Obligation	0	0	0	0	0	0	0	0	73.1	25.1	29.0	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	9.0	8.0	0
1962	SW (Alt 3)	0	0	0	0	0	0	0	0	242.0	654.0	283.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	172.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	0	210.5	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	0	555.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	242.0	98.9	54.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	(0)	8.0	7.0	0
1963	SW (Alt 3)	0	0	0	0	0	0	0	0	0	380.0	101.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	166.2	19.7	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	39.1	4.6	0
	From IO	0	0	0	0	0	0	0	0	0	122.7	10.9	0
	Water Generated	0	0	0	0	0	0	0	0	0	288.9	30.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	91.1	70.4	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	7.0	2.0	0

Alternative 3
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1964	SW (Alt 3)	0	0	0	0	0	0	0	0	401.0	677.0	324.0	0
	From Storage	0	0	0	0	0	0	0	0	84.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	149.2	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	99.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	112.9	210.5	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	346.1	482.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	54.9	194.9	95.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	7.0	8.0	7.0	0
1965	SW (Alt 3)	0	0	0	0	0	0	0	0	0	374.0	0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	166.2	0	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	39.1	0	0
	From IO	0	0	0	0	0	0	0	0	0	122.7	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	288.9	0	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	85.1	0	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	7.0	0	0
1966	SW (Alt 3)	0	0	0	0	0	0	0	39.0	607.0	666.0	274.0	0
	From Storage	0	0	0	0	0	0	0	0	13.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	125.0	92.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	198.0	210.5	113.6	0
	Water Generated	0	0	0	0	0	0	0	0	490.9	475.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	39.0	116.1	190.9	45.1	0
	Cutoff Group	0	0	0	0	0	0	0	(0)	8.0	8.0	7.0	0
1967	SW (Alt 3)	0	0	0	0	0	0	0	0	0	0	0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	0	0	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	0	0	0
	From IO	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	0	0	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	0	0	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	0	0	0
1968	SW (Alt 3)	0	0	0	0	0	0	0	0	580.0	641.0	0	0
	From Storage	0	0	0	0	0	0	0	0	23.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	0	0
	From Friant DD	0	0	0	0	0	0	0	0	96.0	102.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	0	0
	From IO	0	0	0	0	0	0	0	0	198.0	210.5	0	0
	Water Generated	0	0	0	0	0	0	0	0	471.9	485.1	0	0
	Proj Obligation	0	0	0	0	0	0	0	0	108.1	155.9	0	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	8.0	0	0
1969	SW (Alt 3)	0	0	0	0	0	0	0	0	0	27.0	0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	20.1	0	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	3.8	0	0
	From IO	0	0	0	0	0	0	0	0	0	3.6	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	23.7	0	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	3.3	0	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	1.0	0	0

Alternative 3
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1970	SW (Alt 3)	0	0	0	0	0	0	0	0	301.0	536.0	113.0	0
	From Storage	0	0	0	0	0	0	0	0	98.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	107.7	172.6	26.7	0
	From Friant DD	0	0	0	0	0	0	0	0	0	138.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	19.8	39.1	5.5	0
	From IO	0	0	0	0	0	0	0	0	80.9	210.5	81.7	0
	Water Generated	0	0	0	0	0	0	0	0	286.6	521.1	108.4	0
	Proj Obligation	0	0	0	0	0	0	0	0	14.4	14.9	4.6	0
	Cutoff Group	0	0	0	0	0	0	0	0	5.0	8.0	3.0	0
1971	SW (Alt 3)	0	0	0	0	0	0	0	0	0	133.0	25.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	36.8	14.8	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	11.4	3.5	0
	From IO	0	0	0	0	0	0	0	0	0	83.9	3.2	0
	Water Generated	0	0	0	0	0	0	0	0	0	120.7	18.0	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	12.3	7.0	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	3.0	1.0	0
1972	SW (Alt 3)	0	0	0	0	0	0	0	0	615.0	677.0	201.0	0
	From Storage	0	0	0	0	0	0	0	0	47.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	81.6	0
	From Friant DD	0	0	0	0	0	0	0	0	120.0	86.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	12.9	0
	From IO	0	0	0	0	0	0	0	0	198.0	210.5	85.8	0
	Water Generated	0	0	0	0	0	0	0	0	519.9	469.1	167.4	0
	Proj Obligation	0	0	0	0	0	0	0	0	95.1	207.9	33.6	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	8.0	5.0	0
1973	SW (Alt 3)	0	0	0	0	0	0	0	0	421.0	598.0	119.0	0
	From Storage	0	0	0	0	0	0	0	0	275.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	43.5	172.6	31.5	0
	From Friant DD	0	0	0	0	0	0	0	0	0	152.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	13.8	39.1	7.6	0
	From IO	0	0	0	0	0	0	0	0	78.8	210.5	84.2	0
	Water Generated	0	0	0	0	0	0	0	0	397.3	535.1	115.7	0
	Proj Obligation	0	0	0	0	0	0	0	0	23.7	62.9	3.3	0
	Cutoff Group	0	0	0	0	0	0	0	0	4.0	8.0	4.0	0
1974	SW (Alt 3)	0	0	0	0	0	0	0	0	0	0	0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	0	0	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	0	0	0
	From IO	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	0	0	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	0	0	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	0	0	0
1975	SW (Alt 3)	0	0	0	0	0	0	0	0	0	75.0	0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	26.9	0	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	10.5	0	0
	From IO	0	0	0	0	0	0	0	0	0	11.5	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	38.4	0	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	36.6	0	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	2.0	0	0

Alternative 3
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1976	SW (Alt 3)	0	0	0	0	0	0	0	79.0	690.0	489.0	34.0	0
	From Storage	0	0	0	0	0	0	0	58.0	7.0	0	0	0
	From DD	0	0	0	0	0	0	0	19.0	154.9	172.6	19.7	0
	From Friant DD	0	0	0	0	0	0	0	0	57.0	49.0	0	0
	From SJ DD	0	0	0	0	0	0	0	9.8	37.5	39.1	4.6	0
	From IO	0	0	0	0	0	0	0	0.5	430.8	168.7	0.6	0
	Water Generated	0	0	0	0	0	0	0	77.5	649.7	390.3	20.3	0
	Proj Obligation	0	0	0	0	0	0	0	1.5	40.3	98.7	13.7	0
	Cutoff Group	0	0	0	0	0	0	0	2.0	9.0	8.0	2.0	0
1977	SW (Alt 3)	0	0	0	0	189.0	0	311.0	116.0	516.0	420.0	126.0	0
	From Storage	0	0	0	0	9.0	0	38.0	42.0	22.0	7.0	0	0
	From DD	0	0	0	0	0.6	0	49.6	25.9	154.9	172.6	31.5	0
	From Friant DD	0	0	0	0	11.0	0	1.0	0	57.0	56.0	0	0
	From SJ DD	0	0	0	0	0.5	0	19.5	10.5	37.5	39.1	7.6	0
	From IO	0	0	0	0	3.7	0	203.0	0.5	173.8	168.3	56.1	0
	Water Generated	0	0	0	0	24.3	0	291.6	68.4	407.7	403.9	87.6	0
	Proj Obligation	0	0	0	0	164.7	0	19.4	47.6	108.3	16.1	38.4	0
	Cutoff Group	0	0	0	0	9.0	0	9.0	3.0	8.0	8.0	4.0	0
1978	SW (Alt 3)	41.0	0	0	0	0	0	0	0	0	443.0	189.0	0
	From Storage	0	0	0	0	0	0	0	0	0	84.0	0	0
	From DD	5.4	0	0	0	0	0	0	0	0	166.2	81.6	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0.9	0	0	0	0	0	0	0	0	39.1	12.9	0
	From IO	6.3	0	0	0	0	0	0	0	0	122.7	85.8	0
	Water Generated	11.7	0	0	0	0	0	0	0	0	372.9	167.4	0
	Proj Obligation	29.3	0	0	0	0	0	0	0	0	70.1	21.6	0
	Cutoff Group	3.0	0	0	0	0	0	0	0	0	7.0	5.0	0
1979	SW (Alt 3)	0	0	0	0	0	0	0	0	636.0	520.0	101.0	0
	From Storage	0	0	0	0	0	0	0	0	145.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	149.2	172.6	19.7	0
	From Friant DD	0	0	0	0	0	0	0	0	0	133.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	4.6	0
	From IO	0	0	0	0	0	0	0	0	112.9	210.5	10.9	0
	Water Generated	0	0	0	0	0	0	0	0	407.1	516.1	30.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	228.9	3.9	70.4	0
	Cutoff Group	0	0	0	0	0	0	0	0	7.0	8.0	2.0	0
1980	SW (Alt 3)	0	0	0	0	0	0	0	0	0	223.0	75.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	119.6	19.7	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	20.5	4.6	0
	From IO	0	0	0	0	0	0	0	0	0	89.2	10.9	0
	Water Generated	0	0	0	0	0	0	0	0	0	208.8	30.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	14.2	44.4	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	5.0	2.0	0
1981	SW (Alt 3)	0	0	0	0	0	0	0	0	699.0	639.0	206.0	0
	From Storage	0	0	0	0	0	0	0	0	10.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	81.6	0
	From Friant DD	0	0	0	0	0	0	0	0	105.0	92.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	12.9	0
	From IO	0	0	0	0	0	0	0	0	198.0	210.5	85.8	0
	Water Generated	0	0	0	0	0	0	0	0	467.9	475.1	167.4	0
	Proj Obligation	0	0	0	0	0	0	0	0	231.1	163.9	38.6	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	8.0	5.0	0

Alternative 3
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1982	SW (Alt 3)	0	0	0	0	0	0	0	0	0	0	0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	0	0	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	0	0	0
	From IO	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	0	0	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	0	0	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	0	0	0
1983	SW (Alt 3)	0	0	0	0	0	0	0	0	0	0	0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	0	0	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	0	0	0
	From IO	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	0	0	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	0	0	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	0	0	0
1984	SW (Alt 3)	0	0	0	0	0	0	0	0	191.0	495.0	0	0
	From Storage	0	0	0	0	0	0	0	0	92.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	37.4	166.2	0	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	11.2	39.1	0	0
	From IO	0	0	0	0	0	0	0	0	9.8	122.7	0	0
	Water Generated	0	0	0	0	0	0	0	0	139.2	288.9	0	0
	Proj Obligation	0	0	0	0	0	0	0	0	51.8	206.1	0	0
	Cutoff Group	0	0	0	0	0	0	0	0	3.0	7.0	0	0
1985	SW (Alt 3)	0	0	0	0	0	0	0	275.0	763.0	655.0	261.0	0
	From Storage	0	0	0	0	0	0	0	147.0	18.0	0	0	0
	From DD	0	0	0	0	0	0	0	29.9	154.9	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	99.0	68.0	0	0
	From SJ DD	0	0	0	0	0	0	0	12.4	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	67.4	460.3	210.5	113.6	0
	Water Generated	0	0	0	0	0	0	0	244.3	732.2	451.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	30.7	30.8	203.9	32.1	0
	Cutoff Group	0	0	0	0	0	0	0	4.0	9.0	8.0	7.0	0
1986	SW (Alt 3)	0	0	0	0	0	0	0	0	41.0	582.0	163.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	166.2	31.5	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	39.1	7.6	0
	From IO	0	0	0	0	0	0	0	0	0	122.7	84.2	0
	Water Generated	0	0	0	0	0	0	0	0	0	288.9	115.7	0
	Proj Obligation	0	0	0	0	0	0	0	0	41.0	293.1	47.3	0
	Cutoff Group	0	0	0	0	0	0	0	0	(0)	7.0	4.0	0
1987	SW (Alt 3)	0	0	0	0	0	0	0	228.0	971.0	666.0	369.0	0
	From Storage	0	0	0	0	0	0	0	59.0	5.0	0	0	0
	From DD	0	0	0	0	0	0	0	68.7	154.9	172.6	119.9	0
	From Friant DD	0	0	0	0	0	0	0	0	90.0	94.0	103.0	0
	From SJ DD	0	0	0	0	0	0	0	16.7	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	69.4	432.2	178.3	143.0	0
	Water Generated	0	0	0	0	0	0	0	197.1	682.1	444.9	365.9	0
	Proj Obligation	0	0	0	0	0	0	0	30.9	288.9	221.1	3.1	0
	Cutoff Group	0	0	0	0	0	0	0	5.0	9.0	8.0	8.0	0

Alternative 3
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1988	SW (Alt 3)	0	0	0	0	0	0	0	12.0	505.0	608.0	332.0	0
	From Storage	0	0	0	0	0	0	0	0	13.0	1.0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	119.9	0
	From Friant DD	0	0	0	0	0	0	0	0	89.0	91.0	61.0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	174.9	178.3	143.0	0
	Water Generated	0	0	0	0	0	0	0	0	431.8	442.9	323.9	0
	Proj Obligation	0	0	0	0	0	0	0	12.0	73.2	165.1	8.1	0
	Cutoff Group	0	0	0	0	0	0	0	(0)	8.0	8.0	8.0	0
1989	SW (Alt 3)	0	0	0	0	0	0	0	31.0	527.0	579.0	166.0	0
	From Storage	0	0	0	0	0	0	0	0	106.0	0	1.0	0
	From DD	0	0	0	0	0	0	0	0	149.2	172.6	81.6	0
	From Friant DD	0	0	0	0	0	0	0	0	0	96.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	12.9	0
	From IO	0	0	0	0	0	0	0	0	90.1	178.3	57.2	0
	Water Generated	0	0	0	0	0	0	0	0	345.3	446.9	139.8	0
	Proj Obligation	0	0	0	0	0	0	0	31.0	181.7	132.1	26.2	0
	Cutoff Group	0	0	0	0	0	0	0	(0)	7.0	8.0	5.0	0
1990	SW (Alt 3)	0	0	0	0	0	0	70.0	0	427.0	614.0	282.0	0
	From Storage	0	0	0	0	0	0	0	0	52.0	3.0	5.0	0
	From DD	0	0	0	0	0	0	0	0	149.2	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	0	112.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0	90.1	178.3	78.1	0
	Water Generated	0	0	0	0	0	0	0	0	291.3	465.9	198.4	0
	Proj Obligation	0	0	0	0	0	0	70.0	0	135.7	148.1	83.6	0
	Cutoff Group	0	0	0	0	0	0	(0)	0	7.0	8.0	7.0	0
1991	SW (Alt 3)	0	0	0	0	75.0	0	0	0	192.0	307.0	121.0	0
	From Storage	0	0	0	0	5.0	0	0	0	166.0	0	0	0
	From DD	0	0	0	0	0.6	0	0	0	20.2	166.2	31.5	0
	From Friant DD	0	0	0	0	12.0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0.5	0	0	0	3.7	39.1	7.6	0
	From IO	0	0	0	0	3.7	0	0	0	0.8	88.1	56.2	0
	Water Generated	0	0	0	0	21.3	0	0	0	187.0	254.3	87.7	0
	Proj Obligation	0	0	0	0	53.7	0	0	0	5.0	52.7	33.3	0
	Cutoff Group	0	0	0	0	9.0	0	0	0	1.0	7.0	4.0	0
1992	SW (Alt 3)	0	0	0	0	0	0	0	143.0	500.0	418.0	269.0	0
	From Storage	0	0	0	0	0	0	0	103.0	13.0	4.0	0	0
	From DD	0	0	0	0	0	0	0	25.9	154.9	172.6	115.3	0
	From Friant DD	0	0	0	0	0	0	0	0	24.0	45.0	0	0
	From SJ DD	0	0	0	0	0	0	0	10.5	37.5	39.1	28.2	0
	From IO	0	0	0	0	0	0	0	0.5	174.4	168.7	75.2	0
	Water Generated	0	0	0	0	0	0	0	129.4	366.3	390.3	190.5	0
	Proj Obligation	0	0	0	0	0	0	0	13.6	133.7	27.7	78.5	0
	Cutoff Group	0	0	0	0	0	0	0	3.0	8.0	8.0	7.0	0
1993	SW (Alt 3)	0	0	0	0	0	0	0	0	0	367.0	7.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	166.2	0	0
	From Friant DD	0	0	0	0	0	0	0	0	0	0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	0	39.1	0	0
	From IO	0	0	0	0	0	0	0	0	0	122.7	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	288.9	0	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	78.1	7.0	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	7.0	(0)	0

Alternative 3
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1994	SW (Alt 3)	0	0	0	0	0	0	0	0	685.0	455.0	177.0	0
	From Storage	0	0	0	0	0	0	0	0	13.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	81.6	0
	From Friant DD	0	0	0	0	0	0	0	0	104.0	96.0	0	0
	From SJ DD	0	0	0	0	0	0	0	0	37.5	39.1	12.9	0
	From IO	0	0	0	0	0	0	0	0	174.4	168.7	57.8	0
	Water Generated	0	0	0	0	0	0	0	0	446.3	437.3	139.4	0
	Proj Obligation	0	0	0	0	0	0	0	0	238.7	17.7	37.6	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	8.0	5.0	0

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1922	SW (Vernalis)	0	x	x	x	0	0	7.2	0	0	x	x	x
	Right #	0	x	x	x	0	0	11.0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0.3	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	13.0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	6.7	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	6.3	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	6.3	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	7.0	0	0	x	x	x
1923	SW (Vernalis)	0	x	x	x	0	52.0	0	39.1	0	x	x	x
	Right #	0	x	x	x	0	12.0	0	8.0	0	x	x	x
	From DD	0	x	x	x	0	0.2	0	0.5	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0.0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	42.0	0	98.0	0	x	x	x
	Melones for Vern	0	x	x	x	0	42.0	0	38.5	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	59.5	0	x	x	x
	From Hensley	0	x	x	x	0	5.0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	5.0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	5.0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	4.8	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0.2	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0.2	0	59.5	0	x	x	x
	Water Generated	0	x	x	x	0	52.0	0	39.0	0	x	x	x
1924	SW (Vernalis)	0	x	x	x	0	0	7.0	27.0	0	x	x	x
	Right #	0	x	x	x	0	0	16.0	59.0	0	x	x	x
	From DD	0	x	x	x	0	0	1.1	16.8	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0.0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	4.0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	4.0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	9.0	11.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	1.9	11.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	7.1	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	7.1	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	7.0	27.8	0	x	x	x
1925	SW (Vernalis)	27.0	x	x	x	0	0	0	7.0	0	x	x	x
	Right #	72 +	x	x	x	0	0	0	8.0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0.5	0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	From IO(8)	4.0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	25.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	23.4	x	x	x	0	0	0	0.0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	147.0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	6.5	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	140.5	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	140.5	0	x	x	x
	Water Generated	27.0	x	x	x	0	0	0	7.0	0	x	x	x
1926	SW (Vernalis)	10.3	x	x	x	0	32.0	0	18.0	8.0	x	x	x
	Right #	72.0	x	x	x	0	8.0	0	21.0	24.0	x	x	x
	From DD	3.6	x	x	x	0	0.2	0	3.2	9.2	x	x	x
	From IO(8)	6.0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	6.7	x	x	x	0	0.0	0	0.0	0	x	x	x
	From Melones	0	x	x	x	0	47.0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	31.8	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	15.2	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	5.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	5.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	128.0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	9.8	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	118.2	0	x	x	x
	Storage avail for DO	0	x	x	x	0	15.2	0	118.2	0	x	x	x
	Water Generated	10.3	x	x	x	0	32.0	0	18.0	9.2	x	x	x
1927	SW (Vernalis)	0	x	x	x	0	0	0	0	3.1	x	x	x
	Right #	0	x	x	x	0	0	0	0	8.0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0.5	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	21.0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	2.5	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	18.5	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	18.5	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	3.0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1928	SW (Vernalis)	0	x	x	x	0	0	5.0	74.0	2.0	x	x	x
	Right #	0	x	x	x	0	0	8.0	16.0	18.0	x	x	x
	From DD	0	x	x	x	0	0	0.3	1.4	2.5	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0.0	0.0	0	x	x	x
	From Melones	0	x	x	x	0	0	17.0	70.0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	4.7	70.0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	12.3	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	78.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	2.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	75.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	12.3	75.4	0	x	x	x
	Water Generated	0	x	x	x	0	0	5.0	74.0	2.5	x	x	x
1929	SW (Vernalis)	8.0	x	x	x	0	0	0	20.0	0	x	x	x
	Right #	71.0	x	x	x	0	0	0	16.0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	1.4	0	x	x	x
	From IO(8)	4.0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	2.4	x	x	x	0	0	0	0.0	0	x	x	x
	From Melones	2.0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	2.0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	6.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	6.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	21.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	12.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	8.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	8.4	0	x	x	x
	Water Generated	8.0	x	x	x	0	0	0	20.0	0	x	x	x
1930	SW (Vernalis)	24.0	x	x	x	0	0	0	0	0	x	x	x
	Right #	72 +	x	x	x	0	0	0	0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	3.0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	26.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	17.4	x	x	x	0	0	0	0	0	x	x	x
	From Melones	3.0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	3.0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	24.0	x	x	x	0	0	0	0	0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1931	SW (Vernalis)	0	x	x	x	0	0	17.0	25.0	0	x	x	x
	Right #	0	x	x	x	0	0	24.0	53.0	0	x	x	x
	From DD	0	x	x	x	0	0	7.5	12.4	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	13.0	13.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	13.0	13.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	20.5	25.4	0	x	x	x
1932	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1933	SW (Vernalis)	0	x	x	x	0	0	0	0	23.0	x	x	x
	Right #	0	x	x	x	0	0	0	0	16.0	x	x	x
	From DD	0	x	x	x	0	0	0	0	1.4	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0.0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	4.0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	4.0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	87.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	17.6	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	69.4	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	69.4	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	23.0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1934	SW (Vernalis)	15.5	x	x	x	0	0	0	0	0	x	x	x
	Right #	72 +	x	x	x	0	0	0	0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	5.0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	25.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	11.9	x	x	x	0	0	0	0	0	x	x	x
	From Melones	4.0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	4.0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	4.0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	15.5	x	x	x	0	0	0	0	0	x	x	x
1935	SW (Vernalis)	17.0	x	x	x	0	0	0	0	0	x	x	x
	Right #	72 +	x	x	x	0	0	0	0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	5.0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	28.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	13.4	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	17.0	x	x	x	0	0	0	0	0	x	x	x
1936	SW (Vernalis)	0	x	x	x	0	0	0	0	10.2	x	x	x
	Right #	0	x	x	x	0	0	0	0	8.0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0.5	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	56.0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	9.5	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	46.5	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	46.5	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	10.0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1937	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1938	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1939	SW (Vernalis)	0	x	x	x	0	0	0	0	12.0	x	x	x
	Right #	0	x	x	x	0	0	0	0	53.0	x	x	x
	From DD	0	x	x	x	0	0	0	0	13.8	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	13.8	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1940	SW (Vernalis)	20.6	x	x	x	0	0	0	0	91.0	x	x	x
	Right #	72 +	x	x	x	0	0	0	0	21.0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0	3.7	x	x	x
	From IO(8)	8.0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	33.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	9.0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	8.0	x	x	x	0	0	0	0	18.0	x	x	x
	McClure for Vern	8.0	x	x	x	0	0	0	0	18.0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	142.0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	69.3	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	72.7	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	72.7	x	x	x
	Water Generated	20.6	x	x	x	0	0	0	0	91.0	x	x	x
1941	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1942	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1943	SW (Vernalis)	0	x	x	x	0	0	0	0	30.8	x	x	x
	Right #	0	x	x	x	0	0	0	0	17.0	x	x	x
	From DD	0	x	x	x	0	0	0	0	1.4	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	30.0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	30.0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	31.4	x	x	x
1944	SW (Vernalis)	0	x	x	x	0	0	0	20.9	0	x	x	x
	Right #	0	x	x	x	0	0	0	16.0	0	x	x	x
	From DD	0	x	x	x	0	0	0	1.4	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	130.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	19.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	110.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	110.4	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	21.0	0	x	x	x
1945	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1946	SW (Vernalis)	0	x	x	x	0	0	0	0	18.0	x	x	x
	Right #	0	x	x	x	0	0	0	0	21.0	x	x	x
	From DD	0	x	x	x	0	0	0	0	3.7	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	1.0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	1.0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	59.0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	13.3	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	45.7	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	45.7	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	18.0	x	x	x
1947	SW (Vernalis)	0	x	x	x	0	23.0	25.0	7.0	19.0	x	x	x
	Right #	0	x	x	x	0	8.0	16.0	16.0	59.0	x	x	x
	From DD	0	x	x	x	0	0.2	1.1	1.4	19.8	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0.0	0.0	0.0	0	x	x	x
	From Melones	0	x	x	x	0	53.0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	22.8	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	30.2	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	39.0	81.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	23.9	5.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	15.1	75.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	30.2	15.1	75.4	0	x	x	x
	Water Generated	0	x	x	x	0	23.0	25.0	7.0	19.8	x	x	x
1948	SW (Vernalis)	12.0	x	x	x	1.0	0	0	59.0	27.0	x	x	x
	Right #	66.0	x	x	x	8.0	0	0	16.0	8.0	x	x	x
	From DD	3.6	x	x	x	0	0	0	1.4	0.5	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0.4	x	x	x	0	0	0	0.0	0.0	x	x	x
	From Melones	8.0	x	x	x	20.0	0	0	45.0	53.0	x	x	x
	Melones for Vern	8.0	x	x	x	1.0	0	0	45.0	26.5	x	x	x
	NM avail for FOv	0	x	x	x	19.0	0	0	0	26.5	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	119.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	12.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	106.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	19.0	0	0	106.4	26.5	x	x	x
	Water Generated	12.0	x	x	x	1.0	0	0	59.0	27.0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1949	SW (Vernalis)	12.0	x	x	x	0	0	22.0	0	4.0	x	x	x
	Right #	72 +	x	x	x	0	0	16.0	0	20.0	x	x	x
	From DD	3.6	x	x	x	0	0	1.1	0	3.7	x	x	x
	From IO(8)	5.0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	34.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	6.4	x	x	x	0	0	0.0	0	0.3	x	x	x
	From Melones	2.0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	2.0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	55.0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	20.9	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	34.1	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	34.1	0	0	x	x	x
	Water Generated	12.0	x	x	x	0	0	22.0	0	4.0	x	x	x
1950	SW (Vernalis)	12.8	x	x	x	0	0	17.0	31.0	5.0	x	x	x
	Right #	72 +	x	x	x	0	0	8.0	8.0	16.0	x	x	x
	From DD	3.6	x	x	x	0	0	0.3	0.5	1.4	x	x	x
	From IO(8)	8.0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	33.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	9.2	x	x	x	0	0	0.0	0.0	0.0	x	x	x
	From Melones	0	x	x	x	0	0	28.0	119.0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	16.7	30.5	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	11.3	88.5	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	6.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	3.6	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	2.4	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	11.3	88.5	2.4	x	x	x
	Water Generated	12.8	x	x	x	0	0	17.0	31.0	5.0	x	x	x
1951	SW (Vernalis)	0	x	x	x	0	0	78.0	143.0	33.0	x	x	x
	Right #	0	x	x	x	0	0	24.0	72 +	21.0	x	x	x
	From DD	0	x	x	x	0	0	7.5	29.7	3.7	x	x	x
	From IO(8)	0	x	x	x	0	0	0	39.0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	104.0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	56.3	0	x	x	x
	From Melones	0	x	x	x	0	0	27.0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	27.0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	47.0	57.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	47.0	57.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	41.0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	29.3	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	11.7	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	11.7	x	x	x
	Water Generated	0	x	x	x	0	0	81.5	143.0	33.0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1952	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1953	SW (Vernalis)	0	x	x	x	0	0	33.0	95.0	49.0	x	x	x
	Right #	0	x	x	x	0	0	16.0	72 +	21.0	x	x	x
	From DD	0	x	x	x	0	0	1.1	29.7	3.7	x	x	x
	From IO(8)	0	x	x	x	0	0	0	28.0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	96.0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0.0	44.3	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	33.0	2.0	39.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	31.9	2.0	39.0	x	x	x
	McClure for DO	0	x	x	x	0	0	1.1	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	19.0	102.0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	19.0	6.3	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	95.7	x	x	x
	Storage avail for DO	0	x	x	x	0	0	1.1	0	95.7	x	x	x
	Water Generated	0	x	x	x	0	0	33.0	95.0	49.0	x	x	x
1954	SW (Vernalis)	0.6	x	x	x	0	0	0	0	0	x	x	x
	Right #	53.0	x	x	x	0	0	0	0	0	x	x	x
	From DD	1.2	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	1.2	x	x	x	0	0	0	0	0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1955	SW (Vernalis)	11.0	x	x	x	6.8	33.0	0	0	9.0	x	x	x
	Right #	72 +	x	x	x	8.0	21.0	0	0	16.0	x	x	x
	From DD	3.6	x	x	x	0	0.8	0	0	1.4	x	x	x
	From IO(8)	5.0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	33.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	7.4	x	x	x	0	0	0	0	0.0	x	x	x
	From Melones	0	x	x	x	37.0	2.0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	7.0	2.0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	30.0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	4.0	0	0	3.0	x	x	x
	Hensley for Vern	0	x	x	x	0	4.0	0	0	3.0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	3.0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	3.0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	8.0	0	0	46.0	x	x	x
	McClure for Vern	0	x	x	x	0	8.0	0	0	4.6	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	41.4	x	x	x
	From Don Pedro	0	x	x	x	0	34.0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	15.2	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	18.8	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	30.0	18.8	0	0	41.4	x	x	x
	Water Generated	11.0	x	x	x	7.0	33.0	0	0	9.0	x	x	x
1956	SW (Vernalis)	17.6	x	x	x	0	0	20.2	0	0	x	x	x
	Right #	72 +	x	x	x	0	0	16.0	0	0	x	x	x
	From DD	3.6	x	x	x	0	0	1.1	0	0	x	x	x
	From IO(8)	6.0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	30.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	9.0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	5.0	x	x	x	0	0	1.0	0	0	x	x	x
	Melones for Vern	5.0	x	x	x	0	0	1.0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	3.0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	3.0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	8.0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	8.0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	73.0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	6.9	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	17.6	x	x	x	0	0	20.0	0	0	x	x	x
1957	SW (Vernalis)	0	x	x	x	0	0	8.0	17.0	13.7	x	x	x
	Right #	0	x	x	x	0	0	24.0	16.0	16.0	x	x	x
	From DD	0	x	x	x	0	0	7.5	1.4	1.4	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0.5	0.0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	82.0	57.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	15.6	12.6	x	x	x
	McClure for DO	0	x	x	x	0	0	0	66.4	44.4	x	x	x
	From Don Pedro	0	x	x	x	0	0	1.0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	1.0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	1.0	66.4	44.4	x	x	x
	Water Generated	0	x	x	x	0	0	8.0	17.0	14.0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1958	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1959	SW (Vernalis)	0	x	x	x	0	0	0	0	23.0	x	x	x
	Right #	0	x	x	x	0	0	0	0	63.0	x	x	x
	From DD	0	x	x	x	0	0	0	0	33.3	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	33.3	x	x	x
1960	SW (Vernalis)	28.0	x	x	x	0	0	0	0	0	x	x	x
	Right #	72 +	x	x	x	0	0	0	0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	4.0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	26.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	24.4	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	28.0	x	x	x	0	0	0	0	0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1961	SW (Vernalis)	26.0	x	x	x	0	0	0	0	0	x	x	x
	Right #	72 +	x	x	x	0	0	0	0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	3.0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	24.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	22.4	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	26.0	x	x	x	0	0	0	0	0	x	x	x
1962	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1963	SW (Vernalis)	0	x	x	x	0	42.0	0	0	2.4	x	x	x
	Right #	0	x	x	x	0	8.0	0	0	8.0	x	x	x
	From DD	0	x	x	x	0	0.2	0	0	0.5	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0.0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	57.0	0	0	74.0	x	x	x
	Melones for Vern	0	x	x	x	0	41.8	0	0	1.5	x	x	x
	NM avail for FOv	0	x	x	x	0	15.2	0	0	72.5	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	15.2	0	0	72.5	x	x	x
	Water Generated	0	x	x	x	0	42.0	0	0	2.0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1964	SW (Vernalis)	0	x	x	x	18.0	33.0	0	19.0	20.0	x	x	x
	Right #	0	x	x	x	8.0	48.0	0	16.0	21.0	x	x	x
	From DD	0	x	x	x	0	8.0	0	1.4	3.7	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0.0	0	x	x	x
	From Melones	0	x	x	x	36.0	20.0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	18.0	20.0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	18.0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	2.0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	2.0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	3.0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	3.0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	1.0	0	49.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	1.0	0	17.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	31.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	1.0	0	0	28.0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	1.0	0	0	14.3	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	13.7	x	x	x
	Storage avail for DO	0	x	x	x	18.0	0	0	31.4	13.7	x	x	x
	Water Generated	0	x	x	x	18.0	33.0	0	19.0	20.0	x	x	x
1965	SW (Vernalis)	27.0	x	x	x	0	0	0	98.9	0	x	x	x
	Right #	72 + +	x	x	x	0	0	0	8.0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0.5	0	x	x	x
	From IO(8)	3.0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	17.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	20.0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	132.0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	98.5	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	33.5	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	33.5	0	x	x	x
	Water Generated	23.6	x	x	x	0	0	0	99.0	0	x	x	x
1966	SW (Vernalis)	0	x	x	x	0	0	20.0	0	11.0	x	x	x
	Right #	0	x	x	x	0	0	16.0	0	47.0	x	x	x
	From DD	0	x	x	x	0	0	1.1	0	11.2	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0.0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	74.0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	18.9	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	55.1	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	55.1	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	20.0	0	11.2	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1967	SW (Vernalis)	9.0	x	x	x	0	0	0	0	0	x	x	x
	Right #	71.0	x	x	x	0	0	0	0	0	x	x	x
	From DD	3.5	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	4.0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	3.5	x	x	x	0	0	0	0	0	x	x	x
	From Melones	2.0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	2.0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	9.0	x	x	x	0	0	0	0	0	x	x	x
1968	SW (Vernalis)	0	x	x	x	0	0	31.0	35.0	17.0	x	x	x
	Right #	0	x	x	x	0	0	21.0	21.0	58.0	x	x	x
	From DD	0	x	x	x	0	0	2.1	3.2	18.7	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0.0	0.0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	23.0	24.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	23.0	24.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	23.0	34.0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	5.9	7.8	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	17.1	26.2	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	17.1	26.2	0	x	x	x
	Water Generated	0	x	x	x	0	0	31.0	35.0	18.7	x	x	x
1969	SW (Vernalis)	21.0	x	x	x	0	0	0	0	0	x	x	x
	Right #	72 +	x	x	x	0	0	0	0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	3.0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	17.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	17.4	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	21.0	x	x	x	0	0	0	0	0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1970	SW (Vernalis)	0	x	x	x	0	0	78.0	120.5	32.0	x	x	x
	Right #	0	x	x	x	0	0	72+	63.0	21.0	x	x	x
	From DD	0	x	x	x	0	0	19.5	26.5	3.7	x	x	x
	From IO(8)	0	x	x	x	0	0	27.0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	91.0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	56.5	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	2.0	94.0	2.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	2.0	94.0	2.0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	89.0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	26.3	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	62.7	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	62.7	x	x	x
	Water Generated	0	x	x	x	0	0	78.0	120.5	32.0	x	x	x
1971	SW (Vernalis)	0	x	x	x	0	0	51.0	88.0	51.0	x	x	x
	Right #	0	x	x	x	0	0	71.0	63.0	16.0	x	x	x
	From DD	0	x	x	x	0	0	19.5	26.5	1.4	x	x	x
	From IO(8)	0	x	x	x	0	0	22.0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	7.5	0	0.0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	1.0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	1.0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	1.0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	1.0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	7.0	63.0	60.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	7.0	63.0	47.6	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	12.4	x	x	x
	From Don Pedro	0	x	x	x	0	0	17.0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	17.0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	12.4	x	x	x
	Water Generated	0	x	x	x	0	0	51.0	89.5	51.0	x	x	x
1972	SW (Vernalis)	15.2	x	x	x	8.8	29.0	54.0	47.0	27.0	x	x	x
	Right #	72+	x	x	x	8.0	8.0	72+	16.0	63.0	x	x	x
	From DD	3.6	x	x	x	0	0.2	19.5	1.4	33.3	x	x	x
	From IO(8)	6.0	x	x	x	0	0	7.0	0	0	x	x	x
	From IO(9)	33.0	x	x	x	0	0	83.0	0	0	x	x	x
	Friant Oblig at NM	11.6	x	x	x	0	0.0	14.5	0.0	0	x	x	x
	From Melones	0	x	x	x	43.0	31.0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	9.0	28.8	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	34.0	2.2	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	15.0	75.0	4.0	x	x	x
	McClure for Vern	0	x	x	x	0	0	15.0	45.6	4.0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	29.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	5.0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	5.0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	34.0	2.2	0	29.4	0	x	x	x
	Water Generated	15.2	x	x	x	9.0	29.0	54.0	47.0	37.3	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1973	SW (Vernalis)	1.7	x	x	x	0	0	0	0	0	x	x	x
	Right #	8.0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0.1	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	8.0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	1.9	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	6.1	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	6.1	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	2.0	x	x	x	0	0	0	0	0	x	x	x
1974	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1975	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1976	SW (Vernalis)	0	x	x	x	0	0	0	33.0	0	x	x	x
	Right #	0	x	x	x	0	0	0	63.0	0	x	x	x
	From DD	0	x	x	x	0	0	0	26.5	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	2.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	2.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	9.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	9.0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	37.5	0	x	x	x
1977	SW (Vernalis)	0	x	x	x	0	0	26.0	45.0	0	x	x	x
	Right #	0	x	x	x	0	0	72 + +	72 + +	0	x	x	x
	From DD	0	x	x	x	0	0	19.5	29.7	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	4.0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	4.0	2.0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	4.0	6.0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	1.0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	1.0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	24.5	35.7	0	x	x	x
1978	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1979	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1980	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1981	SW (Vernalis)	0	x	x	x	0	0	0	19.0	17.0	x	x	x
	Right #	0	x	x	x	0	0	0	16.0	58.0	x	x	x
	From DD	0	x	x	x	0	0	0	1.4	18.7	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0.0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	1.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	1.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	70.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	16.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	53.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	53.4	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	19.0	18.7	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1982	SW (Vernalis)	10.0	x	x	x	0	0	0	0	0	x	x	x
	Right #	71.0	x	x	x	0	0	0	0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	6.0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	6.4	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	10.0	x	x	x	0	0	0	0	0	x	x	x
1983	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1984	SW (Vernalis)	0	x	x	x	0	0	57.0	111.7	29.0	x	x	x
	Right #	0	x	x	x	0	0	63.0	16.0	21.0	x	x	x
	From DD	0	x	x	x	0	0	17.7	1.4	3.7	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	40.0	138.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	40.0	110.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	27.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	117.0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	25.3	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	91.7	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	27.4	91.7	x	x	x
	Water Generated	0	x	x	x	0	0	57.7	112.0	29.0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1985	SW (Vernalis)	0	x	x	x	0	0	0	0	14.0	x	x	x
	Right #	0	x	x	x	0	0	0	0	56.0	x	x	x
	From DD	0	x	x	x	0	0	0	0	14.5	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	14.5	x	x	x
1986	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1987	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1988	SW (Vernalis)	23.0	x	x	x	0	0	0	0	0	x	x	x
	Right #	72 +	x	x	x	0	0	0	0	0	x	x	x
	From DD	3.6	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	3.0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	28.0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	19.4	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	23.0	x	x	x	0	0	0	0	0	x	x	x
1989	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1990	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1991	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x
1992	SW (Vernalis)	0	x	x	x	0	0	0	22.0	0	x	x	x
	Right #	0	x	x	x	0	0	0	16.0	0	x	x	x
	From DD	0	x	x	x	0	0	0	1.4	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0.0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	1.0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	1.0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	24.0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	19.6	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	4.4	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	4.4	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	22.0	0	x	x	x
1993	SW (Vernalis)	0	x	x	x	0	0	84.8	0	0	x	x	x
	Right #	0	x	x	x	0	0	16.0	0	0	x	x	x
	From DD	0	x	x	x	0	0	1.1	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	42.0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	42.0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	9.0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	9.0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	9.0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	9.0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	96.0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	23.9	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	85.0	0	0	x	x	x

Alternative 4
Allocation of Supplemental Water for Vernalis Objective

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1994	SW (Vernalis)	0	x	x	x	0	0	0	0	0	x	x	x
	Right #	0	x	x	x	0	0	0	0	0	x	x	x
	From DD	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(8)	0	x	x	x	0	0	0	0	0	x	x	x
	From IO(9)	0	x	x	x	0	0	0	0	0	x	x	x
	Friant Oblig at NM	0	x	x	x	0	0	0	0	0	x	x	x
	From Melones	0	x	x	x	0	0	0	0	0	x	x	x
	Melones for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	NM avail for FOv	0	x	x	x	0	0	0	0	0	x	x	x
	From Hensley	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Hensley for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Eastman	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Eastman for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From McClure	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	McClure for DO	0	x	x	x	0	0	0	0	0	x	x	x
	From Don Pedro	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for Vern	0	x	x	x	0	0	0	0	0	x	x	x
	Don Pedro for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Storage avail for DO	0	x	x	x	0	0	0	0	0	x	x	x
	Water Generated	0	x	x	x	0	0	0	0	0	x	x	x

Alternative 4
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1922	SW (Alt4)	0	0	0	0	0	0	0	0	0	349.9	255.8	5.9
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	166.2	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	0	122.7	113.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	288.9	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	61.0	27.0	5.9
	Cutoff Group	0	0	0	0	0	0	0	0	0	7.0	7.0	(0)
1923	SW (Alt4)	0	0	0	0	0	0	0	0	325.2	585.0	374.8	0
	From Storage	0	0	0	0	0	0	0	0	192.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	43.5	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	13.8	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	78.8	210.5	113.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	76.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	314.3	459.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	10.9	125.9	145.9	0
	Cutoff Group	0	0	0	0	0	0	0	0	4.0	8.0	7.0	0
1924	SW (Alt4)	0	0	0	0	0	13.9	159.0	319.0	571.0	521.0	239.7	0
	From Storage	0	0	0	0	0	0	94.0	47.0	8.0	0	0	0
	From DD	0	0	0	0	0	0	19.9	98.6	154.9	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	10.3	29.7	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	25.9	161.6	174.4	168.7	75.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	3.0	27.0	44.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	139.8	310.2	364.3	385.3	190.5	0
	Proj Obligation	0	0	0	0	0	13.9	19.2	8.8	206.7	135.7	49.2	0
	Cutoff Group	0	0	0	0	0	(0)	4.0	8.0	8.0	8.0	7.0	0
1925	SW (Alt4)	6.3	0	0	0	0	0	0	0	372.5	577.0	273.0	5.6
	From Storage	0	0	0	0	0	0	0	0	261.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	37.4	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	11.2	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	9.8	210.5	113.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	61.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	308.2	444.1	228.9	0
	Proj Obligation	6.3	0	0	0	0	0	0	0	64.3	132.9	44.1	5.6
	Cutoff Group	(0)	0	0	0	0	0	0	0	3.0	8.0	7.0	(0)
1926	SW (Alt4)	0	0	0	0	0	0	0	95.0	753.7	811.6	417.7	0
	From Storage	0	0	0	0	0	0	0	0	6.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	119.9	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	210.5	210.5	183.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	63.0	72.0	29.0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	434.4	455.1	332.1	0
	Proj Obligation	0	0	0	0	0	0	0	95.0	319.3	356.5	85.6	0
	Cutoff Group	0	0	0	0	0	0	0	(0)	8.0	8.0	8.0	0
1927	SW (Alt4)	0	0	0	0	0	0	0	0	0	566.5	353.8	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	0	210.5	113.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	99.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	482.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	84.3	125.0	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	8.0	7.0	0

Alternative 4
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1928	SW (Alt4)	0	0	0	0	0	0	0	0	591.0	896.1	433.3	0
	From Storage	0	0	0	0	0	0	0	0	22.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	119.9	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	198.0	490.3	183.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	65.0	63.0	19.0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	61.0	0	0
	Water Generated	0	0	0	0	0	0	0	0	439.9	786.9	322.1	0
	Proj Obligation	0	0	0	0	0	0	0	0	151.1	109.2	111.2	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	9.0	8.0	0
1929	SW (Alt4)	0	0	0	0	0	0	0	0	208.0	551.6	301.3	0
	From Storage	0	0	0	0	0	0	0	0	96.0	10.0	15.0	0
	From DD	0	0	0	0	0	0	0	0	43.5	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	13.8	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	58.9	168.7	75.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	44.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	198.4	395.3	205.5	0
	Proj Obligation	0	0	0	0	0	0	0	0	9.6	156.3	95.8	0
	Cutoff Group	0	0	0	0	0	0	0	0	4.0	8.0	7.0	0
1930	SW (Alt4)	0	0	0	0	0	0	0	0	587.0	613.3	267.0	0
	From Storage	0	0	0	0	0	0	0	0	192.0	14.0	17.0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	175.1	178.3	78.1	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	47.0	46.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	569.0	410.9	210.4	0
	Proj Obligation	0	0	0	0	0	0	0	0	18.0	202.3	56.6	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	8.0	7.0	0
1931	SW (Alt4)	0	0	0	0	0	22.2	156.0	157.0	445.0	475.5	310.7	0
	From Storage	0	0	0	0	0	0	112.0	49.0	7.0	0	0	0
	From DD	0	0	0	0	0	0	17.6	29.9	154.9	172.6	119.9	0
	From DD - SJ	0	0	0	0	0	0	9.3	12.3	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0.2	48.3	174.4	168.7	137.4	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	31.0	47.0	19.0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	129.8	127.2	367.3	388.3	276.3	0
	Proj Obligation	0	0	0	0	0	22.2	26.2	29.8	77.7	87.2	34.4	0
	Cutoff Group	0	0	0	0	0	(0)	3.0	4.0	8.0	8.0	8.0	0
1932	SW (Alt4)	0	0	0	0	0	0	0	0	42.8	500.2	245.9	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	0	178.3	78.1	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	96.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	446.9	193.4	0
	Proj Obligation	0	0	0	0	0	0	0	0	42.8	53.3	52.5	0
	Cutoff Group	0	0	0	0	0	0	0	0	(0)	8.0	7.0	0
1933	SW (Alt4)	0	0	0	0	0	0	0	0	150.4	484.9	337.3	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	172.6	119.9	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	0	168.7	137.4	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	43.0	52.0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	384.3	309.3	0
	Proj Obligation	0	0	0	0	0	0	0	0	150.4	100.5	28.0	0
	Cutoff Group	0	0	0	0	0	0	0	0	(0)	8.0	8.0	0

Alternative 4
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1934	SW (Alt4)	0	0	0	0	0	22.0	0	85.0	492.0	512.1	261.5	0
	From Storage	0	0	0	0	0	0	0	40.0	12.0	0	0	0
	From DD	0	0	0	0	0	0	0	25.9	154.9	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	10.4	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0.5	173.8	168.3	74.5	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	33.0	57.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	66.4	373.7	397.9	189.8	0
	Proj Obligation	0	0	0	0	0	22.0	0	18.6	118.3	114.2	71.7	0
	Cutoff Group	0	0	0	0	0	(0)	0	3.0	8.0	8.0	7.0	0
1935	SW (Alt4)	0	0	0	0	0	0	0	0	0	625.0	317.5	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	0	210.5	113.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	101.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	484.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	140.9	88.6	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	8.0	7.0	0
1936	SW (Alt4)	0	0	0	0	0	0	0	0	9.0	720.5	412.6	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	172.6	119.9	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	0	210.5	183.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	100.0	69.0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	483.1	372.1	0
	Proj Obligation	0	0	0	0	0	0	0	0	9.0	237.3	40.5	0
	Cutoff Group	0	0	0	0	0	0	0	0	(0)	8.0	8.0	0
1937	SW (Alt4)	0	0	0	0	0	0	0	0	80.6	751.5	422.1	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	172.6	119.9	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	0	210.5	183.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	102.0	79.0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	485.1	382.1	0
	Proj Obligation	0	0	0	0	0	0	0	0	80.6	266.4	40.0	0
	Cutoff Group	0	0	0	0	0	0	0	0	(0)	8.0	8.0	0
1938	SW (Alt4)	0	0	0	0	0	0	0	0	0	0	141.3	0
	From Storage	0	0	0	0	0	0	0	0	0	0	2.0	0
	From DD	0	0	0	0	0	0	0	0	0	0	31.4	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	0	7.6	0
	From IO Sac	0	0	0	0	0	0	0	0	0	0	84.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	0	117.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	0	23.7	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	0	4.0	0
1939	SW (Alt4)	0	0	0	0	0	0	54.0	47.0	788.8	677.8	368.6	0
	From Storage	0	0	0	0	0	0	0	0	8.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	119.9	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	442.4	195.5	168.7	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	54.0	69.0	45.0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	91.0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	750.3	437.1	333.6	0
	Proj Obligation	0	0	0	0	0	0	54.0	47.0	38.5	240.7	35.0	0
	Cutoff Group	0	0	0	0	0	0	(0)	(0)	9.0	8.0	8.0	0
1940	SW (Alt4)	0	0	0	0	0	0	0	0	269.9	781.4	406.4	0
	From Storage	0	0	0	0	0	0	0	0	129.0	0	0	0

Alternative 4
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	From DD	0	0	0	0	0	0	0	0	43.5	172.6	119.9	0
	From DD - SJ	0	0	0	0	0	0	0	0	13.8	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	78.8	210.5	183.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	88.0	55.0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	251.3	471.1	358.1	0
	Proj Obligation	0	0	0	0	0	0	0	0	18.6	310.3	48.3	0
	Cutoff Group	0	0	0	0	0	0	0	0	4.0	8.0	8.0	0
1941	SW (Alt4)	0	0	0	0	0	0	0	0	0	195.5	189.4	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	43.4	81.6	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	14.0	12.9	0
	From IO Sac	0	0	0	0	0	0	0	0	0	87.1	85.8	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	130.5	167.4	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	65.1	22.0	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	4.0	5.0	0
1942	SW (Alt4)	0	0	0	0	0	0	0	0	0	210.1	187.6	0
	From Storage	0	0	0	0	0	0	0	0	0	3.0	0	0
	From DD	0	0	0	0	0	0	0	0	0	43.4	81.6	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	14.0	12.9	0
	From IO Sac	0	0	0	0	0	0	0	0	0	87.1	85.8	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	133.5	167.4	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	76.6	20.2	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	4.0	5.0	0
1943	SW (Alt4)	0	0	0	0	0	0	0	0	0	596.4	302.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	0	210.5	113.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	92.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	475.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	121.3	73.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	8.0	7.0	0
1944	SW (Alt4)	0	0	0	0	0	0	0	0	528.3	646.0	336.0	0
	From Storage	0	0	0	0	0	0	0	0	155.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	149.2	172.6	119.9	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	112.9	210.5	183.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	50.0	31.0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	417.1	433.1	334.1	0
	Proj Obligation	0	0	0	0	0	0	0	0	111.2	212.9	1.9	0
	Cutoff Group	0	0	0	0	0	0	0	0	7.0	8.0	8.0	0
1945	SW (Alt4)	0	0	0	0	0	0	0	0	75.1	696.9	357.4	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	0	210.5	113.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	89.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	472.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	75.1	224.7	128.5	0
	Cutoff Group	0	0	0	0	0	0	0	0	(0)	8.0	7.0	0

Alternative 4
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1946	SW (Alt4)	0	0	0	0	0	0	0	0	422.2	637.5	297.9	0
	From Storage	0	0	0	0	0	0	0	0	81.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	149.2	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	112.9	210.5	113.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	80.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	343.1	463.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	79.1	174.3	69.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	7.0	8.0	7.0	0
1947	SW (Alt4)	0	0	0	0	0	0	0	134.0	516.4	779.7	365.5	0
	From Storage	0	0	0	0	0	0	0	0	25.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	119.9	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	198.0	210.5	183.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	53.0	66.0	33.0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	430.9	449.1	336.1	0
	Proj Obligation	0	0	0	0	0	0	0	134.0	85.5	330.6	29.4	0
	Cutoff Group	0	0	0	0	0	0	0	(0)	8.0	8.0	8.0	0
1948	SW (Alt4)	0	0	0	0	0	0	0	0	0	504.0	304.0	0
	From Storage	0	0	0	0	0	0	0	0	0	1.0	0	0
	From DD	0	0	0	0	0	0	0	0	0	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	0	210.5	113.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	87.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	471.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	32.9	75.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	8.0	7.0	0
1949	SW (Alt4)	0	0	0	0	0	0	0	0	605.9	712.2	298.0	0
	From Storage	0	0	0	0	0	0	0	0	109.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	198.0	210.5	113.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	61.0	63.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	522.9	446.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	83.0	266.1	69.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	8.0	7.0	0
1950	SW (Alt4)	0	0	0	0	0	0	0	0	234.9	580.1	223.4	0
	From Storage	0	0	0	0	0	0	0	0	193.0	3.0	0	0
	From DD	0	0	0	0	0	0	0	0	20.1	172.6	112.6	0
	From DD - SJ	0	0	0	0	0	0	0	0	3.7	39.1	27.1	0
	From IO Sac	0	0	0	0	0	0	0	0	3.3	210.5	96.5	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	66.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	216.4	452.1	209.1	0
	Proj Obligation	0	0	0	0	0	0	0	0	18.5	128.0	14.3	0
	Cutoff Group	0	0	0	0	0	0	0	0	1.0	8.0	6.0	0
1951	SW (Alt4)	0	0	0	0	0	0	0	0	469.9	784.7	208.0	0
	From Storage	0	0	0	0	0	0	0	0	31.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	81.6	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	12.9	0
	From IO Sac	0	0	0	0	0	0	0	0	198.0	210.5	85.8	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	81.0	75.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	464.9	458.1	167.4	0
	Proj Obligation	0	0	0	0	0	0	0	0	5.0	326.6	40.6	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	8.0	5.0	0

Alternative 4
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1952	SW (Alt4)	0	0	0	0	0	0	0	0	0	0	82.7	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	0	19.7	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	0	4.7	0
	From IO Sac	0	0	0	0	0	0	0	0	0	0	10.9	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	0	30.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	0	52.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	0	2.0	0
1953	SW (Alt4)	0	0	0	0	0	0	0	0	0	233.0	101.7	0
	From Storage	0	0	0	0	0	0	0	0	0	1.0	0	0
	From DD	0	0	0	0	0	0	0	0	0	119.6	19.7	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	20.4	4.7	0
	From IO Sac	0	0	0	0	0	0	0	0	0	89.2	10.9	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	209.8	30.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	23.2	71.0	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	5.0	2.0	0
1954	SW (Alt4)	0	0	0	0	0	0	0	33.0	303.6	786.0	206.6	0
	From Storage	0	0	0	0	0	0	0	0	36.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	149.2	172.6	81.6	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	12.9	0
	From IO Sac	0	0	0	0	0	0	0	0	112.9	210.5	85.8	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	72.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	298.1	455.1	167.4	0
	Proj Obligation	0	0	0	0	0	0	0	33.0	5.5	330.8	39.2	0
	Cutoff Group	0	0	0	0	0	0	0	(0)	7.0	8.0	5.0	0
1955	SW (Alt4)	0	0	0	0	0	0	0	0	553.0	726.2	358.6	0
	From Storage	0	0	0	0	0	0	0	0	218.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	149.2	172.6	119.9	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	112.9	210.5	183.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	62.0	36.0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	480.1	445.1	339.1	0
	Proj Obligation	0	0	0	0	0	0	0	0	72.9	281.1	19.5	0
	Cutoff Group	0	0	0	0	0	0	0	0	7.0	8.0	8.0	0
1956	SW (Alt4)	0	0	0	0	0	0	0	0	0	107.5	66.1	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	26.9	19.7	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	10.5	4.7	0
	From IO Sac	0	0	0	0	0	0	0	0	0	11.5	10.9	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	38.4	30.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	69.1	35.4	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	2.0	2.0	0
1957	SW (Alt4)	0	0	0	0	0	0	0	0	112.0	628.6	241.4	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	0	210.5	113.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	79.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	462.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	112.0	166.4	12.5	0
	Cutoff Group	0	0	0	0	0	0	0	0	(0)	8.0	7.0	0

Alternative 4
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1958	SW (Alt4)	0	0	0	0	0	0	0	0	0	8.4	67.7	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	0	19.7	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	0	4.7	0
	From IO Sac	0	0	0	0	0	0	0	0	0	0	10.9	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	0	30.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	8.4	37.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	(0)	2.0	0
1959	SW (Alt4)	0	0	0	0	0	14.4	0	0	713.4	790.5	316.2	0
	From Storage	0	0	0	0	0	0	0	0	19.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	198.0	490.3	113.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	55.0	75.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	50.0	0	0
	Water Generated	0	0	0	0	0	0	0	0	426.9	787.9	228.9	0
	Proj Obligation	0	0	0	0	0	14.4	0	0	286.5	2.5	87.3	0
	Cutoff Group	0	0	0	0	0	(0)	0	0	8.0	9.0	7.0	0
1960	SW (Alt4)	4.0	0	0	0	0	0	0	0	656.7	695.0	370.0	2.0
	From Storage	0	0	0	0	0	0	0	0	77.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	119.9	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	198.0	210.5	183.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	45.0	44.0	34.0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	474.9	427.1	337.1	0
	Proj Obligation	4.0	0	0	0	0	0	0	0	181.8	267.9	32.9	2.0
	Cutoff Group	(0)	0	0	0	0	0	0	0	8.0	8.0	8.0	(0)
1961	SW (Alt4)	0	0	0	0	0	0	0	0	596.0	780.2	385.9	0
	From Storage	0	0	0	0	0	0	0	0	40.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	119.9	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	198.0	490.3	183.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	42.0	56.0	13.0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	28.0	0	0
	Water Generated	0	0	0	0	0	0	0	0	434.9	746.9	316.1	0
	Proj Obligation	0	0	0	0	0	0	0	0	161.1	33.2	69.8	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	9.0	8.0	0
1962	SW (Alt4)	0	0	0	0	0	0	0	0	141.6	725.6	364.3	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	0	210.5	113.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	90.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	473.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	141.6	252.4	135.4	0
	Cutoff Group	0	0	0	0	0	0	0	0	(0)	8.0	7.0	0
1963	SW (Alt4)	0	0	0	0	0	0	0	0	0	376.2	165.8	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	166.2	31.4	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	39.1	7.6	0
	From IO Sac	0	0	0	0	0	0	0	0	0	122.7	84.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	288.9	115.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	87.3	50.2	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	7.0	4.0	0

Alternative 4
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1964	SW (Alt4)	0	0	0	0	0	0	0	0	444.0	763.6	379.3	0
	From Storage	0	0	0	0	0	0	0	0	84.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	149.2	172.6	119.9	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	112.9	210.5	183.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	79.0	51.0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	346.1	462.1	354.1	0
	Proj Obligation	0	0	0	0	0	0	0	0	97.9	301.4	25.2	0
	Cutoff Group	0	0	0	0	0	0	0	0	7.0	8.0	8.0	0
1965	SW (Alt4)	1.7	0	0	0	0	0	0	0	0	404.2	51.5	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	166.2	19.7	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	39.1	4.7	0
	From IO Sac	0	0	0	0	0	0	0	0	0	122.7	10.9	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	288.9	30.6	0
	Proj Obligation	1.7	0	0	0	0	0	0	0	0	115.3	20.9	0
	Cutoff Group	(0)	0	0	0	0	0	0	0	0	7.0	2.0	0
1966	SW (Alt4)	0	0	0	0	0	0	0	15.0	665.6	754.8	308.3	0
	From Storage	0	0	0	0	0	0	0	0	13.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	198.0	210.5	113.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	54.0	81.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	419.9	464.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	15.0	245.7	290.7	79.4	0
	Cutoff Group	0	0	0	0	0	0	0	(0)	8.0	8.0	7.0	0
1967	SW (Alt4)	0	0	0	0	0	0	0	0	0	0	55.3	0
	From Storage	0	0	0	0	0	0	0	0	0	0	1.0	0
	From DD	0	0	0	0	0	0	0	0	0	0	19.7	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	0	4.7	0
	From IO Sac	0	0	0	0	0	0	0	0	0	0	10.9	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	0	31.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	0	23.7	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	0	2.0	0
1968	SW (Alt4)	0	0	0	0	0	0	0	0	632.3	718.8	48.4	0
	From Storage	0	0	0	0	0	0	0	0	23.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	19.7	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	4.7	0
	From IO Sac	0	0	0	0	0	0	0	0	198.0	210.5	10.9	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	48.0	71.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	423.9	454.1	30.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	208.4	264.7	17.8	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	8.0	2.0	0
1969	SW (Alt4)	1.7	0	0	0	0	0	0	0	0	0	62.7	0
	From Storage	0	0	0	0	0	0	0	0	0	0	1.0	0
	From DD	0	0	0	0	0	0	0	0	0	0	19.7	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	0	4.7	0
	From IO Sac	0	0	0	0	0	0	0	0	0	0	10.9	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	0	31.6	0
	Proj Obligation	1.7	0	0	0	0	0	0	0	0	0	31.1	0
	Cutoff Group	(0)	0	0	0	0	0	0	0	0	0	2.0	0

Alternative 4
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1970	SW (Alt4)	0	0	0	0	0	0	0	0	345.0	608.0	173.1	0
	From Storage	0	0	0	0	0	0	0	0	101.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	146.3	172.6	81.6	0
	From DD - SJ	0	0	0	0	0	0	0	0	36.3	39.1	12.9	0
	From IO Sac	0	0	0	0	0	0	0	0	92.1	210.5	85.8	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	70.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	339.4	453.1	167.4	0
	Proj Obligation	0	0	0	0	0	0	0	0	5.6	154.9	5.7	0
	Cutoff Group	0	0	0	0	0	0	0	0	6.0	8.0	5.0	0
1971	SW (Alt4)	0	0	0	0	0	0	0	0	0	185.4	42.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	43.4	19.7	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	14.1	4.7	0
	From IO Sac	0	0	0	0	0	0	0	0	0	87.1	10.9	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	130.5	30.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	54.9	11.4	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	4.0	2.0	0
1972	SW (Alt4)	0	0	0	0	0	0	0	0	621.0	755.0	234.1	0
	From Storage	0	0	0	0	0	0	0	0	47.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	198.0	210.5	113.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	42.0	72.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	441.9	455.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	179.1	299.8	5.2	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	8.0	7.0	0
1973	SW (Alt4)	0	0	0	0	0	0	0	0	367.1	696.5	199.4	7.2
	From Storage	0	0	0	0	0	0	0	0	275.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	37.4	172.6	81.6	0
	From DD - SJ	0	0	0	0	0	0	0	0	11.2	39.1	12.9	0
	From IO Sac	0	0	0	0	0	0	0	0	9.8	210.5	85.8	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	98.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	322.2	481.1	167.4	0
	Proj Obligation	0	0	0	0	0	0	0	0	44.9	215.4	32.0	7.2
	Cutoff Group	0	0	0	0	0	0	0	0	3.0	8.0	5.0	0
1974	SW (Alt4)	0	0	0	0	0	0	0	0	0	82.9	68.3	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	26.9	19.7	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	10.5	4.7	0
	From IO Sac	0	0	0	0	0	0	0	0	0	11.5	10.9	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	38.4	30.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	44.5	37.7	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	2.0	2.0	0
1975	SW (Alt4)	0	0	0	0	0	0	0	0	0	173.9	69.3	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	43.4	19.7	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	14.1	4.7	0
	From IO Sac	0	0	0	0	0	0	0	0	0	87.1	10.9	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	130.5	30.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	43.4	38.7	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	4.0	2.0	0

Alternative 4
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1976	SW (Alt4)	0	0	0	0	0	0	0	88.0	737.4	547.4	56.5	0
	From Storage	0	0	0	0	0	0	0	58.0	7.0	0	0	0
	From DD	0	0	0	0	0	0	0	25.9	154.9	172.6	19.7	0
	From DD - SJ	0	0	0	0	0	0	0	10.4	37.5	39.1	4.7	0
	From IO Sac	0	0	0	0	0	0	0	0.5	430.8	210.5	0.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	43.0	53.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	51.0	0	0	0
	Water Generated	0	0	0	0	0	0	0	84.4	686.7	436.1	20.3	0
	Proj Obligation	0	0	0	0	0	0	0	3.6	50.7	111.3	36.2	0
	Cutoff Group	0	0	0	0	0	0	0	3.0	9.0	8.0	2.0	0
1977	SW (Alt4)	4.6	0	0	0	190.1	34.5	311.0	118.0	516.0	410.0	133.0	0
	From Storage	0	0	0	0	9.0	9.0	34.0	42.0	22.0	0	0	0
	From DD	0	0	0	0	0.6	12.2	49.6	25.9	154.9	172.6	31.4	0
	From DD - SJ	0	0	0	0	0.6	13.1	19.4	10.4	37.5	39.1	7.6	0
	From IO Sac	0	0	0	0	3.7	3.1	203.0	0.5	173.8	168.3	57.7	0
	From IO(8) Friant	0	0	0	0	1.0	0	0	0	7.0	7.0	0	0
	From IO(9) Friant	0	0	0	0	10.0	0	4.0	0	0	0	0	0
	Water Generated	0	0	0	0	24.3	24.3	290.6	68.4	357.7	347.9	89.1	0
	Proj Obligation	4.6	0	0	0	165.7	10.2	20.4	49.6	158.3	62.1	43.9	0
	Cutoff Group	(0)	0	0	0	9.0	7.0	9.0	3.0	8.0	8.0	5.0	0
1978	SW (Alt4)	41.0	0	0	0	0	0	0	0	0	369.8	218.7	0
	From Storage	0	0	0	0	0	0	0	0	0	83.0	0	0
	From DD	5.4	0	0	0	0	0	0	0	0	119.6	112.6	0
	From DD - SJ	0.9	0	0	0	0	0	0	0	0	20.4	27.1	0
	From IO Sac	6.3	0	0	0	0	0	0	0	0	101.3	96.5	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	11.7	0	0	0	0	0	0	0	0	303.9	209.1	0
	Proj Obligation	29.3	0	0	0	0	0	0	0	0	65.9	9.6	0
	Cutoff Group	3.0	0	0	0	0	0	0	0	0	5.0	6.0	0
1979	SW (Alt4)	0	0	0	0	0	0	0	0	627.9	617.1	168.1	0
	From Storage	0	0	0	0	0	0	0	0	165.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	31.4	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	7.6	0
	From IO Sac	0	0	0	0	0	0	0	0	198.0	210.5	84.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	83.0	94.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	600.9	477.1	115.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	27.0	140.0	52.5	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	8.0	4.0	0
1980	SW (Alt4)	0	0	0	0	0	0	0	0	0	145.0	118.6	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	43.4	31.4	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	14.0	7.6	0
	From IO Sac	0	0	0	0	0	0	0	0	0	87.1	84.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	130.5	115.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	14.5	3.0	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	4.0	4.0	0
1981	SW (Alt4)	0	0	0	0	0	0	0	0	741.0	708.7	255.8	0
	From Storage	0	0	0	0	0	0	0	0	10.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	198.0	210.5	113.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	45.0	64.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	407.9	447.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	333.1	261.6	27.0	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	8.0	7.0	0

Alternative 4
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1982	SW (Alt4)	0	0	0	0	0	0	0	0	0	0	28.3	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	0	14.8	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	0	3.5	0
	From IO Sac	0	0	0	0	0	0	0	0	0	0	3.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	0	18.0	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	0	10.3	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	0	1.0	0
1983	SW (Alt4)	0	0	0	0	0	0	0	0	0	0	0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	0	0	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	0	0	0
	From IO Sac	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	0	0	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	0	0	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	0	0	0
1984	SW (Alt4)	0	0	0	0	0	0	0	0	208.8	572.1	67.6	0
	From Storage	0	0	0	0	0	0	0	0	92.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	37.4	172.6	19.7	0
	From DD - SJ	0	0	0	0	0	0	0	0	11.2	39.1	4.7	0
	From IO Sac	0	0	0	0	0	0	0	0	9.8	210.5	10.9	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	84.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	139.2	467.1	30.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	69.7	104.9	37.0	0
	Cutoff Group	0	0	0	0	0	0	0	0	3.0	8.0	2.0	0
1985	SW (Alt4)	0	0	0	0	0	0	0	267.0	823.7	726.1	293.9	0
	From Storage	0	0	0	0	0	0	0	199.0	18.0	0	0	0
	From DD	0	0	0	0	0	0	0	25.9	154.9	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	10.4	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	7.5	460.3	210.5	113.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	56.0	65.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	87.0	0	0	0
	Water Generated	0	0	0	0	0	0	0	232.4	776.2	448.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	34.6	47.5	278.0	65.1	0
	Cutoff Group	0	0	0	0	0	0	0	3.0	8.0	8.0	7.0	0
1986	SW (Alt4)	0	0	0	0	0	0	0	0	0	591.8	249.0	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	0	210.5	113.6	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	103.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	486.1	228.9	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	105.7	20.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	8.0	7.0	0
1987	SW (Alt4)	0	0	0	0	0	0	0	167.0	1015.0	743.8	420.1	0
	From Storage	0	0	0	0	0	0	0	57.0	5.0	0	0	0
	From DD	0	0	0	0	0	0	0	29.9	154.9	172.6	119.9	0
	From DD - SJ	0	0	0	0	0	0	0	12.3	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	48.7	432.2	178.3	143.0	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	43.0	71.0	47.0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	80.0	0	0	0
	Water Generated	0	0	0	0	0	0	0	135.6	715.1	421.9	309.9	0
	Proj Obligation	0	0	0	0	0	0	0	31.4	299.9	321.9	110.2	0
	Cutoff Group	0	0	0	0	0	0	0	4.0	9.0	8.0	8.0	0

Alternative 4
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1988	SW (Alt4)	0	0	0	0	0	0	0	11.0	558.0	675.6	355.5	0
	From Storage	0	0	0	0	0	0	0	0	13.0	1.0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	119.9	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	174.9	178.3	143.0	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	49.0	62.0	22.0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	391.8	413.9	284.9	0
	Proj Obligation	0	0	0	0	0	0	0	11.0	166.2	261.7	70.6	0
	Cutoff Group	0	0	0	0	0	0	0	(0)	8.0	8.0	8.0	0
1989	SW (Alt4)	0	0	0	0	0	0	0	0	570.0	655.5	212.1	0
	From Storage	0	0	0	0	0	0	0	0	106.0	0	1.0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	175.1	178.3	78.1	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	45.0	70.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	481.0	420.9	194.4	0
	Proj Obligation	0	0	0	0	0	0	0	0	89.0	234.5	17.7	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	8.0	7.0	0
1990	SW (Alt4)	0	0	0	0	0	0	31.0	0	470.2	665.0	321.3	0
	From Storage	0	0	0	0	0	0	0	0	52.0	3.0	5.0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	119.9	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	175.1	178.3	143.0	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	39.0	55.0	36.0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	421.0	408.9	303.9	0
	Proj Obligation	0	0	0	0	0	0	31.0	0	49.2	256.1	17.4	0
	Cutoff Group	0	0	0	0	0	0	(0)	0	8.0	8.0	8.0	0
1991	SW (Alt4)	3.1	0	0	0	80.1	0	0	0	177.0	320.0	163.2	0
	From Storage	0	0	0	0	5.0	0	0	0	0	0	3.0	0
	From DD	0	0	0	0	0.6	0	0	0	0	166.2	81.6	0
	From DD - SJ	0	0	0	0	0.6	0	0	0	0	39.1	12.9	0
	From IO Sac	0	0	0	0	3.7	0	0	0	0	88.1	57.8	0
	From IO(8) Friant	0	0	0	0	2.0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	13.0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	24.3	0	0	0	0	254.3	142.4	0
	Proj Obligation	3.1	0	0	0	55.8	0	0	0	177.0	65.7	20.8	0
	Cutoff Group	(0)	0	0	0	9.0	0	0	0	(0)	7.0	5.0	0
1992	SW (Alt4)	1.0	0	0	0	0	0	0	143.0	521.2	438.0	277.0	0
	From Storage	0	0	0	0	0	0	0	83.0	13.0	4.0	0	0
	From DD	0	0	0	0	0	0	0	25.9	154.9	172.6	119.9	0
	From DD - SJ	0	0	0	0	0	0	0	10.4	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0.5	174.4	168.7	137.4	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	19.0	20.0	8.0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	109.4	361.3	365.3	265.3	0
	Proj Obligation	1.0	0	0	0	0	0	0	33.6	159.9	72.7	11.7	0
	Cutoff Group	(0)	0	0	0	0	0	0	3.0	8.0	8.0	8.0	0
1993	SW (Alt4)	0	0	0	0	0	0	0	0	0	324.1	87.9	0
	From Storage	0	0	0	0	0	0	0	0	0	0	0	0
	From DD	0	0	0	0	0	0	0	0	0	166.2	19.7	0
	From DD - SJ	0	0	0	0	0	0	0	0	0	39.1	4.7	0
	From IO Sac	0	0	0	0	0	0	0	0	0	122.7	10.9	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	0	288.9	30.6	0
	Proj Obligation	0	0	0	0	0	0	0	0	0	35.2	57.3	0
	Cutoff Group	0	0	0	0	0	0	0	0	0	8.0	2.0	0

Alternative 4
Allocation of Supplemental Water for Delta Outflow

Year		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1994	SW (Alt4)	0	0	0	0	0	0	0	0	740.8	523.6	216.5	0
	From Storage	0	0	0	0	0	0	0	0	13.0	0	0	0
	From DD	0	0	0	0	0	0	0	0	154.9	172.6	115.3	0
	From DD - SJ	0	0	0	0	0	0	0	0	37.5	39.1	28.2	0
	From IO Sac	0	0	0	0	0	0	0	0	174.4	168.7	75.2	0
	From IO(8) Friant	0	0	0	0	0	0	0	0	51.0	63.0	0	0
	From IO(9) Friant	0	0	0	0	0	0	0	0	0	0	0	0
	Water Generated	0	0	0	0	0	0	0	0	393.3	404.3	190.5	0
	Proj Obligation	0	0	0	0	0	0	0	0	347.5	119.3	26.1	0
	Cutoff Group	0	0	0	0	0	0	0	0	8.0	8.0	7.0	0

Table 1

Alternative 3 - Total Water to be Released from New Melones Reservoir for Vernalis and Delta Outflow Objectives, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	2.4	0	0	0	0	0	0	107.5	0	0	0	0	109.9
1923	0	0	0	0	0	42.0	0	98.0	0	0	0	0	140.0
1924	0	0	0	0	0	0	0	2.3	0	0	0	0	2.3
1925	23.4	0	0	0	0	0	22.7	69.5	0	0	0	0	115.6
1926	23.4	0	0	0	0	31.8	4.0	0	0	0	0	0	59.2
1927	23.4	0	0	0	0	0	23.7	112.5	21.0	0	0	0	180.6
1928	0	0	0	0	0	0	17.0	70.0	0	0	0	0	87.0
1929	23.4	0	0	0	0	0	0	0	0	0	0	0	23.4
1930	23.4	0	0	0	0	0	0	0	0	0	0	0	23.4
1931	0	0	0	0	0	0	0.7	2.3	0	0	0	0	3.0
1932	0	0	0	0	0	0	0	67.5	31.5	0	0	0	99.0
1933	0	0	0	0	0	0	0	0.3	0	0	0	0	0.3
1934	23.4	0	0	0	0	0	0	12.3	0	0	0	0	35.6
1935	23.4	0	0	0	0	0	0	0	0	0	0	0	23.4
1936	0	0	0	0	0	0	0	48.5	12.5	0	0	0	61.0
1937	0	0	0	0	0	0	0	0	0	0	0	0	0
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	0	1.1	0	0	0	1.1
1940	11.4	0	0	0	0	0	0	61.5	0	0	0	0	72.9
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	10.5	0	0	0	0	10.5
1943	0	0	0	0	0	0	0	0	30.0	0	0	0	30.0
1944	0	0	0	0	0	0	0	0	0	0	0	0	0
1945	10.4	0	0	0	0	0	0	10.5	0	0	0	0	20.9
1946	0	0	0	0	0	0	10.0	10.5	0	0	0	0	20.5
1947	0	0	0	0	0	22.8	26.5	0	0.3	0	0	0	49.6
1948	23.4	0	0	0	12.0	0	9.0	45.0	26.5	0	0	0	115.9
1949	23.4	0	0	0	0	0	0	17.0	0.3	0	0	0	40.6
1950	22.4	0	0	0	0	0	28.0	99.5	0	0	0	0	149.9
1951	21.4	0	0	0	0	0	40.5	56.3	0	0	0	0	118.2
1952	4.4	0	0	0	0	0	0	0	0	0	0	0	4.4
1953	0	0	0	0	0	0	0.7	44.3	0	0	0	0	45.0
1954	19.4	0	0	0	21.0	0	2.7	81.5	0	0	0	0	124.6
1955	21.4	0	0	0	36.0	2.0	9.5	0	0	0	0	0	68.9
1956	23.4	0	0	0	0	0	1.0	0	0	0	0	0	24.4
1957	0	0	0	0	0	0	56.5	0	0	0	0	0	56.5
1958	14.4	0	0	0	0	0	0	0	0	0	0	0	14.4
1959	0	0	0	0	0	0	0	22.3	0	0	0	0	22.3
1960	24.4	0	0	0	0	0	0	0	0	0	0	0	24.4
1961	23.4	0	0	0	0	0	0	0	0	0	0	0	23.4
1962	0	0	0	0	0	0	0	66.0	7.5	0	0	0	73.5
1963	23.4	0	0	0	0	43.8	0	61.5	52.5	0	0	0	181.2
1964	0	0	0	0	21.0	21.5	4.5	0.3	0	0	0	0	47.3
1965	20.0	0	0	0	0	0	13.7	132.0	0	0	0	0	165.7
1966	0	0	0	0	0	0	0	0	0.6	0	0	0	0.6
1967	15.4	0	0	0	0	0	0	0	0	0	0	0	15.4
1968	0	0	0	0	0	0	12.5	0	0.9	0	0	0	13.5
1969	17.4	0	0	0	0	0	0	0	0	0	0	0	17.4
1970	0	0	0	0	0	0	58.5	5.3	0	0	0	0	63.8
1971	7.4	0	0	0	0	0	56.5	9.3	0	0	0	0	73.2
1972	21.4	0	0	0	37.0	28.8	61.5	0	0	0	0	0	148.7
1973	22.4	0	0	0	0	0	0	15.5	22.0	0	0	0	59.9
1974	0	0	0	0	0	0	0	30.5	16.0	0	0	0	46.5
1975	0	0	0	0	0	0	0	60.0	0	0	0	0	60.0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	1.0	0	5.0	2.0	0	0	0	0	8.0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	1.7	67.5	0	0	0	0	69.2
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0.9	0	0	0	0.9
1982	15.4	0	0	0	0	0	0	0	0	0	0	0	15.4
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	39.5	0	0	0	0	0	39.5
1985	8.4	0	0	0	0	0	0	0	0.2	0	0	0	8.5
1986	15.4	0	0	0	0	0	0	0	0	0	0	0	15.4
1987	0	0	0	0	0	0	0	0.9	0	0	0	0	0.9
1988	24.4	0	0	0	0	0	0	0	0	0	0	0	24.4
1989	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	35.0	33.8	42.0	0	0	0	0	0	110.8
1994	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG:	8.2	0	0	0	2.2	3.1	7.5	20.5	3.1	0	0	0	44.7
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	24.4	0	0	0	37.0	43.8	61.5	132.0	52.5	0	0	0	181.2

Table 2

Alternative 3 - Diversion to Storage Bypassed at Don Pedro for Vernalis and Delta Outflow Objectives, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	0	0	0	0	0	0	0	0	0	0	0	0
1923	0	0	0	0	0	0	0	0	95.0	0	0	0	95.0
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	0	0	0	0	173.0	0	0	0	173.0
1926	0	0	0	0	0	0	0	79.5	0	0	0	0	79.5
1927	0	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	19.7	0	0	0	0	0	19.7
1929	0	0	0	0	0	0	0	0	76.0	0	0	0	76.0
1930	0	0	0	0	0	0	0	5.5	129.0	0	0	0	134.5
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	0	0	0	0	0	0	0	0	0	0	0
1933	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	0	0	0	0	0	0	0	0	0
1937	0	0	0	0	0	0	0	0	0	0	0	0	0
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	38.0	0	0	0	0	38.0
1940	0	0	0	0	0	0	0	0	142.0	0	0	0	142.0
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	3.0	0	0	3.0
1943	0	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	69.0	0	0	0	69.0
1945	0	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	59.0	0	0	0	59.0
1947	0	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	1.7	0	63.0	0	0	0	64.7
1950	0	0	0	0	0	0	0	0	142.0	0	0	0	142.0
1951	0	0	0	0	0	0	0	0	41.0	0	0	0	41.0
1952	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	23.0	19.0	5.9	0	0	0	47.9
1954	0	0	0	0	0	0	0	0	7.0	0	0	0	7.0
1955	0	0	0	0	0	15.1	0	0	64.0	0	0	0	79.1
1956	0	0	0	0	0	0	15.7	0	0	0	0	0	15.7
1957	0	0	0	0	0	0	1.0	0.5	0	0	0	0	1.5
1958	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	32.0	0	0	0	32.0
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	1.0	0	0	28.0	0	0	0	29.0
1965	0	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	15.6	0	0	0	0	0	15.6
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	23.0	31.5	0	0	0	0	54.5
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	89.0	0	0	0	89.0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	5.0	0	0	0	0	0	5.0
1973	0	0	0	0	0	0	0	0	156.0	0	0	0	156.0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	83.0	0	0	83.0
1979	0	0	0	0	0	0	0	0	105.0	0	0	0	105.0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	1.5	117.0	0	0	0	118.5
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	66.0	0	0	0	66.0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	78.0	0	0	0	78.0
1992	0	0	0	0	0	0	0	57.0	0	0	0	0	57.0
1993	0	0	0	0	0	0	6.7	0	0	0	0	0	6.7
1994	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG:	0	0	0	0	0	0.2	1.5	3.2	23.8	1.2	0	0	29.9
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	0	0	0	0	0	15.1	23.0	79.5	173.0	83.0	0	0	173.0

Table 3

Alternative 3 - Diversion to Storage Bypassed at Lake McClure for Vernalis and Delta Outflow Objectives, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	0	0	0	0	0	1.8	0	0	0	0	0	1.8
1923	0	0	0	0	0	0	47.8	0	35.0	0	0	0	82.8
1924	0	0	0	0	0	0	18.0	22.0	0	0	0	0	40.0
1925	0	0	0	0	0	0	0	0	27.0	0	0	0	27.0
1926	0	0	0	0	0	0	22.8	0	0	0	0	0	22.8
1927	0	0	0	0	0	0	0	0	67.5	0	0	0	67.5
1928	0	0	0	0	0	0	0	19.5	0	0	0	0	19.5
1929	0	0	0	0	0	0	0	15.5	0	10.0	15.0	0	40.5
1930	0	0	0	0	0	0	10.8	9.0	21.0	14.0	17.0	0	71.8
1931	0	0	0	0	0	0	26.0	26.0	0	0	0	0	52.0
1932	0	0	0	0	0	0	0	0	0	0	0	0	0
1933	0	0	0	0	0	0	24.0	45.0	17.5	0	0	0	86.5
1934	0	0	0	0	0	0	7.8	0	0	0	0	0	7.8
1935	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	0	0	0	0	0	0	0	0	0
1937	0	0	0	0	0	0	0	0	0	0	0	0	0
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	14.0	0	0	0	0	14.0
1940	8.0	0	0	0	0	0	0	0	36.0	0	0	0	44.0
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	14.5	0	0	0	14.5
1944	0	0	0	0	0	0	0	23.5	13.0	0	0	0	36.5
1945	0	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	14.8	0	0	0	0	0	14.8
1947	0	0	0	0	0	0	39.0	60.5	0	0	0	0	99.5
1948	0	0	0	0	0	0	10.8	12.5	0	0	0	0	23.3
1949	0	0	0	0	0	0	55.0	27.5	0	0	0	0	82.5
1950	0	0	0	0	0	0	26.8	0	6.0	0	0	0	32.8
1951	0	0	0	0	0	0	47.0	57.0	0	0	0	0	104.0
1952	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	33.0	2.0	39.0	0	0	0	74.0
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	8.0	2.0	35.5	39.0	0	0	0	84.5
1956	0	0	0	0	0	0	73.0	0	0	0	0	0	73.0
1957	0	0	0	0	0	0	0	82.0	42.5	0	0	0	124.5
1958	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	33.8	15.0	0	0	0	0	48.8
1960	0	0	0	0	0	0	1.8	7.5	0	0	0	0	9.3
1961	0	0	0	0	0	0	13.8	16.0	0	0	0	0	29.8
1962	0	0	0	0	0	0	0	17.5	0	0	0	0	17.5
1963	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	1.0	13.0	49.0	0	0	0	0	63.0
1965	0	0	0	0	0	0	0	3.5	31.5	0	0	0	35.0
1966	0	0	0	0	0	0	74.0	62.0	0	0	0	0	136.0
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	23.0	24.0	0	0	0	0	47.0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	2.0	94.0	4.0	0	0	0	100.0
1971	0	0	0	0	0	0	7.0	63.0	47.5	0	0	0	117.5
1972	0	0	0	0	0	0	15.0	72.5	8.0	0	0	0	95.5
1973	1.0	0	0	0	0	0	0	0	55.0	0	0	0	56.0
1974	0	0	0	0	0	0	0	0	34.5	0	0	0	34.5
1975	0	0	0	0	0	0	0	16.5	0	0	0	0	16.5
1976	0	0	0	0	0	0	0	18.0	0	0	0	0	18.0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	29.0	0	0	0	29.0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	49.8	50.5	0	0	0	0	100.3
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	40.0	138.0	0	0	0	0	178.0
1985	0	0	0	0	0	0	19.8	78.0	0	0	0	0	97.8
1986	1.0	0	0	0	0	0	0	0	0	0	0	0	1.0
1987	0	0	0	0	0	0	0	30.0	0	0	0	0	30.0
1988	0	0	0	0	0	0	9.8	21.0	0	0	0	0	30.8
1989	0	0	0	0	0	0	16.8	21.5	0	0	0	0	38.3
1990	0	0	0	0	0	0	11.8	37.5	0	0	0	0	49.3
1991	0	0	0	0	0	0	0	8.5	61.0	0	0	0	69.5
1992	0	0	0	0	0	0	0	24.0	0	0	0	0	24.0
1993	0	0	0	0	0	0	96.0	83.5	0	0	0	0	179.5
1994	0	0	0	0	0	0	0	12.5	0	0	0	0	12.5
AVG:	0.1	0	0	0	0	0.1	12.2	19.4	8.6	0.3	0.4	0	41.2
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	8.0	0	0	0	0	8.0	96.0	138.0	67.5	14.0	17.0	0	179.5

Table 4

Alternative 3 - Diversion to Storage Bypassed at Eastman Lake for Vernalis and Delta Outflow Objectives, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	0	0	0	0	0	13.0	0	0	0	0	0	13.0
1923	0	0	0	0	0	4.8	0	0	0	0	0	0	4.8
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	0	0	0	0	0	0	0	0	0
1926	0	0	0	0	0	0	1.0	0	0	0	0	0	1.0
1927	0	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	0	0	0	0	0	0	0
1929	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	0	0	0	0	0	0	0	0	0	0
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	0	0	0	0	0	0	0	0	0	0	0
1933	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	0	0	0	0	0	0	0	0	0
1937	0	0	0	0	0	0	0	0	0	0	0	0	0
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	0	0	0	0	0	0
1940	0	0	0	0	0	0	0	0	0	0	0	0	0
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	0	0	0	0	0
1945	0	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	2.0	0	0	0	2.0
1947	0	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	0	0	0	0	0	0
1950	0	0	0	0	0	0	0	0	1.0	0	0	0	1.0
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	3.0	0	0	0	0	0	0	3.0
1956	0	0	0	0	0	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	1.0	0	0	0	0	0	1.0
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	3.0	0	0	0	0	0	0	3.0
1965	0	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	1.0	0	0	0	1.0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	1.0	0	0	1.0
1993	0	0	0	0	0	0	9.0	0	0	0	0	0	9.0
1994	0	0	0	0	0	0	0	0	1.0	0	0	0	1.0
AVG:	0	0	0	0	0	0.1	0.3	0	0.1	0.0	0	0	0.6
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	0	0	0	0	0	4.8	13.0	0	2.0	1.0	0	0	13.0

Table 5

Alternative 3 - Diversion to Storage Bypassed at Hensley Lake for Vernalis and Delta Outflow Objectives, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	0	0	0	0	0	13.0	0	0	0	0	0	13.0
1923	0	0	0	0	0	5.0	3.0	10.5	0	0	0	0	18.5
1924	0	0	0	0	0	0	8.0	0	0	0	0	0	8.0
1925	0	0	0	0	0	0	0	0	0	0	0	0	0
1926	0	0	0	0	0	0	5.0	5.0	0	0	0	0	10.0
1927	0	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	0	0	0	0	0	0	0
1929	0	0	0	0	0	0	0	6.0	1.0	0	0	0	7.0
1930	0	0	0	0	0	0	3.0	2.0	0	0	0	0	5.0
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	0	0	0	0	0	0	0	0	0	0	0
1933	0	0	0	0	0	0	0	3.0	4.0	0	0	0	7.0
1934	0	0	0	0	0	0	1.0	0	0	0	0	0	1.0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	0	0	0	0	0	0	0	0	0
1937	0	0	0	0	0	0	0	0	0	0	0	0	0
1938	0	0	0	0	0	0	0	0	0	0	2.0	0	2.0
1939	0	0	0	0	0	0	0	0	0	0	0	0	0
1940	0	0	0	0	0	0	0	0	0	0	0	0	0
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	0	0	0	0	0
1945	0	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	1.0	0	0	1.0
1949	0	0	0	0	0	0	0	0	0	0	0	0	0
1950	0	0	0	0	0	0	0	0	0	0	0	0	0
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0	0	1.0	0	0	1.0
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	4.0	0	7.0	6.0	0	0	0	17.0
1956	0	0	0	0	0	0	3.0	0	0	0	0	0	3.0
1957	0	0	0	0	0	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	5.0	5.0	0	0	0	0	10.0
1961	0	0	0	0	0	0	2.0	1.0	0	0	0	0	3.0
1962	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	4.0	0	0	0	4.0
1965	0	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	1.0	0	0	0	1.0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	1.0	0	0	0	0	1.0
1976	0	0	0	0	0	0	3.0	4.0	0	0	0	0	7.0
1977	0	0	0	0	0	0	2.0	0	0	0	0	0	2.0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	1.0	0	0	0	0	1.0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	2.0	0	0	0	0	2.0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	2.0	0	0	0	0	2.0
1988	0	0	0	0	0	0	3.0	1.0	0	0	0	0	4.0
1989	0	0	0	0	0	0	3.0	0	0	0	0	0	3.0
1990	0	0	0	0	0	0	1.0	0	0	0	0	0	1.0
1991	0	0	0	0	0	0	0	3.0	1.0	0	0	0	4.0
1992	0	0	0	0	0	0	0	2.0	0	0	0	0	2.0
1993	0	0	0	0	0	0	9.0	0	0	0	0	0	9.0
1994	0	0	0	0	0	0	2.7	2.0	0	0	0	0	4.7
AVG:	0	0	0	0	0	0.1	0.9	0.8	0.2	0.0	0.0	0	2.1
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	0	0	0	0	0	5.0	13.0	10.5	6.0	1.0	2.0	0	18.5

Table 6

Alternative 3 - Diversion to Storage Bypassed at Bowman Lake for Delta Outflow Objective, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1923.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1924.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1925.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1926.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1927.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1928.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1929.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930.0	0	0	0	0	0	0	0	0	6.0	0	0	0	6.0
1931.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1932.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1933.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1934.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1935.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1936.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1937.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1938.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1939.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1940.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1941.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1942.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1943.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1944.0	0	0	0	0	0	0	0	0	9.0	0	0	0	9.0
1945.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1946.0	0	0	0	0	0	0	0	0	7.0	0	0	0	7.0
1947.0	0	0	0	0	0	0	0	0	2.0	0	0	0	2.0
1948.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1949.0	0	0	0	0	0	0	0	0	5.0	0	0	0	5.0
1950.0	0	0	0	0	0	0	0	0	0	3.0	0	0	3.0
1951.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1952.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1953.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1954.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1955.0	0	0	0	0	0	0	0	0	19.0	0	0	0	19.0
1956.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1957.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1958.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1959.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1960.0	0	0	0	0	0	0	0	0	2.0	0	0	0	2.0
1961.0	0	0	0	0	0	0	0	0	2.0	0	0	0	2.0
1962.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1963.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1964.0	0	0	0	0	0	0	0	0	7.0	0	0	0	7.0
1965.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1966.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1967.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972.0	0	0	0	0	0	0	0	0	5.0	0	0	0	5.0
1973.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978.0	0	0	0	0	0	0	0	0	0	1.0	0	0	1.0
1979.0	0	0	0	0	0	0	0	0	4.0	0	0	0	4.0
1980.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992.0	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG	0	0	0	0	0	0	0	0	1.0	0.1	0	0	1.0
MIN	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX	0	0	0	0	0	0	0	0	19.0	3.0	0	0	19.0

Table 7

Alternative 3 - Diversion to Storage Bypassed at Jackson Meadows Reservoir for Delta Outflow Objective, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1923.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1924.0	0	0	0	0	0	0	0	1.0	0	0	0	0	1.0
1925.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1926.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1927.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1928.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1929.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1931.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1932.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1933.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1934.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1935.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1936.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1937.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1938.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1939.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1940.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1941.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1942.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1943.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1944.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1945.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1946.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1947.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1948.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1949.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1950.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1951.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1952.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1953.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1954.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1955.0	0	0	0	0	0	0	0	0	3.0	0	0	0	3.0
1956.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1957.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1958.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1959.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1960.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1961.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1962.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1963.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1964.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1965.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1966.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1967.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977.0	0	0	0	0	0	0	1.0	0	0	0	0	0	1.0
1978.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988.0	0	0	0	0	0	0	0	0	5.0	1.0	0	0	6.0
1989.0	0	0	0	0	0	0	0	0	3.0	0	0	0	3.0
1990.0	0	0	0	0	0	0	0	0	0	3.0	5.0	0	8.0
1991.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992.0	0	0	0	0	0	0	0	0	3.0	0	0	0	3.0
AVG	0	0	0	0	0	0	0.0	0.0	0.2	0.1	0.1	0	0.4
MIN	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX	0	0	0	0	0	0	1.0	1.0	5.0	3.0	5.0	0	8.0

Table 8

Alternative 3 - Diversion to Storage Bypassed at Bullards Bar for Delta Outflow Objective, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1923.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1924.0	0	0	0	0	0	0	27.0	0	0	0	0	0	27.0
1925.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1926.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1927.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1928.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1929.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1931.0	0	0	0	0	0	0	25.0	0	0	0	0	0	25.0
1932.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1933.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1934.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1935.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1936.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1937.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1938.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1939.0	0	0	0	0	0	0	0	2.0	0	0	0	0	2.0
1940.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1941.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1942.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1943.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1944.0	0	0	0	0	0	0	0	0	5.0	0	0	0	5.0
1945.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1946.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1947.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1948.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1949.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1950.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1951.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1952.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1953.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1954.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1955.0	0	0	0	0	0	0	0	0	6.0	0	0	0	6.0
1956.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1957.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1958.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1959.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1960.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1961.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1962.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1963.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1964.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1965.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1966.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1967.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970.0	0	0	0	0	0	0	0	0	1.0	0	0	0	1.0
1971.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976.0	0	0	0	0	0	0	0	2.0	0	0	0	0	2.0
1977.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985.0	0	0	0	0	0	0	0	36.0	0	0	0	0	36.0
1986.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990.0	0	0	0	0	0	0	0	0	24.0	0	0	0	24.0
1991.0	0	0	0	0	0	0	0	0	19.0	0	0	0	19.0
1992.0	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG:	0	0	0	0	0	0	0.7	0.6	0.8	0	0	0	2.1
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	0	0	0	0	0	0	27.0	36.0	24.0	0	0	0	36.0

Table 9

Alternative 3 - Diversion to Storage Bypassed at Fordyce Lake for Delta Outflow Objective, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1923.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1924.0	0	0	0	0	0	0	0	1.0	0	0	0	0	1.0
1925.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1926.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1927.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1928.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1929.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1931.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1932.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1933.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1934.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1935.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1936.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1937.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1938.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1939.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1940.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1941.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1942.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1943.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1944.0	0	0	0	0	0	0	0	0	9.0	0	0	0	9.0
1945.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1946.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1947.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1948.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1949.0	0	0	0	0	0	0	0	0	4.0	0	0	0	4.0
1950.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1951.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1952.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1953.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1954.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1955.0	0	0	0	0	0	0	0	0	10.0	0	0	0	10.0
1956.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1957.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1958.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1959.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1960.0	0	0	0	0	0	0	0	0	3.0	0	0	0	3.0
1961.0	0	0	0	0	0	0	0	0	2.0	0	0	0	2.0
1962.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1963.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1964.0	0	0	0	0	0	0	0	0	8.0	0	0	0	8.0
1965.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1966.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1967.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977.0	0	0	0	0	0	0	3.0	0	0	0	0	0	3.0
1978.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987.0	0	0	0	0	0	0	0	2.0	0	0	0	0	2.0
1988.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992.0	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG	0	0	0	0	0	0	0.0	0.0	0.5	0	0	0	0.6
MIN	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX	0	0	0	0	0	0	3.0	2.0	10.0	0	0	0	10.0

Table 10

Alternative 3 - Water to be Subtracted from Diversion at CP #16, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0.1	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1923.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1924.0	0	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.7
1925.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1926.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1927.0	0.1	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1928.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1929.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1930.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1931.0	0	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.7
1932.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1933.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1934.0	0.1	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.8
1935.0	0.1	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1936.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1937.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1938.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1939.0	0	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.7
1940.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1941.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1942.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1943.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1944.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1945.0	0.1	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1946.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1947.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1948.0	0.1	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1949.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1950.0	0.1	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1951.0	0.1	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.8
1952.0	0.1	0	0	0	0	0	0	0	0	0	0	0	0.1
1953.0	0	0	0	0	0	0	0	0.4	0	0.4	0	0	0.8
1954.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1955.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1956.0	0.1	0	0	0	0	0	0	0	0	0.4	0	0	0.5
1957.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1958.0	0.1	0	0	0	0	0	0	0	0	0	0	0	0.1
1959.0	0	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.7
1960.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1961.0	0.1	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.8
1962.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1963.0	0.1	0	0	0	0	0	0	0	0	0.4	0	0	0.5
1964.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1965.0	0.1	0	0	0	0	0	0	0	0	0.4	0	0	0.5
1966.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1967.0	0.1	0	0	0	0	0	0	0	0	0	0	0	0.1
1968.0	0	0	0	0	0	0	0	0	0.4	0.4	0	0	0.9
1969.0	0.1	0	0	0	0	0	0	0	0	0	0	0	0.1
1970.0	0	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.7
1971.0	0.1	0	0	0	0	0	0	0.4	0	0.4	0	0	0.9
1972.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1973.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1974.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976.0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	0	1.3
1977.0	0	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.7
1978.0	0.1	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1979.0	0	0	0	0	0	0	0	0	0.4	0.4	0	0	0.9
1980.0	0	0	0	0	0	0	0	0	0	0.4	0	0	0.4
1981.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1982.0	0.1	0	0	0	0	0	0	0	0	0	0	0	0.1
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	0	0	0.4	0.4	0	0	0.9
1985.0	0.1	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.8
1986.0	0.1	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1987.0	0	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.7
1988.0	0.1	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.8
1989.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1990.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1991.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1992.0	0	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.7
1993.0	0	0	0	0	0	0	0	0	0	0.4	0	0	0.4
1994.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
AVG:	0.0	0	0	0	0	0	0	0.1	0.2	0.4	0.3	0	1.0
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	0.1	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.8

Table 11

Alternative 3 - Water to be Subtracted from Diversion at CP #634, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0.2	0	0	0	0	0	0	0	0	6.9	0.8	0	7.8
1923.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1924.0	0	0	0	0	0	0	6.7	6.9	6.9	6.9	0.8	0	28.2
1925.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1926.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1927.0	0.2	0	0	0	0	0	0	0	0	6.9	0.8	0	7.8
1928.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1929.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1930.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1931.0	0	0	0	0	0	0	6.7	6.9	6.9	6.9	0.8	0	28.2
1932.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1933.0	0	0	0	0	0	0	6.1	6.1	0	6.9	0.8	0	20.0
1934.0	0.2	0	0	0	0	0	0	6.9	6.9	6.9	0.8	0	21.7
1935.0	0.2	0	0	0	0	0	0	0	0	6.9	0.8	0	7.8
1936.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1937.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1938.0	0	0	0	0	0	0	0	0	0	0	0.8	0	0.8
1939.0	0	0	0	0	0	0	0	6.9	6.9	6.9	0.8	0	21.5
1940.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1941.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1942.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1943.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1944.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1945.0	0.2	0	0	0	0	0	0	0	0	6.9	0.8	0	7.8
1946.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1947.0	0	0	0	0	0	0	6.7	0	6.9	6.9	0.8	0	21.3
1948.0	0.2	0	0	0	0	0	0	0	0	6.9	0.8	0	7.8
1949.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1950.0	0.2	0	0	0	0	0	0	0	0	6.9	0.8	0	7.8
1951.0	0.2	0	0	0	0	0	6.7	6.9	6.9	6.9	0.8	0	28.3
1952.0	0.2	0	0	0	0	0	0	0	0	0	0	0	0.2
1953.0	0	0	0	0	0	0	6.7	6.9	0	6.9	0.8	0	21.3
1954.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1955.0	0.2	0	0	0	0	0	6.7	0	6.9	6.9	0.8	0	21.4
1956.0	0.2	0	0	0	0	0	0	0	0	6.9	0	0	7.1
1957.0	0	0	0	0	0	0	6.7	0	0	6.9	0.8	0	14.3
1958.0	0.2	0	0	0	0	0	0	0	0	0	0	0	0.2
1959.0	0	0	0	0	0	0	0	6.9	6.9	6.9	0.8	0	21.5
1960.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1961.0	0.2	0	0	0	0	0	0	6.9	6.9	6.9	0.8	0	21.7
1962.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1963.0	0.2	0	0	0	0	0	0	0	0	6.9	0.8	0	7.8
1964.0	0	0	0	0	0	6.4	6.7	6.1	6.9	6.9	0.8	0	33.8
1965.0	0.2	0	0	0	0	0	0	0	0	6.9	0	0	7.1
1966.0	0	0	0	0	0	0	6.1	6.1	6.9	6.9	0.8	0	26.9
1967.0	0.2	0	0	0	0	0	0	0	0	0	0	0	0.2
1968.0	0	0	0	0	0	0	6.7	0	6.9	6.9	0	0	20.5
1969.0	0.2	0	0	0	0	0	0	0	0	0	0	0	0.2
1970.0	0	0	0	0	0	0	6.7	6.9	6.9	6.9	0.8	0	28.2
1971.0	0.2	0	0	0	0	0	6.7	6.9	0	6.9	0	0	20.6
1972.0	0.2	0	0	0	0	0	6.7	0	6.9	6.9	0.8	0	21.4
1973.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1974.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975.0	0	0	0	0	0	0	0	0	0	6.9	0	0	6.9
1976.0	0	0	0	0	0	0	6.1	6.9	6.9	6.9	0.8	0	27.7
1977.0	0	0	0	0	0	0	6.7	6.9	6.9	6.9	0.8	0	28.2
1978.0	0.2	0	0	0	0	0	0	0	0	6.9	0.8	0	7.8
1979.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1980.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1981.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1982.0	0.2	0	0	0	0	0	0	0	0	0	0	0	0.2
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	6.7	0	6.9	6.9	0	0	20.5
1985.0	0.2	0	0	0	0	0	0	6.9	6.9	6.9	0.8	0	21.7
1986.0	0.2	0	0	0	0	0	0	0	0	6.9	0.8	0	7.8
1987.0	0	0	0	0	0	0	0	6.9	6.9	6.9	0.8	0	21.5
1988.0	0.2	0	0	0	0	0	0	6.9	6.9	6.9	0.8	0	21.7
1989.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1990.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1991.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1992.0	0	0	0	0	0	0	0	6.9	6.9	6.9	0.8	0	21.5
1993.0	0	0	0	0	0	0	0	0	0	6.9	0	0	6.9
1994.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
AVG:	0.1	0	0	0	0	0.1	1.5	1.8	3.6	6.2	0.6	0	13.8
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	0.2	0	0	0	0	6.4	6.7	6.9	6.9	6.9	0.8	0	33.8

Table 12

Alternative 3 - Water to be Subtracted from Diversion at CP #649, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	1.1	0	0	0	0	0	0.9	0	0	8.6	5.9	0	16.4
1923.0	0	0	0	0	0	0	0.9	0	0	8.6	7.2	0	16.6
1924.0	0	0	0	0	0	0	3.7	6.2	8.1	8.6	7.2	0	33.8
1925.0	1.1	0	0	0	0	0	0	0	3.0	8.6	7.2	0	19.8
1926.0	1.1	0	0	0	0	0	0.9	2.0	8.1	8.6	7.2	0	27.8
1927.0	1.1	0	0	0	0	0	0	0	1.0	8.6	7.2	0	17.8
1928.0	0	0	0	0	0	0	1.4	1.0	8.1	8.6	7.2	0	26.2
1929.0	1.1	0	0	0	0	0	0	1.0	5.9	8.6	7.2	0	23.7
1930.0	1.1	0	0	0	0	0	0.9	2.0	8.1	8.6	7.2	0	27.8
1931.0	0	0	0	0	0	0	2.6	6.2	8.1	8.6	7.2	0	32.7
1932.0	0	0	0	0	0	0	0	0	0	8.6	7.2	0	15.7
1933.0	0	0	0	0	0	0	1.4	2.0	1.0	8.6	7.2	0	20.1
1934.0	1.1	0	0	0	0	0	0.9	6.2	8.1	8.6	7.2	0	32.0
1935.0	1.1	0	0	0	0	0	0	0	0	8.6	7.2	0	16.8
1936.0	0	0	0	0	0	0	0	0	0	8.6	7.2	0	15.7
1937.0	0	0	0	0	0	0	0	0	0	8.6	7.2	0	15.7
1938.0	0	0	0	0	0	0	0	0	0	0	2.7	0	2.7
1939.0	0	0	0	0	0	0	0	5.2	8.2	8.6	7.2	0	29.0
1940.0	1.1	0	0	0	0	0	0	0	5.9	8.6	7.2	0	22.7
1941.0	0	0	0	0	0	0	0	0	0	7.1	5.2	0	12.3
1942.0	0	0	0	0	0	0	0	0	0	6.2	2.7	0	8.9
1943.0	0	0	0	0	0	0	0	0	1.0	8.6	7.2	0	16.8
1944.0	0	0	0	0	0	0	0	1.0	8.1	8.6	7.2	0	24.8
1945.0	1.1	0	0	0	0	0	0	0	0	8.6	7.2	0	16.8
1946.0	0	0	0	0	0	0	0.9	0	8.1	8.6	7.2	0	24.7
1947.0	0	0	0	0	0	0	4.6	1.0	8.1	8.6	7.2	0	29.4
1948.0	1.1	0	0	0	0	0	0.9	1.0	0	8.6	7.2	0	18.6
1949.0	1.1	0	0	0	0	0	1.4	1.0	8.1	8.6	7.2	0	27.3
1950.0	1.1	0	0	0	0	0	0.9	0	1.0	8.6	5.2	0	16.7
1951.0	1.1	0	0	0	0	0	4.6	6.2	8.1	8.6	5.9	0	34.5
1952.0	1.1	0	0	0	0	0	0	0	0	0	0	0	1.1
1953.0	0	0	0	0	0	0	3.7	6.2	2.4	6.2	2.7	0	21.1
1954.0	1.1	0	0	0	0	0	0	0	6.7	8.6	5.2	0	21.6
1955.0	1.1	0	0	0	0	0.4	4.6	1.0	8.1	8.6	7.2	0	30.9
1956.0	1.1	0	0	0	0	0	1.4	0	0	3.1	0	0	5.6
1957.0	0	0	0	0	0	0	4.6	2.0	1.0	8.6	5.2	0	21.4
1958.0	1.1	0	0	0	0	0	0	0	0	0	0	0	1.1
1959.0	0	0	0	0	0	0	0.9	6.2	8.1	8.6	7.2	0	30.9
1960.0	1.1	0	0	0	0	0	0.9	1.0	8.1	8.6	7.2	0	26.8
1961.0	1.1	0	0	0	0	0	0.9	5.2	8.1	8.6	7.2	0	30.9
1962.0	0	0	0	0	0	0	0	1.0	0	8.6	7.2	0	16.7
1963.0	1.1	0	0	0	0	0	0	0	0	8.6	2.7	0	12.3
1964.0	0	0	0	0	0	0.5	4.6	2.0	8.1	8.6	7.2	0	31.0
1965.0	1.1	0	0	0	0	0	0	1.0	1.0	8.6	0	0	11.7
1966.0	0	0	0	0	0	0	1.4	2.0	8.1	8.6	7.2	0	27.2
1967.0	1.1	0	0	0	0	0	0	0	0	0	0	0	1.1
1968.0	0	0	0	0	0	0	4.6	2.0	8.1	8.6	0	0	23.3
1969.0	1.1	0	0	0	0	0	0	0	0	2.5	0	0	3.6
1970.0	0	0	0	0	0	0	4.6	6.2	6.7	8.6	2.7	0	28.8
1971.0	1.1	0	0	0	0	0	4.6	6.2	1.0	3.1	2.2	0	18.2
1972.0	1.1	0	0	0	0	0	4.6	1.0	8.1	8.6	5.9	0	29.3
1973.0	1.1	0	0	0	0	0	0	0	5.9	8.6	5.2	0	20.7
1974.0	0	0	0	0	0	0	0	0	1.0	0	0	0	1.0
1975.0	0	0	0	0	0	0	0	1.0	0	3.1	0	0	4.1
1976.0	0	0	0	0	0	0	1.4	5.2	8.1	8.6	2.7	0	25.9
1977.0	0	0	0	0	0.6	0	4.6	6.2	8.1	8.6	5.2	0	33.3
1978.0	0.5	0	0	0	0	0	0	0	0	8.6	5.9	0	15.0
1979.0	0	0	0	0	0	0	0	0	8.1	8.6	2.7	0	19.4
1980.0	0	0	0	0	0	0	0	0	0	7.1	2.7	0	9.8
1981.0	0	0	0	0	0	0	0.9	1.0	8.1	8.6	5.9	0	24.5
1982.0	1.1	0	0	0	0	0	0	0	0	0	0	0	1.1
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	4.6	2.0	3.0	8.6	0	0	18.1
1985.0	1.1	0	0	0	0	0	0.9	4.5	8.1	8.6	7.2	0	30.3
1986.0	1.1	0	0	0	0	0	0	0	0	8.6	5.2	0	14.8
1987.0	0	0	0	0	0	0	0	5.2	8.1	8.6	7.2	0	29.0
1988.0	1.1	0	0	0	0	0	0.9	4.5	8.1	8.6	7.2	0	30.3
1989.0	0	0	0	0	0	0	0.9	1.0	8.1	8.6	5.9	0	24.5
1990.0	0	0	0	0	0	0	0.9	1.0	8.1	8.6	7.2	0	25.7
1991.0	0	0	0	0	0.6	0	0	1.0	2.4	8.6	5.2	0	17.8
1992.0	0	0	0	0	0	0	0	2.4	8.1	8.6	7.2	0	26.3
1993.0	0	0	0	0	0	0	1.4	1.0	0	8.6	0	0	10.9
1994.0	0	0	0	0	0	0	0	1.0	8.1	8.6	5.9	0	23.6
AVG:	0.5	0	0	0	0.0	0.0	1.1	1.7	4.1	7.3	5.0	0	19.8
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	1.1	0	0	0	0.6	0.5	4.6	6.2	8.2	8.6	7.2	0	34.5

Table 13

Alternative 3 - Water to be Subtracted from Diversion at CP #672, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0.7	0	0	0	0	0	0.0	0	0	9.1	4.5	0	14.3
1923.0	0	0	0	0	0	0	0.0	0	0	9.1	7.4	0	16.6
1924.0	0	0	0	0	0	0	0.2	6.3	8.6	9.1	6.2	0	30.5
1925.0	0.7	0	0	0	0	0	0	0	0.5	9.1	7.4	0	17.7
1926.0	0.7	0	0	0	0	0	0.0	0	8.6	9.1	7.4	0	25.8
1927.0	0.7	0	0	0	0	0	0	0	0	9.1	7.4	0	17.2
1928.0	0	0	0	0	0	0	0.1	0	8.6	9.1	7.4	0	25.2
1929.0	0.7	0	0	0	0	0	0	0	0.5	9.1	7.4	0	17.7
1930.0	0.7	0	0	0	0	0	0.0	0	8.6	9.1	7.4	0	25.8
1931.0	0	0	0	0	0	0	0.2	6.3	8.6	9.1	7.4	0	31.7
1932.0	0	0	0	0	0	0	0	0	0	9.1	6.2	0	15.3
1933.0	0	0	0	0	0	0	0.1	0.0	0	9.1	7.4	0	16.6
1934.0	0.7	0	0	0	0	0	0.0	6.3	8.6	9.1	7.4	0	32.1
1935.0	0.7	0	0	0	0	0	0	0	0	9.1	6.2	0	16.0
1936.0	0	0	0	0	0	0	0	0	0	9.1	7.4	0	16.5
1937.0	0	0	0	0	0	0	0	0	0	9.1	7.4	0	16.5
1938.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0.0
1939.0	0	0	0	0	0	0	0	3.8	8.6	9.1	7.4	0	28.9
1940.0	0.7	0	0	0	0	0	0	0	0.5	9.1	7.4	0	17.7
1941.0	0	0	0	0	0	0	0	0	0	5.5	0.5	0	6.0
1942.0	0	0	0	0	0	0	0	0	0	0.5	0.5	0	1.0
1943.0	0	0	0	0	0	0	0	0	0	9.1	7.4	0	16.5
1944.0	0	0	0	0	0	0	0	0	8.6	9.1	7.4	0	25.1
1945.0	0.7	0	0	0	0	0	0	0	0	9.1	7.4	0	17.2
1946.0	0	0	0	0	0	0	0.0	0	8.6	9.1	7.4	0	25.2
1947.0	0	0	0	0	0	0	3.4	0	8.6	9.1	7.4	0	28.5
1948.0	0.7	0	0	0	0	0	0.0	0	0	9.1	7.4	0	17.2
1949.0	0.7	0	0	0	0	0	0.1	0	8.6	9.1	7.4	0	25.8
1950.0	0.7	0	0	0	0	0	0.0	0	0.0	9.1	0.5	0	10.3
1951.0	0.7	0	0	0	0	0	3.4	6.3	8.6	9.1	4.5	0	32.5
1952.0	0.7	0	0	0	0	0	0	0	0	0	0	0	0.7
1953.0	0	0	0	0	0	0	0.2	6.3	0.0	0.5	0.0	0	7.1
1954.0	0.7	0	0	0	0	0	0	0	5.2	9.1	0.5	0	15.4
1955.0	0.7	0	0	0	0	0	3.4	0	8.6	9.1	7.4	0	29.1
1956.0	0.7	0	0	0	0	0	0.1	0	0	0.5	0	0	1.2
1957.0	0	0	0	0	0	0	3.4	0	0	9.1	0.5	0	12.9
1958.0	0.7	0	0	0	0	0	0	0	0	0	0	0	0.7
1959.0	0	0	0	0	0	0	0.0	6.3	8.6	9.1	7.4	0	31.5
1960.0	0.7	0	0	0	0	0	0.0	0	8.6	9.1	7.4	0	25.8
1961.0	0.7	0	0	0	0	0	0.0	3.8	8.6	9.1	7.4	0	29.6
1962.0	0	0	0	0	0	0	0	0	0	9.1	7.4	0	16.5
1963.0	0.7	0	0	0	0	0	0	0	0	9.1	0.0	0	9.8
1964.0	0	0	0	0	0	0.0	3.4	0.0	8.6	9.1	7.4	0	28.5
1965.0	0.7	0	0	0	0	0	0	0	0	9.1	0	0	9.7
1966.0	0	0	0	0	0	0	0.1	0.0	8.6	9.1	7.4	0	25.2
1967.0	0.7	0	0	0	0	0	0	0	0	0	0	0	0.7
1968.0	0	0	0	0	0	0	3.4	0	8.6	9.1	0	0	21.0
1969.0	0.7	0	0	0	0	0	0	0	0	0.0	0	0	0.7
1970.0	0	0	0	0	0	0	3.4	6.3	5.2	9.1	0.5	0	24.4
1971.0	0.7	0	0	0	0	0	3.4	6.3	0	0.5	0.0	0	10.9
1972.0	0.7	0	0	0	0	0	3.4	0	8.6	9.1	4.5	0	26.2
1973.0	0.7	0	0	0	0	0	0	0	0.5	9.1	0.5	0	10.7
1974.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976.0	0	0	0	0	0	0	0.1	3.8	8.6	9.1	0.0	0	21.6
1977.0	0	0	0	0	0	0	3.4	6.3	8.6	9.1	0.5	0	27.8
1978.0	0.1	0	0	0	0	0	0	0	0	9.1	4.5	0	13.7
1979.0	0	0	0	0	0	0	0	0	8.6	9.1	0.0	0	17.7
1980.0	0	0	0	0	0	0	0	0	0	5.5	0.0	0	5.5
1981.0	0	0	0	0	0	0	0.0	0	8.6	9.1	4.5	0	22.2
1982.0	0.7	0	0	0	0	0	0	0	0	0	0	0	0.7
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	3.4	0	0.5	9.1	0	0	13.0
1985.0	0.7	0	0	0	0	0	0.0	0.4	8.6	9.1	7.4	0	26.2
1986.0	0.7	0	0	0	0	0	0	0	0	9.1	0.5	0	10.2
1987.0	0	0	0	0	0	0	0	3.8	8.6	9.1	7.4	0	28.9
1988.0	0.7	0	0	0	0	0	0.0	0.4	8.6	9.1	7.4	0	26.2
1989.0	0	0	0	0	0	0	0.0	0	8.6	9.1	4.5	0	22.2
1990.0	0	0	0	0	0	0	0.0	0	8.6	9.1	7.4	0	25.2
1991.0	0	0	0	0	0	0	0	0	0.0	9.1	0.5	0	9.6
1992.0	0	0	0	0	0	0	0	0.4	8.6	9.1	7.4	0	25.5
1993.0	0	0	0	0	0	0	0.1	0	0	9.1	0	0	9.1
1994.0	0	0	0	0	0	0	0	0	8.6	9.1	4.5	0	22.2
AVG:	0.3	0	0	0	0	0.0	0.5	1.0	3.8	7.4	4.1	0	17.2
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	0.7	0	0	0	0	0.0	3.4	6.3	8.6	9.1	7.4	0	32.5

Table 14

Alternative 3 - Water to be Subtracted from Diversion at CP #688, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0.2	0	0	0	0	0	0	0	0	1.3	1.3	0	2.7
1923.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1924.0	0	0	0	0	0	0	0.6	1.2	1.3	1.3	1.3	0	5.6
1925.0	0.2	0	0	0	0	0	0	0	1.3	1.3	1.3	0	4.0
1926.0	0.2	0	0	0	0	0	0	1.2	1.3	1.3	1.3	0	5.1
1927.0	0.2	0	0	0	0	0	0	0	0	1.3	1.3	0	2.7
1928.0	0	0	0	0	0	0	0.6	0	1.3	1.3	1.3	0	4.4
1929.0	0.2	0	0	0	0	0	0	0	1.3	1.3	1.3	0	4.0
1930.0	0.2	0	0	0	0	0	0	1.2	1.3	1.3	1.3	0	5.1
1931.0	0	0	0	0	0	0	0.6	1.2	1.3	1.3	1.3	0	5.6
1932.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1933.0	0	0	0	0	0	0	0.6	1.2	0	1.3	1.3	0	4.3
1934.0	0.2	0	0	0	0	0	0	1.2	1.3	1.3	1.3	0	5.1
1935.0	0.2	0	0	0	0	0	0	0	0	1.3	1.3	0	2.7
1936.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1937.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1938.0	0	0	0	0	0	0	0	0	0	0	1.3	0	1.3
1939.0	0	0	0	0	0	0	0	1.2	1.3	1.3	1.3	0	5.0
1940.0	0.2	0	0	0	0	0	0	0	1.3	1.3	1.3	0	4.0
1941.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1942.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1943.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1944.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1945.0	0.2	0	0	0	0	0	0	0	0	1.3	1.3	0	2.7
1946.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1947.0	0	0	0	0	0	0	0.6	0	1.3	1.3	1.3	0	4.4
1948.0	0.2	0	0	0	0	0	0	0	0	1.3	1.3	0	2.7
1949.0	0.2	0	0	0	0	0	0.6	0	1.3	1.3	1.3	0	4.6
1950.0	0.2	0	0	0	0	0	0	0	0	1.3	1.3	0	2.7
1951.0	0.2	0	0	0	0	0	0.6	1.2	1.3	1.3	1.3	0	5.8
1952.0	0.2	0	0	0	0	0	0	0	0	0	0	0	0.2
1953.0	0	0	0	0	0	0	0.6	1.2	1.3	1.3	1.3	0	5.6
1954.0	0.2	0	0	0	0	0	0	0	1.3	1.3	1.3	0	4.0
1955.0	0.2	0	0	0	0	0.3	0.6	0	1.3	1.3	1.3	0	4.9
1956.0	0.2	0	0	0	0	0	0.6	0	0	1.3	0	0	2.1
1957.0	0	0	0	0	0	0	0.6	1.2	0	1.3	1.3	0	4.3
1958.0	0.2	0	0	0	0	0	0	0	0	0	0	0	0.2
1959.0	0	0	0	0	0	0	0	1.2	1.3	1.3	1.3	0	5.0
1960.0	0.2	0	0	0	0	0	0	0	1.3	1.3	1.3	0	4.0
1961.0	0.2	0	0	0	0	0	0	1.2	1.3	1.3	1.3	0	5.1
1962.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1963.0	0.2	0	0	0	0	0	0	0	0	1.3	1.3	0	2.7
1964.0	0	0	0	0	0	0.3	0.6	1.2	1.3	1.3	1.3	0	5.9
1965.0	0.2	0	0	0	0	0	0	0	0	1.3	0	0	1.5
1966.0	0	0	0	0	0	0	0.6	1.2	1.3	1.3	1.3	0	5.6
1967.0	0.2	0	0	0	0	0	0	0	0	0	0	0	0.2
1968.0	0	0	0	0	0	0	0.6	1.2	1.3	1.3	0	0	4.3
1969.0	0.2	0	0	0	0	0	0	0	0	1.3	0	0	1.5
1970.0	0	0	0	0	0	0	0.6	1.2	1.3	1.3	1.3	0	5.6
1971.0	0.2	0	0	0	0	0	0.6	1.2	0	1.3	1.3	0	4.5
1972.0	0.2	0	0	0	0	0	0.6	0	1.3	1.3	1.3	0	4.6
1973.0	0.2	0	0	0	0	0	0	0	1.3	1.3	1.3	0	4.0
1974.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975.0	0	0	0	0	0	0	0	0	0	1.3	0	0	1.3
1976.0	0	0	0	0	0	0	0.6	1.2	1.3	1.3	1.3	0	5.6
1977.0	0	0	0	0	0	0	0.6	1.2	1.3	1.3	1.3	0	5.6
1978.0	0.2	0	0	0	0	0	0	0	0	1.3	1.3	0	2.7
1979.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1980.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1981.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1982.0	0.2	0	0	0	0	0	0	0	0	0	0	0	0.2
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	0.6	1.2	1.3	1.3	0	0	4.3
1985.0	0.2	0	0	0	0	0	0	1.2	1.3	1.3	1.3	0	5.1
1986.0	0.2	0	0	0	0	0	0	0	0	1.3	1.3	0	2.7
1987.0	0	0	0	0	0	0	0	1.2	1.3	1.3	1.3	0	5.0
1988.0	0.2	0	0	0	0	0	0	1.2	1.3	1.3	1.3	0	5.1
1989.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1990.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1991.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1992.0	0	0	0	0	0	0	0	1.2	1.3	1.3	1.3	0	5.0
1993.0	0	0	0	0	0	0	0.6	0	0	1.3	0	0	1.9
1994.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
AVG:	0.1	0	0	0	0	0.0	0.2	0.4	0.7	1.1	1.0	0	3.5
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	0.2	0	0	0	0	0.3	0.6	1.2	1.3	1.3	1.3	0	5.9

Table 15

Alternative 3 - Water to be Subtracted from Diversion at CP #693, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0.1	0	0	0	0	0	0.3	0.5	0	0.5	0.5	0	1.9
1923.0	0	0	0	0	0	0.2	0.3	0.5	0	0.5	0.5	0	2.0
1924.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1925.0	0.1	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.4
1926.0	0.1	0	0	0	0	0.2	0.3	0.5	0.5	0.5	0.5	0	2.6
1927.0	0.1	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.4
1928.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1929.0	0.1	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.1
1930.0	0.1	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.4
1931.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1932.0	0	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.0
1933.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1934.0	0.1	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.4
1935.0	0.1	0	0	0	0	0	0	0	0	0.5	0.5	0	1.1
1936.0	0	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.0
1937.0	0	0	0	0	0	0	0	0	0	0.5	0.5	0	1.0
1938.0	0	0	0	0	0	0	0	0	0	0	0.5	0	0.5
1939.0	0	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.0
1940.0	0.1	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.1
1941.0	0	0	0	0	0	0	0	0	0	0.5	0.5	0	1.0
1942.0	0	0	0	0	0	0	0	0.5	0	0.5	0.5	0	1.5
1943.0	0	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.5
1944.0	0	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.0
1945.0	0.1	0	0	0	0	0	0	0.5	0	0.5	0.5	0	1.6
1946.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1947.0	0	0	0	0	0	0.2	0.3	0.5	0.5	0.5	0.5	0	2.5
1948.0	0.1	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.4
1949.0	0.1	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.4
1950.0	0.1	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.4
1951.0	0.1	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.4
1952.0	0.1	0	0	0	0	0	0	0	0	0	0	0	0.1
1953.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1954.0	0.1	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.4
1955.0	0.1	0	0	0	0	0.2	0.3	0.5	0.5	0.5	0.5	0	2.6
1956.0	0.1	0	0	0	0	0	0.3	0	0	0.5	0	0	0.9
1957.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1958.0	0.1	0	0	0	0	0	0	0	0	0	0	0	0.1
1959.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1960.0	0.1	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.4
1961.0	0.1	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.4
1962.0	0	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.0
1963.0	0.1	0	0	0	0	0.2	0	0.5	0.5	0.5	0.5	0	2.3
1964.0	0	0	0	0	0	0.2	0.3	0.5	0.5	0.5	0.5	0	2.5
1965.0	0.1	0	0	0	0	0	0.3	0.5	0.5	0.5	0	0	1.9
1966.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1967.0	0.1	0	0	0	0	0	0	0	0	0	0	0	0.1
1968.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0	0	1.8
1969.0	0.1	0	0	0	0	0	0	0	0	0.5	0	0	0.6
1970.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1971.0	0.1	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.4
1972.0	0.1	0	0	0	0	0.2	0.3	0.5	0.5	0.5	0.5	0	2.6
1973.0	0.1	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.1
1974.0	0	0	0	0	0	0	0	0.5	0.5	0	0	0	1.0
1975.0	0	0	0	0	0	0	0	0.5	0	0.5	0	0	1.0
1976.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1977.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1978.0	0.1	0	0	0	0	0	0	0	0	0.5	0.5	0	1.1
1979.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1980.0	0	0	0	0	0	0	0	0	0	0.5	0.5	0	1.0
1981.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1982.0	0.1	0	0	0	0	0	0	0	0	0	0	0	0.1
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0	0	1.8
1985.0	0.1	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.4
1986.0	0.1	0	0	0	0	0	0	0	0	0.5	0.5	0	1.1
1987.0	0	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.0
1988.0	0.1	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.4
1989.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1990.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1991.0	0	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.0
1992.0	0	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.0
1993.0	0	0	0	0	0	0.2	0.3	0.5	0	0.5	0	0	1.5
1994.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
AVG:	0.0	0	0	0	0	0.0	0.2	0.4	0.4	0.5	0.4	0	1.9
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	0.1	0	0	0	0	0.2	0.3	0.5	0.5	0.5	0.5	0	2.6

Table 16

Alternative 3 - Water to be Subtracted from Diversion at CP #699, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	1.9	0	0	0	0	0	0	0	0	17.3	1.1	0	20.3
1923.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1924.0	0	0	0	0	0	0	0	12.0	16.4	17.3	14.2	0	59.9
1925.0	1.9	0	0	0	0	0	0	0	0	17.3	14.2	0	33.4
1926.0	1.9	0	0	0	0	0	0	0	16.4	17.3	14.2	0	49.8
1927.0	1.9	0	0	0	0	0	0	0	0	17.3	14.2	0	33.4
1928.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1929.0	1.9	0	0	0	0	0	0	0	0	17.3	14.2	0	33.4
1930.0	1.9	0	0	0	0	0	0	0	16.4	17.3	14.2	0	49.8
1931.0	0	0	0	0	0	0	0	12.0	16.4	17.3	14.2	0	59.9
1932.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1933.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1934.0	1.9	0	0	0	0	0	0	12.0	16.4	17.3	14.2	0	61.8
1935.0	1.9	0	0	0	0	0	0	0	0	17.3	14.2	0	33.4
1936.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1937.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1938.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1939.0	0	0	0	0	0	0	0	12.0	16.4	17.3	14.2	0	59.9
1940.0	1.9	0	0	0	0	0	0	0	0	17.3	14.2	0	33.4
1941.0	0	0	0	0	0	0	0	0	0	1.3	0	0	1.3
1942.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1943.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1944.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1945.0	1.9	0	0	0	0	0	0	0	0	17.3	14.2	0	33.4
1946.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1947.0	0	0	0	0	0	0	6.3	0	16.4	17.3	14.2	0	54.2
1948.0	1.9	0	0	0	0	0	0	0	0	17.3	14.2	0	33.4
1949.0	1.9	0	0	0	0	0	0	0	16.4	17.3	14.2	0	49.8
1950.0	1.9	0	0	0	0	0	0	0	0	17.3	0	0	19.2
1951.0	1.9	0	0	0	0	0	6.3	12.0	16.4	17.3	1.1	0	55.0
1952.0	1.9	0	0	0	0	0	0	0	0	0	0	0	1.9
1953.0	0	0	0	0	0	0	0	12.0	0	0	0	0	12.0
1954.0	1.9	0	0	0	0	0	0	0	1.3	17.3	0	0	20.5
1955.0	1.9	0	0	0	0	0	6.3	0	16.4	17.3	14.2	0	56.1
1956.0	1.9	0	0	0	0	0	0	0	0	0	0	0	1.9
1957.0	0	0	0	0	0	0	6.3	0	0	17.3	0	0	23.6
1958.0	1.9	0	0	0	0	0	0	0	0	0	0	0	1.9
1959.0	0	0	0	0	0	0	0	12.0	16.4	17.3	14.2	0	59.9
1960.0	1.9	0	0	0	0	0	0	0	16.4	17.3	14.2	0	49.8
1961.0	1.9	0	0	0	0	0	0	12.0	16.4	17.3	14.2	0	61.8
1962.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1963.0	1.9	0	0	0	0	0	0	0	0	17.3	0	0	19.2
1964.0	0	0	0	0	0	0	6.3	0	16.4	17.3	14.2	0	54.2
1965.0	1.9	0	0	0	0	0	0	0	0	17.3	0	0	19.2
1966.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1967.0	1.9	0	0	0	0	0	0	0	0	0	0	0	1.9
1968.0	0	0	0	0	0	0	6.3	0	16.4	17.3	0	0	40.0
1969.0	1.9	0	0	0	0	0	0	0	0	0	0	0	1.9
1970.0	0	0	0	0	0	0	6.3	12.0	1.3	17.3	0	0	36.9
1971.0	1.9	0	0	0	0	0	6.3	12.0	0	0	0	0	20.2
1972.0	1.9	0	0	0	0	0	6.3	0	16.4	17.3	1.1	0	43.0
1973.0	1.9	0	0	0	0	0	0	0	0	17.3	0	0	19.2
1974.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976.0	0	0	0	0	0	0	0	12.0	16.4	17.3	0	0	45.7
1977.0	0	0	0	0	0	0	6.3	12.0	16.4	17.3	0	0	52.0
1978.0	0	0	0	0	0	0	0	0	0	17.3	1.1	0	18.4
1979.0	0	0	0	0	0	0	0	0	16.4	17.3	0	0	33.7
1980.0	0	0	0	0	0	0	0	0	0	1.3	0	0	1.3
1981.0	0	0	0	0	0	0	0	0	16.4	17.3	1.1	0	34.8
1982.0	1.9	0	0	0	0	0	0	0	0	0	0	0	1.9
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	6.3	0	0	17.3	0	0	23.6
1985.0	1.9	0	0	0	0	0	0	0	16.4	17.3	14.2	0	49.8
1986.0	1.9	0	0	0	0	0	0	0	0	17.3	0	0	19.2
1987.0	0	0	0	0	0	0	0	1.0	16.4	17.3	14.2	0	48.9
1988.0	1.9	0	0	0	0	0	0	0	16.4	17.3	14.2	0	49.8
1989.0	0	0	0	0	0	0	0	0	16.4	17.3	1.1	0	34.8
1990.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1991.0	0	0	0	0	0	0	0	0	0	17.3	0	0	17.3
1992.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1993.0	0	0	0	0	0	0	0	0	0	17.3	0	0	17.3
1994.0	0	0	0	0	0	0	0	0	16.4	17.3	1.1	0	34.8
AVG:	0.8	0	0	0	0	0	1.0	2.0	7.0	13.8	7.1	0	31.7
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	1.9	0	0	0	0	0	6.3	12.0	16.4	17.3	14.2	0	61.8

Table 1

Alternative 4 - Total Water to be Released from New Melones Reservoir for Vernalis and Delta Outflow Objectives, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	6.0	0	0	0	0	0	21.8	108.0	0	0	0	0	135.8
1923	0	0	0	0	0	42.0	52.0	108.4	0	0	0	0	202.4
1924	0	0	0	0	0	0	11.0	16.0	0	0	0	0	27.0
1925	23.4	0	0	0	0	0	23.0	69.5	0	0	0	0	115.9
1926	23.4	0	0	0	0	31.8	34.0	70.0	0	0	0	0	159.2
1927	27.0	0	0	0	0	0	24.0	113.0	89.4	0	0	0	253.4
1928	0	0	0	0	0	0	38.7	87.0	0	0	0	0	125.8
1929	23.4	0	0	0	0	0	0	3.0	0	0	0	0	26.4
1930	23.4	0	0	0	0	0	15.0	20.0	0	0	0	0	58.4
1931	0	0	0	0	0	0	6.0	20.0	0	0	0	0	26.0
1932	0	0	0	0	0	0	0	68.0	32.0	0	0	0	100.0
1933	0	0	0	0	0	0	31.0	57.0	0.0	0	0	0	88.0
1934	23.4	0	0	0	0	0	10.0	42.0	0	0	0	0	75.4
1935	23.4	0	0	0	0	0	0	0	0	0	0	0	23.4
1936	0	0	0	0	0	0	0	49.0	12.3	0	0	0	61.3
1937	0	0	0	0	0	0	0	0	0	0	0	0	0
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	45.0	0	0	0	0	45.0
1940	11.4	0	0	0	0	0	0	62.0	0	0	0	0	73.4
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	11.0	0	0	0	0	11.0
1943	0	0	0	0	0	0	0	0	45.2	0	0	0	45.2
1944	0	0	0	0	0	0	0	4.1	0	0	0	0	4.1
1945	14.0	0	0	0	0	0	0	11.0	0	0	0	0	25.0
1946	0	0	0	0	0	0	26.0	11.0	0	0	0	0	37.0
1947	0	0	0	0	0	22.8	60.0	55.0	0	0	0	0	137.9
1948	23.4	0	0	0	12.1	0	21.0	45.0	26.5	0	0	0	128.0
1949	23.4	0	0	0	0	0	37.0	46.0	0.3	0	0	0	106.6
1950	22.4	0	0	0	0	0	55.7	99.5	0.0	0	0	0	177.7
1951	25.0	0	0	0	0	0	56.0	56.3	0	0	0	0	137.3
1952	8.0	0	0	0	0	0	0	0	0	0	0	0	8.0
1953	0	0	0	0	0	0	34.0	44.3	0	0	0	0	78.3
1954	22.4	0	0	0	21.0	0	3.0	82.0	0	0	0	0	128.4
1955	21.4	0	0	0	36.3	2.0	31.0	44.0	0.0	0	0	0	134.7
1956	23.4	0	0	0	0	0	75.8	0	0	0	0	0	99.2
1957	0	0	0	0	0	0	69.5	69.0	30.3	0	0	0	168.8
1958	18.0	0	0	0	0	0	0	0	0	0	0	0	18.0
1959	0	0	0	0	0	0	35.0	67.0	0	0	0	0	102.0
1960	24.4	0	0	0	0	0	9.0	14.0	0	0	0	0	47.4
1961	23.4	0	0	0	0	0	17.0	39.0	0	0	0	0	79.4
1962	0	0	0	0	0	0	0	85.0	8.0	0	0	0	93.0
1963	27.0	0	0	0	0	43.8	0	62.0	52.1	0	0	0	184.9
1964	0	0	0	0	21.1	20.0	37.0	39.0	0	0	0	0	117.1
1965	20.0	0	0	0	0	0	14.0	136.6	33.0	0	0	0	203.6
1966	0	0	0	0	0	0	72.0	68.0	0	0	0	0	140.0
1967	15.5	0	0	0	0	0	0	0	0	0	0	0	15.5
1968	0	0	0	0	0	0	47.0	24.0	0	0	0	0	71.0
1969	17.4	0	0	0	0	0	0	0	0	0	0	0	17.4
1970	0	0	0	0	0	0	58.5	8.5	0	0	0	0	67.0
1971	11.0	0	0	0	0	0	39.5	14.0	0.0	0	0	0	64.6
1972	21.4	0	0	0	37.3	28.8	61.5	27.0	0	0	0	0	176.0
1973	27.2	0	0	0	0	0	0	16.0	22.0	0	0	0	65.2
1974	0	0	0	0	0	0	0	31.0	52.0	0	0	0	83.0
1975	0	0	0	0	0	0	0	79.0	0	0	0	0	79.0
1976	0	0	0	0	0	0	8.0	0	0	0	0	0	8.0
1977	0	0	0	0	1.0	0	8.0	6.0	0	0	0	0	15.0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	2.0	68.0	21.0	0	0	0	91.0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	51.0	34.0	0	0	0	0	85.0
1982	15.4	0	0	0	0	0	0	0	0	0	0	0	15.4
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	42.0	31.3	0	0	0	0	73.3
1985	12.0	0	0	0	0	0	21.0	54.0	0	0	0	0	87.0
1986	20.0	0	0	0	0	0	0	0	0	0	0	0	20.0
1987	0	0	0	0	0	0	0	26.0	0	0	0	0	26.0
1988	24.4	0	0	0	0	0	14.0	34.0	0	0	0	0	72.4
1989	0	0	0	0	0	0	21.0	23.0	0	0	0	0	44.0
1990	0	0	0	0	0	0	14.0	39.0	0	0	0	0	53.0
1991	0	0	0	0	0	0	0	13.0	0	0	0	0	13.0
1992	0	0	0	0	0	0	0	4.0	0	0	0	0	4.0
1993	0	0	0	0	35.0	34.0	122.2	85.0	0	0	0	0	276.2
1994	0	0	0	0	0	0	3.0	16.0	0	0	0	0	19.0
AVG:	8.8	0	0	0	2.2	3.1	19.6	36.4	5.8	0	0	0	76.0
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	27.2	0	0	0	37.3	43.8	122.2	136.6	89.4	0	0	0	276.2

Table 2

Alternative 4 - Diversion to Storage Bypassed at Don Pedro for Vernalis and Delta Outflow Objectives, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	0	0	0	0	0	0	0	0	0	0	0	0
1923	0	0	0	0	0	0	0	0	95.0	0	0	0	95.0
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	0	0	0	0	173.0	0	0	0	173.0
1926	0	0	0	0	0	0	0	9.5	0	0	0	0	9.5
1927	0	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	0	0	0	0	0	0	0
1929	0	0	0	0	0	0	0	0	76.0	0	0	0	76.0
1930	0	0	0	0	0	0	0	0	129.0	0	0	0	129.0
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	0	0	0	0	0	0	0	0	0	0	0
1933	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	0	0	0	0	0	0	0	0	0
1937	0	0	0	0	0	0	0	0	0	0	0	0	0
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	0	0	0	0	0	0
1940	0	0	0	0	0	0	0	0	142.0	0	0	0	142.0
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	3.0	0	0	3.0
1943	0	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	69.0	0	0	0	69.0
1945	0	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	59.0	0	0	0	59.0
1947	0	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	0	63.0	0	0	0	63.0
1950	0	0	0	0	0	0	0	0	142.0	0	0	0	142.0
1951	0	0	0	0	0	0	0	0	41.0	0	0	0	41.0
1952	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	19.0	5.9	0	0	0	24.9
1954	0	0	0	0	0	0	0	0	7.0	0	0	0	7.0
1955	0	0	0	0	0	15.1	0	0	64.0	0	0	0	79.1
1956	0	0	0	0	0	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	32.0	0	0	0	32.0
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	1.0	0	0	28.0	0	0	0	29.0
1965	0	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	5.7	7.5	0	0	0	0	13.2
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	89.0	0	0	0	89.0
1971	0	0	0	0	0	0	17.0	0	0	0	0	0	17.0
1972	0	0	0	0	0	0	5.0	0	0	0	0	0	5.0
1973	0	0	0	0	0	0	0	0	156.0	0	0	0	156.0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	83.0	0	0	83.0
1979	0	0	0	0	0	0	0	0	105.0	0	0	0	105.0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	117.0	0	0	0	117.0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	66.0	0	0	0	66.0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	57.0	0	0	0	0	57.0
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG:	0	0	0	0	0	0.2	0.4	1.3	22.7	1.2	0	0	25.8
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	0	0	0	0	0	15.1	17.0	57.0	173.0	83.0	0	0	173.0

Table 3

Alternative 4 - Diversion to Storage Bypassed at Lake McClure for Vernalis and Delta Outflow Objectives, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	0	0	0	0	0	0	0	0	0	0	0	0
1923	0	0	0	0	0	0	0	0	35.0	0	0	0	35.0
1924	0	0	0	0	0	0	9.0	22.0	0	0	0	0	31.0
1925	0	0	0	0	0	0	0	0	27.0	0	0	0	27.0
1926	0	0	0	0	0	0	0	0	0	0	0	0	0
1927	0	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	0	2.5	0	0	0	0	2.5
1929	0	0	0	0	0	0	0	12.5	0	10.0	15.0	0	37.5
1930	0	0	0	0	0	0	0	0	21.0	14.0	17.0	0	52.0
1931	0	0	0	0	0	0	26.0	26.0	0	0	0	0	52.0
1932	0	0	0	0	0	0	0	0	0	0	0	0	0
1933	0	0	0	0	0	0	0	0	17.5	0	0	0	17.5
1934	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	0	0	0	0	0	0	0	0	0
1937	0	0	0	0	0	0	0	0	0	0	0	0	0
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	0	0	0	0	0	0
1940	8.0	0	0	0	0	0	0	0	36.0	0	0	0	44.0
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	19.5	13.0	0	0	0	32.5
1945	0	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	23.8	5.5	0	0	0	0	29.3
1948	0	0	0	0	0	0	0	12.5	0	0	0	0	12.5
1949	0	0	0	0	0	0	20.8	0	0	0	0	0	20.8
1950	0	0	0	0	0	0	0	0	6.0	0	0	0	6.0
1951	0	0	0	0	0	0	47.0	57.0	0	0	0	0	104.0
1952	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	31.8	2.0	39.0	0	0	0	72.8
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	8.0	0	0	46.0	0	0	0	54.0
1956	0	0	0	0	0	0	6.8	0	0	0	0	0	6.8
1957	0	0	0	0	0	0	0	15.5	12.5	0	0	0	28.0
1958	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	1.0	0	17.5	0	0	0	0	18.5
1965	0	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	18.8	0	0	0	0	0	18.8
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	23.0	24.0	0	0	0	0	47.0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	2.0	94.0	4.0	0	0	0	100.0
1971	0	0	0	0	0	0	7.0	63.0	47.5	0	0	0	117.5
1972	0	0	0	0	0	0	15.0	45.5	8.0	0	0	0	68.5
1973	0	0	0	0	0	0	0	0	55.0	0	0	0	55.0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	18.0	0	0	0	0	18.0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	29.0	0	0	0	29.0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	16.5	0	0	0	0	16.5
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	40.0	110.5	0	0	0	0	150.5
1985	0	0	0	0	0	0	0	78.0	0	0	0	0	78.0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	15.0	0	0	0	0	15.0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	24.0	0	0	0	0	24.0
1993	0	0	0	0	0	0	23.8	0	0	0	0	0	23.8
1994	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG:	0.1	0	0	0	0	0.1	4.0	9.3	5.4	0.3	0.4	0	19.8
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	8.0	0	0	0	0	8.0	47.0	110.5	55.0	14.0	17.0	0	150.5

Table 4

Alternative 4 - Diversion to Storage Bypassed at Eastman Lake for Vernalis and Delta Outflow Objectives, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	0	0	0	0	0	0	0	0	0	0	0	0
1923	0	0	0	0	0	4.8	0	0	0	0	0	0	4.8
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	0	0	0	0	0	0	0	0	0
1926	0	0	0	0	0	0	0	0	0	0	0	0	0
1927	0	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	0	0	0	0	0	0	0
1929	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	0	0	0	0	0	0	0	0	0	0
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	0	0	0	0	0	0	0	0	0	0	0
1933	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	0	0	0	0	0	0	0	0	0
1937	0	0	0	0	0	0	0	0	0	0	0	0	0
1938	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	0	0	0	0	0	0
1940	0	0	0	0	0	0	0	0	0	0	0	0	0
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	0	0	0	0	0
1945	0	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	2.0	0	0	0	2.0
1947	0	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	0	0	0	0	0	0
1950	0	0	0	0	0	0	0	0	0	0	0	0	0
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	3.0	0	0	0	0	0	0	3.0
1956	0	0	0	0	0	0	8.0	0	0	0	0	0	8.0
1957	0	0	0	0	0	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	3.0	0	0	0	0	0	0	3.0
1965	0	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	1.0	0	0	0	1.0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	1.0	0	0	1.0
1993	0	0	0	0	0	0	9.0	0	0	0	0	0	9.0
1994	0	0	0	0	0	0	0	0	1.0	0	0	0	1.0
AVG:	0	0	0	0	0	0.1	0.2	0	0.1	0.0	0	0	0.4
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	0	0	0	0	0	4.8	9.0	0	2.0	1.0	0	0	9.0

Table 5

Alternative 4 - Diversion to Storage Bypassed at Hensley Lake for Vernalis and Delta Outflow Objectives, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	0	0	0	0	0	6.7	0	0	0	0	0	6.7
1923	0	0	0	0	0	5.0	0	0	0	0	0	0	5.0
1924	0	0	0	0	0	0	8.0	0	0	0	0	0	8.0
1925	0	0	0	0	0	0	0	0	0	0	0	0	0
1926	0	0	0	0	0	0	0	5.0	0	0	0	0	5.0
1927	0	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	0	0	0	0	0	0	0
1929	0	0	0	0	0	0	0	6.0	1.0	0	0	0	7.0
1930	0	0	0	0	0	0	0	0	0	0	0	0	0
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	0	0	0	0	0	0	0	0	0	0	0
1933	0	0	0	0	0	0	0	0	4.0	0	0	0	4.0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	0	0	0	0	0	0	0	0	0
1937	0	0	0	0	0	0	0	0	0	0	0	0	0
1938	0	0	0	0	0	0	0	0	0	0	2.0	0	2.0
1939	0	0	0	0	0	0	0	0	0	0	0	0	0
1940	0	0	0	0	0	0	0	0	0	0	0	0	0
1941	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	0	0	0	0	0
1945	0	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	1.0	0	0	1.0
1949	0	0	0	0	0	0	0	0	0	0	0	0	0
1950	0	0	0	0	0	0	0	0	0	0	0	0	0
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0	0	1.0	0	0	1.0
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	4.0	0	0	6.0	0	0	0	10.0
1956	0	0	0	0	0	0	3.0	0	0	0	0	0	3.0
1957	0	0	0	0	0	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	4.0	0	0	0	4.0
1965	0	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	1.0	0	1.0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	1.0	0	1.0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	1.0	0	0	0	1.0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	4.0	0	0	0	0	4.0
1977	0	0	0	0	0	1.0	2.0	0	0	0	0	0	3.0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	1.0	0	0	0	0	1.0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	1.0	0	0	0	0	1.0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	1.0	0	0	0	0	1.0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	2.0	0	0	0	0	2.0
1993	0	0	0	0	0	0	9.0	0	0	0	0	0	9.0
1994	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG:	0	0	0	0	0	0.1	0.4	0.3	0.2	0.0	0.1	0	1.1
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	0	0	0	0	0	5.0	9.0	6.0	6.0	1.0	2.0	0	10.0

Table 6

Alternative 4 - Diversion to Storage Bypassed at Bowman Lake for Delta Outflow Objective, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1923.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1924.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1925.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1926.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1927.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1928.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1929.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930.0	0	0	0	0	0	0	0	0	6.0	0	0	0	6.0
1931.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1932.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1933.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1934.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1935.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1936.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1937.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1938.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1939.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1940.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1941.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1942.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1943.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1944.0	0	0	0	0	0	0	0	0	9.0	0	0	0	9.0
1945.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1946.0	0	0	0	0	0	0	0	0	7.0	0	0	0	7.0
1947.0	0	0	0	0	0	0	0	0	2.0	0	0	0	2.0
1948.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1949.0	0	0	0	0	0	0	0	0	5.0	0	0	0	5.0
1950.0	0	0	0	0	0	0	0	0	0	3.0	0	0	3.0
1951.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1952.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1953.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1954.0	0	0	0	0	0	0	0	0	3.0	0	0	0	3.0
1955.0	0	0	0	0	0	0	0	0	19.0	0	0	0	19.0
1956.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1957.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1958.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1959.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1960.0	0	0	0	0	0	0	0	0	2.0	0	0	0	2.0
1961.0	0	0	0	0	0	0	0	0	2.0	0	0	0	2.0
1962.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1963.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1964.0	0	0	0	0	0	0	0	0	7.0	0	0	0	7.0
1965.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1966.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1967.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972.0	0	0	0	0	0	0	0	0	5.0	0	0	0	5.0
1973.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979.0	0	0	0	0	0	0	0	0	4.0	0	0	0	4.0
1980.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992.0	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG	0	0	0	0	0	0	0	0	1.0	0.0	0	0	1.0
MIN	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX	0	0	0	0	0	0	0	0	19.0	3.0	0	0	19.0

Table 7

Alternative 4 - Diversion to Storage Bypassed at Jackson Meadows Reservoir for Delta Outflow Objective, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1923.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1924.0	0	0	0	0	0	0	4.0	1.0	0	0	0	0	5.0
1925.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1926.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1927.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1928.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1929.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1931.0	0	0	0	0	0	0	7.0	3.0	0	0	0	0	10.0
1932.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1933.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1934.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1935.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1936.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1937.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1938.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1939.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1940.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1941.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1942.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1943.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1944.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1945.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1946.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1947.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1948.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1949.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1950.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1951.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1952.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1953.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1954.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1955.0	0	0	0	0	0	0	0	0	3.0	0	0	0	3.0
1956.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1957.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1958.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1959.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1960.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1961.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1962.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1963.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1964.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1965.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1966.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1967.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976.0	0	0	0	0	0	0	0	5.0	0	0	0	0	5.0
1977.0	0	0	0	0	0	0	1.0	1.0	0	0	0	0	2.0
1978.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985.0	0	0	0	0	0	0	0	8.0	0	0	0	0	8.0
1986.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987.0	0	0	0	0	0	0	0	2.0	0	0	0	0	2.0
1988.0	0	0	0	0	0	0	0	0	5.0	1.0	0	0	6.0
1989.0	0	0	0	0	0	0	0	0	3.0	0	1.0	0	4.0
1990.0	0	0	0	0	0	0	0	0	0	3.0	5.0	0	8.0
1991.0	0	0	0	0	0	0	0	0	0	0	3.0	0	3.0
1992.0	0	0	0	0	0	0	0	4.0	3.0	0	0	0	7.0
AVG	0	0	0	0	0	0	0.2	0.3	0.2	0.1	0.1	0	0.9
MIN	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX	0	0	0	0	0	0	7.0	8.0	5.0	3.0	5.0	0	10.0

Table 8

Alternative 4 - Diversion to Storage Bypassed at Bullards Bar for Delta Outflow Objective, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1923.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1924.0	0	0	0	0	0	0	27.0	0	0	0	0	0	27.0
1925.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1926.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1927.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1928.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1929.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1931.0	0	0	0	0	0	0	25.0	0	0	0	0	0	25.0
1932.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1933.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1934.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1935.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1936.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1937.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1938.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1939.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1940.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1941.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1942.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1943.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1944.0	0	0	0	0	0	0	0	0	5.0	0	0	0	5.0
1945.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1946.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1947.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1948.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1949.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1950.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1951.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1952.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1953.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1954.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1955.0	0	0	0	0	0	0	0	0	6.0	0	0	0	6.0
1956.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1957.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1958.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1959.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1960.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1961.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1962.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1963.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1964.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1965.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1966.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1967.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970.0	0	0	0	0	0	0	0	0	1.0	0	0	0	1.0
1971.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976.0	0	0	0	0	0	0	0	2.0	0	0	0	0	2.0
1977.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985.0	0	0	0	0	0	0	0	36.0	0	0	0	0	36.0
1986.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990.0	0	0	0	0	0	0	0	0	24.0	0	0	0	24.0
1991.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992.0	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG:	0	0	0	0	0	0	0.7	0.5	0.5	0	0	0	1.8
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	0	0	0	0	0	0	27.0	36.0	24.0	0	0	0	36.0

Table 9

Alternative 4 - Diversion to Storage Bypassed at Fordyce Lake for Delta Outflow Objective, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1923.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1924.0	0	0	0	0	0	0	0	1.0	0	0	0	0	1.0
1925.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1926.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1927.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1928.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1929.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1931.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1932.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1933.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1934.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1935.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1936.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1937.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1938.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1939.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1940.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1941.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1942.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1943.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1944.0	0	0	0	0	0	0	0	0	9.0	0	0	0	9.0
1945.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1946.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1947.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1948.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1949.0	0	0	0	0	0	0	0	0	4.0	0	0	0	4.0
1950.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1951.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1952.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1953.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1954.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1955.0	0	0	0	0	0	0	0	0	10.0	0	0	0	10.0
1956.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1957.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1958.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1959.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1960.0	0	0	0	0	0	0	0	0	3.0	0	0	0	3.0
1961.0	0	0	0	0	0	0	0	0	2.0	0	0	0	2.0
1962.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1963.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1964.0	0	0	0	0	0	0	0	0	8.0	0	0	0	8.0
1965.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1966.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1967.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977.0	0	0	0	0	0	0	3.0	0	0	0	0	0	3.0
1978.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992.0	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG	0	0	0	0	0	0	0.0	0.0	0.5	0	0	0	0.6
MIN	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX	0	0	0	0	0	0	3.0	1.0	10.0	0	0	0	10.0

Table 10

Alternative 4 - Water to be Subtracted from Diversion at CP #16, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1923.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1924.0	0	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.7
1925.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1926.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1927.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1928.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1929.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1930.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1931.0	0	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.7
1932.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1933.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1934.0	0.1	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.8
1935.0	0.1	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1936.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1937.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1938.0	0	0	0	0	0	0	0	0	0	0	0.4	0	0.4
1939.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1940.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1941.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1942.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1943.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1944.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1945.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1946.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1947.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1948.0	0.1	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1949.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1950.0	0.1	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1951.0	0	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.7
1952.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1953.0	0	0	0	0	0	0	0	0.4	0	0.4	0	0	0.8
1954.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1955.0	0.2	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1956.0	0.1	0	0	0	0	0	0	0	0	0	0	0	0.1
1957.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1958.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1959.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1960.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1961.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1962.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1963.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1964.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1965.0	0.1	0	0	0	0	0	0	0	0	0.4	0	0	0.5
1966.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1967.0	0.1	0	0	0	0	0	0	0	0	0	0	0	0.1
1968.0	0	0	0	0	0	0	0	0	0.4	0.4	0	0	0.9
1969.0	0.1	0	0	0	0	0	0	0	0	0	0	0	0.1
1970.0	0	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.7
1971.0	0	0	0	0	0	0	0	0.4	0	0.4	0	0	0.8
1972.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1973.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1974.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975.0	0	0	0	0	0	0	0	0	0	0.4	0	0	0.4
1976.0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	0	1.3
1977.0	0	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.7
1978.0	0.1	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1979.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1980.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1981.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1982.0	0.1	0	0	0	0	0	0	0	0	0	0	0	0.1
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	0	0	0.4	0.4	0	0	0.9
1985.0	0	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.7
1986.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1987.0	0	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.7
1988.0	0.1	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.4
1989.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1990.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
1991.0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0.9
1992.0	0	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.7
1993.0	0	0	0	0	0	0	0	0	0	0.4	0	0	0.4
1994.0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0	1.3
AVG:	0.0	0	0	0	0	0	0	0.1	0.2	0.4	0.3	0	1.0
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	0.2	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0	1.8

Table 11

Alternative 4 - Water to be Subtracted from Diversion at CP #634, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1923.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1924.0	0	0	0	0	0	0	6.7	6.9	6.9	6.9	0.8	0	28.2
1925.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1926.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1927.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1928.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1929.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1930.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1931.0	0	0	0	0	0	0	6.7	6.9	6.9	6.9	0.8	0	28.2
1932.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1933.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1934.0	0.2	0	0	0	0	0	0	6.9	6.9	6.9	0.8	0	21.7
1935.0	0.2	0	0	0	0	0	0	0	0	6.9	0.8	0	7.8
1936.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1937.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1938.0	0	0	0	0	0	0	0	0	0	0	0.8	0	0.8
1939.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1940.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1941.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1942.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1943.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1944.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1945.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1946.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1947.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1948.0	0.2	0	0	0	0	0	0	0	0	6.9	0.8	0	7.8
1949.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1950.0	0.2	0	0	0	0	0	0	0	0	6.9	0.8	0	7.8
1951.0	0	0	0	0	0	0	6.1	6.9	6.9	6.9	0.8	0	27.7
1952.0	0	0	0	0	0	0	0	0	0	0	0.8	0	0.8
1953.0	0	0	0	0	0	0	0	6.9	0	6.9	0.8	0	14.6
1954.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1955.0	1.1	0	0	0	0	0	0	0	6.9	6.9	0.8	0	15.7
1956.0	0.2	0	0	0	0	0	0	0	0	6.9	0.8	0	7.8
1957.0	0	0	0	0	0	0	6.1	0	0	6.9	0.8	0	13.8
1958.0	0	0	0	0	0	0	0	0	0	0	0.8	0	0.8
1959.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1960.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1961.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1962.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1963.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1964.0	0	0	0	0	0	6.4	0	0	6.9	6.9	0.8	0	21.0
1965.0	0.2	0	0	0	0	0	0	0	0	6.9	0.8	0	7.8
1966.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1967.0	0.2	0	0	0	0	0	0	0	0	0	0.8	0	0.9
1968.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1969.0	0.2	0	0	0	0	0	0	0	0	0	0.8	0	0.9
1970.0	0	0	0	0	0	0	6.7	6.9	6.9	6.9	0.8	0	28.2
1971.0	0	0	0	0	0	0	6.7	6.9	0	6.9	0.8	0	21.3
1972.0	0.2	0	0	0	0	0	6.7	0	6.9	6.9	0.8	0	21.4
1973.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1974.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1975.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1976.0	0	0	0	0	0	0	0	6.9	6.9	6.9	0.8	0	21.5
1977.0	0	0	0	0	0	6.4	6.7	6.9	6.9	6.9	0.8	0	34.6
1978.0	0.2	0	0	0	0	0	0	0	0	6.9	0.8	0	7.8
1979.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1980.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1981.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1982.0	0.2	0	0	0	0	0	0	0	0	0	2.2	0	2.3
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	6.7	0	6.9	6.9	0.8	0	21.3
1985.0	0	0	0	0	0	0	0	6.9	6.9	6.9	0.8	0	21.5
1986.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1987.0	0	0	0	0	0	0	0	6.9	6.9	6.9	0.8	0	21.5
1988.0	0.2	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.8
1989.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1990.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
1991.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1992.0	0	0	0	0	0	0	0	6.9	6.9	6.9	0.8	0	21.5
1993.0	0	0	0	0	0	0	0	0	0	6.9	0.8	0	7.7
1994.0	0	0	0	0	0	0	0	0	6.9	6.9	0.8	0	14.6
AVG:	0.1	0	0	0	0	0.2	0.8	1.1	3.7	6.2	0.8	0	12.9
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	1.1	0	0	0	0	6.4	6.7	6.9	6.9	6.9	2.2	0	34.6

Table 12

Alternative 4 - Water to be Subtracted from Diversion at CP #649, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0	0	0	0	0	0	0	0	0	8.6	7.2	0	15.7
1923.0	0	0	0	0	0	0	0	0	5.9	8.6	7.2	0	21.6
1924.0	0	0	0	0	0	0	3.7	6.2	8.2	8.6	7.2	0	33.8
1925.0	1.1	0	0	0	0	0	0	0	3.0	8.6	7.2	0	19.8
1926.0	1.1	0	0	0	0	0	0	2.0	8.2	8.6	7.2	0	26.9
1927.0	0	0	0	0	0	0	0	0	0	8.6	7.2	0	15.7
1928.0	0	0	0	0	0	0	0	1.0	8.2	8.6	7.2	0	24.9
1929.0	1.1	0	0	0	0	0	0	1.0	5.9	8.6	7.2	0	23.7
1930.0	1.1	0	0	0	0	0	0	0	8.2	8.6	7.2	0	24.9
1931.0	0	0	0	0	0	0	2.6	4.5	8.2	8.6	7.2	0	31.0
1932.0	0	0	0	0	0	0	0	0	0	8.6	7.2	0	15.7
1933.0	0	0	0	0	0	0	0	0	1.0	8.6	7.2	0	16.8
1934.0	1.1	0	0	0	0	0	0	2.4	8.2	8.6	7.2	0	27.3
1935.0	1.1	0	0	0	0	0	0	0	0	8.6	7.2	0	16.8
1936.0	0	0	0	0	0	0	0	0	0	8.6	7.2	0	15.7
1937.0	0	0	0	0	0	0	0	0	0	8.6	7.2	0	15.7
1938.0	0	0	0	0	0	0	0	0	0	0	5.2	0	5.2
1939.0	0	0	0	0	0	0	0	0	8.2	8.6	7.2	0	23.9
1940.0	1.1	0	0	0	0	0	0	0	5.9	8.6	7.2	0	22.7
1941.0	0	0	0	0	0	0	0	0	0	6.2	5.9	0	12.1
1942.0	0	0	0	0	0	0	0	0	0	6.2	5.9	0	12.1
1943.0	0	0	0	0	0	0	0	0	1.0	8.6	7.2	0	16.8
1944.0	0	0	0	0	0	0	0	1.0	8.2	8.6	7.2	0	24.9
1945.0	0	0	0	0	0	0	0	0	0	8.6	7.2	0	15.7
1946.0	0	0	0	0	0	0	0	0	8.2	8.6	7.2	0	23.9
1947.0	0	0	0	0	0	0	0.9	1.0	8.2	8.6	7.2	0	25.7
1948.0	1.1	0	0	0	0	0	0	1.0	0	8.6	7.2	0	17.8
1949.0	1.1	0	0	0	0	0	0.9	0	8.2	8.6	7.2	0	25.8
1950.0	1.1	0	0	0	0	0	0	0	2.4	8.6	7.2	0	19.2
1951.0	0	0	0	0	0	0	1.4	6.2	8.2	8.6	5.9	0	30.2
1952.0	0	0	0	0	0	0	0	0	0	0	2.7	0	2.7
1953.0	0	0	0	0	0	0	0.9	6.2	2.4	7.1	2.7	0	19.2
1954.0	0.8	0	0	0	0	0	0	0	8.2	8.6	5.9	0	23.5
1955.0	0.7	0	0	0	0	0.4	0	0	8.2	8.6	7.2	0	24.9
1956.0	1.1	0	0	0	0	0	0.9	0	0	3.1	2.7	0	7.7
1957.0	0	0	0	0	0	0	1.4	1.0	1.0	8.6	7.2	0	19.1
1958.0	0	0	0	0	0	0	0	0	0	0	2.7	0	2.7
1959.0	0	0	0	0	0	0	0	0	8.2	8.6	7.2	0	23.9
1960.0	1.1	0	0	0	0	0	0	0	8.2	8.6	7.2	0	24.9
1961.0	1.1	0	0	0	0	0	0	0	8.2	8.6	7.2	0	24.9
1962.0	0	0	0	0	0	0	0	0	0	8.6	7.2	0	15.7
1963.0	0	0	0	0	0	0	0	0	0	8.6	5.2	0	13.7
1964.0	0	0	0	0	0	2.1	0	1.0	8.2	8.6	7.2	0	26.9
1965.0	1.1	0	0	0	0	0	0	0	0	8.6	2.7	0	12.3
1966.0	0	0	0	0	0	0	0.9	0	8.2	8.6	7.2	0	24.7
1967.0	1.1	0	0	0	0	0	0	0	0	0	2.7	0	3.8
1968.0	0	0	0	0	0	0	1.4	2.0	8.2	8.6	2.7	0	22.7
1969.0	1.1	0	0	0	0	0	0	0	0	0	2.7	0	3.8
1970.0	0	0	0	0	0	0	4.6	5.2	8.1	8.6	5.2	0	31.6
1971.0	0	0	0	0	0	0	4.6	5.2	1.0	6.2	2.7	0	19.6
1972.0	1.1	0	0	0	0	0	4.6	1.0	8.2	8.6	7.2	0	30.5
1973.0	0	0	0	0	0	0	0	0	3.0	8.6	5.9	0	17.5
1974.0	0	0	0	0	0	0	0	0	0	3.1	2.7	0	5.8
1975.0	0	0	0	0	0	0	0	0	0	6.2	2.7	0	8.9
1976.0	0	0	0	0	0	0	0	5.2	8.2	8.6	2.7	0	24.5
1977.0	0	0	0	0	0.6	3.1	4.6	6.2	8.2	8.6	5.2	0	36.3
1978.0	0.5	0	0	0	0	0	0	0	0	7.1	7.2	0	14.7
1979.0	0	0	0	0	0	0	0	0	8.2	8.6	5.2	0	21.9
1980.0	0	0	0	0	0	0	0	0	0	6.2	5.2	0	11.4
1981.0	0	0	0	0	0	0	0	1.0	8.2	8.6	7.2	0	24.9
1982.0	1.1	0	0	0	0	0	0	0	0	0	0	0	1.1
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	4.0	1.0	3.0	8.6	2.7	0	19.3
1985.0	0	0	0	0	0	0	0	2.4	8.2	8.6	7.2	0	26.3
1986.0	0	0	0	0	0	0	0	0	0	8.6	7.2	0	15.7
1987.0	0	0	0	0	0	0	0	4.5	8.2	8.6	7.2	0	28.4
1988.0	1.1	0	0	0	0	0	0	0	8.2	8.6	7.2	0	24.9
1989.0	0	0	0	0	0	0	0	0	8.2	8.6	7.2	0	23.9
1990.0	0	0	0	0	0	0	0	0	8.2	8.6	7.2	0	23.9
1991.0	0	0	0	0	0.6	0	0	0	0	8.6	5.9	0	15.1
1992.0	0	0	0	0	0	0	0	2.4	8.2	8.6	7.2	0	26.3
1993.0	0	0	0	0	0	0	0.9	0	0	8.6	2.7	0	12.1
1994.0	0	0	0	0	0	0	0	0	8.2	8.6	7.2	0	23.9
AVG:	0.3	0	0	0	0.0	0.1	0.5	1.0	4.2	7.4	5.8	0	19.3
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	1.1	0	0	0	0.6	3.1	4.6	6.2	8.2	8.6	7.2	0	36.3

Table 13

Alternative 4 - Water to be Subtracted from Diversion at CP #672, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0	0	0	0	0	0	0	0	0	9.1	7.4	0	16.5
1923.0	0	0	0	0	0	0	0	0	0.5	9.1	7.4	0	17.1
1924.0	0	0	0	0	0	0	0.2	6.3	8.6	9.1	7.4	0	31.7
1925.0	0.7	0	0	0	0	0	0	0	0.5	9.1	7.4	0	17.7
1926.0	0.7	0	0	0	0	0	0	0	8.6	9.1	7.4	0	25.8
1927.0	0	0	0	0	0	0	0	0	0	9.1	7.4	0	16.5
1928.0	0	0	0	0	0	0	0	0	8.6	9.1	7.4	0	25.1
1929.0	0.7	0	0	0	0	0	0	0	0.5	9.1	7.4	0	17.7
1930.0	0.7	0	0	0	0	0	0	0	8.6	9.1	7.4	0	25.8
1931.0	0	0	0	0	0	0	0.2	0.4	8.6	9.1	7.4	0	25.8
1932.0	0	0	0	0	0	0	0	0	0	9.1	7.4	0	16.5
1933.0	0	0	0	0	0	0	0	0	0	9.1	7.4	0	16.5
1934.0	0.7	0	0	0	0	0	0	0.4	8.6	9.1	7.4	0	26.2
1935.0	0.7	0	0	0	0	0	0	0	0	9.1	7.4	0	17.2
1936.0	0	0	0	0	0	0	0	0	0	9.1	7.4	0	16.5
1937.0	0	0	0	0	0	0	0	0	0	9.1	7.4	0	16.5
1938.0	0	0	0	0	0	0	0	0	0	0	0.5	0	0.5
1939.0	0	0	0	0	0	0	0	0	8.6	9.1	7.4	0	25.1
1940.0	0.7	0	0	0	0	0	0	0	0.5	9.1	7.4	0	17.7
1941.0	0	0	0	0	0	0	0	0	0	0.5	4.5	0	5.0
1942.0	0	0	0	0	0	0	0	0	0	0.5	4.5	0	5.0
1943.0	0	0	0	0	0	0	0	0	0	9.1	7.4	0	16.5
1944.0	0	0	0	0	0	0	0	0	8.6	9.1	7.4	0	25.1
1945.0	0	0	0	0	0	0	0	0	0	9.1	7.4	0	16.5
1946.0	0	0	0	0	0	0	0	0	8.6	9.1	7.4	0	25.1
1947.0	0	0	0	0	0	0	0.1	0	8.6	9.1	7.4	0	25.2
1948.0	0.7	0	0	0	0	0	0	0	0	9.1	7.4	0	17.2
1949.0	0.7	0	0	0	0	0	0.1	0	8.6	9.1	7.4	0	25.8
1950.0	0.7	0	0	0	0	0	0	0	0.0	9.1	6.2	0	16.0
1951.0	0	0	0	0	0	0	0.1	6.3	8.6	9.1	4.5	0	28.5
1952.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0.0
1953.0	0	0	0	0	0	0	0.1	6.3	0	5.5	0.0	0	11.9
1954.0	0.1	0	0	0	0	0	0	0	8.6	9.1	4.5	0	22.2
1955.0	0.2	0	0	0	0	0	0	0	8.6	9.1	7.4	0	25.3
1956.0	0.7	0	0	0	0	0	0.1	0	0	0.0	0.0	0	0.8
1957.0	0	0	0	0	0	0	0.1	0	0	9.1	7.4	0	16.6
1958.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0.0
1959.0	0	0	0	0	0	0	0	0	8.6	9.1	7.4	0	25.1
1960.0	0.7	0	0	0	0	0	0	0	8.6	9.1	7.4	0	25.8
1961.0	0.7	0	0	0	0	0	0	0	8.6	9.1	7.4	0	25.8
1962.0	0	0	0	0	0	0	0	0	0	9.1	7.4	0	16.5
1963.0	0	0	0	0	0	0	0	0	0	9.1	0.5	0	9.5
1964.0	0	0	0	0	0	0.1	0	0	8.6	9.1	7.4	0	25.2
1965.0	0.7	0	0	0	0	0	0	0	0	9.1	0.0	0	9.8
1966.0	0	0	0	0	0	0	0.1	0	8.6	9.1	7.4	0	25.2
1967.0	0.7	0	0	0	0	0	0	0	0	0	0.0	0	0.7
1968.0	0	0	0	0	0	0	0.1	0	8.6	9.1	0.0	0	17.8
1969.0	0.7	0	0	0	0	0	0	0	0	0	0.0	0	0.7
1970.0	0	0	0	0	0	0	3.4	3.8	7.2	9.1	0.5	0	23.9
1971.0	0	0	0	0	0	0	3.4	3.8	0	0.5	0.0	0	7.7
1972.0	0.7	0	0	0	0	0	3.4	0	8.6	9.1	7.4	0	29.2
1973.0	0	0	0	0	0	0	0	0	0.5	9.1	4.5	0	14.1
1974.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0.1
1975.0	0	0	0	0	0	0	0	0	0	0.5	0.0	0	0.6
1976.0	0	0	0	0	0	0	0	3.8	8.6	9.1	0.0	0	21.5
1977.0	0	0	0	0	0	1.6	3.4	6.3	8.6	9.1	0.5	0	29.4
1978.0	0.1	0	0	0	0	0	0	0	0	5.5	6.3	0	11.8
1979.0	0	0	0	0	0	0	0	0	8.6	9.1	0.5	0	18.1
1980.0	0	0	0	0	0	0	0	0	0	0.5	0.5	0	1.0
1981.0	0	0	0	0	0	0	0	0	8.6	9.1	7.4	0	25.1
1982.0	0.7	0	0	0	0	0	0	0	0	0	0.0	0	0.7
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	2.0	0	0.5	9.1	0.0	0	11.7
1985.0	0	0	0	0	0	0	0	0.4	8.6	9.1	7.4	0	25.5
1986.0	0	0	0	0	0	0	0	0	0	9.1	7.4	0	16.5
1987.0	0	0	0	0	0	0	0	0.4	8.6	9.1	7.4	0	25.5
1988.0	0.7	0	0	0	0	0	0	0	8.6	9.1	7.4	0	25.8
1989.0	0	0	0	0	0	0	0	0	8.6	9.1	7.4	0	25.1
1990.0	0	0	0	0	0	0	0	0	8.6	9.1	7.4	0	25.1
1991.0	0	0	0	0	0	0	0	0	0	9.1	4.5	0	13.6
1992.0	0	0	0	0	0	0	0	0.4	8.6	9.1	7.4	0	25.5
1993.0	0	0	0	0	0	0	0.1	0	0	9.1	0.0	0	9.2
1994.0	0	0	0	0	0	0	0	0	8.6	9.1	7.4	0	25.1
AVG:	0.2	0	0	0	0	0.0	0.2	0.5	3.9	7.3	5.0	0	17.1
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	0.7	0	0	0	0	1.6	3.4	6.3	8.6	9.1	7.4	0	31.7

Table 14

Alternative 4 - Water to be Subtracted from Diversion at CP #688, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1923.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1924.0	0	0	0	0	0	0	0.6	1.2	1.3	1.3	1.3	0	5.6
1925.0	0.2	0	0	0	0	0	0	0	1.3	1.3	1.3	0	4.0
1926.0	0.2	0	0	0	0	0	0	1.2	1.3	1.3	1.3	0	5.2
1927.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1928.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1929.0	0.2	0	0	0	0	0	0	0	1.3	1.3	1.3	0	4.0
1930.0	0.2	0	0	0	0	0	0	0	1.3	1.3	1.3	0	4.0
1931.0	0	0	0	0	0	0	0.6	1.2	1.3	1.3	1.3	0	5.6
1932.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1933.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1934.0	0.2	0	0	0	0	0	0	1.2	1.3	1.3	1.3	0	5.2
1935.0	0.2	0	0	0	0	0	0	0	0	1.3	1.3	0	2.7
1936.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1937.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1938.0	0	0	0	0	0	0	0	0	0	0	1.3	0	1.3
1939.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1940.0	0.2	0	0	0	0	0	0	0	1.3	1.3	1.3	0	4.0
1941.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1942.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1943.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1944.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1945.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1946.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1947.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1948.0	0.2	0	0	0	0	0	0	0	0	1.3	1.3	0	2.7
1949.0	0.2	0	0	0	0	0	0	0	1.3	1.3	1.3	0	4.0
1950.0	0.2	0	0	0	0	0	0	0	1.3	1.3	1.3	0	4.0
1951.0	0	0	0	0	0	0	0.6	1.2	1.3	1.3	1.3	0	5.6
1952.0	0	0	0	0	0	0	0	0	0	0	1.3	0	1.3
1953.0	0	0	0	0	0	0	0	1.2	1.3	1.3	1.3	0	5.0
1954.0	0.2	0	0	0	0	0	0	0	1.3	1.3	1.3	0	4.0
1955.0	0.1	0	0	0	0	0.3	0	0	1.3	1.3	1.3	0	4.2
1956.0	0.2	0	0	0	0	0	0	0	0	1.3	1.3	0	2.7
1957.0	0	0	0	0	0	0	0.6	0	0	1.3	1.3	0	3.2
1958.0	0	0	0	0	0	0	0	0	0	0	1.3	0	1.3
1959.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1960.0	0.2	0	0	0	0	0	0	0	1.3	1.3	1.3	0	4.0
1961.0	0.2	0	0	0	0	0	0	0	1.3	1.3	1.3	0	4.0
1962.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1963.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1964.0	0	0	0	0	0	0.3	0	0	1.3	1.3	1.3	0	4.1
1965.0	0.2	0	0	0	0	0	0	0	0	1.3	1.3	0	2.7
1966.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1967.0	0.2	0	0	0	0	0	0	0	0	0	1.3	0	1.5
1968.0	0	0	0	0	0	0	0.6	1.2	1.3	1.3	1.3	0	5.6
1969.0	0.2	0	0	0	0	0	0	0	0	0	1.3	0	1.5
1970.0	0	0	0	0	0	0	0.6	1.2	1.3	1.3	1.3	0	5.6
1971.0	0	0	0	0	0	0	0.6	1.2	0	1.3	1.3	0	4.3
1972.0	0.2	0	0	0	0	0	0.6	0	1.3	1.3	1.3	0	4.6
1973.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1974.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1975.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1976.0	0	0	0	0	0	0	0	1.2	1.3	1.3	1.3	0	5.0
1977.0	0	0	0	0	0	0.3	0.6	1.2	1.3	1.3	1.3	0	5.9
1978.0	0.2	0	0	0	0	0	0	0	0	1.3	1.3	0	2.7
1979.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1980.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1981.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1982.0	0.2	0	0	0	0	0	0	0	0	0	1.3	0	1.5
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	0.6	0	1.3	1.3	1.3	0	4.4
1985.0	0	0	0	0	0	0	0	1.2	1.3	1.3	1.3	0	5.0
1986.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1987.0	0	0	0	0	0	0	0	1.2	1.3	1.3	1.3	0	5.0
1988.0	0.2	0	0	0	0	0	0	0	1.3	1.3	1.3	0	4.0
1989.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1990.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
1991.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1992.0	0	0	0	0	0	0	0	1.2	1.3	1.3	1.3	0	5.0
1993.0	0	0	0	0	0	0	0	0	0	1.3	1.3	0	2.5
1994.0	0	0	0	0	0	0	0	0	1.3	1.3	1.3	0	3.8
AVG:	0.1	0	0	0	0	0.0	0.1	0.2	0.7	1.1	1.3	0	3.5
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	0.2	0	0	0	0	0.3	0.6	1.2	1.3	1.3	1.3	0	6.1

Table 15

Alternative 4 - Water to be Subtracted from Diversion at CP #693, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0	0	0	0	0	0	0.3	0	0	0.5	0.5	0	1.3
1923.0	0	0	0	0	0	0.2	0	0.5	0.5	0.5	0.5	0	2.2
1924.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1925.0	0.1	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.1
1926.0	0.1	0	0	0	0	0.2	0	0.5	0.5	0.5	0.5	0	2.3
1927.0	0	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.5
1928.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1929.0	0.1	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.1
1930.0	0.1	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.6
1931.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1932.0	0	0	0	0	0	0	0	0	0	0.5	0.5	0	1.0
1933.0	0	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.5
1934.0	0.1	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.1
1935.0	0.1	0	0	0	0	0	0	0	0	0.5	0.5	0	1.1
1936.0	0	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.5
1937.0	0	0	0	0	0	0	0	0	0	0.5	0.5	0	1.0
1938.0	0	0	0	0	0	0	0	0	0	0	0.5	0	0.5
1939.0	0	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.5
1940.0	0.1	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.6
1941.0	0	0	0	0	0	0	0	0	0	0.5	0.5	0	1.0
1942.0	0	0	0	0	0	0	0	0	0	0.5	0.5	0	1.0
1943.0	0	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.5
1944.0	0	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.0
1945.0	0	0	0	0	0	0	0	0	0	0.5	0.5	0	1.0
1946.0	0	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.5
1947.0	0	0	0	0	0	0.2	0.3	0.5	0.5	0.5	0.5	0	2.5
1948.0	0.1	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.1
1949.0	0.1	0	0	0	0	0	0.3	0	0.5	0.5	0.5	0	1.9
1950.0	0.1	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.4
1951.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1952.0	0	0	0	0	0	0	0	0	0	0	0.5	0	0.5
1953.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1954.0	0.1	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.6
1955.0	1.9	0	0	0	0	0.2	0	0	0.5	0.5	0.5	0	3.6
1956.0	0.1	0	0	0	0	0	0.3	0	0	0.5	0.5	0	1.4
1957.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1958.0	0	0	0	0	0	0	0	0	0	0	0.5	0	0.5
1959.0	0	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.5
1960.0	0.1	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.6
1961.0	0.1	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.6
1962.0	0	0	0	0	0	0	0	0	0	0.5	0.5	0	1.0
1963.0	0	0	0	0	0	0.2	0	0	0.5	0.5	0.5	0	1.7
1964.0	0	0	0	0	0	0.2	0	0.5	0.5	0.5	0.5	0	2.2
1965.0	0.1	0	0	0	0	0	0	0.5	0	0.5	0.5	0	1.6
1966.0	0	0	0	0	0	0	0.3	0	0.5	0.5	0.5	0	1.8
1967.0	0.1	0	0	0	0	0	0	0	0	0	0.5	0	0.6
1968.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1969.0	0.1	0	0	0	0	0	0	0	0	0	0.5	0	0.6
1970.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1971.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1972.0	0.1	0	0	0	0	0.2	0.3	0.5	0.5	0.5	0.5	0	2.6
1973.0	0.1	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.6
1974.0	0	0	0	0	0	0	0	0	0	0.5	0.5	0	1.0
1975.0	0	0	0	0	0	0	0	0	0	0.5	0.5	0	1.0
1976.0	0	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.0
1977.0	0	0	0	0	0	0.2	0.3	0.5	0.5	0.5	0.5	0	2.5
1978.0	0.1	0	0	0	0	0	0	0	0	0.5	0.5	0	1.1
1979.0	0	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.5
1980.0	0	0	0	0	0	0	0	0	0	0.5	0.5	0	1.0
1981.0	0	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.0
1982.0	0.1	0	0	0	0	0	0	0	0	0	0.5	0	0.6
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0	2.3
1985.0	0	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.0
1986.0	0	0	0	0	0	0	0	0	0	0.5	0.5	0	1.0
1987.0	0	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.0
1988.0	0.1	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.6
1989.0	0	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.5
1990.0	0	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.5
1991.0	0	0	0	0	0	0	0	0	0	0.5	0.5	0	1.0
1992.0	0	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0	2.0
1993.0	0	0	0	0	0	0	0.3	0	0	0.5	0.5	0	1.3
1994.0	0	0	0	0	0	0	0	0	0.5	0.5	0.5	0	1.5
AVG:	0.1	0	0	0	0	0.0	0.1	0.2	0.3	0.5	0.5	0	1.6
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	1.9	0	0	0	0	0.2	0.3	0.5	0.5	0.5	0.5	0	4.4

Table 16

Alternative 4 - Water to be Subtracted from Diversion at CP #699, TAF

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1923.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1924.0	0	0	0	0	0	0	0	12.0	16.4	17.3	14.2	0	59.9
1925.0	1.9	0	0	0	0	0	0	0	0	17.3	14.2	0	33.4
1926.0	1.9	0	0	0	0	0	0	0	16.4	17.3	14.2	0	49.8
1927.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1928.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1929.0	1.9	0	0	0	0	0	0	0	0	17.3	14.2	0	33.4
1930.0	1.9	0	0	0	0	0	0	0	16.4	17.3	14.2	0	49.8
1931.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1932.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1933.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1934.0	1.9	0	0	0	0	0	0	0	16.4	17.3	14.2	0	49.8
1935.0	1.9	0	0	0	0	0	0	0	0	17.3	14.2	0	33.4
1936.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1937.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1938.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1939.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1940.0	1.9	0	0	0	0	0	0	0	0	17.3	14.2	0	33.4
1941.0	0	0	0	0	0	0	0	0	0	0	1.1	0	1.1
1942.0	0	0	0	0	0	0	0	0	0	0	1.1	0	1.1
1943.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1944.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1945.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1946.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1947.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1948.0	1.9	0	0	0	0	0	0	0	0	17.3	14.2	0	33.4
1949.0	1.9	0	0	0	0	0	0	0	16.4	17.3	14.2	0	49.8
1950.0	1.9	0	0	0	0	0	0	0	0	17.3	14.2	0	33.4
1951.0	0	0	0	0	0	0	0	12.0	16.4	17.3	1.1	0	46.8
1952.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1953.0	0	0	0	0	0	0	0	12.0	0	1.3	0	0	13.3
1954.0	0	0	0	0	0	0	0	0	16.4	17.3	1.1	0	34.8
1955.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1956.0	1.9	0	0	0	0	0	0	0	0	0	0	0	1.9
1957.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1958.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1959.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1960.0	1.9	0	0	0	0	0	0	0	16.4	17.3	14.2	0	49.8
1961.0	1.9	0	0	0	0	0	0	0	16.4	17.3	14.2	0	49.8
1962.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1963.0	0	0	0	0	0	0	0	0	0	17.3	0	0	17.3
1964.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1965.0	1.9	0	0	0	0	0	0	0	0	17.3	0	0	19.2
1966.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1967.0	1.9	0	0	0	0	0	0	0	0	0	0	0	1.9
1968.0	0	0	0	0	0	0	0	0	16.4	17.3	0	0	33.7
1969.0	1.9	0	0	0	0	0	0	0	0	0	0	0	1.9
1970.0	0	0	0	0	0	0	6.3	12.0	16.4	17.3	0	0	52.0
1971.0	0	0	0	0	0	0	6.3	12.0	0	0	0	0	18.3
1972.0	1.9	0	0	0	0	0	6.3	0	16.4	17.3	14.2	0	56.1
1973.0	0	0	0	0	0	0	0	0	0	17.3	1.1	0	18.4
1974.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976.0	0	0	0	0	0	0	0	12.0	16.4	17.3	0	0	45.7
1977.0	0	0	0	0	0	3.2	6.3	12.0	16.4	17.3	0	0	55.1
1978.0	0	0	0	0	0	0	0	0	0	1.3	14.2	0	15.5
1979.0	0	0	0	0	0	0	0	0	16.4	17.3	0	0	33.7
1980.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1982.0	1.9	0	0	0	0	0	0	0	0	0	0	0	1.9
1983.0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984.0	0	0	0	0	0	0	6.3	0	0	17.3	0	0	23.6
1985.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1986.0	0	0	0	0	0	0	0	0	0	17.3	14.2	0	31.5
1987.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1988.0	1.9	0	0	0	0	0	0	0	16.4	17.3	14.2	0	49.8
1989.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1990.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1991.0	0	0	0	0	0	0	0	0	0	17.3	1.1	0	18.4
1992.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
1993.0	0	0	0	0	0	0	0	0	0	17.3	0	0	17.3
1994.0	0	0	0	0	0	0	0	0	16.4	17.3	14.2	0	47.9
AVG:	0.5	0	0	0	0	0.0	0.4	1.1	7.4	13.5	8.8	0	31.9
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	1.9	0	0	0	0	3.2	6.3	12.0	16.4	17.3	14.2	0	71.3

Alternative 3
Water Right Cutoff Number for Vernalis Objectives

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	71.0	x	x	x	0	0	16.0	8.0	0	x	x	x
1923	0	x	x	x	0	12.0	16.0	11.0	0	x	x	x
1924	0	x	x	x	0	0	24.0	70.0	0	x	x	x
1925	71.0	x	x	x	0	0	8.0	8.0	0	x	x	x
1926	71.0	x	x	x	0	8.0	16.0	21.0	24.0	x	x	x
1927	71.0	x	x	x	0	0	8.0	8.0	16.0	x	x	x
1928	0	x	x	x	0	0	21.0	16.0	18.0	x	x	x
1929	71.0	x	x	x	0	0	0	16.0	0	x	x	x
1930	71.0	x	x	x	0	0	16.0	21.0	0	x	x	x
1931	0	x	x	x	0	0	52.0	70.0	0	x	x	x
1932	0	x	x	x	0	0	0	8.0	8.0	x	x	x
1933	0	x	x	x	0	0	24.0	24.0	16.0	x	x	x
1934	71.0	x	x	x	0	0	16.0	71.0	0	x	x	x
1935	71.0	x	x	x	0	0	0	0	0	x	x	x
1936	0	x	x	x	0	0	0	8.0	8.0	x	x	x
1937	0	x	x	x	0	0	0	0	0	x	x	x
1938	0	x	x	x	0	0	0	0	0	x	x	x
1939	0	x	x	x	0	0	0	63.0	44.0	x	x	x
1940	71.0	x	x	x	0	0	0	8.0	21.0	x	x	x
1941	0	x	x	x	0	0	0	0	0	x	x	x
1942	0	x	x	x	0	0	0	8.0	0	x	x	x
1943	0	x	x	x	0	0	0	0	16.0	x	x	x
1944	0	x	x	x	0	0	0	16.0	0	x	x	x
1945	71.0	x	x	x	0	0	0	8.0	0	x	x	x
1946	0	x	x	x	0	0	16.0	8.0	21.0	x	x	x
1947	0	x	x	x	0	8.0	71.0	16.0	58.0	x	x	x
1948	71.0	x	x	x	8.0	0	16.0	16.0	8.0	x	x	x
1949	71.0	x	x	x	0	0	21.0	16.0	20.0	x	x	x
1950	71.0	x	x	x	0	0	16.0	8.0	16.0	x	x	x
1951	71.0	x	x	x	0	0	71.0	71.0	21.0	x	x	x
1952	71.0	x	x	x	0	0	0	0	0	x	x	x
1953	0	x	x	x	0	0	53.0	71.0	21.0	x	x	x
1954	71.0	x	x	x	8.0	0	8.0	8.0	0	x	x	x
1955	71.0	x	x	x	8.0	21.0	71.0	16.0	16.0	x	x	x
1956	71.0	x	x	x	0	0	21.0	0	0	x	x	x
1957	0	x	x	x	0	0	71.0	21.0	16.0	x	x	x
1958	71.0	x	x	x	0	0	0	0	0	x	x	x
1959	0	x	x	x	0	0	16.0	71.0	63.0	x	x	x
1960	71.0	x	x	x	0	0	16.0	16.0	0	x	x	x
1961	71.0	x	x	x	0	0	16.0	63.0	0	x	x	x
1962	0	x	x	x	0	0	0	16.0	8.0	x	x	x
1963	71.0	x	x	x	0	8.0	0	8.0	8.0	x	x	x
1964	0	x	x	x	8.0	36.0	71.0	24.0	21.0	x	x	x
1965	(72+)	x	x	x	0	0	8.0	16.0	16.0	x	x	x
1966	0	x	x	x	0	0	24.0	24.0	36.0	x	x	x
1967	71.0	x	x	x	0	0	0	0	0	x	x	x
1968	0	x	x	x	0	0	71.0	21.0	57.0	x	x	x
1969	71.0	x	x	x	0	0	0	0	0	x	x	x
1970	0	x	x	x	0	0	71.0	71.0	21.0	x	x	x
1971	71.0	x	x	x	0	0	71.0	71.0	16.0	x	x	x
1972	71.0	x	x	x	8.0	8.0	71.0	16.0	63.0	x	x	x
1973	71.0	x	x	x	0	0	0	8.0	0	x	x	x
1974	0	x	x	x	0	0	0	8.0	16.0	x	x	x
1975	0	x	x	x	0	0	0	16.0	0	x	x	x
1976	0	x	x	x	0	0	24.0	63.0	0	x	x	x
1977	0	x	x	x	0	0	(72+)	(72+)	0	x	x	x
1978	0	x	x	x	0	0	0	0	0	x	x	x
1979	0	x	x	x	0	0	8.0	8.0	16.0	x	x	x
1980	0	x	x	x	0	0	0	0	0	x	x	x
1981	0	x	x	x	0	0	16.0	16.0	57.0	x	x	x
1982	71.0	x	x	x	0	0	0	0	0	x	x	x
1983	0	x	x	x	0	0	0	0	0	x	x	x
1984	0	x	x	x	0	0	71.0	21.0	21.0	x	x	x
1985	71.0	x	x	x	0	0	16.0	16.0	53.0	x	x	x
1986	71.0	x	x	x	0	0	0	0	0	x	x	x
1987	0	x	x	x	0	0	0	29.0	0	x	x	x
1988	71.0	x	x	x	0	0	16.0	53.0	0	x	x	x
1989	0	x	x	x	0	0	16.0	16.0	0	x	x	x
1990	0	x	x	x	0	0	16.0	16.0	0	x	x	x
1991	0	x	x	x	0	0	0	16.0	0	x	x	x
1992	0	x	x	x	0	0	0	16.0	0	x	x	x
1993	0	x	x	x	8.0	8.0	21.0	16.0	0	x	x	x
1994	0	x	x	x	0	0	11.0	16.0	0	x	x	x

Alternative 4
Water Right Cutoff Number for Vernalis Objectives

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	0	x	x	x	0	0	11.0	0	0	x	x	x
1923	0	x	x	x	0	12.0	0	8.0	0	x	x	x
1924	0	x	x	x	0	0	16.0	58.0	0	x	x	x
1925	72 +	x	x	x	0	0	0	8.0	0	x	x	x
1926	72.0	x	x	x	0	8.0	0	21.0	24.0	x	x	x
1927	0	x	x	x	0	0	0	0	8.0	x	x	x
1928	0	x	x	x	0	0	8.0	16.0	18.0	x	x	x
1929	71.0	x	x	x	0	0	0	16.0	0	x	x	x
1930	72 +	x	x	x	0	0	0	0	0	x	x	x
1931	0	x	x	x	0	0	24.0	53.0	0	x	x	x
1932	0	x	x	x	0	0	0	0	0	x	x	x
1933	0	x	x	x	0	0	0	0	16.0	x	x	x
1934	72 +	x	x	x	0	0	0	0	0	x	x	x
1935	72 +	x	x	x	0	0	0	0	0	x	x	x
1936	0	x	x	x	0	0	0	0	8.0	x	x	x
1937	0	x	x	x	0	0	0	0	0	x	x	x
1938	0	x	x	x	0	0	0	0	0	x	x	x
1939	0	x	x	x	0	0	0	0	53.0	x	x	x
1940	72 +	x	x	x	0	0	0	0	21.0	x	x	x
1941	0	x	x	x	0	0	0	0	0	x	x	x
1942	0	x	x	x	0	0	0	0	0	x	x	x
1943	0	x	x	x	0	0	0	0	17.0	x	x	x
1944	0	x	x	x	0	0	0	16.0	0	x	x	x
1945	0	x	x	x	0	0	0	0	0	x	x	x
1946	0	x	x	x	0	0	0	0	21.0	x	x	x
1947	0	x	x	x	0	8.0	16.0	16.0	59.0	x	x	x
1948	66.0	x	x	x	8.0	0	0	16.0	8.0	x	x	x
1949	72 +	x	x	x	0	0	16.0	0	20.0	x	x	x
1950	72 +	x	x	x	0	0	8.0	8.0	16.0	x	x	x
1951	0	x	x	x	0	0	24.0	72 +	21.0	x	x	x
1952	0	x	x	x	0	0	0	0	0	x	x	x
1953	0	x	x	x	0	0	16.0	72 +	21.0	x	x	x
1954	43.0	x	x	x	0	0	0	0	0	x	x	x
1955	72 +	x	x	x	8.0	21.0	0	0	16.0	x	x	x
1956	72 +	x	x	x	0	0	16.0	0	0	x	x	x
1957	0	x	x	x	0	0	24.0	16.0	16.0	x	x	x
1958	0	x	x	x	0	0	0	0	0	x	x	x
1959	0	x	x	x	0	0	0	0	63.0	x	x	x
1960	72 +	x	x	x	0	0	0	0	0	x	x	x
1961	72 +	x	x	x	0	0	0	0	0	x	x	x
1962	0	x	x	x	0	0	0	0	0	x	x	x
1963	0	x	x	x	0	8.0	0	0	8.0	x	x	x
1964	0	x	x	x	8.0	48.0	0	16.0	21.0	x	x	x
1965	72 + +	x	x	x	0	0	0	8.0	0	x	x	x
1966	0	x	x	x	0	0	16.0	0	47.0	x	x	x
1967	71.0	x	x	x	0	0	0	0	0	x	x	x
1968	0	x	x	x	0	0	21.0	21.0	58.0	x	x	x
1969	72 +	x	x	x	0	0	0	0	0	x	x	x
1970	0	x	x	x	0	0	72 +	63.0	21.0	x	x	x
1971	0	x	x	x	0	0	71.0	63.0	16.0	x	x	x
1972	72 +	x	x	x	8.0	8.0	72 +	16.0	63.0	x	x	x
1973	8.0	x	x	x	0	0	0	0	0	x	x	x
1974	0	x	x	x	0	0	0	0	0	x	x	x
1975	0	x	x	x	0	0	0	0	0	x	x	x
1976	0	x	x	x	0	0	0	63.0	0	x	x	x
1977	0	x	x	x	0	0	72 + +	72 + +	0	x	x	x
1978	0	x	x	x	0	0	0	0	0	x	x	x
1979	0	x	x	x	0	0	0	0	0	x	x	x
1980	0	x	x	x	0	0	0	0	0	x	x	x
1981	0	x	x	x	0	0	0	16.0	58.0	x	x	x
1982	71.0	x	x	x	0	0	0	0	0	x	x	x
1983	0	x	x	x	0	0	0	0	0	x	x	x
1984	0	x	x	x	0	0	63.0	16.0	21.0	x	x	x
1985	0	x	x	x	0	0	0	0	56.0	x	x	x
1986	0	x	x	x	0	0	0	0	0	x	x	x
1987	0	x	x	x	0	0	0	0	0	x	x	x
1988	72 +	x	x	x	0	0	0	0	0	x	x	x
1989	0	x	x	x	0	0	0	0	0	x	x	x
1990	0	x	x	x	0	0	0	0	0	x	x	x
1991	0	x	x	x	0	0	0	0	0	x	x	x
1992	0	x	x	x	0	0	0	16.0	0	x	x	x
1993	0	x	x	x	0	0	16.0	0	0	x	x	x
1994	0	x	x	x	0	0	0	0	0	x	x	x

Alternative 3
Priority Group Curtaled for Delta Outflow Objective

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	0	0	0	0	0	0	0	0	0	7.0	5.0	0
1923	0	0	0	0	0	0	0	0	4.0	8.0	7.0	0
1924	0	0	0	0	0	0	4.0	7.0	8.0	8.0	6.0	0
1925	0	0	0	0	0	0	0	0	3.0	7.0	7.0	0
1926	0	0	0	0	0	0	0	(0)	8.0	8.0	8.0	0
1927	0	0	0	0	0	0	0	0	0	7.0	7.0	0
1928	0	0	0	0	0	0	0	0	8.0	9.0	8.0	0
1929	0	0	0	0	0	0	0	0	4.0	8.0	7.0	0
1930	0	0	0	0	0	0	0	0	7.0	8.0	7.0	0
1931	0	0	0	0	0	0	3.0	4.0	8.0	8.0	7.0	0
1932	0	0	0	0	0	0	0	0	(0)	7.0	6.0	0
1933	0	0	0	0	0	0	0	0	(0)	7.0	7.0	0
1934	0	0	0	0	0	0	0	3.0	8.0	8.0	7.0	0
1935	0	0	0	0	0	0	0	0	0	7.0	6.0	0
1936	0	0	0	0	0	0	0	0	(0)	8.0	7.0	0
1937	0	0	0	0	0	0	0	0	(0)	8.0	7.0	0
1938	0	0	0	0	0	0	0	0	0	(0)	2.0	0
1939	0	0	0	0	0	0	(0)	1.0	9.0	8.0	7.0	0
1940	0	0	0	0	0	0	0	0	4.0	8.0	7.0	0
1941	0	0	0	0	0	0	0	0	0	5.0	4.0	0
1942	0	0	0	0	0	0	0	0	0	4.0	3.0	0
1943	0	0	0	0	0	0	0	0	0	7.0	7.0	0
1944	0	0	0	0	0	0	0	0	7.0	8.0	7.0	0
1945	0	0	0	0	0	0	0	0	(0)	8.0	7.0	0
1946	0	0	0	0	0	0	0	0	7.0	8.0	7.0	0
1947	0	0	0	0	0	0	0	(0)	7.0	8.0	7.0	0
1948	0	0	0	0	0	0	0	0	0	7.0	7.0	0
1949	0	0	0	0	0	0	0	0	7.0	8.0	7.0	0
1950	0	0	0	0	0	0	0	0	(0)	8.0	4.0	0
1951	0	0	0	0	0	0	0	0	7.0	8.0	5.0	0
1952	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0	0	4.0	2.0	0
1954	0	0	0	0	0	0	0	(0)	5.0	8.0	4.0	0
1955	0	0	0	0	0	0	0	0	7.0	8.0	7.0	0
1956	0	0	0	0	0	0	0	0	0	3.0	0	0
1957	0	0	0	0	0	0	0	0	(0)	8.0	4.0	0
1958	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	8.0	8.0	7.0	0
1960	0	0	0	0	0	0	0	0	8.0	8.0	7.0	0
1961	0	0	0	0	0	0	0	0	8.0	**9.0**	8.0	0
1962	0	0	0	0	0	0	0	0	(0)	8.0	7.0	0
1963	0	0	0	0	0	0	0	0	0	7.0	2.0	0
1964	0	0	0	0	0	0	0	0	7.0	8.0	7.0	0
1965	0	0	0	0	0	0	0	0	0	7.0	0	0
1966	0	0	0	0	0	0	0	(0)	8.0	8.0	7.0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	8.0	8.0	0	0
1969	0	0	0	0	0	0	0	0	0	1.0	0	0
1970	0	0	0	0	0	0	0	0	5.0	8.0	3.0	0
1971	0	0	0	0	0	0	0	0	0	3.0	1.0	0
1972	0	0	0	0	0	0	0	0	8.0	8.0	5.0	0
1973	0	0	0	0	0	0	0	0	4.0	8.0	4.0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	2.0	0	0
1976	0	0	0	0	0	0	0	2.0	9.0	8.0	2.0	0
1977	0	0	0	0	9.0	0	9.0	3.0	8.0	8.0	4.0	0
1978	3.0	0	0	0	0	0	0	0	0	7.0	5.0	0
1979	0	0	0	0	0	0	0	0	7.0	8.0	2.0	0
1980	0	0	0	0	0	0	0	0	0	5.0	2.0	0
1981	0	0	0	0	0	0	0	0	8.0	8.0	5.0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	3.0	7.0	0	0
1985	0	0	0	0	0	0	0	4.0	9.0	8.0	7.0	0
1986	0	0	0	0	0	0	0	0	(0)	7.0	4.0	0
1987	0	0	0	0	0	0	0	5.0	9.0	8.0	8.0	0
1988	0	0	0	0	0	0	0	(0)	8.0	8.0	8.0	0
1989	0	0	0	0	0	0	0	(0)	7.0	8.0	5.0	0
1990	0	0	0	0	0	0	(0)	0	7.0	8.0	7.0	0
1991	0	0	0	0	9.0	0	0	0	1.0	7.0	4.0	0
1992	0	0	0	0	0	0	0	3.0	8.0	8.0	7.0	0
1993	0	0	0	0	0	0	0	0	0	7.0	(0)	0
1994	0	0	0	0	0	0	0	0	8.0	8.0	5.0	0

Alternative 4
Priority Group Curtaled for Delta Outflow Objective

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	0	0	0	0	0	0	0	0	0	7.0	7.0	(0)
1923	0	0	0	0	0	0	0	0	4.0	8.0	7.0	0
1924	0	0	0	0	0	(0)	4.0	8.0	8.0	8.0	7.0	0
1925	(0)	0	0	0	0	0	0	0	3.0	8.0	7.0	(0)
1926	0	0	0	0	0	0	0	(0)	8.0	8.0	8.0	0
1927	0	0	0	0	0	0	0	0	0	8.0	7.0	0
1928	0	0	0	0	0	0	0	0	8.0	9.0	8.0	0
1929	0	0	0	0	0	0	0	0	4.0	8.0	7.0	0
1930	0	0	0	0	0	0	0	0	8.0	8.0	7.0	0
1931	0	0	0	0	0	(0)	3.0	4.0	8.0	8.0	8.0	0
1932	0	0	0	0	0	0	0	0	(0)	8.0	7.0	0
1933	0	0	0	0	0	0	0	0	(0)	8.0	8.0	0
1934	0	0	0	0	0	(0)	0	3.0	8.0	8.0	7.0	0
1935	0	0	0	0	0	0	0	0	0	8.0	7.0	0
1936	0	0	0	0	0	0	0	0	(0)	8.0	8.0	0
1937	0	0	0	0	0	0	0	0	(0)	8.0	8.0	0
1938	0	0	0	0	0	0	0	0	0	0	4.0	0
1939	0	0	0	0	0	0	(0)	(0)	9.0	8.0	8.0	0
1940	0	0	0	0	0	0	0	0	4.0	8.0	8.0	0
1941	0	0	0	0	0	0	0	0	0	4.0	5.0	0
1942	0	0	0	0	0	0	0	0	0	4.0	5.0	0
1943	0	0	0	0	0	0	0	0	0	8.0	7.0	0
1944	0	0	0	0	0	0	0	0	7.0	8.0	8.0	0
1945	0	0	0	0	0	0	0	0	(0)	8.0	7.0	0
1946	0	0	0	0	0	0	0	0	7.0	8.0	7.0	0
1947	0	0	0	0	0	0	0	(0)	8.0	8.0	8.0	0
1948	0	0	0	0	0	0	0	0	0	8.0	7.0	0
1949	0	0	0	0	0	0	0	0	8.0	8.0	7.0	0
1950	0	0	0	0	0	0	0	0	1.0	8.0	6.0	0
1951	0	0	0	0	0	0	0	0	8.0	8.0	5.0	0
1952	0	0	0	0	0	0	0	0	0	0	2.0	0
1953	0	0	0	0	0	0	0	0	0	5.0	2.0	0
1954	0	0	0	0	0	0	0	(0)	7.0	8.0	5.0	0
1955	0	0	0	0	0	0	0	0	7.0	8.0	8.0	0
1956	0	0	0	0	0	0	0	0	0	2.0	2.0	0
1957	0	0	0	0	0	0	0	0	(0)	8.0	7.0	0
1958	0	0	0	0	0	0	0	0	0	(0)	2.0	0
1959	0	0	0	0	0	(0)	0	0	8.0	9.0	7.0	0
1960	(0)	0	0	0	0	0	0	0	8.0	8.0	8.0	(0)
1961	0	0	0	0	0	0	0	0	8.0	9.0	8.0	0
1962	0	0	0	0	0	0	0	0	(0)	8.0	7.0	0
1963	0	0	0	0	0	0	0	0	0	7.0	4.0	0
1964	0	0	0	0	0	0	0	0	7.0	8.0	8.0	0
1965	(0)	0	0	0	0	0	0	0	0	7.0	2.0	0
1966	0	0	0	0	0	0	0	(0)	8.0	8.0	7.0	0
1967	0	0	0	0	0	0	0	0	0	0	2.0	0
1968	0	0	0	0	0	0	0	0	8.0	8.0	2.0	0
1969	(0)	0	0	0	0	0	0	0	0	0	2.0	0
1970	0	0	0	0	0	0	0	0	6.0	8.0	5.0	0
1971	0	0	0	0	0	0	0	0	0	4.0	2.0	0
1972	0	0	0	0	0	0	0	0	8.0	8.0	7.0	0
1973	0	0	0	0	0	0	0	0	3.0	8.0	5.0	0
1974	0	0	0	0	0	0	0	0	0	2.0	2.0	0
1975	0	0	0	0	0	0	0	0	0	4.0	2.0	0
1976	0	0	0	0	0	0	0	3.0	9.0	8.0	2.0	0
1977	(0)	0	0	0	9.0	7.0	9.0	3.0	8.0	8.0	5.0	0
1978	3.0	0	0	0	0	0	0	0	0	5.0	6.0	0
1979	0	0	0	0	0	0	0	0	8.0	8.0	4.0	0
1980	0	0	0	0	0	0	0	0	0	4.0	4.0	0
1981	0	0	0	0	0	0	0	0	8.0	8.0	7.0	0
1982	0	0	0	0	0	0	0	0	0	0	1.0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	3.0	8.0	2.0	0
1985	0	0	0	0	0	0	0	3.0	8.0	8.0	7.0	0
1986	0	0	0	0	0	0	0	0	0	8.0	7.0	0
1987	0	0	0	0	0	0	0	4.0	9.0	8.0	8.0	0
1988	0	0	0	0	0	0	0	(0)	8.0	8.0	8.0	0
1989	0	0	0	0	0	0	0	0	8.0	8.0	7.0	0
1990	0	0	0	0	0	0	(0)	0	8.0	8.0	8.0	0
1991	(0)	0	0	0	9.0	0	0	0	(0)	7.0	5.0	0
1992	(0)	0	0	0	0	0	0	3.0	8.0	8.0	8.0	0
1993	0	0	0	0	0	0	0	0	0	8.0	2.0	0
1994	0	0	0	0	0	0	0	0	8.0	8.0	7.0	0

Alternative 3
Unallocated Water (additional project obligation) (TAF)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	0	0	0	0	0	0	0	0	60.1	15.6	0	75.7
1923	0	0	0	0	0	0	0	0	15.7	172.9	70.1	0	258.8
1924	0	0	0	0	0	0	17.2	84.6	165.7	77.7	45.5	0	390.6
1925	0	0	0	0	0	0	0	0	44.8	223.1	7.1	0	275.0
1926	0	0	0	0	0	0	0	95.0	217.1	257.9	14.0	0	583.9
1927	0	0	0	0	0	0	0	0	0	188.1	47.1	0	235.2
1928	0	0	0	0	0	0	0	0	33.1	95.1	44.0	0	172.1
1929	0	0	0	0	0	0	0	0	0.6	71.7	51.5	0	123.8
1930	0	0	0	0	0	0	0	0	104.7	120.1	26.6	0	251.4
1931	0	0	0	0	0	0	26.3	29.8	28.7	20.7	99.5	0	204.9
1932	0	0	0	0	0	0	0	0	137.0	177.4	20.1	0	334.5
1933	0	0	0	0	0	0	0	0	136.0	183.7	90.5	0	410.2
1934	0	0	0	0	0	0	0	18.6	65.3	25.1	36.2	0	145.2
1935	0	0	0	0	0	0	0	0	0	231.1	24.0	0	255.1
1936	0	0	0	0	0	0	0	0	9.0	85.9	116.1	0	211.0
1937	0	0	0	0	0	0	0	0	154.0	112.9	115.1	0	382.0
1938	0	0	0	0	0	0	0	0	0	6.0	25.4	0	31.4
1939	0	0	0	0	0	0	122.0	7.9	20.7	137.9	105.7	0	394.1
1940	0	0	0	0	0	0	0	0	17.7	175.9	117.1	0	310.7
1941	0	0	0	0	0	0	0	0	0	24.2	3.3	0	27.5
1942	0	0	0	0	0	0	0	0	0	56.5	3.6	0	60.1
1943	0	0	0	0	0	0	0	0	0	221.1	15.1	0	236.2
1944	0	0	0	0	0	0	0	0	76.9	103.9	99.1	0	279.9
1945	0	0	0	0	0	0	0	0	154.0	76.9	62.1	0	293.0
1946	0	0	0	0	0	0	0	0	53.9	41.9	15.1	0	110.9
1947	0	0	0	0	0	0	0	134.0	171.9	239.9	101.1	0	646.9
1948	0	0	0	0	0	0	0	0	0	120.1	70.1	0	190.2
1949	0	0	0	0	0	0	0	0	189.9	163.9	59.1	0	412.9
1950	0	0	0	0	0	0	0	0	196.0	15.9	56.3	0	268.2
1951	0	0	0	0	0	0	0	0	98.9	201.9	42.6	0	343.3
1952	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0	0	42.5	28.4	0	70.9
1954	0	0	0	0	0	0	0	51.0	28.4	223.9	37.3	0	340.6
1955	0	0	0	0	0	0	0	0	50.9	169.9	90.1	0	310.9
1956	0	0	0	0	0	0	0	0	0	7.3	0	0	7.3
1957	0	0	0	0	0	0	0	0	112.0	36.9	52.3	0	201.2
1958	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	158.1	268.9	59.1	0	486.1
1960	0	0	0	0	0	0	0	0	85.1	189.9	110.1	0	385.1
1961	0	0	0	0	0	0	0	0	73.1	25.1	29.0	0	127.1
1962	0	0	0	0	0	0	0	0	242.0	98.9	54.1	0	395.0
1963	0	0	0	0	0	0	0	0	0	91.1	70.4	0	161.5
1964	0	0	0	0	0	0	0	0	54.9	194.9	95.1	0	344.9
1965	0	0	0	0	0	0	0	0	0	85.1	0	0	85.1
1966	0	0	0	0	0	0	0	39.0	116.1	190.9	45.1	0	391.1
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	108.1	155.9	0	0	264.0
1969	0	0	0	0	0	0	0	0	0	3.3	0	0	3.3
1970	0	0	0	0	0	0	0	0	14.4	14.9	4.6	0	33.8
1971	0	0	0	0	0	0	0	0	0	12.3	7.0	0	19.3
1972	0	0	0	0	0	0	0	0	95.1	207.9	33.6	0	336.5
1973	0	0	0	0	0	0	0	0	23.7	62.9	3.3	0	90.0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	36.6	0	0	36.6
1976	0	0	0	0	0	0	0	1.5	40.3	98.7	13.7	0	154.1
1977	0	0	0	0	164.7	0	19.4	47.6	108.3	16.1	38.4	0	394.5
1978	29.3	0	0	0	0	0	0	0	0	70.1	21.6	0	121.0
1979	0	0	0	0	0	0	0	0	228.9	3.9	70.4	0	303.2
1980	0	0	0	0	0	0	0	0	0	14.2	44.4	0	58.5
1981	0	0	0	0	0	0	0	0	231.1	163.9	38.6	0	433.5
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	51.8	206.1	0	0	258.0
1985	0	0	0	0	0	0	0	30.7	30.8	203.9	32.1	0	297.5
1986	0	0	0	0	0	0	0	0	41.0	293.1	47.3	0	381.5
1987	0	0	0	0	0	0	0	30.9	288.9	221.1	3.1	0	543.9
1988	0	0	0	0	0	0	0	12.0	73.2	165.1	8.1	0	258.4
1989	0	0	0	0	0	0	0	31.0	181.7	132.1	26.2	0	370.9
1990	0	0	0	0	0	0	70.0	0	135.7	148.1	83.6	0	437.4
1991	0	0	0	0	53.7	0	0	0	5.0	52.7	33.3	0	144.7
1992	0	0	0	0	0	0	0	13.6	133.7	27.7	78.5	0	253.5
1993	0	0	0	0	0	0	0	0	0	78.1	7.0	0	85.1
1994	0	0	0	0	0	0	0	0	238.7	17.7	37.6	0	293.9
AVG:	0.4	0	0	0	3.0	0	3.5	8.6	69.1	105.8	39.8	0	230.1
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	29.3	0	0	0	164.7	0	122.0	134.0	288.9	293.1	117.1	0	646.9

Alternative 4
Unallocated Water (additional project obligation) (TAF)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	0	0	0	0	0	0	0	0	0	61.0	27.0	5.9	93.9
1923	0	0	0	0	0	0	0	0	10.9	125.9	145.9	0	282.7
1924	0	0	0	0	0	13.9	19.2	8.8	206.7	135.7	49.2	0	433.5
1925	6.3	0	0	0	0	0	0	0	64.3	132.9	44.1	5.6	253.2
1926	0	0	0	0	0	0	0	95.0	319.3	356.5	86.0	0	856.8
1927	0	0	0	0	0	0	0	0	0	84.3	125.0	0	209.3
1928	0	0	0	0	0	0	0	0	151.1	109.2	111.2	0	371.4
1929	0	0	0	0	0	0	0	0	9.6	156.3	95.8	0	261.8
1930	0	0	0	0	0	0	0	0	18.0	202.3	56.6	0	277.0
1931	0	0	0	0	0	22.2	26.2	29.8	77.7	87.2	34.4	0	277.5
1932	0	0	0	0	0	0	0	0	42.8	53.3	52.5	0	148.6
1933	0	0	0	0	0	0	0	0	150.4	100.5	28.0	0	279.0
1934	0	0	0	0	0	22.0	0	18.6	118.3	114.2	71.7	0	344.8
1935	0	0	0	0	0	0	0	0	0	140.9	88.6	0	229.5
1936	0	0	0	0	0	0	0	0	9.0	237.3	40.5	0	286.8
1937	0	0	0	0	0	0	0	0	80.6	266.4	40.0	0	386.9
1938	0	0	0	0	0	0	0	0	0	0	23.7	0	23.7
1939	0	0	0	0	0	0	54.0	47.0	38.5	240.7	35.0	0	415.2
1940	0	0	0	0	0	0	0	0	18.6	310.3	48.3	0	377.2
1941	0	0	0	0	0	0	0	0	0	65.1	22.0	0	87.1
1942	0	0	0	0	0	0	0	0	0	76.6	20.2	0	96.9
1943	0	0	0	0	0	0	0	0	0	121.3	73.1	0	194.4
1944	0	0	0	0	0	0	0	0	111.2	212.9	1.9	0	325.9
1945	0	0	0	0	0	0	0	0	75.1	224.7	128.5	0	428.3
1946	0	0	0	0	0	0	0	0	79.1	174.3	69.1	0	322.5
1947	0	0	0	0	0	0	0	134.0	85.5	330.6	29.4	0	579.5
1948	0	0	0	0	0	0	0	0	0	32.9	75.1	0	108.0
1949	0	0	0	0	0	0	0	0	83.0	266.1	69.1	0	418.2
1950	0	0	0	0	0	0	0	0	18.5	128.0	14.3	0	160.8
1951	0	0	0	0	0	0	0	0	5.0	326.6	40.6	0	372.1
1952	0	0	0	0	0	0	0	0	0	0	52.1	0	52.1
1953	0	0	0	0	0	0	0	0	0	23.2	71.0	0	94.2
1954	0	0	0	0	0	0	0	33.0	5.5	330.8	39.2	0	408.5
1955	0	0	0	0	0	0	0	0	72.9	281.1	19.5	0	373.5
1956	0	0	0	0	0	0	0	0	0	69.1	35.4	0	104.6
1957	0	0	0	0	0	0	0	0	112.0	166.4	12.5	0	291.0
1958	0	0	0	0	0	0	0	0	0	8.4	37.1	0	45.5
1959	0	0	0	0	0	14.4	0	0	286.5	2.5	87.3	0	390.6
1960	4.0	0	0	0	0	0	0	0	181.8	267.9	32.9	2.0	488.6
1961	0	0	0	0	0	0	0	0	161.1	33.2	69.8	0	264.1
1962	0	0	0	0	0	0	0	0	141.6	252.4	135.4	0	529.4
1963	0	0	0	0	0	0	0	0	0	87.3	50.2	0	137.5
1964	0	0	0	0	0	0	0	0	97.9	301.4	25.2	0	424.5
1965	1.7	0	0	0	0	0	0	0	0	115.3	20.9	0	137.9
1966	0	0	0	0	0	0	0	15.0	245.7	290.7	79.4	0	630.9
1967	0	0	0	0	0	0	0	0	0	0	23.7	0	23.7
1968	0	0	0	0	0	0	0	0	208.4	264.7	17.8	0	490.9
1969	1.7	0	0	0	0	0	0	0	0	0	31.1	0	32.8
1970	0	0	0	0	0	0	0	0	5.6	154.9	5.7	0	166.2
1971	0	0	0	0	0	0	0	0	0	54.9	11.4	0	66.3
1972	0	0	0	0	0	0	0	0	179.1	299.8	5.2	0	484.1
1973	0	0	0	0	0	0	0	0	44.9	215.4	32.0	7.2	299.5
1974	0	0	0	0	0	0	0	0	0	44.5	37.7	0	82.2
1975	0	0	0	0	0	0	0	0	0	43.4	38.7	0	82.1
1976	0	0	0	0	0	0	0	3.6	50.7	111.3	36.2	0	201.7
1977	4.6	0	0	0	165.7	10.2	20.4	49.6	158.3	62.1	43.9	0	514.7
1978	29.3	0	0	0	0	0	0	0	0	65.9	9.6	0	104.9
1979	0	0	0	0	0	0	0	0	27.0	140.0	52.5	0	219.5
1980	0	0	0	0	0	0	0	0	0	14.5	3.0	0	17.5
1981	0	0	0	0	0	0	0	0	333.1	261.6	27.0	0	621.6
1982	0	0	0	0	0	0	0	0	0	0	10.3	0	10.3
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	69.7	104.9	37.0	0	211.6
1985	0	0	0	0	0	0	0	34.6	47.5	278.0	65.1	0	425.1
1986	0	0	0	0	0	0	0	0	0	105.7	20.1	0	125.7
1987	0	0	0	0	0	0	0	31.4	299.9	321.9	110.2	0	763.4
1988	0	0	0	0	0	0	0	11.0	166.2	261.7	70.6	0	509.5
1989	0	0	0	0	0	0	0	0	89.0	234.5	17.7	0	341.2
1990	0	0	0	0	0	0	31.0	0	49.2	256.1	17.4	0	353.6
1991	3.1	0	0	0	55.8	0	0	0	177.0	65.7	20.8	0	322.3
1992	1.0	0	0	0	0	0	0	33.6	159.9	72.7	11.7	0	278.8
1993	0	0	0	0	0	0	0	0	0	35.2	57.3	0	92.5
1994	0	0	0	0	0	0	0	0	347.5	119.3	26.1	0	492.8
AVG:	0.7	0	0	0	3.0	1.1	2.1	7.5	75.2	146.5	46.0	0.3	282.3
MIN:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX:	29.3	0	0	0	165.7	22.2	54.0	134.0	347.5	356.5	145.9	7.2	856.8

Appendix 4

Table of Contents

This Appendix contains data used in the calculation of watershed flow obligations under Flow Alternative 5:

AVERAGE UNIMPAIRED FLOW BY WATERSHED (TAF)

Based on DWR 1922-1992 average unimpaired flow data

Watershed	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Stony Creek	1.8	13.0	47.0	82.5	97.7	71.8	48.1	25.6	8.1	1.1	0.1	0.2	397
Sacramento River	305.6	462.0	826.6	1,081.8	1,232.4	1,205.7	972.0	670.3	428.0	297.4	254.0	257.0	7,993
Feather River	109.4	197.6	366.7	454.9	543.0	630.8	682.7	620.8	321.1	150.1	99.4	86.8	4,263
Yuba River	33.9	96.5	194.9	243.4	286.1	318.2	362.5	399.7	206.8	54.8	23.1	19.9	2,240
Bear River	4.8	15.0	40.0	55.6	67.2	59.7	38.7	15.9	5.7	2.5	1.2	1.4	308
American River	26.8	93.3	197.5	270.7	316.1	369.9	437.2	488.7	263.3	64.0	15.7	11.7	2,555
Cosumnes River	1.9	10.0	30.0	50.3	63.5	71.7	64.5	41.6	14.8	3.5	1.2	0.7	354
Mokelumne River	5.7	19.7	37.9	45.9	58.2	77.4	122.6	187.9	115.7	23.9	4.3	2.6	702
Calaveras River	0.4	4.6	15.9	28.6	39.1	34.4	21.0	5.9	2.0	0.8	0.3	0.3	153
Stanislaus River	9.8	28.5	52.9	71.5	91.3	121.5	190.7	278.1	171.6	51.0	12.2	6.4	1,085
Tuolumne River	17.0	49.6	89.8	109.2	142.0	180.5	270.9	437.0	343.4	116.6	23.8	11.5	1,791
Merced River	7.2	20.4	43.6	57.6	82.7	96.7	145.8	238.3	167.6	51.8	12.0	5.3	929
Chowchilla River	0.1	1.5	6.0	10.6	17.9	17.0	11.5	3.8	1.1	0.2	0.0	0.0	70
Fresno River	0.4	1.8	5.8	9.9	16.8	18.8	15.6	9.2	4.9	1.8	0.4	0.4	86
San Joaquin River	19.3	33.5	60.5	73.6	100.0	136.9	234.3	426.1	366.2	160.5	50.3	23.8	1,685
TOTAL	544	1,047	2,015	2,646	3,154	3,411	3,618	3,849	2,420	980	498	428	24,610

AVERAGE PERCENT CONTRIBUTION BY WATERSHED

Contribution based on 1922-1992 avearge unimpaired flow data

Watershed	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Stony Creek	0.32%	1.24%	2.33%	3.12%	3.10%	2.10%	1.33%	0.67%	0.33%	0.12%	0.01%	0.05%
Sacramento River	56.18%	44.13%	41.02%	40.88%	39.07%	35.35%	26.86%	17.41%	17.68%	30.35%	51.00%	60.04%
Feather River	20.12%	18.87%	18.20%	17.19%	17.22%	18.49%	18.87%	16.13%	13.27%	15.32%	19.96%	20.28%
Yuba River	6.23%	9.22%	9.67%	9.20%	9.07%	9.33%	10.02%	10.38%	8.54%	5.59%	4.64%	4.66%
Bear River	0.89%	1.44%	1.98%	2.10%	2.13%	1.75%	1.07%	0.41%	0.23%	0.26%	0.24%	0.34%
American River	4.92%	8.91%	9.80%	10.23%	10.02%	10.84%	12.09%	12.70%	10.88%	6.53%	3.16%	2.74%
Cosumnes River	0.34%	0.96%	1.49%	1.90%	2.01%	2.10%	1.78%	1.08%	0.61%	0.36%	0.25%	0.16%
Mokelumne River	1.04%	1.88%	1.88%	1.73%	1.85%	2.27%	3.39%	4.88%	4.78%	2.44%	0.87%	0.61%
Calaveras River	0.07%	0.44%	0.79%	1.08%	1.24%	1.01%	0.58%	0.15%	0.08%	0.08%	0.06%	0.06%
Stanislaus River	1.81%	2.72%	2.63%	2.70%	2.89%	3.56%	5.27%	7.22%	7.09%	5.21%	2.45%	1.49%
Tuolumne River	3.12%	4.73%	4.46%	4.13%	4.50%	5.29%	7.49%	11.35%	14.19%	11.89%	4.78%	2.68%
Merced River	1.32%	1.95%	2.16%	2.18%	2.62%	2.84%	4.03%	6.19%	6.92%	5.28%	2.40%	1.23%
Chowchilla River	0.01%	0.14%	0.30%	0.40%	0.57%	0.50%	0.32%	0.10%	0.04%	0.02%	0.01%	0.01%
Fresno River	0.08%	0.17%	0.29%	0.37%	0.53%	0.55%	0.43%	0.24%	0.20%	0.18%	0.08%	0.09%
San Joaquin River	3.54%	3.20%	3.00%	2.78%	3.17%	4.01%	6.48%	11.07%	15.13%	16.38%	10.10%	5.57%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

San Joaquin River Basin Watersheds Contribution relative to the SJR Basin

Watershed	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Stanislaus River	18.32%	21.05%	20.46%	21.51%	20.25%	21.26%	21.95%	19.97%	16.27%	13.37%	12.34%	13.44%
Tuolumne River	31.61%	36.65%	34.73%	32.85%	31.51%	31.58%	31.18%	31.38%	32.56%	30.52%	24.12%	24.25%
Merced River	13.37%	15.11%	16.84%	17.32%	18.36%	16.93%	16.78%	17.11%	15.89%	13.56%	12.12%	11.10%
Chowchilla River	0.10%	1.08%	2.31%	3.20%	3.96%	2.98%	1.33%	0.27%	0.10%	0.06%	0.03%	0.09%
Fresno River	0.78%	1.32%	2.25%	2.98%	3.73%	3.28%	1.79%	0.66%	0.46%	0.46%	0.41%	0.82%
San Joaquin River	35.83%	24.79%	23.41%	22.15%	22.19%	23.97%	26.97%	30.60%	34.72%	42.03%	50.99%	50.31%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Sacramento River Basin Watersheds Contribution relative to the SR Basin

Watershed	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Stony Creek	0.36%	1.43%	2.68%	3.56%	3.62%	2.53%	1.75%	1.04%	0.59%	0.19%	0.02%	0.06%
Sacramento River	62.34%	50.67%	47.06%	46.76%	45.59%	42.46%	35.35%	27.29%	31.35%	49.72%	63.61%	67.51%
Feather River	22.32%	21.67%	20.88%	19.66%	20.09%	22.21%	24.83%	25.27%	23.52%	25.10%	24.89%	22.80%
Yuba River	6.92%	10.59%	11.10%	10.52%	10.58%	11.21%	13.18%	16.27%	15.14%	9.17%	5.79%	5.24%
Bear River	0.99%	1.65%	2.28%	2.40%	2.48%	2.10%	1.41%	0.65%	0.42%	0.42%	0.30%	0.38%
American River	5.46%	10.23%	11.24%	11.70%	11.69%	13.02%	15.90%	19.89%	19.29%	10.69%	3.94%	3.08%
Cosumnes River	0.38%	1.10%	1.71%	2.17%	2.35%	2.52%	2.35%	1.69%	1.08%	0.59%	0.31%	0.17%
Mokelumne River	1.16%	2.16%	2.16%	1.98%	2.15%	2.73%	4.46%	7.65%	8.47%	3.99%	1.08%	0.69%
Calaveras River	0.08%	0.51%	0.91%	1.24%	1.45%	1.21%	0.76%	0.24%	0.15%	0.13%	0.07%	0.07%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

STUDY: 1995C06F-SWRCB-469 DWRSIM: 8.18, 27 Nov 96

SAN JOAQUIN RIVER AT VERNALIS, REQUIRED PULSE AND X2 FLOW (TAF)

YEAR	60-20-20 Year Type	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1922	W	123	0	0	0	190	210	369	365	204	0	0	0	1,461
1937	W	123	0	0	0	190	210	369	365	127	0	0	0	1,384
1938	W	123	0	0	0	190	210	369	365	204	0	0	0	1,461
1941	W	123	0	0	0	190	210	369	365	204	0	0	0	1,461
1942	W	123	0	0	0	190	210	369	365	204	0	0	0	1,461
1943	W	123	0	0	0	190	210	369	365	204	0	0	0	1,461
1952	W	123	0	0	0	190	210	369	365	204	0	0	0	1,461
1956	W	123	0	0	0	190	210	369	365	204	0	0	0	1,461
1958	W	123	0	0	0	190	210	369	365	204	0	0	0	1,461
1965	W	121	0	0	0	190	210	369	365	204	0	0	0	1,459
1967	W	123	0	0	0	190	210	369	365	204	0	0	0	1,461
1969	W	123	0	0	0	190	210	369	365	204	0	0	0	1,461
1974	W	123	0	0	0	190	210	369	365	204	0	0	0	1,461
1975	W	123	0	0	0	190	210	369	365	204	0	0	0	1,461
1978	W	61	0	0	0	190	210	369	365	204	0	0	0	1,399
1980	W	123	0	0	0	190	210	369	365	204	0	0	0	1,461
1982	W	123	0	0	0	190	210	369	365	204	0	0	0	1,461
1983	W	123	0	0	0	190	210	369	365	204	0	0	0	1,461
1986	W	123	0	0	0	190	210	369	365	127	0	0	0	1,384
1993	W	61	0	0	0	190	210	369	365	204	0	0	0	1,399
AVG	W	117	0	0	0	190	210	369	365	196	0	0	0	1,447
1923	AN	123	0	0	0	190	210	318	317	127	0	0	0	1,285
1927	AN	118	0	0	0	190	210	318	317	204	0	0	0	1,357
1932	AN	61	0	0	0	190	131	241	238	127	0	0	0	988
1935	AN	113	0	0	0	118	210	318	317	204	0	0	0	1,280
1936	AN	123	0	0	0	190	210	318	317	127	0	0	0	1,285
1940	AN	123	0	0	0	190	210	318	317	204	0	0	0	1,362
1945	AN	123	0	0	0	190	210	318	238	127	0	0	0	1,206
1946	AN	123	0	0	0	190	210	318	238	127	0	0	0	1,206
1951	AN	123	0	0	0	190	210	318	317	127	0	0	0	1,285
1963	AN	123	0	0	0	190	210	318	317	204	0	0	0	1,362
1970	AN	123	0	0	0	190	210	318	317	127	0	0	0	1,285
1973	AN	120	0	0	0	190	210	318	317	127	0	0	0	1,282
1979	AN	123	0	0	0	190	210	318	317	127	0	0	0	1,285
1984	AN	123	0	0	0	190	210	318	317	127	0	0	0	1,285
AVG	AN	117	0	0	0	185	204	313	300	149	0	0	0	1,268
1925	BN	115	0	0	0	127	140	237	235	84	0	0	0	938
1928	BN	123	0	0	0	127	140	237	235	84	0	0	0	946
1944	BN	123	0	0	0	127	140	186	183	84	0	0	0	843
1948	BN	118	0	0	0	79	87	237	235	136	0	0	0	892
1949	BN	123	0	0	0	79	140	237	183	84	0	0	0	846
1950	BN	123	0	0	0	127	140	237	235	84	0	0	0	946
1953	BN	123	0	0	0	127	140	237	235	136	0	0	0	998
1954	BN	123	0	0	0	127	140	237	235	84	0	0	0	946
1957	BN	123	0	0	0	127	140	237	235	136	0	0	0	998
1962	BN	61	0	0	0	127	140	237	235	84	0	0	0	884
1966	BN	123	0	0	0	127	140	237	183	84	0	0	0	894
1971	BN	123	0	0	0	127	140	237	235	136	0	0	0	998
AVG	BN	117	0	0	0	119	136	233	222	101	0	0	0	927
1926	D	116	0	0	0	127	140	218	218	84	0	0	0	903
1933	D	123	0	0	0	79	87	167	165	84	0	0	0	705
1939	D	123	0	0	0	127	140	167	165	84	0	0	0	806
1947	D	123	0	0	0	127	140	218	165	84	0	0	0	857
1955	D	123	0	0	0	127	140	167	165	84	0	0	0	806
1959	D	123	0	0	0	127	140	167	165	84	0	0	0	806
1964	D	123	0	0	0	127	140	167	165	84	0	0	0	806
1968	D	123	0	0	0	127	140	218	165	84	0	0	0	857
1972	D	123	0	0	0	127	140	218	165	84	0	0	0	857
1981	D	123	0	0	0	127	140	218	165	84	0	0	0	857
1985	D	123	0	0	0	127	140	167	165	84	0	0	0	806
AVG	D	122	0	0	0	123	135	190	170	84	0	0	0	824
1924	C	123	0	0	0	39	44	118	115	42	0	0	0	481
1929	C	117	0	0	0	39	44	118	115	42	0	0	0	475
1930	C	113	0	0	0	39	70	144	115	42	0	0	0	523
1931	C	61	0	0	0	39	44	118	115	42	0	0	0	419
1934	C	115	0	0	0	39	44	118	115	42	0	0	0	473
1960	C	116	0	0	0	63	70	144	115	42	0	0	0	550
1961	C	112	0	0	0	63	70	118	115	42	0	0	0	520
1976	C	123	0	0	0	39	70	118	115	42	0	0	0	507
1977	C	123	0	0	0	39	44	118	115	42	0	0	0	481
1987	C	123	0	0	0	63	70	118	115	42	0	0	0	531
1988	C	111	0	0	0	39	44	118	115	42	0	0	0	469
1989	C	61	0	0	0	39	70	144	115	42	0	0	0	471
1990	C	61	0	0	0	39	44	118	115	42	0	0	0	419
1991	C	61	0	0	0	39	70	144	115	42	0	0	0	471
1992	C	61	0	0	0	63	70	118	115	42	0	0	0	469
1994	C	123	0	0	0	63	70	118	115	42	0	0	0	531
AVG	C	100	0	0	0	47	59	125	115	42	0	0	0	487
AVG ALL		114	0	0	0	136	152	255	245	121	0	0	0	1,023

STUDY: 1995C06F-SWRCB-469 DWRSIM: 8.18, 27 Nov 96

DELTA, MINIMUM REQUIRED OUTFLOW (TAF)

YEAR	40-30-30 Year Type	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1927	W	246	268	277	369	633	1,241	1,000	1,274	513	492	299	179	6,791
1938	W	246	268	277	369	1,282	1,060	853	1,049	1,074	492	246	179	7,395
1941	W	246	268	277	369	1,164	1,012	913	968	887	492	276	179	7,051
1942	W	246	268	277	369	1,132	957	641	1,219	592	492	254	179	6,626
1943	W	246	268	277	369	1,250	1,116	1,128	1,159	428	492	325	179	7,237
1952	W	246	268	277	369	1,163	1,143	898	1,217	1,185	492	246	179	7,683
1953	W	246	268	277	369	1,149	864	652	645	412	492	260	179	5,813
1956	W	246	268	277	369	946	999	887	890	736	492	250	179	6,539
1958	W	246	268	277	369	517	1,125	860	996	1,125	492	246	179	6,700
1963	W	246	268	277	369	633	1,541	636	1,228	646	492	269	179	6,784
1965	W	246	268	277	369	1,086	1,099	512	1,400	446	492	303	179	6,677
1967	W	246	268	277	369	1,469	1,113	1,059	883	1,047	492	246	179	7,648
1969	W	246	268	277	369	1,238	975	817	1,206	1,178	492	246	179	7,491
1970	W	246	268	277	369	898	917	874	238	338	492	299	179	5,395
1971	W	246	268	277	369	1,349	1,057	1,146	559	497	492	262	179	6,701
1974	W	246	268	277	369	955	964	1,020	1,083	603	492	263	179	6,719
1975	W	246	268	277	369	633	1,369	1,065	587	836	492	249	179	6,570
1982	W	246	268	277	369	1,082	1,073	941	961	813	492	246	179	6,947
1983	W	246	268	277	369	960	864	711	837	1,007	492	246	179	6,456
1984	W	246	268	277	369	944	998	954	416	494	492	308	179	5,945
1986	W	246	268	277	369	633	1,166	887	711	573	492	301	179	6,102
AVG	W	246	268	277	369	1,006	1,079	879	930	735	492	269	179	6,727
1922	AN	246	268	277	369	633	1,348	780	581	1,396	492	246	179	6,815
1928	AN	246	268	277	369	614	599	1,311	997	343	492	308	179	6,003
1940	AN	246	268	277	555	633	1,706	1,126	1,049	437	492	336	179	7,304
1951	AN	246	268	277	369	1,090	1,124	820	543	374	492	286	179	6,068
1954	AN	246	268	277	277	588	1,323	1,078	1,283	366	492	298	179	6,675
1957	AN	246	268	277	277	412	625	1,114	377	537	492	279	179	5,083
1973	AN	246	268	277	369	1,346	1,103	847	712	641	492	282	179	6,762
1978	AN	333	208	215	597	1,581	1,365	1,268	1,112	615	492	272	179	8,237
1980	AN	246	268	277	369	1,295	1,011	892	706	533	492	274	179	6,542
1993	AN	332	208	215	397	1,540	1,327	1,311	1,192	705	492	246	179	8,144
AVG	AN	263	256	265	395	973	1,153	1,055	855	595	492	283	179	6,763
1923	BN	246	268	277	369	1,293	752	588	616	506	400	246	179	5,740
1935	BN	335	208	215	292	633	701	602	1,713	617	400	246	179	6,141
1936	BN	246	268	277	277	633	1,397	894	570	517	400	246	179	5,904
1937	BN	246	268	277	369	378	1,267	1,012	1,016	601	400	246	179	6,259
1945	BN	246	268	277	369	633	1,633	686	589	546	400	246	179	6,072
1946	BN	246	268	277	369	1,268	812	543	689	522	400	246	179	5,819
1948	BN	246	268	277	277	633	369	536	669	554	400	246	179	4,654
1950	BN	246	268	277	277	633	624	630	669	533	400	246	179	4,982
1959	BN	246	268	277	277	561	1,229	507	377	393	400	246	179	4,960
1962	BN	246	268	277	369	419	1,632	786	689	388	400	246	179	5,899
1966	BN	246	268	277	369	536	567	544	676	331	400	248	179	4,641
1968	BN	246	268	277	369	568	1,425	792	336	351	400	246	179	5,457
1972	BN	246	268	277	369	633	686	570	469	344	400	246	179	4,687
1979	BN	246	268	277	277	621	1,162	935	478	642	400	246	179	5,731
AVG	BN	252	264	273	331	674	1,018	688	683	489	400	246	179	5,496
1925	D	331	208	215	369	549	564	633	625	520	307	215	179	4,715
1926	D	246	268	277	277	407	610	572	634	304	307	215	179	4,296
1930	D	350	208	215	369	633	701	594	518	346	307	215	179	4,635
1932	D	184	352	215	369	633	701	666	558	608	307	215	179	4,987
1939	D	246	268	277	277	401	353	593	369	417	307	215	179	3,902
1944	D	246	268	277	277	401	618	531	340	462	307	215	179	4,121
1947	D	246	268	277	369	389	701	666	362	405	307	215	179	4,384
1949	D	246	268	277	277	376	439	561	676	450	307	215	179	4,271
1955	D	246	268	277	369	628	447	400	354	426	307	215	179	4,116
1960	D	246	268	277	277	495	701	668	459	344	307	215	179	4,436
1961	D	246	268	277	369	434	700	604	343	411	307	215	179	4,353
1964	D	246	268	277	369	632	479	363	429	393	307	215	179	4,157
1981	D	246	268	277	369	610	588	831	371	368	307	215	179	4,629
1985	D	246	268	277	369	404	664	504	580	337	307	215	179	4,350
1987	D	246	268	277	277	406	701	568	316	443	307	215	179	4,203
1989	D	289	208	255	277	592	486	587	619	306	307	215	179	4,320
AVG	D	257	262	264	329	499	591	584	472	409	307	215	179	4,367
1924	C	246	268	277	277	391	621	350	424	410	246	184	179	3,873
1929	C	246	268	277	277	398	584	405	394	359	246	184	179	3,817
1931	C	246	268	277	277	437	382	406	430	410	246	283	179	3,841
1933	C	246	268	277	277	410	382	600	355	415	246	283	179	3,938
1934	C	184	352	215	369	633	701	596	349	410	246	184	179	4,418
1976	C	246	268	277	277	376	400	412	379	410	246	184	179	3,654
1977	C	281	212	258	277	607	373	417	424	410	246	184	179	3,868
1988	C	246	268	277	369	633	484	402	408	410	246	208	179	4,130
1990	C	246	268	277	277	633	405	585	354	410	246	184	179	4,064
1991	C	284	208	261	277	598	374	656	335	354	246	184	179	3,956
1992	C	345	208	215	283	628	692	616	354	399	246	184	179	4,349
1994	C	246	268	277	277	396	624	471	364	410	246	184	179	3,942
AVG	C	255	260	264	293	512	502	493	381	401	246	203	179	3,988
AVG ALL		253	263	269	344	745	876	738	682	542	393	244	179	5,528

STUDY: 1995C06F-SWRCB-469 DWRSIM: 8.18, 27 Nov 96

DELTA, NET CONSUMPTIVE USE (TAF)

YEAR	40-30-30 Year Type	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1927	W	59	11	39	0	0	21	36	128	212	255	177	109	1,047
1938	W	71	37	0	0	0	0	60	131	225	255	177	104	1,060
1941	W	69	48	0	0	0	0	0	110	220	255	177	109	988
1942	W	62	44	0	0	0	10	0	105	220	255	177	107	980
1943	W	71	33	23	0	0	0	51	130	225	255	177	109	1,074
1952	W	62	35	0	0	0	0	45	131	223	254	177	108	1,035
1953	W	81	40	0	0	22	38	54	129	210	255	175	109	1,113
1956	W	78	45	0	0	0	49	51	117	221	255	177	90	1,083
1958	W	54	51	36	0	0	0	0	106	215	255	174	106	997
1963	W	24	47	20	0	0	0	0	114	221	255	177	102	960
1965	W	54	37	0	0	15	33	36	134	226	253	164	109	1,061
1967	W	81	17	0	0	15	0	0	127	204	255	177	108	984
1969	W	73	37	20	0	0	27	67	137	225	255	177	105	1,123
1970	W	59	46	3	0	0	26	87	147	220	255	177	107	1,127
1971	W	71	0	0	0	19	22	77	113	221	255	177	108	1,063
1974	W	50	3	0	0	15	0	40	132	217	238	177	109	981
1975	W	63	48	42	0	0	0	63	135	225	250	166	109	1,101
1982	W	53	7	0	0	0	0	5	130	220	255	177	70	917
1983	W	49	0	0	0	0	0	2	121	224	255	175	88	914
1984	W	73	4	0	0	0	32	82	145	225	255	176	108	1,100
1986	W	70	27	9	0	0	0	62	128	226	254	177	93	1,046
AVG	W	63	29	9	0	4	12	39	126	220	254	175	103	1,036
1922	AN	71	42	8	0	0	24	77	126	225	255	177	108	1,113
1928	AN	48	36	11	0	0	0	74	131	225	255	177	109	1,066
1940	AN	68	52	51	0	0	0	64	128	225	255	177	105	1,125
1951	AN	51	10	0	0	0	20	71	120	223	255	176	107	1,033
1954	AN	78	45	53	0	0	0	64	138	218	255	176	109	1,136
1957	AN	64	52	56	0	0	22	62	82	208	255	177	102	1,080
1973	AN	43	0	0	0	0	0	83	144	226	255	177	105	1,033
1978	AN	78	40	8	0	0	0	28	130	226	255	177	104	1,046
1980	AN	52	43	0	0	0	13	67	126	224	242	177	109	1,053
1993	AN	60	51	0	0	0	0	70	100	186	255	177	109	1,008
AVG	AN	61	37	19	0	0	8	66	123	219	254	177	107	1,069
1923	BN	65	31	0	0	14	53	26	135	221	255	177	93	1,070
1935	BN	73	34	16	0	9	0	0	128	226	255	177	108	1,026
1936	BN	61	48	43	0	0	26	66	118	203	255	177	102	1,099
1937	BN	69	52	31	0	0	0	70	139	223	255	177	109	1,125
1945	BN	62	31	2	0	0	0	85	130	225	255	177	109	1,076
1946	BN	46	44	0	0	8	21	91	125	226	254	177	108	1,100
1948	BN	48	47	54	0	21	4	34	97	204	255	177	107	1,048
1950	BN	79	47	48	0	0	19	80	138	226	255	177	100	1,169
1959	BN	79	51	54	0	0	46	89	155	226	255	177	57	1,189
1962	BN	80	35	48	0	0	24	88	145	226	254	177	108	1,185
1966	BN	80	26	0	0	0	47	90	146	225	250	177	108	1,149
1968	BN	79	46	49	0	0	1	83	139	226	255	142	109	1,129
1972	BN	78	47	22	0	8	64	87	154	220	255	177	90	1,202
1979	BN	81	38	55	0	0	6	69	134	226	252	177	109	1,147
AVG	BN	70	41	30	0	4	22	68	135	222	254	175	101	1,122
1925	D	52	42	0	0	0	23	21	78	206	255	177	108	962
1926	D	78	45	49	0	0	50	0	126	226	255	177	109	1,115
1930	D	79	52	43	0	0	0	67	131	226	255	176	104	1,133
1932	D	75	41	0	0	0	37	80	133	226	255	177	109	1,133
1939	D	63	49	52	0	2	9	96	140	226	255	177	105	1,174
1944	D	76	48	48	0	0	39	62	117	212	255	177	109	1,143
1947	D	77	34	37	0	0	1	95	146	214	255	177	109	1,145
1949	D	67	50	32	0	0	0	93	144	226	253	176	107	1,148
1955	D	81	38	14	0	0	39	45	118	222	255	177	102	1,091
1960	D	81	52	51	0	0	30	79	133	225	255	177	108	1,191
1961	D	80	27	48	0	9	7	77	136	226	255	175	103	1,143
1964	D	58	31	52	0	22	47	96	155	200	254	173	107	1,195
1981	D	80	51	47	0	8	0	80	140	226	255	177	101	1,165
1985	D	54	0	4	0	0	0	82	142	220	255	177	101	1,035
1987	D	80	52	51	0	0	0	91	149	226	255	177	109	1,190
1989	D	78	41	39	0	2	0	92	150	223	255	173	57	1,110
AVG	D	72	41	35	0	3	18	72	134	221	255	176	103	1,130
1924	C	74	49	53	0	3	41	100	159	226	255	177	108	1,245
1929	C	80	33	12	0	4	26	89	151	190	255	177	109	1,126
1931	C	64	45	57	0	0	37	98	119	216	255	177	109	1,177
1933	C	81	50	44	0	12	8	98	128	225	255	177	108	1,186
1934	C	65	52	24	0	0	51	94	145	216	255	177	102	1,181
1976	C	46	51	57	1	22	74	87	168	222	255	151	92	1,226
1977	C	71	48	52	0	27	50	96	114	224	255	177	92	1,206
1988	C	69	41	16	0	15	50	70	122	207	255	177	109	1,131
1990	C	59	43	55	0	0	46	91	71	214	255	177	108	1,119
1991	C	75	50	50	1	20	0	83	124	181	255	173	109	1,121
1992	C	51	50	50	0	0	0	70	139	221	255	177	109	1,122
1994	C	71	38	43	0	0	51	77	92	222	255	177	106	1,132
AVG	C	67	46	43	0	9	36	88	128	214	255	175	105	1,164
AVG ALL		67	38	26	0	4	19	64	129	219	254	175	104	1,099

AVERAGE REQUIRED FLOWS IN WET YEARS (TAF)

Contribution based on 1922-1992 average unimpaired flows and DWRSIM Study 1995C06F-SWRCB-469 data

Watershed	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Stony Creek	1	4	7	12	30	22	10	7	4	1	0	0
Sacramento River	120	133	118	151	374	374	194	189	238	275	249	177
Feather River	43	57	52	63	165	196	136	175	178	139	97	60
Yuba River	13	28	28	34	87	99	72	112	115	51	23	14
Bear River	2	4	6	8	20	19	8	4	3	2	1	1
American River	11	27	28	38	96	115	87	137	146	59	15	8
Cosumnes River	1	3	4	7	19	22	13	12	8	3	1	0
Mokelumne River	2	6	5	6	18	24	24	53	64	22	4	2
Calaveras River	0	1	2	4	12	11	4	2	1	1	0	0
Stanislaus River	21	7	7	10	38	45	81	73	32	26	7	3
Tuolumne River	37	13	12	15	60	66	115	115	64	59	13	5
Merced River	16	5	6	8	35	36	62	62	31	26	6	2
Chowchilla River	0	0	1	1	8	6	5	1	0	0	0	0
Fresno River	1	0	1	1	7	7	7	2	1	1	0	0
San Joaquin River	42	9	8	10	42	50	100	112	68	81	27	10
Total	**309**	**297**	**286**	**369**	**1,010**	**1,091**	**918**	**1,056**	**955**	**746**	**444**	**282**

Sacramento side (months with SJR objectives) = (SAC %) x (Adj Avg Min Delta Outflow) + (SAC %) x (Avg CU)
Sacramento side (months w/o SJR objectives) = (Overall %) x (Adj Avg Min Delta Outflow) + (SAC %) x (Avg CU)

San Joaquin side (months with SJR objectives) = (SJR %) x (Avg SJR flow objective)
San Joaquin side (months w/o SJR objectives) = (Overall %) x (Adj Avg Min Delta Outflow)

Average Required SJR Flow by Year Type

Year Type	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
W	117	0	0	0	190	210	369	365	196	0	0	0
AN	117	0	0	0	185	204	313	300	149	0	0	0
BN	117	0	0	0	119	136	233	222	101	0	0	0
D	122	0	0	0	123	135	190	170	84	0	0	0
C	100	0	0	0	47	59	125	115	42	0	0	0

Adjusted Average Minimum Delta Outflow by Year Type (Avg Min Delta Outflow - Avg Required SJR Flow)

Year Type	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
W	129	268	277	369	816	869	510	565	538	492	269	179
AN	146	256	265	395	788	949	742	555	446	492	283	179
BN	136	264	273	331	555	883	455	461	388	400	246	179
D	134	262	264	329	377	456	394	302	325	307	215	179
C	155	260	264	293	465	443	369	266	359	246	203	179

Average Minimum Consumptive Use by Year Type (TAF)

Year Type	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
W	63	29	9	0	4	12	39	126	220	254	175	103
AN	61	37	19	0	0	8	66	123	219	254	177	107
BN	70	41	30	0	4	22	68	135	222	254	175	101
D	72	41	35	0	3	18	72	134	221	255	176	103
C	67	46	43	0	9	36	88	128	214	255	175	105

AVERAGE REQUIRED FLOWS IN ABOVE NORMAL YEARS (TAF)

Contribution based on 1922-1992 average unimpaired flows and DWRSIM Study 1995C06F-SWRCB-469 data

Watershed	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Stony Creek	1	4	7	12	29	24	14	7	4	1	0	0
Sacramento River	129	132	117	161	359	406	286	185	208	275	257	180
Feather River	46	56	52	68	158	213	201	171	156	139	100	61
Yuba River	14	28	28	36	83	107	107	110	101	51	23	14
Bear River	2	4	6	8	20	20	11	4	3	2	1	1
American River	11	27	28	40	92	125	129	135	128	59	16	8
Cosumnes River	1	3	4	8	19	24	19	11	7	3	1	0
Mokelumne River	2	6	5	7	17	26	36	52	56	22	4	2
Calaveras River	0	1	2	4	11	12	6	2	1	1	0	0
Stanislaus River	21	7	7	11	37	43	69	60	24	26	7	3
Tuolumne River	37	12	12	16	58	65	97	94	49	59	14	5
Merced River	16	5	6	9	34	35	52	51	24	26	7	2
Chowchilla River	0	0	1	2	7	6	4	1	0	0	0	0
Fresno River	1	0	1	1	7	7	6	2	1	1	0	0
San Joaquin River	42	8	8	11	41	49	84	92	52	81	29	10
Total	**325**	**293**	**283**	**395**	**973**	**1,161**	**1,121**	**978**	**813**	**746**	**460**	**286**

AVERAGE REQUIRED FLOWS IN BELOW NORMAL YEARS (TAF)

Contribution based on 1922-1992 average unimpaired flows and DWRSIM Study 1995C06F-SWRCB-469 data

Watershed	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Stony Creek	1	4	7	10	20	23	9	6	4	1	0	0
Sacramento River	128	137	126	135	255	384	185	162	191	248	237	176
Feather River	46	59	56	57	112	201	130	150	143	125	93	59
Yuba River	14	29	30	30	59	101	69	97	92	46	22	14
Bear River	2	4	6	7	14	19	7	4	3	2	1	1
American River	11	28	30	34	65	118	83	118	118	53	15	8
Cosumnes River	1	3	5	6	13	23	12	10	7	3	1	0
Mokelumne River	2	6	6	6	12	25	23	46	52	20	4	2
Calaveras River	0	1	2	4	8	11	4	1	1	1	0	0
Stanislaus River	21	7	7	9	24	29	51	44	16	21	6	3
Tuolumne River	37	12	12	14	37	43	73	70	33	48	12	5
Merced River	16	5	6	7	22	23	39	38	16	21	6	2
Chowchilla River	0	0	1	1	5	4	3	1	0	0	0	0
Fresno River	1	0	1	1	4	4	4	1	0	1	0	0
San Joaquin River	42	8	8	9	26	32	63	68	35	66	25	10
Total	**322**	**305**	**303**	**331**	**679**	**1,041**	**756**	**817**	**711**	**654**	**421**	**280**

AVERAGE REQUIRED FLOWS IN DRY YEARS (TAF)

Contribution based on 1922-1992 average unimpaired flows and DWRSIM Study 1995C06F-SWRCB-469 data

Watershed	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Stony Creek	1	4	7	10	14	12	8	5	3	1	0	0
Sacramento River	129	136	125	134	173	201	165	119	171	220	222	177
Feather River	46	58	55	57	76	105	116	110	128	111	87	60
Yuba River	14	28	29	30	40	53	61	71	83	41	20	14
Bear River	2	4	6	7	9	10	7	3	2	2	1	1
American River	11	28	30	34	44	62	74	87	105	47	14	8
Cosumnes River	1	3	5	6	9	12	11	7	6	3	1	0
Mokelumne River	2	6	6	6	8	13	21	33	46	18	4	2
Calaveras River	0	1	2	4	5	6	4	1	1	1	0	0
Stanislaus River	22	7	7	9	25	29	42	34	14	16	5	3
Tuolumne River	39	12	12	14	39	43	59	53	27	37	10	5
Merced River	16	5	6	7	23	23	32	29	13	16	5	2
Chowchilla River	0	0	1	1	5	4	3	0	0	0	0	0
Fresno River	1	0	1	1	5	4	3	1	0	1	0	0
San Joaquin River	44	8	8	9	27	32	51	52	29	50	22	10
Total	**329**	**303**	**299**	**329**	**502**	**608**	**656**	**606**	**629**	**562**	**391**	**282**

AVERAGE REQUIRED FLOWS IN CRITICALLY DRY YEARS (TAF)

Contribution based on 1922-1992 average unimpaired flows and DWRSIM Study 1995C06F-SWRCB-469 data

Watershed	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Stony Creek	1	4	7	9	17	12	8	4	3	1	0	0
Sacramento River	138	138	128	120	216	204	161	107	179	201	214	178
Feather River	50	59	57	50	95	106	113	99	135	102	84	60
Yuba River	15	29	30	27	50	54	60	64	87	37	20	14
Bear River	2	4	6	6	12	10	6	3	2	2	1	1
American River	12	28	31	30	55	62	73	78	110	43	13	8
Cosumnes River	1	3	5	6	11	12	11	7	6	2	1	0
Mokelumne River	3	6	6	5	10	13	20	30	48	16	4	2
Calaveras River	0	1	2	3	7	6	3	1	1	1	0	0
Stanislaus River	18	7	7	8	9	12	27	23	7	13	5	3
Tuolumne River	32	12	12	12	15	19	39	36	14	29	10	5
Merced River	13	5	6	6	9	10	21	20	7	13	5	2
Chowchilla River	0	0	1	1	2	2	2	0	0	0	0	0
Fresno River	1	0	1	1	2	2	2	1	0	0	0	0
San Joaquin River	36	8	8	8	10	14	34	35	15	40	20	10
Total	**322**	**306**	**307**	**293**	**520**	**538**	**581**	**509**	**614**	**501**	**377**	**284**

Yuba River Watershed

Minimum Required Downstream Flow at Control Point 45 on the Yuba River Model Network (TAF) (see footnote 1)

Year Type	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Wet	8.7	18.3	18.3	22.3	57.0	64.9	47.5	73.9	75.5	33.4	14.9	9.0
Above Normal	9.4	18.1	18.2	23.9	54.8	70.4	70.0	72.4	66.1	33.4	15.4	9.1
Below Normal	9.3	18.8	19.5	20.0	38.9	66.6	45.3	63.6	60.6	30.0	14.1	9.0
Dry	9.4	18.7	19.4	19.9	26.4	34.8	40.3	46.6	54.3	26.6	13.3	9.0
Critically Dry	10.1	19.0	19.9	17.7	32.9	35.3	39.5	42.1	56.9	24.4	12.8	9.1

Minimum Required Downstream Flow at Control Point 30 on the Yuba River Model Network (TAF) (see footnote 2)

Year Type	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Wet	1.3	2.6	2.6	3.2	8.2	9.4	6.9	10.7	10.9	4.8	2.1	1.3
Above Normal	1.4	2.6	2.6	3.4	7.9	10.2	10.1	10.4	9.5	4.8	2.2	1.3
Below Normal	1.3	2.7	2.8	2.9	5.6	9.6	6.5	9.2	8.7	4.3	2.0	1.3
Dry	1.4	2.7	2.8	2.9	3.8	5.0	5.8	6.7	7.8	3.8	1.9	1.3
Critically Dry	1.5	2.7	2.9	2.6	4.8	5.1	5.7	6.1	8.2	3.5	1.8	1.3

Minimum Required Downstream Flow at Control Point 12 on the Yuba River Model Network (TAF) (see footnote 3)

Year Type	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Wet	13.3	27.8	27.8	33.9	86.7	98.7	72.3	112.4	114.9	50.8	22.6	13.7
Above Normal	14.3	27.5	27.7	36.3	83.4	107.2	106.6	110.2	100.6	50.8	23.4	13.9
Below Normal	14.2	28.7	29.7	30.4	59.2	101.4	69.0	96.8	92.3	45.7	21.5	13.6
Dry	14.3	28.5	29.5	30.2	40.2	53.0	61.4	70.9	82.6	40.5	20.2	13.7
Critically Dry	15.4	28.9	30.3	27.0	50.1	53.7	60.2	64.0	86.7	37.1	19.5	13.8

Footnote 1

If minimum downstream flows are not met at CP 45, apply deficiencies to the Drum / S. Yuba Canal (NID 13.3%, PG&E 86.7%)

Footnote 2

If minimum downstream flows are not met at CP 30, apply deficiencies to the Slate Creek Tunnel diversion operated by OWID

Footnote 3

If minimum downstream flows are not met at CP 12, apply deficiencies to Yuba County Water Agency

Water Year Type is based on the Sacramento 40-30-30 index.

Bear River Watershed

Minimum Required Downstream Flow at Control Point 3 on the Bear River Model Network (TAF) (see footnote 1)

Year Type	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Wet	0.7	1.5	2.0	2.7	7.1	6.5	2.7	1.6	1.1	0.8	0.4	0.3
Above Normal	0.7	1.5	2.0	2.9	6.8	7.0	4.0	1.5	1.0	0.8	0.4	0.4
Below Normal	0.7	1.6	2.1	2.4	4.9	6.6	2.6	1.3	0.9	0.7	0.4	0.3
Dry	0.7	1.5	2.1	2.4	3.3	3.5	2.3	1.0	0.8	0.7	0.4	0.3
Critically Dry	0.8	1.6	2.2	2.1	4.1	3.5	2.2	0.9	0.8	0.6	0.4	0.3

Minimum Required Downstream Flow at Control Point 30 on the Bear River Model Network (TAF) (see footnote 2)

Year Type	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Wet	1.9	4.3	5.7	7.8	20.4	18.5	7.7	4.5	3.2	2.3	1.2	1.0
Above Normal	2.0	4.3	5.7	8.3	19.6	20.1	11.4	4.4	2.8	2.3	1.2	1.0
Below Normal	2.0	4.5	6.1	6.9	13.9	19.0	7.4	3.8	2.5	2.1	1.1	1.0
Dry	2.0	4.4	6.0	6.9	9.4	9.9	6.6	2.8	2.3	1.9	1.0	1.0
Critically Dry	2.2	4.5	6.2	6.2	11.8	10.1	6.4	2.5	2.4	1.7	1.0	1.0

Footnote 1

If minimum downstream flow is not met at CP 3, then apply deficiencies to the Bear River Canal, Gold Hill Combie Canal, Tarr Ditch, and depletion at CP 35.

Footnote 2

If minimum downstream flow at CP 30 is not met, apply 11.5% of the deficiency to Camp Far West ID at CP 26 and 88.5% of the deficiency to South Sutter WD at CP 28.

Tuolumne River Watershed

Minimum Required Inflow to Control Point 81 on the DWRSIM Network (TAF) (see footnote 3)

Year Type	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Wet	7.8	2.7	2.6	3.2	12.6	14.0	24.3	24.2	13.5	12.3	2.7	1.0
Above Normal	7.8	2.6	2.5	3.4	12.3	13.6	20.6	19.9	10.2	12.3	2.9	1.0
Below Normal	7.8	2.6	2.6	2.9	7.9	9.0	15.3	14.7	7.0	10.0	2.5	1.0
Dry	8.2	2.6	2.5	2.9	8.2	9.0	12.5	11.2	5.8	7.7	2.2	1.0
Critically Dry	6.7	2.6	2.5	2.5	3.1	3.9	8.2	7.6	2.9	6.2	2.0	1.0

Minimum Required Downstream Flow at Control Point 81 on the DWRSIM Network (TAF) (see footnote 4)

Year Type	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Wet	36.9	12.7	12.3	15.2	59.9	66.3	115.1	114.5	63.9	58.5	12.8	4.8
Above Normal	37.1	12.1	11.8	16.3	58.3	64.5	97.4	94.2	48.5	58.5	13.5	4.8
Below Normal	36.9	12.5	12.1	13.6	37.5	42.8	72.6	69.7	33.0	47.6	11.8	4.8
Dry	38.7	12.4	11.8	13.6	38.6	42.7	59.3	53.3	27.3	36.5	10.3	4.8
Critically Dry	31.7	12.3	11.8	12.1	14.7	18.5	38.8	36.1	13.7	29.3	9.7	4.8

Footnote 3

If minimum reqired inflow to control point 81 is not met, apply the deficiency to the City of San Francisco exports.

Footnote 4

If the minimum required downstream flow at control pont 81 is not met, make additional releases out of New Don Pedro Reservoir to make up the deficiency

Appendix 5
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This Appendix contains Modeling Data of Aquatic Resources Analysis:

* This column lists the EIR chapter and section numbers in which the appendix files are referenced.

D1485 Sacramento River Fall Run Salmon Smolt Survival Model

Temperatures based on limited historical data from USBR

Cross Channel Closed when Sac River flow exceeds 25,000 cfs

Cross Channel closed from April 1 - April 15 when DOI > 12,000 cfs and closed half time in May

	A	B	C	D	G	H	I	J	K	L	M	N	O	P	Q	S	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AH	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AW
4			**APRIL**														**MAY**	Calculated											**JUNE**	Calculated										
5		Water	Sac	Total		Steamboat									**Calculated**	Sac		Steamboat									**Calculated**	Sac		Steamboat									**Calculated**	
6		Year	River	Delta	CVP+SWP	& Sutter		xchannel	observed		Calculated Mortality				**Survival**	River	CVP+SWP	& Sutter		xchannel	observed		Calculated Mortality				**Survival**	River	CVP+SWP	& Sutter		xchannel	observed		Calculated Mortality				**Survival**	**Weighted**
7	Year	Type	Flow	Outflow	exports	Slough Q	percent	closed	temp f	m1	m2	m3	m23	m123	**s123**	Flow	exports	Slough Q	percent	closed	temp f	m1	m2	m3	m23	m123	**s123**	Flow	exports	Slough Q	percent	closed	temp f	m1	m2	m3	m23	m123	**s123**	**Total Survival**
8	1922	A	22,822	19,528	9,546	7,585	58%	0.25	58.5	0.002	0.874	0.256	0.512	0.513	**48.7%**	46,530	5,985	16,452	0.23	0.23	61.2	0.116	0.768	0.342	0.442	0.506	**49.4%**	34,720	6,016	12,035	24%	0.24	65.9	0.313	0.854	0.493	0.579	0.711	**28.9%**	**45.6%**
9	1923	B	24,418	21,175	10,100	8,183	57%	0.25	58.3	0.000	0.894	0.250	0.514	0.514	**48.6%**	15,434	5,985	4,822	0.62	0.33	62.4	0.166	0.789	0.381	0.575	0.646	**35.4%**	14,957	5,008	4,644	63%	0.53	65.3	0.288	0.799	0.473	0.678	0.771	**22.9%**	**35.4%**
10	1924	C	7,630	7,394	571	1,904	76%	0.32	61.5	0.128	0.538	0.352	0.493	0.558	**44.2%**	8,392	4,017	2,189	0.73	0.38	69.2	0.452	0.826	0.598	0.725	0.849	**15.1%**	9,327	3,697	2,538	71%	0.60	70.6	0.511	0.837	0.643	0.781	0.893	**10.7%**	**19.2%**
11	1925	D	22,906	17,864	11,226	7,617	58%	0.25	59.1	0.027	0.958	0.275	0.558	0.570	**43.0%**	14,816	5,985	4,591	0.63	0.33	63.2	0.200	0.804	0.406	0.597	0.678	**32.2%**	16,671	5,008	5,285	61%	0.52	68.3	0.414	0.853	0.569	0.743	0.850	**15.0%**	**31.0%**
12	1926	D	18,268	14,285	10,739	5,882	60%	0.26	61.6	0.133	0.981	0.355	0.626	0.675	**32.5%**	10,441	5,985	2,955	0.69	0.36	65.7	0.305	0.849	0.486	0.676	0.775	**22.5%**	13,528	4,991	4,110	64%	0.54	71.2	0.536	0.904	0.662	0.818	0.916	**8.4%**	**21.7%**
13	1927	W	48,215	47,022	9,764	17,082	23%	0.23	56.8	0.000	0.853	0.202	0.353	0.353	**64.7%**	26,786	5,985	9,068	0.25	0.25	62.6	0.175	0.793	0.387	0.488	0.577	**42.3%**	19,007	5,008	6,159	60%	0.51	68.1	0.406	0.849	0.563	0.734	0.842	**15.8%**	**41.3%**
14	1928	A	29,208	24,771	10,083	9,974	25%	0.25	58.7	0.011	0.901	0.262	0.419	0.425	**57.5%**	12,881	5,985	3,867	0.65	0.34	66.6	0.343	0.865	0.515	0.688	0.795	**20.5%**	12,520	5,008	3,733	66%	0.55	69.7	0.473	0.878	0.614	0.787	0.888	**11.2%**	**25.1%**
15	1929	C	7,075	2,504	5,395	1,696	77%	0.33	56.3	0.000	0.654	0.186	0.548	0.548	**45.2%**	8,733	4,375	2,316	0.72	0.38	66.1	0.322	0.786	0.499	0.657	0.767	**23.3%**	9,478	4,470	2,595	71%	0.60	70.1	0.490	0.862	0.627	0.793	0.895	**10.5%**	**24.7%**
16	1930	D	13,713	6,235	9,344	4,179	64%	0.28	59.6	0.048	0.885	0.291	0.671	0.687	**31.3%**	13,417	5,985	4,068	0.64	0.34	63.1	0.196	0.802	0.403	0.599	0.677	**32.3%**	12,890	5,008	3,871	65%	0.55	69.6	0.469	0.876	0.611	0.784	0.885	**11.5%**	**28.4%**
17	1931	C	13,377	9,310	4,269	4,053	64%	0.28	62.8	0.183	0.722	0.393	0.605	0.678	**32.2%**	8,164	4,326	2,103	0.74	0.38	70.5	0.507	0.863	0.640	0.765	0.884	**11.6%**	9,041	3,412	2,431	72%	0.61	70.7	0.515	0.827	0.646	0.776	0.891	**10.9%**	**15.0%**
18	1932	D	10,890	13,881	538	3,123	68%	0.29	58.9	0.019	0.490	0.269	0.376	0.388	**61.2%**	10,718	5,985	3,058	0.68	0.36	65.5	0.297	0.845	0.480	0.670	0.768	**23.2%**	12,470	5,159	3,714	66%	0.56	69.5	0.465	0.881	0.608	0.787	0.886	**11.4%**	**27.6%**
19	1933	C	10,083	9,260	1,765	2,821	69%	0.30	60.1	0.069	0.565	0.307	0.486	0.522	**47.8%**	7,839	4,472	1,982	0.75	0.39	63.7	0.221	0.747	0.422	0.607	0.694	**30.6%**	10,184	4,554	2,859	69%	0.59	69.8	0.478	0.860	0.617	0.786	0.888	**11.2%**	**30.0%**
20	1934	C	8,067	7,949	689	2,067	74%	0.32	63.6	0.217	0.581	0.419	0.539	0.639	**36.1%**	9,091	4,977	2,450	0.72	0.37	68.3	0.414	0.852	0.569	0.723	0.838	**16.2%**	10,621	5,008	3,022	68%	0.58	70.7	0.515	0.896	0.646	0.817	0.911	**8.9%**	**18.3%**
21	1935	B	23,696	38,720	11,142	7,912	57%	0.25	58.9	0.019	0.950	0.269	0.550	0.558	**44.2%**	18,134	5,985	5,832	0.60	0.32	64	0.234	0.818	0.432	0.609	0.701	**29.9%**	15,310	5,008	4,776	62%	0.53	71	0.528	0.901	0.656	0.809	0.910	**9.0%**	**28.6%**
22	1936	B	22,032	20,066	9,781	7,290	58%	0.26	59.7	0.053	0.906	0.294	0.549	0.573	**42.7%**	15,092	5,985	4,695	0.63	0.33	64.9	0.271	0.834	0.461	0.639	0.737	**26.3%**	15,142	5,008	4,713	63%	0.53	69.2	0.452	0.869	0.598	0.768	0.873	**12.7%**	**26.6%**
23	1937	B	22,503	22,234	9,579	7,466	58%	0.25	58.8	0.015	0.881	0.266	0.521	0.528	**47.2%**	15,044	5,985	4,676	0.63	0.33	64.5	0.255	0.827	0.448	0.629	0.724	**27.6%**	14,402	5,008	4,436	63%	0.54	69.7	0.473	0.878	0.614	0.781	0.885	**11.5%**	**28.1%**
24	1938	W	47,173	78,633	7,714	16,693	23%	0.23	56.3	0.000	0.755	0.186	0.318	0.318	**68.2%**	57,426	5,985	20,527	0.23	0.23	62.5	0.170	0.791	0.384	0.477	0.566	**43.4%**	35,510	6,016	12,331	24%	0.24	67.7	0.389	0.886	0.550	0.631	0.774	**22.6%**	**43.8%**
25	1939	D	10,571	4,453	7,983	3,003	69%	0.30	63.3	0.204	0.892	0.409	0.740	0.793	**20.7%**	8,002	4,993	2,043	0.74	0.39	68	0.402	0.847	0.560	0.722	0.834	**16.6%**	10,067	5,008	2,815	69%	0.59	71	0.528	0.901	0.656	0.826	0.918	**8.2%**	**15.8%**
26	1940	A	41,980	66,029	10,285	14,751	24%	0.24	57.4	0.000	0.886	0.221	0.378	0.378	**62.2%**	15,808	5,985	4,962	0.62	0.33	65.6	0.301	0.847	0.483	0.655	0.759	**24.1%**	16,167	4,991	5,096	62%	0.52	71.5	0.549	0.910	0.672	0.818	0.918	**8.2%**	**27.7%**
27	1941	W	42,367	77,541	9,310	14,895	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**	39,488	5,985	13,818	0.24	0.24	61.6	0.133	0.775	0.355	0.455	0.527	**47.3%**	20,805	6,016	6,831	59%	0.50	69	0.444	0.909	0.592	0.778	0.876	**12.4%**	**44.0%**
28	1942	W	43,308	48,719	9,646	15,247	23%	0.23	56.5	0.000	0.842	0.192	0.345	0.345	**65.5%**	36,040	5,985	12,529	0.24	0.24	60.1	0.069	0.748	0.307	0.413	0.453	**54.7%**	27,124	6,016	9,194	25%	0.25	67.8	0.393	0.888	0.553	0.636	0.779	**22.1%**	**50.6%**
29	1943	W	29,410	29,964	9,663	10,049	24%	0.24	58.8	0.015	0.884	0.266	0.417	0.426	**57.4%**	20,134	5,985	6,580	0.59	0.31	65.4	0.292	0.843	0.477	0.642	0.747	**25.3%**	16,285	2,470	5,140	62%	0.52	66.6	0.343	0.712	0.515	0.636	0.761	**23.9%**	**30.5%**
30	1944	D	10,806	4,924	9,579	3,091	68%	0.29	58.4	0.000	0.873	0.253	0.676	0.676	**32.4%**	15,857	4,993	4,980	0.62	0.33	65.9	0.313	0.809	0.493	0.642	0.754	**24.6%**	10,083	5,008	2,821	69%	0.59	67.8	0.393	0.844	0.553	0.755	0.852	**14.8%**	**24.2%**
31	1945	B	12,167	9,243	9,764	3,601	66%	0.29	60.6	0.090	0.921	0.323	0.718	0.743	**25.7%**	13,905	5,855	4,251	0.64	0.34	63.1	0.196	0.796	0.403	0.595	0.674	**32.6%**	14,806	5,008	4,587	63%	0.53	70.6	0.511	0.894	0.643	0.801	0.903	**9.7%**	**27.3%**
32	1946	B	13,159	7,731	10,100	3,971	65%	0.28	60.7	0.095	0.937	0.326	0.722	0.748	**25.2%**	15,759	5,562	4,944	0.62	0.33	63.9	0.229	0.798	0.429	0.603	0.694	**30.6%**	16,520	5,008	5,228	61%	0.52	68.1	0.406	0.849	0.563	0.739	0.845	**15.5%**	**26.9%**
33	1947	D	13,310	4,453	10,134	4,028	65%	0.28	62.5	0.170	0.971	0.384	0.763	0.803	**19.7%**	14,962	4,993	4,646	0.63	0.33	68.7	0.431	0.859	0.582	0.715	0.838	**16.2%**	11,529	5,008	3,362	67%	0.57	70	0.486	0.884	0.624	0.798	0.896	**10.4%**	**15.8%**
34	1948	B	22,990	16,570	11,092	7,648	58%	0.25	56.6	0.000	0.907	0.195	0.490	0.490	**51.0%**	31,014	5,985	10,649	0.24	0.24	62.3	0.162	0.788	0.378	0.477	0.562	**43.8%**	22,301	6,016	7,391	58%	0.49	69	0.444	0.909	0.592	0.775	0.875	**12.5%**	**39.4%**
35	1949	D	13,461	5,899	9,814	4,085	64%	0.28	61.7	0.137	0.943	0.358	0.735	0.771	**22.9%**	13,856	5,985	4,232	0.64	0.34	65.2	0.284	0.840	0.470	0.650	0.750	**25.0%**	12,201	5,008	3,613	66%	0.56	70.9	0.524	0.900	0.652	0.816	0.912	**8.8%**	**21.8%**
36	1950	B	19,276	12,789	10,067	6,259	59%	0.26	61.3	0.120	0.947	0.346	0.603	0.650	**35.0%**	15,694	5,985	4,920	0.62	0.33	64.3	0.246	0.823	0.441	0.622	0.715	**28.5%**	16,638	5,764	5,272	61%	0.52	68.9	0.440	0.897	0.588	0.777	0.875	**12.5%**	**26.7%**
37	1951	A	15,495	9,999	9,092	4,845	62%	0.27	59.9	0.061	0.879	0.301	0.661	0.682	**31.8%**	19,028	5,985	6,167	0.60	0.31	64.4	0.250	0.825	0.445	0.618	0.714	**28.6%**	12,487	6,016	3,720	66%	0.56	70.3	0.499	0.933	0.633	0.830	0.915	**8.5%**	**25.6%**
38	1952	W	56,652	68,180	8,773	20,238	23%	0.23	55.5	0.000	0.786	0.160	0.304	0.304	**69.6%**	59,557	5,985	21,324	0.23	0.23	61.7	0.137	0.777	0.358	0.454	0.529	**47.1%**	38,972	6,016	13,626	24%	0.24	65	0.276	0.837	0.464	0.552	0.676	**32.4%**	**48.3%**
39	1953	W	16,621	9,999	9,764	5,266	61%	0.27	58.8	0.015	0.889	0.266	0.648	0.653	**34.7%**	26,558	5,985	8,983	0.25	0.25	60.9	0.103	0.762	0.333	0.439	0.497	**50.3%**	25,881	6,016	8,729	25%	0.25	66.2	0.326	0.859	0.502	0.591	0.724	**27.6%**	**43.5%**
40	1954	A	39,863	35,258	10,386	13,959	24%	0.24	58.4	0.000	0.908	0.253	0.408	0.408	**59.2%**	16,394	5,822	5,181	0.61	0.32	65.9	0.313	0.845	0.493	0.658	0.765	**23.5%**	17,091	5,008	5,442	61%	0.52	68.7	0.431	0.860	0.582	0.751	0.859	**14.1%**	**27.9%**
41	1955	D	12,722	6,302	9,008	3,808	65%	0.28	56.4	0.000	0.813	0.189	0.596	0.596	**40.4%**	14,279	4,993	4,390	0.63	0.33	66.9	0.356	0.827	0.525	0.671	0.788	**21.2%**	11,327	5,008	3,286	67%	0.57	70.1	0.490	0.885	0.627	0.801	0.898	**10.2%**	**22.5%**
42	1956	W	20,436	15,780	10,386	6,693	59%	0.26	59.7	0.053	0.932	0.294	0.564	0.587	**41.3%**	39,000	5,985	13,636	0.24	0.24	61.4	0.124	0.771	0.349	0.449	0.517	**48.3%**	22,301	6,016	7,391	58%	0.49	68.7	0.431	0.904	0.582	0.768	0.868	**13.2%**	**40.8%**
43	1957	A	13,596	6,100	10,184	4,135	64%	0.28	60.5	0.086	0.937	0.320	0.716	0.741	**25.9%**	20,590	5,985	6,750	0.59	0.31	64	0.234	0.818	0.432	0.605	0.697	**30.3%**	15,394	4,941	4,807	62%	0.53	72	0.570	0.917	0.688	0.830	0.927	**7.3%**	**25.4%**
44	1958	W	52,282	103,018	9,663	18,603	23%	0.23	57.4	0.000	0.859	0.221	0.368	0.368	**63.2%**	43,488	5,985	15,315	0.23	0.23	62.9	0.187	0.798	0.397	0.491	0.586	**41.4%**	33,930	6,016	11,740	24%	0.24	67.7	0.389	0.886	0.550	0.631	0.775	**22.5%**	**41.7%**
45	1959	B	11,680	4,453	8,470	3,418	67%	0.29	63	0.191	0.908	0.400	0.739	0.789	**21.1%**	14,995	4,993	4,658	0.63	0.33	65.9	0.313	0.809	0.493	0.644	0.756	**24.4%**	11,361	5,008	3,299	67%	0.57	72.1	0.574	0.921	0.691	0.846	0.934	**6.6%**	**20.7%**
46	1960	D	9,730	4,453	6,857	2,689	70%	0.30	59.5	0.044	0.775	0.288	0.630	0.646	**35.4%**	15,987	4,993	5,029	0.62	0.33	65.9	0.313	0.809	0.493	0.642	0.754	**24.6%**	12,839	5,008	3,852	65%	0.55	72.7	0.600	0.932	0.710	0.855	0.942	**5.8%**	**23.0%**
47	1961	D	11,781	4,453	7,932	3,456	67%	0.29	60.1	0.069	0.833	0.307	0.657	0.681	**31.9%**	13,629	4,993	4,147	0.64	0.34	64.3	0.246	0.780	0.441	0.607	0.704	**29.6%**	13,159	5,008	3,971	65%	0.55	73.2	0.621	0.941	0.726	0.865	0.949	**5.1%**	**25.6%**
48	1962	B	12,403	5,327	10,487	3,689	66%	0.28	61.8	0.141	0.974	0.362	0.764	0.797	**20.3%**	16,280	4,993	5,139	0.62	0.32	64.8	0.267	0.789	0.457	0.613	0.717	**28.3%**	16,755	5,008	5,316	61%	0.52	70.4	0.503	0.891	0.636	0.792	0.897	**10.3%**	**23.7%**
49	1963	W	69,457	88,750	10,117	25,027	23%	0.23	53.7	0.000	0.812	0.103	0.263	0.263	**73.7%**	29,095	5,985	9,932	0.25	0.25	62.5	0.170	0.791	0.384	0.484	0.572	**42.8%**	18,604	5,008	6,008	60%	0.51	69	0.444	0.866	0.592	0.756	0.864	**13.6%**	**42.8%**
50	1964	D	13,697	5,663	9,008	4,173	64%	0.28	59.3	0.036	0.865	0.282	0.655	0.668	**33.2%**	16,800	4,993	5,333	0.61	0.32	65.2	0.284	0.797	0.470	0.623	0.730	**27.0%**	10,873	5,008	3,117	68%	0.58	69.5	0.465	0.875	0.608	0.789	0.887	**11.3%**	**25.2%**
51	1965	W	45,173	45,509	9,932	15,945	23%	0.23	56.9	0.000	0.862	0.205	0.359	0.359	**64.1%**	19,581	5,985	6,373	0.59	0.31	63.6	0.217	0.811	0.419	0.597	0.684	**31.6%**	17,377	4,269	5,549	61%	0.51	67.1	0.364	0.799	0.531	0.694	0.805	**19.5%**	**35.0%**
52	1966	B	12,806	4,453	9,966	3,839	65%	0.28	61.9	0.145	0.953	0.365	0.748	0.785	**21.5%**	14,052	4,993	4,305	0.64	0.33	67.3	0.372	0.834	0.537	0.682	0.800	**20.0%**	12,907	5,008	3,877	65%	0.55	70.4	0.503	0.891	0.636	0.802	0.901	**9.9%**	**18.4%**
53	1967	W	39,930	56,870	8,722	13,984	24%	0.24	53.8	0.000	0.754	0.106	0.259	0.259	**74.1%**	44,790	5,985	15,801	0.23	0.23	62.1	0.154	0.784	0.371	0.468	0.550	**45.0%**	39,342	6,016	13,764	24%	0.24	66.5	0.339	0.864	0.512	0.595	0.732	**26.8%**	**46.7%**
54	1968	B	11,293	4,453	8,470	3,274	67%	0.29	61.5	0.128	0.881	0.352	0.708	0.746	**25.4%**	14,426	4,993	4,445	0.63	0.33	66.1	0.322	0.813	0.499	0.650	0.763	**23.7%**	12,503	5,008	3,726	66%	0.56	72	0.570	0.919	0.688	0.840	0.931	**6.9%**	**21.0%**
55	1969	W	44,787	62,130	7,495	15,800	23%	0.23	56.4	0.000	0.747	0.189	0.320	0.320	**68.0%**	45,538	5,985	16,081	0.23	0.23	63.2	0.200	0.804	0.406	0.499	0.599	**40.1%**	24,133	6,016	8,076	57%	0.48	68.3	0.414	0.897	0.569	0.756	0.857	**14.3%**	**40.2%**
56	1970	W	15,108	9,999	8,470	4,700	63%	0.27	58.8	0.015	0.833	0.266	0.621	0.626	**37.4%**	12,149	5,985	3,594	0.66	0.35	68.6	0.427	0.901	0.579	0.741	0.851	**14.9%**	13,545	5,008	4,116	64%	0.54	70.7	0.515	0.896	0.646	0.807	0.906	**9.4%**	**17.7%**
57	1971	W	20,755	13,176	10,386	6,812	59%	0.26	58.7	0.011	0.914	0.262	0.537	0.542	**45.8%**	30,266	5,985	10,370	0.24	0.24	61	0.107	0.764	0.336	0.440	0.500	**50.0%**	23,629	6,016	7,887	57%	0.49	68.1	0.406	0.893	0.563	0.752	0.853	**14.7%**	**42.9%**
58	1972	B	12,890	4,453	9,646	3,871	65%	0.28	58.5	0.002	0.878	0.256	0.661	0.661	**33.9%**	14,540	4,993	4,488	0.63	0.33	67.3	0.372	0.834	0.537	0.680	0.799	**20.1%**	12,520	5,008	3,733	66%	0.55	70.7	0.515	0.896	0.646	0.810	0.908	**9.2%**	**20.5%**
59	1973	A	19,511	16,402	10,117	6,347	59%	0.26	61.3	0.120	0.949	0.346	0.603	0.651	**34.9%**	15,743	5,985	4,938	0.62	0.33	66.9	0.356	0.870	0.525	0.688	0.799	**20.1%**	18,100	4,017	5,819	60%	0.51	70.1	0.490	0.842	0.627	0.757	0.876	**12.4%**	**21.2%**
60	1974	W	33,208	67,390	10,100	11,470	24%	0.24	56.8	0.000	0.867	0.202	0.362	0.362	**63.8%**	26,949	5,985	9,129	0.25	0.25	63.4	0.208	0.807	0.413	0.510	0.612	**38.8%**	21,629	6,016	7,139	58%	0.49	69.7	0.473	0.922	0.614	0.793	0.891	**10.9%**	**38.0%**
61	1975	W	25,763	23,612	10,386	8,685	25%	0.25	56.8	0.000	0.880	0.202	0.371	0.371	**62.9%**	28,542	5,985	9,725	0.25	0.25	63.8	0.225	0.815	0.425	0.521	0.629	**37.1%**	24,788	6,016	8,321	57%	0.48	69.1	0.448	0.911	0.595	0.774	0.876	**12.4%**	**37.1%**
62	1976	C	9,428	2,504	7,613	2,576	71%	0.30	58.9	0.019	0.797	0.269	0.643	0.650	**35.0%**	9,059	4,359	2,438	0.72	0.37	69.6	0.469	0.848	0.611	0.740	0.862	**13.8%**	9,898	4,453	2,752	70%	0.59	71.8	0.562	0.892	0.681	0.828	0.925	**7.5%**	**16.3%**
63	1977	C	16,990	8,403	9,008	5,404	61%	0.27	64.3	0.246	0.955	0.441	0.755	0.815	**18.5%**	6,993	3,887	1,665	0.78	0.40	64	0.234	0.727	0.432	0.606	0.698	**30.2%**	10,151	471	2,846	69%	0.59	73.9	0.650	0.757	0.748	0.754	0.914	**8.6%**	**24.3%**
64	1978	A	38,703	48,249	8,672	13,525	24%	0.24	56.9	0.000	0.807	0.205	0.348	0.348	**65.2%**	21,061	5,985	6,927	0.58	0.31	63	0.191	0.800	0.400	0.579	0.659	**34.1%**	13,965	4,101	4,273	64%	0.54	70	0.486	0.844	0.624	0.764	0.879	**12.1%**	**35.4%**
65	1979	B	17,696	13,478	9,646	5,668	60%	0.26	59.8	0.057	0.902	0.298	0.560	0.585	**41.5%**	13,564	5,985	4,123	0.64	0.34	63.8	0.225	0.815	0.425	0.616	0.702	**29.8%**	10,352	5,848	2,922	69%	0.58	69.2	0.452	0.906	0.598	0.810	0.896	**10.4%**	**28.3%**
66	1980	A	19,814	18,016	8,554	6,460	59%	0.26	57.1	0.000	0.806	0.211	0.464	0.464	**53.6%**	14,783	5,985	4,579	0.63	0.33	63.6	0.217	0.811	0.419	0.607	0.692	**30.8%**	14,755	5,126	4,568	63%	0.53	66.9	0.356	0.833	0.525	0.719	0.819	**18.1%**	**32.4%**
67	1981	D	16,990	9,226	9,764	5,404	61%	0.27	61.5	0.128	0.937	0.352	0.709	0.746	**25.4%**	9,953	5,497	2,773	0.70	0.36	66.7	0.347	0.845	0.518	0.692	0.799	**20.1%**	13,898	5,008	4,248	64%	0.54	71.9	0.566	0.918	0.684	0.833	0.928	**7.2%**	**18.7%**
68	1982	W	75,843	141,049	8,974	27,415	23%	0.23	54.1	0.000	0.770	0.115	0.263	0.263	**73.7%**	38,431	5,985	13,423	0.24	0.24	61.1	0.112	0.766	0.339	0.441	0.503	**49.7%**	24,418	6,016	8,183	57%	0.48	66	0.318	0.855	0.496	0.701	0.796	**20.4%**	**48.5%**
69	1983	W	68,298	101,892	6,958	24,593	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**	54,515	5,985	19,439	0.23	0.23	60.1	0.069	0.748	0.307	0.409	0.450	**55.0%**	55,576	6,016	19,835	23%	0.23	63.6	0.217	0.812	0.419	0.510	0.616	**38.4%**	**55.1%**
70	1984	W	16,301	9,999	9,646	5,147	62%	0.27	59.7	0.053	0.900	0.294	0.667	0.685	**31.5%**	14,897	5,985	4,622	0.63	0.33	66.5	0.339	0.863	0.512	0.680	0.788	**21.2%**	11,730	5,411	3,437	67%	0.56	68.4	0.419	0.872	0.572	0.772	0.868	**13.2%**	**21.5%**
71	1985	D	13,327	4,823	10,335	4,034	65%	0.28	60.8	0.099	0.949	0.330	0.729	0.756	**24.4%**	13,450	4,993	4,080	0.64	0.34	65.8	0.309	0.807	0.489	0.645	0.755	**24.5%**	12,234	5,008	3,626	66%	0.56	69.4	0.461	0.873	0.604	0.781	0.882	**11.8%**	**22.2%**
72	1986	W	20,772	24,250	7,714	6,819	59%	0.26	60.4	0.082	0.828	0.317	0.533	0.571	**42.9%**	13,125	5,985	3,959	0.65	0.34	66.2	0.326	0.858	0.502	0.678	0.783	**21.7%**	12,419	6,016	3,695	66%	0.56	71.6	0.553	0.956	0.675	0.859	0.937	**6.3%**	**22.5%**
73	1987	D	8,789	4,453	5,092	2,337	72%	0.31	65.7	0.305	0.810	0.486	0.720	0.806	**19.4%**	8,912	4,993	2,383	0.72	0.37	70.5	0.507	0.892	0.640	0.778	0.890	**11.0%**	10,554	5,008	2,997	69%	0.58	73.2	0.621	0.941	0.726	0.873	0.952	**4.8%**	**11.3%**
74	1988	C	10,016	8,773	2,067	2,796	70%	0.30	59.9	0.061	0.574	0.301	0.491	0.522	**47.8%**	8,701	4,977	2,304	0.73	0.38	65.8	0.309	0.807	0.489	0.664	0.768	**23.2%**	10,386	5,008	2,934	69%	0.58	69.4	0.461	0.873	0.604	0.789	0.886	**11.4%**	**25.2%**
75	1989	D	24,133	14,049	11,075	8,076	57%	0.25	61.4	0.124	0.992	0.349	0.613	0.661	**33.9%**	11,384	5,985	3,308	0.67	0.35	64.7	0.263	0.831	0.454	0.647	0.740	**26.0%**	13,092	4,773	3,946	65%	0.55	68.6	0.427	0.848	0.579	0.753	0.859	**14.1%**	**25.2%**
76	1990	C	8,420	2,504	6,621	2,199	73%	0.31	61.6	0.133	0.803	0.355	0.683	0.725	**27.5%**	9,189	5,009	2,487	0.71	0.37	66.4	0.335	0.819	0.509	0.677	0.785	**21.5%**	10,369	4,756	2,928	69%	0.58	68.5	0.423	0.846	0.576	0.762	0.862	**13.8%**	**21.1%**
77	1991	C	16,033	6,184	10,991	5,046	62%	0.27	60.8	0.099	0.978	0.330	0.730	0.757	**24.3%**	8,685	5,204	2,298	0.73	0.38	65.7	0.305	0.815	0.486	0.667	0.769	**23.1%**	9,058	4,117	2,438	72%	0.61	69.4	0.461	0.834	0.604	0.769	0.875	**12.5%**	**21.4%**
78	1992	C	11,730	3,462	9,898	3,437	67%	0.29	61.2	0.116	0.938	0.342	0.739	0.769	**23.1%**	8,050	4,131	2,061	0.74	0.39	66	0.318	0.774	0.496	0.652	0.763	**23.7%**	10,268	4,722	2,890	69%	0.58	69	0.444	0.853	0.592	0.772	0.873	**12.7%**	**21.6%**
79																																							**Average:**	**29.12%**

Formulas: D1485 Sacramento River Fall Run Smolt Survival Model

C8 ='Study 467 Flow Data'!G8
D8 ='Study 467 Flow Data'!AL8
E8 ='Study 467 Flow Data'!Q8 (HIDDEN)
F8 ='Study 467 Flow Data'!AA8 (HIDDEN)
G8 =(E8+F8)
H8 =0.374*C8-950
I8 =IF(C8>$I$2,(0.133*C8+829)/(C8-H8),(0.293*C8+2090)/(C8-H8))
J8 =(0.133*C8+829)/(C8-H8)
L8 =IF((-2.45925+(0.0420748*K8))<0,0,(-2.45925+(0.0420748*K8)))
M8 =(-0.5916024)+(0.017968*K8)+(0.0000434*G8)
N8 =-1.613493+(0.0319584*K8)
O8 =IF(D8>=$I$3,((M8*J8)+(N8*(1-J8))+(M8*I8)+(N8*(1-I8)))/2,(M8*I8)+(N8*(1-I8)))
P8 =L8+O8-(L8*O8)
Q8 =1-P8

S8 ='Study 467 Flow Data'!H8
T8 ='Study 467 Flow Data'!R8 (HIDDEN)
U8 ='Study 467 Flow Data'!AB8 (HIDDEN)
V8 =(T8+U8)
W8 =0.374*S8-950
X8 =IF(S8>$I$2,(0.133*S8+829)/(S8-W8),(0.293*S8+2090)/(S8-W8))
Y8 =(0.84*(0.133*S8+829)/(S8-W8))+(0.16*X8)
AA8 =(-2.45925+(0.0420748*Z8))
AB8 =(-0.5916024)+(0.017968*Z8)+(0.0000434*V8)
AC8 =-1.613493+(0.0319584*Z8)
AD8 =((AB8*Y8)+(AC8*(1-Y8))+(AB8*X8)+(AC8*(1-X8)))/2
AE8 =AA8+AD8-(AA8*AD8)
AF8 =1-AE8

AH8 ='Study 467 Flow Data'!I8
AI8 ='Study 467 Flow Data'!S8 (HIDDEN)
AJ8 ='Study 467 Flow Data'!AC8 (HIDDEN)
AK8 =(AI8+AJ8)
AL8 =0.374*AH8-950
AM8 =IF(AH8>$I$2,(0.133*AH8+829)/(AH8-AL8),(0.293*AH8+2090)/(AH8-AL8))
AN8 =(0.27*(0.133*AH8+829)/(AH8-AL8))+(0.73*AM8)
AP8 =(-2.45925+(0.0420748*AO8))
AQ8 =IF(((-0.5916024)+(0.017968*AO8)+(0.0000434*AK8))>1,1,((-0.5916024)+(0.017968*AO8)+(0.0000434*AK8)))
AR8 =-1.613493+(0.0319584*AO8)
AS8 =(AQ8*AM8)+(AR8*(1-AM8))
AT8 =AP8+AS8-(AP8*AS8)
AU8 =1-AT8
AW8 =(Q8*0.17)+(AF8*0.65)+(AU8*0.18)

Study 468 Sacramento River Fall Run Smolt Survival Model — Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

APRIL

Row	Year (A)	Water Year Type (B)	APRIL Sac River Flows (C)	CVP + SWP exports (F)	Calculated Sutter & Steamboat Slough Q (G)	Percent (H)	X-Channel Closed (I)	observed temp f (J)	m1 (K)	Calculated Mortality m2 (L)	m3 (M)	m23 (N)	m123 (O)	**Calculated Survival s123** (P)
8	1922	A	22,822	8,369	7,585	58%	0.25	58.5	0.002	0.823	0.256	0.400	0.401	**59.9%**
9	1923	B	22,721	7,932	7,548	58%	0.25	58.3	0.000	0.800	0.250	0.389	0.389	**61.1%**
10	1924	C	8,067	2,790	2,067	74%	0.32	61.5	0.128	0.635	0.352	0.442	0.513	**48.7%**
11	1925	D	22,654	6,958	7,523	58%	0.25	59.1	0.027	0.772	0.275	0.401	0.418	**58.2%**
12	1926	D	21,427	6,655	7,064	58%	0.26	61.6	0.133	0.804	0.355	0.470	0.540	**46.0%**
13	1927	W	48,215	8,100	17,082	23%	0.23	56.8	0.000	0.781	0.202	0.336	0.336	**66.4%**
14	1928	A	29,208	7,630	9,974	25%	0.25	58.7	0.011	0.794	0.262	0.393	0.399	**60.1%**
15	1929	C	8,436	2,353	2,205	73%	0.31	56.3	0.000	0.522	0.186	0.291	0.291	**70.9%**
16	1930	D	12,638	3,899	3,777	65%	0.28	59.6	0.048	0.649	0.291	0.392	0.422	**57.8%**
17	1931	C	9,193	2,958	2,488	71%	0.31	62.8	0.183	0.665	0.393	0.477	0.572	**42.8%**
18	1932	D	13,075	5,378	3,940	65%	0.28	58.9	0.019	0.700	0.269	0.390	0.402	**59.8%**
19	1933	C	12,739	4,134	3,814	65%	0.28	60.1	0.069	0.668	0.307	0.409	0.450	**55.0%**
20	1934	C	12,839	3,563	3,852	65%	0.28	63.6	0.217	0.706	0.419	0.500	0.608	**39.2%**
21	1935	B	24,637	9,092	8,264	57%	0.25	58.9	0.019	0.861	0.269	0.417	0.428	**57.2%**
22	1936	B	21,276	8,369	7,007	58%	0.26	59.7	0.053	0.844	0.294	0.435	0.465	**53.5%**
23	1937	B	23,511	8,050	7,843	57%	0.25	58.8	0.015	0.814	0.266	0.404	0.413	**58.7%**
24	1938	W	47,173	8,420	16,693	23%	0.23	56.3	0.000	0.785	0.186	0.326	0.326	**67.4%**
25	1939	D	12,234	4,134	3,626	66%	0.29	63.3	0.204	0.725	0.409	0.500	0.602	**39.8%**
26	1940	A	41,728	8,268	14,656	24%	0.24	57.4	0.000	0.799	0.221	0.357	0.357	**64.3%**
27	1941	W	42,367	9,310	14,895	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
28	1942	W	43,308	8,907	15,247	23%	0.23	56.5	0.000	0.810	0.192	0.337	0.337	**66.3%**
29	1943	W	29,410	9,462	10,049	24%	0.24	58.8	0.015	0.876	0.266	0.415	0.424	**57.6%**
30	1944	D	9,814	4,235	2,721	70%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	**63.0%**
31	1945	B	11,747	6,252	3,443	67%	0.29	60.6	0.090	0.769	0.323	0.451	0.501	**49.9%**
32	1946	B	12,218	5,949	3,619	66%	0.29	60.7	0.095	0.757	0.326	0.449	0.501	**49.9%**
33	1947	D	13,797	4,907	4,210	64%	0.28	62.5	0.170	0.744	0.384	0.484	0.572	**42.8%**
34	1948	B	23,040	6,823	7,667	58%	0.25	56.6	0.000	0.722	0.195	0.329	0.329	**67.1%**
35	1949	D	13,209	5,075	3,990	65%	0.28	61.7	0.137	0.737	0.358	0.465	0.538	**46.2%**
36	1950	B	19,276	6,252	6,259	59%	0.26	61.3	0.120	0.781	0.346	0.459	0.524	**47.6%**
37	1951	A	14,856	6,386	4,606	63%	0.27	59.9	0.061	0.762	0.301	0.427	0.462	**53.8%**
38	1952	W	56,652	8,773	20,238	23%	0.23	55.5	0.000	0.786	0.160	0.304	0.304	**69.6%**
39	1953	W	16,184	5,647	5,103	62%	0.27	58.8	0.015	0.710	0.266	0.385	0.394	**60.6%**
40	1954	A	39,863	7,361	13,959	24%	0.24	58.4	0.000	0.777	0.253	0.377	0.377	**62.3%**
41	1955	D	9,478	3,664	2,595	71%	0.30	56.4	0.000	0.581	0.189	0.308	0.308	**69.2%**
42	1956	W	20,436	7,966	6,693	59%	0.26	59.7	0.053	0.827	0.294	0.432	0.462	**53.8%**
43	1957	A	21,209	6,453	6,982	58%	0.26	60.5	0.086	0.776	0.320	0.437	0.485	**51.5%**
44	1958	W	52,282	9,663	18,603	23%	0.23	57.4	0.000	0.859	0.221	0.368	0.368	**63.2%**
45	1959	B	10,487	3,798	2,972	69%	0.30	63	0.191	0.705	0.400	0.490	0.588	**41.2%**
46	1960	D	13,545	4,033	4,116	64%	0.28	59.5	0.044	0.653	0.288	0.390	0.417	**58.3%**
47	1961	D	12,789	3,546	3,833	65%	0.28	60.1	0.069	0.642	0.307	0.402	0.443	**55.7%**
48	1962	B	15,411	5,579	4,814	62%	0.27	61.8	0.141	0.761	0.362	0.470	0.545	**45.5%**
49	1963	W	69,457	8,100	25,027	23%	0.23	53.7	0.000	0.725	0.103	0.244	0.244	**75.6%**
50	1964	D	8,957	3,496	2,400	72%	0.31	59.3	0.036	0.626	0.282	0.388	0.410	**59.0%**
51	1965	W	45,173	8,537	15,945	23%	0.23	56.9	0.000	0.801	0.205	0.344	0.344	**65.6%**
52	1966	B	12,806	4,974	3,839	65%	0.28	61.9	0.145	0.737	0.365	0.470	0.547	**45.3%**
53	1967	W	39,930	9,546	13,984	24%	0.24	53.8	0.000	0.789	0.106	0.268	0.268	**73.2%**
54	1968	B	15,646	5,243	4,902	62%	0.27	61.5	0.128	0.741	0.352	0.457	0.527	**47.3%**
55	1969	W	44,787	7,512	15,800	23%	0.23	56.4	0.000	0.748	0.189	0.320	0.320	**68.0%**
56	1970	W	16,604	6,588	5,260	61%	0.27	58.8	0.015	0.751	0.266	0.396	0.404	**59.6%**
57	1971	W	21,948	6,588	7,259	58%	0.26	58.7	0.011	0.749	0.262	0.387	0.393	**60.7%**
58	1972	B	12,453	4,706	3,707	66%	0.28	58.5	0.002	0.664	0.256	0.372	0.373	**62.7%**
59	1973	A	19,511	7,428	6,347	59%	0.26	61.3	0.120	0.832	0.346	0.472	0.535	**46.5%**
60	1974	W	33,208	9,327	11,470	24%	0.24	56.8	0.000	0.834	0.202	0.354	0.354	**64.6%**
61	1975	W	25,763	8,773	8,685	25%	0.25	56.8	0.000	0.810	0.202	0.353	0.353	**64.7%**
62	1976	C	9,428	3,008	2,576	71%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
63	1977	C	9,142	3,008	2,469	71%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	**36.3%**
64	1978	A	38,703	7,512	13,525	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
65	1979	B	17,696	6,857	5,668	60%	0.26	59.8	0.057	0.780	0.298	0.425	0.458	**54.2%**
66	1980	A	19,814	6,958	6,460	59%	0.26	57.1	0.000	0.736	0.211	0.348	0.348	**65.2%**
67	1981	D	16,990	5,445	5,404	61%	0.27	61.5	0.128	0.750	0.352	0.458	0.528	**47.2%**
68	1982	W	75,843	9,159	27,415	23%	0.23	54.1	0.000	0.778	0.115	0.265	0.265	**73.5%**
69	1983	W	68,298	6,958	24,593	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
70	1984	W	17,864	6,857	5,731	60%	0.26	59.7	0.053	0.779	0.294	0.422	0.453	**54.7%**
71	1985	D	13,327	4,235	4,034	65%	0.28	60.8	0.099	0.685	0.330	0.429	0.485	**51.5%**
72	1986	W	20,772	7,512	6,819	59%	0.26	60.4	0.082	0.820	0.317	0.446	0.492	**50.8%**
73	1987	D	12,369	3,496	3,676	66%	0.28	65.7	0.305	0.741	0.486	0.559	0.693	**30.7%**
74	1988	C	8,621	2,857	2,274	73%	0.31	59.9	0.061	0.609	0.301	0.397	0.433	**56.7%**
75	1989	D	23,629	5,647	7,887	57%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	**48.0%**
76	1990	C	12,436	3,529	3,701	66%	0.28	61.6	0.133	0.668	0.355	0.444	0.518	**48.2%**
77	1991	C	15,276	4,252	4,763	62%	0.27	60.8	0.099	0.685	0.330	0.426	0.483	**51.7%**
78	1992	C	12,470	3,731	3,714	66%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	**49.9%**

MAY

Year	MAY Sac River Flows (R)	CVP + SWP Exports (U)	Calculated Steamboat & Sutter Slough Q (V)	Percent (W)	X-channel Closed (X)	USBR observed temp f (Y)	m1 (Z)	Calculated Mortality m2 (AA)	m3 (AB)	m23 (AC)	m123 (AD)	**Calculated Survival s123** (AE)
1922	46,530	8,685	16,452	0.23	0.23	61.2	0.116	0.885	0.342	0.469	0.530	**47.0%**
1923	14,214	6,245	4,366	0.64	0.33	62.4	0.166	0.801	0.381	0.521	0.600	**40.0%**
1924	8,278	781	2,146	0.74	0.38	69.2	0.452	0.686	0.598	0.632	0.798	**20.2%**
1925	12,067	5,042	3,563	0.66	0.35	63.2	0.200	0.763	0.406	0.530	0.624	**37.6%**
1926	13,613	4,879	4,141	0.64	0.34	65.7	0.305	0.801	0.486	0.592	0.717	**28.3%**
1927	26,786	8,327	9,068	0.25	0.25	62.6	0.175	0.895	0.387	0.513	0.598	**40.2%**
1928	20,606	6,375	6,757	0.59	0.31	66.6	0.343	0.882	0.515	0.629	0.756	**24.4%**
1929	9,807	3,058	2,718	0.70	0.36	66.1	0.322	0.729	0.499	0.583	0.717	**28.3%**
1930	12,067	3,513	3,563	0.66	0.35	63.1	0.196	0.695	0.403	0.504	0.601	**39.9%**
1931	9,807	2,797	2,718	0.70	0.36	70.5	0.507	0.797	0.640	0.697	0.851	**14.9%**
1932	12,019	4,847	3,545	0.66	0.35	65.5	0.297	0.796	0.480	0.589	0.711	**28.9%**
1933	7,741	2,700	1,945	0.75	0.39	63.7	0.221	0.670	0.422	0.519	0.625	**37.5%**
1934	8,912	2,944	2,383	0.72	0.37	68.3	0.414	0.763	0.569	0.642	0.790	**21.0%**
1935	28,624	5,465	9,755	0.25	0.25	64	0.234	0.796	0.432	0.521	0.633	**36.7%**
1936	14,100	6,310	4,324	0.64	0.33	64.9	0.271	0.848	0.461	0.590	0.701	**29.9%**
1937	16,182	6,733	5,102	0.62	0.32	64.5	0.255	0.860	0.448	0.581	0.688	**31.2%**
1938	57,426	9,449	20,527	0.23	0.23	62.5	0.170	0.941	0.384	0.512	0.595	**40.5%**
1939	8,571	3,480	2,255	0.73	0.38	68	0.402	0.781	0.560	0.644	0.787	**21.3%**
1940	18,280	6,278	5,887	0.60	0.32	65.6	0.301	0.860	0.483	0.602	0.722	**27.8%**
1941	39,488	9,726	13,818	0.24	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**
1942	36,040	8,685	12,529	0.24	0.24	60.1	0.069	0.865	0.307	0.441	0.479	**52.1%**
1943	21,077	8,327	6,933	0.58	0.31	65.4	0.292	0.945	0.477	0.621	0.732	**26.8%**
1944	8,912	3,741	2,383	0.72	0.37	65.9	0.313	0.755	0.493	0.591	0.719	**28.1%**
1945	13,222	5,237	3,995	0.65	0.34	63.1	0.196	0.769	0.403	0.527	0.620	**38.0%**
1946	13,694	5,269	4,171	0.64	0.34	63.9	0.229	0.785	0.429	0.549	0.652	**34.8%**
1947	8,864	3,480	2,365	0.72	0.37	68.7	0.431	0.794	0.582	0.661	0.807	**19.3%**
1948	28,835	7,676	9,834	0.25	0.25	62.3	0.162	0.861	0.378	0.496	0.578	**42.2%**
1949	14,914	4,749	4,628	0.63	0.33	65.2	0.284	0.786	0.470	0.574	0.695	**30.5%**
1950	13,873	5,269	4,238	0.64	0.34	64.3	0.246	0.792	0.441	0.559	0.668	**33.2%**
1951	18,784	7,123	6,075	0.60	0.32	64.4	0.250	0.875	0.445	0.580	0.685	**31.5%**
1952	59,557	9,709	21,324	0.23	0.23	61.7	0.137	0.938	0.358	0.491	0.561	**43.9%**
1953	26,867	7,676	9,098	0.25	0.25	60.9	0.103	0.836	0.333	0.457	0.513	**48.7%**
1954	25,403	7,432	8,551	0.25	0.25	65.9	0.313	0.915	0.493	0.598	0.724	**27.6%**
1955	11,271	3,968	3,265	0.67	0.35	66.9	0.356	0.783	0.525	0.615	0.752	**24.8%**
1956	39,000	8,685	13,636	0.24	0.24	61.4	0.124	0.889	0.349	0.477	0.542	**45.8%**
1957	16,816	5,952	5,339	0.61	0.32	64	0.234	0.817	0.432	0.556	0.660	**34.0%**
1958	43,488	10,685	15,315	0.23	0.23	62.9	0.187	1.002	0.397	0.539	0.625	**37.5%**
1959	9,417	3,676	2,572	0.71	0.37	65.9	0.313	0.752	0.493	0.588	0.717	**28.3%**
1960	10,913	3,350	3,131	0.68	0.35	65.9	0.313	0.738	0.493	0.580	0.711	**28.9%**
1961	9,238	2,992	2,505	0.71	0.37	64.3	0.246	0.694	0.441	0.535	0.649	**35.1%**
1962	14,735	5,334	4,561	0.63	0.33	64.8	0.267	0.804	0.457	0.572	0.687	**31.3%**
1963	29,095	8,327	9,932	0.25	0.25	62.5	0.170	0.893	0.384	0.509	0.592	**40.8%**
1964	10,295	3,741	2,900	0.69	0.36	65.2	0.284	0.742	0.470	0.568	0.691	**30.9%**
1965	24,851	7,725	8,344	0.57	0.30	63.6	0.217	0.886	0.419	0.560	0.655	**34.5%**
1966	14,930	4,781	4,634	0.63	0.33	67.3	0.372	0.825	0.537	0.632	0.769	**23.1%**
1967	44,790	10,051	15,801	0.23	0.23	62.1	0.154	0.960	0.371	0.509	0.584	**41.6%**
1968	9,384	3,643	2,560	0.71	0.37	66.1	0.322	0.754	0.499	0.593	0.724	**27.6%**
1969	45,538	9,010	16,081	0.23	0.23	63.2	0.200	0.935	0.406	0.530	0.624	**37.6%**
1970	12,149	5,920	3,594	0.66	0.35	68.6	0.427	0.898	0.579	0.689	0.822	**17.8%**
1971	29,404	7,676	10,047	0.24	0.24	61	0.107	0.838	0.336	0.459	0.517	**48.3%**
1972	10,799	3,871	3,089	0.68	0.36	67.3	0.372	0.786	0.537	0.626	0.765	**23.5%**
1973	15,743	6,505	4,938	0.62	0.33	66.9	0.356	0.893	0.525	0.645	0.771	**22.9%**
1974	26,949	8,685	9,129	0.25	0.25	63.4	0.208	0.924	0.413	0.539	0.635	**36.5%**
1975	28,542	8,685	9,725	0.25	0.25	63.8	0.225	0.932	0.425	0.550	0.651	**34.9%**
1976	10,067	3,123	2,815	0.69	0.36	69.6	0.469	0.794	0.611	0.677	0.829	**17.1%**
1977	6,993	732	1,665	0.78	0.40	64	0.234	0.590	0.432	0.495	0.613	**38.7%**
1978	21,061	8,197	6,927	0.58	0.31	63	0.191	0.896	0.400	0.553	0.639	**36.1%**
1979	12,572	5,985	3,752	0.65	0.34	63.8	0.225	0.815	0.425	0.559	0.658	**34.2%**
1980	14,783	7,465	4,579	0.63	0.33	63.6	0.217	0.875	0.419	0.570	0.663	**33.7%**
1981	8,750	3,513	2,322	0.72	0.38	66.7	0.347	0.759	0.518	0.609	0.745	**25.5%**
1982	38,431	10,701	13,423	0.24	0.24	61.1	0.112	0.971	0.339	0.489	0.546	**45.4%**
1983	54,515	7,546	19,439	0.23	0.23	60.1	0.069	0.816	0.307	0.424	0.464	**53.6%**
1984	13,417	6,148	4,068	0.64	0.34	66.5	0.339	0.870	0.512	0.633	0.757	**24.3%**
1985	13,141	4,228	3,965	0.65	0.34	65.8	0.309	0.774	0.489	0.586	0.714	**28.6%**
1986	13,125	8,132	3,959	0.65	0.34	66.2	0.326	0.951	0.502	0.654	0.767	**23.3%**
1987	8,457	2,830	2,213	0.73	0.38	70.5	0.507	0.798	0.640	0.700	0.852	**14.8%**
1988	9,774	3,058	2,706	0.70	0.37	65.8	0.309	0.723	0.489	0.575	0.706	**29.4%**
1989	14,328	3,936	4,409	0.63	0.33	64.7	0.263	0.742	0.454	0.550	0.668	**33.2%**
1990	7,709	2,700	1,933	0.75	0.39	66.4	0.335	0.719	0.509	0.591	0.727	**27.3%**
1991	8,685	2,862	2,298	0.73	0.38	65.7	0.305	0.713	0.486	0.572	0.702	**29.8%**
1992	9,026	2,927	2,426	0.72	0.37	66	0.318	0.721	0.496	0.580	0.713	**28.7%**

JUNE

Year	JUNE Sac River Flow (AG)	CVP + SWP exports (AJ)	Caculated Steamboat & Sutter Slough Q (AK)	percent (AL)	X-channel closed (AM)	USBR observed temp f (AN)	m1 (AO)	Calculated Mortality m2 (AP)	m3 (AQ)	m23 (AR)	m123 (AS)	**Calculated Survival s123** (AT)	**Weighted Total Survival** (AV)
1922	34,720	11,277	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**45.5%**
1923	18,150	7,613	5,838	60%	0.51	65.3	0.288	0.912	0.473	0.697	0.785	**21.5%**	**40.2%**
1924	10,151	924	2,846	69%	0.59	70.6	0.511	0.717	0.643	0.686	0.847	**15.3%**	**24.2%**
1925	16,352	6,420	5,166	62%	0.52	68.3	0.414	0.914	0.569	0.749	0.853	**14.7%**	**37.0%**
1926	15,276	6,067	4,763	62%	0.53	71.2	0.536	0.951	0.662	0.815	0.914	**8.6%**	**27.8%**
1927	18,889	8,352	6,115	60%	0.51	68.1	0.406	0.995	0.563	0.781	0.870	**13.0%**	**39.8%**
1928	14,100	5,697	4,323	64%	0.54	69.7	0.473	0.908	0.614	0.773	0.880	**12.0%**	**28.2%**
1929	11,411	3,126	3,318	67%	0.57	70.1	0.490	0.804	0.627	0.727	0.861	**13.9%**	**32.9%**
1930	18,621	6,974	6,014	60%	0.51	69.6	0.469	0.962	0.611	0.789	0.888	**11.2%**	**37.8%**
1931	12,487	2,891	3,720	66%	0.56	70.7	0.515	0.804	0.646	0.734	0.871	**12.9%**	**19.3%**
1932	19,058	7,394	6,178	60%	0.51	69.5	0.465	0.978	0.608	0.795	0.890	**11.0%**	**30.9%**
1933	11,041	1,781	3,179	68%	0.57	69.8	0.478	0.740	0.617	0.688	0.837	**16.3%**	**36.7%**
1934	14,991	5,411	4,656	63%	0.53	70.7	0.515	0.914	0.646	0.788	0.897	**10.3%**	**22.1%**
1935	17,663	7,613	5,656	61%	0.51	71	0.528	1.000	0.656	0.832	0.921	**7.9%**	**35.0%**
1936	18,587	7,966	6,002	60%	0.51	69.2	0.452	0.998	0.598	0.801	0.891	**10.9%**	**30.5%**
1937	18,133	7,647	5,832	60%	0.51	69.7	0.473	0.993	0.614	0.807	0.899	**10.1%**	**32.1%**
1938	35,510	11,277	12,331	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**41.6%**
1939	18,587	7,378	6,002	60%	0.51	71	0.528	1.000	0.656	0.831	0.920	**8.0%**	**22.1%**
1940	15,343	7,176	4,788	62%	0.53	71.5	0.549	1.000	0.672	0.845	0.930	**7.0%**	**30.3%**
1941	20,805	10,907	6,831	59%	0.50	69	0.444	1.000	0.592	0.795	0.886	**11.4%**	**41.6%**
1942	27,124	11,277	9,194	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**48.8%**
1943	16,856	7,747	5,354	61%	0.52	66.6	0.343	0.941	0.515	0.736	0.826	**17.4%**	**30.3%**
1944	18,217	7,344	5,863	60%	0.51	67.8	0.393	0.945	0.553	0.753	0.850	**15.0%**	**31.7%**
1945	16,671	7,176	5,285	61%	0.52	70.6	0.511	0.988	0.643	0.822	0.913	**8.7%**	**34.8%**
1946	16,285	6,958	5,140	62%	0.52	68.1	0.406	0.934	0.563	0.757	0.855	**14.5%**	**33.7%**
1947	18,822	7,260	6,090	60%	0.51	70	0.486	0.981	0.624	0.805	0.900	**10.0%**	**21.6%**
1948	23,259	9,125	7,749	57%	0.49	69	0.444	1.000	0.592	0.791	0.884	**11.6%**	**41.0%**
1949	17,091	6,789	5,442	61%	0.52	70.9	0.524	0.977	0.652	0.820	0.914	**8.6%**	**29.2%**
1950	20,301	8,134	6,643	59%	0.50	68.9	0.440	0.999	0.588	0.794	0.884	**11.6%**	**31.8%**
1951	17,646	7,428	5,650	61%	0.51	70.3	0.499	0.994	0.633	0.818	0.909	**9.1%**	**31.2%**
1952	38,972	11,277	13,626	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**45.7%**
1953	25,881	10,386	8,729	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**46.5%**
1954	14,234	6,016	4,374	63%	0.54	68.7	0.431	0.904	0.582	0.755	0.861	**13.9%**	**31.0%**
1955	18,133	7,075	5,832	60%	0.51	70.1	0.490	0.975	0.627	0.805	0.900	**10.0%**	**29.7%**
1956	22,301	11,277	7,391	58%	0.49	68.7	0.431	1.000	0.582	0.787	0.879	**12.1%**	**41.1%**
1957	19,108	7,966	6,196	60%	0.51	72	0.570	1.000	0.688	0.845	0.934	**6.6%**	**32.1%**
1958	33,930	11,277	11,740	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**38.9%**
1959	17,915	7,193	5,750	60%	0.51	72.1	0.574	1.000	0.691	0.849	0.936	**6.4%**	**26.5%**
1960	18,217	7,042	5,863	60%	0.51	72.7	0.600	1.000	0.710	0.858	0.943	**5.7%**	**29.7%**
1961	19,814	7,563	6,460	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**33.2%**
1962	17,243	6,823	5,499	61%	0.52	70.4	0.503	0.969	0.636	0.808	0.905	**9.5%**	**29.8%**
1963	19,562	8,621	6,366	59%	0.50	69	0.444	1.000	0.592	0.797	0.887	**11.3%**	**41.4%**
1964	18,150	7,008	5,838	60%	0.51	69.5	0.465	0.961	0.608	0.788	0.887	**11.3%**	**32.2%**
1965	18,402	8,235	5,932	60%	0.51	67.1	0.364	0.971	0.531	0.755	0.844	**15.6%**	**36.4%**
1966	15,562	6,252	4,870	62%	0.53	70.4	0.503	0.945	0.636	0.799	0.900	**10.0%**	**24.5%**
1967	39,342	11,277	13,764	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**43.9%**
1968	17,394	7,025	5,555	61%	0.51	72	0.570	1.000	0.688	0.848	0.935	**6.5%**	**27.1%**
1969	24,133	11,243	8,076	57%	0.48	68.3	0.414	1.000	0.569	0.778	0.870	**13.0%**	**38.4%**
1970	15,512	6,806	4,851	62%	0.53	70.7	0.515	0.974	0.646	0.819	0.912	**8.8%**	**23.3%**
1971	23,629	9,646	7,887	57%	0.49	68.1	0.406	1.000	0.563	0.775	0.867	**13.3%**	**44.1%**
1972	17,142	6,806	5,461	61%	0.52	70.7	0.515	0.974	0.646	0.815	0.911	**8.9%**	**27.5%**
1973	19,427	8,033	6,316	59%	0.50	70.1	0.490	1.000	0.627	0.815	0.906	**9.4%**	**24.5%**
1974	21,629	9,529	7,139	58%	0.49	69.7	0.473	1.000	0.614	0.805	0.897	**10.3%**	**36.5%**
1975	24,788	11,277	8,321	57%	0.48	69.1	0.448	1.000	0.595	0.790	0.884	**11.6%**	**35.8%**
1976	19,360	7,394	6,291	59%	0.50	71.8	0.562	1.000	0.681	0.842	0.931	**6.9%**	**22.9%**
1977	9,579	437	2,633	70%	0.60	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**	**32.9%**
1978	16,469	8,504	5,210	61%	0.52	70	0.486	1.000	0.624	0.820	0.907	**9.3%**	**36.4%**
1979	19,427	8,050	6,316	59%	0.50	69.2	0.452	1.000	0.598	0.800	0.891	**10.9%**	**33.4%**
1980	16,268	8,672	5,134	62%	0.52	66.9	0.356	0.987	0.525	0.766	0.849	**15.1%**	**35.7%**
1981	18,066	7,193	5,807	60%	0.51	71.9	0.566	1.000	0.684	0.846	0.933	**6.7%**	**25.8%**
1982	24,418	11,277	8,183	57%	0.48	66	0.318	1.000	0.496	0.740	0.822	**17.8%**	**45.2%**
1983	55,576	9,293	19,835	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**53.7%**
1984	18,436	7,764	5,945	60%	0.51	68.4	0.419	0.974	0.572	0.777	0.870	**13.0%**	**27.4%**
1985	16,638	6,521	5,272	61%	0.52	69.4	0.461	0.938	0.604	0.778	0.880	**12.0%**	**29.5%**
1986	12,688	7,781	3,795	65%	0.55	71.6	0.553	1.000	0.675	0.855	0.935	**6.5%**	**24.9%**
1987	20,318	7,747	6,649	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**15.8%**
1988	15,058	5,848	4,682	63%	0.53	69.4	0.461	0.909	0.604	0.766	0.874	**12.6%**	**31.0%**
1989	16,873	6,554	5,360	61%	0.52	68.6	0.427	0.925	0.579	0.758	0.862	**13.8%**	**32.2%**
1990	19,629	7,445	6,391	59%	0.50	68.5	0.423	0.962	0.576	0.770	0.867	**13.3%**	**28.3%**
1991	10,974	3,025	3,154	68%	0.57	69.4	0.461	0.787	0.604	0.709	0.843	**15.7%**	**31.0%**
1992	14,470	5,143	4,462	63%	0.54	69	0.444	0.871	0.592	0.742	0.856	**14.4%**	**29.7%**
												Average:	**33.03%**

Formulas — Sacramento River Fall Run Smolt Survival

```
C8 ='Study 468 Flow Data'!G7
D8 ='Study 468 Flow Data'!Q7          (HIDDEN)
E8 ='Study 468 Flow Data'!AA7         (HIDDEN)
F8 =(D8+E8)
G8 =0.374*C8-950
H8 =IF(C8>25000,(0.133*C8+829)/(C8-G8),(0.293*C8+2090)/(C8-G8))
I8 =(0.133*C8+829)/(C8-G8)
K8 =IF((-2.45925+(0.0420748*J8))<0,0,(-2.45925+(0.0420748*J8)))
L8 =(-0.5916024)+(0.017968*J8)+(0.0000434*F8)
M8 =-1.613493+(0.0319584*J8)
N8 =(L8*I8)+(M8*(1-I8))
O8 =K8+N8-(K8*N8)
P8 =1-O8
```

```
R8 ='Study 468 Flow Data'!H7
S8 ='Study 468 Flow Data'!R7          (HIDDEN)
T8 ='Study 468 Flow Data'!AB7         (HIDDEN)
U8 =(S8+T8)
V8 =0.374*R8-950
W8 =IF(R8>25000,(0.133*R8+829)/(R8-V8),(0.293*R8+2090)/(R8-V8))
X8 =(0.84*(0.133*R8+829)/(R8-V8))+(0.16*W8)
Z8 =(-2.45925+(0.0420748*Y8))
AA8 =(-0.5916024)+(0.017968*Y8)+(0.0000434*U8)
AB8 =-1.613493+(0.0319584*Y8)
AC8 =(AA8*X8)+(AB8*(1-X8))
AD8 =Z8+AC8-(Z8*AC8)
AE8 =1-AD8
```

```
AG8 ='Study 468 Flow Data'!I7
AH8 ='Study 468 Flow Data'!S7                (HIDDEN)
AI8 ='Study 468 Flow Revised Data'!AC7       (HIDDEN)
AJ8 =(AH8+AI8)
AK8 =0.374*AG8-950
AL8 =IF(AG8>25000,(0.133*AG8+829)/(AG8-AK8),(0.293*AG8+2090)/(AG8-AK8))
AM8 =(0.27*(0.133*AG8+829)/(AG8-AK8))+(0.73*AL8)
AO8 =(-2.45925+(0.0420748*AN8))
AP8 =IF(((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8))>1,1,((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8)))
AQ8 =-1.613493+(0.0319584*AN8)
AR8 =(AP8*AM8)+(AQ8*(1-AM8))
AS8 =AO8+AR8-(AO8*AR8)
AT8 =1-AS8
```

Study 506 Sacramento River Fall Run Smolt Survival Model — Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

APRIL

Row	Year	Water Year Type	Sac River Flows	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123
8	1922	A	22,822	8,369	7,585	58%	0.25	58.5	0.002	0.823	0.256	0.400	0.401	**59.9%**
9	1923	B	22,721	7,932	7,548	58%	0.25	58.3	0.000	0.800	0.250	0.389	0.389	**61.1%**
10	1924	C	7,999	2,924	2,042	74%	0.32	61.5	0.128	0.640	0.352	0.444	0.515	**48.5%**
11	1925	D	22,654	6,958	7,523	58%	0.25	59.1	0.027	0.772	0.275	0.401	0.418	**58.2%**
12	1926	D	21,511	6,689	7,095	58%	0.26	61.6	0.133	0.806	0.355	0.470	0.541	**45.9%**
13	1927	W	48,215	8,100	17,082	23%	0.23	56.8	0.000	0.781	0.202	0.336	0.336	**66.4%**
14	1928	A	29,208	7,361	9,974	25%	0.25	58.7	0.011	0.783	0.262	0.390	0.396	**60.4%**
15	1929	C	8,773	2,706	2,331	72%	0.31	56.3	0.000	0.537	0.186	0.295	0.295	**70.5%**
16	1930	D	12,638	3,899	3,777	65%	0.28	59.6	0.048	0.649	0.291	0.392	0.422	**57.8%**
17	1931	C	9,109	3,059	2,457	72%	0.31	62.8	0.183	0.670	0.393	0.478	0.574	**42.6%**
18	1932	D	13,075	5,378	3,940	65%	0.28	58.9	0.019	0.700	0.269	0.390	0.402	**59.8%**
19	1933	C	12,739	4,134	3,814	65%	0.28	60.1	0.069	0.668	0.307	0.409	0.450	**55.0%**
20	1934	C	12,839	3,563	3,852	65%	0.28	63.6	0.217	0.706	0.419	0.500	0.608	**39.2%**
21	1935	B	24,183	8,840	8,095	57%	0.25	58.9	0.019	0.850	0.269	0.415	0.426	**57.4%**
22	1936	B	21,528	8,403	7,101	58%	0.26	59.7	0.053	0.846	0.294	0.436	0.465	**53.5%**
23	1937	B	23,259	8,218	7,749	57%	0.25	58.8	0.015	0.822	0.266	0.406	0.415	**58.5%**
24	1938	W	47,173	8,420	16,693	23%	0.23	56.3	0.000	0.785	0.186	0.326	0.326	**67.4%**
25	1939	D	12,234	4,134	3,626	66%	0.29	63.3	0.204	0.725	0.409	0.500	0.602	**39.8%**
26	1940	A	41,728	8,571	14,656	24%	0.24	57.4	0.000	0.812	0.221	0.360	0.360	**64.0%**
27	1941	W	42,367	9,310	14,895	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
28	1942	W	43,308	8,907	15,247	23%	0.23	56.5	0.000	0.810	0.192	0.337	0.337	**66.3%**
29	1943	W	29,410	9,462	10,049	24%	0.24	58.8	0.015	0.876	0.266	0.415	0.424	**57.6%**
30	1944	D	9,814	4,235	2,721	70%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	**63.0%**
31	1945	B	11,999	6,689	3,538	66%	0.29	60.6	0.090	0.788	0.323	0.456	0.505	**49.5%**
32	1946	B	12,218	5,949	3,619	66%	0.29	60.7	0.095	0.757	0.326	0.449	0.501	**49.9%**
33	1947	D	13,797	4,941	4,210	64%	0.28	62.5	0.170	0.746	0.384	0.484	0.572	**42.8%**
34	1948	B	23,293	6,857	7,761	57%	0.25	56.6	0.000	0.723	0.195	0.329	0.329	**67.1%**
35	1949	D	13,209	5,075	3,990	65%	0.28	61.7	0.137	0.737	0.358	0.465	0.538	**46.2%**
36	1950	B	19,528	6,285	6,353	59%	0.26	61.3	0.120	0.783	0.346	0.459	0.524	**47.6%**
37	1951	A	14,772	6,353	4,575	63%	0.27	59.9	0.061	0.760	0.301	0.427	0.462	**53.8%**
38	1952	W	56,652	8,773	20,238	23%	0.23	55.5	0.000	0.786	0.160	0.304	0.304	**69.6%**
39	1953	W	16,184	5,647	5,103	62%	0.27	58.8	0.015	0.710	0.266	0.385	0.394	**60.6%**
40	1954	A	39,863	7,361	13,959	24%	0.24	58.4	0.000	0.777	0.253	0.377	0.377	**62.3%**
41	1955	D	9,478	3,664	2,595	71%	0.30	56.4	0.000	0.581	0.189	0.308	0.308	**69.2%**
42	1956	W	20,436	7,999	6,693	59%	0.26	59.7	0.053	0.828	0.294	0.432	0.462	**53.8%**
43	1957	A	21,108	6,420	6,944	58%	0.26	60.5	0.086	0.774	0.320	0.437	0.485	**51.5%**
44	1958	W	52,282	9,663	18,603	23%	0.23	57.4	0.000	0.859	0.221	0.368	0.368	**63.2%**
45	1959	B	10,487	3,798	2,972	69%	0.30	63	0.191	0.705	0.400	0.490	0.588	**41.2%**
46	1960	D	13,545	4,033	4,116	64%	0.28	59.5	0.044	0.653	0.288	0.390	0.417	**58.3%**
47	1961	D	12,789	3,546	3,833	65%	0.28	60.1	0.069	0.642	0.307	0.402	0.443	**55.7%**
48	1962	B	15,411	5,579	4,814	62%	0.27	61.8	0.141	0.761	0.362	0.470	0.545	**45.5%**
49	1963	W	69,457	8,100	25,027	23%	0.23	53.7	0.000	0.725	0.103	0.244	0.244	**75.6%**
50	1964	D	8,957	3,496	2,400	72%	0.31	59.3	0.036	0.626	0.282	0.388	0.410	**59.0%**
51	1965	W	45,173	8,537	15,945	23%	0.23	56.9	0.000	0.801	0.205	0.344	0.344	**65.6%**
52	1966	B	12,806	4,974	3,839	65%	0.28	61.9	0.145	0.737	0.365	0.470	0.547	**45.3%**
53	1967	W	39,930	9,546	13,984	24%	0.24	53.8	0.000	0.789	0.106	0.268	0.268	**73.2%**
54	1968	B	15,612	5,243	4,889	62%	0.27	61.5	0.128	0.741	0.352	0.457	0.527	**47.3%**
55	1969	W	44,787	7,512	15,800	23%	0.23	56.4	0.000	0.748	0.189	0.320	0.320	**68.0%**
56	1970	W	16,604	6,588	5,260	61%	0.27	58.8	0.015	0.751	0.266	0.396	0.404	**59.6%**
57	1971	W	22,133	6,621	7,328	58%	0.25	58.7	0.011	0.750	0.262	0.387	0.393	**60.7%**
58	1972	B	12,453	4,739	3,707	66%	0.28	58.5	0.002	0.665	0.256	0.372	0.374	**62.6%**
59	1973	A	19,511	7,495	6,347	59%	0.26	61.3	0.120	0.835	0.346	0.473	0.536	**46.4%**
60	1974	W	32,720	9,327	11,287	24%	0.24	56.8	0.000	0.834	0.202	0.355	0.355	**64.5%**
61	1975	W	25,763	8,773	8,685	25%	0.25	56.8	0.000	0.810	0.202	0.353	0.353	**64.7%**
62	1976	C	9,428	3,008	2,576	71%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
63	1977	C	9,142	2,991	2,469	71%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	**36.3%**
64	1978	A	38,703	7,512	13,525	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
65	1979	B	17,696	6,857	5,668	60%	0.26	59.8	0.057	0.780	0.298	0.425	0.458	**54.2%**
66	1980	A	19,814	6,941	6,460	59%	0.26	57.1	0.000	0.736	0.211	0.347	0.347	**65.3%**
67	1981	D	16,990	5,445	5,404	61%	0.27	61.5	0.128	0.750	0.352	0.458	0.528	**47.2%**
68	1982	W	75,843	9,159	27,415	23%	0.23	54.1	0.000	0.778	0.115	0.265	0.265	**73.5%**
69	1983	W	68,298	6,958	24,593	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
70	1984	W	17,864	6,857	5,731	60%	0.26	59.7	0.053	0.779	0.294	0.422	0.453	**54.7%**
71	1985	D	13,327	4,874	4,034	65%	0.28	60.8	0.099	0.712	0.330	0.437	0.492	**50.8%**
72	1986	W	21,024	7,546	6,913	58%	0.26	60.4	0.082	0.821	0.317	0.446	0.492	**50.8%**
73	1987	D	12,386	3,496	3,682	66%	0.28	65.7	0.305	0.741	0.486	0.559	0.693	**30.7%**
74	1988	C	9,092	2,924	2,450	72%	0.31	59.9	0.061	0.612	0.301	0.396	0.433	**56.7%**
75	1989	D	23,629	5,647	7,887	57%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	**48.0%**
76	1990	C	12,436	3,546	3,701	66%	0.28	61.6	0.133	0.669	0.355	0.444	0.518	**48.2%**
77	1991	C	15,276	4,252	4,763	62%	0.27	60.8	0.099	0.685	0.330	0.426	0.483	**51.7%**
78	1992	C	12,470	3,731	3,714	66%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	**49.9%**

MAY

Row	Year	Sac River Flows	CVP + SWP Exports	Calculated Steamboat & Sutter Slough Q	Percent	X-channel Closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123
8	1922	46,530	8,685	16,452	0.23	0.23	61.2	0.116	0.885	0.342	0.469	0.530	**47.0%**
9	1923	14,214	6,245	4,366	0.64	0.33	62.4	0.166	0.801	0.381	0.521	0.600	**40.0%**
10	1924	8,636	1,171	2,280	0.73	0.38	69.2	0.452	0.703	0.598	0.638	0.801	**19.9%**
11	1925	12,067	5,042	3,563	0.66	0.35	63.2	0.200	0.763	0.406	0.530	0.624	**37.6%**
12	1926	13,596	4,879	4,135	0.64	0.34	65.7	0.305	0.801	0.486	0.592	0.717	**28.3%**
13	1927	26,786	8,327	9,068	0.25	0.25	62.6	0.175	0.895	0.387	0.513	0.598	**40.2%**
14	1928	20,655	6,375	6,775	0.59	0.31	66.6	0.343	0.882	0.515	0.629	0.756	**24.4%**
15	1929	9,872	3,106	2,742	0.70	0.36	66.1	0.322	0.731	0.499	0.583	0.718	**28.2%**
16	1930	12,067	3,513	3,563	0.66	0.35	63.1	0.196	0.695	0.403	0.504	0.601	**39.9%**
17	1931	10,035	3,220	2,803	0.70	0.36	70.5	0.507	0.815	0.640	0.703	0.854	**14.6%**
18	1932	12,019	4,847	3,545	0.66	0.35	65.5	0.297	0.796	0.480	0.589	0.711	**28.9%**
19	1933	8,181	3,155	2,110	0.74	0.38	63.7	0.221	0.690	0.422	0.525	0.630	**37.0%**
20	1934	8,929	2,944	2,389	0.72	0.37	68.3	0.414	0.763	0.569	0.642	0.790	**21.0%**
21	1935	28,786	5,627	9,816	0.25	0.25	64	0.234	0.803	0.432	0.523	0.634	**36.6%**
22	1936	14,100	6,310	4,324	0.64	0.33	64.9	0.271	0.848	0.461	0.590	0.701	**29.9%**
23	1937	16,036	6,961	5,047	0.62	0.33	64.5	0.255	0.869	0.448	0.585	0.691	**30.9%**
24	1938	57,426	9,449	20,527	0.23	0.23	62.5	0.170	0.941	0.384	0.512	0.595	**40.5%**
25	1939	8,424	3,708	2,201	0.73	0.38	68	0.402	0.791	0.560	0.648	0.789	**21.1%**
26	1940	18,166	6,196	5,844	0.60	0.32	65.6	0.301	0.856	0.483	0.601	0.721	**27.9%**
27	1941	39,488	9,726	13,818	0.24	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**
28	1942	36,040	8,685	12,529	0.24	0.24	60.1	0.069	0.865	0.307	0.441	0.479	**52.1%**
29	1943	21,077	8,327	6,933	0.58	0.31	65.4	0.292	0.945	0.477	0.621	0.732	**26.8%**
30	1944	8,912	3,741	2,383	0.72	0.37	65.9	0.313	0.755	0.493	0.591	0.719	**28.1%**
31	1945	12,539	5,237	3,740	0.66	0.34	63.1	0.196	0.769	0.403	0.529	0.621	**37.9%**
32	1946	13,694	5,269	4,171	0.64	0.34	63.9	0.229	0.785	0.429	0.549	0.652	**34.8%**
33	1947	8,847	3,545	2,359	0.72	0.38	68.7	0.431	0.797	0.582	0.663	0.808	**19.2%**
34	1948	29,047	7,676	9,913	0.25	0.25	62.3	0.162	0.861	0.378	0.496	0.578	**42.2%**
35	1949	14,914	4,749	4,628	0.63	0.33	65.2	0.284	0.786	0.470	0.574	0.695	**30.5%**
36	1950	13,726	5,269	4,184	0.64	0.34	64.3	0.246	0.792	0.441	0.559	0.668	**33.2%**
37	1951	18,833	7,123	6,094	0.60	0.32	64.4	0.250	0.875	0.445	0.580	0.685	**31.5%**
38	1952	59,557	9,563	21,324	0.23	0.23	61.7	0.137	0.932	0.358	0.490	0.559	**44.1%**
39	1953	26,867	7,676	9,098	0.25	0.25	60.9	0.103	0.836	0.333	0.457	0.513	**48.7%**
40	1954	25,403	7,432	8,551	0.25	0.25	65.9	0.313	0.915	0.493	0.598	0.724	**27.6%**
41	1955	11,271	3,968	3,265	0.67	0.35	66.9	0.356	0.783	0.525	0.615	0.752	**24.8%**
42	1956	39,000	8,685	13,636	0.24	0.24	61.4	0.124	0.889	0.349	0.477	0.542	**45.8%**
43	1957	16,865	5,985	5,358	0.61	0.32	64	0.234	0.818	0.432	0.556	0.660	**34.0%**
44	1958	43,488	10,685	15,315	0.23	0.23	62.9	0.187	1.002	0.397	0.539	0.625	**37.5%**
45	1959	9,417	3,676	2,572	0.71	0.37	65.9	0.313	0.752	0.493	0.588	0.717	**28.3%**
46	1960	10,913	3,350	3,131	0.68	0.35	65.9	0.313	0.738	0.493	0.580	0.711	**28.9%**
47	1961	9,238	2,992	2,505	0.71	0.37	64.3	0.246	0.694	0.441	0.535	0.649	**35.1%**
48	1962	14,735	5,334	4,561	0.63	0.33	64.8	0.267	0.804	0.457	0.572	0.687	**31.3%**
49	1963	29,095	8,327	9,932	0.25	0.25	62.5	0.170	0.893	0.384	0.509	0.592	**40.8%**
50	1964	11,043	3,871	3,180	0.68	0.35	65.2	0.284	0.748	0.470	0.568	0.691	**30.9%**
51	1965	24,655	7,937	8,271	0.57	0.30	63.6	0.217	0.896	0.419	0.563	0.658	**34.2%**
52	1966	14,930	4,781	4,634	0.63	0.33	67.3	0.372	0.825	0.537	0.632	0.769	**23.1%**
53	1967	44,790	10,051	15,801	0.23	0.23	62.1	0.154	0.960	0.371	0.509	0.584	**41.6%**
54	1968	9,384	3,643	2,560	0.71	0.37	66.1	0.322	0.754	0.499	0.593	0.724	**27.6%**
55	1969	45,538	9,010	16,081	0.23	0.23	63.2	0.200	0.935	0.406	0.530	0.624	**37.6%**
56	1970	12,149	5,920	3,594	0.66	0.35	68.6	0.427	0.898	0.579	0.689	0.822	**17.8%**
57	1971	29,274	7,676	9,999	0.24	0.24	61	0.107	0.838	0.336	0.459	0.517	**48.3%**
58	1972	10,539	3,903	2,991	0.69	0.36	67.3	0.372	0.787	0.537	0.627	0.766	**23.4%**
59	1973	15,743	6,570	4,938	0.62	0.33	66.9	0.356	0.896	0.525	0.646	0.772	**22.8%**
60	1974	26,949	8,685	9,129	0.25	0.25	63.4	0.208	0.924	0.413	0.539	0.635	**36.5%**
61	1975	28,542	8,685	9,725	0.25	0.25	63.8	0.225	0.932	0.425	0.550	0.651	**34.9%**
62	1976	10,002	3,253	2,791	0.70	0.36	69.6	0.469	0.800	0.611	0.680	0.830	**17.0%**
63	1977	6,993	732	1,665	0.78	0.40	64	0.234	0.590	0.432	0.495	0.613	**38.7%**
64	1978	21,061	8,197	6,927	0.58	0.31	63	0.191	0.896	0.400	0.553	0.639	**36.1%**
65	1979	12,572	5,985	3,752	0.65	0.34	63.8	0.225	0.815	0.425	0.559	0.658	**34.2%**
66	1980	14,783	7,481	4,579	0.63	0.33	63.6	0.217	0.876	0.419	0.570	0.663	**33.7%**
67	1981	8,750	3,513	2,322	0.72	0.38	66.7	0.347	0.759	0.518	0.609	0.745	**25.5%**
68	1982	38,431	10,701	13,423	0.24	0.24	61.1	0.112	0.971	0.339	0.489	0.546	**45.4%**
69	1983	54,515	7,546	19,439	0.23	0.23	60.1	0.069	0.816	0.307	0.424	0.464	**53.6%**
70	1984	13,417	6,148	4,068	0.64	0.34	66.5	0.339	0.870	0.512	0.633	0.757	**24.3%**
71	1985	12,572	4,521	3,752	0.65	0.34	65.8	0.309	0.787	0.489	0.591	0.718	**28.2%**
72	1986	13,125	8,132	3,959	0.65	0.34	66.2	0.326	0.951	0.502	0.654	0.767	**23.3%**
73	1987	8,343	2,992	2,170	0.73	0.38	70.5	0.507	0.805	0.640	0.703	0.853	**14.7%**
74	1988	9,628	3,025	2,651	0.70	0.37	65.8	0.309	0.722	0.489	0.575	0.706	**29.4%**
75	1989	14,344	3,936	4,415	0.63	0.33	64.7	0.263	0.742	0.454	0.550	0.668	**33.2%**
76	1990	7,709	2,700	1,933	0.75	0.39	66.4	0.335	0.719	0.509	0.591	0.727	**27.3%**
77	1991	8,685	2,862	2,298	0.73	0.38	65.7	0.305	0.713	0.486	0.572	0.702	**29.8%**
78	1992	8,457	3,757	2,213	0.73	0.38	66	0.318	0.757	0.496	0.595	0.724	**27.6%**

JUNE

Row	Year	Sac River Flow	CVP + SWP exports	Calculated Steamboat & Sutter Slough Q	percent	X-channel closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123	Weighted Total Survival
8	1922	34,720	11,277	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**45.5%**
9	1923	17,058	7,999	5,430	61%	0.52	65.3	0.288	0.929	0.473	0.709	0.793	**20.7%**	**40.1%**
10	1924	10,083	1,311	2,821	69%	0.59	70.6	0.511	0.734	0.643	0.696	0.852	**14.8%**	**23.8%**
11	1925	12,856	6,168	3,858	65%	0.55	68.3	0.414	0.903	0.569	0.753	0.856	**14.4%**	**37.0%**
12	1926	14,923	6,067	4,631	63%	0.53	71.2	0.536	0.951	0.662	0.816	0.915	**8.5%**	**27.8%**
13	1927	18,889	8,352	6,115	60%	0.51	68.1	0.406	0.995	0.563	0.781	0.870	**13.0%**	**39.8%**
14	1928	13,461	5,697	4,085	64%	0.55	69.7	0.473	0.908	0.614	0.774	0.881	**11.9%**	**28.3%**
15	1929	9,898	3,126	2,752	70%	0.59	70.1	0.490	0.804	0.627	0.731	0.863	**13.7%**	**32.8%**
16	1930	16,016	7,176	5,040	62%	0.52	69.6	0.469	0.970	0.611	0.799	0.893	**10.7%**	**37.7%**
17	1931	14,167	5,512	4,348	64%	0.54	70.7	0.515	0.918	0.646	0.792	0.899	**10.1%**	**18.6%**
18	1932	19,377	7,714	6,297	59%	0.50	69.5	0.465	0.992	0.608	0.801	0.894	**10.6%**	**30.9%**
19	1933	11,478	2,252	3,343	67%	0.57	69.8	0.478	0.760	0.617	0.698	0.842	**15.8%**	**36.2%**
20	1934	13,495	4,840	4,097	64%	0.54	70.7	0.515	0.889	0.646	0.778	0.893	**10.7%**	**22.2%**
21	1935	17,696	7,647	5,668	60%	0.51	71	0.528	1.000	0.656	0.832	0.921	**7.9%**	**35.0%**
22	1936	19,058	7,966	6,178	60%	0.51	69.2	0.452	0.998	0.598	0.800	0.890	**11.0%**	**30.5%**
23	1937	17,679	7,663	5,662	60%	0.51	69.7	0.473	0.993	0.614	0.809	0.899	**10.1%**	**31.9%**
24	1938	35,510	11,277	12,331	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**41.6%**
25	1939	17,982	7,310	5,775	60%	0.51	71	0.528	1.000	0.656	0.832	0.921	**7.9%**	**21.9%**
26	1940	15,293	7,697	4,770	62%	0.53	71.5	0.549	1.000	0.672	0.845	0.930	**7.0%**	**30.2%**
27	1941	20,805	10,907	6,831	59%	0.50	69	0.444	1.000	0.592	0.795	0.886	**11.4%**	**41.6%**
28	1942	27,124	11,277	9,194	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**48.8%**
29	1943	16,856	7,747	5,354	61%	0.52	66.6	0.343	0.941	0.515	0.736	0.826	**17.4%**	**30.3%**
30	1944	16,822	7,411	5,342	61%	0.52	67.8	0.393	0.948	0.553	0.758	0.853	**14.7%**	**31.6%**
31	1945	16,688	7,176	5,291	61%	0.52	70.6	0.511	0.988	0.643	0.822	0.913	**8.7%**	**34.6%**
32	1946	14,940	6,974	4,638	63%	0.53	68.1	0.406	0.935	0.563	0.761	0.858	**14.2%**	**33.6%**
33	1947	17,881	7,243	5,738	60%	0.51	70	0.486	0.981	0.624	0.806	0.900	**10.0%**	**21.5%**
34	1948	23,259	9,125	7,749	57%	0.49	69	0.444	1.000	0.592	0.791	0.884	**11.6%**	**41.0%**
35	1949	15,831	6,806	4,971	62%	0.53	70.9	0.524	0.978	0.652	0.823	0.916	**8.4%**	**29.2%**
36	1950	18,184	8,134	5,851	60%	0.51	68.9	0.440	0.999	0.588	0.798	0.887	**11.3%**	**31.7%**
37	1951	17,259	7,512	5,505	61%	0.52	70.3	0.499	0.998	0.633	0.821	0.910	**9.0%**	**31.2%**
38	1952	38,972	11,277	13,626	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**45.8%**
39	1953	25,881	10,386	8,729	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**46.5%**
40	1954	14,083	6,016	4,317	64%	0.54	68.7	0.431	0.904	0.582	0.756	0.861	**13.9%**	**31.0%**
41	1955	16,385	7,176	5,178	61%	0.52	70.1	0.490	0.979	0.627	0.811	0.903	**9.7%**	**29.6%**
42	1956	22,301	11,125	7,391	58%	0.49	68.7	0.431	1.000	0.582	0.787	0.879	**12.1%**	**41.1%**
43	1957	19,125	7,966	6,203	60%	0.51	72	0.570	1.000	0.688	0.845	0.934	**6.6%**	**32.1%**
44	1958	33,930	11,277	11,740	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**38.9%**
45	1959	17,629	7,243	5,643	61%	0.51	72.1	0.574	1.000	0.691	0.849	0.936	**6.4%**	**26.5%**
46	1960	17,629	7,109	5,643	61%	0.51	72.7	0.600	1.000	0.710	0.859	0.943	**5.7%**	**29.7%**
47	1961	19,444	7,596	6,322	59%	0.50	73.2	0.621	1.000	0.726	0.864	0.948	**5.2%**	**33.2%**
48	1962	17,243	6,823	5,499	61%	0.52	70.4	0.503	0.969	0.636	0.808	0.905	**9.5%**	**29.8%**
49	1963	19,562	8,621	6,366	59%	0.50	69	0.444	1.000	0.592	0.797	0.887	**11.3%**	**41.4%**
50	1964	17,175	6,924	5,474	61%	0.52	69.5	0.465	0.958	0.608	0.788	0.887	**11.3%**	**32.2%**
51	1965	18,167	8,319	5,844	60%	0.51	67.1	0.364	0.975	0.531	0.758	0.846	**15.4%**	**36.2%**
52	1966	15,209	6,252	4,738	63%	0.53	70.4	0.503	0.945	0.636	0.800	0.900	**10.0%**	**24.5%**
53	1967	39,342	11,277	13,764	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**43.9%**
54	1968	17,142	7,075	5,461	61%	0.52	72	0.570	1.000	0.688	0.849	0.935	**6.5%**	**27.1%**
55	1969	24,133	11,243	8,076	57%	0.48	68.3	0.414	1.000	0.569	0.778	0.870	**13.0%**	**38.4%**
56	1970	14,570	6,907	4,499	63%	0.54	70.7	0.515	0.979	0.646	0.824	0.915	**8.5%**	**23.2%**
57	1971	23,629	9,646	7,887	57%	0.49	68.1	0.406	1.000	0.563	0.775	0.867	**13.3%**	**44.1%**
58	1972	16,436	6,873	5,197	61%	0.52	70.7	0.515	0.977	0.646	0.818	0.912	**8.8%**	**27.5%**
59	1973	17,142	8,571	5,461	61%	0.52	70.1	0.490	1.000	0.627	0.820	0.908	**9.2%**	**24.4%**
60	1974	21,629	9,529	7,139	58%	0.49	69.7	0.473	1.000	0.614	0.805	0.897	**10.3%**	**36.5%**
61	1975	24,788	11,277	8,321	57%	0.48	69.1	0.448	1.000	0.595	0.790	0.884	**11.6%**	**35.8%**
62	1976	18,772	7,361	6,071	60%	0.51	71.8	0.562	1.000	0.681	0.843	0.931	**6.9%**	**22.8%**
63	1977	9,092	437	2,450	72%	0.61	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**	**32.9%**
64	1978	15,965	8,504	5,021	62%	0.52	70	0.486	1.000	0.624	0.821	0.908	**9.2%**	**36.4%**
65	1979	17,108	8,050	5,448	61%	0.52	69.2	0.452	1.000	0.598	0.806	0.894	**10.6%**	**33.3%**
66	1980	16,268	8,672	5,134	62%	0.52	66.9	0.356	0.987	0.525	0.766	0.849	**15.1%**	**35.7%**
67	1981	17,797	7,226	5,706	60%	0.51	71.9	0.566	1.000	0.684	0.846	0.933	**6.7%**	**25.8%**
68	1982	24,418	11,277	8,183	57%	0.48	66	0.318	1.000	0.496	0.740	0.822	**17.8%**	**45.2%**
69	1983	55,576	9,293	19,835	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**53.7%**
70	1984	17,276	7,882	5,511	61%	0.52	68.4	0.419	0.979	0.572	0.782	0.873	**12.7%**	**27.4%**
71	1985	15,377	6,369	4,801	62%	0.53	69.4	0.461	0.932	0.604	0.777	0.880	**12.0%**	**29.1%**
72	1986	13,209	7,966	3,990	65%	0.55	71.6	0.553	1.000	0.675	0.853	0.934	**6.6%**	**25.0%**
73	1987	19,797	7,714	6,454	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**15.7%**
74	1988	14,218	5,663	4,367	64%	0.54	69.4	0.461	0.901	0.604	0.764	0.873	**12.7%**	**31.0%**
75	1989	15,528	6,554	4,858	62%	0.53	68.6	0.427	0.925	0.579	0.762	0.863	**13.7%**	**32.2%**
76	1990	19,158	7,462	6,215	60%	0.50	68.5	0.423	0.963	0.576	0.771	0.868	**13.2%**	**28.3%**
77	1991	9,495	3,966	2,601	71%	0.60	69.4	0.461	0.828	0.604	0.738	0.859	**14.1%**	**30.7%**
78	1992	13,125	4,672	3,959	65%	0.55	69	0.444	0.851	0.592	0.734	0.852	**14.8%**	**29.1%**
79													Average:	**32.96%**

Formulas   Sacramento River Fall Run Smolt Survival

C8 ='Study 513 Revised Flow Data'!G7
D8 ='Study 513 Revised Flow Data'!Q7 (HIDDEN)
E8 ='Study 513 Revised Flow Data'!AA7 (HIDDEN)
F8 =(D8+E8)
G8 =0.374*C8-950
H8 =IF(C8>25000,(0.133*C8+829)/(C8-G8),(0.293*C8+2090)/(C8-G8))
I8 =(0.133*C8+829)/(C8-G8)
K8 =IF((-2.45925+(0.0420748*J8))<0,0,(-2.45925+(0.0420748*J8)))
L8 =(-0.5916024)+(0.017968*J8)+(0.0000434*F8)
M8 =-1.613493+(0.0319584*J8)
N8 =(L8*I8)+(M8*(1-I8))
O8 =K8+N8-(K8*N8)
P8 =1-O8

R8 ='Study 513 Revised Flow Data'!H7
S8 ='Study 513 Revised Flow Data'! (HIDDEN)
T8 ='Study 513 Revised Flow Data'! (HIDDEN)
U8 =(S8+T8)
V8 =0.374*R8-950
W8 =IF(R8>25000,(0.133*R8+829)/(R8-V8),(0.293*R8+2090)/(R8-V8))
X8 =(0.84*(0.133*R8+829)/(R8-V8))+(0.16*W8)
Z8 =(-2.45925+(0.0420748*Y8))
AA8 =(-0.5916024)+(0.017968*Y8)+(0.0000434*U8)
AB8 =-1.613493+(0.0319584*Y8)
AC8 =(AA8*X8)+(AB8*(1-X8))
AD8 =Z8+AC8-(Z8*AC8)
AE8 =1-AD8

AG8 ='Study 513 Revised Flow Data'!I7
AH8 ='Study 513 Revised Flow Data'!S7 (HIDDEN)
AI8 ='Study 513 Flow Revised Data'!AC7 (HIDDEN)
AJ8 =(AH8+AI8)
AK8 =0.374*AG8-950
AL8 =IF(AG8>25000,(0.133*AG8+829)/(AG8-AK8),(0.293*AG8+2090)/(AG8-AK8))
AM8 =(0.27*(0.133*AG8+829)/(AG8-AK8))+(0.73*AL8)
AO8 =(-2.45925+(0.0420748*AN8))
AP8 =IF(((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8))>1,1,((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8)))
AQ8 =-1.613493+(0.0319584*AN8)
AR8 =(AP8*AM8)+(AQ8*(1-AM8))
AS8 =AO8+AR8-(AO8*AR8)
AT8 =1-AS8
AV8 =(P8*0.17)+(AE8*0.65)+(AT8*0.18)

Study 507 Sacramento River Fall Run Smolt Survival Model   Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

APRIL

Year	Water Year Type	Sac River Flows	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123
1922	A	22,822	8,369	7,585	58%	0.25	58.5	0.002	0.823	0.256	0.400	0.401	**59.9%**
1923	B	22,721	7,932	7,548	58%	0.25	58.3	0.000	0.800	0.250	0.389	0.389	**61.1%**
1924	C	8,050	2,823	2,061	74%	0.32	61.5	0.128	0.636	0.352	0.442	0.514	**48.6%**
1925	D	22,654	6,958	7,523	58%	0.25	59.1	0.027	0.772	0.275	0.401	0.418	**58.2%**
1926	D	21,242	6,621	6,995	58%	0.26	61.6	0.133	0.803	0.355	0.470	0.540	**46.0%**
1927	W	48,215	8,100	17,082	23%	0.23	56.8	0.000	0.781	0.202	0.336	0.336	**66.4%**
1928	A	29,208	7,361	9,974	25%	0.25	58.7	0.011	0.783	0.262	0.390	0.396	**60.4%**
1929	C	8,773	2,706	2,331	72%	0.31	56.3	0.000	0.537	0.186	0.295	0.295	**70.5%**
1930	D	12,638	3,899	3,777	65%	0.28	59.6	0.048	0.649	0.291	0.392	0.422	**57.8%**
1931	C	9,109	3,059	2,457	72%	0.31	62.8	0.183	0.670	0.393	0.478	0.574	**42.6%**
1932	D	13,075	5,378	3,940	65%	0.28	58.9	0.019	0.700	0.269	0.390	0.402	**59.8%**
1933	C	12,739	4,134	3,814	65%	0.28	60.1	0.069	0.668	0.307	0.409	0.450	**55.0%**
1934	C	12,839	3,563	3,852	65%	0.28	63.6	0.217	0.706	0.419	0.500	0.608	**39.2%**
1935	B	24,166	9,125	8,088	57%	0.25	58.9	0.019	0.863	0.269	0.418	0.429	**57.1%**
1936	B	21,528	8,403	7,101	58%	0.26	59.7	0.053	0.846	0.294	0.436	0.465	**53.5%**
1937	B	23,259	8,235	7,749	57%	0.25	58.8	0.015	0.822	0.266	0.406	0.415	**58.5%**
1938	W	47,173	8,420	16,693	23%	0.23	56.3	0.000	0.785	0.186	0.326	0.326	**67.4%**
1939	D	12,234	4,134	3,626	66%	0.29	63.3	0.204	0.725	0.409	0.500	0.602	**39.8%**
1940	A	41,728	8,336	14,656	24%	0.24	57.4	0.000	0.802	0.221	0.358	0.358	**64.2%**
1941	W	42,367	9,310	14,895	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
1942	W	43,308	8,907	15,247	23%	0.23	56.5	0.000	0.810	0.192	0.337	0.337	**66.3%**
1943	W	29,410	9,462	10,049	24%	0.24	58.8	0.015	0.876	0.266	0.415	0.424	**57.6%**
1944	D	9,814	4,235	2,721	70%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	**63.0%**
1945	B	11,999	6,588	3,538	66%	0.29	60.6	0.090	0.783	0.323	0.455	0.504	**49.6%**
1946	B	12,218	5,949	3,619	66%	0.29	60.7	0.095	0.757	0.326	0.449	0.501	**49.9%**
1947	D	13,797	4,941	4,210	64%	0.28	62.5	0.170	0.746	0.384	0.484	0.572	**42.8%**
1948	B	23,293	6,857	7,761	57%	0.25	56.6	0.000	0.723	0.195	0.329	0.329	**67.1%**
1949	D	13,209	5,075	3,990	65%	0.28	61.7	0.137	0.737	0.358	0.465	0.538	**46.2%**
1950	B	19,528	6,285	6,353	59%	0.26	61.3	0.120	0.783	0.346	0.459	0.524	**47.6%**
1951	A	14,789	6,386	4,581	63%	0.27	59.9	0.061	0.762	0.301	0.427	0.462	**53.8%**
1952	W	56,652	8,773	20,238	23%	0.23	55.5	0.000	0.786	0.160	0.304	0.304	**69.6%**
1953	W	16,184	5,647	5,103	62%	0.27	58.8	0.015	0.710	0.266	0.385	0.394	**60.6%**
1954	A	39,863	7,361	13,959	24%	0.24	58.4	0.000	0.777	0.253	0.377	0.377	**62.3%**
1955	D	9,478	3,664	2,595	71%	0.30	56.4	0.000	0.581	0.189	0.308	0.308	**69.2%**
1956	W	20,436	7,966	6,693	59%	0.26	59.7	0.053	0.827	0.294	0.432	0.462	**53.8%**
1957	A	21,158	6,420	6,963	58%	0.26	60.5	0.086	0.774	0.320	0.437	0.485	**51.5%**
1958	W	52,282	9,663	18,603	23%	0.23	57.4	0.000	0.859	0.221	0.368	0.368	**63.2%**
1959	B	10,487	3,798	2,972	69%	0.30	63	0.191	0.705	0.400	0.490	0.588	**41.2%**
1960	D	13,545	4,033	4,116	64%	0.28	59.5	0.044	0.653	0.288	0.390	0.417	**58.3%**
1961	D	12,789	3,546	3,833	65%	0.28	60.1	0.069	0.642	0.307	0.402	0.443	**55.7%**
1962	B	15,411	5,579	4,814	62%	0.27	61.8	0.141	0.761	0.362	0.470	0.545	**45.5%**
1963	W	69,457	8,100	25,027	23%	0.23	53.7	0.000	0.725	0.103	0.244	0.244	**75.6%**
1964	D	8,957	3,496	2,400	72%	0.31	59.3	0.036	0.626	0.282	0.388	0.410	**59.0%**
1965	W	45,173	8,537	15,945	23%	0.23	56.9	0.000	0.801	0.205	0.344	0.344	**65.6%**
1966	B	12,806	4,974	3,839	65%	0.28	61.9	0.145	0.737	0.365	0.470	0.547	**45.3%**
1967	W	39,930	9,546	13,984	24%	0.24	53.8	0.000	0.789	0.106	0.268	0.268	**73.2%**
1968	B	15,629	5,243	4,895	62%	0.27	61.5	0.128	0.741	0.352	0.457	0.527	**47.3%**
1969	W	44,787	7,512	15,800	23%	0.23	56.4	0.000	0.748	0.189	0.320	0.320	**68.0%**
1970	W	16,604	6,588	5,260	61%	0.27	58.8	0.015	0.751	0.266	0.396	0.404	**59.6%**
1971	W	22,133	6,621	7,328	58%	0.25	58.7	0.011	0.750	0.262	0.387	0.393	**60.7%**
1972	B	12,453	4,739	3,707	66%	0.28	58.5	0.002	0.665	0.256	0.372	0.374	**62.6%**
1973	A	19,511	7,495	6,347	59%	0.26	61.3	0.120	0.835	0.346	0.473	0.536	**46.4%**
1974	W	33,208	9,327	11,470	24%	0.24	56.8	0.000	0.834	0.202	0.354	0.354	**64.6%**
1975	W	25,763	8,773	8,685	25%	0.25	56.8	0.000	0.810	0.202	0.353	0.353	**64.7%**
1976	C	9,428	3,008	2,576	71%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
1977	C	9,142	2,991	2,469	71%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	**36.3%**
1978	A	38,703	7,512	13,525	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
1979	B	17,696	6,857	5,668	60%	0.26	59.8	0.057	0.780	0.298	0.425	0.458	**54.2%**
1980	A	19,814	6,941	6,460	59%	0.26	57.1	0.000	0.736	0.211	0.347	0.347	**65.3%**
1981	D	16,990	5,445	5,404	61%	0.27	61.5	0.128	0.750	0.352	0.458	0.528	**47.2%**
1982	W	75,843	9,159	27,415	23%	0.23	54.1	0.000	0.778	0.115	0.265	0.265	**73.5%**
1983	W	68,298	6,958	24,593	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
1984	W	17,864	6,857	5,731	60%	0.26	59.7	0.053	0.779	0.294	0.422	0.453	**54.7%**
1985	D	13,327	4,874	4,034	65%	0.28	60.8	0.099	0.712	0.330	0.437	0.492	**50.8%**
1986	W	21,024	7,546	6,913	58%	0.26	60.4	0.082	0.821	0.317	0.446	0.492	**50.8%**
1987	D	12,386	3,496	3,682	66%	0.28	65.7	0.305	0.741	0.486	0.559	0.693	**30.7%**
1988	C	8,621	2,857	2,274	73%	0.31	59.9	0.061	0.609	0.301	0.397	0.433	**56.7%**
1989	D	23,629	5,647	7,887	57%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	**48.0%**
1990	C	12,436	3,529	3,701	66%	0.28	61.6	0.133	0.668	0.355	0.444	0.518	**48.2%**
1991	C	15,276	4,252	4,763	62%	0.27	60.8	0.099	0.685	0.330	0.426	0.483	**51.7%**
1992	C	12,470	3,731	3,714	66%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	**49.9%**

MAY

Year	Sac River Flows	CVP + SWP Exports	Calculated Steamboat & Sutter Slough Q	Percent	X-channel Closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123
1922	46,530	8,685	16,452	0.23	0.23	61.2	0.116	0.885	0.342	0.469	0.530	**47.0%**
1923	14,214	6,245	4,366	0.64	0.33	62.4	0.166	0.801	0.381	0.521	0.600	**40.0%**
1924	8,766	1,301	2,328	0.72	0.38	69.2	0.452	0.708	0.598	0.639	0.803	**19.7%**
1925	12,067	5,042	3,563	0.66	0.35	63.2	0.200	0.763	0.406	0.530	0.624	**37.6%**
1926	13,645	4,879	4,153	0.64	0.34	65.7	0.305	0.801	0.486	0.592	0.716	**28.4%**
1927	26,786	8,327	9,068	0.25	0.25	62.6	0.175	0.895	0.387	0.513	0.598	**40.2%**
1928	20,655	6,375	6,775	0.59	0.31	66.6	0.343	0.882	0.515	0.629	0.756	**24.4%**
1929	9,872	3,106	2,742	0.70	0.36	66.1	0.322	0.731	0.499	0.583	0.718	**28.2%**
1930	12,067	3,513	3,563	0.66	0.35	63.1	0.196	0.695	0.403	0.504	0.601	**39.9%**
1931	10,100	3,123	2,827	0.69	0.36	70.5	0.507	0.811	0.640	0.702	0.853	**14.7%**
1932	12,019	4,847	3,545	0.66	0.35	65.5	0.297	0.796	0.480	0.589	0.711	**28.9%**
1933	8,181	3,155	2,110	0.74	0.38	63.7	0.221	0.690	0.422	0.525	0.630	**37.0%**
1934	8,912	2,944	2,383	0.72	0.37	68.3	0.414	0.763	0.569	0.642	0.790	**21.0%**
1935	28,770	5,611	9,810	0.25	0.25	64	0.234	0.802	0.432	0.523	0.634	**36.6%**
1936	14,100	6,310	4,324	0.64	0.33	64.9	0.271	0.848	0.461	0.590	0.701	**29.9%**
1937	16,198	6,749	5,108	0.62	0.32	64.5	0.255	0.860	0.448	0.582	0.688	**31.2%**
1938	57,426	9,449	20,527	0.23	0.23	62.5	0.170	0.941	0.384	0.512	0.595	**40.5%**
1939	8,571	3,480	2,255	0.73	0.38	68	0.402	0.781	0.560	0.644	0.787	**21.3%**
1940	18,199	6,196	5,856	0.60	0.32	65.6	0.301	0.856	0.483	0.601	0.721	**27.9%**
1941	39,488	9,726	13,818	0.24	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**
1942	36,040	8,685	12,529	0.24	0.24	60.1	0.069	0.865	0.307	0.441	0.479	**52.1%**
1943	21,077	8,327	6,933	0.58	0.31	65.4	0.292	0.945	0.477	0.621	0.732	**26.8%**
1944	8,912	3,741	2,383	0.72	0.37	65.9	0.313	0.755	0.493	0.591	0.719	**28.1%**
1945	12,539	5,172	3,740	0.66	0.34	63.1	0.196	0.767	0.403	0.528	0.620	**38.0%**
1946	13,694	5,269	4,171	0.64	0.34	63.9	0.229	0.785	0.429	0.549	0.652	**34.8%**
1947	8,847	3,545	2,359	0.72	0.38	68.7	0.431	0.797	0.582	0.663	0.808	**19.2%**
1948	29,030	7,676	9,907	0.25	0.25	62.3	0.162	0.861	0.378	0.496	0.578	**42.2%**
1949	14,914	4,749	4,628	0.63	0.33	65.2	0.284	0.786	0.470	0.574	0.695	**30.5%**
1950	13,726	5,269	4,184	0.64	0.34	64.3	0.246	0.792	0.441	0.559	0.668	**33.2%**
1951	18,817	7,123	6,087	0.60	0.32	64.4	0.250	0.875	0.445	0.580	0.685	**31.5%**
1952	59,557	9,563	21,324	0.23	0.23	61.7	0.137	0.932	0.358	0.490	0.559	**44.1%**
1953	26,867	7,676	9,098	0.25	0.25	60.9	0.103	0.836	0.333	0.457	0.513	**48.7%**
1954	25,403	7,432	8,551	0.25	0.25	65.9	0.313	0.915	0.493	0.598	0.724	**27.6%**
1955	10,278	3,773	2,894	0.69	0.36	66.9	0.356	0.774	0.525	0.614	0.752	**24.8%**
1956	39,000	8,750	13,636	0.24	0.24	61.4	0.124	0.891	0.349	0.477	0.542	**45.8%**
1957	16,833	5,952	5,345	0.61	0.32	64	0.234	0.817	0.432	0.556	0.660	**34.0%**
1958	43,488	10,685	15,315	0.23	0.23	62.9	0.187	1.002	0.397	0.539	0.625	**37.5%**
1959	9,417	3,676	2,572	0.71	0.37	65.9	0.313	0.752	0.493	0.588	0.717	**28.3%**
1960	10,913	3,350	3,131	0.68	0.35	65.9	0.313	0.738	0.493	0.580	0.711	**28.9%**
1961	9,238	2,992	2,505	0.71	0.37	64.3	0.246	0.694	0.441	0.535	0.649	**35.1%**
1962	14,735	5,334	4,561	0.63	0.33	64.8	0.267	0.804	0.457	0.572	0.687	**31.3%**
1963	29,095	8,327	9,932	0.25	0.25	62.5	0.170	0.893	0.384	0.509	0.592	**40.8%**
1964	11,043	3,871	3,180	0.68	0.35	65.2	0.284	0.748	0.470	0.568	0.691	**30.9%**
1965	24,655	7,937	8,271	0.57	0.30	63.6	0.217	0.896	0.419	0.563	0.658	**34.2%**
1966	14,930	4,781	4,634	0.63	0.33	67.3	0.372	0.825	0.537	0.632	0.769	**23.1%**
1967	44,790	10,051	15,801	0.23	0.23	62.1	0.154	0.960	0.371	0.509	0.584	**41.6%**
1968	9,384	3,643	2,560	0.71	0.37	66.1	0.322	0.754	0.499	0.593	0.724	**27.6%**
1969	45,538	9,010	16,081	0.23	0.23	63.2	0.200	0.935	0.406	0.530	0.624	**37.6%**
1970	12,149	5,920	3,594	0.66	0.35	68.6	0.427	0.898	0.579	0.689	0.822	**17.8%**
1971	29,274	7,676	9,999	0.24	0.24	61	0.107	0.838	0.336	0.459	0.517	**48.3%**
1972	10,539	3,903	2,991	0.69	0.36	67.3	0.372	0.787	0.537	0.627	0.766	**23.4%**
1973	15,743	6,570	4,938	0.62	0.33	66.9	0.356	0.896	0.525	0.646	0.772	**22.8%**
1974	26,949	8,685	9,129	0.25	0.25	63.4	0.208	0.924	0.413	0.539	0.635	**36.5%**
1975	28,542	8,685	9,725	0.25	0.25	63.8	0.225	0.932	0.425	0.550	0.651	**34.9%**
1976	10,002	3,253	2,791	0.70	0.36	69.6	0.469	0.800	0.611	0.680	0.830	**17.0%**
1977	6,993	732	1,665	0.78	0.40	64	0.234	0.590	0.432	0.495	0.613	**38.7%**
1978	21,061	8,197	6,927	0.58	0.31	63	0.191	0.896	0.400	0.553	0.639	**36.1%**
1979	12,572	5,985	3,752	0.65	0.34	63.8	0.225	0.815	0.425	0.559	0.658	**34.2%**
1980	14,783	7,481	4,579	0.63	0.33	63.6	0.217	0.876	0.419	0.570	0.663	**33.7%**
1981	8,750	3,513	2,322	0.72	0.38	66.7	0.347	0.759	0.518	0.609	0.745	**25.5%**
1982	38,431	10,701	13,423	0.24	0.24	61.1	0.112	0.971	0.339	0.489	0.546	**45.4%**
1983	54,515	7,546	19,439	0.23	0.23	60.1	0.069	0.816	0.307	0.424	0.464	**53.6%**
1984	13,417	6,148	4,068	0.64	0.34	66.5	0.339	0.870	0.512	0.633	0.757	**24.3%**
1985	12,376	4,781	3,679	0.66	0.34	65.8	0.309	0.798	0.489	0.596	0.721	**27.9%**
1986	13,125	8,132	3,959	0.65	0.34	66.2	0.326	0.951	0.502	0.654	0.767	**23.3%**
1987	8,441	2,862	2,207	0.73	0.38	70.5	0.507	0.799	0.640	0.700	0.852	**14.8%**
1988	9,774	3,058	2,706	0.70	0.37	65.8	0.309	0.723	0.489	0.575	0.706	**29.4%**
1989	14,328	3,936	4,409	0.63	0.33	64.7	0.263	0.742	0.454	0.550	0.668	**33.2%**
1990	7,709	2,700	1,933	0.75	0.39	66.4	0.335	0.719	0.509	0.591	0.727	**27.3%**
1991	8,685	2,879	2,298	0.73	0.38	65.7	0.305	0.714	0.486	0.572	0.703	**29.7%**
1992	8,620	3,529	2,274	0.73	0.38	66	0.318	0.747	0.496	0.591	0.721	**27.9%**

JUNE

Year	Sac River Flow	CVP + SWP exports	Caculated Steamboat & Sutter Slough Q	percent	X-channel closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123	Weighted Total Survival
1922	34,720	11,277	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**45.5%**
1923	16,990	7,999	5,404	61%	0.52	65.3	0.288	0.929	0.473	0.709	0.793	**20.7%**	**40.1%**
1924	10,218	1,462	2,871	69%	0.59	70.6	0.511	0.740	0.643	0.700	0.853	**14.7%**	**23.7%**
1925	12,839	6,151	3,852	65%	0.55	68.3	0.414	0.903	0.569	0.753	0.855	**14.5%**	**37.0%**
1926	14,907	6,067	4,625	63%	0.53	71.2	0.536	0.951	0.662	0.816	0.915	**8.5%**	**27.8%**
1927	18,889	8,352	6,115	60%	0.51	68.1	0.406	0.995	0.563	0.781	0.870	**13.0%**	**39.8%**
1928	13,461	5,697	4,085	64%	0.55	69.7	0.473	0.908	0.614	0.774	0.881	**11.9%**	**28.3%**
1929	9,898	3,126	2,752	70%	0.59	70.1	0.490	0.804	0.627	0.731	0.863	**13.7%**	**32.8%**
1930	16,016	7,176	5,040	62%	0.52	69.6	0.469	0.970	0.611	0.799	0.893	**10.7%**	**37.7%**
1931	14,251	5,579	4,380	63%	0.54	70.7	0.515	0.921	0.646	0.794	0.900	**10.0%**	**18.6%**
1932	19,175	7,714	6,222	60%	0.50	69.5	0.465	0.992	0.608	0.802	0.894	**10.6%**	**30.9%**
1933	11,461	2,252	3,337	67%	0.57	69.8	0.478	0.760	0.617	0.698	0.842	**15.8%**	**36.2%**
1934	13,528	4,874	4,110	64%	0.54	70.7	0.515	0.890	0.646	0.779	0.893	**10.7%**	**22.2%**
1935	17,679	7,630	5,662	60%	0.51	71	0.528	1.000	0.656	0.832	0.921	**7.9%**	**34.9%**
1936	19,058	7,966	6,178	60%	0.51	69.2	0.452	0.998	0.598	0.800	0.890	**11.0%**	**30.5%**
1937	18,184	7,663	5,851	60%	0.51	69.7	0.473	0.993	0.614	0.808	0.899	**10.1%**	**32.0%**
1938	35,510	11,277	12,331	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**41.6%**
1939	18,301	7,411	5,895	60%	0.51	71	0.528	1.000	0.656	0.831	0.920	**8.0%**	**22.1%**
1940	15,293	7,697	4,770	62%	0.53	71.5	0.549	1.000	0.672	0.845	0.930	**7.0%**	**30.3%**
1941	20,805	10,907	6,831	59%	0.50	69	0.444	1.000	0.592	0.795	0.886	**11.4%**	**41.6%**
1942	27,124	11,277	9,194	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**48.8%**
1943	16,856	7,747	5,354	61%	0.52	66.6	0.343	0.941	0.515	0.736	0.826	**17.4%**	**30.3%**
1944	16,822	7,411	5,342	61%	0.52	67.8	0.393	0.948	0.553	0.758	0.853	**14.7%**	**31.6%**
1945	16,688	7,176	5,291	61%	0.51	70.6	0.511	0.988	0.643	0.822	0.913	**8.7%**	**34.7%**
1946	14,940	6,958	4,638	63%	0.53	68.1	0.406	0.934	0.563	0.760	0.858	**14.2%**	**33.7%**
1947	17,881	7,243	5,738	60%	0.51	70	0.486	0.981	0.624	0.806	0.900	**10.0%**	**21.5%**
1948	23,259	9,125	7,749	57%	0.49	69	0.444	1.000	0.592	0.791	0.884	**11.6%**	**41.0%**
1949	15,831	6,806	4,971	62%	0.53	70.9	0.524	0.978	0.652	0.823	0.916	**8.4%**	**29.2%**
1950	18,184	8,134	5,851	60%	0.51	68.9	0.440	0.999	0.588	0.798	0.887	**11.3%**	**31.7%**
1951	17,243	7,512	5,499	61%	0.52	70.3	0.499	0.998	0.633	0.821	0.910	**9.0%**	**31.2%**
1952	38,972	11,277	13,626	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**45.8%**
1953	25,881	10,386	8,729	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**46.5%**
1954	13,865	6,016	4,235	64%	0.54	68.7	0.431	0.904	0.582	0.756	0.861	**13.9%**	**31.0%**
1955	16,688	7,327	5,291	61%	0.52	70.1	0.490	0.986	0.627	0.813	0.905	**9.5%**	**29.6%**
1956	22,301	11,277	7,391	58%	0.49	68.7	0.431	1.000	0.582	0.787	0.879	**12.1%**	**41.1%**
1957	19,108	7,966	6,196	60%	0.51	72	0.570	1.000	0.688	0.845	0.934	**6.6%**	**32.1%**
1958	33,930	11,277	11,740	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**38.9%**
1959	17,629	7,243	5,643	61%	0.51	72.1	0.574	1.000	0.691	0.849	0.936	**6.4%**	**26.5%**
1960	17,629	7,109	5,643	61%	0.51	72.7	0.600	1.000	0.710	0.859	0.943	**5.7%**	**29.7%**
1961	19,444	7,596	6,322	59%	0.50	73.2	0.621	1.000	0.726	0.864	0.948	**5.2%**	**33.2%**
1962	17,243	6,823	5,499	61%	0.52	70.4	0.503	0.969	0.636	0.808	0.905	**9.5%**	**29.8%**
1963	19,562	8,621	6,366	59%	0.50	69	0.444	1.000	0.592	0.797	0.887	**11.3%**	**41.4%**
1964	17,175	6,924	5,474	61%	0.52	69.5	0.465	0.958	0.608	0.788	0.887	**11.3%**	**32.2%**
1965	18,167	8,319	5,844	60%	0.51	67.1	0.364	0.975	0.531	0.758	0.846	**15.4%**	**36.2%**
1966	15,209	6,252	4,738	63%	0.53	70.4	0.503	0.945	0.636	0.800	0.900	**10.0%**	**24.5%**
1967	39,342	11,277	13,764	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**43.9%**
1968	17,142	7,075	5,461	61%	0.52	72	0.570	1.000	0.688	0.849	0.935	**6.5%**	**27.1%**
1969	24,133	11,243	8,076	57%	0.48	68.3	0.414	1.000	0.569	0.778	0.870	**13.0%**	**38.4%**
1970	14,839	7,092	4,600	63%	0.53	70.7	0.515	0.987	0.646	0.827	0.916	**8.4%**	**23.2%**
1971	23,629	9,646	7,887	57%	0.49	68.1	0.406	1.000	0.563	0.775	0.867	**13.3%**	**44.1%**
1972	16,436	6,873	5,197	61%	0.52	70.7	0.515	0.977	0.646	0.818	0.912	**8.8%**	**27.5%**
1973	17,091	8,537	5,442	61%	0.52	70.1	0.490	1.000	0.627	0.820	0.908	**9.2%**	**24.4%**
1974	21,629	9,529	7,139	58%	0.49	69.7	0.473	1.000	0.614	0.805	0.897	**10.3%**	**36.5%**
1975	24,788	11,277	8,321	57%	0.48	69.1	0.448	1.000	0.595	0.790	0.884	**11.6%**	**35.8%**
1976	18,772	7,361	6,071	60%	0.51	71.8	0.562	1.000	0.681	0.843	0.931	**6.9%**	**22.8%**
1977	9,092	437	2,450	72%	0.61	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**	**32.9%**
1978	15,965	8,504	5,021	62%	0.52	70	0.486	1.000	0.624	0.821	0.908	**9.2%**	**36.4%**
1979	17,108	8,050	5,448	61%	0.52	69.2	0.452	1.000	0.598	0.806	0.894	**10.6%**	**33.3%**
1980	16,268	8,672	5,134	62%	0.52	66.9	0.356	0.987	0.525	0.766	0.849	**15.1%**	**35.7%**
1981	17,797	7,226	5,706	60%	0.51	71.9	0.566	1.000	0.684	0.846	0.933	**6.7%**	**25.8%**
1982	24,418	11,277	8,183	57%	0.48	66	0.318	1.000	0.496	0.740	0.822	**17.8%**	**45.2%**
1983	55,576	9,293	19,835	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**53.7%**
1984	17,276	7,882	5,511	61%	0.52	68.4	0.419	0.979	0.572	0.782	0.873	**12.7%**	**27.4%**
1985	14,957	6,218	4,644	63%	0.53	69.4	0.461	0.925	0.604	0.775	0.879	**12.1%**	**29.0%**
1986	13,209	7,966	3,990	65%	0.55	71.6	0.553	1.000	0.675	0.853	0.934	**6.6%**	**25.0%**
1987	19,948	7,781	6,511	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**15.8%**
1988	14,201	5,647	4,361	64%	0.54	69.4	0.461	0.900	0.604	0.764	0.873	**12.7%**	**31.0%**
1989	15,528	6,554	4,858	62%	0.53	68.6	0.427	0.925	0.579	0.762	0.863	**13.7%**	**32.2%**
1990	19,192	7,478	6,228	59%	0.50	68.5	0.423	0.964	0.576	0.772	0.868	**13.2%**	**28.3%**
1991	11,545	4,050	3,368	67%	0.57	69.4	0.461	0.831	0.604	0.733	0.856	**14.4%**	**30.7%**
1992	13,293	4,857	4,022	65%	0.55	69	0.444	0.859	0.592	0.738	0.854	**14.6%**	**29.3%**
												Average:	**32.97%**

Formulas   Sacramento River Fall Run Smolt Survival

C8 ='Study 513 Revised Flow Data'!G7
D8 ='Study 513 Revised Flow Data'!Q7 (HIDDEN)
E8 ='Study 513 Revised Flow Data'!AA7 (HIDDEN)
F8 =(D8+E8)
G8 =0.374*C8-950
H8 =IF(C8>25000,(0.133*C8+829)/(C8-G8),(0.293*C8+2090)/(C8-G8))
I8 =(0.133*C8+829)/(C8-G8)
K8 =IF((-2.45925+(0.0420748*J8))<0,0,(-2.45925+(0.0420748*J8)))
L8 =(-0.5916024)+(0.017968*J8)+(0.0000434*F8)
M8 =-1.613493+(0.0319584*J8)
N8 =(L8*I8)+(M8*(1-I8))
O8 =K8+N8-(K8*N8)
P8 =1-O8

R8 ='Study 513 Revised Flow Data'!H7
S8 ='Study 513 Revised Flow Data' (HIDDEN)
T8 ='Study 513 Revised Flow Data' (HIDDEN)
U8 =(S8+T8)
V8 =0.374*R8-950
W8 =IF(R8>25000,(0.133*R8+829)/(R8-V8),(0.293*R8+2090)/(R8-V8))
X8 =(0.84*(0.133*R8+829)/(R8-V8))+(0.16*W8)
Z8 =(-2.45925+(0.0420748*Y8))
AA8 =(-0.5916024)+(0.017968*Y8)+(0.0000434*U8)
AB8 =-1.613493+(0.0319584*Y8)
AC8 =(AA8*X8)+(AB8*(1-X8))
AD8 =Z8+AC8-(Z8*AC8)
AE8 =1-AD8

AG8 ='Study 513 Revised Flow Data'!I7
AH8 ='Study 513 Revised Flow Data'!S7 (HIDDEN)
AI8 ='Study 513 Flow Revised Data'!AC7 (HIDDEN)
AJ8 =(AH8+AI8)
AK8 =0.374*AG8-950
AL8 =IF(AG8>25000,(0.133*AG8+829)/(AG8-AK8),(0.293*AG8+2090)/(AG8-AK8))
AM8 =(0.27*(0.133*AG8+829)/(AG8-AK8))+(0.73*AL8)
AO8 =(-2.45925+(0.0420748*AN8))
AP8 =IF(((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8))>1,1,((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8)))
AQ8 =-1.613493+(0.0319584*AN8)
AR8 =(AP8*AM8)+(AQ8*(1-AM8))
AS8 =AO8+AR8-(AO8*AR8)
AT8 =1-AS8
AV8 =(P8*0.17)+(AE8*0.65)+(AT8*0.18)

Study 513 (Revised) Sacramento River Fall Run Smolt Survival Model   Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

A	B	C	F	G	H	I	J	K	L	M	N	O	P
		APRIL		Calculated									
	Water	Sac		Sutter &									Calculated
	Year	River	CVP + SWP	Steamboat		X-Channel	observed		Calculated Mortality				Survival
Year	Type	Flows	exports	Slough Q	Percent	Closed	temp f	m1	m2	m3	m23	m123	s123
1922	A	23,242	9,867	7,743	57%	0.25	58.5	0.002	0.888	0.256	0.416	0.417	**58.3%**
1923	B	24,150	9,688	8,082	57%	0.25	58.3	0.000	0.876	0.250	0.407	0.407	**59.3%**
1924	C	7,260	3,525	1,765	77%	0.33	61.5	0.128	0.666	0.352	0.455	0.525	**47.5%**
1925	D	20,469	7,889	6,705	59%	0.26	59.1	0.027	0.813	0.275	0.414	0.430	**57.0%**
1926	D	19,763	7,315	6,441	59%	0.26	61.6	0.133	0.833	0.355	0.479	0.548	**45.2%**
1927	W	48,501	9,873	17,189	23%	0.23	56.8	0.000	0.857	0.202	0.354	0.354	**64.6%**
1928	A	29,763	8,382	10,181	24%	0.24	58.7	0.011	0.827	0.262	0.400	0.407	**59.3%**
1929	C	7,378	3,032	1,809	76%	0.33	56.3	0.000	0.552	0.186	0.305	0.305	**69.5%**
1930	D	13,092	4,683	3,946	65%	0.28	59.6	0.048	0.683	0.291	0.401	0.430	**57.0%**
1931	C	8,369	3,597	2,180	73%	0.31	62.8	0.183	0.693	0.393	0.487	0.581	**41.9%**
1932	D	11,243	7,377	3,255	67%	0.29	58.9	0.019	0.787	0.269	0.420	0.431	**56.9%**
1933	C	11,798	5,059	3,462	67%	0.29	60.1	0.069	0.708	0.307	0.422	0.463	**53.7%**
1934	C	12,083	4,427	3,569	66%	0.29	63.6	0.217	0.743	0.419	0.512	0.618	**38.2%**
1935	B	23,729	10,524	7,925	57%	0.25	58.9	0.019	0.923	0.269	0.434	0.445	**55.5%**
1936	B	23,175	9,891	7,717	57%	0.25	59.7	0.053	0.910	0.294	0.450	0.479	**52.1%**
1937	B	23,578	9,430	7,868	57%	0.25	58.8	0.015	0.874	0.266	0.419	0.428	**57.2%**
1938	W	47,543	9,084	16,831	23%	0.23	56.3	0.000	0.814	0.186	0.332	0.332	**66.8%**
1939	D	11,142	5,284	3,217	68%	0.29	63.3	0.204	0.775	0.409	0.516	0.615	**38.5%**
1940	A	42,686	10,245	15,015	24%	0.24	57.4	0.000	0.884	0.221	0.377	0.377	**62.3%**
1941	W	42,770	9,415	15,046	24%	0.24	56.9	0.000	0.839	0.205	0.354	0.354	**64.6%**
1942	W	43,678	9,753	15,385	23%	0.23	56.5	0.000	0.847	0.192	0.346	0.346	**65.4%**
1943	W	29,427	9,769	10,056	24%	0.24	58.8	0.015	0.889	0.266	0.418	0.427	**57.3%**
1944	D	10,100	5,956	2,827	69%	0.30	58.4	0.000	0.716	0.253	0.391	0.391	**60.9%**
1945	B	12,890	8,624	3,871	65%	0.28	60.6	0.090	0.872	0.323	0.478	0.525	**47.5%**
1946	B	12,722	7,748	3,808	65%	0.28	60.7	0.095	0.835	0.326	0.470	0.520	**48.0%**
1947	D	14,251	5,469	4,380	63%	0.28	62.5	0.170	0.769	0.384	0.490	0.577	**42.3%**
1948	B	24,469	8,313	8,201	57%	0.25	56.6	0.000	0.786	0.195	0.344	0.344	**65.6%**
1949	D	14,016	6,190	4,292	64%	0.28	61.7	0.137	0.786	0.358	0.477	0.548	**45.2%**
1950	B	20,570	7,404	6,743	59%	0.26	61.3	0.120	0.831	0.346	0.471	0.534	**46.6%**
1951	A	14,722	7,939	4,556	63%	0.27	59.9	0.061	0.829	0.301	0.446	0.480	**52.0%**
1952	W	57,324	8,873	20,489	23%	0.23	55.5	0.000	0.791	0.160	0.305	0.305	**69.5%**
1953	W	16,822	6,600	5,342	61%	0.27	58.8	0.015	0.751	0.266	0.395	0.404	**59.6%**
1954	A	40,434	8,178	14,172	24%	0.24	58.4	0.000	0.813	0.253	0.385	0.385	**61.5%**
1955	D	9,730	4,725	2,689	70%	0.30	56.4	0.000	0.627	0.189	0.321	0.321	**67.9%**
1956	W	21,125	10,060	6,951	58%	0.26	59.7	0.053	0.918	0.294	0.454	0.483	**51.7%**
1957	A	19,965	6,995	6,517	59%	0.26	60.5	0.086	0.799	0.320	0.444	0.492	**50.8%**
1958	W	52,669	9,769	18,748	23%	0.23	57.4	0.000	0.864	0.221	0.369	0.369	**63.1%**
1959	B	9,495	4,689	2,601	71%	0.30	63	0.191	0.744	0.400	0.504	0.599	**40.1%**
1960	D	11,999	4,601	3,538	66%	0.29	59.5	0.044	0.677	0.288	0.400	0.426	**57.4%**
1961	D	11,730	4,172	3,437	67%	0.29	60.1	0.069	0.669	0.307	0.412	0.452	**54.8%**
1962	B	14,285	7,115	4,392	63%	0.28	61.8	0.141	0.828	0.362	0.490	0.562	**43.8%**
1963	W	70,684	10,084	25,486	23%	0.23	53.7	0.000	0.811	0.103	0.263	0.263	**73.7%**
1964	D	9,394	4,540	2,563	71%	0.30	59.3	0.036	0.671	0.282	0.400	0.422	**57.8%**
1965	W	44,938	9,993	15,857	23%	0.23	56.9	0.000	0.864	0.205	0.359	0.359	**64.1%**
1966	B	15,764	6,210	4,946	62%	0.27	61.9	0.145	0.790	0.365	0.480	0.555	**44.5%**
1967	W	40,922	9,656	14,355	24%	0.24	53.8	0.000	0.794	0.106	0.268	0.268	**73.2%**
1968	B	15,058	5,631	4,682	63%	0.27	61.5	0.128	0.758	0.352	0.463	0.532	**46.8%**
1969	W	45,476	7,622	16,058	23%	0.23	56.4	0.000	0.753	0.189	0.321	0.321	**67.9%**
1970	W	15,444	8,222	4,826	62%	0.27	58.8	0.015	0.822	0.266	0.417	0.425	**57.5%**
1971	W	21,595	7,298	7,127	58%	0.26	58.7	0.011	0.780	0.262	0.395	0.401	**59.9%**
1972	B	12,722	5,007	3,808	65%	0.28	58.5	0.002	0.677	0.256	0.375	0.376	**62.4%**
1973	A	20,049	10,222	6,548	59%	0.26	61.3	0.120	0.953	0.346	0.503	0.563	**43.7%**
1974	W	33,460	10,208	11,564	24%	0.24	56.8	0.000	0.872	0.202	0.363	0.363	**63.7%**
1975	W	26,200	10,492	8,849	25%	0.25	56.8	0.000	0.884	0.202	0.371	0.371	**62.9%**
1976	C	9,663	3,987	2,664	70%	0.30	58.9	0.019	0.640	0.269	0.381	0.393	**60.7%**
1977	C	8,588	3,413	2,262	73%	0.31	64.3	0.246	0.712	0.441	0.526	0.642	**35.8%**
1978	A	38,821	7,606	13,569	24%	0.24	56.9	0.000	0.761	0.205	0.337	0.337	**66.3%**
1979	B	18,217	9,509	5,863	60%	0.26	59.8	0.057	0.896	0.298	0.455	0.486	**51.4%**
1980	A	20,570	8,279	6,743	59%	0.26	57.1	0.000	0.794	0.211	0.361	0.361	**63.9%**
1981	D	17,377	6,103	5,549	61%	0.27	61.5	0.128	0.778	0.352	0.465	0.534	**46.6%**
1982	W	76,247	9,750	27,566	23%	0.23	54.1	0.000	0.804	0.115	0.271	0.271	**72.9%**
1983	W	67,609	7,071	24,336	23%	0.23	55	0.000	0.704	0.144	0.271	0.271	**72.9%**
1984	W	17,175	8,231	5,474	61%	0.27	59.7	0.053	0.838	0.294	0.439	0.469	**53.1%**
1985	D	13,898	5,496	4,248	64%	0.28	60.8	0.099	0.739	0.330	0.443	0.498	**50.2%**
1986	W	21,982	7,773	7,271	58%	0.26	60.4	0.082	0.831	0.317	0.448	0.493	**50.7%**
1987	D	11,024	4,263	3,173	68%	0.29	65.7	0.305	0.774	0.486	0.570	0.701	**29.9%**
1988	C	9,226	3,776	2,501	71%	0.31	59.9	0.061	0.649	0.301	0.407	0.443	**55.7%**
1989	D	24,351	6,384	8,157	57%	0.25	61.4	0.124	0.789	0.349	0.459	0.526	**47.4%**
1990	C	11,697	4,271	3,425	67%	0.29	61.6	0.133	0.701	0.355	0.455	0.527	**47.3%**
1991	C	16,335	5,457	5,159	62%	0.27	60.8	0.099	0.738	0.330	0.439	0.495	**50.5%**
1992	C	12,167	4,717	3,601	66%	0.29	61.2	0.116	0.713	0.342	0.448	0.512	**48.8%**

A	R	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
	MAY		Calculated									
	Sac		Steamboat			USBR						Calculated
	River	CVP + SWP	& Sutter		X-channel	observed		Calculated Mortality				Survival
Year	Flows	Exports	Slough Q	Percent	Closed	temp f	m1	m2	m3	m23	m123	s123
1922	46,302	10,935	16,367	0.23	0.23	61.2	0.116	0.983	0.342	0.492	0.551	**44.9%**
1923	15,092	7,741	4,695	0.63	0.33	62.4	0.166	0.866	0.381	0.540	0.617	**38.3%**
1924	10,067	3,730	2,815	0.69	0.36	69.2	0.452	0.814	0.598	0.676	0.823	**17.7%**
1925	12,328	6,073	3,661	0.66	0.34	63.2	0.200	0.808	0.406	0.545	0.636	**36.4%**
1926	13,108	5,183	3,953	0.65	0.34	65.7	0.305	0.814	0.486	0.597	0.720	**28.0%**
1927	26,640	9,191	9,013	0.25	0.25	62.6	0.175	0.932	0.387	0.522	0.606	**39.4%**
1928	18,752	7,058	6,063	0.60	0.32	66.6	0.343	0.911	0.515	0.640	0.763	**23.7%**
1929	9,091	3,665	2,450	0.72	0.37	66.1	0.322	0.755	0.499	0.594	0.725	**27.5%**
1930	12,133	4,211	3,588	0.66	0.35	63.1	0.196	0.725	0.403	0.514	0.609	**39.1%**
1931	9,254	3,547	2,511	0.71	0.37	70.5	0.507	0.829	0.640	0.710	0.857	**14.3%**
1932	12,962	6,709	3,898	0.65	0.34	65.5	0.297	0.876	0.480	0.615	0.729	**27.1%**
1933	7,530	3,962	1,866	0.76	0.39	63.7	0.221	0.725	0.422	0.541	0.643	**35.7%**
1934	8,246	3,433	2,134	0.74	0.38	68.3	0.414	0.785	0.569	0.652	0.796	**20.4%**
1935	26,509	6,021	8,965	0.25	0.25	64	0.234	0.820	0.432	0.528	0.638	**36.2%**
1936	18,801	8,305	6,081	0.60	0.32	64.9	0.271	0.935	0.461	0.610	0.716	**28.4%**
1937	14,735	9,362	4,561	0.63	0.33	64.5	0.255	0.974	0.448	0.622	0.718	**28.2%**
1938	57,020	10,068	20,375	0.23	0.23	62.5	0.170	0.968	0.384	0.518	0.600	**40.0%**
1939	8,164	4,271	2,103	0.74	0.38	68	0.402	0.816	0.560	0.658	0.795	**20.5%**
1940	16,036	5,938	5,047	0.62	0.33	65.6	0.301	0.845	0.483	0.601	0.721	**27.9%**
1941	39,536	9,931	13,837	0.24	0.24	61.6	0.133	0.946	0.355	0.495	0.562	**43.8%**
1942	36,267	10,117	12,614	0.24	0.24	60.1	0.069	0.927	0.307	0.455	0.493	**50.7%**
1943	20,427	10,407	6,690	0.59	0.31	65.4	0.292	1.035	0.477	0.650	0.753	**24.7%**
1944	9,709	5,401	2,681	0.70	0.37	65.9	0.313	0.827	0.493	0.615	0.736	**26.4%**
1945	13,726	7,777	4,184	0.64	0.34	63.1	0.196	0.880	0.403	0.563	0.649	**35.1%**
1946	12,393	6,845	3,685	0.66	0.34	63.9	0.229	0.854	0.429	0.575	0.672	**32.8%**
1947	9,579	4,351	2,633	0.70	0.37	68.7	0.431	0.832	0.582	0.674	0.814	**18.6%**
1948	31,551	8,429	10,850	0.24	0.24	62.3	0.162	0.894	0.378	0.503	0.583	**41.7%**
1949	13,775	5,895	4,202	0.64	0.34	65.2	0.284	0.836	0.470	0.593	0.709	**29.1%**
1950	16,182	6,305	5,102	0.62	0.32	64.3	0.246	0.837	0.441	0.570	0.676	**32.4%**
1951	18,833	8,129	6,094	0.60	0.32	64.4	0.250	0.918	0.445	0.594	0.696	**30.4%**
1952	59,768	10,082	21,403	0.23	0.23	61.7	0.137	0.955	0.358	0.495	0.564	**43.6%**
1953	27,355	8,192	9,281	0.25	0.25	60.9	0.103	0.858	0.333	0.463	0.518	**48.2%**
1954	23,712	8,098	7,918	0.57	0.30	65.9	0.313	0.944	0.493	0.630	0.746	**25.4%**
1955	11,921	4,989	3,508	0.66	0.35	66.9	0.356	0.827	0.525	0.630	0.761	**23.9%**
1956	38,349	11,463	13,393	0.24	0.24	61.4	0.124	1.009	0.349	0.506	0.567	**43.3%**
1957	18,768	7,069	6,069	0.60	0.32	64	0.234	0.865	0.432	0.569	0.669	**33.1%**
1958	43,228	10,895	15,217	0.23	0.23	62.9	0.187	1.011	0.397	0.541	0.627	**37.3%**
1959	10,197	4,503	2,864	0.69	0.36	65.9	0.313	0.788	0.493	0.599	0.725	**27.5%**
1960	13,547	4,655	4,117	0.64	0.34	65.9	0.313	0.795	0.493	0.594	0.722	**27.8%**
1961	8,912	3,563	2,383	0.72	0.37	64.3	0.246	0.718	0.441	0.545	0.657	**34.3%**
1962	13,613	6,071	4,141	0.64	0.34	64.8	0.267	0.836	0.457	0.585	0.696	**30.4%**
1963	28,868	9,810	9,846	0.25	0.25	62.5	0.170	0.957	0.384	0.525	0.606	**39.4%**
1964	11,791	4,709	3,460	0.67	0.35	65.2	0.284	0.784	0.470	0.580	0.699	**30.1%**
1965	23,192	9,110	7,724	0.57	0.30	63.6	0.217	0.947	0.419	0.580	0.671	**32.9%**
1966	12,751	5,635	3,819	0.65	0.34	67.3	0.372	0.862	0.537	0.648	0.779	**22.1%**
1967	45,651	10,257	16,124	0.23	0.23	62.1	0.154	0.969	0.371	0.511	0.586	**41.4%**
1968	9,888	4,521	2,748	0.70	0.36	66.1	0.322	0.792	0.499	0.606	0.733	**26.7%**
1969	45,261	9,228	15,978	0.23	0.23	63.2	0.200	0.944	0.406	0.532	0.626	**37.4%**
1970	13,287	7,323	4,019	0.65	0.34	68.6	0.427	0.959	0.579	0.708	0.832	**16.8%**
1971	30,998	8,113	10,643	0.24	0.24	61	0.107	0.857	0.336	0.463	0.520	**48.0%**
1972	11,466	4,663	3,338	0.67	0.35	67.3	0.372	0.820	0.537	0.636	0.772	**22.8%**
1973	16,638	8,029	5,272	0.61	0.32	66.9	0.356	0.959	0.525	0.665	0.784	**21.6%**
1974	27,371	10,383	9,287	0.25	0.25	63.4	0.208	0.998	0.413	0.557	0.650	**35.0%**
1975	29,941	9,958	10,248	0.24	0.24	63.8	0.225	0.987	0.425	0.563	0.661	**33.9%**
1976	8,945	3,598	2,395	0.72	0.37	69.6	0.469	0.815	0.611	0.687	0.834	**16.6%**
1977	7,253	1,819	1,763	0.77	0.40	64	0.234	0.637	0.432	0.513	0.627	**37.3%**
1978	21,809	8,395	7,207	0.58	0.31	63	0.191	0.905	0.400	0.555	0.640	**36.0%**
1979	13,352	7,387	4,044	0.64	0.34	63.8	0.225	0.875	0.425	0.578	0.673	**32.7%**
1980	14,881	9,817	4,616	0.63	0.33	63.6	0.217	0.977	0.419	0.603	0.689	**31.1%**
1981	9,010	4,317	2,420	0.72	0.37	66.7	0.347	0.794	0.518	0.621	0.753	**24.7%**
1982	38,089	10,920	13,295	0.24	0.24	61.1	0.112	0.980	0.339	0.492	0.548	**45.2%**
1983	54,710	7,752	19,512	0.23	0.23	60.1	0.069	0.825	0.307	0.426	0.466	**53.4%**
1984	15,336	7,459	4,786	0.62	0.33	66.5	0.339	0.927	0.512	0.648	0.767	**23.3%**
1985	11,889	4,845	3,496	0.66	0.35	65.8	0.309	0.801	0.489	0.598	0.722	**27.8%**
1986	13,434	9,536	4,074	0.64	0.34	66.2	0.326	1.012	0.502	0.674	0.780	**22.0%**
1987	8,294	3,533	2,152	0.74	0.38	70.5	0.507	0.828	0.640	0.712	0.858	**14.2%**
1988	8,603	3,489	2,268	0.73	0.38	65.8	0.309	0.742	0.489	0.585	0.713	**28.7%**
1989	13,369	4,413	4,050	0.64	0.34	64.7	0.263	0.762	0.454	0.558	0.675	**32.5%**
1990	7,221	3,209	1,751	0.77	0.40	66.4	0.335	0.741	0.509	0.601	0.734	**26.6%**
1991	9,140	3,833	2,468	0.71	0.37	65.7	0.305	0.755	0.486	0.586	0.712	**28.8%**
1992	8,181	3,531	2,110	0.74	0.38	66	0.318	0.748	0.496	0.592	0.722	**27.8%**

A	AG	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AV
	JUNE		Caculated										
	Sac		Steamboat			USBR						Calculated	
	River	CVP + SWP	& Sutter		X-channel	observed		Calculated Mortality				Survival	Weighted
Year	Flow	exports	Slough Q	percent	closed	temp f	m1	m2	m3	m23	m123	s123	Total Survival
1922	34,115	11,544	11,809	24%	0.24	65.9	0.313	1.000	0.493	0.615	0.735	**26.5%**	**43.9%**
1923	17,125	8,250	5,455	61%	0.52	65.3	0.288	0.940	0.473	0.714	0.797	**20.3%**	**38.6%**
1924	13,142	5,329	3,965	65%	0.55	70.6	0.511	0.908	0.643	0.788	0.897	**10.3%**	**21.5%**
1925	11,831	3,737	3,475	66%	0.56	68.3	0.414	0.798	0.569	0.698	0.823	**17.7%**	**36.6%**
1926	13,730	6,305	4,185	64%	0.54	71.2	0.536	0.961	0.662	0.824	0.919	**8.1%**	**27.3%**
1927	18,957	8,877	6,140	60%	0.51	68.1	0.406	1.000	0.563	0.784	0.872	**12.8%**	**38.9%**
1928	16,285	7,540	5,140	62%	0.52	69.7	0.473	0.988	0.614	0.809	0.900	**10.0%**	**27.3%**
1929	11,243	4,582	3,255	67%	0.57	70.1	0.490	0.867	0.627	0.764	0.880	**12.0%**	**31.9%**
1930	16,402	6,952	5,184	61%	0.52	69.6	0.469	0.961	0.611	0.793	0.890	**11.0%**	**37.1%**
1931	14,049	6,025	4,304	64%	0.54	70.7	0.515	0.940	0.646	0.805	0.905	**9.5%**	**18.1%**
1932	17,528	7,953	5,606	61%	0.51	69.5	0.465	1.000	0.608	0.809	0.898	**10.2%**	**29.1%**
1933	11,697	4,322	3,425	67%	0.56	69.8	0.478	0.850	0.617	0.749	0.869	**13.1%**	**34.7%**
1934	17,192	7,186	5,480	61%	0.52	70.7	0.515	0.991	0.646	0.824	0.915	**8.5%**	**21.3%**
1935	17,948	8,519	5,763	60%	0.51	71	0.528	1.000	0.656	0.832	0.921	**7.9%**	**34.4%**
1936	17,394	8,258	5,555	61%	0.51	69.2	0.452	1.000	0.598	0.805	0.893	**10.7%**	**29.2%**
1937	17,713	8,667	5,675	60%	0.51	69.7	0.473	1.000	0.614	0.812	0.901	**9.9%**	**29.8%**
1938	35,645	11,544	12,381	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**41.1%**
1939	16,520	7,432	5,228	61%	0.52	71	0.528	1.000	0.656	0.835	0.922	**7.8%**	**21.3%**
1940	16,806	8,061	5,335	61%	0.52	71.5	0.549	1.000	0.672	0.842	0.929	**7.1%**	**30.0%**
1941	21,847	11,544	7,221	58%	0.49	69	0.444	1.000	0.592	0.793	0.885	**11.5%**	**41.5%**
1942	27,275	11,544	9,251	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**47.7%**
1943	16,722	8,440	5,304	61%	0.52	66.6	0.343	0.971	0.515	0.752	0.837	**16.3%**	**28.8%**
1944	14,318	6,853	4,405	63%	0.54	67.8	0.393	0.924	0.553	0.752	0.850	**15.0%**	**30.2%**
1945	17,780	8,447	5,700	60%	0.51	70.6	0.511	1.000	0.643	0.826	0.915	**8.5%**	**32.4%**
1946	16,873	8,072	5,360	61%	0.52	68.1	0.406	0.982	0.563	0.780	0.869	**13.1%**	**31.8%**
1947	15,713	7,132	4,927	62%	0.53	70	0.486	0.976	0.624	0.809	0.902	**9.8%**	**21.0%**
1948	23,444	10,013	7,818	57%	0.49	69	0.444	1.000	0.592	0.790	0.883	**11.7%**	**40.3%**
1949	14,268	6,602	4,386	63%	0.54	70.9	0.524	0.969	0.652	0.823	0.916	**8.4%**	**28.1%**
1950	18,789	8,392	6,077	60%	0.51	68.9	0.440	1.000	0.588	0.797	0.886	**11.4%**	**31.0%**
1951	17,142	8,150	5,461	61%	0.52	70.3	0.499	1.000	0.633	0.823	0.911	**8.9%**	**30.2%**
1952	38,418	11,544	13,418	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**45.5%**
1953	26,469	11,253	8,949	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**46.0%**
1954	16,251	7,614	5,128	62%	0.52	68.7	0.431	0.973	0.582	0.786	0.878	**12.2%**	**29.2%**
1955	14,923	6,919	4,631	63%	0.53	70.1	0.490	0.968	0.627	0.809	0.902	**9.8%**	**28.8%**
1956	23,225	11,544	7,736	57%	0.49	68.7	0.431	1.000	0.582	0.786	0.878	**12.2%**	**39.1%**
1957	18,016	8,272	5,788	60%	0.51	72	0.570	1.000	0.688	0.847	0.934	**6.6%**	**31.3%**
1958	34,098	11,544	11,803	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**38.7%**
1959	15,293	7,092	4,770	62%	0.53	72.1	0.574	1.000	0.691	0.854	0.938	**6.2%**	**25.8%**
1960	15,259	6,712	4,757	62%	0.53	72.7	0.600	1.000	0.710	0.864	0.945	**5.5%**	**28.8%**
1961	18,100	7,677	5,819	60%	0.51	73.2	0.621	1.000	0.726	0.866	0.949	**5.1%**	**32.5%**
1962	17,461	7,753	5,580	61%	0.51	70.4	0.503	1.000	0.636	0.823	0.912	**8.8%**	**28.8%**
1963	18,805	8,942	6,083	60%	0.51	69	0.444	1.000	0.592	0.799	0.888	**11.2%**	**40.2%**
1964	16,049	7,087	5,052	62%	0.52	69.5	0.465	0.965	0.608	0.795	0.890	**11.0%**	**31.4%**
1965	17,730	8,968	5,681	60%	0.51	67.1	0.364	1.000	0.531	0.771	0.855	**14.5%**	**34.9%**
1966	12,419	6,179	3,695	66%	0.56	70.4	0.503	0.942	0.636	0.806	0.904	**9.6%**	**23.6%**
1967	38,938	11,544	13,613	24%	0.24	66.5	0.339	1.000	0.512	0.628	0.754	**24.6%**	**43.8%**
1968	15,528	7,188	4,858	62%	0.53	72	0.570	1.000	0.688	0.852	0.937	**6.3%**	**26.5%**
1969	24,234	11,515	8,113	57%	0.48	68.3	0.414	1.000	0.569	0.778	0.870	**13.0%**	**38.2%**
1970	16,184	7,954	5,103	62%	0.52	70.7	0.515	1.000	0.646	0.831	0.918	**8.2%**	**22.1%**
1971	24,318	10,507	8,145	57%	0.48	68.1	0.406	1.000	0.563	0.774	0.866	**13.4%**	**43.8%**
1972	14,335	6,797	4,411	63%	0.54	70.7	0.515	0.974	0.646	0.822	0.914	**8.6%**	**27.0%**
1973	18,385	8,674	5,926	60%	0.51	70.1	0.490	1.000	0.627	0.817	0.907	**9.3%**	**23.2%**
1974	22,200	10,512	7,353	58%	0.49	69.7	0.473	1.000	0.614	0.804	0.897	**10.3%**	**35.5%**
1975	25,141	11,544	8,453	25%	0.25	69.1	0.448	1.000	0.595	0.696	0.832	**16.8%**	**35.7%**
1976	16,066	6,916	5,059	62%	0.52	71.8	0.562	0.999	0.681	0.847	0.933	**6.7%**	**22.3%**
1977	8,756	677	2,325	72%	0.61	73.9	0.650	0.766	0.748	0.759	0.916	**8.4%**	**31.8%**
1978	16,100	9,041	5,071	62%	0.52	70	0.486	1.000	0.624	0.821	0.908	**9.2%**	**36.3%**
1979	17,747	8,318	5,687	60%	0.51	69.2	0.452	1.000	0.598	0.804	0.893	**10.7%**	**31.9%**
1980	16,385	9,150	5,178	61%	0.52	66.9	0.356	1.000	0.525	0.772	0.853	**14.7%**	**33.7%**
1981	15,747	7,158	4,939	62%	0.53	71.9	0.566	1.000	0.684	0.850	0.935	**6.5%**	**25.2%**
1982	25,326	11,544	8,522	25%	0.25	66	0.318	1.000	0.496	0.622	0.742	**25.8%**	**46.4%**
1983	54,215	9,557	19,326	23%	0.23	63.6	0.217	0.966	0.419	0.545	0.644	**35.6%**	**53.5%**
1984	17,259	8,211	5,505	61%	0.52	68.4	0.419	0.994	0.572	0.790	0.878	**12.2%**	**26.4%**
1985	14,218	6,629	4,367	64%	0.54	69.4	0.461	0.943	0.604	0.787	0.885	**11.5%**	**28.7%**
1986	14,285	9,315	4,392	63%	0.54	71.6	0.553	1.000	0.675	0.850	0.933	**6.7%**	**24.1%**
1987	18,469	7,787	5,958	60%	0.51	73.2	0.621	1.000	0.726	0.865	0.949	**5.1%**	**15.2%**
1988	17,679	7,504	5,662	60%	0.51	69.4	0.461	0.981	0.604	0.798	0.891	**10.9%**	**30.1%**
1989	15,343	6,704	4,788	62%	0.53	68.6	0.427	0.932	0.579	0.766	0.866	**13.4%**	**31.6%**
1990	18,621	7,697	6,014	60%	0.51	68.5	0.423	0.973	0.576	0.778	0.872	**12.8%**	**27.6%**
1991	10,386	3,819	2,934	69%	0.58	69.4	0.461	0.821	0.604	0.731	0.855	**14.5%**	**29.9%**
1992	15,360	6,345	4,795	62%	0.53	69	0.444	0.924	0.592	0.767	0.871	**12.9%**	**28.7%**
												Average:	**32.10%**

Formulas   Sacramento River Fall Run Smolt Survival

C8 ='Study 513 Revised Flow Data'!G7
D8 ='Study 513 Revised Flow Data'!Q7 (HIDDEN)
E8 ='Study 513 Revised Flow Data'!AA7 (HIDDEN)
F8 =(D8+E8)
G8 =0.374*C8-950
H8 =IF(C8>25000,(0.133*C8+829)/(C8-G8),(0.293*C8+2090)/(C8-G8))
I8 =(0.133*C8+829)/(C8-G8)
K8 =IF((-2.45925+(0.0420748*J8))<0,0,(-2.45925+(0.0420748*J8)))
L8 =(-0.5916024)+(0.017968*J8)+(0.0000434*F8)
M8 =-1.613493+(0.0319584*J8)
N8 =(L8*I8)+(M8*(1-I8))
O8 =K8+N8-(K8*N8)
P8 =1-O8

R8 ='Study 513 Revised Flow Data'!H7
S8 ='Study 513 Revised Flow Data'! (HIDDEN)
T8 ='Study 513 Revised Flow Data'! (HIDDEN)
U8 =(S8+T8)
V8 =0.374*R8-950
W8 =IF(R8>25000,(0.133*R8+829)/(R8-V8),(0.293*R8+2090)/(R8-V8))
X8 =(0.84*(0.133*R8+829)/(R8-V8))+(0.16*W8)
Z8 =(-2.45925+(0.0420748*Y8))
AA8 =(-0.5916024)+(0.017968*Y8)+(0.0000434*U8)
AB8 =-1.613493+(0.0319584*Y8)
AC8 =(AA8*X8)+(AB8*(1-X8))
AD8 =Z8+AC8-(Z8*AC8)
AE8 =1-AD8

AG8 ='Study 513 Revised Flow Data'!I7
AH8 ='Study 513 Revised Flow Data'!S7 (HIDDEN)
AI8 ='Study 513 Flow Revised Data'!AC7 (HIDDEN)
AJ8 =(AH8+AI8)
AK8 =0.374*AG8-950
AL8 =IF(AG8>25000,(0.133*AG8+829)/(AG8-AK8),(0.293*AG8+2090)/(AG8-AK8))
AM8 =(0.27*(0.133*AG8+829)/(AG8-AK8))+(0.73*AL8)
AO8 =(-2.45925+(0.0420748*AN8))
AP8 =IF(((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8))>1,1,((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8)))
AQ8 =-1.613493+(0.0319584*AN8)
AR8 =(AP8*AM8)+(AQ8*(1-AM8))
AS8 =AO8+AR8-(AO8*AR8)
AT8 =1-AS8
AV8 =(P8*0.17)+(AE8*0.65)+(AT8*0.18)

Study 485 Sacramento River Fall Run Smolt Survival Model

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

APRIL

A	B	C	F	G	H	I	J	K	L	M	N	O	P
Year	Water Year Type	Sac River Flows	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123
1922	A	22,822	8,369	7,585	58%	0.25	58.5	0.002	0.823	0.256	0.400	0.401	59.9%
1923	B	23,007	7,966	7,655	58%	0.25	58.3	0.000	0.802	0.250	0.390	0.390	61.0%
1924	C	8,134	2,790	2,092	74%	0.32	61.5	0.128	0.635	0.352	0.441	0.513	48.7%
1925	D	22,251	6,924	7,372	58%	0.25	59.1	0.027	0.771	0.275	0.401	0.418	58.2%
1926	D	20,049	6,420	6,548	59%	0.26	61.6	0.133	0.794	0.355	0.469	0.539	46.1%
1927	W	48,215	8,067	17,082	23%	0.23	56.8	0.000	0.779	0.202	0.336	0.336	66.4%
1928	A	29,208	7,630	9,974	25%	0.25	58.7	0.011	0.794	0.262	0.393	0.399	60.1%
1929	C	9,092	2,958	2,450	72%	0.31	56.3	0.000	0.548	0.186	0.297	0.297	70.3%
1930	D	12,638	3,899	3,777	65%	0.28	59.6	0.048	0.649	0.291	0.392	0.422	57.8%
1931	C	9,193	2,958	2,488	71%	0.31	62.8	0.183	0.665	0.393	0.477	0.572	42.8%
1932	D	13,092	5,378	3,946	65%	0.28	58.9	0.019	0.700	0.269	0.390	0.402	59.8%
1933	C	12,739	4,117	3,814	65%	0.28	60.1	0.069	0.667	0.307	0.409	0.450	55.0%
1934	C	12,856	3,563	3,858	65%	0.28	63.6	0.217	0.706	0.419	0.500	0.608	39.2%
1935	B	24,637	9,075	8,264	57%	0.25	58.9	0.019	0.861	0.269	0.417	0.428	57.2%
1936	B	21,024	8,369	6,913	58%	0.26	59.7	0.053	0.844	0.294	0.436	0.465	53.5%
1937	B	21,965	7,966	7,265	58%	0.26	58.8	0.015	0.811	0.266	0.405	0.413	58.7%
1938	W	47,173	7,714	16,693	23%	0.23	56.3	0.000	0.755	0.186	0.318	0.318	68.2%
1939	D	12,234	4,134	3,626	66%	0.29	63.3	0.204	0.725	0.409	0.500	0.602	39.8%
1940	A	41,728	8,504	14,656	24%	0.24	57.4	0.000	0.809	0.221	0.359	0.359	64.1%
1941	W	42,367	9,310	14,895	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	64.7%
1942	W	43,308	8,907	15,247	23%	0.23	56.5	0.000	0.810	0.192	0.337	0.337	66.3%
1943	W	29,410	9,125	10,049	24%	0.24	58.8	0.015	0.861	0.266	0.411	0.420	58.0%
1944	D	9,814	4,235	2,721	70%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	63.0%
1945	B	11,747	6,420	3,443	67%	0.29	60.6	0.090	0.776	0.323	0.454	0.503	49.7%
1946	B	12,218	5,949	3,619	66%	0.29	60.7	0.095	0.757	0.326	0.449	0.501	49.9%
1947	D	13,797	4,941	4,210	64%	0.28	62.5	0.170	0.746	0.384	0.484	0.572	42.8%
1948	B	22,788	6,789	7,573	58%	0.25	56.6	0.000	0.720	0.195	0.328	0.328	67.2%
1949	D	13,209	5,075	3,990	65%	0.28	61.7	0.137	0.737	0.358	0.465	0.538	46.2%
1950	B	18,772	6,184	6,071	60%	0.26	61.3	0.120	0.778	0.346	0.459	0.524	47.6%
1951	A	14,738	6,353	4,562	63%	0.27	59.9	0.061	0.760	0.301	0.427	0.462	53.8%
1952	W	56,652	7,848	20,238	23%	0.23	55.5	0.000	0.746	0.160	0.295	0.295	70.5%
1953	W	16,184	5,647	5,103	62%	0.27	58.8	0.015	0.710	0.266	0.385	0.394	60.6%
1954	A	39,863	7,361	13,959	24%	0.24	58.4	0.000	0.777	0.253	0.377	0.377	62.3%
1955	D	9,478	3,664	2,595	71%	0.30	56.4	0.000	0.581	0.189	0.308	0.308	69.2%
1956	W	20,436	7,966	6,693	59%	0.26	59.7	0.053	0.827	0.294	0.432	0.462	53.8%
1957	A	21,209	6,453	6,982	58%	0.26	60.5	0.086	0.776	0.320	0.437	0.485	51.5%
1958	W	52,282	9,478	18,603	23%	0.23	57.4	0.000	0.851	0.221	0.367	0.367	63.3%
1959	B	10,487	3,764	2,972	69%	0.30	63	0.191	0.704	0.400	0.490	0.587	41.3%
1960	D	13,764	4,050	4,198	64%	0.28	59.5	0.044	0.653	0.288	0.390	0.417	58.3%
1961	D	12,806	3,529	3,839	65%	0.28	60.1	0.069	0.641	0.307	0.402	0.443	55.7%
1962	B	10,739	4,840	3,066	68%	0.29	61.8	0.141	0.729	0.362	0.470	0.544	45.6%
1963	W	69,457	8,100	25,027	23%	0.23	53.7	0.000	0.725	0.103	0.244	0.244	75.6%
1964	D	8,957	3,496	2,400	72%	0.31	59.3	0.036	0.626	0.282	0.388	0.410	59.0%
1965	W	45,661	8,957	16,127	23%	0.23	56.9	0.000	0.820	0.205	0.349	0.349	65.1%
1966	B	16,520	5,613	5,228	61%	0.27	61.9	0.145	0.764	0.365	0.472	0.548	45.2%
1967	W	39,930	8,487	13,984	24%	0.24	53.8	0.000	0.743	0.106	0.257	0.257	74.3%
1968	B	15,596	5,243	4,883	62%	0.27	61.5	0.128	0.741	0.352	0.457	0.527	47.3%
1969	W	44,787	7,512	15,800	23%	0.23	56.4	0.000	0.748	0.189	0.320	0.320	68.0%
1970	W	16,604	6,588	5,260	61%	0.27	58.8	0.015	0.751	0.266	0.396	0.404	59.6%
1971	W	21,814	6,554	7,208	58%	0.26	58.7	0.011	0.748	0.262	0.386	0.393	60.7%
1972	B	12,453	4,739	3,707	66%	0.28	58.5	0.002	0.665	0.256	0.372	0.374	62.6%
1973	A	19,511	8,100	6,347	59%	0.26	61.3	0.120	0.861	0.346	0.480	0.542	45.8%
1974	W	33,208	9,327	11,470	24%	0.24	56.8	0.000	0.834	0.202	0.354	0.354	64.6%
1975	W	25,763	8,773	8,685	25%	0.25	56.8	0.000	0.810	0.202	0.353	0.353	64.7%
1976	C	9,428	3,008	2,576	71%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	61.9%
1977	C	9,125	2,991	2,463	72%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	36.3%
1978	A	38,703	7,512	13,525	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	66.4%
1979	B	17,696	7,092	5,668	60%	0.26	59.8	0.057	0.791	0.298	0.428	0.461	53.9%
1980	A	19,814	6,873	6,460	59%	0.26	57.1	0.000	0.733	0.211	0.347	0.347	65.3%
1981	D	16,990	5,445	5,404	61%	0.27	61.5	0.128	0.750	0.352	0.458	0.528	47.2%
1982	W	75,843	8,941	27,415	23%	0.23	54.1	0.000	0.768	0.115	0.263	0.263	73.7%
1983	W	68,298	6,958	24,593	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	73.0%
1984	W	17,881	6,857	5,738	60%	0.26	59.7	0.053	0.779	0.294	0.422	0.453	54.7%
1985	D	12,335	4,101	3,663	66%	0.28	60.8	0.099	0.679	0.330	0.429	0.486	51.4%
1986	W	20,536	9,680	6,731	59%	0.26	60.4	0.082	0.914	0.317	0.471	0.514	48.6%
1987	D	12,285	3,479	3,645	66%	0.29	65.7	0.305	0.740	0.486	0.558	0.693	30.7%
1988	C	8,621	2,857	2,274	73%	0.31	59.9	0.061	0.609	0.301	0.397	0.433	56.7%
1989	D	23,629	5,647	7,887	57%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	48.0%
1990	C	12,453	3,529	3,707	66%	0.28	61.6	0.133	0.668	0.355	0.444	0.518	48.2%
1991	C	15,276	4,252	4,763	62%	0.27	60.8	0.099	0.685	0.330	0.426	0.483	51.7%
1992	C	12,470	3,731	3,714	66%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	49.9%

MAY

A	R	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
Year	Sac River Flows	CVP + SWP Exports	Calculated Steamboat & Sutter Slough Q	Percent	X-channel Closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123
1922	46,269	8,685	16,355	0.23	0.23	61.2	0.116	0.885	0.342	0.469	0.530	47.0%
1923	14,344	6,245	4,415	0.63	0.33	62.4	0.166	0.801	0.381	0.521	0.600	40.0%
1924	10,181	2,667	2,858	0.69	0.36	69.2	0.452	0.768	0.598	0.659	0.813	18.7%
1925	12,067	5,107	3,563	0.66	0.35	63.2	0.200	0.766	0.406	0.531	0.625	37.5%
1926	14,003	4,944	4,287	0.64	0.33	65.7	0.305	0.803	0.486	0.592	0.717	28.3%
1927	26,786	8,327	9,068	0.25	0.25	62.6	0.175	0.895	0.387	0.513	0.598	40.2%
1928	20,215	6,375	6,611	0.59	0.31	66.6	0.343	0.882	0.515	0.629	0.756	24.4%
1929	9,709	2,862	2,681	0.70	0.37	66.1	0.322	0.720	0.499	0.580	0.715	28.5%
1930	12,067	3,480	3,563	0.66	0.35	63.1	0.196	0.693	0.403	0.504	0.601	39.9%
1931	10,132	3,123	2,839	0.69	0.36	70.5	0.507	0.811	0.640	0.701	0.853	14.7%
1932	12,019	4,847	3,545	0.66	0.35	65.5	0.297	0.796	0.480	0.589	0.711	28.9%
1933	8,424	3,367	2,201	0.73	0.38	63.7	0.221	0.699	0.422	0.528	0.632	36.8%
1934	8,912	2,944	2,383	0.72	0.37	68.3	0.414	0.763	0.569	0.642	0.790	21.0%
1935	28,624	5,465	9,755	0.25	0.25	64	0.234	0.796	0.432	0.521	0.633	36.7%
1936	14,100	6,375	4,324	0.64	0.33	64.9	0.271	0.851	0.461	0.591	0.702	29.8%
1937	16,068	6,977	5,060	0.62	0.33	64.5	0.255	0.870	0.448	0.585	0.691	30.9%
1938	57,426	9,433	20,527	0.23	0.23	62.5	0.170	0.941	0.384	0.512	0.595	40.5%
1939	8,571	3,480	2,255	0.73	0.38	68	0.402	0.781	0.560	0.644	0.787	21.3%
1940	18,996	6,944	6,154	0.60	0.31	65.6	0.301	0.888	0.483	0.611	0.728	27.2%
1941	39,488	9,726	13,818	0.24	0.24	61.6	0.133	0.937	0.355	0.493	0.560	44.0%
1942	36,040	8,685	12,529	0.24	0.24	60.1	0.069	0.865	0.307	0.441	0.479	52.1%
1943	20,297	7,660	6,641	0.59	0.31	65.4	0.292	0.916	0.477	0.613	0.726	27.4%
1944	8,912	3,741	2,383	0.72	0.37	65.9	0.313	0.755	0.493	0.591	0.719	28.1%
1945	11,628	4,944	3,399	0.67	0.35	63.1	0.196	0.757	0.403	0.527	0.619	38.1%
1946	13,710	5,269	4,178	0.64	0.34	63.9	0.229	0.785	0.429	0.549	0.652	34.8%
1947	8,847	3,545	2,359	0.72	0.38	68.7	0.431	0.797	0.582	0.663	0.808	19.2%
1948	23,826	7,091	7,961	0.57	0.30	62.3	0.162	0.836	0.378	0.516	0.595	40.5%
1949	14,914	4,749	4,628	0.63	0.33	65.2	0.284	0.786	0.470	0.574	0.695	30.5%
1950	13,726	5,302	4,184	0.64	0.34	64.3	0.246	0.794	0.441	0.560	0.668	33.2%
1951	19,126	7,188	6,203	0.60	0.31	64.4	0.250	0.878	0.445	0.581	0.686	31.4%
1952	59,557	9,221	21,324	0.23	0.23	61.7	0.137	0.917	0.358	0.486	0.557	44.3%
1953	26,867	7,676	9,098	0.25	0.25	60.9	0.103	0.836	0.333	0.457	0.513	48.7%
1954	25,403	7,416	8,551	0.25	0.25	65.9	0.313	0.914	0.493	0.598	0.724	27.6%
1955	10,278	3,773	2,894	0.69	0.36	66.9	0.356	0.774	0.525	0.614	0.752	24.8%
1956	39,000	8,782	13,636	0.24	0.24	61.4	0.124	0.893	0.349	0.478	0.543	45.7%
1957	16,816	5,952	5,339	0.61	0.32	64	0.234	0.817	0.432	0.556	0.660	34.0%
1958	43,488	10,636	15,315	0.23	0.23	62.9	0.187	1.000	0.397	0.538	0.625	37.5%
1959	9,417	3,676	2,572	0.71	0.37	65.9	0.313	0.752	0.493	0.588	0.717	28.3%
1960	10,913	3,383	3,131	0.68	0.35	65.9	0.313	0.739	0.493	0.580	0.712	28.8%
1961	8,717	2,895	2,310	0.72	0.38	64.3	0.246	0.689	0.441	0.535	0.649	35.1%
1962	15,320	4,847	4,780	0.62	0.33	64.8	0.267	0.783	0.457	0.564	0.681	31.9%
1963	29,095	8,327	9,932	0.25	0.25	62.5	0.170	0.893	0.384	0.509	0.592	40.8%
1964	10,100	3,708	2,827	0.69	0.36	65.2	0.284	0.741	0.470	0.568	0.691	30.9%
1965	25,257	8,685	8,496	0.25	0.25	63.6	0.217	0.928	0.419	0.546	0.645	35.5%
1966	14,149	4,684	4,342	0.64	0.33	67.3	0.372	0.821	0.537	0.632	0.769	23.1%
1967	44,790	9,433	15,801	0.23	0.23	62.1	0.154	0.934	0.371	0.503	0.579	42.1%
1968	9,384	3,643	2,560	0.71	0.37	66.1	0.322	0.754	0.499	0.593	0.724	27.6%
1969	45,538	9,010	16,081	0.23	0.23	63.2	0.200	0.935	0.406	0.530	0.624	37.6%
1970	12,149	5,920	3,594	0.66	0.35	68.6	0.427	0.898	0.579	0.689	0.822	17.8%
1971	29,616	7,676	10,126	0.24	0.24	61	0.107	0.838	0.336	0.459	0.517	48.3%
1972	10,539	3,903	2,991	0.69	0.36	67.3	0.372	0.787	0.537	0.627	0.766	23.4%
1973	15,743	6,766	4,938	0.62	0.33	66.9	0.356	0.904	0.525	0.648	0.773	22.7%
1974	26,949	8,685	9,129	0.25	0.25	63.4	0.208	0.924	0.413	0.539	0.635	36.5%
1975	28,542	8,685	9,725	0.25	0.25	63.8	0.225	0.932	0.425	0.550	0.651	34.9%
1976	10,116	3,155	2,833	0.69	0.36	69.6	0.469	0.796	0.611	0.678	0.829	17.1%
1977	7,481	1,203	1,848	0.76	0.39	64	0.234	0.611	0.432	0.502	0.618	38.2%
1978	21,061	8,213	6,927	0.58	0.31	63	0.191	0.897	0.400	0.554	0.639	36.1%
1979	12,572	5,985	3,752	0.65	0.34	63.8	0.225	0.815	0.425	0.559	0.658	34.2%
1980	14,783	7,481	4,579	0.63	0.33	63.6	0.217	0.876	0.419	0.570	0.663	33.7%
1981	8,750	3,513	2,322	0.72	0.38	66.7	0.347	0.759	0.518	0.609	0.745	25.5%
1982	38,431	10,701	13,423	0.24	0.24	61.1	0.112	0.971	0.339	0.489	0.546	45.4%
1983	54,515	7,546	19,439	0.23	0.23	60.1	0.069	0.816	0.307	0.424	0.464	53.6%
1984	13,417	6,115	4,068	0.64	0.34	66.5	0.339	0.869	0.512	0.632	0.757	24.3%
1985	12,783	4,228	3,831	0.65	0.34	65.8	0.309	0.774	0.489	0.587	0.715	28.5%
1986	13,125	8,132	3,959	0.65	0.34	66.2	0.326	0.951	0.502	0.654	0.767	23.3%
1987	8,457	2,830	2,213	0.73	0.38	70.5	0.507	0.798	0.640	0.700	0.852	14.8%
1988	9,758	3,074	2,700	0.70	0.37	65.8	0.309	0.724	0.489	0.575	0.707	29.3%
1989	14,296	3,936	4,397	0.63	0.33	64.7	0.263	0.742	0.454	0.550	0.668	33.2%
1990	7,774	2,700	1,957	0.75	0.39	66.4	0.335	0.719	0.509	0.590	0.727	27.3%
1991	8,685	2,911	2,298	0.73	0.38	65.7	0.305	0.715	0.486	0.573	0.703	29.7%
1992	9,042	2,944	2,432	0.72	0.37	66	0.318	0.722	0.496	0.580	0.714	28.6%

JUNE

A	AG	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AV
Year	Sac River Flow	CVP + SWP exports	Calculated Steamboat & Sutter Slough Q	percent	X-channel closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123	Weighted Total Survival
1922	34,720	11,277	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	26.5%	45.5%
1923	19,209	7,999	6,234	59%	0.50	65.3	0.288	0.929	0.473	0.703	0.789	21.1%	40.2%
1924	11,545	2,370	3,368	67%	0.57	70.6	0.511	0.780	0.643	0.720	0.863	13.7%	22.9%
1925	18,116	7,428	5,826	60%	0.51	68.3	0.414	0.958	0.569	0.768	0.864	13.6%	36.8%
1926	18,167	7,092	5,844	60%	0.51	71.2	0.536	0.996	0.662	0.832	0.922	7.8%	27.6%
1927	17,898	8,168	5,744	60%	0.51	68.1	0.406	0.986	0.563	0.780	0.869	13.1%	39.8%
1928	17,780	7,277	5,700	60%	0.51	69.7	0.473	0.977	0.614	0.800	0.895	10.5%	27.9%
1929	10,588	2,790	3,010	69%	0.58	70.1	0.490	0.789	0.627	0.721	0.858	14.2%	33.0%
1930	19,024	7,277	6,165	60%	0.51	69.6	0.469	0.975	0.611	0.795	0.891	10.9%	37.7%
1931	13,159	4,067	3,971	65%	0.55	70.7	0.515	0.855	0.646	0.761	0.884	11.6%	18.9%
1932	21,444	8,453	7,070	58%	0.49	69.5	0.465	1.000	0.608	0.802	0.894	10.6%	30.9%
1933	11,008	1,899	3,167	68%	0.57	69.8	0.478	0.745	0.617	0.691	0.838	16.2%	36.2%
1934	14,890	5,781	4,619	63%	0.53	70.7	0.515	0.930	0.646	0.797	0.902	9.8%	22.1%
1935	17,629	7,613	5,643	61%	0.51	71	0.528	1.000	0.656	0.832	0.921	7.9%	35.0%
1936	18,083	7,966	5,813	60%	0.51	69.2	0.452	0.998	0.598	0.802	0.892	10.8%	30.4%
1937	17,679	7,663	5,662	60%	0.51	69.7	0.473	0.993	0.614	0.809	0.899	10.1%	31.9%
1938	35,510	11,277	12,331	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	20.9%	41.7%
1939	19,360	7,697	6,291	59%	0.50	71	0.528	1.000	0.656	0.829	0.919	8.1%	22.1%
1940	16,486	7,579	5,216	61%	0.52	71.5	0.549	1.000	0.672	0.843	0.929	7.1%	29.9%
1941	20,805	10,907	6,831	59%	0.50	69	0.444	1.000	0.592	0.795	0.886	11.4%	41.6%
1942	27,124	11,277	9,194	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	20.4%	48.8%
1943	16,856	7,747	5,354	61%	0.52	66.6	0.343	0.941	0.515	0.736	0.826	17.4%	30.8%
1944	19,444	7,781	6,322	59%	0.50	67.8	0.393	0.964	0.553	0.760	0.855	14.5%	31.6%
1945	18,822	7,932	6,090	60%	0.51	70.6	0.511	1.000	0.643	0.824	0.914	8.6%	34.7%
1946	19,478	8,083	6,335	59%	0.50	68.1	0.406	0.983	0.563	0.774	0.866	13.4%	33.5%
1947	19,058	7,546	6,178	60%	0.51	70	0.486	0.994	0.624	0.811	0.903	9.7%	21.5%
1948	22,889	8,991	7,611	58%	0.49	69	0.444	1.000	0.592	0.791	0.884	11.6%	39.8%
1949	19,847	7,764	6,473	59%	0.50	70.9	0.524	1.000	0.652	0.827	0.917	8.3%	29.1%
1950	19,780	8,134	6,448	59%	0.50	68.9	0.440	0.999	0.588	0.795	0.885	11.5%	31.7%
1951	17,646	7,428	5,650	61%	0.51	70.3	0.499	0.994	0.633	0.818	0.909	9.1%	31.2%
1952	38,972	11,277	13,626	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	29.6%	46.1%
1953	25,881	10,386	8,729	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	25.2%	46.5%
1954	17,058	7,176	5,430	61%	0.52	68.7	0.431	0.954	0.582	0.774	0.872	12.8%	30.8%
1955	19,814	7,680	6,460	59%	0.50	70.1	0.490	1.000	0.627	0.814	0.905	9.5%	29.6%
1956	22,301	11,277	7,391	58%	0.49	68.7	0.431	1.000	0.582	0.787	0.879	12.1%	41.1%
1957	19,410	8,067	6,309	59%	0.50	72	0.570	1.000	0.688	0.845	0.933	6.7%	32.1%
1958	33,930	11,277	11,740	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	20.9%	38.9%
1959	19,007	7,613	6,159	60%	0.51	72.1	0.574	1.000	0.691	0.847	0.935	6.5%	26.6%
1960	18,889	7,277	6,115	60%	0.51	72.7	0.600	1.000	0.710	0.857	0.943	5.7%	29.7%
1961	20,133	7,680	6,580	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	5.2%	33.2%
1962	19,125	7,495	6,203	60%	0.51	70.4	0.503	0.999	0.636	0.819	0.910	9.0%	30.1%
1963	19,578	8,621	6,372	59%	0.50	69	0.444	1.000	0.592	0.797	0.887	11.3%	41.4%
1964	19,360	7,462	6,291	59%	0.50	69.5	0.465	0.981	0.608	0.796	0.891	10.9%	32.1%
1965	18,167	8,319	5,844	60%	0.51	67.1	0.364	0.975	0.531	0.758	0.846	15.4%	37.0%
1966	17,780	7,210	5,700	60%	0.51	70.4	0.503	0.986	0.636	0.816	0.908	9.2%	24.3%
1967	39,342	11,277	13,764	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	24.6%	44.4%
1968	18,436	7,428	5,945	60%	0.51	72	0.570	1.000	0.688	0.846	0.934	6.6%	27.2%
1969	24,133	11,243	8,076	57%	0.48	68.3	0.414	1.000	0.569	0.778	0.870	13.0%	38.4%
1970	16,722	7,226	5,304	61%	0.52	70.7	0.515	0.992	0.646	0.826	0.916	8.4%	23.2%
1971	23,629	9,630	7,887	57%	0.49	68.1	0.406	1.000	0.563	0.775	0.867	13.3%	44.1%
1972	18,133	7,344	5,832	60%	0.51	70.7	0.515	0.997	0.646	0.825	0.915	8.5%	27.4%
1973	18,688	7,966	6,039	60%	0.51	70.1	0.490	1.000	0.627	0.816	0.906	9.4%	24.2%
1974	21,629	9,529	7,139	58%	0.49	69.7	0.473	1.000	0.614	0.805	0.897	10.3%	36.5%
1975	24,788	11,277	8,321	57%	0.48	69.1	0.448	1.000	0.595	0.790	0.884	11.6%	35.8%
1976	19,730	7,546	6,429	59%	0.50	71.8	0.562	1.000	0.681	0.841	0.930	7.0%	22.9%
1977	9,781	739	2,708	70%	0.59	73.9	0.650	0.768	0.748	0.760	0.916	8.4%	32.5%
1978	15,965	8,504	5,021	62%	0.52	70	0.486	1.000	0.624	0.821	0.908	9.2%	36.4%
1979	21,074	8,638	6,932	58%	0.50	69.2	0.452	1.000	0.598	0.797	0.889	11.1%	33.4%
1980	16,268	8,672	5,134	62%	0.52	66.9	0.356	0.987	0.525	0.766	0.849	15.1%	35.7%
1981	18,889	7,495	6,115	60%	0.51	71.9	0.566	1.000	0.684	0.844	0.932	6.8%	25.8%
1982	24,418	11,277	8,183	57%	0.48	66	0.318	1.000	0.496	0.740	0.822	17.8%	45.2%
1983	55,576	9,293	19,835	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	35.9%	53.7%
1984	19,024	7,966	6,165	60%	0.51	68.4	0.419	0.983	0.572	0.780	0.872	12.8%	27.4%
1985	18,083	7,226	5,813	60%	0.51	69.4	0.461	0.969	0.604	0.791	0.887	11.3%	29.3%
1986	12,419	7,680	3,695	66%	0.56	71.6	0.553	1.000	0.675	0.856	0.936	6.4%	24.6%
1987	20,284	7,747	6,636	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	5.2%	15.8%
1988	14,520	5,579	4,480	63%	0.54	69.4	0.461	0.898	0.604	0.761	0.871	12.9%	31.0%
1989	18,368	7,092	5,920	60%	0.51	68.6	0.427	0.949	0.579	0.767	0.867	13.3%	32.1%
1990	19,763	7,512	6,441	59%	0.50	68.5	0.423	0.965	0.576	0.771	0.868	13.2%	28.3%
1991	10,789	3,311	3,085	68%	0.58	69.4	0.461	0.799	0.604	0.717	0.847	15.3%	30.8%
1992	14,503	5,647	4,474	63%	0.54	69	0.444	0.893	0.592	0.753	0.863	13.7%	29.6%
												Average:	32.96%

Formulas Sacramento River Fall Run Smolt Survival

C8 ='Study 485 Flow Data'!G7
D8 ='Study 485 Flow Data'!Q7 (HIDDEN)
E8 ='Study 485 Flow Data'!AA7 (HIDDEN)
F8 =(D8+E8)
G8 =0.374*C8-950
H8 =IF(C8>25000,(0.133*C8+829)/(C8-G8),(0.293*C8+2090)/(C8-G8))
I8 =(0.133*C8+829)/(C8-G8)
K8 =IF((-2.45925+(0.0420748*J8))<0,0,(-2.45925+(0.0420748*J8)))
L8 =(-0.5916024)+(0.017968*J8)+(0.0000434*F8)
M8 =-1.613493+(0.0319584*J8)
N8 =(L8*I8)+(M8*(1-I8))
O8 =K8+N8-(K8*N8)
P8 =1-O8

R8 ='Study 485 Flow Data'!H7
S8 ='Study 485 Flow Data'!R7 (HIDDEN)
T8 ='Study 485 Flow Data'!AB7 (HIDDEN)
U8 =(S8+T8)
V8 =0.374*R8-950
W8 =IF(R8>25000,(0.133*R8+829)/(R8-V8),(0.293*R8+2090)/(R8-V8))
X8 =(0.84*(0.133*R8+829)/(R8-V8))+(0.16*W8)
Z8 =(-2.45925+(0.0420748*Y8))
AA8 =(-0.5916024)+(0.017968*Y8)+(0.0000434*U8)
AB8 =-1.613493+(0.0319584*Y8)
AC8 =(AA8*X8)+(AB8*(1-X8))
AD8 =Z8+AC8-(Z8*AC8)
AE8 =1-AD8

AG8 ='Study 485 Flow Data'!I7
AH8 ='Study 485 Flow Data'!S7 (HIDDEN)
AI8 ='Study 513 Flow Revised Data'!AC7 (HIDDEN)
AJ8 =(AH8+AI8)
AK8 =0.374*AG8-950
AL8 =IF(AG8>25000,(0.133*AG8+829)/(AG8-AK8),(0.293*AG8+2090)/(AG8-AK8))
AM8 =(0.27*(0.133*AG8+829)/(AG8-AK8))+(0.73*AL8)
AO8 =(-2.45925+(0.0420748*AN8))
AP8 =IF(((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8))>1,1,((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8)))
AQ8 =-1.613493+(0.0319584*AN8)
AR8 =(AP8*AM8)+(AQ8*(1-AM8))
AS8 =AO8+AR8-(AO8*AR8)
AT8 =1-AS8
AV8 =(P8*0.17)+(AE8*0.65)+(AT8*0.18)

Study 507 Sacramento River Fall Run Smolt Survival Model

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

Row	Year	Water Year Type	APRIL Sac River Flows	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	observed temp f	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
8	1922	A	22,822	8,369	7,585	58%	0.25	58.5	0.002	0.823	0.256	0.400	0.401	**59.9%**
9	1923	B	22,721	7,932	7,548	58%	0.25	58.3	0.000	0.800	0.250	0.389	0.389	**61.1%**
10	1924	C	8,050	2,823	2,061	74%	0.32	61.5	0.128	0.636	0.352	0.442	0.514	**48.6%**
11	1925	D	22,654	6,958	7,523	58%	0.25	59.1	0.027	0.772	0.275	0.401	0.418	**58.2%**
12	1926	D	21,242	6,621	6,995	58%	0.26	61.6	0.133	0.803	0.355	0.470	0.540	**46.0%**
13	1927	W	48,215	8,100	17,082	23%	0.23	56.8	0.000	0.781	0.202	0.336	0.336	**66.4%**
14	1928	A	29,208	7,361	9,974	25%	0.25	58.7	0.011	0.783	0.262	0.390	0.396	**60.4%**
15	1929	C	8,773	2,706	2,331	72%	0.31	56.3	0.000	0.537	0.186	0.295	0.295	**70.5%**
16	1930	D	12,638	3,899	3,777	65%	0.28	59.6	0.048	0.649	0.291	0.392	0.422	**57.8%**
17	1931	C	9,109	3,059	2,457	72%	0.31	62.8	0.183	0.670	0.393	0.478	0.574	**42.6%**
18	1932	D	13,075	5,378	3,940	65%	0.28	58.9	0.019	0.700	0.269	0.390	0.402	**59.8%**
19	1933	C	12,739	4,134	3,814	65%	0.28	60.1	0.069	0.668	0.307	0.409	0.450	**55.0%**
20	1934	C	12,839	3,563	3,852	65%	0.28	63.6	0.217	0.706	0.419	0.500	0.608	**39.2%**
21	1935	B	24,166	9,125	8,088	57%	0.25	58.9	0.019	0.863	0.269	0.418	0.429	**57.1%**
22	1936	B	21,528	8,403	7,101	58%	0.26	59.7	0.053	0.846	0.294	0.436	0.465	**53.5%**
23	1937	B	23,259	8,235	7,749	57%	0.25	58.8	0.015	0.822	0.266	0.406	0.415	**58.5%**
24	1938	W	47,173	8,420	16,693	23%	0.23	56.3	0.000	0.785	0.186	0.326	0.326	**67.4%**
25	1939	D	12,234	4,134	3,626	66%	0.29	63.3	0.204	0.725	0.409	0.500	0.602	**39.8%**
26	1940	A	41,728	8,336	14,656	24%	0.24	57.4	0.000	0.802	0.221	0.358	0.358	**64.2%**
27	1941	W	42,367	9,310	14,895	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
28	1942	W	43,308	8,907	15,247	23%	0.23	56.5	0.000	0.810	0.192	0.337	0.337	**66.3%**
29	1943	W	29,410	9,462	10,049	24%	0.24	58.8	0.015	0.876	0.266	0.415	0.424	**57.6%**
30	1944	D	9,814	4,235	2,721	70%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	**63.0%**
31	1945	B	11,999	6,588	3,538	66%	0.29	60.6	0.090	0.783	0.323	0.455	0.504	**49.6%**
32	1946	B	12,218	5,949	3,619	66%	0.29	60.7	0.095	0.757	0.326	0.449	0.501	**49.9%**
33	1947	D	13,797	4,941	4,210	64%	0.28	62.5	0.170	0.746	0.384	0.484	0.572	**42.8%**
34	1948	B	23,293	6,857	7,761	57%	0.25	56.6	0.000	0.723	0.195	0.329	0.329	**67.1%**
35	1949	D	13,209	5,075	3,990	65%	0.28	61.7	0.137	0.737	0.358	0.465	0.538	**46.2%**
36	1950	B	19,528	6,285	6,353	59%	0.26	61.3	0.120	0.783	0.346	0.459	0.524	**47.6%**
37	1951	A	14,789	6,386	4,581	63%	0.27	59.9	0.061	0.762	0.301	0.427	0.462	**53.8%**
38	1952	W	56,652	8,773	20,238	23%	0.23	55.5	0.000	0.786	0.160	0.304	0.304	**69.6%**
39	1953	W	16,184	5,647	5,103	62%	0.27	58.8	0.015	0.710	0.266	0.385	0.394	**60.6%**
40	1954	A	39,863	7,361	13,959	24%	0.24	58.4	0.000	0.777	0.253	0.377	0.377	**62.3%**
41	1955	D	9,478	3,664	2,595	71%	0.30	56.4	0.000	0.581	0.189	0.308	0.308	**69.2%**
42	1956	W	20,436	7,966	6,693	59%	0.26	59.7	0.053	0.827	0.294	0.432	0.462	**53.8%**
43	1957	A	21,158	6,420	6,963	58%	0.26	60.5	0.086	0.774	0.320	0.437	0.485	**51.5%**
44	1958	W	52,282	9,663	18,603	23%	0.23	57.4	0.000	0.859	0.221	0.368	0.368	**63.2%**
45	1959	B	10,487	3,798	2,972	69%	0.30	63	0.191	0.705	0.400	0.490	0.588	**41.2%**
46	1960	D	13,545	4,033	4,116	64%	0.28	59.5	0.044	0.653	0.288	0.390	0.417	**58.3%**
47	1961	D	12,789	3,546	3,833	65%	0.28	60.1	0.069	0.642	0.307	0.402	0.443	**55.7%**
48	1962	B	15,411	5,579	4,814	62%	0.27	61.8	0.141	0.761	0.362	0.470	0.545	**45.5%**
49	1963	W	69,457	8,100	25,027	23%	0.23	53.7	0.000	0.725	0.103	0.244	0.244	**75.6%**
50	1964	D	8,957	3,496	2,400	72%	0.31	59.3	0.036	0.626	0.282	0.388	0.410	**59.0%**
51	1965	W	45,173	8,537	15,945	23%	0.23	56.9	0.000	0.801	0.205	0.344	0.344	**65.6%**
52	1966	B	12,806	4,974	3,839	65%	0.28	61.9	0.145	0.737	0.365	0.470	0.547	**45.3%**
53	1967	W	39,930	9,546	13,984	24%	0.24	53.8	0.000	0.789	0.106	0.268	0.268	**73.2%**
54	1968	B	15,629	5,243	4,895	62%	0.27	61.5	0.128	0.741	0.352	0.457	0.527	**47.3%**
55	1969	W	44,787	7,512	15,800	23%	0.23	56.4	0.000	0.748	0.189	0.320	0.320	**68.0%**
56	1970	W	16,604	6,588	5,260	61%	0.27	58.8	0.015	0.751	0.266	0.396	0.404	**59.6%**
57	1971	W	22,133	6,621	7,328	58%	0.25	58.7	0.011	0.750	0.262	0.387	0.393	**60.7%**
58	1972	B	12,453	4,739	3,707	66%	0.28	58.5	0.002	0.665	0.256	0.372	0.374	**62.6%**
59	1973	A	19,511	7,495	6,347	59%	0.26	61.3	0.120	0.835	0.346	0.473	0.536	**46.4%**
60	1974	W	33,208	9,327	11,470	24%	0.24	56.8	0.000	0.834	0.202	0.354	0.354	**64.6%**
61	1975	W	25,763	8,773	8,685	25%	0.25	56.8	0.000	0.810	0.202	0.353	0.353	**64.7%**
62	1976	C	9,428	3,008	2,576	71%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
63	1977	C	9,142	2,991	2,469	71%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	**36.3%**
64	1978	A	38,703	7,512	13,525	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
65	1979	B	17,696	6,857	5,668	60%	0.26	59.8	0.057	0.780	0.298	0.425	0.458	**54.2%**
66	1980	A	19,814	6,941	6,460	59%	0.26	57.1	0.000	0.736	0.211	0.347	0.347	**65.3%**
67	1981	D	16,990	5,445	5,404	61%	0.27	61.5	0.128	0.750	0.352	0.458	0.528	**47.2%**
68	1982	W	75,843	9,159	27,415	23%	0.23	54.1	0.000	0.778	0.115	0.265	0.265	**73.5%**
69	1983	W	68,298	6,958	24,593	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
70	1984	W	17,864	6,857	5,731	60%	0.26	59.7	0.053	0.779	0.294	0.422	0.453	**54.7%**
71	1985	D	13,327	4,874	4,034	65%	0.28	60.8	0.099	0.712	0.330	0.437	0.492	**50.8%**
72	1986	W	21,024	7,546	6,913	58%	0.26	60.4	0.082	0.821	0.317	0.446	0.492	**50.8%**
73	1987	D	12,386	3,496	3,682	66%	0.28	65.7	0.305	0.741	0.486	0.559	0.693	**30.7%**
74	1988	C	8,621	2,857	2,274	73%	0.31	59.9	0.061	0.609	0.301	0.397	0.433	**56.7%**
75	1989	D	23,629	5,647	7,887	57%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	**48.0%**
76	1990	C	12,436	3,529	3,701	66%	0.28	61.6	0.133	0.668	0.355	0.444	0.518	**48.2%**
77	1991	C	15,276	4,252	4,763	62%	0.27	60.8	0.099	0.685	0.330	0.426	0.483	**51.7%**
78	1992	C	12,470	3,731	3,714	66%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	**49.9%**

Row	Year	MAY Sac River Flows	CVP + SWP Exports	Calculated Steamboat & Sutter Slough Q	Percent	X-channel Closed	USBR observed temp f	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
8	1922	46,530	8,685	16,452	0.23	0.23	61.2	0.116	0.885	0.342	0.469	0.530	**47.0%**
9	1923	14,214	6,245	4,366	0.64	0.33	62.4	0.166	0.801	0.381	0.521	0.600	**40.0%**
10	1924	8,766	1,301	2,328	0.72	0.38	69.2	0.452	0.708	0.598	0.639	0.803	**19.7%**
11	1925	12,067	5,042	3,563	0.66	0.35	63.2	0.200	0.763	0.406	0.530	0.624	**37.6%**
12	1926	13,645	4,879	4,153	0.64	0.34	65.7	0.305	0.801	0.486	0.592	0.716	**28.4%**
13	1927	26,786	8,327	9,068	0.25	0.25	62.6	0.175	0.895	0.387	0.513	0.598	**40.2%**
14	1928	20,655	6,375	6,775	0.59	0.31	66.6	0.343	0.882	0.515	0.629	0.756	**24.4%**
15	1929	9,872	3,106	2,742	0.70	0.36	66.1	0.322	0.731	0.499	0.583	0.718	**28.2%**
16	1930	12,067	3,513	3,563	0.66	0.35	63.1	0.196	0.695	0.403	0.504	0.601	**39.9%**
17	1931	10,100	3,123	2,827	0.69	0.36	70.5	0.507	0.811	0.640	0.702	0.853	**14.7%**
18	1932	12,019	4,847	3,545	0.66	0.35	65.5	0.297	0.796	0.480	0.589	0.711	**28.9%**
19	1933	8,181	3,155	2,110	0.74	0.38	63.7	0.221	0.690	0.422	0.525	0.630	**37.0%**
20	1934	8,912	2,944	2,383	0.72	0.37	68.3	0.414	0.763	0.569	0.642	0.790	**21.0%**
21	1935	28,770	5,611	9,810	0.25	0.25	64	0.234	0.802	0.432	0.523	0.634	**36.6%**
22	1936	14,100	6,310	4,324	0.64	0.33	64.9	0.271	0.848	0.461	0.590	0.701	**29.9%**
23	1937	16,198	6,749	5,108	0.62	0.32	64.5	0.255	0.860	0.448	0.582	0.688	**31.2%**
24	1938	57,426	9,449	20,527	0.23	0.23	62.5	0.170	0.941	0.384	0.512	0.595	**40.5%**
25	1939	8,571	3,480	2,255	0.73	0.38	68	0.402	0.781	0.560	0.644	0.787	**21.3%**
26	1940	18,199	6,196	5,856	0.60	0.32	65.6	0.301	0.856	0.483	0.601	0.721	**27.9%**
27	1941	39,488	9,726	13,818	0.24	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**
28	1942	36,040	8,685	12,529	0.24	0.24	60.1	0.069	0.865	0.307	0.441	0.479	**52.1%**
29	1943	21,077	8,327	6,933	0.58	0.31	65.4	0.292	0.945	0.477	0.621	0.732	**26.8%**
30	1944	8,912	3,741	2,383	0.72	0.37	65.9	0.313	0.755	0.493	0.591	0.719	**28.1%**
31	1945	12,539	5,172	3,740	0.66	0.34	63.1	0.196	0.767	0.403	0.528	0.620	**38.0%**
32	1946	13,694	5,269	4,171	0.64	0.34	63.9	0.229	0.785	0.429	0.549	0.652	**34.8%**
33	1947	8,847	3,545	2,359	0.72	0.38	68.7	0.431	0.797	0.582	0.663	0.808	**19.2%**
34	1948	29,030	7,676	9,907	0.25	0.25	62.3	0.162	0.861	0.378	0.496	0.578	**42.2%**
35	1949	14,914	4,749	4,628	0.63	0.33	65.2	0.284	0.786	0.470	0.574	0.695	**30.5%**
36	1950	13,726	5,269	4,184	0.64	0.34	64.3	0.246	0.792	0.441	0.559	0.668	**33.2%**
37	1951	18,817	7,123	6,087	0.60	0.32	64.4	0.250	0.875	0.445	0.580	0.685	**31.5%**
38	1952	59,557	9,563	21,324	0.23	0.23	61.7	0.137	0.932	0.358	0.490	0.559	**44.1%**
39	1953	26,867	7,676	9,098	0.25	0.25	60.9	0.103	0.836	0.333	0.457	0.513	**48.7%**
40	1954	25,403	7,432	8,551	0.25	0.25	65.9	0.313	0.915	0.493	0.598	0.724	**27.6%**
41	1955	10,278	3,773	2,894	0.69	0.36	66.9	0.356	0.774	0.525	0.614	0.752	**24.8%**
42	1956	39,000	8,750	13,636	0.24	0.24	61.4	0.124	0.891	0.349	0.477	0.542	**45.8%**
43	1957	16,833	5,952	5,345	0.61	0.32	64	0.234	0.817	0.432	0.556	0.660	**34.0%**
44	1958	43,488	10,685	15,315	0.23	0.23	62.9	0.187	1.002	0.397	0.539	0.625	**37.5%**
45	1959	9,417	3,676	2,572	0.71	0.37	65.9	0.313	0.752	0.493	0.588	0.717	**28.3%**
46	1960	10,913	3,350	3,131	0.68	0.35	65.9	0.313	0.738	0.493	0.580	0.711	**28.9%**
47	1961	9,238	2,992	2,505	0.71	0.37	64.3	0.246	0.694	0.441	0.535	0.649	**35.1%**
48	1962	14,735	5,334	4,561	0.63	0.33	64.8	0.267	0.804	0.457	0.572	0.687	**31.3%**
49	1963	29,095	8,327	9,932	0.25	0.25	62.5	0.170	0.893	0.384	0.509	0.592	**40.8%**
50	1964	11,043	3,871	3,180	0.68	0.35	65.2	0.284	0.748	0.470	0.568	0.691	**30.9%**
51	1965	24,655	7,937	8,271	0.57	0.30	63.6	0.217	0.896	0.419	0.563	0.658	**34.2%**
52	1966	14,930	4,781	4,634	0.63	0.33	67.3	0.372	0.825	0.537	0.632	0.769	**23.1%**
53	1967	44,790	10,051	15,801	0.23	0.23	62.1	0.154	0.960	0.371	0.509	0.584	**41.6%**
54	1968	9,384	3,643	2,560	0.71	0.37	66.1	0.322	0.754	0.499	0.593	0.724	**27.6%**
55	1969	45,538	9,010	16,081	0.23	0.23	63.2	0.200	0.935	0.406	0.530	0.624	**37.6%**
56	1970	12,149	5,920	3,594	0.66	0.35	68.6	0.427	0.898	0.579	0.689	0.822	**17.8%**
57	1971	29,274	7,676	9,999	0.24	0.24	61	0.107	0.838	0.336	0.459	0.517	**48.3%**
58	1972	10,539	3,903	2,991	0.69	0.36	67.3	0.372	0.787	0.537	0.627	0.766	**23.4%**
59	1973	15,743	6,570	4,938	0.62	0.33	66.9	0.356	0.896	0.525	0.646	0.772	**22.8%**
60	1974	26,949	8,685	9,129	0.25	0.25	63.4	0.208	0.924	0.413	0.539	0.635	**36.5%**
61	1975	28,542	8,685	9,725	0.25	0.25	63.8	0.225	0.932	0.425	0.550	0.651	**34.9%**
62	1976	10,002	3,253	2,791	0.70	0.36	69.6	0.469	0.800	0.611	0.680	0.830	**17.0%**
63	1977	6,993	732	1,665	0.78	0.40	64	0.234	0.590	0.432	0.495	0.613	**38.7%**
64	1978	21,061	8,197	6,927	0.58	0.31	63	0.191	0.896	0.400	0.553	0.639	**36.1%**
65	1979	12,572	5,985	3,752	0.65	0.34	63.8	0.225	0.815	0.425	0.559	0.658	**34.2%**
66	1980	14,783	7,481	4,579	0.63	0.33	63.6	0.217	0.876	0.419	0.570	0.663	**33.7%**
67	1981	8,750	3,513	2,322	0.72	0.38	66.7	0.347	0.759	0.518	0.609	0.745	**25.5%**
68	1982	38,431	10,701	13,423	0.24	0.24	61.1	0.112	0.971	0.339	0.489	0.546	**45.4%**
69	1983	54,515	7,546	19,439	0.23	0.23	60.1	0.069	0.816	0.307	0.424	0.464	**53.6%**
70	1984	13,417	6,148	4,068	0.64	0.34	66.5	0.339	0.870	0.512	0.633	0.757	**24.3%**
71	1985	12,376	4,781	3,679	0.66	0.34	65.8	0.309	0.798	0.489	0.596	0.721	**27.9%**
72	1986	13,125	8,132	3,959	0.65	0.34	66.2	0.326	0.951	0.502	0.654	0.767	**23.3%**
73	1987	8,441	2,862	2,207	0.73	0.38	70.5	0.507	0.799	0.640	0.700	0.852	**14.8%**
74	1988	9,774	3,058	2,706	0.70	0.37	65.8	0.309	0.723	0.489	0.575	0.706	**29.4%**
75	1989	14,328	3,936	4,409	0.63	0.33	64.7	0.263	0.742	0.454	0.550	0.668	**33.2%**
76	1990	7,709	2,700	1,933	0.75	0.39	66.4	0.335	0.719	0.509	0.591	0.727	**27.3%**
77	1991	8,685	2,879	2,298	0.73	0.38	65.7	0.305	0.714	0.486	0.572	0.703	**29.7%**
78	1992	8,620	3,529	2,274	0.73	0.38	66	0.318	0.747	0.496	0.591	0.721	**27.9%**

Row	Year	JUNE Sac River Flow	CVP + SWP exports	Caculated Steamboat & Sutter Slough Q	percent	X-channel closed	USBR observed temp f	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123	Weighted Total Survival
8	1922	34,720	11,277	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**45.5%**
9	1923	16,990	7,999	5,404	61%	0.52	65.3	0.288	0.929	0.473	0.709	0.793	**20.7%**	**40.1%**
10	1924	10,218	1,462	2,871	69%	0.59	70.6	0.511	0.740	0.643	0.700	0.853	**14.7%**	**23.7%**
11	1925	12,839	6,151	3,852	65%	0.55	68.3	0.414	0.903	0.569	0.753	0.855	**14.5%**	**37.0%**
12	1926	14,907	6,067	4,625	63%	0.53	71.2	0.536	0.951	0.662	0.816	0.915	**8.5%**	**27.8%**
13	1927	18,889	8,352	6,115	60%	0.51	68.1	0.406	0.995	0.563	0.781	0.870	**13.0%**	**39.8%**
14	1928	13,461	5,697	4,085	64%	0.55	69.7	0.473	0.908	0.614	0.774	0.881	**11.9%**	**28.3%**
15	1929	9,898	3,126	2,752	70%	0.59	70.1	0.490	0.804	0.627	0.731	0.863	**13.7%**	**32.8%**
16	1930	16,016	7,176	5,040	62%	0.52	69.6	0.469	0.970	0.611	0.799	0.893	**10.7%**	**37.7%**
17	1931	14,251	5,579	4,380	63%	0.54	70.7	0.515	0.921	0.646	0.794	0.900	**10.0%**	**18.6%**
18	1932	19,175	7,714	6,222	60%	0.50	69.5	0.465	0.992	0.608	0.802	0.894	**10.6%**	**30.9%**
19	1933	11,461	2,252	3,337	67%	0.57	69.8	0.478	0.760	0.617	0.698	0.842	**15.8%**	**36.2%**
20	1934	13,528	4,874	4,110	64%	0.54	70.7	0.515	0.890	0.646	0.779	0.893	**10.7%**	**22.2%**
21	1935	17,679	7,630	5,662	60%	0.51	71	0.528	1.000	0.656	0.832	0.921	**7.9%**	**34.9%**
22	1936	19,058	7,966	6,178	60%	0.51	69.2	0.452	0.998	0.598	0.800	0.890	**11.0%**	**30.5%**
23	1937	18,184	7,663	5,851	60%	0.51	69.7	0.473	0.993	0.614	0.808	0.899	**10.1%**	**32.0%**
24	1938	35,510	11,277	12,331	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**41.6%**
25	1939	18,301	7,411	5,895	60%	0.51	71	0.528	1.000	0.656	0.831	0.920	**8.0%**	**22.1%**
26	1940	15,293	7,697	4,770	62%	0.53	71.5	0.549	1.000	0.672	0.845	0.930	**7.0%**	**30.3%**
27	1941	20,805	10,907	6,831	59%	0.50	69	0.444	1.000	0.592	0.795	0.886	**11.4%**	**41.6%**
28	1942	27,124	11,277	9,194	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**48.8%**
29	1943	16,856	7,747	5,354	61%	0.52	66.6	0.343	0.941	0.515	0.736	0.826	**17.4%**	**30.3%**
30	1944	16,822	7,411	5,342	61%	0.52	67.8	0.393	0.948	0.553	0.758	0.853	**14.7%**	**31.6%**
31	1945	16,688	7,176	5,291	61%	0.52	70.6	0.511	0.988	0.643	0.822	0.913	**8.7%**	**34.7%**
32	1946	14,940	6,958	4,638	63%	0.53	68.1	0.406	0.934	0.563	0.760	0.858	**14.2%**	**33.7%**
33	1947	17,881	7,243	5,738	60%	0.51	70	0.486	0.981	0.624	0.806	0.900	**10.0%**	**21.5%**
34	1948	23,259	9,125	7,749	57%	0.49	69	0.444	1.000	0.592	0.791	0.884	**11.6%**	**41.0%**
35	1949	15,831	6,806	4,971	62%	0.53	70.9	0.524	0.978	0.652	0.823	0.916	**8.4%**	**29.2%**
36	1950	18,184	8,134	5,851	60%	0.51	68.9	0.440	0.999	0.588	0.798	0.887	**11.3%**	**31.7%**
37	1951	17,243	7,512	5,499	61%	0.52	70.3	0.499	0.998	0.633	0.821	0.910	**9.0%**	**31.2%**
38	1952	38,972	11,277	13,626	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**45.8%**
39	1953	25,881	10,386	8,729	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**46.5%**
40	1954	13,865	6,016	4,235	64%	0.54	68.7	0.431	0.904	0.582	0.756	0.861	**13.9%**	**31.0%**
41	1955	16,688	7,327	5,291	61%	0.52	70.1	0.490	0.986	0.627	0.813	0.905	**9.5%**	**29.6%**
42	1956	22,301	11,277	7,391	58%	0.49	68.7	0.431	1.000	0.582	0.787	0.879	**12.1%**	**41.1%**
43	1957	19,108	7,966	6,196	60%	0.51	72	0.570	1.000	0.688	0.845	0.934	**6.6%**	**32.1%**
44	1958	33,930	11,277	11,740	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**38.9%**
45	1959	17,629	7,243	5,643	61%	0.51	72.1	0.574	1.000	0.691	0.849	0.936	**6.4%**	**26.5%**
46	1960	17,629	7,109	5,643	61%	0.51	72.7	0.600	1.000	0.710	0.859	0.943	**5.7%**	**29.7%**
47	1961	19,444	7,596	6,322	59%	0.50	73.2	0.621	1.000	0.726	0.864	0.948	**5.2%**	**33.2%**
48	1962	17,243	6,823	5,499	61%	0.52	70.4	0.503	0.969	0.636	0.808	0.905	**9.5%**	**29.8%**
49	1963	19,562	8,621	6,366	59%	0.50	69	0.444	1.000	0.592	0.797	0.887	**11.3%**	**41.4%**
50	1964	17,175	6,924	5,474	61%	0.52	69.5	0.465	0.958	0.608	0.788	0.887	**11.3%**	**32.2%**
51	1965	18,167	8,319	5,844	60%	0.51	67.1	0.364	0.975	0.531	0.758	0.846	**15.4%**	**36.2%**
52	1966	15,209	6,252	4,738	63%	0.53	70.4	0.503	0.945	0.636	0.800	0.900	**10.0%**	**24.5%**
53	1967	39,342	11,277	13,764	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**43.9%**
54	1968	17,142	7,075	5,461	61%	0.52	72	0.570	1.000	0.688	0.849	0.935	**6.5%**	**27.1%**
55	1969	24,133	11,243	8,076	57%	0.48	68.3	0.414	1.000	0.569	0.778	0.870	**13.0%**	**38.4%**
56	1970	14,839	7,092	4,600	63%	0.53	70.7	0.515	0.987	0.646	0.827	0.916	**8.4%**	**23.2%**
57	1971	23,629	9,646	7,887	57%	0.49	68.1	0.406	1.000	0.563	0.775	0.867	**13.3%**	**44.1%**
58	1972	16,436	6,873	5,197	61%	0.52	70.7	0.515	0.977	0.646	0.818	0.912	**8.8%**	**27.5%**
59	1973	17,091	8,537	5,442	61%	0.52	70.1	0.490	1.000	0.627	0.820	0.908	**9.2%**	**24.4%**
60	1974	21,629	9,529	7,139	58%	0.49	69.7	0.473	1.000	0.614	0.805	0.897	**10.3%**	**36.5%**
61	1975	24,788	11,277	8,321	57%	0.48	69.1	0.448	1.000	0.595	0.790	0.884	**11.6%**	**35.8%**
62	1976	18,772	7,361	6,071	60%	0.51	71.8	0.562	1.000	0.681	0.843	0.931	**6.9%**	**22.8%**
63	1977	9,092	437	2,450	72%	0.61	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**	**32.9%**
64	1978	15,965	8,504	5,021	62%	0.52	70	0.486	1.000	0.624	0.821	0.908	**9.2%**	**36.4%**
65	1979	17,108	8,050	5,448	61%	0.52	69.2	0.452	1.000	0.598	0.806	0.894	**10.6%**	**33.3%**
66	1980	16,268	8,672	5,134	62%	0.52	66.9	0.356	0.987	0.525	0.766	0.849	**15.1%**	**35.7%**
67	1981	17,797	7,226	5,706	60%	0.51	71.9	0.566	1.000	0.684	0.846	0.933	**6.7%**	**25.8%**
68	1982	24,418	11,277	8,183	57%	0.48	66	0.318	1.000	0.496	0.740	0.822	**17.8%**	**45.2%**
69	1983	55,576	9,293	19,835	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**53.7%**
70	1984	17,276	7,882	5,511	61%	0.52	68.4	0.419	0.979	0.572	0.782	0.873	**12.7%**	**27.4%**
71	1985	14,957	6,218	4,644	63%	0.53	69.4	0.461	0.925	0.604	0.775	0.879	**12.1%**	**29.0%**
72	1986	13,209	7,966	3,990	65%	0.55	71.6	0.553	1.000	0.675	0.853	0.934	**6.6%**	**25.0%**
73	1987	19,948	7,781	6,511	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**15.8%**
74	1988	14,201	5,647	4,361	64%	0.54	69.4	0.461	0.900	0.604	0.764	0.873	**12.7%**	**31.0%**
75	1989	15,528	6,554	4,858	62%	0.53	68.6	0.427	0.925	0.579	0.762	0.863	**13.7%**	**32.2%**
76	1990	19,192	7,478	6,228	59%	0.50	68.5	0.423	0.964	0.576	0.772	0.868	**13.2%**	**28.3%**
77	1991	11,545	4,050	3,368	67%	0.57	69.4	0.461	0.831	0.604	0.733	0.856	**14.4%**	**30.7%**
78	1992	13,293	4,857	4,022	65%	0.55	69	0.444	0.859	0.592	0.738	0.854	**14.6%**	**29.3%**
79													Average:	**32.97%**

Formulas   Sacramento River Fall Run Smolt Survival

C8 ='Study 513 Revised Flow Data'!G7
D8 ='Study 513 Revised Flow Data'!Q7 (HIDDEN)
E8 ='Study 513 Revised Flow Data'!AA7 (HIDDEN)
F8 =(D8+E8)
G8 =0.374*C8-950
H8 =IF(C8>25000,(0.133*C8+829)/(C8-G8),(0.293*C8+2090)/(C8-G8))
I8 =(0.133*C8+829)/(C8-G8)
K8 =IF((-2.45925+(0.0420748*J8))<0,0,(-2.45925+(0.0420748*J8)))
L8 =(-0.5916024)+(0.017968*J8)+(0.0000434*F8)
M8 =-1.613493+(0.0319584*J8)
N8 =(L8*I8)+(M8*(1-I8))
O8 =K8+N8-(K8*N8)
P8 =1-O8

R8 ='Study 513 Revised Flow Data'!H7
S8 ='Study 513 Revised Flow Data'! (HIDDEN)
T8 ='Study 513 Revised Flow Data'! (HIDDEN)
U8 =(S8+T8)
V8 =0.374*R8-950
W8 =IF(R8>25000,(0.133*R8+829)/(R8-V8),(0.293*R8+2090)/(R8-V8))
X8 =(0.84*(0.133*R8+829)/(R8-V8))+(0.16*W8)
Z8 =(-2.45925+(0.0420748*Y8))
AA8 =(-0.5916024)+(0.017968*Y8)+(0.0000434*U8)
AB8 =-1.613493+(0.0319584*Y8)
AC8 =(AA8*X8)+(AB8*(1-X8))
AD8 =Z8+AC8-(Z8*AC8)
AE8 =1-AD8

AG8 ='Study 513 Revised Flow Data'!I7
AH8 ='Study 513 Revised Flow Data'!S7 (HIDDEN)
AI8 ='Study 513 Flow Revised Data'!AC7 (HIDDEN)
AJ8 =(AH8+AI8)
AK8 =0.374*AG8-950
AL8 =IF(AG8>25000,(0.133*AG8+829)/(AG8-AK8),(0.293*AG8+2090)/(AG8-AK8))
AM8 =(0.27*(0.133*AG8+829)/(AG8-AK8))+(0.73*AL8)
AO8 =(-2.45925+(0.0420748*AN8))
AP8 =IF(((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8))>1,1,((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8)))
AQ8 =-1.613493+(0.0319584*AN8)
AR8 =(AP8*AM8)+(AQ8*(1-AM8))
AS8 =AO8+AR8-(AO8*AR8)
AT8 =1-AS8
AV8 =(P8*0.17)+(AE8*0.65)+(AT8*0.18)

Study 622a Sacramento River Fall Run Smolt Survival Model — Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

APRIL

Row	Year (A)	Water Year Type (B)	Sac River Flows (C)	CVP + SWP exports (F)	Calculated Sutter & Steamboat Slough Q (G)	Percent (H)	X-Channel Closed (I)	observed temp f (J)	m1 (K)	Calculated Mortality m2 (L)	m3 (M)	m23 (N)	m123 (O)	Calculated Survival s123 (P)
8	1922	A	22,822	6,038	7,585	58%	0.25	58.5	0.002	0.722	0.256	0.374	0.375	**62.5%**
9	1923	B	22,234	6,824	7,365	58%	0.25	58.3	0.000	0.752	0.250	0.378	0.378	**62.2%**
10	1924	C	7,327	2,650	1,790	77%	0.33	61.5	0.128	0.628	0.352	0.442	0.514	**48.6%**
11	1925	D	22,385	6,202	7,422	58%	0.25	59.1	0.027	0.739	0.275	0.393	0.410	**59.0%**
12	1926	D	21,057	5,574	6,925	58%	0.26	61.6	0.133	0.757	0.355	0.458	0.530	**47.0%**
13	1927	W	48,215	6,144	17,082	23%	0.23	56.8	0.000	0.696	0.202	0.317	0.317	**68.3%**
14	1928	A	29,208	6,544	9,974	25%	0.25	58.7	0.011	0.747	0.262	0.381	0.388	**61.2%**
15	1929	C	8,218	2,808	2,124	74%	0.32	56.3	0.000	0.542	0.186	0.298	0.298	**70.2%**
16	1930	D	12,638	3,564	3,777	65%	0.28	59.6	0.048	0.634	0.291	0.388	0.418	**58.2%**
17	1931	C	9,159	2,830	2,475	71%	0.31	62.8	0.183	0.660	0.393	0.475	0.571	**42.9%**
18	1932	D	11,277	4,138	3,267	67%	0.29	58.9	0.019	0.646	0.269	0.379	0.390	**61.0%**
19	1933	C	12,083	3,464	3,569	66%	0.29	60.1	0.069	0.639	0.307	0.402	0.444	**55.6%**
20	1934	C	12,150	3,439	3,594	66%	0.29	63.6	0.217	0.700	0.419	0.499	0.608	**39.2%**
21	1935	B	24,250	6,944	8,120	57%	0.25	58.9	0.019	0.768	0.269	0.394	0.406	**59.4%**
22	1936	B	21,780	5,906	7,196	58%	0.26	59.7	0.053	0.737	0.294	0.408	0.439	**56.1%**
23	1937	B	23,259	8,151	7,749	57%	0.25	58.8	0.015	0.819	0.266	0.406	0.414	**58.6%**
24	1938	W	47,173	8,383	16,693	23%	0.23	56.3	0.000	0.784	0.186	0.325	0.325	**67.5%**
25	1939	D	10,705	3,925	3,054	68%	0.29	63.3	0.204	0.716	0.409	0.500	0.602	**39.8%**
26	1940	A	41,728	6,944	14,656	24%	0.24	57.4	0.000	0.741	0.221	0.343	0.343	**65.7%**
27	1941	W	42,367	9,415	14,895	24%	0.24	56.9	0.000	0.839	0.205	0.354	0.354	**64.6%**
28	1942	W	43,308	6,944	15,247	23%	0.23	56.5	0.000	0.725	0.192	0.317	0.317	**68.3%**
29	1943	W	29,410	9,583	10,049	24%	0.24	58.8	0.015	0.881	0.266	0.416	0.425	**57.5%**
30	1944	D	9,814	4,478	2,721	70%	0.30	58.4	0.000	0.652	0.253	0.373	0.373	**62.7%**
31	1945	B	11,747	4,254	3,443	67%	0.29	60.6	0.090	0.682	0.323	0.426	0.478	**52.2%**
32	1946	B	12,218	4,928	3,619	66%	0.29	60.7	0.095	0.713	0.326	0.437	0.490	**51.0%**
33	1947	D	13,797	3,844	4,210	64%	0.28	62.5	0.170	0.698	0.384	0.471	0.561	**43.9%**
34	1948	B	23,040	5,620	7,667	58%	0.25	56.6	0.000	0.669	0.195	0.315	0.315	**68.5%**
35	1949	D	13,209	3,832	3,990	65%	0.28	61.7	0.137	0.683	0.358	0.449	0.525	**47.5%**
36	1950	B	19,276	5,002	6,259	59%	0.26	61.3	0.120	0.727	0.346	0.445	0.512	**48.8%**
37	1951	A	14,738	4,496	4,562	63%	0.27	59.9	0.061	0.680	0.301	0.405	0.441	**55.9%**
38	1952	W	56,652	8,873	20,238	23%	0.23	55.5	0.000	0.791	0.160	0.305	0.305	**69.5%**
39	1953	W	16,184	4,958	5,103	62%	0.27	58.8	0.015	0.680	0.266	0.377	0.386	**61.4%**
40	1954	A	39,863	6,144	13,959	24%	0.24	58.4	0.000	0.724	0.253	0.364	0.364	**63.6%**
41	1955	D	9,478	3,082	2,595	71%	0.30	56.4	0.000	0.556	0.189	0.300	0.300	**70.0%**
42	1956	W	20,436	5,550	6,693	59%	0.26	59.7	0.053	0.722	0.294	0.405	0.436	**56.4%**
43	1957	A	19,578	5,436	6,372	59%	0.26	60.5	0.086	0.731	0.320	0.427	0.476	**52.4%**
44	1958	W	52,282	9,626	18,603	23%	0.23	57.4	0.000	0.858	0.221	0.368	0.368	**63.2%**
45	1959	B	8,823	3,540	2,350	72%	0.31	63	0.191	0.694	0.400	0.491	0.588	**41.2%**
46	1960	D	12,856	3,584	3,858	65%	0.28	59.5	0.044	0.633	0.288	0.385	0.413	**58.7%**
47	1961	D	12,655	3,336	3,783	65%	0.28	60.1	0.069	0.633	0.307	0.399	0.441	**55.9%**
48	1962	B	13,512	4,452	4,103	64%	0.28	61.8	0.141	0.712	0.362	0.459	0.536	**46.4%**
49	1963	W	69,457	6,944	25,027	23%	0.23	53.7	0.000	0.675	0.103	0.232	0.232	**76.8%**
50	1964	D	8,957	2,902	2,400	72%	0.31	59.3	0.036	0.600	0.282	0.380	0.402	**59.8%**
51	1965	W	45,627	6,944	16,115	23%	0.23	56.9	0.000	0.732	0.205	0.328	0.328	**67.2%**
52	1966	B	12,806	4,202	3,839	65%	0.28	61.9	0.145	0.703	0.365	0.460	0.539	**46.1%**
53	1967	W	39,930	9,137	13,984	24%	0.24	53.8	0.000	0.772	0.106	0.263	0.263	**73.7%**
54	1968	B	14,251	4,450	4,380	63%	0.28	61.5	0.128	0.707	0.352	0.450	0.520	**48.0%**
55	1969	W	44,787	7,613	15,800	23%	0.23	56.4	0.000	0.752	0.189	0.321	0.321	**67.9%**
56	1970	W	13,814	4,254	4,216	64%	0.28	58.8	0.015	0.650	0.266	0.372	0.382	**61.8%**
57	1971	W	20,755	5,696	6,812	59%	0.26	58.7	0.011	0.710	0.262	0.378	0.384	**61.6%**
58	1972	B	12,453	3,544	3,707	66%	0.28	58.5	0.002	0.613	0.256	0.358	0.359	**64.1%**
59	1973	A	19,511	6,328	6,347	59%	0.26	61.3	0.120	0.784	0.346	0.460	0.525	**47.5%**
60	1974	W	33,208	9,445	11,470	24%	0.24	56.8	0.000	0.839	0.202	0.355	0.355	**64.5%**
61	1975	W	25,763	6,944	8,685	25%	0.25	56.8	0.000	0.730	0.202	0.333	0.333	**66.7%**
62	1976	C	9,428	3,032	2,576	71%	0.30	58.9	0.019	0.598	0.269	0.369	0.381	**61.9%**
63	1977	C	9,125	2,857	2,463	72%	0.31	64.3	0.246	0.688	0.441	0.517	0.636	**36.4%**
64	1978	A	38,703	7,621	13,525	24%	0.24	56.9	0.000	0.762	0.205	0.337	0.337	**66.3%**
65	1979	B	17,696	5,886	5,668	60%	0.26	59.8	0.057	0.738	0.298	0.414	0.448	**55.2%**
66	1980	A	19,814	5,490	6,460	59%	0.26	57.1	0.000	0.673	0.211	0.331	0.331	**66.9%**
67	1981	D	16,990	4,948	5,404	61%	0.27	61.5	0.128	0.728	0.352	0.452	0.523	**47.7%**
68	1982	W	75,843	9,509	27,415	23%	0.23	54.1	0.000	0.793	0.115	0.268	0.268	**73.2%**
69	1983	W	68,298	7,071	24,593	23%	0.23	55	0.000	0.704	0.144	0.271	0.271	**72.9%**
70	1984	W	16,016	4,636	5,040	62%	0.27	59.7	0.053	0.682	0.294	0.399	0.431	**56.9%**
71	1985	D	13,327	3,862	4,034	65%	0.28	60.8	0.099	0.668	0.330	0.424	0.481	**51.9%**
72	1986	W	20,772	7,531	6,819	59%	0.26	60.4	0.082	0.821	0.317	0.446	0.492	**50.8%**
73	1987	D	10,974	3,245	3,154	68%	0.29	65.7	0.305	0.730	0.486	0.557	0.692	**30.8%**
74	1988	C	9,092	2,854	2,450	72%	0.31	59.9	0.061	0.609	0.301	0.395	0.432	**56.8%**
75	1989	D	23,629	5,224	7,887	57%	0.25	61.4	0.124	0.738	0.349	0.447	0.516	**48.4%**
76	1990	C	12,285	3,395	3,645	66%	0.29	61.6	0.133	0.663	0.355	0.443	0.517	**48.3%**
77	1991	C	15,276	3,921	4,763	62%	0.27	60.8	0.099	0.671	0.330	0.422	0.480	**52.0%**
78	1992	C	11,999	3,426	3,538	66%	0.29	61.2	0.116	0.657	0.342	0.432	0.498	**50.2%**

MAY

Row	Year	Sac River Flows (R)	CVP + SWP Exports (U)	Calculated Steamboat & Sutter Slough Q (V)	Percent (W)	X-channel Closed (X)	USBR observed temp f (Y)	m1 (Z)	Calculated Mortality m2 (AA)	m3 (AB)	m23 (AC)	m123 (AD)	Calculated Survival s123 (AE)
8	1922	46,530	6,763	16,452	0.23	0.23	61.2	0.116	0.802	0.342	0.449	0.513	**48.7%**
9	1923	14,377	5,450	4,427	0.63	0.33	62.4	0.166	0.766	0.381	0.509	0.591	**40.9%**
10	1924	8,327	1,335	2,164	0.74	0.38	69.2	0.452	0.710	0.598	0.641	0.803	**19.7%**
11	1925	12,067	4,586	3,563	0.66	0.35	63.2	0.200	0.743	0.406	0.523	0.618	**38.2%**
12	1926	12,555	3,864	3,746	0.65	0.34	65.7	0.305	0.757	0.486	0.579	0.707	**29.3%**
13	1927	26,786	6,763	9,068	0.25	0.25	62.6	0.175	0.827	0.387	0.496	0.584	**41.6%**
14	1928	19,240	5,616	6,246	0.59	0.31	66.6	0.343	0.849	0.515	0.620	0.750	**25.0%**
15	1929	9,303	3,154	2,529	0.71	0.37	66.1	0.322	0.733	0.499	0.586	0.719	**28.1%**
16	1930	11,433	3,505	3,326	0.67	0.35	63.1	0.196	0.694	0.403	0.505	0.602	**39.8%**
17	1931	10,278	3,153	2,894	0.69	0.36	70.5	0.507	0.812	0.640	0.702	0.853	**14.7%**
18	1932	10,831	4,125	3,101	0.68	0.36	65.5	0.297	0.764	0.480	0.581	0.705	**29.5%**
19	1933	8,018	2,913	2,049	0.74	0.39	63.7	0.221	0.679	0.422	0.521	0.627	**37.3%**
20	1934	8,506	2,956	2,231	0.73	0.38	68.3	0.414	0.764	0.569	0.643	0.791	**20.9%**
21	1935	28,786	5,926	9,816	0.25	0.25	64	0.234	0.816	0.432	0.526	0.637	**36.3%**
22	1936	17,630	5,396	5,643	0.61	0.32	64.9	0.271	0.809	0.461	0.572	0.688	**31.2%**
23	1937	15,727	7,262	4,932	0.62	0.33	64.5	0.255	0.883	0.448	0.590	0.694	**30.6%**
24	1938	57,426	9,543	20,527	0.23	0.23	62.5	0.170	0.946	0.384	0.513	0.596	**40.4%**
25	1939	7,953	3,484	2,024	0.75	0.39	68	0.402	0.781	0.560	0.645	0.788	**21.2%**
26	1940	17,776	6,238	5,698	0.60	0.32	65.6	0.301	0.858	0.483	0.602	0.722	**27.8%**
27	1941	39,488	9,931	13,818	0.24	0.24	61.6	0.133	0.946	0.355	0.495	0.562	**43.8%**
28	1942	36,040	7,488	12,529	0.24	0.24	60.1	0.069	0.813	0.307	0.428	0.468	**53.2%**
29	1943	20,134	6,949	6,580	0.59	0.31	65.4	0.292	0.885	0.477	0.604	0.720	**28.0%**
30	1944	8,912	3,781	2,383	0.72	0.37	65.9	0.313	0.757	0.493	0.591	0.719	**28.1%**
31	1945	12,881	4,573	3,867	0.65	0.34	63.1	0.196	0.741	0.403	0.518	0.612	**38.8%**
32	1946	12,442	4,977	3,703	0.66	0.34	63.9	0.229	0.773	0.429	0.547	0.651	**34.9%**
33	1947	8,847	3,216	2,359	0.72	0.38	68.7	0.431	0.782	0.582	0.657	0.805	**19.5%**
34	1948	27,941	6,763	9,500	0.25	0.25	62.3	0.162	0.821	0.378	0.487	0.570	**43.0%**
35	1949	13,678	4,105	4,165	0.64	0.34	65.2	0.284	0.758	0.470	0.567	0.690	**31.0%**
36	1950	13,726	4,264	4,184	0.64	0.34	64.3	0.246	0.749	0.441	0.545	0.657	**34.3%**
37	1951	18,866	5,796	6,106	0.60	0.32	64.4	0.250	0.817	0.445	0.562	0.672	**32.8%**
38	1952	59,557	9,536	21,324	0.23	0.23	61.7	0.137	0.931	0.358	0.489	0.559	**44.1%**
39	1953	26,867	7,126	9,098	0.25	0.25	60.9	0.103	0.812	0.333	0.451	0.508	**49.2%**
40	1954	23,761	6,213	7,937	0.57	0.30	65.9	0.313	0.862	0.493	0.605	0.729	**27.1%**
41	1955	11,271	3,600	3,265	0.67	0.35	66.9	0.356	0.767	0.525	0.610	0.749	**25.1%**
42	1956	39,000	6,763	13,636	0.24	0.24	61.4	0.124	0.805	0.349	0.457	0.524	**47.6%**
43	1957	17,434	5,606	5,570	0.61	0.32	64	0.234	0.802	0.432	0.550	0.655	**34.5%**
44	1958	43,488	10,883	15,315	0.23	0.23	62.9	0.187	1.011	0.397	0.541	0.627	**37.3%**
45	1959	9,417	3,370	2,572	0.71	0.37	65.9	0.313	0.739	0.493	0.583	0.714	**28.6%**
46	1960	11,254	3,569	3,259	0.67	0.35	65.9	0.313	0.747	0.493	0.582	0.713	**28.7%**
47	1961	9,156	2,954	2,474	0.71	0.37	64.3	0.246	0.692	0.441	0.535	0.649	**35.1%**
48	1962	13,889	4,606	4,244	0.64	0.34	64.8	0.267	0.773	0.457	0.563	0.680	**32.0%**
49	1963	29,095	7,488	9,932	0.25	0.25	62.5	0.170	0.856	0.384	0.500	0.585	**41.5%**
50	1964	11,043	3,490	3,180	0.68	0.35	65.2	0.284	0.731	0.470	0.563	0.687	**31.3%**
51	1965	24,021	7,474	8,034	0.57	0.30	63.6	0.217	0.876	0.419	0.557	0.653	**34.7%**
52	1966	13,694	4,117	4,171	0.64	0.34	67.3	0.372	0.796	0.537	0.624	0.764	**23.6%**
53	1967	44,790	9,679	15,801	0.23	0.23	62.1	0.154	0.944	0.371	0.505	0.581	**41.9%**
54	1968	9,384	3,383	2,560	0.71	0.37	66.1	0.322	0.743	0.499	0.589	0.721	**27.9%**
55	1969	45,538	9,218	16,081	0.23	0.23	63.2	0.200	0.944	0.406	0.532	0.626	**37.4%**
56	1970	12,149	4,293	3,594	0.66	0.35	68.6	0.427	0.827	0.579	0.665	0.808	**19.2%**
57	1971	30,266	7,126	10,370	0.24	0.24	61	0.107	0.814	0.336	0.453	0.511	**48.9%**
58	1972	10,539	3,504	2,991	0.69	0.36	67.3	0.372	0.770	0.537	0.621	0.762	**23.8%**
59	1973	15,743	5,937	4,938	0.62	0.33	66.9	0.356	0.868	0.525	0.637	0.766	**23.4%**
60	1974	26,949	6,763	9,129	0.25	0.25	63.4	0.208	0.841	0.413	0.519	0.619	**38.1%**
61	1975	28,542	7,488	9,725	0.25	0.25	63.8	0.225	0.880	0.425	0.537	0.641	**35.9%**
62	1976	8,912	3,099	2,383	0.72	0.37	69.6	0.469	0.793	0.611	0.679	0.830	**17.0%**
63	1977	7,188	873	1,738	0.77	0.40	64	0.234	0.596	0.432	0.497	0.615	**38.5%**
64	1978	21,061	8,414	6,927	0.58	0.31	63	0.191	0.906	0.400	0.556	0.641	**35.9%**
65	1979	12,572	5,243	3,752	0.65	0.34	63.8	0.225	0.782	0.425	0.548	0.650	**35.0%**
66	1980	14,783	8,042	4,579	0.63	0.33	63.6	0.217	0.900	0.419	0.578	0.670	**33.0%**
67	1981	8,750	3,647	2,322	0.72	0.38	66.7	0.347	0.765	0.518	0.611	0.746	**25.4%**
68	1982	38,431	10,919	13,423	0.24	0.24	61.1	0.112	0.980	0.339	0.491	0.548	**45.2%**
69	1983	54,515	7,752	19,439	0.23	0.23	60.1	0.069	0.825	0.307	0.426	0.466	**53.4%**
70	1984	15,109	5,126	4,701	0.63	0.33	66.5	0.339	0.826	0.512	0.615	0.745	**25.5%**
71	1985	11,433	3,754	3,326	0.67	0.35	65.8	0.309	0.754	0.489	0.582	0.711	**28.9%**
72	1986	13,125	8,565	3,959	0.65	0.34	66.2	0.326	0.970	0.502	0.661	0.771	**22.9%**
73	1987	7,367	2,832	1,805	0.76	0.40	70.5	0.507	0.798	0.640	0.702	0.853	**14.7%**
74	1988	8,831	2,991	2,353	0.72	0.38	65.8	0.309	0.721	0.489	0.576	0.707	**29.3%**
75	1989	14,133	3,916	4,336	0.64	0.33	64.7	0.263	0.741	0.454	0.550	0.668	**33.2%**
76	1990	7,790	2,715	1,964	0.75	0.39	66.4	0.335	0.719	0.509	0.591	0.727	**27.3%**
77	1991	8,685	2,925	2,298	0.73	0.38	65.7	0.305	0.716	0.486	0.573	0.703	**29.7%**
78	1992	8,929	2,950	2,389	0.72	0.37	66	0.318	0.722	0.496	0.581	0.714	**28.6%**

JUNE

Row	Year	Sac River Flow (AG)	CVP + SWP exports (AJ)	Caculated Steamboat & Sutter Slough Q (AK)	percent (AL)	X-channel closed (AM)	USBR observed temp f (AN)	m1 (AO)	Calculated Mortality m2 (AP)	m3 (AQ)	m23 (AR)	m123 (AS)	Calculated Survival s123 (AT)	Weighted Total Survival (AV)
8	1922	34,720	11,544	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**47.0%**
9	1923	15,848	7,038	4,977	62%	0.53	65.3	0.288	0.887	0.473	0.691	0.780	**22.0%**	**41.2%**
10	1924	10,537	1,624	2,991	69%	0.58	70.6	0.511	0.747	0.643	0.704	0.855	**14.5%**	**23.7%**
11	1925	16,990	7,179	5,404	61%	0.52	68.3	0.414	0.947	0.569	0.765	0.862	**13.8%**	**37.3%**
12	1926	17,024	6,986	5,417	61%	0.52	71.2	0.536	0.991	0.662	0.832	0.922	**7.8%**	**28.4%**
13	1927	19,511	8,403	6,347	59%	0.50	68.1	0.406	0.997	0.563	0.781	0.870	**13.0%**	**41.0%**
14	1928	14,470	6,254	4,462	63%	0.54	69.7	0.473	0.932	0.614	0.785	0.887	**11.3%**	**28.7%**
15	1929	11,024	3,450	3,173	68%	0.57	70.1	0.490	0.818	0.627	0.736	0.866	**13.4%**	**32.6%**
16	1930	18,436	7,345	5,945	60%	0.51	69.6	0.469	0.978	0.611	0.797	0.892	**10.8%**	**37.7%**
17	1931	14,537	5,601	4,487	63%	0.54	70.7	0.515	0.922	0.646	0.794	0.900	**10.0%**	**18.6%**
18	1932	20,217	8,184	6,611	59%	0.50	69.5	0.465	1.000	0.608	0.804	0.895	**10.5%**	**31.4%**
19	1933	11,882	2,893	3,494	66%	0.56	69.8	0.478	0.788	0.617	0.713	0.850	**15.0%**	**36.4%**
20	1934	14,638	5,703	4,524	63%	0.53	70.7	0.515	0.926	0.646	0.796	0.901	**9.9%**	**22.0%**
21	1935	18,402	8,263	5,932	60%	0.51	71	0.528	1.000	0.656	0.831	0.920	**8.0%**	**35.2%**
22	1936	17,898	7,834	5,744	60%	0.51	69.2	0.452	0.992	0.598	0.800	0.890	**11.0%**	**31.8%**
23	1937	17,747	7,679	5,687	60%	0.51	69.7	0.473	0.994	0.614	0.809	0.899	**10.1%**	**31.6%**
24	1938	35,510	11,544	12,331	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**41.5%**
25	1939	18,923	7,675	6,127	60%	0.51	71	0.528	1.000	0.656	0.830	0.920	**8.0%**	**22.0%**
26	1940	13,932	6,465	4,260	64%	0.54	71.5	0.549	0.974	0.672	0.835	0.926	**7.4%**	**30.6%**
27	1941	20,805	11,358	6,831	59%	0.50	69	0.444	1.000	0.592	0.795	0.886	**11.4%**	**41.5%**
28	1942	27,124	11,544	9,194	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**49.9%**
29	1943	16,772	8,050	5,323	61%	0.52	66.6	0.343	0.954	0.515	0.743	0.831	**16.9%**	**31.0%**
30	1944	18,520	7,623	5,976	60%	0.51	67.8	0.393	0.957	0.553	0.759	0.854	**14.6%**	**31.5%**
31	1945	16,688	7,418	5,291	61%	0.52	70.6	0.511	0.999	0.643	0.828	0.916	**8.4%**	**35.6%**
32	1946	16,806	7,388	5,335	61%	0.52	68.1	0.406	0.953	0.563	0.765	0.860	**14.0%**	**33.9%**
33	1947	18,822	7,591	6,090	60%	0.51	70	0.486	0.996	0.624	0.812	0.903	**9.7%**	**21.9%**
34	1948	22,956	9,243	7,636	58%	0.49	69	0.444	1.000	0.592	0.791	0.884	**11.6%**	**41.7%**
35	1949	18,284	7,510	5,888	60%	0.51	70.9	0.524	1.000	0.652	0.830	0.919	**8.1%**	**29.7%**
36	1950	20,167	8,396	6,592	59%	0.50	68.9	0.440	1.000	0.588	0.794	0.885	**11.5%**	**32.7%**
37	1951	17,864	7,656	5,731	60%	0.51	70.3	0.499	1.000	0.633	0.821	0.910	**9.0%**	**32.5%**
38	1952	38,972	11,544	13,626	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**45.8%**
39	1953	25,881	10,444	8,729	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**46.9%**
40	1954	13,764	6,032	4,198	64%	0.54	68.7	0.431	0.905	0.582	0.757	0.862	**13.8%**	**30.9%**
41	1955	18,805	7,631	6,083	60%	0.51	70.1	0.490	0.999	0.627	0.815	0.906	**9.4%**	**29.9%**
42	1956	22,301	11,544	7,391	58%	0.49	68.7	0.431	1.000	0.582	0.787	0.879	**12.1%**	**42.7%**
43	1957	18,738	7,886	6,058	60%	0.51	72	0.570	1.000	0.688	0.846	0.934	**6.6%**	**32.5%**
44	1958	33,930	11,544	11,740	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**38.8%**
45	1959	18,570	7,578	5,995	60%	0.51	72.1	0.574	1.000	0.691	0.848	0.935	**6.5%**	**26.8%**
46	1960	17,999	7,286	5,782	60%	0.51	72.7	0.600	1.000	0.710	0.858	0.943	**5.7%**	**29.6%**
47	1961	19,982	7,892	6,523	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**33.2%**
48	1962	16,873	6,977	5,360	61%	0.52	70.4	0.503	0.976	0.636	0.812	0.907	**9.3%**	**30.4%**
49	1963	20,200	8,874	6,605	59%	0.50	69	0.444	1.000	0.592	0.796	0.886	**11.4%**	**42.1%**
50	1964	18,385	7,384	5,926	60%	0.51	69.5	0.465	0.978	0.608	0.796	0.891	**10.9%**	**32.5%**
51	1965	18,705	8,394	6,046	60%	0.51	67.1	0.364	0.978	0.531	0.758	0.846	**15.4%**	**36.7%**
52	1966	16,654	6,946	5,279	61%	0.52	70.4	0.503	0.975	0.636	0.812	0.907	**9.3%**	**24.8%**
53	1967	39,342	11,544	13,764	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**44.2%**
54	1968	17,915	7,382	5,750	60%	0.51	72	0.570	1.000	0.688	0.847	0.934	**6.6%**	**27.4%**
55	1969	24,133	11,515	8,076	57%	0.48	68.3	0.414	1.000	0.569	0.778	0.870	**13.0%**	**38.2%**
56	1970	14,503	6,870	4,474	63%	0.54	70.7	0.515	0.977	0.646	0.823	0.914	**8.6%**	**24.5%**
57	1971	23,629	9,681	7,887	57%	0.49	68.1	0.406	1.000	0.563	0.775	0.867	**13.3%**	**44.6%**
58	1972	17,629	7,304	5,643	61%	0.51	70.7	0.515	0.996	0.646	0.826	0.915	**8.5%**	**27.9%**
59	1973	17,982	8,000	5,775	60%	0.51	70.1	0.490	1.000	0.627	0.818	0.907	**9.3%**	**25.0%**
60	1974	21,629	9,828	7,139	58%	0.49	69.7	0.473	1.000	0.614	0.805	0.897	**10.3%**	**37.6%**
61	1975	24,788	11,544	8,321	57%	0.48	69.1	0.448	1.000	0.595	0.790	0.884	**11.6%**	**36.7%**
62	1976	19,192	7,637	6,228	59%	0.50	71.8	0.562	1.000	0.681	0.842	0.931	**6.9%**	**22.8%**
63	1977	9,663	780	2,664	70%	0.59	73.9	0.650	0.770	0.748	0.761	0.916	**8.4%**	**32.7%**
64	1978	16,301	8,766	5,147	62%	0.52	70	0.486	1.000	0.624	0.820	0.907	**9.3%**	**36.3%**
65	1979	19,881	8,319	6,485	59%	0.50	69.2	0.452	1.000	0.598	0.800	0.890	**11.0%**	**34.1%**
66	1980	15,797	9,109	4,958	62%	0.53	66.9	0.356	1.000	0.525	0.774	0.855	**14.5%**	**35.5%**
67	1981	18,032	7,338	5,794	60%	0.51	71.9	0.566	1.000	0.684	0.846	0.933	**6.7%**	**25.8%**
68	1982	24,418	11,544	8,183	57%	0.48	66	0.318	1.000	0.496	0.740	0.822	**17.8%**	**45.0%**
69	1983	55,576	9,557	19,835	23%	0.23	63.6	0.217	0.966	0.419	0.545	0.643	**35.7%**	**53.5%**
70	1984	16,301	7,432	5,147	62%	0.52	68.4	0.419	0.960	0.572	0.775	0.869	**13.1%**	**28.6%**
71	1985	17,394	7,133	5,555	61%	0.51	69.4	0.461	0.965	0.604	0.790	0.887	**11.3%**	**29.6%**
72	1986	12,419	8,293	3,695	66%	0.56	71.6	0.553	1.000	0.675	0.856	0.936	**6.4%**	**24.7%**
73	1987	20,167	8,026	6,592	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**15.7%**
74	1988	16,587	6,687	5,254	61%	0.52	69.4	0.461	0.946	0.604	0.782	0.882	**11.8%**	**30.8%**
75	1989	17,158	6,950	5,467	61%	0.52	68.6	0.427	0.943	0.579	0.767	0.866	**13.4%**	**32.2%**
76	1990	19,629	7,676	6,391	59%	0.50	68.5	0.423	0.972	0.576	0.775	0.870	**13.0%**	**28.3%**
77	1991	10,588	3,343	3,010	69%	0.58	69.4	0.461	0.800	0.604	0.718	0.848	**15.2%**	**30.9%**
78	1992	14,218	5,578	4,367	64%	0.54	69	0.444	0.890	0.592	0.752	0.862	**13.8%**	**29.6%**
79													**Average:**	33.33%

Formulas — Sacramento River Fall Run Smolt Survival

C8 ='Study 622a Flow Data'!G7
D8 ='Study 622a Flow Data'!Q7 (HIDDEN)
E8 ='Study 622a Flow Data'!AA7 (HIDDEN)
F8 =(D8+E8)
G8 =0.374*C8-950
H8 =IF(C8>25000,(0.133*C8+829)/(C8-G8),(0.293*C8+2090)/(C8-G8))
I8 =(0.133*C8+829)/(C8-G8)
K8 =IF((-2.45925+(0.0420748*J8))<0,0,(-2.45925+(0.0420748*J8)))
L8 =(-0.5916024)+(0.017968*J8)+(0.0000434*F8)
M8 =-1.613493+(0.0319584*J8)
N8 =(L8*I8)+(M8*(1-I8))
O8 =K8+N8-(K8*N8)
P8 =1-O8

R8 ='Study 622a Flow Data'!H7
S8 ='Study 622a Flow Data'!R7 (HIDDEN)
T8 ='Study 622a Flow Data'!AB7 (HIDDEN)
U8 =(S8+T8)
V8 =0.374*R8-950
W8 =IF(R8>25000,(0.133*R8+829)/(R8-V8),(0.293*R8+2090)/(R8-V8))
X8 =(0.84*(0.133*R8+829)/(R8-V8))+(0.16*W8)
Z8 =(-2.45925+(0.0420748*Y8))
AA8 =(-0.5916024)+(0.017968*Y8)+(0.0000434*U8)
AB8 =-1.613493+(0.0319584*Y8)
AC8 =(AA8*X8)+(AB8*(1-X8))
AD8 =Z8+AC8-(Z8*AC8)
AE8 =1-AD8

AG8 ='Study 622a Flow Data'!I7 (HIDDEN)
AH8 ='Study 622a Flow Data'!S7 (HIDDEN)
AI8 ='Study 513 Flow Revised Data'!AC7
AJ8 =(AH8+AI8)
AK8 =0.374*AG8-950
AL8 =IF(AG8>25000,(0.133*AG8+829)/(AG8-AK8),(0.293*AG8+2090)/(AG8-AK8))
AM8 =(0.27*(0.133*AG8+829)/(AG8-AK8))+(0.73*AL8)
AO8 =(-2.45925+(0.0420748*AN8))
AP8 =IF(((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8))>1,1,((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8)))
AQ8 =-1.613493+(0.0319584*AN8)
AR8 =(AP8*AM8)+(AQ8*(1-AM8))
AS8 =AO8+AR8-(AO8*AR8)
AT8 =1-AS8

D1485 Sacramento River Late Fall Run Smolt Survival Model

(Modifies m2 by changing the slope to 0.000054)

Cross Channel Closed above 25,000 cfs

Cross Channel closed when DOI is greater than 12,000 cfs in January

November Sac River Temperature: 53 degrees F

December Sac River Temperature: 47 degrees F

January Sac River Temperature: 47 degrees F

NOVEMBER

Row	Year	WY Type	Sac River Flows (C)	CVP+SWP exports (F)	Calculated Steamboat & Sutter Slough Q (G)	percent (H)	xchannel closed (I)	m1 (J)	m2 (K)	m3 (L)	m23 (M)	m123 (N)	Calculated Survival s123 (O)
10	1922	A	11,008	7,512	3,167	68%	0.29		0.77	0.08	0.55	0.55	**45.5%**
11	1923	B	16,940	10,974	5,386	61%	0.27		0.95	0.08	0.61	0.61	**38.7%**
12	1924	C	10,991	9,008	3,161	68%	0.29		0.85	0.08	0.60	0.60	**40.0%**
13	1925	D	6,941	5,546	1,646	78%	0.33		0.66	0.08	0.53	0.53	**46.8%**
14	1926	D	9,344	6,907	2,545	71%	0.30		0.73	0.08	0.54	0.54	**45.6%**
15	1927	W	21,478	10,924	7,083	58%	0.26		0.95	0.08	0.59	0.59	**41.3%**
16	1928	A	21,629	10,974	7,139	58%	0.26		0.95	0.08	0.59	0.59	**41.2%**
17	1929	C	13,108	10,957	3,953	65%	0.28		0.95	0.08	0.65	0.65	**35.5%**
18	1930	D	8,151	5,294	2,098	74%	0.32		0.65	0.08	0.50	0.50	**50.1%**
19	1931	C	11,041	9,361	3,179	68%	0.29		0.87	0.08	0.61	0.61	**38.7%**
20	1932	D	7,075	4,521	1,696	77%	0.33		0.60	0.08	0.49	0.49	**51.4%**
21	1933	C	7,495	5,697	1,853	76%	0.32		0.67	0.08	0.53	0.53	**47.3%**
22	1934	C	6,487	4,168	1,476	80%	0.34		0.59	0.08	0.48	0.48	**51.7%**
23	1935	B	9,209	7,680	2,494	71%	0.31		0.78	0.08	0.58	0.58	**42.4%**
24	1936	B	12,369	9,781	3,676	66%	0.28		0.89	0.08	0.61	0.61	**38.8%**
25	1937	B	10,907	8,252	3,129	68%	0.29		0.81	0.08	0.57	0.57	**42.6%**
26	1938	W	22,956	10,974	7,636	58%	0.25		0.95	0.08	0.58	0.58	**41.7%**
27	1939	D	19,444	10,974	6,322	59%	0.26		0.95	0.08	0.60	0.60	**40.2%**
28	1940	A	7,915	5,832	2,010	75%	0.32		0.68	0.08	0.52	0.52	**47.5%**
29	1941	W	13,411	10,974	4,066	64%	0.28		0.95	0.08	0.64	0.64	**35.7%**
30	1942	W	18,184	10,974	5,851	60%	0.26		0.95	0.08	0.61	0.61	**39.5%**
31	1943	W	21,326	10,974	7,026	58%	0.26		0.95	0.08	0.59	0.59	**41.1%**
32	1944	D	12,823	10,806	3,846	65%	0.28		0.94	0.08	0.64	0.64	**35.7%**
33	1945	B	15,175	10,940	4,726	63%	0.27		0.95	0.08	0.63	0.63	**37.5%**
34	1946	B	17,293	10,974	5,518	61%	0.27		0.95	0.08	0.61	0.61	**38.9%**
35	1947	D	13,276	10,974	4,015	65%	0.28		0.95	0.08	0.64	0.64	**35.6%**
36	1948	B	11,108	9,411	3,205	68%	0.29		0.87	0.08	0.61	0.61	**38.6%**
37	1949	D	13,680	10,957	4,166	64%	0.28		0.95	0.08	0.64	0.64	**36.1%**
38	1950	B	12,050	10,369	3,557	66%	0.29		0.92	0.08	0.64	0.64	**36.4%**
39	1951	A	40,922	10,957	14,355	24%	0.24		0.95	0.08	0.29	0.29	**71.4%**
40	1952	W	16,822	10,974	5,342	61%	0.27		0.95	0.08	0.61	0.61	**38.6%**
41	1953	W	16,537	10,856	5,235	61%	0.27		0.95	0.08	0.61	0.61	**38.8%**
42	1954	A	21,007	10,974	6,907	58%	0.26		0.95	0.08	0.59	0.59	**40.9%**
43	1955	D	19,999	10,957	6,529	59%	0.26		0.95	0.08	0.60	0.60	**40.5%**
44	1956	W	12,134	10,487	3,588	66%	0.29		0.93	0.08	0.64	0.64	**36.0%**
45	1957	A	15,478	10,974	4,839	62%	0.27		0.95	0.08	0.62	0.62	**37.6%**
46	1958	W	19,259	10,957	6,253	59%	0.26		0.95	0.08	0.60	0.60	**40.1%**
47	1959	B	16,133	10,974	5,084	62%	0.27		0.95	0.08	0.62	0.62	**38.1%**
48	1960	D	10,184	8,252	2,859	69%	0.30		0.81	0.08	0.58	0.58	**41.7%**
49	1961	D	14,251	10,940	4,380	63%	0.28		0.95	0.08	0.63	0.63	**36.7%**
50	1962	B	10,403	8,789	2,941	69%	0.30		0.84	0.08	0.60	0.60	**40.0%**
51	1963	W	21,730	10,974	7,177	58%	0.26		0.95	0.08	0.59	0.59	**41.2%**
52	1964	D	28,805	10,974	9,823	25%	0.25		0.95	0.08	0.29	0.29	**70.5%**
53	1965	W	14,554	10,940	4,493	63%	0.27		0.95	0.08	0.63	0.63	**36.9%**
54	1966	B	29,628	10,974	10,131	24%	0.24		0.95	0.08	0.29	0.29	**70.6%**
55	1967	W	18,301	10,957	5,895	60%	0.26		0.95	0.08	0.60	0.60	**39.6%**
56	1968	B	16,234	8,537	5,122	62%	0.27		0.82	0.08	0.54	0.54	**46.3%**
57	1969	W	14,638	10,957	4,524	63%	0.27		0.95	0.08	0.63	0.63	**37.0%**
58	1970	W	17,646	10,974	5,650	61%	0.26		0.95	0.08	0.61	0.61	**39.1%**
59	1971	W	23,141	10,974	7,705	57%	0.25		0.95	0.08	0.58	0.58	**41.8%**
60	1972	B	16,755	10,957	5,316	61%	0.27		0.95	0.08	0.61	0.61	**38.6%**
61	1973	A	25,662	10,957	8,648	25%	0.25		0.95	0.08	0.30	0.30	**70.2%**
62	1974	W	58,920	10,974	21,086	23%	0.23		0.95	0.08	0.28	0.28	**72.0%**
63	1975	W	17,579	10,957	5,624	61%	0.26		0.95	0.08	0.61	0.61	**39.1%**
64	1976	C	19,226	10,974	6,240	59%	0.26		0.95	0.08	0.60	0.60	**40.0%**
65	1977	C	8,016	6,100	2,048	74%	0.32		0.69	0.08	0.53	0.53	**46.6%**
66	1978	A	5,243	3,042	1,011	86%	0.36		0.52	0.08	0.46	0.46	**53.9%**
67	1979	B	15,125	10,957	4,707	63%	0.27		0.95	0.08	0.63	0.63	**37.4%**
68	1980	A	16,301	10,974	5,147	62%	0.27		0.95	0.08	0.62	0.62	**38.2%**
69	1981	D	13,024	10,974	3,921	65%	0.28		0.95	0.08	0.65	0.65	**35.3%**
70	1982	W	37,897	10,957	13,223	24%	0.24		0.95	0.08	0.29	0.29	**71.2%**
71	1983	W	39,107	10,974	13,676	24%	0.24		0.95	0.08	0.29	0.29	**71.3%**
72	1984	W	62,802	7,932	22,538	23%	0.23		0.79	0.08	0.24	0.24	**75.8%**
73	1985	D	35,813	10,974	12,444	24%	0.24		0.95	0.08	0.29	0.29	**71.1%**
74	1986	W	9,949	9,075	2,771	70%	0.30		0.85	0.08	0.62	0.62	**38.2%**
75	1987	D	11,125	8,420	3,211	68%	0.29		0.82	0.08	0.58	0.58	**42.3%**
76	1988	C	8,688	6,941	2,299	73%	0.31		0.74	0.08	0.56	0.56	**44.4%**
77	1989	D	9,730	7,848	2,689	70%	0.30		0.78	0.08	0.57	0.57	**42.6%**
78	1990	C	12,251	10,487	3,632	66%	0.29		0.93	0.08	0.64	0.64	**36.2%**
79	1991	C	7,512	5,176	1,860	76%	0.32		0.64	0.08	0.51	0.51	**49.5%**
80	1992	C	7,714	4,588	1,935	75%	0.32		0.61	0.08	0.48	0.48	**52.2%**

DECEMBER

Row	Year	Sac River Flows (Q)	CVP+SWP exports (T)	Steamboat & Sutter Slough Q (U)	percent (V)	xchannel closed (W)	m1	m2	m3	m23 (AA)	m123 (AB)	Calculated Survival s123 (AC)
10	1922	17,142	11,319	5,461	61%	0.27		0.86		0.53	0.53	**47.4%**
11	1923	34,202	11,303	11,842	24%	0.24		0.86		0.21	0.21	**79.2%**
12	1924	15,353	11,157	4,792	62%	0.27		0.86		0.53	0.53	**46.6%**
13	1925	11,271	8,506	3,265	67%	0.29		0.71		0.48	0.48	**52.0%**
14	1926	10,620	7,026	3,022	68%	0.30		0.63		0.43	0.43	**56.7%**
15	1927	15,841	11,254	4,974	62%	0.27		0.86		0.53	0.53	**46.7%**
16	1928	16,572	11,287	5,248	61%	0.27		0.86		0.53	0.53	**47.1%**
17	1929	13,954	11,140	4,269	64%	0.28		0.85		0.55	0.55	**45.5%**
18	1930	14,767	10,994	4,573	63%	0.27		0.85		0.53	0.53	**46.7%**
19	1931	11,449	6,489	3,332	67%	0.29		0.60		0.40	0.40	**59.5%**
20	1932	14,653	11,401	4,530	63%	0.27		0.87		0.55	0.55	**45.2%**
21	1933	9,904	5,399	2,754	70%	0.30		0.54		0.38	0.38	**62.0%**
22	1934	12,474	9,319	3,715	66%	0.28		0.76		0.50	0.50	**50.4%**
23	1935	8,522	4,895	2,237	73%	0.31		0.52		0.38	0.38	**62.2%**
24	1936	14,767	11,157	4,573	63%	0.27		0.86		0.54	0.54	**46.2%**
25	1937	14,052	11,206	4,305	64%	0.28		0.86		0.55	0.55	**45.4%**
26	1938	51,246	11,742	18,216	23%	0.23		0.89		0.21	0.21	**79.5%**
27	1939	18,687	8,750	6,039	60%	0.26		0.73		0.43	0.43	**56.6%**
28	1940	9,579	5,090	2,633	70%	0.30		0.53		0.37	0.37	**62.8%**
29	1941	32,413	11,563	11,172	24%	0.24		0.88		0.21	0.21	**78.8%**
30	1942	65,623	9,368	23,593	23%	0.23		0.76		0.17	0.17	**82.7%**
31	1943	28,803	10,035	9,822	25%	0.25		0.79		0.20	0.20	**80.5%**
32	1944	13,775	10,474	4,202	64%	0.28		0.82		0.52	0.52	**47.6%**
33	1945	17,272	11,173	5,510	61%	0.27		0.86		0.52	0.52	**47.9%**
34	1946	56,109	11,807	20,035	23%	0.23		0.89		0.20	0.20	**79.5%**
35	1947	17,630	11,352	5,643	61%	0.26		0.87		0.52	0.52	**47.6%**
36	1948	12,149	7,335	3,594	66%	0.29		0.65		0.43	0.43	**57.1%**
37	1949	15,564	11,140	4,871	62%	0.27		0.85		0.53	0.53	**46.9%**
38	1950	12,263	7,644	3,636	66%	0.29		0.67		0.44	0.44	**56.1%**
39	1951	66,631	11,807	23,970	23%	0.23		0.89		0.20	0.20	**79.8%**
40	1952	51,962	11,319	18,484	23%	0.23		0.86		0.20	0.20	**80.0%**
41	1953	42,334	7,953	14,883	24%	0.24		0.68		0.16	0.16	**83.9%**
42	1954	14,914	11,092	4,628	63%	0.27		0.85		0.53	0.53	**46.5%**
43	1955	25,517	11,140	8,593	25%	0.25		0.85		0.21	0.21	**78.7%**
44	1956	32,933	11,807	11,367	24%	0.24		0.89		0.22	0.22	**78.5%**
45	1957	14,149	11,238	4,342	64%	0.28		0.86		0.55	0.55	**45.3%**
46	1958	23,745	11,140	7,930	57%	0.25		0.85		0.49	0.49	**51.1%**
47	1959	14,621	9,937	4,518	63%	0.27		0.79		0.50	0.50	**50.2%**
48	1960	11,856	7,010	3,484	66%	0.29		0.63		0.42	0.42	**58.0%**
49	1961	19,711	11,124	6,422	59%	0.26		0.85		0.51	0.51	**49.5%**
50	1962	18,004	11,124	5,783	60%	0.26		0.85		0.51	0.51	**48.6%**
51	1963	28,054	11,140	9,542	25%	0.25		0.85		0.21	0.21	**79.0%**
52	1964	14,849	11,206	4,603	63%	0.27		0.86		0.54	0.54	**46.1%**
53	1965	27,371	11,677	9,287	25%	0.25		0.88		0.22	0.22	**78.2%**
54	1966	16,995	11,726	5,406	61%	0.27		0.89		0.54	0.54	**45.9%**
55	1967	39,699	11,336	13,897	24%	0.24		0.87		0.20	0.20	**79.5%**
56	1968	16,686	7,953	5,291	61%	0.27		0.68		0.42	0.42	**58.2%**
57	1969	27,144	11,189	9,202	25%	0.25		0.86		0.21	0.21	**78.8%**
58	1970	50,156	7,693	17,809	23%	0.23		0.67		0.15	0.15	**84.5%**
59	1971	57,101	11,254	20,406	23%	0.23		0.86		0.20	0.20	**80.2%**
60	1972	22,053	11,157	7,298	58%	0.25		0.86		0.50	0.50	**50.4%**
61	1973	26,753	11,140	9,056	25%	0.25		0.85		0.21	0.21	**78.8%**
62	1974	61,590	11,384	22,085	23%	0.23		0.87		0.20	0.20	**80.2%**
63	1975	17,613	11,303	5,637	61%	0.26		0.86		0.52	0.52	**47.7%**
64	1976	16,768	11,206	5,321	61%	0.27		0.86		0.52	0.52	**47.5%**
65	1977	9,205	5,058	2,493	71%	0.31		0.53		0.38	0.38	**62.5%**
66	1978	12,295	9,660	3,648	66%	0.28		0.77		0.51	0.51	**49.0%**
67	1979	12,751	9,758	3,819	65%	0.28		0.78		0.51	0.51	**49.1%**
68	1980	21,842	11,206	7,219	58%	0.26		0.86		0.50	0.50	**50.2%**
69	1981	15,613	9,254	4,889	62%	0.27		0.75		0.47	0.47	**53.2%**
70	1982	68,599	11,238	24,706	23%	0.23		0.86		0.19	0.19	**80.5%**
71	1983	55,410	11,807	19,773	23%	0.23		0.89		0.20	0.20	**79.5%**
72	1984	82,944	7,319	30,071	22%	0.22		0.65		0.15	0.15	**85.5%**
73	1985	23,875	11,173	7,979	57%	0.25		0.86		0.49	0.49	**51.1%**
74	1986	16,166	11,157	5,096	62%	0.27		0.86		0.53	0.53	**47.3%**
75	1987	12,864	9,384	3,861	65%	0.28		0.76		0.49	0.49	**50.6%**
76	1988	16,345	11,124	5,163	62%	0.27		0.85		0.53	0.53	**47.5%**
77	1989	10,083	6,017	2,821	69%	0.30		0.58		0.40	0.40	**59.9%**
78	1990	16,117	11,124	5,078	62%	0.27		0.85		0.53	0.53	**47.3%**
79	1991	10,360	5,578	2,925	69%	0.30		0.55		0.38	0.38	**61.8%**
80	1992	8,164	4,440	2,103	74%	0.32		0.49		0.36	0.36	**63.6%**

JANUARY

Row	Year	Sac River Flow (AE)	Total Delta Outflow (AF)	CVP+SWP exports (AI)	Calculated Steamboat & Sutter Slough Q (AJ)	percent (AK)	xchannel closed (AL)	m1 (AM)	m2 (AN)	m3 (AO)	m23 (AP)	m123 (AQ)	Calculated Survival s123 (AR)	Weighted Total Survival (AT)
10	1922	17,499	11,401	11,791	5,595	61%	0.27		0.89		0.54	0.54	**46%**	**46.6%**
11	1923	32,283	33,356	7,855	11,124	24%	0.24		0.68		0.16	0.16	**84%**	**70.2%**
12	1924	18,036	9,726	10,522	5,796	60%	0.26		0.82		0.49	0.49	**51%**	**45.9%**
13	1925	10,213	9,758	3,171	2,870	69%	0.30		0.42		0.29	0.29	**71%**	**55.4%**
14	1926	18,085	9,986	10,848	5,814	60%	0.26		0.84		0.50	0.50	**50%**	**52.1%**
15	1927	30,608	23,810	11,498	10,497	24%	0.24		0.87		0.21	0.21	**79%**	**53.3%**
16	1928	25,208	21,533	7,855	8,478	25%	0.25		0.68		0.17	0.17	**83%**	**54.6%**
17	1929	15,776	9,400	8,701	4,950	62%	0.27		0.72		0.45	0.45	**55%**	**45.4%**
18	1930	21,077	13,694	11,368	6,933	58%	0.26		0.87		0.22	0.22	**78%**	**55.3%**
19	1931	13,775	9,726	6,928	4,202	64%	0.28		0.63		0.40	0.40	**60%**	**54.4%**
20	1932	17,256	11,075	12,035	5,504	61%	0.27		0.90		0.55	0.55	**45%**	**46.7%**
21	1933	13,905	9,726	8,002	4,251	64%	0.28		0.68		0.44	0.44	**56%**	**56.9%**
22	1934	16,101	10,002	9,693	5,072	62%	0.27		0.78		0.48	0.48	**52%**	**51.2%**
23	1935	25,469	21,760	11,872	8,575	25%	0.25		0.89		0.22	0.22	**78%**	**61.1%**
24	1936	32,966	27,599	11,661	11,379	24%	0.24		0.88		0.21	0.21	**79%**	**52.5%**
25	1937	15,223	9,953	9,904	4,743	63%	0.27		0.79		0.49	0.49	**51%**	**46.0%**
26	1938	31,437	31,275	11,108	10,808	24%	0.24		0.85		0.21	0.21	**79%**	**70.0%**
27	1939	18,410	14,312	7,481	5,935	60%	0.26		0.66		0.17	0.17	**83%**	**59.0%**
28	1940	23,696	21,386	12,230	7,912	57%	0.25		0.91		0.23	0.23	**77%**	**62.5%**
29	1941	73,885	103,387	12,393	26,683	23%	0.23		0.92		0.21	0.21	**79%**	**68.1%**
30	1942	63,265	86,700	7,481	22,711	23%	0.23		0.66		0.15	0.15	**85%**	**72.5%**
31	1943	58,060	88,506	7,546	20,765	23%	0.23		0.66		0.15	0.15	**85%**	**71.7%**
32	1944	17,678	11,384	9,530	5,662	60%	0.26		0.77		0.46	0.46	**54%**	**46.1%**
33	1945	13,856	5,107	11,466	4,232	64%	0.28		0.87		0.56	0.56	**44%**	**44.4%**
34	1946	43,228	51,132	9,937	15,217	23%	0.23		0.79		0.19	0.19	**81%**	**69.9%**
35	1947	14,474	5,595	11,628	4,463	63%	0.28		0.88		0.56	0.56	**44%**	**43.8%**
36	1948	16,312	9,742	8,294	5,151	62%	0.27		0.70		0.43	0.43	**57%**	**52.4%**
37	1949	15,906	7,042	11,352	4,999	62%	0.27		0.87		0.54	0.54	**46%**	**44.0%**
38	1950	22,183	15,141	11,401	7,347	58%	0.25		0.87		0.22	0.22	**78%**	**56.6%**
39	1951	62,208	72,681	12,279	22,316	23%	0.23		0.92		0.21	0.21	**79%**	**77.5%**
40	1952	67,347	91,173	12,718	24,238	23%	0.23		0.94		0.21	0.21	**79%**	**69.3%**
41	1953	64,078	100,492	7,546	23,015	23%	0.23		0.66		0.15	0.15	**85%**	**72.9%**
42	1954	33,421	27,908	8,083	11,550	24%	0.24		0.69		0.17	0.17	**83%**	**54.3%**
43	1955	22,004	16,426	11,401	7,280	58%	0.26		0.87		0.22	0.22	**78%**	**68.9%**
44	1956	84,716	174,458	12,718	30,734	22%	0.22		0.94		0.21	0.21	**79%**	**68.0%**
45	1957	18,638	9,791	11,580	6,021	60%	0.26		0.88		0.53	0.53	**47%**	**43.9%**
46	1958	43,179	36,967	11,433	15,199	23%	0.23		0.87		0.20	0.20	**80%**	**55.5%**
47	1959	35,162	31,486	7,563	12,200	24%	0.24		0.66		0.16	0.16	**84%**	**55.7%**
48	1960	15,776	9,742	8,555	4,950	62%	0.27		0.71		0.44	0.44	**56%**	**53.4%**
49	1961	15,255	7,676	11,352	4,755	62%	0.27		0.87		0.54	0.54	**46%**	**45.4%**
50	1962	13,710	4,050	11,336	4,178	64%	0.28		0.87		0.55	0.55	**45%**	**45.4%**
51	1963	18,313	11,092	11,466	5,899	60%	0.26		0.87		0.52	0.52	**48%**	**61.7%**
52	1964	27,046	21,256	10,766	9,165	25%	0.25		0.83		0.21	0.21	**79%**	**60.5%**
53	1965	81,236	120,528	12,718	29,432	22%	0.22		0.94		0.21	0.21	**79%**	**68.0%**
54	1966	29,632	26,184	11,742	10,132	24%	0.24		0.89		0.22	0.22	**78%**	**60.2%**
55	1967	36,837	49,555	11,889	12,827	24%	0.24		0.89		0.21	0.21	**79%**	**69.3%**
56	1968	30,640	28,006	7,546	10,509	24%	0.24		0.66		0.16	0.16	**84%**	**61.7%**
57	1969	71,868	125,944	12,718	25,929	23%	0.23		0.94		0.21	0.21	**79%**	**68.3%**
58	1970	92,669	208,107	7,546	33,708	22%	0.22		0.66		0.15	0.15	**85%**	**73.4%**
59	1971	47,538	46,286	11,677	16,829	23%	0.23		0.88		0.21	0.21	**79%**	**70.4%**
60	1972	20,394	11,206	11,384	6,677	59%	0.26		0.87		0.51	0.51	**49%**	**47.1%**
61	1973	48,400	75,283	11,775	17,152	23%	0.23		0.89		0.21	0.21	**79%**	**76.8%**
62	1974	78,422	129,977	12,555	28,380	22%	0.22		0.93		0.21	0.21	**79%**	**77.9%**
63	1975	18,670	11,840	9,969	6,033	60%	0.26		0.79		0.47	0.47	**53%**	**46.8%**
64	1976	16,768	7,253	11,498	5,321	61%	0.27		0.87		0.53	0.53	**47%**	**45.4%**
65	1977	10,701	10,181	2,131	3,052	68%	0.29		0.37		0.25	0.25	**75%**	**61.6%**
66	1978	47,668	61,378	11,986	16,878	23%	0.23		0.90		0.21	0.21	**79%**	**57.7%**
67	1979	27,241	28,201	7,481	9,238	25%	0.25		0.66		0.16	0.16	**84%**	**54.9%**
68	1980	69,884	118,382	9,563	25,187	23%	0.23		0.77		0.17	0.17	**83%**	**55.3%**
69	1981	28,185	25,615	7,563	9,591	25%	0.25		0.66		0.16	0.16	**84%**	**56.4%**
70	1982	51,165	79,366	12,718	18,186	23%	0.23		0.94		0.22	0.22	**78%**	**77.6%**
71	1983	59,150	106,997	10,132	21,172	23%	0.23		0.80		0.18	0.18	**82%**	**78.0%**
72	1984	47,359	76,422	4,505	16,762	23%	0.23		0.50		0.12	0.12	**88%**	**83.8%**
73	1985	17,646	12,019	8,083	5,650	61%	0.26		0.69		0.18	0.18	**82%**	**63.7%**
74	1986	21,712	14,670	11,563	7,170	58%	0.26		0.88		0.22	0.22	**78%**	**52.6%**
75	1987	16,735	10,132	8,620	5,309	61%	0.27		0.72		0.44	0.44	**56%**	**49.9%**
76	1988	26,022	19,240	11,336	8,782	25%	0.25		0.87		0.22	0.22	**78%**	**54.5%**
77	1989	12,994	9,937	4,749	3,910	65%	0.28		0.51		0.33	0.33	**67%**	**57.3%**
78	1990	22,395	14,865	9,888	7,426	58%	0.25		0.79		0.20	0.20	**80%**	**52.7%**
79	1991	10,653	9,937	1,968	3,034	68%	0.29		0.36		0.25	0.25	**75%**	**62.1%**
80	1992	12,149	10,295	3,773	3,594	66%	0.29		0.46		0.30	0.30	**70%**	**62.3%**
81													**Average:**	**58.97%**

Formulas: D1485 Sacramento River Late Fall Run Smolt Survival Model

```
C10  ='Study 467 Flow Data'!B8
D10  ='Study 467 Flow Data'!L8 (HIDDEN)
E10  ='Study 467 Flow Data'!V8 (HIDDEN)
F10  =(D10+E10)
G10  =0.374*C10-950
H10  =IF(C10>$H$3,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10  =(0.133*C10+829)/(C10-G10)
K10  =(-0.5916024)+(0.017968*$Q$1)+(0.000054*F10)
L10  =-1.613493+(0.0319584*$Q$1)
M10  =(K10*H10)+(L10*(1-H10))
N10  =J10+M10-(J10*M10)
O10  =1-N10

Q10  ='Study 467 Flow Data'!C8
R10  ='Study 467 Flow Data'!M8 (HIDDEN)
S10  ='Study 467 Flow Data'!W8 (HIDDEN)
T10  =(R10+S10)
U10  =0.374*Q10-950
V10  =IF(Q10>$H$3,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10  =(0.133*Q10+829)/(Q10-U10)
Y10  =(-0.5916024)+(0.017968*$Q$2)+(0.000054*T10)
AA10 =(Y10*V10)
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!D8
AF10 ='Study 467 Flow Data'!AI8
AG10 ='Study 467 Flow Data'!N8 (HIDDEN)
AH10 ='Study 467 Flow Data'!X8 (HIDDEN)
AI10 =(AG10+AH10)
AJ10 =0.374*AE10-950
AK10 =IF(AE10>$H$3,(0.133*AE10+829)/(AE10-AJ10),(0.293*AE10+2090)/(AE10-AJ10))
AL10 =(0.133*AE10+829)/(AE10-AJ10)
AN10 =(-0.5916024)+(0.017968*$Q$3)+(0.000054*AI10)
AP10 =IF(AF10>=$H$4,(AN10*AL10),(AN10*AK10))
AQ10 =AM10+AP10-(AM10*AP10)
AR10 =1-AQ10
AT10 =(O10*0.25)+(AC10*0.5)+(AR10*0.25)
```

Study 468 Sacramento River Late Fall Run Smolt Survival Model

Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Year	Water Year Type	Sac River Flow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	A	11,814	8,604	3,469	67%	0.29		0.825	0.080	0.576	0.576	42.4%
1923	B	18,133	10,974	5,832	60%	0.26		0.953	0.080	0.606	0.606	39.4%
1924	C	11,243	7,579	3,255	67%	0.29		0.770	0.080	0.545	0.545	45.5%
1925	D	7,025	4,521	1,677	78%	0.33		0.605	0.080	0.487	0.487	51.3%
1926	D	10,924	7,411	3,135	68%	0.29		0.761	0.080	0.543	0.543	45.7%
1927	W	20,284	10,924	6,636	59%	0.26		0.951	0.080	0.593	0.593	40.7%
1928	A	22,940	10,957	7,629	58%	0.25		0.952	0.080	0.582	0.582	41.8%
1929	C	12,856	9,730	3,858	65%	0.28		0.886	0.080	0.605	0.605	39.5%
1930	D	7,159	4,050	1,728	77%	0.33		0.579	0.080	0.465	0.465	53.5%
1931	C	9,798	5,932	2,714	70%	0.30		0.681	0.080	0.501	0.501	49.9%
1932	D	8,050	2,823	2,061	74%	0.32		0.513	0.080	0.402	0.402	59.8%
1933	C	9,512	5,663	2,607	71%	0.30		0.667	0.080	0.494	0.494	50.6%
1934	C	8,083	2,554	2,073	74%	0.32		0.499	0.080	0.391	0.391	60.9%
1935	B	9,209	6,823	2,494	71%	0.31		0.729	0.080	0.543	0.543	45.7%
1936	B	11,361	7,731	3,299	67%	0.29		0.778	0.080	0.549	0.549	45.1%
1937	B	11,663	7,949	3,412	67%	0.29		0.790	0.080	0.554	0.554	44.6%
1938	W	23,696	10,957	7,912	57%	0.25		0.952	0.080	0.579	0.579	42.1%
1939	D	19,444	9,579	6,322	59%	0.26		0.878	0.080	0.554	0.554	44.6%
1940	A	8,436	4,554	2,205	73%	0.31		0.607	0.080	0.466	0.466	53.4%
1941	W	13,781	10,369	4,204	64%	0.28		0.921	0.080	0.618	0.618	38.2%
1942	W	18,184	10,470	5,851	60%	0.26		0.926	0.080	0.589	0.589	41.1%
1943	W	21,914	10,823	7,246	58%	0.26		0.945	0.080	0.582	0.582	41.8%
1944	D	14,890	10,957	4,619	63%	0.27		0.952	0.080	0.628	0.628	37.2%
1945	B	13,764	10,873	4,198	64%	0.28		0.948	0.080	0.636	0.636	36.4%
1946	B	20,637	10,957	6,768	59%	0.26		0.952	0.080	0.592	0.592	40.8%
1947	D	13,781	10,890	4,204	64%	0.28		0.949	0.080	0.636	0.636	36.4%
1948	B	10,453	6,655	2,959	69%	0.30		0.720	0.080	0.520	0.520	48.0%
1949	D	14,453	10,503	4,455	63%	0.28		0.928	0.080	0.617	0.617	38.3%
1950	B	11,411	7,663	3,318	67%	0.29		0.775	0.080	0.546	0.546	45.4%
1951	A	41,863	10,940	14,707	24%	0.24		0.951	0.080	0.286	0.286	71.4%
1952	W	16,789	10,957	5,329	61%	0.27		0.952	0.080	0.614	0.614	38.6%
1953	W	16,537	8,386	5,235	61%	0.27		0.814	0.080	0.530	0.530	47.0%
1954	A	20,923	10,957	6,875	59%	0.26		0.952	0.080	0.591	0.591	40.9%
1955	D	20,856	10,957	6,850	59%	0.26		0.952	0.080	0.591	0.591	40.9%
1956	W	12,184	8,487	3,607	66%	0.29		0.819	0.080	0.568	0.568	43.2%
1957	A	15,478	10,974	4,839	62%	0.27		0.953	0.080	0.624	0.624	37.6%
1958	W	19,259	10,957	6,253	59%	0.26		0.952	0.080	0.599	0.599	40.1%
1959	B	16,133	8,487	5,084	62%	0.27		0.819	0.080	0.536	0.536	46.4%
1960	D	11,411	7,344	3,318	67%	0.29		0.757	0.080	0.535	0.535	46.5%
1961	D	14,251	10,503	4,380	63%	0.28		0.928	0.080	0.618	0.618	38.2%
1962	B	9,814	6,050	2,721	70%	0.30		0.687	0.080	0.505	0.505	49.5%
1963	W	21,242	10,957	6,995	58%	0.26		0.952	0.080	0.589	0.589	41.1%
1964	D	28,653	10,940	9,766	25%	0.25		0.951	0.080	0.294	0.294	70.6%
1965	W	13,646	10,319	4,154	64%	0.28		0.918	0.080	0.618	0.618	38.2%
1966	B	25,662	10,974	8,648	25%	0.25		0.953	0.080	0.298	0.298	70.2%
1967	W	16,066	10,940	5,059	62%	0.27		0.951	0.080	0.618	0.618	38.2%
1968	B	16,234	8,352	5,122	62%	0.27		0.812	0.080	0.531	0.531	46.9%
1969	W	14,318	10,638	4,405	63%	0.28		0.935	0.080	0.622	0.622	37.8%
1970	W	17,646	8,386	5,650	61%	0.26		0.814	0.080	0.524	0.524	47.6%
1971	W	23,511	10,957	7,843	57%	0.25		0.952	0.080	0.580	0.580	42.0%
1972	B	15,343	10,940	4,788	62%	0.27		0.951	0.080	0.624	0.624	37.6%
1973	A	23,494	10,940	7,837	57%	0.25		0.951	0.080	0.580	0.580	42.0%
1974	W	54,299	10,957	19,358	23%	0.23		0.952	0.080	0.281	0.281	71.9%
1975	W	17,579	9,714	5,624	61%	0.26		0.885	0.080	0.568	0.568	43.2%
1976	C	19,226	10,974	6,240	59%	0.26		0.953	0.080	0.600	0.600	40.0%
1977	C	8,285	6,000	2,149	74%	0.31		0.685	0.080	0.525	0.525	47.5%
1978	A	6,924	4,185	1,640	78%	0.33		0.587	0.080	0.475	0.475	52.5%
1979	B	14,402	10,890	4,436	63%	0.28		0.949	0.080	0.630	0.630	37.0%
1980	A	16,940	10,940	5,386	61%	0.27		0.951	0.080	0.612	0.612	38.8%
1981	D	13,024	9,865	3,921	65%	0.28		0.893	0.080	0.608	0.608	39.2%
1982	W	33,258	10,957	11,489	24%	0.24		0.952	0.080	0.291	0.291	70.9%
1983	W	39,107	10,974	13,676	24%	0.24		0.953	0.080	0.287	0.287	71.3%
1984	W	62,802	6,958	22,538	23%	0.23		0.736	0.080	0.230	0.230	77.0%
1985	D	33,998	10,957	11,765	24%	0.24		0.952	0.080	0.290	0.290	71.0%
1986	W	9,546	6,655	2,620	71%	0.30		0.720	0.080	0.532	0.532	46.8%
1987	D	11,226	7,764	3,249	67%	0.29		0.780	0.080	0.552	0.552	44.8%
1988	C	8,453	4,840	2,211	73%	0.31		0.622	0.080	0.477	0.477	52.3%
1989	D	8,588	5,748	2,262	73%	0.31		0.671	0.080	0.510	0.510	49.0%
1990	C	11,764	7,815	3,450	67%	0.29		0.783	0.080	0.548	0.548	45.2%
1991	C	8,134	4,857	2,092	74%	0.32		0.623	0.080	0.482	0.482	51.8%
1992	C	7,512	4,554	1,860	76%	0.32		0.607	0.080	0.480	0.480	52.0%

DECEMBER

Year	Sac River Flows	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	17,142	11,319	5,461	61%	0.45		0.864		0.393	0.393	60.7%
1923	34,544	8,717	11,969	24%	0.24		0.724		0.174	0.174	82.6%
1924	13,873	10,344	4,238	64%	0.48		0.811		0.386	0.386	61.4%
1925	11,254	9,059	3,259	67%	0.50		0.742		0.372	0.372	62.8%
1926	11,547	8,083	3,369	67%	0.50		0.689		0.343	0.343	65.7%
1927	14,312	11,254	4,403	63%	0.47		0.861		0.407	0.407	59.3%
1928	16,572	9,726	5,248	61%	0.46		0.778		0.356	0.356	64.4%
1929	13,710	10,392	4,178	64%	0.48		0.814		0.389	0.389	61.1%
1930	14,442	10,490	4,451	63%	0.47		0.819		0.387	0.387	61.3%
1931	9,368	5,172	2,554	71%	0.53		0.532		0.281	0.281	71.9%
1932	14,653	11,401	4,530	63%	0.47		0.869		0.408	0.408	59.2%
1933	8,181	4,505	2,110	74%	0.55		0.496		0.272	0.272	72.8%
1934	12,474	9,709	3,715	66%	0.49		0.777		0.380	0.380	62.0%
1935	8,506	6,619	2,231	73%	0.54		0.610		0.331	0.331	66.9%
1936	10,880	7,497	3,119	68%	0.51		0.658		0.333	0.333	66.7%
1937	12,702	9,953	3,800	65%	0.49		0.790		0.384	0.384	61.6%
1938	48,367	11,742	17,139	23%	0.23		0.887		0.206	0.206	79.4%
1939	18,687	7,953	6,039	60%	0.45		0.682		0.305	0.305	69.5%
1940	7,839	4,098	1,982	75%	0.56		0.474		0.264	0.264	73.6%
1941	35,975	11,547	12,505	24%	0.24		0.876		0.210	0.210	79.0%
1942	65,623	7,823	23,593	23%	0.23		0.675		0.154	0.154	84.6%
1943	28,803	7,985	9,822	25%	0.25		0.684		0.168	0.168	83.2%
1944	13,775	10,636	4,202	64%	0.48		0.827		0.395	0.395	60.5%
1945	15,824	11,173	4,968	62%	0.46		0.856		0.396	0.396	60.4%
1946	54,840	11,807	19,560	23%	0.23		0.890		0.205	0.205	79.5%
1947	18,134	11,352	5,832	60%	0.45		0.866		0.389	0.389	61.1%
1948	9,384	5,383	2,560	71%	0.53		0.544		0.286	0.286	71.4%
1949	15,564	11,108	4,871	62%	0.46		0.853		0.396	0.396	60.4%
1950	11,449	7,660	3,332	67%	0.50		0.667		0.333	0.333	66.7%
1951	68,095	11,807	24,518	23%	0.23		0.890		0.202	0.202	79.8%
1952	46,709	11,319	16,519	23%	0.23		0.864		0.202	0.202	79.8%
1953	42,334	7,953	14,883	24%	0.24		0.682		0.161	0.161	83.9%
1954	14,914	8,115	4,628	63%	0.47		0.691		0.324	0.324	67.6%
1955	26,022	11,124	8,782	25%	0.25		0.854		0.212	0.212	78.8%
1956	25,290	11,807	8,508	25%	0.25		0.890		0.222	0.222	77.8%
1957	14,149	10,018	4,342	64%	0.47		0.794		0.376	0.376	62.4%
1958	23,745	11,140	7,930	57%	0.43		0.854		0.366	0.366	63.4%
1959	14,621	8,067	4,518	63%	0.47		0.688		0.324	0.324	67.6%
1960	11,075	7,010	3,192	68%	0.50		0.631		0.318	0.318	68.2%
1961	18,280	11,108	5,887	60%	0.45		0.853		0.383	0.383	61.7%
1962	16,703	11,092	5,297	61%	0.46		0.852		0.389	0.389	61.1%
1963	27,550	11,108	9,354	25%	0.25		0.853		0.211	0.211	78.9%
1964	14,849	10,262	4,603	63%	0.47		0.807		0.378	0.378	62.2%
1965	27,989	11,677	9,518	25%	0.25		0.883		0.218	0.218	78.2%
1966	16,995	10,392	5,406	61%	0.46		0.814		0.371	0.371	62.9%
1967	39,748	11,336	13,916	24%	0.24		0.865		0.205	0.205	79.5%
1968	16,686	7,953	5,291	61%	0.46		0.682		0.312	0.312	68.8%
1969	24,981	11,189	8,393	57%	0.42		0.857		0.364	0.364	63.6%
1970	50,156	7,693	17,809	23%	0.23		0.668		0.155	0.155	84.5%
1971	54,125	11,254	19,293	23%	0.23		0.861		0.198	0.198	80.2%
1972	20,004	10,409	6,532	59%	0.44		0.815		0.360	0.360	64.0%
1973	26,200	11,108	8,849	25%	0.25		0.853		0.212	0.212	78.8%
1974	61,590	11,352	22,085	23%	0.23		0.866		0.198	0.198	80.2%
1975	17,613	8,457	5,637	61%	0.45		0.710		0.321	0.321	67.9%
1976	16,768	8,864	5,321	61%	0.46		0.732		0.334	0.334	66.6%
1977	8,115	4,716	2,085	74%	0.55		0.508		0.279	0.279	72.1%
1978	12,279	9,660	3,642	66%	0.49		0.775		0.380	0.380	62.0%
1979	12,751	7,888	3,819	65%	0.49		0.679		0.330	0.330	67.0%
1980	20,833	11,206	6,842	59%	0.44		0.858		0.376	0.376	62.4%
1981	15,613	8,327	4,889	62%	0.46		0.703		0.326	0.326	67.4%
1982	68,599	11,238	24,706	23%	0.23		0.860		0.195	0.195	80.5%
1983	55,410	8,636	19,773	23%	0.23		0.719		0.165	0.165	83.5%
1984	82,944	6,099	30,071	22%	0.22		0.582		0.131	0.131	86.9%
1985	23,875	10,831	7,979	57%	0.43		0.838		0.358	0.358	64.2%
1986	15,727	11,157	4,932	62%	0.46		0.855		0.396	0.396	60.4%
1987	13,791	10,311	4,208	64%	0.48		0.810		0.386	0.386	61.4%
1988	15,841	11,092	4,974	62%	0.46		0.852		0.394	0.394	60.6%
1989	8,847	5,725	2,359	72%	0.54		0.562		0.301	0.301	69.9%
1990	14,637	10,409	4,524	63%	0.47		0.815		0.383	0.383	61.7%
1991	8,766	4,830	2,328	72%	0.54		0.514		0.276	0.276	72.4%
1992	7,465	4,570	1,842	76%	0.56		0.500		0.282	0.282	71.8%

JANUARY

Year	Sac River Flows	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123	Weighted Total Survival
1922	17,499	11,791	5,595	61%	0.27		0.890		0.236	0.236	76.4%	60.1%
1923	32,283	7,855	11,124	24%	0.24		0.677		0.164	0.164	83.6%	72.1%
1924	14,621	10,864	4,518	63%	0.27		0.840		0.230	0.230	77.0%	61.3%
1925	10,213	6,701	2,870	69%	0.30		0.615		0.183	0.183	81.7%	64.6%
1926	19,776	11,352	6,446	59%	0.26		0.866		0.225	0.225	77.5%	63.6%
1927	29,681	11,498	10,151	24%	0.24		0.874		0.214	0.214	78.6%	59.5%
1928	26,103	7,855	8,812	25%	0.25		0.677		0.168	0.168	83.2%	63.4%
1929	15,515	11,303	4,853	62%	0.27		0.863		0.234	0.234	76.6%	59.6%
1930	20,768	11,303	6,817	59%	0.26		0.863		0.222	0.222	77.8%	63.5%
1931	11,970	9,091	3,527	66%	0.29		0.744		0.213	0.213	78.7%	68.1%
1932	17,256	12,035	5,504	61%	0.27		0.903		0.240	0.240	76.0%	63.5%
1933	12,100	9,628	3,575	66%	0.29		0.773		0.221	0.221	77.9%	68.5%
1934	16,101	11,368	5,072	62%	0.27		0.867		0.233	0.233	76.7%	65.4%
1935	25,469	11,872	8,575	25%	0.25		0.894		0.223	0.223	77.7%	64.3%
1936	32,039	11,661	11,033	24%	0.24		0.883		0.214	0.214	78.6%	64.3%
1937	16,215	11,791	5,114	62%	0.27		0.890		0.239	0.239	76.1%	60.9%
1938	31,437	8,148	10,808	24%	0.24		0.693		0.168	0.168	83.2%	71.0%
1939	18,410	7,449	5,935	60%	0.26		0.655		0.172	0.172	82.8%	66.6%
1940	23,452	12,230	7,821	57%	0.25		0.913		0.231	0.231	76.9%	69.4%
1941	72,291	12,344	26,087	23%	0.23		0.919		0.208	0.208	79.2%	68.9%
1942	63,265	7,449	22,711	23%	0.23		0.655		0.149	0.149	85.1%	73.9%
1943	58,060	7,514	20,765	23%	0.23		0.659		0.151	0.151	84.9%	73.3%
1944	17,678	7,481	5,662	60%	0.26		0.657		0.174	0.174	82.6%	60.2%
1945	12,685	9,400	3,794	65%	0.28		0.761		0.215	0.215	78.5%	58.9%
1946	43,228	7,855	15,217	23%	0.23		0.677		0.159	0.159	84.1%	71.0%
1947	15,223	10,897	4,743	63%	0.27		0.841		0.229	0.229	77.1%	58.9%
1948	14,897	10,734	4,622	63%	0.27		0.833		0.228	0.228	77.2%	67.0%
1949	14,930	11,027	4,634	63%	0.27		0.848		0.232	0.232	76.8%	59.0%
1950	20,931	11,384	6,878	59%	0.26		0.868		0.223	0.223	77.7%	64.1%
1951	62,208	11,531	22,316	23%	0.23		0.876		0.200	0.200	80.0%	77.8%
1952	67,347	11,059	24,238	23%	0.23		0.850		0.193	0.193	80.7%	69.8%
1953	64,078	7,546	23,015	23%	0.23		0.660		0.150	0.150	85.0%	75.0%
1954	33,421	8,067	11,550	24%	0.24		0.688		0.166	0.166	83.4%	64.9%
1955	22,265	10,230	7,377	58%	0.25		0.805		0.205	0.205	79.5%	69.5%
1956	83,724	12,230	30,363	22%	0.22		0.913		0.205	0.205	79.5%	69.6%
1957	18,638	8,099	6,021	60%	0.26		0.690		0.181	0.181	81.9%	61.1%
1958	36,463	7,579	12,687	24%	0.24		0.662		0.158	0.158	84.2%	62.8%
1959	35,162	7,546	12,200	24%	0.24		0.660		0.158	0.158	84.2%	66.4%
1960	14,523	10,620	4,482	63%	0.27		0.826		0.227	0.227	77.3%	65.1%
1961	15,011	11,287	4,664	63%	0.27		0.862		0.235	0.235	76.5%	59.5%
1962	12,653	8,132	3,782	65%	0.28		0.692		0.196	0.196	80.4%	63.0%
1963	18,280	11,466	5,887	60%	0.26		0.872		0.229	0.229	77.1%	69.0%
1964	25,534	8,083	8,600	25%	0.25		0.689		0.172	0.172	82.8%	69.4%
1965	81,236	12,718	29,432	22%	0.22		0.940		0.211	0.211	78.9%	68.4%
1966	29,632	7,872	10,132	24%	0.24		0.678		0.166	0.166	83.4%	69.9%
1967	34,625	11,889	12,000	24%	0.24		0.895		0.215	0.215	78.5%	68.9%
1968	30,640	7,546	10,509	24%	0.24		0.660		0.161	0.161	83.9%	67.1%
1969	68,502	9,498	24,670	23%	0.23		0.766		0.174	0.174	82.6%	61.9%
1970	92,669	7,497	33,708	22%	0.22		0.658		0.147	0.147	85.3%	75.5%
1971	46,888	9,677	16,586	23%	0.23		0.775		0.181	0.181	81.9%	71.1%
1972	20,394	8,099	6,677	59%	0.26		0.690		0.178	0.178	82.2%	62.0%
1973	49,376	10,620	17,517	23%	0.23		0.826		0.192	0.192	80.8%	70.1%
1974	78,422	7,855	28,380	22%	0.22		0.677		0.152	0.152	84.8%	79.3%
1975	18,670	8,067	6,033	60%	0.26		0.688		0.180	0.180	82.0%	65.3%
1976	16,768	8,018	5,321	61%	0.27		0.686		0.183	0.183	81.7%	63.7%
1977	7,660	4,538	1,915	75%	0.32		0.498		0.160	0.160	84.0%	68.9%
1978	43,066	10,295	15,157	23%	0.23		0.809		0.190	0.190	81.0%	64.4%
1979	27,241	7,481	9,238	25%	0.25		0.657		0.162	0.162	83.8%	63.7%
1980	63,623	7,367	22,845	23%	0.23		0.651		0.148	0.148	85.2%	62.2%
1981	28,607	7,563	9,749	25%	0.25		0.661		0.162	0.162	83.8%	64.5%
1982	51,165	11,856	18,186	23%	0.23		0.893		0.207	0.207	79.3%	77.8%
1983	59,150	6,863	21,172	23%	0.23		0.624		0.143	0.143	85.7%	81.0%
1984	47,359	4,212	16,762	23%	0.23		0.480		0.112	0.112	88.8%	84.9%
1985	16,800	8,083	5,333	61%	0.27		0.689		0.184	0.184	81.6%	70.2%
1986	21,500	11,563	7,091	58%	0.26		0.877		0.225	0.225	77.5%	61.3%
1987	16,735	7,465	5,309	61%	0.27		0.656		0.175	0.175	82.5%	62.5%
1988	25,534	11,271	8,600	25%	0.25		0.862		0.215	0.215	78.5%	63.0%
1989	12,002	8,717	3,539	66%	0.29		0.724		0.207	0.207	79.3%	67.0%
1990	21,582	9,612	7,122	58%	0.26		0.772		0.197	0.197	80.3%	62.2%
1991	6,847	3,399	1,611	78%	0.33		0.436		0.145	0.145	85.5%	70.5%
1992	12,133	8,994	3,588	66%	0.29		0.739		0.211	0.211	78.9%	68.6%
											Average:	66.81%

Formulas: Sacramento River Late Fall Run Smolt Survival Model

```
C10 ='Study 468 Flow Data'!B7
D10 ='Study 468 Flow Data'!L7      (HIDDEN)
E10 ='Study 468 Flow Data'!V7      (HIDDEN)
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =-1.613493+(0.0319584*$T$1)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 468 Flow Data'!C7
R10 ='Study 468 Flow Data'!M7      (HIDDEN)
S10 ='Study 468 Flow Data'!W7      (HIDDEN)
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 468 Flow Data'!D7
AF10 ='Study 468 Flow Data'!N7     (HIDDEN)
AG10 ='Study 468 Flow Data'!X7     (HIDDEN)
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
AS10 =(O10*0.25)+(AC10*0.5)+(AQ10*0.25)
```

Study 506 Sacramento River Late Fall Run Smolt Survival Model

Modified m2 by changing the slope to 0.000054

Cross Channel closed for 45 consecutive days, Dec 18-Jan 31

Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F

December Sacramento River Temp: 47 degrees F

January Sacramento River Temp: 47 degrees F

NOVEMBER

Year	Water Year Type	Sac River Flow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	A	11,814	8,604	3,469	67%	0.29		0.825	0.080	0.576	0.576	**42.4%**
1923	B	18,133	10,974	5,832	60%	0.26		0.953	0.080	0.606	0.606	**39.4%**
1924	C	11,243	7,579	3,255	67%	0.29		0.770	0.080	0.545	0.545	**45.5%**
1925	D	7,025	4,521	1,677	78%	0.33		0.605	0.080	0.487	0.487	**51.3%**
1926	D	10,924	7,411	3,135	68%	0.29		0.761	0.080	0.543	0.543	**45.7%**
1927	W	20,536	10,924	6,731	59%	0.26		0.951	0.080	0.591	0.591	**40.9%**
1928	A	23,343	10,957	7,780	57%	0.25		0.952	0.080	0.581	0.581	**41.9%**
1929	C	12,856	9,747	3,858	65%	0.28		0.887	0.080	0.605	0.605	**39.5%**
1930	D	7,159	4,050	1,728	77%	0.33		0.579	0.080	0.465	0.465	**53.5%**
1931	C	9,764	5,916	2,702	70%	0.30		0.680	0.080	0.501	0.501	**49.9%**
1932	D	8,235	3,059	2,130	74%	0.32		0.526	0.080	0.409	0.409	**59.1%**
1933	C	9,512	5,663	2,607	71%	0.30		0.667	0.080	0.494	0.494	**50.6%**
1934	C	8,638	3,109	2,281	73%	0.31		0.529	0.080	0.406	0.406	**59.4%**
1935	B	9,209	6,840	2,494	71%	0.31		0.730	0.080	0.544	0.544	**45.6%**
1936	B	11,865	8,218	3,487	66%	0.29		0.804	0.080	0.561	0.561	**43.9%**
1937	B	11,411	7,697	3,318	67%	0.29		0.776	0.080	0.548	0.548	**45.2%**
1938	W	23,948	10,957	8,007	57%	0.25		0.952	0.080	0.578	0.578	**42.2%**
1939	D	19,444	9,562	6,322	59%	0.26		0.877	0.080	0.553	0.553	**44.7%**
1940	A	8,436	4,554	2,205	73%	0.31		0.607	0.080	0.466	0.466	**53.4%**
1941	W	13,764	10,369	4,198	64%	0.28		0.921	0.080	0.618	0.618	**38.2%**
1942	W	18,184	10,436	5,851	60%	0.26		0.924	0.080	0.588	0.588	**41.2%**
1943	W	21,914	10,806	7,246	58%	0.26		0.944	0.080	0.582	0.582	**41.8%**
1944	D	15,125	10,957	4,707	63%	0.27		0.952	0.080	0.626	0.626	**37.4%**
1945	B	14,016	10,940	4,292	64%	0.28		0.951	0.080	0.635	0.635	**36.5%**
1946	B	20,856	10,957	6,850	59%	0.26		0.952	0.080	0.591	0.591	**40.9%**
1947	D	13,999	10,940	4,286	64%	0.28		0.951	0.080	0.636	0.636	**36.4%**
1948	B	11,108	7,310	3,205	68%	0.29		0.755	0.080	0.537	0.537	**46.3%**
1949	D	14,453	10,520	4,455	63%	0.28		0.929	0.080	0.617	0.617	**38.3%**
1950	B	11,529	7,781	3,362	67%	0.29		0.781	0.080	0.549	0.549	**45.1%**
1951	A	43,308	10,940	15,247	23%	0.23		0.951	0.080	0.285	0.285	**71.5%**
1952	W	16,806	10,957	5,335	61%	0.27		0.952	0.080	0.614	0.614	**38.6%**
1953	W	16,537	8,386	5,235	61%	0.27		0.814	0.080	0.530	0.530	**47.0%**
1954	A	20,957	10,957	6,888	59%	0.26		0.952	0.080	0.590	0.590	**41.0%**
1955	D	20,856	10,957	6,850	59%	0.26		0.952	0.080	0.591	0.591	**40.9%**
1956	W	12,184	8,504	3,607	66%	0.29		0.820	0.080	0.568	0.568	**43.2%**
1957	A	15,478	10,974	4,839	62%	0.27		0.953	0.080	0.624	0.624	**37.6%**
1958	W	19,259	10,957	6,253	59%	0.26		0.952	0.080	0.599	0.599	**40.1%**
1959	B	16,133	8,487	5,084	62%	0.27		0.819	0.080	0.536	0.536	**46.4%**
1960	D	11,411	7,344	3,318	67%	0.29		0.757	0.080	0.535	0.535	**46.5%**
1961	D	14,251	10,503	4,380	63%	0.28		0.928	0.080	0.618	0.618	**38.2%**
1962	B	10,184	6,420	2,859	69%	0.30		0.707	0.080	0.515	0.515	**48.5%**
1963	W	21,242	10,957	6,995	58%	0.26		0.952	0.080	0.589	0.589	**41.1%**
1964	D	28,653	10,940	9,766	25%	0.25		0.951	0.080	0.294	0.294	**70.6%**
1965	W	13,646	10,319	4,154	64%	0.28		0.918	0.080	0.618	0.618	**38.2%**
1966	B	25,410	10,974	8,553	25%	0.25		0.953	0.080	0.298	0.298	**70.2%**
1967	W	17,579	10,940	5,624	61%	0.26		0.951	0.080	0.608	0.608	**39.2%**
1968	B	16,234	8,352	5,122	62%	0.27		0.812	0.080	0.531	0.531	**46.9%**
1969	W	13,814	10,302	4,216	64%	0.28		0.917	0.080	0.615	0.615	**38.5%**
1970	W	17,646	8,386	5,650	61%	0.26		0.814	0.080	0.524	0.524	**47.6%**
1971	W	24,217	10,957	8,107	57%	0.25		0.952	0.080	0.578	0.578	**42.2%**
1972	B	15,343	10,940	4,788	62%	0.27		0.951	0.080	0.624	0.624	**37.6%**
1973	A	24,889	10,940	8,358	57%	0.25		0.951	0.080	0.575	0.575	**42.5%**
1974	W	56,786	10,957	20,288	23%	0.23		0.952	0.080	0.281	0.281	**71.9%**
1975	W	17,579	9,714	5,624	61%	0.26		0.885	0.080	0.568	0.568	**43.2%**
1976	C	19,226	10,974	6,240	59%	0.26		0.953	0.080	0.600	0.600	**40.0%**
1977	C	8,386	6,100	2,186	73%	0.31		0.690	0.080	0.528	0.528	**47.2%**
1978	A	6,924	4,168	1,640	78%	0.33		0.586	0.080	0.474	0.474	**52.6%**
1979	B	15,142	10,974	4,713	63%	0.27		0.953	0.080	0.627	0.627	**37.3%**
1980	A	18,721	10,940	6,052	60%	0.26		0.951	0.080	0.601	0.601	**39.9%**
1981	D	13,024	9,865	3,921	65%	0.28		0.893	0.080	0.608	0.608	**39.2%**
1982	W	34,098	10,957	11,803	24%	0.24		0.952	0.080	0.290	0.290	**71.0%**
1983	W	39,107	10,974	13,676	24%	0.24		0.953	0.080	0.287	0.287	**71.3%**
1984	W	62,802	6,958	22,538	23%	0.23		0.736	0.080	0.230	0.230	**77.0%**
1985	D	33,998	10,957	11,765	24%	0.24		0.952	0.080	0.290	0.290	**71.0%**
1986	W	9,646	6,773	2,658	70%	0.30		0.726	0.080	0.535	0.535	**46.5%**
1987	D	11,209	7,764	3,242	67%	0.29		0.780	0.080	0.552	0.552	**44.8%**
1988	C	8,453	4,840	2,211	73%	0.31		0.622	0.080	0.477	0.477	**52.3%**
1989	D	8,991	6,151	2,413	72%	0.31		0.693	0.080	0.520	0.520	**48.0%**
1990	C	11,764	7,815	3,450	67%	0.29		0.783	0.080	0.548	0.548	**45.2%**
1991	C	8,134	4,857	2,092	74%	0.32		0.623	0.080	0.482	0.482	**51.8%**
1992	C	7,647	4,521	1,910	75%	0.32		0.605	0.080	0.476	0.476	**52.4%**

DECEMBER

Year	Sac River Flows	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	17,142	11,319	5,461	61%	0.45		0.864		0.393	0.393	**60.7%**
1923	34,544	8,668	11,969	24%	0.24		0.721		0.173	0.173	**82.7%**
1924	13,873	10,344	4,238	64%	0.48		0.811		0.386	0.386	**61.4%**
1925	11,254	9,059	3,259	67%	0.50		0.742		0.372	0.372	**62.8%**
1926	11,547	8,034	3,369	67%	0.50		0.687		0.342	0.342	**65.8%**
1927	14,556	11,254	4,494	63%	0.47		0.861		0.405	0.405	**59.5%**
1928	16,572	10,376	5,248	61%	0.46		0.813		0.372	0.372	**62.8%**
1929	13,710	10,392	4,178	64%	0.48		0.814		0.389	0.389	**61.1%**
1930	14,442	10,506	4,451	63%	0.47		0.820		0.387	0.387	**61.3%**
1931	9,563	5,399	2,627	71%	0.52		0.544		0.285	0.285	**71.5%**
1932	14,653	11,401	4,530	63%	0.47		0.869		0.408	0.408	**59.2%**
1933	8,148	4,489	2,097	74%	0.55		0.495		0.272	0.272	**72.8%**
1934	12,474	9,709	3,715	66%	0.49		0.777		0.380	0.380	**62.0%**
1935	8,506	6,619	2,231	73%	0.54		0.610		0.331	0.331	**66.9%**
1936	11,628	8,246	3,399	67%	0.50		0.698		0.347	0.347	**65.3%**
1937	12,458	9,791	3,709	66%	0.49		0.782		0.382	0.382	**61.8%**
1938	51,149	11,742	18,180	23%	0.23		0.887		0.205	0.205	**79.5%**
1939	18,687	7,953	6,039	60%	0.45		0.682		0.305	0.305	**69.5%**
1940	7,839	4,115	1,982	75%	0.56		0.475		0.264	0.264	**73.6%**
1941	35,601	11,547	12,365	24%	0.24		0.876		0.210	0.210	**79.0%**
1942	65,623	7,823	23,593	23%	0.23		0.675		0.154	0.154	**84.6%**
1943	28,803	7,985	9,822	25%	0.25		0.684		0.168	0.168	**83.2%**
1944	13,775	10,636	4,202	64%	0.48		0.827		0.395	0.395	**60.5%**
1945	16,068	11,173	5,060	62%	0.46		0.856		0.395	0.395	**60.5%**
1946	55,344	11,807	19,749	23%	0.23		0.890		0.205	0.205	**79.5%**
1947	18,134	11,352	5,832	60%	0.45		0.866		0.389	0.389	**61.1%**
1948	11,433	7,449	3,326	67%	0.50		0.655		0.327	0.327	**67.3%**
1949	15,564	11,108	4,871	62%	0.46		0.853		0.396	0.396	**60.4%**
1950	11,693	7,888	3,423	67%	0.50		0.679		0.337	0.337	**66.3%**
1951	68,095	11,807	24,518	23%	0.23		0.890		0.202	0.202	**79.8%**
1952	47,408	11,319	16,781	23%	0.23		0.864		0.201	0.201	**79.9%**
1953	42,334	7,953	14,883	24%	0.24		0.682		0.161	0.161	**83.9%**
1954	14,914	8,115	4,628	63%	0.47		0.691		0.324	0.324	**67.6%**
1955	26,022	11,124	8,782	25%	0.25		0.854		0.212	0.212	**78.8%**
1956	27,355	11,807	9,281	25%	0.25		0.890		0.220	0.220	**78.0%**
1957	14,149	10,051	4,342	64%	0.47		0.796		0.377	0.377	**62.3%**
1958	23,745	11,140	7,930	57%	0.43		0.854		0.366	0.366	**63.4%**
1959	14,621	8,067	4,518	63%	0.47		0.688		0.324	0.324	**67.6%**
1960	11,075	7,010	3,192	68%	0.50		0.631		0.318	0.318	**68.2%**
1961	19,484	11,108	6,337	59%	0.44		0.853		0.378	0.378	**62.2%**
1962	16,947	11,092	5,388	61%	0.46		0.852		0.388	0.388	**61.2%**
1963	27,550	11,108	9,354	25%	0.25		0.853		0.211	0.211	**78.9%**
1964	14,849	10,246	4,603	63%	0.47		0.806		0.378	0.378	**62.2%**
1965	29,079	11,515	9,926	25%	0.25		0.875		0.214	0.214	**78.6%**
1966	16,995	10,457	5,406	61%	0.46		0.818		0.372	0.372	**62.8%**
1967	39,699	11,336	13,897	24%	0.24		0.865		0.205	0.205	**79.5%**
1968	16,686	7,953	5,291	61%	0.46		0.682		0.312	0.312	**68.8%**
1969	25,160	11,189	8,460	25%	0.25		0.857		0.214	0.214	**78.6%**
1970	50,156	7,693	17,809	23%	0.23		0.668		0.155	0.155	**84.5%**
1971	54,401	11,254	19,396	23%	0.23		0.861		0.198	0.198	**80.2%**
1972	20,134	10,392	6,580	59%	0.44		0.814		0.359	0.359	**64.1%**
1973	26,200	11,108	8,849	25%	0.25		0.853		0.212	0.212	**78.8%**
1974	61,590	11,352	22,085	23%	0.23		0.866		0.198	0.198	**80.2%**
1975	17,613	8,457	5,637	61%	0.45		0.710		0.321	0.321	**67.9%**
1976	16,768	8,864	5,321	61%	0.46		0.732		0.334	0.334	**66.6%**
1977	8,229	4,798	2,128	74%	0.55		0.512		0.280	0.280	**72.0%**
1978	12,279	9,660	3,642	66%	0.49		0.775		0.380	0.380	**62.0%**
1979	12,751	7,888	3,819	65%	0.49		0.679		0.330	0.330	**67.0%**
1980	20,833	11,206	6,842	59%	0.44		0.858		0.376	0.376	**62.4%**
1981	15,613	8,278	4,889	62%	0.46		0.700		0.325	0.325	**67.5%**
1982	68,599	11,157	24,706	23%	0.23		0.855		0.194	0.194	**80.6%**
1983	55,410	8,636	19,773	23%	0.23		0.719		0.165	0.165	**83.5%**
1984	82,944	6,099	30,071	22%	0.22		0.582		0.131	0.131	**86.9%**
1985	23,875	9,953	7,979	57%	0.43		0.790		0.338	0.338	**66.2%**
1986	15,971	11,157	5,023	62%	0.46		0.855		0.395	0.395	**60.5%**
1987	13,791	10,311	4,208	64%	0.48		0.810		0.386	0.386	**61.4%**
1988	15,841	11,092	4,974	62%	0.46		0.852		0.394	0.394	**60.6%**
1989	9,303	6,847	2,529	71%	0.53		0.623		0.329	0.329	**67.1%**
1990	14,637	10,409	4,524	63%	0.47		0.815		0.383	0.383	**61.7%**
1991	8,782	4,879	2,335	72%	0.54		0.516		0.277	0.277	**72.3%**
1992	7,465	4,570	1,842	76%	0.56		0.500		0.282	0.282	**71.8%**

JANUARY

Year	Sac River Flows	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**	**Weighted Total Survival**
1922	17,499	11,791	5,595	61%	0.27		0.890		0.236	0.236	**76.4%**	**60.1%**
1923	32,283	7,855	11,124	24%	0.24		0.677		0.164	0.164	**83.6%**	**72.1%**
1924	14,621	10,864	4,518	63%	0.27		0.840		0.230	0.230	**77.0%**	**61.3%**
1925	10,213	6,701	2,870	69%	0.30		0.615		0.183	0.183	**81.7%**	**64.6%**
1926	19,776	11,303	6,446	59%	0.26		0.863		0.224	0.224	**77.6%**	**63.7%**
1927	32,624	11,498	11,252	24%	0.24		0.874		0.211	0.211	**78.9%**	**59.7%**
1928	26,509	7,855	8,965	25%	0.25		0.677		0.168	0.168	**83.2%**	**62.7%**
1929	15,515	11,303	4,853	62%	0.27		0.863		0.234	0.234	**76.6%**	**59.6%**
1930	20,768	11,303	6,817	59%	0.26		0.863		0.222	0.222	**77.8%**	**63.5%**
1931	12,214	9,270	3,618	66%	0.29		0.753		0.215	0.215	**78.5%**	**67.8%**
1932	17,256	12,002	5,504	61%	0.27		0.901		0.240	0.240	**76.0%**	**63.4%**
1933	12,100	9,628	3,575	66%	0.29		0.773		0.221	0.221	**77.9%**	**68.5%**
1934	16,101	11,303	5,072	62%	0.27		0.863		0.232	0.232	**76.8%**	**65.0%**
1935	25,469	11,872	8,575	25%	0.25		0.894		0.223	0.223	**77.7%**	**64.3%**
1936	32,527	11,661	11,215	24%	0.24		0.883		0.213	0.213	**78.7%**	**63.3%**
1937	15,971	11,791	5,023	62%	0.27		0.890		0.240	0.240	**76.0%**	**61.2%**
1938	31,535	7,449	10,844	24%	0.24		0.655		0.159	0.159	**84.1%**	**71.3%**
1939	18,410	7,449	5,935	60%	0.26		0.655		0.172	0.172	**82.8%**	**66.6%**
1940	23,452	12,230	7,821	57%	0.25		0.913		0.231	0.231	**76.9%**	**69.4%**
1941	73,169	12,376	26,415	23%	0.23		0.921		0.208	0.208	**79.2%**	**68.9%**
1942	63,265	7,449	22,711	23%	0.23		0.655		0.149	0.149	**85.1%**	**73.9%**
1943	58,060	7,514	20,765	23%	0.23		0.659		0.151	0.151	**84.9%**	**73.3%**
1944	17,678	7,481	5,662	60%	0.26		0.657		0.174	0.174	**82.6%**	**60.3%**
1945	13,255	9,807	4,007	65%	0.28		0.782		0.219	0.219	**78.1%**	**58.9%**
1946	43,228	7,855	15,217	23%	0.23		0.677		0.159	0.159	**84.1%**	**71.0%**
1947	15,223	10,945	4,743	63%	0.27		0.844		0.230	0.230	**77.0%**	**58.9%**
1948	15,645	11,222	4,901	62%	0.27		0.859		0.233	0.233	**76.7%**	**64.4%**
1949	14,930	11,027	4,634	63%	0.27		0.848		0.232	0.232	**76.8%**	**59.0%**
1950	21,191	11,384	6,976	58%	0.26		0.868		0.223	0.223	**77.7%**	**63.8%**
1951	62,208	11,661	22,316	23%	0.23		0.883		0.201	0.201	**79.9%**	**77.7%**
1952	67,347	10,978	24,238	23%	0.23		0.846		0.192	0.192	**80.8%**	**69.8%**
1953	64,078	7,546	23,015	23%	0.23		0.660		0.150	0.150	**85.0%**	**75.0%**
1954	33,421	8,067	11,550	24%	0.24		0.688		0.166	0.166	**83.4%**	**64.9%**
1955	22,265	10,132	7,377	58%	0.25		0.800		0.204	0.204	**79.6%**	**69.5%**
1956	84,716	12,198	30,734	22%	0.22		0.912		0.204	0.204	**79.6%**	**69.7%**
1957	18,638	8,099	6,021	60%	0.26		0.690		0.181	0.181	**81.9%**	**61.0%**
1958	36,463	7,774	12,687	24%	0.24		0.673		0.161	0.161	**83.9%**	**62.7%**
1959	35,162	7,546	12,200	24%	0.24		0.660		0.158	0.158	**84.2%**	**66.4%**
1960	14,523	10,620	4,482	63%	0.27		0.826		0.227	0.227	**77.3%**	**65.1%**
1961	15,011	11,287	4,664	63%	0.27		0.862		0.235	0.235	**76.5%**	**59.8%**
1962	12,897	8,376	3,873	65%	0.28		0.705		0.199	0.199	**80.1%**	**62.8%**
1963	17,808	11,466	5,710	60%	0.26		0.872		0.230	0.230	**77.0%**	**69.0%**
1964	25,713	8,083	8,666	25%	0.25		0.689		0.172	0.172	**82.8%**	**69.4%**
1965	81,236	12,718	29,432	22%	0.22		0.940		0.211	0.211	**78.9%**	**68.6%**
1966	29,632	7,872	10,132	24%	0.24		0.678		0.166	0.166	**83.4%**	**69.8%**
1967	34,153	11,889	11,823	24%	0.24		0.895		0.215	0.215	**78.5%**	**69.2%**
1968	30,640	7,546	10,509	24%	0.24		0.660		0.161	0.161	**83.9%**	**67.1%**
1969	70,177	10,522	25,296	23%	0.23		0.821		0.186	0.186	**81.4%**	**69.3%**
1970	92,669	7,497	33,708	22%	0.22		0.658		0.147	0.147	**85.3%**	**75.5%**
1971	47,262	9,677	16,726	23%	0.23		0.775		0.181	0.181	**81.9%**	**71.1%**
1972	20,394	8,099	6,677	59%	0.26		0.690		0.178	0.178	**82.2%**	**62.0%**
1973	50,156	11,124	17,809	23%	0.23		0.854		0.198	0.198	**80.2%**	**70.1%**
1974	78,422	7,855	28,380	22%	0.22		0.677		0.152	0.152	**84.8%**	**79.3%**
1975	18,670	8,067	6,033	60%	0.26		0.688		0.180	0.180	**82.0%**	**65.3%**
1976	16,768	8,018	5,321	61%	0.27		0.686		0.183	0.183	**81.7%**	**63.7%**
1977	7,660	4,538	1,915	75%	0.32		0.498		0.160	0.160	**84.0%**	**68.8%**
1978	43,066	10,831	15,157	23%	0.23		0.838		0.197	0.197	**80.3%**	**64.2%**
1979	27,241	7,481	9,238	25%	0.25		0.657		0.162	0.162	**83.8%**	**63.8%**
1980	64,452	7,367	23,155	23%	0.23		0.651		0.148	0.148	**85.2%**	**62.5%**
1981	28,656	7,563	9,767	25%	0.25		0.661		0.162	0.162	**83.8%**	**64.5%**
1982	51,165	11,921	18,186	23%	0.23		0.897		0.208	0.208	**79.2%**	**77.9%**
1983	59,150	6,863	21,172	23%	0.23		0.624		0.143	0.143	**85.7%**	**81.0%**
1984	47,359	4,212	16,762	23%	0.23		0.480		0.112	0.112	**88.8%**	**84.9%**
1985	16,800	8,083	5,333	61%	0.27		0.689		0.184	0.184	**81.6%**	**71.2%**
1986	23,354	11,384	7,785	57%	0.25		0.868		0.219	0.219	**78.1%**	**61.4%**
1987	16,735	7,741	5,309	61%	0.27		0.671		0.179	0.179	**82.1%**	**62.4%**
1988	25,534	11,271	8,600	25%	0.25		0.862		0.215	0.215	**78.5%**	**63.0%**
1989	12,490	9,059	3,721	66%	0.28		0.742		0.211	0.211	**78.9%**	**65.3%**
1990	21,582	9,839	7,122	58%	0.26		0.784		0.201	0.201	**79.9%**	**62.1%**
1991	6,847	3,399	1,611	78%	0.33		0.436		0.145	0.145	**85.5%**	**70.5%**
1992	12,133	8,994	3,588	66%	0.29		0.739		0.211	0.211	**78.9%**	**68.7%**
											Average:	**66.85%**

Formulas: Sacramento River Late Fall Run Smolt Survival Model

```
C10 ='Study 513 Revised Flow Data'!B7
D10 ='Study 513 Revised Flow Data' (HIDDEN)
E10 ='Study 513 Revised Flow Data' (HIDDEN)
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =-1.613493+(0.0319584*$T$1)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 513 Revised Flow Data'!C7
R10 ='Study 513 Revised Flow Data'!I (HIDDEN)
S10 ='Study 513 Revised Flow Data'!' (HIDDEN)
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 513 Revised Flow Data'!D7
AF10 ='Study 513 Revised Flow Data'!I (HIDDEN)
AG10 ='Study 513 Revised Flow Data'!: (HIDDEN)
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
AS10 =(O10*0.25)+(AC10*0.5)+(AQ10*0.25)
```

Study 507 Sacramento River Late Fall Run Smolt Survival Model

Modified m2 by changing the slope to 0.000054

Cross Channel closed for 45 consecutive days, Dec 18-Jan 31

Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Year	Water Year Type	Sac River Flow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	A	11,814	8,604	3,469	67%	0.29		0.825	0.080	0.576	0.576	42.4%
1923	B	18,133	10,974	5,832	60%	0.26		0.953	0.080	0.606	0.606	39.4%
1924	C	11,243	7,579	3,255	67%	0.29		0.770	0.080	0.545	0.545	45.5%
1925	D	7,025	4,521	1,677	78%	0.33		0.605	0.080	0.487	0.487	51.3%
1926	D	10,924	7,411	3,135	68%	0.29		0.761	0.080	0.543	0.543	45.7%
1927	W	20,536	10,924	6,731	59%	0.26		0.951	0.080	0.591	0.591	40.9%
1928	A	23,360	10,957	7,787	57%	0.25		0.952	0.080	0.581	0.581	41.9%
1929	C	12,856	9,747	3,858	65%	0.28		0.887	0.080	0.605	0.605	39.5%
1930	D	7,159	4,050	1,728	77%	0.33		0.579	0.080	0.465	0.465	53.5%
1931	C	9,764	5,916	2,702	70%	0.30		0.680	0.080	0.501	0.501	49.9%
1932	D	8,235	3,059	2,130	74%	0.32		0.526	0.080	0.409	0.409	59.1%
1933	C	9,512	5,663	2,607	71%	0.30		0.667	0.080	0.494	0.494	50.6%
1934	C	8,604	3,109	2,268	73%	0.31		0.529	0.080	0.407	0.407	59.3%
1935	B	9,209	6,840	2,494	71%	0.31		0.730	0.080	0.544	0.544	45.6%
1936	B	11,865	8,218	3,487	66%	0.29		0.804	0.080	0.561	0.561	43.9%
1937	B	11,411	7,697	3,318	67%	0.29		0.776	0.080	0.548	0.548	45.2%
1938	W	23,948	10,957	8,007	57%	0.25		0.952	0.080	0.578	0.578	42.2%
1939	D	19,444	9,562	6,322	59%	0.26		0.877	0.080	0.553	0.553	44.7%
1940	A	8,436	4,554	2,205	73%	0.31		0.607	0.080	0.466	0.466	53.4%
1941	W	13,747	10,369	4,191	64%	0.28		0.921	0.080	0.618	0.618	38.2%
1942	W	18,184	10,419	5,851	60%	0.26		0.923	0.080	0.587	0.587	41.3%
1943	W	21,914	10,772	7,246	58%	0.26		0.942	0.080	0.581	0.581	41.9%
1944	D	15,125	10,957	4,707	63%	0.27		0.952	0.080	0.626	0.626	37.4%
1945	B	14,016	10,940	4,292	64%	0.28		0.951	0.080	0.635	0.635	36.5%
1946	B	20,856	10,957	6,850	59%	0.26		0.952	0.080	0.591	0.591	40.9%
1947	D	14,016	10,940	4,292	64%	0.28		0.951	0.080	0.635	0.635	36.5%
1948	B	11,108	7,310	3,205	68%	0.29		0.755	0.080	0.537	0.537	46.3%
1949	D	14,453	10,520	4,455	63%	0.28		0.929	0.080	0.617	0.617	38.3%
1950	B	11,529	7,781	3,362	67%	0.29		0.781	0.080	0.549	0.549	45.1%
1951	A	43,476	10,940	15,310	23%	0.23		0.951	0.080	0.285	0.285	71.5%
1952	W	16,806	10,957	5,335	61%	0.27		0.952	0.080	0.614	0.614	38.6%
1953	W	16,537	8,386	5,235	61%	0.27		0.814	0.080	0.530	0.530	47.0%
1954	A	20,973	10,957	6,894	58%	0.26		0.952	0.080	0.590	0.590	41.0%
1955	D	20,856	10,957	6,850	59%	0.26		0.952	0.080	0.591	0.591	40.9%
1956	W	12,184	8,504	3,607	66%	0.29		0.820	0.080	0.568	0.568	43.2%
1957	A	15,478	10,974	4,839	62%	0.27		0.953	0.080	0.624	0.624	37.6%
1958	W	19,259	10,957	6,253	59%	0.26		0.952	0.080	0.599	0.599	40.1%
1959	B	16,133	8,487	5,084	62%	0.27		0.819	0.080	0.536	0.536	46.4%
1960	D	11,411	7,344	3,318	67%	0.29		0.757	0.080	0.535	0.535	46.5%
1961	D	14,251	10,503	4,380	63%	0.28		0.928	0.080	0.618	0.618	38.2%
1962	B	10,184	6,420	2,859	69%	0.30		0.707	0.080	0.515	0.515	48.5%
1963	W	21,242	10,957	6,995	58%	0.26		0.952	0.080	0.589	0.589	41.1%
1964	D	28,653	10,940	9,766	25%	0.25		0.951	0.080	0.294	0.294	70.6%
1965	W	13,646	10,319	4,154	64%	0.28		0.918	0.080	0.618	0.618	38.2%
1966	B	25,427	10,974	8,560	25%	0.25		0.953	0.080	0.298	0.298	70.2%
1967	W	17,579	10,940	5,624	61%	0.26		0.951	0.080	0.608	0.608	39.2%
1968	B	16,234	8,352	5,122	62%	0.27		0.812	0.080	0.531	0.531	46.9%
1969	W	13,814	10,302	4,216	64%	0.28		0.917	0.080	0.615	0.615	38.5%
1970	W	17,646	8,386	5,650	61%	0.26		0.814	0.080	0.524	0.524	47.6%
1971	W	24,049	10,957	8,044	57%	0.25		0.952	0.080	0.578	0.578	42.2%
1972	B	15,343	10,940	4,788	62%	0.27		0.951	0.080	0.624	0.624	37.6%
1973	A	25,007	10,940	8,402	25%	0.25		0.951	0.080	0.298	0.298	70.2%
1974	W	56,803	10,957	20,294	23%	0.23		0.952	0.080	0.281	0.281	71.9%
1975	W	17,579	9,663	5,624	61%	0.26		0.883	0.080	0.566	0.566	43.4%
1976	C	19,226	10,974	6,240	59%	0.26		0.953	0.080	0.600	0.600	40.0%
1977	C	8,386	6,100	2,186	73%	0.31		0.690	0.080	0.528	0.528	47.2%
1978	A	6,924	4,168	1,640	78%	0.33		0.586	0.080	0.474	0.474	52.6%
1979	B	15,142	10,974	4,713	63%	0.27		0.953	0.080	0.627	0.627	37.3%
1980	A	18,721	10,940	6,052	60%	0.26		0.951	0.080	0.601	0.601	39.9%
1981	D	13,024	9,865	3,921	65%	0.28		0.893	0.080	0.608	0.608	39.2%
1982	W	34,267	10,957	11,866	24%	0.24		0.952	0.080	0.290	0.290	71.0%
1983	W	39,107	10,974	13,676	24%	0.24		0.953	0.080	0.287	0.287	71.3%
1984	W	62,802	6,958	22,538	23%	0.23		0.736	0.080	0.230	0.230	77.0%
1985	D	33,998	10,957	11,765	24%	0.24		0.952	0.080	0.290	0.290	71.0%
1986	W	9,646	6,773	2,658	70%	0.30		0.726	0.080	0.535	0.535	46.5%
1987	D	11,209	7,764	3,242	67%	0.29		0.780	0.080	0.552	0.552	44.8%
1988	C	8,453	4,840	2,211	73%	0.31		0.622	0.080	0.477	0.477	52.3%
1989	D	8,588	5,748	2,262	73%	0.31		0.671	0.080	0.510	0.510	49.0%
1990	C	11,764	7,815	3,450	67%	0.29		0.783	0.080	0.548	0.548	45.2%
1991	C	8,134	4,857	2,092	74%	0.32		0.623	0.080	0.482	0.482	51.8%
1992	C	7,579	4,605	1,885	76%	0.32		0.609	0.080	0.481	0.481	51.9%

DECEMBER

Year	Sac River Flows	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	17,142	11,319	5,461	61%	0.45		0.864		0.393	0.393	60.7%
1923	34,544	8,571	11,969	24%	0.24		0.716		0.172	0.172	82.8%
1924	13,873	10,344	4,238	64%	0.48		0.811		0.386	0.386	61.4%
1925	11,254	9,059	3,259	67%	0.50		0.742		0.372	0.372	62.8%
1926	11,547	8,034	3,369	67%	0.50		0.687		0.342	0.342	65.8%
1927	14,556	11,254	4,494	63%	0.47		0.861		0.405	0.405	59.5%
1928	16,572	9,677	5,248	61%	0.46		0.775		0.355	0.355	64.5%
1929	13,710	10,392	4,178	64%	0.48		0.814		0.389	0.389	61.1%
1930	14,442	10,506	4,451	63%	0.47		0.820		0.387	0.387	61.3%
1931	9,563	5,399	2,627	71%	0.52		0.544		0.285	0.285	71.5%
1932	14,653	11,401	4,530	63%	0.47		0.869		0.408	0.408	59.2%
1933	8,148	4,489	2,097	74%	0.55		0.495		0.272	0.272	72.8%
1934	12,474	9,709	3,715	66%	0.49		0.777		0.380	0.380	62.0%
1935	8,506	6,619	2,231	73%	0.54		0.610		0.331	0.331	66.9%
1936	11,628	8,246	3,399	67%	0.50		0.698		0.347	0.347	65.3%
1937	12,458	9,791	3,709	66%	0.49		0.782		0.382	0.382	61.8%
1938	49,652	11,742	17,620	23%	0.23		0.887		0.206	0.206	79.4%
1939	18,687	7,953	6,039	60%	0.45		0.682		0.305	0.305	69.5%
1940	7,839	4,115	1,982	75%	0.56		0.475		0.264	0.264	73.6%
1941	35,454	11,531	12,310	24%	0.24		0.876		0.210	0.210	79.0%
1942	65,623	7,823	23,593	23%	0.23		0.675		0.154	0.154	84.6%
1943	28,803	7,985	9,822	25%	0.25		0.684		0.168	0.168	83.2%
1944	13,775	10,636	4,202	64%	0.48		0.827		0.395	0.395	60.5%
1945	16,068	11,173	5,060	62%	0.46		0.856		0.395	0.395	60.5%
1946	55,231	11,807	19,706	23%	0.23		0.890		0.205	0.205	79.5%
1947	18,134	11,352	5,832	60%	0.45		0.866		0.389	0.389	61.1%
1948	11,433	7,449	3,326	67%	0.50		0.655		0.327	0.327	67.3%
1949	15,564	11,108	4,871	62%	0.46		0.853		0.396	0.396	60.4%
1950	11,693	7,888	3,423	67%	0.50		0.679		0.337	0.337	66.3%
1951	68,095	11,807	24,518	23%	0.23		0.890		0.202	0.202	79.8%
1952	47,408	11,319	16,781	23%	0.23		0.864		0.201	0.201	79.9%
1953	42,334	7,953	14,883	24%	0.24		0.682		0.161	0.161	83.9%
1954	14,914	8,115	4,628	63%	0.47		0.691		0.324	0.324	67.6%
1955	26,022	11,124	8,782	25%	0.25		0.854		0.212	0.212	78.8%
1956	27,648	11,807	9,390	25%	0.25		0.890		0.220	0.220	78.0%
1957	14,149	10,002	4,342	64%	0.47		0.793		0.376	0.376	62.4%
1958	23,745	11,140	7,930	57%	0.43		0.854		0.366	0.366	63.4%
1959	14,621	8,067	4,518	63%	0.47		0.688		0.324	0.324	67.6%
1960	11,075	7,010	3,192	68%	0.50		0.631		0.318	0.318	68.2%
1961	19,484	11,108	6,337	59%	0.44		0.853		0.378	0.378	62.2%
1962	16,947	11,092	5,388	61%	0.46		0.852		0.388	0.388	61.2%
1963	27,550	11,108	9,354	25%	0.25		0.853		0.211	0.211	78.9%
1964	14,849	10,246	4,603	63%	0.47		0.806		0.378	0.378	62.2%
1965	29,079	11,628	9,926	25%	0.25		0.881		0.216	0.216	78.4%
1966	16,995	10,425	5,406	61%	0.46		0.816		0.372	0.372	62.8%
1967	39,699	11,336	13,897	24%	0.24		0.865		0.205	0.205	79.5%
1968	16,686	7,953	5,291	61%	0.46		0.682		0.312	0.312	68.8%
1969	25,176	11,189	8,466	25%	0.25		0.857		0.214	0.214	78.6%
1970	50,156	7,693	17,809	23%	0.23		0.668		0.155	0.155	84.5%
1971	54,352	11,254	19,378	23%	0.23		0.861		0.198	0.198	80.2%
1972	20,167	10,392	6,592	59%	0.44		0.814		0.359	0.359	64.1%
1973	26,200	11,108	8,849	25%	0.25		0.853		0.212	0.212	78.8%
1974	61,590	11,352	22,085	23%	0.23		0.866		0.198	0.198	80.2%
1975	17,613	8,457	5,637	61%	0.45		0.710		0.321	0.321	67.9%
1976	16,768	8,864	5,321	61%	0.46		0.732		0.334	0.334	66.6%
1977	8,229	4,798	2,128	74%	0.55		0.512		0.280	0.280	72.0%
1978	12,279	9,660	3,642	66%	0.49		0.775		0.380	0.380	62.0%
1979	12,751	7,888	3,819	65%	0.49		0.679		0.330	0.330	67.0%
1980	20,833	11,206	6,842	59%	0.44		0.858		0.376	0.376	62.4%
1981	15,613	8,246	4,889	62%	0.46		0.698		0.324	0.324	67.6%
1982	68,599	11,189	24,706	23%	0.23		0.857		0.194	0.194	80.6%
1983	55,410	8,636	19,773	23%	0.23		0.719		0.165	0.165	83.5%
1984	82,944	6,099	30,071	22%	0.22		0.582		0.131	0.131	86.9%
1985	23,875	9,953	7,979	57%	0.43		0.790		0.338	0.338	66.2%
1986	15,971	11,157	5,023	62%	0.46		0.855		0.395	0.395	60.5%
1987	13,791	10,311	4,208	64%	0.48		0.810		0.386	0.386	61.4%
1988	15,841	11,092	4,974	62%	0.46		0.852		0.394	0.394	60.6%
1989	8,847	6,408	2,359	72%	0.54		0.599		0.321	0.321	67.9%
1990	14,637	10,409	4,524	63%	0.47		0.815		0.383	0.383	61.7%
1991	8,815	4,912	2,347	72%	0.54		0.518		0.278	0.278	72.2%
1992	7,465	4,570	1,842	76%	0.56		0.500		0.282	0.282	71.8%

JANUARY

Year	Sac River Flows	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123	Weighted Total Survival
1922	17,499	11,791	5,595	61%	0.27		0.890		0.236	0.236	76.4%	60.1%
1923	32,283	7,855	11,124	24%	0.24		0.677		0.164	0.164	83.6%	72.2%
1924	14,621	10,864	4,518	63%	0.27		0.840		0.230	0.230	77.0%	61.3%
1925	10,213	6,701	2,870	69%	0.30		0.615		0.183	0.183	81.7%	64.6%
1926	19,776	11,303	6,446	59%	0.26		0.863		0.224	0.224	77.6%	63.7%
1927	32,624	11,498	11,252	24%	0.24		0.874		0.211	0.211	78.9%	59.7%
1928	26,526	7,855	8,971	25%	0.25		0.677		0.168	0.168	83.2%	63.5%
1929	15,515	11,303	4,853	62%	0.27		0.863		0.234	0.234	76.6%	59.6%
1930	20,768	11,303	6,817	59%	0.26		0.863		0.222	0.222	77.8%	63.5%
1931	12,214	9,270	3,618	66%	0.29		0.753		0.215	0.215	78.5%	67.8%
1932	17,256	12,035	5,504	61%	0.27		0.903		0.240	0.240	76.0%	63.4%
1933	12,100	9,628	3,575	66%	0.29		0.773		0.221	0.221	77.9%	68.5%
1934	16,101	11,303	5,072	62%	0.27		0.863		0.232	0.232	76.8%	65.0%
1935	25,469	11,872	8,575	25%	0.25		0.894		0.223	0.223	77.7%	64.3%
1936	32,543	11,661	11,221	24%	0.24		0.883		0.213	0.213	78.7%	63.3%
1937	15,971	11,791	5,023	62%	0.27		0.890		0.240	0.240	76.0%	61.2%
1938	31,535	7,888	10,844	24%	0.24		0.679		0.165	0.165	83.5%	71.1%
1939	18,410	7,449	5,935	60%	0.26		0.655		0.172	0.172	82.8%	66.6%
1940	23,452	12,230	7,821	57%	0.25		0.913		0.231	0.231	76.9%	69.4%
1941	72,990	12,360	26,348	23%	0.23		0.920		0.208	0.208	79.2%	68.9%
1942	63,265	7,449	22,711	23%	0.23		0.655		0.149	0.149	85.1%	73.9%
1943	58,060	7,514	20,765	23%	0.23		0.659		0.151	0.151	84.9%	73.3%
1944	17,678	7,481	5,662	60%	0.26		0.657		0.174	0.174	82.6%	60.3%
1945	13,255	9,807	4,007	65%	0.28		0.782		0.219	0.219	78.1%	58.9%
1946	43,228	7,855	15,217	23%	0.23		0.677		0.159	0.159	84.1%	71.0%
1947	15,223	10,766	4,743	63%	0.27		0.834		0.227	0.227	77.3%	59.0%
1948	15,645	11,222	4,901	62%	0.27		0.859		0.233	0.233	76.7%	64.4%
1949	14,930	11,027	4,634	63%	0.27		0.848		0.232	0.232	76.8%	59.0%
1950	21,191	11,384	6,976	58%	0.26		0.868		0.223	0.223	77.7%	63.8%
1951	62,208	11,661	22,316	23%	0.23		0.883		0.201	0.201	79.9%	77.7%
1952	67,347	10,978	24,238	23%	0.23		0.846		0.192	0.192	80.8%	69.8%
1953	64,078	7,546	23,015	23%	0.23		0.660		0.150	0.150	85.0%	75.0%
1954	33,421	8,067	11,550	24%	0.24		0.688		0.166	0.166	83.4%	64.9%
1955	22,265	10,132	7,377	58%	0.25		0.800		0.204	0.204	79.6%	69.5%
1956	84,716	12,198	30,734	22%	0.22		0.912		0.204	0.204	79.6%	69.7%
1957	18,638	8,099	6,021	60%	0.26		0.690		0.181	0.181	81.9%	61.1%
1958	36,463	7,774	12,687	24%	0.24		0.673		0.161	0.161	83.9%	62.7%
1959	35,162	7,546	12,200	24%	0.24		0.660		0.158	0.158	84.2%	66.4%
1960	14,523	10,620	4,482	63%	0.27		0.826		0.227	0.227	77.3%	65.1%
1961	15,011	11,287	4,664	63%	0.27		0.862		0.235	0.235	76.5%	59.8%
1962	12,897	8,376	3,873	65%	0.28		0.705		0.199	0.199	80.1%	62.8%
1963	17,808	11,482	5,710	60%	0.26		0.873		0.231	0.231	76.9%	69.0%
1964	25,745	8,083	8,679	25%	0.25		0.689		0.172	0.172	82.8%	69.4%
1965	81,236	12,718	29,432	22%	0.22		0.940		0.211	0.211	78.9%	68.5%
1966	29,632	7,872	10,132	24%	0.24		0.678		0.166	0.166	83.4%	69.8%
1967	34,153	11,889	11,823	24%	0.24		0.895		0.215	0.215	78.5%	69.2%
1968	30,640	7,546	10,509	24%	0.24		0.660		0.161	0.161	83.9%	67.1%
1969	70,209	10,522	25,308	23%	0.23		0.821		0.186	0.186	81.4%	69.3%
1970	92,669	7,497	33,708	22%	0.22		0.658		0.147	0.147	85.3%	75.5%
1971	47,359	9,677	16,762	23%	0.23		0.775		0.181	0.181	81.9%	71.1%
1972	20,394	8,099	6,677	59%	0.26		0.690		0.178	0.178	82.2%	62.0%
1973	50,254	11,124	17,845	23%	0.23		0.854		0.198	0.198	80.2%	77.0%
1974	78,422	7,855	28,380	22%	0.22		0.677		0.152	0.152	84.8%	79.3%
1975	18,670	8,067	6,033	60%	0.26		0.688		0.180	0.180	82.0%	65.3%
1976	16,768	8,018	5,321	61%	0.27		0.686		0.183	0.183	81.7%	63.7%
1977	7,660	4,538	1,915	75%	0.32		0.498		0.160	0.160	84.0%	68.8%
1978	43,066	10,831	15,157	23%	0.23		0.838		0.197	0.197	80.3%	64.2%
1979	27,241	7,481	9,238	25%	0.25		0.657		0.162	0.162	83.8%	63.8%
1980	64,468	7,367	23,161	23%	0.23		0.651		0.148	0.148	85.2%	62.5%
1981	28,640	7,563	9,761	25%	0.25		0.661		0.162	0.162	83.8%	64.6%
1982	51,165	11,889	18,186	23%	0.23		0.895		0.207	0.207	79.3%	77.9%
1983	59,150	6,863	21,172	23%	0.23		0.624		0.143	0.143	85.7%	81.0%
1984	47,359	4,212	16,762	23%	0.23		0.480		0.112	0.112	88.8%	84.9%
1985	16,800	8,083	5,333	61%	0.27		0.689		0.184	0.184	81.6%	71.2%
1986	23,615	11,384	7,882	57%	0.25		0.868		0.219	0.219	78.1%	61.4%
1987	16,735	7,725	5,309	61%	0.27		0.670		0.179	0.179	82.1%	62.4%
1988	25,534	11,271	8,600	25%	0.25		0.862		0.215	0.215	78.5%	63.0%
1989	12,002	8,490	3,539	66%	0.29		0.711		0.204	0.204	79.6%	66.1%
1990	21,582	9,579	7,122	58%	0.26		0.770		0.197	0.197	80.3%	62.2%
1991	6,847	3,399	1,611	78%	0.33		0.436		0.145	0.145	85.5%	70.4%
1992	12,133	8,994	3,588	66%	0.29		0.739		0.211	0.211	78.9%	68.6%
											Average:	66.97%

Formulas: Sacramento River Late Fall Run Smolt Survival Model

C10 ='Study 513 Revised Flow Data'!B7
D10 ='Study 513 Revised Flow Data' (HIDDEN)
E10 ='Study 513 Revised Flow Data' (HIDDEN)
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =-1.613493+(0.0319584*$T$1)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 513 Revised Flow Data'!C7
R10 ='Study 513 Revised Flow Data'!I (HIDDEN)
S10 ='Study 513 Revised Flow Data'!' (HIDDEN)
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 513 Revised Flow Data'!D7
AF10 ='Study 513 Revised Flow Data'!I (HIDDEN)
AG10 ='Study 513 Revised Flow Data'!: (HIDDEN)
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
AS10 =(O10*0.25)+(AC10*0.5)+(AQ10*0.25)

Study 513 Sacramento River Late Fall Run Smolt Survival Model

Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Year	Water Year Type	Sac River Flow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	A	12,033	9,186	3,550	66%	0.29		0.857	0.080	0.594	0.594	40.6%
1923	B	18,150	11,155	5,838	60%	0.26		0.963	0.080	0.611	0.611	38.9%
1924	C	11,411	8,037	3,318	67%	0.29		0.795	0.080	0.560	0.560	44.0%
1925	D	7,126	4,921	1,715	77%	0.33		0.626	0.080	0.502	0.502	49.8%
1926	D	10,924	7,642	3,135	68%	0.29		0.773	0.080	0.551	0.551	44.9%
1927	W	20,906	11,105	6,869	59%	0.26		0.960	0.080	0.595	0.595	40.5%
1928	A	25,780	11,141	8,692	25%	0.25		0.962	0.080	0.300	0.300	70.0%
1929	C	13,327	10,252	4,034	65%	0.28		0.914	0.080	0.618	0.618	38.2%
1930	D	7,680	4,876	1,922	75%	0.32		0.624	0.080	0.490	0.490	51.0%
1931	C	10,016	6,427	2,796	70%	0.30		0.708	0.080	0.517	0.517	48.3%
1932	D	8,453	3,538	2,211	73%	0.31		0.552	0.080	0.425	0.425	57.5%
1933	C	9,663	6,101	2,664	70%	0.30		0.690	0.080	0.509	0.509	49.1%
1934	C	8,520	4,010	2,237	73%	0.31		0.577	0.080	0.443	0.443	55.7%
1935	B	9,445	7,343	2,582	71%	0.30		0.757	0.080	0.559	0.559	44.1%
1936	B	12,587	9,138	3,758	65%	0.28		0.854	0.080	0.587	0.587	41.3%
1937	B	11,428	8,006	3,324	67%	0.29		0.793	0.080	0.559	0.559	44.1%
1938	W	23,847	11,142	7,969	57%	0.25		0.962	0.080	0.585	0.585	41.5%
1939	D	19,343	8,536	6,284	59%	0.26		0.822	0.080	0.521	0.521	47.9%
1940	A	9,378	5,782	2,557	71%	0.30		0.673	0.080	0.501	0.501	49.9%
1941	W	13,663	10,574	4,160	64%	0.28		0.932	0.080	0.626	0.626	37.4%
1942	W	18,200	8,723	5,857	60%	0.26		0.832	0.080	0.532	0.532	46.8%
1943	W	22,267	10,045	7,378	58%	0.25		0.903	0.080	0.556	0.556	44.4%
1944	D	14,722	11,139	4,556	63%	0.27		0.962	0.080	0.636	0.636	36.4%
1945	B	15,226	11,119	4,744	63%	0.27		0.961	0.080	0.631	0.631	36.9%
1946	B	21,847	11,135	7,221	58%	0.26		0.962	0.080	0.592	0.592	40.8%
1947	D	14,352	11,125	4,418	63%	0.28		0.961	0.080	0.639	0.639	36.1%
1948	B	11,848	8,332	3,481	66%	0.29		0.811	0.080	0.566	0.566	43.4%
1949	D	14,386	10,748	4,430	63%	0.28		0.941	0.080	0.625	0.625	37.5%
1950	B	11,613	8,206	3,393	67%	0.29		0.804	0.080	0.564	0.564	43.6%
1951	A	45,409	11,122	16,033	23%	0.23		0.961	0.080	0.286	0.286	71.4%
1952	W	17,293	11,136	5,518	61%	0.27		0.962	0.080	0.616	0.616	38.4%
1953	W	16,822	8,570	5,342	61%	0.27		0.823	0.080	0.535	0.535	46.5%
1954	A	21,343	11,135	7,032	58%	0.26		0.962	0.080	0.594	0.594	40.6%
1955	D	20,805	11,133	6,831	59%	0.26		0.962	0.080	0.597	0.597	40.3%
1956	W	12,806	9,462	3,839	65%	0.28		0.872	0.080	0.596	0.596	40.4%
1957	A	15,360	11,154	4,795	62%	0.27		0.963	0.080	0.631	0.631	36.9%
1958	W	19,209	11,120	6,234	59%	0.26		0.961	0.080	0.604	0.604	39.6%
1959	B	16,066	8,668	5,059	62%	0.27		0.829	0.080	0.543	0.543	45.7%
1960	D	11,293	7,515	3,274	67%	0.29		0.767	0.080	0.542	0.542	45.8%
1961	D	14,268	10,811	4,386	63%	0.28		0.944	0.080	0.629	0.629	37.1%
1962	B	10,756	7,386	3,073	68%	0.29		0.760	0.080	0.544	0.544	45.6%
1963	W	21,259	11,142	7,001	58%	0.26		0.962	0.080	0.595	0.595	40.5%
1964	D	30,704	11,121	10,533	24%	0.24		0.961	0.080	0.295	0.295	70.5%
1965	W	13,898	10,749	4,248	64%	0.28		0.941	0.080	0.630	0.630	37.0%
1966	B	28,015	11,144	9,528	25%	0.25		0.962	0.080	0.298	0.298	70.2%
1967	W	21,864	11,123	7,227	58%	0.26		0.961	0.080	0.592	0.592	40.8%
1968	B	16,150	8,536	5,090	62%	0.27		0.822	0.080	0.538	0.538	46.2%
1969	W	16,638	11,117	5,272	61%	0.27		0.961	0.080	0.620	0.620	38.0%
1970	W	17,579	8,571	5,624	61%	0.26		0.824	0.080	0.530	0.530	47.0%
1971	W	26,418	11,139	8,930	25%	0.25		0.962	0.080	0.299	0.299	70.1%
1972	B	16,671	11,124	5,285	61%	0.27		0.961	0.080	0.620	0.620	38.0%
1973	A	26,267	11,125	8,874	25%	0.25		0.961	0.080	0.299	0.299	70.1%
1974	W	58,433	11,132	20,904	23%	0.23		0.962	0.080	0.282	0.282	71.8%
1975	W	17,478	9,096	5,587	61%	0.27		0.852	0.080	0.548	0.548	45.2%
1976	C	19,158	11,145	6,215	60%	0.26		0.963	0.080	0.605	0.605	39.5%
1977	C	8,386	6,476	2,186	73%	0.31		0.710	0.080	0.542	0.542	45.8%
1978	A	6,924	4,588	1,640	78%	0.33		0.608	0.080	0.492	0.492	50.8%
1979	B	15,024	11,157	4,669	63%	0.27		0.963	0.080	0.634	0.634	36.6%
1980	A	18,453	11,120	5,951	60%	0.26		0.961	0.080	0.609	0.609	39.1%
1981	D	12,991	9,920	3,909	65%	0.28		0.896	0.080	0.610	0.610	39.0%
1982	W	38,367	11,123	13,399	24%	0.24		0.961	0.080	0.290	0.290	71.0%
1983	W	38,569	10,298	13,475	24%	0.24		0.917	0.080	0.279	0.279	72.1%
1984	W	62,920	6,730	22,582	23%	0.23		0.724	0.080	0.227	0.227	77.3%
1985	D	35,040	11,141	12,155	24%	0.24		0.962	0.080	0.292	0.292	70.8%
1986	W	11,142	8,623	3,217	68%	0.29		0.826	0.080	0.584	0.584	41.6%
1987	D	11,529	8,204	3,362	67%	0.29		0.804	0.080	0.565	0.565	43.5%
1988	C	8,436	5,124	2,205	73%	0.31		0.637	0.080	0.488	0.488	51.2%
1989	D	8,941	6,481	2,394	72%	0.31		0.711	0.080	0.534	0.534	46.6%
1990	C	12,957	9,316	3,896	65%	0.28		0.864	0.080	0.589	0.589	41.1%
1991	C	8,117	5,100	2,086	74%	0.32		0.636	0.080	0.492	0.492	50.8%
1992	C	7,714	4,992	1,935	75%	0.32		0.630	0.080	0.494	0.494	50.6%

DECEMBER

Year	Sac River Flows	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	17,142	11,469	5,461	61%	0.45		0.872		0.397	0.397	60.3%
1923	33,600	8,244	11,617	24%	0.24		0.698		0.168	0.168	83.2%
1924	13,759	10,495	4,196	64%	0.48		0.820		0.391	0.391	60.9%
1925	11,726	9,630	3,436	67%	0.50		0.773		0.384	0.384	61.6%
1926	11,108	7,813	3,204	68%	0.50		0.675		0.340	0.340	66.0%
1927	15,483	11,369	4,841	62%	0.46		0.867		0.403	0.403	59.7%
1928	16,491	11,371	5,218	61%	0.46		0.867		0.397	0.397	60.3%
1929	14,279	11,016	4,390	63%	0.47		0.848		0.401	0.401	59.9%
1930	14,572	10,814	4,500	63%	0.47		0.837		0.394	0.394	60.6%
1931	10,165	6,222	2,852	69%	0.52		0.589		0.303	0.303	69.7%
1932	14,686	11,591	4,543	63%	0.47		0.879		0.413	0.413	58.7%
1933	9,547	6,146	2,620	71%	0.52		0.585		0.307	0.307	69.3%
1934	12,198	9,795	3,612	66%	0.49		0.782		0.384	0.384	61.6%
1935	8,750	6,798	2,322	72%	0.54		0.620		0.333	0.333	66.7%
1936	13,401	10,201	4,062	64%	0.48		0.804		0.386	0.386	61.4%
1937	12,474	10,014	3,715	66%	0.49		0.794		0.388	0.388	61.2%
1938	54,824	11,823	19,554	23%	0.23		0.891		0.205	0.205	79.5%
1939	18,687	8,082	6,039	60%	0.45		0.689		0.308	0.308	69.2%
1940	8,668	5,177	2,292	73%	0.54		0.532		0.287	0.287	71.3%
1941	39,390	11,523	13,782	24%	0.24		0.875		0.207	0.207	79.3%
1942	65,135	7,955	23,411	23%	0.23		0.682		0.155	0.155	84.5%
1943	28,738	8,126	9,798	25%	0.25		0.692		0.170	0.170	83.0%
1944	13,759	10,792	4,196	64%	0.48		0.836		0.399	0.399	60.1%
1945	17,499	11,340	5,595	61%	0.45		0.865		0.392	0.392	60.8%
1946	57,410	11,825	20,521	23%	0.23		0.891		0.205	0.205	79.5%
1947	18,280	11,394	5,887	60%	0.45		0.868		0.390	0.390	61.0%
1948	11,515	7,830	3,356	67%	0.50		0.676		0.337	0.337	66.3%
1949	15,580	11,269	4,877	62%	0.46		0.861		0.400	0.400	60.0%
1950	11,758	8,292	3,448	67%	0.50		0.701		0.347	0.347	65.3%
1951	67,705	11,939	24,372	23%	0.23		0.898		0.204	0.204	79.6%
1952	50,287	11,478	17,857	23%	0.23		0.873		0.202	0.202	79.8%
1953	42,626	8,089	14,992	24%	0.24		0.690		0.162	0.162	83.8%
1954	15,011	8,244	4,664	63%	0.47		0.698		0.327	0.327	67.3%
1955	26,005	11,279	8,776	25%	0.25		0.862		0.215	0.215	78.5%
1956	32,462	11,939	11,191	24%	0.24		0.898		0.217	0.217	78.3%
1957	14,198	9,803	4,360	64%	0.47		0.782		0.371	0.371	62.9%
1958	24,021	11,295	8,034	57%	0.43		0.863		0.369	0.369	63.1%
1959	14,637	8,199	4,524	63%	0.47		0.696		0.327	0.327	67.3%
1960	10,929	7,138	3,137	68%	0.51		0.638		0.323	0.323	67.7%
1961	22,248	11,263	7,371	58%	0.43		0.861		0.373	0.373	62.7%
1962	17,321	11,245	5,528	61%	0.45		0.860		0.390	0.390	61.0%
1963	27,144	11,265	9,202	25%	0.25		0.861		0.213	0.213	78.7%
1964	14,881	10,548	4,616	63%	0.47		0.822		0.385	0.385	61.5%
1965	31,909	11,611	10,984	24%	0.24		0.880		0.213	0.213	78.7%
1966	17,093	10,368	5,443	61%	0.45		0.813		0.370	0.370	63.0%
1967	39,910	11,497	13,977	24%	0.24		0.874		0.207	0.207	79.3%
1968	16,621	8,082	5,266	61%	0.46		0.689		0.315	0.315	68.5%
1969	27,745	11,344	9,427	25%	0.25		0.865		0.214	0.214	78.6%
1970	49,506	7,828	17,565	23%	0.23		0.676		0.157	0.157	84.3%
1971	57,117	11,416	20,412	23%	0.23		0.869		0.200	0.200	80.0%
1972	22,183	10,265	7,347	58%	0.43		0.807		0.350	0.350	65.0%
1973	26,867	11,274	9,098	25%	0.25		0.862		0.213	0.213	78.7%
1974	60,776	11,371	21,780	23%	0.23		0.867		0.198	0.198	80.2%
1975	17,613	8,595	5,637	61%	0.45		0.717		0.324	0.324	67.6%
1976	16,768	8,999	5,321	61%	0.46		0.739		0.337	0.337	66.3%
1977	8,002	5,294	2,043	74%	0.55		0.539		0.298	0.298	70.2%
1978	11,970	9,804	3,527	66%	0.49		0.782		0.386	0.386	61.4%
1979	12,783	8,012	3,831	65%	0.49		0.686		0.333	0.333	66.7%
1980	21,191	11,319	6,976	58%	0.44		0.864		0.377	0.377	62.3%
1981	17,353	9,007	5,540	61%	0.45		0.739		0.335	0.335	66.5%
1982	68,372	11,316	24,621	23%	0.23		0.864		0.196	0.196	80.4%
1983	54,385	8,665	19,390	23%	0.23		0.721		0.166	0.166	83.4%
1984	82,748	6,238	29,998	22%	0.22		0.590		0.132	0.132	86.8%
1985	23,793	8,895	7,949	57%	0.43		0.733		0.314	0.314	68.6%
1986	16,719	11,315	5,303	61%	0.46		0.864		0.395	0.395	60.5%
1987	13,629	10,439	4,147	64%	0.48		0.817		0.391	0.391	60.9%
1988	15,027	11,243	4,670	63%	0.47		0.860		0.402	0.402	59.8%
1989	9,433	6,592	2,578	71%	0.53		0.609		0.320	0.320	68.0%
1990	14,523	10,563	4,482	63%	0.47		0.823		0.388	0.388	61.2%
1991	8,424	5,013	2,201	73%	0.54		0.524		0.285	0.285	71.5%
1992	7,384	4,862	1,811	76%	0.57		0.515		0.292	0.292	70.8%

JANUARY

Year	Sac River Flows	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123	Weighted Total Survival
1922	17,727	11,966	5,680	60%	0.26		0.899		0.238	0.238	76.2%	59.4%
1923	32,039	7,938	11,033	24%	0.24		0.682		0.165	0.165	83.5%	72.2%
1924	15,044	11,337	4,676	63%	0.27		0.865		0.236	0.236	76.4%	60.5%
1925	10,360	7,145	2,925	69%	0.30		0.639		0.190	0.190	81.0%	63.5%
1926	20,053	11,470	6,550	59%	0.26		0.872		0.226	0.226	77.4%	63.6%
1927	33,080	11,661	11,422	24%	0.24		0.883		0.213	0.213	78.7%	59.7%
1928	27,225	7,961	9,232	25%	0.25		0.683		0.169	0.169	83.1%	68.4%
1929	15,759	11,459	4,944	62%	0.27		0.872		0.236	0.236	76.4%	58.6%
1930	21,679	11,502	7,158	58%	0.26		0.874		0.223	0.223	77.7%	62.5%
1931	12,767	9,848	3,825	65%	0.28		0.785		0.222	0.222	77.8%	66.4%
1932	15,873	12,200	4,987	62%	0.27		0.912		0.246	0.246	75.4%	62.6%
1933	13,531	10,758	4,111	64%	0.28		0.834		0.233	0.233	76.7%	66.1%
1934	16,507	11,496	5,224	61%	0.27		0.874		0.234	0.234	76.6%	63.9%
1935	24,639	12,077	8,265	57%	0.25		0.905		0.227	0.227	77.3%	63.7%
1936	33,893	11,646	11,726	24%	0.24		0.882		0.212	0.212	78.8%	60.7%
1937	16,052	11,919	5,053	62%	0.27		0.897		0.242	0.242	75.8%	60.6%
1938	31,323	8,136	10,765	24%	0.24		0.692		0.168	0.168	83.2%	70.9%
1939	18,605	7,563	6,008	60%	0.26		0.661		0.173	0.173	82.7%	67.2%
1940	23,387	12,336	7,797	57%	0.25		0.919		0.232	0.232	76.8%	67.3%
1941	72,307	12,542	26,093	23%	0.23		0.930		0.210	0.210	79.0%	68.7%
1942	62,631	7,563	22,474	23%	0.23		0.661		0.151	0.151	84.9%	75.2%
1943	57,003	7,627	20,369	23%	0.23		0.665		0.153	0.153	84.7%	73.8%
1944	18,361	7,586	5,917	60%	0.26		0.663		0.174	0.174	82.6%	59.8%
1945	13,759	10,632	4,196	64%	0.28		0.827		0.230	0.230	77.0%	58.9%
1946	42,545	8,915	14,962	24%	0.24		0.734		0.173	0.173	82.7%	70.7%
1947	15,320	11,051	4,780	62%	0.27		0.850		0.231	0.231	76.9%	58.8%
1948	16,312	11,406	5,151	62%	0.27		0.869		0.233	0.233	76.7%	63.2%
1949	15,044	11,325	4,676	63%	0.27		0.864		0.236	0.236	76.4%	58.5%
1950	22,444	11,563	7,444	58%	0.25		0.877		0.223	0.223	77.7%	63.0%
1951	62,663	12,824	22,486	23%	0.23		0.945		0.216	0.216	78.4%	77.3%
1952	65,786	9,529	23,654	23%	0.23		0.767		0.174	0.174	82.6%	70.1%
1953	62,972	7,657	22,602	23%	0.23		0.666		0.152	0.152	84.8%	74.7%
1954	33,291	8,174	11,501	24%	0.24		0.694		0.167	0.167	83.3%	64.6%
1955	22,606	9,655	7,505	58%	0.25		0.774		0.197	0.197	80.3%	69.4%
1956	85,204	11,698	30,916	22%	0.22		0.885		0.198	0.198	80.2%	69.3%
1957	18,947	8,196	6,136	60%	0.26		0.695		0.182	0.182	81.8%	61.2%
1958	37,552	8,436	13,095	24%	0.24		0.708		0.169	0.169	83.1%	62.2%
1959	35,324	7,657	12,261	24%	0.24		0.666		0.160	0.160	84.0%	66.1%
1960	15,369	11,447	4,798	62%	0.27		0.871		0.237	0.237	76.3%	64.4%
1961	15,450	11,458	4,828	62%	0.27		0.872		0.237	0.237	76.3%	59.7%
1962	13,401	9,245	4,062	64%	0.28		0.752		0.210	0.210	79.0%	61.6%
1963	24,639	11,643	8,265	57%	0.25		0.882		0.221	0.221	77.9%	68.9%
1964	26,705	8,196	9,038	25%	0.25		0.695		0.172	0.172	82.8%	69.0%
1965	81,870	12,611	29,669	22%	0.22		0.934		0.210	0.210	79.0%	68.3%
1966	29,258	7,981	9,992	25%	0.25		0.684		0.168	0.168	83.2%	69.9%
1967	35,292	11,809	12,249	24%	0.24		0.891		0.213	0.213	78.7%	69.5%
1968	30,640	7,657	10,509	24%	0.24		0.666		0.162	0.162	83.8%	66.7%
1969	71,218	8,876	25,685	23%	0.23		0.732		0.166	0.166	83.4%	69.7%
1970	92,002	7,657	33,459	22%	0.22		0.666		0.149	0.149	85.1%	75.2%
1971	47,310	10,243	16,744	23%	0.23		0.806		0.188	0.188	81.2%	77.8%
1972	20,378	8,215	6,671	59%	0.26		0.697		0.180	0.180	82.0%	62.5%
1973	49,669	11,159	17,626	23%	0.23		0.855		0.198	0.198	80.2%	76.9%
1974	78,796	7,992	28,520	22%	0.22		0.684		0.154	0.154	84.6%	79.2%
1975	18,882	8,172	6,112	60%	0.26		0.694		0.182	0.182	81.8%	65.5%
1976	16,719	8,166	5,303	61%	0.27		0.694		0.186	0.186	81.4%	63.4%
1977	8,392	5,541	2,189	73%	0.31		0.552		0.173	0.173	82.7%	67.2%
1978	49,603	10,598	17,602	23%	0.23		0.825		0.191	0.191	80.9%	63.6%
1979	27,583	7,586	9,366	25%	0.25		0.663		0.164	0.164	83.6%	63.4%
1980	64,663	8,061	23,234	23%	0.23		0.688		0.157	0.157	84.3%	62.0%
1981	29,307	7,680	10,011	24%	0.24		0.668		0.164	0.164	83.6%	63.9%
1982	51,392	10,870	18,271	23%	0.23		0.840		0.194	0.194	80.6%	78.1%
1983	58,809	6,972	21,044	23%	0.23		0.629		0.144	0.144	85.6%	81.1%
1984	47,538	4,329	16,829	23%	0.23		0.487		0.113	0.113	88.7%	84.9%
1985	17,727	8,196	5,680	60%	0.26		0.695		0.184	0.184	81.6%	72.4%
1986	23,631	11,569	7,888	57%	0.25		0.878		0.221	0.221	77.9%	60.1%
1987	17,109	8,026	5,449	61%	0.27		0.686		0.183	0.183	81.7%	61.8%
1988	25,290	11,418	8,508	25%	0.25		0.869		0.217	0.217	78.3%	62.3%
1989	12,393	9,263	3,685	66%	0.28		0.753		0.214	0.214	78.6%	65.3%
1990	22,037	9,924	7,292	58%	0.25		0.789		0.201	0.201	79.9%	60.8%
1991	7,156	3,854	1,726	77%	0.33		0.461		0.151	0.151	84.9%	69.7%
1992	12,181	9,276	3,606	66%	0.29		0.754		0.215	0.215	78.5%	67.7%
											Average:	66.70%

Formulas: Sacramento River Late Fall Run Smolt Survival Model

C10 ='Study 513 Revised Flow Data'!B7
D10 ='Study 513 Revised Flow Data' (HIDDEN)
E10 ='Study 513 Revised Flow Data' (HIDDEN)
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =-1.613493+(0.0319584*$T$1)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 513 Revised Flow Data'!C7
R10 ='Study 513 Revised Flow Data'! (HIDDEN)
S10 ='Study 513 Revised Flow Data'! (HIDDEN)
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 513 Revised Flow Data'!D7
AF10 ='Study 513 Revised Flow Data'! (HIDDEN)
AG10 ='Study 513 Revised Flow Data'! (HIDDEN)
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
AS10 =(O10*0.25)+(AC10*0.5)+(AQ10*0.25)

	A	B	C	F	G	H	I	J	K	L	M	N	O
1	Study 485 Sacramento River Late Fall Run Smolt Survival Model												
2	Modified m2 by changing the slope to 0.000054												
3	Cross Channel closed for 45 consecutive days, Dec 18-Jan 31												
4	Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs												

53 degrees F
47 degrees F
47 degrees F

NOVEMBER

Row	Year	Water Year Type	Sac River Flow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
10	1922	A	13,344	9,361	4,041	64%	0.28		0.866	0.080	0.587	0.587	**41.3%**
11	1923	B	17,881	10,974	5,738	60%	0.26		0.953	0.080	0.607	0.607	**39.3%**
12	1924	C	9,831	6,151	2,727	70%	0.30		0.693	0.080	0.509	0.509	**49.1%**
13	1925	D	7,025	4,521	1,677	78%	0.33		0.605	0.080	0.487	0.487	**51.3%**
14	1926	D	12,352	7,294	3,670	66%	0.28		0.755	0.080	0.524	0.524	**47.6%**
15	1927	W	20,284	10,924	6,636	59%	0.26		0.951	0.080	0.593	0.593	**40.7%**
16	1928	A	21,746	10,974	7,183	58%	0.26		0.953	0.080	0.588	0.588	**41.2%**
17	1929	C	13,008	9,243	3,915	65%	0.28		0.860	0.080	0.586	0.586	**41.4%**
18	1930	D	7,159	4,050	1,728	77%	0.33		0.579	0.080	0.465	0.465	**53.5%**
19	1931	C	9,781	5,916	2,708	70%	0.30		0.680	0.080	0.501	0.501	**49.9%**
20	1932	D	8,151	2,924	2,098	74%	0.32		0.519	0.080	0.405	0.405	**59.5%**
21	1933	C	9,512	5,663	2,607	71%	0.30		0.667	0.080	0.494	0.494	**50.6%**
22	1934	C	8,134	2,638	2,092	74%	0.32		0.503	0.080	0.393	0.393	**60.7%**
23	1935	B	9,209	4,420	2,494	71%	0.31		0.599	0.080	0.450	0.450	**55.0%**
24	1936	B	9,378	5,748	2,557	71%	0.30		0.671	0.080	0.499	0.499	**50.1%**
25	1937	B	14,184	8,974	4,355	64%	0.28		0.845	0.080	0.566	0.566	**43.4%**
26	1938	W	23,948	10,957	8,007	57%	0.25		0.952	0.080	0.578	0.578	**42.2%**
27	1939	D	19,444	9,579	6,322	59%	0.26		0.878	0.080	0.554	0.554	**44.6%**
28	1940	A	8,436	4,554	2,205	73%	0.31		0.607	0.080	0.466	0.466	**53.4%**
29	1941	W	13,747	10,352	4,191	64%	0.28		0.920	0.080	0.618	0.618	**38.2%**
30	1942	W	18,184	10,470	5,851	60%	0.26		0.926	0.080	0.589	0.589	**41.1%**
31	1943	W	21,914	10,823	7,246	58%	0.26		0.945	0.080	0.582	0.582	**41.8%**
32	1944	D	15,125	10,957	4,707	63%	0.27		0.952	0.080	0.626	0.626	**37.4%**
33	1945	B	13,764	10,873	4,198	64%	0.28		0.948	0.080	0.636	0.636	**36.4%**
34	1946	B	17,243	10,957	5,499	61%	0.27		0.952	0.080	0.611	0.611	**38.9%**
35	1947	D	13,781	10,907	4,204	64%	0.28		0.950	0.080	0.637	0.637	**36.3%**
36	1948	B	10,201	6,420	2,865	69%	0.30		0.707	0.080	0.514	0.514	**48.6%**
37	1949	D	14,453	10,503	4,455	63%	0.28		0.928	0.080	0.617	0.617	**38.3%**
38	1950	B	14,049	7,697	4,304	64%	0.28		0.776	0.080	0.524	0.524	**47.6%**
39	1951	A	39,628	10,940	13,871	24%	0.24		0.951	0.080	0.287	0.287	**71.3%**
40	1952	W	16,570	10,974	5,247	61%	0.27		0.953	0.080	0.616	0.616	**38.4%**
41	1953	W	16,537	8,386	5,235	61%	0.27		0.814	0.080	0.530	0.530	**47.0%**
42	1954	A	20,906	10,957	6,869	59%	0.26		0.952	0.080	0.591	0.591	**40.9%**
43	1955	D	17,058	10,957	5,430	61%	0.27		0.952	0.080	0.612	0.612	**38.8%**
44	1956	W	10,470	6,789	2,966	69%	0.30		0.727	0.080	0.525	0.525	**47.5%**
45	1957	A	15,478	10,974	4,839	62%	0.27		0.953	0.080	0.624	0.624	**37.6%**
46	1958	W	19,259	10,957	6,253	59%	0.26		0.952	0.080	0.599	0.599	**40.1%**
47	1959	B	16,133	8,487	5,084	62%	0.27		0.819	0.080	0.536	0.536	**46.4%**
48	1960	D	14,537	7,361	4,487	63%	0.27		0.758	0.080	0.509	0.509	**49.1%**
49	1961	D	12,991	9,176	3,909	65%	0.28		0.856	0.080	0.584	0.584	**41.6%**
50	1962	B	13,680	7,747	4,166	64%	0.28		0.779	0.080	0.528	0.528	**47.2%**
51	1963	W	20,822	10,974	6,837	59%	0.26		0.953	0.080	0.592	0.592	**40.8%**
52	1964	D	28,653	10,974	9,766	25%	0.25		0.953	0.080	0.295	0.295	**70.5%**
53	1965	W	13,394	10,167	4,059	64%	0.28		0.910	0.080	0.615	0.615	**38.5%**
54	1966	B	25,477	10,957	8,578	25%	0.25		0.952	0.080	0.298	0.298	**70.2%**
55	1967	W	14,285	10,957	4,392	63%	0.28		0.952	0.080	0.634	0.634	**36.6%**
56	1968	B	16,234	8,352	5,122	62%	0.27		0.812	0.080	0.531	0.531	**46.9%**
57	1969	W	13,394	9,714	4,059	64%	0.28		0.885	0.080	0.599	0.599	**40.1%**
58	1970	W	17,646	8,386	5,650	61%	0.26		0.814	0.080	0.524	0.524	**47.6%**
59	1971	W	18,990	10,957	6,152	60%	0.26		0.952	0.080	0.600	0.600	**40.0%**
60	1972	B	15,343	10,957	4,788	62%	0.27		0.952	0.080	0.624	0.624	**37.6%**
61	1973	A	21,914	10,957	7,246	58%	0.26		0.952	0.080	0.586	0.586	**41.4%**
62	1974	W	55,778	10,974	19,911	23%	0.23		0.953	0.080	0.281	0.281	**71.9%**
63	1975	W	17,579	9,714	5,624	61%	0.26		0.885	0.080	0.568	0.568	**43.2%**
64	1976	C	19,226	10,974	6,240	59%	0.26		0.953	0.080	0.600	0.600	**40.0%**
65	1977	C	8,420	6,000	2,199	73%	0.31		0.685	0.080	0.523	0.523	**47.7%**
66	1978	A	6,924	4,185	1,640	78%	0.33		0.587	0.080	0.475	0.475	**52.5%**
67	1979	B	15,142	10,974	4,713	63%	0.27		0.953	0.080	0.627	0.627	**37.3%**
68	1980	A	15,797	10,957	4,958	62%	0.27		0.952	0.080	0.621	0.621	**37.9%**
69	1981	D	13,613	9,865	4,141	64%	0.28		0.893	0.080	0.602	0.602	**39.8%**
70	1982	W	27,981	10,957	9,515	25%	0.25		0.952	0.080	0.295	0.295	**70.5%**
71	1983	W	39,107	10,974	13,676	24%	0.24		0.953	0.080	0.287	0.287	**71.3%**
72	1984	W	62,802	6,974	22,538	23%	0.23		0.737	0.080	0.230	0.230	**77.0%**
73	1985	D	33,292	10,974	11,501	24%	0.24		0.953	0.080	0.291	0.291	**70.9%**
74	1986	W	9,546	6,689	2,620	71%	0.30		0.722	0.080	0.533	0.533	**46.7%**
75	1987	D	11,209	7,747	3,242	67%	0.29		0.779	0.080	0.552	0.552	**44.8%**
76	1988	C	8,453	4,840	2,211	73%	0.31		0.622	0.080	0.477	0.477	**52.3%**
77	1989	D	8,588	5,748	2,262	73%	0.31		0.671	0.080	0.510	0.510	**49.0%**
78	1990	C	11,260	7,310	3,261	67%	0.29		0.755	0.080	0.535	0.535	**46.5%**
79	1991	C	8,134	4,823	2,092	74%	0.32		0.621	0.080	0.481	0.481	**51.9%**
80	1992	C	7,579	4,605	1,885	76%	0.32		0.609	0.080	0.481	0.481	**51.9%**

DECEMBER

Row	Year	Sac River Flows	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
10	1922	17,142	11,319	5,461	61%	0.45		0.864		0.393	0.393	**60.7%**
11	1923	34,544	8,847	11,969	24%	0.24		0.731		0.176	0.176	**82.4%**
12	1924	13,417	9,888	4,068	64%	0.48		0.787		0.378	0.378	**62.2%**
13	1925	11,254	9,059	3,259	67%	0.50		0.742		0.372	0.372	**62.8%**
14	1926	12,962	7,091	3,898	65%	0.48		0.636		0.308	0.308	**69.2%**
15	1927	14,312	11,254	4,403	63%	0.47		0.861		0.407	0.407	**59.3%**
16	1928	16,572	11,287	5,248	61%	0.46		0.862		0.395	0.395	**60.5%**
17	1929	13,206	10,083	3,989	65%	0.48		0.797		0.384	0.384	**61.6%**
18	1930	14,442	10,506	4,451	63%	0.47		0.820		0.387	0.387	**61.3%**
19	1931	9,335	5,172	2,541	71%	0.53		0.532		0.281	0.281	**71.9%**
20	1932	14,653	11,401	4,530	63%	0.47		0.869		0.408	0.408	**59.2%**
21	1933	8,197	4,521	2,116	74%	0.55		0.497		0.273	0.273	**72.7%**
22	1934	12,474	9,709	3,715	66%	0.49		0.777		0.380	0.380	**62.0%**
23	1935	8,506	6,619	2,231	73%	0.54		0.610		0.331	0.331	**66.9%**
24	1936	9,400	6,034	2,566	71%	0.53		0.579		0.305	0.305	**69.5%**
25	1937	14,003	10,815	4,287	64%	0.48		0.837		0.398	0.398	**60.2%**
26	1938	41,781	11,742	14,676	24%	0.24		0.887		0.209	0.209	**79.1%**
27	1939	18,687	7,953	6,039	60%	0.45		0.682		0.305	0.305	**69.5%**
28	1940	7,839	4,115	1,982	75%	0.56		0.475		0.264	0.264	**73.6%**
29	1941	30,852	11,563	10,589	24%	0.24		0.877		0.214	0.214	**78.6%**
30	1942	65,623	7,823	23,593	23%	0.23		0.675		0.154	0.154	**84.6%**
31	1943	28,803	7,985	9,822	25%	0.25		0.684		0.168	0.168	**83.2%**
32	1944	13,775	10,636	4,202	64%	0.48		0.827		0.395	0.395	**60.5%**
33	1945	15,824	11,173	4,968	62%	0.46		0.856		0.396	0.396	**60.4%**
34	1946	54,808	11,807	19,548	23%	0.23		0.890		0.205	0.205	**79.5%**
35	1947	18,134	11,352	5,832	60%	0.45		0.866		0.389	0.389	**61.1%**
36	1948	9,742	5,741	2,693	70%	0.52		0.563		0.294	0.294	**70.6%**
37	1949	15,564	11,108	4,871	62%	0.46		0.853		0.396	0.396	**60.4%**
38	1950	10,994	7,188	3,162	68%	0.50		0.641		0.323	0.323	**67.7%**
39	1951	67,997	11,807	24,481	23%	0.23		0.890		0.202	0.202	**79.8%**
40	1952	45,586	11,319	16,099	23%	0.23		0.864		0.202	0.202	**79.8%**
41	1953	42,334	7,953	14,883	24%	0.24		0.682		0.161	0.161	**83.9%**
42	1954	14,914	8,115	4,628	63%	0.47		0.691		0.324	0.324	**67.6%**
43	1955	25,517	11,124	8,593	25%	0.25		0.854		0.213	0.213	**78.7%**
44	1956	24,964	11,807	8,387	57%	0.42		0.890		0.378	0.378	**62.2%**
45	1957	14,149	10,018	4,342	64%	0.47		0.794		0.376	0.376	**62.4%**
46	1958	23,745	11,140	7,930	57%	0.43		0.854		0.366	0.366	**63.4%**
47	1959	14,621	8,067	4,518	63%	0.47		0.688		0.324	0.324	**67.6%**
48	1960	9,807	5,741	2,718	70%	0.52		0.563		0.293	0.293	**70.7%**
49	1961	16,507	11,108	5,224	61%	0.46		0.853		0.391	0.391	**60.9%**
50	1962	16,703	11,092	5,297	61%	0.46		0.852		0.389	0.389	**61.1%**
51	1963	27,550	11,108	9,354	25%	0.25		0.853		0.211	0.211	**78.9%**
52	1964	14,849	11,206	4,603	63%	0.47		0.858		0.402	0.402	**59.8%**
53	1965	24,330	11,677	8,149	57%	0.43		0.883		0.377	0.377	**62.3%**
54	1966	16,995	10,636	5,406	61%	0.46		0.827		0.377	0.377	**62.3%**
55	1967	34,495	11,336	11,951	24%	0.24		0.865		0.208	0.208	**79.2%**
56	1968	16,686	7,953	5,291	61%	0.46		0.682		0.312	0.312	**68.8%**
57	1969	23,338	11,189	7,778	57%	0.43		0.857		0.368	0.368	**63.2%**
58	1970	50,156	7,693	17,809	23%	0.23		0.668		0.155	0.155	**84.5%**
59	1971	52,368	11,254	18,636	23%	0.23		0.861		0.199	0.199	**80.1%**
60	1972	19,988	10,425	6,525	59%	0.44		0.816		0.360	0.360	**64.0%**
61	1973	26,200	11,108	8,849	25%	0.25		0.853		0.212	0.212	**78.8%**
62	1974	61,590	11,384	22,085	23%	0.23		0.868		0.198	0.198	**80.2%**
63	1975	17,613	8,457	5,637	61%	0.45		0.710		0.321	0.321	**67.9%**
64	1976	16,768	9,059	5,321	61%	0.46		0.742		0.339	0.339	**66.1%**
65	1977	8,148	4,895	2,097	74%	0.55		0.517		0.284	0.284	**71.6%**
66	1978	12,279	9,660	3,642	66%	0.49		0.775		0.380	0.380	**62.0%**
67	1979	14,019	7,888	4,293	64%	0.48		0.679		0.323	0.323	**67.7%**
68	1980	20,329	11,206	6,653	59%	0.44		0.858		0.377	0.377	**62.3%**
69	1981	15,613	8,327	4,889	62%	0.46		0.703		0.326	0.326	**67.4%**
70	1982	68,453	11,238	24,651	23%	0.23		0.860		0.195	0.195	**80.5%**
71	1983	55,410	8,636	19,773	23%	0.23		0.719		0.165	0.165	**83.5%**
72	1984	82,944	6,099	30,071	22%	0.22		0.582		0.131	0.131	**86.9%**
73	1985	23,875	11,173	7,979	57%	0.43		0.856		0.366	0.366	**63.4%**
74	1986	15,467	11,157	4,834	62%	0.46		0.855		0.397	0.397	**60.3%**
75	1987	13,369	9,872	4,050	64%	0.48		0.786		0.378	0.378	**62.2%**
76	1988	15,841	11,092	4,974	62%	0.46		0.852		0.394	0.394	**60.6%**
77	1989	8,847	6,408	2,359	72%	0.54		0.599		0.321	0.321	**67.9%**
78	1990	12,751	8,522	3,819	65%	0.49		0.713		0.347	0.347	**65.3%**
79	1991	8,278	4,391	2,146	74%	0.55		0.490		0.268	0.268	**73.2%**
80	1992	7,465	4,570	1,842	76%	0.56		0.500		0.282	0.282	**71.8%**

JANUARY

Row	Year	Sac River Flows	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**	**Weighted Total Survival**
10	1922	18,557	11,791	5,990	60%	0.26		0.890		0.233	0.233	**76.7%**	**59.8%**
11	1923	32,283	7,855	11,124	24%	0.24		0.677		0.164	0.164	**83.6%**	**71.9%**
12	1924	13,369	10,051	4,050	64%	0.28		0.796		0.223	0.223	**77.7%**	**62.8%**
13	1925	10,213	6,701	2,870	69%	0.30		0.615		0.183	0.183	**81.7%**	**64.6%**
14	1926	18,768	9,677	6,069	60%	0.26		0.775		0.203	0.203	**79.7%**	**66.4%**
15	1927	28,640	11,482	9,761	25%	0.25		0.873		0.214	0.214	**78.6%**	**59.5%**
16	1928	25,257	7,855	8,496	25%	0.25		0.677		0.169	0.169	**83.1%**	**61.3%**
17	1929	14,767	10,848	4,573	63%	0.27		0.839		0.230	0.230	**77.0%**	**60.4%**
18	1930	20,768	11,303	6,817	59%	0.26		0.863		0.222	0.222	**77.8%**	**63.5%**
19	1931	11,710	8,945	3,429	67%	0.29		0.736		0.212	0.212	**78.8%**	**68.1%**
20	1932	17,256	12,035	5,504	61%	0.27		0.903		0.240	0.240	**76.0%**	**63.5%**
21	1933	12,100	9,628	3,575	66%	0.29		0.773		0.221	0.221	**77.9%**	**68.5%**
22	1934	16,101	11,368	5,072	62%	0.27		0.867		0.233	0.233	**76.7%**	**65.3%**
23	1935	25,469	11,872	8,575	25%	0.25		0.894		0.223	0.223	**77.7%**	**66.6%**
24	1936	31,584	11,661	10,862	24%	0.24		0.883		0.214	0.214	**78.6%**	**66.9%**
25	1937	17,272	11,791	5,510	61%	0.27		0.890		0.236	0.236	**76.4%**	**60.0%**
26	1938	30,543	7,449	10,473	24%	0.24		0.655		0.160	0.160	**84.0%**	**71.1%**
27	1939	18,410	5,952	5,935	60%	0.26		0.574		0.151	0.151	**84.9%**	**67.1%**
28	1940	23,452	12,230	7,821	57%	0.25		0.913		0.231	0.231	**76.9%**	**69.4%**
29	1941	71,494	12,376	25,789	23%	0.23		0.921		0.208	0.208	**79.2%**	**68.7%**
30	1942	63,265	7,449	22,711	23%	0.23		0.655		0.149	0.149	**85.1%**	**73.9%**
31	1943	58,060	7,514	20,765	23%	0.23		0.659		0.151	0.151	**84.9%**	**73.3%**
32	1944	17,678	7,481	5,662	60%	0.26		0.657		0.174	0.174	**82.6%**	**60.3%**
33	1945	14,052	9,140	4,305	64%	0.28		0.746		0.207	0.207	**79.3%**	**59.1%**
34	1946	43,228	7,855	15,217	23%	0.23		0.677		0.159	0.159	**84.1%**	**70.5%**
35	1947	14,979	11,336	4,652	63%	0.27		0.865		0.236	0.236	**76.4%**	**58.7%**
36	1948	14,653	10,571	4,530	63%	0.27		0.824		0.226	0.226	**77.4%**	**66.8%**
37	1949	14,930	11,027	4,634	63%	0.27		0.848		0.232	0.232	**76.8%**	**59.0%**
38	1950	19,435	11,384	6,319	59%	0.26		0.868		0.226	0.226	**77.4%**	**65.1%**
39	1951	62,208	11,856	22,316	23%	0.23		0.893		0.204	0.204	**79.6%**	**77.6%**
40	1952	67,347	11,417	24,238	23%	0.23		0.869		0.197	0.197	**80.3%**	**69.6%**
41	1953	64,078	6,050	23,015	23%	0.23		0.580		0.132	0.132	**86.8%**	**75.4%**
42	1954	33,421	8,067	11,550	24%	0.24		0.688		0.166	0.166	**83.4%**	**64.9%**
43	1955	22,004	11,401	7,280	58%	0.26		0.869		0.222	0.222	**77.8%**	**68.5%**
44	1956	84,489	12,246	30,649	22%	0.22		0.914		0.205	0.205	**79.5%**	**62.8%**
45	1957	18,638	8,099	6,021	60%	0.26		0.690		0.181	0.181	**81.9%**	**61.1%**
46	1958	36,219	7,741	12,596	24%	0.24		0.671		0.160	0.160	**84.0%**	**62.7%**
47	1959	35,162	6,066	12,200	24%	0.24		0.580		0.139	0.139	**86.1%**	**66.9%**
48	1960	14,279	10,457	4,390	63%	0.28		0.818		0.226	0.226	**77.4%**	**67.0%**
49	1961	13,515	10,311	4,105	64%	0.28		0.810		0.226	0.226	**77.4%**	**60.2%**
50	1962	12,653	8,132	3,782	65%	0.28		0.692		0.196	0.196	**80.4%**	**62.4%**
51	1963	18,605	11,466	6,008	60%	0.26		0.872		0.229	0.229	**77.1%**	**69.0%**
52	1964	25,631	8,083	8,636	25%	0.25		0.689		0.172	0.172	**82.8%**	**68.2%**
53	1965	81,236	12,718	29,432	22%	0.22		0.940		0.211	0.211	**78.9%**	**60.5%**
54	1966	29,632	7,872	10,132	24%	0.24		0.678		0.166	0.166	**83.4%**	**69.6%**
55	1967	33,486	11,889	11,574	24%	0.24		0.895		0.216	0.216	**78.4%**	**68.4%**
56	1968	30,640	6,066	10,509	24%	0.24		0.580		0.141	0.141	**85.9%**	**67.6%**
57	1969	66,404	11,612	23,885	23%	0.23		0.880		0.200	0.200	**80.0%**	**61.6%**
58	1970	92,669	5,839	33,708	22%	0.22		0.568		0.127	0.127	**87.3%**	**76.0%**
59	1971	46,904	10,848	16,592	23%	0.23		0.839		0.196	0.196	**80.4%**	**70.2%**
60	1972	20,394	8,099	6,677	59%	0.26		0.690		0.178	0.178	**82.2%**	**61.9%**
61	1973	49,392	11,677	17,523	23%	0.23		0.883		0.205	0.205	**79.5%**	**69.6%**
62	1974	78,422	7,985	28,380	22%	0.22		0.684		0.154	0.154	**84.6%**	**79.2%**
63	1975	18,670	8,067	6,033	60%	0.26		0.688		0.180	0.180	**82.0%**	**65.3%**
64	1976	16,768	8,050	5,321	61%	0.27		0.688		0.184	0.184	**81.6%**	**63.5%**
65	1977	7,904	4,798	2,006	75%	0.32		0.512		0.163	0.163	**83.7%**	**68.6%**
66	1978	43,033	10,197	15,144	23%	0.23		0.804		0.189	0.189	**81.1%**	**64.4%**
67	1979	27,241	7,481	9,238	25%	0.25		0.657		0.162	0.162	**83.8%**	**64.1%**
68	1980	60,484	7,367	21,671	23%	0.23		0.651		0.149	0.149	**85.1%**	**61.9%**
69	1981	28,607	5,887	9,749	25%	0.25		0.571		0.140	0.140	**86.0%**	**65.2%**
70	1982	51,165	11,970	18,186	23%	0.23		0.899		0.208	0.208	**79.2%**	**77.7%**
71	1983	59,150	5,546	21,172	23%	0.23		0.552		0.126	0.126	**87.4%**	**81.4%**
72	1984	47,359	4,212	16,762	23%	0.23		0.480		0.112	0.112	**88.8%**	**84.9%**
73	1985	16,556	8,083	5,242	61%	0.27		0.689		0.185	0.185	**81.5%**	**69.8%**
74	1986	21,256	11,563	7,000	58%	0.26		0.877		0.225	0.225	**77.5%**	**61.2%**
75	1987	16,735	6,652	5,309	61%	0.27		0.612		0.164	0.164	**83.6%**	**63.2%**
76	1988	25,534	11,271	8,600	25%	0.25		0.862		0.215	0.215	**78.5%**	**63.0%**
77	1989	12,002	8,701	3,539	66%	0.29		0.723		0.207	0.207	**79.3%**	**66.0%**
78	1990	20,833	10,051	6,842	59%	0.26		0.796		0.205	0.205	**79.5%**	**64.2%**
79	1991	6,847	3,399	1,611	78%	0.33		0.436		0.145	0.145	**85.5%**	**71.0%**
80	1992	12,133	8,994	3,588	66%	0.29		0.739		0.211	0.211	**78.9%**	**68.6%**
81												**Average:**	**66.72%**

82 Formulas: Sacramento River Late Fall Run Smolt Survival Model

Row	November	December	January
84	C10 ='Study 485 Flow Data'!B7	Q10 ='Study 485 Flow Data'!C7	AE10 ='Study 485 Flow Data'!D7
85	D10 ='Study 485 Flow Data'!L7 (HIDDEN)	R10 ='Study 485 Flow Data'!M7 (HIDDEN)	AF10 ='Study 485 Flow Data'!N7 (HIDDEN)
86	E10 ='Study 485 Flow Data'!V7 (HIDDEN)	S10 ='Study 485 Flow Data'!W7 (HIDDEN)	AG10 ='Study 485 Flow Data'!X7 (HIDDEN)
87	F10 =(D10+E10)	T10 =(R10+S10)	AH10 =(AF10+AG10)
88	G10 =0.374*C10-950	U10 =0.374*Q10-950	AI10 =0.374*AE10-950
89	H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))	V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))	AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
90	I10 =(0.133*C10+829)/(C10-G10)	W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)	AK10 =(0.133*AE10+829)/(AE10-AI10)
91	K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)	Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)	AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
92	L10 =-1.613493+(0.0319584*$T$1)	AA10 =(Y10*W10)+(Z10*(1-W10))	AO10 =(AM10*AK10)+(AN10*(1-AK10))
93	M10 =(K10*H10)+(L10*(1-H10))	AB10 =X10+AA10-(X10*AA10)	AP10 =AL10+AO10-(AL10*AO10)
94	N10 =J10+M10-(J10*M10)	AC10 =1-AB10	AQ10 =1-AP10
95	O10 =1-N10		AS10 =(O10*0.25)+(AC10*0.5)+(AQ10*0.25)

Study 519a Sacramento River Late Fall Run Smolt Survival Model

Modified m2 by changing the slope to 0.000054

Cross Channel closed for 45 consecutive days, Dec 18-Jan 31

Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Year	Water Year Type	Sac River Flow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	A	11,814	8,857	3,469	67%	0.29		0.839	0.080	0.585	0.585	**41.5%**
1923	B	17,226	11,159	5,492	61%	0.27		0.963	0.080	0.617	0.617	**38.3%**
1924	C	10,756	7,277	3,073	68%	0.29		0.754	0.080	0.540	0.540	**46.0%**
1925	D	7,025	4,756	1,677	78%	0.33		0.618	0.080	0.497	0.497	**50.3%**
1926	D	10,083	6,806	2,821	69%	0.30		0.728	0.080	0.530	0.530	**47.0%**
1927	W	20,284	11,092	6,636	59%	0.26		0.960	0.080	0.598	0.598	**40.2%**
1928	A	21,830	11,142	7,215	58%	0.26		0.962	0.080	0.592	0.592	**40.8%**
1929	C	12,369	9,445	3,676	66%	0.28		0.871	0.080	0.600	0.600	**40.0%**
1930	D	7,159	4,269	1,728	77%	0.33		0.591	0.080	0.474	0.474	**52.6%**
1931	C	9,814	6,151	2,721	70%	0.30		0.693	0.080	0.509	0.509	**49.1%**
1932	D	7,663	3,529	1,916	75%	0.32		0.551	0.080	0.436	0.436	**56.4%**
1933	C	9,478	5,865	2,595	71%	0.30		0.677	0.080	0.503	0.503	**49.7%**
1934	C	8,033	3,361	2,054	74%	0.32		0.542	0.080	0.424	0.424	**57.6%**
1935	B	9,209	7,109	2,494	71%	0.31		0.745	0.080	0.554	0.554	**44.6%**
1936	B	11,865	8,470	3,487	66%	0.29		0.818	0.080	0.571	0.571	**42.9%**
1937	B	11,411	7,966	3,318	67%	0.29		0.791	0.080	0.557	0.557	**44.3%**
1938	W	23,948	11,142	8,007	57%	0.25		0.962	0.080	0.584	0.584	**41.6%**
1939	D	19,444	10,487	6,322	59%	0.26		0.927	0.080	0.583	0.583	**41.7%**
1940	A	8,436	4,806	2,205	73%	0.31		0.620	0.080	0.476	0.476	**52.4%**
1941	W	13,663	10,688	4,160	64%	0.28		0.938	0.080	0.630	0.630	**37.0%**
1942	W	18,184	10,974	5,851	60%	0.26		0.953	0.080	0.605	0.605	**39.5%**
1943	W	21,914	11,142	7,246	58%	0.26		0.962	0.080	0.592	0.592	**40.8%**
1944	D	14,318	11,125	4,405	63%	0.28		0.961	0.080	0.639	0.639	**36.1%**
1945	B	13,764	11,108	4,198	64%	0.28		0.961	0.080	0.644	0.644	**35.6%**
1946	B	19,629	11,142	6,391	59%	0.26		0.962	0.080	0.603	0.603	**39.7%**
1947	D	13,781	11,125	4,204	64%	0.28		0.961	0.080	0.644	0.644	**35.6%**
1948	B	10,201	6,621	2,865	69%	0.30		0.718	0.080	0.522	0.522	**47.8%**
1949	D	14,453	10,722	4,455	63%	0.28		0.940	0.080	0.624	0.624	**37.6%**
1950	B	11,377	7,865	3,305	67%	0.29		0.785	0.080	0.554	0.554	**44.6%**
1951	A	41,846	11,125	14,700	24%	0.24		0.961	0.080	0.288	0.288	**71.2%**
1952	W	16,453	11,125	5,203	61%	0.27		0.961	0.080	0.622	0.622	**37.8%**
1953	W	16,537	8,571	5,235	61%	0.27		0.824	0.080	0.536	0.536	**46.4%**
1954	A	19,679	11,142	6,410	59%	0.26		0.962	0.080	0.603	0.603	**39.7%**
1955	D	17,965	11,125	5,769	60%	0.26		0.961	0.080	0.612	0.612	**38.8%**
1956	W	10,722	7,294	3,060	68%	0.29		0.755	0.080	0.541	0.541	**45.9%**
1957	A	15,478	11,159	4,839	62%	0.27		0.963	0.080	0.630	0.630	**37.0%**
1958	W	19,259	11,125	6,253	59%	0.26		0.961	0.080	0.604	0.604	**39.6%**
1959	B	16,133	8,672	5,084	62%	0.27		0.829	0.080	0.542	0.542	**45.8%**
1960	D	11,377	7,529	3,305	67%	0.29		0.767	0.080	0.542	0.542	**45.8%**
1961	D	13,495	10,201	4,097	64%	0.28		0.912	0.080	0.615	0.615	**38.5%**
1962	B	9,781	6,252	2,708	70%	0.30		0.698	0.080	0.513	0.513	**48.7%**
1963	W	20,923	11,125	6,875	59%	0.26		0.961	0.080	0.596	0.596	**40.4%**
1964	D	28,653	11,125	9,766	25%	0.25		0.961	0.080	0.297	0.297	**70.3%**
1965	W	13,394	10,403	4,059	64%	0.28		0.922	0.080	0.623	0.623	**37.7%**
1966	B	25,427	11,142	8,560	25%	0.25		0.962	0.080	0.301	0.301	**69.9%**
1967	W	14,537	11,125	4,487	63%	0.27		0.961	0.080	0.637	0.637	**36.3%**
1968	B	16,234	8,537	5,122	62%	0.27		0.822	0.080	0.537	0.537	**46.3%**
1969	W	13,562	10,369	4,122	64%	0.28		0.921	0.080	0.620	0.620	**38.0%**
1970	W	17,646	8,571	5,650	61%	0.26		0.824	0.080	0.530	0.530	**47.0%**
1971	W	20,940	11,142	6,881	59%	0.26		0.962	0.080	0.596	0.596	**40.4%**
1972	B	15,343	11,125	4,788	62%	0.27		0.961	0.080	0.630	0.630	**37.0%**
1973	A	22,015	11,125	7,284	58%	0.26		0.961	0.080	0.591	0.591	**40.9%**
1974	W	55,005	11,142	19,622	23%	0.23		0.962	0.080	0.283	0.283	**71.7%**
1975	W	17,579	11,159	5,624	61%	0.26		0.963	0.080	0.615	0.615	**38.5%**
1976	C	19,226	11,142	6,240	59%	0.26		0.962	0.080	0.605	0.605	**39.5%**
1977	C	8,235	6,168	2,130	74%	0.32		0.694	0.080	0.533	0.533	**46.7%**
1978	A	6,924	4,403	1,640	78%	0.33		0.598	0.080	0.484	0.484	**51.6%**
1979	B	14,537	11,159	4,487	63%	0.27		0.963	0.080	0.638	0.638	**36.2%**
1980	A	16,301	11,125	5,147	62%	0.27		0.961	0.080	0.623	0.623	**37.7%**
1981	D	13,024	10,050	3,921	65%	0.28		0.903	0.080	0.614	0.614	**38.6%**
1982	W	30,284	11,125	10,376	24%	0.24		0.961	0.080	0.295	0.295	**70.5%**
1983	W	39,107	11,159	13,676	24%	0.24		0.963	0.080	0.290	0.290	**71.0%**
1984	W	62,802	7,142	22,538	23%	0.23		0.746	0.080	0.232	0.232	**76.8%**
1985	D	33,578	11,142	11,608	24%	0.24		0.962	0.080	0.293	0.293	**70.7%**
1986	W	9,546	6,941	2,620	71%	0.30		0.735	0.080	0.543	0.543	**45.7%**
1987	D	11,125	8,235	3,211	68%	0.29		0.805	0.080	0.570	0.570	**43.0%**
1988	C	8,453	5,042	2,211	73%	0.31		0.633	0.080	0.485	0.485	**51.5%**
1989	D	8,588	5,949	2,262	73%	0.31		0.682	0.080	0.518	0.518	**48.2%**
1990	C	11,512	7,764	3,355	67%	0.29		0.780	0.080	0.549	0.549	**45.1%**
1991	C	8,134	5,092	2,092	74%	0.32		0.636	0.080	0.491	0.491	**50.9%**
1992	C	7,462	4,739	1,841	76%	0.32		0.617	0.080	0.488	0.488	**51.2%**

DECEMBER

Year	Sac River Flows	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	17,142	11,466	5,461	61%	0.45		0.872		0.396	0.396	**60.4%**
1923	34,365	9,400	11,902	24%	0.24		0.761		0.183	0.183	**81.7%**
1924	10,051	6,766	2,809	70%	0.52		0.618		0.320	0.320	**68.0%**
1925	11,254	9,319	3,259	67%	0.50		0.756		0.379	0.379	**62.1%**
1926	10,295	7,042	2,900	69%	0.51		0.633		0.325	0.325	**67.5%**
1927	14,296	11,417	4,397	63%	0.47		0.869		0.411	0.411	**58.9%**
1928	16,572	10,181	5,248	61%	0.46		0.803		0.368	0.368	**63.2%**
1929	13,206	10,278	3,989	65%	0.48		0.808		0.389	0.389	**61.1%**
1930	14,881	10,994	4,616	63%	0.47		0.847		0.397	0.397	**60.3%**
1931	9,351	5,399	2,547	71%	0.53		0.544		0.287	0.287	**71.3%**
1932	14,653	11,596	4,530	63%	0.47		0.879		0.413	0.413	**58.7%**
1933	8,457	5,090	2,213	73%	0.54		0.528		0.287	0.287	**71.3%**
1934	12,474	9,953	3,715	66%	0.49		0.790		0.386	0.386	**61.4%**
1935	8,506	6,928	2,231	73%	0.54		0.627		0.340	0.340	**66.0%**
1936	13,287	10,197	4,019	65%	0.48		0.804		0.387	0.387	**61.3%**
1937	12,458	10,018	3,709	66%	0.49		0.794		0.388	0.388	**61.2%**
1938	49,929	11,905	17,723	23%	0.23		0.896		0.208	0.208	**79.2%**
1939	18,687	8,083	6,039	60%	0.45		0.689		0.308	0.308	**69.2%**
1940	7,839	4,375	1,982	75%	0.56		0.489		0.272	0.272	**72.8%**
1941	34,706	11,824	12,030	24%	0.24		0.891		0.214	0.214	**78.6%**
1942	65,623	7,953	23,593	23%	0.23		0.682		0.155	0.155	**84.5%**
1943	28,803	8,115	9,822	25%	0.25		0.691		0.170	0.170	**83.0%**
1944	13,775	10,913	4,202	64%	0.48		0.842		0.402	0.402	**59.8%**
1945	15,824	11,336	4,968	62%	0.46		0.865		0.400	0.400	**60.0%**
1946	54,678	11,937	19,499	23%	0.23		0.898		0.207	0.207	**79.3%**
1947	18,134	11,547	5,832	60%	0.45		0.876		0.394	0.394	**60.6%**
1948	9,238	5,497	2,505	71%	0.53		0.550		0.291	0.291	**70.9%**
1949	15,564	11,254	4,871	62%	0.46		0.861		0.399	0.399	**60.1%**
1950	10,978	7,432	3,156	68%	0.50		0.654		0.330	0.330	**67.0%**
1951	68,095	11,937	24,518	23%	0.23		0.898		0.204	0.204	**79.6%**
1952	43,537	11,498	15,333	23%	0.23		0.874		0.205	0.205	**79.5%**
1953	42,334	8,083	14,883	24%	0.24		0.689		0.162	0.162	**83.8%**
1954	14,914	8,994	4,628	63%	0.47		0.739		0.346	0.346	**65.4%**
1955	25,517	11,271	8,593	25%	0.25		0.862		0.215	0.215	**78.5%**
1956	25,160	11,937	8,460	25%	0.25		0.898		0.224	0.224	**77.6%**
1957	14,149	10,962	4,342	64%	0.47		0.845		0.401	0.401	**59.9%**
1958	23,745	11,287	7,930	57%	0.43		0.862		0.369	0.369	**63.1%**
1959	14,621	8,197	4,518	63%	0.47		0.696		0.327	0.327	**67.3%**
1960	10,978	7,140	3,156	68%	0.50		0.638		0.322	0.322	**67.8%**
1961	17,499	11,254	5,595	61%	0.45		0.861		0.390	0.390	**61.0%**
1962	16,703	11,238	5,297	61%	0.46		0.860		0.393	0.393	**60.7%**
1963	27,550	11,254	9,354	25%	0.25		0.861		0.213	0.213	**78.7%**
1964	14,849	10,571	4,603	63%	0.47		0.824		0.386	0.386	**61.4%**
1965	24,265	11,807	8,125	57%	0.43		0.890		0.380	0.380	**62.0%**
1966	16,995	10,522	5,406	61%	0.46		0.821		0.374	0.374	**62.6%**
1967	38,609	11,498	13,490	24%	0.24		0.874		0.207	0.207	**79.3%**
1968	16,686	8,083	5,291	61%	0.46		0.689		0.315	0.315	**68.5%**
1969	23,842	11,352	7,967	57%	0.43		0.866		0.370	0.370	**63.0%**
1970	50,156	7,823	17,809	23%	0.23		0.675		0.157	0.157	**84.3%**
1971	53,734	11,417	19,147	23%	0.23		0.869		0.200	0.200	**80.0%**
1972	18,378	11,449	5,923	60%	0.45		0.871		0.391	0.391	**60.9%**
1973	26,200	11,271	8,849	25%	0.25		0.862		0.214	0.214	**78.6%**
1974	61,590	11,742	22,085	23%	0.23		0.887		0.203	0.203	**79.7%**
1975	17,613	8,652	5,637	61%	0.45		0.720		0.326	0.326	**67.4%**
1976	16,768	10,506	5,321	61%	0.46		0.820		0.375	0.375	**62.5%**
1977	8,050	4,912	2,061	74%	0.55		0.518		0.286	0.286	**71.4%**
1978	12,279	9,937	3,642	66%	0.49		0.789		0.387	0.387	**61.3%**
1979	12,751	8,018	3,819	65%	0.49		0.686		0.333	0.333	**66.7%**
1980	20,833	11,352	6,842	59%	0.44		0.866		0.379	0.379	**62.1%**
1981	15,613	9,010	4,889	62%	0.46		0.739		0.343	0.343	**65.7%**
1982	67,623	11,368	24,341	23%	0.23		0.867		0.197	0.197	**80.3%**
1983	55,410	8,766	19,773	23%	0.23		0.726		0.167	0.167	**83.3%**
1984	82,944	6,245	30,071	22%	0.22		0.590		0.132	0.132	**86.8%**
1985	23,875	11,368	7,979	57%	0.43		0.867		0.371	0.371	**62.9%**
1986	15,467	11,319	4,834	62%	0.46		0.864		0.402	0.402	**59.8%**
1987	13,417	10,441	4,068	64%	0.48		0.817		0.392	0.392	**60.8%**
1988	15,841	11,222	4,974	62%	0.46		0.859		0.397	0.397	**60.3%**
1989	8,847	6,619	2,359	72%	0.54		0.610		0.327	0.327	**67.3%**
1990	14,540	10,539	4,488	63%	0.47		0.822		0.387	0.387	**61.3%**
1991	8,620	4,912	2,274	73%	0.54		0.518		0.280	0.280	**72.0%**
1992	7,449	4,814	1,836	76%	0.56		0.513		0.290	0.290	**71.0%**

JANUARY

Year	Sac River Flows	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**	**Weighted Total Survival**
1922	17,499	11,970	5,595	61%	0.27		0.899		0.238	0.238	**76.2%**	**59.6%**
1923	32,283	7,969	11,124	24%	0.24		0.683		0.165	0.165	**83.5%**	**71.3%**
1924	14,377	10,880	4,427	63%	0.28		0.840		0.232	0.232	**76.8%**	**64.7%**
1925	10,197	6,961	2,864	69%	0.30		0.629		0.187	0.187	**81.3%**	**63.9%**
1926	18,768	11,449	6,069	60%	0.26		0.871		0.228	0.228	**77.2%**	**64.8%**
1927	29,469	11,661	10,072	24%	0.24		0.883		0.216	0.216	**78.4%**	**59.1%**
1928	25,208	7,969	8,478	25%	0.25		0.683		0.171	0.171	**82.9%**	**62.5%**
1929	14,767	11,027	4,573	63%	0.27		0.848		0.232	0.232	**76.8%**	**59.7%**
1930	21,273	11,466	7,006	58%	0.26		0.872		0.224	0.224	**77.6%**	**62.7%**
1931	11,970	9,270	3,527	66%	0.29		0.753		0.216	0.216	**78.4%**	**67.5%**
1932	17,256	12,246	5,504	61%	0.27		0.914		0.243	0.243	**75.7%**	**62.4%**
1933	12,604	10,181	3,764	65%	0.28		0.803		0.227	0.227	**77.3%**	**67.4%**
1934	16,101	11,482	5,072	62%	0.27		0.873		0.235	0.235	**76.5%**	**64.2%**
1935	25,469	12,100	8,575	25%	0.25		0.906		0.226	0.226	**77.4%**	**63.5%**
1936	32,413	11,856	11,172	24%	0.24		0.893		0.216	0.216	**78.4%**	**61.0%**
1937	15,971	11,970	5,023	62%	0.27		0.899		0.243	0.243	**75.7%**	**60.6%**
1938	31,535	7,888	10,844	24%	0.24		0.679		0.165	0.165	**83.5%**	**70.9%**
1939	18,410	7,563	5,935	60%	0.26		0.661		0.174	0.174	**82.6%**	**65.7%**
1940	23,452	12,442	7,821	57%	0.25		0.925		0.234	0.234	**76.6%**	**68.7%**
1941	71,998	12,832	25,977	23%	0.23		0.946		0.214	0.214	**78.6%**	**68.2%**
1942	63,265	7,563	22,711	23%	0.23		0.661		0.151	0.151	**84.9%**	**73.3%**
1943	58,060	7,628	20,765	23%	0.23		0.665		0.152	0.152	**84.8%**	**72.9%**
1944	17,678	7,595	5,662	60%	0.26		0.663		0.175	0.175	**82.5%**	**59.6%**
1945	12,409	9,238	3,691	66%	0.28		0.752		0.214	0.214	**78.6%**	**58.6%**
1946	43,228	7,969	15,217	23%	0.23		0.683		0.160	0.160	**84.0%**	**70.6%**
1947	14,979	11,319	4,652	63%	0.27		0.864		0.236	0.236	**76.4%**	**58.3%**
1948	14,653	10,718	4,530	63%	0.27		0.832		0.228	0.228	**77.2%**	**66.7%**
1949	14,930	11,222	4,634	63%	0.27		0.859		0.235	0.235	**76.5%**	**58.6%**
1950	20,427	11,580	6,690	59%	0.26		0.878		0.227	0.227	**77.3%**	**64.0%**
1951	62,208	11,352	22,316	23%	0.23		0.866		0.198	0.198	**80.2%**	**77.7%**
1952	67,233	12,458	24,195	23%	0.23		0.926		0.210	0.210	**79.0%**	**69.0%**
1953	64,078	7,660	23,015	23%	0.23		0.667		0.152	0.152	**84.8%**	**74.7%**
1954	33,421	8,164	11,550	24%	0.24		0.694		0.167	0.167	**83.3%**	**63.5%**
1955	22,004	11,596	7,280	58%	0.26		0.879		0.224	0.224	**77.6%**	**68.4%**
1956	84,017	12,490	30,472	22%	0.22		0.927		0.208	0.208	**79.2%**	**70.1%**
1957	18,638	8,213	6,021	60%	0.26		0.696		0.183	0.183	**81.7%**	**59.7%**
1958	36,381	8,424	12,657	24%	0.24		0.708		0.169	0.169	**83.1%**	**62.2%**
1959	35,162	7,660	12,200	24%	0.24		0.667		0.160	0.160	**84.0%**	**66.1%**
1960	13,515	10,148	4,105	64%	0.28		0.801		0.224	0.224	**77.6%**	**64.8%**
1961	14,263	10,978	4,384	63%	0.28		0.846		0.233	0.233	**76.7%**	**59.3%**
1962	12,653	8,311	3,782	65%	0.28		0.702		0.199	0.199	**80.1%**	**62.5%**
1963	17,548	11,645	5,613	61%	0.27		0.882		0.234	0.234	**76.6%**	**68.6%**
1964	24,200	8,148	8,101	57%	0.25		0.693		0.174	0.174	**82.6%**	**68.9%**
1965	81,236	12,832	29,432	22%	0.22		0.946		0.212	0.212	**78.8%**	**60.1%**
1966	29,632	7,985	10,132	24%	0.24		0.684		0.167	0.167	**83.3%**	**69.6%**
1967	35,210	12,084	12,219	24%	0.24		0.905		0.217	0.217	**78.3%**	**68.3%**
1968	30,640	7,660	10,509	24%	0.24		0.667		0.162	0.162	**83.8%**	**66.8%**
1969	66,761	12,214	24,019	23%	0.23		0.912		0.207	0.207	**79.3%**	**60.8%**
1970	92,669	7,611	33,708	22%	0.22		0.664		0.148	0.148	**85.2%**	**75.2%**
1971	45,245	10,799	15,972	23%	0.23		0.836		0.196	0.196	**80.4%**	**70.2%**
1972	20,394	8,213	6,677	59%	0.26		0.696		0.180	0.180	**82.0%**	**60.2%**
1973	49,002	10,571	17,377	23%	0.23		0.824		0.191	0.191	**80.9%**	**69.7%**
1974	78,422	7,969	28,380	22%	0.22		0.683		0.154	0.154	**84.6%**	**78.9%**
1975	18,670	8,181	6,033	60%	0.26		0.695		0.182	0.182	**81.8%**	**63.8%**
1976	16,768	8,132	5,321	61%	0.27		0.692		0.185	0.185	**81.5%**	**61.5%**
1977	7,660	4,749	1,915	75%	0.32		0.509		0.164	0.164	**83.6%**	**68.3%**
1978	43,066	9,400	15,157	23%	0.23		0.761		0.179	0.179	**82.1%**	**64.1%**
1979	27,241	7,595	9,238	25%	0.25		0.663		0.164	0.164	**83.6%**	**63.3%**
1980	61,053	7,481	21,884	23%	0.23		0.657		0.150	0.150	**85.0%**	**61.7%**
1981	27,843	7,676	9,463	25%	0.25		0.667		0.165	0.165	**83.5%**	**63.4%**
1982	51,165	12,832	18,186	23%	0.23		0.946		0.219	0.219	**78.1%**	**77.3%**
1983	59,150	6,977	21,172	23%	0.23		0.630		0.144	0.144	**85.6%**	**80.8%**
1984	47,359	4,326	16,762	23%	0.23		0.487		0.113	0.113	**88.7%**	**84.7%**
1985	16,800	8,197	5,333	61%	0.27		0.696		0.186	0.186	**81.4%**	**69.5%**
1986	21,500	11,645	7,091	58%	0.26		0.882		0.226	0.226	**77.4%**	**60.7%**
1987	16,735	7,676	5,309	61%	0.27		0.667		0.178	0.178	**82.2%**	**61.7%**
1988	25,534	11,401	8,600	25%	0.25		0.869		0.217	0.217	**78.3%**	**62.6%**
1989	12,002	8,896	3,539	66%	0.29		0.733		0.210	0.210	**79.0%**	**65.4%**
1990	21,338	9,856	7,030	58%	0.26		0.785		0.201	0.201	**79.9%**	**61.9%**
1991	6,847	3,529	1,611	78%	0.33		0.443		0.147	0.147	**85.3%**	**70.0%**
1992	11,889	9,010	3,496	66%	0.29		0.739		0.212	0.212	**78.8%**	**68.0%**
											Average:	**66.12%**

Formulas: Sacramento River Late Fall Run Smolt Survival Model

C10 ='Study 513 Revised Flow Data'!B7
D10 ='Study 513 Revised Flow Data' (HIDDEN)
E10 ='Study 513 Revised Flow Data' (HIDDEN)
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =-1.613493+(0.0319584*$T$1)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 513 Revised Flow Data'!C7
R10 ='Study 513 Revised Flow Data'! (HIDDEN)
S10 ='Study 513 Revised Flow Data'! (HIDDEN)
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 513 Revised Flow Data'!D7
AF10 ='Study 513 Revised Flow Data'! (HIDDEN)
AG10 ='Study 513 Revised Flow Data'! (HIDDEN)
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
AS10 =(O10*0.25)+(AC10*0.5)+(AQ10*0.25)

Study 622a Sacramento River Late Fall Run Smolt Survival Model

Modified m2 by changing the slope to 0.000054

Cross Channel closed for 45 consecutive days, Dec 18-Jan 31

Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F

December Sacramento River Temp: 47 degrees F

January Sacramento River Temp: 47 degrees F

A	B	C	F	G	H	I	J	K	L	M	N	O	Q	T	U	V	W	X	Y	Z	AA	AB	AC	AE	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AS
NOVEMBER				Calculated									DECEMBER		Calculated									JANUARY		Calculated									
	Water	Sac		Steamboat								Calculated	Sac		Steamboat								Calculated	Sac		Steamboat								Calculated	
	Year	River	CVP+SWP	& Sutter		xchannel		Calculated Mortality				Survival	River	SWP+CVP	& Sutter		xchannel		Calculated Mortality				Survival	River	CVP+SWP	& Sutter		xchannel		Calculated Mortality				Survival	Weighted
Year	Type	Flow	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	s123	Flows	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	s123	Flows	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	s123	Total Survival
1922	A	11,814	8,799	3,469	67%	0.29		0.836	0.080	0.583	0.583	41.7%	17,142	11,462	5,461	61%	0.45		0.872		0.396	0.396	60.4%	17,499	11,918	5,595	61%	0.27		0.896		0.238	0.238	76.2%	59.7%
1923	B	17,007	11,155	5,411	61%	0.27		0.963	0.080	0.619	0.619	38.1%	34,072	8,800	11,793	24%	0.24		0.728		0.175	0.175	82.5%	32,283	7,961	11,124	24%	0.24		0.683		0.165	0.165	83.5%	71.6%
1924	C	11,243	7,859	3,255	67%	0.29		0.785	0.080	0.555	0.555	44.5%	10,539	7,336	2,991	69%	0.51		0.649		0.331	0.331	66.9%	14,621	11,092	4,518	63%	0.27		0.852		0.234	0.234	76.6%	63.7%
1925	D	7,025	4,733	1,677	78%	0.33		0.616	0.080	0.496	0.496	50.4%	11,254	9,286	3,259	67%	0.50		0.754		0.378	0.378	62.2%	10,197	6,872	2,864	69%	0.30		0.624		0.186	0.186	81.4%	64.0%
1926	D	10,924	7,640	3,135	68%	0.29		0.773	0.080	0.551	0.551	44.9%	11,547	8,303	3,369	67%	0.50		0.701		0.349	0.349	65.1%	19,776	11,456	6,446	59%	0.26		0.872		0.226	0.226	77.4%	63.1%
1927	W	20,284	11,102	6,636	59%	0.26		0.960	0.080	0.598	0.598	40.2%	14,312	11,356	4,403	63%	0.47		0.866		0.410	0.410	59.0%	29,469	11,601	10,072	24%	0.24		0.879		0.215	0.215	78.5%	59.2%
1928	A	22,519	11,134	7,472	58%	0.25		0.962	0.080	0.589	0.589	41.1%	16,572	9,811	5,248	61%	0.46		0.783		0.358	0.358	64.2%	25,208	7,962	8,478	25%	0.25		0.683		0.171	0.171	82.9%	63.1%
1929	C	12,856	9,984	3,858	65%	0.28		0.900	0.080	0.614	0.614	38.6%	13,710	10,627	4,178	64%	0.48		0.827		0.395	0.395	60.5%	15,515	11,455	4,853	62%	0.27		0.871		0.236	0.236	76.4%	59.0%
1930	D	7,159	4,251	1,728	77%	0.33		0.590	0.080	0.473	0.473	52.7%	14,442	10,709	4,451	63%	0.47		0.831		0.392	0.392	60.8%	20,768	11,448	6,817	59%	0.26		0.871		0.224	0.224	77.6%	62.9%
1931	C	9,798	6,124	2,714	70%	0.30		0.691	0.080	0.508	0.508	49.2%	9,335	5,369	2,541	71%	0.53		0.543		0.286	0.286	71.4%	11,970	9,201	3,527	66%	0.29		0.750		0.215	0.215	78.5%	67.6%
1932	D	8,184	3,182	2,111	74%	0.32		0.533	0.080	0.414	0.414	58.6%	14,653	11,585	4,530	63%	0.47		0.878		0.413	0.413	58.7%	17,256	12,178	5,504	61%	0.27		0.911		0.242	0.242	75.8%	62.9%
1933	C	9,512	5,866	2,607	71%	0.30		0.677	0.080	0.502	0.502	49.8%	8,132	4,720	2,091	74%	0.55		0.508		0.279	0.279	72.1%	12,100	9,780	3,575	66%	0.29		0.781		0.223	0.223	77.7%	67.9%
1934	C	8,100	2,801	2,080	74%	0.32		0.512	0.080	0.400	0.400	60.0%	12,474	9,929	3,715	66%	0.49		0.789		0.386	0.386	61.4%	16,101	11,444	5,072	62%	0.27		0.871		0.235	0.235	76.5%	64.9%
1935	B	9,209	5,518	2,494	71%	0.31		0.659	0.080	0.493	0.493	50.7%	8,506	6,856	2,231	73%	0.54		0.623		0.338	0.338	66.2%	25,469	12,017	8,575	25%	0.25		0.902		0.225	0.225	77.5%	65.2%
1936	B	12,117	8,643	3,582	66%	0.29		0.827	0.080	0.574	0.574	42.6%	11,872	8,695	3,490	66%	0.49		0.722		0.357	0.357	64.3%	33,177	11,779	11,458	24%	0.24		0.889		0.215	0.215	78.5%	62.4%
1937	B	11,411	7,906	3,318	67%	0.29		0.788	0.080	0.555	0.555	44.5%	12,458	9,986	3,709	66%	0.49		0.792		0.387	0.387	61.3%	15,971	11,921	5,023	62%	0.27		0.897		0.242	0.242	75.8%	60.7%
1938	W	23,696	11,142	7,912	57%	0.25		0.962	0.080	0.585	0.585	41.5%	44,611	11,900	15,734	23%	0.23		0.895		0.210	0.210	79.0%	31,437	8,065	10,808	24%	0.24		0.688		0.167	0.167	83.3%	70.7%
1939	D	19,444	10,087	6,322	59%	0.26		0.905	0.080	0.570	0.570	43.0%	18,687	8,082	6,039	60%	0.45		0.689		0.308	0.308	69.2%	18,410	7,563	5,935	60%	0.26		0.661		0.174	0.174	82.6%	66.0%
1940	A	8,436	4,835	2,205	73%	0.31		0.622	0.080	0.477	0.477	52.3%	7,839	4,416	1,982	75%	0.56		0.491		0.273	0.273	72.7%	23,452	12,391	7,821	57%	0.25		0.922		0.233	0.233	76.7%	68.6%
1941	W	13,663	10,557	4,160	64%	0.28		0.931	0.080	0.626	0.626	37.4%	36,999	11,717	12,888	24%	0.24		0.886		0.211	0.211	78.9%	72,242	12,531	26,069	23%	0.23		0.930		0.210	0.210	79.0%	68.5%
1942	W	18,184	10,783	5,851	60%	0.26		0.943	0.080	0.599	0.599	40.1%	65,623	7,955	23,593	23%	0.23		0.682		0.155	0.155	84.5%	63,265	7,563	22,711	23%	0.23		0.661		0.151	0.151	84.9%	73.5%
1943	W	21,914	10,957	7,246	58%	0.26		0.952	0.080	0.586	0.586	41.4%	28,803	8,126	9,822	25%	0.25		0.692		0.170	0.170	83.0%	58,060	7,628	20,765	23%	0.23		0.665		0.152	0.152	84.8%	73.0%
1944	D	14,318	11,138	4,405	63%	0.28		0.962	0.080	0.639	0.639	36.1%	13,775	11,021	4,202	64%	0.48		0.848		0.405	0.405	59.5%	17,678	7,586	5,662	60%	0.26		0.663		0.175	0.175	82.5%	59.4%
1945	B	13,764	11,117	4,198	64%	0.28		0.961	0.080	0.644	0.644	35.6%	15,824	11,345	4,968	62%	0.46		0.866		0.400	0.400	60.0%	12,393	9,251	3,685	66%	0.28		0.752		0.214	0.214	78.6%	58.5%
1946	B	20,368	11,128	6,668	59%	0.26		0.962	0.080	0.599	0.599	40.1%	52,986	11,939	18,867	23%	0.23		0.898		0.207	0.207	79.3%	43,228	7,961	15,217	23%	0.23		0.683		0.160	0.160	84.0%	70.7%
1947	D	13,781	10,807	4,204	64%	0.28		0.944	0.080	0.633	0.633	36.7%	18,134	11,456	5,832	60%	0.45		0.872		0.392	0.392	60.8%	15,223	11,756	4,743	63%	0.27		0.888		0.242	0.242	75.8%	58.5%
1948	B	10,453	6,924	2,959	69%	0.30		0.735	0.080	0.530	0.530	47.0%	9,433	5,731	2,578	71%	0.53		0.562		0.296	0.296	70.4%	14,897	10,900	4,622	63%	0.27		0.841		0.230	0.230	77.0%	66.2%
1949	D	14,453	10,708	4,455	63%	0.28		0.939	0.080	0.623	0.623	37.7%	15,564	11,261	4,871	62%	0.46		0.861		0.400	0.400	60.0%	14,930	11,197	4,634	63%	0.27		0.858		0.234	0.234	76.6%	58.6%
1950	B	11,377	7,823	3,305	67%	0.29		0.783	0.080	0.553	0.553	44.7%	10,978	7,413	3,156	68%	0.50		0.653		0.330	0.330	67.0%	21,305	11,514	7,018	58%	0.26		0.875		0.224	0.224	77.6%	64.1%
1951	A	40,737	11,116	14,286	24%	0.24		0.961	0.080	0.288	0.288	71.2%	68,095	11,939	24,518	23%	0.23		0.898		0.204	0.204	79.6%	62,208	11,020	22,316	23%	0.23		0.848		0.193	0.193	80.7%	77.8%
1952	W	16,537	11,130	5,235	61%	0.27		0.962	0.080	0.621	0.621	37.9%	45,456	11,485	16,051	23%	0.23		0.873		0.204	0.204	79.6%	67,347	12,283	24,238	23%	0.23		0.916		0.208	0.208	79.2%	69.1%
1953	W	16,537	8,570	5,235	61%	0.27		0.823	0.080	0.536	0.536	46.4%	42,334	8,089	14,883	24%	0.24		0.690		0.162	0.162	83.8%	64,078	7,657	23,015	23%	0.23		0.666		0.152	0.152	84.8%	74.7%
1954	A	20,133	11,132	6,580	59%	0.26		0.962	0.080	0.600	0.600	40.0%	14,914	8,244	4,628	63%	0.47		0.698		0.327	0.327	67.3%	33,421	8,174	11,550	24%	0.24		0.694		0.167	0.167	83.3%	64.5%
1955	D	20,856	11,124	6,850	59%	0.26		0.961	0.080	0.596	0.596	40.4%	26,022	11,287	8,782	25%	0.25		0.862		0.215	0.215	78.5%	22,265	11,581	7,377	58%	0.25		0.878		0.224	0.224	77.6%	68.8%
1956	W	10,722	7,244	3,060	68%	0.29		0.752	0.080	0.539	0.539	46.1%	25,647	11,939	8,642	25%	0.25		0.898		0.224	0.224	77.6%	83,610	12,403	30,320	22%	0.22		0.923		0.207	0.207	79.3%	70.2%
1957	A	15,478	11,154	4,839	62%	0.27		0.963	0.080	0.630	0.630	37.0%	14,149	10,351	4,342	64%	0.47		0.812		0.385	0.385	61.5%	18,638	8,215	6,021	60%	0.26		0.697		0.183	0.183	81.7%	60.4%
1958	W	19,259	11,110	6,253	59%	0.26		0.961	0.080	0.604	0.604	39.6%	23,745	11,305	7,930	57%	0.43		0.863		0.370	0.370	63.0%	36,463	7,641	12,687	24%	0.24		0.666		0.159	0.159	84.1%	62.5%
1959	B	16,133	8,669	5,084	62%	0.27		0.829	0.080	0.542	0.542	45.8%	14,621	8,199	4,518	63%	0.47		0.696		0.327	0.327	67.3%	35,162	7,657	12,200	24%	0.24		0.666		0.160	0.160	84.0%	66.1%
1960	D	11,293	7,530	3,274	67%	0.29		0.767	0.080	0.543	0.543	45.7%	10,897	7,138	3,125	68%	0.51		0.638		0.323	0.323	67.7%	14,279	10,678	4,390	63%	0.28		0.830		0.229	0.229	77.1%	64.6%
1961	D	14,251	10,685	4,380	63%	0.28		0.938	0.080	0.625	0.625	37.5%	18,849	11,252	6,100	60%	0.45		0.861		0.384	0.384	61.6%	15,011	11,411	4,664	63%	0.27		0.869		0.237	0.237	76.3%	59.3%
1962	B	9,781	6,208	2,708	70%	0.30		0.696	0.080	0.512	0.512	48.8%	16,703	11,234	5,297	61%	0.46		0.860		0.393	0.393	60.7%	12,653	8,209	3,782	65%	0.28		0.696		0.197	0.197	80.3%	62.6%
1963	W	21,242	11,122	6,995	58%	0.26		0.961	0.080	0.594	0.594	40.6%	27,550	11,253	9,354	25%	0.25		0.861		0.212	0.212	78.8%	17,808	11,578	5,710	60%	0.26		0.878		0.232	0.232	76.8%	68.7%
1964	D	28,653	11,120	9,766	25%	0.25		0.961	0.080	0.297	0.297	70.3%	14,849	9,800	4,603	63%	0.47		0.782		0.367	0.367	63.3%	24,200	8,177	8,101	57%	0.25		0.694		0.175	0.175	82.5%	69.9%
1965	W	13,394	10,352	4,059	64%	0.28		0.920	0.080	0.621	0.621	37.9%	27,355	11,712	9,281	25%	0.25		0.885		0.219	0.219	78.1%	81,236	12,824	29,432	22%	0.22		0.945		0.212	0.212	78.8%	68.2%
1966	B	25,376	11,143	8,541	25%	0.25		0.962	0.080	0.301	0.301	69.9%	16,995	9,984	5,406	61%	0.46		0.792		0.361	0.361	63.9%	29,632	7,981	10,132	24%	0.24		0.684		0.167	0.167	83.3%	70.3%
1967	W	16,133	11,111	5,084	62%	0.27		0.961	0.080	0.623	0.623	37.7%	39,797	11,495	13,934	24%	0.24		0.874		0.207	0.207	79.3%	35,097	12,021	12,176	24%	0.24		0.902		0.216	0.216	78.4%	68.7%
1968	B	16,234	8,537	5,122	62%	0.27		0.822	0.080	0.537	0.537	46.3%	16,686	8,082	5,291	61%	0.46		0.689		0.315	0.315	68.5%	30,640	7,657	10,509	24%	0.24		0.666		0.162	0.162	83.8%	66.8%
1969	W	14,318	10,875	4,405	63%	0.28		0.948	0.080	0.630	0.630	37.0%	24,769	11,348	8,314	57%	0.43		0.866		0.368	0.368	63.2%	68,681	10,021	24,737	23%	0.23		0.794		0.180	0.180	82.0%	61.3%
1970	W	17,646	8,570	5,650	61%	0.26		0.823	0.080	0.530	0.530	47.0%	50,156	7,828	17,809	23%	0.23		0.676		0.157	0.157	84.3%	92,669	7,625	33,708	22%	0.22		0.665		0.148	0.148	85.2%	75.2%
1971	W	24,939	11,134	8,377	57%	0.25		0.962	0.080	0.581	0.581	41.9%	54,580	11,604	19,463	23%	0.23		0.880		0.203	0.203	79.7%	45,847	9,061	16,197	23%	0.23		0.742		0.173	0.173	82.7%	71.0%
1972	B	15,343	11,114	4,788	62%	0.27		0.961	0.080	0.630	0.630	37.0%	19,858	11,314	6,477	59%	0.44		0.864		0.382	0.382	61.8%	20,394	8,215	6,677	59%	0.26		0.697		0.180	0.180	82.0%	60.7%
1973	A	23,124	11,127	7,699	57%	0.25		0.962	0.080	0.587	0.587	41.3%	26,200	11,280	8,849	25%	0.25		0.862		0.214	0.214	78.6%	49,750	11,598	17,656	23%	0.23		0.879		0.204	0.204	79.6%	69.5%
1974	W	53,576	11,120	19,087	23%	0.23		0.961	0.080	0.283	0.283	71.7%	61,590	11,522	22,085	23%	0.23		0.875		0.200	0.200	80.0%	78,422	7,961	28,380	22%	0.22		0.683		0.154	0.154	84.6%	79.1%
1975	W	17,579	11,045	5,624	61%	0.26		0.957	0.080	0.611	0.611	38.9%	17,613	8,649	5,637	61%	0.45		0.720		0.326	0.326	67.4%	18,670	8,172	6,033	60%	0.26		0.694		0.182	0.182	81.8%	63.9%
1976	C	19,226	11,139	6,240	59%	0.26		0.962	0.080	0.605	0.605	39.5%	16,768	9,977	5,321	61%	0.46		0.792		0.362	0.362	63.8%	16,768	8,151	5,321	61%	0.27		0.693		0.185	0.185	81.5%	62.2%
1977	C	8,235	6,223	2,130	74%	0.32		0.697	0.080	0.535	0.535	46.5%	8,050	4,978	2,061	74%	0.55		0.522		0.288	0.288	71.2%	7,904	5,063	2,006	75%	0.32		0.526		0.168	0.168	83.2%	68.1%
1978	A	6,924	4,361	1,640	78%	0.33		0.596	0.080	0.482	0.482	51.8%	12,279	9,892	3,642	66%	0.49		0.787		0.386	0.386	61.4%	43,066	10,451	15,157	23%	0.23		0.817		0.192	0.192	80.8%	63.8%
1979	B	14,688	11,157	4,543	63%	0.27		0.963	0.080	0.637	0.637	36.3%	12,751	8,023	3,819	65%	0.49		0.686		0.333	0.333	66.7%	27,241	7,586	9,238	25%	0.25		0.663		0.164	0.164	83.6%	63.3%
1980	A	16,301	11,114	5,147	62%	0.27		0.961	0.080	0.622	0.622	37.8%	20,833	11,363	6,842	59%	0.44		0.866		0.379	0.379	62.1%	61,557	7,483	22,072	23%	0.23		0.657		0.150	0.150	85.0%	61.7%
1981	D	13,024	10,041	3,921	65%	0.28		0.903	0.080	0.614	0.614	38.6%	15,613	8,440	4,889	62%	0.46		0.709		0.329	0.329	67.1%	28,705	7,680	9,786	25%	0.25		0.668		0.164	0.164	83.6%	64.1%
1982	W	32,636	11,127	11,256	24%	0.24		0.962	0.080	0.293	0.293	70.7%	68,144	11,319	24,536	23%	0.23		0.864		0.196	0.196	80.4%	51,165	11,965	18,186	23%	0.23		0.899		0.208	0.208	79.2%	77.7%
1983	W	39,107	11,155	13,676	24%	0.24		0.963	0.080	0.290	0.290	71.0%	55,410	8,775	19,773	23%	0.23		0.727		0.167	0.167	83.3%	59,150	6,972	21,172	23%	0.23		0.629		0.144	0.144	85.6%	80.8%
1984	W	62,802	7,149	22,538	23%	0.23		0.747	0.080	0.232	0.232	76.8%	82,944	6,238	30,071	22%	0.22		0.590		0.132	0.132	86.8%	47,359	4,329	16,762	23%	0.23		0.487		0.113	0.113	88.7%	84.7%
1985	D	33,998	11,134	11,765	24%	0.24		0.962	0.080	0.292	0.292	70.8%	23,875	8,816	7,979	57%	0.43		0.729		0.312	0.312	68.8%	16,800	8,196	5,333	61%	0.27		0.695		0.186	0.186	81.4%	72.5%
1986	W	9,546	6,964	2,620	71%	0.30		0.737	0.080	0.544	0.544	45.6%	15,727	11,320	4,932	62%	0.46		0.864		0.400	0.400	60.0%	21,500	11,560	7,091	58%	0.26		0.877		0.225	0.225	77.5%	60.8%
1987	D	11,125	8,523	3,211	68%	0.29		0.821	0.080	0.581	0.581	41.9%	13,417	10,440	4,068	64%	0.48		0.817		0.392	0.392	60.8%	16,735	7,147	5,309	61%	0.27		0.639		0.171	0.171	82.9%	61.6%
1988	C	8,453	5,122	2,211	73%	0.31		0.637	0.080	0.488	0.488	51.2%	15,841	11,245	4,974	62%	0.46		0.860		0.398	0.398	60.2%	25,534	11,416	8,600	25%	0.25		0.869		0.217	0.217	78.3%	62.5%
1989	D	8,991	6,348	2,413	72%	0.31		0.703	0.080	0.528	0.528	47.2%	9,286	6,915	2,523	71%	0.53		0.626		0.331	0.331	66.9%	12,490	9,173	3,721	66%	0.28		0.748		0.212	0.212	78.8%	64.9%
1990	C	11,512	7,757	3,355	67%	0.29		0.780	0.080	0.549	0.549	45.1%	14,588	10,549	4,506	63%	0.47		0.823		0.387	0.387	61.3%	21,338	9,919	7,030	58%	0.26		0.789		0.202	0.202	79.8%	61.9%
1991	C	8,134	5,065	2,092	74%	0.32		0.634	0.080	0.490	0.490	51.0%	8,668	4,926	2,292	73%	0.54		0.519		0.280	0.280	72.0%	6,847	3,455	1,611	78%	0.33		0.439		0.146	0.146	85.4%	70.1%
1992	C	7,495	4,724	1,853	76%	0.32		0.616	0.080	0.487	0.487	51.3%	7,449	4,774	1,836	76%	0.56		0.511		0.288	0.288	71.2%	12,133	9,105	3,588	66%	0.29		0.745		0.213	0.213	78.7%	68.1%
																																		Average:	66.43%

Formulas: Sacramento River Late Fall Run Smolt Survival Model

C10 ='Study 622a Flow Data'!B7
D10 ='Study 622a Flow Data'!L7 (HIDDEN)
E10 ='Study 622a Flow Data'!V7 (HIDDEN)
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =-1.613493+(0.0319584*$T$1)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 622a Flow Data'!C7
R10 ='Study 622a Flow Data'!M7 (HIDDEN)
S10 ='Study 622a Flow Data'!W7 (HIDDEN)
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 622a Flow Data'!D7
AF10 ='Study 622a Flow Data'!N7 (HIDDEN)
AG10 ='Study 622a Flow Data'!X7 (HIDDEN)
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
AS10 =(O10*0.25)+(AC10*0.5)+(AQ10*0.25)

D1485 Winter Run Salmon Smolt Survival Model

Cross Channel Closed: 25,000 cfs
Cross Channel Closed from Feb to Apr when DOI greater than: 12,000 cfs

February Sac R. Temp: 50 degrees F
March Sac R. Temp: 55 degrees F

April Sacramento River temperatures based on limited historical data from USBR

A	B	C	D	G	H	I	J	K	L	M	N	O	P
		FEBRUARY			Calculated								
	Water	Sac	Total		Steamboat								**Calculated**
	Year	River	Delta	CVP+SWP	& Sutter		x channel		Calculated Mortality				**Survival**
Year	Type	Flows	Outflow	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	**s123**
1922	A	35,436	40,297	11,470	12,303	24%	0.24		0.93		0.22	0.22	**77.8%**
1923	B	19,050	16,007	8,661	6,175	60%	0.26		0.77		0.20	0.20	**79.8%**
1924	C	16,655	7,823	11,074	5,279	61%	0.27		0.90		0.55	0.55	**44.6%**
1925	D	45,105	52,974	11,812	15,919	23%	0.23		0.94		0.22	0.22	**77.9%**
1926	D	35,274	32,735	11,866	12,242	24%	0.24		0.95		0.23	0.23	**77.3%**
1927	W	88,337	135,315	11,776	32,088	22%	0.22		0.94		0.21	0.21	**78.9%**
1928	A	25,469	22,270	8,327	8,575	25%	0.25		0.76		0.19	0.19	**81.1%**
1929	C	18,780	9,921	11,470	6,074	60%	0.26		0.93		0.55	0.55	**44.7%**
1930	D	17,592	9,525	11,488	5,629	61%	0.26		0.93		0.56	0.56	**43.9%**
1931	C	12,640	3,871	10,984	3,777	65%	0.28		0.90		0.59	0.59	**41.2%**
1932	D	15,403	16,916	12,309	4,811	62%	0.27		0.97		0.26	0.26	**73.6%**
1933	C	13,324	3,907	11,596	4,033	65%	0.28		0.93		0.60	0.60	**39.8%**
1934	C	13,018	6,518	11,740	3,919	65%	0.28		0.94		0.61	0.61	**39.0%**
1935	B	13,000	11,992	5,060	3,912	65%	0.28		0.58		0.38	0.38	**62.4%**
1936	B	53,442	90,420	11,631	19,037	23%	0.23		0.93		0.22	0.22	**78.4%**
1937	B	32,033	44,421	12,586	11,030	24%	0.24		0.99		0.24	0.24	**76.1%**
1938	W	82,359	151,682	8,229	29,852	22%	0.22		0.75		0.17	0.17	**83.1%**
1939	D	19,032	15,071	8,211	6,168	60%	0.26		0.75		0.20	0.20	**80.4%**
1940	A	47,722	58,396	12,309	16,898	23%	0.23		0.97		0.23	0.23	**77.4%**
1941	W	75,031	127,104	10,065	27,112	23%	0.23		0.85		0.19	0.19	**80.8%**
1942	W	78,344	144,966	8,247	28,351	23%	0.23		0.75		0.17	0.17	**83.1%**
1943	W	52,253	61,706	8,301	18,593	23%	0.23		0.76		0.17	0.17	**82.6%**
1944	D	27,451	27,190	7,962	9,317	25%	0.25		0.74		0.18	0.18	**81.8%**
1945	B	39,451	49,156	8,643	13,805	24%	0.24		0.77		0.18	0.18	**81.7%**
1946	B	23,588	21,931	8,697	7,872	57%	0.25		0.78		0.20	0.20	**80.4%**
1947	D	20,563	13,378	11,002	6,740	59%	0.26		0.90		0.23	0.23	**76.8%**
1948	B	11,109	2,417	10,031	3,205	68%	0.29		0.85		0.57	0.57	**42.6%**
1949	D	16,133	7,202	11,470	5,084	62%	0.27		0.93		0.57	0.57	**42.9%**
1950	B	36,372	30,610	11,794	12,653	24%	0.24		0.94		0.23	0.23	**77.5%**
1951	A	60,572	70,331	8,967	21,704	23%	0.23		0.79		0.18	0.18	**81.9%**
1952	W	62,499	79,241	8,762	22,425	23%	0.23		0.78		0.18	0.18	**82.2%**
1953	W	28,341	27,441	8,337	9,650	25%	0.25		0.76		0.19	0.19	**81.4%**
1954	A	57,151	57,475	8,931	20,424	23%	0.23		0.79		0.18	0.18	**81.9%**
1955	D	16,295	7,328	11,506	5,144	62%	0.27		0.93		0.57	0.57	**42.9%**
1956	W	61,543	90,559	8,658	22,067	23%	0.23		0.77		0.18	0.18	**82.3%**
1957	A	33,149	29,620	9,057	11,448	24%	0.24		0.80		0.19	0.19	**80.8%**
1958	W	65,740	158,236	9,327	23,637	23%	0.23		0.81		0.18	0.18	**81.6%**
1959	B	50,075	52,541	8,337	17,778	23%	0.23		0.76		0.18	0.18	**82.4%**
1960	D	27,051	22,879	11,144	9,167	25%	0.25		0.91		0.22	0.22	**77.5%**
1961	D	33,347	26,217	9,831	11,522	24%	0.24		0.84		0.20	0.20	**79.8%**
1962	B	46,707	56,899	11,164	16,519	23%	0.23		0.91		0.21	0.21	**78.8%**
1963	W	54,846	69,143	12,694	19,562	23%	0.23		0.99		0.23	0.23	**77.2%**
1964	D	17,246	10,483	8,640	5,500	61%	0.27		0.77		0.47	0.47	**53.0%**
1965	W	33,329	31,781	12,208	11,515	24%	0.24		0.97		0.23	0.23	**76.7%**
1966	B	26,775	26,379	8,697	9,064	25%	0.25		0.78		0.19	0.19	**80.8%**
1967	W	43,106	56,683	8,895	15,172	23%	0.23		0.79		0.18	0.18	**81.5%**
1968	B	54,520	58,327	8,049	19,440	23%	0.23		0.74		0.17	0.17	**82.9%**
1969	W	67,486	148,387	7,454	24,290	23%	0.23		0.71		0.16	0.16	**83.9%**
1970	W	57,565	91,254	7,851	20,579	23%	0.23		0.73		0.17	0.17	**83.2%**
1971	W	28,521	24,308	8,967	9,717	25%	0.25		0.79		0.19	0.19	**80.6%**
1972	B	24,217	17,872	9,075	8,107	57%	0.25		0.80		0.20	0.20	**80.0%**
1973	A	70,961	95,864	9,669	25,590	23%	0.23		0.83		0.19	0.19	**81.2%**
1974	W	41,918	46,005	8,679	14,727	24%	0.24		0.78		0.18	0.18	**81.7%**
1975	W	58,807	63,345	8,931	21,044	23%	0.23		0.79		0.18	0.18	**81.9%**
1976	C	19,523	13,369	8,536	6,352	59%	0.26		0.77		0.20	0.20	**80.0%**
1977	C	7,256	2,503	5,798	1,764	77%	0.33		0.62		0.48	0.48	**52.4%**
1978	A	51,371	56,827	12,406	18,263	23%	0.23		0.98		0.23	0.23	**77.4%**
1979	B	42,044	49,570	8,211	14,774	24%	0.24		0.75		0.18	0.18	**82.3%**
1980	A	69,453	138,698	7,771	25,026	23%	0.23		0.73		0.16	0.16	**83.5%**
1981	D	29,674	24,956	8,337	10,148	24%	0.24		0.76		0.19	0.19	**81.5%**
1982	W	65,650	106,613	9,417	23,603	23%	0.23		0.82		0.19	0.19	**81.5%**
1983	W	82,917	185,029	7,112	30,061	22%	0.22		0.69		0.15	0.15	**84.5%**
1984	W	36,004	44,036	5,285	12,516	24%	0.24		0.59		0.14	0.14	**85.8%**
1985	D	22,381	18,078	8,895	7,421	58%	0.25		0.79		0.20	0.20	**80.0%**
1986	W	99,825	227,055	12,748	36,385	22%	0.22		1.00		0.22	0.22	**77.9%**
1987	D	23,030	20,563	5,852	7,663	58%	0.25		0.62		0.16	0.16	**84.2%**
1988	C	11,248	2,417	10,205	3,257	67%	0.29		0.86		0.58	0.58	**42.2%**
1989	D	9,093	2,503	8,355	2,451	72%	0.31		0.76		0.54	0.54	**45.7%**
1990	C	17,754	11,956	8,715	5,690	60%	0.26		0.78		0.47	0.47	**53.0%**
1991	C	8,211	2,503	6,932	2,121	74%	0.32		0.68		0.50	0.50	**49.7%**
1992	C	31,415	26,999	11,300	10,799	24%	0.24		0.92		0.22	0.22	**77.7%**

A	R	S	V	W	X	Y	Z	AA	AB	AC	AD	AE
		MARCH		Calculated								
	Sac	Total		Steamboat								**Calculated**
	River	Delta	CVP+SWP	& Sutter		x channel		Calculated Mortality				**Survival**
Year	Flows	Outflow	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	**s123**
1922	31,551	31,112	8,034	10,850	24%	0.24		0.830	0.144	0.311	0.311	**68.9%**
1923	17,337	11,319	8,652	5,534	61%	0.27		0.864	0.144	0.581	0.581	**41.9%**
1924	8,603	2,505	7,286	2,268	73%	0.31		0.790	0.144	0.614	0.614	**38.6%**
1925	18,557	12,002	10,083	5,990	60%	0.26		0.941	0.144	0.353	0.353	**64.7%**
1926	16,019	6,473	11,206	5,041	62%	0.27		1.000	0.144	0.673	0.673	**32.7%**
1927	43,863	42,822	7,611	15,455	23%	0.23		0.808	0.144	0.300	0.300	**70.0%**
1928	86,229	99,126	8,652	31,300	22%	0.22		0.864	0.144	0.305	0.305	**69.5%**
1929	14,670	9,042	7,579	4,536	63%	0.27		0.806	0.144	0.561	0.561	**43.9%**
1930	30,852	26,087	8,945	10,589	24%	0.24		0.880	0.144	0.323	0.323	**67.7%**
1931	9,319	2,505	7,709	2,535	71%	0.30		0.813	0.144	0.619	0.619	**38.1%**
1932	10,116	6,066	8,620	2,833	69%	0.30		0.862	0.144	0.642	0.642	**35.8%**
1933	10,994	2,505	10,945	3,162	68%	0.29		0.988	0.144	0.716	0.716	**28.4%**
1934	12,214	2,505	10,864	3,618	66%	0.29		0.983	0.144	0.698	0.698	**30.2%**
1935	24,916	21,256	11,498	8,368	57%	0.25		1.000	0.144	0.358	0.358	**64.2%**
1936	34,202	32,999	8,392	11,842	24%	0.24		0.850	0.144	0.314	0.314	**68.6%**
1937	37,260	49,522	8,229	12,985	24%	0.24		0.841	0.144	0.310	0.310	**69.0%**
1938	78,634	176,279	7,595	28,459	22%	0.22		0.807	0.144	0.293	0.293	**70.7%**
1939	16,394	12,230	7,611	5,181	61%	0.27		0.808	0.144	0.322	0.322	**67.8%**
1940	63,606	108,672	9,872	22,839	23%	0.23		0.930	0.144	0.323	0.323	**67.7%**
1941	58,581	96,361	8,067	20,959	23%	0.23		0.832	0.144	0.302	0.302	**69.8%**
1942	27,095	29,681	8,229	9,183	25%	0.25		0.841	0.144	0.317	0.317	**68.3%**
1943	64,598	90,262	8,278	23,210	23%	0.23		0.844	0.144	0.303	0.303	**69.7%**
1944	25,094	21,874	8,246	8,435	25%	0.25		0.842	0.144	0.319	0.319	**68.1%**
1945	27,030	31,372	7,497	9,159	25%	0.25		0.801	0.144	0.307	0.307	**69.3%**
1946	23,533	20,459	8,668	7,851	57%	0.25		0.865	0.144	0.326	0.326	**67.4%**
1947	21,874	16,556	8,408	7,231	58%	0.26		0.851	0.144	0.325	0.325	**67.5%**
1948	16,735	12,002	7,237	5,309	61%	0.27		0.787	0.144	0.316	0.316	**68.4%**
1949	41,813	40,577	9,319	14,688	24%	0.24		0.900	0.144	0.322	0.322	**67.8%**
1950	23,615	18,052	8,685	7,882	57%	0.25		0.866	0.144	0.326	0.326	**67.4%**
1951	29,323	30,039	8,929	10,017	24%	0.24		0.879	0.144	0.324	0.324	**67.6%**
1952	57,524	71,673	8,181	20,564	23%	0.23		0.838	0.144	0.303	0.303	**69.7%**
1953	24,899	20,638	8,343	8,362	57%	0.25		0.847	0.144	0.320	0.320	**68.0%**
1954	49,538	46,400	8,912	17,577	23%	0.23		0.878	0.144	0.314	0.314	**68.6%**
1955	15,158	8,490	8,473	4,719	63%	0.27		0.854	0.144	0.588	0.588	**41.2%**
1956	36,674	38,935	8,278	12,766	24%	0.24		0.844	0.144	0.311	0.311	**68.9%**
1957	44,383	43,423	8,815	15,649	23%	0.23		0.873	0.144	0.315	0.315	**68.5%**
1958	93,612	127,977	8,311	34,061	22%	0.22		0.845	0.144	0.301	0.301	**69.9%**
1959	21,760	17,304	8,343	7,188	58%	0.26		0.847	0.144	0.324	0.324	**67.6%**
1960	21,809	13,824	10,620	7,207	58%	0.26		0.970	0.144	0.355	0.355	**64.5%**
1961	21,338	15,092	8,148	7,030	58%	0.26		0.837	0.144	0.322	0.322	**67.8%**
1962	27,014	25,046	8,571	9,153	25%	0.25		0.859	0.144	0.321	0.321	**67.9%**
1963	32,641	29,258	8,685	11,258	24%	0.24		0.866	0.144	0.319	0.319	**68.1%**
1964	16,345	9,156	8,929	5,163	62%	0.27		0.879	0.144	0.596	0.596	**40.4%**
1965	21,386	18,703	8,083	7,049	58%	0.26		0.833	0.144	0.321	0.321	**67.9%**
1966	28,689	24,265	8,668	9,780	25%	0.25		0.865	0.144	0.321	0.321	**67.9%**
1967	54,483	61,915	7,530	19,426	23%	0.23		0.803	0.144	0.296	0.296	**70.4%**
1968	36,788	35,649	7,741	12,809	24%	0.24		0.815	0.144	0.304	0.304	**69.6%**
1969	45,326	71,250	6,733	16,002	23%	0.23		0.760	0.144	0.288	0.288	**71.2%**
1970	35,812	40,870	7,335	12,444	24%	0.24		0.793	0.144	0.299	0.299	**70.1%**
1971	51,506	49,083	8,929	18,313	23%	0.23		0.879	0.144	0.314	0.314	**68.6%**
1972	32,933	25,615	8,799	11,367	24%	0.24		0.872	0.144	0.320	0.320	**68.0%**
1973	47,554	62,712	8,701	16,835	23%	0.23		0.866	0.144	0.312	0.312	**68.8%**
1974	#######	113,047	8,668	36,524	22%	0.22		0.865	0.144	0.304	0.304	**69.6%**
1975	75,999	90,685	8,929	27,474	23%	0.23		0.879	0.144	0.310	0.310	**69.0%**
1976	18,361	10,653	8,652	5,917	60%	0.26		0.864	0.144	0.576	0.576	**42.4%**
1977	6,863	3,952	3,708	1,617	78%	0.33		0.597	0.144	0.498	0.498	**50.2%**
1978	46,465	70,616	8,115	16,428	23%	0.23		0.835	0.144	0.305	0.305	**69.5%**
1979	32,592	35,958	8,229	11,239	24%	0.24		0.841	0.144	0.313	0.313	**68.7%**
1980	36,479	61,020	7,579	12,693	24%	0.24		0.806	0.144	0.302	0.302	**69.8%**
1981	32,494	29,258	8,343	11,203	24%	0.24		0.847	0.144	0.314	0.314	**68.6%**
1982	69,087	89,790	8,896	24,889	23%	0.23		0.877	0.144	0.310	0.310	**69.0%**
1983	81,935	251,823	4,684	29,694	22%	0.22		0.650	0.144	0.258	0.258	**74.2%**
1984	36,495	36,674	7,416	12,699	24%	0.24		0.797	0.144	0.300	0.300	**70.0%**
1985	21,809	16,816	8,912	7,207	58%	0.26		0.878	0.144	0.332	0.332	**66.8%**
1986	72,535	157,479	6,245	26,178	23%	0.23		0.734	0.144	0.277	0.277	**72.3%**
1987	29,876	26,591	6,863	10,224	24%	0.24		0.767	0.144	0.296	0.296	**70.4%**
1988	7,075	2,505	5,351	1,696	77%	0.33		0.686	0.144	0.563	0.563	**43.7%**
1989	46,611	39,081	11,189	16,483	23%	0.23		1.000	0.144	0.344	0.344	**65.6%**
1990	15,483	9,872	6,603	4,841	62%	0.27		0.753	0.144	0.523	0.523	**47.7%**
1991	30,429	24,249	11,319	10,430	24%	0.24		1.000	0.144	0.353	0.353	**64.7%**
1992	20,102	12,669	10,913	6,568	59%	0.26		0.986	0.144	0.362	0.362	**63.8%**

A	AG	AH	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AW
		APRIL		Calculated										
	Sac	Total		Steamboat									**Calculated**	
	River	Delta	CVP+SWP	& Sutter		x channel			Calculated Mortality				**Survival**	**Weighted**
Year	Flows	Outflow	exports	Slough Q	percent	closed	temp f	m1	m2	m3	m23	m123	**s123**	**Total Survival**
1922	22,822	19,528	9,546	7,585	0.58	0.25	58.5	0.002	0.975	0.256	0.554	0.555	**44.5%**	**62.7%**
1923	24,418	21,175	10,100	8,183	0.57	0.25	58.3	0.000	1.000	0.250	0.557	0.557	**44.3%**	**47.5%**
1924	7,630	7,394	571	1,904	0.76	0.32	61.5	0.128	0.544	0.352	0.497	0.562	**43.8%**	**40.9%**
1925	22,906	17,864	11,226	7,617	0.58	0.25	59.1	0.027	1.000	0.275	0.576	0.587	**41.3%**	**59.4%**
1926	18,268	14,285	10,739	5,882	0.60	0.26	61.6	0.133	1.000	0.355	0.634	0.682	**31.8%**	**38.2%**
1927	48,215	47,022	9,764	17,082	0.23	0.23	56.8	0.000	0.956	0.202	0.377	0.377	**62.3%**	**68.9%**
1928	29,208	24,771	10,083	9,974	0.25	0.25	58.7	0.011	1.000	0.262	0.443	0.449	**55.1%**	**66.7%**
1929	7,075	2,504	5,395	1,696	0.77	0.33	56.3	0.000	0.711	0.186	0.592	0.592	**40.8%**	**43.0%**
1930	13,713	6,235	9,344	4,179	0.64	0.28	59.6	0.048	0.984	0.291	0.735	0.748	**25.2%**	**51.8%**
1931	13,377	9,310	4,269	4,053	0.64	0.28	62.8	0.183	0.767	0.393	0.634	0.701	**29.9%**	**36.0%**
1932	10,890	13,881	538	3,123	0.68	0.29	58.9	0.019	0.496	0.269	0.379	0.391	**60.9%**	**48.2%**
1933	10,083	9,260	1,765	2,821	0.69	0.30	60.1	0.069	0.584	0.307	0.499	0.534	**46.6%**	**35.3%**
1934	8,067	7,949	689	2,067	0.74	0.32	63.6	0.217	0.588	0.419	0.545	0.643	**35.7%**	**33.0%**
1935	23,696	38,720	11,142	7,912	0.57	0.25	58.9	0.019	1.000	0.269	0.570	0.578	**42.2%**	**57.3%**
1936	22,032	20,066	9,781	7,290	0.58	0.26	59.7	0.053	1.000	0.294	0.589	0.611	**38.9%**	**61.0%**
1937	22,503	22,234	9,579	7,466	0.58	0.25	58.8	0.015	0.982	0.266	0.564	0.570	**43.0%**	**62.1%**
1938	47,173	78,633	7,714	16,693	0.23	0.23	56.3	0.000	0.837	0.186	0.337	0.337	**66.3%**	**71.0%**
1939	10,571	4,453	7,983	3,003	0.69	0.30	63.3	0.204	0.977	0.409	0.798	0.840	**16.0%**	**53.9%**
1940	41,980	66,029	10,285	14,751	0.24	0.24	57.4	0.000	0.995	0.221	0.403	0.403	**59.7%**	**66.5%**
1941	42,367	77,541	9,310	14,895	0.24	0.24	56.9	0.000	0.934	0.205	0.376	0.376	**62.4%**	**69.0%**
1942	43,308	48,719	9,646	15,247	0.23	0.23	56.5	0.000	0.944	0.192	0.369	0.369	**63.1%**	**68.7%**
1943	29,410	29,964	9,663	10,049	0.24	0.24	58.8	0.015	0.987	0.266	0.442	0.450	**55.0%**	**66.9%**
1944	10,806	4,924	9,579	3,091	0.68	0.29	58.4	0.000	0.975	0.253	0.745	0.745	**25.5%**	**57.1%**
1945	12,167	9,243	9,764	3,601	0.66	0.29	60.6	0.090	1.000	0.323	0.770	0.791	**20.9%**	**56.4%**
1946	13,159	7,731	10,100	3,971	0.65	0.28	60.7	0.095	1.000	0.326	0.762	0.785	**21.5%**	**55.3%**
1947	13,310	4,453	10,134	4,028	0.65	0.28	62.5	0.170	1.000	0.384	0.781	0.819	**18.1%**	**53.9%**
1948	22,990	16,570	11,092	7,648	0.58	0.25	56.6	0.000	1.000	0.195	0.529	0.529	**47.1%**	**58.7%**
1949	13,461	5,899	9,814	4,085	0.64	0.28	61.7	0.137	1.000	0.358	0.771	0.803	**19.7%**	**50.1%**
1950	19,276	12,789	10,067	6,259	0.59	0.26	61.3	0.120	1.000	0.346	0.625	0.670	**33.0%**	**58.4%**
1951	15,495	9,999	9,092	4,845	0.62	0.27	59.9	0.061	0.976	0.301	0.721	0.738	**26.2%**	**57.0%**
1952	56,652	68,180	8,773	20,238	0.23	0.23	55.5	0.000	0.879	0.160	0.325	0.325	**67.5%**	**70.6%**
1953	16,621	9,999	9,764	5,266	0.61	0.27	58.8	0.015	0.992	0.266	0.711	0.715	**28.5%**	**57.9%**
1954	39,863	35,258	10,386	13,959	0.24	0.24	58.4	0.000	1.000	0.253	0.430	0.430	**57.0%**	**66.8%**
1955	12,722	6,302	9,008	3,808	0.65	0.28	56.4	0.000	0.908	0.189	0.658	0.658	**34.2%**	**39.3%**
1956	20,436	15,780	10,386	6,693	0.59	0.26	59.7	0.053	1.000	0.294	0.593	0.614	**38.6%**	**61.5%**
1957	13,596	6,100	10,184	4,135	0.64	0.28	60.5	0.086	1.000	0.320	0.757	0.778	**22.2%**	**56.2%**
1958	52,282	103,018	9,663	18,603	0.23	0.23	57.4	0.000	0.962	0.221	0.392	0.392	**60.8%**	**68.7%**
1959	11,680	4,453	8,470	3,418	0.67	0.29	63	0.191	0.998	0.400	0.799	0.837	**16.3%**	**54.1%**
1960	9,730	4,453	6,857	2,689	0.70	0.30	59.5	0.044	0.848	0.288	0.681	0.695	**30.5%**	**56.0%**
1961	11,781	4,453	7,932	3,456	0.67	0.29	60.1	0.069	0.917	0.307	0.713	0.733	**26.7%**	**57.1%**
1962	12,403	5,327	10,487	3,689	0.66	0.28	61.8	0.141	1.000	0.362	0.781	0.812	**18.8%**	**54.6%**
1963	69,457	88,750	10,117	25,027	0.23	0.23	53.7	0.000	0.920	0.103	0.288	0.288	**71.2%**	**70.2%**
1964	13,697	5,663	9,008	4,173	0.64	0.28	59.3	0.036	0.960	0.282	0.717	0.727	**27.3%**	**38.1%**
1965	45,173	45,509	9,932	15,945	0.23	0.23	56.9	0.000	0.967	0.205	0.383	0.383	**61.7%**	**67.2%**
1966	12,806	4,453	9,966	3,839	0.65	0.28	61.9	0.145	1.000	0.365	0.779	0.811	**18.9%**	**54.9%**
1967	39,930	56,870	8,722	13,984	0.24	0.24	53.8	0.000	0.846	0.106	0.281	0.281	**71.9%**	**72.3%**
1968	11,293	4,453	8,470	3,274	0.67	0.29	61.5	0.128	0.971	0.352	0.769	0.798	**20.2%**	**56.5%**
1969	44,787	62,130	7,495	15,800	0.23	0.23	56.4	0.000	0.827	0.189	0.338	0.338	**66.2%**	**71.3%**
1970	15,108	9,999	8,470	4,700	0.63	0.27	58.8	0.015	0.922	0.266	0.677	0.682	**31.8%**	**60.3%**
1971	20,755	13,176	10,386	6,812	0.59	0.26	58.7	0.011	1.000	0.262	0.574	0.578	**42.2%**	**62.2%**
1972	12,890	4,453	9,646	3,871	0.65	0.28	58.5	0.002	0.980	0.256	0.727	0.728	**27.2%**	**57.3%**
1973	19,511	16,402	10,117	6,347	0.59	0.26	61.3	0.120	1.000	0.346	0.625	0.670	**33.0%**	**59.7%**
1974	33,208	67,390	10,100	11,470	0.24	0.24	56.8	0.000	0.974	0.202	0.388	0.388	**61.2%**	**68.6%**
1975	25,763	23,612	10,386	8,685	0.25	0.25	56.8	0.000	0.990	0.202	0.398	0.398	**60.2%**	**68.0%**
1976	9,428	2,504	7,613	2,576	0.71	0.30	58.9	0.019	0.878	0.269	0.700	0.706	**29.4%**	**43.4%**
1977	16,990	8,403	9,008	5,404	0.61	0.27	64.3	0.246	1.000	0.441	0.782	0.836	**16.4%**	**40.4%**
1978	38,703	48,249	8,672	13,525	0.24	0.24	56.9	0.000	0.899	0.205	0.370	0.370	**63.0%**	**68.6%**
1979	17,696	13,478	9,646	5,668	0.60	0.26	59.8	0.057	1.000	0.298	0.603	0.626	**37.4%**	**61.1%**
1980	19,814	18,016	8,554	6,460	0.59	0.26	57.1	0.000	0.896	0.211	0.503	0.503	**49.7%**	**65.6%**
1981	16,990	9,226	9,764	5,404	0.61	0.27	61.5	0.128	1.000	0.352	0.747	0.780	**22.0%**	**56.3%**
1982	75,843	141,049	8,974	27,415	0.23	0.23	54.1	0.000	0.865	0.115	0.284	0.284	**71.6%**	**71.4%**
1983	68,298	101,892	6,958	24,593	0.23	0.23	55	0.000	0.772	0.144	0.287	0.287	**71.3%**	**74.7%**
1984	16,301	9,999	9,646	5,147	0.62	0.27	59.7	0.053	1.000	0.294	0.729	0.743	**25.7%**	**58.8%**
1985	13,327	4,823	10,335	4,034	0.65	0.28	60.8	0.099	1.000	0.330	0.762	0.786	**21.4%**	**54.9%**
1986	20,772	24,250	7,714	6,819	0.59	0.26	60.4	0.082	0.910	0.317	0.567	0.603	**39.7%**	**63.2%**
1987	8,789	4,453	5,092	2,337	0.72	0.31	65.7	0.305	0.864	0.486	0.759	0.833	**16.7%**	**56.1%**
1988	10,016	8,773	2,067	2,796	0.70	0.30	59.9	0.061	0.596	0.301	0.506	0.537	**46.3%**	**44.3%**
1989	24,133	14,049	11,075	8,076	0.57	0.25	61.4	0.124	1.000	0.349	0.616	0.664	**33.6%**	**53.4%**
1990	8,420	2,504	6,621	2,199	0.73	0.31	61.6	0.133	0.873	0.355	0.734	0.770	**23.0%**	**41.0%**
1991	16,033	6,184	10,991	5,046	0.62	0.27	60.8	0.099	1.000	0.330	0.744	0.769	**23.1%**	**50.3%**
1992	11,730	3,462	9,898	3,437	0.67	0.29	61.2	0.116	1.000	0.342	0.781	0.806	**19.4%**	**52.3%**
													Average:	**57.19%**

Formulas D1485 Sacramento River Winter Run Smolt Survival

C9 ='Study 467 Flow Data'!E8
D9 ='Study 467 Flow Data'!AJ8
E9 ='Study 467 Flow Data'!O8 (HIDDEN)
F9 ='Study 467 Flow Data'!Y8 (HIDDEN)
G9 =(E9+F9)
H9 =0.374*C9-950
I9 =IF(C9>$D$2,(0.133*C9+829)/(C9-H9),(0.293*C9+2090)/(C9-H9))
J9 =(0.133*C9+829)/(C9-H9)
L9 =(-0.5916024)+(0.017968*$M$1)+(0.000054*G9)
N9 =IF(D9>=$J$3,(L9*J9),(L9*I9))
O9 =K9+N9-(K9*N9)
P9 =1-O9

R9 ='Study 467 Flow Data'!F8
S9 ='Study 467 Flow Data'!AK8
T9 ='Study 467 Flow Data'!P8 (HIDDEN)
U9 ='Study 467 Flow Data'!Z8 (HIDDEN)
V9 =(T9+U9)
W9 =0.374*R9-950
X9 =IF(R9>$D$2,(0.133*R9+829)/(R9-W9),(0.293*R9+2090)/(R9-W9))
Y9 =(0.133*R9+829)/(R9-W9)
AA9 =IF(((-0.5916024)+(0.017968*$M$2)+(0.000054*V9))>1,1,((-0.5916024)+(0.017968*$M$2)+(0.000054*V9)))
AB9 =-1.613493+(0.0319584*$M$2)
AC9 =IF(S9>=$J$3,(AA9*Y9)+(AB9*(1-Y9)),(AA9*X9)+(AB9*(1-X9)))
AD9 =Z9+AC9-(Z9*AC9)
AE9 =1-AD9

AG9 ='Study 467 Flow Data'!G8
AH9 ='Study 467 Flow Data'!AL8
AI9 ='Study 467 Flow Data'!Q8 (HIDDEN)
AJ9 ='Study 467 Flow Data'!AA8 (HIDDEN)
AK9 =AI9+AJ9
AL9 =0.374*AG9-950
AM9 =IF(AG9>$D$2,(0.133*AG9+829)/(AG9-AL9),(0.293*AG9+2090)/(AG9-AL9))
AN9 =(0.133*AG9+829)/(AG9-AL9)
AP9 =IF((-2.45925+(0.0420748*AO9))<0,0,(-2.45925+(0.0420748*AO9)))
AQ9 =IF(((-0.5916024)+(0.017968*AO9)+(0.000054*AK9))>1,1,((-0.5916024)+(0.017968*AO9)+(0.000054*AK9)))
AR9 =-1.613493+(0.0319584*AO9)
AS9 =IF(AH9>=$J$3,((AQ9*AN9)+(AR9*(1-AN9))+(AQ9*AM9)+(AR9*(1-AM9)))/2,(AQ9*AM9)+(AR9*(1-AM9)))
AT9 =AP9+AS9-(AP9*AS9)
AU9 =1-AT9
AW9 =(0.13*P9)+(0.57*AE9)+(0.3*AU9)

Study 468 Winter Run Smolt Survival Model

February Water Temp 50 F
March Water Temp 55 F
April Water Temperatures based on limited historical data from USBR

Cross Channel Closed Over 25000 cfs
Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

A	B	C	F	G	H	I	J	K	L	M	N	O
		FEBRUARY		Calculated								
	Water	Sac		Sutter &								Calculated
	Year	River	CVP + SWP	Steamboat		X-Channel	Calculated Mortality					Survivability
Year	Type	Flow	Exports	Slough Q	Percent	Closed	m1	m2	m3	m23	m123	s123
1922	A	34,409	10,606	11,919	24%	0.24		0.879		0.211	0.211	78.9%
1923	B	24,326	6,662	8,148	57%	0.25		0.667		0.167	0.167	83.3%
1924	C	16,898	8,693	5,370	61%	0.27		0.776		0.207	0.207	79.3%
1925	D	44,583	11,794	15,724	23%	0.23		0.944		0.221	0.221	77.9%
1926	D	36,714	11,866	12,781	24%	0.24		0.948		0.226	0.226	77.4%
1927	W	88,121	11,326	32,007	22%	0.22		0.918		0.205	0.205	79.5%
1928	A	27,364	8,327	9,284	25%	0.25		0.756		0.187	0.187	81.3%
1929	C	18,528	8,085	5,980	60%	0.26		0.743		0.195	0.195	80.5%
1930	D	15,683	6,788	4,916	62%	0.27		0.673		0.182	0.182	81.8%
1931	C	11,092	5,222	3,198	68%	0.29		0.589		0.172	0.172	82.8%
1932	D	13,995	9,979	4,284	64%	0.28		0.846		0.234	0.234	76.6%
1933	C	11,974	6,536	3,528	66%	0.29		0.660		0.189	0.189	81.1%
1934	C	12,748	6,032	3,818	65%	0.28		0.633		0.179	0.179	82.1%
1935	B	11,974	4,628	3,528	66%	0.29		0.557		0.160	0.160	84.0%
1936	B	47,548	12,309	16,833	23%	0.23		0.971		0.226	0.226	77.4%
1937	B	33,455	8,787	11,562	24%	0.24		0.781		0.188	0.188	81.2%
1938	W	82,359	8,211	29,852	22%	0.22		0.750		0.168	0.168	83.2%
1939	D	19,032	6,554	6,168	60%	0.26		0.661		0.173	0.173	82.7%
1940	A	42,646	12,291	14,999	24%	0.24		0.971		0.228	0.228	77.2%
1941	W	75,031	11,164	27,112	23%	0.23		0.910		0.205	0.205	79.5%
1942	W	78,344	8,247	28,351	23%	0.23		0.752		0.169	0.169	83.1%
1943	W	52,253	8,265	18,593	23%	0.23		0.753		0.174	0.174	82.6%
1944	D	29,937	7,928	10,246	24%	0.24		0.735		0.180	0.180	82.0%
1945	B	40,621	8,247	14,242	24%	0.24		0.752		0.178	0.178	82.2%
1946	B	24,362	8,247	8,161	57%	0.25		0.752		0.189	0.189	81.1%
1947	D	21,571	8,247	7,118	58%	0.26		0.752		0.192	0.192	80.8%
1948	B	15,594	5,876	4,882	62%	0.27		0.624		0.169	0.169	83.1%
1949	D	16,277	8,427	5,138	62%	0.27		0.762		0.205	0.205	79.5%
1950	B	35,166	11,776	12,202	24%	0.24		0.943		0.226	0.226	77.4%
1951	A	60,572	8,967	21,704	23%	0.23		0.791		0.181	0.181	81.9%
1952	W	62,499	7,910	22,425	23%	0.23		0.734		0.167	0.167	83.3%
1953	W	28,341	8,337	9,650	25%	0.25		0.757		0.186	0.186	81.4%
1954	A	57,151	8,895	20,424	23%	0.23		0.787		0.181	0.181	81.9%
1955	D	16,295	8,139	5,144	62%	0.27		0.746		0.201	0.201	79.9%
1956	W	61,543	8,658	22,067	23%	0.23		0.774		0.177	0.177	82.3%
1957	A	33,149	8,895	11,448	24%	0.24		0.787		0.190	0.190	81.0%
1958	W	63,003	8,301	22,613	23%	0.23		0.755		0.172	0.172	82.8%
1959	B	50,075	8,301	17,778	23%	0.23		0.755		0.175	0.175	82.5%
1960	D	26,217	11,126	8,855	25%	0.25		0.908		0.226	0.226	77.4%
1961	D	32,843	11,362	11,333	24%	0.24		0.920		0.222	0.222	77.8%
1962	B	45,177	12,712	15,946	23%	0.23		0.993		0.232	0.232	76.8%
1963	W	58,699	12,784	21,004	23%	0.23		0.997		0.228	0.228	77.2%
1964	D	19,019	7,632	6,163	60%	0.26		0.719		0.188	0.188	81.2%
1965	W	33,329	9,867	11,515	24%	0.24		0.840		0.203	0.203	79.7%
1966	B	26,775	8,661	9,064	25%	0.25		0.774		0.192	0.192	80.8%
1967	W	43,106	7,490	15,172	23%	0.23		0.711		0.167	0.167	83.3%
1968	B	54,520	6,589	19,440	23%	0.23		0.663		0.153	0.153	84.7%
1969	W	67,486	7,454	24,290	23%	0.23		0.709		0.161	0.161	83.9%
1970	W	57,565	5,258	20,579	23%	0.23		0.591		0.136	0.136	86.4%
1971	W	29,206	8,571	9,973	25%	0.25		0.770		0.189	0.189	81.1%
1972	B	24,217	8,588	8,107	57%	0.25		0.771		0.194	0.194	80.6%
1973	A	70,961	8,697	25,590	23%	0.23		0.776		0.176	0.176	82.4%
1974	W	41,918	8,643	14,727	24%	0.24		0.774		0.182	0.182	81.8%
1975	W	58,807	8,877	21,044	23%	0.23		0.786		0.180	0.180	82.0%
1976	C	19,523	8,171	6,352	59%	0.26		0.748		0.195	0.195	80.5%
1977	C	12,172	2,071	3,602	66%	0.29		0.419		0.120	0.120	88.0%
1978	A	50,129	9,129	17,798	23%	0.23		0.800		0.185	0.185	81.5%
1979	B	42,044	8,211	14,774	24%	0.24		0.750		0.177	0.177	82.3%
1980	A	69,453	7,736	25,026	23%	0.23		0.725		0.164	0.164	83.6%
1981	D	29,674	6,968	10,148	24%	0.24		0.683		0.167	0.167	83.3%
1982	W	65,650	8,913	23,603	23%	0.23		0.788		0.179	0.179	82.1%
1983	W	82,917	6,212	30,061	22%	0.22		0.642		0.144	0.144	85.6%
1984	W	36,004	5,163	12,516	24%	0.24		0.586		0.140	0.140	86.0%
1985	D	20,131	8,895	6,579	59%	0.26		0.787		0.204	0.204	79.6%
1986	W	95,486	11,578	34,762	22%	0.22		0.932		0.208	0.208	79.2%
1987	D	23,030	5,474	7,663	58%	0.25		0.602		0.153	0.153	84.7%
1988	C	17,072	6,519	5,435	61%	0.27		0.659		0.175	0.175	82.5%
1989	D	11,830	2,719	3,474	66%	0.29		0.454		0.130	0.130	87.0%
1990	C	16,944	7,797	5,387	61%	0.27		0.728		0.194	0.194	80.6%
1991	C	11,002	1,242	3,165	68%	0.29		0.374		0.109	0.109	89.1%
1992	C	31,415	8,762	10,799	24%	0.24		0.780		0.189	0.189	81.1%

A	Q	T	U	V	W	X	Y	Z	AA	AB	AC
	MARCH		Calculated								
	Sac		Sutter &								Calculated
	River	CVP + SWP	Steamboat		X-Channel	Calculated Mortality					Survivability
Year	Flow	exports	Slough Q	percent	Closed	m1	m2	m3	m23	m123	s123
1922	31,551	7,920	10,850	0.24	0.24		0.824	0.144	0.309	0.309	69.1%
1923	17,174	7,595	5,473	0.61	0.27		0.807	0.144	0.320	0.320	68.0%
1924	12,100	3,155	3,575	0.66	0.29		0.567	0.144	0.265	0.265	73.5%
1925	18,557	7,872	5,990	0.60	0.26		0.822	0.144	0.322	0.322	67.8%
1926	18,947	7,725	6,136	0.60	0.26		0.814	0.144	0.319	0.319	68.1%
1927	43,863	7,384	15,455	0.23	0.23		0.795	0.144	0.297	0.297	70.3%
1928	86,229	8,652	31,300	0.22	0.22		0.864	0.144	0.305	0.305	69.5%
1929	16,930	6,831	5,382	0.61	0.27		0.765	0.144	0.310	0.310	69.0%
1930	30,087	7,042	10,303	0.24	0.24		0.777	0.144	0.299	0.299	70.1%
1931	8,701	3,285	2,304	0.73	0.31		0.574	0.144	0.278	0.278	72.2%
1932	10,522	3,659	2,985	0.69	0.30		0.594	0.144	0.277	0.277	72.3%
1933	10,392	4,635	2,937	0.69	0.30		0.647	0.144	0.293	0.293	70.7%
1934	14,735	4,456	4,561	0.63	0.27		0.637	0.144	0.279	0.279	72.1%
1935	24,916	11,206	8,368	0.57	0.25		1.000	0.144	0.358	0.358	64.2%
1936	33,454	11,287	11,562	0.24	0.24		1.000	0.144	0.351	0.351	64.9%
1937	38,463	8,229	13,435	0.24	0.24		0.841	0.144	0.310	0.310	69.0%
1938	78,634	8,197	28,459	0.22	0.22		0.839	0.144	0.301	0.301	69.9%
1939	16,394	6,652	5,181	0.61	0.27		0.756	0.144	0.308	0.308	69.2%
1940	59,134	8,880	21,166	0.23	0.23		0.876	0.144	0.312	0.312	68.8%
1941	58,581	8,067	20,959	0.23	0.23		0.832	0.144	0.302	0.302	69.8%
1942	27,095	8,229	9,183	0.25	0.25		0.841	0.144	0.317	0.317	68.3%
1943	64,598	8,278	23,210	0.23	0.23		0.844	0.144	0.303	0.303	69.7%
1944	25,094	8,229	8,435	0.25	0.25		0.841	0.144	0.318	0.318	68.2%
1945	27,030	8,359	9,159	0.25	0.25		0.848	0.144	0.318	0.318	68.2%
1946	23,647	8,652	7,894	0.57	0.25		0.864	0.144	0.326	0.326	67.4%
1947	22,509	8,213	7,468	0.58	0.25		0.840	0.144	0.321	0.321	67.9%
1948	19,240	7,660	6,246	0.59	0.26		0.810	0.144	0.318	0.318	68.2%
1949	41,716	10,880	14,652	0.24	0.24		0.984	0.144	0.342	0.342	65.8%
1950	22,655	8,831	7,523	0.58	0.25		0.874	0.144	0.329	0.329	67.1%
1951	29,827	8,929	10,205	0.24	0.24		0.879	0.144	0.324	0.324	67.6%
1952	57,524	8,164	20,564	0.23	0.23		0.838	0.144	0.303	0.303	69.7%
1953	24,899	7,563	8,362	0.57	0.25		0.805	0.144	0.310	0.310	69.0%
1954	49,538	8,912	17,577	0.23	0.23		0.878	0.144	0.314	0.314	68.6%
1955	17,678	7,253	5,662	0.60	0.26		0.788	0.144	0.315	0.315	68.5%
1956	36,674	7,188	12,766	0.24	0.24		0.785	0.144	0.297	0.297	70.3%
1957	44,383	8,603	15,649	0.23	0.23		0.861	0.144	0.312	0.312	68.8%
1958	93,612	8,294	34,061	0.22	0.22		0.845	0.144	0.300	0.300	70.0%
1959	23,387	7,253	7,797	0.57	0.25		0.788	0.144	0.307	0.307	69.3%
1960	22,606	7,465	7,505	0.58	0.25		0.800	0.144	0.311	0.311	68.9%
1961	20,947	8,050	6,884	0.59	0.26		0.831	0.144	0.321	0.321	67.9%
1962	27,664	7,725	9,396	0.25	0.25		0.814	0.144	0.309	0.309	69.1%
1963	32,641	8,603	11,258	0.24	0.24		0.861	0.144	0.318	0.318	68.2%
1964	17,174	6,993	5,473	0.61	0.27		0.774	0.144	0.312	0.312	68.8%
1965	21,386	8,506	7,049	0.58	0.26		0.856	0.144	0.327	0.327	67.3%
1966	28,689	8,652	9,780	0.25	0.25		0.864	0.144	0.321	0.321	67.9%
1967	54,483	7,514	19,426	0.23	0.23		0.802	0.144	0.296	0.296	70.4%
1968	36,788	7,107	12,809	0.24	0.24		0.780	0.144	0.296	0.296	70.4%
1969	45,326	6,896	16,002	0.23	0.23		0.769	0.144	0.290	0.290	71.0%
1970	35,812	7,221	12,444	0.24	0.24		0.787	0.144	0.298	0.298	70.2%
1971	50,888	8,929	18,082	0.23	0.23		0.879	0.144	0.314	0.314	68.6%
1972	32,933	8,083	11,367	0.24	0.24		0.833	0.144	0.311	0.311	68.9%
1973	47,554	8,685	16,835	0.23	0.23		0.866	0.144	0.312	0.312	68.8%
1974	100,199	8,652	36,524	0.22	0.22		0.864	0.144	0.304	0.304	69.6%
1975	75,999	8,912	27,474	0.23	0.23		0.878	0.144	0.310	0.310	69.0%
1976	20,069	7,855	6,556	0.59	0.26		0.821	0.144	0.319	0.319	68.1%
1977	7,546	2,049	1,872	0.76	0.32		0.507	0.144	0.261	0.261	73.9%
1978	46,448	6,017	16,422	0.23	0.23		0.722	0.144	0.279	0.279	72.1%
1979	32,592	8,229	11,239	0.24	0.24		0.841	0.144	0.313	0.313	68.7%
1980	36,479	7,107	12,693	0.24	0.24		0.780	0.144	0.296	0.296	70.4%
1981	32,494	7,107	11,203	0.24	0.24		0.780	0.144	0.298	0.298	70.2%
1982	69,087	8,880	24,889	0.23	0.23		0.876	0.144	0.310	0.310	69.0%
1983	81,935	4,684	29,694	0.22	0.22		0.650	0.144	0.258	0.258	74.2%
1984	36,495	7,205	12,699	0.24	0.24		0.786	0.144	0.297	0.297	70.3%
1985	21,809	8,847	7,207	0.58	0.26		0.874	0.144	0.331	0.331	66.9%
1986	72,535	8,408	26,178	0.23	0.23		0.851	0.144	0.304	0.304	69.6%
1987	29,551	6,473	10,102	0.24	0.24		0.746	0.144	0.292	0.292	70.8%
1988	11,010	3,773	3,168	0.68	0.29		0.600	0.144	0.278	0.278	72.2%
1989	42,496	11,189	14,944	0.24	0.24		1.000	0.144	0.346	0.346	65.4%
1990	14,832	5,871	4,597	0.63	0.27		0.714	0.144	0.300	0.300	70.0%
1991	29,681	11,303	10,151	0.24	0.24		1.000	0.144	0.354	0.354	64.6%
1992	20,102	8,229	6,568	0.59	0.26		0.841	0.144	0.325	0.325	67.5%

A	AE	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS
			Calculated										
	APRIL		Steamboat										
	Sac		& Sutter									**Calculated**	**Weighted**
	River	CVP + SWF	Slough		X-Channel	Water		Calculated Mortality				**Survivability**	**Total**
Year	Flow	Exports	flows	Percent	Closed	temp f	m1	m2	m3	m23	m123	**s123**	**Survival**
1922	22,822	8,369	7,585	0.58	0.25	58.5	0.002	0.911	0.256	0.422	0.424	**57.6%**	**66.92%**
1923	22,721	7,932	7,548	0.58	0.25	58.3	0.000	0.884	0.250	0.411	0.411	**58.9%**	**67.23%**
1924	8,067	2,790	2,067	0.74	0.32	61.5	0.128	0.664	0.352	0.451	0.521	**47.9%**	**66.55%**
1925	22,654	6,958	7,523	0.58	0.25	59.1	0.027	0.846	0.275	0.420	0.436	**56.4%**	**65.69%**
1926	21,427	6,655	7,064	0.58	0.26	61.6	0.133	0.875	0.355	0.488	0.556	**44.4%**	**62.18%**
1927	48,215	8,100	17,082	0.23	0.23	56.8	0.000	0.866	0.202	0.356	0.356	**64.4%**	**69.71%**
1928	29,208	7,630	9,974	0.25	0.25	58.7	0.011	0.875	0.262	0.413	0.419	**58.1%**	**67.60%**
1929	8,436	2,353	2,205	0.73	0.31	56.3	0.000	0.547	0.186	0.299	0.299	**70.1%**	**70.83%**
1930	12,638	3,899	3,777	0.65	0.28	59.6	0.048	0.690	0.291	0.404	0.433	**56.7%**	**67.62%**
1931	9,193	2,958	2,488	0.71	0.31	62.8	0.183	0.697	0.393	0.486	0.580	**42.0%**	**64.53%**
1932	13,075	5,378	3,940	0.65	0.28	58.9	0.019	0.757	0.269	0.406	0.417	**58.3%**	**68.63%**
1933	12,739	4,134	3,814	0.65	0.28	60.1	0.069	0.712	0.307	0.422	0.462	**53.8%**	**66.97%**
1934	12,839	3,563	3,852	0.65	0.28	63.6	0.217	0.744	0.419	0.511	0.617	**38.3%**	**63.25%**
1935	24,637	9,092	8,264	0.57	0.25	58.9	0.019	0.958	0.269	0.442	0.452	**54.8%**	**63.93%**
1936	21,276	8,369	7,007	0.58	0.26	59.7	0.053	0.933	0.294	0.458	0.487	**51.3%**	**62.48%**
1937	23,511	8,050	7,843	0.57	0.25	58.8	0.015	0.900	0.266	0.426	0.434	**56.6%**	**66.87%**
1938	47,173	8,420	16,693	0.23	0.23	56.3	0.000	0.875	0.186	0.346	0.346	**65.4%**	**70.29%**
1939	12,234	4,134	3,626	0.66	0.29	63.3	0.204	0.769	0.409	0.512	0.612	**38.8%**	**61.83%**
1940	41,728	8,268	14,656	0.24	0.24	57.4	0.000	0.886	0.221	0.378	0.378	**62.2%**	**67.93%**
1941	42,367	9,310	14,895	0.24	0.24	56.9	0.000	0.934	0.205	0.376	0.376	**62.4%**	**68.84%**
1942	43,308	8,907	15,247	0.23	0.23	56.5	0.000	0.905	0.192	0.359	0.359	**64.1%**	**68.97%**
1943	29,410	9,462	10,049	0.24	0.24	58.8	0.015	0.976	0.266	0.440	0.448	**55.2%**	**67.01%**
1944	9,814	4,235	2,721	0.70	0.30	58.4	0.000	0.686	0.253	0.383	0.383	**61.7%**	**68.01%**
1945	11,747	6,252	3,443	0.67	0.29	60.6	0.090	0.835	0.323	0.471	0.518	**48.2%**	**63.98%**
1946	12,218	5,949	3,619	0.66	0.29	60.7	0.095	0.820	0.326	0.467	0.518	**48.2%**	**63.44%**
1947	13,797	4,907	4,210	0.64	0.28	62.5	0.170	0.796	0.384	0.499	0.584	**41.6%**	**61.68%**
1948	23,040	6,823	7,667	0.58	0.25	56.6	0.000	0.794	0.195	0.347	0.347	**65.3%**	**69.27%**
1949	13,209	5,075	3,990	0.65	0.28	61.7	0.137	0.791	0.358	0.480	0.551	**44.9%**	**61.31%**
1950	19,276	6,252	6,259	0.59	0.26	61.3	0.120	0.847	0.346	0.476	0.539	**46.1%**	**62.11%**
1951	14,856	6,386	4,606	0.63	0.27	59.9	0.061	0.830	0.301	0.445	0.479	**52.1%**	**64.81%**
1952	56,652	8,773	20,238	0.23	0.23	55.5	0.000	0.879	0.160	0.325	0.325	**67.5%**	**70.78%**
1953	16,184	5,647	5,103	0.62	0.27	58.8	0.015	0.770	0.266	0.401	0.410	**59.0%**	**67.62%**
1954	39,863	7,361	13,959	0.24	0.24	58.4	0.000	0.855	0.253	0.395	0.395	**60.5%**	**67.86%**
1955	9,478	3,664	2,595	0.71	0.30	56.4	0.000	0.620	0.189	0.320	0.320	**68.0%**	**69.87%**
1956	20,436	7,966	6,693	0.59	0.26	59.7	0.053	0.911	0.294	0.454	0.482	**51.8%**	**66.29%**
1957	21,209	6,453	6,982	0.58	0.26	60.5	0.086	0.844	0.320	0.454	0.501	**49.9%**	**64.69%**
1958	52,282	9,663	18,603	0.23	0.23	57.4	0.000	0.962	0.221	0.392	0.392	**60.8%**	**68.88%**
1959	10,487	3,798	2,972	0.69	0.30	63	0.191	0.745	0.400	0.502	0.597	**40.3%**	**62.30%**
1960	13,545	4,033	4,116	0.64	0.28	59.5	0.044	0.695	0.288	0.402	0.428	**57.2%**	**66.51%**
1961	12,789	3,546	3,833	0.65	0.28	60.1	0.069	0.680	0.307	0.412	0.453	**54.7%**	**65.22%**
1962	15,411	5,579	4,814	0.62	0.27	61.8	0.141	0.820	0.362	0.486	0.559	**44.1%**	**62.58%**
1963	69,457	8,100	25,027	0.23	0.23	53.7	0.000	0.811	0.103	0.263	0.263	**73.7%**	**71.04%**
1964	8,957	3,496	2,400	0.72	0.31	59.3	0.036	0.663	0.282	0.399	0.421	**57.9%**	**67.17%**
1965	45,173	8,537	15,945	0.23	0.23	56.9	0.000	0.892	0.205	0.366	0.366	**63.4%**	**67.78%**
1966	12,806	4,974	3,839	0.65	0.28	61.9	0.145	0.789	0.365	0.485	0.559	**44.1%**	**62.43%**
1967	39,930	9,546	13,984	0.24	0.24	53.8	0.000	0.891	0.106	0.292	0.292	**70.8%**	**72.22%**
1968	15,646	5,243	4,902	0.62	0.27	61.5	0.128	0.797	0.352	0.472	0.540	**46.0%**	**64.94%**
1969	44,787	7,512	15,800	0.23	0.23	56.4	0.000	0.827	0.189	0.338	0.338	**66.2%**	**71.21%**
1970	16,604	6,588	5,260	0.61	0.27	58.8	0.015	0.821	0.266	0.414	0.423	**57.7%**	**68.57%**
1971	21,948	6,588	7,259	0.58	0.26	58.7	0.011	0.819	0.262	0.404	0.411	**58.9%**	**67.31%**
1972	12,453	4,706	3,707	0.66	0.28	58.5	0.002	0.714	0.256	0.386	0.387	**61.3%**	**68.15%**
1973	19,511	7,428	6,347	0.59	0.26	61.3	0.120	0.911	0.346	0.493	0.553	**44.7%**	**63.32%**
1974	33,208	9,327	11,470	0.24	0.24	56.8	0.000	0.933	0.202	0.378	0.378	**62.2%**	**68.95%**
1975	25,763	8,773	8,685	0.25	0.25	56.8	0.000	0.903	0.202	0.376	0.376	**62.4%**	**68.72%**
1976	9,428	3,008	2,576	0.71	0.30	58.9	0.019	0.629	0.269	0.378	0.390	**61.0%**	**67.56%**
1977	9,142	3,008	2,469	0.71	0.31	64.3	0.246	0.726	0.441	0.529	0.645	**35.5%**	**64.20%**
1978	38,703	7,512	13,525	0.24	0.24	56.9	0.000	0.836	0.205	0.355	0.355	**64.5%**	**71.04%**
1979	17,696	6,857	5,668	0.60	0.26	59.8	0.057	0.853	0.298	0.445	0.476	**52.4%**	**65.59%**
1980	19,814	6,958	6,460	0.59	0.26	57.1	0.000	0.810	0.211	0.367	0.367	**63.3%**	**69.98%**
1981	16,990	5,445	5,404	0.61	0.27	61.5	0.128	0.807	0.352	0.473	0.541	**45.9%**	**64.61%**
1982	75,843	9,159	27,415	0.23	0.23	54.1	0.000	0.875	0.115	0.287	0.287	**71.3%**	**71.39%**
1983	68,298	6,958	24,593	0.23	0.23	55	0.000	0.772	0.144	0.287	0.287	**71.3%**	**74.84%**
1984	17,864	6,857	5,731	0.60	0.26	59.7	0.053	0.851	0.294	0.442	0.471	**52.9%**	**67.10%**
1985	13,327	4,235	4,034	0.65	0.28	60.8	0.099	0.730	0.330	0.442	0.497	**50.3%**	**63.60%**
1986	20,772	7,512	6,819	0.59	0.26	60.4	0.082	0.899	0.317	0.467	0.511	**48.9%**	**64.66%**
1987	12,369	3,496	3,676	0.66	0.28	65.7	0.305	0.778	0.486	0.569	0.701	**29.9%**	**60.38%**
1988	8,621	2,857	2,274	0.73	0.31	59.9	0.061	0.639	0.301	0.406	0.442	**55.8%**	**68.63%**
1989	23,629	5,647	7,887	0.57	0.25	61.4	0.124	0.817	0.349	0.467	0.533	**46.7%**	**62.62%**
1990	12,436	3,529	3,701	0.66	0.28	61.6	0.133	0.706	0.355	0.455	0.527	**47.3%**	**64.56%**
1991	15,276	4,252	4,763	0.62	0.27	60.8	0.099	0.730	0.330	0.439	0.494	**50.6%**	**63.60%**
1992	12,470	3,731	3,714	0.66	0.28	61.2	0.116	0.710	0.342	0.447	0.511	**48.9%**	**63.72%**
												Average:	**65.60%**

Formulas: Winter Run Salmon Smolt Survival Model

C10 ='Study 468 Flow Data'!E7
D10 ='Study 468 Flow Data'!O7 (HIDDEN)
E10 ='Study 468 Flow Data'!Y7 (HIDDEN)
F10 =(D9+E9)
G10 =0.374*C9-950
H10 =IF(C9>$G$2,(0.133*C9+829)/(C9-G9),(0.293*C9+2090)/(C9-G9))
I10 =(0.133*C9+829)/(C9-G9)
K10 =(-0.5916024)+(0.017968*$M$1)+(0.000054*F9)
M10 =(K9*I9)+L9*(1-I9)
N10 =J9+M9-(J9*M9)
O10 =1-N9

Q10 ='Study 468 Flow Data'!F7
R10 ='Study 468 Flow Data'!P7 (HIDDEN)
S10 ='Study 468 Flow Data'!Z7 (HIDDEN)
T10 =(R9+S9)
U10 =0.374*Q9-950
V10 =IF(Q9>$G$2,(0.133*Q9+829)/(Q9-U9),(0.293*Q9+2090)/(Q9-U9))
Y10 =(0.133*Q9+829)/(Q9-U9)
W10 =IF(((-0.5916024)+(0.017968*$M$2)+(0.000054*T9))>1,1,((-0.5916024)+(0.017968*$M$2)+(0.000054*T9)))
Z10 =-1.613493+(0.0319584*$M$2)
AA10 =(Y9*W9)+Z9*(1-W9)
AB10 =X9+AA9-(X9*AA9)
AC10 =1-AB9

AE10 ='Study 468 Flow Data'!G7
AF10 ='Study 468 Flow Data'!Q7 (HIDDEN)
AG10 ='Study 468 Flow Data'!AA7 (HIDDEN)
AH10 =AF9+AG9
AI10 =0.374*AE9-950
AJ10 =IF(AE9>$G$2,(0.133*AE9+829)/(AE9-AI9),(0.293*AE9+2090)/(AE9-AI9))
AK10 =(0.133*AE9+829)/(AE9-AI9)
AM10 =IF((-2.45925+(0.0420748*AL9))<0,0,(-2.45925+(0.0420748*AL9)))
AN10 =IF(((-0.5916024)+(0.017968*AL9)+(0.000054*AH9))>1,1,((-0.5916024)+(0.017968*AL9)+(0.000054*AH9
AO10 =-1.613493+(0.0319584*AL9)
AP10 =(AN9*AK9)+(AO9*(1-AK9))
AQ10 =AM9+AP9-(AM9*AP9)

Study 506 Winter Run Smolt Survival Model — February Water Temp 50 F — March Water Temp 55 F — April Water Temperatures based on limited historical data from USBR

Cross Channel Closed Over 25000 cfs

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

Row	Year	Water Year Type	FEBRUARY Sac River Flow	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m2	m23	m123	Calculated Survivability s123	MARCH Sac River Flow	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m2	m3	m23	m123	Calculated Survivability s123	APRIL Sac River Flow	CVP + SWF Exports	Calculated Steamboat & Sutter Slough flows	Percent	X-Channel Closed	Water temp f	m1	m2	m3	m23	m123	Calculated Survivability s123	Weighted Total Survival
10	1922	A	34,409	10,642	11,919	24%	0.24	0.881	0.212	0.212	78.8%	31,551	7,953	10,850	0.24	0.24	0.826	0.144	0.310	0.310	69.0%	22,822	8,369	7,585	0.58	0.25	58.5	0.002	0.911	0.256	0.422	0.424	57.6%	66.88%
11	1923	B	24,326	6,662	8,148	57%	0.25	0.667	0.167	0.167	83.3%	17,174	7,595	5,473	0.61	0.27	0.807	0.144	0.320	0.320	68.0%	22,721	7,932	7,548	0.58	0.25	58.3	0.000	0.884	0.250	0.411	0.411	58.9%	67.23%
12	1924	C	16,898	8,693	5,370	61%	0.27	0.776	0.207	0.207	79.3%	12,198	3,253	3,612	0.66	0.29	0.572	0.144	0.266	0.266	73.4%	7,999	2,924	2,042	0.74	0.32	61.5	0.128	0.671	0.352	0.453	0.524	47.6%	66.41%
13	1925	D	44,655	11,794	15,751	23%	0.23	0.944	0.221	0.221	77.9%	18,557	7,872	5,990	0.60	0.26	0.822	0.144	0.322	0.322	67.8%	22,654	6,958	7,523	0.58	0.25	59.1	0.027	0.846	0.275	0.420	0.436	56.4%	65.69%
14	1926	D	36,714	11,686	12,781	24%	0.24	0.938	0.224	0.224	77.6%	18,947	7,725	6,136	0.60	0.26	0.814	0.144	0.319	0.319	68.1%	21,511	6,689	7,095	0.58	0.26	61.6	0.133	0.876	0.355	0.489	0.556	44.4%	62.20%
15	1927	W	86,122	10,876	31,260	22%	0.22	0.894	0.200	0.200	80.0%	43,863	7,888	15,455	0.23	0.23	0.823	0.144	0.303	0.303	69.7%	48,215	8,100	17,082	0.23	0.23	56.8	0.000	0.866	0.202	0.356	0.356	64.4%	69.42%
16	1928	A	27,364	8,327	9,284	25%	0.25	0.756	0.187	0.187	81.3%	86,229	8,652	31,300	0.22	0.22	0.864	0.144	0.305	0.305	69.5%	29,208	7,361	9,974	0.25	0.25	58.7	0.011	0.861	0.262	0.409	0.415	58.5%	67.71%
17	1929	C	18,528	8,031	5,980	60%	0.26	0.740	0.194	0.194	80.6%	16,930	6,831	5,382	0.61	0.27	0.765	0.144	0.310	0.310	69.0%	8,773	2,706	2,331	0.72	0.31	56.3	0.000	0.566	0.186	0.304	0.304	69.6%	70.70%
18	1930	D	15,683	6,788	4,916	62%	0.27	0.673	0.182	0.182	81.8%	30,087	7,319	10,303	0.24	0.24	0.792	0.144	0.302	0.302	69.8%	12,638	3,899	3,777	0.65	0.28	59.6	0.048	0.690	0.291	0.404	0.433	56.7%	67.41%
19	1931	C	11,326	5,438	3,286	67%	0.29	0.600	0.174	0.174	82.6%	9,856	4,017	2,736	0.70	0.30	0.614	0.144	0.285	0.285	71.5%	9,109	3,059	2,457	0.72	0.31	62.8	0.183	0.702	0.393	0.488	0.582	41.8%	64.02%
20	1932	D	13,995	9,544	4,284	64%	0.28	0.822	0.228	0.228	77.2%	12,100	5,253	3,575	0.66	0.29	0.680	0.144	0.298	0.298	70.2%	13,075	5,378	3,940	0.65	0.28	58.9	0.019	0.757	0.269	0.406	0.417	58.3%	67.56%
21	1933	C	11,974	6,536	3,528	66%	0.29	0.660	0.189	0.189	81.1%	10,392	4,635	2,937	0.69	0.30	0.647	0.144	0.293	0.293	70.7%	12,739	4,134	3,814	0.65	0.28	60.1	0.069	0.712	0.307	0.422	0.462	53.8%	66.97%
22	1934	C	12,748	5,798	3,818	65%	0.28	0.620	0.175	0.175	82.5%	14,231	3,968	4,372	0.63	0.28	0.611	0.144	0.273	0.273	72.7%	12,839	3,563	3,852	0.65	0.28	63.6	0.217	0.744	0.419	0.511	0.617	38.3%	63.66%
23	1935	B	12,478	5,132	3,717	66%	0.28	0.584	0.166	0.166	83.4%	24,916	11,206	8,368	0.57	0.25	1.000	0.144	0.358	0.358	64.2%	24,183	8,840	8,095	0.57	0.25	58.9	0.019	0.944	0.269	0.439	0.449	55.1%	63.93%
24	1936	B	49,843	12,309	17,691	23%	0.23	0.971	0.225	0.225	77.5%	33,698	10,018	11,653	0.24	0.24	0.938	0.144	0.335	0.335	66.5%	21,528	8,403	7,101	0.58	0.26	59.7	0.053	0.935	0.294	0.458	0.487	51.3%	63.35%
25	1937	B	33,203	9,273	11,468	24%	0.24	0.808	0.195	0.195	80.5%	38,203	8,229	13,338	0.24	0.24	0.841	0.144	0.310	0.310	69.0%	23,259	8,218	7,749	0.57	0.25	58.8	0.015	0.909	0.266	0.428	0.437	56.3%	66.70%
26	1938	W	82,269	8,175	29,819	22%	0.22	0.748	0.168	0.168	83.2%	78,634	8,181	28,459	0.22	0.22	0.838	0.144	0.300	0.300	70.0%	47,173	8,420	16,693	0.23	0.23	56.3	0.000	0.875	0.186	0.346	0.346	65.4%	70.31%
27	1939	D	19,032	6,590	6,168	60%	0.26	0.663	0.173	0.173	82.7%	16,394	6,717	5,181	0.61	0.27	0.759	0.144	0.309	0.309	69.1%	12,234	4,134	3,626	0.66	0.29	63.3	0.204	0.769	0.409	0.512	0.612	38.8%	61.77%
28	1940	A	43,654	12,309	15,377	23%	0.23	0.971	0.228	0.228	77.2%	59,443	8,880	21,282	0.23	0.23	0.876	0.144	0.312	0.312	68.8%	41,728	8,571	14,656	0.24	0.24	57.4	0.000	0.903	0.221	0.382	0.382	61.8%	67.82%
29	1941	W	75,031	11,128	27,112	23%	0.23	0.908	0.205	0.205	79.5%	58,581	8,067	20,959	0.23	0.23	0.832	0.144	0.302	0.302	69.8%	42,367	9,310	14,895	0.24	0.24	56.9	0.000	0.934	0.205	0.376	0.376	62.4%	68.84%
30	1942	W	78,344	8,247	28,351	23%	0.23	0.752	0.169	0.169	83.1%	27,095	8,229	9,183	0.25	0.25	0.841	0.144	0.317	0.317	68.3%	43,308	8,907	15,247	0.23	0.23	56.5	0.000	0.905	0.192	0.359	0.359	64.1%	68.97%
31	1943	W	52,253	8,283	18,593	23%	0.23	0.754	0.174	0.174	82.6%	64,598	8,278	23,210	0.23	0.23	0.844	0.144	0.303	0.303	69.7%	29,410	9,462	10,049	0.24	0.24	58.8	0.015	0.976	0.266	0.440	0.448	55.2%	67.01%
32	1944	D	30,163	7,928	10,331	24%	0.24	0.735	0.179	0.179	82.1%	25,094	8,229	8,435	0.25	0.25	0.841	0.144	0.318	0.318	68.2%	9,814	4,235	2,721	0.70	0.30	58.4	0.000	0.686	0.253	0.383	0.383	61.7%	68.01%
33	1945	B	41,378	8,247	14,525	24%	0.24	0.752	0.177	0.177	82.3%	27,274	8,359	9,250	0.25	0.25	0.848	0.144	0.318	0.318	68.2%	11,999	6,689	3,538	0.66	0.29	60.6	0.090	0.858	0.323	0.477	0.524	47.6%	63.84%
34	1946	B	24,092	8,499	8,060	57%	0.25	0.766	0.193	0.193	80.7%	23,712	8,652	7,918	0.57	0.25	0.864	0.144	0.326	0.326	67.4%	12,218	5,949	3,619	0.66	0.29	60.7	0.095	0.820	0.326	0.467	0.518	48.2%	63.40%
35	1947	D	21,571	8,211	7,118	58%	0.26	0.750	0.192	0.192	80.8%	22,509	8,148	7,468	0.58	0.25	0.837	0.144	0.320	0.320	68.0%	13,797	4,941	4,210	0.64	0.28	62.5	0.170	0.798	0.384	0.499	0.584	41.6%	61.72%
36	1948	B	15,525	5,807	4,856	62%	0.27	0.620	0.168	0.168	83.2%	19,353	7,709	6,288	0.59	0.26	0.813	0.144	0.318	0.318	68.2%	23,293	6,857	7,761	0.57	0.25	56.6	0.000	0.796	0.195	0.347	0.347	65.3%	69.25%
37	1949	D	16,277	8,427	5,138	62%	0.27	0.762	0.205	0.205	79.5%	41,716	11,336	14,652	0.24	0.24	1.000	0.144	0.346	0.346	65.4%	13,209	5,075	3,990	0.65	0.28	61.7	0.137	0.791	0.358	0.480	0.551	44.9%	61.10%
38	1950	B	35,562	11,776	12,350	24%	0.24	0.943	0.226	0.226	77.4%	22,899	8,782	7,614	0.58	0.25	0.871	0.144	0.328	0.328	67.2%	19,528	6,285	6,353	0.59	0.26	61.3	0.120	0.849	0.346	0.477	0.539	46.1%	62.17%
39	1951	A	60,572	8,967	21,704	23%	0.23	0.791	0.181	0.181	81.9%	29,827	8,929	10,205	0.24	0.24	0.879	0.144	0.324	0.324	67.6%	14,772	6,353	4,575	0.63	0.27	59.9	0.061	0.828	0.301	0.445	0.479	52.1%	64.82%
40	1952	W	62,499	7,910	22,425	23%	0.23	0.734	0.167	0.167	83.3%	57,524	8,164	20,564	0.23	0.23	0.838	0.144	0.303	0.303	69.7%	56,652	8,773	20,238	0.23	0.23	55.5	0.000	0.879	0.160	0.325	0.325	67.5%	70.78%
41	1953	W	28,341	8,337	9,650	25%	0.25	0.757	0.186	0.186	81.4%	24,899	7,563	8,362	0.57	0.25	0.805	0.144	0.310	0.310	69.0%	16,184	5,647	5,103	0.62	0.27	58.8	0.015	0.770	0.266	0.401	0.410	59.0%	67.62%
42	1954	A	57,151	8,895	20,424	23%	0.23	0.787	0.181	0.181	81.9%	49,538	8,912	17,577	0.23	0.23	0.878	0.144	0.314	0.314	68.6%	39,863	7,361	13,959	0.24	0.24	58.4	0.000	0.855	0.253	0.395	0.395	60.5%	67.86%
43	1955	D	16,295	8,193	5,144	62%	0.27	0.749	0.201	0.201	79.9%	17,678	7,253	5,662	0.60	0.26	0.788	0.144	0.315	0.315	68.5%	9,478	3,664	2,595	0.71	0.30	56.4	0.000	0.620	0.189	0.320	0.320	68.0%	69.86%
44	1956	W	61,543	8,658	22,067	23%	0.23	0.774	0.177	0.177	82.3%	36,674	7,172	12,766	0.24	0.24	0.784	0.144	0.297	0.297	70.3%	20,436	7,999	6,693	0.59	0.26	59.7	0.053	0.913	0.294	0.454	0.483	51.7%	66.29%
45	1957	A	33,149	8,895	11,448	24%	0.24	0.787	0.190	0.190	81.0%	44,383	8,668	15,649	0.23	0.23	0.865	0.144	0.313	0.313	68.7%	21,108	6,420	6,944	0.58	0.26	60.5	0.086	0.842	0.320	0.454	0.501	49.9%	64.65%
46	1958	W	62,283	8,301	22,344	23%	0.23	0.755	0.172	0.172	82.8%	93,612	8,294	34,061	0.22	0.22	0.845	0.144	0.300	0.300	70.0%	52,282	9,663	18,603	0.23	0.23	57.4	0.000	0.962	0.221	0.392	0.392	60.8%	68.88%
47	1959	B	50,075	8,301	17,778	23%	0.23	0.755	0.175	0.175	82.5%	23,354	7,286	7,785	0.57	0.25	0.790	0.144	0.307	0.307	69.3%	10,487	3,798	2,972	0.69	0.30	63	0.191	0.745	0.400	0.502	0.597	40.3%	62.27%
48	1960	D	26,512	11,126	8,966	25%	0.25	0.908	0.225	0.225	77.5%	22,606	7,530	7,505	0.58	0.25	0.803	0.144	0.312	0.312	68.8%	13,545	4,033	4,116	0.64	0.28	59.5	0.044	0.695	0.288	0.402	0.428	57.2%	66.47%
49	1961	D	32,843	11,362	11,333	24%	0.24	0.920	0.222	0.222	77.8%	20,947	8,050	6,884	0.59	0.26	0.831	0.144	0.321	0.321	67.9%	12,789	3,546	3,833	0.65	0.28	60.1	0.069	0.680	0.307	0.412	0.453	54.7%	65.22%
50	1962	B	45,537	12,748	16,081	23%	0.23	0.995	0.233	0.233	76.7%	27,664	7,725	9,396	0.25	0.25	0.814	0.144	0.309	0.309	69.1%	15,411	5,579	4,814	0.62	0.27	61.8	0.141	0.820	0.362	0.486	0.559	44.1%	62.58%
51	1963	W	57,565	12,550	20,579	23%	0.23	0.985	0.226	0.226	77.4%	32,641	8,929	11,258	0.24	0.24	0.879	0.144	0.322	0.322	67.8%	69,457	8,100	25,027	0.23	0.23	53.7	0.000	0.811	0.103	0.263	0.263	73.7%	70.83%
52	1964	D	19,019	7,632	6,163	60%	0.26	0.719	0.188	0.188	81.2%	16,638	6,733	5,272	0.61	0.27	0.760	0.144	0.309	0.309	69.1%	8,957	3,496	2,400	0.72	0.31	59.3	0.036	0.663	0.282	0.399	0.421	57.9%	67.32%
53	1965	W	33,329	10,299	11,515	24%	0.24	0.863	0.208	0.208	79.2%	21,386	8,603	7,049	0.58	0.26	0.861	0.144	0.328	0.328	67.2%	45,173	8,537	15,945	0.23	0.23	56.9	0.000	0.892	0.205	0.366	0.366	63.4%	67.63%
54	1966	B	26,775	8,661	9,064	25%	0.25	0.774	0.192	0.192	80.8%	28,689	8,652	9,780	0.25	0.25	0.864	0.144	0.321	0.321	67.9%	12,806	4,974	3,839	0.65	0.28	61.9	0.145	0.789	0.365	0.485	0.559	44.1%	62.43%
55	1967	W	43,106	7,490	15,172	23%	0.23	0.711	0.167	0.167	83.3%	54,483	7,514	19,426	0.23	0.23	0.802	0.144	0.296	0.296	70.4%	39,930	9,546	13,984	0.24	0.24	53.8	0.000	0.891	0.106	0.292	0.292	70.8%	72.22%
56	1968	B	54,520	6,572	19,440	23%	0.23	0.662	0.152	0.152	84.8%	36,788	7,107	12,809	0.24	0.24	0.780	0.144	0.296	0.296	70.4%	15,612	5,243	4,889	0.62	0.27	61.5	0.128	0.797	0.352	0.472	0.540	46.0%	64.94%
57	1969	W	67,486	7,454	24,290	23%	0.23	0.709	0.161	0.161	83.9%	45,326	6,896	16,002	0.23	0.23	0.769	0.144	0.290	0.290	71.0%	44,787	7,512	15,800	0.23	0.23	56.4	0.000	0.827	0.189	0.338	0.338	66.2%	71.21%
58	1970	W	57,565	5,258	20,579	23%	0.23	0.591	0.136	0.136	86.4%	35,812	7,221	12,444	0.24	0.24	0.787	0.144	0.298	0.298	70.2%	16,604	6,588	5,260	0.61	0.27	58.8	0.015	0.821	0.266	0.414	0.423	57.7%	68.57%
59	1971	W	29,332	8,481	10,020	24%	0.24	0.765	0.187	0.187	81.3%	50,774	8,929	18,040	0.23	0.23	0.879	0.144	0.314	0.314	68.6%	22,133	6,621	7,328	0.58	0.25	58.7	0.011	0.821	0.262	0.405	0.411	58.9%	67.32%
60	1972	B	24,217	8,606	8,107	57%	0.25	0.772	0.194	0.194	80.6%	32,933	8,164	11,367	0.24	0.24	0.838	0.144	0.312	0.312	68.8%	12,453	4,739	3,707	0.66	0.28	58.5	0.002	0.715	0.256	0.387	0.388	61.2%	68.08%
61	1973	A	70,961	8,697	25,590	23%	0.23	0.776	0.176	0.176	82.4%	47,554	8,685	16,835	0.23	0.23	0.866	0.144	0.312	0.312	68.8%	19,511	7,495	6,347	0.59	0.26	61.3	0.120	0.915	0.346	0.494	0.554	44.6%	63.29%
62	1974	W	43,304	8,643	15,246	23%	0.23	0.774	0.182	0.182	81.8%	99,418	8,652	36,232	0.22	0.22	0.864	0.144	0.304	0.304	69.6%	32,720	9,327	11,287	0.24	0.24	56.8	0.000	0.933	0.202	0.378	0.378	62.2%	68.94%
63	1975	W	58,807	8,877	21,044	23%	0.23	0.786	0.180	0.180	82.0%	75,999	8,912	27,474	0.23	0.23	0.878	0.144	0.310	0.310	69.0%	25,763	8,773	8,685	0.25	0.25	56.8	0.000	0.903	0.202	0.376	0.376	62.4%	68.72%
64	1976	C	19,523	8,258	6,352	59%	0.26	0.753	0.196	0.196	80.4%	20,069	7,855	6,556	0.59	0.26	0.821	0.144	0.319	0.319	68.1%	9,428	3,008	2,576	0.71	0.30	58.9	0.019	0.629	0.269	0.378	0.390	61.0%	67.55%
65	1977	C	12,172	2,107	3,602	66%	0.29	0.421	0.120	0.120	88.0%	7,514	2,017	1,860	0.76	0.32	0.506	0.144	0.261	0.261	73.9%	9,142	2,991	2,469	0.71	0.31	64.3	0.246	0.725	0.441	0.528	0.644	35.6%	64.22%
66	1978	A	50,939	8,301	18,101	23%	0.23	0.755	0.175	0.175	82.5%	45,375	6,017	16,020	0.23	0.23	0.722	0.144	0.279	0.279	72.1%	38,703	7,512	13,525	0.24	0.24	56.9	0.000	0.836	0.205	0.355	0.355	64.5%	71.17%
67	1979	B	42,044	8,211	14,774	24%	0.24	0.750	0.177	0.177	82.3%	32,592	8,229	11,239	0.24	0.24	0.841	0.144	0.313	0.313	68.7%	17,696	6,857	5,668	0.60	0.26	59.8	0.057	0.853	0.298	0.445	0.476	52.4%	65.59%
68	1980	A	69,453	7,771	25,026	23%	0.23	0.726	0.165	0.165	83.5%	36,479	7,123	12,693	0.24	0.24	0.781	0.144	0.296	0.296	70.4%	19,814	6,941	6,460	0.59	0.26	57.1	0.000	0.809	0.211	0.366	0.366	63.4%	69.97%
69	1981	D	29,674	6,716	10,148	24%	0.24	0.669	0.164	0.164	83.6%	32,494	7,107	11,203	0.24	0.24	0.780	0.144	0.298	0.298	70.2%	16,990	5,445	5,404	0.61	0.27	61.5	0.128	0.807	0.352	0.473	0.541	45.9%	64.65%
70	1982	W	65,650	8,913	23,603	23%	0.23	0.788	0.179	0.179	82.1%	69,087	8,880	24,889	0.23	0.23	0.876	0.144	0.310	0.310	69.0%	75,843	9,159	27,415	0.23	0.23	54.1	0.000	0.875	0.115	0.287	0.287	71.3%	71.39%
71	1983	W	82,917	6,212	30,061	22%	0.22	0.642	0.144	0.144	85.6%	81,935	4,684	29,694	0.22	0.22	0.650	0.144	0.258	0.258	74.2%	68,298	6,958	24,593	0.23	0.23	55	0.000	0.772	0.144	0.287	0.287	71.3%	74.84%
72	1984	W	36,004	5,163	12,516	24%	0.24	0.586	0.140	0.140	86.0%	36,495	7,205	12,699	0.24	0.24	0.786	0.144	0.297	0.297	70.3%	17,864	6,857	5,731	0.60	0.26	59.7	0.053	0.851	0.294	0.442	0.471	52.9%	67.10%
73	1985	D	20,689	8,895	6,788	59%	0.26	0.787	0.203	0.203	79.7%	21,809	8,864	7,207	0.58	0.26	0.875	0.144	0.331	0.331	66.9%	13,327	4,874	4,034	0.65	0.28	60.8	0.099	0.764	0.330	0.451	0.505	49.5%	63.34%
74	1986	W	97,916	11,938	35,671	22%	0.22	0.951	0.212	0.212	78.8%	72,535	8,408	26,178	0.23	0.23	0.851	0.144	0.304	0.304	69.6%	21,024	7,546	6,913	0.58	0.26	60.4	0.082	0.901	0.317	0.467	0.511	48.9%	64.61%
75	1987	D	23,030	5,546	7,663	58%	0.25	0.606	0.154	0.154	84.6%	29,502	6,522	10,084	0.24	0.24	0.749	0.144	0.292	0.292	70.8%	12,386	3,496	3,682	0.66	0.28	65.7	0.305	0.778	0.486	0.569	0.701	29.9%	60.33%
76	1988	C	16,638	6,363	5,272	61%	0.27	0.650	0.174	0.174	82.6%	11,075	3,838	3,192	0.68	0.29	0.604	0.144	0.278	0.278	72.2%	9,092	2,924	2,450	0.72	0.31	59.9	0.061	0.643	0.301	0.406	0.442	55.8%	68.61%
77	1989	D	12,766	2,809	3,825	65%	0.28	0.458	0.130	0.130	87.0%	41,098	10,994	14,421	0.24	0.24	0.990	0.144	0.344	0.344	65.6%	23,629	5,647	7,887	0.57	0.25	61.4	0.124	0.817	0.349	0.467	0.533	46.7%	62.73%
78	1990	C	16,944	7,797	5,387	61%	0.27	0.728	0.194	0.194	80.6%	14,832	5,871	4,597	0.63	0.27	0.714	0.144	0.300	0.300	70.0%	12,436	3,546	3,701	0.66	0.28	61.6	0.133	0.707	0.355	0.455	0.527	47.3%	64.55%
79	1991	C	11,056	1,260	3,185	68%	0.29	0.375	0.110	0.110	89.0%	29,681	11,303	10,151	0.24	0.24	1.000	0.144	0.354	0.354	64.6%	15,276	4,252	4,763	0.62	0.27	60.8	0.099	0.730	0.330	0.439	0.494	50.6%	63.60%
80	1992	C	31,415	8,345	10,799	24%	0.24	0.757	0.184	0.184	81.6%	20,102	8,229	6,568	0.59	0.26	0.841	0.144	0.325	0.325	67.5%	12,470	3,731	3,714	0.66	0.28	61.2	0.116	0.710	0.342	0.447	0.511	48.9%	63.79%
81																																	Average:	65.57%

Formulas: Winter Run Salmon Smolt Survival Model

C10 ='Study 513 Revised Flow Data'!E7
D10 ='Study 513 Revised Flow Data'!C (HIDDEN)
E10 ='Study 513 Revised Flow Data'!Y (HIDDEN)
F10 =(D9+E9)
G10 =0.374*C9-950
H10 =IF(C9>$G$2,(0.133*C9+829)/(C9-G9),(0.293*C9+2090)/(C9-G9))
I10 =(0.133*C9+829)/(C9-G9)
K10 =(-0.5916024)+(0.017968*$M$1)+(0.000054*F9)
M10 =(K9*I9)+L9*(1-I9)
N10 =J9+M9-(J9*M9)
O10 =1-N9

Q10 ='Study 513 Revised Flow Data'!F7
R10 ='Study 513 Revised Flow Data' (HIDDEN)
S10 ='Study 513 Revised Flow Data' (HIDDEN)
T10 =(R9+S9)
U10 =0.374*Q9-950
V10 =IF(Q9>$G$2,(0.133*Q9+829)/(Q9-U9),(0.293*Q9+2090)/(Q9-U9))
Y10 =(0.133*Q9+829)/(Q9-U9)
W10 =IF(((-0.5916024)+(0.017968*$M$2)+(0.000054*T9))>1,1,((-0.5916024)+(0.017968*$M$2)+(0.000054*T9)))
Z10 =-1.613493+(0.0319584*$M$2)
AA10 =(Y9*W9)+Z9*(1-W9)
AB10 =X9+AA9-(X9*AA9)
AC10 =1-AB9

AE10 ='Study 513 Revised Flow Data'!G7
AF10 ='Study 513 Revised Flow Data'! (HIDDEN)
AG10 ='Study 513 Revised Flow Data'! (HIDDEN)
AH10 =AF9+AG9
AI10 =0.374*AE9-950
AJ10 =IF(AE9>$G$2,(0.133*AE9+829)/(AE9-AI9),(0.293*AE9+2090)/(AE9-AI9))
AK10 =(0.133*AE9+829)/(AE9-AI9)
AM10 =IF((-2.45925+(0.0420748*AL9))<0,0,(-2.45925+(0.0420748*AL9)))
AN10 =IF(((-0.5916024)+(0.017968*AL9)+(0.000054*AH9))>1,1,((-0.5916024)+(0.017968*AL9)+(0.000054*AH
AO10 =-1.613493+(0.0319584*AL9)
AP10 =(AN9*AK9)+(AO9*(1-AK9))
AQ10 =AM9+AP9-(AM9*AP9)
AR10 =1-AQ9
AS10 =(0.13*O9)+(0.57*AC9)+(0.3*AR9)

Study 507 Winter Run Smolt Survival Model   February Water Temp 50 F   April Water Temperatures based on limited historical data from USBR

Cross Channel Closed Over 25000 cfs   March Water Temp 55 F

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

FEBRUARY

Year	Water Year Type	Sac River Flow	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survivability s123
1922	A	34,409	10,642	11,919	24%	0.24		0.881		0.212	0.212	78.8%
1923	B	24,326	6,662	8,148	57%	0.25		0.667		0.167	0.167	83.3%
1924	C	16,898	8,693	5,370	61%	0.27		0.776		0.207	0.207	79.3%
1925	D	44,673	11,794	15,758	23%	0.23		0.944		0.221	0.221	77.9%
1926	D	36,714	11,740	12,781	24%	0.24		0.941		0.225	0.225	77.5%
1927	W	86,122	10,912	31,260	22%	0.22		0.896		0.201	0.201	79.9%
1928	A	27,364	8,327	9,284	25%	0.25		0.756		0.187	0.187	81.3%
1929	C	18,528	8,031	5,980	60%	0.26		0.740		0.194	0.194	80.6%
1930	D	15,683	6,788	4,916	62%	0.27		0.673		0.182	0.182	81.8%
1931	C	11,326	5,438	3,286	67%	0.29		0.600		0.174	0.174	82.6%
1932	D	13,995	9,666	4,284	64%	0.28		0.829		0.230	0.230	77.0%
1933	C	11,974	6,536	3,528	66%	0.29		0.660		0.189	0.189	81.1%
1934	C	12,748	6,032	3,818	65%	0.28		0.633		0.179	0.179	82.1%
1935	B	12,478	5,132	3,717	66%	0.28		0.584		0.166	0.166	83.4%
1936	B	49,982	12,309	17,743	23%	0.23		0.971		0.225	0.225	77.5%
1937	B	33,203	9,273	11,468	24%	0.24		0.808		0.195	0.195	80.5%
1938	W	82,269	8,211	29,819	22%	0.22		0.750		0.168	0.168	83.2%
1939	D	19,032	6,590	6,168	60%	0.26		0.663		0.173	0.173	82.7%
1940	A	43,306	12,309	15,247	23%	0.23		0.971		0.228	0.228	77.2%
1941	W	75,031	11,146	27,112	23%	0.23		0.909		0.205	0.205	79.5%
1942	W	78,344	8,247	28,351	23%	0.23		0.752		0.169	0.169	83.1%
1943	W	52,253	8,265	18,593	23%	0.23		0.753		0.174	0.174	82.6%
1944	D	30,163	7,928	10,331	24%	0.24		0.735		0.179	0.179	82.1%
1945	B	41,378	8,247	14,525	24%	0.24		0.752		0.177	0.177	82.3%
1946	B	24,092	8,499	8,060	57%	0.25		0.766		0.193	0.193	80.7%
1947	D	21,571	8,211	7,118	58%	0.26		0.750		0.192	0.192	80.8%
1948	B	15,525	5,807	4,856	62%	0.27		0.620		0.168	0.168	83.2%
1949	D	16,277	8,427	5,138	62%	0.27		0.762		0.205	0.205	79.5%
1950	B	35,562	11,776	12,350	24%	0.24		0.943		0.226	0.226	77.4%
1951	A	60,572	8,967	21,704	23%	0.23		0.791		0.181	0.181	81.9%
1952	W	62,499	7,910	22,425	23%	0.23		0.734		0.167	0.167	83.3%
1953	W	28,341	8,337	9,650	25%	0.25		0.757		0.186	0.186	81.4%
1954	A	57,151	8,895	20,424	23%	0.23		0.787		0.181	0.181	81.9%
1955	D	16,295	8,193	5,144	62%	0.27		0.749		0.201	0.201	79.9%
1956	W	61,543	8,658	22,067	23%	0.23		0.774		0.177	0.177	82.3%
1957	A	33,149	8,895	11,448	24%	0.24		0.787		0.190	0.190	81.0%
1958	W	62,427	8,301	22,398	23%	0.23		0.755		0.172	0.172	82.8%
1959	B	50,075	8,301	17,778	23%	0.23		0.755		0.175	0.175	82.5%
1960	D	26,512	11,126	8,966	25%	0.25		0.908		0.225	0.225	77.5%
1961	D	32,843	11,362	11,333	24%	0.24		0.920		0.222	0.222	77.8%
1962	B	45,537	12,748	16,081	23%	0.23		0.995		0.233	0.233	76.7%
1963	W	57,565	12,784	20,579	23%	0.23		0.997		0.229	0.229	77.1%
1964	D	19,019	7,632	6,163	60%	0.26		0.719		0.188	0.188	81.2%
1965	W	33,329	10,173	11,515	24%	0.24		0.856		0.207	0.207	79.3%
1966	B	26,775	8,661	9,064	25%	0.25		0.774		0.192	0.192	80.8%
1967	W	43,106	7,490	15,172	23%	0.23		0.711		0.167	0.167	83.3%
1968	B	54,520	6,572	19,440	23%	0.23		0.662		0.152	0.152	84.8%
1969	W	67,486	7,454	24,290	23%	0.23		0.709		0.161	0.161	83.9%
1970	W	57,565	5,258	20,579	23%	0.23		0.591		0.136	0.136	86.4%
1971	W	29,332	8,481	10,020	24%	0.24		0.765		0.187	0.187	81.3%
1972	B	24,217	8,606	8,107	57%	0.25		0.772		0.194	0.194	80.6%
1973	A	70,961	8,697	25,590	23%	0.23		0.776		0.176	0.176	82.4%
1974	W	41,918	8,643	14,727	24%	0.24		0.774		0.182	0.182	81.8%
1975	W	58,807	8,877	21,044	23%	0.23		0.786		0.180	0.180	82.0%
1976	C	19,523	8,258	6,352	59%	0.26		0.753		0.196	0.196	80.4%
1977	C	12,172	2,107	3,602	66%	0.29		0.421		0.120	0.120	88.0%
1978	A	51,083	8,319	18,155	23%	0.23		0.756		0.175	0.175	82.5%
1979	B	42,044	8,211	14,774	24%	0.24		0.750		0.177	0.177	82.3%
1980	A	69,453	7,771	25,026	23%	0.23		0.726		0.165	0.165	83.5%
1981	D	29,674	6,806	10,148	24%	0.24		0.674		0.165	0.165	83.5%
1982	W	65,650	8,913	23,603	23%	0.23		0.788		0.179	0.179	82.1%
1983	W	82,917	6,212	30,061	22%	0.22		0.642		0.144	0.144	85.6%
1984	W	36,004	5,163	12,516	24%	0.24		0.586		0.140	0.140	86.0%
1985	D	20,707	8,895	6,794	59%	0.26		0.787		0.203	0.203	79.7%
1986	W	98,439	11,974	35,866	22%	0.22		0.953		0.212	0.212	78.8%
1987	D	23,030	5,546	7,663	58%	0.25		0.606		0.154	0.154	84.6%
1988	C	16,603	6,363	5,259	61%	0.27		0.650		0.174	0.174	82.6%
1989	D	12,658	2,791	3,784	65%	0.28		0.458		0.130	0.130	87.0%
1990	C	16,944	7,797	5,387	61%	0.27		0.728		0.194	0.194	80.6%
1991	C	11,074	1,260	3,192	68%	0.29		0.375		0.109	0.109	89.1%
1992	C	31,415	8,519	10,799	24%	0.24		0.767		0.186	0.186	81.4%

MARCH

Year	Sac River Flow	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survivability s123
1922	31,551	7,953	10,850	0.24	0.24		0.826	0.144	0.310	0.310	69.0%
1923	17,174	7,595	5,473	0.61	0.27		0.807	0.144	0.320	0.320	68.0%
1924	12,246	3,318	3,630	0.66	0.29		0.576	0.144	0.267	0.267	73.3%
1925	18,557	7,888	5,990	0.60	0.26		0.823	0.144	0.322	0.322	67.8%
1926	18,947	7,725	6,136	0.60	0.26		0.814	0.144	0.319	0.319	68.1%
1927	43,863	7,920	15,455	0.23	0.23		0.824	0.144	0.304	0.304	69.6%
1928	86,229	8,652	31,300	0.22	0.22		0.864	0.144	0.305	0.305	69.5%
1929	16,930	6,831	5,382	0.61	0.27		0.765	0.144	0.310	0.310	69.0%
1930	30,087	7,319	10,303	0.24	0.24		0.792	0.144	0.302	0.302	69.8%
1931	9,856	4,017	2,736	0.70	0.30		0.614	0.144	0.285	0.285	71.5%
1932	12,100	5,237	3,575	0.66	0.29		0.679	0.144	0.297	0.297	70.3%
1933	10,392	4,635	2,937	0.69	0.30		0.647	0.144	0.293	0.293	70.7%
1934	14,263	4,001	4,384	0.63	0.28		0.613	0.144	0.273	0.273	72.7%
1935	24,916	11,206	8,368	0.57	0.25		1.000	0.144	0.358	0.358	64.2%
1936	33,698	10,018	11,653	0.24	0.24		0.938	0.144	0.335	0.335	66.5%
1937	38,203	8,229	13,338	0.24	0.24		0.841	0.144	0.310	0.310	69.0%
1938	78,634	8,197	28,459	0.22	0.22		0.839	0.144	0.301	0.301	69.9%
1939	16,394	6,717	5,181	0.61	0.27		0.759	0.144	0.309	0.309	69.1%
1940	59,183	8,880	21,184	0.23	0.23		0.876	0.144	0.312	0.312	68.8%
1941	58,581	8,067	20,959	0.23	0.23		0.832	0.144	0.302	0.302	69.8%
1942	27,095	8,229	9,183	0.25	0.25		0.841	0.144	0.317	0.317	68.3%
1943	64,598	8,278	23,210	0.23	0.23		0.844	0.144	0.303	0.303	69.7%
1944	25,094	8,229	8,435	0.25	0.25		0.841	0.144	0.318	0.318	68.2%
1945	27,274	8,359	9,250	0.25	0.25		0.848	0.144	0.318	0.318	68.2%
1946	23,712	8,652	7,918	0.57	0.25		0.864	0.144	0.326	0.326	67.4%
1947	22,509	8,148	7,468	0.58	0.25		0.837	0.144	0.320	0.320	68.0%
1948	19,353	7,709	6,288	0.59	0.26		0.813	0.144	0.318	0.318	68.2%
1949	41,716	11,336	14,652	0.24	0.24		1.000	0.144	0.346	0.346	65.4%
1950	22,899	8,782	7,614	0.58	0.25		0.871	0.144	0.328	0.328	67.2%
1951	29,827	8,929	10,205	0.24	0.24		0.879	0.144	0.324	0.324	67.6%
1952	57,524	8,164	20,564	0.23	0.23		0.838	0.144	0.303	0.303	69.7%
1953	24,899	7,563	8,362	0.57	0.25		0.805	0.144	0.310	0.310	69.0%
1954	49,538	8,912	17,577	0.23	0.23		0.878	0.144	0.314	0.314	68.6%
1955	18,117	7,416	5,826	0.60	0.26		0.797	0.144	0.316	0.316	68.4%
1956	36,674	7,172	12,766	0.24	0.24		0.784	0.144	0.297	0.297	70.3%
1957	44,383	8,668	15,649	0.23	0.23		0.865	0.144	0.313	0.313	68.7%
1958	93,612	8,294	34,061	0.22	0.22		0.845	0.144	0.300	0.300	70.0%
1959	23,354	7,286	7,785	0.57	0.25		0.790	0.144	0.307	0.307	69.3%
1960	22,606	7,530	7,505	0.58	0.25		0.803	0.144	0.312	0.312	68.8%
1961	20,947	8,050	6,884	0.59	0.26		0.831	0.144	0.321	0.321	67.9%
1962	27,664	7,725	9,396	0.25	0.25		0.814	0.144	0.309	0.309	69.1%
1963	32,641	8,717	11,258	0.24	0.24		0.867	0.144	0.319	0.319	68.1%
1964	16,638	6,733	5,272	0.61	0.27		0.760	0.144	0.309	0.309	69.1%
1965	21,386	8,603	7,049	0.58	0.26		0.861	0.144	0.328	0.328	67.2%
1966	28,689	8,652	9,780	0.25	0.25		0.864	0.144	0.321	0.321	67.9%
1967	54,483	7,514	19,426	0.23	0.23		0.802	0.144	0.296	0.296	70.4%
1968	36,788	7,107	12,809	0.24	0.24		0.780	0.144	0.296	0.296	70.4%
1969	45,326	6,896	16,002	0.23	0.23		0.769	0.144	0.290	0.290	71.0%
1970	35,812	7,221	12,444	0.24	0.24		0.787	0.144	0.298	0.298	70.2%
1971	50,791	8,929	18,046	0.23	0.23		0.879	0.144	0.314	0.314	68.6%
1972	32,933	8,213	11,367	0.24	0.24		0.840	0.144	0.312	0.312	68.8%
1973	47,554	8,685	16,835	0.23	0.23		0.866	0.144	0.312	0.312	68.8%
1974	100,199	8,652	36,524	0.22	0.22		0.864	0.144	0.304	0.304	69.6%
1975	75,999	8,912	27,474	0.23	0.23		0.878	0.144	0.310	0.310	69.0%
1976	20,069	7,855	6,556	0.59	0.26		0.821	0.144	0.319	0.319	68.1%
1977	7,286	2,017	1,775	0.77	0.33		0.506	0.144	0.262	0.262	73.8%
1978	45,473	6,017	16,057	0.23	0.23		0.722	0.144	0.279	0.279	72.1%
1979	32,592	8,229	11,239	0.24	0.24		0.841	0.144	0.313	0.313	68.7%
1980	36,479	7,107	12,693	0.24	0.24		0.780	0.144	0.296	0.296	70.4%
1981	32,494	7,107	11,203	0.24	0.24		0.780	0.144	0.298	0.298	70.2%
1982	69,087	8,880	24,889	0.23	0.23		0.876	0.144	0.310	0.310	69.0%
1983	81,935	4,684	29,694	0.22	0.22		0.650	0.144	0.258	0.258	74.2%
1984	36,495	7,205	12,699	0.24	0.24		0.786	0.144	0.297	0.297	70.3%
1985	21,809	8,864	7,207	0.58	0.26		0.875	0.144	0.331	0.331	66.9%
1986	72,535	8,408	26,178	0.23	0.23		0.851	0.144	0.304	0.304	69.6%
1987	29,567	6,522	10,108	0.24	0.24		0.749	0.144	0.292	0.292	70.8%
1988	11,075	3,838	3,192	0.68	0.29		0.604	0.144	0.278	0.278	72.2%
1989	41,992	11,189	14,755	0.24	0.24		1.000	0.144	0.346	0.346	65.4%
1990	14,832	5,855	4,597	0.63	0.27		0.713	0.144	0.300	0.300	70.0%
1991	29,681	11,303	10,151	0.24	0.24		1.000	0.144	0.354	0.354	64.6%
1992	20,102	8,246	6,568	0.59	0.26		0.842	0.144	0.325	0.325	67.5%

APRIL

Year	Sac River Flow	CVP + SWF Exports	Calculated Steamboat & Sutter Slough flows	Percent	X-Channel Closed	Water temp f	m1	m2	m3	m23	m123	Calculated Survivability s123	Weighted Total Survival
1922	22,822	8,369	7,585	0.58	0.25	58.5	0.002	0.911	0.256	0.422	0.424	57.6%	66.88%
1923	22,721	7,932	7,548	0.58	0.25	58.3	0.000	0.884	0.250	0.411	0.411	58.9%	67.23%
1924	8,050	2,823	2,061	0.74	0.32	61.5	0.128	0.666	0.352	0.452	0.522	47.8%	66.41%
1925	22,654	6,958	7,523	0.58	0.25	59.1	0.027	0.846	0.275	0.420	0.436	56.4%	65.68%
1926	21,242	6,621	6,995	0.58	0.26	61.6	0.133	0.873	0.355	0.488	0.556	44.4%	62.21%
1927	48,215	8,100	17,082	0.23	0.23	56.8	0.000	0.866	0.202	0.356	0.356	64.4%	69.39%
1928	29,208	7,361	9,974	0.25	0.25	58.7	0.011	0.861	0.262	0.409	0.415	58.5%	67.71%
1929	8,773	2,706	2,331	0.72	0.31	56.3	0.000	0.566	0.186	0.304	0.304	69.6%	70.70%
1930	12,638	3,899	3,777	0.65	0.28	59.6	0.048	0.690	0.291	0.404	0.433	56.7%	67.41%
1931	9,109	3,059	2,457	0.72	0.31	62.8	0.183	0.702	0.393	0.488	0.582	41.8%	64.02%
1932	13,075	5,378	3,940	0.65	0.28	58.9	0.019	0.757	0.269	0.406	0.417	58.3%	67.55%
1933	12,739	4,134	3,814	0.65	0.28	60.1	0.069	0.712	0.307	0.422	0.462	53.8%	66.97%
1934	12,839	3,563	3,852	0.65	0.28	63.6	0.217	0.744	0.419	0.511	0.617	38.3%	63.59%
1935	24,166	9,125	8,088	0.57	0.25	58.9	0.019	0.959	0.269	0.443	0.453	54.7%	63.82%
1936	21,528	8,403	7,101	0.58	0.26	59.7	0.053	0.935	0.294	0.458	0.487	51.3%	63.35%
1937	23,259	8,235	7,749	0.57	0.25	58.8	0.015	0.910	0.266	0.429	0.437	56.3%	66.70%
1938	47,173	8,420	16,693	0.23	0.23	56.3	0.000	0.875	0.186	0.346	0.346	65.4%	70.29%
1939	12,234	4,134	3,626	0.66	0.29	63.3	0.204	0.769	0.409	0.512	0.612	38.8%	61.77%
1940	41,728	8,336	14,656	0.24	0.24	57.4	0.000	0.890	0.221	0.379	0.379	62.1%	67.91%
1941	42,367	9,310	14,895	0.24	0.24	56.9	0.000	0.934	0.205	0.376	0.376	62.4%	68.84%
1942	43,308	8,907	15,247	0.23	0.23	56.5	0.000	0.905	0.192	0.359	0.359	64.1%	68.97%
1943	29,410	9,462	10,049	0.24	0.24	58.8	0.015	0.976	0.266	0.440	0.448	55.2%	67.01%
1944	9,814	4,235	2,721	0.70	0.30	58.4	0.000	0.686	0.253	0.383	0.383	61.7%	68.01%
1945	11,999	6,588	3,538	0.66	0.29	60.6	0.090	0.853	0.323	0.475	0.523	47.7%	63.88%
1946	12,218	5,949	3,619	0.66	0.29	60.7	0.095	0.820	0.326	0.467	0.518	48.2%	63.40%
1947	13,797	4,941	4,210	0.64	0.28	62.5	0.170	0.798	0.384	0.499	0.584	41.6%	61.72%
1948	23,293	6,857	7,761	0.57	0.25	56.6	0.000	0.796	0.195	0.347	0.347	65.3%	69.25%
1949	13,209	5,075	3,990	0.65	0.28	61.7	0.137	0.791	0.358	0.480	0.551	44.9%	61.10%
1950	19,528	6,285	6,353	0.59	0.26	61.3	0.120	0.849	0.346	0.477	0.539	46.1%	62.17%
1951	14,789	6,386	4,581	0.63	0.27	59.9	0.061	0.830	0.301	0.446	0.479	52.1%	64.81%
1952	56,652	8,773	20,238	0.23	0.23	55.5	0.000	0.879	0.160	0.325	0.325	67.5%	70.78%
1953	16,184	5,647	5,103	0.62	0.27	58.8	0.015	0.770	0.266	0.401	0.410	59.0%	67.62%
1954	39,863	7,361	13,959	0.24	0.24	58.4	0.000	0.855	0.253	0.395	0.395	60.5%	67.86%
1955	9,478	3,664	2,595	0.71	0.30	56.4	0.000	0.620	0.189	0.320	0.320	68.0%	69.77%
1956	20,436	7,966	6,693	0.59	0.26	59.7	0.053	0.911	0.294	0.454	0.482	51.8%	66.31%
1957	21,158	6,420	6,963	0.58	0.26	60.5	0.086	0.842	0.320	0.454	0.501	49.9%	64.65%
1958	52,282	9,663	18,603	0.23	0.23	57.4	0.000	0.962	0.221	0.392	0.392	60.8%	68.88%
1959	10,487	3,798	2,972	0.69	0.30	63	0.191	0.745	0.400	0.502	0.597	40.3%	62.27%
1960	13,545	4,033	4,116	0.64	0.28	59.5	0.044	0.695	0.288	0.402	0.428	57.2%	66.47%
1961	12,789	3,546	3,833	0.65	0.28	60.1	0.069	0.680	0.307	0.412	0.453	54.7%	65.22%
1962	15,411	5,579	4,814	0.62	0.27	61.8	0.141	0.820	0.362	0.486	0.559	44.1%	62.58%
1963	69,457	8,100	25,027	0.23	0.23	53.7	0.000	0.811	0.103	0.263	0.263	73.7%	70.95%
1964	8,957	3,496	2,400	0.72	0.31	59.3	0.036	0.663	0.282	0.399	0.421	57.9%	67.32%
1965	45,173	8,537	15,945	0.23	0.23	56.9	0.000	0.892	0.205	0.366	0.366	63.4%	67.66%
1966	12,806	4,974	3,839	0.65	0.28	61.9	0.145	0.789	0.365	0.485	0.559	44.1%	62.43%
1967	39,930	9,546	13,984	0.24	0.24	53.8	0.000	0.891	0.106	0.292	0.292	70.8%	72.22%
1968	15,629	5,243	4,895	0.62	0.27	61.5	0.128	0.797	0.352	0.472	0.540	46.0%	64.94%
1969	44,787	7,512	15,800	0.23	0.23	56.4	0.000	0.827	0.189	0.338	0.338	66.2%	71.21%
1970	16,604	6,588	5,260	0.61	0.27	58.8	0.015	0.821	0.266	0.414	0.423	57.7%	68.57%
1971	22,133	6,621	7,328	0.58	0.25	58.7	0.011	0.821	0.262	0.405	0.411	58.9%	67.32%
1972	12,453	4,739	3,707	0.66	0.28	58.5	0.002	0.715	0.256	0.387	0.388	61.2%	68.04%
1973	19,511	7,495	6,347	0.59	0.26	61.3	0.120	0.915	0.346	0.494	0.554	44.6%	63.29%
1974	33,208	9,327	11,470	0.24	0.24	56.8	0.000	0.933	0.202	0.378	0.378	62.2%	68.95%
1975	25,763	8,773	8,685	0.25	0.25	56.8	0.000	0.903	0.202	0.376	0.376	62.4%	68.72%
1976	9,428	3,008	2,576	0.71	0.30	58.9	0.019	0.629	0.269	0.378	0.390	61.0%	67.55%
1977	9,142	2,991	2,469	0.71	0.31	64.3	0.246	0.725	0.441	0.528	0.644	35.6%	64.16%
1978	38,703	7,512	13,525	0.24	0.24	56.9	0.000	0.836	0.205	0.355	0.355	64.5%	71.17%
1979	17,696	6,857	5,668	0.60	0.26	59.8	0.057	0.853	0.298	0.445	0.476	52.4%	65.59%
1980	19,814	6,941	6,460	0.59	0.26	57.1	0.000	0.809	0.211	0.366	0.366	63.4%	69.99%
1981	16,990	5,445	5,404	0.61	0.27	61.5	0.128	0.807	0.352	0.473	0.541	45.9%	64.63%
1982	75,843	9,159	27,415	0.23	0.23	54.1	0.000	0.875	0.115	0.287	0.287	71.3%	71.39%
1983	68,298	6,958	24,593	0.23	0.23	55	0.000	0.772	0.144	0.287	0.287	71.3%	74.84%
1984	17,864	6,857	5,731	0.60	0.26	59.7	0.053	0.851	0.294	0.442	0.471	52.9%	67.10%
1985	13,327	4,874	4,034	0.65	0.28	60.8	0.099	0.764	0.330	0.451	0.505	49.5%	63.34%
1986	21,024	7,546	6,913	0.58	0.26	60.4	0.082	0.901	0.317	0.467	0.511	48.9%	64.60%
1987	12,386	3,496	3,682	0.66	0.28	65.7	0.305	0.778	0.486	0.569	0.701	29.9%	60.33%
1988	8,621	2,857	2,274	0.73	0.31	59.9	0.061	0.639	0.301	0.406	0.442	55.8%	68.59%
1989	23,629	5,647	7,887	0.57	0.25	61.4	0.124	0.817	0.349	0.467	0.533	46.7%	62.62%
1990	12,436	3,529	3,701	0.66	0.28	61.6	0.133	0.706	0.355	0.455	0.527	47.3%	64.57%
1991	15,276	4,252	4,763	0.62	0.27	60.8	0.099	0.730	0.330	0.439	0.494	50.6%	63.60%
1992	12,470	3,731	3,714	0.66	0.28	61.2	0.116	0.710	0.342	0.447	0.511	48.9%	63.75%
												Average:	65.56%

Formulas: Winter Run Salmon Smolt Survival Model

C10 ='Study 513 Revised Flow Data'!E7
D10 ='Study 513 Revised Flow Data'!C (HIDDEN)
E10 ='Study 513 Revised Flow Data'!Y (HIDDEN)
F10 =(D9+E9)
G10 =0.374*C9-950
H10 =IF(C9>$G$2,(0.133*C9+829)/(C9-G9),(0.293*C9+2090)/(C9-G9))
I10 =(0.133*C9+829)/(C9-G9)
K10 =(-0.5916024)+(0.017968*$M$1)+(0.000054*F9)
M10 =(K9*I9)+L9*(1-I9)
N10 =J9+M9-(J9*M9)
O10 =1-N9

Q10 ='Study 513 Revised Flow Data'!F7
R10 ='Study 513 Revised Flow Data' (HIDDEN)
S10 ='Study 513 Revised Flow Data' (HIDDEN)
T10 =(R9+S9)
U10 =0.374*Q9-950
V10 =IF(Q9>$G$2,(0.133*Q9+829)/(Q9-U9),(0.293*Q9+2090)/(Q9-U9))
Y10 =(0.133*Q9+829)/(Q9-U9)
W10 =IF(((-0.5916024)+(0.017968*$M$2)+(0.000054*T9))>1,1,((-0.5916024)+(0.017968*$M$2)+(0.000054*T9)))
Z10 =-1.613493+(0.0319584*$M$2)
AA10 =(Y9*W9)+Z9*(1-W9)
AB10 =X9+AA9-(X9*AA9)
AC10 =1-AB9

AE10 ='Study 513 Revised Flow Data'!G7
AF10 ='Study 513 Revised Flow Data'! (HIDDEN)
AG10 ='Study 513 Revised Flow Data'! (HIDDEN)
AH10 =AF9+AG9
AI10 =0.374*AE9-950
AJ10 =IF(AE9>$G$2,(0.133*AE9+829)/(AE9-AI9),(0.293*AE9+2090)/(AE9-AI9))
AK10 =(0.133*AE9+829)/(AE9-AI9)
AM10 =IF((-2.45925+(0.0420748*AL9))<0,0,(-2.45925+(0.0420748*AL9)))
AN10 =IF(((-0.5916024)+(0.017968*AL9)+(0.000054*AH9))>1,1,((-0.5916024)+(0.017968*AL9)+(0.000054*AH9
AO10 =-1.613493+(0.0319584*AL9)
AP10 =(AN9*AK9)+(AO9*(1-AK9))
AQ10 =AM9+AP9-(AM9*AP9)
AR10 =1-AQ9
AS10 =(0.13*O9)+(0.57*AC9)+(0.3*AR9)

1 Study 513 Winter Run Smolt Survival Model — February Water Temp 50 F — April Water Temperatures based on limited historical data from USBR

2 Cross Channel Closed Over 25000 cfs — March Water Temp 55 F

3 Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

	A	B	C	F	G	H	I	J	K	L	M	N	O	Q	T	U	V	W	X	Y	Z	AA	AB	AC	AE	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS
5																											Calculated										
6			FEBRUARY		Calculated									MARCH		Calculated									APRIL		Steamboat										
7		Water	Sac		Sutter &								Calculated	Sac		Sutter &								Calculated	Sac		& Sutter									Calculated	Weighted
8		Year	River	CVP + SWP	Steamboat		X-Channel		Calculated Mortality				Survivability	River	CVP + SWP	Steamboat		X-Channel		Calculated Mortality				Survivability	River	CVP + SWF	Slough		X-Channel	Water		Calculated Mortality				Survivability	Total
9	Year	Type	Flow	Exports	Slough Q	Percent	Closed	m1	m2	m3	m23	m123	s123	Flow	exports	Slough Q	percent	Closed	m1	m2	m3	m23	m123	s123	Flow	Exports	flows	Percent	Closed	temp f	m1	m2	m3	m23	m123	s123	Survival
10	1922	A	33,923	9,677	11,737	24%	0.24		0.829		0.200	0.200	80.0%	32,413	8,342	11,172	0.24	0.24		0.847	0.144	0.314	0.314	68.6%	23,242	9,867	7,743	0.57	0.25	58.5	0.002	0.992	0.256	0.442	0.443	55.7%	66.18%
11	1923	B	22,363	6,759	7,414	58%	0.25		0.672		0.171	0.171	82.9%	17,337	8,347	5,534	0.61	0.27		0.847	0.144	0.331	0.331	66.9%	24,150	9,688	8,082	0.57	0.25	58.3	0.000	0.979	0.250	0.433	0.433	56.7%	65.92%
12	1924	C	17,924	9,638	5,754	60%	0.26		0.827		0.218	0.218	78.2%	12,458	4,164	3,709	0.66	0.28		0.621	0.144	0.280	0.280	72.0%	7,260	3,525	1,765	0.77	0.33	61.5	0.128	0.704	0.352	0.467	0.535	46.5%	65.15%
13	1925	D	44,997	11,679	15,879	23%	0.23		0.937		0.219	0.219	78.1%	28,087	5,858	9,555	0.25	0.25		0.713	0.144	0.284	0.284	71.6%	20,469	7,889	6,705	0.59	0.26	59.1	0.027	0.896	0.275	0.435	0.451	54.9%	67.41%
14	1926	D	36,516	12,060	12,707	24%	0.24		0.958		0.229	0.229	77.1%	18,866	8,119	6,106	0.60	0.26		0.835	0.144	0.325	0.325	67.5%	19,763	7,315	6,441	0.59	0.26	61.6	0.133	0.910	0.355	0.499	0.566	43.4%	61.54%
15	1927	W	85,240	8,540	30,930	22%	0.22		0.768		0.172	0.172	82.8%	44,058	7,482	15,528	0.23	0.23		0.801	0.144	0.298	0.298	70.2%	48,501	9,873	17,189	0.23	0.23	56.8	0.000	0.962	0.202	0.379	0.379	62.1%	69.42%
16	1928	A	27,729	8,736	9,421	25%	0.25		0.779		0.192	0.192	80.8%	85,285	8,745	30,947	0.22	0.22		0.869	0.144	0.307	0.307	69.3%	29,763	8,382	10,181	0.24	0.24	58.7	0.011	0.916	0.262	0.422	0.428	57.2%	67.18%
17	1929	C	19,014	8,410	6,161	60%	0.26		0.761		0.199	0.199	80.1%	18,036	7,527	5,796	0.60	0.26		0.803	0.144	0.318	0.318	68.2%	7,378	3,032	1,809	0.76	0.33	56.3	0.000	0.584	0.186	0.315	0.315	68.5%	69.84%
18	1930	D	15,809	7,109	4,963	62%	0.27		0.691		0.187	0.187	81.3%	30,104	10,200	10,309	0.24	0.24		0.947	0.144	0.340	0.340	66.0%	13,092	4,683	3,946	0.65	0.28	59.6	0.048	0.732	0.291	0.415	0.443	55.7%	64.87%
19	1931	C	11,902	6,419	3,501	66%	0.29		0.653		0.188	0.188	81.2%	10,880	4,767	3,119	0.68	0.29		0.654	0.144	0.294	0.294	70.6%	8,369	3,597	2,180	0.73	0.31	62.8	0.183	0.731	0.393	0.499	0.591	40.9%	63.09%
20	1932	D	13,613	10,510	4,141	64%	0.28		0.874		0.244	0.244	75.6%	10,701	6,651	3,052	0.68	0.29		0.756	0.144	0.324	0.324	67.6%	11,243	7,377	3,255	0.67	0.29	58.9	0.019	0.865	0.269	0.442	0.453	54.7%	64.76%
21	1933	C	14,117	8,165	4,330	64%	0.28		0.748		0.207	0.207	79.3%	10,653	5,381	3,034	0.68	0.29		0.687	0.144	0.304	0.304	69.6%	11,798	5,059	3,462	0.67	0.29	60.1	0.069	0.761	0.307	0.438	0.477	52.3%	65.66%
22	1934	C	12,460	5,971	3,710	66%	0.28		0.629		0.179	0.179	82.1%	16,524	6,915	5,230	0.61	0.27		0.770	0.144	0.312	0.312	68.8%	12,083	4,427	3,569	0.66	0.29	63.6	0.217	0.790	0.419	0.525	0.628	37.2%	61.05%
23	1935	B	11,524	6,640	3,360	67%	0.29		0.665		0.192	0.192	80.8%	24,363	11,913	8,162	0.57	0.25		1.000	0.144	0.359	0.359	64.1%	23,729	10,524	7,925	0.57	0.25	58.9	0.019	1.000	0.269	0.453	0.464	53.6%	63.12%
24	1936	B	56,171	12,854	20,058	23%	0.23		1.001		0.230	0.230	77.0%	35,048	8,481	12,158	0.24	0.24		0.855	0.144	0.315	0.315	68.5%	23,175	9,891	7,717	0.57	0.25	59.7	0.053	1.000	0.294	0.473	0.501	49.9%	64.06%
25	1937	B	33,725	9,627	11,663	24%	0.24		0.827		0.199	0.199	80.1%	38,187	8,321	13,332	0.24	0.24		0.846	0.144	0.311	0.311	68.9%	23,578	9,430	7,868	0.57	0.25	58.8	0.015	0.974	0.266	0.444	0.453	54.7%	66.10%
26	1938	W	81,027	8,309	29,354	22%	0.22		0.755		0.170	0.170	83.0%	79,187	8,287	28,666	0.22	0.22		0.844	0.144	0.302	0.302	69.8%	47,543	9,084	16,831	0.23	0.23	56.3	0.000	0.911	0.186	0.355	0.355	64.5%	69.97%
27	1939	D	19,392	8,309	6,303	59%	0.26		0.755		0.197	0.197	80.3%	16,914	6,959	5,376	0.61	0.27		0.772	0.144	0.312	0.312	68.8%	11,142	5,284	3,217	0.68	0.29	63.3	0.204	0.831	0.409	0.532	0.628	37.2%	60.83%
28	1940	A	44,784	12,739	15,799	23%	0.23		0.995		0.233	0.233	76.7%	62,078	8,943	22,267	0.23	0.23		0.880	0.144	0.312	0.312	68.8%	42,686	10,245	15,015	0.24	0.24	57.4	0.000	0.993	0.221	0.402	0.402	59.8%	67.11%
29	1941	W	75,481	11,438	27,280	23%	0.23		0.924		0.208	0.208	79.2%	58,939	8,167	21,093	0.23	0.23		0.838	0.144	0.303	0.303	69.7%	42,770	9,415	15,046	0.24	0.24	56.9	0.000	0.939	0.205	0.378	0.378	62.2%	68.69%
30	1942	W	78,614	8,336	28,452	22%	0.22		0.757		0.170	0.170	83.0%	27,550	8,328	9,354	0.25	0.25		0.846	0.144	0.318	0.318	68.2%	43,678	9,753	15,385	0.23	0.23	56.5	0.000	0.950	0.192	0.370	0.370	63.0%	68.58%
31	1943	W	52,577	8,382	18,714	23%	0.23		0.759		0.175	0.175	82.5%	65,119	8,377	23,404	0.23	0.23		0.849	0.144	0.305	0.305	69.5%	29,427	9,769	10,056	0.24	0.24	58.8	0.015	0.992	0.266	0.444	0.452	54.8%	66.81%
32	1944	D	33,275	8,301	11,495	24%	0.24		0.755		0.182	0.182	81.8%	25,127	8,328	8,448	0.25	0.25		0.846	0.144	0.320	0.320	68.0%	10,100	5,956	2,827	0.69	0.30	58.4	0.000	0.779	0.253	0.410	0.410	59.0%	67.10%
33	1945	B	42,962	8,443	15,118	23%	0.23		0.763		0.179	0.179	82.1%	27,908	8,447	9,488	0.25	0.25		0.853	0.144	0.319	0.319	68.1%	12,890	8,624	3,871	0.65	0.28	60.6	0.090	0.963	0.323	0.504	0.549	45.1%	63.04%
34	1946	B	23,948	8,792	8,007	57%	0.25		0.782		0.197	0.197	80.3%	25,127	8,760	8,448	0.25	0.25		0.870	0.144	0.326	0.326	67.4%	12,722	7,748	3,808	0.65	0.28	60.7	0.095	0.917	0.326	0.494	0.542	45.8%	62.64%
35	1947	D	22,165	8,488	7,340	58%	0.25		0.765		0.195	0.195	80.5%	23,127	8,447	7,699	0.57	0.25		0.853	0.144	0.324	0.324	67.6%	14,251	5,469	4,380	0.63	0.28	62.5	0.170	0.827	0.384	0.506	0.590	41.0%	61.31%
36	1948	B	13,439	5,178	4,076	64%	0.28		0.586		0.164	0.164	83.6%	18,931	8,205	6,130	0.60	0.26		0.840	0.144	0.326	0.326	67.4%	24,469	8,313	8,201	0.57	0.25	56.6	0.000	0.874	0.195	0.366	0.366	63.4%	68.31%
37	1949	D	16,511	9,223	5,225	61%	0.27		0.805		0.216	0.216	78.4%	41,277	11,312	14,487	0.24	0.24		1.000	0.144	0.346	0.346	65.4%	14,016	6,190	4,292	0.64	0.28	61.7	0.137	0.851	0.358	0.495	0.564	43.6%	60.55%
38	1950	B	36,012	12,290	12,518	24%	0.24		0.970		0.232	0.232	76.8%	23,875	10,275	7,979	0.57	0.25		0.951	0.144	0.348	0.348	65.2%	20,570	7,404	6,743	0.59	0.26	61.3	0.120	0.910	0.346	0.491	0.552	44.8%	60.61%
39	1951	A	61,238	9,056	21,953	23%	0.23		0.796		0.182	0.182	81.8%	30,331	9,007	10,394	0.24	0.24		0.883	0.144	0.324	0.324	67.6%	14,722	7,939	4,556	0.63	0.27	59.9	0.061	0.913	0.301	0.469	0.501	49.9%	64.11%
40	1952	W	62,812	8,301	22,542	23%	0.23		0.755		0.172	0.172	82.8%	58,174	8,255	20,807	0.23	0.23		0.842	0.144	0.304	0.304	69.6%	57,324	8,873	20,489	0.23	0.23	55.5	0.000	0.885	0.160	0.326	0.326	67.4%	70.62%
41	1953	W	28,990	8,441	9,892	25%	0.25		0.763		0.187	0.187	81.3%	25,989	8,432	8,770	0.25	0.25		0.852	0.144	0.320	0.320	68.0%	16,822	6,600	5,342	0.61	0.27	58.8	0.015	0.821	0.266	0.414	0.423	57.7%	66.63%
42	1954	A	57,151	9,009	20,424	23%	0.23		0.793		0.182	0.182	81.8%	49,701	9,006	17,638	0.23	0.23		0.883	0.144	0.316	0.316	68.4%	40,434	8,178	14,172	0.24	0.24	58.4	0.000	0.899	0.253	0.406	0.406	59.4%	67.47%
43	1955	D	16,674	8,386	5,286	61%	0.27		0.760		0.203	0.203	79.7%	17,825	7,748	5,716	0.60	0.26		0.815	0.144	0.321	0.321	67.9%	9,730	4,725	2,689	0.70	0.30	56.4	0.000	0.677	0.189	0.336	0.336	66.4%	68.95%
44	1956	W	62,534	9,059	22,438	23%	0.23		0.796		0.182	0.182	81.8%	37,081	7,278	12,918	0.24	0.24		0.790	0.144	0.298	0.298	70.2%	21,125	10,060	6,951	0.58	0.26	59.7	0.053	1.000	0.294	0.476	0.503	49.7%	65.55%
45	1957	A	32,969	8,985	11,380	24%	0.24		0.792		0.191	0.191	80.9%	44,513	8,824	15,698	0.23	0.23		0.873	0.144	0.315	0.315	68.5%	19,965	6,995	6,517	0.59	0.26	60.5	0.086	0.873	0.320	0.463	0.510	49.0%	64.27%
46	1958	W	64,731	8,402	23,260	23%	0.23		0.761		0.173	0.173	82.7%	93,547	8,391	34,037	0.22	0.22		0.850	0.144	0.302	0.302	69.8%	52,669	9,769	18,748	0.23	0.23	57.4	0.000	0.967	0.221	0.393	0.393	60.7%	68.76%
47	1959	B	50,363	8,415	17,886	23%	0.23		0.761		0.176	0.176	82.4%	22,818	8,273	7,584	0.58	0.25		0.843	0.144	0.322	0.322	67.8%	9,495	4,689	2,601	0.71	0.30	63	0.191	0.794	0.400	0.519	0.611	38.9%	61.04%
48	1960	D	28,268	11,723	9,622	25%	0.25		0.940		0.231	0.231	76.9%	25,176	7,096	8,466	0.25	0.25		0.780	0.144	0.303	0.303	69.7%	11,999	4,601	3,538	0.66	0.29	59.5	0.044	0.726	0.288	0.414	0.439	56.1%	66.53%
49	1961	D	33,527	11,542	11,589	24%	0.24		0.930		0.224	0.224	77.6%	21,549	7,439	7,109	0.58	0.26		0.798	0.144	0.312	0.312	68.8%	11,730	4,172	3,437	0.67	0.29	60.1	0.069	0.714	0.307	0.424	0.464	53.6%	65.40%
50	1962	B	45,609	12,844	16,108	23%	0.23		1.000		0.234	0.234	76.6%	27,908	8,093	9,488	0.25	0.25		0.834	0.144	0.314	0.314	68.6%	14,285	7,115	4,392	0.63	0.28	61.8	0.141	0.903	0.362	0.511	0.580	42.0%	61.66%
51	1963	W	59,150	12,870	21,172	23%	0.23		1.002		0.229	0.229	77.1%	32,267	8,829	11,118	0.24	0.24		0.873	0.144	0.321	0.321	67.9%	70,684	10,084	25,486	0.23	0.23	53.7	0.000	0.918	0.103	0.287	0.287	71.3%	70.12%
52	1964	D	17,333	7,593	5,533	61%	0.27		0.717		0.190	0.190	81.0%	16,572	7,141	5,248	0.61	0.27		0.782	0.144	0.315	0.315	68.5%	9,394	4,540	2,563	0.71	0.30	59.3	0.036	0.719	0.282	0.415	0.436	56.4%	66.49%
53	1965	W	34,283	10,478	11,872	24%	0.24		0.873		0.210	0.210	79.0%	21,988	8,752	7,274	0.58	0.26		0.869	0.144	0.329	0.329	67.1%	44,938	9,993	15,857	0.23	0.23	56.9	0.000	0.970	0.205	0.384	0.384	61.6%	66.99%
54	1966	B	27,099	8,758	9,185	25%	0.25		0.780		0.193	0.193	80.7%	29,356	8,745	10,029	0.24	0.24		0.869	0.144	0.322	0.322	67.8%	15,764	6,210	4,946	0.62	0.27	61.9	0.145	0.856	0.365	0.498	0.571	42.9%	62.04%
55	1967	W	42,800	7,592	15,057	24%	0.24		0.717		0.168	0.168	83.2%	54,548	7,604	19,451	0.23	0.23		0.807	0.144	0.297	0.297	70.3%	40,922	9,656	14,355	0.24	0.24	53.8	0.000	0.897	0.106	0.293	0.293	70.7%	72.11%
56	1968	B	53,494	8,439	19,057	23%	0.23		0.763		0.176	0.176	82.4%	37,276	8,432	12,991	0.24	0.24		0.852	0.144	0.313	0.313	68.7%	15,058	5,631	4,682	0.63	0.27	61.5	0.128	0.818	0.352	0.479	0.546	45.4%	63.50%
57	1969	W	67,792	7,564	24,404	23%	0.23		0.715		0.162	0.162	83.8%	45,717	6,403	16,148	0.23	0.23		0.742	0.144	0.284	0.284	71.6%	45,476	7,622	16,058	0.23	0.23	56.4	0.000	0.833	0.189	0.340	0.340	66.0%	71.51%
58	1970	W	58,771	6,365	21,031	23%	0.23		0.651		0.149	0.149	85.1%	35,942	7,352	12,492	0.24	0.24		0.794	0.144	0.300	0.300	70.0%	15,444	8,222	4,826	0.62	0.27	58.8	0.015	0.909	0.266	0.440	0.449	55.1%	67.53%
59	1971	W	29,476	9,067	10,074	24%	0.24		0.796		0.195	0.195	80.5%	51,197	9,020	18,198	0.23	0.23		0.884	0.144	0.315	0.315	68.5%	21,595	7,298	7,127	0.58	0.26	58.7	0.011	0.857	0.262	0.415	0.421	57.9%	66.87%
60	1972	B	24,565	8,999	8,237	57%	0.25		0.793		0.199	0.199	80.1%	33,259	8,084	11,489	0.24	0.24		0.833	0.144	0.310	0.310	69.0%	12,722	5,007	3,808	0.65	0.28	58.5	0.002	0.730	0.256	0.390	0.391	60.9%	67.98%
61	1973	A	71,376	8,791	25,744	23%	0.23		0.782		0.177	0.177	82.3%	48,156	8,772	17,060	0.23	0.23		0.870	0.144	0.313	0.313	68.7%	20,049	10,222	6,548	0.59	0.26	61.3	0.120	1.000	0.346	0.515	0.573	42.7%	62.66%
62	1974	W	42,440	8,779	14,923	24%	0.24		0.781		0.184	0.184	81.6%	100,199	8,760	36,524	0.22	0.22		0.870	0.144	0.305	0.305	69.5%	33,460	10,208	11,564	0.24	0.24	56.8	0.000	0.980	0.202	0.389	0.389	61.1%	68.52%
63	1975	W	57,871	8,985	20,694	23%	0.23		0.792		0.182	0.182	81.8%	75,007	9,006	27,103	0.23	0.23		0.883	0.144	0.311	0.311	68.9%	26,200	10,492	8,849	0.25	0.25	56.8	0.000	0.996	0.202	0.399	0.399	60.1%	67.95%
64	1976	C	19,819	8,709	6,462	59%	0.26		0.777		0.202	0.202	79.8%	20,004	8,186	6,532	0.59	0.26		0.839	0.144	0.324	0.324	67.6%	9,663	3,987	2,664	0.70	0.30	58.9	0.019	0.682	0.269	0.394	0.405	59.5%	66.75%
65	1977	C	10,822	1,899	3,097	68%	0.29		0.409		0.120	0.120	88.0%	7,091	2,852	1,702	0.77	0.33		0.551	0.144	0.278	0.278	72.2%	8,588	3,413	2,262	0.73	0.31	64.3	0.246	0.748	0.441	0.537	0.651	34.9%	63.07%
66	1978	A	50,327	8,432	17,872	23%	0.23		0.762		0.177	0.177	82.3%	47,310	6,104	16,744	0.23	0.23		0.726	0.144	0.280	0.280	72.0%	38,821	7,606	13,569	0.24	0.24	56.9	0.000	0.842	0.205	0.356	0.356	64.4%	71.07%
67	1979	B	42,134	8,300	14,808	24%	0.24		0.755		0.178	0.178	82.2%	33,210	8,328	11,471	0.24	0.24		0.846	0.144	0.314	0.314	68.6%	18,217	9,509	5,863	0.60	0.26	59.8	0.057	0.996	0.298	0.482	0.511	48.9%	64.48%
68	1980	A	70,531	8,157	25,429	23%	0.23		0.747		0.169	0.169	83.1%	36,983	6,110	12,882	0.24	0.24		0.727	0.144	0.283	0.283	71.7%	20,570	8,279	6,743	0.59	0.26	57.1	0.000	0.881	0.211	0.384	0.384	61.6%	70.14%
69	1981	D	30,124	8,425	10,316	24%	0.24		0.762		0.186	0.186	81.4%	31,990	7,989	11,014	0.24	0.24		0.828	0.144	0.310	0.310	69.0%	17,377	6,103	5,549	0.61	0.27	61.5	0.128	0.843	0.352	0.482	0.549	45.1%	63.45%
70	1982	W	67,486	9,002	24,290	23%	0.23		0.793		0.180	0.180	82.0%	68,957	8,965	24,840	0.23	0.23		0.881	0.144	0.311	0.311	68.9%	76,247	9,750	27,566	0.23	0.23	54.1	0.000	0.907	0.115	0.294	0.294	70.6%	71.11%
71	1983	W	83,368	7,185	30,229	22%	0.22		0.695		0.156	0.156	84.4%	83,627	5,460	30,326	0.22	0.22		0.691	0.144	0.267	0.267	73.3%	67,609	7,071	24,336	0.23	0.23	55	0.000	0.778	0.144	0.288	0.288	71.2%	74.11%
72	1984	W	36,700	5,586	12,776	24%	0.24		0.608		0.145	0.145	85.5%	36,528	7,327	12,711	0.24	0.24		0.792	0.144	0.299	0.299	70.1%	17,175	8,231	5,474	0.61	0.27	59.7	0.053	0.926	0.294	0.462	0.491	50.9%	66.35%
73	1985	D	22,543	8,992	7,481	58%	0.25		0.792		0.201	0.201	79.9%	21,956	9,006	7,261	0.58	0.26		0.883	0.144	0.333	0.333	66.7%	13,898	5,496	4,248	0.64	0.28	60.8	0.099	0.798	0.330	0.459	0.513	48.7%	63.03%
74	1986	W	98,673	12,124	35,954	22%	0.22		0.961		0.214	0.214	78.6%	72,828	6,353	26,288	0.23	0.23		0.740	0.144	0.279	0.279	72.1%	21,982	7,773	7,271	0.58	0.26	60.4	0.082	0.913	0.317	0.469	0.513	48.7%	65.95%
75	1987	D	23,624	5,779	7,885	57%	0.25		0.619		0.156	0.156	84.4%	32,039	6,795	11,033	0.24	0.24		0.764	0.144	0.294	0.294	70.6%	11,024	4,263	3,173	0.68	0.29	65.7	0.305	0.819	0.486	0.584	0.711	28.9%	59.88%
76	1988	C	16,255	6,662	5,129	62%	0.27		0.667		0.179	0.179	82.1%	10,945	4,426	3,144	0.68	0.29		0.636	0.144	0.288	0.288	71.2%	9,226	3,776	2,501	0.71	0.31	59.9	0.061	0.689	0.301	0.419	0.455	54.5%	67.60%
77	1989	D	11,362	3,262	3,299	67%	0.29		0.483		0.140	0.140	86.0%	42,789	11,327	15,053	0.24	0.24		1.000	0.144	0.345	0.345	65.5%	24,351	6,384	8,157	0.57	0.25	61.4	0.124	0.856	0.349	0.476	0.541	45.9%	62.25%
78	1990	C	17,556	8,260	5,616	61%	0.26		0.753		0.199	0.199	80.1%	15,239	6,361	4,749	0.62	0.27		0.740	0.144	0.306	0.306	69.4%	11,697	4,271	3,425	0.67	0.29	61.6	0.133	0.746	0.355	0.468	0.538	46.2%	63.79%
79	1991	C	11,560	1,689	3,373	67%	0.29		0.398		0.115	0.115	88.5%	30,819	11,547	10,576	0.24	0.24		1.000	0.144	0.353	0.353	64.7%	16,335	5,457	5,159	0.62	0.27	60.8	0.099	0.796	0.330	0.455	0.509	49.1%	63.15%
80	1992	C	32,110	8,781	11,059	24%	0.24		0.781		0.189	0.189	81.1%	20,508	8,768	6,720	0.59	0.26		0.870	0.144	0.331	0.331	66.9%	12,167	4,717	3,601	0.66	0.29	61.2	0.116	0.763	0.342	0.462	0.525	47.5%	62.91%
81																																				Average:	64.93%

82 Formulas: Winter Run Salmon Smolt Survival Model

C10 ='Study 513 Revised Flow Data'!E7
D10 ='Study 513 Revised Flow Data'!C(HIDDEN)
E10 ='Study 513 Revised Flow Data'!Y (HIDDEN)
F10 =(D9+E9)
G10 =0.374*C9-950
H10 =IF(C9>$G$2,(0.133*C9+829)/(C9-G9),(0.293*C9+2090)/(C9-G9))
I10 =(0.133*C9+829)/(C9-G9)
K10 =(-0.5916024)+(0.017968*$M$1)+(0.000054*F9)
M10 =(K9*I9)+L9*(1-I9)
N10 =J9+M9-(J9*M9)
O10 =1-N9

Q10 ='Study 513 Revised Flow Data'!F7
R10 ='Study 513 Revised Flow Data'(HIDDEN)
S10 ='Study 513 Revised Flow Data'(HIDDEN)
T10 =(R9+S9)
U10 =0.374*Q9-950
V10 =IF(Q9>$G$2,(0.133*Q9+829)/(Q9-U9),(0.293*Q9+2090)/(Q9-U9))
Y10 =(0.133*Q9+829)/(Q9-U9)
W10 =IF(((-0.5916024)+(0.017968*$M$2)+(0.000054*T9))>1,1,((-0.5916024)+(0.017968*$M$2)+(0.000054*T9)))
Z10 =-1.613493+(0.0319584*$M$2)
AA10 =(Y9*W9)+Z9*(1-W9)
AB10 =X9+AA9-(X9*AA9)
AC10 =1-AB9

AE10 ='Study 513 Revised Flow Data'!G7
AF10 ='Study 513 Revised Flow Data'!((HIDDEN)
AG10 ='Study 513 Revised Flow Data'!, (HIDDEN)
AH10 =AF9+AG9
AI10 =0.374*AE9-950
AJ10 =IF(AE9>$G$2,(0.133*AE9+829)/(AE9-AI9),(0.293*AE9+2090)/(AE9-AI9))
AK10 =(0.133*AE9+829)/(AE9-AI9)
AM10 =IF((-2.45925+(0.0420748*AL9))<0,0,(-2.45925+(0.0420748*AL9)))
AN10 =IF(((-0.5916024)+(0.017968*AL9)+(0.000054*AH9))>1,1,((-0.5916024)+(0.017968*AL9)+(0.000054*AH
AO10 =-1.613493+(0.0319584*AL9)
AP10 =(AN9*AK9)+(AO9*(1-AK9))
AQ10 =AM9+AP9-(AM9*AP9)
AR10 =1-AQ9
AS10 =(0.13*O9)+(0.57*AC9)+(0.3*AR9)

Study 485 Winter Run Smolt Survival Model — February Water Temp 50 F — April Water Temperatures based on limited historical data from USBR

Cross Channel Closed Over 25000 cfs — March Water Temp 55 F

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

FEBRUARY

Row	Year	Water Year Type	Sac River Flow	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	**Calculated Survivability s123**
10	1922	A	31,781	9,813	10,936	24%	0.24		0.837		0.203	0.203	**79.7%**
11	1923	B	22,615	4,916	7,508	58%	0.25		0.572		0.145	0.145	**85.5%**
12	1924	C	15,925	8,258	5,006	62%	0.27		0.753		0.203	0.203	**79.7%**
13	1925	D	44,691	11,794	15,764	23%	0.23		0.944		0.221	0.221	**77.9%**
14	1926	D	35,724	8,589	12,411	24%	0.24		0.771		0.184	0.184	**81.6%**
15	1927	W	82,503	11,020	29,906	22%	0.22		0.902		0.202	0.202	**79.8%**
16	1928	A	27,399	8,380	9,297	25%	0.25		0.759		0.188	0.188	**81.2%**
17	1929	C	17,538	8,301	5,609	61%	0.27		0.755		0.200	0.200	**80.0%**
18	1930	D	15,683	6,788	4,916	62%	0.27		0.673		0.182	0.182	**81.8%**
19	1931	C	10,840	4,844	3,104	68%	0.29		0.568		0.167	0.167	**83.3%**
20	1932	D	13,995	9,979	4,284	64%	0.28		0.846		0.234	0.234	**76.6%**
21	1933	C	11,974	6,536	3,528	66%	0.29		0.660		0.189	0.189	**81.1%**
22	1934	C	12,748	6,050	3,818	65%	0.28		0.633		0.179	0.179	**82.1%**
23	1935	B	11,974	4,628	3,528	66%	0.29		0.557		0.160	0.160	**84.0%**
24	1936	B	46,053	12,309	16,274	23%	0.23		0.971		0.227	0.227	**77.3%**
25	1937	B	33,833	6,500	11,704	24%	0.24		0.658		0.158	0.158	**84.2%**
26	1938	W	82,269	5,150	29,819	22%	0.22		0.585		0.131	0.131	**86.9%**
27	1939	D	19,032	5,492	6,168	60%	0.26		0.603		0.158	0.158	**84.2%**
28	1940	A	41,064	12,291	14,408	24%	0.24		0.971		0.229	0.229	**77.1%**
29	1941	W	75,031	11,236	27,112	23%	0.23		0.914		0.206	0.206	**79.4%**
30	1942	W	78,344	5,618	28,351	23%	0.23		0.610		0.137	0.137	**86.3%**
31	1943	W	52,253	5,996	18,593	23%	0.23		0.631		0.146	0.146	**85.4%**
32	1944	D	30,772	6,137	10,559	24%	0.24		0.638		0.155	0.155	**84.5%**
33	1945	B	38,911	8,283	13,603	24%	0.24		0.754		0.179	0.179	**82.1%**
34	1946	B	23,840	6,842	7,966	57%	0.25		0.676		0.170	0.170	**83.0%**
35	1947	D	21,067	8,193	6,929	58%	0.26		0.749		0.192	0.192	**80.8%**
36	1948	B	15,681	5,980	4,915	62%	0.27		0.630		0.170	0.170	**83.0%**
37	1949	D	16,277	8,427	5,138	62%	0.27		0.762		0.205	0.205	**79.5%**
38	1950	B	31,294	8,985	10,754	24%	0.24		0.792		0.192	0.192	**80.8%**
39	1951	A	60,572	8,967	21,704	23%	0.23		0.791		0.181	0.181	**81.9%**
40	1952	W	62,499	7,910	22,425	23%	0.23		0.734		0.167	0.167	**83.3%**
41	1953	W	28,341	6,050	9,650	25%	0.25		0.633		0.156	0.156	**84.4%**
42	1954	A	57,151	7,671	20,424	23%	0.23		0.721		0.165	0.165	**83.5%**
43	1955	D	16,583	7,689	5,252	61%	0.27		0.722		0.193	0.193	**80.7%**
44	1956	W	61,543	8,658	22,067	23%	0.23		0.774		0.177	0.177	**82.3%**
45	1957	A	33,149	8,895	11,448	24%	0.24		0.787		0.190	0.190	**81.0%**
46	1958	W	62,121	7,346	22,283	23%	0.23		0.704		0.161	0.161	**83.9%**
47	1959	B	50,075	5,852	17,778	23%	0.23		0.623		0.144	0.144	**85.6%**
48	1960	D	25,852	9,562	8,718	25%	0.25		0.823		0.205	0.205	**79.5%**
49	1961	D	28,647	9,471	9,764	25%	0.25		0.818		0.201	0.201	**79.9%**
50	1962	B	37,020	9,291	12,896	24%	0.24		0.809		0.193	0.193	**80.7%**
51	1963	W	58,699	12,784	21,004	23%	0.23		0.997		0.228	0.228	**77.2%**
52	1964	D	19,923	7,962	6,501	59%	0.26		0.737		0.191	0.191	**80.9%**
53	1965	W	33,077	10,155	11,421	24%	0.24		0.855		0.206	0.206	**79.4%**
54	1966	B	26,775	6,410	9,064	25%	0.25		0.653		0.162	0.162	**83.8%**
55	1967	W	42,872	7,490	15,084	24%	0.24		0.711		0.167	0.167	**83.3%**
56	1968	B	54,520	5,807	19,440	23%	0.23		0.620		0.143	0.143	**85.7%**
57	1969	W	67,486	4,862	24,290	23%	0.23		0.569		0.129	0.129	**87.1%**
58	1970	W	57,565	5,222	20,579	23%	0.23		0.589		0.135	0.135	**86.5%**
59	1971	W	29,152	8,589	9,953	25%	0.25		0.771		0.189	0.189	**81.1%**
60	1972	B	24,217	8,936	8,107	57%	0.25		0.789		0.198	0.198	**80.2%**
61	1973	A	70,961	8,697	25,590	23%	0.23		0.776		0.176	0.176	**82.4%**
62	1974	W	41,918	8,211	14,727	24%	0.24		0.750		0.177	0.177	**82.3%**
63	1975	W	58,807	6,230	21,044	23%	0.23		0.643		0.147	0.147	**85.3%**
64	1976	C	19,523	7,719	6,352	59%	0.26		0.724		0.188	0.188	**81.2%**
65	1977	C	12,460	2,053	3,710	66%	0.28		0.418		0.119	0.119	**88.1%**
66	1978	A	48,814	7,689	17,306	23%	0.23		0.722		0.168	0.168	**83.2%**
67	1979	B	41,684	5,384	14,640	24%	0.24		0.598		0.141	0.141	**85.9%**
68	1980	A	69,453	4,485	25,026	23%	0.23		0.549		0.124	0.124	**87.6%**
69	1981	D	29,674	5,798	10,148	24%	0.24		0.620		0.152	0.152	**84.8%**
70	1982	W	65,650	7,418	23,603	23%	0.23		0.707		0.161	0.161	**83.9%**
71	1983	W	82,917	4,177	30,061	22%	0.22		0.532		0.119	0.119	**88.1%**
72	1984	W	36,004	5,129	12,516	24%	0.24		0.584		0.140	0.140	**86.0%**
73	1985	D	20,131	8,571	6,579	59%	0.26		0.770		0.199	0.199	**80.1%**
74	1986	W	96,692	12,280	35,213	22%	0.22		0.970		0.216	0.216	**78.4%**
75	1987	D	23,030	5,546	7,663	58%	0.25		0.606		0.154	0.154	**84.6%**
76	1988	C	17,229	6,589	5,493	61%	0.27		0.663		0.176	0.176	**82.4%**
77	1989	D	13,072	2,701	3,939	65%	0.28		0.453		0.127	0.127	**87.3%**
78	1990	C	16,223	7,508	5,118	62%	0.27		0.712		0.192	0.192	**80.8%**
79	1991	C	11,074	1,188	3,192	68%	0.29		0.371		0.108	0.108	**89.2%**
80	1992	C	31,415	8,414	10,799	24%	0.24		0.761		0.185	0.185	**81.5%**

MARCH

Year	Sac River Flow	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	**Calculated Survivability s123**
1922	31,551	6,977	10,850	0.24	0.24		0.773	0.144	0.297	0.297	**70.3%**
1923	17,028	7,530	5,418	0.61	0.27		0.803	0.144	0.320	0.320	**68.0%**
1924	12,100	3,139	3,575	0.66	0.29		0.566	0.144	0.265	0.265	**73.5%**
1925	19,337	8,181	6,282	0.59	0.26		0.838	0.144	0.325	0.325	**67.5%**
1926	16,019	6,701	5,041	0.62	0.27		0.758	0.144	0.310	0.310	**69.0%**
1927	43,863	7,628	15,455	0.23	0.23		0.809	0.144	0.300	0.300	**70.0%**
1928	86,261	7,579	31,312	0.22	0.22		0.806	0.144	0.292	0.292	**70.8%**
1929	13,515	4,668	4,105	0.64	0.28		0.649	0.144	0.285	0.285	**71.5%**
1930	30,087	7,172	10,303	0.24	0.24		0.784	0.144	0.300	0.300	**70.0%**
1931	9,221	3,806	2,499	0.71	0.31		0.602	0.144	0.284	0.284	**71.6%**
1932	10,539	3,676	2,991	0.69	0.30		0.595	0.144	0.277	0.277	**72.3%**
1933	10,392	4,635	2,937	0.69	0.30		0.647	0.144	0.293	0.293	**70.7%**
1934	14,084	3,822	4,317	0.64	0.28		0.603	0.144	0.271	0.271	**72.9%**
1935	24,916	11,206	8,368	0.57	0.25		1.000	0.144	0.358	0.358	**64.2%**
1936	33,194	11,693	11,464	0.24	0.24		1.000	0.144	0.351	0.351	**64.9%**
1937	37,861	6,245	13,210	0.24	0.24		0.734	0.144	0.284	0.284	**71.6%**
1938	78,634	6,017	28,459	0.22	0.22		0.722	0.144	0.274	0.274	**72.6%**
1939	16,394	6,668	5,181	0.61	0.27		0.757	0.144	0.309	0.309	**69.1%**
1940	59,166	8,880	21,178	0.23	0.23		0.876	0.144	0.312	0.312	**68.8%**
1941	58,581	8,067	20,959	0.23	0.23		0.832	0.144	0.302	0.302	**69.8%**
1942	27,095	7,432	9,183	0.25	0.25		0.798	0.144	0.306	0.306	**69.4%**
1943	64,598	5,871	23,210	0.23	0.23		0.714	0.144	0.274	0.274	**72.6%**
1944	25,094	6,961	8,435	0.25	0.25		0.773	0.144	0.301	0.301	**69.9%**
1945	27,030	7,319	9,159	0.25	0.25		0.792	0.144	0.305	0.305	**69.5%**
1946	23,777	7,872	7,943	0.57	0.25		0.822	0.144	0.315	0.315	**68.5%**
1947	22,102	6,668	7,316	0.58	0.25		0.757	0.144	0.300	0.300	**70.0%**
1948	19,110	7,628	6,197	0.60	0.26		0.809	0.144	0.318	0.318	**68.2%**
1949	41,716	11,336	14,652	0.24	0.24		1.000	0.144	0.346	0.346	**65.4%**
1950	22,151	7,058	7,334	0.58	0.25		0.778	0.144	0.306	0.306	**69.4%**
1951	29,583	7,953	10,114	0.24	0.24		0.826	0.144	0.311	0.311	**68.9%**
1952	57,524	7,140	20,564	0.23	0.23		0.782	0.144	0.291	0.291	**70.9%**
1953	24,899	7,270	8,362	0.57	0.25		0.789	0.144	0.306	0.306	**69.4%**
1954	49,538	7,855	17,577	0.23	0.23		0.821	0.144	0.301	0.301	**69.9%**
1955	18,752	7,628	6,063	0.60	0.26		0.809	0.144	0.318	0.318	**68.2%**
1956	36,674	6,766	12,766	0.24	0.24		0.762	0.144	0.292	0.292	**70.8%**
1957	44,383	7,628	15,649	0.23	0.23		0.809	0.144	0.300	0.300	**70.0%**
1958	93,612	7,530	34,061	0.22	0.22		0.803	0.144	0.291	0.291	**70.9%**
1959	22,021	6,131	7,286	0.58	0.26		0.728	0.144	0.293	0.293	**70.7%**
1960	20,329	6,294	6,653	0.59	0.26		0.737	0.144	0.297	0.297	**70.3%**
1961	20,541	7,920	6,732	0.59	0.26		0.824	0.144	0.320	0.320	**68.0%**
1962	26,265	7,611	8,873	0.25	0.25		0.808	0.144	0.309	0.309	**69.1%**
1963	32,641	9,254	11,258	0.24	0.24		0.896	0.144	0.326	0.326	**67.4%**
1964	19,175	7,693	6,221	0.60	0.26		0.812	0.144	0.318	0.318	**68.2%**
1965	21,126	7,628	6,951	0.58	0.26		0.809	0.144	0.315	0.315	**68.5%**
1966	28,689	7,644	9,780	0.25	0.25		0.809	0.144	0.308	0.308	**69.2%**
1967	54,483	6,489	19,426	0.23	0.23		0.747	0.144	0.283	0.283	**71.7%**
1968	36,788	7,107	12,809	0.24	0.24		0.780	0.144	0.296	0.296	**70.4%**
1969	45,326	5,302	16,002	0.23	0.23		0.683	0.144	0.270	0.270	**73.0%**
1970	35,812	7,172	12,444	0.24	0.24		0.784	0.144	0.297	0.297	**70.3%**
1971	50,953	7,920	18,107	0.23	0.23		0.824	0.144	0.302	0.302	**69.8%**
1972	32,933	7,872	11,367	0.24	0.24		0.822	0.144	0.308	0.308	**69.2%**
1973	47,554	7,937	16,835	0.23	0.23		0.825	0.144	0.303	0.303	**69.7%**
1974	100,199	7,888	36,524	0.22	0.22		0.823	0.144	0.295	0.295	**70.5%**
1975	75,999	8,132	27,474	0.23	0.23		0.836	0.144	0.300	0.300	**70.0%**
1976	18,361	6,343	5,917	0.60	0.26		0.739	0.144	0.301	0.301	**69.9%**
1977	7,351	1,870	1,799	0.76	0.33		0.498	0.144	0.259	0.259	**74.1%**
1978	45,619	6,017	16,111	0.23	0.23		0.722	0.144	0.279	0.279	**72.1%**
1979	32,494	7,172	11,203	0.24	0.24		0.784	0.144	0.299	0.299	**70.1%**
1980	36,479	5,172	12,693	0.24	0.24		0.676	0.144	0.271	0.271	**72.9%**
1981	32,137	7,107	11,069	0.24	0.24		0.780	0.144	0.298	0.298	**70.2%**
1982	69,087	7,579	24,889	0.23	0.23		0.806	0.144	0.294	0.294	**70.6%**
1983	81,935	4,684	29,694	0.22	0.22		0.650	0.144	0.258	0.258	**74.2%**
1984	36,495	7,237	12,699	0.24	0.24		0.787	0.144	0.298	0.298	**70.2%**
1985	22,297	7,676	7,389	0.58	0.25		0.811	0.144	0.314	0.314	**68.6%**
1986	72,535	8,408	26,178	0.23	0.23		0.851	0.144	0.304	0.304	**69.6%**
1987	29,974	6,457	10,260	0.24	0.24		0.745	0.144	0.291	0.291	**70.9%**
1988	10,929	3,692	3,137	0.68	0.29		0.596	0.144	0.277	0.277	**72.3%**
1989	41,862	10,718	14,706	0.24	0.24		0.975	0.144	0.340	0.340	**66.0%**
1990	13,987	5,562	4,281	0.64	0.28		0.697	0.144	0.297	0.297	**70.3%**
1991	29,681	11,303	10,151	0.24	0.24		1.000	0.144	0.354	0.354	**64.6%**
1992	20,102	8,246	6,568	0.59	0.26		0.842	0.144	0.325	0.325	**67.5%**

APRIL

Year	Sac River Flow	CVP + SWF Exports	Calculated Steamboat & Sutter Slough flows	Percent	X-Channel Closed	Water temp f	m1	m2	m3	m23	m123	**Calculated Survivability s123**	**Weighted Total Survival**
1922	22,822	8,369	7,585	0.58	0.25	58.5	0.002	0.911	0.256	0.422	0.424	**57.6%**	**67.73%**
1923	23,007	7,966	7,655	0.58	0.25	58.3	0.000	0.886	0.250	0.411	0.411	**58.9%**	**67.55%**
1924	8,134	2,790	2,092	0.74	0.32	61.5	0.128	0.664	0.352	0.451	0.521	**47.9%**	**66.62%**
1925	22,251	6,924	7,372	0.58	0.25	59.1	0.027	0.844	0.275	0.420	0.436	**56.4%**	**65.52%**
1926	20,049	6,420	6,548	0.59	0.26	61.6	0.133	0.862	0.355	0.486	0.554	**44.6%**	**63.31%**
1927	48,215	8,067	17,082	0.23	0.23	56.8	0.000	0.865	0.202	0.356	0.356	**64.4%**	**69.59%**
1928	29,208	7,630	9,974	0.25	0.25	58.7	0.011	0.875	0.262	0.413	0.419	**58.1%**	**68.33%**
1929	9,092	2,958	2,450	0.72	0.31	56.3	0.000	0.580	0.186	0.307	0.307	**69.3%**	**71.95%**
1930	12,638	3,899	3,777	0.65	0.28	59.6	0.048	0.690	0.291	0.404	0.433	**56.7%**	**67.52%**
1931	9,193	2,958	2,488	0.71	0.31	62.8	0.183	0.697	0.393	0.486	0.580	**42.0%**	**64.22%**
1932	13,092	5,378	3,946	0.65	0.28	58.9	0.019	0.757	0.269	0.406	0.417	**58.3%**	**68.62%**
1933	12,739	4,117	3,814	0.65	0.28	60.1	0.069	0.711	0.307	0.421	0.461	**53.9%**	**66.98%**
1934	12,856	3,563	3,858	0.65	0.28	63.6	0.217	0.744	0.419	0.511	0.617	**38.3%**	**63.72%**
1935	24,637	9,075	8,264	0.57	0.25	58.9	0.019	0.957	0.269	0.441	0.452	**54.8%**	**63.93%**
1936	21,024	8,369	6,913	0.58	0.26	59.7	0.053	0.933	0.294	0.458	0.487	**51.3%**	**62.45%**
1937	21,965	7,966	7,265	0.58	0.26	58.8	0.015	0.895	0.266	0.426	0.435	**56.5%**	**68.68%**
1938	47,173	7,714	16,693	0.23	0.23	56.3	0.000	0.837	0.186	0.337	0.337	**66.3%**	**72.55%**
1939	12,234	4,134	3,626	0.66	0.29	63.3	0.204	0.769	0.409	0.512	0.612	**38.8%**	**62.01%**
1940	41,728	8,504	14,656	0.24	0.24	57.4	0.000	0.899	0.221	0.381	0.381	**61.9%**	**67.83%**
1941	42,367	9,310	14,895	0.24	0.24	56.9	0.000	0.934	0.205	0.376	0.376	**62.4%**	**68.82%**
1942	43,308	8,907	15,247	0.23	0.23	56.5	0.000	0.905	0.192	0.359	0.359	**64.1%**	**69.99%**
1943	29,410	9,125	10,049	0.24	0.24	58.8	0.015	0.958	0.266	0.435	0.443	**55.7%**	**69.19%**
1944	9,814	4,235	2,721	0.70	0.30	58.4	0.000	0.686	0.253	0.383	0.383	**61.7%**	**69.30%**
1945	11,747	6,420	3,443	0.67	0.29	60.6	0.090	0.844	0.323	0.473	0.521	**47.9%**	**64.69%**
1946	12,218	5,949	3,619	0.66	0.29	60.7	0.095	0.820	0.326	0.467	0.518	**48.2%**	**64.30%**
1947	13,797	4,941	4,210	0.64	0.28	62.5	0.170	0.798	0.384	0.499	0.584	**41.6%**	**62.85%**
1948	22,788	6,789	7,573	0.58	0.25	56.6	0.000	0.792	0.195	0.347	0.347	**65.3%**	**69.28%**
1949	13,209	5,075	3,990	0.65	0.28	61.7	0.137	0.791	0.358	0.480	0.551	**44.9%**	**61.10%**
1950	18,772	6,184	6,071	0.60	0.26	61.3	0.120	0.844	0.346	0.476	0.539	**46.1%**	**63.91%**
1951	14,738	6,353	4,562	0.63	0.27	59.9	0.061	0.828	0.301	0.445	0.479	**52.1%**	**65.55%**
1952	56,652	7,848	20,238	0.23	0.23	55.5	0.000	0.829	0.160	0.314	0.314	**68.6%**	**71.84%**
1953	16,184	5,647	5,103	0.62	0.27	58.8	0.015	0.770	0.266	0.401	0.410	**59.0%**	**68.24%**
1954	39,863	7,361	13,959	0.24	0.24	58.4	0.000	0.855	0.253	0.395	0.395	**60.5%**	**68.81%**
1955	9,478	3,664	2,595	0.71	0.30	56.4	0.000	0.620	0.189	0.320	0.320	**68.0%**	**69.76%**
1956	20,436	7,966	6,693	0.59	0.26	59.7	0.053	0.911	0.294	0.454	0.482	**51.8%**	**66.60%**
1957	21,209	6,453	6,982	0.58	0.26	60.5	0.086	0.844	0.320	0.454	0.501	**49.9%**	**65.39%**
1958	52,282	9,478	18,603	0.23	0.23	57.4	0.000	0.952	0.221	0.390	0.390	**61.0%**	**69.62%**
1959	10,487	3,764	2,972	0.69	0.30	63	0.191	0.744	0.400	0.502	0.597	**40.3%**	**63.51%**
1960	13,764	4,050	4,198	0.64	0.28	59.5	0.044	0.696	0.288	0.402	0.428	**57.2%**	**67.55%**
1961	12,806	3,529	3,839	0.65	0.28	60.1	0.069	0.679	0.307	0.412	0.453	**54.7%**	**65.58%**
1962	10,739	4,840	3,066	0.68	0.29	61.8	0.141	0.780	0.362	0.485	0.557	**44.3%**	**63.15%**
1963	69,457	8,100	25,027	0.23	0.23	53.7	0.000	0.811	0.103	0.263	0.263	**73.7%**	**70.55%**
1964	8,957	3,496	2,400	0.72	0.31	59.3	0.036	0.663	0.282	0.399	0.421	**57.9%**	**66.75%**
1965	45,661	8,957	16,127	0.23	0.23	56.9	0.000	0.914	0.205	0.371	0.371	**62.9%**	**68.25%**
1966	16,520	5,613	5,228	0.61	0.27	61.9	0.145	0.824	0.365	0.488	0.562	**43.8%**	**63.50%**
1967	39,930	8,487	13,984	0.24	0.24	53.8	0.000	0.833	0.106	0.278	0.278	**72.2%**	**73.35%**
1968	15,596	5,243	4,883	0.62	0.27	61.5	0.128	0.797	0.352	0.472	0.540	**46.0%**	**65.06%**
1969	44,787	7,512	15,800	0.23	0.23	56.4	0.000	0.827	0.189	0.338	0.338	**66.2%**	**72.77%**
1970	16,604	6,588	5,260	0.61	0.27	58.8	0.015	0.821	0.266	0.414	0.423	**57.7%**	**68.61%**
1971	21,814	6,554	7,208	0.58	0.26	58.7	0.011	0.817	0.262	0.404	0.410	**59.0%**	**68.04%**
1972	12,453	4,739	3,707	0.66	0.28	58.5	0.002	0.715	0.256	0.387	0.388	**61.2%**	**68.23%**
1973	19,511	8,100	6,347	0.59	0.26	61.3	0.120	0.947	0.346	0.502	0.562	**43.8%**	**63.60%**
1974	33,208	9,327	11,470	0.24	0.24	56.8	0.000	0.933	0.202	0.378	0.378	**62.2%**	**69.54%**
1975	25,763	8,773	8,685	0.25	0.25	56.8	0.000	0.903	0.202	0.376	0.376	**62.4%**	**69.69%**
1976	9,428	3,008	2,576	0.71	0.30	58.9	0.019	0.629	0.269	0.378	0.390	**61.0%**	**68.71%**
1977	9,125	2,991	2,463	0.72	0.31	64.3	0.246	0.725	0.441	0.528	0.645	**35.5%**	**64.35%**
1978	38,703	7,512	13,525	0.24	0.24	56.9	0.000	0.836	0.205	0.355	0.355	**64.5%**	**71.26%**
1979	17,696	7,092	5,668	0.60	0.26	59.8	0.057	0.866	0.298	0.448	0.479	**52.1%**	**66.75%**
1980	19,814	6,873	6,460	0.59	0.26	57.1	0.000	0.806	0.211	0.365	0.365	**63.5%**	**71.96%**
1981	16,990	5,445	5,404	0.61	0.27	61.5	0.128	0.807	0.352	0.473	0.541	**45.9%**	**64.80%**
1982	75,843	8,941	27,415	0.23	0.23	54.1	0.000	0.863	0.115	0.284	0.284	**71.6%**	**72.62%**
1983	68,298	6,958	24,593	0.23	0.23	55	0.000	0.772	0.144	0.287	0.287	**71.3%**	**75.16%**
1984	17,881	6,857	5,738	0.60	0.26	59.7	0.053	0.851	0.294	0.442	0.471	**52.9%**	**67.08%**
1985	12,335	4,101	3,663	0.66	0.28	60.8	0.099	0.722	0.330	0.441	0.497	**50.3%**	**64.62%**
1986	20,536	9,680	6,731	0.59	0.26	60.4	0.082	1.000	0.317	0.493	0.535	**46.5%**	**63.83%**
1987	12,285	3,479	3,645	0.66	0.29	65.7	0.305	0.777	0.486	0.569	0.700	**30.0%**	**60.40%**
1988	8,621	2,857	2,274	0.73	0.31	59.9	0.061	0.639	0.301	0.406	0.442	**55.8%**	**68.68%**
1989	23,629	5,647	7,887	0.57	0.25	61.4	0.124	0.817	0.349	0.467	0.533	**46.7%**	**62.98%**
1990	12,453	3,529	3,707	0.66	0.28	61.6	0.133	0.706	0.355	0.455	0.527	**47.3%**	**64.75%**
1991	15,276	4,252	4,763	0.62	0.27	60.8	0.099	0.730	0.330	0.439	0.494	**50.6%**	**63.62%**
1992	12,470	3,731	3,714	0.66	0.28	61.2	0.116	0.710	0.342	0.447	0.511	**48.9%**	**63.76%**
												Average:	**66.13%**

Formulas: Winter Run Salmon Smolt Survival Model

C10 ='Study 485 Flow Data'!E7
D10 ='Study 485 Flow Data'!O7 (HIDDEN)
E10 ='Study 485 Flow Data'!Y7 (HIDDEN)
F10 =(D9+E9)
G10 =0.374*C9-950
H10 =IF(C9>$G$2,(0.133*C9+829)/(C9-G9),(0.293*C9+2090)/(C9-G9))
I10 =(0.133*C9+829)/(C9-G9)
K10 =(-0.5916024)+(0.017968*$M$1)+(0.000054*F9)
M10 =(K9*I9)+L9*(1-I9)
N10 =J9+M9-(J9*M9)
O10 =1-N9

Q10 ='Study 485 Flow Data'!F7
R10 ='Study 485 Flow Data'!P7 (HIDDEN)
S10 ='Study 485 Flow Data'!Z7 (HIDDEN)
T10 =(R9+S9)
U10 =0.374*Q9-950
V10 =IF(Q9>$G$2,(0.133*Q9+829)/(Q9-U9),(0.293*Q9+2090)/(Q9-U9))
Y10 =(0.133*Q9+829)/(Q9-U9)
W10 =IF(((-0.5916024)+(0.017968*$M$2)+(0.000054*T9))>1,1,((-0.5916024)+(0.017968*$M$2)+(0.000054*T9)))
Z10 =-1.613493+(0.0319584*$M$2)
AA10 =(Y9*W9)+Z9*(1-W9)
AB10 =X9+AA9-(X9*AA9)
AC10 =1-AB9

AE10 ='Study 485 Flow Data'!G7
AF10 ='Study 485 Flow Data'!Q7 (HIDDEN)
AG10 ='Study 485 Flow Data'!AA7 (HIDDEN)
AH10 =AF9+AG9
AI10 =0.374*AE9-950
AJ10 =IF(AE9>$G$2,(0.133*AE9+829)/(AE9-AI9),(0.293*AE9+2090)/(AE9-AI9))
AK10 =(0.133*AE9+829)/(AE9-AI9)
AM10 =IF((-2.45925+(0.0420748*AL9))<0,0,(-2.45925+(0.0420748*AL9)))
AN10 =IF(((-0.5916024)+(0.017968*AL9)+(0.000054*AH9))>1,1,((-0.5916024)+(0.017968*AL9)+(0.000054*AH
AO10 =-1.613493+(0.0319584*AL9)
AP10 =(AN9*AK9)+(AO9*(1-AK9))
AQ10 =AM9+AP9-(AM9*AP9)
AR10 =1-AQ9
AS10 =(0.13*O9)+(0.57*AC9)+(0.3*AR9)

1 Study 519a Winter Run Smolt Survival Model — February Water Temp 50 F — April Water Temperatures based on limited historical data from USBR

2 Cross Channel Closed Over 25000 cfs — March Water Temp 55 F

3 Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

	A	B	C	F	G	H	I	J	K	L	M	N	O	Q	T	U	V	W	X	Y	Z	AA	AB	AC	AE	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS
4																																					
5																											Calculated										
6			FEBRUARY		Calculated									MARCH		Calculated									APRIL		Steamboat										
7		Water	Sac		Sutter &								Calculated	Sac		Sutter &								Calculated	Sac		& Sutter									Calculated	Weighted
8		Year	River	CVP + SWP	Steamboat		X-Channel		Calculated Mortality				Survivability	River	CVP + SWP	Steamboat		X-Channel		Calculated Mortality				Survivability	River	CVP + SWF	Slough		X-Channel	Water		Calculated Mortality				Survivability	Total
9	Year	Type	Flow	Exports	Slough Q	Percent	Closed	m1	m2	m3	m23	m123	s123	Flow	exports	Slough Q	percent	Closed	m1	m2	m3	m23	m123	s123	Flow	Exports	flows	Percent	Closed	temp f	m1	m2	m3	m23	m123	s123	Survival
10	1922	A	34,463	10,515	11,939	24%	0.24		0.875		0.210	0.210	79.0%	31,551	7,953	10,850	0.24	0.24		0.826	0.144	0.310	0.310	69.0%	22,822	9,680	7,585	0.58	0.25	58.5	0.002	0.982	0.256	0.440	0.441	55.9%	66.37%
11	1923	B	24,092	6,752	8,060	57%	0.25		0.671		0.169	0.169	83.1%	17,939	7,693	5,759	0.60	0.26		0.812	0.144	0.320	0.320	68.0%	22,772	10,335	7,567	0.58	0.25	58.3	0.000	1.000	0.250	0.440	0.440	56.0%	66.33%
12	1924	C	16,898	8,832	5,370	61%	0.27		0.784		0.209	0.209	79.1%	12,409	3,757	3,691	0.66	0.28		0.600	0.144	0.274	0.274	72.6%	9,613	4,369	2,645	0.70	0.30	61.5	0.128	0.749	0.352	0.472	0.540	46.0%	65.48%
13	1925	D	44,709	12,046	15,771	23%	0.23		0.957		0.224	0.224	77.6%	31,307	7,709	10,759	0.24	0.24		0.813	0.144	0.307	0.307	69.3%	20,335	9,579	6,655	0.59	0.26	59.1	0.027	0.988	0.275	0.459	0.474	52.6%	65.38%
14	1926	D	35,958	11,920	12,498	24%	0.24		0.950		0.227	0.227	77.3%	18,768	7,628	6,069	0.60	0.26		0.809	0.144	0.318	0.318	68.2%	17,663	8,705	5,656	0.61	0.26	61.6	0.133	0.985	0.355	0.522	0.585	41.5%	61.35%
15	1927	W	86,465	9,237	31,388	22%	0.22		0.806		0.180	0.180	82.0%	43,863	7,497	15,455	0.23	0.23		0.801	0.144	0.298	0.298	70.2%	48,215	9,865	17,082	0.23	0.23	56.8	0.000	0.962	0.202	0.379	0.379	62.1%	69.29%
16	1928	A	25,521	8,432	8,595	25%	0.25		0.762		0.190	0.190	81.0%	86,229	8,750	31,300	0.22	0.22		0.869	0.144	0.307	0.307	69.3%	29,208	10,184	9,974	0.25	0.25	58.7	0.011	1.000	0.262	0.443	0.449	55.1%	66.58%
17	1929	C	17,538	9,237	5,609	61%	0.27		0.806		0.214	0.214	78.6%	14,361	6,148	4,421	0.63	0.28		0.729	0.144	0.305	0.305	69.5%	9,613	3,529	2,645	0.70	0.30	56.3	0.000	0.611	0.186	0.314	0.314	68.6%	70.40%
18	1930	D	16,169	7,184	5,097	62%	0.27		0.695		0.187	0.187	81.3%	30,348	9,238	10,400	0.24	0.24		0.895	0.144	0.327	0.327	67.3%	14,604	6,285	4,512	0.63	0.27	59.6	0.048	0.819	0.291	0.436	0.463	53.7%	65.00%
19	1931	C	11,092	5,492	3,198	68%	0.29		0.603		0.176	0.176	82.4%	8,880	3,741	2,371	0.72	0.31		0.599	0.144	0.285	0.285	71.5%	11,142	4,857	3,217	0.68	0.29	62.8	0.183	0.799	0.393	0.512	0.601	39.9%	63.46%
20	1932	D	13,995	10,101	4,284	64%	0.28		0.852		0.236	0.236	76.4%	11,677	5,172	3,417	0.67	0.29		0.676	0.144	0.298	0.298	70.2%	14,066	7,058	4,311	0.64	0.28	58.9	0.019	0.848	0.269	0.429	0.440	56.0%	66.77%
21	1933	C	12,730	7,094	3,811	65%	0.28		0.690		0.195	0.195	80.5%	9,937	4,700	2,766	0.70	0.30		0.650	0.144	0.296	0.296	70.4%	15,327	6,605	4,782	0.62	0.27	60.1	0.069	0.845	0.307	0.453	0.491	50.9%	65.85%
22	1934	C	12,748	6,230	3,818	65%	0.28		0.643		0.182	0.182	81.8%	14,588	4,570	4,506	0.63	0.27		0.643	0.144	0.281	0.281	71.9%	15,276	6,067	4,763	0.62	0.27	63.6	0.217	0.879	0.419	0.544	0.643	35.7%	62.31%
23	1935	B	12,334	5,330	3,663	66%	0.28		0.595		0.169	0.169	83.1%	24,916	11,368	8,368	0.57	0.25		1.000	0.144	0.358	0.358	64.2%	24,318	10,537	8,145	0.57	0.25	58.9	0.019	1.000	0.269	0.453	0.463	53.7%	63.48%
24	1936	B	49,269	12,396	17,477	23%	0.23		0.976		0.227	0.227	77.3%	33,698	8,522	11,653	0.24	0.24		0.857	0.144	0.316	0.316	68.4%	21,528	9,932	7,101	0.58	0.26	59.7	0.053	1.000	0.294	0.475	0.503	49.7%	63.97%
25	1937	B	33,203	9,183	11,468	24%	0.24		0.803		0.194	0.194	80.6%	38,203	7,937	13,338	0.24	0.24		0.825	0.144	0.306	0.306	69.4%	23,259	8,067	7,749	0.57	0.25	58.8	0.015	0.901	0.266	0.426	0.435	56.5%	67.00%
26	1938	W	82,269	8,301	29,819	22%	0.22		0.755		0.169	0.169	83.1%	78,634	8,294	28,459	0.22	0.22		0.845	0.144	0.302	0.302	69.8%	47,173	8,386	16,693	0.23	0.23	56.3	0.000	0.873	0.186	0.346	0.346	65.4%	70.22%
27	1939	D	19,032	6,644	6,168	60%	0.26		0.666		0.174	0.174	82.6%	16,394	6,717	5,181	0.61	0.27		0.759	0.144	0.309	0.309	69.1%	14,486	6,453	4,468	0.63	0.28	63.3	0.204	0.894	0.409	0.543	0.636	36.4%	61.03%
28	1940	A	39,134	12,396	13,686	24%	0.24		0.976		0.231	0.231	76.9%	58,939	8,912	21,093	0.23	0.23		0.878	0.144	0.312	0.312	68.8%	41,728	10,453	14,656	0.24	0.24	57.4	0.000	1.000	0.221	0.404	0.404	59.6%	67.06%
29	1941	W	75,031	10,588	27,112	23%	0.23		0.879		0.198	0.198	80.2%	58,581	8,164	20,959	0.23	0.23		0.838	0.144	0.303	0.303	69.7%	42,367	9,411	14,895	0.24	0.24	56.9	0.000	0.939	0.205	0.378	0.378	62.2%	68.82%
30	1942	W	78,344	8,337	28,351	23%	0.23		0.757		0.170	0.170	83.0%	27,095	8,327	9,183	0.25	0.25		0.846	0.144	0.318	0.318	68.2%	43,308	9,747	15,247	0.23	0.23	56.5	0.000	0.950	0.192	0.370	0.370	63.0%	68.56%
31	1943	W	52,253	8,373	18,593	23%	0.23		0.759		0.175	0.175	82.5%	64,598	8,376	23,210	0.23	0.23		0.849	0.144	0.305	0.305	69.5%	29,410	9,764	10,049	0.24	0.24	58.8	0.015	0.992	0.266	0.444	0.452	54.8%	66.80%
32	1944	D	28,268	8,015	9,622	25%	0.25		0.740		0.182	0.182	81.8%	25,094	8,327	8,435	0.25	0.25		0.846	0.144	0.320	0.320	68.0%	10,705	5,596	3,054	0.68	0.29	58.4	0.000	0.760	0.253	0.402	0.402	59.8%	67.34%
33	1945	B	40,045	8,337	14,027	24%	0.24		0.757		0.179	0.179	82.1%	26,038	8,473	8,788	0.25	0.25		0.854	0.144	0.321	0.321	67.9%	12,520	7,210	3,733	0.66	0.28	60.6	0.090	0.887	0.323	0.483	0.530	47.0%	63.49%
34	1946	B	24,074	8,589	8,054	57%	0.25		0.771		0.194	0.194	80.6%	23,728	8,750	7,924	0.57	0.25		0.869	0.144	0.327	0.327	67.3%	12,218	6,369	3,619	0.66	0.29	60.7	0.095	0.843	0.326	0.474	0.524	47.6%	63.13%
35	1947	D	21,067	8,283	6,929	58%	0.26		0.754		0.194	0.194	80.6%	22,297	8,278	7,389	0.58	0.25		0.844	0.144	0.322	0.322	67.8%	15,444	5,748	4,826	0.62	0.27	62.5	0.170	0.842	0.384	0.508	0.592	40.8%	61.35%
36	1948	B	15,664	5,928	4,908	62%	0.27		0.627		0.170	0.170	83.0%	19,061	7,741	6,179	0.60	0.26		0.815	0.144	0.319	0.319	68.1%	22,788	9,983	7,573	0.58	0.25	56.6	0.000	0.964	0.195	0.390	0.390	61.0%	67.88%
37	1949	D	16,187	8,553	5,104	62%	0.27		0.769		0.207	0.207	79.3%	41,765	10,734	14,670	0.24	0.24		0.976	0.144	0.340	0.340	66.0%	13,209	6,252	3,990	0.65	0.28	61.7	0.137	0.855	0.358	0.498	0.566	43.4%	60.93%
38	1950	B	35,220	11,938	12,222	24%	0.24		0.951		0.228	0.228	77.2%	22,411	9,221	7,432	0.58	0.25		0.895	0.144	0.335	0.335	66.5%	19,024	8,638	6,165	0.60	0.26	61.3	0.120	0.976	0.346	0.510	0.569	43.1%	60.86%
39	1951	A	60,572	9,057	21,704	23%	0.23		0.796		0.182	0.182	81.8%	30,071	9,026	10,297	0.24	0.24		0.884	0.144	0.325	0.325	67.5%	18,083	8,268	5,813	0.60	0.26	59.9	0.061	0.931	0.301	0.467	0.499	50.1%	64.13%
40	1952	W	62,499	8,015	22,425	23%	0.23		0.740		0.169	0.169	83.1%	57,524	8,262	20,564	0.23	0.23		0.843	0.144	0.304	0.304	69.6%	56,652	8,873	20,238	0.23	0.23	55.5	0.000	0.885	0.160	0.327	0.327	67.3%	70.65%
41	1953	W	28,341	8,427	9,650	25%	0.25		0.762		0.187	0.187	81.3%	24,899	7,725	8,362	0.57	0.25		0.814	0.144	0.312	0.312	68.8%	16,184	7,260	5,103	0.62	0.27	58.8	0.015	0.857	0.266	0.425	0.433	56.7%	66.79%
42	1954	A	57,151	9,003	20,424	23%	0.23		0.793		0.182	0.182	81.8%	49,538	9,010	17,577	0.23	0.23		0.883	0.144	0.316	0.316	68.4%	39,863	10,453	13,959	0.24	0.24	58.4	0.000	1.000	0.253	0.430	0.430	57.0%	66.75%
43	1955	D	16,295	8,031	5,144	62%	0.27		0.740		0.199	0.199	80.1%	18,345	7,432	5,911	0.60	0.26		0.798	0.144	0.316	0.316	68.4%	9,478	4,638	2,595	0.71	0.30	56.4	0.000	0.672	0.189	0.336	0.336	66.4%	69.33%
44	1956	W	61,543	8,745	22,067	23%	0.23		0.779		0.178	0.178	82.2%	36,674	8,912	12,766	0.24	0.24		0.878	0.144	0.319	0.319	68.1%	20,436	9,310	6,693	0.59	0.26	59.7	0.053	0.984	0.294	0.472	0.500	50.0%	64.48%
45	1957	A	33,149	8,985	11,448	24%	0.24		0.792		0.191	0.191	80.9%	44,383	8,668	15,649	0.23	0.23		0.865	0.144	0.313	0.313	68.7%	24,503	8,621	8,214	0.57	0.25	60.5	0.086	0.961	0.320	0.481	0.526	47.4%	63.90%
46	1958	W	61,130	8,409	21,913	23%	0.23		0.761		0.174	0.174	82.6%	93,612	8,392	34,061	0.22	0.22		0.850	0.144	0.302	0.302	69.8%	52,282	9,764	18,603	0.23	0.23	57.4	0.000	0.967	0.221	0.393	0.393	60.7%	68.75%
47	1959	B	50,075	8,409	17,778	23%	0.23		0.761		0.176	0.176	82.4%	23,354	7,384	7,785	0.57	0.25		0.795	0.144	0.309	0.309	69.1%	12,705	5,613	3,802	0.65	0.28	63	0.191	0.843	0.400	0.525	0.616	38.4%	61.62%
48	1960	D	25,121	11,283	8,445	25%	0.25		0.916		0.229	0.229	77.1%	21,565	7,302	7,115	0.58	0.26		0.791	0.144	0.310	0.310	69.0%	14,201	4,353	4,361	0.64	0.28	59.5	0.044	0.713	0.288	0.405	0.432	56.8%	66.42%
49	1961	D	31,168	11,470	10,707	24%	0.24		0.926		0.225	0.225	77.5%	20,752	8,115	6,811	0.59	0.26		0.835	0.144	0.322	0.322	67.8%	13,495	4,185	4,097	0.64	0.28	60.1	0.069	0.714	0.307	0.421	0.461	53.9%	64.89%
50	1962	B	44,421	12,838	15,663	23%	0.23		1.000		0.234	0.234	76.6%	27,599	7,872	9,372	0.25	0.25		0.822	0.144	0.311	0.311	68.9%	17,612	8,134	5,637	0.61	0.26	61.8	0.141	0.958	0.362	0.520	0.587	41.3%	61.58%
51	1963	W	57,349	12,874	20,499	23%	0.23		1.002		0.230	0.230	77.0%	32,641	8,668	11,258	0.24	0.24		0.865	0.144	0.318	0.318	68.2%	69,457	10,218	25,027	0.23	0.23	53.7	0.000	0.925	0.103	0.289	0.289	71.1%	70.19%
52	1964	D	18,932	7,754	6,131	60%	0.26		0.725		0.190	0.190	81.0%	18,557	7,579	5,990	0.60	0.26		0.806	0.144	0.318	0.318	68.2%	9,125	4,369	2,463	0.72	0.31	59.3	0.036	0.710	0.282	0.413	0.434	56.6%	66.40%
53	1965	W	33,077	9,813	11,421	24%	0.24		0.837		0.202	0.202	79.8%	21,126	8,571	6,951	0.58	0.26		0.859	0.144	0.328	0.328	67.2%	45,661	9,747	16,127	0.23	0.23	56.9	0.000	0.957	0.205	0.381	0.381	61.9%	67.27%
54	1966	B	26,775	8,751	9,064	25%	0.25		0.779		0.193	0.193	80.7%	28,689	8,750	9,780	0.25	0.25		0.869	0.144	0.322	0.322	67.8%	12,991	5,932	3,909	0.65	0.28	61.9	0.145	0.841	0.365	0.499	0.572	42.8%	61.97%
55	1967	W	43,106	7,581	15,172	23%	0.23		0.716		0.168	0.168	83.2%	54,483	7,611	19,426	0.23	0.23		0.808	0.144	0.297	0.297	70.3%	39,930	9,646	13,984	0.24	0.24	53.8	0.000	0.896	0.106	0.293	0.293	70.7%	72.10%
56	1968	B	54,520	6,763	19,440	23%	0.23		0.672		0.155	0.155	84.5%	36,788	7,205	12,809	0.24	0.24		0.786	0.144	0.297	0.297	70.3%	19,646	8,134	6,397	0.59	0.26	61.5	0.128	0.953	0.352	0.508	0.571	42.9%	63.91%
57	1969	W	67,486	7,563	24,290	23%	0.23		0.715		0.162	0.162	83.8%	45,326	6,961	16,002	0.23	0.23		0.773	0.144	0.291	0.291	70.9%	44,787	7,613	15,800	0.23	0.23	56.4	0.000	0.833	0.189	0.340	0.340	66.0%	71.10%
58	1970	W	57,565	5,330	20,579	23%	0.23		0.595		0.136	0.136	86.4%	35,812	7,253	12,444	0.24	0.24		0.788	0.144	0.298	0.298	70.2%	19,629	8,571	6,391	0.59	0.26	58.8	0.015	0.928	0.266	0.438	0.446	55.4%	67.84%
59	1971	W	29,116	8,751	9,939	25%	0.25		0.779		0.191	0.191	80.9%	50,970	9,026	18,113	0.23	0.23		0.884	0.144	0.316	0.316	68.4%	25,713	9,193	8,666	0.25	0.25	58.7	0.011	0.960	0.262	0.436	0.442	55.8%	66.27%
60	1972	B	24,217	8,640	8,107	57%	0.25		0.773		0.194	0.194	80.6%	32,933	8,636	11,367	0.24	0.24		0.863	0.144	0.318	0.318	68.2%	14,402	6,201	4,436	0.63	0.28	58.5	0.002	0.794	0.256	0.404	0.406	59.4%	67.19%
61	1973	A	70,961	8,787	25,590	23%	0.23		0.781		0.177	0.177	82.3%	47,554	8,782	16,835	0.23	0.23		0.871	0.144	0.313	0.313	68.7%	19,511	9,663	6,347	0.59	0.26	61.3	0.120	1.000	0.346	0.516	0.574	42.6%	62.62%
62	1974	W	41,918	8,733	14,727	24%	0.24		0.778		0.183	0.183	81.7%	100,199	8,750	36,524	0.22	0.22		0.869	0.144	0.305	0.305	69.5%	33,208	10,201	11,470	0.24	0.24	56.8	0.000	0.980	0.202	0.390	0.390	61.0%	68.53%
63	1975	W	58,807	8,967	21,044	23%	0.23		0.791		0.181	0.181	81.9%	75,999	9,010	27,474	0.23	0.23		0.883	0.144	0.311	0.311	68.9%	25,763	10,487	8,685	0.25	0.25	56.8	0.000	0.995	0.202	0.399	0.399	60.1%	67.95%
64	1976	C	19,523	8,258	6,352	59%	0.26		0.753		0.196	0.196	80.4%	20,020	8,067	6,538	0.59	0.26		0.832	0.144	0.322	0.322	67.8%	10,302	4,201	2,903	0.69	0.30	58.9	0.019	0.694	0.269	0.395	0.407	59.3%	66.88%
65	1977	C	12,100	2,197	3,575	66%	0.29		0.425		0.122	0.122	87.8%	7,319	2,098	1,787	0.77	0.33		0.510	0.144	0.263	0.263	73.7%	11,260	4,941	3,261	0.67	0.29	64.3	0.246	0.831	0.441	0.555	0.664	33.6%	63.48%
66	1978	A	50,183	8,517	17,818	23%	0.23		0.767		0.178	0.178	82.2%	45,521	6,115	16,075	0.23	0.23		0.727	0.144	0.280	0.280	72.0%	38,703	7,613	13,525	0.24	0.24	56.9	0.000	0.842	0.205	0.356	0.356	64.4%	71.02%
67	1979	B	42,044	8,301	14,774	24%	0.24		0.755		0.178	0.178	82.2%	32,592	8,327	11,239	0.24	0.24		0.846	0.144	0.314	0.314	68.6%	18,537	8,420	5,983	0.60	0.26	59.8	0.057	0.938	0.298	0.466	0.496	50.4%	64.91%
68	1980	A	69,453	7,858	25,026	23%	0.23		0.731		0.166	0.166	83.4%	36,479	6,131	12,693	0.24	0.24		0.728	0.144	0.284	0.284	71.6%	19,814	7,008	6,460	0.59	0.26	57.1	0.000	0.813	0.211	0.367	0.367	63.3%	70.66%
69	1981	D	29,674	7,328	10,148	24%	0.24		0.703		0.172	0.172	82.8%	32,494	7,205	11,203	0.24	0.24		0.786	0.144	0.299	0.299	70.1%	20,301	8,403	6,643	0.59	0.26	61.5	0.128	0.967	0.352	0.511	0.574	42.6%	63.49%
70	1982	W	65,650	9,003	23,603	23%	0.23		0.793		0.180	0.180	82.0%	69,087	8,977	24,889	0.23	0.23		0.881	0.144	0.311	0.311	68.9%	75,843	9,226	27,415	0.23	0.23	54.1	0.000	0.879	0.115	0.287	0.287	71.3%	71.29%
71	1983	W	82,917	6,356	30,061	22%	0.22		0.650		0.146	0.146	85.4%	81,935	4,765	29,694	0.22	0.22		0.654	0.144	0.259	0.259	74.1%	68,298	7,075	24,593	0.23	0.23	55	0.000	0.779	0.144	0.288	0.288	71.2%	74.72%
72	1984	W	36,004	5,216	12,516	24%	0.24		0.588		0.141	0.141	85.9%	36,495	7,302	12,699	0.24	0.24		0.791	0.144	0.299	0.299	70.1%	20,940	8,453	6,881	0.59	0.26	59.7	0.053	0.938	0.294	0.460	0.488	51.2%	66.50%
73	1985	D	18,978	8,931	6,148	60%	0.26		0.789		0.206	0.206	79.4%	20,720	8,571	6,799	0.59	0.26		0.859	0.144	0.328	0.328	67.2%	13,327	5,983	4,034	0.65	0.28	60.8	0.099	0.824	0.330	0.468	0.521	47.9%	62.98%
74	1986	W	94,333	11,542	34,331	22%	0.22		0.930		0.207	0.207	79.3%	72,535	8,506	26,178	0.23	0.23		0.856	0.144	0.305	0.305	69.5%	20,536	7,495	6,731	0.59	0.26	60.4	0.082	0.898	0.317	0.467	0.511	48.9%	64.60%
75	1987	D	23,030	5,528	7,663	58%	0.25		0.605		0.153	0.153	84.7%	29,762	6,440	10,181	0.24	0.24		0.744	0.144	0.291	0.291	70.9%	14,856	6,134	4,606	0.63	0.27	65.7	0.305	0.920	0.486	0.605	0.725	27.5%	59.66%
76	1988	C	15,907	6,172	4,999	62%	0.27		0.640		0.173	0.173	82.7%	10,913	3,822	3,131	0.68	0.29		0.603	0.144	0.279	0.279	72.1%	10,319	4,470	2,909	0.69	0.30	59.9	0.061	0.726	0.301	0.427	0.462	53.8%	68.01%
77	1989	D	13,054	2,863	3,932	65%	0.28		0.461		0.130	0.130	87.0%	41,911	11,303	14,725	0.24	0.24		1.000	0.144	0.346	0.346	65.4%	23,629	9,293	7,887	0.57	0.25	61.4	0.124	1.000	0.349	0.513	0.574	42.6%	61.40%
78	1990	C	16,692	7,851	5,293	61%	0.27		0.731		0.195	0.195	80.5%	14,588	5,985	4,506	0.63	0.27		0.720	0.144	0.302	0.302	69.8%	15,310	6,420	4,776	0.62	0.27	61.6	0.133	0.862	0.355	0.493	0.560	44.0%	63.42%
79	1991	C	11,164	1,422	3,225	68%	0.29		0.384		0.112	0.112	88.8%	29,681	11,515	10,151	0.24	0.24		1.000	0.144	0.354	0.354	64.6%	16,772	6,974	5,323	0.61	0.27	60.8	0.099	0.877	0.330	0.476	0.528	47.2%	62.56%
80	1992	C	30,928	9,388	10,617	24%	0.24		0.814		0.198	0.198	80.2%	19,711	8,327	6,422	0.59	0.26		0.846	0.144	0.327	0.327	67.3%	14,738	6,151	4,562	0.63	0.27	61.2	0.116	0.840	0.342	0.479	0.539	46.1%	62.64%
81																																				Average:	64.96%

82	Formulas: Winter Run Salmon Smolt Survival Model		AE10 ='Study 513 Revised Flow Data'!G7
83			AF10 ='Study 513 Revised Flow Data'!((HIDDEN)
84	C10 ='Study 513 Revised Flow Data'!E7	Q10 ='Study 513 Revised Flow Data'!F7	AG10 ='Study 513 Revised Flow Data'!/ (HIDDEN)
85	D10 ='Study 513 Revised Flow Data'!C (HIDDEN)	R10 ='Study 513 Revised Flow Data' (HIDDEN)	AH10 =AF9+AG9
86	E10 ='Study 513 Revised Flow Data'!Y (HIDDEN)	S10 ='Study 513 Revised Flow Data' (HIDDEN)	AI10 =0.374*AE9-950
87	F10 =(D9+E9)	T10 =(R9+S9)	AJ10 =IF(AE9>$G$2,(0.133*AE9+829)/(AE9-AI9),(0.293*AE9+2090)/(AE9-AI9))
88	G10 =0.374*C9-950	U10 =0.374*Q9-950	AK10 =(0.133*AE9+829)/(AE9-AI9)
89	H10 =IF(C9>$G$2,(0.133*C9+829)/(C9-G9),(0.293*C9+2090)/(C9-G9))	V10 =IF(Q9>$G$2,(0.133*Q9+829)/(Q9-U9),(0.293*Q9+2090)/(Q9-U9))	AM10 =IF((-2.45925+(0.0420748*AL9))<0,0,(-2.45925+(0.0420748*AL9)))
90	I10 =(0.133*C9+829)/(C9-G9)	Y10 =(0.133*Q9+829)/(Q9-U9)	AN10 =IF(((-0.5916024)+(0.017968*AL9)+(0.000054*AH9))>1,1,((-0.5916024)+(0.017968*AL9)+(0.000054*AH9
91	K10 =(-0.5916024)+(0.017968*$M$1)+(0.000054*F9)	W10 =IF(((-0.5916024)+(0.017968*$M$2)+(0.000054*T9))>1,1,((-0.5916024)+(0.017968*$M$2)+(0.000054*T9)))	AO10 =-1.613493+(0.0319584*AL9)
92	M10 =(K9*I9)+L9*(1-I9)	Z10 =-1.613493+(0.0319584*$M$2)	AP10 =(AN9*AK9)+(AO9*(1-AK9))
93	N10 =J9+M9-(J9*M9)	AA10 =(Y9*W9)+Z9*(1-W9)	AQ10 =AM9+AP9-(AM9*AP9)
94	O10 =1-N9	AB10 =X9+AA9-(X9*AA9)	AR10 =1-AQ9
95		AC10 =1-AB9	AS10 =(0.13*O9)+(0.57*AC9)+(0.3*AR9)

Study 622a Winter Run Smolt Survival Model — February Water Temp 50 F — April Water Temperatures based on limited historical data from USBR

Cross Channel Closed Over 25000 cfs — March Water Temp 55 F

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

Year	Water Year Type	FEBRUARY Sac River Flow	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	m2	m3	Calculated Mortality m23	m123	Calculated Survivability s123	MARCH Sac River Flow	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	m2	m3	Calculated Mortality m23	m123	Calculated Survivability s123	APRIL Sac River Flow	CVP + SWF Exports	Calculated Steamboat & Sutter Slough flows	Percent	X-Channel Closed	Water temp f	m1	m2	m3	Calculated Mortality m23	m123	Calculated Survivability s123	Weighted Total Survival
1922	A	34,571	10,648	11,980	24%	0.24		0.882		0.212	0.212	**78.8%**	31,551	8,015	10,850	0.24	0.24		0.829	0.144	0.311	0.311	**68.9%**	22,822	6,038	7,585	0.58	0.25	58.5	0.002	0.786	0.256	0.390	0.392	**60.8%**	**67.79%**
1923	B	24,164	6,761	8,087	57%	0.25		0.672		0.169	0.169	**83.1%**	17,939	7,689	5,759	0.60	0.26		0.812	0.144	0.320	0.320	**68.0%**	22,234	6,824	7,365	0.58	0.25	58.3	0.000	0.824	0.250	0.396	0.396	**60.4%**	**67.66%**
1924	C	16,898	9,189	5,370	61%	0.27		0.803		0.214	0.214	**78.6%**	12,718	4,011	3,807	0.65	0.28		0.613	0.144	0.277	0.277	**72.3%**	7,327	2,650	1,790	0.77	0.33	61.5	0.128	0.657	0.352	0.451	0.522	**47.8%**	**65.78%**
1925	D	44,709	11,962	15,771	23%	0.23		0.953		0.223	0.223	**77.7%**	19,142	8,228	6,209	0.60	0.26		0.841	0.144	0.326	0.326	**67.4%**	22,385	6,202	7,422	0.58	0.25	59.1	0.027	0.805	0.275	0.410	0.426	**57.4%**	**65.73%**
1926	D	36,714	11,631	12,781	24%	0.24		0.935		0.223	0.223	**77.7%**	19,175	7,737	6,221	0.60	0.26		0.814	0.144	0.319	0.319	**68.1%**	21,057	5,574	6,925	0.58	0.26	61.6	0.133	0.816	0.355	0.474	0.543	**45.7%**	**62.61%**
1927	W	85,852	11,499	31,159	22%	0.22		0.928		0.208	0.208	**79.2%**	43,863	7,365	15,455	0.23	0.23		0.794	0.144	0.297	0.297	**70.3%**	48,215	6,144	17,082	0.23	0.23	56.8	0.000	0.761	0.202	0.332	0.332	**66.8%**	**70.43%**
1928	A	25,695	8,731	8,660	25%	0.25		0.778		0.194	0.194	**80.6%**	86,229	8,745	31,300	0.22	0.22		0.869	0.144	0.306	0.306	**69.4%**	29,208	6,544	9,974	0.25	0.25	58.7	0.011	0.816	0.262	0.398	0.405	**59.5%**	**67.87%**
1929	C	18,528	8,485	5,980	60%	0.26		0.765		0.201	0.201	**79.9%**	14,491	6,177	4,470	0.63	0.28		0.730	0.144	0.305	0.305	**69.5%**	8,218	2,808	2,124	0.74	0.32	56.3	0.000	0.572	0.186	0.307	0.307	**69.3%**	**70.76%**
1930	D	15,863	7,029	4,983	62%	0.27		0.686		0.185	0.185	**81.5%**	30,608	7,811	10,497	0.24	0.24		0.818	0.144	0.308	0.308	**69.2%**	12,638	3,564	3,777	0.65	0.28	59.6	0.048	0.672	0.291	0.399	0.428	**57.2%**	**67.16%**
1931	C	11,092	5,166	3,198	68%	0.29		0.586		0.171	0.171	**82.9%**	9,205	3,993	2,493	0.71	0.31		0.612	0.144	0.287	0.287	**71.3%**	9,159	2,830	2,475	0.71	0.31	62.8	0.183	0.690	0.393	0.484	0.579	**42.1%**	**64.04%**
1932	D	13,995	10,040	4,284	64%	0.28		0.849		0.235	0.235	**76.5%**	10,506	3,856	2,979	0.69	0.30		0.605	0.144	0.280	0.280	**72.0%**	11,277	4,138	3,267	0.67	0.29	58.9	0.019	0.690	0.269	0.391	0.403	**59.7%**	**68.87%**
1933	C	11,524	6,472	3,360	67%	0.29		0.656		0.190	0.190	**81.0%**	10,392	4,828	2,937	0.69	0.30		0.657	0.144	0.296	0.296	**70.4%**	12,083	3,464	3,569	0.66	0.29	60.1	0.069	0.675	0.307	0.413	0.453	**54.7%**	**67.04%**
1934	C	12,748	6,028	3,818	65%	0.28		0.632		0.179	0.179	**82.1%**	14,165	4,103	4,348	0.64	0.28		0.618	0.144	0.275	0.275	**72.5%**	12,150	3,439	3,594	0.66	0.29	63.6	0.217	0.737	0.419	0.510	0.616	**38.4%**	**63.51%**
1935	B	12,406	5,234	3,690	66%	0.28		0.589		0.168	0.168	**83.2%**	24,916	11,308	8,368	0.57	0.25		1.000	0.144	0.358	0.358	**64.2%**	24,250	6,944	8,120	0.57	0.25	58.9	0.019	0.842	0.269	0.413	0.424	**57.6%**	**64.67%**
1936	B	48,348	12,744	17,132	23%	0.23		0.995		0.231	0.231	**76.9%**	33,942	8,378	11,744	0.24	0.24		0.849	0.144	0.314	0.314	**68.6%**	21,780	5,906	7,196	0.58	0.26	59.7	0.053	0.800	0.294	0.424	0.454	**54.6%**	**65.48%**
1937	B	33,203	8,617	11,468	24%	0.24		0.772		0.186	0.186	**81.4%**	38,203	8,345	13,338	0.24	0.24		0.847	0.144	0.311	0.311	**68.9%**	23,259	8,151	7,749	0.57	0.25	58.8	0.015	0.905	0.266	0.427	0.436	**56.4%**	**66.76%**
1938	W	82,359	8,307	29,852	22%	0.22		0.755		0.170	0.170	**83.0%**	78,634	8,287	28,459	0.22	0.22		0.844	0.144	0.302	0.302	**69.8%**	47,173	8,383	16,693	0.23	0.23	56.3	0.000	0.873	0.186	0.346	0.346	**65.4%**	**70.23%**
1939	D	19,032	5,792	6,168	60%	0.26		0.620		0.162	0.162	**83.8%**	16,394	6,745	5,181	0.61	0.27		0.761	0.144	0.310	0.310	**69.0%**	10,705	3,925	3,054	0.68	0.29	63.3	0.204	0.758	0.409	0.512	0.612	**38.8%**	**61.89%**
1940	A	42,906	12,804	15,097	24%	0.24		0.998		0.235	0.235	**76.5%**	59,589	8,969	21,336	0.23	0.23		0.881	0.144	0.313	0.313	**68.7%**	41,728	6,944	14,656	0.24	0.24	57.4	0.000	0.815	0.221	0.361	0.361	**63.9%**	**68.29%**
1941	W	75,031	11,112	27,112	23%	0.23		0.907		0.205	0.205	**79.5%**	58,581	7,997	20,959	0.23	0.23		0.828	0.144	0.301	0.301	**69.9%**	42,367	9,415	14,895	0.24	0.24	56.9	0.000	0.939	0.205	0.378	0.378	**62.2%**	**68.85%**
1942	W	78,344	8,335	28,351	23%	0.23		0.757		0.170	0.170	**83.0%**	27,095	8,328	9,183	0.25	0.25		0.846	0.144	0.318	0.318	**68.2%**	43,308	6,944	15,247	0.23	0.23	56.5	0.000	0.799	0.192	0.335	0.335	**66.5%**	**69.62%**
1943	W	52,253	8,380	18,593	23%	0.23		0.759		0.175	0.175	**82.5%**	64,598	8,377	23,210	0.23	0.23		0.849	0.144	0.305	0.305	**69.5%**	29,410	9,583	10,049	0.24	0.24	58.8	0.015	0.982	0.266	0.441	0.449	**55.1%**	**66.87%**
1944	D	30,215	8,298	10,350	24%	0.24		0.755		0.184	0.184	**81.6%**	25,094	8,328	8,435	0.25	0.25		0.846	0.144	0.320	0.320	**68.0%**	9,814	4,478	2,721	0.70	0.30	58.4	0.000	0.700	0.253	0.387	0.387	**61.3%**	**67.76%**
1945	B	40,495	8,337	14,195	24%	0.24		0.757		0.179	0.179	**82.1%**	27,030	8,470	9,159	0.25	0.25		0.854	0.144	0.320	0.320	**68.0%**	11,747	4,254	3,443	0.67	0.29	60.6	0.090	0.727	0.323	0.439	0.490	**51.0%**	**64.73%**
1946	B	24,812	7,989	8,330	57%	0.25		0.738		0.185	0.185	**81.5%**	23,533	8,745	7,851	0.57	0.25		0.869	0.144	0.327	0.327	**67.3%**	12,218	4,928	3,619	0.66	0.29	60.7	0.095	0.765	0.326	0.452	0.504	**49.6%**	**63.84%**
1947	D	21,571	8,368	7,118	58%	0.26		0.759		0.194	0.194	**80.6%**	22,509	8,280	7,468	0.58	0.25		0.844	0.144	0.322	0.322	**67.8%**	13,797	3,844	4,210	0.64	0.28	62.5	0.170	0.739	0.384	0.483	0.571	**42.9%**	**62.00%**
1948	B	15,577	6,106	4,876	62%	0.27		0.637		0.173	0.173	**82.7%**	19,191	7,776	6,227	0.59	0.26		0.817	0.144	0.320	0.320	**68.0%**	23,040	5,620	7,667	0.58	0.25	56.6	0.000	0.729	0.195	0.330	0.330	**67.0%**	**69.63%**
1949	D	16,223	8,542	5,118	62%	0.27		0.768		0.207	0.207	**79.3%**	41,748	9,917	14,664	0.24	0.24		0.932	0.144	0.330	0.330	**67.0%**	13,209	3,832	3,990	0.65	0.28	61.7	0.137	0.724	0.358	0.461	0.535	**46.5%**	**62.47%**
1950	B	35,580	11,884	12,357	24%	0.24		0.949		0.227	0.227	**77.3%**	22,655	8,990	7,523	0.58	0.25		0.882	0.144	0.332	0.332	**66.8%**	19,276	5,002	6,259	0.59	0.26	61.3	0.120	0.780	0.346	0.459	0.524	**47.6%**	**62.44%**
1951	A	60,572	9,056	21,704	23%	0.23		0.796		0.182	0.182	**81.8%**	29,827	8,771	10,205	0.24	0.24		0.870	0.144	0.322	0.322	**67.8%**	14,738	4,496	4,562	0.63	0.27	59.9	0.061	0.727	0.301	0.418	0.453	**54.7%**	**65.70%**
1952	W	62,499	8,301	22,425	23%	0.23		0.755		0.172	0.172	**82.8%**	57,524	8,255	20,564	0.23	0.23		0.842	0.144	0.304	0.304	**69.6%**	56,652	8,873	20,238	0.23	0.23	55.5	0.000	0.885	0.160	0.327	0.327	**67.3%**	**70.61%**
1953	W	28,341	8,441	9,650	25%	0.25		0.763		0.188	0.188	**81.2%**	24,899	7,593	8,362	0.57	0.25		0.807	0.144	0.310	0.310	**69.0%**	16,184	4,958	5,103	0.62	0.27	58.8	0.015	0.733	0.266	0.391	0.400	**60.0%**	**67.88%**
1954	A	57,151	9,006	20,424	23%	0.23		0.793		0.182	0.182	**81.8%**	49,538	9,006	17,577	0.23	0.23		0.883	0.144	0.316	0.316	**68.4%**	39,863	6,144	13,959	0.24	0.24	58.4	0.000	0.790	0.253	0.380	0.380	**62.0%**	**68.24%**
1955	D	16,295	7,708	5,144	62%	0.27		0.723		0.194	0.194	**80.6%**	17,906	7,272	5,747	0.60	0.26		0.789	0.144	0.315	0.315	**68.5%**	9,478	3,082	2,595	0.71	0.30	56.4	0.000	0.588	0.189	0.310	0.310	**69.0%**	**70.24%**
1956	W	61,543	9,057	22,067	23%	0.23		0.796		0.182	0.182	**81.8%**	36,674	8,900	12,766	0.24	0.24		0.877	0.144	0.319	0.319	**68.1%**	20,436	5,550	6,693	0.59	0.26	59.7	0.053	0.781	0.294	0.420	0.450	**55.0%**	**65.93%**
1957	A	33,149	8,981	11,448	24%	0.24		0.792		0.191	0.191	**80.9%**	44,383	8,702	15,649	0.23	0.23		0.867	0.144	0.313	0.313	**68.7%**	19,578	5,436	6,372	0.59	0.26	60.5	0.086	0.789	0.320	0.442	0.490	**51.0%**	**64.95%**
1958	W	62,661	8,399	22,485	23%	0.23		0.760		0.173	0.173	**82.7%**	93,612	7,985	34,061	0.22	0.22		0.828	0.144	0.297	0.297	**70.3%**	52,282	9,626	18,603	0.23	0.23	57.4	0.000	0.960	0.221	0.392	0.392	**60.8%**	**69.09%**
1959	B	50,075	8,416	17,778	23%	0.23		0.761		0.177	0.177	**82.3%**	22,948	7,126	7,632	0.58	0.25		0.781	0.144	0.306	0.306	**69.4%**	8,823	3,540	2,350	0.72	0.31	63	0.191	0.732	0.400	0.502	0.598	**40.2%**	**62.35%**
1960	D	25,852	11,686	8,718	25%	0.25		0.938		0.234	0.234	**76.6%**	22,086	7,827	7,310	0.58	0.25		0.819	0.144	0.316	0.316	**68.4%**	12,856	3,584	3,858	0.65	0.28	59.5	0.044	0.671	0.288	0.396	0.423	**57.7%**	**66.25%**
1961	D	32,843	11,462	11,333	24%	0.24		0.926		0.224	0.224	**77.6%**	20,947	7,598	6,884	0.59	0.26		0.807	0.144	0.315	0.315	**68.5%**	12,655	3,336	3,783	0.65	0.28	60.1	0.069	0.668	0.307	0.409	0.450	**55.0%**	**65.65%**
1962	B	44,313	12,683	15,623	23%	0.23		0.992		0.232	0.232	**76.8%**	27,648	7,824	9,390	0.25	0.25		0.819	0.144	0.311	0.311	**68.9%**	13,512	4,452	4,103	0.64	0.28	61.8	0.141	0.759	0.362	0.473	0.547	**45.3%**	**62.86%**
1963	W	58,231	12,159	20,828	23%	0.23		0.963		0.221	0.221	**77.9%**	32,641	9,252	11,258	0.24	0.24		0.896	0.144	0.326	0.326	**67.4%**	69,457	6,944	25,027	0.23	0.23	53.7	0.000	0.748	0.103	0.249	0.249	**75.1%**	**71.08%**
1964	D	19,176	7,948	6,222	60%	0.26		0.736		0.192	0.192	**80.8%**	15,564	6,350	4,871	0.62	0.27		0.740	0.144	0.306	0.306	**69.4%**	8,957	2,902	2,400	0.72	0.31	59.3	0.036	0.631	0.282	0.389	0.411	**58.9%**	**67.75%**
1965	W	33,077	11,187	11,421	24%	0.24		0.911		0.220	0.220	**78.0%**	21,175	8,598	6,969	0.58	0.26		0.861	0.144	0.328	0.328	**67.2%**	45,627	6,944	16,115	0.23	0.23	56.9	0.000	0.806	0.205	0.345	0.345	**65.5%**	**68.08%**
1966	B	26,775	8,757	9,064	25%	0.25		0.780		0.193	0.193	**80.7%**	28,689	8,745	9,780	0.25	0.25		0.869	0.144	0.322	0.322	**67.8%**	12,806	4,202	3,839	0.65	0.28	61.9	0.145	0.748	0.365	0.473	0.549	**45.1%**	**62.64%**
1967	W	43,106	7,594	15,172	23%	0.23		0.717		0.168	0.168	**83.2%**	54,483	7,604	19,426	0.23	0.23		0.807	0.144	0.297	0.297	**70.3%**	39,930	9,137	13,984	0.24	0.24	53.8	0.000	0.868	0.106	0.286	0.286	**71.4%**	**72.29%**
1968	B	54,520	6,407	19,440	23%	0.23		0.653		0.150	0.150	**85.0%**	36,788	7,195	12,809	0.24	0.24		0.785	0.144	0.297	0.297	**70.3%**	14,251	4,450	4,380	0.63	0.28	61.5	0.128	0.754	0.352	0.463	0.532	**46.8%**	**65.15%**
1969	W	67,486	7,564	24,290	23%	0.23		0.715		0.162	0.162	**83.8%**	45,326	7,415	16,002	0.23	0.23		0.797	0.144	0.297	0.297	**70.3%**	44,787	7,613	15,800	0.23	0.23	56.4	0.000	0.833	0.189	0.340	0.340	**66.0%**	**70.78%**
1970	W	57,565	5,372	20,579	23%	0.23		0.597		0.137	0.137	**86.3%**	35,812	7,313	12,444	0.24	0.24		0.792	0.144	0.299	0.299	**70.1%**	13,814	4,254	4,216	0.64	0.28	58.8	0.015	0.695	0.266	0.385	0.394	**60.6%**	**69.35%**
1971	W	28,810	9,016	9,825	25%	0.25		0.794		0.195	0.195	**80.5%**	51,262	9,020	18,222	0.23	0.23		0.884	0.144	0.315	0.315	**68.5%**	20,755	5,696	6,812	0.59	0.26	58.7	0.011	0.771	0.262	0.393	0.400	**60.0%**	**67.50%**
1972	B	24,217	8,280	8,107	57%	0.25		0.754		0.190	0.190	**81.0%**	32,933	7,450	11,367	0.24	0.24		0.799	0.144	0.302	0.302	**69.8%**	12,453	3,544	3,707	0.66	0.28	58.5	0.002	0.651	0.256	0.368	0.370	**63.0%**	**69.21%**
1973	A	70,961	8,785	25,590	23%	0.23		0.781		0.177	0.177	**82.3%**	47,554	8,773	16,835	0.23	0.23		0.870	0.144	0.313	0.313	**68.7%**	19,511	6,328	6,347	0.59	0.26	61.3	0.120	0.852	0.346	0.477	0.540	**46.0%**	**63.65%**
1974	W	41,918	8,744	14,727	24%	0.24		0.779		0.183	0.183	**81.7%**	100,199	8,745	36,524	0.22	0.22		0.869	0.144	0.305	0.305	**69.5%**	33,208	9,445	11,470	0.24	0.24	56.8	0.000	0.939	0.202	0.380	0.380	**62.0%**	**68.82%**
1975	W	58,807	8,982	21,044	23%	0.23		0.792		0.181	0.181	**81.9%**	75,999	9,006	27,474	0.23	0.23		0.883	0.144	0.311	0.311	**68.9%**	25,763	6,944	8,685	0.25	0.25	56.8	0.000	0.804	0.202	0.352	0.352	**64.8%**	**69.38%**
1976	C	19,523	8,573	6,352	59%	0.26		0.770		0.200	0.200	**80.0%**	19,988	8,073	6,525	0.59	0.26		0.833	0.144	0.323	0.323	**67.7%**	9,428	3,032	2,576	0.71	0.30	58.9	0.019	0.630	0.269	0.379	0.391	**60.9%**	**67.30%**
1977	C	12,154	2,287	3,596	66%	0.29		0.430		0.123	0.123	**87.7%**	7,579	2,309	1,884	0.76	0.32		0.521	0.144	0.266	0.266	**73.4%**	9,125	2,857	2,463	0.72	0.31	64.3	0.246	0.718	0.441	0.526	0.643	**35.7%**	**63.96%**
1978	A	51,173	9,834	18,189	23%	0.23		0.838		0.194	0.194	**80.6%**	46,676	6,116	16,507	0.23	0.23		0.727	0.144	0.280	0.280	**72.0%**	38,703	7,621	13,525	0.24	0.24	56.9	0.000	0.842	0.205	0.356	0.356	**64.4%**	**70.82%**
1979	B	42,044	8,297	14,774	24%	0.24		0.755		0.178	0.178	**82.2%**	32,592	8,328	11,239	0.24	0.24		0.846	0.144	0.314	0.314	**68.6%**	17,696	5,886	5,668	0.60	0.26	59.8	0.057	0.801	0.298	0.431	0.463	**53.7%**	**65.90%**
1980	A	69,453	8,119	25,026	23%	0.23		0.745		0.169	0.169	**83.1%**	36,479	5,632	12,693	0.24	0.24		0.701	0.144	0.277	0.277	**72.3%**	19,814	5,490	6,460	0.59	0.26	57.1	0.000	0.731	0.211	0.346	0.346	**65.4%**	**71.63%**
1981	D	29,674	7,252	10,148	24%	0.24		0.698		0.171	0.171	**82.9%**	32,494	7,194	11,203	0.24	0.24		0.785	0.144	0.299	0.299	**70.1%**	16,990	4,948	5,404	0.61	0.27	61.5	0.128	0.781	0.352	0.466	0.535	**46.5%**	**64.68%**
1982	W	65,650	9,001	23,603	23%	0.23		0.793		0.180	0.180	**82.0%**	69,087	8,965	24,889	0.23	0.23		0.881	0.144	0.311	0.311	**68.9%**	75,843	9,509	27,415	0.23	0.23	54.1	0.000	0.894	0.115	0.291	0.291	**70.9%**	**71.19%**
1983	W	82,917	6,327	30,061	22%	0.22		0.648		0.145	0.145	**85.5%**	81,935	4,766	29,694	0.22	0.22		0.654	0.144	0.259	0.259	**74.1%**	68,298	7,071	24,593	0.23	0.23	55	0.000	0.778	0.144	0.288	0.288	**71.2%**	**74.72%**
1984	W	36,004	5,441	12,516	24%	0.24		0.601		0.144	0.144	**85.6%**	36,495	7,192	12,699	0.24	0.24		0.785	0.144	0.297	0.297	**70.3%**	16,016	4,636	5,040	0.62	0.27	59.7	0.053	0.731	0.294	0.412	0.443	**55.7%**	**67.89%**
1985	D	18,978	8,987	6,148	60%	0.26		0.792		0.207	0.207	**79.3%**	20,833	8,586	6,842	0.59	0.26		0.860	0.144	0.328	0.328	**67.2%**	13,327	3,862	4,034	0.65	0.28	60.8	0.099	0.709	0.330	0.436	0.492	**50.8%**	**63.84%**
1986	W	96,764	11,979	35,240	22%	0.22		0.954		0.212	0.212	**78.8%**	72,535	8,455	26,178	0.23	0.23		0.853	0.144	0.304	0.304	**69.6%**	20,772	7,531	6,819	0.59	0.26	60.4	0.082	0.900	0.317	0.467	0.511	**48.9%**	**64.56%**
1987	D	23,030	5,578	7,663	58%	0.25		0.608		0.154	0.154	**84.6%**	30,022	6,575	10,278	0.24	0.24		0.752	0.144	0.293	0.293	**70.7%**	10,974	3,245	3,154	0.68	0.29	65.7	0.305	0.764	0.486	0.568	0.699	**30.1%**	**60.34%**
1988	C	17,281	6,951	5,513	61%	0.27		0.682		0.181	0.181	**81.9%**	11,124	4,015	3,210	0.68	0.29		0.613	0.144	0.281	0.281	**71.9%**	9,092	2,854	2,450	0.72	0.31	59.9	0.061	0.639	0.301	0.405	0.441	**55.9%**	**68.39%**
1989	D	12,460	2,845	3,710	66%	0.28		0.460		0.131	0.131	**86.9%**	41,667	11,282	14,633	0.24	0.24		1.000	0.144	0.346	0.346	**65.4%**	23,629	5,224	7,887	0.57	0.25	61.4	0.124	0.794	0.349	0.461	0.528	**47.2%**	**62.75%**
1990	C	16,692	7,788	5,293	61%	0.27		0.727		0.195	0.195	**80.5%**	14,588	5,971	4,506	0.63	0.27		0.719	0.144	0.302	0.302	**69.8%**	12,285	3,395	3,645	0.66	0.29	61.6	0.133	0.699	0.355	0.453	0.526	**47.4%**	**64.48%**
1991	C	10,443	664	2,956	69%	0.30		0.343		0.102	0.102	**89.8%**	29,681	11,498	10,151	0.24	0.24		1.000	0.144	0.354	0.354	**64.6%**	15,276	3,921	4,763	0.62	0.27	60.8	0.099	0.713	0.330	0.434	0.490	**51.0%**	**63.84%**
1992	C	31,415	8,713	10,799	24%	0.24		0.777		0.189	0.189	**81.1%**	20,102	8,434	6,568	0.59	0.26		0.852	0.144	0.327	0.327	**67.3%**	11,999	3,426	3,538	0.66	0.29	61.2	0.116	0.693	0.342	0.443	0.507	**49.3%**	**63.66%**
																																			Average:	**65.84%**

Formulas: Winter Run Salmon Smolt Survival Model

(HIDDEN)

C10 ='Study 622a Flow Data'!E7
D10 ='Study 622a Flow Data'!O7 (HIDDEN)
E10 ='Study 622a Flow Data'!Y7 (HIDDEN)
F10 =(D9+E9)
G10 =0.374*C9-950
H10 =IF(C9>$G$2,(0.133*C9+829)/(C9-G9),(0.293*C9+2090)/(C9-G9))
I10 =(0.133*C9+829)/(C9-G9)
K10 =(-0.5916024)+(0.017968*$M$1)+(0.000054*F9)
M10 =(K9*I9)+L9*(1-I9)
N10 =J9+M9-(J9*M9)
O10 =1-N9

Q10 ='Study 622a Flow Data'!F7
R10 ='Study 622a Flow Data'!P7 (HIDDEN)
S10 ='Study 622a Flow Data'!Z7 (HIDDEN)
T10 =(R9+S9)
U10 =0.374*Q9-950
V10 =IF(Q9>$G$2,(0.133*Q9+829)/(Q9-U9),(0.293*Q9+2090)/(Q9-U9))
Y10 =(0.133*Q9+829)/(Q9-U9)
W10 =IF(((-0.5916024)+(0.017968*$M$2)+(0.000054*T9))>1,1,((-0.5916024)+(0.017968*$M$2)+(0.000054*T9)))
Z10 =-1.613493+(0.0319584*$M$2)
AA10 =(Y9*W9)+Z9*(1-W9)
AB10 =X9+AA9-(X9*AA9)
AC10 =1-AB9

AE10 ='Study 622a Flow Data'!G7 (HIDDEN)
AF10 ='Study 622a Flow Data'!Q7 (HIDDEN)
AG10 ='Study 622a Flow Data'!AA7
AH10 =AF9+AG9
AI10 =0.374*AE9-950
AJ10 =IF(AE9>$G$2,(0.133*AE9+829)/(AE9-AI9),(0.293*AE9+2090)/(AE9-AI9))
AK10 =(0.133*AE9+829)/(AE9-AI9)
AM10 =IF((-2.45925+(0.0420748*AL9))<0,0,(-2.45925+(0.0420748*AL9)))
AN10 =IF(((-0.5916024)+(0.017968*AL9)+(0.000054*AH9))>1,1,((-0.5916024)+(0.017968*AL9)+(0.000054*AH
AO10 =-1.613493+(0.0319584*AL9)
AP10 =(AN9*AK9)+(AO9*(1-AK9))
AQ10 =AM9+AP9-(AM9*AP9)

1	D1485 Sacramento River Spring Run Yearling Survival Model	November Sac River Temperature:	53	degrees F	
2	(Modifies m2 by changing the slope to 0.000054)	December Sac River Temperature:	47	degrees F	
3	Cross Channel Closed above 25,000 cfs	January Sac River Temperature:	47	degrees F	
4	Cross Channel closed when DOI is greater than 12,000 cfs in January	February Sac River Temperature:	50	degrees F	
5		March Sac River Temperature:	55	degrees F	

NOVEMBER

Row	Year (A)	WY Type (B)	Sac River Flows (C)	CVP+SWP exports (F)	Calculated Steamboat & Sutter Slough Q (G)	percent (H)	xchannel closed (I)	m1 (J)	m2 (K)	m3 (L)	m23 (M)	m123 (N)	Calculated Survival s123 (O)
10	1922	A	11,008	7,512	3,167	68%	0.29		0.77	0.08	0.55	0.55	**45.5%**
11	1923	B	16,940	10,974	5,386	61%	0.27		0.95	0.08	0.61	0.61	**38.7%**
12	1924	C	10,991	9,008	3,161	68%	0.29		0.85	0.08	0.60	0.60	**40.0%**
13	1925	D	6,941	5,546	1,646	78%	0.33		0.66	0.08	0.53	0.53	**46.8%**
14	1926	D	9,344	6,907	2,545	71%	0.30		0.73	0.08	0.54	0.54	**45.6%**
15	1927	W	21,478	10,924	7,083	58%	0.26		0.95	0.08	0.59	0.59	**41.3%**
16	1928	A	21,629	10,974	7,139	58%	0.26		0.95	0.08	0.59	0.59	**41.2%**
17	1929	C	13,108	10,957	3,953	65%	0.28		0.95	0.08	0.65	0.65	**35.5%**
18	1930	D	8,151	5,294	2,098	74%	0.32		0.65	0.08	0.50	0.50	**50.1%**
19	1931	C	11,041	9,361	3,179	68%	0.29		0.87	0.08	0.61	0.61	**38.7%**
20	1932	D	7,075	4,521	1,696	77%	0.33		0.60	0.08	0.49	0.49	**51.4%**
21	1933	C	7,495	5,697	1,853	76%	0.32		0.67	0.08	0.53	0.53	**47.3%**
22	1934	C	6,487	4,168	1,476	80%	0.34		0.59	0.08	0.48	0.48	**51.7%**
23	1935	B	9,209	7,680	2,494	71%	0.31		0.78	0.08	0.58	0.58	**42.4%**
24	1936	B	12,369	9,781	3,676	66%	0.28		0.89	0.08	0.61	0.61	**38.8%**
25	1937	B	10,907	8,252	3,129	68%	0.29		0.81	0.08	0.57	0.57	**42.6%**
26	1938	W	22,956	10,974	7,636	58%	0.25		0.95	0.08	0.58	0.58	**41.7%**
27	1939	D	19,444	10,974	6,322	59%	0.26		0.95	0.08	0.60	0.60	**40.2%**
28	1940	A	7,915	5,832	2,010	75%	0.32		0.68	0.08	0.52	0.52	**47.5%**
29	1941	W	13,411	10,974	4,066	64%	0.28		0.95	0.08	0.64	0.64	**35.7%**
30	1942	W	18,184	10,974	5,851	60%	0.26		0.95	0.08	0.61	0.61	**39.5%**
31	1943	W	21,326	10,974	7,026	58%	0.26		0.95	0.08	0.59	0.59	**41.1%**
32	1944	D	12,823	10,806	3,846	65%	0.28		0.94	0.08	0.64	0.64	**35.7%**
33	1945	B	15,175	10,940	4,726	63%	0.27		0.95	0.08	0.63	0.63	**37.5%**
34	1946	B	17,293	10,974	5,518	61%	0.27		0.95	0.08	0.61	0.61	**38.9%**
35	1947	D	13,276	10,974	4,015	65%	0.28		0.95	0.08	0.64	0.64	**35.6%**
36	1948	B	11,108	9,411	3,205	68%	0.29		0.87	0.08	0.61	0.61	**38.6%**
37	1949	D	13,680	10,957	4,166	64%	0.28		0.95	0.08	0.64	0.64	**36.1%**
38	1950	B	12,050	10,369	3,557	66%	0.29		0.92	0.08	0.64	0.64	**36.4%**
39	1951	A	40,922	10,957	14,355	24%	0.24		0.95	0.08	0.29	0.29	**71.4%**
40	1952	W	16,822	10,974	5,342	61%	0.27		0.95	0.08	0.61	0.61	**38.6%**
41	1953	W	16,537	10,856	5,235	61%	0.27		0.95	0.08	0.61	0.61	**38.8%**
42	1954	A	21,007	10,974	6,907	58%	0.26		0.95	0.08	0.59	0.59	**40.9%**
43	1955	D	19,999	10,957	6,529	59%	0.26		0.95	0.08	0.60	0.60	**40.5%**
44	1956	W	12,134	10,487	3,588	66%	0.29		0.93	0.08	0.64	0.64	**36.0%**
45	1957	A	15,478	10,974	4,839	62%	0.27		0.95	0.08	0.62	0.62	**37.6%**
46	1958	W	19,259	10,957	6,253	59%	0.26		0.95	0.08	0.60	0.60	**40.1%**
47	1959	B	16,133	10,974	5,084	62%	0.27		0.95	0.08	0.62	0.62	**38.1%**
48	1960	D	10,184	8,252	2,859	69%	0.30		0.81	0.08	0.58	0.58	**41.7%**
49	1961	D	14,251	10,940	4,380	63%	0.28		0.95	0.08	0.63	0.63	**36.7%**
50	1962	B	10,403	8,789	2,941	69%	0.30		0.84	0.08	0.60	0.60	**40.0%**
51	1963	W	21,730	10,974	7,177	58%	0.26		0.95	0.08	0.59	0.59	**41.2%**
52	1964	D	28,805	10,974	9,823	25%	0.25		0.95	0.08	0.29	0.29	**70.5%**
53	1965	W	14,554	10,940	4,493	63%	0.27		0.95	0.08	0.63	0.63	**36.9%**
54	1966	B	29,628	10,974	10,131	24%	0.24		0.95	0.08	0.29	0.29	**70.6%**
55	1967	W	18,301	10,957	5,895	60%	0.26		0.95	0.08	0.60	0.60	**39.6%**
56	1968	B	16,234	8,537	5,122	62%	0.27		0.82	0.08	0.54	0.54	**46.3%**
57	1969	W	14,638	10,957	4,524	63%	0.27		0.95	0.08	0.63	0.63	**37.0%**
58	1970	W	17,646	10,974	5,650	61%	0.26		0.95	0.08	0.61	0.61	**39.1%**
59	1971	W	23,141	10,974	7,705	57%	0.25		0.95	0.08	0.58	0.58	**41.8%**
60	1972	B	16,755	10,957	5,316	61%	0.27		0.95	0.08	0.61	0.61	**38.6%**
61	1973	A	25,662	10,957	8,648	25%	0.25		0.95	0.08	0.30	0.30	**70.2%**
62	1974	W	58,920	10,974	21,086	23%	0.23		0.95	0.08	0.28	0.28	**72.0%**
63	1975	W	17,579	10,957	5,624	61%	0.26		0.95	0.08	0.61	0.61	**39.1%**
64	1976	C	19,226	10,974	6,240	59%	0.26		0.95	0.08	0.60	0.60	**40.0%**
65	1977	C	8,016	6,100	2,048	74%	0.32		0.69	0.08	0.53	0.53	**46.6%**
66	1978	A	5,243	3,042	1,011	86%	0.36		0.52	0.08	0.46	0.46	**53.9%**
67	1979	B	15,125	10,957	4,707	63%	0.27		0.95	0.08	0.63	0.63	**37.4%**
68	1980	A	16,301	10,974	5,147	62%	0.27		0.95	0.08	0.62	0.62	**38.2%**
69	1981	D	13,024	10,974	3,921	65%	0.28		0.95	0.08	0.65	0.65	**35.3%**
70	1982	W	37,897	10,957	13,223	24%	0.24		0.95	0.08	0.29	0.29	**71.2%**
71	1983	W	39,107	10,974	13,676	24%	0.24		0.95	0.08	0.29	0.29	**71.3%**
72	1984	W	62,802	7,932	22,538	23%	0.23		0.79	0.08	0.24	0.24	**75.8%**
73	1985	D	35,813	10,974	12,444	24%	0.24		0.95	0.08	0.29	0.29	**71.1%**
74	1986	W	9,949	9,075	2,771	70%	0.30		0.85	0.08	0.62	0.62	**38.2%**
75	1987	D	11,125	8,420	3,211	68%	0.29		0.82	0.08	0.58	0.58	**42.3%**
76	1988	C	8,688	6,941	2,299	73%	0.31		0.74	0.08	0.56	0.56	**44.4%**
77	1989	D	9,730	7,848	2,689	70%	0.30		0.78	0.08	0.57	0.57	**42.6%**
78	1990	C	12,251	10,487	3,632	66%	0.29		0.93	0.08	0.64	0.64	**36.2%**
79	1991	C	7,512	5,176	1,860	76%	0.32		0.64	0.08	0.51	0.51	**49.5%**
80	1992	C	7,714	4,588	1,935	75%	0.32		0.61	0.08	0.48	0.48	**52.2%**

DECEMBER

Row	Sac River Flows (Q)	CVP+SWP exports (T)	Steamboat & Sutter Slough Q (U)	percent (V)	xchannel closed (W)	m1 (X)	m2 (Y)	m3 (Z)	m23 (AA)	m123 (AB)	Calculated Survival s123 (AC)
10	17,142	11,319	5,461	61%	0.27		0.86		0.53	0.53	**47.4%**
11	34,202	11,303	11,842	24%	0.24		0.86		0.21	0.21	**79.2%**
12	15,353	11,157	4,792	62%	0.27		0.86		0.53	0.53	**46.6%**
13	11,271	8,506	3,265	67%	0.29		0.71		0.48	0.48	**52.0%**
14	10,620	7,026	3,022	68%	0.30		0.63		0.43	0.43	**56.7%**
15	15,841	11,254	4,974	62%	0.27		0.86		0.53	0.53	**46.7%**
16	16,572	11,287	5,248	61%	0.27		0.86		0.53	0.53	**47.1%**
17	13,954	11,140	4,269	64%	0.28		0.85		0.55	0.55	**45.5%**
18	14,767	10,994	4,573	63%	0.27		0.85		0.53	0.53	**46.7%**
19	11,449	6,489	3,332	67%	0.29		0.60		0.40	0.40	**59.5%**
20	14,653	11,401	4,530	63%	0.27		0.87		0.55	0.55	**45.2%**
21	9,904	5,399	2,754	70%	0.30		0.54		0.38	0.38	**62.0%**
22	12,474	9,319	3,715	66%	0.28		0.76		0.50	0.50	**50.4%**
23	8,522	4,895	2,237	73%	0.31		0.52		0.38	0.38	**62.2%**
24	14,767	11,157	4,573	63%	0.27		0.86		0.54	0.54	**46.2%**
25	14,052	11,206	4,305	64%	0.28		0.86		0.55	0.55	**45.4%**
26	51,246	11,742	18,216	23%	0.23		0.89		0.21	0.21	**79.5%**
27	18,687	8,750	6,039	60%	0.26		0.73		0.43	0.43	**56.6%**
28	9,579	5,090	2,633	70%	0.30		0.53		0.37	0.37	**62.8%**
29	32,413	11,563	11,172	24%	0.24		0.88		0.21	0.21	**78.8%**
30	65,623	9,368	23,593	23%	0.23		0.76		0.17	0.17	**82.7%**
31	28,803	10,035	9,822	25%	0.25		0.79		0.20	0.20	**80.5%**
32	13,775	10,474	4,202	64%	0.28		0.82		0.52	0.52	**47.6%**
33	17,272	11,173	5,510	61%	0.27		0.86		0.52	0.52	**47.9%**
34	56,109	11,807	20,035	23%	0.23		0.89		0.20	0.20	**79.5%**
35	17,630	11,352	5,643	61%	0.26		0.87		0.52	0.52	**47.6%**
36	12,149	7,335	3,594	66%	0.29		0.65		0.43	0.43	**57.1%**
37	15,564	11,140	4,871	62%	0.27		0.85		0.53	0.53	**46.9%**
38	12,263	7,644	3,636	66%	0.29		0.67		0.44	0.44	**56.1%**
39	66,631	11,807	23,970	23%	0.23		0.89		0.20	0.20	**79.8%**
40	51,962	11,319	18,484	23%	0.23		0.86		0.20	0.20	**80.0%**
41	42,334	7,953	14,883	24%	0.24		0.68		0.16	0.16	**83.9%**
42	14,914	11,092	4,628	63%	0.27		0.85		0.53	0.53	**46.5%**
43	25,517	11,140	8,593	25%	0.25		0.85		0.21	0.21	**78.7%**
44	32,933	11,807	11,367	24%	0.24		0.89		0.22	0.22	**78.5%**
45	14,149	11,238	4,342	64%	0.28		0.86		0.55	0.55	**45.3%**
46	23,745	11,140	7,930	57%	0.25		0.85		0.49	0.49	**51.1%**
47	14,621	9,937	4,518	63%	0.27		0.79		0.50	0.50	**50.2%**
48	11,856	7,010	3,484	66%	0.29		0.63		0.42	0.42	**58.0%**
49	19,711	11,124	6,422	59%	0.26		0.85		0.51	0.51	**49.5%**
50	18,004	11,124	5,783	60%	0.26		0.85		0.51	0.51	**48.6%**
51	28,054	11,140	9,542	25%	0.25		0.85		0.21	0.21	**79.0%**
52	14,849	11,206	4,603	63%	0.27		0.86		0.54	0.54	**46.1%**
53	27,371	11,677	9,287	25%	0.25		0.88		0.22	0.22	**78.2%**
54	16,995	11,726	5,406	61%	0.27		0.89		0.54	0.54	**45.9%**
55	39,699	11,336	13,897	24%	0.24		0.87		0.20	0.20	**79.5%**
56	16,686	7,953	5,291	61%	0.27		0.68		0.42	0.42	**58.2%**
57	27,144	11,189	9,202	25%	0.25		0.86		0.21	0.21	**78.8%**
58	50,156	7,693	17,809	23%	0.23		0.67		0.15	0.15	**84.5%**
59	57,101	11,254	20,406	23%	0.23		0.86		0.20	0.20	**80.2%**
60	22,053	11,157	7,298	58%	0.25		0.86		0.50	0.50	**50.4%**
61	26,753	11,140	9,056	25%	0.25		0.85		0.21	0.21	**78.8%**
62	61,590	11,384	22,085	23%	0.23		0.87		0.20	0.20	**80.2%**
63	17,613	11,303	5,637	61%	0.26		0.86		0.52	0.52	**47.7%**
64	16,768	11,206	5,321	61%	0.27		0.86		0.52	0.52	**47.5%**
65	9,205	5,058	2,493	71%	0.31		0.53		0.38	0.38	**62.5%**
66	12,295	9,660	3,648	66%	0.28		0.77		0.51	0.51	**49.0%**
67	12,751	9,758	3,819	65%	0.28		0.78		0.51	0.51	**49.1%**
68	21,842	11,206	7,219	58%	0.26		0.86		0.50	0.50	**50.2%**
69	15,613	9,254	4,889	62%	0.27		0.75		0.47	0.47	**53.2%**
70	68,599	11,238	24,706	23%	0.23		0.86		0.19	0.19	**80.5%**
71	55,410	11,807	19,773	23%	0.23		0.89		0.20	0.20	**79.5%**
72	82,944	7,319	30,071	22%	0.22		0.65		0.15	0.15	**85.5%**
73	23,875	11,173	7,979	57%	0.25		0.86		0.49	0.49	**51.1%**
74	16,166	11,157	5,096	62%	0.27		0.86		0.53	0.53	**47.3%**
75	12,864	9,384	3,861	65%	0.28		0.76		0.49	0.49	**50.6%**
76	16,345	11,124	5,163	62%	0.27		0.85		0.53	0.53	**47.5%**
77	10,083	6,017	2,821	69%	0.30		0.58		0.40	0.40	**59.9%**
78	16,117	11,124	5,078	62%	0.27		0.85		0.53	0.53	**47.3%**
79	10,360	5,578	2,925	69%	0.30		0.55		0.38	0.38	**61.8%**
80	8,164	4,440	2,103	74%	0.32		0.49		0.36	0.36	**63.6%**

JANUARY

Row	Sac River Flow (AE)	Total Delta Outflow (AF)	CVP+SWP exports (AI)	Calculated Steamboat & Sutter Slough Q (AJ)	percent (AK)	xchannel closed (AL)	m1 (AM)	m2 (AN)	m3 (AO)	m23 (AP)	m123 (AQ)	Calculated Survival s123 (AR)
10	17,499	11,401	11,791	5,595	61%	0.27		0.89		0.54	0.54	**46%**
11	32,283	33,356	7,855	11,124	24%	0.24		0.68		0.16	0.16	**84%**
12	18,036	9,726	10,522	5,796	60%	0.26		0.82		0.49	0.49	**51%**
13	10,213	9,758	3,171	2,870	69%	0.30		0.42		0.29	0.29	**71%**
14	18,085	9,986	10,848	5,814	60%	0.26		0.84		0.50	0.50	**50%**
15	30,608	23,810	11,498	10,497	24%	0.24		0.87		0.21	0.21	**79%**
16	25,208	21,533	7,855	8,478	25%	0.25		0.68		0.17	0.17	**83%**
17	15,776	9,400	8,701	4,950	62%	0.27		0.72		0.45	0.45	**55%**
18	21,077	13,694	11,368	6,933	58%	0.26		0.87		0.22	0.22	**78%**
19	13,775	9,726	6,928	4,202	64%	0.28		0.63		0.40	0.40	**60%**
20	17,256	11,075	12,035	5,504	61%	0.27		0.90		0.55	0.55	**45%**
21	13,905	9,726	8,002	4,251	64%	0.28		0.68		0.44	0.44	**56%**
22	16,101	10,002	9,693	5,072	62%	0.27		0.78		0.48	0.48	**52%**
23	25,469	21,760	11,872	8,575	25%	0.25		0.89		0.22	0.22	**78%**
24	32,966	27,599	11,661	11,379	24%	0.24		0.88		0.21	0.21	**79%**
25	15,223	9,953	9,904	4,743	63%	0.27		0.79		0.49	0.49	**51%**
26	31,437	31,275	11,108	10,808	24%	0.24		0.85		0.21	0.21	**79%**
27	18,410	14,312	7,481	5,935	60%	0.26		0.66		0.17	0.17	**83%**
28	23,696	21,386	12,230	7,912	57%	0.25		0.91		0.23	0.23	**77%**
29	73,885	103,387	12,393	26,683	23%	0.23		0.92		0.21	0.21	**79%**
30	63,265	86,700	7,481	22,711	23%	0.23		0.66		0.15	0.15	**85%**
31	58,060	88,506	7,546	20,765	23%	0.23		0.66		0.15	0.15	**85%**
32	17,678	11,384	9,530	5,662	60%	0.26		0.77		0.46	0.46	**54%**
33	13,856	5,107	11,466	4,232	64%	0.28		0.87		0.56	0.56	**44%**
34	43,228	51,132	9,937	15,217	23%	0.23		0.79		0.19	0.19	**81%**
35	14,474	5,595	11,628	4,463	63%	0.28		0.88		0.56	0.56	**44%**
36	16,312	9,742	8,294	5,151	62%	0.27		0.70		0.43	0.43	**57%**
37	15,906	7,042	11,352	4,999	62%	0.27		0.87		0.54	0.54	**46%**
38	22,183	15,141	11,401	7,347	58%	0.25		0.87		0.22	0.22	**78%**
39	62,208	72,681	12,279	22,316	23%	0.23		0.92		0.21	0.21	**79%**
40	67,347	91,173	12,718	24,238	23%	0.23		0.94		0.21	0.21	**79%**
41	64,078	100,492	7,546	23,015	23%	0.23		0.66		0.15	0.15	**85%**
42	33,421	27,908	8,083	11,550	24%	0.24		0.69		0.17	0.17	**83%**
43	22,004	16,426	11,401	7,280	58%	0.26		0.87		0.22	0.22	**78%**
44	84,716	174,458	12,718	30,734	22%	0.22		0.94		0.21	0.21	**79%**
45	18,638	9,791	11,580	6,021	60%	0.26		0.88		0.53	0.53	**47%**
46	43,179	36,967	11,433	15,199	23%	0.23		0.87		0.20	0.20	**80%**
47	35,162	31,486	7,563	12,200	24%	0.24		0.66		0.16	0.16	**84%**
48	15,776	9,742	8,555	4,950	62%	0.27		0.71		0.44	0.44	**56%**
49	15,255	7,676	11,352	4,755	62%	0.27		0.87		0.54	0.54	**46%**
50	13,710	4,050	11,336	4,178	64%	0.28		0.87		0.55	0.55	**45%**
51	18,313	11,092	11,466	5,899	60%	0.26		0.87		0.52	0.52	**48%**
52	27,046	21,256	10,766	9,165	25%	0.25		0.83		0.21	0.21	**79%**
53	81,236	120,528	12,718	29,432	22%	0.22		0.94		0.21	0.21	**79%**
54	29,632	26,184	11,742	10,132	24%	0.24		0.89		0.22	0.22	**78%**
55	36,837	49,555	11,889	12,827	24%	0.24		0.89		0.21	0.21	**79%**
56	30,640	28,006	7,546	10,509	24%	0.24		0.66		0.16	0.16	**84%**
57	71,868	125,944	12,718	25,929	23%	0.23		0.94		0.21	0.21	**79%**
58	92,669	208,107	7,546	33,708	22%	0.22		0.66		0.15	0.15	**85%**
59	47,538	46,286	11,677	16,829	23%	0.23		0.88		0.21	0.21	**79%**
60	20,394	11,206	11,384	6,677	59%	0.26		0.87		0.51	0.51	**49%**
61	48,400	75,283	11,775	17,152	23%	0.23		0.89		0.21	0.21	**79%**
62	78,422	129,977	12,555	28,380	22%	0.22		0.93		0.21	0.21	**79%**
63	18,670	11,840	9,969	6,033	60%	0.26		0.79		0.47	0.47	**53%**
64	16,768	7,253	11,498	5,321	61%	0.27		0.87		0.53	0.53	**47%**
65	10,701	10,181	2,131	3,052	68%	0.29		0.37		0.25	0.25	**75%**
66	47,668	61,378	11,986	16,878	23%	0.23		0.90		0.21	0.21	**79%**
67	27,241	28,201	7,481	9,238	25%	0.25		0.66		0.16	0.16	**84%**
68	69,884	118,382	9,563	25,187	23%	0.23		0.77		0.17	0.17	**83%**
69	28,185	25,615	7,563	9,591	25%	0.25		0.66		0.16	0.16	**84%**
70	51,165	79,366	12,718	18,186	23%	0.23		0.94		0.22	0.22	**78%**
71	59,150	106,997	10,132	21,172	23%	0.23		0.80		0.18	0.18	**82%**
72	47,359	76,422	4,505	16,762	23%	0.23		0.50		0.12	0.12	**88%**
73	17,646	12,019	8,083	5,650	61%	0.26		0.69		0.18	0.18	**82%**
74	21,712	14,670	11,563	7,170	58%	0.26		0.88		0.22	0.22	**78%**
75	16,735	10,132	8,620	5,309	61%	0.27		0.72		0.44	0.44	**56%**
76	26,022	19,240	11,336	8,782	25%	0.25		0.87		0.22	0.22	**78%**
77	12,994	9,937	4,749	3,910	65%	0.28		0.51		0.33	0.33	**67%**
78	22,395	14,865	9,888	7,426	58%	0.25		0.79		0.20	0.20	**80%**
79	10,653	9,937	1,968	3,034	68%	0.29		0.36		0.25	0.25	**75%**
80	12,149	10,295	3,773	3,594	66%	0.29		0.46		0.30	0.30	**70%**

Row	Cell	Formula	Cell	Formula	Cell	Formula
83	C10	='Study 467 Flow Data'!B8	Q10	='Study 467 Flow Data'!C8	AE10	='Study 467 Flow Data'!D8
84	D10	='Study 467 Flow Data'!L8 (HIDDEN)	R10	='Study 467 Flow Data'!M8 (HIDDEN)	AF10	='Study 467 Flow Data'!AI8
85	E10	='Study 467 Flow Data'!V8 (HIDDEN)	S10	='Study 467 Flow Data'!W8 (HIDDEN)	AG10	='Study 467 Flow Data'!N8 (HIDDEN)
86	F10	=(D10+E10)	T10	=(R10+S10)	AH10	='Study 467 Flow Data'!X8 (HIDDEN)
87	G10	=0.374*C10-950	U10	=0.374*Q10-950	AI10	=(AG10+AH10)
88	H10	=IF(C10>$H$3,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))	V10	=IF(Q10>$H$3,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))	AJ10	=0.374*AE10-950
89	I10	=(0.133*C10+829)/(C10-G10)	W10	=(0.133*Q10+829)/(Q10-U10)	AK10	=IF(AE10>$H$3,(0.133*AE10+829)/(AE10-AJ10),(0.293*AE10+2090)/(AE10-AJ10))
90	K10	=(-0.5916024)+(0.017968*$Q$1)+(0.000054*F10)	Y10	=(-0.5916024)+(0.017968*$Q$2)+(0.000054*T10)	AL10	=(0.133*AE10+829)/(AE10-AJ10)
91	L10	=-1.613493+(0.0319584*$Q$1)	AA10	=(Y10*V10)	AN10	=(-0.5916024)+(0.017968*$Q$3)+(0.000054*AI10)
92	M10	=(K10*H10)+(L10*(1-H10))	AB10	=X10+AA10-(X10*AA10)	AP10	=IF(AF10>=$H$4,(AN10*AL10),(AN10*AK10))
93	N10	=J10+M10-(J10*M10)	AC10	=1-AB10	AQ10	=AM10+AP10-(AM10*AP10)
94	O10	=1-N10			AR10	=1-AQ10
95					AT10	=(O10*0.25)+(AC10*0.5)+(AR10*0.25)

	AT	AU	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ
1	D1485 Sacramento River Spring Run Yearling Survival Model (continued)																												
2																													
3																													
4																													
5																													
6	**FEBRUARY**			Calculated										**MARCH**			Calculated												
7	Sac	Total		Steamboat								**Calculated**		Sac	Total		Steamboat								**Cacluated**				
8	River	Delta	CVP+SWP	& Sutter		x channel		Calculated Mortality				**Survival**		River	Delta	CVP+SWP	& Sutter		x channel		Calculated Mortality				**Survival**		**Weighted**		
9	Flows	Outflow	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	**s123**		Flows	Outflow	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	**s123**		**Total Survival**		
10	35,436	40,297	11,470	12,303	24%	0.24		0.93		0.22	0.22	**77.8%**		31,551	31,112	8,034	10,850	24%	0.24		0.830	0.144	0.311	0.311	**68.9%**		**48.7%**		
11	19,050	16,007	8,661	6,175	60%	0.26		0.77		0.20	0.20	**79.8%**		17,337	11,319	8,652	5,534	61%	0.27		0.864	0.144	0.581	0.581	**41.9%**		**63.7%**		
12	16,655	7,823	11,074	5,279	61%	0.27		0.90		0.55	0.55	**44.6%**		8,603	2,505	7,286	2,268	73%	0.31		0.790	0.144	0.614	0.614	**38.6%**		**44.3%**		
13	45,105	52,974	11,812	15,919	23%	0.23		0.94		0.22	0.22	**77.9%**		18,557	12,002	10,083	5,990	60%	0.26		0.941	0.144	0.353	0.353	**64.7%**		**54.2%**		
14	35,274	32,735	11,866	12,242	24%	0.24		0.95		0.23	0.23	**77.3%**		16,019	6,473	11,206	5,041	62%	0.27		1.000	0.144	0.673	0.673	**32.7%**		**52.0%**		
15	88,337	135,315	11,776	32,088	22%	0.22		0.94		0.21	0.21	**78.9%**		43,863	42,822	7,611	15,455	23%	0.23		0.808	0.144	0.300	0.300	**70.0%**		**51.2%**		
16	25,469	22,270	8,327	8,575	25%	0.25		0.76		0.19	0.19	**81.1%**		86,229	99,126	8,652	31,300	22%	0.22		0.864	0.144	0.305	0.305	**69.5%**		**52.0%**		
17	18,780	9,921	11,470	6,074	60%	0.26		0.93		0.55	0.55	**44.7%**		14,670	9,042	7,579	4,536	63%	0.27		0.806	0.144	0.561	0.561	**43.9%**		**43.0%**		
18	17,592	9,525	11,488	5,629	61%	0.26		0.93		0.56	0.56	**43.9%**		30,852	26,087	8,945	10,589	24%	0.24		0.880	0.144	0.323	0.323	**67.7%**		**52.5%**		
19	12,640	3,871	10,984	3,777	65%	0.28		0.90		0.59	0.59	**41.2%**		9,319	2,505	7,709	2,535	71%	0.30		0.813	0.144	0.619	0.619	**38.1%**		**50.3%**		
20	15,403	16,916	12,309	4,811	62%	0.27		0.97		0.26	0.26	**73.6%**		10,116	6,066	8,620	2,833	69%	0.30		0.862	0.144	0.642	0.642	**35.8%**		**48.6%**		
21	13,324	3,907	11,596	4,033	65%	0.28		0.93		0.60	0.60	**39.8%**		10,994	2,505	10,945	3,162	68%	0.29		0.988	0.144	0.716	0.716	**28.4%**		**53.7%**		
22	13,018	6,518	11,740	3,919	65%	0.28		0.94		0.61	0.61	**39.0%**		12,214	2,505	10,864	3,618	66%	0.29		0.983	0.144	0.698	0.698	**30.2%**		**49.9%**		
23	13,000	11,992	5,060	3,912	65%	0.28		0.58		0.38	0.38	**62.4%**		24,916	21,256	11,498	8,368	57%	0.25		1.000	0.144	0.358	0.358	**64.2%**		**57.0%**		
24	53,442	90,420	11,631	19,037	23%	0.23		0.93		0.22	0.22	**78.4%**		34,202	32,999	8,392	11,842	24%	0.24		0.850	0.144	0.314	0.314	**68.6%**		**50.0%**		
25	32,033	44,421	12,586	11,030	24%	0.24		0.99		0.24	0.24	**76.1%**		37,260	49,522	8,229	12,985	24%	0.24		0.841	0.144	0.310	0.310	**69.0%**		**47.3%**		
26	82,359	151,682	8,229	29,852	22%	0.22		0.75		0.17	0.17	**83.1%**		78,634	176,279	7,595	28,459	22%	0.22		0.807	0.144	0.293	0.293	**70.7%**		**65.4%**		
27	19,032	15,071	8,211	6,168	60%	0.26		0.75		0.20	0.20	**80.4%**		16,394	12,230	7,611	5,181	61%	0.27		0.808	0.144	0.322	0.322	**67.8%**		**55.4%**		
28	47,722	58,396	12,309	16,898	23%	0.23		0.97		0.23	0.23	**77.4%**		63,606	108,672	9,872	22,839	23%	0.23		0.930	0.144	0.323	0.323	**67.7%**		**59.9%**		
29	75,031	127,104	10,065	27,112	23%	0.23		0.85		0.19	0.19	**80.8%**		58,581	96,361	8,067	20,959	23%	0.23		0.832	0.144	0.302	0.302	**69.8%**		**62.7%**		
30	78,344	144,966	8,247	28,351	23%	0.23		0.75		0.17	0.17	**83.1%**		27,095	29,681	8,229	9,183	25%	0.25		0.841	0.144	0.317	0.317	**68.3%**		**66.6%**		
31	52,253	61,706	8,301	18,593	23%	0.23		0.76		0.17	0.17	**82.6%**		64,598	90,262	8,278	23,210	23%	0.23		0.844	0.144	0.303	0.303	**69.7%**		**66.2%**		
32	27,451	27,190	7,962	9,317	25%	0.25		0.74		0.18	0.18	**81.8%**		25,094	21,874	8,246	8,435	25%	0.25		0.842	0.144	0.319	0.319	**68.1%**		**46.3%**		
33	39,451	49,156	8,643	13,805	24%	0.24		0.77		0.18	0.18	**81.7%**		27,030	31,372	7,497	9,159	25%	0.25		0.801	0.144	0.307	0.307	**69.3%**		**45.9%**		
34	23,588	21,931	8,697	7,872	57%	0.25		0.78		0.20	0.20	**80.4%**		23,533	20,459	8,668	7,851	57%	0.25		0.865	0.144	0.326	0.326	**67.4%**		**64.4%**		
35	20,563	13,378	11,002	6,740	59%	0.26		0.90		0.23	0.23	**76.8%**		21,874	16,556	8,408	7,231	58%	0.26		0.851	0.144	0.325	0.325	**67.5%**		**44.8%**		
36	11,109	2,417	10,031	3,205	68%	0.29		0.85		0.57	0.57	**42.6%**		16,735	12,002	7,237	5,309	61%	0.27		0.787	0.144	0.316	0.316	**68.4%**		**49.9%**		
37	16,133	7,202	11,470	5,084	62%	0.27		0.93		0.57	0.57	**42.9%**		41,813	40,577	9,319	14,688	24%	0.24		0.900	0.144	0.322	0.322	**67.8%**		**43.2%**		
38	36,372	30,610	11,794	12,653	24%	0.24		0.94		0.23	0.23	**77.5%**		23,615	18,052	8,685	7,882	57%	0.25		0.866	0.144	0.326	0.326	**67.4%**		**53.1%**		
39	60,572	70,331	8,967	21,704	23%	0.23		0.79		0.18	0.18	**81.9%**		29,323	30,039	8,929	10,017	24%	0.24		0.879	0.144	0.324	0.324	**67.6%**		**76.3%**		
40	62,499	79,241	8,762	22,425	23%	0.23		0.78		0.18	0.18	**82.2%**		57,524	71,673	8,181	20,564	23%	0.23		0.838	0.144	0.303	0.303	**69.7%**		**64.3%**		
41	28,341	27,441	8,337	9,650	25%	0.25		0.76		0.19	0.19	**81.4%**		24,899	20,638	8,343	8,362	57%	0.25		0.847	0.144	0.320	0.320	**68.0%**		**66.8%**		
42	57,151	57,475	8,931	20,424	23%	0.23		0.79		0.18	0.18	**81.9%**		49,538	46,400	8,912	17,577	23%	0.23		0.878	0.144	0.314	0.314	**68.6%**		**51.7%**		
43	16,295	7,328	11,506	5,144	62%	0.27		0.93		0.57	0.57	**42.9%**		15,158	8,490	8,473	4,719	63%	0.27		0.854	0.144	0.588	0.588	**41.2%**		**61.5%**		
44	61,543	90,559	8,658	22,067	23%	0.23		0.77		0.18	0.18	**82.3%**		36,674	38,935	8,278	12,766	24%	0.24		0.844	0.144	0.311	0.311	**68.9%**		**62.7%**		
45	33,149	29,620	9,057	11,448	24%	0.24		0.80		0.19	0.19	**80.8%**		44,383	43,423	8,815	15,649	23%	0.23		0.873	0.144	0.315	0.315	**68.5%**		**45.2%**		
46	65,740	158,236	9,327	23,637	23%	0.23		0.81		0.18	0.18	**81.6%**		93,612	127,977	8,311	34,061	22%	0.22		0.845	0.144	0.301	0.301	**69.9%**		**52.8%**		
47	50,075	52,541	8,337	17,778	23%	0.23		0.76		0.18	0.18	**82.4%**		21,760	17,304	8,343	7,188	58%	0.26		0.847	0.144	0.324	0.324	**67.6%**		**52.3%**		
48	27,051	22,879	11,144	9,167	25%	0.25		0.91		0.22	0.22	**77.5%**		21,809	13,824	10,620	7,207	58%	0.26		0.970	0.144	0.355	0.355	**64.5%**		**52.8%**		
49	33,347	26,217	9,831	11,522	24%	0.24		0.84		0.20	0.20	**79.8%**		21,338	15,092	8,148	7,030	58%	0.26		0.837	0.144	0.322	0.322	**67.8%**		**46.3%**		
50	46,707	56,899	11,164	16,519	23%	0.23		0.91		0.21	0.21	**78.8%**		27,014	25,046	8,571	9,153	25%	0.25		0.859	0.144	0.321	0.321	**67.9%**		**47.0%**		
51	54,846	69,143	12,694	19,562	23%	0.23		0.99		0.23	0.23	**77.2%**		32,641	29,258	8,685	11,258	24%	0.24		0.866	0.144	0.319	0.319	**68.1%**		**60.5%**		
52	17,246	10,483	8,640	5,500	61%	0.27		0.77		0.47	0.47	**53.0%**		16,345	9,156	8,929	5,163	62%	0.27		0.879	0.144	0.596	0.596	**40.4%**		**59.6%**		
53	33,329	31,781	12,208	11,515	24%	0.24		0.97		0.23	0.23	**76.7%**		21,386	18,703	8,083	7,049	58%	0.26		0.833	0.144	0.321	0.321	**67.9%**		**62.6%**		
54	26,775	26,379	8,697	9,064	25%	0.25		0.78		0.19	0.19	**80.8%**		28,689	24,265	8,668	9,780	25%	0.25		0.865	0.144	0.321	0.321	**67.9%**		**61.7%**		
55	43,106	56,683	8,895	15,172	23%	0.23		0.79		0.18	0.18	**81.5%**		54,483	61,915	7,530	19,426	23%	0.23		0.803	0.144	0.296	0.296	**70.4%**		**64.5%**		
56	54,520	58,327	8,049	19,440	23%	0.23		0.74		0.17	0.17	**82.9%**		36,788	35,649	7,741	12,809	24%	0.24		0.815	0.144	0.304	0.304	**69.6%**		**58.7%**		
57	67,486	148,387	7,454	24,290	23%	0.23		0.71		0.16	0.16	**83.9%**		45,326	71,250	6,733	16,002	23%	0.23		0.760	0.144	0.288	0.288	**71.2%**		**63.3%**		
58	57,565	91,254	7,851	20,579	23%	0.23		0.73		0.17	0.17	**83.2%**		35,812	40,870	7,335	12,444	24%	0.24		0.793	0.144	0.299	0.299	**70.1%**		**67.3%**		
59	28,521	24,308	8,967	9,717	25%	0.25		0.79		0.19	0.19	**80.6%**		51,506	49,083	8,929	18,313	23%	0.23		0.879	0.144	0.314	0.314	**68.6%**		**65.6%**		
60	24,217	17,872	9,075	8,107	57%	0.25		0.80		0.20	0.20	**80.0%**		32,933	25,615	8,799	11,367	24%	0.24		0.872	0.144	0.320	0.320	**68.0%**		**47.9%**		
61	70,961	95,864	9,669	25,590	23%	0.23		0.83		0.19	0.19	**81.2%**		47,554	62,712	8,701	16,835	23%	0.23		0.866	0.144	0.312	0.312	**68.8%**		**75.5%**		
62	41,918	46,005	8,679	14,727	24%	0.24		0.78		0.18	0.18	**81.7%**		100,199	113,047	8,668	36,524	22%	0.22		0.865	0.144	0.304	0.304	**69.6%**		**76.8%**		
63	58,807	63,345	8,931	21,044	23%	0.23		0.79		0.18	0.18	**81.9%**		75,999	90,685	8,929	27,474	23%	0.23		0.879	0.144	0.310	0.310	**69.0%**		**47.5%**		
64	19,523	13,369	8,536	6,352	59%	0.26		0.77		0.20	0.20	**80.0%**		18,361	10,653	8,652	5,917	60%	0.26		0.864	0.144	0.576	0.576	**42.4%**		**46.1%**		
65	7,256	2,503	5,798	1,764	77%	0.33		0.62		0.48	0.48	**52.4%**		6,863	3,952	3,708	1,617	78%	0.33		0.597	0.144	0.498	0.498	**50.2%**		**57.4%**		
66	51,371	56,827	12,406	18,263	23%	0.23		0.98		0.23	0.23	**77.4%**		46,465	70,616	8,115	16,428	23%	0.23		0.835	0.144	0.305	0.305	**69.5%**		**56.7%**		
67	42,044	49,570	8,211	14,774	24%	0.24		0.75		0.18	0.18	**82.3%**		32,592	35,958	8,229	11,239	24%	0.24		0.841	0.144	0.313	0.313	**68.7%**		**51.5%**		
68	69,453	138,698	7,771	25,026	23%	0.23		0.73		0.16	0.16	**83.5%**		36,479	61,020	7,579	12,693	24%	0.24		0.806	0.144	0.302	0.302	**69.8%**		**52.2%**		
69	29,674	24,956	8,337	10,148	24%	0.24		0.76		0.19	0.19	**81.5%**		32,494	29,258	8,343	11,203	24%	0.24		0.847	0.144	0.314	0.314	**68.6%**		**52.4%**		
70	65,650	106,613	9,417	23,603	23%	0.23		0.82		0.19	0.19	**81.5%**		69,087	89,790	8,896	24,889	23%	0.23		0.877	0.144	0.310	0.310	**69.0%**		**76.5%**		
71	82,917	185,029	7,112	30,061	22%	0.22		0.69		0.15	0.15	**84.5%**		81,935	251,823	4,684	29,694	22%	0.22		0.650	0.144	0.258	0.258	**74.2%**		**76.8%**		
72	36,004	44,036	5,285	12,516	24%	0.24		0.59		0.14	0.14	**85.8%**		36,495	36,674	7,416	12,699	24%	0.24		0.797	0.144	0.300	0.300	**70.0%**		**81.8%**		
73	22,381	18,078	8,895	7,421	58%	0.25		0.79		0.20	0.20	**80.0%**		21,809	16,816	8,912	7,207	58%	0.26		0.878	0.144	0.332	0.332	**66.8%**		**64.4%**		
74	99,825	227,055	12,748	36,385	22%	0.22		1.00		0.22	0.22	**77.9%**		72,535	157,479	6,245	26,178	23%	0.23		0.734	0.144	0.277	0.277	**72.3%**		**50.1%**		
75	23,030	20,563	5,852	7,663	58%	0.25		0.62		0.16	0.16	**84.2%**		29,876	26,591	6,863	10,224	24%	0.24		0.767	0.144	0.296	0.296	**70.4%**		**50.5%**		
76	11,248	2,417	10,205	3,257	67%	0.29		0.86		0.58	0.58	**42.2%**		7,075	2,505	5,351	1,696	77%	0.33		0.686	0.144	0.563	0.563	**43.7%**		**50.0%**		
77	9,093	2,503	8,355	2,451	72%	0.31		0.76		0.54	0.54	**45.7%**		46,611	39,081	11,189	16,483	23%	0.23		1.000	0.144	0.344	0.344	**65.6%**		**53.8%**		
78	17,754	11,956	8,715	5,690	60%	0.26		0.78		0.47	0.47	**53.0%**		15,483	9,872	6,603	4,841	62%	0.27		0.753	0.144	0.523	0.523	**47.7%**		**47.7%**		
79	8,211	2,503	6,932	2,121	74%	0.32		0.68		0.50	0.50	**49.7%**		30,429	24,249	11,319	10,430	24%	0.24		1.000	0.144	0.353	0.353	**64.7%**		**58.5%**		
80	31,415	26,999	11,300	10,799	24%	0.24		0.92		0.22	0.22	**77.7%**		20,102	12,669	10,913	6,568	59%	0.26		0.986	0.144	0.362	0.362	**63.8%**		**60.9%**		
81																											**56.63%**		
82																													
83	AT10 ='Study 467 Flow Data'!E8													BI10 ='Study 467 Flow Data'!F8															
84	AU10 ='Study 467 Flow Data'!AJ8													BJ10 ='Study 467 Flow Data'!AK8															
85	AV10 ='Study 467 Flow Data'!O8				(HIDDEN)									BK10 ='Study 467 Flow Data'!P8				(HIDDEN)											
86	AW10 ='Study 467 Flow Data'!Y8				(HIDDEN)									BL10 ='Study 467 Flow Data'!Z8				(HIDDEN)											
87	AX10 =(AV10+AW10)													BM10 =(BK10+BL10)															
88	AY10 =0.374*AT10-950													BN10 =0.374*BI10-950															
89	AZ10 =IF(AT10>$H$3,(0.133*AT10+829)/(AT10-AY10),(0.293*AT10+2090)/(AT10-AY10))													BO10 =IF(BI10>$H$3,(0.133*BI10+829)/(BI10-BN10),(0.293*BI10+2090)/(BI10-BN10))															
90	BA10 =(0.133*AT10+829)/(AT10-AY10)													BP10 =(0.133*BI10+829)/(BI10-BN10)															
91	BB10													BQ10															
92	BC10 =(-0.5916024)+(0.017968*$Q$4)+(0.000054*AX10)													BR10 =IF(((-0.5916024)+(0.017968*$Q$5)+(0.000054*BM10))>1,1,((-0.5916024)+(0.017968*$Q$5)+(0.000054*BM10)))															
93	BD10													BS10 =-1.613493+(0.0319584*$Q$5)															
94	BE10 =IF(AU10>=$H$4,(BC10*BA10),(BC10*AZ10))													BT10 =IF(BJ10>=$H$4,(BR10*BP10)+(BS10*(1-BP10)),(BR10*BO10)+(BS10*(1-BO10)))															
95	BF10 =BB10+BE10-(BB10*BE10)													BU10 =BQ10+BT10-(BQ10*BT10)															
96	BG10 =1-BF10													BV10 =1-BU10															
97														BX10 **=(O10*0.37)+(AC10*0.42)+(AR10*0.13)+(BG10*0.05)+(BV10*0.03)**															

Study 468 Sacramento River Spring Run Yearling Survival Model
Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

Year	Water Year Type	NOVEMBER Sac River Flow	CVP Flow	SWP Flow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	A	11,814	4,285	4,319	8,604	3,469	67%	0.29	0	0.825	0.080	0.576	0.576	**42.4%**
1923	B	18,133	4,302	6,672	10,974	5,832	60%	0.26	0	0.953	0.080	0.606	0.606	**39.4%**
1924	C	11,243	3,832	3,748	7,579	3,255	67%	0.29	0	0.770	0.080	0.545	0.545	**45.5%**
1925	D	7,025	1,311	3,210	4,521	1,677	78%	0.33	0	0.605	0.080	0.487	0.487	**51.3%**
1926	D	10,924	4,302	3,109	7,411	3,135	68%	0.29	0	0.761	0.080	0.543	0.543	**45.7%**
1927	W	20,284	4,252	6,672	10,924	6,636	59%	0.26	0	0.951	0.080	0.593	0.593	**40.7%**
1928	A	22,940	4,285	6,672	10,957	7,629	58%	0.25	0	0.952	0.080	0.582	0.582	**41.8%**
1929	C	12,856	4,269	5,462	9,730	3,858	65%	0.28	0	0.886	0.080	0.605	0.605	**39.5%**
1930	D	7,159	2,286	1,765	4,050	1,728	77%	0.33	0	0.579	0.080	0.465	0.465	**53.5%**
1931	C	9,798	2,655	3,277	5,932	2,714	70%	0.30	0	0.681	0.080	0.501	0.501	**49.9%**
1932	D	8,050	1,176	1,647	2,823	2,061	74%	0.32	0	0.513	0.080	0.402	0.402	**59.8%**
1933	C	9,512	3,059	2,605	5,663	2,607	71%	0.30	0	0.667	0.080	0.494	0.494	**50.6%**
1934	C	8,083	992	1,563	2,554	2,073	74%	0.32	0	0.499	0.080	0.391	0.391	**60.9%**
1935	B	9,209	2,538	4,285	6,823	2,494	71%	0.31	0	0.729	0.080	0.543	0.543	**45.7%**
1936	B	11,361	4,285	3,445	7,731	3,299	67%	0.29	0	0.778	0.080	0.549	0.549	**45.1%**
1937	B	11,663	4,285	3,664	7,949	3,412	67%	0.29	0	0.790	0.080	0.554	0.554	**44.6%**
1938	W	23,696	4,285	6,672	10,957	7,912	57%	0.25	0	0.952	0.080	0.579	0.579	**42.1%**
1939	D	19,444	4,302	5,277	9,579	6,322	59%	0.26	0	0.878	0.080	0.554	0.554	**44.6%**
1940	A	8,436	2,807	1,748	4,554	2,205	73%	0.31	0	0.607	0.080	0.466	0.466	**53.4%**
1941	W	13,781	4,269	6,100	10,369	4,204	64%	0.28	0	0.921	0.080	0.618	0.618	**38.2%**
1942	W	18,184	4,302	6,168	10,470	5,851	60%	0.26	0	0.926	0.080	0.589	0.589	**41.1%**
1943	W	21,914	4,302	6,521	10,823	7,246	58%	0.26	0	0.945	0.080	0.582	0.582	**41.8%**
1944	D	14,890	4,285	6,672	10,957	4,619	63%	0.27	0	0.952	0.080	0.628	0.628	**37.2%**
1945	B	13,764	4,269	6,605	10,873	4,198	64%	0.28	0	0.948	0.080	0.636	0.636	**36.4%**
1946	B	20,637	4,285	6,672	10,957	6,768	59%	0.26	0	0.952	0.080	0.592	0.592	**40.8%**
1947	D	13,781	4,269	6,621	10,890	4,204	64%	0.28	0	0.949	0.080	0.636	0.636	**36.4%**
1948	B	10,453	3,025	3,630	6,655	2,959	69%	0.30	0	0.720	0.080	0.520	0.520	**48.0%**
1949	D	14,453	4,269	6,235	10,503	4,455	63%	0.28	0	0.928	0.080	0.617	0.617	**38.3%**
1950	B	11,411	4,285	3,378	7,663	3,318	67%	0.29	0	0.775	0.080	0.546	0.546	**45.4%**
1951	A	41,863	4,269	6,672	10,940	14,707	24%	0.24	0	0.951	0.080	0.286	0.286	**71.4%**
1952	W	16,789	4,285	6,672	10,957	5,329	61%	0.27	0	0.952	0.080	0.614	0.614	**38.6%**
1953	W	16,537	4,302	4,084	8,386	5,235	61%	0.27	0	0.814	0.080	0.530	0.530	**47.0%**
1954	A	20,923	4,285	6,672	10,957	6,875	59%	0.26	0	0.952	0.080	0.591	0.591	**40.9%**
1955	D	20,856	4,285	6,672	10,957	6,850	59%	0.26	0	0.952	0.080	0.591	0.591	**40.9%**
1956	W	12,184	4,269	4,218	8,487	3,607	66%	0.29	0	0.819	0.080	0.568	0.568	**43.2%**
1957	A	15,478	4,302	6,672	10,974	4,839	62%	0.27	0	0.953	0.080	0.624	0.624	**37.6%**
1958	W	19,259	4,285	6,672	10,957	6,253	59%	0.26	0	0.952	0.080	0.599	0.599	**40.1%**
1959	B	16,133	4,302	4,185	8,487	5,084	62%	0.27	0	0.819	0.080	0.536	0.536	**46.4%**
NOVEND

DECTABLE

Year	JANUARY Sac River Flows	CVP Flows	SWP Flows	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	17,499	4,212	7,579	11,791	5,595	61%	0.27	0	0.890	0.000	0.236	0.236	**76.4%**
1923	32,283	4,212	3,643	7,855	11,124	24%	0.24	0	0.677	0.000	0.164	0.164	**83.6%**
1924	14,621	4,212	6,652	10,864	4,518	63%	0.27	0	0.840	0.000	0.230	0.230	**77.0%**
1925	10,213	3,545	3,155	6,701	2,870	69%	0.30	0	0.615	0.000	0.183	0.183	**81.7%**
1926	19,776	4,212	7,140	11,352	6,446	59%	0.26	0	0.866	0.000	0.225	0.225	**77.5%**
1927	29,681	4,212	7,286	11,498	10,151	24%	0.24	0	0.874	0.000	0.214	0.214	**78.6%**
1928	26,103	4,212	3,643	7,855	8,812	25%	0.25	0	0.677	0.000	0.168	0.168	**83.2%**
1929	15,515	4,212	7,091	11,303	4,853	62%	0.27	0	0.863	0.000	0.234	0.234	**76.6%**
1930	20,768	4,212	7,091	11,303	6,817	59%	0.26	0	0.863	0.000	0.222	0.222	**77.8%**
1931	11,970	4,212	4,879	9,091	3,527	66%	0.29	0	0.744	0.000	0.213	0.213	**78.7%**
1932	17,256	4,212	7,823	12,035	5,504	61%	0.27	0	0.903	0.000	0.240	0.240	**76.0%**
1933	12,100	4,212	5,416	9,628	3,575	66%	0.29	0	0.773	0.000	0.221	0.221	**77.9%**
1934	16,101	4,212	7,156	11,368	5,072	62%	0.27	0	0.867	0.000	0.233	0.233	**76.7%**
1935	25,469	4,212	7,660	11,872	8,575	25%	0.25	0	0.894	0.000	0.223	0.223	**77.7%**
1936	32,039	4,212	7,449	11,661	11,033	24%	0.24	0	0.883	0.000	0.214	0.214	**78.6%**
1937	16,215	4,212	7,579	11,791	5,114	62%	0.27	0	0.890	0.000	0.239	0.239	**76.1%**
1938	31,437	4,212	3,936	8,148	10,808	24%	0.24	0	0.693	0.000	0.168	0.168	**83.2%**
1939	18,410	4,212	3,236	7,449	5,935	60%	0.26	0	0.655	0.000	0.172	0.172	**82.8%**
1940	23,452	4,212	8,018	12,230	7,821	57%	0.25	0	0.913	0.000	0.231	0.231	**76.9%**
1941	72,291	4,212	8,132	12,344	26,087	23%	0.23	0	0.919	0.000	0.208	0.208	**79.2%**
1942	63,265	4,212	3,236	7,449	22,711	23%	0.23	0	0.655	0.000	0.149	0.149	**85.1%**
1943	58,060	4,212	3,301	7,514	20,765	23%	0.23	0	0.659	0.000	0.151	0.151	**84.9%**
1944	17,678	4,212	3,269	7,481	5,662	60%	0.26	0	0.657	0.000	0.174	0.174	**82.6%**
1945	12,685	4,212	5,188	9,400	3,794	65%	0.28	0	0.761	0.000	0.215	0.215	**78.5%**
1946	43,228	4,212	3,643	7,855	15,217	23%	0.23	0	0.677	0.000	0.159	0.159	**84.1%**
1947	15,223	4,212	6,684	10,897	4,743	63%	0.27	0	0.841	0.000	0.229	0.229	**77.1%**
1948	14,897	4,212	6,522	10,734	4,622	63%	0.27	0	0.833	0.000	0.228	0.228	**77.2%**
1949	14,930	4,212	6,814	11,027	4,634	63%	0.27	0	0.848	0.000	0.232	0.232	**76.8%**
1950	20,931	4,212	7,172	11,384	6,878	59%	0.26	0	0.868	0.000	0.223	0.223	**77.7%**
1951	62,208	4,212	7,319	11,531	22,316	23%	0.23	0	0.876	0.000	0.200	0.200	**80.0%**
1952	67,347	4,212	6,847	11,059	24,238	23%	0.23	0	0.850	0.000	0.193	0.193	**80.7%**
1953	64,078	4,212	3,334	7,546	23,015	23%	0.23	0	0.660	0.000	0.150	0.150	**85.0%**
1954	33,421	4,212	3,854	8,067	11,550	24%	0.24	0	0.688	0.000	0.166	0.166	**83.4%**
1955	22,265	4,212	6,017	10,230	7,377	58%	0.25	0	0.805	0.000	0.205	0.205	**79.5%**
1956	83,724	4,212	8,018	12,230	30,363	22%	0.22	0	0.913	0.000	0.205	0.205	**79.5%**
1957	18,638	4,212	3,887	8,099	6,021	60%	0.26	0	0.690	0.000	0.181	0.181	**81.9%**
1958	36,463	4,212	3,367	7,579	12,687	24%	0.24	0	0.662	0.000	0.158	0.158	**84.2%**
1959	35,162	4,212	3,334	7,546	12,200	24%	0.24	0	0.660	0.000	0.158	0.158	**84.2%**
1960	14,523	4,212	6,408	10,620	4,482	63%	0.27	0	0.826	0.000	0.227	0.227	**77.3%**
1961	15,011	4,212	7,075	11,287	4,664	63%	0.27	0	0.862	0.000	0.235	0.235	**76.5%**
1962	12,653	4,212	3,919	8,132	3,782	65%	0.28	0	0.692	0.000	0.196	0.196	**80.4%**
1963	18,280	4,212	7,253	11,466	5,887	60%	0.26	0	0.872	0.000	0.229	0.229	**77.1%**
1964	25,534	4,212	3,871	8,083	8,600	25%	0.25	0	0.689	0.000	0.172	0.172	**82.8%**
1965	81,236	4,212	8,506	12,718	29,432	22%	0.22	0	0.940	0.000	0.211	0.211	**78.9%**
1966	29,632	4,212	3,659	7,872	10,132	24%	0.24	0	0.678	0.000	0.166	0.166	**83.4%**
1967	34,625	4,212	7,676	11,889	12,000	24%	0.24	0	0.895	0.000	0.215	0.215	**78.5%**
1968	30,640	4,212	3,334	7,546	10,509	24%	0.24	0	0.660	0.000	0.161	0.161	**83.9%**
1969	68,502	4,212	5,286	9,498	24,670	23%	0.23	0	0.766	0.000	0.174	0.174	**82.6%**
1970	92,669	4,163	3,334	7,497	33,708	22%	0.22	0	0.658	0.000	0.147	0.147	**85.3%**
1971	46,888	4,212	5,465	9,677	16,586	23%	0.23	0	0.775	0.000	0.181	0.181	**81.9%**
1972	20,394	4,212	3,887	8,099	6,677	59%	0.26	0	0.690	0.000	0.178	0.178	**82.2%**
1973	49,376	4,212	6,408	10,620	17,517	23%	0.23	0	0.826	0.000	0.192	0.192	**80.8%**
1974	78,422	4,212	3,643	7,855	28,380	22%	0.22	0	0.677	0.000	0.152	0.152	**84.8%**
1975	18,670	4,212	3,854	8,067	6,033	60%	0.26	0	0.688	0.000	0.180	0.180	**82.0%**
1976	16,768	4,212	3,806	8,018	5,321	61%	0.27	0	0.686	0.000	0.183	0.183	**81.7%**
1977	7,660	2,098	2,440	4,538	1,915	75%	0.32	0	0.498	0.000	0.160	0.160	**84.0%**
1978	43,066	2,521	7,774	10,295	15,157	23%	0.23	0	0.809	0.000	0.190	0.190	**81.0%**
1979	27,241	4,212	3,269	7,481	9,238	25%	0.25	0	0.657	0.000	0.162	0.162	**83.8%**
1980	63,623	4,212	3,155	7,367	22,845	23%	0.23	0	0.651	0.000	0.148	0.148	**85.2%**
1981	28,607	4,212	3,350	7,563	9,749	25%	0.25	0	0.661	0.000	0.162	0.162	**83.8%**
1982	51,165	4,212	7,644	11,856	18,186	23%	0.23	0	0.893	0.000	0.207	0.207	**79.3%**
1983	59,150	4,212	2,651	6,863	21,172	23%	0.23	0	0.624	0.000	0.143	0.143	**85.7%**
1984	47,359	1,334	2,879	4,212	16,762	23%	0.23	0	0.480	0.000	0.112	0.112	**88.8%**
1985	16,800	4,212	3,871	8,083	5,333	61%	0.27	0	0.689	0.000	0.184	0.184	**81.6%**
1986	21,500	4,212	7,351	11,563	7,091	58%	0.26	0	0.877	0.000	0.225	0.225	**77.5%**
1987	16,735	1,106	6,359	7,465	5,309	61%	0.27	0	0.656	0.000	0.175	0.175	**82.5%**
1988	25,534	4,212	7,058	11,271	8,600	25%	0.25	0	0.862	0.000	0.215	0.215	**78.5%**
1989	12,002	4,196	4,521	8,717	3,539	66%	0.29	0	0.724	0.000	0.207	0.207	**79.3%**
1990	21,582	2,553	7,058	9,612	7,122	58%	0.26	0	0.772	0.000	0.197	0.197	**80.3%**
1991	6,847	1,691	1,708	3,399	1,611	78%	0.33	0	0.436	0.000	0.145	0.145	**85.5%**
1992	12,133	4,212	4,781	8,994	3,588	66%	0.29	0	0.739	0.000	0.211	0.211	**78.9%**

Formulas: Sacramento River Spring Smolt Yearling Survival Model

C10 ='Study 468 Flow Data'!B7
D10 ='Study 468 Flow Data'!L7
E10 ='Study 468 Flow Data'!V7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
J10 =IF(-2.45925+(0.0420748*$T$1)>0,-2.45925+(0.0420748*$T$1),0)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =IF(-1.613493+(0.0319584*$T$1)>0,-1.613493+(0.0319584*$T$1),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 468 Flow Data'!C7
R10 ='Study 468 Flow Data'!M7
S10 ='Study 468 Flow Data'!W7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
Z10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 468 Flow Data'!D7
AF10 ='Study 468 Flow Data'!N7
AG10 ='Study 468 Flow Data'!X7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AN10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

Study 468 Sacramento River Spring Run Yearling Survival Model (continued)

February Water Temp 50 F

Cross Channel Closed Over 25000 cfs — March Water Temp 55 F

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU
6	**FEBRUARY**				Calculated										**MARCH**				Calculated										
7	Sac				Sutter &								**Calculated**		Sac				Sutter &								**Calculated**		**Weighted**
8	River	CVP	SWP	CVP + SWP	Steamboat		X-Channel		Calculated Mortality				**Survivability**		River			CVP + SWP	Steamboat		X-Channel		Calculated Mortality				**Survivability**		**Total**
9	Flow	Flow	Flow	Exports	Slough Q	Percent	Closed	m1	m2	m3	m23	m123	**s123**		Flow	CVP	SWP	exports	Slough Q	percent	Closed	m1	m2	m3	m23	m123	**s123**		**Survival**
10	34,409	4,249	6,356	10,606	11,919	24%	0.24	0	0.879	0.000	0.211	0.211	**78.9%**		31,551	3,773	4,147	7,920	10,850	24%	0.24	0	0.824	0.144	0.309	0.309	**69.1%**		**57.1%**
11	24,326	4,285	2,377	6,662	8,148	57%	0.25	0	0.667	0.000	0.167	0.167	**83.3%**		17,174	4,228	3,367	7,595	5,473	61%	0.27	0	0.807	0.144	0.320	0.320	**68.0%**		**66.4%**
12	16,898	4,068	4,624	8,693	5,370	61%	0.27	0	0.776	0.000	0.207	0.207	**79.3%**		12,100	1,480	1,675	3,155	3,575	66%	0.29	0	0.567	0.144	0.265	0.265	**73.5%**		**58.8%**
13	44,583	4,213	7,581	11,794	15,724	23%	0.23	0	0.944	0.000	0.221	0.221	**77.9%**		18,557	3,708	4,163	7,872	5,990	60%	0.26	0	0.822	0.144	0.322	0.322	**67.8%**		**61.9%**
14	36,714	4,231	7,635	11,866	12,781	24%	0.24	0	0.948	0.000	0.226	0.226	**77.4%**		18,947	4,228	3,497	7,725	6,136	60%	0.26	0	0.814	0.144	0.319	0.319	**68.1%**		**60.5%**
15	88,121	2,827	8,499	11,326	32,007	22%	0.22	0	0.918	0.000	0.205	0.205	**79.5%**		43,863	3,236	4,147	7,384	15,455	23%	0.23	0	0.795	0.144	0.297	0.297	**70.3%**		**56.3%**
16	27,364	4,103	4,225	8,327	9,284	25%	0.25	0	0.756	0.000	0.187	0.187	**81.3%**		86,229	4,228	4,424	8,652	31,300	22%	0.22	0	0.864	0.144	0.305	0.305	**69.5%**		**59.5%**
17	18,528	4,231	3,853	8,085	5,980	60%	0.26	0	0.743	0.000	0.195	0.195	**80.5%**		16,930	4,066	2,765	6,831	5,382	61%	0.27	0	0.765	0.144	0.310	0.310	**69.0%**		**56.3%**
18	15,683	2,791	3,997	6,788	4,916	62%	0.27	0	0.673	0.000	0.182	0.182	**81.8%**		30,087	2,976	4,066	7,042	10,303	24%	0.24	0	0.777	0.144	0.299	0.299	**70.1%**		**61.9%**
19	11,092	3,331	1,891	5,222	3,198	68%	0.29	0	0.589	0.000	0.172	0.172	**82.8%**		8,701	1,659	1,626	3,285	2,304	73%	0.31	0	0.574	0.144	0.278	0.278	**72.2%**		**65.2%**
20	13,995	4,085	5,894	9,979	4,284	64%	0.28	0	0.846	0.000	0.234	0.234	**76.6%**		10,522	927	2,732	3,659	2,985	69%	0.30	0	0.594	0.144	0.277	0.277	**72.3%**		**62.9%**
21	11,974	3,835	2,701	6,536	3,528	66%	0.29	0	0.660	0.000	0.189	0.189	**81.1%**		10,392	293	4,342	4,635	2,937	69%	0.30	0	0.647	0.144	0.293	0.293	**70.7%**		**65.6%**
22	12,748	1,621	4,411	6,032	3,818	65%	0.28	0	0.633	0.000	0.179	0.179	**82.1%**		14,735	2,179	2,277	4,456	4,561	63%	0.27	0	0.637	0.144	0.279	0.279	**72.1%**		**64.8%**
23	11,974	684	3,943	4,628	3,528	66%	0.29	0	0.557	0.000	0.160	0.160	**84.0%**		24,916	4,228	6,977	11,206	8,368	57%	0.25	0	1.002	0.144	0.359	0.359	**64.1%**		**61.2%**
24	47,548	4,103	8,206	12,309	16,833	23%	0.23	0	0.971	0.000	0.226	0.226	**77.4%**		33,454	4,228	7,058	11,287	11,562	24%	0.24	0	1.006	0.144	0.352	0.352	**64.8%**		**60.7%**
25	33,455	4,231	4,556	8,787	11,562	24%	0.24	0	0.781	0.000	0.188	0.188	**81.2%**		38,463	4,228	4,001	8,229	13,435	24%	0.24	0	0.841	0.144	0.310	0.310	**69.0%**		**58.4%**
26	82,359	4,267	3,943	8,211	29,852	22%	0.22	0	0.750	0.000	0.168	0.168	**83.2%**		78,634	4,228	3,968	8,197	28,459	22%	0.22	0	0.839	0.144	0.301	0.301	**69.9%**		**66.0%**
27	19,032	2,593	3,961	6,554	6,168	60%	0.26	0	0.661	0.000	0.173	0.173	**82.7%**		16,394	2,667	3,985	6,652	5,181	61%	0.27	0	0.756	0.144	0.308	0.308	**69.2%**		**62.7%**
28	42,646	4,085	8,206	12,291	14,999	24%	0.24	0	0.971	0.000	0.228	0.228	**77.2%**		59,134	4,228	4,651	8,880	21,166	23%	0.23	0	0.876	0.144	0.312	0.312	**68.8%**		**66.6%**
29	75,031	4,285	6,878	11,164	27,112	23%	0.23	0	0.910	0.000	0.205	0.205	**79.5%**		58,581	4,228	3,838	8,067	20,959	23%	0.23	0	0.832	0.144	0.302	0.302	**69.8%**		**63.7%**
30	78,344	4,285	3,961	8,247	28,351	23%	0.23	0	0.752	0.000	0.169	0.169	**83.1%**		27,095	4,228	4,001	8,229	9,183	25%	0.25	0	0.841	0.144	0.317	0.317	**68.3%**		**68.0%**
31	52,253	4,267	3,997	8,265	18,593	23%	0.23	0	0.753	0.000	0.174	0.174	**82.6%**		64,598	4,228	4,050	8,278	23,210	23%	0.23	0	0.844	0.144	0.303	0.303	**69.7%**		**67.7%**
32	29,937	4,103	3,825	7,928	10,246	24%	0.24	0	0.735	0.000	0.180	0.180	**82.0%**		25,094	4,228	4,001	8,229	8,435	25%	0.25	0	0.841	0.144	0.318	0.318	**68.2%**		**56.1%**
33	40,621	4,249	3,997	8,247	14,242	24%	0.24	0	0.752	0.000	0.178	0.178	**82.2%**		27,030	4,228	4,131	8,359	9,159	25%	0.25	0	0.848	0.144	0.318	0.318	**68.2%**		**55.2%**
34	24,362	4,267	3,979	8,247	8,161	57%	0.25	0	0.752	0.000	0.189	0.189	**81.1%**		23,647	4,228	4,424	8,652	7,894	57%	0.25	0	0.864	0.144	0.326	0.326	**67.4%**		**65.5%**
35	21,571	4,249	3,997	8,247	7,118	58%	0.26	0	0.752	0.000	0.192	0.192	**80.8%**		22,509	4,228	3,985	8,213	7,468	58%	0.25	0	0.840	0.144	0.321	0.321	**67.9%**		**55.2%**
36	15,594	4,085	1,791	5,876	4,882	62%	0.27	0	0.624	0.000	0.169	0.169	**83.1%**		19,240	4,228	3,432	7,660	6,246	59%	0.26	0	0.810	0.144	0.318	0.318	**68.2%**		**64.0%**
37	16,277	4,249	4,177	8,427	5,138	62%	0.27	0	0.762	0.000	0.205	0.205	**79.5%**		41,716	3,773	7,107	10,880	14,652	24%	0.24	0	0.984	0.144	0.342	0.342	**65.8%**		**55.5%**
38	35,166	4,249	7,526	11,776	12,202	24%	0.24	0	0.943	0.000	0.226	0.226	**77.4%**		22,655	4,228	4,603	8,831	7,523	58%	0.25	0	0.874	0.144	0.329	0.329	**67.1%**		**60.8%**
39	60,572	4,285	4,682	8,967	21,704	23%	0.23	0	0.791	0.000	0.181	0.181	**81.9%**		29,827	4,228	4,700	8,929	10,205	24%	0.24	0	0.879	0.144	0.324	0.324	**67.6%**		**76.5%**
40	62,499	4,138	3,773	7,910	22,425	23%	0.23	0	0.734	0.000	0.167	0.167	**83.3%**		57,524	4,228	3,936	8,164	20,564	23%	0.23	0	0.838	0.144	0.303	0.303	**69.7%**		**64.6%**
41	28,341	4,285	4,051	8,337	9,650	25%	0.25	0	0.757	0.000	0.186	0.186	**81.4%**		24,899	3,448	4,115	7,563	8,362	57%	0.25	0	0.805	0.144	0.310	0.310	**69.0%**		**69.8%**
42	57,151	4,267	4,628	8,895	20,424	23%	0.23	0	0.787	0.000	0.181	0.181	**81.9%**		49,538	4,228	4,684	8,912	17,577	23%	0.23	0	0.878	0.144	0.314	0.314	**68.6%**		**60.5%**
43	16,295	4,249	3,889	8,139	5,144	62%	0.27	0	0.746	0.000	0.201	0.201	**79.9%**		17,678	4,228	3,025	7,253	5,662	60%	0.26	0	0.788	0.144	0.315	0.315	**68.5%**		**64.6%**
44	61,543	4,138	4,520	8,658	22,067	23%	0.23	0	0.774	0.000	0.177	0.177	**82.3%**		36,674	2,488	4,700	7,188	12,766	24%	0.24	0	0.785	0.144	0.297	0.297	**70.3%**		**65.2%**
45	33,149	4,249	4,646	8,895	11,448	24%	0.24	0	0.787	0.000	0.190	0.190	**81.0%**		44,383	4,228	4,375	8,603	15,649	23%	0.23	0	0.861	0.144	0.312	0.312	**68.8%**		**56.9%**
46	63,003	4,249	4,051	8,301	22,613	23%	0.23	0	0.755	0.000	0.172	0.172	**82.8%**		93,612	4,228	4,066	8,294	34,061	22%	0.22	0	0.845	0.144	0.300	0.300	**70.0%**		**58.7%**
47	50,075	4,249	4,051	8,301	17,778	23%	0.23	0	0.755	0.000	0.175	0.175	**82.5%**		23,387	4,228	3,025	7,253	7,797	57%	0.25	0	0.788	0.144	0.307	0.307	**69.3%**		**62.7%**
48	26,217	4,085	7,041	11,126	8,855	25%	0.25	0	0.908	0.000	0.226	0.226	**77.4%**		22,606	3,432	4,033	7,465	7,505	58%	0.25	0	0.800	0.144	0.311	0.311	**68.9%**		**61.8%**
49	32,843	4,249	7,112	11,362	11,333	24%	0.24	0	0.920	0.000	0.222	0.222	**77.8%**		20,947	3,497	4,554	8,050	6,884	59%	0.26	0	0.831	0.144	0.321	0.321	**67.9%**		**55.9%**
50	45,177	4,231	8,481	12,712	15,946	23%	0.23	0	0.993	0.000	0.232	0.232	**76.8%**		27,664	4,228	3,497	7,725	9,396	25%	0.25	0	0.814	0.144	0.309	0.309	**69.1%**		**60.3%**
51	58,699	4,285	8,499	12,784	21,004	23%	0.23	0	0.997	0.000	0.228	0.228	**77.2%**		32,641	4,228	4,375	8,603	11,258	24%	0.24	0	0.861	0.144	0.318	0.318	**68.2%**		**64.3%**
52	19,019	4,120	3,512	7,632	6,163	60%	0.26	0	0.719	0.000	0.188	0.188	**81.2%**		17,174	3,643	3,350	6,993	5,473	61%	0.27	0	0.774	0.144	0.312	0.312	**68.8%**		**69.1%**
53	33,329	4,249	5,618	9,867	11,515	24%	0.24	0	0.840	0.000	0.203	0.203	**79.7%**		21,386	4,228	4,277	8,506	7,049	58%	0.26	0	0.856	0.144	0.327	0.327	**67.3%**		**63.3%**
54	26,775	4,285	4,375	8,661	9,064	25%	0.25	0	0.774	0.000	0.192	0.192	**80.8%**		28,689	4,228	4,424	8,652	9,780	25%	0.25	0	0.864	0.144	0.321	0.321	**67.9%**		**69.3%**
55	43,106	4,285	3,205	7,490	15,172	23%	0.23	0	0.711	0.000	0.167	0.167	**83.3%**		54,483	4,228	3,285	7,514	19,426	23%	0.23	0	0.802	0.144	0.296	0.296	**70.4%**		**64.0%**
56	54,520	2,677	3,912	6,589	19,440	23%	0.23	0	0.663	0.000	0.153	0.153	**84.7%**		36,788	2,992	4,115	7,107	12,809	24%	0.24	0	0.780	0.144	0.296	0.296	**70.4%**		**63.5%**
57	67,486	4,285	3,169	7,454	24,290	23%	0.23	0	0.709	0.000	0.161	0.161	**83.9%**		45,326	3,643	3,253	6,896	16,002	23%	0.23	0	0.769	0.144	0.290	0.290	**71.0%**		**57.8%**
58	57,565	1,206	4,051	5,258	20,579	23%	0.23	0	0.591	0.000	0.136	0.136	**86.4%**		35,812	3,106	4,115	7,221	12,444	24%	0.24	0	0.787	0.144	0.298	0.298	**70.2%**		**70.6%**
59	29,206	4,285	4,285	8,571	9,973	25%	0.25	0	0.770	0.000	0.189	0.189	**81.1%**		50,888	4,228	4,700	8,929	18,082	23%	0.23	0	0.879	0.144	0.314	0.314	**68.6%**		**66.0%**
60	24,217	4,103	4,485	8,588	8,107	57%	0.25	0	0.771	0.000	0.194	0.194	**80.6%**		32,933	3,724	4,359	8,083	11,367	24%	0.24	0	0.833	0.144	0.311	0.311	**68.9%**		**57.6%**
61	70,961	4,267	4,429	8,697	25,590	23%	0.23	0	0.776	0.000	0.176	0.176	**82.4%**		47,554	4,228	4,456	8,685	16,835	23%	0.23	0	0.866	0.144	0.312	0.312	**68.8%**		**65.3%**
62	41,918	4,267	4,375	8,643	14,727	24%	0.24	0	0.774	0.000	0.182	0.182	**81.8%**		100,199	4,228	4,424	8,652	36,524	22%	0.22	0	0.864	0.144	0.304	0.304	**69.6%**		**77.5%**
63	58,807	4,249	4,628	8,877	21,044	23%	0.23	0	0.786	0.000	0.180	0.180	**82.0%**		75,999	4,228	4,684	8,912	27,474	23%	0.23	0	0.878	0.144	0.310	0.310	**69.0%**		**61.3%**
64	19,523	4,085	4,085	8,171	6,352	59%	0.26	0	0.748	0.000	0.195	0.195	**80.5%**		20,069	4,228	3,627	7,855	6,556	59%	0.26	0	0.821	0.144	0.319	0.319	**68.1%**		**59.5%**
65	12,172	666	1,404	2,071	3,602	66%	0.29	0	0.419	0.000	0.120	0.120	**88.0%**		7,546	797	1,252	2,049	1,872	76%	0.32	0	0.507	0.144	0.261	0.261	**73.9%**		**65.4%**
66	50,129	1,711	7,418	9,129	17,798	23%	0.23	0	0.800	0.000	0.185	0.185	**81.5%**		46,448	2,114	3,903	6,017	16,422	23%	0.23	0	0.722	0.144	0.279	0.279	**72.1%**		**62.2%**
67	42,044	4,249	3,961	8,211	14,774	24%	0.24	0	0.750	0.000	0.177	0.177	**82.3%**		32,592	4,228	4,001	8,229	11,239	24%	0.24	0	0.841	0.144	0.313	0.313	**68.7%**		**58.9%**
68	69,453	4,103	3,633	7,736	25,026	23%	0.23	0	0.725	0.000	0.164	0.164	**83.6%**		36,479	3,757	3,350	7,107	12,693	24%	0.24	0	0.780	0.144	0.296	0.296	**70.4%**		**57.9%**
69	29,674	2,899	4,069	6,968	10,148	24%	0.24	0	0.683	0.000	0.167	0.167	**83.3%**		32,494	2,992	4,115	7,107	11,203	24%	0.24	0	0.780	0.144	0.298	0.298	**70.2%**		**60.0%**
70	65,650	4,285	4,628	8,913	23,603	23%	0.23	0	0.788	0.000	0.179	0.179	**82.1%**		69,087	4,228	4,651	8,880	24,889	23%	0.23	0	0.876	0.144	0.310	0.310	**69.0%**		**76.5%**
71	82,917	3,421	2,791	6,212	30,061	22%	0.22	0	0.642	0.000	0.144	0.144	**85.6%**		81,935	2,049	2,635	4,684	29,694	22%	0.22	0	0.650	0.144	0.258	0.258	**74.2%**		**79.1%**
72	36,004	1,443	3,720	5,163	12,516	24%	0.24	0	0.586	0.000	0.140	0.140	**86.0%**		36,495	3,204	4,001	7,205	12,699	24%	0.24	0	0.786	0.144	0.297	0.297	**70.3%**		**83.0%**
73	20,131	4,249	4,646	8,895	6,579	59%	0.26	0	0.787	0.000	0.204	0.204	**79.6%**		21,809	4,228	4,619	8,847	7,207	58%	0.26	0	0.874	0.144	0.331	0.331	**66.9%**		**69.8%**
74	95,486	4,249	7,328	11,578	34,762	22%	0.22	0	0.932	0.000	0.208	0.208	**79.2%**		72,535	4,228	4,180	8,408	26,178	23%	0.23	0	0.851	0.144	0.304	0.304	**69.6%**		**58.8%**
75	23,030	1,260	4,213	5,474	7,663	58%	0.25	0	0.602	0.000	0.153	0.153	**84.7%**		29,551	2,342	4,131	6,473	10,102	24%	0.24	0	0.746	0.144	0.292	0.292	**70.8%**		**59.4%**
76	17,072	3,981	2,538	6,519	5,435	61%	0.27	0	0.659	0.000	0.175	0.175	**82.5%**		11,010	2,000	1,773	3,773	3,168	68%	0.29	0	0.600	0.144	0.278	0.278	**72.2%**		**61.3%**
77	11,830	954	1,765	2,719	3,474	66%	0.29	0	0.454	0.000	0.130	0.130	**87.0%**		42,496	4,228	6,961	11,189	14,944	24%	0.24	0	1.001	0.144	0.346	0.346	**65.4%**		**64.1%**
78	16,944	1,224	6,572	7,797	5,387	61%	0.27	0	0.728	0.000	0.194	0.194	**80.6%**		14,832	2,228	3,643	5,871	4,597	63%	0.27	0	0.714	0.144	0.300	0.300	**70.0%**		**59.2%**
79	11,002	396	846	1,242	3,165	68%	0.29	0	0.374	0.000	0.109	0.109	**89.1%**		29,681	4,228	7,075	11,303	10,151	24%	0.24	0	1.007	0.144	0.355	0.355	**64.5%**		**67.1%**
80	31,415	1,565	7,197	8,762	10,799	24%	0.24	0	0.780	0.000	0.189	0.189	**81.1%**		20,102	1,984	6,245	8,229	6,568	59%	0.26	0	0.841	0.144	0.325	0.325	**67.5%**		**65.7%**
81																											**AVERAGE:**		**63.37%**

AS10 ='Study 468 Flow Data'!E7
AT10 ='Study 468 Flow Data'!O7
AU10 ='Study 468 Flow Data'!Y7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$K$4,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
BA10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
BB10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =AZ10+BC10-(AZ10*BC10)
BE10 =1-BD10

BG10 ='Study 513 (Revised) Flow Data'!F7
BH10 ='Study 513 (Revised) Flow Data'!P7
BI10 ='Study 513 (Revised) Flow Data'!Z7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$K$4,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BO10 =(-0.5916024)+(0.017968*$BC$3)+(0.000054*BJ10)
BP10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)
BQ10 =(BO10*BM10)+(BP10*(1-BM10))
BR10 =BN10+BQ10-(BN10*BQ10)
BS10 =1-BR10
BU10 =(O10*0.37)+(AC10*0.42)+(AQ10*0.13)+(BE10*0.05)+(BS10*0.03)

Study 506 Sacramento River Spring Run Yearling Survival Model
Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Year	Water Year Type	Sac River Flow	CVP Flow	SWP Flow	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	A	11,814	4,285	4,319	8,604	3,469	67%	0.29	0	0.825	0.080	0.576	0.576	**42.4%**
1923	B	18,133	4,302	6,672	10,974	5,832	60%	0.26	0	0.953	0.080	0.606	0.606	**39.4%**
1924	C	11,243	3,832	3,748	7,579	3,255	67%	0.29	0	0.770	0.080	0.545	0.545	**45.5%**
1925	D	7,025	1,311	3,210	4,521	1,677	78%	0.33	0	0.605	0.080	0.487	0.487	**51.3%**
1926	D	10,924	4,302	3,109	7,411	3,135	68%	0.29	0	0.761	0.080	0.543	0.543	**45.7%**
1927	W	20,536	4,252	6,672	10,924	6,731	59%	0.26	0	0.951	0.080	0.591	0.591	**40.9%**
1928	A	23,343	4,285	6,672	10,957	7,780	57%	0.25	0	0.952	0.080	0.581	0.581	**41.9%**
1929	C	12,856	4,285	5,462	9,747	3,858	65%	0.28	0	0.887	0.080	0.605	0.605	**39.5%**
1930	D	7,159	2,286	1,765	4,050	1,728	77%	0.33	0	0.579	0.080	0.465	0.465	**53.5%**
1931	C	9,764	2,655	3,260	5,916	2,702	70%	0.30	0	0.680	0.080	0.501	0.501	**49.9%**
1932	D	8,235	1,210	1,849	3,059	2,130	74%	0.32	0	0.526	0.080	0.409	0.409	**59.1%**
1933	C	9,512	3,059	2,605	5,663	2,607	71%	0.30	0	0.667	0.080	0.494	0.494	**50.6%**
1934	C	8,638	1,529	1,580	3,109	2,281	73%	0.31	0	0.529	0.080	0.406	0.406	**59.4%**
1935	B	9,209	2,538	4,302	6,840	2,494	71%	0.31	0	0.730	0.080	0.544	0.544	**45.6%**
1936	B	11,865	4,269	3,949	8,218	3,487	66%	0.29	0	0.804	0.080	0.561	0.561	**43.9%**
1937	B	11,411	4,285	3,412	7,697	3,318	67%	0.29	0	0.776	0.080	0.548	0.548	**45.2%**
1938	W	23,948	4,285	6,672	10,957	8,007	57%	0.25	0	0.952	0.080	0.578	0.578	**42.2%**
1939	D	19,444	4,302	5,260	9,562	6,322	59%	0.26	0	0.877	0.080	0.553	0.553	**44.7%**
1940	A	8,436	2,807	1,748	4,554	2,205	73%	0.31	0	0.607	0.080	0.466	0.466	**53.4%**
1941	W	13,764	4,269	6,100	10,369	4,198	64%	0.28	0	0.921	0.080	0.618	0.618	**38.2%**
1942	W	18,184	4,302	6,134	10,436	5,851	60%	0.26	0	0.924	0.080	0.588	0.588	**41.2%**
1943	W	21,914	4,302	6,504	10,806	7,246	58%	0.26	0	0.944	0.080	0.582	0.582	**41.8%**
1944	D	15,125	4,285	6,672	10,957	4,707	63%	0.27	0	0.952	0.080	0.626	0.626	**37.4%**
1945	B	14,016	4,269	6,672	10,940	4,292	64%	0.28	0	0.951	0.080	0.635	0.635	**36.5%**
1946	B	20,856	4,285	6,672	10,957	6,850	59%	0.26	0	0.952	0.080	0.591	0.591	**40.9%**
1947	D	13,999	4,269	6,672	10,940	4,286	64%	0.28	0	0.951	0.080	0.636	0.636	**36.4%**
1948	B	11,108	3,680	3,630	7,310	3,205	68%	0.29	0	0.755	0.080	0.537	0.537	**46.3%**
1949	D	14,453	4,285	6,235	10,520	4,455	63%	0.28	0	0.929	0.080	0.617	0.617	**38.3%**
1950	B	11,529	4,285	3,496	7,781	3,362	67%	0.29	0	0.781	0.080	0.549	0.549	**45.1%**
1951	A	43,308	4,269	6,672	10,940	15,247	23%	0.23	0	0.951	0.080	0.285	0.285	**71.5%**
1952	W	16,806	4,285	6,672	10,957	5,335	61%	0.27	0	0.952	0.080	0.614	0.614	**38.6%**
1953	W	16,537	4,302	4,084	8,386	5,235	61%	0.27	0	0.814	0.080	0.530	0.530	**47.0%**
1954	A	20,957	4,285	6,672	10,957	6,888	59%	0.26	0	0.952	0.080	0.590	0.590	**41.0%**
1955	D	20,856	4,285	6,672	10,957	6,850	59%	0.26	0	0.952	0.080	0.591	0.591	**40.9%**
1956	W	12,184	4,269	4,235	8,504	3,607	66%	0.29	0	0.820	0.080	0.568	0.568	**43.2%**
1957	A	15,478	4,302	6,672	10,974	4,839	62%	0.27	0	0.953	0.080	0.624	0.624	**37.6%**
1958	W	19,259	4,285	6,672	10,957	6,253	59%	0.26	0	0.952	0.080	0.599	0.599	**40.1%**
1959	B	16,133	4,302	4,185	8,487	5,084	62%	0.27	0	0.819	0.080	0.536	0.536	**46.4%**
1960	D	11,411	4,269	3,075	7,344	3,318	67%	0.29	0	0.757	0.080	0.535	0.535	**46.5%**
1961	D	14,251	4,269	6,235	10,503	4,380	63%	0.28	0	0.928	0.080	0.618	0.618	**38.2%**
1962	B	10,184	2,924	3,496	6,420	2,859	69%	0.30	0	0.707	0.080	0.515	0.515	**48.5%**
1963	W	21,242	4,285	6,672	10,957	6,995	58%	0.26	0	0.952	0.080	0.589	0.589	**41.1%**
1964	D	28,653	4,269	6,672	10,940	9,766	25%	0.25	0	0.951	0.080	0.294	0.294	**70.6%**
1965	W	13,646	4,067	6,252	10,319	4,154	64%	0.28	0	0.918	0.080	0.618	0.618	**38.2%**
1966	B	25,410	4,302	6,672	10,974	8,553	25%	0.25	0	0.953	0.080	0.298	0.298	**70.2%**
1967	W	17,579	4,269	6,672	10,940	5,624	61%	0.26	0	0.951	0.080	0.608	0.608	**39.2%**
1968	B	16,234	4,302	4,050	8,352	5,122	62%	0.27	0	0.812	0.080	0.531	0.531	**46.9%**
1969	W	13,814	4,285	6,016	10,302	4,216	64%	0.28	0	0.917	0.080	0.615	0.615	**38.5%**
1970	W	17,646	4,302	4,084	8,386	5,650	61%	0.26	0	0.814	0.080	0.524	0.524	**47.6%**
1971	W	24,217	4,285	6,672	10,957	8,107	57%	0.25	0	0.952	0.080	0.578	0.578	**42.2%**
1972	B	15,343	4,269	6,672	10,940	4,788	62%	0.27	0	0.951	0.080	0.624	0.624	**37.6%**
1973	A	24,889	4,269	6,672	10,940	8,358	57%	0.25	0	0.951	0.080	0.575	0.575	**42.5%**
1974	W	56,786	4,285	6,672	10,957	20,288	23%	0.23	0	0.952	0.080	0.281	0.281	**71.9%**
1975	W	17,579	4,302	5,411	9,714	5,624	61%	0.26	0	0.885	0.080	0.568	0.568	**43.2%**
1976	C	19,226	4,302	6,672	10,974	6,240	59%	0.26	0	0.953	0.080	0.600	0.600	**40.0%**
1977	C	8,386	2,689	3,412	6,100	2,186	73%	0.31	0	0.690	0.080	0.528	0.528	**47.2%**
1978	A	6,924	2,470	1,697	4,168	1,640	78%	0.33	0	0.586	0.080	0.474	0.474	**52.6%**
1979	B	15,142	4,302	6,672	10,974	4,713	63%	0.27	0	0.953	0.080	0.627	0.627	**37.3%**
1980	A	18,721	4,269	6,672	10,940	6,052	60%	0.26	0	0.951	0.080	0.601	0.601	**39.9%**
1981	D	13,024	4,285	5,579	9,865	3,921	65%	0.28	0	0.893	0.080	0.608	0.608	**39.2%**
1982	W	34,098	4,285	6,672	10,957	11,803	24%	0.24	0	0.952	0.080	0.290	0.290	**71.0%**
1983	W	39,107	4,302	6,672	10,974	13,676	24%	0.24	0	0.953	0.080	0.287	0.287	**71.3%**
1984	W	62,802	3,328	3,630	6,958	22,538	23%	0.23	0	0.736	0.080	0.230	0.230	**77.0%**
1985	D	33,998	4,285	6,672	10,957	11,765	24%	0.24	0	0.952	0.080	0.290	0.290	**71.0%**
1986	W	9,646	2,605	4,168	6,773	2,658	70%	0.30	0	0.726	0.080	0.535	0.535	**46.5%**
1987	D	11,209	4,269	3,496	7,764	3,242	67%	0.29	0	0.780	0.080	0.552	0.552	**44.8%**
1988	C	8,453	2,975	1,865	4,840	2,211	73%	0.31	0	0.622	0.080	0.477	0.477	**52.3%**
1989	D	8,991	2,790	3,361	6,151	2,413	72%	0.31	0	0.693	0.080	0.520	0.520	**48.0%**
1990	C	11,764	4,252	3,563	7,815	3,450	67%	0.29	0	0.783	0.080	0.548	0.548	**45.2%**
1991	C	8,134	2,487	2,370	4,857	2,092	74%	0.32	0	0.623	0.080	0.482	0.482	**51.8%**
1992	C	7,647	3,025	1,496	4,521	1,910	75%	0.32	0	0.605	0.080	0.476	0.476	**52.4%**

DECEMBER

Year	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	17,142	4,212	7,107	11,319	5,461	61%	0.45	0	0.864	0.000	0.393	0.393	**60.7%**
1923	34,544	4,212	4,456	8,668	11,969	24%	0.24	0	0.721	0.000	0.173	0.173	**82.7%**
1924	13,873	3,919	6,424	10,344	4,238	64%	0.48	0	0.811	0.000	0.386	0.386	**61.4%**
1925	11,254	4,212	4,847	9,059	3,259	67%	0.50	0	0.742	0.000	0.372	0.372	**62.8%**
1926	11,547	4,212	3,822	8,034	3,369	67%	0.50	0	0.687	0.000	0.342	0.342	**65.8%**
1927	14,556	4,212	7,042	11,254	4,494	63%	0.47	0	0.861	0.000	0.405	0.405	**59.5%**
1928	16,572	4,212	6,164	10,376	5,248	61%	0.46	0	0.813	0.000	0.372	0.372	**62.8%**
1929	13,710	4,212	6,180	10,392	4,178	64%	0.48	0	0.814	0.000	0.389	0.389	**61.1%**
1930	14,442	4,212	6,294	10,506	4,451	63%	0.47	0	0.820	0.000	0.387	0.387	**61.3%**
1931	9,563	2,423	2,976	5,399	2,627	71%	0.52	0	0.544	0.000	0.285	0.285	**71.5%**
1932	14,653	4,212	7,188	11,401	4,530	63%	0.47	0	0.869	0.000	0.408	0.408	**59.2%**
1933	8,148	2,017	2,472	4,489	2,097	74%	0.55	0	0.495	0.000	0.272	0.272	**72.8%**
1934	12,474	4,163	5,546	9,709	3,715	66%	0.49	0	0.777	0.000	0.380	0.380	**62.0%**
1935	8,506	3,220	3,399	6,619	2,231	73%	0.54	0	0.610	0.000	0.331	0.331	**66.9%**
1936	11,628	4,212	4,033	8,246	3,399	67%	0.50	0	0.698	0.000	0.347	0.347	**65.3%**
1937	12,458	4,212	5,578	9,791	3,709	66%	0.49	0	0.782	0.000	0.382	0.382	**61.8%**
1938	51,149	4,212	7,530	11,742	18,180	23%	0.23	0	0.887	0.000	0.205	0.205	**79.5%**
1939	18,687	4,212	3,741	7,953	6,039	60%	0.45	0	0.682	0.000	0.305	0.305	**69.5%**
1940	7,839	1,431	2,683	4,115	1,982	75%	0.56	0	0.475	0.000	0.264	0.264	**73.6%**
1941	35,601	4,212	7,335	11,547	12,365	24%	0.24	0	0.876	0.000	0.210	0.210	**79.0%**
1942	65,623	4,212	3,610	7,823	23,593	23%	0.23	0	0.675	0.000	0.154	0.154	**84.6%**
1943	28,803	4,212	3,773	7,985	9,822	25%	0.25	0	0.684	0.000	0.168	0.168	**83.2%**
1944	13,775	4,212	6,424	10,636	4,202	64%	0.48	0	0.827	0.000	0.395	0.395	**60.5%**
1945	16,068	4,212	6,961	11,173	5,060	62%	0.46	0	0.856	0.000	0.395	0.395	**60.5%**
1946	55,344	4,212	7,595	11,807	19,749	23%	0.23	0	0.890	0.000	0.205	0.205	**79.5%**
1947	18,134	4,212	7,140	11,352	5,832	60%	0.45	0	0.866	0.000	0.389	0.389	**61.1%**
1948	11,433	4,212	3,236	7,449	3,326	67%	0.50	0	0.655	0.000	0.327	0.327	**67.3%**
1949	15,564	4,212	6,896	11,108	4,871	62%	0.46	0	0.853	0.000	0.396	0.396	**60.4%**
1950	11,693	4,212	3,676	7,888	3,423	67%	0.50	0	0.679	0.000	0.337	0.337	**66.3%**
1951	68,095	4,212	7,595	11,807	24,518	23%	0.23	0	0.890	0.000	0.202	0.202	**79.8%**
1952	47,408	4,212	7,107	11,319	16,781	23%	0.23	0	0.864	0.000	0.201	0.201	**79.9%**
1953	42,334	4,212	3,741	7,953	14,883	24%	0.24	0	0.682	0.000	0.161	0.161	**83.9%**
1954	14,914	4,212	3,903	8,115	4,628	63%	0.47	0	0.691	0.000	0.324	0.324	**67.6%**
1955	26,022	4,212	6,912	11,124	8,782	25%	0.25	0	0.854	0.000	0.212	0.212	**78.8%**
1956	27,355	4,212	7,595	11,807	9,281	25%	0.25	0	0.890	0.000	0.220	0.220	**78.0%**
1957	14,149	4,212	5,839	10,051	4,342	64%	0.47	0	0.796	0.000	0.377	0.377	**62.3%**
1958	23,745	4,212	6,928	11,140	7,930	57%	0.43	0	0.854	0.000	0.366	0.366	**63.4%**
1959	14,621	4,212	3,854	8,067	4,518	63%	0.47	0	0.688	0.000	0.324	0.324	**67.6%**
1960	11,075	4,212	2,797	7,010	3,192	68%	0.50	0	0.631	0.000	0.318	0.318	**68.2%**
1961	19,484	4,212	6,896	11,108	6,337	59%	0.44	0	0.853	0.000	0.378	0.378	**62.2%**
1962	16,947	4,212	6,879	11,092	5,388	61%	0.46	0	0.852	0.000	0.388	0.388	**61.2%**
1963	27,550	4,212	6,896	11,108	9,354	25%	0.25	0	0.853	0.000	0.211	0.211	**78.9%**
1964	14,849	4,212	6,034	10,246	4,603	63%	0.47	0	0.806	0.000	0.378	0.378	**62.2%**
1965	29,079	4,212	7,302	11,515	9,926	25%	0.25	0	0.875	0.000	0.214	0.214	**78.6%**
1966	16,995	4,212	6,245	10,457	5,406	61%	0.46	0	0.818	0.000	0.372	0.372	**62.8%**
1967	39,699	4,212	7,123	11,336	13,897	24%	0.24	0	0.865	0.000	0.205	0.205	**79.5%**
1968	16,686	4,212	3,741	7,953	5,291	61%	0.46	0	0.682	0.000	0.312	0.312	**68.8%**
1969	25,160	4,212	6,977	11,189	8,460	25%	0.25	0	0.857	0.000	0.214	0.214	**78.6%**
1970	50,156	4,212	3,480	7,693	17,809	23%	0.23	0	0.668	0.000	0.155	0.155	**84.5%**
1971	54,401	4,212	7,042	11,254	19,396	23%	0.23	0	0.861	0.000	0.198	0.198	**80.2%**
1972	20,134	4,212	6,180	10,392	6,580	59%	0.44	0	0.814	0.000	0.359	0.359	**64.1%**
1973	26,200	4,212	6,896	11,108	8,849	25%	0.25	0	0.853	0.000	0.212	0.212	**78.8%**
1974	61,590	4,212	7,140	11,352	22,085	23%	0.23	0	0.866	0.000	0.198	0.198	**80.2%**
1975	17,613	4,212	4,245	8,457	5,637	61%	0.45	0	0.710	0.000	0.321	0.321	**67.9%**
1976	16,768	4,212	4,651	8,864	5,321	61%	0.46	0	0.732	0.000	0.334	0.334	**66.6%**
1977	8,229	1,691	3,106	4,798	2,128	74%	0.55	0	0.512	0.000	0.280	0.280	**72.0%**
1978	12,279	4,131	5,530	9,660	3,642	66%	0.49	0	0.775	0.000	0.380	0.380	**62.0%**
1979	12,751	4,212	3,676	7,888	3,819	65%	0.49	0	0.679	0.000	0.330	0.330	**67.0%**
1980	20,833	4,212	6,993	11,206	6,842	59%	0.44	0	0.858	0.000	0.376	0.376	**62.4%**
1981	15,613	4,212	4,066	8,278	4,889	62%	0.46	0	0.700	0.000	0.325	0.325	**67.5%**
1982	68,599	4,212	6,944	11,157	24,706	23%	0.23	0	0.855	0.000	0.194	0.194	**80.6%**
1983	55,410	4,212	4,424	8,636	19,773	23%	0.23	0	0.719	0.000	0.165	0.165	**83.5%**
1984	82,944	2,992	3,106	6,099	30,071	22%	0.22	0	0.582	0.000	0.131	0.131	**86.9%**
1985	23,875	4,212	5,741	9,953	7,979	57%	0.43	0	0.790	0.000	0.338	0.338	**66.2%**
1986	15,971	4,212	6,944	11,157	5,023	62%	0.46	0	0.855	0.000	0.395	0.395	**60.5%**
1987	13,791	4,212	6,099	10,311	4,208	64%	0.48	0	0.810	0.000	0.386	0.386	**61.4%**
1988	15,841	4,212	6,879	11,092	4,974	62%	0.46	0	0.852	0.000	0.394	0.394	**60.6%**
1989	9,303	3,285	3,562	6,847	2,529	71%	0.53	0	0.623	0.000	0.329	0.329	**67.1%**
1990	14,637	4,212	6,196	10,409	4,524	63%	0.47	0	0.815	0.000	0.383	0.383	**61.7%**
1991	8,782	1,740	3,139	4,879	2,335	72%	0.54	0	0.516	0.000	0.277	0.277	**72.3%**
1992	7,465	2,960	1,610	4,570	1,842	76%	0.56	0	0.500	0.000	0.282	0.282	**71.8%**

JANUARY

Year	Sac River Flows	CVP Flows	SWP Flows	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	17,499	4,212	7,579	11,791	5,595	61%	0.27	0	0.890	0.000	0.236	0.236	**76.4%**
1923	32,283	4,212	3,643	7,855	11,124	24%	0.24	0	0.677	0.000	0.164	0.164	**83.6%**
1924	14,621	4,212	6,652	10,864	4,518	63%	0.27	0	0.840	0.000	0.230	0.230	**77.0%**
1925	10,213	3,545	3,155	6,701	2,870	69%	0.30	0	0.615	0.000	0.183	0.183	**81.7%**
1926	19,776	4,212	7,091	11,303	6,446	59%	0.26	0	0.863	0.000	0.224	0.224	**77.6%**
1927	32,624	4,212	7,286	11,498	11,252	24%	0.24	0	0.874	0.000	0.211	0.211	**78.9%**
1928	26,509	4,212	3,643	7,855	8,965	25%	0.25	0	0.677	0.000	0.168	0.168	**83.2%**
1929	15,515	4,212	7,091	11,303	4,853	62%	0.27	0	0.863	0.000	0.234	0.234	**76.6%**
1930	20,768	4,212	7,091	11,303	6,817	59%	0.26	0	0.863	0.000	0.222	0.222	**77.8%**
1931	12,214	4,212	5,058	9,270	3,618	66%	0.29	0	0.753	0.000	0.215	0.215	**78.5%**
1932	17,256	4,212	7,790	12,002	5,504	61%	0.27	0	0.901	0.000	0.240	0.240	**76.0%**
1933	12,100	4,212	5,416	9,628	3,575	66%	0.29	0	0.773	0.000	0.221	0.221	**77.9%**
1934	16,101	4,212	7,091	11,303	5,072	62%	0.27	0	0.863	0.000	0.232	0.232	**76.8%**
1935	25,469	4,212	7,660	11,872	8,575	25%	0.25	0	0.894	0.000	0.223	0.223	**77.7%**
1936	32,527	4,212	7,449	11,661	11,215	24%	0.24	0	0.883	0.000	0.213	0.213	**78.7%**
1937	15,971	4,212	7,579	11,791	5,023	62%	0.27	0	0.890	0.000	0.240	0.240	**76.0%**
1938	31,535	4,212	3,236	7,449	10,844	24%	0.24	0	0.655	0.000	0.159	0.159	**84.1%**
1939	18,410	4,212	3,236	7,449	5,935	60%	0.26	0	0.655	0.000	0.172	0.172	**82.8%**
1940	23,452	4,212	8,018	12,230	7,821	57%	0.25	0	0.913	0.000	0.231	0.231	**76.9%**
1941	73,169	4,212	8,164	12,376	26,415	23%	0.23	0	0.921	0.000	0.208	0.208	**79.2%**
1942	63,265	4,212	3,236	7,449	22,711	23%	0.23	0	0.655	0.000	0.149	0.149	**85.1%**
1943	58,060	4,212	3,301	7,514	20,765	23%	0.23	0	0.659	0.000	0.151	0.151	**84.9%**
1944	17,678	4,212	3,269	7,481	5,662	60%	0.26	0	0.657	0.000	0.174	0.174	**82.6%**
1945	13,255	4,212	5,595	9,807	4,007	65%	0.28	0	0.782	0.000	0.219	0.219	**78.1%**
1946	43,228	4,212	3,643	7,855	15,217	23%	0.23	0	0.677	0.000	0.159	0.159	**84.1%**
1947	15,223	4,212	6,733	10,945	4,743	63%	0.27	0	0.844	0.000	0.230	0.230	**77.0%**
1948	15,645	4,212	7,010	11,222	4,901	62%	0.27	0	0.859	0.000	0.233	0.233	**76.7%**
1949	14,930	4,212	6,814	11,027	4,634	63%	0.27	0	0.848	0.000	0.232	0.232	**76.8%**
1950	21,191	4,212	7,172	11,384	6,976	58%	0.26	0	0.868	0.000	0.223	0.223	**77.7%**
1951	62,208	4,212	7,449	11,661	22,316	23%	0.23	0	0.883	0.000	0.201	0.201	**79.9%**
1952	67,347	4,212	6,766	10,978	24,238	23%	0.23	0	0.846	0.000	0.192	0.192	**80.8%**
1953	64,078	4,212	3,334	7,546	23,015	23%	0.23	0	0.660	0.000	0.150	0.150	**85.0%**
1954	33,421	4,212	3,854	8,067	11,550	24%	0.24	0	0.688	0.000	0.166	0.166	**83.4%**
1955	22,265	4,212	5,920	10,132	7,377	58%	0.25	0	0.800	0.000	0.204	0.204	**79.6%**
1956	84,716	4,212	7,985	12,198	30,734	22%	0.22	0	0.912	0.000	0.204	0.204	**79.6%**
1957	18,638	4,212	3,887	8,099	6,021	60%	0.26	0	0.690	0.000	0.181	0.181	**81.9%**
1958	36,463	4,212	3,562	7,774	12,687	24%	0.24	0	0.673	0.000	0.161	0.161	**83.9%**
1959	35,162	4,212	3,334	7,546	12,200	24%	0.24	0	0.660	0.000	0.158	0.158	**84.2%**
1960	14,523	4,212	6,408	10,620	4,482	63%	0.27	0	0.826	0.000	0.227	0.227	**77.3%**
1961	15,011	4,212	7,075	11,287	4,664	63%	0.27	0	0.862	0.000	0.235	0.235	**76.5%**
1962	12,897	4,212	4,163	8,376	3,873	65%	0.28	0	0.705	0.000	0.199	0.199	**80.1%**
1963	17,808	4,212	7,253	11,466	5,710	60%	0.26	0	0.872	0.000	0.230	0.230	**77.0%**
1964	25,713	4,212	3,871	8,083	8,666	25%	0.25	0	0.689	0.000	0.172	0.172	**82.8%**
1965	81,236	4,212	8,506	12,718	29,432	22%	0.22	0	0.940	0.000	0.211	0.211	**78.9%**
1966	29,632	4,212	3,659	7,872	10,132	24%	0.24	0	0.678	0.000	0.166	0.166	**83.4%**
1967	34,153	4,212	7,676	11,889	11,823	24%	0.24	0	0.895	0.000	0.215	0.215	**78.5%**
1968	30,640	4,212	3,334	7,546	10,509	24%	0.24	0	0.660	0.000	0.161	0.161	**83.9%**
1969	70,177	4,212	6,310	10,522	25,296	23%	0.23	0	0.821	0.000	0.186	0.186	**81.4%**
1970	92,669	4,163	3,334	7,497	33,708	22%	0.22	0	0.658	0.000	0.147	0.147	**85.3%**
1971	47,262	4,212	5,465	9,677	16,726	23%	0.23	0	0.775	0.000	0.181	0.181	**81.9%**
1972	20,394	4,212	3,887	8,099	6,677	59%	0.26	0	0.690	0.000	0.178	0.178	**82.2%**
1973	50,156	4,212	6,912	11,124	17,809	23%	0.23	0	0.854	0.000	0.198	0.198	**80.2%**
1974	78,422	4,212	3,643	7,855	28,380	22%	0.22	0	0.677	0.000	0.152	0.152	**84.8%**
1975	18,670	4,212	3,854	8,067	6,033	60%	0.26	0	0.688	0.000	0.180	0.180	**82.0%**
1976	16,768	4,212	3,806	8,018	5,321	61%	0.27	0	0.686	0.000	0.183	0.183	**81.7%**
1977	7,660	2,098	2,440	4,538	1,915	75%	0.32	0	0.498	0.000	0.160	0.160	**84.0%**
1978	43,066	3,074	7,758	10,831	15,157	23%	0.23	0	0.838	0.000	0.197	0.197	**80.3%**
1979	27,241	4,212	3,269	7,481	9,238	25%	0.25	0	0.657	0.000	0.162	0.162	**83.8%**
1980	64,452	4,212	3,155	7,367	23,155	23%	0.23	0	0.651	0.000	0.148	0.148	**85.2%**
1981	28,656	4,212	3,350	7,563	9,767	25%	0.25	0	0.661	0.000	0.162	0.162	**83.8%**
1982	51,165	4,212	7,709	11,921	18,186	23%	0.23	0	0.897	0.000	0.208	0.208	**79.2%**
1983	59,150	4,212	2,651	6,863	21,172	23%	0.23	0	0.624	0.000	0.143	0.143	**85.7%**
1984	47,359	1,334	2,879	4,212	16,762	23%	0.23	0	0.480	0.000	0.112	0.112	**88.8%**
1985	16,800	4,212	3,871	8,083	5,333	61%	0.27	0	0.689	0.000	0.184	0.184	**81.6%**
1986	23,354	4,212	7,172	11,384	7,785	57%	0.25	0	0.868	0.000	0.219	0.219	**78.1%**
1987	16,735	1,480	6,261	7,741	5,309	61%	0.27	0	0.671	0.000	0.179	0.179	**82.1%**
1988	25,534	4,212	7,058	11,271	8,600	25%	0.25	0	0.862	0.000	0.215	0.215	**78.5%**
1989	12,490	4,212	4,847	9,059	3,721	66%	0.28	0	0.742	0.000	0.211	0.211	**78.9%**
1990	21,582	2,781	7,058	9,839	7,122	58%	0.26	0	0.784	0.000	0.201	0.201	**79.9%**
1991	6,847	1,691	1,708	3,399	1,611	78%	0.33	0	0.436	0.000	0.145	0.145	**85.5%**
1992	12,133	4,212	4,781	8,994	3,588	66%	0.29	0	0.739	0.000	0.211	0.211	**78.9%**

Formulas: Sacramento River Spring Smolt Yearling Survival Model

C10 ='Study 513 Revised Flow Data'!B7
D10 ='Study 513 Revised Flow Data'!L7
E10 ='Study 513 Revised Flow Data'!V7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
J10 =IF(-2.45925+(0.0420748*$T$1)>0,-2.45925+(0.0420748*$T$1),0)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =IF(-1.613493+(0.0319584*$T$1)>0,-1.613493+(0.0319584*$T$1),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 513 Revised Flow Data'!C7
R10 ='Study 513 Revised Flow Data'!M7
S10 ='Study 513 Revised Flow Data'!W7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
Z10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 513 Revised Flow Data'!D7
AF10 ='Study 513 Revised Flow Data'!N7
AG10 ='Study 513 Revised Flow Data'!X7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AN10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

Study 506 Sacramento River Spring Run Yearling Survival Model (continued)

February Water Temp 50 F
Cross Channel Closed Over 25000 cfs — March Water Temp 55 F
Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

FEBRUARY

Row	Sac River Flow (AS)	CVP Flow (AT)	SWP Flow (AU)	CVP + SWP Exports (AV)	Calculated Sutter & Steamboat Slough Q (AW)	Percent (AX)	X-Channel Closed (AY)	m1 (AZ)	Calculated Mortality m2 (BA)	m3 (BB)	m23 (BC)	m123 (BD)	**Calculated Survivability s123** (BE)
10	34,409	4,249	6,392	10,642	11,919	24%	0.24	0	0.881	0.000	0.212	0.212	**78.8%**
11	24,326	4,285	2,377	6,662	8,148	57%	0.25	0	0.667	0.000	0.167	0.167	**83.3%**
12	16,898	4,068	4,624	8,693	5,370	61%	0.27	0	0.776	0.000	0.207	0.207	**79.3%**
13	44,655	4,213	7,581	11,794	15,751	23%	0.23	0	0.944	0.000	0.221	0.221	**77.9%**
14	36,714	4,231	7,454	11,686	12,781	24%	0.24	0	0.938	0.000	0.224	0.224	**77.6%**
15	86,122	4,285	6,590	10,876	31,260	22%	0.22	0	0.894	0.000	0.200	0.200	**80.0%**
16	27,364	4,103	4,225	8,327	9,284	25%	0.25	0	0.756	0.000	0.187	0.187	**81.3%**
17	18,528	4,231	3,799	8,031	5,980	60%	0.26	0	0.740	0.000	0.194	0.194	**80.6%**
18	15,683	2,773	4,015	6,788	4,916	62%	0.27	0	0.673	0.000	0.182	0.182	**81.8%**
19	11,326	3,565	1,873	5,438	3,286	67%	0.29	0	0.600	0.000	0.174	0.174	**82.6%**
20	13,995	4,103	5,442	9,544	4,284	64%	0.28	0	0.822	0.000	0.228	0.228	**77.2%**
21	11,974	3,835	2,701	6,536	3,528	66%	0.29	0	0.660	0.000	0.189	0.189	**81.1%**
22	12,748	1,260	4,538	5,798	3,818	65%	0.28	0	0.620	0.000	0.175	0.175	**82.5%**
23	12,478	1,188	3,943	5,132	3,717	66%	0.28	0	0.584	0.000	0.166	0.166	**83.4%**
24	49,843	4,103	8,206	12,309	17,691	23%	0.23	0	0.971	0.000	0.225	0.225	**77.5%**
25	33,203	4,231	5,042	9,273	11,468	24%	0.24	0	0.808	0.000	0.195	0.195	**80.5%**
26	82,269	4,267	3,907	8,175	29,819	22%	0.22	0	0.748	0.000	0.168	0.168	**83.2%**
27	19,032	2,629	3,961	6,590	6,168	60%	0.26	0	0.663	0.000	0.173	0.173	**82.7%**
28	43,654	4,103	8,206	12,309	15,377	23%	0.23	0	0.971	0.000	0.228	0.228	**77.2%**
29	75,031	4,285	6,842	11,128	27,112	23%	0.23	0	0.908	0.000	0.205	0.205	**79.5%**
30	78,344	4,285	3,961	8,247	28,351	23%	0.23	0	0.752	0.000	0.169	0.169	**83.1%**
31	52,253	4,285	3,997	8,283	18,593	23%	0.23	0	0.754	0.000	0.174	0.174	**82.6%**
32	30,163	4,103	3,825	7,928	10,331	24%	0.24	0	0.735	0.000	0.179	0.179	**82.1%**
33	41,378	4,249	3,997	8,247	14,525	24%	0.24	0	0.752	0.000	0.177	0.177	**82.3%**
34	24,092	4,285	4,213	8,499	8,060	57%	0.25	0	0.766	0.000	0.193	0.193	**80.7%**
35	21,571	4,249	3,961	8,211	7,118	58%	0.26	0	0.750	0.000	0.192	0.192	**80.8%**
36	15,525	4,085	1,721	5,807	4,856	62%	0.27	0	0.620	0.000	0.168	0.168	**83.2%**
37	16,277	4,249	4,177	8,427	5,138	62%	0.27	0	0.762	0.000	0.205	0.205	**79.5%**
38	35,562	4,249	7,526	11,776	12,350	24%	0.24	0	0.943	0.000	0.226	0.226	**77.4%**
39	60,572	4,285	4,682	8,967	21,704	23%	0.23	0	0.791	0.000	0.181	0.181	**81.9%**
40	62,499	4,138	3,773	7,910	22,425	23%	0.23	0	0.734	0.000	0.167	0.167	**83.3%**
41	28,341	4,285	4,051	8,337	9,650	25%	0.25	0	0.757	0.000	0.186	0.186	**81.4%**
42	57,151	4,267	4,628	8,895	20,424	23%	0.23	0	0.787	0.000	0.181	0.181	**81.9%**
43	16,295	4,267	3,925	8,193	5,144	62%	0.27	0	0.749	0.000	0.201	0.201	**79.9%**
44	61,543	4,138	4,520	8,658	22,067	23%	0.23	0	0.774	0.000	0.177	0.177	**82.3%**
45	33,149	4,249	4,646	8,895	11,448	24%	0.24	0	0.787	0.000	0.190	0.190	**81.0%**
46	62,283	4,249	4,051	8,301	22,344	23%	0.23	0	0.755	0.000	0.172	0.172	**82.8%**
47	50,075	4,249	4,051	8,301	17,778	23%	0.23	0	0.755	0.000	0.175	0.175	**82.5%**
48	26,512	4,085	7,041	11,126	8,966	25%	0.25	0	0.908	0.000	0.225	0.225	**77.5%**
49	32,843	4,249	7,112	11,362	11,333	24%	0.24	0	0.920	0.000	0.222	0.222	**77.8%**
50	45,537	4,249	8,499	12,748	16,081	23%	0.23	0	0.995	0.000	0.233	0.233	**76.7%**
51	57,565	4,285	8,265	12,550	20,579	23%	0.23	0	0.985	0.000	0.226	0.226	**77.4%**
52	19,019	4,120	3,512	7,632	6,163	60%	0.26	0	0.719	0.000	0.188	0.188	**81.2%**
53	33,329	4,249	6,050	10,299	11,515	24%	0.24	0	0.863	0.000	0.208	0.208	**79.2%**
54	26,775	4,285	4,375	8,661	9,064	25%	0.25	0	0.774	0.000	0.192	0.192	**80.8%**
55	43,106	4,285	3,205	7,490	15,172	23%	0.23	0	0.711	0.000	0.167	0.167	**83.3%**
56	54,520	2,660	3,912	6,572	19,440	23%	0.23	0	0.662	0.000	0.152	0.152	**84.8%**
57	67,486	4,285	3,169	7,454	24,290	23%	0.23	0	0.709	0.000	0.161	0.161	**83.9%**
58	57,565	1,206	4,051	5,258	20,579	23%	0.23	0	0.591	0.000	0.136	0.136	**86.4%**
59	29,332	4,285	4,195	8,481	10,020	24%	0.24	0	0.765	0.000	0.187	0.187	**81.3%**
60	24,217	4,120	4,485	8,606	8,107	57%	0.25	0	0.772	0.000	0.194	0.194	**80.6%**
61	70,961	4,267	4,429	8,697	25,590	23%	0.23	0	0.776	0.000	0.176	0.176	**82.4%**
62	43,304	4,267	4,375	8,643	15,246	23%	0.23	0	0.774	0.000	0.182	0.182	**81.8%**
63	58,807	4,249	4,628	8,877	21,044	23%	0.23	0	0.786	0.000	0.180	0.180	**82.0%**
64	19,523	4,085	4,172	8,258	6,352	59%	0.26	0	0.753	0.000	0.196	0.196	**80.4%**
65	12,172	684	1,422	2,107	3,602	66%	0.29	0	0.421	0.000	0.120	0.120	**88.0%**
66	50,939	1,747	6,554	8,301	18,101	23%	0.23	0	0.755	0.000	0.175	0.175	**82.5%**
67	42,044	4,249	3,961	8,211	14,774	24%	0.24	0	0.750	0.000	0.177	0.177	**82.3%**
68	69,453	4,103	3,668	7,771	25,026	23%	0.23	0	0.726	0.000	0.165	0.165	**83.5%**
69	29,674	2,647	4,069	6,716	10,148	24%	0.24	0	0.669	0.000	0.164	0.164	**83.6%**
70	65,650	4,285	4,628	8,913	23,603	23%	0.23	0	0.788	0.000	0.179	0.179	**82.1%**
71	82,917	3,421	2,791	6,212	30,061	22%	0.22	0	0.642	0.000	0.144	0.144	**85.6%**
72	36,004	1,443	3,720	5,163	12,516	24%	0.24	0	0.586	0.000	0.140	0.140	**86.0%**
73	20,689	4,249	4,646	8,895	6,788	59%	0.26	0	0.787	0.000	0.203	0.203	**79.7%**
74	97,916	4,249	7,689	11,938	35,671	22%	0.22	0	0.951	0.000	0.212	0.212	**78.8%**
75	23,030	1,278	4,267	5,546	7,663	58%	0.25	0	0.606	0.000	0.154	0.154	**84.6%**
76	16,638	3,894	2,469	6,363	5,272	61%	0.27	0	0.650	0.000	0.174	0.174	**82.6%**
77	12,766	972	1,837	2,809	3,825	65%	0.28	0	0.458	0.000	0.130	0.130	**87.0%**
78	16,944	1,296	6,500	7,797	5,387	61%	0.27	0	0.728	0.000	0.194	0.194	**80.6%**
79	11,056	432	828	1,260	3,185	68%	0.29	0	0.375	0.000	0.110	0.110	**89.0%**
80	31,415	1,147	7,197	8,345	10,799	24%	0.24	0	0.757	0.000	0.184	0.184	**81.6%**

MARCH

Row	Sac River Flow (BG)	CVP (BH)	SWP (BI)	CVP + SWF exports (BJ)	Calculated Sutter & Steamboat Slough Q (BK)	percent (BL)	X-Channel Closed (BM)	m1 (BN)	Calculated Mortality m2 (BO)	m3 (BP)	m23 (BQ)	m123 (BR)	**Calculated Survivability s123** (BS)	**Weighted Total Survival** (BU)
10	31,551	3,806	4,147	7,953	10,850	24%	0.24	0	0.826	0.144	0.310	0.310	**69.0%**	**57.1%**
11	17,174	4,228	3,367	7,595	5,473	61%	0.27	0	0.807	0.144	0.320	0.320	**68.0%**	**66.4%**
12	12,198	1,513	1,740	3,253	3,612	66%	0.29	0	0.572	0.144	0.266	0.266	**73.4%**	**58.8%**
13	18,557	3,708	4,163	7,872	5,990	60%	0.26	0	0.822	0.144	0.322	0.322	**67.8%**	**61.9%**
14	18,947	4,228	3,497	7,725	6,136	60%	0.26	0	0.814	0.144	0.319	0.319	**68.1%**	**60.6%**
15	43,863	3,741	4,147	7,888	15,455	23%	0.23	0	0.823	0.144	0.303	0.303	**69.7%**	**56.4%**
16	86,229	4,228	4,424	8,652	31,300	22%	0.22	0	0.864	0.144	0.305	0.305	**69.5%**	**58.8%**
17	16,930	4,017	2,814	6,831	5,382	61%	0.27	0	0.765	0.144	0.310	0.310	**69.0%**	**56.3%**
18	30,087	2,944	4,375	7,319	10,303	24%	0.24	0	0.792	0.144	0.302	0.302	**69.8%**	**61.8%**
19	9,856	2,114	1,903	4,017	2,736	70%	0.30	0	0.614	0.144	0.285	0.285	**71.5%**	**65.0%**
20	12,100	2,553	2,700	5,253	3,575	66%	0.29	0	0.680	0.144	0.298	0.298	**70.2%**	**62.6%**
21	10,392	1,561	3,074	4,635	2,937	69%	0.30	0	0.647	0.144	0.293	0.293	**70.7%**	**65.6%**
22	14,231	2,293	1,675	3,968	4,372	63%	0.28	0	0.611	0.144	0.273	0.273	**72.7%**	**64.3%**
23	24,916	4,228	6,977	11,206	8,368	57%	0.25	0	1.002	0.144	0.359	0.359	**64.1%**	**61.2%**
24	33,698	4,228	5,790	10,018	11,653	24%	0.24	0	0.938	0.144	0.335	0.335	**66.5%**	**59.7%**
25	38,203	4,228	4,001	8,229	13,338	24%	0.24	0	0.841	0.144	0.310	0.310	**69.0%**	**58.7%**
26	78,634	4,228	3,952	8,181	28,459	22%	0.22	0	0.838	0.144	0.300	0.300	**70.0%**	**66.2%**
27	16,394	2,716	4,001	6,717	5,181	61%	0.27	0	0.759	0.144	0.309	0.309	**69.1%**	**62.7%**
28	59,443	4,228	4,651	8,880	21,282	23%	0.23	0	0.876	0.144	0.312	0.312	**68.8%**	**66.6%**
29	58,581	4,228	3,838	8,067	20,959	23%	0.23	0	0.832	0.144	0.302	0.302	**69.8%**	**63.7%**
30	27,095	4,228	4,001	8,229	9,183	25%	0.25	0	0.841	0.144	0.317	0.317	**68.3%**	**68.1%**
31	64,598	4,228	4,050	8,278	23,210	23%	0.23	0	0.844	0.144	0.303	0.303	**69.7%**	**67.7%**
32	25,094	4,228	4,001	8,229	8,435	25%	0.25	0	0.841	0.144	0.318	0.318	**68.2%**	**56.1%**
33	27,274	4,228	4,131	8,359	9,250	25%	0.25	0	0.848	0.144	0.318	0.318	**68.2%**	**55.2%**
34	23,712	4,228	4,424	8,652	7,918	57%	0.25	0	0.864	0.144	0.326	0.326	**67.4%**	**65.5%**
35	22,509	4,228	3,919	8,148	7,468	58%	0.25	0	0.837	0.144	0.320	0.320	**68.0%**	**55.2%**
36	19,353	4,228	3,480	7,709	6,288	59%	0.26	0	0.813	0.144	0.318	0.318	**68.2%**	**61.6%**
37	41,716	4,228	7,107	11,336	14,652	24%	0.24	0	1.009	0.144	0.348	0.348	**65.2%**	**55.5%**
38	22,899	4,228	4,554	8,782	7,614	58%	0.25	0	0.871	0.144	0.328	0.328	**67.2%**	**60.5%**
39	29,827	4,228	4,700	8,929	10,205	24%	0.24	0	0.879	0.144	0.324	0.324	**67.6%**	**76.5%**
40	57,524	4,228	3,936	8,164	20,564	23%	0.23	0	0.838	0.144	0.303	0.303	**69.7%**	**64.6%**
41	24,899	3,448	4,115	7,563	8,362	57%	0.25	0	0.805	0.144	0.310	0.310	**69.0%**	**69.8%**
42	49,538	4,228	4,684	8,912	17,577	23%	0.23	0	0.878	0.144	0.314	0.314	**68.6%**	**60.5%**
43	17,678	4,228	3,025	7,253	5,662	60%	0.26	0	0.788	0.144	0.315	0.315	**68.5%**	**64.6%**
44	36,674	2,472	4,700	7,172	12,766	24%	0.24	0	0.784	0.144	0.297	0.297	**70.3%**	**65.3%**
45	44,383	4,228	4,440	8,668	15,649	23%	0.23	0	0.865	0.144	0.313	0.313	**68.7%**	**56.8%**
46	93,612	4,228	4,066	8,294	34,061	22%	0.22	0	0.845	0.144	0.300	0.300	**70.0%**	**58.6%**
47	23,354	4,228	3,058	7,286	7,785	57%	0.25	0	0.790	0.144	0.307	0.307	**69.3%**	**62.7%**
48	22,606	3,545	3,985	7,530	7,505	58%	0.25	0	0.803	0.144	0.312	0.312	**68.8%**	**61.8%**
49	20,947	3,513	4,538	8,050	6,884	59%	0.26	0	0.831	0.144	0.321	0.321	**67.9%**	**56.1%**
50	27,664	4,228	3,497	7,725	9,396	25%	0.25	0	0.814	0.144	0.309	0.309	**69.1%**	**60.0%**
51	32,641	4,228	4,700	8,929	11,258	24%	0.24	0	0.879	0.144	0.322	0.322	**67.8%**	**64.3%**
52	16,638	3,415	3,318	6,733	5,272	61%	0.27	0	0.760	0.144	0.309	0.309	**69.1%**	**69.1%**
53	21,386	4,228	4,375	8,603	7,049	58%	0.26	0	0.861	0.144	0.328	0.328	**67.2%**	**63.4%**
54	28,689	4,228	4,424	8,652	9,780	25%	0.25	0	0.864	0.144	0.321	0.321	**67.9%**	**69.2%**
55	54,483	4,228	3,285	7,514	19,426	23%	0.23	0	0.802	0.144	0.296	0.296	**70.4%**	**64.4%**
56	36,788	2,992	4,115	7,107	12,809	24%	0.24	0	0.780	0.144	0.296	0.296	**70.4%**	**63.5%**
57	45,326	3,643	3,253	6,896	16,002	23%	0.23	0	0.769	0.144	0.290	0.290	**71.0%**	**64.1%**
58	35,812	3,106	4,115	7,221	12,444	24%	0.24	0	0.787	0.144	0.298	0.298	**70.2%**	**70.6%**
59	50,774	4,228	4,700	8,929	18,040	23%	0.23	0	0.879	0.144	0.314	0.314	**68.6%**	**66.1%**
60	32,933	3,741	4,424	8,164	11,367	24%	0.24	0	0.838	0.144	0.312	0.312	**68.8%**	**57.6%**
61	47,554	4,228	4,456	8,685	16,835	23%	0.23	0	0.866	0.144	0.312	0.312	**68.8%**	**65.4%**
62	99,418	4,228	4,424	8,652	36,232	22%	0.22	0	0.864	0.144	0.304	0.304	**69.6%**	**77.5%**
63	75,999	4,228	4,684	8,912	27,474	23%	0.23	0	0.878	0.144	0.310	0.310	**69.0%**	**61.3%**
64	20,069	4,228	3,627	7,855	6,556	59%	0.26	0	0.821	0.144	0.319	0.319	**68.1%**	**59.5%**
65	7,514	829	1,187	2,017	1,860	76%	0.32	0	0.506	0.144	0.261	0.261	**73.9%**	**65.2%**
66	45,375	2,114	3,903	6,017	16,020	23%	0.23	0	0.722	0.144	0.279	0.279	**72.1%**	**62.2%**
67	32,592	4,228	4,001	8,229	11,239	24%	0.24	0	0.841	0.144	0.313	0.313	**68.7%**	**59.0%**
68	36,479	3,773	3,350	7,123	12,693	24%	0.24	0	0.781	0.144	0.296	0.296	**70.4%**	**58.3%**
69	32,494	2,992	4,115	7,107	11,203	24%	0.24	0	0.780	0.144	0.298	0.298	**70.2%**	**60.1%**
70	69,087	4,228	4,651	8,880	24,889	23%	0.23	0	0.876	0.144	0.310	0.310	**69.0%**	**76.6%**
71	81,935	2,049	2,635	4,684	29,694	22%	0.22	0	0.650	0.144	0.258	0.258	**74.2%**	**79.1%**
72	36,495	3,204	4,001	7,205	12,699	24%	0.24	0	0.786	0.144	0.297	0.297	**70.3%**	**83.0%**
73	21,809	4,228	4,635	8,864	7,207	58%	0.26	0	0.875	0.144	0.331	0.331	**66.9%**	**70.7%**
74	72,535	4,228	4,180	8,408	26,178	23%	0.23	0	0.851	0.144	0.304	0.304	**69.6%**	**58.8%**
75	29,502	2,358	4,163	6,522	10,084	24%	0.24	0	0.749	0.144	0.292	0.292	**70.8%**	**59.4%**
76	11,075	2,082	1,756	3,838	3,192	68%	0.29	0	0.604	0.144	0.278	0.278	**72.2%**	**61.3%**
77	41,098	4,228	6,766	10,994	14,421	24%	0.24	0	0.990	0.144	0.344	0.344	**65.6%**	**62.5%**
78	14,832	2,326	3,545	5,871	4,597	63%	0.27	0	0.714	0.144	0.300	0.300	**70.0%**	**59.1%**
79	29,681	4,228	7,075	11,303	10,151	24%	0.24	0	1.007	0.144	0.355	0.355	**64.5%**	**67.0%**
80	20,102	2,098	6,131	8,229	6,568	59%	0.26	0	0.841	0.144	0.325	0.325	**67.5%**	**65.9%**
81													**AVERAGE:**	**63.40%**

```
AS10 ='Study 513 Revised Flow Data'!E7
AT10 ='Study 513 Revised Flow Data'!O7
AU10 ='Study 513 Revised Flow Data'!Y7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$K$4,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
BA10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
BB10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =AZ10+BC10-(AZ10*BC10)
BE10 =1-BD10

BG10 ='Study 513 (Revised) Flow Data'!F7
BH10 ='Study 513 (Revised) Flow Data'!P7
BI10 ='Study 513 (Revised) Flow Data'!Z7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$K$4,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BO10 =(-0.5916024)+(0.017968*$BC$3)+(0.000054*BJ10)
BP10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)
BQ10 =(BO10*BM10)+(BP10*(1-BM10))
BR10 =BN10+BQ10-(BN10*BQ10)
BS10 =1-BR10
BU10 =(O10*0.37)+(AC10*0.42)+(AQ10*0.13)+(BE10*0.05)+(BS10*0.03)
```

Study 507 Sacramento River Spring Run Yearling Survival Model

Modified m2 by changing the slope to 0.000054

Cross Channel closed for 45 consecutive days, Dec 18-Jan 31

Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Year	Water Year Type	Sac River Flow	CVP Flow	SWP Flow	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	A	11,814	4,285	4,319	8,604	3,469	67%	0.29	0	0.825	0.080	0.576	0.576	**42.4%**
1923	B	18,133	4,302	6,672	10,974	5,832	60%	0.26	0	0.953	0.080	0.606	0.606	**39.4%**
1924	C	11,243	3,832	3,748	7,579	3,255	67%	0.29	0	0.770	0.080	0.545	0.545	**45.5%**
1925	D	7,025	1,311	3,210	4,521	1,677	78%	0.33	0	0.605	0.080	0.487	0.487	**51.3%**
1926	D	10,924	4,302	3,109	7,411	3,135	68%	0.29	0	0.761	0.080	0.543	0.543	**45.7%**
1927	W	20,536	4,252	6,672	10,924	6,731	59%	0.26	0	0.951	0.080	0.591	0.591	**40.9%**
1928	A	23,360	4,285	6,672	10,957	7,787	57%	0.25	0	0.952	0.080	0.581	0.581	**41.9%**
1929	C	12,856	4,285	5,462	9,747	3,858	65%	0.28	0	0.887	0.080	0.605	0.605	**39.5%**
1930	D	7,159	2,286	1,765	4,050	1,728	77%	0.33	0	0.579	0.080	0.465	0.465	**53.5%**
1931	C	9,764	2,655	3,260	5,916	2,702	70%	0.30	0	0.680	0.080	0.501	0.501	**49.9%**
1932	D	8,235	1,210	1,849	3,059	2,130	74%	0.32	0	0.526	0.080	0.409	0.409	**59.1%**
1933	C	9,512	3,059	2,605	5,663	2,607	71%	0.30	0	0.667	0.080	0.494	0.494	**50.6%**
1934	C	8,604	1,529	1,580	3,109	2,268	73%	0.31	0	0.529	0.080	0.407	0.407	**59.3%**
1935	B	9,209	2,538	4,302	6,840	2,494	71%	0.31	0	0.730	0.080	0.544	0.544	**45.6%**
1936	B	11,865	4,269	3,949	8,218	3,487	66%	0.29	0	0.804	0.080	0.561	0.561	**43.9%**
1937	B	11,411	4,285	3,412	7,697	3,318	67%	0.29	0	0.776	0.080	0.548	0.548	**45.2%**
1938	W	23,948	4,285	6,672	10,957	8,007	57%	0.25	0	0.952	0.080	0.578	0.578	**42.2%**
1939	D	19,444	4,302	5,260	9,562	6,322	59%	0.26	0	0.877	0.080	0.553	0.553	**44.7%**
1940	A	8,436	2,807	1,748	4,554	2,205	73%	0.31	0	0.607	0.080	0.466	0.466	**53.4%**
1941	W	13,747	4,269	6,100	10,369	4,191	64%	0.28	0	0.921	0.080	0.618	0.618	**38.2%**
1942	W	18,184	4,302	6,117	10,419	5,851	60%	0.26	0	0.923	0.080	0.587	0.587	**41.3%**
1943	W	21,914	4,302	6,470	10,772	7,246	58%	0.26	0	0.942	0.080	0.581	0.581	**41.9%**
1944	D	15,125	4,285	6,672	10,957	4,707	63%	0.27	0	0.952	0.080	0.626	0.626	**37.4%**
1945	B	14,016	4,269	6,672	10,940	4,292	64%	0.28	0	0.951	0.080	0.635	0.635	**36.5%**
1946	B	20,856	4,285	6,672	10,957	6,850	59%	0.26	0	0.952	0.080	0.591	0.591	**40.9%**
1947	D	14,016	4,269	6,672	10,940	4,292	64%	0.28	0	0.951	0.080	0.635	0.635	**36.5%**
1948	B	11,108	3,680	3,630	7,310	3,205	68%	0.29	0	0.755	0.080	0.537	0.537	**46.3%**
1949	D	14,453	4,285	6,235	10,520	4,455	63%	0.28	0	0.929	0.080	0.617	0.617	**38.3%**
1950	B	11,529	4,285	3,496	7,781	3,362	67%	0.29	0	0.781	0.080	0.549	0.549	**45.1%**
1951	A	43,476	4,269	6,672	10,940	15,310	23%	0.23	0	0.951	0.080	0.285	0.285	**71.5%**
1952	W	16,806	4,285	6,672	10,957	5,335	61%	0.27	0	0.952	0.080	0.614	0.614	**38.6%**
1953	W	16,537	4,302	4,084	8,386	5,235	61%	0.27	0	0.814	0.080	0.530	0.530	**47.0%**
1954	A	20,973	4,285	6,672	10,957	6,894	58%	0.26	0	0.952	0.080	0.590	0.590	**41.0%**
1955	D	20,856	4,285	6,672	10,957	6,850	59%	0.26	0	0.952	0.080	0.591	0.591	**40.9%**
1956	W	12,184	4,269	4,235	8,504	3,607	66%	0.29	0	0.820	0.080	0.568	0.568	**43.2%**
1957	A	15,478	4,302	6,672	10,974	4,839	62%	0.27	0	0.953	0.080	0.624	0.624	**37.6%**
1958	W	19,259	4,285	6,672	10,957	6,253	59%	0.26	0	0.952	0.080	0.599	0.599	**40.1%**
1959	B	16,133	4,302	4,185	8,487	5,084	62%	0.27	0	0.819	0.080	0.536	0.536	**46.4%**
1960	D	11,411	4,269	3,075	7,344	3,318	67%	0.29	0	0.757	0.080	0.535	0.535	**46.5%**
1961	D	14,251	4,269	6,235	10,503	4,380	63%	0.28	0	0.928	0.080	0.618	0.618	**38.2%**
1962	B	10,184	2,924	3,496	6,420	2,859	69%	0.30	0	0.707	0.080	0.515	0.515	**48.5%**
1963	W	21,242	4,285	6,672	10,957	6,995	58%	0.26	0	0.952	0.080	0.589	0.589	**41.1%**
1964	D	28,653	4,269	6,672	10,940	9,766	25%	0.25	0	0.951	0.080	0.294	0.294	**70.6%**
1965	W	13,646	4,067	6,252	10,319	4,154	64%	0.28	0	0.918	0.080	0.618	0.618	**38.2%**
1966	B	25,427	4,302	6,672	10,974	8,560	25%	0.25	0	0.953	0.080	0.298	0.298	**70.2%**
1967	W	17,579	4,269	6,672	10,940	5,624	61%	0.26	0	0.951	0.080	0.608	0.608	**39.2%**
1968	B	16,234	4,302	4,050	8,352	5,122	62%	0.27	0	0.812	0.080	0.531	0.531	**46.9%**
1969	W	13,814	4,285	6,016	10,302	4,216	64%	0.28	0	0.917	0.080	0.615	0.615	**38.5%**
1970	W	17,646	4,302	4,084	8,386	5,650	61%	0.26	0	0.814	0.080	0.524	0.524	**47.6%**
1971	W	24,049	4,285	6,672	10,957	8,044	57%	0.25	0	0.952	0.080	0.578	0.578	**42.2%**
1972	B	15,343	4,269	6,672	10,940	4,788	62%	0.27	0	0.951	0.080	0.624	0.624	**37.6%**
1973	A	25,007	4,269	6,672	10,940	8,402	25%	0.25	0	0.951	0.080	0.298	0.298	**70.2%**
1974	W	56,803	4,285	6,672	10,957	20,294	23%	0.23	0	0.952	0.080	0.281	0.281	**71.9%**
1975	W	17,579	4,302	5,361	9,663	5,624	61%	0.26	0	0.883	0.080	0.566	0.566	**43.4%**
1976	C	19,226	4,302	6,672	10,974	6,240	59%	0.26	0	0.953	0.080	0.600	0.600	**40.0%**
1977	C	8,386	2,689	3,412	6,100	2,186	73%	0.31	0	0.690	0.080	0.528	0.528	**47.2%**
1978	A	6,924	2,470	1,697	4,168	1,640	78%	0.33	0	0.586	0.080	0.474	0.474	**52.6%**
1979	B	15,142	4,302	6,672	10,974	4,713	63%	0.27	0	0.953	0.080	0.627	0.627	**37.3%**
1980	A	18,721	4,269	6,672	10,940	6,052	60%	0.26	0	0.951	0.080	0.601	0.601	**39.9%**
1981	D	13,024	4,285	5,579	9,865	3,921	65%	0.28	0	0.893	0.080	0.608	0.608	**39.2%**
1982	W	34,267	4,285	6,672	10,957	11,866	24%	0.24	0	0.952	0.080	0.290	0.290	**71.0%**
1983	W	39,107	4,302	6,672	10,974	13,676	24%	0.24	0	0.953	0.080	0.287	0.287	**71.3%**
1984	W	62,802	3,328	3,630	6,958	22,538	23%	0.23	0	0.736	0.080	0.230	0.230	**77.0%**
1985	D	33,998	4,285	6,672	10,957	11,765	24%	0.24	0	0.952	0.080	0.290	0.290	**71.0%**
1986	W	9,646	2,605	4,168	6,773	2,658	70%	0.30	0	0.726	0.080	0.535	0.535	**46.5%**
1987	D	11,209	4,269	3,496	7,764	3,242	67%	0.29	0	0.780	0.080	0.552	0.552	**44.8%**
1988	C	8,453	2,975	1,865	4,840	2,211	73%	0.31	0	0.622	0.080	0.477	0.477	**52.3%**
1989	D	8,588	2,386	3,361	5,748	2,262	73%	0.31	0	0.671	0.080	0.510	0.510	**49.0%**
1990	C	11,764	4,252	3,563	7,815	3,450	67%	0.29	0	0.783	0.080	0.548	0.548	**45.2%**
1991	C	8,134	2,487	2,370	4,857	2,092	74%	0.32	0	0.623	0.080	0.482	0.482	**51.8%**
1992	C	7,579	3,109	1,496	4,605	1,885	76%	0.32	0	0.609	0.080	0.481	0.481	**51.9%**

DECEMBER

Year	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	17,142	4,212	7,107	11,319	5,461	61%	0.45	0	0.864	0.000	0.393	0.393	**60.7%**
1923	34,544	4,212	4,359	8,571	11,969	24%	0.24	0	0.716	0.000	0.172	0.172	**82.8%**
1924	13,873	3,919	6,424	10,344	4,238	64%	0.48	0	0.811	0.000	0.386	0.386	**61.4%**
1925	11,254	4,212	4,847	9,059	3,259	67%	0.50	0	0.742	0.000	0.372	0.372	**62.8%**
1926	11,547	4,212	3,822	8,034	3,369	67%	0.50	0	0.687	0.000	0.342	0.342	**65.8%**
1927	14,556	4,212	7,042	11,254	4,494	63%	0.47	0	0.861	0.000	0.405	0.405	**59.5%**
1928	16,572	4,212	5,465	9,677	5,248	61%	0.46	0	0.775	0.000	0.355	0.355	**64.5%**
1929	13,710	4,212	6,180	10,392	4,178	64%	0.48	0	0.814	0.000	0.389	0.389	**61.1%**
1930	14,442	4,212	6,294	10,506	4,451	63%	0.47	0	0.820	0.000	0.387	0.387	**61.3%**
1931	9,563	2,423	2,976	5,399	2,627	71%	0.52	0	0.544	0.000	0.285	0.285	**71.5%**
1932	14,653	4,212	7,188	11,401	4,530	63%	0.47	0	0.869	0.000	0.408	0.408	**59.2%**
1933	8,148	2,017	2,472	4,489	2,097	74%	0.55	0	0.495	0.000	0.272	0.272	**72.8%**
1934	12,474	4,163	5,546	9,709	3,715	66%	0.49	0	0.777	0.000	0.380	0.380	**62.0%**
1935	8,506	3,220	3,399	6,619	2,231	73%	0.54	0	0.610	0.000	0.331	0.331	**66.9%**
1936	11,628	4,212	4,033	8,246	3,399	67%	0.50	0	0.698	0.000	0.347	0.347	**65.3%**
1937	12,458	4,212	5,578	9,791	3,709	66%	0.49	0	0.782	0.000	0.382	0.382	**61.8%**
1938	49,652	4,212	7,530	11,742	17,620	23%	0.23	0	0.887	0.000	0.206	0.206	**79.4%**
1939	18,687	4,212	3,741	7,953	6,039	60%	0.45	0	0.682	0.000	0.305	0.305	**69.5%**
1940	7,839	1,431	2,683	4,115	1,982	75%	0.56	0	0.475	0.000	0.264	0.264	**73.6%**
1941	35,454	4,212	7,319	11,531	12,310	24%	0.24	0	0.876	0.000	0.210	0.210	**79.0%**
1942	65,623	4,212	3,610	7,823	23,593	23%	0.23	0	0.675	0.000	0.154	0.154	**84.6%**
1943	28,803	4,212	3,773	7,985	9,822	25%	0.25	0	0.684	0.000	0.168	0.168	**83.2%**
1944	13,775	4,212	6,424	10,636	4,202	64%	0.48	0	0.827	0.000	0.395	0.395	**60.5%**
1945	16,068	4,212	6,961	11,173	5,060	62%	0.46	0	0.856	0.000	0.395	0.395	**60.5%**
1946	55,231	4,212	7,595	11,807	19,706	23%	0.23	0	0.890	0.000	0.205	0.205	**79.5%**
1947	18,134	4,212	7,140	11,352	5,832	60%	0.45	0	0.866	0.000	0.389	0.389	**61.1%**
1948	11,433	4,212	3,236	7,449	3,326	67%	0.50	0	0.655	0.000	0.327	0.327	**67.3%**
1949	15,564	4,212	6,896	11,108	4,871	62%	0.46	0	0.853	0.000	0.396	0.396	**60.4%**
1950	11,693	4,212	3,676	7,888	3,423	67%	0.50	0	0.679	0.000	0.337	0.337	**66.3%**
1951	68,095	4,212	7,595	11,807	24,518	23%	0.23	0	0.890	0.000	0.202	0.202	**79.8%**
1952	47,408	4,212	7,107	11,319	16,781	23%	0.23	0	0.864	0.000	0.201	0.201	**79.9%**
1953	42,334	4,212	3,741	7,953	14,883	24%	0.24	0	0.682	0.000	0.161	0.161	**83.9%**
1954	14,914	4,212	3,903	8,115	4,628	63%	0.47	0	0.691	0.000	0.324	0.324	**67.6%**
1955	26,022	4,212	6,912	11,124	8,782	25%	0.25	0	0.854	0.000	0.212	0.212	**78.8%**
1956	27,648	4,212	7,595	11,807	9,390	25%	0.25	0	0.890	0.000	0.220	0.220	**78.0%**
1957	14,149	4,212	5,790	10,002	4,342	64%	0.47	0	0.793	0.000	0.376	0.376	**62.4%**
1958	23,745	4,212	6,928	11,140	7,930	57%	0.43	0	0.854	0.000	0.366	0.366	**63.4%**
1959	14,621	4,212	3,854	8,067	4,518	63%	0.47	0	0.688	0.000	0.324	0.324	**67.6%**
1960	11,075	4,212	2,797	7,010	3,192	68%	0.50	0	0.631	0.000	0.318	0.318	**68.2%**
1961	19,484	4,212	6,896	11,108	6,337	59%	0.44	0	0.853	0.000	0.378	0.378	**62.2%**
1962	16,947	4,212	6,879	11,092	5,388	61%	0.46	0	0.852	0.000	0.388	0.388	**61.2%**
1963	27,550	4,212	6,896	11,108	9,354	25%	0.25	0	0.853	0.000	0.211	0.211	**78.9%**
1964	14,849	4,212	6,034	10,246	4,603	63%	0.47	0	0.806	0.000	0.378	0.378	**62.2%**
1965	29,079	4,212	7,416	11,628	9,926	25%	0.25	0	0.881	0.000	0.216	0.216	**78.4%**
1966	16,995	4,212	6,213	10,425	5,406	61%	0.46	0	0.816	0.000	0.372	0.372	**62.8%**
1967	39,699	4,212	7,123	11,336	13,897	24%	0.24	0	0.865	0.000	0.205	0.205	**79.5%**
1968	16,686	4,212	3,741	7,953	5,291	61%	0.46	0	0.682	0.000	0.312	0.312	**68.8%**
1969	25,176	4,212	6,977	11,189	8,466	25%	0.25	0	0.857	0.000	0.214	0.214	**78.6%**
1970	50,156	4,212	3,480	7,693	17,809	23%	0.23	0	0.668	0.000	0.155	0.155	**84.5%**
1971	54,352	4,212	7,042	11,254	19,378	23%	0.23	0	0.861	0.000	0.198	0.198	**80.2%**
1972	20,167	4,212	6,180	10,392	6,592	59%	0.44	0	0.814	0.000	0.359	0.359	**64.1%**
1973	26,200	4,212	6,896	11,108	8,849	25%	0.25	0	0.853	0.000	0.212	0.212	**78.8%**
1974	61,590	4,212	7,140	11,352	22,085	23%	0.23	0	0.866	0.000	0.198	0.198	**80.2%**
1975	17,613	4,212	4,245	8,457	5,637	61%	0.45	0	0.710	0.000	0.321	0.321	**67.9%**
1976	16,768	4,212	4,651	8,864	5,321	61%	0.46	0	0.732	0.000	0.334	0.334	**66.6%**
1977	8,229	1,691	3,106	4,798	2,128	74%	0.55	0	0.512	0.000	0.280	0.280	**72.0%**
1978	12,279	4,131	5,530	9,660	3,642	66%	0.49	0	0.775	0.000	0.380	0.380	**62.0%**
1979	12,751	4,212	3,676	7,888	3,819	65%	0.49	0	0.679	0.000	0.330	0.330	**67.0%**
1980	20,833	4,212	6,993	11,206	6,842	59%	0.44	0	0.858	0.000	0.376	0.376	**62.4%**
1981	15,613	4,212	4,033	8,246	4,889	62%	0.46	0	0.698	0.000	0.324	0.324	**67.6%**
1982	68,599	4,212	6,977	11,189	24,706	23%	0.23	0	0.857	0.000	0.194	0.194	**80.6%**
1983	55,410	4,212	4,424	8,636	19,773	23%	0.23	0	0.719	0.000	0.165	0.165	**83.5%**
1984	82,944	2,992	3,106	6,099	30,071	22%	0.22	0	0.582	0.000	0.131	0.131	**86.9%**
1985	23,875	4,212	5,741	9,953	7,979	57%	0.43	0	0.790	0.000	0.338	0.338	**66.2%**
1986	15,971	4,212	6,944	11,157	5,023	62%	0.46	0	0.855	0.000	0.395	0.395	**60.5%**
1987	13,791	4,212	6,099	10,311	4,208	64%	0.48	0	0.810	0.000	0.386	0.386	**61.4%**
1988	15,841	4,212	6,879	11,092	4,974	62%	0.46	0	0.852	0.000	0.394	0.394	**60.6%**
1989	8,847	2,846	3,562	6,408	2,359	72%	0.54	0	0.599	0.000	0.321	0.321	**67.9%**
1990	14,637	4,212	6,196	10,409	4,524	63%	0.47	0	0.815	0.000	0.383	0.383	**61.7%**
1991	8,815	1,773	3,139	4,912	2,347	72%	0.54	0	0.518	0.000	0.278	0.278	**72.2%**
1992	7,465	2,960	1,610	4,570	1,842	76%	0.56	0	0.500	0.000	0.282	0.282	**71.8%**

JANUARY

Year	Sac River Flows	CVP Flows	SWP Flows	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	17,499	4,212	7,579	11,791	5,595	61%	0.27	0	0.890	0.000	0.236	0.236	**76.4%**
1923	32,283	4,212	3,643	7,855	11,124	24%	0.24	0	0.677	0.000	0.164	0.164	**83.6%**
1924	14,621	4,212	6,652	10,864	4,518	63%	0.27	0	0.840	0.000	0.230	0.230	**77.0%**
1925	10,213	3,545	3,155	6,701	2,870	69%	0.30	0	0.615	0.000	0.183	0.183	**81.7%**
1926	19,776	4,212	7,091	11,303	6,446	59%	0.26	0	0.863	0.000	0.224	0.224	**77.6%**
1927	32,624	4,212	7,286	11,498	11,252	24%	0.24	0	0.874	0.000	0.211	0.211	**78.9%**
1928	26,526	4,212	3,643	7,855	8,971	25%	0.25	0	0.677	0.000	0.168	0.168	**83.2%**
1929	15,515	4,212	7,091	11,303	4,853	62%	0.27	0	0.863	0.000	0.234	0.234	**76.6%**
1930	20,768	4,212	7,091	11,303	6,817	59%	0.26	0	0.863	0.000	0.222	0.222	**77.8%**
1931	12,214	4,212	5,058	9,270	3,618	66%	0.29	0	0.753	0.000	0.215	0.215	**78.5%**
1932	17,256	4,212	7,823	12,035	5,504	61%	0.27	0	0.903	0.000	0.240	0.240	**76.0%**
1933	12,100	4,212	5,416	9,628	3,575	66%	0.29	0	0.773	0.000	0.221	0.221	**77.9%**
1934	16,101	4,212	7,091	11,303	5,072	62%	0.27	0	0.863	0.000	0.232	0.232	**76.8%**
1935	25,469	4,212	7,660	11,872	8,575	25%	0.25	0	0.894	0.000	0.223	0.223	**77.7%**
1936	32,543	4,212	7,449	11,661	11,221	24%	0.24	0	0.883	0.000	0.213	0.213	**78.7%**
1937	15,971	4,212	7,579	11,791	5,023	62%	0.27	0	0.890	0.000	0.240	0.240	**76.0%**
1938	31,535	4,212	3,676	7,888	10,844	24%	0.24	0	0.679	0.000	0.165	0.165	**83.5%**
1939	18,410	4,212	3,236	7,449	5,935	60%	0.26	0	0.655	0.000	0.172	0.172	**82.8%**
1940	23,452	4,212	8,018	12,230	7,821	57%	0.25	0	0.913	0.000	0.231	0.231	**76.9%**
1941	72,990	4,212	8,148	12,360	26,348	23%	0.23	0	0.920	0.000	0.208	0.208	**79.2%**
1942	63,265	4,212	3,236	7,449	22,711	23%	0.23	0	0.655	0.000	0.149	0.149	**85.1%**
1943	58,060	4,212	3,301	7,514	20,765	23%	0.23	0	0.659	0.000	0.151	0.151	**84.9%**
1944	17,678	4,212	3,269	7,481	5,662	60%	0.26	0	0.657	0.000	0.174	0.174	**82.6%**
1945	13,255	4,212	5,595	9,807	4,007	65%	0.28	0	0.782	0.000	0.219	0.219	**78.1%**
1946	43,228	4,212	3,643	7,855	15,217	23%	0.23	0	0.677	0.000	0.159	0.159	**84.1%**
1947	15,223	4,212	6,554	10,766	4,743	63%	0.27	0	0.834	0.000	0.227	0.227	**77.3%**
1948	15,645	4,212	7,010	11,222	4,901	62%	0.27	0	0.859	0.000	0.233	0.233	**76.7%**
1949	14,930	4,212	6,814	11,027	4,634	63%	0.27	0	0.848	0.000	0.232	0.232	**76.8%**
1950	21,191	4,212	7,172	11,384	6,976	58%	0.26	0	0.868	0.000	0.223	0.223	**77.7%**
1951	62,208	4,212	7,449	11,661	22,316	23%	0.23	0	0.883	0.000	0.201	0.201	**79.9%**
1952	67,347	4,212	6,766	10,978	24,238	23%	0.23	0	0.846	0.000	0.192	0.192	**80.8%**
1953	64,078	4,212	3,334	7,546	23,015	23%	0.23	0	0.660	0.000	0.150	0.150	**85.0%**
1954	33,421	4,212	3,854	8,067	11,550	24%	0.24	0	0.688	0.000	0.166	0.166	**83.4%**
1955	22,265	4,212	5,920	10,132	7,377	58%	0.25	0	0.800	0.000	0.204	0.204	**79.6%**
1956	84,716	4,212	7,985	12,198	30,734	22%	0.22	0	0.912	0.000	0.204	0.204	**79.6%**
1957	18,638	4,212	3,887	8,099	6,021	60%	0.26	0	0.690	0.000	0.181	0.181	**81.9%**
1958	36,463	4,212	3,562	7,774	12,687	24%	0.24	0	0.673	0.000	0.161	0.161	**83.9%**
1959	35,162	4,212	3,334	7,546	12,200	24%	0.24	0	0.660	0.000	0.158	0.158	**84.2%**
1960	14,523	4,212	6,408	10,620	4,482	63%	0.27	0	0.826	0.000	0.227	0.227	**77.3%**
1961	15,011	4,212	7,075	11,287	4,664	63%	0.27	0	0.862	0.000	0.235	0.235	**76.5%**
1962	12,897	4,212	4,163	8,376	3,873	65%	0.28	0	0.705	0.000	0.199	0.199	**80.1%**
1963	17,808	4,212	7,270	11,482	5,710	60%	0.26	0	0.873	0.000	0.231	0.231	**76.9%**
1964	25,745	4,212	3,871	8,083	8,679	25%	0.25	0	0.689	0.000	0.172	0.172	**82.8%**
1965	81,236	4,212	8,506	12,718	29,432	22%	0.22	0	0.940	0.000	0.211	0.211	**78.9%**
1966	29,632	4,212	3,659	7,872	10,132	24%	0.24	0	0.678	0.000	0.166	0.166	**83.4%**
1967	34,153	4,212	7,676	11,889	11,823	24%	0.24	0	0.895	0.000	0.215	0.215	**78.5%**
1968	30,640	4,212	3,334	7,546	10,509	24%	0.24	0	0.660	0.000	0.161	0.161	**83.9%**
1969	70,209	4,212	6,310	10,522	25,308	23%	0.23	0	0.821	0.000	0.186	0.186	**81.4%**
1970	92,669	4,163	3,334	7,497	33,708	22%	0.22	0	0.658	0.000	0.147	0.147	**85.3%**
1971	47,359	4,212	5,465	9,677	16,762	23%	0.23	0	0.775	0.000	0.181	0.181	**81.9%**
1972	20,394	4,212	3,887	8,099	6,677	59%	0.26	0	0.690	0.000	0.178	0.178	**82.2%**
1973	50,254	4,212	6,912	11,124	17,845	23%	0.23	0	0.854	0.000	0.198	0.198	**80.2%**
1974	78,422	4,212	3,643	7,855	28,380	22%	0.22	0	0.677	0.000	0.152	0.152	**84.8%**
1975	18,670	4,212	3,854	8,067	6,033	60%	0.26	0	0.688	0.000	0.180	0.180	**82.0%**
1976	16,768	4,212	3,806	8,018	5,321	61%	0.27	0	0.686	0.000	0.183	0.183	**81.7%**
1977	7,660	2,098	2,440	4,538	1,915	75%	0.32	0	0.498	0.000	0.160	0.160	**84.0%**
1978	43,066	3,074	7,758	10,831	15,157	23%	0.23	0	0.838	0.000	0.197	0.197	**80.3%**
1979	27,241	4,212	3,269	7,481	9,238	25%	0.25	0	0.657	0.000	0.162	0.162	**83.8%**
1980	64,468	4,212	3,155	7,367	23,161	23%	0.23	0	0.651	0.000	0.148	0.148	**85.2%**
1981	28,640	4,212	3,350	7,563	9,761	25%	0.25	0	0.661	0.000	0.162	0.162	**83.8%**
1982	51,165	4,212	7,676	11,889	18,186	23%	0.23	0	0.895	0.000	0.207	0.207	**79.3%**
1983	59,150	4,212	2,651	6,863	21,172	23%	0.23	0	0.624	0.000	0.143	0.143	**85.7%**
1984	47,359	1,334	2,879	4,212	16,762	23%	0.23	0	0.480	0.000	0.112	0.112	**88.8%**
1985	16,800	4,212	3,871	8,083	5,333	61%	0.27	0	0.689	0.000	0.184	0.184	**81.6%**
1986	23,615	4,212	7,172	11,384	7,882	57%	0.25	0	0.868	0.000	0.219	0.219	**78.1%**
1987	16,735	1,480	6,245	7,725	5,309	61%	0.27	0	0.670	0.000	0.179	0.179	**82.1%**
1988	25,534	4,212	7,058	11,271	8,600	25%	0.25	0	0.862	0.000	0.215	0.215	**78.5%**
1989	12,002	3,936	4,554	8,490	3,539	66%	0.29	0	0.711	0.000	0.204	0.204	**79.6%**
1990	21,582	2,521	7,058	9,579	7,122	58%	0.26	0	0.770	0.000	0.197	0.197	**80.3%**
1991	6,847	1,691	1,708	3,399	1,611	78%	0.33	0	0.436	0.000	0.145	0.145	**85.5%**
1992	12,133	4,212	4,781	8,994	3,588	66%	0.29	0	0.739	0.000	0.211	0.211	**78.9%**

Formulas: Sacramento River Spring Smolt Yearling Survival Model

C10 ='Study 513 Revised Flow Data'!B7
D10 ='Study 513 Revised Flow Data'!L7
E10 ='Study 513 Revised Flow Data'!V7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
J10 =IF(-2.45925+(0.0420748*$T$1)>0,-2.45925+(0.0420748*$T$1),0)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =IF(-1.613493+(0.0319584*$T$1)>0,-1.613493+(0.0319584*$T$1),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 513 Revised Flow Data'!C7
R10 ='Study 513 Revised Flow Data'!M7
S10 ='Study 513 Revised Flow Data'!W7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
Z10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 513 Revised Flow Data'!D7
AF10 ='Study 513 Revised Flow Data'!N7
AG10 ='Study 513 Revised Flow Data'!X7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AN10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU
1	Study 507 Sacramento River Spring Run Yearling Survival Model (continued)																												
2									February Water Temp		50 F																		
3		Cross Channel Closed Over			25000 cfs				March Water Temp		55 F																		
4		Cross Channel Closed Feb to Apr when DOI greater than					12,000 cfs																						
5																													
6	**FEBRUARY**				Calculated										**MARCH**				Calculated										
7	Sac				Sutter &								**Calculated**		Sac				Sutter &								**Calculated**		**Weighted**
8	River	CVP	SWP	CVP + SWP	Steamboat		X-Channel		Calculated Mortality				**Survivability**		River			CVP + SWP	Steamboat		X-Channel		Calculated Mortality				**Survivability**		**Total**
9	Flow	Flow	Flow	Exports	Slough Q	Percent	Closed	m1	m2	m3	m23	m123	**s123**		Flow	CVP	SWP	exports	Slough Q	percent	Closed	m1	m2	m3	m23	m123	**s123**		**Survival**
10	34,409	4,249	6,392	10,642	11,919	24%	0.24	0	0.881	0.000	0.212	0.212	**78.8%**		31,551	3,806	4,147	7,953	10,850	24%	0.24	0	0.826	0.144	0.310	0.310	**69.0%**		**57.1%**
11	24,326	4,285	2,377	6,662	8,148	57%	0.25	0	0.667	0.000	0.167	0.167	**83.3%**		17,174	4,228	3,367	7,595	5,473	61%	0.27	0	0.807	0.144	0.320	0.320	**68.0%**		**66.4%**
12	16,898	4,068	4,624	8,693	5,370	61%	0.27	0	0.776	0.000	0.207	0.207	**79.3%**		12,246	1,529	1,789	3,318	3,630	66%	0.29	0	0.576	0.144	0.267	0.267	**73.3%**		**58.8%**
13	44,673	4,213	7,581	11,794	15,758	23%	0.23	0	0.944	0.000	0.221	0.221	**77.9%**		18,557	3,757	4,131	7,888	5,990	60%	0.26	0	0.823	0.144	0.322	0.322	**67.8%**		**61.9%**
14	36,714	4,231	7,508	11,740	12,781	24%	0.24	0	0.941	0.000	0.225	0.225	**77.5%**		18,947	4,228	3,497	7,725	6,136	60%	0.26	0	0.814	0.144	0.319	0.319	**68.1%**		**60.6%**
15	86,122	4,285	6,626	10,912	31,260	22%	0.22	0	0.896	0.000	0.201	0.201	**79.9%**		43,863	3,773	4,147	7,920	15,455	23%	0.23	0	0.824	0.144	0.304	0.304	**69.6%**		**56.4%**
16	27,364	4,103	4,225	8,327	9,284	25%	0.25	0	0.756	0.000	0.187	0.187	**81.3%**		86,229	4,228	4,424	8,652	31,300	22%	0.22	0	0.864	0.144	0.305	0.305	**69.5%**		**59.6%**
17	18,528	4,231	3,799	8,031	5,980	60%	0.26	0	0.740	0.000	0.194	0.194	**80.6%**		16,930	4,017	2,814	6,831	5,382	61%	0.27	0	0.765	0.144	0.310	0.310	**69.0%**		**56.3%**
18	15,683	2,773	4,015	6,788	4,916	62%	0.27	0	0.673	0.000	0.182	0.182	**81.8%**		30,087	2,944	4,375	7,319	10,303	24%	0.24	0	0.792	0.144	0.302	0.302	**69.8%**		**61.8%**
19	11,326	3,565	1,873	5,438	3,286	67%	0.29	0	0.600	0.000	0.174	0.174	**82.6%**		9,856	2,114	1,903	4,017	2,736	70%	0.30	0	0.614	0.144	0.285	0.285	**71.5%**		**65.0%**
20	13,995	4,103	5,563	9,666	4,284	64%	0.28	0	0.829	0.000	0.230	0.230	**77.0%**		12,100	2,537	2,700	5,237	3,575	66%	0.29	0	0.679	0.144	0.297	0.297	**70.3%**		**62.6%**
21	11,974	3,835	2,701	6,536	3,528	66%	0.29	0	0.660	0.000	0.189	0.189	**81.1%**		10,392	1,561	3,074	4,635	2,937	69%	0.30	0	0.647	0.144	0.293	0.293	**70.7%**		**65.6%**
22	12,748	1,621	4,411	6,032	3,818	65%	0.28	0	0.633	0.000	0.179	0.179	**82.1%**		14,263	2,309	1,691	4,001	4,384	63%	0.28	0	0.613	0.144	0.273	0.273	**72.7%**		**64.3%**
23	12,478	1,188	3,943	5,132	3,717	66%	0.28	0	0.584	0.000	0.166	0.166	**83.4%**		24,916	4,228	6,977	11,206	8,368	57%	0.25	0	1.002	0.144	0.359	0.359	**64.1%**		**61.2%**
24	49,982	4,103	8,206	12,309	17,743	23%	0.23	0	0.971	0.000	0.225	0.225	**77.5%**		33,698	4,228	5,790	10,018	11,653	24%	0.24	0	0.938	0.144	0.335	0.335	**66.5%**		**59.7%**
25	33,203	4,231	5,042	9,273	11,468	24%	0.24	0	0.808	0.000	0.195	0.195	**80.5%**		38,203	4,228	4,001	8,229	13,338	24%	0.24	0	0.841	0.144	0.310	0.310	**69.0%**		**58.7%**
26	82,269	4,267	3,943	8,211	29,819	22%	0.22	0	0.750	0.000	0.168	0.168	**83.2%**		78,634	4,228	3,968	8,197	28,459	22%	0.22	0	0.839	0.144	0.301	0.301	**69.9%**		**66.1%**
27	19,032	2,629	3,961	6,590	6,168	60%	0.26	0	0.663	0.000	0.173	0.173	**82.7%**		16,394	2,716	4,001	6,717	5,181	61%	0.27	0	0.759	0.144	0.309	0.309	**69.1%**		**62.7%**
28	43,306	4,103	8,206	12,309	15,247	23%	0.23	0	0.971	0.000	0.228	0.228	**77.2%**		59,183	4,228	4,651	8,880	21,184	23%	0.23	0	0.876	0.144	0.312	0.312	**68.8%**		**66.6%**
29	75,031	4,285	6,860	11,146	27,112	23%	0.23	0	0.909	0.000	0.205	0.205	**79.5%**		58,581	4,228	3,838	8,067	20,959	23%	0.23	0	0.832	0.144	0.302	0.302	**69.8%**		**63.7%**
30	78,344	4,285	3,961	8,247	28,351	23%	0.23	0	0.752	0.000	0.169	0.169	**83.1%**		27,095	4,228	4,001	8,229	9,183	25%	0.25	0	0.841	0.144	0.317	0.317	**68.3%**		**68.1%**
31	52,253	4,267	3,997	8,265	18,593	23%	0.23	0	0.753	0.000	0.174	0.174	**82.6%**		64,598	4,228	4,050	8,278	23,210	23%	0.23	0	0.844	0.144	0.303	0.303	**69.7%**		**67.7%**
32	30,163	4,103	3,825	7,928	10,331	24%	0.24	0	0.735	0.000	0.179	0.179	**82.1%**		25,094	4,228	4,001	8,229	8,435	25%	0.25	0	0.841	0.144	0.318	0.318	**68.2%**		**56.1%**
33	41,378	4,249	3,997	8,247	14,525	24%	0.24	0	0.752	0.000	0.177	0.177	**82.3%**		27,274	4,228	4,131	8,359	9,250	25%	0.25	0	0.848	0.144	0.318	0.318	**68.2%**		**55.2%**
34	24,092	4,285	4,213	8,499	8,060	57%	0.25	0	0.766	0.000	0.193	0.193	**80.7%**		23,712	4,228	4,424	8,652	7,918	57%	0.25	0	0.864	0.144	0.326	0.326	**67.4%**		**65.5%**
35	21,571	4,249	3,961	8,211	7,118	58%	0.26	0	0.750	0.000	0.192	0.192	**80.8%**		22,509	4,228	3,919	8,148	7,468	58%	0.25	0	0.837	0.144	0.320	0.320	**68.0%**		**55.3%**
36	15,525	4,085	1,721	5,807	4,856	62%	0.27	0	0.620	0.000	0.168	0.168	**83.2%**		19,353	4,228	3,480	7,709	6,288	59%	0.26	0	0.813	0.144	0.318	0.318	**68.2%**		**61.6%**
37	16,277	4,249	4,177	8,427	5,138	62%	0.27	0	0.762	0.000	0.205	0.205	**79.5%**		41,716	4,228	7,107	11,336	14,652	24%	0.24	0	1.009	0.144	0.348	0.348	**65.2%**		**55.5%**
38	35,562	4,249	7,526	11,776	12,350	24%	0.24	0	0.943	0.000	0.226	0.226	**77.4%**		22,899	4,228	4,554	8,782	7,614	58%	0.25	0	0.871	0.144	0.328	0.328	**67.2%**		**60.5%**
39	60,572	4,285	4,682	8,967	21,704	23%	0.23	0	0.791	0.000	0.181	0.181	**81.9%**		29,827	4,228	4,700	8,929	10,205	24%	0.24	0	0.879	0.144	0.324	0.324	**67.6%**		**76.5%**
40	62,499	4,138	3,773	7,910	22,425	23%	0.23	0	0.734	0.000	0.167	0.167	**83.3%**		57,524	4,228	3,936	8,164	20,564	23%	0.23	0	0.838	0.144	0.303	0.303	**69.7%**		**64.6%**
41	28,341	4,285	4,051	8,337	9,650	25%	0.25	0	0.757	0.000	0.186	0.186	**81.4%**		24,899	3,448	4,115	7,563	8,362	57%	0.25	0	0.805	0.144	0.310	0.310	**69.0%**		**69.8%**
42	57,151	4,267	4,628	8,895	20,424	23%	0.23	0	0.787	0.000	0.181	0.181	**81.9%**		49,538	4,228	4,684	8,912	17,577	23%	0.23	0	0.878	0.144	0.314	0.314	**68.6%**		**60.6%**
43	16,295	4,267	3,925	8,193	5,144	62%	0.27	0	0.749	0.000	0.201	0.201	**79.9%**		18,117	4,228	3,188	7,416	5,826	60%	0.26	0	0.797	0.144	0.316	0.316	**68.4%**		**64.6%**
44	61,543	4,138	4,520	8,658	22,067	23%	0.23	0	0.774	0.000	0.177	0.177	**82.3%**		36,674	2,472	4,700	7,172	12,766	24%	0.24	0	0.784	0.144	0.297	0.297	**70.3%**		**65.3%**
45	33,149	4,249	4,646	8,895	11,448	24%	0.24	0	0.787	0.000	0.190	0.190	**81.0%**		44,383	4,228	4,440	8,668	15,649	23%	0.23	0	0.865	0.144	0.313	0.313	**68.7%**		**56.9%**
46	62,427	4,249	4,051	8,301	22,398	23%	0.23	0	0.755	0.000	0.172	0.172	**82.8%**		93,612	4,228	4,066	8,294	34,061	22%	0.22	0	0.845	0.144	0.300	0.300	**70.0%**		**58.6%**
47	50,075	4,249	4,051	8,301	17,778	23%	0.23	0	0.755	0.000	0.175	0.175	**82.5%**		23,354	4,228	3,058	7,286	7,785	57%	0.25	0	0.790	0.144	0.307	0.307	**69.3%**		**62.7%**
48	26,512	4,085	7,041	11,126	8,966	25%	0.25	0	0.908	0.000	0.225	0.225	**77.5%**		22,606	3,545	3,985	7,530	7,505	58%	0.25	0	0.803	0.144	0.312	0.312	**68.8%**		**61.8%**
49	32,843	4,249	7,112	11,362	11,333	24%	0.24	0	0.920	0.000	0.222	0.222	**77.8%**		20,947	3,513	4,538	8,050	6,884	59%	0.26	0	0.831	0.144	0.321	0.321	**67.9%**		**56.1%**
50	45,537	4,249	8,499	12,748	16,081	23%	0.23	0	0.995	0.000	0.233	0.233	**76.7%**		27,664	4,228	3,497	7,725	9,396	25%	0.25	0	0.814	0.144	0.309	0.309	**69.1%**		**60.0%**
51	57,565	4,285	8,499	12,784	20,579	23%	0.23	0	0.997	0.000	0.229	0.229	**77.1%**		32,641	4,228	4,489	8,717	11,258	24%	0.24	0	0.867	0.144	0.319	0.319	**68.1%**		**64.3%**
52	19,019	4,120	3,512	7,632	6,163	60%	0.26	0	0.719	0.000	0.188	0.188	**81.2%**		16,638	3,415	3,318	6,733	5,272	61%	0.27	0	0.760	0.144	0.309	0.309	**69.1%**		**69.1%**
53	33,329	4,249	5,924	10,173	11,515	24%	0.24	0	0.856	0.000	0.207	0.207	**79.3%**		21,386	4,228	4,375	8,603	7,049	58%	0.26	0	0.861	0.144	0.328	0.328	**67.2%**		**63.3%**
54	26,775	4,285	4,375	8,661	9,064	25%	0.25	0	0.774	0.000	0.192	0.192	**80.8%**		28,689	4,228	4,424	8,652	9,780	25%	0.25	0	0.864	0.144	0.321	0.321	**67.9%**		**69.3%**
55	43,106	4,285	3,205	7,490	15,172	23%	0.23	0	0.711	0.000	0.167	0.167	**83.3%**		54,483	4,228	3,285	7,514	19,426	23%	0.23	0	0.802	0.144	0.296	0.296	**70.4%**		**64.4%**
56	54,520	2,660	3,912	6,572	19,440	23%	0.23	0	0.662	0.000	0.152	0.152	**84.8%**		36,788	2,992	4,115	7,107	12,809	24%	0.24	0	0.780	0.144	0.296	0.296	**70.4%**		**63.5%**
57	67,486	4,285	3,169	7,454	24,290	23%	0.23	0	0.709	0.000	0.161	0.161	**83.9%**		45,326	3,643	3,253	6,896	16,002	23%	0.23	0	0.769	0.144	0.290	0.290	**71.0%**		**64.1%**
58	57,565	1,206	4,051	5,258	20,579	23%	0.23	0	0.591	0.000	0.136	0.136	**86.4%**		35,812	3,106	4,115	7,221	12,444	24%	0.24	0	0.787	0.144	0.298	0.298	**70.2%**		**70.6%**
59	29,332	4,285	4,195	8,481	10,020	24%	0.24	0	0.765	0.000	0.187	0.187	**81.3%**		50,791	4,228	4,700	8,929	18,046	23%	0.23	0	0.879	0.144	0.314	0.314	**68.6%**		**66.1%**
60	24,217	4,120	4,485	8,606	8,107	57%	0.25	0	0.772	0.000	0.194	0.194	**80.6%**		32,933	3,789	4,424	8,213	11,367	24%	0.24	0	0.840	0.144	0.312	0.312	**68.8%**		**57.6%**
61	70,961	4,267	4,429	8,697	25,590	23%	0.23	0	0.776	0.000	0.176	0.176	**82.4%**		47,554	4,228	4,456	8,685	16,835	23%	0.23	0	0.866	0.144	0.312	0.312	**68.8%**		**75.7%**
62	41,918	4,267	4,375	8,643	14,727	24%	0.24	0	0.774	0.000	0.182	0.182	**81.8%**		100,199	4,228	4,424	8,652	36,524	22%	0.22	0	0.864	0.144	0.304	0.304	**69.6%**		**77.5%**
63	58,807	4,249	4,628	8,877	21,044	23%	0.23	0	0.786	0.000	0.180	0.180	**82.0%**		75,999	4,228	4,684	8,912	27,474	23%	0.23	0	0.878	0.144	0.310	0.310	**69.0%**		**61.4%**
64	19,523	4,085	4,172	8,258	6,352	59%	0.26	0	0.753	0.000	0.196	0.196	**80.4%**		20,069	4,228	3,627	7,855	6,556	59%	0.26	0	0.821	0.144	0.319	0.319	**68.1%**		**59.5%**
65	12,172	684	1,422	2,107	3,602	66%	0.29	0	0.421	0.000	0.120	0.120	**88.0%**		7,286	829	1,187	2,017	1,775	77%	0.33	0	0.506	0.144	0.262	0.262	**73.8%**		**65.2%**
66	51,083	1,765	6,554	8,319	18,155	23%	0.23	0	0.756	0.000	0.175	0.175	**82.5%**		45,473	2,114	3,903	6,017	16,057	23%	0.23	0	0.722	0.144	0.279	0.279	**72.1%**		**62.2%**
67	42,044	4,249	3,961	8,211	14,774	24%	0.24	0	0.750	0.000	0.177	0.177	**82.3%**		32,592	4,228	4,001	8,229	11,239	24%	0.24	0	0.841	0.144	0.313	0.313	**68.7%**		**59.0%**
68	69,453	4,103	3,668	7,771	25,026	23%	0.23	0	0.726	0.000	0.165	0.165	**83.5%**		36,479	3,757	3,350	7,107	12,693	24%	0.24	0	0.780	0.144	0.296	0.296	**70.4%**		**58.3%**
69	29,674	2,737	4,069	6,806	10,148	24%	0.24	0	0.674	0.000	0.165	0.165	**83.5%**		32,494	2,992	4,115	7,107	11,203	24%	0.24	0	0.780	0.144	0.298	0.298	**70.2%**		**60.1%**
70	65,650	4,285	4,628	8,913	23,603	23%	0.23	0	0.788	0.000	0.179	0.179	**82.1%**		69,087	4,228	4,651	8,880	24,889	23%	0.23	0	0.876	0.144	0.310	0.310	**69.0%**		**76.6%**
71	82,917	3,421	2,791	6,212	30,061	22%	0.22	0	0.642	0.000	0.144	0.144	**85.6%**		81,935	2,049	2,635	4,684	29,694	22%	0.22	0	0.650	0.144	0.258	0.258	**74.2%**		**79.1%**
72	36,004	1,443	3,720	5,163	12,516	24%	0.24	0	0.586	0.000	0.140	0.140	**86.0%**		36,495	3,204	4,001	7,205	12,699	24%	0.24	0	0.786	0.144	0.297	0.297	**70.3%**		**83.0%**
73	20,707	4,249	4,646	8,895	6,794	59%	0.26	0	0.787	0.000	0.203	0.203	**79.7%**		21,809	4,228	4,635	8,864	7,207	58%	0.26	0	0.875	0.144	0.331	0.331	**66.9%**		**70.7%**
74	98,439	4,249	7,725	11,974	35,866	22%	0.22	0	0.953	0.000	0.212	0.212	**78.8%**		72,535	4,228	4,180	8,408	26,178	23%	0.23	0	0.851	0.144	0.304	0.304	**69.6%**		**58.8%**
75	23,030	1,278	4,267	5,546	7,663	58%	0.25	0	0.606	0.000	0.154	0.154	**84.6%**		29,567	2,358	4,163	6,522	10,108	24%	0.24	0	0.749	0.144	0.292	0.292	**70.8%**		**59.4%**
76	16,603	3,894	2,469	6,363	5,259	61%	0.27	0	0.650	0.000	0.174	0.174	**82.6%**		11,075	2,082	1,756	3,838	3,192	68%	0.29	0	0.604	0.144	0.278	0.278	**72.2%**		**61.3%**
77	12,658	990	1,801	2,791	3,784	65%	0.28	0	0.458	0.000	0.130	0.130	**87.0%**		41,992	4,228	6,961	11,189	14,755	24%	0.24	0	1.001	0.144	0.346	0.346	**65.4%**		**63.3%**
78	16,944	1,314	6,482	7,797	5,387	61%	0.27	0	0.728	0.000	0.194	0.194	**80.6%**		14,832	2,358	3,497	5,855	4,597	63%	0.27	0	0.713	0.144	0.300	0.300	**70.0%**		**59.2%**
79	11,074	432	828	1,260	3,192	68%	0.29	0	0.375	0.000	0.109	0.109	**89.1%**		29,681	4,228	7,075	11,303	10,151	24%	0.24	0	1.007	0.144	0.355	0.355	**64.5%**		**67.0%**
80	31,415	1,321	7,197	8,519	10,799	24%	0.24	0	0.767	0.000	0.186	0.186	**81.4%**		20,102	2,082	6,164	8,246	6,568	59%	0.26	0	0.842	0.144	0.325	0.325	**67.5%**		**65.7%**
81																												**AVERAGE:**	**63.57%**

AS10 ='Study 513 Revised Flow Data'!E7
AT10 ='Study 513 Revised Flow Data'!O7
AU10 ='Study 513 Revised Flow Data'!Y7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$K$4,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
BA10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
BB10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =AZ10+BC10-(AZ10*BC10)
BE10 =1-BD10

BG10 ='Study 513 (Revised) Flow Data'!F7
BH10 ='Study 513 (Revised) Flow Data'!P7
BI10 ='Study 513 (Revised) Flow Data'!Z7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$K$4,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BO10 =(-0.5916024)+(0.017968*$BC$3)+(0.000054*BJ10)
BP10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)
BQ10 =(BO10*BM10)+(BP10*(1-BM10))
BR10 =BN10+BQ10-(BN10*BQ10)
BS10 =1-BR10
BU10 =(O10*0.37)+(AC10*0.42)+(AQ10*0.13)+(BE10*0.05)+(BS10*0.03)

Study 513 Sacramento River Spring Run Yearling Survival Model
Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Row	Year	Water Year Type	Sac River Flow	CVP Flow	SWP Flow	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2 (Calculated Mortality)	m3	m23	m123	Calculated Survival s123
10	1922	A	12,033	4,466	4,720	9,186	3,550	66%	0.29	0	0.857	0.080	0.594	0.594	**40.6%**
11	1923	B	18,150	4,483	6,672	11,155	5,838	60%	0.26	0	0.963	0.080	0.611	0.611	**38.9%**
12	1924	C	11,411	4,270	3,767	8,037	3,318	67%	0.29	0	0.795	0.080	0.560	0.560	**44.0%**
13	1925	D	7,126	1,621	3,300	4,921	1,715	77%	0.33	0	0.626	0.080	0.502	0.502	**49.8%**
14	1926	D	10,924	4,473	3,169	7,642	3,135	68%	0.29	0	0.773	0.080	0.551	0.551	**44.9%**
15	1927	W	20,906	4,433	6,672	11,105	6,869	59%	0.26	0	0.960	0.080	0.595	0.595	**40.5%**
16	1928	A	25,780	4,469	6,672	11,141	8,692	25%	0.25	0	0.962	0.080	0.300	0.300	**70.0%**
17	1929	C	13,327	4,461	5,791	10,252	4,034	65%	0.28	0	0.914	0.080	0.618	0.618	**38.2%**
18	1930	D	7,680	2,551	2,325	4,876	1,922	75%	0.32	0	0.624	0.080	0.490	0.490	**51.0%**
19	1931	C	10,016	3,067	3,360	6,427	2,796	70%	0.30	0	0.708	0.080	0.517	0.517	**48.3%**
20	1932	D	8,453	1,407	2,131	3,538	2,211	73%	0.31	0	0.552	0.080	0.425	0.425	**57.5%**
21	1933	C	9,663	3,493	2,608	6,101	2,664	70%	0.30	0	0.690	0.080	0.509	0.509	**49.1%**
22	1934	C	8,520	1,813	2,197	4,010	2,237	73%	0.31	0	0.577	0.080	0.443	0.443	**55.7%**
23	1935	B	9,445	2,953	4,390	7,343	2,582	71%	0.30	0	0.757	0.080	0.559	0.559	**44.1%**
24	1936	B	12,587	4,449	4,689	9,138	3,758	65%	0.28	0	0.854	0.080	0.587	0.587	**41.3%**
25	1937	B	11,428	4,463	3,543	8,006	3,324	67%	0.29	0	0.793	0.080	0.559	0.559	**44.1%**
26	1938	W	23,847	4,470	6,672	11,142	7,969	57%	0.25	0	0.962	0.080	0.585	0.585	**41.5%**
27	1939	D	19,343	4,482	4,054	8,536	6,284	59%	0.26	0	0.822	0.080	0.521	0.521	**47.9%**
28	1940	A	9,378	3,175	2,607	5,782	2,557	71%	0.30	0	0.673	0.080	0.501	0.501	**49.9%**
29	1941	W	13,663	4,455	6,119	10,574	4,160	64%	0.28	0	0.932	0.080	0.626	0.626	**37.4%**
30	1942	W	18,200	4,481	4,242	8,723	5,857	60%	0.26	0	0.832	0.080	0.532	0.532	**46.8%**
31	1943	W	22,267	4,472	5,573	10,045	7,378	58%	0.25	0	0.903	0.080	0.556	0.556	**44.4%**
32	1944	D	14,722	4,467	6,672	11,139	4,556	63%	0.27	0	0.962	0.080	0.636	0.636	**36.4%**
33	1945	B	15,226	4,447	6,672	11,119	4,744	63%	0.27	0	0.961	0.080	0.631	0.631	**36.9%**
34	1946	B	21,847	4,463	6,672	11,135	7,221	58%	0.26	0	0.962	0.080	0.592	0.592	**40.8%**
35	1947	D	14,352	4,453	6,672	11,125	4,418	63%	0.28	0	0.961	0.080	0.639	0.639	**36.1%**
36	1948	B	11,848	4,447	3,885	8,332	3,481	66%	0.29	0	0.811	0.080	0.566	0.566	**43.4%**
37	1949	D	14,386	4,462	6,286	10,748	4,430	63%	0.28	0	0.941	0.080	0.625	0.625	**37.5%**
38	1950	B	11,613	4,466	3,740	8,206	3,393	67%	0.29	0	0.804	0.080	0.564	0.564	**43.6%**
39	1951	A	45,409	4,450	6,672	11,122	16,033	23%	0.23	0	0.961	0.080	0.286	0.286	**71.4%**
40	1952	W	17,293	4,464	6,672	11,136	5,518	61%	0.27	0	0.962	0.080	0.616	0.616	**38.4%**
41	1953	W	16,822	4,481	4,089	8,570	5,342	61%	0.27	0	0.823	0.080	0.535	0.535	**46.5%**
42	1954	A	21,343	4,463	6,672	11,135	7,032	58%	0.26	0	0.962	0.080	0.594	0.594	**40.6%**
43	1955	D	20,805	4,461	6,672	11,133	6,831	59%	0.26	0	0.962	0.080	0.597	0.597	**40.3%**
44	1956	W	12,806	4,443	5,019	9,462	3,839	65%	0.28	0	0.872	0.080	0.596	0.596	**40.4%**
45	1957	A	15,360	4,482	6,672	11,154	4,795	62%	0.27	0	0.963	0.080	0.631	0.631	**36.9%**
46	1958	W	19,209	4,448	6,672	11,120	6,234	59%	0.26	0	0.961	0.080	0.604	0.604	**39.6%**
47	1959	B	16,066	4,483	4,185	8,668	5,059	62%	0.27	0	0.829	0.080	0.543	0.543	**45.7%**
48	1960	D	11,293	4,435	3,080	7,515	3,274	67%	0.29	0	0.767	0.080	0.542	0.542	**45.8%**
49	1961	D	14,268	4,441	6,370	10,811	4,386	63%	0.28	0	0.944	0.080	0.629	0.629	**37.1%**
50	1962	B	10,756	3,861	3,525	7,386	3,073	68%	0.29	0	0.760	0.080	0.544	0.544	**45.6%**
51	1963	W	21,259	4,470	6,672	11,142	7,001	58%	0.26	0	0.962	0.080	0.595	0.595	**40.5%**
52	1964	D	30,704	4,449	6,672	11,121	10,533	24%	0.24	0	0.961	0.080	0.295	0.295	**70.5%**
53	1965	W	13,898	4,455	6,294	10,749	4,248	64%	0.28	0	0.941	0.080	0.630	0.630	**37.0%**
54	1966	B	28,015	4,472	6,672	11,144	9,528	25%	0.25	0	0.962	0.080	0.298	0.298	**70.2%**
55	1967	W	21,864	4,451	6,672	11,123	7,227	58%	0.26	0	0.961	0.080	0.592	0.592	**40.8%**
56	1968	B	16,150	4,482	4,054	8,536	5,090	62%	0.27	0	0.822	0.080	0.538	0.538	**46.2%**
57	1969	W	16,638	4,445	6,672	11,117	5,272	61%	0.27	0	0.961	0.080	0.620	0.620	**38.0%**
58	1970	W	17,579	4,482	4,089	8,571	5,624	61%	0.26	0	0.824	0.080	0.530	0.530	**47.0%**
59	1971	W	26,418	4,467	6,672	11,139	8,930	25%	0.25	0	0.962	0.080	0.299	0.299	**70.1%**
60	1972	B	16,671	4,452	6,672	11,124	5,285	61%	0.27	0	0.961	0.080	0.620	0.620	**38.0%**
61	1973	A	26,267	4,453	6,672	11,125	8,874	25%	0.25	0	0.961	0.080	0.299	0.299	**70.1%**
62	1974	W	58,433	4,460	6,672	11,132	20,904	23%	0.23	0	0.962	0.080	0.282	0.282	**71.8%**
63	1975	W	17,478	4,482	4,614	9,096	5,587	61%	0.27	0	0.852	0.080	0.548	0.548	**45.2%**
64	1976	C	19,158	4,473	6,672	11,145	6,215	60%	0.26	0	0.963	0.080	0.605	0.605	**39.5%**
65	1977	C	8,386	3,020	3,456	6,476	2,186	73%	0.31	0	0.710	0.080	0.542	0.542	**45.8%**
66	1978	A	6,924	2,780	1,808	4,588	1,640	78%	0.33	0	0.608	0.080	0.492	0.492	**50.8%**
67	1979	B	15,024	4,485	6,672	11,157	4,669	63%	0.27	0	0.963	0.080	0.634	0.634	**36.6%**
68	1980	A	18,453	4,448	6,672	11,120	5,951	60%	0.26	0	0.961	0.080	0.609	0.609	**39.1%**
69	1981	D	12,991	4,470	5,450	9,920	3,909	65%	0.28	0	0.896	0.080	0.610	0.610	**39.0%**
70	1982	W	38,367	4,451	6,672	11,123	13,399	24%	0.24	0	0.961	0.080	0.290	0.290	**71.0%**
71	1983	W	38,569	4,483	5,815	10,298	13,475	24%	0.24	0	0.917	0.080	0.279	0.279	**72.1%**
72	1984	W	62,920	3,107	3,623	6,730	22,582	23%	0.23	0	0.724	0.080	0.227	0.227	**77.3%**
73	1985	D	35,040	4,469	6,672	11,141	12,155	24%	0.24	0	0.962	0.080	0.292	0.292	**70.8%**
74	1986	W	11,142	4,439	4,184	8,623	3,217	68%	0.29	0	0.826	0.080	0.584	0.584	**41.6%**
75	1987	D	11,529	4,449	3,755	8,204	3,362	67%	0.29	0	0.804	0.080	0.565	0.565	**43.5%**
76	1988	C	8,436	3,213	1,911	5,124	2,205	73%	0.31	0	0.637	0.080	0.488	0.488	**51.2%**
77	1989	D	8,941	3,077	3,404	6,481	2,394	72%	0.31	0	0.711	0.080	0.534	0.534	**46.6%**
78	1990	C	12,957	4,426	4,890	9,316	3,896	65%	0.28	0	0.864	0.080	0.589	0.589	**41.1%**
79	1991	C	8,117	2,749	2,351	5,100	2,086	74%	0.32	0	0.636	0.080	0.492	0.492	**50.8%**
80	1992	C	7,714	3,328	1,664	4,992	1,935	75%	0.32	0	0.630	0.080	0.494	0.494	**50.6%**

DECEMBER

Year	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2 (Calculated Mortality)	m3	m23	m123	Calculated Survival s123
1922	17,142	4,347	7,122	11,469	5,461	61%	0.45	0	0.872	0.000	0.397	0.397	**60.3%**
1923	33,600	4,347	3,897	8,244	11,617	24%	0.24	0	0.698	0.000	0.168	0.168	**83.2%**
1924	13,759	4,341	6,154	10,495	4,196	64%	0.48	0	0.820	0.000	0.391	0.391	**60.9%**
1925	11,726	4,378	5,252	9,630	3,436	67%	0.50	0	0.773	0.000	0.384	0.384	**61.6%**
1926	11,108	4,347	3,466	7,813	3,204	68%	0.50	0	0.675	0.000	0.340	0.340	**66.0%**
1927	15,483	4,347	7,022	11,369	4,841	62%	0.46	0	0.867	0.000	0.403	0.403	**59.7%**
1928	16,491	4,347	7,024	11,371	5,218	61%	0.46	0	0.867	0.000	0.397	0.397	**60.3%**
1929	14,279	4,347	6,669	11,016	4,390	63%	0.47	0	0.848	0.000	0.401	0.401	**59.9%**
1930	14,572	4,378	6,436	10,814	4,500	63%	0.47	0	0.837	0.000	0.394	0.394	**60.6%**
1931	10,165	3,042	3,180	6,222	2,852	69%	0.52	0	0.589	0.000	0.303	0.303	**69.7%**
1932	14,686	4,378	7,213	11,591	4,543	63%	0.47	0	0.879	0.000	0.413	0.413	**58.7%**
1933	9,547	3,651	2,495	6,146	2,620	71%	0.52	0	0.585	0.000	0.307	0.307	**69.3%**
1934	12,198	4,378	5,417	9,795	3,612	66%	0.49	0	0.782	0.000	0.384	0.384	**61.6%**
1935	8,750	3,435	3,363	6,798	2,322	72%	0.54	0	0.620	0.000	0.333	0.333	**66.7%**
1936	13,401	4,347	5,854	10,201	4,062	64%	0.48	0	0.804	0.000	0.386	0.386	**61.4%**
1937	12,474	4,347	5,667	10,014	3,715	66%	0.49	0	0.794	0.000	0.388	0.388	**61.2%**
1938	54,824	4,347	7,476	11,823	19,554	23%	0.23	0	0.891	0.000	0.205	0.205	**79.5%**
1939	18,687	4,347	3,735	8,082	6,039	60%	0.45	0	0.689	0.000	0.308	0.308	**69.2%**
1940	8,668	2,476	2,701	5,177	2,292	73%	0.54	0	0.532	0.000	0.287	0.287	**71.3%**
1941	39,390	4,347	7,176	11,523	13,782	24%	0.24	0	0.875	0.000	0.207	0.207	**79.3%**
1942	65,135	4,347	3,608	7,955	23,411	23%	0.23	0	0.682	0.000	0.155	0.155	**84.5%**
1943	28,738	4,347	3,779	8,126	9,798	25%	0.25	0	0.692	0.000	0.170	0.170	**83.0%**
1944	13,759	4,347	6,445	10,792	4,196	64%	0.48	0	0.836	0.000	0.399	0.399	**60.1%**
1945	17,499	4,347	6,993	11,340	5,595	61%	0.45	0	0.865	0.000	0.392	0.392	**60.8%**
1946	57,410	4,347	7,478	11,825	20,521	23%	0.23	0	0.891	0.000	0.205	0.205	**79.5%**
1947	18,280	4,347	7,047	11,394	5,887	60%	0.45	0	0.868	0.000	0.390	0.390	**61.0%**
1948	11,515	4,347	3,483	7,830	3,356	67%	0.50	0	0.676	0.000	0.337	0.337	**66.3%**
1949	15,580	4,347	6,922	11,269	4,877	62%	0.46	0	0.861	0.000	0.400	0.400	**60.0%**
1950	11,758	4,347	3,945	8,292	3,448	67%	0.50	0	0.701	0.000	0.347	0.347	**65.3%**
1951	67,705	4,347	7,592	11,939	24,372	23%	0.23	0	0.898	0.000	0.204	0.204	**79.6%**
1952	50,287	4,347	7,131	11,478	17,857	23%	0.23	0	0.873	0.000	0.202	0.202	**79.8%**
1953	42,626	4,347	3,742	8,089	14,992	24%	0.24	0	0.690	0.000	0.162	0.162	**83.8%**
1954	15,011	4,347	3,897	8,244	4,664	63%	0.47	0	0.698	0.000	0.327	0.327	**67.3%**
1955	26,005	4,347	6,932	11,279	8,776	25%	0.25	0	0.862	0.000	0.215	0.215	**78.5%**
1956	32,462	4,347	7,592	11,939	11,191	24%	0.24	0	0.898	0.000	0.217	0.217	**78.3%**
1957	14,198	4,347	5,456	9,803	4,360	64%	0.47	0	0.782	0.000	0.371	0.371	**62.9%**
1958	24,021	4,347	6,948	11,295	8,034	57%	0.43	0	0.863	0.000	0.369	0.369	**63.1%**
1959	14,637	4,347	3,852	8,199	4,524	63%	0.47	0	0.696	0.000	0.327	0.327	**67.3%**
1960	10,929	4,347	2,791	7,138	3,137	68%	0.51	0	0.638	0.000	0.323	0.323	**67.7%**
1961	22,248	4,347	6,916	11,263	7,371	58%	0.43	0	0.861	0.000	0.373	0.373	**62.7%**
1962	17,321	4,347	6,898	11,245	5,528	61%	0.45	0	0.860	0.000	0.390	0.390	**61.0%**
1963	27,144	4,347	6,918	11,265	9,202	25%	0.25	0	0.861	0.000	0.213	0.213	**78.7%**
1964	14,881	4,347	6,201	10,548	4,616	63%	0.47	0	0.822	0.000	0.385	0.385	**61.5%**
1965	31,909	4,347	7,264	11,611	10,984	24%	0.24	0	0.880	0.000	0.213	0.213	**78.7%**
1966	17,093	4,347	6,021	10,368	5,443	61%	0.45	0	0.813	0.000	0.370	0.370	**63.0%**
1967	39,910	4,347	7,150	11,497	13,977	24%	0.24	0	0.874	0.000	0.207	0.207	**79.3%**
1968	16,621	4,347	3,735	8,082	5,266	61%	0.46	0	0.689	0.000	0.315	0.315	**68.5%**
1969	27,745	4,347	6,997	11,344	9,427	25%	0.25	0	0.865	0.000	0.214	0.214	**78.6%**
1970	49,506	4,347	3,481	7,828	17,565	23%	0.23	0	0.676	0.000	0.157	0.157	**84.3%**
1971	57,117	4,347	7,069	11,416	20,412	23%	0.23	0	0.869	0.000	0.200	0.200	**80.0%**
1972	22,183	4,347	5,918	10,265	7,347	58%	0.43	0	0.807	0.000	0.350	0.350	**65.0%**
1973	26,867	4,347	6,927	11,274	9,098	25%	0.25	0	0.862	0.000	0.213	0.213	**78.7%**
1974	60,776	4,347	7,024	11,371	21,780	23%	0.23	0	0.867	0.000	0.198	0.198	**80.2%**
1975	17,613	4,347	4,248	8,595	5,637	61%	0.45	0	0.717	0.000	0.324	0.324	**67.6%**
1976	16,768	4,347	4,652	8,999	5,321	61%	0.46	0	0.739	0.000	0.337	0.337	**66.3%**
1977	8,002	2,140	3,154	5,294	2,043	74%	0.55	0	0.539	0.000	0.298	0.298	**70.2%**
1978	11,970	4,228	5,576	9,804	3,527	66%	0.49	0	0.782	0.000	0.386	0.386	**61.4%**
1979	12,783	4,347	3,665	8,012	3,831	65%	0.49	0	0.686	0.000	0.333	0.333	**66.7%**
1980	21,191	4,347	6,972	11,319	6,976	58%	0.44	0	0.864	0.000	0.377	0.377	**62.3%**
1981	17,353	4,347	4,660	9,007	5,540	61%	0.45	0	0.739	0.000	0.335	0.335	**66.5%**
1982	68,372	4,347	6,969	11,316	24,621	23%	0.23	0	0.864	0.000	0.196	0.196	**80.4%**
1983	54,385	4,347	4,318	8,665	19,390	23%	0.23	0	0.721	0.000	0.166	0.166	**83.4%**
1984	82,748	3,134	3,104	6,238	29,998	22%	0.22	0	0.590	0.000	0.132	0.132	**86.8%**
1985	23,793	4,347	4,548	8,895	7,949	57%	0.43	0	0.733	0.000	0.314	0.314	**68.6%**
1986	16,719	4,347	6,968	11,315	5,303	61%	0.46	0	0.864	0.000	0.395	0.395	**60.5%**
1987	13,629	4,347	6,092	10,439	4,147	64%	0.48	0	0.817	0.000	0.391	0.391	**60.9%**
1988	15,027	4,347	6,896	11,243	4,670	63%	0.47	0	0.860	0.000	0.402	0.402	**59.8%**
1989	9,433	3,239	3,353	6,592	2,578	71%	0.53	0	0.609	0.000	0.320	0.320	**68.0%**
1990	14,523	4,347	6,216	10,563	4,482	63%	0.47	0	0.823	0.000	0.388	0.388	**61.2%**
1991	8,424	2,104	2,909	5,013	2,201	73%	0.54	0	0.524	0.000	0.285	0.285	**71.5%**
1992	7,384	3,201	1,661	4,862	1,811	76%	0.57	0	0.515	0.000	0.292	0.292	**70.8%**

JANUARY

Year	Sac River Flows	CVP Flows	SWP Flows	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2 (Calculated Mortality)	m3	m23	m123	Calculated Survival s123
1922	17,727	4,324	7,642	11,966	5,680	60%	0.26	0	0.899	0.000	0.238	0.238	**76.2%**
1923	32,039	4,324	3,614	7,938	11,033	24%	0.24	0	0.682	0.000	0.165	0.165	**83.5%**
1924	15,044	4,324	7,013	11,337	4,676	63%	0.27	0	0.865	0.000	0.236	0.236	**76.4%**
1925	10,360	3,923	3,222	7,145	2,925	69%	0.30	0	0.639	0.000	0.190	0.190	**81.0%**
1926	20,053	4,324	7,146	11,470	6,550	59%	0.26	0	0.872	0.000	0.226	0.226	**77.4%**
1927	33,080	4,324	7,337	11,661	11,422	24%	0.24	0	0.883	0.000	0.213	0.213	**78.7%**
1928	27,225	4,324	3,637	7,961	9,232	25%	0.25	0	0.683	0.000	0.169	0.169	**83.1%**
1929	15,759	4,324	7,135	11,459	4,944	62%	0.27	0	0.872	0.000	0.236	0.236	**76.4%**
1930	21,679	4,346	7,156	11,502	7,158	58%	0.26	0	0.874	0.000	0.223	0.223	**77.7%**
1931	12,767	4,324	5,524	9,848	3,825	65%	0.28	0	0.785	0.000	0.222	0.222	**77.8%**
1932	15,873	4,346	7,854	12,200	4,987	62%	0.27	0	0.912	0.000	0.246	0.246	**75.4%**
1933	13,531	4,346	6,412	10,758	4,111	64%	0.28	0	0.834	0.000	0.233	0.233	**76.7%**
1934	16,507	4,346	7,150	11,496	5,224	61%	0.27	0	0.874	0.000	0.234	0.234	**76.6%**
1935	24,639	4,346	7,731	12,077	8,265	57%	0.25	0	0.905	0.000	0.227	0.227	**77.3%**
1936	33,893	4,324	7,322	11,646	11,726	24%	0.24	0	0.882	0.000	0.212	0.212	**78.8%**
1937	16,052	4,324	7,595	11,919	5,053	62%	0.27	0	0.897	0.000	0.242	0.242	**75.8%**
1938	31,323	4,324	3,812	8,136	10,765	24%	0.24	0	0.692	0.000	0.168	0.168	**83.2%**
1939	18,605	4,324	3,239	7,563	6,008	60%	0.26	0	0.661	0.000	0.173	0.173	**82.7%**
1940	23,387	4,324	8,012	12,336	7,797	57%	0.25	0	0.919	0.000	0.232	0.232	**76.8%**
1941	72,307	4,324	8,218	12,542	26,093	23%	0.23	0	0.930	0.000	0.210	0.210	**79.0%**
1942	62,631	4,324	3,239	7,563	22,474	23%	0.23	0	0.661	0.000	0.151	0.151	**84.9%**
1943	57,003	4,324	3,303	7,627	20,369	23%	0.23	0	0.665	0.000	0.153	0.153	**84.7%**
1944	18,361	4,324	3,262	7,586	5,917	60%	0.26	0	0.663	0.000	0.174	0.174	**82.6%**
1945	13,759	4,324	6,308	10,632	4,196	64%	0.28	0	0.827	0.000	0.230	0.230	**77.0%**
1946	42,545	4,324	4,591	8,915	14,962	24%	0.24	0	0.734	0.000	0.173	0.173	**82.7%**
1947	15,320	4,324	6,727	11,051	4,780	62%	0.27	0	0.850	0.000	0.231	0.231	**76.9%**
1948	16,312	4,324	7,082	11,406	5,151	62%	0.27	0	0.869	0.000	0.233	0.233	**76.7%**
1949	15,044	4,324	7,001	11,325	4,676	63%	0.27	0	0.864	0.000	0.236	0.236	**76.4%**
1950	22,444	4,324	7,239	11,563	7,444	58%	0.25	0	0.877	0.000	0.223	0.223	**77.7%**
1951	62,663	4,324	8,500	12,824	22,486	23%	0.23	0	0.945	0.000	0.216	0.216	**78.4%**
1952	65,786	4,324	5,205	9,529	23,654	23%	0.23	0	0.767	0.000	0.174	0.174	**82.6%**
1953	62,972	4,324	3,333	7,657	22,602	23%	0.23	0	0.666	0.000	0.152	0.152	**84.8%**
1954	33,291	4,324	3,850	8,174	11,501	24%	0.24	0	0.694	0.000	0.167	0.167	**83.3%**
1955	22,606	4,324	5,331	9,655	7,505	58%	0.25	0	0.774	0.000	0.197	0.197	**80.3%**
1956	85,204	4,324	7,374	11,698	30,916	22%	0.22	0	0.885	0.000	0.198	0.198	**80.2%**
1957	18,947	4,324	3,872	8,196	6,136	60%	0.26	0	0.695	0.000	0.182	0.182	**81.8%**
1958	37,552	4,324	4,112	8,436	13,095	24%	0.24	0	0.708	0.000	0.169	0.169	**83.1%**
1959	35,324	4,324	3,333	7,657	12,261	24%	0.24	0	0.666	0.000	0.160	0.160	**84.0%**
1960	15,369	4,324	7,123	11,447	4,798	62%	0.27	0	0.871	0.000	0.237	0.237	**76.3%**
1961	15,450	4,324	7,134	11,458	4,828	62%	0.27	0	0.872	0.000	0.237	0.237	**76.3%**
1962	13,401	4,324	4,921	9,245	4,062	64%	0.28	0	0.752	0.000	0.210	0.210	**79.0%**
1963	24,639	4,324	7,319	11,643	8,265	57%	0.25	0	0.882	0.000	0.221	0.221	**77.9%**
1964	26,705	4,324	3,872	8,196	9,038	25%	0.25	0	0.695	0.000	0.172	0.172	**82.8%**
1965	81,870	4,324	8,287	12,611	29,669	22%	0.22	0	0.934	0.000	0.210	0.210	**79.0%**
1966	29,258	4,324	3,657	7,981	9,992	25%	0.25	0	0.684	0.000	0.168	0.168	**83.2%**
1967	35,292	4,324	7,485	11,809	12,249	24%	0.24	0	0.891	0.000	0.213	0.213	**78.7%**
1968	30,640	4,324	3,333	7,657	10,509	24%	0.24	0	0.666	0.000	0.162	0.162	**83.8%**
1969	71,218	4,324	4,552	8,876	25,685	23%	0.23	0	0.732	0.000	0.166	0.166	**83.4%**
1970	92,002	4,324	3,333	7,657	33,459	22%	0.22	0	0.666	0.000	0.149	0.149	**85.1%**
1971	47,310	4,324	5,919	10,243	16,744	23%	0.23	0	0.806	0.000	0.188	0.188	**81.2%**
1972	20,378	4,324	3,891	8,215	6,671	59%	0.26	0	0.697	0.000	0.180	0.180	**82.0%**
1973	49,669	4,324	6,835	11,159	17,626	23%	0.23	0	0.855	0.000	0.198	0.198	**80.2%**
1974	78,796	4,324	3,668	7,992	28,520	22%	0.22	0	0.684	0.000	0.154	0.154	**84.6%**
1975	18,882	4,324	3,848	8,172	6,112	60%	0.26	0	0.694	0.000	0.182	0.182	**81.8%**
1976	16,719	4,324	3,842	8,166	5,303	61%	0.27	0	0.694	0.000	0.186	0.186	**81.4%**
1977	8,392	3,050	2,491	5,541	2,189	73%	0.31	0	0.552	0.000	0.173	0.173	**82.7%**
1978	49,603	2,776	7,822	10,598	17,602	23%	0.23	0	0.825	0.000	0.191	0.191	**80.9%**
1979	27,583	4,324	3,262	7,586	9,366	25%	0.25	0	0.663	0.000	0.164	0.164	**83.6%**
1980	64,663	4,324	3,737	8,061	23,234	23%	0.23	0	0.688	0.000	0.157	0.157	**84.3%**
1981	29,307	4,324	3,356	7,680	10,011	24%	0.24	0	0.668	0.000	0.164	0.164	**83.6%**
1982	51,392	4,324	6,546	10,870	18,271	23%	0.23	0	0.840	0.000	0.194	0.194	**80.6%**
1983	58,809	4,324	2,648	6,972	21,044	23%	0.23	0	0.629	0.000	0.144	0.144	**85.6%**
1984	47,538	1,448	2,881	4,329	16,829	23%	0.23	0	0.487	0.000	0.113	0.113	**88.7%**
1985	17,727	4,324	3,872	8,196	5,680	60%	0.26	0	0.695	0.000	0.184	0.184	**81.6%**
1986	23,631	4,324	7,245	11,569	7,888	57%	0.25	0	0.878	0.000	0.221	0.221	**77.9%**
1987	17,109	2,108	5,918	8,026	5,449	61%	0.27	0	0.686	0.000	0.183	0.183	**81.7%**
1988	25,290	4,324	7,094	11,418	8,508	25%	0.25	0	0.869	0.000	0.217	0.217	**78.3%**
1989	12,393	4,324	4,939	9,263	3,685	66%	0.28	0	0.753	0.000	0.214	0.214	**78.6%**
1990	22,037	2,835	7,089	9,924	7,292	58%	0.25	0	0.789	0.000	0.201	0.201	**79.9%**
1991	7,156	2,231	1,623	3,854	1,726	77%	0.33	0	0.461	0.000	0.151	0.151	**84.9%**
1992	12,181	4,346	4,930	9,276	3,606	66%	0.29	0	0.754	0.000	0.215	0.215	**78.5%**

Formulas: Sacramento River Spring Smolt Yearling Survival Model

```
C10 ='Study 513 Revised Flow Data'!B7
D10 ='Study 513 Revised Flow Data'!L7
E10 ='Study 513 Revised Flow Data'!V7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
J10 =IF(-2.45925+(0.0420748*$T$1)>0,-2.45925+(0.0420748*$T$1),0)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =IF(-1.613493+(0.0319584*$T$1)>0,-1.613493+(0.0319584*$T$1),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 513 Revised Flow Data'!C7
R10 ='Study 513 Revised Flow Data'!M7
S10 ='Study 513 Revised Flow Data'!W7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
Z10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 513 Revised Flow Data'!D7
AF10 ='Study 513 Revised Flow Data'!N7
AG10 ='Study 513 Revised Flow Data'!X7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AN10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
```

	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU
1	Study 513 Sacramento River Spring Run Yearling Survival Model (continued)																												
2									February Water Temp		50 F																		
3		Cross Channel Closed Over		25000 cfs					March Water Temp		55 F																		
4		Cross Channel Closed Feb to Apr when DOI greater than					12,000 cfs																						
5																													
6	**FEBRUARY**				Calculated										**MARCH**				Calculated										
7	Sac				Sutter &								**Calculated**		Sac				Sutter &								**Calculated**		**Weighted**
8	River	CVP	SWP	CVP + SWP	Steamboat		X-Channel		Calculated Mortality				**Survivability**		River			CVP + SWP	Steamboat		X-Channel		Calculated Mortality				**Survivability**		**Total**
9	Flow	Flow	Flow	Exports	Slough Q	Percent	Closed	m1	m2	m3	m23	m123	**s123**		Flow	CVP	SWP	exports	Slough Q	percent	Closed	m1	m2	m3	m23	m123	**s123**		**Survival**
10	33,923	4,351	5,326	9,677	11,737	24%	0.24	0	0.829	0.000	0.200	0.200	**80.0%**		32,413	4,200	4,142	8,342	11,172	24%	0.24	0	0.847	0.144	0.314	0.314	**68.6%**		**56.3%**
11	22,363	4,382	2,377	6,759	7,414	58%	0.25	0	0.672	0.000	0.171	0.171	**82.9%**		17,337	4,321	4,026	8,347	5,534	61%	0.27	0	0.847	0.144	0.331	0.331	**66.9%**		**66.3%**
12	17,924	4,325	5,313	9,638	5,754	60%	0.26	0	0.827	0.000	0.218	0.218	**78.2%**		12,458	2,005	2,159	4,164	3,709	66%	0.28	0	0.621	0.144	0.280	0.280	**72.0%**		**57.9%**
13	44,997	3,748	7,931	11,679	15,879	23%	0.23	0	0.937	0.000	0.219	0.219	**78.1%**		28,087	3,409	2,449	5,858	9,555	25%	0.25	0	0.713	0.144	0.284	0.284	**71.6%**		**60.9%**
14	36,516	4,334	7,726	12,060	12,707	24%	0.24	0	0.958	0.000	0.229	0.229	**77.1%**		18,866	4,321	3,798	8,119	6,106	60%	0.26	0	0.835	0.144	0.325	0.325	**67.5%**		**60.3%**
15	85,240	4,341	4,199	8,540	30,930	22%	0.22	0	0.768	0.000	0.172	0.172	**82.8%**		44,058	3,334	4,148	7,482	15,528	23%	0.23	0	0.801	0.144	0.298	0.298	**70.2%**		**56.5%**
16	27,729	4,359	4,377	8,736	9,421	25%	0.25	0	0.779	0.000	0.192	0.192	**80.8%**		85,285	4,321	4,424	8,745	30,947	22%	0.22	0	0.869	0.144	0.307	0.307	**69.3%**		**68.1%**
17	19,014	4,336	4,074	8,410	6,161	60%	0.26	0	0.761	0.000	0.199	0.199	**80.1%**		18,036	4,417	3,110	7,527	5,796	60%	0.26	0	0.803	0.144	0.318	0.318	**68.2%**		**55.3%**
18	15,809	3,552	3,557	7,109	4,963	62%	0.27	0	0.691	0.000	0.187	0.187	**81.3%**		30,104	3,145	7,055	10,200	10,309	24%	0.24	0	0.947	0.144	0.340	0.340	**66.0%**		**60.5%**
19	11,902	4,327	2,092	6,419	3,501	66%	0.29	0	0.653	0.000	0.188	0.188	**81.2%**		10,880	2,821	1,946	4,767	3,119	68%	0.29	0	0.654	0.144	0.294	0.294	**70.6%**		**63.4%**
20	13,613	4,406	6,104	10,510	4,141	64%	0.28	0	0.874	0.000	0.244	0.244	**75.6%**		10,701	2,920	3,731	6,651	3,052	68%	0.29	0	0.756	0.144	0.324	0.324	**67.6%**		**61.5%**
21	14,117	4,384	3,781	8,165	4,330	64%	0.28	0	0.748	0.000	0.207	0.207	**79.3%**		10,653	1,865	3,516	5,381	3,034	68%	0.29	0	0.687	0.144	0.304	0.304	**69.6%**		**63.3%**
22	12,460	1,916	4,055	5,971	3,710	66%	0.28	0	0.629	0.000	0.179	0.179	**82.1%**		16,524	2,760	4,155	6,915	5,230	61%	0.27	0	0.770	0.144	0.312	0.312	**68.8%**		**62.6%**
23	11,524	2,080	4,560	6,640	3,360	67%	0.29	0	0.665	0.000	0.192	0.192	**80.8%**		24,363	4,321	7,592	11,913	8,162	57%	0.25	0	1.040	0.144	0.369	0.369	**63.1%**		**60.3%**
24	56,171	4,354	8,500	12,854	20,058	23%	0.23	0	1.001	0.000	0.230	0.230	**77.0%**		35,048	4,321	4,160	8,481	12,158	24%	0.24	0	0.855	0.144	0.315	0.315	**68.5%**		**57.2%**
25	33,725	4,332	5,295	9,627	11,663	24%	0.24	0	0.827	0.000	0.199	0.199	**80.1%**		38,187	4,321	4,000	8,321	13,332	24%	0.24	0	0.846	0.144	0.311	0.311	**68.9%**		**58.0%**
26	81,027	4,370	3,939	8,309	29,354	22%	0.22	0	0.755	0.000	0.170	0.170	**83.0%**		79,187	4,321	3,966	8,287	28,666	22%	0.22	0	0.844	0.144	0.302	0.302	**69.8%**		**65.8%**
27	19,392	4,354	3,955	8,309	6,303	59%	0.26	0	0.755	0.000	0.197	0.197	**80.3%**		16,914	2,952	4,007	6,959	5,376	61%	0.27	0	0.772	0.144	0.312	0.312	**68.8%**		**63.6%**
28	44,784	4,346	8,393	12,739	15,799	23%	0.23	0	0.995	0.000	0.233	0.233	**76.7%**		62,078	4,321	4,622	8,943	22,267	23%	0.23	0	0.880	0.144	0.312	0.312	**68.8%**		**64.3%**
29	75,481	4,392	7,046	11,438	27,280	23%	0.23	0	0.924	0.000	0.208	0.208	**79.2%**		58,939	4,321	3,846	8,167	21,093	23%	0.23	0	0.838	0.144	0.303	0.303	**69.7%**		**63.4%**
30	78,614	4,381	3,955	8,336	28,452	22%	0.22	0	0.757	0.000	0.170	0.170	**83.0%**		27,550	4,321	4,007	8,328	9,354	25%	0.25	0	0.846	0.144	0.318	0.318	**68.2%**		**70.0%**
31	52,577	4,377	4,005	8,382	18,714	23%	0.23	0	0.759	0.000	0.175	0.175	**82.5%**		65,119	4,321	4,056	8,377	23,404	23%	0.23	0	0.849	0.144	0.305	0.305	**69.5%**		**68.5%**
32	33,275	4,343	3,958	8,301	11,495	24%	0.24	0	0.755	0.000	0.182	0.182	**81.8%**		25,127	4,321	4,007	8,328	8,448	25%	0.25	0	0.846	0.144	0.320	0.320	**68.0%**		**55.6%**
33	42,962	4,344	4,099	8,443	15,118	23%	0.23	0	0.763	0.000	0.179	0.179	**82.1%**		27,908	4,321	4,126	8,447	9,488	25%	0.25	0	0.853	0.144	0.319	0.319	**68.1%**		**55.4%**
34	23,948	4,379	4,413	8,792	8,007	57%	0.25	0	0.782	0.000	0.197	0.197	**80.3%**		25,127	4,321	4,439	8,760	8,448	25%	0.25	0	0.870	0.144	0.326	0.326	**67.4%**		**65.3%**
35	22,165	4,348	4,140	8,488	7,340	58%	0.25	0	0.765	0.000	0.195	0.195	**80.5%**		23,127	4,321	4,126	8,447	7,699	57%	0.25	0	0.853	0.144	0.324	0.324	**67.6%**		**55.1%**
36	13,439	3,288	1,890	5,178	4,076	64%	0.28	0	0.586	0.000	0.164	0.164	**83.6%**		18,931	4,321	3,884	8,205	6,130	60%	0.26	0	0.840	0.144	0.326	0.326	**67.4%**		**60.1%**
37	16,511	4,344	4,879	9,223	5,225	61%	0.27	0	0.805	0.000	0.216	0.216	**78.4%**		41,277	3,998	7,314	11,312	14,487	24%	0.24	0	1.007	0.144	0.348	0.348	**65.2%**		**54.9%**
38	36,012	4,351	7,939	12,290	12,518	24%	0.24	0	0.970	0.000	0.232	0.232	**76.8%**		23,875	4,321	5,954	10,275	7,979	57%	0.25	0	0.951	0.144	0.348	0.348	**65.2%**		**59.4%**
39	61,238	4,381	4,675	9,056	21,953	23%	0.23	0	0.796	0.000	0.182	0.182	**81.8%**		30,331	4,308	4,699	9,007	10,394	24%	0.24	0	0.883	0.144	0.324	0.324	**67.6%**		**76.2%**
40	62,812	4,392	3,909	8,301	22,542	23%	0.23	0	0.755	0.000	0.172	0.172	**82.8%**		58,174	4,321	3,934	8,255	20,807	23%	0.23	0	0.842	0.144	0.304	0.304	**69.6%**		**64.7%**
41	28,990	4,381	4,060	8,441	9,892	25%	0.25	0	0.763	0.000	0.187	0.187	**81.3%**		25,989	4,321	4,111	8,432	8,770	25%	0.25	0	0.852	0.144	0.320	0.320	**68.0%**		**69.5%**
42	57,151	4,373	4,636	9,009	20,424	23%	0.23	0	0.793	0.000	0.182	0.182	**81.8%**		49,701	4,321	4,685	9,006	17,638	23%	0.23	0	0.883	0.144	0.316	0.316	**68.4%**		**60.3%**
43	16,674	4,360	4,026	8,386	5,286	61%	0.27	0	0.760	0.000	0.203	0.203	**79.7%**		17,825	4,321	3,427	7,748	5,716	60%	0.26	0	0.815	0.144	0.321	0.321	**67.9%**		**64.4%**
44	62,534	4,384	4,675	9,059	22,438	23%	0.23	0	0.796	0.000	0.182	0.182	**81.8%**		37,081	2,579	4,699	7,278	12,918	24%	0.24	0	0.790	0.144	0.298	0.298	**70.2%**		**64.5%**
45	32,969	4,347	4,638	8,985	11,380	24%	0.24	0	0.792	0.000	0.191	0.191	**80.9%**		44,513	4,321	4,503	8,824	15,698	23%	0.23	0	0.873	0.144	0.315	0.315	**68.5%**		**56.8%**
46	64,731	4,358	4,044	8,402	23,260	23%	0.23	0	0.761	0.000	0.173	0.173	**82.7%**		93,547	4,321	4,070	8,391	34,037	22%	0.22	0	0.850	0.144	0.302	0.302	**69.8%**		**58.2%**
47	50,363	4,355	4,060	8,415	17,886	23%	0.23	0	0.761	0.000	0.176	0.176	**82.4%**		22,818	4,321	3,952	8,273	7,584	58%	0.25	0	0.843	0.144	0.322	0.322	**67.8%**		**62.3%**
48	28,268	4,339	7,384	11,723	9,622	25%	0.25	0	0.940	0.000	0.231	0.231	**76.9%**		25,176	3,015	4,081	7,096	8,466	25%	0.25	0	0.780	0.144	0.303	0.303	**69.7%**		**61.2%**
49	33,527	4,350	7,192	11,542	11,589	24%	0.24	0	0.930	0.000	0.224	0.224	**77.6%**		21,549	3,387	4,052	7,439	7,109	58%	0.26	0	0.798	0.144	0.312	0.312	**68.8%**		**56.0%**
50	45,609	4,344	8,500	12,844	16,108	23%	0.23	0	1.000	0.000	0.234	0.234	**76.6%**		27,908	3,601	4,492	8,093	9,488	25%	0.25	0	0.834	0.144	0.314	0.314	**68.6%**		**58.6%**
51	59,150	4,380	8,490	12,870	21,172	23%	0.23	0	1.002	0.000	0.229	0.229	**77.1%**		32,267	4,321	4,508	8,829	11,118	24%	0.24	0	0.873	0.144	0.321	0.321	**67.9%**		**64.1%**
52	17,333	3,248	4,345	7,593	5,533	61%	0.27	0	0.717	0.000	0.190	0.190	**81.0%**		16,572	3,085	4,056	7,141	5,248	61%	0.27	0	0.782	0.144	0.315	0.315	**68.5%**		**68.8%**
53	34,283	4,357	6,121	10,478	11,872	24%	0.24	0	0.873	0.000	0.210	0.210	**79.0%**		21,988	4,321	4,431	8,752	7,274	58%	0.26	0	0.869	0.144	0.329	0.329	**67.1%**		**63.0%**
54	27,099	4,381	4,377	8,758	9,185	25%	0.25	0	0.780	0.000	0.193	0.193	**80.7%**		29,356	4,321	4,424	8,745	10,029	24%	0.24	0	0.869	0.144	0.322	0.322	**67.8%**		**69.3%**
55	42,800	4,391	3,201	7,592	15,057	24%	0.24	0	0.717	0.000	0.168	0.168	**83.2%**		54,548	4,321	3,283	7,604	19,451	23%	0.23	0	0.807	0.144	0.297	0.297	**70.3%**		**64.9%**
56	53,494	4,379	4,060	8,439	19,057	23%	0.23	0	0.763	0.000	0.176	0.176	**82.4%**		37,276	4,321	4,111	8,432	12,991	24%	0.24	0	0.852	0.144	0.313	0.313	**68.7%**		**62.9%**
57	67,792	4,393	3,171	7,564	24,404	23%	0.23	0	0.715	0.000	0.162	0.162	**83.8%**		45,717	3,152	3,251	6,403	16,148	23%	0.23	0	0.742	0.144	0.284	0.284	**71.6%**		**64.3%**
58	58,771	2,305	4,060	6,365	21,031	23%	0.23	0	0.651	0.000	0.149	0.149	**85.1%**		35,942	3,241	4,111	7,352	12,492	24%	0.24	0	0.794	0.144	0.300	0.300	**70.0%**		**70.2%**
59	29,476	4,392	4,675	9,067	10,074	24%	0.24	0	0.796	0.000	0.195	0.195	**80.5%**		51,197	4,321	4,699	9,020	18,198	23%	0.23	0	0.884	0.144	0.315	0.315	**68.5%**		**76.2%**
60	24,565	4,361	4,638	8,999	8,237	57%	0.25	0	0.793	0.000	0.199	0.199	**80.1%**		33,259	3,602	4,482	8,084	11,489	24%	0.24	0	0.833	0.144	0.310	0.310	**69.0%**		**58.1%**
61	71,376	4,368	4,423	8,791	25,744	23%	0.23	0	0.782	0.000	0.177	0.177	**82.3%**		48,156	4,321	4,451	8,772	17,060	23%	0.23	0	0.870	0.144	0.313	0.313	**68.7%**		**75.6%**
62	42,440	4,366	4,413	8,779	14,923	24%	0.24	0	0.781	0.000	0.184	0.184	**81.6%**		100,199	4,321	4,439	8,760	36,524	22%	0.22	0	0.870	0.144	0.305	0.305	**69.5%**		**77.4%**
63	57,871	4,349	4,636	8,985	20,694	23%	0.23	0	0.792	0.000	0.182	0.182	**81.8%**		75,007	4,321	4,685	9,006	27,103	23%	0.23	0	0.883	0.144	0.311	0.311	**68.9%**		**61.9%**
64	19,819	4,339	4,370	8,709	6,462	59%	0.26	0	0.777	0.000	0.202	0.202	**79.8%**		20,004	4,417	3,769	8,186	6,532	59%	0.26	0	0.839	0.144	0.324	0.324	**67.6%**		**59.0%**
65	10,822	441	1,458	1,899	3,097	68%	0.29	0	0.409	0.000	0.120	0.120	**88.0%**		7,091	1,588	1,264	2,852	1,702	77%	0.33	0	0.551	0.144	0.278	0.278	**72.2%**		**63.7%**
66	50,327	2,148	6,284	8,432	17,872	23%	0.23	0	0.762	0.000	0.177	0.177	**82.3%**		47,310	2,209	3,895	6,104	16,744	23%	0.23	0	0.726	0.144	0.280	0.280	**72.0%**		**61.4%**
67	42,134	4,345	3,955	8,300	14,808	24%	0.24	0	0.755	0.000	0.178	0.178	**82.2%**		33,210	4,321	4,007	8,328	11,471	24%	0.24	0	0.846	0.144	0.314	0.314	**68.6%**		**58.6%**
68	70,531	4,353	3,804	8,157	25,429	23%	0.23	0	0.747	0.000	0.169	0.169	**83.1%**		36,983	2,752	3,358	6,110	12,882	24%	0.24	0	0.727	0.144	0.283	0.283	**71.7%**		**57.9%**
69	30,124	4,363	4,062	8,425	10,316	24%	0.24	0	0.762	0.000	0.186	0.186	**81.4%**		31,990	3,878	4,111	7,989	11,014	24%	0.24	0	0.828	0.144	0.310	0.310	**69.0%**		**59.4%**
70	67,486	4,382	4,620	9,002	24,290	23%	0.23	0	0.793	0.000	0.180	0.180	**82.0%**		68,957	4,321	4,644	8,965	24,840	23%	0.23	0	0.881	0.144	0.311	0.311	**68.9%**		**76.7%**
71	83,368	4,392	2,793	7,185	30,229	22%	0.22	0	0.695	0.000	0.156	0.156	**84.4%**		83,627	2,832	2,628	5,460	30,326	22%	0.22	0	0.691	0.144	0.267	0.267	**73.3%**		**79.3%**
72	36,700	1,739	3,847	5,586	12,776	24%	0.24	0	0.608	0.000	0.145	0.145	**85.5%**		36,528	3,320	4,007	7,327	12,711	24%	0.24	0	0.792	0.144	0.299	0.299	**70.1%**		**82.9%**
73	22,543	4,354	4,638	8,992	7,481	58%	0.25	0	0.792	0.000	0.201	0.201	**79.9%**		21,956	4,321	4,685	9,006	7,261	58%	0.26	0	0.883	0.144	0.333	0.333	**66.7%**		**71.6%**
74	98,673	4,350	7,774	12,124	35,954	22%	0.22	0	0.961	0.000	0.214	0.214	**78.6%**		72,828	2,194	4,159	6,353	26,288	23%	0.23	0	0.740	0.144	0.279	0.279	**72.1%**		**57.0%**
75	23,624	1,417	4,362	5,779	7,885	57%	0.25	0	0.619	0.000	0.156	0.156	**84.4%**		32,039	2,512	4,283	6,795	11,033	24%	0.24	0	0.764	0.144	0.294	0.294	**70.6%**		**58.7%**
76	16,255	3,941	2,721	6,662	5,129	62%	0.27	0	0.667	0.000	0.179	0.179	**82.1%**		10,945	2,436	1,990	4,426	3,144	68%	0.29	0	0.636	0.144	0.288	0.288	**71.2%**		**60.5%**
77	11,362	1,182	2,080	3,262	3,299	67%	0.29	0	0.483	0.000	0.140	0.140	**86.0%**		42,789	4,321	7,006	11,327	15,053	24%	0.24	0	1.008	0.144	0.347	0.347	**65.3%**		**62.3%**
78	17,556	1,556	6,704	8,260	5,616	61%	0.26	0	0.753	0.000	0.199	0.199	**80.1%**		15,239	2,726	3,635	6,361	4,749	62%	0.27	0	0.740	0.144	0.306	0.306	**69.4%**		**57.4%**
79	11,560	769	920	1,689	3,373	67%	0.29	0	0.398	0.000	0.115	0.115	**88.5%**		30,819	4,417	7,130	11,547	10,576	24%	0.24	0	1.020	0.144	0.357	0.357	**64.3%**		**66.2%**
80	32,110	1,235	7,546	8,781	11,059	24%	0.24	0	0.781	0.000	0.189	0.189	**81.1%**		20,508	2,459	6,309	8,768	6,720	59%	0.26	0	0.870	0.144	0.331	0.331	**66.9%**		**64.7%**
81																												**AVERAGE:**	**63.33%**
82																													
83																													
84																													
85	AS10 ='Study 513 Revised Flow Data'!E7														BG10 ='Study 513 (Revised) Flow Data'!F7														
86	AT10 ='Study 513 Revised Flow Data'!O7														BH10 ='Study 513 (Revised) Flow Data'!P7														
87	AU10 ='Study 513 Revised Flow Data'!Y7														BI10 ='Study 513 (Revised) Flow Data'!Z7														
88	AV10 =(AT10+AU10)														BJ10 =(BH10+BI10)														
89	AW10 =0.374*AS10-950														BK10 =0.374*BG10-950														
90	AX10 =IF(AS10>$K$4,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))														BL10 =IF(BG10>$K$4,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))														
91	AY10 =(0.133*AS10+829)/(AS10-AW10)														BM10 =(0.133*BG10+829)/(BG10-BK10)														
92	AZ10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)														BN10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)														
93	BA10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)														BO10 =(-0.5916024)+(0.017968*$BC$3)+(0.000054*BJ10)														
94	BB10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)														BP10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)														
95	BC10 =(BA10*AY10)+(BB10*(1-AY10))														BQ10 =(BO10*BM10)+(BP10*(1-BM10))														
96	BD10 =AZ10+BC10-(AZ10*BC10)														BR10 =BN10+BQ10-(BN10*BQ10)														
97	BE10 =1-BD10														BS10 =1-BR10														
98															BU10 =(O10*0.37)+(AC10*0.42)+(AQ10*0.13)+(BE10*0.05)+(BS10*0.03)														

Study 485 Sacramento River Spring Run Yearling Survival Model

Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Year	Water Year Type	Sac River Flow	CVP Flow	SWP Flow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	A	13,344	4,285	5,075	9,361	4,041	64%	0.28	0	0.866	0.080	0.587	0.587	**41.3%**
1923	B	17,881	4,302	6,672	10,974	5,738	60%	0.26	0	0.953	0.080	0.607	0.607	**39.3%**
1924	C	9,831	2,403	3,748	6,151	2,727	70%	0.30	0	0.693	0.080	0.509	0.509	**49.1%**
1925	D	7,025	1,311	3,210	4,521	1,677	78%	0.33	0	0.605	0.080	0.487	0.487	**51.3%**
1926	D	12,352	4,285	3,008	7,294	3,670	66%	0.28	0	0.755	0.080	0.524	0.524	**47.6%**
1927	W	20,284	4,252	6,672	10,924	6,636	59%	0.26	0	0.951	0.080	0.593	0.593	**40.7%**
1928	A	21,746	4,302	6,672	10,974	7,183	58%	0.26	0	0.953	0.080	0.588	0.588	**41.2%**
1929	C	13,008	4,285	4,958	9,243	3,915	65%	0.28	0	0.860	0.080	0.586	0.586	**41.4%**
1930	D	7,159	2,286	1,765	4,050	1,728	77%	0.33	0	0.579	0.080	0.465	0.465	**53.5%**
1931	C	9,781	2,655	3,260	5,916	2,708	70%	0.30	0	0.680	0.080	0.501	0.501	**49.9%**
1932	D	8,151	1,176	1,748	2,924	2,098	74%	0.32	0	0.519	0.080	0.405	0.405	**59.5%**
1933	C	9,512	3,059	2,605	5,663	2,607	71%	0.30	0	0.667	0.080	0.494	0.494	**50.6%**
1934	C	8,134	1,008	1,630	2,638	2,092	74%	0.32	0	0.503	0.080	0.393	0.393	**60.7%**
1935	B	9,209	1,210	3,210	4,420	2,494	71%	0.31	0	0.599	0.080	0.450	0.450	**55.0%**
1936	B	9,378	2,470	3,277	5,748	2,557	71%	0.30	0	0.671	0.080	0.499	0.499	**50.1%**
1937	B	14,184	4,285	4,689	8,974	4,355	64%	0.28	0	0.845	0.080	0.566	0.566	**43.4%**
1938	W	23,948	4,285	6,672	10,957	8,007	57%	0.25	0	0.952	0.080	0.578	0.578	**42.2%**
1939	D	19,444	4,302	5,277	9,579	6,322	59%	0.26	0	0.878	0.080	0.554	0.554	**44.6%**
1940	A	8,436	2,807	1,748	4,554	2,205	73%	0.31	0	0.607	0.080	0.466	0.466	**53.4%**
1941	W	13,747	4,302	6,050	10,352	4,191	64%	0.28	0	0.920	0.080	0.618	0.618	**38.2%**
1942	W	18,184	4,302	6,168	10,470	5,851	60%	0.26	0	0.926	0.080	0.589	0.589	**41.1%**
1943	W	21,914	4,302	6,521	10,823	7,246	58%	0.26	0	0.945	0.080	0.582	0.582	**41.8%**
1944	D	15,125	4,285	6,672	10,957	4,707	63%	0.27	0	0.952	0.080	0.626	0.626	**37.4%**
1945	B	13,764	4,269	6,605	10,873	4,198	64%	0.28	0	0.948	0.080	0.636	0.636	**36.4%**
1946	B	17,243	4,285	6,672	10,957	5,499	61%	0.27	0	0.952	0.080	0.611	0.611	**38.9%**
1947	D	13,781	4,302	6,605	10,907	4,204	64%	0.28	0	0.950	0.080	0.637	0.637	**36.3%**
1948	B	10,201	2,790	3,630	6,420	2,865	69%	0.30	0	0.707	0.080	0.514	0.514	**48.6%**
1949	D	14,453	4,269	6,235	10,503	4,455	63%	0.28	0	0.928	0.080	0.617	0.617	**38.3%**
1950	B	14,049	4,285	3,412	7,697	4,304	64%	0.28	0	0.776	0.080	0.524	0.524	**47.6%**
1951	A	39,628	4,269	6,672	10,940	13,871	24%	0.24	0	0.951	0.080	0.287	0.287	**71.3%**
1952	W	16,570	4,302	6,672	10,974	5,247	61%	0.27	0	0.953	0.080	0.616	0.616	**38.4%**
1953	W	16,537	4,302	4,084	8,386	5,235	61%	0.27	0	0.814	0.080	0.530	0.530	**47.0%**
1954	A	20,906	4,285	6,672	10,957	6,869	59%	0.26	0	0.952	0.080	0.591	0.591	**40.9%**
1955	D	17,058	4,285	6,672	10,957	5,430	61%	0.27	0	0.952	0.080	0.612	0.612	**38.8%**
1956	W	10,470	2,554	4,235	6,789	2,966	69%	0.30	0	0.727	0.080	0.525	0.525	**47.5%**
1957	A	15,478	4,302	6,672	10,974	4,839	62%	0.27	0	0.953	0.080	0.624	0.624	**37.6%**
1958	W	19,259	4,285	6,672	10,957	6,253	59%	0.26	0	0.952	0.080	0.599	0.599	**40.1%**
1959	B	16,133	4,302	4,185	8,487	5,084	62%	0.27	0	0.819	0.080	0.536	0.536	**46.4%**
1960	D	14,537	4,285	3,075	7,361	4,487	63%	0.27	0	0.758	0.080	0.509	0.509	**49.1%**
1961	D	12,991	4,269	4,907	9,176	3,909	65%	0.28	0	0.856	0.080	0.584	0.584	**41.6%**
1962	B	13,680	4,269	3,479	7,747	4,166	64%	0.28	0	0.779	0.080	0.528	0.528	**47.2%**
1963	W	20,822	4,302	6,672	10,974	6,837	59%	0.26	0	0.953	0.080	0.592	0.592	**40.8%**
1964	D	28,653	4,302	6,672	10,974	9,766	25%	0.25	0	0.953	0.080	0.295	0.295	**70.5%**
1965	W	13,394	3,815	6,353	10,167	4,059	64%	0.28	0	0.910	0.080	0.615	0.615	**38.5%**
1966	B	25,477	4,285	6,672	10,957	8,578	25%	0.25	0	0.952	0.080	0.298	0.298	**70.2%**
1967	W	14,285	4,285	6,672	10,957	4,392	63%	0.28	0	0.952	0.080	0.634	0.634	**36.6%**
1968	B	16,234	4,302	4,050	8,352	5,122	62%	0.27	0	0.812	0.080	0.531	0.531	**46.9%**
1969	W	13,394	4,285	5,428	9,714	4,059	64%	0.28	0	0.885	0.080	0.599	0.599	**40.1%**
1970	W	17,646	4,302	4,084	8,386	5,650	61%	0.26	0	0.814	0.080	0.524	0.524	**47.6%**
1971	W	18,990	4,285	6,672	10,957	6,152	60%	0.26	0	0.952	0.080	0.600	0.600	**40.0%**
1972	B	15,343	4,285	6,672	10,957	4,788	62%	0.27	0	0.952	0.080	0.624	0.624	**37.6%**
1973	A	21,914	4,285	6,672	10,957	7,246	58%	0.26	0	0.952	0.080	0.586	0.586	**41.4%**
1974	W	55,778	4,302	6,672	10,974	19,911	23%	0.23	0	0.953	0.080	0.281	0.281	**71.9%**
1975	W	17,579	4,302	5,411	9,714	5,624	61%	0.26	0	0.885	0.080	0.568	0.568	**43.2%**
1976	C	19,226	4,302	6,672	10,974	6,240	59%	0.26	0	0.953	0.080	0.600	0.600	**40.0%**
1977	C	8,420	2,622	3,378	6,000	2,199	73%	0.31	0	0.685	0.080	0.523	0.523	**47.7%**
1978	A	6,924	2,470	1,714	4,185	1,640	78%	0.33	0	0.587	0.080	0.475	0.475	**52.5%**
1979	B	15,142	4,302	6,672	10,974	4,713	63%	0.27	0	0.953	0.080	0.627	0.627	**37.3%**
1980	A	15,797	4,285	6,672	10,957	4,958	62%	0.27	0	0.952	0.080	0.621	0.621	**37.9%**
1981	D	13,613	4,285	5,579	9,865	4,141	64%	0.28	0	0.893	0.080	0.602	0.602	**39.8%**
1982	W	27,981	4,285	6,672	10,957	9,515	25%	0.25	0	0.952	0.080	0.295	0.295	**70.5%**
1983	W	39,107	4,302	6,672	10,974	13,676	24%	0.24	0	0.953	0.080	0.287	0.287	**71.3%**
1984	W	62,802	3,344	3,630	6,974	22,538	23%	0.23	0	0.737	0.080	0.230	0.230	**77.0%**
1985	D	33,292	4,302	6,672	10,974	11,501	24%	0.24	0	0.953	0.080	0.291	0.291	**70.9%**
1986	W	9,546	2,504	4,185	6,689	2,620	71%	0.30	0	0.722	0.080	0.533	0.533	**46.7%**
1987	D	11,209	4,252	3,496	7,747	3,242	67%	0.29	0	0.779	0.080	0.552	0.552	**44.8%**
1988	C	8,453	2,975	1,865	4,840	2,211	73%	0.31	0	0.622	0.080	0.477	0.477	**52.3%**
1989	D	8,588	2,386	3,361	5,748	2,262	73%	0.31	0	0.671	0.080	0.510	0.510	**49.0%**
1990	C	11,260	4,252	3,059	7,310	3,261	67%	0.29	0	0.755	0.080	0.535	0.535	**46.5%**
1991	C	8,134	2,470	2,353	4,823	2,092	74%	0.32	0	0.621	0.080	0.481	0.481	**51.9%**
1992	C	7,579	3,109	1,496	4,605	1,885	76%	0.32	0	0.609	0.080	0.481	0.481	**51.9%**

DECEMBER

Year	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	17,142	4,212	7,107	11,319	5,461	61%	0.45	0	0.864	0.000	0.393	0.393	**60.7%**
1923	34,544	4,212	4,635	8,847	11,969	24%	0.24	0	0.731	0.000	0.176	0.176	**82.4%**
1924	13,417	2,960	6,928	9,888	4,068	64%	0.48	0	0.787	0.000	0.378	0.378	**62.2%**
1925	11,254	4,212	4,847	9,059	3,259	67%	0.50	0	0.742	0.000	0.372	0.372	**62.8%**
1926	12,962	4,212	2,879	7,091	3,898	65%	0.48	0	0.636	0.000	0.308	0.308	**69.2%**
1927	14,312	4,212	7,042	11,254	4,403	63%	0.47	0	0.861	0.000	0.407	0.407	**59.3%**
1928	16,572	4,212	7,075	11,287	5,248	61%	0.46	0	0.862	0.000	0.395	0.395	**60.5%**
1929	13,206	4,212	5,871	10,083	3,989	65%	0.48	0	0.797	0.000	0.384	0.384	**61.6%**
1930	14,442	4,212	6,294	10,506	4,451	63%	0.47	0	0.820	0.000	0.387	0.387	**61.3%**
1931	9,335	2,196	2,976	5,172	2,541	71%	0.53	0	0.532	0.000	0.281	0.281	**71.9%**
1932	14,653	4,212	7,188	11,401	4,530	63%	0.47	0	0.869	0.000	0.408	0.408	**59.2%**
1933	8,197	2,017	2,505	4,521	2,116	74%	0.55	0	0.497	0.000	0.273	0.273	**72.7%**
1934	12,474	4,163	5,546	9,709	3,715	66%	0.49	0	0.777	0.000	0.380	0.380	**62.0%**
1935	8,506	3,220	3,399	6,619	2,231	73%	0.54	0	0.610	0.000	0.331	0.331	**66.9%**
1936	9,400	3,058	2,976	6,034	2,566	71%	0.53	0	0.579	0.000	0.305	0.305	**69.5%**
1937	14,003	4,212	6,603	10,815	4,287	64%	0.48	0	0.837	0.000	0.398	0.398	**60.2%**
1938	41,781	4,212	7,530	11,742	14,676	24%	0.24	0	0.887	0.000	0.209	0.209	**79.1%**
1939	18,687	4,212	3,741	7,953	6,039	60%	0.45	0	0.682	0.000	0.305	0.305	**69.5%**
1940	7,839	1,431	2,683	4,115	1,982	75%	0.56	0	0.475	0.000	0.264	0.264	**73.6%**
1941	30,852	4,212	7,351	11,563	10,589	24%	0.24	0	0.877	0.000	0.214	0.214	**78.6%**
1942	65,623	4,212	3,610	7,823	23,593	23%	0.23	0	0.675	0.000	0.154	0.154	**84.6%**
1943	28,803	4,212	3,773	7,985	9,822	25%	0.25	0	0.684	0.000	0.168	0.168	**83.2%**
1944	13,775	4,212	6,424	10,636	4,202	64%	0.48	0	0.827	0.000	0.395	0.395	**60.5%**
1945	15,824	4,212	6,961	11,173	4,968	62%	0.46	0	0.856	0.000	0.396	0.396	**60.4%**
1946	54,808	4,212	7,595	11,807	19,548	23%	0.23	0	0.890	0.000	0.205	0.205	**79.5%**
1947	18,134	4,212	7,140	11,352	5,832	60%	0.45	0	0.866	0.000	0.389	0.389	**61.1%**
1948	9,742	2,537	3,204	5,741	2,693	70%	0.52	0	0.563	0.000	0.294	0.294	**70.6%**
1949	15,564	4,212	6,896	11,108	4,871	62%	0.46	0	0.853	0.000	0.396	0.396	**60.4%**
1950	10,994	4,082	3,106	7,188	3,162	68%	0.50	0	0.641	0.000	0.323	0.323	**67.7%**
1951	67,997	4,212	7,595	11,807	24,481	23%	0.23	0	0.890	0.000	0.202	0.202	**79.8%**
1952	45,586	4,212	7,107	11,319	16,099	23%	0.23	0	0.864	0.000	0.202	0.202	**79.8%**
1953	42,334	4,212	3,741	7,953	14,883	24%	0.24	0	0.682	0.000	0.161	0.161	**83.9%**
1954	14,914	4,212	3,903	8,115	4,628	63%	0.47	0	0.691	0.000	0.324	0.324	**67.6%**
1955	25,517	4,212	6,912	11,124	8,593	25%	0.25	0	0.854	0.000	0.213	0.213	**78.7%**
1956	24,964	4,212	7,595	11,807	8,387	57%	0.42	0	0.890	0.000	0.378	0.378	**62.2%**
1957	14,149	4,212	5,806	10,018	4,342	64%	0.47	0	0.794	0.000	0.376	0.376	**62.4%**
1958	23,745	4,212	6,928	11,140	7,930	57%	0.43	0	0.854	0.000	0.366	0.366	**63.4%**
1959	14,621	4,212	3,854	8,067	4,518	63%	0.47	0	0.688	0.000	0.324	0.324	**67.6%**
1960	9,807	2,944	2,797	5,741	2,718	70%	0.52	0	0.563	0.000	0.293	0.293	**70.7%**
1961	16,507	4,212	6,896	11,108	5,224	61%	0.46	0	0.853	0.000	0.391	0.391	**60.9%**
1962	16,703	4,212	6,879	11,092	5,297	61%	0.46	0	0.852	0.000	0.389	0.389	**61.1%**
1963	27,550	4,212	6,896	11,108	9,354	25%	0.25	0	0.853	0.000	0.211	0.211	**78.9%**
1964	14,849	4,212	6,993	11,206	4,603	63%	0.47	0	0.858	0.000	0.402	0.402	**59.8%**
1965	24,330	4,212	7,465	11,677	8,149	57%	0.43	0	0.883	0.000	0.377	0.377	**62.3%**
1966	16,995	4,212	6,424	10,636	5,406	61%	0.46	0	0.827	0.000	0.377	0.377	**62.3%**
1967	34,495	4,212	7,123	11,336	11,951	24%	0.24	0	0.865	0.000	0.208	0.208	**79.2%**
1968	16,686	4,212	3,741	7,953	5,291	61%	0.46	0	0.682	0.000	0.312	0.312	**68.8%**
1969	23,338	4,212	6,977	11,189	7,778	57%	0.43	0	0.857	0.000	0.368	0.368	**63.2%**
1970	50,156	4,212	3,480	7,693	17,809	23%	0.23	0	0.668	0.000	0.155	0.155	**84.5%**
1971	52,368	4,212	7,042	11,254	18,636	23%	0.23	0	0.861	0.000	0.199	0.199	**80.1%**
1972	19,988	4,212	6,213	10,425	6,525	59%	0.44	0	0.816	0.000	0.360	0.360	**64.0%**
1973	26,200	4,212	6,896	11,108	8,849	25%	0.25	0	0.853	0.000	0.212	0.212	**78.8%**
1974	61,590	4,212	7,172	11,384	22,085	23%	0.23	0	0.868	0.000	0.198	0.198	**80.2%**
1975	17,613	4,212	4,245	8,457	5,637	61%	0.45	0	0.710	0.000	0.321	0.321	**67.9%**
1976	16,768	4,212	4,847	9,059	5,321	61%	0.46	0	0.742	0.000	0.339	0.339	**66.1%**
1977	8,148	1,789	3,106	4,895	2,097	74%	0.55	0	0.517	0.000	0.284	0.284	**71.6%**
1978	12,279	4,131	5,530	9,660	3,642	66%	0.49	0	0.775	0.000	0.380	0.380	**62.0%**
1979	14,019	4,212	3,676	7,888	4,293	64%	0.48	0	0.679	0.000	0.323	0.323	**67.7%**
1980	20,329	4,212	6,993	11,206	6,653	59%	0.44	0	0.858	0.000	0.377	0.377	**62.3%**
1981	15,613	4,212	4,115	8,327	4,889	62%	0.46	0	0.703	0.000	0.326	0.326	**67.4%**
1982	68,453	4,212	7,026	11,238	24,651	23%	0.23	0	0.860	0.000	0.195	0.195	**80.5%**
1983	55,410	4,212	4,424	8,636	19,773	23%	0.23	0	0.719	0.000	0.165	0.165	**83.5%**
1984	82,944	2,992	3,106	6,099	30,071	22%	0.22	0	0.582	0.000	0.131	0.131	**86.9%**
1985	23,875	4,212	6,961	11,173	7,979	57%	0.43	0	0.856	0.000	0.366	0.366	**63.4%**
1986	15,467	4,212	6,944	11,157	4,834	62%	0.46	0	0.855	0.000	0.397	0.397	**60.3%**
1987	13,369	3,350	6,522	9,872	4,050	64%	0.48	0	0.786	0.000	0.378	0.378	**62.2%**
1988	15,841	4,212	6,879	11,092	4,974	62%	0.46	0	0.852	0.000	0.394	0.394	**60.6%**
1989	8,847	2,846	3,562	6,408	2,359	72%	0.54	0	0.599	0.000	0.321	0.321	**67.9%**
1990	12,751	4,212	4,310	8,522	3,819	65%	0.49	0	0.713	0.000	0.347	0.347	**65.3%**
1991	8,278	1,626	2,765	4,391	2,146	74%	0.55	0	0.490	0.000	0.268	0.268	**73.2%**
1992	7,465	2,960	1,610	4,570	1,842	76%	0.56	0	0.500	0.000	0.282	0.282	**71.8%**

JANUARY

Year	Sac River Flows	CVP Flows	SWP Flows	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	18,557	4,212	7,579	11,791	5,990	60%	0.26	0	0.890	0.000	0.233	0.233	**76.7%**
1923	32,283	4,212	3,643	7,855	11,124	24%	0.24	0	0.677	0.000	0.164	0.164	**83.6%**
1924	13,369	4,212	5,839	10,051	4,050	64%	0.28	0	0.796	0.000	0.223	0.223	**77.7%**
1925	10,213	3,545	3,155	6,701	2,870	69%	0.30	0	0.615	0.000	0.183	0.183	**81.7%**
1926	18,768	2,537	7,140	9,677	6,069	60%	0.26	0	0.775	0.000	0.203	0.203	**79.7%**
1927	28,640	4,212	7,270	11,482	9,761	25%	0.25	0	0.873	0.000	0.214	0.214	**78.6%**
1928	25,257	4,212	3,643	7,855	8,496	25%	0.25	0	0.677	0.000	0.169	0.169	**83.1%**
1929	14,767	4,212	6,635	10,848	4,573	63%	0.27	0	0.839	0.000	0.230	0.230	**77.0%**
1930	20,768	4,212	7,091	11,303	6,817	59%	0.26	0	0.863	0.000	0.222	0.222	**77.8%**
1931	11,710	4,212	4,733	8,945	3,429	67%	0.29	0	0.736	0.000	0.212	0.212	**78.8%**
1932	17,256	4,212	7,823	12,035	5,504	61%	0.27	0	0.903	0.000	0.240	0.240	**76.0%**
1933	12,100	4,212	5,416	9,628	3,575	66%	0.29	0	0.773	0.000	0.221	0.221	**77.9%**
1934	16,101	4,212	7,156	11,368	5,072	62%	0.27	0	0.867	0.000	0.233	0.233	**76.7%**
1935	25,469	4,212	7,660	11,872	8,575	25%	0.25	0	0.894	0.000	0.223	0.223	**77.7%**
1936	31,584	4,212	7,449	11,661	10,862	24%	0.24	0	0.883	0.000	0.214	0.214	**78.6%**
1937	17,272	4,212	7,579	11,791	5,510	61%	0.27	0	0.890	0.000	0.236	0.236	**76.4%**
1938	30,543	4,212	3,236	7,449	10,473	24%	0.24	0	0.655	0.000	0.160	0.160	**84.0%**
1939	18,410	2,716	3,236	5,952	5,935	60%	0.26	0	0.574	0.000	0.151	0.151	**84.9%**
1940	23,452	4,212	8,018	12,230	7,821	57%	0.25	0	0.913	0.000	0.231	0.231	**76.9%**
1941	71,494	4,212	8,164	12,376	25,789	23%	0.23	0	0.921	0.000	0.208	0.208	**79.2%**
1942	63,265	4,212	3,236	7,449	22,711	23%	0.23	0	0.655	0.000	0.149	0.149	**85.1%**
1943	58,060	4,212	3,301	7,514	20,765	23%	0.23	0	0.659	0.000	0.151	0.151	**84.9%**
1944	17,678	4,212	3,269	7,481	5,662	60%	0.26	0	0.657	0.000	0.174	0.174	**82.6%**
1945	14,052	4,212	4,928	9,140	4,305	64%	0.28	0	0.746	0.000	0.207	0.207	**79.3%**
1946	43,228	4,212	3,643	7,855	15,217	23%	0.23	0	0.677	0.000	0.159	0.159	**84.1%**
1947	14,979	4,212	7,123	11,336	4,652	63%	0.27	0	0.865	0.000	0.236	0.236	**76.4%**
1948	14,653	4,212	6,359	10,571	4,530	63%	0.27	0	0.824	0.000	0.226	0.226	**77.4%**
1949	14,930	4,212	6,814	11,027	4,634	63%	0.27	0	0.848	0.000	0.232	0.232	**76.8%**
1950	19,435	4,212	7,172	11,384	6,319	59%	0.26	0	0.868	0.000	0.226	0.226	**77.4%**
1951	62,208	4,212	7,644	11,856	22,316	23%	0.23	0	0.893	0.000	0.204	0.204	**79.6%**
1952	67,347	4,212	7,205	11,417	24,238	23%	0.23	0	0.869	0.000	0.197	0.197	**80.3%**
1953	64,078	2,716	3,334	6,050	23,015	23%	0.23	0	0.580	0.000	0.132	0.132	**86.8%**
1954	33,421	4,212	3,854	8,067	11,550	24%	0.24	0	0.688	0.000	0.166	0.166	**83.4%**
1955	22,004	4,212	7,188	11,401	7,280	58%	0.26	0	0.869	0.000	0.222	0.222	**77.8%**
1956	84,489	4,212	8,034	12,246	30,649	22%	0.22	0	0.914	0.000	0.205	0.205	**79.5%**
1957	18,638	4,212	3,887	8,099	6,021	60%	0.26	0	0.690	0.000	0.181	0.181	**81.9%**
1958	36,219	4,212	3,529	7,741	12,596	24%	0.24	0	0.671	0.000	0.160	0.160	**84.0%**
1959	35,162	2,732	3,334	6,066	12,200	24%	0.24	0	0.580	0.000	0.139	0.139	**86.1%**
1960	14,279	4,212	6,245	10,457	4,390	63%	0.28	0	0.818	0.000	0.226	0.226	**77.4%**
1961	13,515	4,212	6,099	10,311	4,105	64%	0.28	0	0.810	0.000	0.226	0.226	**77.4%**
1962	12,653	2,895	5,237	8,132	3,782	65%	0.28	0	0.692	0.000	0.196	0.196	**80.4%**
1963	18,605	4,212	7,253	11,466	6,008	60%	0.26	0	0.872	0.000	0.229	0.229	**77.1%**
1964	25,631	4,212	3,871	8,083	8,636	25%	0.25	0	0.689	0.000	0.172	0.172	**82.8%**
1965	81,236	4,212	8,506	12,718	29,432	22%	0.22	0	0.940	0.000	0.211	0.211	**78.9%**
1966	29,632	4,212	3,659	7,872	10,132	24%	0.24	0	0.678	0.000	0.166	0.166	**83.4%**
1967	33,486	4,212	7,676	11,889	11,574	24%	0.24	0	0.895	0.000	0.216	0.216	**78.4%**
1968	30,640	2,732	3,334	6,066	10,509	24%	0.24	0	0.580	0.000	0.141	0.141	**85.9%**
1969	66,404	4,212	7,400	11,612	23,885	23%	0.23	0	0.880	0.000	0.200	0.200	**80.0%**
1970	92,669	2,505	3,334	5,839	33,708	22%	0.22	0	0.568	0.000	0.127	0.127	**87.3%**
1971	46,904	4,212	6,635	10,848	16,592	23%	0.23	0	0.839	0.000	0.196	0.196	**80.4%**
1972	20,394	4,212	3,887	8,099	6,677	59%	0.26	0	0.690	0.000	0.178	0.178	**82.2%**
1973	49,392	4,212	7,465	11,677	17,523	23%	0.23	0	0.883	0.000	0.205	0.205	**79.5%**
1974	78,422	4,212	3,773	7,985	28,380	22%	0.22	0	0.684	0.000	0.154	0.154	**84.6%**
1975	18,670	4,212	3,854	8,067	6,033	60%	0.26	0	0.688	0.000	0.180	0.180	**82.0%**
1976	16,768	4,212	3,838	8,050	5,321	61%	0.27	0	0.688	0.000	0.184	0.184	**81.6%**
1977	7,904	2,358	2,440	4,798	2,006	75%	0.32	0	0.512	0.000	0.163	0.163	**83.7%**
1978	43,033	2,423	7,774	10,197	15,144	23%	0.23	0	0.804	0.000	0.189	0.189	**81.1%**
1979	27,241	4,212	3,269	7,481	9,238	25%	0.25	0	0.657	0.000	0.162	0.162	**83.8%**
1980	60,484	4,212	3,155	7,367	21,671	23%	0.23	0	0.651	0.000	0.149	0.149	**85.1%**
1981	28,607	2,537	3,350	5,887	9,749	25%	0.25	0	0.571	0.000	0.140	0.140	**86.0%**
1982	51,165	4,212	7,758	11,970	18,186	23%	0.23	0	0.899	0.000	0.208	0.208	**79.2%**
1983	59,150	2,895	2,651	5,546	21,172	23%	0.23	0	0.552	0.000	0.126	0.126	**87.4%**
1984	47,359	1,334	2,879	4,212	16,762	23%	0.23	0	0.480	0.000	0.112	0.112	**88.8%**
1985	16,556	4,212	3,871	8,083	5,242	61%	0.27	0	0.689	0.000	0.185	0.185	**81.5%**
1986	21,256	4,212	7,351	11,563	7,000	58%	0.26	0	0.877	0.000	0.225	0.225	**77.5%**
1987	16,735	960	5,692	6,652	5,309	61%	0.27	0	0.612	0.000	0.164	0.164	**83.6%**
1988	25,534	4,212	7,058	11,271	8,600	25%	0.25	0	0.862	0.000	0.215	0.215	**78.5%**
1989	12,002	4,050	4,651	8,701	3,539	66%	0.29	0	0.723	0.000	0.207	0.207	**79.3%**
1990	20,833	2,992	7,058	10,051	6,842	59%	0.26	0	0.796	0.000	0.205	0.205	**79.5%**
1991	6,847	1,691	1,708	3,399	1,611	78%	0.33	0	0.436	0.000	0.145	0.145	**85.5%**
1992	12,133	4,212	4,781	8,994	3,588	66%	0.29	0	0.739	0.000	0.211	0.211	**78.9%**

Formulas: Sacramento River Spring Smolt Yearling Survival Model

```
C10 ='Study 485 Flow Data'!B7
D10 ='Study 485 Flow Data'!L7
E10 ='Study 485 Flow Data'!V7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
J10 =IF(-2.45925+(0.0420748*$T$1)>0,-2.45925+(0.0420748*$T$1),0)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =IF(-1.613493+(0.0319584*$T$1)>0,-1.613493+(0.0319584*$T$1),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 485 Flow Data'!C7
R10 ='Study 485 Flow Data'!M7
S10 ='Study 485 Flow Data'!W7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
Z10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 485 Flow Data'!D7
AF10 ='Study 485 Flow Data'!N7
AG10 ='Study 485 Flow Data'!X7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AN10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
```

Study 485 Sacramento River Spring Run Yearling Survival Model (continued)

February Water Temp 50 F
Cross Channel Closed Over 25000 cfs
March Water Temp 55 F
Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

Row	FEBRUARY Sac River Flow (AS)	CVP Flow (AT)	SWP Flow (AU)	CVP + SWP Exports (AV)	Calculated Sutter & Steamboat Slough Q (AW)	Percent (AX)	X-Channel Closed (AY)	m1 (AZ)	Calculated Mortality m2 (BA)	m3 (BB)	m23 (BC)	m123 (BD)	Calculated Survivability s123 (BE)	MARCH Sac River Flow (BG)	CVP (BH)	SWP (BI)	CVP + SWP exports (BJ)	Calculated Sutter & Steamboat Slough Q (BK)	percent (BL)	X-Channel Closed (BM)	m1 (BN)	Calculated Mortality m2 (BO)	m3 (BP)	m23 (BQ)	m123 (BR)	Calculated Survivability s123 (BS)	Weighted Total Survival (BU)
10	31,781	4,249	5,564	9,813	10,936	24%	0.24	0	0.837	0.000	0.203	0.203	**79.7%**	31,551	2,830	4,147	6,977	10,850	24%	0.24	0	0.773	0.144	0.297	0.297	**70.3%**	**56.8%**
11	22,615	2,539	2,377	4,916	7,508	58%	0.25	0	0.572	0.000	0.145	0.145	**85.5%**	17,028	4,033	3,497	7,530	5,418	61%	0.27	0	0.803	0.144	0.320	0.320	**68.0%**	**66.3%**
12	15,925	4,068	4,190	8,258	5,006	62%	0.27	0	0.753	0.000	0.203	0.203	**79.7%**	12,100	1,399	1,740	3,139	3,575	66%	0.29	0	0.566	0.144	0.265	0.265	**73.5%**	**60.6%**
13	44,691	4,213	7,581	11,794	15,764	23%	0.23	0	0.944	0.000	0.221	0.221	**77.9%**	19,337	4,228	3,952	8,181	6,282	59%	0.26	0	0.838	0.144	0.325	0.325	**67.5%**	**61.9%**
14	35,724	954	7,635	8,589	12,411	24%	0.24	0	0.771	0.000	0.184	0.184	**81.6%**	16,019	2,749	3,952	6,701	5,041	62%	0.27	0	0.758	0.144	0.310	0.310	**69.0%**	**63.2%**
15	82,503	2,521	8,499	11,020	29,906	22%	0.22	0	0.902	0.000	0.202	0.202	**79.8%**	43,863	3,480	4,147	7,628	15,455	23%	0.23	0	0.809	0.144	0.300	0.300	**70.0%**	**56.3%**
16	27,399	4,120	4,259	8,380	9,297	25%	0.25	0	0.759	0.000	0.188	0.188	**81.2%**	86,261	3,139	4,440	7,579	31,312	22%	0.22	0	0.806	0.144	0.292	0.292	**70.8%**	**57.7%**
17	17,538	3,151	5,150	8,301	5,609	61%	0.27	0	0.755	0.000	0.200	0.200	**80.0%**	13,515	1,870	2,797	4,668	4,105	64%	0.28	0	0.649	0.144	0.285	0.285	**71.5%**	**57.3%**
18	15,683	2,791	3,997	6,788	4,916	62%	0.27	0	0.673	0.000	0.182	0.182	**81.8%**	30,087	2,651	4,521	7,172	10,303	24%	0.24	0	0.784	0.144	0.300	0.300	**70.0%**	**61.8%**
19	10,840	3,007	1,837	4,844	3,104	68%	0.29	0	0.568	0.000	0.167	0.167	**83.3%**	9,221	1,610	2,196	3,806	2,499	71%	0.31	0	0.602	0.144	0.284	0.284	**71.6%**	**65.2%**
20	13,995	4,085	5,894	9,979	4,284	64%	0.28	0	0.846	0.000	0.234	0.234	**76.6%**	10,539	927	2,749	3,676	2,991	69%	0.30	0	0.595	0.144	0.277	0.277	**72.3%**	**62.7%**
21	11,974	3,835	2,701	6,536	3,528	66%	0.29	0	0.660	0.000	0.189	0.189	**81.1%**	10,392	293	4,342	4,635	2,937	69%	0.30	0	0.647	0.144	0.293	0.293	**70.7%**	**65.6%**
22	12,748	1,621	4,429	6,050	3,818	65%	0.28	0	0.633	0.000	0.179	0.179	**82.1%**	14,084	2,098	1,724	3,822	4,317	64%	0.28	0	0.603	0.144	0.271	0.271	**72.9%**	**64.8%**
23	11,974	684	3,943	4,628	3,528	66%	0.29	0	0.557	0.000	0.160	0.160	**84.0%**	24,916	4,228	6,977	11,206	8,368	57%	0.25	0	1.002	0.144	0.359	0.359	**64.1%**	**64.7%**
24	46,053	4,103	8,206	12,309	16,274	23%	0.23	0	0.971	0.000	0.227	0.227	**77.3%**	33,194	4,228	7,465	11,693	11,464	24%	0.24	0	1.028	0.144	0.358	0.358	**64.2%**	**63.7%**
25	33,833	2,773	3,727	6,500	11,704	24%	0.24	0	0.658	0.000	0.158	0.158	**84.2%**	37,861	2,374	3,871	6,245	13,210	24%	0.24	0	0.734	0.144	0.284	0.284	**71.6%**	**57.6%**
26	82,269	1,206	3,943	5,150	29,819	22%	0.22	0	0.585	0.000	0.131	0.131	**86.9%**	78,634	2,065	3,952	6,017	28,459	22%	0.22	0	0.722	0.144	0.274	0.274	**72.6%**	**66.3%**
27	19,032	1,531	3,961	5,492	6,168	60%	0.26	0	0.603	0.000	0.158	0.158	**84.2%**	16,394	2,683	3,985	6,668	5,181	61%	0.27	0	0.757	0.144	0.309	0.309	**69.1%**	**63.0%**
28	41,064	4,085	8,206	12,291	14,408	24%	0.24	0	0.971	0.000	0.229	0.229	**77.1%**	59,166	4,228	4,651	8,880	21,178	23%	0.23	0	0.876	0.144	0.312	0.312	**68.8%**	**66.6%**
29	75,031	4,285	6,950	11,236	27,112	23%	0.23	0	0.914	0.000	0.206	0.206	**79.4%**	58,581	4,228	3,838	8,067	20,959	23%	0.23	0	0.832	0.144	0.302	0.302	**69.8%**	**63.5%**
30	78,344	1,657	3,961	5,618	28,351	23%	0.23	0	0.610	0.000	0.137	0.137	**86.3%**	27,095	3,432	4,001	7,432	9,183	25%	0.25	0	0.798	0.144	0.306	0.306	**69.4%**	**68.2%**
31	52,253	1,999	3,997	5,996	18,593	23%	0.23	0	0.631	0.000	0.146	0.146	**85.4%**	64,598	1,822	4,050	5,871	23,210	23%	0.23	0	0.714	0.144	0.274	0.274	**72.6%**	**67.9%**
32	30,772	2,312	3,825	6,137	10,559	24%	0.24	0	0.638	0.000	0.155	0.155	**84.5%**	25,094	2,960	4,001	6,961	8,435	25%	0.25	0	0.773	0.144	0.301	0.301	**69.9%**	**56.3%**
33	38,911	4,231	4,051	8,283	13,603	24%	0.24	0	0.754	0.000	0.179	0.179	**82.1%**	27,030	3,171	4,147	7,319	9,159	25%	0.25	0	0.792	0.144	0.305	0.305	**69.5%**	**55.4%**
34	23,840	2,449	4,393	6,842	7,966	57%	0.25	0	0.676	0.000	0.170	0.170	**83.0%**	23,777	3,448	4,424	7,872	7,943	57%	0.25	0	0.822	0.144	0.315	0.315	**68.5%**	**64.9%**
35	21,067	4,231	3,961	8,193	6,929	58%	0.26	0	0.749	0.000	0.192	0.192	**80.8%**	22,102	2,781	3,887	6,668	7,316	58%	0.25	0	0.757	0.144	0.300	0.300	**70.0%**	**55.2%**
36	15,681	4,311	1,669	5,980	4,915	62%	0.27	0	0.630	0.000	0.170	0.170	**83.0%**	19,110	4,228	3,399	7,628	6,197	60%	0.26	0	0.809	0.144	0.318	0.318	**68.2%**	**63.9%**
37	16,277	4,249	4,177	8,427	5,138	62%	0.27	0	0.762	0.000	0.205	0.205	**79.5%**	41,716	4,228	7,107	11,336	14,652	24%	0.24	0	1.009	0.144	0.348	0.348	**65.2%**	**55.5%**
38	31,294	1,458	7,526	8,985	10,754	24%	0.24	0	0.792	0.000	0.192	0.192	**80.8%**	22,151	2,635	4,424	7,058	7,334	58%	0.25	0	0.778	0.144	0.306	0.306	**69.4%**	**62.2%**
39	60,572	4,285	4,682	8,967	21,704	23%	0.23	0	0.791	0.000	0.181	0.181	**81.9%**	29,583	3,253	4,700	7,953	10,114	24%	0.24	0	0.826	0.144	0.311	0.311	**68.9%**	**76.4%**
40	62,499	4,138	3,773	7,910	22,425	23%	0.23	0	0.734	0.000	0.167	0.167	**83.3%**	57,524	3,204	3,936	7,140	20,564	23%	0.23	0	0.782	0.144	0.291	0.291	**70.9%**	**64.5%**
41	28,341	1,999	4,051	6,050	9,650	25%	0.25	0	0.633	0.000	0.156	0.156	**84.4%**	24,899	3,155	4,115	7,270	8,362	57%	0.25	0	0.789	0.144	0.306	0.306	**69.4%**	**70.2%**
42	57,151	3,043	4,628	7,671	20,424	23%	0.23	0	0.721	0.000	0.165	0.165	**83.5%**	49,538	3,171	4,684	7,855	17,577	23%	0.23	0	0.821	0.144	0.301	0.301	**69.9%**	**60.7%**
43	16,583	4,249	3,439	7,689	5,252	61%	0.27	0	0.722	0.000	0.193	0.193	**80.7%**	18,752	4,603	3,025	7,628	6,063	60%	0.26	0	0.809	0.144	0.318	0.318	**68.2%**	**63.6%**
44	61,543	4,138	4,520	8,658	22,067	23%	0.23	0	0.774	0.000	0.177	0.177	**82.3%**	36,674	2,065	4,700	6,766	12,766	24%	0.24	0	0.762	0.144	0.292	0.292	**70.8%**	**60.3%**
45	33,149	4,249	4,646	8,895	11,448	24%	0.24	0	0.787	0.000	0.190	0.190	**81.0%**	44,383	3,188	4,440	7,628	15,649	23%	0.23	0	0.809	0.144	0.300	0.300	**70.0%**	**56.9%**
46	62,121	3,295	4,051	7,346	22,283	23%	0.23	0	0.704	0.000	0.161	0.161	**83.9%**	93,612	3,464	4,066	7,530	34,061	22%	0.22	0	0.803	0.144	0.291	0.291	**70.9%**	**58.7%**
47	50,075	1,801	4,051	5,852	17,778	23%	0.23	0	0.623	0.000	0.144	0.144	**85.6%**	22,021	2,992	3,139	6,131	7,286	58%	0.26	0	0.728	0.144	0.293	0.293	**70.7%**	**63.1%**
48	25,852	2,521	7,041	9,562	8,718	25%	0.25	0	0.823	0.000	0.205	0.205	**79.5%**	20,329	2,293	4,001	6,294	6,653	59%	0.26	0	0.737	0.144	0.297	0.297	**70.3%**	**64.0%**
49	28,647	2,359	7,112	9,471	9,764	25%	0.25	0	0.818	0.000	0.201	0.201	**79.9%**	20,541	2,765	5,156	7,920	6,732	59%	0.26	0	0.824	0.144	0.320	0.320	**68.0%**	**57.1%**
50	37,020	1,080	8,211	9,291	12,896	24%	0.24	0	0.809	0.000	0.193	0.193	**80.7%**	26,265	3,285	4,326	7,611	8,873	25%	0.25	0	0.808	0.144	0.309	0.309	**69.1%**	**59.7%**
51	58,699	4,285	8,499	12,784	21,004	23%	0.23	0	0.997	0.000	0.228	0.228	**77.2%**	32,641	4,603	4,651	9,254	11,258	24%	0.24	0	0.896	0.144	0.326	0.326	**67.4%**	**64.2%**
52	19,923	4,451	3,512	7,962	6,501	59%	0.26	0	0.737	0.000	0.191	0.191	**80.9%**	19,175	4,342	3,350	7,693	6,221	60%	0.26	0	0.812	0.144	0.318	0.318	**68.2%**	**68.1%**
53	33,077	4,249	5,906	10,155	11,421	24%	0.24	0	0.855	0.000	0.206	0.206	**79.4%**	21,126	3,253	4,375	7,628	6,951	58%	0.26	0	0.809	0.144	0.315	0.315	**68.5%**	**56.7%**
54	26,775	2,035	4,375	6,410	9,064	25%	0.25	0	0.653	0.000	0.162	0.162	**83.8%**	28,689	3,220	4,424	7,644	9,780	25%	0.25	0	0.809	0.144	0.308	0.308	**69.2%**	**69.3%**
55	42,872	4,285	3,205	7,490	15,084	24%	0.24	0	0.711	0.000	0.167	0.167	**83.3%**	54,483	3,204	3,285	6,489	19,426	23%	0.23	0	0.747	0.144	0.283	0.283	**71.7%**	**63.3%**
56	54,520	1,895	3,912	5,807	19,440	23%	0.23	0	0.620	0.000	0.143	0.143	**85.7%**	36,788	2,992	4,115	7,107	12,809	24%	0.24	0	0.780	0.144	0.296	0.296	**70.4%**	**63.8%**
57	67,486	1,693	3,169	4,862	24,290	23%	0.23	0	0.569	0.000	0.129	0.129	**87.1%**	45,326	2,049	3,253	5,302	16,002	23%	0.23	0	0.683	0.144	0.270	0.270	**73.0%**	**58.3%**
58	57,565	1,170	4,051	5,222	20,579	23%	0.23	0	0.589	0.000	0.135	0.135	**86.5%**	35,812	3,058	4,115	7,172	12,444	24%	0.24	0	0.784	0.144	0.297	0.297	**70.3%**	**70.9%**
59	29,152	4,267	4,321	8,589	9,953	25%	0.25	0	0.771	0.000	0.189	0.189	**81.1%**	50,953	3,220	4,700	7,920	18,107	23%	0.23	0	0.824	0.144	0.302	0.302	**69.8%**	**65.0%**
60	24,217	4,451	4,485	8,936	8,107	57%	0.25	0	0.789	0.000	0.198	0.198	**80.2%**	32,933	3,448	4,424	7,872	11,367	24%	0.24	0	0.822	0.144	0.308	0.308	**69.2%**	**57.5%**
61	70,961	4,267	4,429	8,697	25,590	23%	0.23	0	0.776	0.000	0.176	0.176	**82.4%**	47,554	3,480	4,456	7,937	16,835	23%	0.23	0	0.825	0.144	0.303	0.303	**69.7%**	**65.0%**
62	41,918	3,799	4,411	8,211	14,727	24%	0.24	0	0.750	0.000	0.177	0.177	**82.3%**	100,199	3,448	4,440	7,888	36,524	22%	0.22	0	0.823	0.144	0.295	0.295	**70.5%**	**77.5%**
63	58,807	1,603	4,628	6,230	21,044	23%	0.23	0	0.643	0.000	0.147	0.147	**85.3%**	75,999	3,448	4,684	8,132	27,474	23%	0.23	0	0.836	0.144	0.300	0.300	**70.0%**	**61.5%**
64	19,523	3,547	4,172	7,719	6,352	59%	0.26	0	0.724	0.000	0.188	0.188	**81.2%**	18,361	2,049	4,294	6,343	5,917	60%	0.26	0	0.739	0.144	0.301	0.301	**69.9%**	**59.4%**
65	12,460	684	1,368	2,053	3,710	66%	0.28	0	0.418	0.000	0.119	0.119	**88.1%**	7,351	732	1,138	1,870	1,799	76%	0.33	0	0.498	0.144	0.259	0.259	**74.1%**	**65.2%**
66	48,814	1,639	6,050	7,689	17,306	23%	0.23	0	0.722	0.000	0.168	0.168	**83.2%**	45,619	2,114	3,903	6,017	16,111	23%	0.23	0	0.722	0.144	0.279	0.279	**72.1%**	**62.3%**
67	41,684	1,422	3,961	5,384	14,640	24%	0.24	0	0.598	0.000	0.141	0.141	**85.9%**	32,494	3,171	4,001	7,172	11,203	24%	0.24	0	0.784	0.144	0.299	0.299	**70.1%**	**59.6%**
68	69,453	852	3,633	4,485	25,026	23%	0.23	0	0.549	0.000	0.124	0.124	**87.6%**	36,479	1,822	3,350	5,172	12,693	24%	0.24	0	0.676	0.144	0.271	0.271	**72.9%**	**57.8%**
69	29,674	1,729	4,069	5,798	10,148	24%	0.24	0	0.620	0.000	0.152	0.152	**84.8%**	32,137	2,992	4,115	7,107	11,069	24%	0.24	0	0.780	0.144	0.298	0.298	**70.2%**	**60.6%**
70	65,650	2,791	4,628	7,418	23,603	23%	0.23	0	0.707	0.000	0.161	0.161	**83.9%**	69,087	2,927	4,651	7,579	24,889	23%	0.23	0	0.806	0.144	0.294	0.294	**70.6%**	**76.5%**
71	82,917	1,386	2,791	4,177	30,061	22%	0.22	0	0.532	0.000	0.119	0.119	**88.1%**	81,935	2,049	2,635	4,684	29,694	22%	0.22	0	0.650	0.144	0.258	0.258	**74.2%**	**79.4%**
72	36,004	1,408	3,720	5,129	12,516	24%	0.24	0	0.584	0.000	0.140	0.140	**86.0%**	36,495	3,236	4,001	7,237	12,699	24%	0.24	0	0.787	0.144	0.298	0.298	**70.2%**	**83.0%**
73	20,131	3,925	4,646	8,571	6,579	59%	0.26	0	0.770	0.000	0.199	0.199	**80.1%**	22,297	2,992	4,684	7,676	7,389	58%	0.25	0	0.811	0.144	0.314	0.314	**68.6%**	**69.5%**
74	96,692	4,249	8,031	12,280	35,213	22%	0.22	0	0.970	0.000	0.216	0.216	**78.4%**	72,535	4,228	4,180	8,408	26,178	23%	0.23	0	0.851	0.144	0.304	0.304	**69.6%**	**58.7%**
75	23,030	1,278	4,267	5,546	7,663	58%	0.25	0	0.606	0.000	0.154	0.154	**84.6%**	29,974	2,293	4,163	6,457	10,260	24%	0.24	0	0.745	0.144	0.291	0.291	**70.9%**	**60.0%**
76	17,229	4,103	2,486	6,589	5,493	61%	0.27	0	0.663	0.000	0.176	0.176	**82.4%**	10,929	1,984	1,708	3,692	3,137	68%	0.29	0	0.596	0.144	0.277	0.277	**72.3%**	**61.3%**
77	13,072	900	1,801	2,701	3,939	65%	0.28	0	0.453	0.000	0.127	0.127	**87.3%**	41,862	4,228	6,489	10,718	14,706	24%	0.24	0	0.975	0.144	0.340	0.340	**66.0%**	**63.3%**
78	16,223	1,224	6,284	7,508	5,118	62%	0.27	0	0.712	0.000	0.192	0.192	**80.8%**	13,987	2,212	3,350	5,562	4,281	64%	0.28	0	0.697	0.144	0.297	0.297	**70.3%**	**61.1%**
79	11,074	360	828	1,188	3,192	68%	0.29	0	0.371	0.000	0.108	0.108	**89.2%**	29,681	4,228	7,075	11,303	10,151	24%	0.24	0	1.007	0.144	0.355	0.355	**64.5%**	**67.5%**
80	31,415	1,217	7,197	8,414	10,799	24%	0.24	0	0.761	0.000	0.185	0.185	**81.5%**	20,102	2,000	6,245	8,246	6,568	59%	0.26	0	0.842	0.144	0.325	0.325	**67.5%**	**65.7%**
81																										**AVERAGE:**	**63.41%**

AS10 ='Study 485 Flow Data'!E7
AT10 ='Study 485 Flow Data'!O7
AU10 ='Study 485 Flow Data'!Y7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$K$4,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
BA10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
BB10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =AZ10+BC10-(AZ10*BC10)
BE10 =1-BD10

BG10 ='Study 513 (Revised) Flow Data'!F7
BH10 ='Study 513 (Revised) Flow Data'!P7
BI10 ='Study 513 (Revised) Flow Data'!Z7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$K$4,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BO10 =(-0.5916024)+(0.017968*$BC$3)+(0.000054*BJ10)
BP10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)
BQ10 =(BO10*BM10)+(BP10*(1-BM10))
BR10 =BN10+BQ10-(BN10*BQ10)
BS10 =1-BR10
BU10 =(O10*0.37)+(AC10*0.42)+(AQ10*0.13)+(BE10*0.05)+(BS10*0.03)

Study 519a Sacramento River Spring Run Yearling Survival Model

Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Year	Water Year Type	Sac River Flow	CVP Flow	SWP Flow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	A	11,814	4,470	4,386	8,857	3,469	67%	0.29	0	0.839	0.080	0.585	0.585	**41.5%**
1923	B	17,226	4,487	6,672	11,159	5,492	61%	0.27	0	0.963	0.080	0.617	0.617	**38.3%**
1924	C	10,756	3,512	3,764	7,277	3,073	68%	0.29	0	0.754	0.080	0.540	0.540	**46.0%**
1925	D	7,025	1,529	3,227	4,756	1,677	78%	0.33	0	0.618	0.080	0.497	0.497	**50.3%**
1926	D	10,083	4,470	2,336	6,806	2,821	69%	0.30	0	0.728	0.080	0.530	0.530	**47.0%**
1927	W	20,284	4,420	6,672	11,092	6,636	59%	0.26	0	0.960	0.080	0.598	0.598	**40.2%**
1928	A	21,830	4,470	6,672	11,142	7,215	58%	0.26	0	0.962	0.080	0.592	0.592	**40.8%**
1929	C	12,369	4,453	4,991	9,445	3,676	66%	0.28	0	0.871	0.080	0.600	0.600	**40.0%**
1930	D	7,159	2,487	1,781	4,269	1,728	77%	0.33	0	0.591	0.080	0.474	0.474	**52.6%**
1931	C	9,814	2,840	3,311	6,151	2,721	70%	0.30	0	0.693	0.080	0.509	0.509	**49.1%**
1932	D	7,663	1,865	1,664	3,529	1,916	75%	0.32	0	0.551	0.080	0.436	0.436	**56.4%**
1933	C	9,478	3,260	2,605	5,865	2,595	71%	0.30	0	0.677	0.080	0.503	0.503	**49.7%**
1934	C	8,033	1,681	1,681	3,361	2,054	74%	0.32	0	0.542	0.080	0.424	0.424	**57.6%**
1935	B	9,209	2,773	4,336	7,109	2,494	71%	0.31	0	0.745	0.080	0.554	0.554	**44.6%**
1936	B	11,865	4,453	4,017	8,470	3,487	66%	0.29	0	0.818	0.080	0.571	0.571	**42.9%**
1937	B	11,411	4,470	3,496	7,966	3,318	67%	0.29	0	0.791	0.080	0.557	0.557	**44.3%**
1938	W	23,948	4,470	6,672	11,142	8,007	57%	0.25	0	0.962	0.080	0.584	0.584	**41.6%**
1939	D	19,444	4,487	6,000	10,487	6,322	59%	0.26	0	0.927	0.080	0.583	0.583	**41.7%**
1940	A	8,436	3,025	1,781	4,806	2,205	73%	0.31	0	0.620	0.080	0.476	0.476	**52.4%**
1941	W	13,663	4,453	6,235	10,688	4,160	64%	0.28	0	0.938	0.080	0.630	0.630	**37.0%**
1942	W	18,184	4,487	6,487	10,974	5,851	60%	0.26	0	0.953	0.080	0.605	0.605	**39.5%**
1943	W	21,914	4,470	6,672	11,142	7,246	58%	0.26	0	0.962	0.080	0.592	0.592	**40.8%**
1944	D	14,318	4,470	6,655	11,125	4,405	63%	0.28	0	0.961	0.080	0.639	0.639	**36.1%**
1945	B	13,764	4,437	6,672	11,108	4,198	64%	0.28	0	0.961	0.080	0.644	0.644	**35.6%**
1946	B	19,629	4,470	6,672	11,142	6,391	59%	0.26	0	0.962	0.080	0.603	0.603	**39.7%**
1947	D	13,781	4,453	6,672	11,125	4,204	64%	0.28	0	0.961	0.080	0.644	0.644	**35.6%**
1948	B	10,201	2,975	3,647	6,621	2,865	69%	0.30	0	0.718	0.080	0.522	0.522	**47.8%**
1949	D	14,453	4,453	6,268	10,722	4,455	63%	0.28	0	0.940	0.080	0.624	0.624	**37.6%**
1950	B	11,377	4,470	3,395	7,865	3,305	67%	0.29	0	0.785	0.080	0.554	0.554	**44.6%**
1951	A	41,846	4,453	6,672	11,125	14,700	24%	0.24	0	0.961	0.080	0.288	0.288	**71.2%**
1952	W	16,453	4,453	6,672	11,125	5,203	61%	0.27	0	0.961	0.080	0.622	0.622	**37.8%**
1953	W	16,537	4,487	4,084	8,571	5,235	61%	0.27	0	0.824	0.080	0.536	0.536	**46.4%**
1954	A	19,679	4,470	6,672	11,142	6,410	59%	0.26	0	0.962	0.080	0.603	0.603	**39.7%**
1955	D	17,965	4,453	6,672	11,125	5,769	60%	0.26	0	0.961	0.080	0.612	0.612	**38.8%**
1956	W	10,722	3,025	4,269	7,294	3,060	68%	0.29	0	0.755	0.080	0.541	0.541	**45.9%**
1957	A	15,478	4,487	6,672	11,159	4,839	62%	0.27	0	0.963	0.080	0.630	0.630	**37.0%**
1958	W	19,259	4,453	6,672	11,125	6,253	59%	0.26	0	0.961	0.080	0.604	0.604	**39.6%**
1959	B	16,133	4,487	4,185	8,672	5,084	62%	0.27	0	0.829	0.080	0.542	0.542	**45.8%**
1960	D	11,377	4,453	3,075	7,529	3,305	67%	0.29	0	0.767	0.080	0.542	0.542	**45.8%**
1961	D	13,495	4,437	5,764	10,201	4,097	64%	0.28	0	0.912	0.080	0.615	0.615	**38.5%**
1962	B	9,781	2,874	3,378	6,252	2,708	70%	0.30	0	0.698	0.080	0.513	0.513	**48.7%**
1963	W	20,923	4,453	6,672	11,125	6,875	59%	0.26	0	0.961	0.080	0.596	0.596	**40.4%**
1964	D	28,653	4,453	6,672	11,125	9,766	25%	0.25	0	0.961	0.080	0.297	0.297	**70.3%**
1965	W	13,394	4,050	6,353	10,403	4,059	64%	0.28	0	0.922	0.080	0.623	0.623	**37.7%**
1966	B	25,427	4,470	6,672	11,142	8,560	25%	0.25	0	0.962	0.080	0.301	0.301	**69.9%**
1967	W	14,537	4,453	6,672	11,125	4,487	63%	0.27	0	0.961	0.080	0.637	0.637	**36.3%**
1968	B	16,234	4,487	4,050	8,537	5,122	62%	0.27	0	0.822	0.080	0.537	0.537	**46.3%**
1969	W	13,562	4,453	5,916	10,369	4,122	64%	0.28	0	0.921	0.080	0.620	0.620	**38.0%**
1970	W	17,646	4,487	4,084	8,571	5,650	61%	0.26	0	0.824	0.080	0.530	0.530	**47.0%**
1971	W	20,940	4,470	6,672	11,142	6,881	59%	0.26	0	0.962	0.080	0.596	0.596	**40.4%**
1972	B	15,343	4,453	6,672	11,125	4,788	62%	0.27	0	0.961	0.080	0.630	0.630	**37.0%**
1973	A	22,015	4,453	6,672	11,125	7,284	58%	0.26	0	0.961	0.080	0.591	0.591	**40.9%**
1974	W	55,005	4,470	6,672	11,142	19,622	23%	0.23	0	0.962	0.080	0.283	0.283	**71.7%**
1975	W	17,579	4,487	6,672	11,159	5,624	61%	0.26	0	0.963	0.080	0.615	0.615	**38.5%**
1976	C	19,226	4,470	6,672	11,142	6,240	59%	0.26	0	0.962	0.080	0.605	0.605	**39.5%**
1977	C	8,235	2,891	3,277	6,168	2,130	74%	0.32	0	0.694	0.080	0.533	0.533	**46.7%**
1978	A	6,924	2,689	1,714	4,403	1,640	78%	0.33	0	0.598	0.080	0.484	0.484	**51.6%**
1979	B	14,537	4,487	6,672	11,159	4,487	63%	0.27	0	0.963	0.080	0.638	0.638	**36.2%**
1980	A	16,301	4,453	6,672	11,125	5,147	62%	0.27	0	0.961	0.080	0.623	0.623	**37.7%**
1981	D	13,024	4,470	5,579	10,050	3,921	65%	0.28	0	0.903	0.080	0.614	0.614	**38.6%**
1982	W	30,284	4,453	6,672	11,125	10,376	24%	0.24	0	0.961	0.080	0.295	0.295	**70.5%**
1983	W	39,107	4,487	6,672	11,159	13,676	24%	0.24	0	0.963	0.080	0.290	0.290	**71.0%**
1984	W	62,802	3,512	3,630	7,142	22,538	23%	0.23	0	0.746	0.080	0.232	0.232	**76.8%**
1985	D	33,578	4,470	6,672	11,142	11,608	24%	0.24	0	0.962	0.080	0.293	0.293	**70.7%**
1986	W	9,546	2,723	4,218	6,941	2,620	71%	0.30	0	0.735	0.080	0.543	0.543	**45.7%**
1987	D	11,125	4,437	3,798	8,235	3,211	68%	0.29	0	0.805	0.080	0.570	0.570	**43.0%**
1988	C	8,453	3,159	1,882	5,042	2,211	73%	0.31	0	0.633	0.080	0.485	0.485	**51.5%**
1989	D	8,588	2,571	3,378	5,949	2,262	73%	0.31	0	0.682	0.080	0.518	0.518	**48.2%**
1990	C	11,512	4,420	3,344	7,764	3,355	67%	0.29	0	0.780	0.080	0.549	0.549	**45.1%**
1991	C	8,134	2,706	2,386	5,092	2,092	74%	0.32	0	0.636	0.080	0.491	0.491	**50.9%**
1992	C	7,462	3,328	1,412	4,739	1,841	76%	0.32	0	0.617	0.080	0.488	0.488	**51.2%**

DECEMBER

Year	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	17,142	4,342	7,123	11,466	5,461	61%	0.45	0	0.872	0.000	0.396	0.396	**60.4%**
1923	34,365	4,342	5,058	9,400	11,902	24%	0.24	0	0.761	0.000	0.183	0.183	**81.7%**
1924	10,051	3,627	3,139	6,766	2,809	70%	0.52	0	0.618	0.000	0.320	0.320	**68.0%**
1925	11,254	4,375	4,944	9,319	3,259	67%	0.50	0	0.756	0.000	0.379	0.379	**62.1%**
1926	10,295	4,342	2,700	7,042	2,900	69%	0.51	0	0.633	0.000	0.325	0.325	**67.5%**
1927	14,296	4,342	7,075	11,417	4,397	63%	0.47	0	0.869	0.000	0.411	0.411	**58.9%**
1928	16,572	4,342	5,839	10,181	5,248	61%	0.46	0	0.803	0.000	0.368	0.368	**63.2%**
1929	13,206	4,342	5,936	10,278	3,989	65%	0.48	0	0.808	0.000	0.389	0.389	**61.1%**
1930	14,881	4,375	6,619	10,994	4,616	63%	0.47	0	0.847	0.000	0.397	0.397	**60.3%**
1931	9,351	2,374	3,025	5,399	2,547	71%	0.53	0	0.544	0.000	0.287	0.287	**71.3%**
1932	14,653	4,375	7,221	11,596	4,530	63%	0.47	0	0.879	0.000	0.413	0.413	**58.7%**
1933	8,457	2,700	2,391	5,090	2,213	73%	0.54	0	0.528	0.000	0.287	0.287	**71.3%**
1934	12,474	4,375	5,578	9,953	3,715	66%	0.49	0	0.790	0.000	0.386	0.386	**61.4%**
1935	8,506	3,464	3,464	6,928	2,231	73%	0.54	0	0.627	0.000	0.340	0.340	**66.0%**
1936	13,287	4,342	5,855	10,197	4,019	65%	0.48	0	0.804	0.000	0.387	0.387	**61.3%**
1937	12,458	4,342	5,676	10,018	3,709	66%	0.49	0	0.794	0.000	0.388	0.388	**61.2%**
1938	49,929	4,342	7,563	11,905	17,723	23%	0.23	0	0.896	0.000	0.208	0.208	**79.2%**
1939	18,687	4,342	3,741	8,083	6,039	60%	0.45	0	0.689	0.000	0.308	0.308	**69.2%**
1940	7,839	1,643	2,732	4,375	1,982	75%	0.56	0	0.489	0.000	0.272	0.272	**72.8%**
1941	34,706	4,342	7,481	11,824	12,030	24%	0.24	0	0.891	0.000	0.214	0.214	**78.6%**
1942	65,623	4,342	3,610	7,953	23,593	23%	0.23	0	0.682	0.000	0.155	0.155	**84.5%**
1943	28,803	4,342	3,773	8,115	9,822	25%	0.25	0	0.691	0.000	0.170	0.170	**83.0%**
1944	13,775	4,342	6,570	10,913	4,202	64%	0.48	0	0.842	0.000	0.402	0.402	**59.8%**
1945	15,824	4,342	6,993	11,336	4,968	62%	0.46	0	0.865	0.000	0.400	0.400	**60.0%**
1946	54,678	4,342	7,595	11,937	19,499	23%	0.23	0	0.898	0.000	0.207	0.207	**79.3%**
1947	18,134	4,342	7,205	11,547	5,832	60%	0.45	0	0.876	0.000	0.394	0.394	**60.6%**
1948	9,238	2,472	3,025	5,497	2,505	71%	0.53	0	0.550	0.000	0.291	0.291	**70.9%**
1949	15,564	4,342	6,912	11,254	4,871	62%	0.46	0	0.861	0.000	0.399	0.399	**60.1%**
1950	10,978	4,342	3,090	7,432	3,156	68%	0.50	0	0.654	0.000	0.330	0.330	**67.0%**
1951	68,095	4,342	7,595	11,937	24,518	23%	0.23	0	0.898	0.000	0.204	0.204	**79.6%**
1952	43,537	4,342	7,156	11,498	15,333	23%	0.23	0	0.874	0.000	0.205	0.205	**79.5%**
1953	42,334	4,342	3,741	8,083	14,883	24%	0.24	0	0.689	0.000	0.162	0.162	**83.8%**
1954	14,914	4,342	4,651	8,994	4,628	63%	0.47	0	0.739	0.000	0.346	0.346	**65.4%**
1955	25,517	4,342	6,928	11,271	8,593	25%	0.25	0	0.862	0.000	0.215	0.215	**78.5%**
1956	25,160	4,342	7,595	11,937	8,460	25%	0.25	0	0.898	0.000	0.224	0.224	**77.6%**
1957	14,149	4,342	6,619	10,962	4,342	64%	0.47	0	0.845	0.000	0.401	0.401	**59.9%**
1958	23,745	4,342	6,944	11,287	7,930	57%	0.43	0	0.862	0.000	0.369	0.369	**63.1%**
1959	14,621	4,342	3,854	8,197	4,518	63%	0.47	0	0.696	0.000	0.327	0.327	**67.3%**
1960	10,978	4,342	2,797	7,140	3,156	68%	0.50	0	0.638	0.000	0.322	0.322	**67.8%**
1961	17,499	4,342	6,912	11,254	5,595	61%	0.45	0	0.861	0.000	0.390	0.390	**61.0%**
1962	16,703	4,342	6,896	11,238	5,297	61%	0.46	0	0.860	0.000	0.393	0.393	**60.7%**
1963	27,550	4,342	6,912	11,254	9,354	25%	0.25	0	0.861	0.000	0.213	0.213	**78.7%**
1964	14,849	4,342	6,229	10,571	4,603	63%	0.47	0	0.824	0.000	0.386	0.386	**61.4%**
1965	24,265	4,342	7,465	11,807	8,125	57%	0.43	0	0.890	0.000	0.380	0.380	**62.0%**
1966	16,995	4,342	6,180	10,522	5,406	61%	0.46	0	0.821	0.000	0.374	0.374	**62.6%**
1967	38,609	4,342	7,156	11,498	13,490	24%	0.24	0	0.874	0.000	0.207	0.207	**79.3%**
1968	16,686	4,342	3,741	8,083	5,291	61%	0.46	0	0.689	0.000	0.315	0.315	**68.5%**
1969	23,842	4,342	7,010	11,352	7,967	57%	0.43	0	0.866	0.000	0.370	0.370	**63.0%**
1970	50,156	4,342	3,480	7,823	17,809	23%	0.23	0	0.675	0.000	0.157	0.157	**84.3%**
1971	53,734	4,342	7,075	11,417	19,147	23%	0.23	0	0.869	0.000	0.200	0.200	**80.0%**
1972	18,378	4,342	7,107	11,449	5,923	60%	0.45	0	0.871	0.000	0.391	0.391	**60.9%**
1973	26,200	4,342	6,928	11,271	8,849	25%	0.25	0	0.862	0.000	0.214	0.214	**78.6%**
1974	61,590	4,342	7,400	11,742	22,085	23%	0.23	0	0.887	0.000	0.203	0.203	**79.7%**
1975	17,613	4,342	4,310	8,652	5,637	61%	0.45	0	0.720	0.000	0.326	0.326	**67.4%**
1976	16,768	4,342	6,164	10,506	5,321	61%	0.46	0	0.820	0.000	0.375	0.375	**62.5%**
1977	8,050	1,919	2,992	4,912	2,061	74%	0.55	0	0.518	0.000	0.286	0.286	**71.4%**
1978	12,279	4,375	5,562	9,937	3,642	66%	0.49	0	0.789	0.000	0.387	0.387	**61.3%**
1979	12,751	4,342	3,676	8,018	3,819	65%	0.49	0	0.686	0.000	0.333	0.333	**66.7%**
1980	20,833	4,342	7,010	11,352	6,842	59%	0.44	0	0.866	0.000	0.379	0.379	**62.1%**
1981	15,613	4,342	4,668	9,010	4,889	62%	0.46	0	0.739	0.000	0.343	0.343	**65.7%**
1982	67,623	4,342	7,026	11,368	24,341	23%	0.23	0	0.867	0.000	0.197	0.197	**80.3%**
1983	55,410	4,342	4,424	8,766	19,773	23%	0.23	0	0.726	0.000	0.167	0.167	**83.3%**
1984	82,944	3,139	3,106	6,245	30,071	22%	0.22	0	0.590	0.000	0.132	0.132	**86.8%**
1985	23,875	4,342	7,026	11,368	7,979	57%	0.43	0	0.867	0.000	0.371	0.371	**62.9%**
1986	15,467	4,342	6,977	11,319	4,834	62%	0.46	0	0.864	0.000	0.402	0.402	**59.8%**
1987	13,417	4,342	6,099	10,441	4,068	64%	0.48	0	0.817	0.000	0.392	0.392	**60.8%**
1988	15,841	4,342	6,879	11,222	4,974	62%	0.46	0	0.859	0.000	0.397	0.397	**60.3%**
1989	8,847	3,025	3,594	6,619	2,359	72%	0.54	0	0.610	0.000	0.327	0.327	**67.3%**
1990	14,540	4,342	6,196	10,539	4,488	63%	0.47	0	0.822	0.000	0.387	0.387	**61.3%**
1991	8,620	1,756	3,155	4,912	2,274	73%	0.54	0	0.518	0.000	0.280	0.280	**72.0%**
1992	7,449	3,171	1,643	4,814	1,836	76%	0.56	0	0.513	0.000	0.290	0.290	**71.0%**

JANUARY

Year	Sac River Flows	CVP Flows	SWP Flows	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	17,499	4,326	7,644	11,970	5,595	61%	0.27	0	0.899	0.000	0.238	0.238	**76.2%**
1923	32,283	4,326	3,643	7,969	11,124	24%	0.24	0	0.683	0.000	0.165	0.165	**83.5%**
1924	14,377	4,326	6,554	10,880	4,427	63%	0.28	0	0.840	0.000	0.232	0.232	**76.8%**
1925	10,197	3,757	3,204	6,961	2,864	69%	0.30	0	0.629	0.000	0.187	0.187	**81.3%**
1926	18,768	4,326	7,123	11,449	6,069	60%	0.26	0	0.871	0.000	0.228	0.228	**77.2%**
1927	29,469	4,326	7,335	11,661	10,072	24%	0.24	0	0.883	0.000	0.216	0.216	**78.4%**
1928	25,208	4,326	3,643	7,969	8,478	25%	0.25	0	0.683	0.000	0.171	0.171	**82.9%**
1929	14,767	4,326	6,701	11,027	4,573	63%	0.27	0	0.848	0.000	0.232	0.232	**76.8%**
1930	21,273	4,342	7,123	11,466	7,006	58%	0.26	0	0.872	0.000	0.224	0.224	**77.6%**
1931	11,970	4,326	4,944	9,270	3,527	66%	0.29	0	0.753	0.000	0.216	0.216	**78.4%**
1932	17,256	4,342	7,904	12,246	5,504	61%	0.27	0	0.914	0.000	0.243	0.243	**75.7%**
1933	12,604	4,342	5,839	10,181	3,764	65%	0.28	0	0.803	0.000	0.227	0.227	**77.3%**
1934	16,101	4,342	7,140	11,482	5,072	62%	0.27	0	0.873	0.000	0.235	0.235	**76.5%**
1935	25,469	4,342	7,758	12,100	8,575	25%	0.25	0	0.906	0.000	0.226	0.226	**77.4%**
1936	32,413	4,326	7,530	11,856	11,172	24%	0.24	0	0.893	0.000	0.216	0.216	**78.4%**
1937	15,971	4,326	7,644	11,970	5,023	62%	0.27	0	0.899	0.000	0.243	0.243	**75.7%**
1938	31,535	4,326	3,562	7,888	10,844	24%	0.24	0	0.679	0.000	0.165	0.165	**83.5%**
1939	18,410	4,326	3,236	7,563	5,935	60%	0.26	0	0.661	0.000	0.174	0.174	**82.6%**
1940	23,452	4,326	8,115	12,442	7,821	57%	0.25	0	0.925	0.000	0.234	0.234	**76.6%**
1941	71,998	4,326	8,506	12,832	25,977	23%	0.23	0	0.946	0.000	0.214	0.214	**78.6%**
1942	63,265	4,326	3,236	7,563	22,711	23%	0.23	0	0.661	0.000	0.151	0.151	**84.9%**
1943	58,060	4,326	3,301	7,628	20,765	23%	0.23	0	0.665	0.000	0.152	0.152	**84.8%**
1944	17,678	4,326	3,269	7,595	5,662	60%	0.26	0	0.663	0.000	0.175	0.175	**82.5%**
1945	12,409	4,326	4,912	9,238	3,691	66%	0.28	0	0.752	0.000	0.214	0.214	**78.6%**
1946	43,228	4,326	3,643	7,969	15,217	23%	0.23	0	0.683	0.000	0.160	0.160	**84.0%**
1947	14,979	4,326	6,993	11,319	4,652	63%	0.27	0	0.864	0.000	0.236	0.236	**76.4%**
1948	14,653	4,326	6,392	10,718	4,530	63%	0.27	0	0.832	0.000	0.228	0.228	**77.2%**
1949	14,930	4,326	6,896	11,222	4,634	63%	0.27	0	0.859	0.000	0.235	0.235	**76.5%**
1950	20,427	4,326	7,253	11,580	6,690	59%	0.26	0	0.878	0.000	0.227	0.227	**77.3%**
1951	62,208	4,326	7,026	11,352	22,316	23%	0.23	0	0.866	0.000	0.198	0.198	**80.2%**
1952	67,233	4,326	8,132	12,458	24,195	23%	0.23	0	0.926	0.000	0.210	0.210	**79.0%**
1953	64,078	4,326	3,334	7,660	23,015	23%	0.23	0	0.667	0.000	0.152	0.152	**84.8%**
1954	33,421	4,326	3,838	8,164	11,550	24%	0.24	0	0.694	0.000	0.167	0.167	**83.3%**
1955	22,004	4,326	7,270	11,596	7,280	58%	0.26	0	0.879	0.000	0.224	0.224	**77.6%**
1956	84,017	4,326	8,164	12,490	30,472	22%	0.22	0	0.927	0.000	0.208	0.208	**79.2%**
1957	18,638	4,326	3,887	8,213	6,021	60%	0.26	0	0.696	0.000	0.183	0.183	**81.7%**
1958	36,381	4,326	4,098	8,424	12,657	24%	0.24	0	0.708	0.000	0.169	0.169	**83.1%**
1959	35,162	4,326	3,334	7,660	12,200	24%	0.24	0	0.667	0.000	0.160	0.160	**84.0%**
1960	13,515	4,326	5,822	10,148	4,105	64%	0.28	0	0.801	0.000	0.224	0.224	**77.6%**
1961	14,263	4,326	6,652	10,978	4,384	63%	0.28	0	0.846	0.000	0.233	0.233	**76.7%**
1962	12,653	4,326	3,985	8,311	3,782	65%	0.28	0	0.702	0.000	0.199	0.199	**80.1%**
1963	17,548	4,326	7,319	11,645	5,613	61%	0.27	0	0.882	0.000	0.234	0.234	**76.6%**
1964	24,200	4,326	3,822	8,148	8,101	57%	0.25	0	0.693	0.000	0.174	0.174	**82.6%**
1965	81,236	4,326	8,506	12,832	29,432	22%	0.22	0	0.946	0.000	0.212	0.212	**78.8%**
1966	29,632	4,326	3,659	7,985	10,132	24%	0.24	0	0.684	0.000	0.167	0.167	**83.3%**
1967	35,210	4,326	7,758	12,084	12,219	24%	0.24	0	0.905	0.000	0.217	0.217	**78.3%**
1968	30,640	4,326	3,334	7,660	10,509	24%	0.24	0	0.667	0.000	0.162	0.162	**83.8%**
1969	66,761	4,326	7,888	12,214	24,019	23%	0.23	0	0.912	0.000	0.207	0.207	**79.3%**
1970	92,669	4,277	3,334	7,611	33,708	22%	0.22	0	0.664	0.000	0.148	0.148	**85.2%**
1971	45,245	4,326	6,473	10,799	15,972	23%	0.23	0	0.836	0.000	0.196	0.196	**80.4%**
1972	20,394	4,326	3,887	8,213	6,677	59%	0.26	0	0.696	0.000	0.180	0.180	**82.0%**
1973	49,002	4,326	6,245	10,571	17,377	23%	0.23	0	0.824	0.000	0.191	0.191	**80.9%**
1974	78,422	4,326	3,643	7,969	28,380	22%	0.22	0	0.683	0.000	0.154	0.154	**84.6%**
1975	18,670	4,326	3,854	8,181	6,033	60%	0.26	0	0.695	0.000	0.182	0.182	**81.8%**
1976	16,768	4,326	3,806	8,132	5,321	61%	0.27	0	0.692	0.000	0.185	0.185	**81.5%**
1977	7,660	2,277	2,472	4,749	1,915	75%	0.32	0	0.509	0.000	0.164	0.164	**83.6%**
1978	43,066	1,545	7,855	9,400	15,157	23%	0.23	0	0.761	0.000	0.179	0.179	**82.1%**
1979	27,241	4,326	3,269	7,595	9,238	25%	0.25	0	0.663	0.000	0.164	0.164	**83.6%**
1980	61,053	4,326	3,155	7,481	21,884	23%	0.23	0	0.657	0.000	0.150	0.150	**85.0%**
1981	27,843	4,326	3,350	7,676	9,463	25%	0.25	0	0.667	0.000	0.165	0.165	**83.5%**
1982	51,165	4,326	8,506	12,832	18,186	23%	0.23	0	0.946	0.000	0.219	0.219	**78.1%**
1983	59,150	4,326	2,651	6,977	21,172	23%	0.23	0	0.630	0.000	0.144	0.144	**85.6%**
1984	47,359	1,447	2,879	4,326	16,762	23%	0.23	0	0.487	0.000	0.113	0.113	**88.7%**
1985	16,800	4,326	3,871	8,197	5,333	61%	0.27	0	0.696	0.000	0.186	0.186	**81.4%**
1986	21,500	4,326	7,319	11,645	7,091	58%	0.26	0	0.882	0.000	0.226	0.226	**77.4%**
1987	16,735	1,220	6,457	7,676	5,309	61%	0.27	0	0.667	0.000	0.178	0.178	**82.2%**
1988	25,534	4,326	7,075	11,401	8,600	25%	0.25	0	0.869	0.000	0.217	0.217	**78.3%**
1989	12,002	4,212	4,684	8,896	3,539	66%	0.29	0	0.733	0.000	0.210	0.210	**79.0%**
1990	21,338	2,765	7,091	9,856	7,030	58%	0.26	0	0.785	0.000	0.201	0.201	**79.9%**
1991	6,847	1,822	1,708	3,529	1,611	78%	0.33	0	0.443	0.000	0.147	0.147	**85.3%**
1992	11,889	4,342	4,668	9,010	3,496	66%	0.29	0	0.739	0.000	0.212	0.212	**78.8%**

Formulas: Sacramento River Spring Smolt Yearling Survival Model

```
C10 ='Study 513 Revised Flow Data'!B7
D10 ='Study 513 Revised Flow Data'!L7
E10 ='Study 513 Revised Flow Data'!V7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
J10 =IF(-2.45925+(0.0420748*$T$1)>0,-2.45925+(0.0420748*$T$1),0)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =IF(-1.613493+(0.0319584*$T$1)>0,-1.613493+(0.0319584*$T$1),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10
```

```
Q10 ='Study 513 Revised Flow Data'!C7
R10 ='Study 513 Revised Flow Data'!M7
S10 ='Study 513 Revised Flow Data'!W7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
Z10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10
```

```
AE10 ='Study 513 Revised Flow Data'!D7
AF10 ='Study 513 Revised Flow Data'!N7
AG10 ='Study 513 Revised Flow Data'!X7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AN10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
```

Study 519a Sacramento River Spring Run Yearling Survival Model (continued)

February Water Temp 50 F

Cross Channel Closed Over 25000 cfs — March Water Temp 55 F

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BU
6	**FEBRUARY**				Calculated									**MARCH**				Calculated									
7	Sac				Sutter &								**Calculated**	Sac				Sutter &								**Calculated**	**Weighted**
8	River	CVP	SWP	CVP + SWP	Steamboat		X-Channel		Calculated Mortality				**Survivability**	River			CVP + SWF	Steamboat		X-Channel		Calculated Mortality				**Survivability**	**Total**
9	Flow	Flow	Flow	Exports	Slough Q	Percent	Closed	m1	m2	m3	m23	m123	**s123**	Flow	CVP	SWP	exports	Slough Q	percent	Closed	m1	m2	m3	m23	m123	**s123**	**Survival**
10	34,463	4,339	6,176	10,515	11,939	24%	0.24	0	0.875	0.000	0.210	0.210	**79.0%**	31,551	3,806	4,147	7,953	10,850	24%	0.24	0	0.826	0.144	0.310	0.310	**69.0%**	**56.6%**
11	24,092	4,375	2,377	6,752	8,060	57%	0.25	0	0.671	0.000	0.169	0.169	**83.1%**	17,939	4,326	3,367	7,693	5,759	60%	0.26	0	0.812	0.144	0.320	0.320	**68.0%**	**65.5%**
12	16,898	4,172	4,659	8,832	5,370	61%	0.27	0	0.784	0.000	0.209	0.209	**79.1%**	12,409	1,659	2,098	3,757	3,691	66%	0.28	0	0.600	0.144	0.274	0.274	**72.6%**	**61.7%**
13	44,709	4,375	7,671	12,046	15,771	23%	0.23	0	0.957	0.000	0.224	0.224	**77.6%**	31,307	4,147	3,562	7,709	10,759	24%	0.24	0	0.813	0.144	0.307	0.307	**69.3%**	**61.2%**
14	35,958	4,321	7,599	11,920	12,498	24%	0.24	0	0.950	0.000	0.227	0.227	**77.3%**	18,768	4,326	3,301	7,628	6,069	60%	0.26	0	0.809	0.144	0.318	0.318	**68.2%**	**61.7%**
15	86,465	2,521	6,716	9,237	31,388	22%	0.22	0	0.806	0.000	0.180	0.180	**82.0%**	43,863	3,350	4,147	7,497	15,455	23%	0.23	0	0.801	0.144	0.298	0.298	**70.2%**	**56.0%**
16	25,521	4,207	4,225	8,432	8,595	25%	0.25	0	0.762	0.000	0.190	0.190	**81.0%**	86,229	4,326	4,424	8,750	31,300	22%	0.22	0	0.869	0.144	0.307	0.307	**69.3%**	**58.6%**
17	17,538	4,321	4,916	9,237	5,609	61%	0.27	0	0.806	0.000	0.214	0.214	**78.6%**	14,361	3,318	2,830	6,148	4,421	63%	0.28	0	0.729	0.144	0.305	0.305	**69.5%**	**56.4%**
18	16,169	3,529	3,655	7,184	5,097	62%	0.27	0	0.695	0.000	0.187	0.187	**81.3%**	30,348	4,326	4,912	9,238	10,400	24%	0.24	0	0.895	0.144	0.327	0.327	**67.3%**	**61.0%**
19	11,092	3,529	1,963	5,492	3,198	68%	0.29	0	0.603	0.000	0.176	0.176	**82.4%**	8,880	2,114	1,626	3,741	2,371	72%	0.31	0	0.599	0.144	0.285	0.285	**71.5%**	**64.6%**
20	13,995	4,242	5,859	10,101	4,284	64%	0.28	0	0.852	0.000	0.236	0.236	**76.4%**	11,677	2,586	2,586	5,172	3,417	67%	0.29	0	0.676	0.144	0.298	0.298	**70.2%**	**61.3%**
21	12,730	3,799	3,295	7,094	3,811	65%	0.28	0	0.690	0.000	0.195	0.195	**80.5%**	9,937	1,724	2,976	4,700	2,766	70%	0.30	0	0.650	0.144	0.296	0.296	**70.4%**	**64.5%**
22	12,748	1,855	4,375	6,230	3,818	65%	0.28	0	0.643	0.000	0.182	0.182	**81.8%**	14,588	2,358	2,212	4,570	4,506	63%	0.27	0	0.643	0.144	0.281	0.281	**71.9%**	**63.3%**
23	12,334	1,296	4,033	5,330	3,663	66%	0.28	0	0.595	0.000	0.169	0.169	**83.1%**	24,916	4,326	7,042	11,368	8,368	57%	0.25	0	1.011	0.144	0.361	0.361	**63.9%**	**60.4%**
24	49,269	4,190	8,206	12,396	17,477	23%	0.23	0	0.976	0.000	0.227	0.227	**77.3%**	33,698	4,326	4,196	8,522	11,653	24%	0.24	0	0.857	0.144	0.316	0.316	**68.4%**	**57.8%**
25	33,203	4,339	4,844	9,183	11,468	24%	0.24	0	0.803	0.000	0.194	0.194	**80.6%**	38,203	3,936	4,001	7,937	13,338	24%	0.24	0	0.825	0.144	0.306	0.306	**69.4%**	**58.0%**
26	82,269	4,357	3,943	8,301	29,819	22%	0.22	0	0.755	0.000	0.169	0.169	**83.1%**	78,634	4,326	3,968	8,294	28,459	22%	0.22	0	0.845	0.144	0.302	0.302	**69.8%**	**65.8%**
27	19,032	2,683	3,961	6,644	6,168	60%	0.26	0	0.666	0.000	0.174	0.174	**82.6%**	16,394	2,732	3,985	6,717	5,181	61%	0.27	0	0.759	0.144	0.309	0.309	**69.1%**	**61.4%**
28	39,134	4,190	8,206	12,396	13,686	24%	0.24	0	0.976	0.000	0.231	0.231	**76.9%**	58,939	4,326	4,586	8,912	21,093	23%	0.23	0	0.878	0.144	0.312	0.312	**68.8%**	**65.9%**
29	75,031	4,393	6,194	10,588	27,112	23%	0.23	0	0.879	0.000	0.198	0.198	**80.2%**	58,581	4,326	3,838	8,164	20,959	23%	0.23	0	0.838	0.144	0.303	0.303	**69.7%**	**63.0%**
30	78,344	4,375	3,961	8,337	28,351	23%	0.23	0	0.757	0.000	0.170	0.170	**83.0%**	27,095	4,326	4,001	8,327	9,183	25%	0.25	0	0.846	0.144	0.318	0.318	**68.2%**	**67.3%**
31	52,253	4,375	3,997	8,373	18,593	23%	0.23	0	0.759	0.000	0.175	0.175	**82.5%**	64,598	4,326	4,050	8,376	23,210	23%	0.23	0	0.849	0.144	0.305	0.305	**69.5%**	**67.2%**
32	28,268	4,190	3,825	8,015	9,622	25%	0.25	0	0.740	0.000	0.182	0.182	**81.8%**	25,094	4,326	4,001	8,327	8,435	25%	0.25	0	0.846	0.144	0.320	0.320	**68.0%**	**55.3%**
33	40,045	4,339	3,997	8,337	14,027	24%	0.24	0	0.757	0.000	0.179	0.179	**82.1%**	26,038	4,326	4,147	8,473	8,788	25%	0.25	0	0.854	0.144	0.321	0.321	**67.9%**	**54.7%**
34	24,074	4,375	4,213	8,589	8,054	57%	0.25	0	0.771	0.000	0.194	0.194	**80.6%**	23,728	4,326	4,424	8,750	7,924	57%	0.25	0	0.869	0.144	0.327	0.327	**67.3%**	**65.0%**
35	21,067	4,339	3,943	8,283	6,929	58%	0.26	0	0.754	0.000	0.194	0.194	**80.6%**	22,297	4,326	3,952	8,278	7,389	58%	0.25	0	0.844	0.144	0.322	0.322	**67.8%**	**54.6%**
36	15,664	4,172	1,756	5,928	4,908	62%	0.27	0	0.627	0.000	0.170	0.170	**83.0%**	19,061	4,326	3,415	7,741	6,179	60%	0.26	0	0.815	0.144	0.319	0.319	**68.1%**	**63.7%**
37	16,187	4,339	4,213	8,553	5,104	62%	0.27	0	0.769	0.000	0.207	0.207	**79.3%**	41,765	3,594	7,140	10,734	14,670	24%	0.24	0	0.976	0.144	0.340	0.340	**66.0%**	**55.0%**
38	35,220	4,339	7,599	11,938	12,222	24%	0.24	0	0.951	0.000	0.228	0.228	**77.2%**	22,411	4,326	4,895	9,221	7,432	58%	0.25	0	0.895	0.144	0.335	0.335	**66.5%**	**60.5%**
39	60,572	4,375	4,682	9,057	21,704	23%	0.23	0	0.796	0.000	0.182	0.182	**81.8%**	30,071	4,326	4,700	9,026	10,297	24%	0.24	0	0.884	0.144	0.325	0.325	**67.5%**	**76.3%**
40	62,499	4,242	3,773	8,015	22,425	23%	0.23	0	0.740	0.000	0.169	0.169	**83.1%**	57,524	4,326	3,936	8,262	20,564	23%	0.23	0	0.843	0.144	0.304	0.304	**69.6%**	**63.9%**
41	28,341	4,375	4,051	8,427	9,650	25%	0.25	0	0.762	0.000	0.187	0.187	**81.3%**	24,899	3,610	4,115	7,725	8,362	57%	0.25	0	0.814	0.144	0.312	0.312	**68.8%**	**69.5%**
42	57,151	4,357	4,646	9,003	20,424	23%	0.23	0	0.793	0.000	0.182	0.182	**81.8%**	49,538	4,326	4,684	9,010	17,577	23%	0.23	0	0.883	0.144	0.316	0.316	**68.4%**	**59.1%**
43	16,295	4,357	3,673	8,031	5,144	62%	0.27	0	0.740	0.000	0.199	0.199	**80.1%**	18,345	4,326	3,106	7,432	5,911	60%	0.26	0	0.798	0.144	0.316	0.316	**68.4%**	**63.5%**
44	61,543	4,225	4,520	8,745	22,067	23%	0.23	0	0.779	0.000	0.178	0.178	**82.2%**	36,674	4,212	4,700	8,912	12,766	24%	0.24	0	0.878	0.144	0.319	0.319	**68.1%**	**66.0%**
45	33,149	4,339	4,646	8,985	11,448	24%	0.24	0	0.792	0.000	0.191	0.191	**80.9%**	44,383	4,326	4,342	8,668	15,649	23%	0.23	0	0.865	0.144	0.313	0.313	**68.7%**	**55.6%**
46	61,130	4,357	4,051	8,409	21,913	23%	0.23	0	0.761	0.000	0.174	0.174	**82.6%**	93,612	4,326	4,066	8,392	34,061	22%	0.22	0	0.850	0.144	0.302	0.302	**69.8%**	**58.2%**
47	50,075	4,357	4,051	8,409	17,778	23%	0.23	0	0.761	0.000	0.176	0.176	**82.4%**	23,354	4,326	3,058	7,384	7,785	57%	0.25	0	0.795	0.144	0.309	0.309	**69.1%**	**62.3%**
48	25,121	4,172	7,110	11,283	8,445	25%	0.25	0	0.916	0.000	0.229	0.229	**77.1%**	21,565	3,301	4,001	7,302	7,115	58%	0.26	0	0.791	0.144	0.310	0.310	**69.0%**	**61.4%**
49	31,168	4,339	7,130	11,470	10,707	24%	0.24	0	0.926	0.000	0.225	0.225	**77.5%**	20,752	3,578	4,538	8,115	6,811	59%	0.26	0	0.835	0.144	0.322	0.322	**67.8%**	**55.8%**
50	44,421	4,339	8,499	12,838	15,663	23%	0.23	0	1.000	0.000	0.234	0.234	**76.6%**	27,599	4,326	3,545	7,872	9,372	25%	0.25	0	0.822	0.144	0.311	0.311	**68.9%**	**59.8%**
51	57,349	4,375	8,499	12,874	20,499	23%	0.23	0	1.002	0.000	0.230	0.230	**77.0%**	32,641	4,326	4,342	8,668	11,258	24%	0.24	0	0.865	0.144	0.318	0.318	**68.2%**	**63.9%**
52	18,932	4,225	3,529	7,754	6,131	60%	0.26	0	0.725	0.000	0.190	0.190	**81.0%**	18,557	4,326	3,253	7,579	5,990	60%	0.26	0	0.806	0.144	0.318	0.318	**68.2%**	**68.6%**
53	33,077	4,357	5,456	9,813	11,421	24%	0.24	0	0.837	0.000	0.202	0.202	**79.8%**	21,126	4,326	4,245	8,571	6,951	58%	0.26	0	0.859	0.144	0.328	0.328	**67.2%**	**56.2%**
54	26,775	4,375	4,375	8,751	9,064	25%	0.25	0	0.779	0.000	0.193	0.193	**80.7%**	28,689	4,326	4,424	8,750	9,780	25%	0.25	0	0.869	0.144	0.322	0.322	**67.8%**	**69.1%**
55	43,106	4,375	3,205	7,581	15,172	23%	0.23	0	0.716	0.000	0.168	0.168	**83.2%**	54,483	4,326	3,285	7,611	19,426	23%	0.23	0	0.808	0.144	0.297	0.297	**70.3%**	**63.2%**
56	54,520	2,851	3,912	6,763	19,440	23%	0.23	0	0.672	0.000	0.155	0.155	**84.5%**	36,788	3,090	4,115	7,205	12,809	24%	0.24	0	0.786	0.144	0.297	0.297	**70.3%**	**63.1%**
57	67,486	4,393	3,169	7,563	24,290	23%	0.23	0	0.715	0.000	0.162	0.162	**83.8%**	45,326	3,708	3,253	6,961	16,002	23%	0.23	0	0.773	0.144	0.291	0.291	**70.9%**	**57.1%**
58	57,565	1,278	4,051	5,330	20,579	23%	0.23	0	0.595	0.000	0.136	0.136	**86.4%**	35,812	3,139	4,115	7,253	12,444	24%	0.24	0	0.788	0.144	0.298	0.298	**70.2%**	**70.3%**
59	29,116	4,393	4,357	8,751	9,939	25%	0.25	0	0.779	0.000	0.191	0.191	**80.9%**	50,970	4,326	4,700	9,026	18,113	23%	0.23	0	0.884	0.144	0.316	0.316	**68.4%**	**65.1%**
60	24,217	4,207	4,433	8,640	8,107	57%	0.25	0	0.773	0.000	0.194	0.194	**80.6%**	32,933	4,326	4,310	8,636	11,367	24%	0.24	0	0.863	0.144	0.318	0.318	**68.2%**	**56.0%**
61	70,961	4,357	4,429	8,787	25,590	23%	0.23	0	0.781	0.000	0.177	0.177	**82.3%**	47,554	4,326	4,456	8,782	16,835	23%	0.23	0	0.871	0.144	0.313	0.313	**68.7%**	**64.8%**
62	41,918	4,357	4,375	8,733	14,727	24%	0.24	0	0.778	0.000	0.183	0.183	**81.7%**	100,199	4,326	4,424	8,750	36,524	22%	0.22	0	0.869	0.144	0.305	0.305	**69.5%**	**77.2%**
63	58,807	4,339	4,628	8,967	21,044	23%	0.23	0	0.791	0.000	0.181	0.181	**81.9%**	75,999	4,326	4,684	9,010	27,474	23%	0.23	0	0.883	0.144	0.311	0.311	**68.9%**	**59.4%**
64	19,523	4,190	4,068	8,258	6,352	59%	0.26	0	0.753	0.000	0.196	0.196	**80.4%**	20,020	4,424	3,643	8,067	6,538	59%	0.26	0	0.832	0.144	0.322	0.322	**67.8%**	**57.5%**
65	12,100	792	1,404	2,197	3,575	66%	0.29	0	0.425	0.000	0.122	0.122	**87.8%**	7,319	813	1,285	2,098	1,787	77%	0.33	0	0.510	0.144	0.263	0.263	**73.7%**	**64.8%**
66	50,183	1,837	6,680	8,517	17,818	23%	0.23	0	0.767	0.000	0.178	0.178	**82.2%**	45,521	2,212	3,903	6,115	16,075	23%	0.23	0	0.727	0.144	0.280	0.280	**72.0%**	**61.8%**
67	42,044	4,339	3,961	8,301	14,774	24%	0.24	0	0.755	0.000	0.178	0.178	**82.2%**	32,592	4,326	4,001	8,327	11,239	24%	0.24	0	0.846	0.144	0.314	0.314	**68.6%**	**58.4%**
68	69,453	4,190	3,668	7,858	25,026	23%	0.23	0	0.731	0.000	0.166	0.166	**83.4%**	36,479	2,781	3,350	6,131	12,693	24%	0.24	0	0.728	0.144	0.284	0.284	**71.6%**	**57.4%**
69	29,674	3,259	4,069	7,328	10,148	24%	0.24	0	0.703	0.000	0.172	0.172	**82.8%**	32,494	3,090	4,115	7,205	11,203	24%	0.24	0	0.786	0.144	0.299	0.299	**70.1%**	**59.0%**
70	65,650	4,375	4,628	9,003	23,603	23%	0.23	0	0.793	0.000	0.180	0.180	**82.0%**	69,087	4,326	4,651	8,977	24,889	23%	0.23	0	0.881	0.144	0.311	0.311	**68.9%**	**76.1%**
71	82,917	3,565	2,791	6,356	30,061	22%	0.22	0	0.650	0.000	0.146	0.146	**85.4%**	81,935	2,131	2,635	4,765	29,694	22%	0.22	0	0.654	0.144	0.259	0.259	**74.1%**	**78.9%**
72	36,004	1,495	3,720	5,216	12,516	24%	0.24	0	0.588	0.000	0.141	0.141	**85.9%**	36,495	3,301	4,001	7,302	12,699	24%	0.24	0	0.791	0.144	0.299	0.299	**70.1%**	**82.8%**
73	18,978	4,357	4,574	8,931	6,148	60%	0.26	0	0.789	0.000	0.206	0.206	**79.4%**	20,720	4,326	4,245	8,571	6,799	59%	0.26	0	0.859	0.144	0.328	0.328	**67.2%**	**69.2%**
74	94,333	4,339	7,202	11,542	34,331	22%	0.22	0	0.930	0.000	0.207	0.207	**79.3%**	72,535	4,326	4,180	8,506	26,178	23%	0.23	0	0.856	0.144	0.305	0.305	**69.5%**	**58.2%**
75	23,030	1,314	4,213	5,528	7,663	58%	0.25	0	0.605	0.000	0.153	0.153	**84.7%**	29,762	2,309	4,131	6,440	10,181	24%	0.24	0	0.744	0.144	0.291	0.291	**70.9%**	**58.5%**
76	15,907	3,807	2,364	6,172	4,999	62%	0.27	0	0.640	0.000	0.173	0.173	**82.7%**	10,913	2,049	1,773	3,822	3,131	68%	0.29	0	0.603	0.144	0.279	0.279	**72.1%**	**60.9%**
77	13,054	1,026	1,837	2,863	3,932	65%	0.28	0	0.461	0.000	0.130	0.130	**87.0%**	41,911	4,326	6,977	11,303	14,725	24%	0.24	0	1.007	0.144	0.347	0.347	**65.3%**	**62.7%**
78	16,692	1,296	6,554	7,851	5,293	61%	0.27	0	0.731	0.000	0.195	0.195	**80.5%**	14,588	2,326	3,659	5,985	4,506	63%	0.27	0	0.720	0.144	0.302	0.302	**69.8%**	**58.9%**
79	11,164	468	954	1,422	3,225	68%	0.29	0	0.384	0.000	0.112	0.112	**88.8%**	29,681	4,424	7,091	11,515	10,151	24%	0.24	0	1.018	0.144	0.358	0.358	**64.2%**	**66.5%**
80	30,928	2,121	7,267	9,388	10,617	24%	0.24	0	0.814	0.000	0.198	0.198	**80.2%**	19,711	2,196	6,131	8,327	6,422	59%	0.26	0	0.846	0.144	0.327	0.327	**67.3%**	**65.0%**
81																										**AVERAGE:**	**62.68%**

AS10 ='Study 513 Revised Flow Data'!E7
AT10 ='Study 513 Revised Flow Data'!O7
AU10 ='Study 513 Revised Flow Data'!Y7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$K$4,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
BA10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
BB10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =AZ10+BC10-(AZ10*BC10)
BE10 =1-BD10

BG10 ='Study 513 (Revised) Flow Data'!F7
BH10 ='Study 513 (Revised) Flow Data'!P7
BI10 ='Study 513 (Revised) Flow Data'!Z7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$K$4,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BO10 =(-0.5916024)+(0.017968*$BC$3)+(0.000054*BJ10)
BP10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)
BQ10 =(BO10*BM10)+(BP10*(1-BM10))
BR10 =BN10+BQ10-(BN10*BQ10)
BS10 =1-BR10
BU10 =(O10*0.37)+(AC10*0.42)+(AQ10*0.13)+(BE10*0.05)+(BS10*0.03)

Study 622a Sacramento River Spring Run Yearling Survival Model

Modified m2 by changing the slope to 0.000054

Cross Channel closed for 45 consecutive days, Dec 18-Jan 31

Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Year	Water Year Type	Sac River Flow	CVP Flow	SWP Flow	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2 (Calculated Mortality)	m3	m23	m123	**Calculated Survival s123**
1922	A	11,814	4,466	4,333	8,799	3,469	67%	0.29	0	0.836	0.080	0.583	0.583	**41.7%**
1923	B	17,007	4,483	6,672	11,155	5,411	61%	0.27	0	0.963	0.080	0.619	0.619	**38.1%**
1924	C	11,243	4,061	3,798	7,859	3,255	67%	0.29	0	0.785	0.080	0.555	0.555	**44.5%**
1925	D	7,025	1,514	3,219	4,733	1,677	78%	0.33	0	0.616	0.080	0.496	0.496	**50.4%**
1926	D	10,924	4,461	3,179	7,640	3,135	68%	0.29	0	0.773	0.080	0.551	0.551	**44.9%**
1927	W	20,284	4,430	6,672	11,102	6,636	59%	0.26	0	0.960	0.080	0.598	0.598	**40.2%**
1928	A	22,519	4,462	6,672	11,134	7,472	58%	0.25	0	0.962	0.080	0.589	0.589	**41.1%**
1929	C	12,856	4,450	5,534	9,984	3,858	65%	0.28	0	0.900	0.080	0.614	0.614	**38.6%**
1930	D	7,159	2,479	1,772	4,251	1,728	77%	0.33	0	0.590	0.080	0.473	0.473	**52.7%**
1931	C	9,798	2,834	3,290	6,124	2,714	70%	0.30	0	0.691	0.080	0.508	0.508	**49.2%**
1932	D	8,184	1,391	1,791	3,182	2,111	74%	0.32	0	0.533	0.080	0.414	0.414	**58.6%**
1933	C	9,512	3,249	2,617	5,866	2,607	71%	0.30	0	0.677	0.080	0.502	0.502	**49.8%**
1934	C	8,100	1,201	1,600	2,801	2,080	74%	0.32	0	0.512	0.080	0.400	0.400	**60.0%**
1935	B	9,209	1,902	3,616	5,518	2,494	71%	0.31	0	0.659	0.080	0.493	0.493	**50.7%**
1936	B	12,117	4,431	4,212	8,643	3,582	66%	0.29	0	0.827	0.080	0.574	0.574	**42.6%**
1937	B	11,411	4,464	3,442	7,906	3,318	67%	0.29	0	0.788	0.080	0.555	0.555	**44.5%**
1938	W	23,696	4,470	6,672	11,142	7,912	57%	0.25	0	0.962	0.080	0.585	0.585	**41.5%**
1939	D	19,444	4,478	5,609	10,087	6,322	59%	0.26	0	0.905	0.080	0.570	0.570	**43.0%**
1940	A	8,436	3,038	1,797	4,835	2,205	73%	0.31	0	0.622	0.080	0.477	0.477	**52.3%**
1941	W	13,663	4,442	6,115	10,557	4,160	64%	0.28	0	0.931	0.080	0.626	0.626	**37.4%**
1942	W	18,184	4,482	6,301	10,783	5,851	60%	0.26	0	0.943	0.080	0.599	0.599	**40.1%**
1943	W	21,914	4,476	6,481	10,957	7,246	58%	0.26	0	0.952	0.080	0.586	0.586	**41.4%**
1944	D	14,318	4,466	6,672	11,138	4,405	63%	0.28	0	0.962	0.080	0.639	0.639	**36.1%**
1945	B	13,764	4,445	6,672	11,117	4,198	64%	0.28	0	0.961	0.080	0.644	0.644	**35.6%**
1946	B	20,368	4,456	6,672	11,128	6,668	59%	0.26	0	0.962	0.080	0.599	0.599	**40.1%**
1947	D	13,781	4,446	6,361	10,807	4,204	64%	0.28	0	0.944	0.080	0.633	0.633	**36.7%**
1948	B	10,453	3,255	3,669	6,924	2,959	69%	0.30	0	0.735	0.080	0.530	0.530	**47.0%**
1949	D	14,453	4,440	6,268	10,708	4,455	63%	0.28	0	0.939	0.080	0.623	0.623	**37.7%**
1950	B	11,377	4,464	3,359	7,823	3,305	67%	0.29	0	0.783	0.080	0.553	0.553	**44.7%**
1951	A	40,737	4,444	6,672	11,116	14,286	24%	0.24	0	0.961	0.080	0.288	0.288	**71.2%**
1952	W	16,537	4,458	6,672	11,130	5,235	61%	0.27	0	0.962	0.080	0.621	0.621	**37.9%**
1953	W	16,537	4,481	4,089	8,570	5,235	61%	0.27	0	0.823	0.080	0.536	0.536	**46.4%**
1954	A	20,133	4,460	6,672	11,132	6,580	59%	0.26	0	0.962	0.080	0.600	0.600	**40.0%**
1955	D	20,856	4,452	6,672	11,124	6,850	59%	0.26	0	0.961	0.080	0.596	0.596	**40.4%**
1956	W	10,722	3,001	4,243	7,244	3,060	68%	0.29	0	0.752	0.080	0.539	0.539	**46.1%**
1957	A	15,478	4,482	6,672	11,154	4,839	62%	0.27	0	0.963	0.080	0.630	0.630	**37.0%**
1958	W	19,259	4,438	6,672	11,110	6,253	59%	0.26	0	0.961	0.080	0.604	0.604	**39.6%**
1959	B	16,133	4,484	4,185	8,669	5,084	62%	0.27	0	0.829	0.080	0.542	0.542	**45.8%**
1960	D	11,293	4,450	3,080	7,530	3,274	67%	0.29	0	0.767	0.080	0.543	0.543	**45.7%**
1961	D	14,251	4,437	6,248	10,685	4,380	63%	0.28	0	0.938	0.080	0.625	0.625	**37.5%**
1962	B	9,781	2,860	3,348	6,208	2,708	70%	0.30	0	0.696	0.080	0.512	0.512	**48.8%**
1963	W	21,242	4,450	6,672	11,122	6,995	58%	0.26	0	0.961	0.080	0.594	0.594	**40.6%**
1964	D	28,653	4,448	6,672	11,120	9,766	25%	0.25	0	0.961	0.080	0.297	0.297	**70.3%**
1965	W	13,394	4,005	6,347	10,352	4,059	64%	0.28	0	0.920	0.080	0.621	0.621	**37.9%**
1966	B	25,376	4,471	6,672	11,143	8,541	25%	0.25	0	0.962	0.080	0.301	0.301	**69.9%**
1967	W	16,133	4,439	6,672	11,111	5,084	62%	0.27	0	0.961	0.080	0.623	0.623	**37.7%**
1968	B	16,234	4,483	4,054	8,537	5,122	62%	0.27	0	0.822	0.080	0.537	0.537	**46.3%**
1969	W	14,318	4,455	6,420	10,875	4,405	63%	0.28	0	0.948	0.080	0.630	0.630	**37.0%**
1970	W	17,646	4,481	4,089	8,570	5,650	61%	0.26	0	0.823	0.080	0.530	0.530	**47.0%**
1971	W	24,939	4,462	6,672	11,134	8,377	57%	0.25	0	0.962	0.080	0.581	0.581	**41.9%**
1972	B	15,343	4,442	6,672	11,114	4,788	62%	0.27	0	0.961	0.080	0.630	0.630	**37.0%**
1973	A	23,124	4,455	6,672	11,127	7,699	57%	0.25	0	0.962	0.080	0.587	0.587	**41.3%**
1974	W	53,576	4,448	6,672	11,120	19,087	23%	0.23	0	0.961	0.080	0.283	0.283	**71.7%**
1975	W	17,579	4,483	6,562	11,045	5,624	61%	0.26	0	0.957	0.080	0.611	0.611	**38.9%**
1976	C	19,226	4,467	6,672	11,139	6,240	59%	0.26	0	0.962	0.080	0.605	0.605	**39.5%**
1977	C	8,235	2,920	3,303	6,223	2,130	74%	0.32	0	0.697	0.080	0.535	0.535	**46.5%**
1978	A	6,924	2,659	1,702	4,361	1,640	78%	0.33	0	0.596	0.080	0.482	0.482	**51.8%**
1979	B	14,688	4,485	6,672	11,157	4,543	63%	0.27	0	0.963	0.080	0.637	0.637	**36.3%**
1980	A	16,301	4,442	6,672	11,114	5,147	62%	0.27	0	0.961	0.080	0.622	0.622	**37.8%**
1981	D	13,024	4,469	5,572	10,041	3,921	65%	0.28	0	0.903	0.080	0.614	0.614	**38.6%**
1982	W	32,636	4,455	6,672	11,127	11,256	24%	0.24	0	0.962	0.080	0.293	0.293	**70.7%**
1983	W	39,107	4,483	6,672	11,155	13,676	24%	0.24	0	0.963	0.080	0.290	0.290	**71.0%**
1984	W	62,802	3,526	3,623	7,149	22,538	23%	0.23	0	0.747	0.080	0.232	0.232	**76.8%**
1985	D	33,998	4,462	6,672	11,134	11,765	24%	0.24	0	0.962	0.080	0.292	0.292	**70.8%**
1986	W	9,546	2,737	4,227	6,964	2,620	71%	0.30	0	0.737	0.080	0.544	0.544	**45.6%**
1987	D	11,125	4,439	4,084	8,523	3,211	68%	0.29	0	0.821	0.080	0.581	0.581	**41.9%**
1988	C	8,453	3,206	1,916	5,122	2,211	73%	0.31	0	0.637	0.080	0.488	0.488	**51.2%**
1989	D	8,991	2,973	3,375	6,348	2,413	72%	0.31	0	0.703	0.080	0.528	0.528	**47.2%**
1990	C	11,512	4,426	3,331	7,757	3,355	67%	0.29	0	0.780	0.080	0.549	0.549	**45.1%**
1991	C	8,134	2,689	2,376	5,065	2,092	74%	0.32	0	0.634	0.080	0.490	0.490	**51.0%**
1992	C	7,495	3,303	1,421	4,724	1,853	76%	0.32	0	0.616	0.080	0.487	0.487	**51.3%**

DECEMBER

Year	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2 (Calculated Mortality)	m3	m23	m123	**Calculated Survival s123**
1922	17,142	4,347	7,115	11,462	5,461	61%	0.45	0	0.872	0.000	0.396	0.396	**60.4%**
1923	34,072	4,347	4,453	8,800	11,793	24%	0.24	0	0.728	0.000	0.175	0.175	**82.5%**
1924	10,539	4,163	3,173	7,336	2,991	69%	0.51	0	0.649	0.000	0.331	0.331	**66.9%**
1925	11,254	4,378	4,908	9,286	3,259	67%	0.50	0	0.754	0.000	0.378	0.378	**62.2%**
1926	11,547	4,347	3,956	8,303	3,369	67%	0.50	0	0.701	0.000	0.349	0.349	**65.1%**
1927	14,312	4,347	7,009	11,356	4,403	63%	0.47	0	0.866	0.000	0.410	0.410	**59.0%**
1928	16,572	4,347	5,464	9,811	5,248	61%	0.46	0	0.783	0.000	0.358	0.358	**64.2%**
1929	13,710	4,347	6,280	10,627	4,178	64%	0.48	0	0.827	0.000	0.395	0.395	**60.5%**
1930	14,442	4,378	6,331	10,709	4,451	63%	0.47	0	0.831	0.000	0.392	0.392	**60.8%**
1931	9,335	2,365	3,004	5,369	2,541	71%	0.53	0	0.543	0.000	0.286	0.286	**71.4%**
1932	14,653	4,378	7,207	11,585	4,530	63%	0.47	0	0.878	0.000	0.413	0.413	**58.7%**
1933	8,132	2,235	2,485	4,720	2,091	74%	0.55	0	0.508	0.000	0.279	0.279	**72.1%**
1934	12,474	4,378	5,551	9,929	3,715	66%	0.49	0	0.789	0.000	0.386	0.386	**61.4%**
1935	8,506	3,428	3,428	6,856	2,231	73%	0.54	0	0.623	0.000	0.338	0.338	**66.2%**
1936	11,872	4,347	4,348	8,695	3,490	66%	0.49	0	0.722	0.000	0.357	0.357	**64.3%**
1937	12,458	4,347	5,639	9,986	3,709	66%	0.49	0	0.792	0.000	0.387	0.387	**61.3%**
1938	44,611	4,347	7,553	11,900	15,734	23%	0.23	0	0.895	0.000	0.210	0.210	**79.0%**
1939	18,687	4,347	3,735	8,082	6,039	60%	0.45	0	0.689	0.000	0.308	0.308	**69.2%**
1940	7,839	1,664	2,752	4,416	1,982	75%	0.56	0	0.491	0.000	0.273	0.273	**72.7%**
1941	36,999	4,347	7,370	11,717	12,888	24%	0.24	0	0.886	0.000	0.211	0.211	**78.9%**
1942	65,623	4,347	3,608	7,955	23,593	23%	0.23	0	0.682	0.000	0.155	0.155	**84.5%**
1943	28,803	4,347	3,779	8,126	9,822	25%	0.25	0	0.692	0.000	0.170	0.170	**83.0%**
1944	13,775	4,347	6,674	11,021	4,202	64%	0.48	0	0.848	0.000	0.405	0.405	**59.5%**
1945	15,824	4,347	6,998	11,345	4,968	62%	0.46	0	0.866	0.000	0.400	0.400	**60.0%**
1946	52,986	4,347	7,592	11,939	18,867	23%	0.23	0	0.898	0.000	0.207	0.207	**79.3%**
1947	18,134	4,347	7,109	11,456	5,832	60%	0.45	0	0.872	0.000	0.392	0.392	**60.8%**
1948	9,433	2,596	3,135	5,731	2,578	71%	0.53	0	0.562	0.000	0.296	0.296	**70.4%**
1949	15,564	4,347	6,914	11,261	4,871	62%	0.46	0	0.861	0.000	0.400	0.400	**60.0%**
1950	10,978	4,347	3,066	7,413	3,156	68%	0.50	0	0.653	0.000	0.330	0.330	**67.0%**
1951	68,095	4,347	7,592	11,939	24,518	23%	0.23	0	0.898	0.000	0.204	0.204	**79.6%**
1952	45,456	4,347	7,138	11,485	16,051	23%	0.23	0	0.873	0.000	0.204	0.204	**79.6%**
1953	42,334	4,347	3,742	8,089	14,883	24%	0.24	0	0.690	0.000	0.162	0.162	**83.8%**
1954	14,914	4,347	3,897	8,244	4,628	63%	0.47	0	0.698	0.000	0.327	0.327	**67.3%**
1955	26,022	4,347	6,940	11,287	8,782	25%	0.25	0	0.862	0.000	0.215	0.215	**78.5%**
1956	25,647	4,347	7,592	11,939	8,642	25%	0.25	0	0.898	0.000	0.224	0.224	**77.6%**
1957	14,149	4,347	6,004	10,351	4,342	64%	0.47	0	0.812	0.000	0.385	0.385	**61.5%**
1958	23,745	4,347	6,958	11,305	7,930	57%	0.43	0	0.863	0.000	0.370	0.370	**63.0%**
1959	14,621	4,347	3,852	8,199	4,518	63%	0.47	0	0.696	0.000	0.327	0.327	**67.3%**
1960	10,897	4,347	2,791	7,138	3,125	68%	0.51	0	0.638	0.000	0.323	0.323	**67.7%**
1961	18,849	4,347	6,905	11,252	6,100	60%	0.45	0	0.861	0.000	0.384	0.384	**61.6%**
1962	16,703	4,347	6,887	11,234	5,297	61%	0.46	0	0.860	0.000	0.393	0.393	**60.7%**
1963	27,550	4,347	6,906	11,253	9,354	25%	0.25	0	0.861	0.000	0.212	0.212	**78.8%**
1964	14,849	4,347	5,453	9,800	4,603	63%	0.47	0	0.782	0.000	0.367	0.367	**63.3%**
1965	27,355	4,347	7,365	11,712	9,281	25%	0.25	0	0.885	0.000	0.219	0.219	**78.1%**
1966	16,995	4,347	5,637	9,984	5,406	61%	0.46	0	0.792	0.000	0.361	0.361	**63.9%**
1967	39,797	4,347	7,148	11,495	13,934	24%	0.24	0	0.874	0.000	0.207	0.207	**79.3%**
1968	16,686	4,347	3,735	8,082	5,291	61%	0.46	0	0.689	0.000	0.315	0.315	**68.5%**
1969	24,769	4,347	7,001	11,348	8,314	57%	0.43	0	0.866	0.000	0.368	0.368	**63.2%**
1970	50,156	4,347	3,481	7,828	17,809	23%	0.23	0	0.676	0.000	0.157	0.157	**84.3%**
1971	54,580	4,347	7,257	11,604	19,463	23%	0.23	0	0.880	0.000	0.203	0.203	**79.7%**
1972	19,858	4,347	6,967	11,314	6,477	59%	0.44	0	0.864	0.000	0.382	0.382	**61.8%**
1973	26,200	4,347	6,933	11,280	8,849	25%	0.25	0	0.862	0.000	0.214	0.214	**78.6%**
1974	61,590	4,347	7,175	11,522	22,085	23%	0.23	0	0.875	0.000	0.200	0.200	**80.0%**
1975	17,613	4,347	4,302	8,649	5,637	61%	0.45	0	0.720	0.000	0.326	0.326	**67.4%**
1976	16,768	4,347	5,630	9,977	5,321	61%	0.46	0	0.792	0.000	0.362	0.362	**63.8%**
1977	8,050	1,962	3,016	4,978	2,061	74%	0.55	0	0.522	0.000	0.288	0.288	**71.2%**
1978	12,279	4,376	5,516	9,892	3,642	66%	0.49	0	0.787	0.000	0.386	0.386	**61.4%**
1979	12,751	4,347	3,676	8,023	3,819	65%	0.49	0	0.686	0.000	0.333	0.333	**66.7%**
1980	20,833	4,347	7,016	11,363	6,842	59%	0.44	0	0.866	0.000	0.379	0.379	**62.1%**
1981	15,613	4,347	4,093	8,440	4,889	62%	0.46	0	0.709	0.000	0.329	0.329	**67.1%**
1982	68,144	4,347	6,972	11,319	24,536	23%	0.23	0	0.864	0.000	0.196	0.196	**80.4%**
1983	55,410	4,347	4,428	8,775	19,773	23%	0.23	0	0.727	0.000	0.167	0.167	**83.3%**
1984	82,944	3,134	3,104	6,238	30,071	22%	0.22	0	0.590	0.000	0.132	0.132	**86.8%**
1985	23,875	4,347	4,469	8,816	7,979	57%	0.43	0	0.729	0.000	0.312	0.312	**68.8%**
1986	15,727	4,347	6,973	11,320	4,932	62%	0.46	0	0.864	0.000	0.400	0.400	**60.0%**
1987	13,417	4,347	6,093	10,440	4,068	64%	0.48	0	0.817	0.000	0.392	0.392	**60.8%**
1988	15,841	4,347	6,898	11,245	4,974	62%	0.46	0	0.860	0.000	0.398	0.398	**60.2%**
1989	9,286	3,387	3,528	6,915	2,523	71%	0.53	0	0.626	0.000	0.331	0.331	**66.9%**
1990	14,588	4,347	6,202	10,549	4,506	63%	0.47	0	0.823	0.000	0.387	0.387	**61.3%**
1991	8,668	1,811	3,115	4,926	2,292	73%	0.54	0	0.519	0.000	0.280	0.280	**72.0%**
1992	7,449	3,151	1,623	4,774	1,836	76%	0.56	0	0.511	0.000	0.288	0.288	**71.2%**

JANUARY

Year	Sac River Flows	CVP Flows	SWP Flows	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2 (Calculated Mortality)	m3	m23	m123	**Calculated Survival s123**
1922	17,499	4,324	7,594	11,918	5,595	61%	0.27	0	0.896	0.000	0.238	0.238	**76.2%**
1923	32,283	4,324	3,637	7,961	11,124	24%	0.24	0	0.683	0.000	0.165	0.165	**83.5%**
1924	14,621	4,324	6,768	11,092	4,518	63%	0.27	0	0.852	0.000	0.234	0.234	**76.6%**
1925	10,197	3,706	3,166	6,872	2,864	69%	0.30	0	0.624	0.000	0.186	0.186	**81.4%**
1926	19,776	4,324	7,132	11,456	6,446	59%	0.26	0	0.872	0.000	0.226	0.226	**77.4%**
1927	29,469	4,324	7,277	11,601	10,072	24%	0.24	0	0.879	0.000	0.215	0.215	**78.5%**
1928	25,208	4,324	3,638	7,962	8,478	25%	0.25	0	0.683	0.000	0.171	0.171	**82.9%**
1929	15,515	4,324	7,131	11,455	4,853	62%	0.27	0	0.871	0.000	0.236	0.236	**76.4%**
1930	20,768	4,346	7,102	11,448	6,817	59%	0.26	0	0.871	0.000	0.224	0.224	**77.6%**
1931	11,970	4,324	4,877	9,201	3,527	66%	0.29	0	0.750	0.000	0.215	0.215	**78.5%**
1932	17,256	4,346	7,832	12,178	5,504	61%	0.27	0	0.911	0.000	0.242	0.242	**75.8%**
1933	12,100	4,346	5,434	9,780	3,575	66%	0.29	0	0.781	0.000	0.223	0.223	**77.7%**
1934	16,101	4,346	7,098	11,444	5,072	62%	0.27	0	0.871	0.000	0.235	0.235	**76.5%**
1935	25,469	4,346	7,671	12,017	8,575	25%	0.25	0	0.902	0.000	0.225	0.225	**77.5%**
1936	33,177	4,324	7,455	11,779	11,458	24%	0.24	0	0.889	0.000	0.215	0.215	**78.5%**
1937	15,971	4,324	7,597	11,921	5,023	62%	0.27	0	0.897	0.000	0.242	0.242	**75.8%**
1938	31,437	4,324	3,741	8,065	10,808	24%	0.24	0	0.688	0.000	0.167	0.167	**83.3%**
1939	18,410	4,324	3,239	7,563	5,935	60%	0.26	0	0.661	0.000	0.174	0.174	**82.6%**
1940	23,452	4,324	8,067	12,391	7,821	57%	0.25	0	0.922	0.000	0.233	0.233	**76.7%**
1941	72,242	4,324	8,207	12,531	26,069	23%	0.23	0	0.930	0.000	0.210	0.210	**79.0%**
1942	63,265	4,324	3,239	7,563	22,711	23%	0.23	0	0.661	0.000	0.151	0.151	**84.9%**
1943	58,060	4,324	3,304	7,628	20,765	23%	0.23	0	0.665	0.000	0.152	0.152	**84.8%**
1944	17,678	4,324	3,262	7,586	5,662	60%	0.26	0	0.663	0.000	0.175	0.175	**82.5%**
1945	12,393	4,324	4,927	9,251	3,685	66%	0.28	0	0.752	0.000	0.214	0.214	**78.6%**
1946	43,228	4,324	3,637	7,961	15,217	23%	0.23	0	0.683	0.000	0.160	0.160	**84.0%**
1947	15,223	4,324	7,432	11,756	4,743	63%	0.27	0	0.888	0.000	0.242	0.242	**75.8%**
1948	14,897	4,316	6,584	10,900	4,622	63%	0.27	0	0.841	0.000	0.230	0.230	**77.0%**
1949	14,930	4,324	6,873	11,197	4,634	63%	0.27	0	0.858	0.000	0.234	0.234	**76.6%**
1950	21,305	4,324	7,190	11,514	7,018	58%	0.26	0	0.875	0.000	0.224	0.224	**77.6%**
1951	62,208	4,324	6,696	11,020	22,316	23%	0.23	0	0.848	0.000	0.193	0.193	**80.7%**
1952	67,347	4,324	7,959	12,283	24,238	23%	0.23	0	0.916	0.000	0.208	0.208	**79.2%**
1953	64,078	4,324	3,333	7,657	23,015	23%	0.23	0	0.666	0.000	0.152	0.152	**84.8%**
1954	33,421	4,324	3,850	8,174	11,550	24%	0.24	0	0.694	0.000	0.167	0.167	**83.3%**
1955	22,265	4,324	7,257	11,581	7,377	58%	0.25	0	0.878	0.000	0.224	0.224	**77.6%**
1956	83,610	4,324	8,079	12,403	30,320	22%	0.22	0	0.923	0.000	0.207	0.207	**79.3%**
1957	18,638	4,324	3,891	8,215	6,021	60%	0.26	0	0.697	0.000	0.183	0.183	**81.7%**
1958	36,463	4,324	3,317	7,641	12,687	24%	0.24	0	0.666	0.000	0.159	0.159	**84.1%**
1959	35,162	4,324	3,333	7,657	12,200	24%	0.24	0	0.666	0.000	0.160	0.160	**84.0%**
1960	14,279	4,324	6,354	10,678	4,390	63%	0.28	0	0.830	0.000	0.229	0.229	**77.1%**
1961	15,011	4,324	7,087	11,411	4,664	63%	0.27	0	0.869	0.000	0.237	0.237	**76.3%**
1962	12,653	4,324	3,885	8,209	3,782	65%	0.28	0	0.696	0.000	0.197	0.197	**80.3%**
1963	17,808	4,324	7,254	11,578	5,710	60%	0.26	0	0.878	0.000	0.232	0.232	**76.8%**
1964	24,200	4,324	3,853	8,177	8,101	57%	0.25	0	0.694	0.000	0.175	0.175	**82.5%**
1965	81,236	4,324	8,500	12,824	29,432	22%	0.22	0	0.945	0.000	0.212	0.212	**78.8%**
1966	29,632	4,324	3,657	7,981	10,132	24%	0.24	0	0.684	0.000	0.167	0.167	**83.3%**
1967	35,097	4,324	7,697	12,021	12,176	24%	0.24	0	0.902	0.000	0.216	0.216	**78.4%**
1968	30,640	4,324	3,333	7,657	10,509	24%	0.24	0	0.666	0.000	0.162	0.162	**83.8%**
1969	68,681	4,324	5,697	10,021	24,737	23%	0.23	0	0.794	0.000	0.180	0.180	**82.0%**
1970	92,669	4,292	3,333	7,625	33,708	22%	0.22	0	0.665	0.000	0.148	0.148	**85.2%**
1971	45,847	4,324	4,737	9,061	16,197	23%	0.23	0	0.742	0.000	0.173	0.173	**82.7%**
1972	20,394	4,324	3,891	8,215	6,677	59%	0.26	0	0.697	0.000	0.180	0.180	**82.0%**
1973	49,750	4,324	7,274	11,598	17,656	23%	0.23	0	0.879	0.000	0.204	0.204	**79.6%**
1974	78,422	4,324	3,637	7,961	28,380	22%	0.22	0	0.683	0.000	0.154	0.154	**84.6%**
1975	18,670	4,324	3,848	8,172	6,033	60%	0.26	0	0.694	0.000	0.182	0.182	**81.8%**
1976	16,768	4,324	3,827	8,151	5,321	61%	0.27	0	0.693	0.000	0.185	0.185	**81.5%**
1977	7,904	2,565	2,498	5,063	2,006	75%	0.32	0	0.526	0.000	0.168	0.168	**83.2%**
1978	43,066	2,684	7,767	10,451	15,157	23%	0.23	0	0.817	0.000	0.192	0.192	**80.8%**
1979	27,241	4,324	3,262	7,586	9,238	25%	0.25	0	0.663	0.000	0.164	0.164	**83.6%**
1980	61,557	4,324	3,159	7,483	22,072	23%	0.23	0	0.657	0.000	0.150	0.150	**85.0%**
1981	28,705	4,324	3,356	7,680	9,786	25%	0.25	0	0.668	0.000	0.164	0.164	**83.6%**
1982	51,165	4,324	7,641	11,965	18,186	23%	0.23	0	0.899	0.000	0.208	0.208	**79.2%**
1983	59,150	4,324	2,648	6,972	21,172	23%	0.23	0	0.629	0.000	0.144	0.144	**85.6%**
1984	47,359	1,448	2,881	4,329	16,762	23%	0.23	0	0.487	0.000	0.113	0.113	**88.7%**
1985	16,800	4,324	3,872	8,196	5,333	61%	0.27	0	0.695	0.000	0.186	0.186	**81.4%**
1986	21,500	4,324	7,236	11,560	7,091	58%	0.26	0	0.877	0.000	0.225	0.225	**77.5%**
1987	16,735	1,484	5,663	7,147	5,309	61%	0.27	0	0.639	0.000	0.171	0.171	**82.9%**
1988	25,534	4,324	7,092	11,416	8,600	25%	0.25	0	0.869	0.000	0.217	0.217	**78.3%**
1989	12,490	4,324	4,849	9,173	3,721	66%	0.28	0	0.748	0.000	0.212	0.212	**78.8%**
1990	21,338	2,868	7,051	9,919	7,030	58%	0.26	0	0.789	0.000	0.202	0.202	**79.8%**
1991	6,847	1,787	1,668	3,455	1,611	78%	0.33	0	0.439	0.000	0.146	0.146	**85.4%**
1992	12,133	4,346	4,759	9,105	3,588	66%	0.29	0	0.745	0.000	0.213	0.213	**78.7%**

Formulas: Sacramento River Spring Smolt Yearling Survival Model

```
C10 ='Study 622a Flow Data'!B7
D10 ='Study 622a Flow Data'!L7
E10 ='Study 622a Flow Data'!V7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
J10 =IF(-2.45925+(0.0420748*$T$1)>0,-2.45925+(0.0420748*$T$1),0)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =IF(-1.613493+(0.0319584*$T$1)>0,-1.613493+(0.0319584*$T$1),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10
```

```
Q10 ='Study 622a Flow Data'!C7
R10 ='Study 622a Flow Data'!M7
S10 ='Study 622a Flow Data'!W7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
Z10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10
```

```
AE10 ='Study 622a Flow Data'!D7
AF10 ='Study 622a Flow Data'!N7
AG10 ='Study 622a Flow Data'!X7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AN10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
```

Study 622a Sacramento River Spring Run Yearling Survival Model (continued)

February Water Temp 50 F
March Water Temp 55 F

Cross Channel Closed Over 25000 cfs
Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

Row	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BU
6	FEBRUARY				Calculated									MARCH				Calculated									
7	Sac				Sutter &								Calculated	Sac				Sutter &								Calculated	Weighted
8	River	CVP	SWP	CVP + SWP	Steamboat		X-Channel		Calculated Mortality				Survivability	River			CVP + SWP	Steamboat		X-Channel		Calculated Mortality				Survivability	Total
9	Flow	Flow	Flow	Exports	Slough Q	Percent	Closed	m1	m2	m3	m23	m123	s123	Flow	CVP	SWP	exports	Slough Q	percent	Closed	m1	m2	m3	m23	m123	s123	Survival
10	34,571	4,348	6,300	10,648	11,980	24%	0.24	0	0.882	0.000	0.212	0.212	78.8%	31,551	3,872	4,143	8,015	10,850	24%	0.24	0	0.829	0.144	0.311	0.311	68.9%	56.7%
11	24,164	4,381	2,380	6,761	8,087	57%	0.25	0	0.672	0.000	0.169	0.169	83.1%	17,939	4,321	3,368	7,689	5,759	60%	0.26	0	0.812	0.144	0.320	0.320	68.0%	65.8%
12	16,898	4,321	4,868	9,189	5,370	61%	0.27	0	0.803	0.000	0.214	0.214	78.6%	12,718	1,736	2,275	4,011	3,807	65%	0.28	0	0.613	0.144	0.277	0.277	72.3%	60.6%
13	44,709	4,378	7,584	11,962	15,771	23%	0.23	0	0.953	0.000	0.223	0.223	77.7%	19,142	4,264	3,964	8,228	6,209	60%	0.26	0	0.841	0.144	0.326	0.326	67.4%	61.2%
14	36,714	4,332	7,299	11,631	12,781	24%	0.24	0	0.935	0.000	0.223	0.223	77.7%	19,175	4,321	3,416	7,737	6,221	60%	0.26	0	0.814	0.144	0.319	0.319	68.1%	59.9%
15	85,852	3,228	8,271	11,499	31,159	22%	0.22	0	0.928	0.000	0.208	0.208	79.2%	43,863	3,210	4,155	7,365	15,455	23%	0.23	0	0.794	0.144	0.297	0.297	70.3%	55.9%
16	25,695	4,354	4,377	8,731	8,660	25%	0.25	0	0.778	0.000	0.194	0.194	80.6%	86,229	4,321	4,424	8,745	31,300	22%	0.22	0	0.869	0.144	0.306	0.306	69.4%	59.0%
17	18,528	4,333	4,152	8,485	5,980	60%	0.26	0	0.765	0.000	0.201	0.201	79.9%	14,491	3,395	2,782	6,177	4,470	63%	0.28	0	0.730	0.144	0.305	0.305	69.5%	55.7%
18	15,863	3,157	3,872	7,029	4,983	62%	0.27	0	0.686	0.000	0.185	0.185	81.5%	30,608	3,121	4,690	7,811	10,497	24%	0.24	0	0.818	0.144	0.308	0.308	69.2%	61.2%
19	11,092	3,347	1,819	5,166	3,198	68%	0.29	0	0.586	0.000	0.171	0.171	82.9%	9,205	2,075	1,918	3,993	2,493	71%	0.31	0	0.612	0.144	0.287	0.287	71.3%	64.6%
20	13,995	4,397	5,643	10,040	4,284	64%	0.28	0	0.849	0.000	0.235	0.235	76.5%	10,506	1,142	2,714	3,856	2,979	69%	0.30	0	0.605	0.144	0.280	0.280	72.0%	62.1%
21	11,524	3,872	2,600	6,472	3,360	67%	0.29	0	0.656	0.000	0.190	0.190	81.0%	10,392	425	4,403	4,828	2,937	69%	0.30	0	0.657	0.144	0.296	0.296	70.4%	65.0%
22	12,748	1,518	4,510	6,028	3,818	65%	0.28	0	0.632	0.000	0.179	0.179	82.1%	14,165	2,338	1,765	4,103	4,348	64%	0.28	0	0.618	0.144	0.275	0.275	72.5%	64.2%
23	12,406	1,282	3,952	5,234	3,690	66%	0.28	0	0.589	0.000	0.168	0.168	83.2%	24,916	4,321	6,987	11,308	8,368	57%	0.25	0	1.007	0.144	0.360	0.360	64.0%	62.7%
24	48,348	4,244	8,500	12,744	17,132	23%	0.23	0	0.995	0.000	0.231	0.231	76.9%	33,942	3,237	5,141	8,378	11,744	24%	0.24	0	0.849	0.144	0.314	0.314	68.6%	58.9%
25	33,203	4,329	4,288	8,617	11,468	24%	0.24	0	0.772	0.000	0.186	0.186	81.4%	38,203	4,321	4,024	8,345	13,338	24%	0.24	0	0.847	0.144	0.311	0.311	68.9%	58.2%
26	82,359	4,368	3,939	8,307	29,852	22%	0.22	0	0.755	0.000	0.170	0.170	83.0%	78,634	4,321	3,966	8,287	28,459	22%	0.22	0	0.844	0.144	0.302	0.302	69.8%	65.6%
27	19,032	1,837	3,955	5,792	6,168	60%	0.26	0	0.620	0.000	0.162	0.162	83.8%	16,394	2,760	3,985	6,745	5,181	61%	0.27	0	0.761	0.144	0.310	0.310	69.0%	62.0%
28	42,906	4,339	8,465	12,804	15,097	24%	0.24	0	0.998	0.000	0.235	0.235	76.5%	59,589	4,321	4,648	8,969	21,336	23%	0.23	0	0.881	0.144	0.313	0.313	68.7%	65.8%
29	75,031	4,393	6,719	11,112	27,112	23%	0.23	0	0.907	0.000	0.205	0.205	79.5%	58,581	4,151	3,846	7,997	20,959	23%	0.23	0	0.828	0.144	0.301	0.301	69.9%	63.3%
30	78,344	4,380	3,955	8,335	28,351	23%	0.23	0	0.757	0.000	0.170	0.170	83.0%	27,095	4,321	4,007	8,328	9,183	25%	0.25	0	0.846	0.144	0.318	0.318	68.2%	67.5%
31	52,253	4,375	4,005	8,380	18,593	23%	0.23	0	0.759	0.000	0.175	0.175	82.5%	64,598	4,321	4,056	8,377	23,210	23%	0.23	0	0.849	0.144	0.305	0.305	69.5%	67.4%
32	30,215	4,340	3,958	8,298	10,350	24%	0.24	0	0.755	0.000	0.184	0.184	81.6%	25,094	4,321	4,007	8,328	8,435	25%	0.25	0	0.846	0.144	0.320	0.320	68.0%	55.2%
33	40,495	4,339	3,998	8,337	14,195	24%	0.24	0	0.757	0.000	0.179	0.179	82.1%	27,030	4,321	4,149	8,470	9,159	25%	0.25	0	0.854	0.144	0.320	0.320	68.0%	54.7%
34	24,812	4,377	3,612	7,989	8,330	57%	0.25	0	0.738	0.000	0.185	0.185	81.5%	23,533	4,321	4,424	8,745	7,851	57%	0.25	0	0.869	0.144	0.327	0.327	67.3%	65.2%
35	21,571	4,342	4,026	8,368	7,118	58%	0.26	0	0.759	0.000	0.194	0.194	80.6%	22,509	4,275	4,005	8,280	7,468	58%	0.25	0	0.844	0.144	0.322	0.322	67.8%	55.0%
36	15,577	4,331	1,775	6,106	4,876	62%	0.27	0	0.637	0.000	0.173	0.173	82.7%	19,191	4,321	3,455	7,776	6,227	59%	0.26	0	0.817	0.144	0.320	0.320	68.0%	63.1%
37	16,223	4,342	4,200	8,542	5,118	62%	0.27	0	0.768	0.000	0.207	0.207	79.3%	41,748	2,794	7,123	9,917	14,664	24%	0.24	0	0.932	0.144	0.330	0.330	67.0%	55.1%
38	35,580	4,345	7,539	11,884	12,357	24%	0.24	0	0.949	0.000	0.227	0.227	77.3%	22,655	4,321	4,669	8,990	7,523	58%	0.25	0	0.882	0.144	0.332	0.332	66.8%	60.7%
39	60,572	4,381	4,675	9,056	21,704	23%	0.23	0	0.796	0.000	0.182	0.182	81.8%	29,827	4,072	4,699	8,771	10,205	24%	0.24	0	0.870	0.144	0.322	0.322	67.8%	76.4%
40	62,499	4,392	3,909	8,301	22,425	23%	0.23	0	0.755	0.000	0.172	0.172	82.8%	57,524	4,321	3,934	8,255	20,564	23%	0.23	0	0.842	0.144	0.304	0.304	69.6%	64.0%
41	28,341	4,381	4,060	8,441	9,650	25%	0.25	0	0.763	0.000	0.188	0.188	81.2%	24,899	3,482	4,111	7,593	8,362	57%	0.25	0	0.807	0.144	0.310	0.310	69.0%	69.5%
42	57,151	4,370	4,636	9,006	20,424	23%	0.23	0	0.793	0.000	0.182	0.182	81.8%	49,538	4,321	4,685	9,006	17,577	23%	0.23	0	0.883	0.144	0.316	0.316	68.4%	60.0%
43	16,295	4,356	3,352	7,708	5,144	62%	0.27	0	0.723	0.000	0.194	0.194	80.6%	17,906	4,321	2,951	7,272	5,747	60%	0.26	0	0.789	0.144	0.315	0.315	68.5%	64.1%
44	61,543	4,382	4,675	9,057	22,067	23%	0.23	0	0.796	0.000	0.182	0.182	81.8%	36,674	4,201	4,699	8,900	12,766	24%	0.24	0	0.877	0.144	0.319	0.319	68.1%	66.1%
45	33,149	4,343	4,638	8,981	11,448	24%	0.24	0	0.792	0.000	0.191	0.191	80.9%	44,383	4,321	4,381	8,702	15,649	23%	0.23	0	0.867	0.144	0.313	0.313	68.7%	56.3%
46	62,661	4,354	4,045	8,399	22,485	23%	0.23	0	0.760	0.000	0.173	0.173	82.7%	93,612	3,928	4,057	7,985	34,061	22%	0.22	0	0.828	0.144	0.297	0.297	70.3%	58.3%
47	50,075	4,356	4,060	8,416	17,778	23%	0.23	0	0.761	0.000	0.177	0.177	82.3%	22,948	4,005	3,121	7,126	7,632	58%	0.25	0	0.781	0.144	0.306	0.306	69.4%	62.3%
48	25,852	4,330	7,356	11,686	8,718	25%	0.25	0	0.938	0.000	0.234	0.234	76.6%	22,086	3,763	4,064	7,827	7,310	58%	0.25	0	0.819	0.144	0.316	0.316	68.4%	61.3%
49	32,843	4,346	7,116	11,462	11,333	24%	0.24	0	0.926	0.000	0.224	0.224	77.6%	20,947	3,534	4,064	7,598	6,884	59%	0.26	0	0.807	0.144	0.315	0.315	68.5%	55.6%
50	44,313	4,337	8,346	12,683	15,623	23%	0.23	0	0.992	0.000	0.232	0.232	76.8%	27,648	4,321	3,503	7,824	9,390	25%	0.25	0	0.819	0.144	0.311	0.311	68.9%	59.9%
51	58,231	4,380	7,779	12,159	20,828	23%	0.23	0	0.963	0.000	0.221	0.221	77.9%	32,641	4,321	4,931	9,252	11,258	24%	0.24	0	0.896	0.144	0.326	0.326	67.4%	64.0%
52	19,176	4,376	3,572	7,948	6,222	60%	0.26	0	0.736	0.000	0.192	0.192	80.8%	15,564	3,002	3,348	6,350	4,871	62%	0.27	0	0.740	0.144	0.306	0.306	69.4%	69.5%
53	33,077	4,353	6,834	11,187	11,421	24%	0.24	0	0.911	0.000	0.220	0.220	78.0%	21,175	4,321	4,277	8,598	6,969	58%	0.26	0	0.861	0.144	0.328	0.328	67.2%	63.0%
54	26,775	4,380	4,377	8,757	9,064	25%	0.25	0	0.780	0.000	0.193	0.193	80.7%	28,689	4,321	4,424	8,745	9,780	25%	0.25	0	0.869	0.144	0.322	0.322	67.8%	69.6%
55	43,106	4,393	3,201	7,594	15,172	23%	0.23	0	0.717	0.000	0.168	0.168	83.2%	54,483	4,321	3,283	7,604	19,426	23%	0.23	0	0.807	0.144	0.297	0.297	70.3%	63.7%
56	54,520	2,347	4,060	6,407	19,440	23%	0.23	0	0.653	0.000	0.150	0.150	85.0%	36,788	3,084	4,111	7,195	12,809	24%	0.24	0	0.785	0.144	0.297	0.297	70.3%	63.1%
57	67,486	4,393	3,171	7,564	24,290	23%	0.23	0	0.715	0.000	0.162	0.162	83.8%	45,326	4,164	3,251	7,415	16,002	23%	0.23	0	0.797	0.144	0.297	0.297	70.3%	57.2%
58	57,565	1,312	4,060	5,372	20,579	23%	0.23	0	0.597	0.000	0.137	0.137	86.3%	35,812	3,202	4,111	7,313	12,444	24%	0.24	0	0.792	0.144	0.299	0.299	70.1%	70.3%
59	28,810	4,392	4,624	9,016	9,825	25%	0.25	0	0.794	0.000	0.195	0.195	80.5%	51,262	4,321	4,699	9,020	18,222	23%	0.23	0	0.884	0.144	0.315	0.315	68.5%	65.8%
60	24,217	3,642	4,638	8,280	8,107	57%	0.25	0	0.754	0.000	0.190	0.190	81.0%	32,933	3,095	4,355	7,450	11,367	24%	0.24	0	0.799	0.144	0.302	0.302	69.8%	56.5%
61	70,961	4,362	4,423	8,785	25,590	23%	0.23	0	0.781	0.000	0.177	0.177	82.3%	47,554	4,321	4,452	8,773	16,835	23%	0.23	0	0.870	0.144	0.313	0.313	68.7%	64.8%
62	41,918	4,367	4,377	8,744	14,727	24%	0.24	0	0.779	0.000	0.183	0.183	81.7%	100,199	4,321	4,424	8,745	36,524	22%	0.22	0	0.869	0.144	0.305	0.305	69.5%	77.3%
63	58,807	4,346	4,636	8,982	21,044	23%	0.23	0	0.792	0.000	0.181	0.181	81.9%	75,999	4,321	4,685	9,006	27,474	23%	0.23	0	0.883	0.144	0.311	0.311	68.9%	59.5%
64	19,523	4,336	4,237	8,573	6,352	59%	0.26	0	0.770	0.000	0.200	0.200	80.0%	19,988	4,417	3,656	8,073	6,525	59%	0.26	0	0.833	0.144	0.323	0.323	67.7%	58.1%
65	12,154	872	1,415	2,287	3,596	66%	0.29	0	0.430	0.000	0.123	0.123	87.7%	7,579	1,023	1,286	2,309	1,884	76%	0.32	0	0.521	0.144	0.266	0.266	73.4%	64.5%
66	51,173	1,911	7,923	9,834	18,189	23%	0.23	0	0.838	0.000	0.194	0.194	80.6%	46,676	2,211	3,905	6,116	16,507	23%	0.23	0	0.727	0.144	0.280	0.280	72.0%	61.6%
67	42,044	4,342	3,955	8,297	14,774	24%	0.24	0	0.755	0.000	0.178	0.178	82.2%	32,592	4,321	4,007	8,328	11,239	24%	0.24	0	0.846	0.144	0.314	0.314	68.6%	58.5%
68	69,453	4,351	3,768	8,119	25,026	23%	0.23	0	0.745	0.000	0.169	0.169	83.1%	36,479	2,288	3,344	5,632	12,693	24%	0.24	0	0.701	0.144	0.277	0.277	72.3%	57.4%
69	29,674	3,190	4,062	7,252	10,148	24%	0.24	0	0.698	0.000	0.171	0.171	82.9%	32,494	3,083	4,111	7,194	11,203	24%	0.24	0	0.785	0.144	0.299	0.299	70.1%	59.6%
70	65,650	4,381	4,620	9,001	23,603	23%	0.23	0	0.793	0.000	0.180	0.180	82.0%	69,087	4,321	4,644	8,965	24,889	23%	0.23	0	0.881	0.144	0.311	0.311	68.9%	76.4%
71	82,917	3,534	2,793	6,327	30,061	22%	0.22	0	0.648	0.000	0.145	0.145	85.5%	81,935	2,138	2,628	4,766	29,694	22%	0.22	0	0.654	0.144	0.259	0.259	74.1%	78.9%
72	36,004	1,594	3,847	5,441	12,516	24%	0.24	0	0.601	0.000	0.144	0.144	85.6%	36,495	3,185	4,007	7,192	12,699	24%	0.24	0	0.785	0.144	0.297	0.297	70.3%	82.8%
73	18,978	4,351	4,636	8,987	6,148	60%	0.26	0	0.792	0.000	0.207	0.207	79.3%	20,833	4,321	4,265	8,586	6,842	59%	0.26	0	0.860	0.144	0.328	0.328	67.2%	71.6%
74	96,764	4,344	7,635	11,979	35,240	22%	0.22	0	0.954	0.000	0.212	0.212	78.8%	72,535	4,275	4,180	8,455	26,178	23%	0.23	0	0.853	0.144	0.304	0.304	69.6%	58.2%
75	23,030	1,359	4,219	5,578	7,663	58%	0.25	0	0.608	0.000	0.154	0.154	84.6%	30,022	2,439	4,136	6,575	10,278	24%	0.24	0	0.752	0.144	0.293	0.293	70.7%	58.2%
76	17,281	4,251	2,700	6,951	5,513	61%	0.27	0	0.682	0.000	0.181	0.181	81.9%	11,124	2,155	1,860	4,015	3,210	68%	0.29	0	0.613	0.144	0.281	0.281	71.9%	60.7%
77	12,460	1,055	1,790	2,845	3,710	66%	0.28	0	0.460	0.000	0.131	0.131	86.9%	41,667	4,321	6,961	11,282	14,633	24%	0.24	0	1.006	0.144	0.347	0.347	65.3%	62.1%
78	16,692	1,317	6,471	7,788	5,293	61%	0.27	0	0.727	0.000	0.195	0.195	80.5%	14,588	2,405	3,566	5,971	4,506	63%	0.27	0	0.719	0.144	0.302	0.302	69.8%	58.9%
79	10,443	553	111	664	2,956	69%	0.30	0	0.343	0.000	0.102	0.102	89.8%	29,681	4,417	7,081	11,498	10,151	24%	0.24	0	1.018	0.144	0.358	0.358	64.2%	66.6%
80	31,415	1,257	7,456	8,713	10,799	24%	0.24	0	0.777	0.000	0.189	0.189	81.1%	20,102	2,173	6,261	8,434	6,568	59%	0.26	0	0.852	0.144	0.327	0.327	67.3%	65.2%
81																										AVERAGE:	62.96%

AS10 ='Study 622a Flow Data'!E7
AT10 ='Study 622a Flow Data'!O7
AU10 ='Study 622a Flow Data'!Y7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$K$4,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
BA10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
BB10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =AZ10+BC10-(AZ10*BC10)
BE10 =1-BD10

BG10 ='Study 622a Flow Data'!F7
BH10 ='Study 622a Flow Data'!P7
BI10 ='Study 622a Flow Data'!Z7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$K$4,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BO10 =(-0.5916024)+(0.017968*$BC$3)+(0.000054*BJ10)
BP10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)
BQ10 =(BO10*BM10)+(BP10*(1-BM10))
BR10 =BN10+BQ10-(BN10*BQ10)
BS10 =1-BR10
BU10 =(O10*0.37)+(AC10*0.42)+(AQ10*0.13)+(BE10*0.05)+(BS10*0.03)

D1485 Sacramento River Spring Run YOY Smolt Survival Model

(Modifies m2 by changing the slope to 0.0000434)

Cross Channel Closed above 25,000 cfs

Cross Channel closed when DOI is greater than 12,000 cfs in January to April

December Sac River Temperature: 47 degrees F

January Sac River Temperature: 47 degrees F

February Sac River Temperature: 50 degrees F

March Sac River Temperature: 55 degrees F

Temperatures for April, May and June are based on limited historical data from USBR

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DECEMBER

Year	WY Type	Sac River Flows	CVP+SWP exports	Steamboat Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	A	17,142	11,319	5,461	61%	0.27	0	0.74	0.00	0.45	0.45	**54.7%**
1923	B	34,202	11,303	11,842	24%	0.24	0	0.74	0.00	0.18	0.18	**82.1%**
1924	C	15,353	11,157	4,792	62%	0.27	0	0.74	0.00	0.46	0.46	**54.0%**
1925	D	11,271	8,506	3,265	67%	0.29	0	0.62	0.00	0.42	0.42	**58.1%**
1926	D	10,620	7,026	3,022	68%	0.30	0	0.56	0.00	0.38	0.38	**61.8%**
1927	W	15,841	11,254	4,974	62%	0.27	0	0.74	0.00	0.46	0.46	**54.1%**
1928	A	16,572	11,287	5,248	61%	0.27	0	0.74	0.00	0.46	0.46	**54.4%**
1929	C	13,954	11,140	4,269	64%	0.28	0	0.74	0.00	0.47	0.47	**53.0%**
1930	D	14,767	10,994	4,573	63%	0.27	0	0.73	0.00	0.46	0.46	**54.0%**
1931	C	11,449	6,489	3,332	67%	0.29	0	0.53	0.00	0.36	0.36	**64.1%**
1932	D	14,653	11,401	4,530	63%	0.27	0	0.75	0.00	0.47	0.47	**52.9%**
1933	C	9,904	5,399	2,754	70%	0.30	0	0.49	0.00	0.34	0.34	**66.0%**
1934	C	12,474	9,319	3,715	66%	0.28	0	0.66	0.00	0.43	0.43	**56.9%**
1935	B	8,522	4,895	2,237	73%	0.31	0	0.47	0.00	0.34	0.34	**66.0%**
1936	B	14,767	11,157	4,573	63%	0.27	0	0.74	0.00	0.46	0.46	**53.6%**
1937	B	14,052	11,206	4,305	64%	0.28	0	0.74	0.00	0.47	0.47	**52.9%**
1938	W	51,246	11,742	18,216	23%	0.23	0	0.76	0.00	0.18	0.18	**82.4%**
1939	D	18,687	8,750	6,039	60%	0.26	0	0.63	0.00	0.38	0.38	**62.2%**
1940	A	9,579	5,090	2,633	70%	0.30	0	0.47	0.00	0.33	0.33	**66.6%**
1941	W	32,413	11,563	11,172	24%	0.24	0	0.75	0.00	0.18	0.18	**81.7%**
1942	W	65,623	9,368	23,593	23%	0.23	0	0.66	0.00	0.15	0.15	**85.0%**
1943	W	28,803	10,035	9,822	25%	0.25	0	0.69	0.00	0.17	0.17	**83.1%**
1944	D	13,775	10,474	4,202	64%	0.28	0	0.71	0.00	0.45	0.45	**54.7%**
1945	B	17,272	11,173	5,510	61%	0.27	0	0.74	0.00	0.45	0.45	**55.1%**
1946	B	56,109	11,807	20,035	23%	0.23	0	0.77	0.00	0.18	0.18	**82.4%**
1947	D	17,630	11,352	5,643	61%	0.26	0	0.75	0.00	0.45	0.45	**54.9%**
1948	B	12,149	7,335	3,594	66%	0.29	0	0.57	0.00	0.38	0.38	**62.3%**
1949	D	15,564	11,140	4,871	62%	0.27	0	0.74	0.00	0.46	0.46	**54.2%**
1950	B	12,263	7,644	3,636	66%	0.29	0	0.58	0.00	0.39	0.39	**61.5%**
1951	A	66,631	11,807	23,970	23%	0.23	0	0.77	0.00	0.17	0.17	**82.6%**
1952	W	51,962	11,319	18,484	23%	0.23	0	0.74	0.00	0.17	0.17	**82.8%**
1953	W	42,334	7,953	14,883	24%	0.24	0	0.60	0.00	0.14	0.14	**85.9%**
1954	A	14,914	11,092	4,628	63%	0.27	0	0.73	0.00	0.46	0.46	**53.9%**
1955	D	25,517	11,140	8,593	25%	0.25	0	0.74	0.00	0.18	0.18	**81.6%**
1956	W	32,933	11,807	11,367	24%	0.24	0	0.77	0.00	0.18	0.18	**81.5%**
1957	A	14,149	11,238	4,342	64%	0.28	0	0.74	0.00	0.47	0.47	**52.9%**
1958	W	23,745	11,140	7,930	57%	0.25	0	0.74	0.00	0.42	0.42	**57.9%**
1959	B	14,621	9,937	4,518	63%	0.27	0	0.68	0.00	0.43	0.43	**56.8%**
1960	D	11,856	7,010	3,484	66%	0.29	0	0.56	0.00	0.37	0.37	**63.0%**
1961	D	19,711	11,124	6,422	59%	0.26	0	0.74	0.00	0.44	0.44	**56.5%**
1962	B	18,004	11,124	5,783	60%	0.26	0	0.74	0.00	0.44	0.44	**55.7%**
1963	W	28,054	11,140	9,542	25%	0.25	0	0.74	0.00	0.18	0.18	**81.9%**
1964	D	14,849	11,206	4,603	63%	0.27	0	0.74	0.00	0.46	0.46	**53.5%**
1965	W	27,371	11,677	9,287	25%	0.25	0	0.76	0.00	0.19	0.19	**81.2%**
1966	B	16,995	11,726	5,406	61%	0.27	0	0.76	0.00	0.46	0.46	**53.5%**
1967	W	39,699	11,336	13,897	24%	0.24	0	0.74	0.00	0.18	0.18	**82.4%**
1968	B	16,686	7,953	5,291	61%	0.27	0	0.60	0.00	0.37	0.37	**63.4%**
1969	W	27,144	11,189	9,202	25%	0.25	0	0.74	0.00	0.18	0.18	**81.7%**
1970	W	50,156	7,693	17,809	23%	0.23	0	0.59	0.00	0.14	0.14	**86.4%**
1971	W	57,101	11,254	20,406	23%	0.23	0	0.74	0.00	0.17	0.17	**83.0%**
1972	B	22,053	11,157	7,298	58%	0.25	0	0.74	0.00	0.43	0.43	**57.3%**
1973	A	26,753	11,140	9,056	25%	0.25	0	0.74	0.00	0.18	0.18	**81.7%**
1974	W	61,590	11,384	22,085	23%	0.23	0	0.75	0.00	0.17	0.17	**82.9%**
1975	W	17,613	11,303	5,637	61%	0.26	0	0.74	0.00	0.45	0.45	**55.0%**
1976	C	16,768	11,206	5,321	61%	0.27	0	0.74	0.00	0.45	0.45	**54.8%**
1977	C	9,205	5,058	2,493	71%	0.31	0	0.47	0.00	0.34	0.34	**66.3%**
1978	A	12,295	9,660	3,648	66%	0.28	0	0.67	0.00	0.44	0.44	**55.7%**
1979	B	12,751	9,758	3,819	65%	0.28	0	0.68	0.00	0.44	0.44	**55.9%**
1980	A	21,842	11,206	7,219	58%	0.26	0	0.74	0.00	0.43	0.43	**57.1%**
1981	D	15,613	9,254	4,889	62%	0.27	0	0.65	0.00	0.41	0.41	**59.3%**
1982	W	68,599	11,238	24,706	23%	0.23	0	0.74	0.00	0.17	0.17	**83.2%**
1983	W	55,410	11,807	19,773	23%	0.23	0	0.77	0.00	0.18	0.18	**82.4%**
1984	W	82,944	7,319	30,071	22%	0.22	0	0.57	0.00	0.13	0.13	**87.2%**
1985	D	23,875	11,173	7,979	57%	0.25	0	0.74	0.00	0.42	0.42	**57.8%**
1986	W	16,166	11,157	5,096	62%	0.27	0	0.74	0.00	0.45	0.45	**54.5%**
1987	D	12,864	9,384	3,861	65%	0.28	0	0.66	0.00	0.43	0.43	**57.0%**
1988	C	16,345	11,124	5,163	62%	0.27	0	0.74	0.00	0.45	0.45	**54.7%**
1989	D	10,083	6,017	2,821	69%	0.30	0	0.51	0.00	0.36	0.36	**64.3%**
1990	C	16,117	11,124	5,078	62%	0.27	0	0.74	0.00	0.45	0.45	**54.6%**
1991	C	10,360	5,578	2,925	69%	0.30	0	0.49	0.00	0.34	0.34	**65.9%**
1992	C	8,164	4,440	2,103	74%	0.32	0	0.45	0.00	0.33	0.33	**67.0%**

JANUARY

Year	WY Type	Sac River Flow	Total Delta Outflow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	A	17,499	11,401	11,791	5,595	61%	0.27	0	0.76	0.00	0.46	0.46	**54%**
1923	B	32,283	33,356	7,855	11,124	24%	0.24	0	0.59	0.00	0.14	0.14	**86%**
1924	C	18,036	9,726	10,522	5,796	60%	0.26	0	0.71	0.00	0.43	0.43	**57%**
1925	D	10,213	9,758	3,171	2,870	69%	0.30	0	0.39	0.00	0.27	0.27	**73%**
1926	D	18,085	9,986	10,848	5,814	60%	0.26	0	0.72	0.00	0.44	0.44	**56%**
1927	W	30,608	23,810	11,498	10,497	24%	0.24	0	0.75	0.00	0.18	0.18	**82%**
1928	A	25,208	21,533	7,855	8,478	25%	0.25	0	0.59	0.00	0.15	0.15	**85%**
1929	C	15,776	9,400	8,701	4,950	62%	0.27	0	0.63	0.00	0.39	0.39	**61%**
1930	D	21,077	13,694	11,368	6,933	58%	0.26	0	0.75	0.00	0.19	0.19	**81%**
1931	C	13,775	9,726	6,928	4,202	64%	0.28	0	0.55	0.00	0.35	0.35	**65%**
1932	D	17,256	11,075	12,035	5,504	61%	0.27	0	0.78	0.00	0.47	0.47	**53%**
1933	C	13,905	9,726	8,002	4,251	64%	0.28	0	0.60	0.00	0.38	0.38	**62%**
1934	C	16,101	10,002	9,693	5,072	62%	0.27	0	0.67	0.00	0.42	0.42	**58%**
1935	B	25,469	21,760	11,872	8,575	25%	0.25	0	0.77	0.00	0.19	0.19	**81%**
1936	B	32,966	27,599	11,661	11,379	24%	0.24	0	0.76	0.00	0.18	0.18	**82%**
1937	B	15,223	9,953	9,904	4,743	63%	0.27	0	0.68	0.00	0.43	0.43	**57%**
1938	W	31,437	31,275	11,108	10,808	24%	0.24	0	0.73	0.00	0.18	0.18	**82%**
1939	D	18,410	14,312	7,481	5,935	60%	0.26	0	0.58	0.00	0.15	0.15	**85%**
1940	A	23,696	21,386	12,230	7,912	57%	0.25	0	0.78	0.00	0.20	0.20	**80%**
1941	W	73,885	103,387	12,393	26,683	23%	0.23	0	0.79	0.00	0.18	0.18	**82%**
1942	W	63,265	86,700	7,481	22,711	23%	0.23	0	0.58	0.00	0.13	0.13	**87%**
1943	W	58,060	88,506	7,546	20,765	23%	0.23	0	0.58	0.00	0.13	0.13	**87%**
1944	D	17,678	11,384	9,530	5,662	60%	0.26	0	0.67	0.00	0.40	0.40	**60%**
1945	B	13,856	5,107	11,466	4,232	64%	0.28	0	0.75	0.00	0.48	0.48	**52%**
1946	B	43,228	51,132	9,937	15,217	23%	0.23	0	0.68	0.00	0.16	0.16	**84%**
1947	D	14,474	5,595	11,628	4,463	63%	0.28	0	0.76	0.00	0.48	0.48	**52%**
1948	B	16,312	9,742	8,294	5,151	62%	0.27	0	0.61	0.00	0.38	0.38	**62%**
1949	D	15,906	7,042	11,352	4,999	62%	0.27	0	0.75	0.00	0.46	0.46	**54%**
1950	B	22,183	15,141	11,401	7,347	58%	0.25	0	0.75	0.00	0.19	0.19	**81%**
1951	A	62,208	72,681	12,279	22,316	23%	0.23	0	0.79	0.00	0.18	0.18	**82%**
1952	W	67,347	91,173	12,718	24,238	23%	0.23	0	0.80	0.00	0.18	0.18	**82%**
1953	W	64,078	100,492	7,546	23,015	23%	0.23	0	0.58	0.00	0.13	0.13	**87%**
1954	A	33,421	27,908	8,083	11,550	24%	0.24	0	0.60	0.00	0.15	0.15	**85%**
1955	D	22,004	16,426	11,401	7,280	58%	0.26	0	0.75	0.00	0.19	0.19	**81%**
1956	W	84,716	174,458	12,718	30,734	22%	0.22	0	0.80	0.00	0.18	0.18	**82%**
1957	A	18,638	9,791	11,580	6,021	60%	0.26	0	0.76	0.00	0.45	0.45	**55%**
1958	W	43,179	36,967	11,433	15,199	23%	0.23	0	0.75	0.00	0.18	0.18	**82%**
1959	B	35,162	31,486	7,563	12,200	24%	0.24	0	0.58	0.00	0.14	0.14	**86%**
1960	D	15,776	9,742	8,555	4,950	62%	0.27	0	0.62	0.00	0.39	0.39	**61%**
1961	D	15,255	7,676	11,352	4,755	62%	0.27	0	0.75	0.00	0.47	0.47	**53%**
1962	B	13,710	4,050	11,336	4,178	64%	0.28	0	0.74	0.00	0.48	0.48	**52%**
1963	W	18,313	11,092	11,466	5,899	60%	0.26	0	0.75	0.00	0.45	0.45	**55%**
1964	D	27,046	21,256	10,766	9,165	25%	0.25	0	0.72	0.00	0.18	0.18	**82%**
1965	W	81,236	120,528	12,718	29,432	22%	0.22	0	0.80	0.00	0.18	0.18	**82%**
1966	B	29,632	26,184	11,742	10,132	24%	0.24	0	0.76	0.00	0.19	0.19	**81%**
1967	W	36,837	49,555	11,889	12,827	24%	0.24	0	0.77	0.00	0.18	0.18	**82%**
1968	B	30,640	28,006	7,546	10,509	24%	0.24	0	0.58	0.00	0.14	0.14	**86%**
1969	W	71,868	125,944	12,718	25,929	23%	0.23	0	0.80	0.00	0.18	0.18	**82%**
1970	W	92,669	208,107	7,546	33,708	22%	0.22	0	0.58	0.00	0.13	0.13	**87%**
1971	W	47,538	46,286	11,677	16,829	23%	0.23	0	0.76	0.00	0.18	0.18	**82%**
1972	B	20,394	11,206	11,384	6,677	59%	0.26	0	0.75	0.00	0.44	0.44	**56%**
1973	A	48,400	75,283	11,775	17,152	23%	0.23	0	0.76	0.00	0.18	0.18	**82%**
1974	W	78,422	129,977	12,555	28,380	22%	0.22	0	0.80	0.00	0.18	0.18	**82%**
1975	W	18,670	11,840	9,969	6,033	60%	0.26	0	0.69	0.00	0.41	0.41	**59%**
1976	C	16,768	7,253	11,498	5,321	61%	0.27	0	0.75	0.00	0.46	0.46	**54%**
1977	C	10,701	10,181	2,131	3,052	68%	0.29	0	0.35	0.00	0.24	0.24	**76%**
1978	A	47,668	61,378	11,986	16,878	23%	0.23	0	0.77	0.00	0.18	0.18	**82%**
1979	B	27,241	28,201	7,481	9,238	25%	0.25	0	0.58	0.00	0.14	0.14	**86%**
1980	A	69,884	118,382	9,563	25,187	23%	0.23	0	0.67	0.00	0.15	0.15	**85%**
1981	D	28,185	25,615	7,563	9,591	25%	0.25	0	0.58	0.00	0.14	0.14	**86%**
1982	W	51,165	79,366	12,718	18,186	23%	0.23	0	0.80	0.00	0.19	0.19	**81%**
1983	W	59,150	106,997	10,132	21,172	23%	0.23	0	0.69	0.00	0.16	0.16	**84%**
1984	W	47,359	76,422	4,505	16,762	23%	0.23	0	0.45	0.00	0.10	0.10	**90%**
1985	D	17,646	12,019	8,083	5,650	61%	0.26	0	0.60	0.00	0.16	0.16	**84%**
1986	W	21,712	14,670	11,563	7,170	58%	0.26	0	0.75	0.00	0.19	0.19	**81%**
1987	D	16,735	10,132	8,620	5,309	61%	0.27	0	0.63	0.00	0.38	0.38	**62%**
1988	C	26,022	19,240	11,336	8,782	25%	0.25	0	0.74	0.00	0.19	0.19	**81%**
1989	D	12,994	9,937	4,749	3,910	65%	0.28	0	0.46	0.00	0.30	0.30	**70%**
1990	C	22,395	14,865	9,888	7,426	58%	0.25	0	0.68	0.00	0.17	0.17	**83%**
1991	C	10,653	9,937	1,968	3,034	68%	0.29	0	0.34	0.00	0.23	0.23	**77%**
1992	C	12,149	10,295	3,773	3,594	66%	0.29	0	0.42	0.00	0.28	0.28	**72%**

FEBRUARY

Year	WY Type	Sac River Flows	Total Delta Outflow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	x channel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	A	35,436	40,297	11,470	12,303	24%	0.24	0	0.80	0.00	0.19	0.19	**80.7%**
1923	B	19,050	16,007	8,661	6,175	60%	0.26	0	0.68	0.00	0.18	0.18	**82.2%**
1924	C	16,655	7,823	11,074	5,279	61%	0.27	0	0.79	0.00	0.48	0.48	**51.8%**
1925	D	45,105	52,974	11,812	15,919	23%	0.23	0	0.82	0.00	0.19	0.19	**80.8%**
1926	D	35,274	32,735	11,866	12,242	24%	0.24	0	0.82	0.00	0.20	0.20	**80.3%**
1927	W	88,337	135,315	11,776	32,088	22%	0.22	0	0.82	0.00	0.18	0.18	**81.7%**
1928	A	25,469	22,270	8,327	8,575	25%	0.25	0	0.67	0.00	0.17	0.17	**83.3%**
1929	C	18,780	9,921	11,470	6,074	60%	0.26	0	0.80	0.00	0.48	0.48	**51.9%**
1930	D	17,592	9,525	11,488	5,629	61%	0.26	0	0.81	0.00	0.49	0.49	**51.2%**
1931	C	12,640	3,871	10,984	3,777	65%	0.28	0	0.78	0.00	0.51	0.51	**48.8%**
1932	D	15,403	16,916	12,309	4,811	62%	0.27	0	0.84	0.00	0.23	0.23	**77.2%**
1933	C	13,324	3,907	11,596	4,033	65%	0.28	0	0.81	0.00	0.52	0.52	**47.7%**
1934	C	13,018	6,518	11,740	3,919	65%	0.28	0	0.82	0.00	0.53	0.53	**47.0%**
1935	B	13,000	11,992	5,060	3,912	65%	0.28	0	0.53	0.00	0.34	0.34	**65.8%**
1936	B	53,442	90,420	11,631	19,037	23%	0.23	0	0.81	0.00	0.19	0.19	**81.3%**
1937	B	32,033	44,421	12,586	11,030	24%	0.24	0	0.85	0.00	0.21	0.21	**79.3%**
1938	W	82,359	151,682	8,229	29,852	22%	0.22	0	0.66	0.00	0.15	0.15	**85.1%**
1939	D	19,032	15,071	8,211	6,168	60%	0.26	0	0.66	0.00	0.17	0.17	**82.7%**
1940	A	47,722	58,396	12,309	16,898	23%	0.23	0	0.84	0.00	0.20	0.20	**80.4%**
1941	W	75,031	127,104	10,065	27,112	23%	0.23	0	0.74	0.00	0.17	0.17	**83.2%**
1942	W	78,344	144,966	8,247	28,351	23%	0.23	0	0.66	0.00	0.15	0.15	**85.0%**
1943	W	52,253	61,706	8,301	18,593	23%	0.23	0	0.67	0.00	0.15	0.15	**84.6%**
1944	D	27,451	27,190	7,962	9,317	25%	0.25	0	0.65	0.00	0.16	0.16	**83.9%**
1945	B	39,451	49,156	8,643	13,805	24%	0.24	0	0.68	0.00	0.16	0.16	**83.8%**
1946	B	23,588	21,931	8,697	7,872	57%	0.25	0	0.68	0.00	0.17	0.17	**82.7%**
1947	D	20,563	13,378	11,002	6,740	59%	0.26	0	0.78	0.00	0.20	0.20	**79.8%**
1948	B	11,109	2,417	10,031	3,205	68%	0.29	0	0.74	0.00	0.50	0.50	**49.8%**
1949	D	16,133	7,202	11,470	5,084	62%	0.27	0	0.80	0.00	0.50	0.50	**50.4%**
1950	B	36,372	30,610	11,794	12,653	24%	0.24	0	0.82	0.00	0.20	0.20	**80.4%**
1951	A	60,572	70,331	8,967	21,704	23%	0.23	0	0.70	0.00	0.16	0.16	**84.1%**
1952	W	62,499	79,241	8,762	22,425	23%	0.23	0	0.69	0.00	0.16	0.16	**84.3%**
1953	W	28,341	27,441	8,337	9,650	25%	0.25	0	0.67	0.00	0.16	0.16	**83.6%**
1954	A	57,151	57,475	8,931	20,424	23%	0.23	0	0.69	0.00	0.16	0.16	**84.1%**
1955	D	16,295	7,328	11,506	5,144	62%	0.27	0	0.81	0.00	0.50	0.50	**50.4%**
1956	W	61,543	90,559	8,658	22,067	23%	0.23	0	0.68	0.00	0.16	0.16	**84.4%**
1957	A	33,149	29,620	9,057	11,448	24%	0.24	0	0.70	0.00	0.17	0.17	**83.1%**
1958	W	65,740	158,236	9,327	23,637	23%	0.23	0	0.71	0.00	0.16	0.16	**83.8%**
1959	B	50,075	52,541	8,337	17,778	23%	0.23	0	0.67	0.00	0.16	0.16	**84.5%**
1960	D	27,051	22,879	11,144	9,167	25%	0.25	0	0.79	0.00	0.20	0.20	**80.4%**
1961	D	33,347	26,217	9,831	11,522	24%	0.24	0	0.73	0.00	0.18	0.18	**82.3%**
1962	B	46,707	56,899	11,164	16,519	23%	0.23	0	0.79	0.00	0.18	0.18	**81.5%**
1963	W	54,846	69,143	12,694	19,562	23%	0.23	0	0.86	0.00	0.20	0.20	**80.3%**
1964	D	17,246	10,483	8,640	5,500	61%	0.27	0	0.68	0.00	0.41	0.41	**58.5%**
1965	W	33,329	31,781	12,208	11,515	24%	0.24	0	0.84	0.00	0.20	0.20	**79.8%**
1966	B	26,775	26,379	8,697	9,064	25%	0.25	0	0.68	0.00	0.17	0.17	**83.0%**
1967	W	43,106	56,683	8,895	15,172	23%	0.23	0	0.69	0.00	0.16	0.16	**83.7%**
1968	B	54,520	58,327	8,049	19,440	23%	0.23	0	0.66	0.00	0.15	0.15	**84.9%**
1969	W	67,486	148,387	7,454	24,290	23%	0.23	0	0.63	0.00	0.14	0.14	**85.7%**
1970	W	57,565	91,254	7,851	20,579	23%	0.23	0	0.65	0.00	0.15	0.15	**85.1%**
1971	W	28,521	24,308	8,967	9,717	25%	0.25	0	0.70	0.00	0.17	0.17	**82.9%**
1972	B	24,217	17,872	9,075	8,107	57%	0.25	0	0.70	0.00	0.18	0.18	**82.4%**
1973	A	70,961	95,864	9,669	25,590	23%	0.23	0	0.73	0.00	0.16	0.16	**83.6%**
1974	W	41,918	46,005	8,679	14,727	24%	0.24	0	0.68	0.00	0.16	0.16	**83.9%**
1975	W	58,807	63,345	8,931	21,044	23%	0.23	0	0.69	0.00	0.16	0.16	**84.1%**
1976	C	19,523	13,369	8,536	6,352	59%	0.26	0	0.68	0.00	0.18	0.18	**82.4%**
1977	C	7,256	2,503	5,798	1,764	77%	0.33	0	0.56	0.00	0.43	0.43	**57.1%**
1978	A	51,371	56,827	12,406	18,263	23%	0.23	0	0.85	0.00	0.20	0.20	**80.4%**
1979	B	42,044	49,570	8,211	14,774	24%	0.24	0	0.66	0.00	0.16	0.16	**84.4%**
1980	A	69,453	138,698	7,771	25,026	23%	0.23	0	0.64	0.00	0.15	0.15	**85.4%**
1981	D	29,674	24,956	8,337	10,148	24%	0.24	0	0.67	0.00	0.16	0.16	**83.6%**
1982	W	65,650	106,613	9,417	23,603	23%	0.23	0	0.72	0.00	0.16	0.16	**83.7%**
1983	W	82,917	185,029	7,112	30,061	22%	0.22	0	0.62	0.00	0.14	0.14	**86.2%**
1984	W	36,004	44,036	5,285	12,516	24%	0.24	0	0.54	0.00	0.13	0.13	**87.2%**
1985	D	22,381	18,078	8,895	7,421	58%	0.25	0	0.69	0.00	0.18	0.18	**82.4%**
1986	W	99,825	227,055	12,748	36,385	22%	0.22	0	0.86	0.00	0.19	0.19	**80.9%**
1987	D	23,030	20,563	5,852	7,663	58%	0.25	0	0.56	0.00	0.14	0.14	**85.8%**
1988	C	11,248	2,417	10,205	3,257	67%	0.29	0	0.75	0.00	0.51	0.51	**49.5%**
1989	D	9,093	2,503	8,355	2,451	72%	0.31	0	0.67	0.00	0.48	0.48	**52.1%**
1990	C	17,754	11,956	8,715	5,690	60%	0.26	0	0.69	0.00	0.41	0.41	**58.6%**
1991	C	8,211	2,503	6,932	2,121	74%	0.32	0	0.61	0.00	0.45	0.45	**55.1%**
1992	C	31,415	26,999	11,300	10,799	24%	0.24	0	0.80	0.00	0.19	0.19	**80.6%**

MARCH

Year	WY Type	Sac River Flows	Total Delta Outflow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	x channel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	A	31,551	31,112	8,034	10,850	24%	0.24	0	0.745	0.144	0.290	0.290	**71.0%**
1923	B	17,337	11,319	8,652	5,534	61%	0.27	0	0.772	0.144	0.526	0.526	**47.4%**
1924	C	8,603	2,505	7,286	2,268	73%	0.31	0	0.713	0.144	0.558	0.558	**44.2%**
1925	D	18,557	12,002	10,083	5,990	60%	0.26	0	0.834	0.144	0.325	0.325	**67.5%**
1926	D	16,019	6,473	11,206	5,041	62%	0.27	0	0.883	0.144	0.601	0.601	**39.9%**
1927	W	43,863	42,822	7,611	15,455	23%	0.23	0	0.727	0.144	0.281	0.281	**71.9%**
1928	A	86,229	99,126	8,652	31,300	22%	0.22	0	0.772	0.144	0.285	0.285	**71.5%**
1929	C	14,670	9,042	7,579	4,536	63%	0.27	0	0.726	0.144	0.511	0.511	**48.9%**
1930	D	30,852	26,087	8,945	10,589	24%	0.24	0	0.785	0.144	0.300	0.300	**70.0%**
1931	C	9,319	2,505	7,709	2,535	71%	0.30	0	0.731	0.144	0.561	0.561	**43.9%**
1932	D	10,116	6,066	8,620	2,833	69%	0.30	0	0.771	0.144	0.579	0.579	**42.1%**
1933	C	10,994	2,505	10,945	3,162	68%	0.29	0	0.872	0.144	0.638	0.638	**36.2%**
1934	C	12,214	2,505	10,864	3,618	66%	0.29	0	0.868	0.144	0.622	0.622	**37.8%**
1935	B	24,916	21,256	11,498	8,368	57%	0.25	0	0.896	0.144	0.332	0.332	**66.8%**
1936	B	34,202	32,999	8,392	11,842	24%	0.24	0	0.761	0.144	0.293	0.293	**70.7%**
1937	B	37,260	49,522	8,229	12,985	24%	0.24	0	0.754	0.144	0.289	0.289	**71.1%**
1938	W	78,634	176,279	7,595	28,459	22%	0.22	0	0.726	0.144	0.275	0.275	**72.5%**
1939	D	16,394	12,230	7,611	5,181	61%	0.27	0	0.727	0.144	0.301	0.301	**69.9%**
1940	A	63,606	108,672	9,872	22,839	23%	0.23	0	0.825	0.144	0.299	0.299	**70.1%**
1941	W	58,581	96,361	8,067	20,959	23%	0.23	0	0.747	0.144	0.282	0.282	**71.8%**
1942	W	27,095	29,681	8,229	9,183	25%	0.25	0	0.754	0.144	0.295	0.295	**70.5%**
1943	W	64,598	90,262	8,278	23,210	23%	0.23	0	0.756	0.144	0.283	0.283	**71.7%**
1944	D	25,094	21,874	8,246	8,435	25%	0.25	0	0.754	0.144	0.297	0.297	**70.3%**
1945	B	27,030	31,372	7,497	9,159	25%	0.25	0	0.722	0.144	0.287	0.287	**71.3%**
1946	B	23,533	20,459	8,668	7,851	57%	0.25	0	0.773	0.144	0.303	0.303	**69.7%**
1947	D	21,874	16,556	8,408	7,231	58%	0.26	0	0.762	0.144	0.302	0.302	**69.8%**
1948	B	16,735	12,002	7,237	5,309	61%	0.27	0	0.711	0.144	0.296	0.296	**70.4%**
1949	D	41,813	40,577	9,319	14,688	24%	0.24	0	0.801	0.144	0.299	0.299	**70.1%**
1950	B	23,615	18,052	8,685	7,882	57%	0.25	0	0.774	0.144	0.303	0.303	**69.7%**
1951	A	29,323	30,039	8,929	10,017	24%	0.24	0	0.784	0.144	0.301	0.301	**69.9%**
1952	W	57,524	71,673	8,181	20,564	23%	0.23	0	0.752	0.144	0.284	0.284	**71.6%**
1953	W	24,899	20,638	8,343	8,362	57%	0.25	0	0.759	0.144	0.298	0.298	**70.2%**
1954	A	49,538	46,400	8,912	17,577	23%	0.23	0	0.783	0.144	0.293	0.293	**70.7%**
1955	D	15,158	8,490	8,473	4,719	63%	0.27	0	0.764	0.144	0.532	0.532	**46.8%**
1956	W	36,674	38,935	8,278	12,766	24%	0.24	0	0.756	0.144	0.290	0.290	**71.0%**
1957	A	44,383	43,423	8,815	15,649	23%	0.23	0	0.779	0.144	0.293	0.293	**70.7%**
1958	W	93,612	127,977	8,311	34,061	22%	0.22	0	0.757	0.144	0.281	0.281	**71.9%**
1959	B	21,760	17,304	8,343	7,188	58%	0.26	0	0.759	0.144	0.301	0.301	**69.9%**
1960	D	21,809	13,824	10,620	7,207	58%	0.26	0	0.858	0.144	0.326	0.326	**67.4%**
1961	D	21,338	15,092	8,148	7,030	58%	0.26	0	0.750	0.144	0.300	0.300	**70.0%**
1962	B	27,014	25,046	8,571	9,153	25%	0.25	0	0.769	0.144	0.299	0.299	**70.1%**
1963	W	32,641	29,258	8,685	11,258	24%	0.24	0	0.774	0.144	0.296	0.296	**70.4%**
1964	D	16,345	9,156	8,929	5,163	62%	0.27	0	0.784	0.144	0.538	0.538	**46.2%**
1965	W	21,386	18,703	8,083	7,049	58%	0.26	0	0.747	0.144	0.299	0.299	**70.1%**
1966	B	28,689	24,265	8,668	9,780	25%	0.25	0	0.773	0.144	0.299	0.299	**70.1%**
1967	W	54,483	61,915	7,530	19,426	23%	0.23	0	0.723	0.144	0.278	0.278	**72.2%**
1968	B	36,788	35,649	7,741	12,809	24%	0.24	0	0.733	0.144	0.285	0.285	**71.5%**
1969	W	45,326	71,250	6,733	16,002	23%	0.23	0	0.689	0.144	0.272	0.272	**72.8%**
1970	W	35,812	40,870	7,335	12,444	24%	0.24	0	0.715	0.144	0.281	0.281	**71.9%**
1971	W	51,506	49,083	8,929	18,313	23%	0.23	0	0.784	0.144	0.292	0.292	**70.8%**
1972	B	32,933	25,615	8,799	11,367	24%	0.24	0	0.778	0.144	0.297	0.297	**70.3%**
1973	A	47,554	62,712	8,701	16,835	23%	0.23	0	0.774	0.144	0.291	0.291	**70.9%**
1974	W	100,199	113,047	8,668	36,524	22%	0.22	0	0.773	0.144	0.284	0.284	**71.6%**
1975	W	75,999	90,685	8,929	27,474	23%	0.23	0	0.784	0.144	0.288	0.288	**71.2%**
1976	C	18,361	10,653	8,652	5,917	60%	0.26	0	0.772	0.144	0.521	0.521	**47.9%**
1977	C	6,863	3,952	3,708	1,617	78%	0.33	0	0.558	0.144	0.467	0.467	**53.3%**
1978	A	46,465	70,616	8,115	16,428	23%	0.23	0	0.749	0.144	0.285	0.285	**71.5%**
1979	B	32,592	35,958	8,229	11,239	24%	0.24	0	0.754	0.144	0.292	0.292	**70.8%**
1980	A	36,479	61,020	7,579	12,693	24%	0.24	0	0.726	0.144	0.283	0.283	**71.7%**
1981	D	32,494	29,258	8,343	11,203	24%	0.24	0	0.759	0.144	0.293	0.293	**70.7%**
1982	W	69,087	89,790	8,896	24,889	23%	0.23	0	0.783	0.144	0.289	0.289	**71.1%**
1983	W	81,935	251,823	4,684	29,694	22%	0.22	0	0.600	0.144	0.247	0.247	**75.3%**
1984	W	36,495	36,674	7,416	12,699	24%	0.24	0	0.718	0.144	0.281	0.281	**71.9%**
1985	D	21,809	16,816	8,912	7,207	58%	0.26	0	0.783	0.144	0.307	0.307	**69.3%**
1986	W	72,535	157,479	6,245	26,178	23%	0.23	0	0.668	0.144	0.263	0.263	**73.7%**
1987	D	29,876	26,591	6,863	10,224	24%	0.24	0	0.694	0.144	0.279	0.279	**72.1%**
1988	C	7,075	2,505	5,351	1,696	77%	0.33	0	0.629	0.144	0.519	0.519	**48.1%**
1989	D	46,611	39,081	11,189	16,483	23%	0.23	0	0.882	0.144	0.316	0.316	**68.4%**
1990	C	15,483	9,872	6,603	4,841	62%	0.27	0	0.683	0.144	0.480	0.480	**52.0%**
1991	C	30,429	24,249	11,319	10,430	24%	0.24	0	0.888	0.144	0.326	0.326	**67.4%**
1992	C	20,102	12,669	10,913	6,568	59%	0.26	0	0.870	0.144	0.332	0.332	**66.8%**

C10 ='Study 467 Flow Data'!C8
D10 ='Study 467 Flow Data'!M8 (HIDDEN)
E10 ='Study 467 Flow Data'!W8 (HIDDEN)
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$H$3,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10
I10 =(0.133*C10+829)/(C10-G10)
J10 =IF((-2.45925+(0.0420748*$Q$2))<0,0,(-2.45925+(0.0420748*$Q$2)))
K10 =(-0.5916024)+(0.017968*$Q$2)+(0.0000434*F10)
L10 =IF((-1.613493+(0.0319584*$Q$2))<0,0,(-1.613493+(0.0319584*$Q$2)))
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!D8
R10 ='Study 467 Flow Data'!AI8
S10 ='Study 467 Flow Data'!N8 (HIDDEN)
T10 ='Study 467 Flow Data'!X8 (HIDDEN)
U10 =(S10+T10)
V10 =0.374*Q10-950
W10 =IF(Q10>$H$3,(0.133*Q10+829)/(Q10-V10),(0.293*Q10+2090)/(Q10-V10))
X10 =(0.133*Q10+829)/(Q10-V10)
Y10 =IF((-2.45925+(0.0420748*X10))<0,0,(-2.45925+(0.0420748*X10)))
Z10 =(-0.5916024)+(0.017968*$Q$3)+(0.0000434*U10)
AA10 =IF((-1.613493+(0.0319584*$Q$3))<0,0,(-1.613493+(0.0319584*$Q$3)))
AB10 =IF(R10>=$H$4,(Z10*X10),(Z10*W10))
AC10 =Y10+AB10-(Y10*AB10)
AD10 =1-AC10

AF10 ='Study 467 Flow Data'!E8
AG10 ='Study 467 Flow Data'!AJ8
AH10 ='Study 467 Flow Data'!O8 (HIDDEN)
AI10 ='Study 467 Flow Data'!Y8 (HIDDEN)
AJ10 =(AH10+AI10)
AK10 =0.374*AF10-950
AL10 =IF(AF10>$H$3,(0.133*AF10+829)/(AF10-AK10),(0.293*AF10+2090)/(AF10-AK10))
AM10 =(0.133*AF10+829)/(AF10-AK10)
AN10 =IF((-2.45925+(0.0420748*AM10))<0,0,(-2.45925+(0.0420748*AM10)))
AO10 =(-0.5916024)+(0.017968*$Q$4)+(0.0000434*AJ10)
AP10 =IF((-1.613493+(0.0319584*$Q$4))<0,0,(-1.613493+(0.0319584*$Q$4)))
AQ10 =IF(AG10>=$H$4,(AO10*AM10),(AO10*AL10))
AR10 =AN10+AQ10-(AN10*AQ10)
AT10 =1-AR10

AU10 ='Study 467 Flow Data'!F8
AV10 ='Study 467 Flow Data'!AK8
AW10 ='Study 467 Flow Data'!P8 (HIDDEN)
AX10 ='Study 467 Flow Data'!Z8 (HIDDEN)
AY10 =(AV10+AW10)
AZ10 =0.374*AT10-950
BA10 =IF(AU10>$H$3,(0.133*AU10+829)/(AU10-AZ10),(0.293*AU10+2090)/(AU10-AZ10))
BB10 =(0.133*AU10+829)/(AU10-AZ10)
BC10 =IF((-2.45925+(0.0420748*BB10))<0,0,(-2.45925+(0.0420748*BB10)))
BD10 =IF(((-0.5916024)+(0.017968*$Q$5)+(0.0000434*AY10))>1,1,((-0.5916024)+(0.017968*$Q$5)+(0.0000434*AY10)))
BE10 =-1.613493+(0.0319584*$Q$5)
BF10 =IF(AV10>=$H$4,(BD10*BB10)+(BE10*(1-BB10)),(BD10*BA10)+(BE10*(1-BA10)))
BG10 =BC10+BF10-(BC10*BF10)
BH10 =1-BG10

D1485 Sacramento River Spring Run YOY Smolt Survival Model (continued)

APRIL

Row	BJ Sac River Flow	BK Delta Outflow	BN CVP+SWP exports	BO Steamboat & Sutter Slough Q	BP percent	BQ xchannel closed	BR observed temp f	BS m1	BT m2 (Calculated Mortality)	BU m3	BV m23	BW m123	BX Calculated Survival s123
10	22,822	19,528	9,546	7585.41	25%	0.25	58.5	0.002	0.874	0.256	0.413	0.414	**0.586**
11	24,418	21,175	10,100	8182.51	25%	0.25	58.3	0.000	0.894	0.250	0.412	0.412	**0.588**
12	7,630	7,394	571	1903.52	32%	0.32	61.5	0.128	0.538	0.352	0.412	0.487	**0.513**
13	22,906	17,864	11,226	7616.83	25%	0.25	59.1	0.027	0.958	0.275	0.448	0.463	**0.537**
14	18,268	14,285	10,739	5882.1	26%	0.26	61.6	0.133	0.981	0.355	0.520	0.584	**0.416**
15	48,215	47,022	9,764	17082.5	23%	0.23	56.8	0.000	0.853	0.202	0.353	0.353	**0.647**
16	29,208	24,771	10,083	9973.81	25%	0.25	58.7	0.011	0.901	0.262	0.419	0.425	**0.575**
17	7,075	2,504	5,395	1696.1	33%	0.33	56.3	0.000	0.654	0.186	0.340	0.340	**0.660**
18	13,713	6,235	9,344	4178.79	28%	0.28	59.6	0.048	0.885	0.291	0.456	0.483	**0.517**
19	13,377	9,310	4,269	4053.08	28%	0.28	62.8	0.183	0.722	0.393	0.485	0.580	**0.420**
20	10,890	13,881	538	3122.86	29%	0.29	58.9	0.019	0.490	0.269	0.334	0.346	**0.654**
21	10,083	9,260	1,765	2821.17	30%	0.30	60.1	0.069	0.565	0.307	0.384	0.427	**0.573**
22	8,067	7,949	689	2066.93	32%	0.32	63.6	0.217	0.581	0.419	0.470	0.585	**0.415**
23	23,696	38,720	11,142	7912.24	25%	0.25	58.9	0.019	0.950	0.269	0.441	0.451	**0.549**
24	22,032	20,066	9,781	7290	26%	0.26	59.7	0.053	0.906	0.294	0.450	0.479	**0.521**
25	22,503	22,234	9,579	7465.99	25%	0.25	58.8	0.015	0.881	0.266	0.422	0.430	**0.570**
26	47,173	78,633	7,714	16692.8	23%	0.23	56.3	0.000	0.755	0.186	0.318	0.318	**0.682**
27	10,571	4,453	7,983	3003.44	30%	0.30	63.3	0.204	0.892	0.409	0.552	0.643	**0.357**
28	41,980	66,029	10,285	14750.6	24%	0.24	57.4	0.000	0.886	0.221	0.378	0.378	**0.622**
29	42,367	77,541	9,310	14895.2	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**0.647**
30	43,308	48,719	9,646	15247.2	23%	0.23	56.5	0.000	0.842	0.192	0.345	0.345	**0.655**
31	29,410	29,964	9,663	10049.2	24%	0.24	58.8	0.015	0.884	0.266	0.417	0.426	**0.574**
32	10,806	4,924	9,579	3091.43	29%	0.29	58.4	0.000	0.873	0.253	0.435	0.435	**0.565**
33	12,167	9,243	9,764	3600.54	29%	0.29	60.6	0.090	0.921	0.323	0.494	0.540	**0.460**
34	13,159	7,731	10,100	3971.37	28%	0.28	60.7	0.095	0.937	0.326	0.498	0.545	**0.455**
35	13,310	4,453	10,134	4027.94	28%	0.28	62.5	0.170	0.971	0.384	0.548	0.625	**0.375**
36	22,990	16,570	11,092	7648.26	25%	0.25	56.6	0.000	0.907	0.195	0.376	0.376	**0.624**
37	13,461	5,899	9,814	4084.51	28%	0.28	61.7	0.137	0.943	0.358	0.522	0.587	**0.413**
38	19,276	12,789	10,067	6259.21	26%	0.26	61.3	0.120	0.947	0.346	0.502	0.562	**0.438**
39	15,495	9,999	9,092	4845.03	27%	0.27	59.9	0.061	0.879	0.301	0.458	0.491	**0.509**
40	56,652	68,180	8,773	20237.7	23%	0.23	55.5	0.000	0.786	0.160	0.304	0.304	**0.696**
41	16,621	9,999	9,764	5266.14	27%	0.27	58.8	0.015	0.889	0.266	0.432	0.441	**0.559**
42	39,863	35,258	10,386	13958.7	24%	0.24	58.4	0.000	0.908	0.253	0.408	0.408	**0.592**
43	12,722	6,302	9,008	3807.96	28%	0.28	56.4	0.000	0.813	0.189	0.365	0.365	**0.635**
44	20,436	15,780	10,386	6692.9	26%	0.26	59.7	0.053	0.932	0.294	0.459	0.487	**0.513**
45	13,596	6,100	10,184	4134.79	28%	0.28	60.5	0.086	0.937	0.320	0.492	0.536	**0.464**
46	52,282	103,018	9,663	18603.5	23%	0.23	57.4	0.000	0.859	0.221	0.368	0.368	**0.632**
47	11,680	4,453	8,470	3418.27	29%	0.29	63	0.191	0.908	0.400	0.546	0.633	**0.367**
48	9,730	4,453	6,857	2689.18	30%	0.30	59.5	0.044	0.775	0.288	0.435	0.460	**0.540**
49	11,781	4,453	7,932	3455.98	29%	0.29	60.1	0.069	0.833	0.307	0.458	0.496	**0.504**
50	12,403	5,327	10,487	3688.54	28%	0.28	61.8	0.141	0.974	0.362	0.536	0.601	**0.399**
51	69,457	88,750	10,117	25027.1	23%	0.23	53.7	0.000	0.812	0.103	0.263	0.263	**0.737**
52	13,697	5,663	9,008	4172.5	28%	0.28	59.3	0.036	0.865	0.282	0.444	0.464	**0.536**
53	45,173	45,509	9,932	15944.8	23%	0.23	56.9	0.000	0.862	0.205	0.359	0.359	**0.641**
54	12,806	4,453	9,966	3839.38	28%	0.28	61.9	0.145	0.953	0.365	0.531	0.599	**0.401**
55	39,930	56,870	8,722	13983.8	24%	0.24	53.8	0.000	0.754	0.106	0.259	0.259	**0.741**
56	11,293	4,453	8,470	3273.71	29%	0.29	61.5	0.128	0.881	0.352	0.506	0.569	**0.431**
57	44,787	62,130	7,495	15800.3	23%	0.23	56.4	0.000	0.747	0.189	0.320	0.320	**0.680**
58	15,108	9,999	8,470	4700.46	27%	0.27	58.8	0.015	0.833	0.266	0.420	0.429	**0.571**
59	20,755	13,176	10,386	6812.32	26%	0.26	58.7	0.011	0.914	0.262	0.430	0.436	**0.564**
60	12,890	4,453	9,646	3870.81	28%	0.28	58.5	0.002	0.878	0.256	0.432	0.433	**0.567**
61	19,511	16,402	10,117	6347.21	26%	0.26	61.3	0.120	0.949	0.346	0.502	0.562	**0.438**
62	33,208	67,390	10,100	11469.7	24%	0.24	56.8	0.000	0.867	0.202	0.362	0.362	**0.638**
63	25,763	23,612	10,386	8685.33	25%	0.25	56.8	0.000	0.880	0.202	0.371	0.371	**0.629**
64	9,428	2,504	7,613	2576.04	30%	0.30	58.9	0.019	0.797	0.269	0.429	0.440	**0.560**
65	16,990	8,403	9,008	5404.42	27%	0.27	64.3	0.246	0.955	0.441	0.578	0.682	**0.318**
66	38,703	48,249	8,672	13525	24%	0.24	56.9	0.000	0.807	0.205	0.348	0.348	**0.652**
67	17,696	13,478	9,646	5668.4	26%	0.26	59.8	0.057	0.902	0.298	0.457	0.488	**0.512**
68	19,814	18,016	8,554	6460.34	26%	0.26	57.1	0.000	0.806	0.211	0.366	0.366	**0.634**
69	16,990	9,226	9,764	5404.42	27%	0.27	61.5	0.128	0.937	0.352	0.508	0.571	**0.429**
70	75,843	141,049	8,974	27415.5	23%	0.23	54.1	0.000	0.770	0.115	0.263	0.263	**0.737**
71	68,298	101,892	6,958	24593.4	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**0.730**
72	16,301	9,999	9,646	5146.72	27%	0.27	59.7	0.053	0.900	0.294	0.457	0.486	**0.514**
73	13,327	4,823	10,335	4034.23	28%	0.28	60.8	0.099	0.949	0.330	0.503	0.552	**0.448**
74	20,772	24,250	7,714	6818.6	26%	0.26	60.4	0.082	0.828	0.317	0.448	0.494	**0.506**
75	8,789	4,453	5,092	2337.2	31%	0.31	65.7	0.305	0.810	0.486	0.586	0.713	**0.287**
76	10,016	8,773	2,067	2796.03	30%	0.30	59.9	0.061	0.574	0.301	0.383	0.420	**0.580**
77	24,133	14,049	11,075	8075.66	25%	0.25	61.4	0.124	0.992	0.349	0.511	0.571	**0.429**
78	8,420	2,504	6,621	2198.92	31%	0.31	61.6	0.133	0.803	0.355	0.495	0.562	**0.438**
79	16,033	6,184	10,991	5046.16	27%	0.27	60.8	0.099	0.978	0.330	0.504	0.553	**0.447**
80	11,730	3,462	9,898	3437.12	29%	0.29	61.2	0.116	0.938	0.342	0.514	0.570	**0.430**

MAY

Row	BZ Sac River Flow	CC CVP+SWP exports	CD Calculated Steamboat & Sutter Slough Q	CE percent	CF xchannel closed	CG observed temp f	CH m1	CI m2 (Calculated Mortality)	CJ m3	CK m23	CL m123	CM Calculated Survival s123
10	46,530	5,985	16,452	23%	0.23	61.2	0.116	0.768	0.342	0.442	0.506	**0.494**
11	15,434	5,985	4,822	27%	0.27	62.4	0.166	0.789	0.381	0.492	0.576	**0.424**
12	8,392	4,017	2,189	31%	0.31	69.2	0.452	0.826	0.598	0.670	0.819	**0.181**
13	14,816	5,985	4,591	27%	0.27	63.2	0.200	0.804	0.406	0.515	0.612	**0.388**
14	10,441	5,985	2,955	30%	0.30	65.7	0.305	0.849	0.486	0.594	0.718	**0.282**
15	26,786	5,985	9,068	25%	0.25	62.6	0.175	0.793	0.387	0.488	0.577	**0.423**
16	12,881	5,985	3,867	28%	0.28	66.6	0.343	0.865	0.515	0.614	0.746	**0.254**
17	8,733	4,375	2,316	31%	0.31	66.1	0.322	0.786	0.499	0.588	0.721	**0.279**
18	13,417	5,985	4,068	28%	0.28	63.1	0.196	0.802	0.403	0.515	0.610	**0.390**
19	8,164	4,326	2,103	32%	0.32	70.5	0.507	0.863	0.640	0.710	0.857	**0.143**
20	10,718	5,985	3,058	29%	0.29	65.5	0.297	0.845	0.480	0.587	0.710	**0.290**
21	7,839	4,472	1,982	32%	0.32	63.7	0.221	0.747	0.422	0.526	0.631	**0.369**
22	9,091	4,977	2,450	31%	0.31	68.3	0.414	0.852	0.569	0.656	0.799	**0.201**
23	18,134	5,985	5,832	26%	0.26	64	0.234	0.818	0.432	0.534	0.643	**0.357**
24	15,092	5,985	4,695	27%	0.27	64.9	0.271	0.834	0.461	0.563	0.681	**0.319**
25	15,044	5,985	4,676	27%	0.27	64.5	0.255	0.827	0.448	0.551	0.666	**0.334**
26	57,426	5,985	20,527	23%	0.23	62.5	0.170	0.791	0.384	0.477	0.566	**0.434**
27	8,002	4,993	2,043	32%	0.32	68	0.402	0.847	0.560	0.651	0.791	**0.209**
28	15,808	5,985	4,962	27%	0.27	65.6	0.301	0.847	0.483	0.581	0.707	**0.293**
29	39,488	5,985	13,818	24%	0.24	61.6	0.133	0.775	0.355	0.455	0.527	**0.473**
30	36,040	5,985	12,529	24%	0.24	60.1	0.069	0.748	0.307	0.413	0.453	**0.547**
31	20,134	5,985	6,580	26%	0.26	65.4	0.292	0.843	0.477	0.571	0.697	**0.303**
32	15,857	4,993	4,980	27%	0.27	65.9	0.313	0.809	0.493	0.578	0.710	**0.290**
33	13,905	5,855	4,251	28%	0.28	63.1	0.196	0.796	0.403	0.512	0.608	**0.392**
34	15,759	5,562	4,944	27%	0.27	63.9	0.229	0.798	0.429	0.529	0.637	**0.363**
35	14,962	4,993	4,646	27%	0.27	68.7	0.431	0.859	0.582	0.658	0.805	**0.195**
36	31,014	5,985	10,649	24%	0.24	62.3	0.162	0.788	0.378	0.477	0.562	**0.438**
37	13,856	5,985	4,232	28%	0.28	65.2	0.284	0.840	0.470	0.573	0.694	**0.306**
38	15,694	5,985	4,920	27%	0.27	64.3	0.246	0.823	0.441	0.545	0.657	**0.343**
39	19,028	5,985	6,167	26%	0.26	64.4	0.250	0.825	0.445	0.544	0.658	**0.342**
40	59,557	5,985	21,324	23%	0.23	61.7	0.137	0.777	0.358	0.454	0.529	**0.471**
41	26,558	5,985	8,983	25%	0.25	60.9	0.103	0.762	0.333	0.439	0.497	**0.503**
42	16,394	5,822	5,181	27%	0.27	65.9	0.313	0.845	0.493	0.587	0.717	**0.283**
43	14,279	4,993	4,390	28%	0.28	66.9	0.356	0.827	0.525	0.608	0.747	**0.253**
44	39,000	5,985	13,636	24%	0.24	61.4	0.124	0.771	0.349	0.449	0.517	**0.483**
45	20,590	5,985	6,750	26%	0.26	64	0.234	0.818	0.432	0.531	0.641	**0.359**
46	43,488	5,985	15,315	23%	0.23	62.9	0.187	0.798	0.397	0.491	0.586	**0.414**
47	14,995	4,993	4,658	27%	0.27	65.9	0.313	0.809	0.493	0.579	0.711	**0.289**
48	15,987	4,993	5,029	27%	0.27	65.9	0.313	0.809	0.493	0.578	0.710	**0.290**
49	13,629	4,993	4,147	28%	0.28	64.3	0.246	0.780	0.441	0.536	0.650	**0.350**
50	16,280	4,993	5,139	27%	0.27	64.8	0.267	0.789	0.457	0.547	0.668	**0.332**
51	29,095	5,985	9,932	25%	0.25	62.5	0.170	0.791	0.384	0.484	0.572	**0.428**
52	16,800	4,993	5,333	27%	0.27	65.2	0.284	0.797	0.470	0.557	0.683	**0.317**
53	19,581	5,985	6,373	26%	0.26	63.6	0.217	0.811	0.419	0.521	0.625	**0.375**
54	14,052	4,993	4,305	28%	0.28	67.3	0.372	0.834	0.537	0.620	0.761	**0.239**
55	44,790	5,985	15,801	23%	0.23	62.1	0.154	0.784	0.371	0.468	0.550	**0.450**
56	14,426	4,993	4,445	28%	0.28	66.1	0.322	0.813	0.499	0.585	0.719	**0.281**
57	45,538	5,985	16,081	23%	0.23	63.2	0.200	0.804	0.406	0.499	0.599	**0.401**
58	12,149	5,985	3,594	29%	0.29	68.6	0.427	0.901	0.579	0.671	0.811	**0.189**
59	30,266	5,985	10,370	24%	0.24	61	0.107	0.764	0.336	0.440	0.500	**0.500**
60	14,540	4,993	4,488	27%	0.27	67.3	0.372	0.834	0.537	0.619	0.761	**0.239**
61	15,743	5,985	4,938	27%	0.27	66.9	0.356	0.870	0.525	0.618	0.754	**0.246**
62	26,949	5,985	9,129	25%	0.25	63.4	0.208	0.807	0.413	0.510	0.612	**0.388**
63	28,542	5,985	9,725	25%	0.25	63.8	0.225	0.815	0.425	0.521	0.629	**0.371**
64	9,059	4,359	2,438	31%	0.31	69.6	0.469	0.848	0.611	0.684	0.832	**0.168**
65	6,993	3,887	1,665	33%	0.33	64	0.234	0.727	0.432	0.529	0.639	**0.361**
66	21,061	5,985	6,927	26%	0.26	63	0.191	0.800	0.400	0.503	0.598	**0.402**
67	13,564	5,985	4,123	28%	0.28	63.8	0.225	0.815	0.425	0.534	0.639	**0.361**
68	14,783	5,985	4,579	27%	0.27	63.6	0.217	0.811	0.419	0.526	0.629	**0.371**
69	9,953	5,497	2,773	30%	0.30	66.7	0.347	0.845	0.518	0.616	0.749	**0.251**
70	38,431	5,985	13,423	24%	0.24	61.1	0.112	0.766	0.339	0.441	0.503	**0.497**
71	54,515	5,985	19,439	23%	0.23	60.1	0.069	0.748	0.307	0.409	0.450	**0.550**
72	14,897	5,985	4,622	27%	0.27	66.5	0.339	0.863	0.512	0.608	0.741	**0.259**
73	13,450	4,993	4,080	28%	0.28	65.8	0.309	0.807	0.489	0.578	0.709	**0.291**
74	13,125	5,985	3,959	28%	0.28	66.2	0.326	0.858	0.502	0.602	0.732	**0.268**
75	8,912	4,993	2,383	31%	0.31	70.5	0.507	0.892	0.640	0.717	0.861	**0.139**
76	8,701	4,977	2,304	31%	0.31	65.8	0.309	0.807	0.489	0.588	0.715	**0.285**
77	11,384	5,985	3,308	29%	0.29	64.7	0.263	0.831	0.454	0.563	0.678	**0.322**
78	9,189	5,009	2,487	31%	0.31	66.4	0.335	0.819	0.509	0.604	0.736	**0.264**
79	8,685	5,204	2,298	31%	0.31	65.7	0.305	0.815	0.486	0.588	0.714	**0.286**
80	8,050	4,131	2,061	32%	0.32	66	0.318	0.774	0.496	0.584	0.716	**0.284**

JUNE

Row	CO Sac River Flow	CR CVP+SWP exports	CS Calculated Steamboat Slough Q	CT percent	CU xchannel closed	CV observed temp f	CW m1	CX m2 (Calculated Mortality)	CY m3	CZ m23	DA m123	DB Calculated Survival s123	DD Weighted Total Survival
10	34,720	6,016	12,035	24%	0.24	65.9	0.313	0.854	0.493	0.579	0.711	**0.289**	**0.619**
11	14,957	5,008	4,644	27%	0.27	65.3	0.288	0.799	0.473	0.562	0.689	**0.311**	**0.569**
12	9,327	3,697	2,538	30%	0.30	70.6	0.511	0.837	0.643	0.702	0.854	**0.146**	**0.419**
13	16,671	5,008	5,285	27%	0.27	68.3	0.414	0.853	0.569	0.645	0.792	**0.208**	**0.587**
14	13,528	4,991	4,110	28%	0.28	71.2	0.536	0.904	0.662	0.730	0.875	**0.125**	**0.446**
15	19,007	5,008	6,159	26%	0.26	68.1	0.406	0.849	0.563	0.638	0.785	**0.215**	**0.639**
16	12,520	5,008	3,733	28%	0.28	69.7	0.473	0.878	0.614	0.689	0.836	**0.164**	**0.594**
17	9,478	4,470	2,595	30%	0.30	70.1	0.490	0.862	0.627	0.698	0.846	**0.154**	**0.488**
18	12,890	5,008	3,871	28%	0.28	69.6	0.469	0.876	0.611	0.686	0.833	**0.167**	**0.540**
19	9,041	3,412	2,431	31%	0.31	70.7	0.515	0.827	0.646	0.702	0.855	**0.145**	**0.389**
20	12,470	5,159	3,714	28%	0.28	69.5	0.465	0.881	0.608	0.685	0.832	**0.168**	**0.508**
21	10,184	4,554	2,859	30%	0.30	69.8	0.478	0.860	0.617	0.690	0.838	**0.162**	**0.440**
22	10,621	5,008	3,022	29%	0.29	70.7	0.515	0.896	0.646	0.720	0.864	**0.136**	**0.372**
23	15,310	5,008	4,776	27%	0.27	71	0.528	0.901	0.656	0.722	0.869	**0.131**	**0.557**
24	15,142	5,008	4,713	27%	0.27	69.2	0.452	0.869	0.598	0.672	0.820	**0.180**	**0.584**
25	14,402	5,008	4,436	28%	0.28	69.7	0.473	0.878	0.614	0.687	0.835	**0.165**	**0.581**
26	35,510	6,016	12,331	24%	0.24	67.7	0.389	0.886	0.550	0.631	0.774	**0.226**	**0.661**
27	10,067	5,008	2,815	30%	0.30	71	0.528	0.901	0.656	0.729	0.872	**0.128**	**0.525**
28	16,167	4,991	5,096	27%	0.27	71.5	0.549	0.910	0.672	0.736	0.881	**0.119**	**0.598**
29	20,805	6,016	6,831	26%	0.26	69	0.444	0.909	0.592	0.673	0.818	**0.182**	**0.650**
30	27,124	6,016	9,194	25%	0.25	67.8	0.393	0.888	0.553	0.636	0.779	**0.221**	**0.669**
31	16,285	2,470	5,140	27%	0.27	66.6	0.343	0.712	0.515	0.568	0.716	**0.284**	**0.617**
32	10,083	5,008	2,821	30%	0.30	67.8	0.393	0.844	0.553	0.640	0.782	**0.218**	**0.584**
33	14,806	5,008	4,587	27%	0.27	70.6	0.511	0.894	0.643	0.712	0.859	**0.141**	**0.567**
34	16,520	5,008	5,228	27%	0.27	68.1	0.406	0.849	0.563	0.640	0.786	**0.214**	**0.581**
35	11,529	5,008	3,362	29%	0.29	70	0.486	0.884	0.624	0.699	0.845	**0.155**	**0.503**
36	22,301	6,016	7,391	25%	0.25	69	0.444	0.909	0.592	0.672	0.818	**0.182**	**0.564**
37	12,201	5,008	3,613	29%	0.29	70.9	0.524	0.900	0.652	0.723	0.868	**0.132**	**0.481**
38	16,638	5,764	5,272	27%	0.27	68.9	0.440	0.897	0.588	0.671	0.816	**0.184**	**0.564**
39	12,487	6,016	3,720	28%	0.28	70.3	0.499	0.933	0.633	0.718	0.859	**0.141**	**0.588**
40	38,972	6,016	13,626	24%	0.24	65	0.276	0.837	0.464	0.552	0.676	**0.324**	**0.673**
41	25,881	6,016	8,729	25%	0.25	66.2	0.326	0.859	0.502	0.591	0.724	**0.276**	**0.639**
42	17,091	5,008	5,442	27%	0.27	68.7	0.431	0.860	0.582	0.656	0.804	**0.196**	**0.605**
43	11,327	5,008	3,286	29%	0.29	70.1	0.490	0.885	0.627	0.702	0.848	**0.152**	**0.483**
44	22,301	6,016	7,391	25%	0.25	68.7	0.431	0.904	0.582	0.664	0.809	**0.191**	**0.618**
45	15,394	4,941	4,807	27%	0.27	72	0.570	0.917	0.688	0.750	0.892	**0.108**	**0.558**
46	33,930	6,016	11,740	24%	0.24	67.7	0.389	0.886	0.550	0.631	0.775	**0.225**	**0.639**
47	11,361	5,008	3,299	29%	0.29	72.1	0.574	0.921	0.691	0.758	0.897	**0.103**	**0.542**
48	12,839	5,008	3,852	28%	0.28	72.7	0.600	0.932	0.710	0.773	0.909	**0.091**	**0.556**
49	13,159	5,008	3,971	28%	0.28	73.2	0.621	0.941	0.726	0.786	0.919	**0.081**	**0.561**
50	16,755	5,008	5,316	27%	0.27	70.4	0.503	0.891	0.636	0.704	0.853	**0.147**	**0.535**
51	18,604	5,008	6,008	26%	0.26	69	0.444	0.866	0.592	0.663	0.813	**0.187**	**0.640**
52	10,873	5,008	3,117	29%	0.29	69.5	0.465	0.875	0.608	0.686	0.832	**0.168**	**0.480**
53	17,377	4,269	5,549	27%	0.27	67.1	0.364	0.799	0.531	0.602	0.747	**0.253**	**0.627**
54	12,907	5,008	3,877	28%	0.28	70.4	0.503	0.891	0.636	0.708	0.855	**0.145**	**0.540**
55	39,342	6,016	13,764	24%	0.24	66.5	0.339	0.864	0.512	0.595	0.732	**0.268**	**0.678**
56	12,503	5,008	3,726	28%	0.28	72	0.570	0.919	0.688	0.753	0.894	**0.106**	**0.563**
57	24,133	6,016	8,076	25%	0.25	68.3	0.414	0.897	0.569	0.652	0.796	**0.204**	**0.655**
58	13,545	5,008	4,116	28%	0.28	70.7	0.515	0.896	0.646	0.716	0.862	**0.138**	**0.590**
59	23,629	6,016	7,887	25%	0.25	68.1	0.406	0.893	0.563	0.646	0.790	**0.210**	**0.632**
60	12,520	5,008	3,733	28%	0.28	70.7	0.515	0.896	0.646	0.717	0.863	**0.137**	**0.566**
61	18,100	4,017	5,819	26%	0.26	70.1	0.490	0.842	0.627	0.684	0.839	**0.161**	**0.558**
62	21,629	6,016	7,139	26%	0.26	69.7	0.473	0.922	0.614	0.693	0.838	**0.162**	**0.633**
63	24,788	6,016	8,321	25%	0.25	69.1	0.448	0.911	0.595	0.674	0.820	**0.180**	**0.612**
64	9,898	4,453	2,752	30%	0.30	71.8	0.562	0.892	0.681	0.744	0.888	**0.112**	**0.487**
65	10,151	471	2,846	30%	0.30	73.9	0.650	0.757	0.748	0.751	0.913	**0.087**	**0.442**
66	13,965	4,101	4,273	28%	0.28	70	0.486	0.844	0.624	0.685	0.838	**0.162**	**0.630**
67	10,352	5,848	2,922	30%	0.30	69.2	0.452	0.906	0.598	0.689	0.830	**0.170**	**0.596**
68	14,755	5,126	4,568	27%	0.27	66.9	0.356	0.833	0.525	0.609	0.748	**0.252**	**0.638**
69	13,898	5,008	4,248	28%	0.28	71.9	0.566	0.918	0.684	0.749	0.891	**0.109**	**0.552**
70	24,418	6,016	8,183	25%	0.25	66	0.318	0.855	0.496	0.586	0.718	**0.282**	**0.682**
71	55,576	6,016	19,835	23%	0.23	63.6	0.217	0.812	0.419	0.510	0.616	**0.384**	**0.714**
72	11,730	5,411	3,437	29%	0.29	68.4	0.419	0.872	0.572	0.659	0.802	**0.198**	**0.596**
73	12,234	5,008	3,626	29%	0.29	69.4	0.461	0.873	0.604	0.681	0.828	**0.172**	**0.561**
74	12,419	6,016	3,695	28%	0.28	71.6	0.553	0.956	0.675	0.755	0.890	**0.110**	**0.575**
75	10,554	5,008	2,997	30%	0.30	73.2	0.621	0.941	0.726	0.789	0.920	**0.080**	**0.490**
76	10,386	5,008	2,934	30%	0.30	69.4	0.461	0.873	0.604	0.684	0.830	**0.170**	**0.475**
77	13,092	4,773	3,946	28%	0.28	68.6	0.427	0.848	0.579	0.655	0.802	**0.198**	**0.501**
78	10,369	4,756	2,928	30%	0.30	68.5	0.423	0.846	0.576	0.656	0.801	**0.199**	**0.466**
79	9,058	4,117	2,438	31%	0.31	69.4	0.461	0.834	0.604	0.675	0.825	**0.175**	**0.505**
80	10,268	4,722	2,890	30%	0.30	69	0.444	0.853	0.592	0.669	0.816	**0.184**	**0.540**
81												**Average:**	**0.565**

BJ10 ='Study 467 Flow Data'!G8
BK10 ='Study 467 Flow Data'!AL8
BL10 ='Study 467 Flow Data'!Q8 (HIDDEN)
BM10 ='Study 467 Flow Data'!AA8 (HIDDEN)
BN10 =(BL10+BM10)
BO10 =0.374*BJ10-950
BP10 =IF(BJ10>$I$2,(0.133*BJ10+829)/(BJ10-BO10),(0.293*BJ10+2090)/(BJ10-BO10))
BQ10 =(0.133*BJ10+829)/(BJ10-BO10)
BR10 observed temp f
BS10 =IF((-2.45925+(0.0420748*BR10))<0,0,(-2.45925+(0.0420748*BR10)))
BT10 =(-0.5916024)+(0.017968*BR10)+(0.0000434*BN10)
BU10 =-1.613493+(0.0319584*BR10)
BV10 =IF(BK10>=$I$3,((BT10*BQ10)+(BU10*(1-BQ10))+(BT10*BP10)+(BU10*(1-BP10)))/2,(BT10*BP10)+(BU10*(1-BP10)))
BW10 =BS10+BV10-(BS10*BV10)
BX10 =1-BW10

BZ10 ='Study 467 Flow Data'!H8
CA10 ='Study 467 Flow Data'!R8 (HIDDEN)
CB10 ='Study 467 Flow Data'!AB8 (HIDDEN)
CC10 =(CA10+CB10)
CD10 =0.374*BZ10-950
CE10 =IF(BZ10>$I$2,(0.133*BZ10+829)/(BZ10-CD10),(0.293*BZ10+2090)/(BZ10-CD10))
CF10 =(0.84*(0.133*BZ10+829)/(BZ10-CD10))+(0.16*CE10)
CG10 USBR OBSERVED TEMPERATURES
CH10 =(-2.45925+(0.0420748*CG10))
CI10 =(-0.5916024)+(0.017968*CG10)+(0.0000434*CC10)
CJ10 =-1.613493+(0.0319584*CG10)
CK10 =((CI10*CF10)+(CJ10*(1-CF10))+(CI10*CE10)+(CJ10*(1-CE10)))/2
CL10 =CH10+CK10-(CH10*CK10)
CM10 =1-CL10

CO10 ='Study 467 Flow Data'!I8
CP10 ='Study 467 Flow Data'!S8 (HIDDEN)
CQ10 ='Study 467 Flow Data'!AC8 (HIDDEN)
CR10 =(CP10+CQ10)
CS10 =0.374*CO10-950
CT10 =IF(CO10>$I$2,(0.133*CO10+829)/(CO10-CS10),(0.293*CO10+2090)/(CO10-CS10))
CU10 =(0.27*(0.133*CO10+829)/(CO10-CS10))+(0.73*CT10)
CV10 USBR OBSERVED TEMPERATURES
CW10 =(-2.45925+(0.0420748*CV10))
CX10 =IF(((-0.5916024)+(0.017968*CV10)+(0.0000434*CR10))>1,1,((-0.5916024)+(0.017968*CV10)+(0.0000434*CR10)))
CY10 =-1.613493+(0.0319584*CV10)
CZ10 =(CX10*CT10)+(CY10*(1-CT10))
DA10 =CW10+CZ10-(CW10*CZ10)
DB10 =(Q8*0.1 =1-DA10
DD10 =(O10*0.01)+(AD10*0.06)+(AS10*0.17)+(BH10*0.28)+(BX10*0.25)+(CM10*0.16)+(DB10*0.07)

Study 468 Sacramento River Spring Run YOY Smolt Survival Model

Modified m2 by changing the slope to 0.0000434
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

Cross Channel Closed Over 25000 cfs
Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

February Water Temp 50 F
March Water Temp 55 F

DECEMBER

Year	Water Year Type	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	A	17,142	4,212	7,107	11,319	5,461	61%	0.45	0	0.744	0.000	0.338	0.338	**66.2%**
1923	B	34,544	4,212	4,505	8,717	11,969	24%	0.24	0	0.631	0.000	0.152	0.152	**84.8%**
1924	C	13,873	3,919	6,424	10,344	4,238	64%	0.48	0	0.702	0.000	0.334	0.334	**66.6%**
1925	D	11,254	4,212	4,847	9,059	3,259	67%	0.50	0	0.646	0.000	0.324	0.324	**67.6%**
1926	D	11,547	4,212	3,871	8,083	3,369	67%	0.50	0	0.604	0.000	0.301	0.301	**69.9%**
1927	W	14,312	4,212	7,042	11,254	4,403	63%	0.47	0	0.741	0.000	0.351	0.351	**64.9%**
1928	A	16,572	4,212	5,513	9,726	5,248	61%	0.46	0	0.675	0.000	0.309	0.309	**69.1%**
1929	C	13,710	4,212	6,180	10,392	4,178	64%	0.48	0	0.704	0.000	0.336	0.336	**66.4%**
1930	D	14,442	4,212	6,278	10,490	4,451	63%	0.47	0	0.708	0.000	0.334	0.334	**66.6%**
1931	C	9,368	2,179	2,992	5,172	2,554	71%	0.53	0	0.477	0.000	0.252	0.252	**74.8%**
1932	D	14,653	4,212	7,188	11,401	4,530	63%	0.47	0	0.748	0.000	0.352	0.352	**64.8%**
1933	C	8,181	2,017	2,488	4,505	2,110	74%	0.55	0	0.448	0.000	0.246	0.246	**75.4%**
1934	C	12,474	4,163	5,546	9,709	3,715	66%	0.49	0	0.674	0.000	0.329	0.329	**67.1%**
1935	B	8,506	3,220	3,399	6,619	2,231	73%	0.54	0	0.540	0.000	0.293	0.293	**70.7%**
1936	B	10,880	4,212	3,285	7,497	3,119	68%	0.51	0	0.578	0.000	0.293	0.293	**70.7%**
1937	B	12,702	4,212	5,741	9,953	3,800	65%	0.49	0	0.685	0.000	0.333	0.333	**66.7%**
1938	W	48,367	4,212	7,530	11,742	17,139	23%	0.23	0	0.763	0.000	0.177	0.177	**82.3%**
1939	D	18,687	4,212	3,741	7,953	6,039	60%	0.45	0	0.598	0.000	0.267	0.267	**73.3%**
1940	A	7,839	1,431	2,667	4,098	1,982	75%	0.56	0	0.431	0.000	0.239	0.239	**76.1%**
1941	W	35,975	4,212	7,335	11,547	12,505	24%	0.24	0	0.754	0.000	0.180	0.180	**82.0%**
1942	W	65,623	4,212	3,610	7,823	23,593	23%	0.23	0	0.592	0.000	0.135	0.135	**86.5%**
1943	W	28,803	4,212	3,773	7,985	9,822	25%	0.25	0	0.599	0.000	0.147	0.147	**85.3%**
1944	D	13,775	4,212	6,424	10,636	4,202	64%	0.48	0	0.715	0.000	0.341	0.341	**65.9%**
1945	B	15,824	4,212	6,961	11,173	4,968	62%	0.46	0	0.738	0.000	0.341	0.341	**65.9%**
1946	B	54,840	4,212	7,595	11,807	19,560	23%	0.23	0	0.765	0.000	0.176	0.176	**82.4%**
1947	D	18,134	4,212	7,140	11,352	5,832	60%	0.45	0	0.746	0.000	0.335	0.335	**66.5%**
1948	B	9,384	2,293	3,090	5,383	2,560	71%	0.53	0	0.487	0.000	0.256	0.256	**74.4%**
1949	D	15,564	4,212	6,896	11,108	4,871	62%	0.46	0	0.735	0.000	0.341	0.341	**65.9%**
1950	B	11,449	4,212	3,448	7,660	3,332	67%	0.50	0	0.585	0.000	0.292	0.292	**70.8%**
1951	A	68,095	4,212	7,595	11,807	24,518	23%	0.23	0	0.765	0.000	0.174	0.174	**82.6%**
1952	W	46,709	4,212	7,107	11,319	16,519	23%	0.23	0	0.744	0.000	0.174	0.174	**82.6%**
1953	W	42,334	4,212	3,741	7,953	14,883	24%	0.24	0	0.598	0.000	0.141	0.141	**85.9%**
1954	A	14,914	4,212	3,903	8,115	4,628	63%	0.47	0	0.605	0.000	0.283	0.283	**71.7%**
1955	D	26,022	4,212	6,912	11,124	8,782	25%	0.25	0	0.736	0.000	0.183	0.183	**81.7%**
1956	W	25,290	4,212	7,595	11,807	8,508	25%	0.25	0	0.765	0.000	0.191	0.191	**80.9%**
1957	A	14,149	4,212	5,806	10,018	4,342	64%	0.47	0	0.688	0.000	0.326	0.326	**67.4%**
1958	W	23,745	4,212	6,928	11,140	7,930	57%	0.43	0	0.736	0.000	0.315	0.315	**68.5%**
1959	B	14,621	4,212	3,854	8,067	4,518	63%	0.47	0	0.603	0.000	0.284	0.284	**71.6%**
1960	D	11,075	4,212	2,797	7,010	3,192	68%	0.50	0	0.557	0.000	0.281	0.281	**71.9%**
1961	D	18,280	4,212	6,896	11,108	5,887	60%	0.45	0	0.735	0.000	0.330	0.330	**67.0%**
1962	B	16,703	4,212	6,879	11,092	5,297	61%	0.46	0	0.734	0.000	0.336	0.336	**66.4%**
1963	W	27,550	4,212	6,896	11,108	9,354	25%	0.25	0	0.735	0.000	0.181	0.181	**81.9%**
1964	D	14,849	4,212	6,050	10,262	4,603	63%	0.47	0	0.698	0.000	0.327	0.327	**67.3%**
1965	W	27,989	4,212	7,465	11,677	9,518	25%	0.25	0	0.760	0.000	0.187	0.187	**81.3%**
1966	B	16,995	4,212	6,180	10,392	5,406	61%	0.46	0	0.704	0.000	0.321	0.321	**67.9%**
1967	W	39,748	4,212	7,123	11,336	13,916	24%	0.24	0	0.745	0.000	0.176	0.176	**82.4%**
1968	B	16,686	4,212	3,741	7,953	5,291	61%	0.46	0	0.598	0.000	0.273	0.273	**72.7%**
1969	W	24,981	4,212	6,977	11,189	8,393	57%	0.42	0	0.739	0.000	0.314	0.314	**68.6%**
1970	W	50,156	4,212	3,480	7,693	17,809	23%	0.23	0	0.587	0.000	0.136	0.136	**86.4%**
1971	W	54,125	4,212	7,042	11,254	19,293	23%	0.23	0	0.741	0.000	0.171	0.171	**82.9%**
1972	B	20,004	4,212	6,196	10,409	6,532	59%	0.44	0	0.705	0.000	0.311	0.311	**68.9%**
1973	A	26,200	4,212	6,896	11,108	8,849	25%	0.25	0	0.735	0.000	0.183	0.183	**81.7%**
1974	W	61,590	4,212	7,140	11,352	22,085	23%	0.23	0	0.746	0.000	0.170	0.170	**83.0%**
1975	W	17,613	4,212	4,245	8,457	5,637	61%	0.45	0	0.620	0.000	0.280	0.280	**72.0%**
1976	C	16,768	4,212	4,651	8,864	5,321	61%	0.46	0	0.638	0.000	0.291	0.291	**70.9%**
1977	C	8,115	1,708	3,009	4,716	2,085	74%	0.55	0	0.458	0.000	0.252	0.252	**74.8%**
1978	A	12,279	4,131	5,530	9,660	3,642	66%	0.49	0	0.672	0.000	0.330	0.330	**67.0%**
1979	B	12,751	4,212	3,676	7,888	3,819	65%	0.49	0	0.595	0.000	0.289	0.289	**71.1%**
1980	A	20,833	4,212	6,993	11,206	6,842	59%	0.44	0	0.739	0.000	0.324	0.324	**67.6%**
1981	D	15,613	4,212	4,115	8,327	4,889	62%	0.46	0	0.614	0.000	0.285	0.285	**71.5%**
1982	W	68,599	4,212	7,026	11,238	24,706	23%	0.23	0	0.741	0.000	0.168	0.168	**83.2%**
1983	W	55,410	4,212	4,424	8,636	19,773	23%	0.23	0	0.628	0.000	0.144	0.144	**85.6%**
1984	W	82,944	2,992	3,106	6,099	30,071	22%	0.22	0	0.518	0.000	0.116	0.116	**88.4%**
1985	D	23,875	4,212	6,619	10,831	7,979	57%	0.43	0	0.723	0.000	0.309	0.309	**69.1%**
1986	W	15,727	4,212	6,944	11,157	4,932	62%	0.46	0	0.737	0.000	0.341	0.341	**65.9%**
1987	D	13,791	4,212	6,099	10,311	4,208	64%	0.48	0	0.700	0.000	0.334	0.334	**66.6%**
1988	C	15,841	4,212	6,879	11,092	4,974	62%	0.46	0	0.734	0.000	0.339	0.339	**66.1%**
1989	D	8,847	2,472	3,253	5,725	2,359	72%	0.54	0	0.501	0.000	0.269	0.269	**73.1%**
1990	C	14,637	4,212	6,196	10,409	4,524	63%	0.47	0	0.705	0.000	0.331	0.331	**66.9%**
1991	C	8,766	1,659	3,171	4,830	2,328	72%	0.54	0	0.463	0.000	0.249	0.249	**75.1%**
1992	C	7,465	2,960	1,610	4,570	1,842	76%	0.56	0	0.451	0.000	0.255	0.255	**74.5%**

JANUARY

Year	Sac River Flows	CVP	SWP	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	17,499	4,212	7,579	11,791	5,595	61%	0.27	0	0.765	0.000	0.203	0.203	**79.7%**
1923	32,283	4,212	3,643	7,855	11,124	24%	0.24	0	0.594	0.000	0.144	0.144	**85.6%**
1924	14,621	4,212	6,652	10,864	4,518	63%	0.27	0	0.724	0.000	0.199	0.199	**80.1%**
1925	10,213	3,545	3,155	6,701	2,870	69%	0.30	0	0.544	0.000	0.162	0.162	**83.8%**
1926	19,776	4,212	7,140	11,352	6,446	59%	0.26	0	0.746	0.000	0.193	0.193	**80.7%**
1927	29,681	4,212	7,286	11,498	10,151	24%	0.24	0	0.752	0.000	0.184	0.184	**81.6%**
1928	26,103	4,212	3,643	7,855	8,812	25%	0.25	0	0.594	0.000	0.148	0.148	**85.2%**
1929	15,515	4,212	7,091	11,303	4,853	62%	0.27	0	0.743	0.000	0.202	0.202	**79.8%**
1930	20,768	4,212	7,091	11,303	6,817	59%	0.26	0	0.743	0.000	0.191	0.191	**80.9%**
1931	11,970	4,212	4,879	9,091	3,527	66%	0.29	0	0.647	0.000	0.186	0.186	**81.4%**
1932	17,256	4,212	7,823	12,035	5,504	61%	0.27	0	0.775	0.000	0.206	0.206	**79.4%**
1933	12,100	4,212	5,416	9,628	3,575	66%	0.29	0	0.671	0.000	0.192	0.192	**80.8%**
1934	16,101	4,212	7,156	11,368	5,072	62%	0.27	0	0.746	0.000	0.201	0.201	**79.9%**
1935	25,469	4,212	7,660	11,872	8,575	25%	0.25	0	0.768	0.000	0.192	0.192	**80.8%**
1936	32,039	4,212	7,449	11,661	11,033	24%	0.24	0	0.759	0.000	0.184	0.184	**81.6%**
1937	16,215	4,212	7,579	11,791	5,114	62%	0.27	0	0.765	0.000	0.206	0.206	**79.4%**
1938	31,437	4,212	3,936	8,148	10,808	24%	0.24	0	0.607	0.000	0.147	0.147	**85.3%**
1939	18,410	4,212	3,236	7,449	5,935	60%	0.26	0	0.576	0.000	0.151	0.151	**84.9%**
1940	23,452	4,212	8,018	12,230	7,821	57%	0.25	0	0.784	0.000	0.198	0.198	**80.2%**
1941	72,291	4,212	8,132	12,344	26,087	23%	0.23	0	0.789	0.000	0.178	0.178	**82.2%**
1942	63,265	4,212	3,236	7,449	22,711	23%	0.23	0	0.576	0.000	0.131	0.131	**86.9%**
1943	58,060	4,212	3,301	7,514	20,765	23%	0.23	0	0.579	0.000	0.133	0.133	**86.7%**
1944	17,678	4,212	3,269	7,481	5,662	60%	0.26	0	0.578	0.000	0.153	0.153	**84.7%**
1945	12,685	4,212	5,188	9,400	3,794	65%	0.28	0	0.661	0.000	0.187	0.187	**81.3%**
1946	43,228	4,212	3,643	7,855	15,217	23%	0.23	0	0.594	0.000	0.139	0.139	**86.1%**
1947	15,223	4,212	6,684	10,897	4,743	63%	0.27	0	0.726	0.000	0.198	0.198	**80.2%**
1948	14,897	4,212	6,522	10,734	4,622	63%	0.27	0	0.719	0.000	0.197	0.197	**80.3%**
1949	14,930	4,212	6,814	11,027	4,634	63%	0.27	0	0.731	0.000	0.200	0.200	**80.0%**
1950	20,931	4,212	7,172	11,384	6,878	59%	0.26	0	0.747	0.000	0.192	0.192	**80.8%**
1951	62,208	4,212	7,319	11,531	22,316	23%	0.23	0	0.753	0.000	0.172	0.172	**82.8%**
1952	67,347	4,212	6,847	11,059	24,238	23%	0.23	0	0.733	0.000	0.166	0.166	**83.4%**
1953	64,078	4,212	3,334	7,546	23,015	23%	0.23	0	0.580	0.000	0.132	0.132	**86.8%**
1954	33,421	4,212	3,854	8,067	11,550	24%	0.24	0	0.603	0.000	0.145	0.145	**85.5%**
1955	22,265	4,212	6,017	10,230	7,377	58%	0.25	0	0.697	0.000	0.177	0.177	**82.3%**
1956	83,724	4,212	8,018	12,230	30,363	22%	0.22	0	0.784	0.000	0.176	0.176	**82.4%**
1957	18,638	4,212	3,887	8,099	6,021	60%	0.26	0	0.604	0.000	0.158	0.158	**84.2%**
1958	36,463	4,212	3,367	7,579	12,687	24%	0.24	0	0.582	0.000	0.139	0.139	**86.1%**
1959	35,162	4,212	3,334	7,546	12,200	24%	0.24	0	0.580	0.000	0.139	0.139	**86.1%**
1960	14,523	4,212	6,408	10,620	4,482	63%	0.27	0	0.714	0.000	0.196	0.196	**80.4%**
1961	15,011	4,212	7,075	11,287	4,664	63%	0.27	0	0.743	0.000	0.203	0.203	**79.7%**
1962	12,653	4,212	3,919	8,132	3,782	65%	0.28	0	0.606	0.000	0.172	0.172	**82.8%**
1963	18,280	4,212	7,253	11,466	5,887	60%	0.26	0	0.751	0.000	0.197	0.197	**80.3%**
1964	25,534	4,212	3,871	8,083	8,600	25%	0.25	0	0.604	0.000	0.151	0.151	**84.9%**
1965	81,236	4,212	8,506	12,718	29,432	22%	0.22	0	0.805	0.000	0.181	0.181	**81.9%**
1966	29,632	4,212	3,659	7,872	10,132	24%	0.24	0	0.595	0.000	0.145	0.145	**85.5%**
1967	34,625	4,212	7,676	11,889	12,000	24%	0.24	0	0.769	0.000	0.185	0.185	**81.5%**
1968	30,640	4,212	3,334	7,546	10,509	24%	0.24	0	0.580	0.000	0.141	0.141	**85.9%**
1969	68,502	4,212	5,286	9,498	24,670	23%	0.23	0	0.665	0.000	0.151	0.151	**84.9%**
1970	92,669	4,163	3,334	7,497	33,708	22%	0.22	0	0.578	0.000	0.129	0.129	**87.1%**
1971	46,888	4,212	5,465	9,677	16,586	23%	0.23	0	0.673	0.000	0.157	0.157	**84.3%**
1972	20,394	4,212	3,887	8,099	6,677	59%	0.26	0	0.604	0.000	0.156	0.156	**84.4%**
1973	49,376	4,212	6,408	10,620	17,517	23%	0.23	0	0.714	0.000	0.166	0.166	**83.4%**
1974	78,422	4,212	3,643	7,855	28,380	22%	0.22	0	0.594	0.000	0.134	0.134	**86.6%**
1975	18,670	4,212	3,854	8,067	6,033	60%	0.26	0	0.603	0.000	0.158	0.158	**84.2%**
1976	16,768	4,212	3,806	8,018	5,321	61%	0.27	0	0.601	0.000	0.161	0.161	**83.9%**
1977	7,660	2,098	2,440	4,538	1,915	75%	0.32	0	0.450	0.000	0.145	0.145	**85.5%**
1978	43,066	2,521	7,774	10,295	15,157	23%	0.23	0	0.700	0.000	0.164	0.164	**83.6%**
1979	27,241	4,212	3,269	7,481	9,238	25%	0.25	0	0.578	0.000	0.143	0.143	**85.7%**
1980	63,623	4,212	3,155	7,367	22,845	23%	0.23	0	0.573	0.000	0.130	0.130	**87.0%**
1981	28,607	4,212	3,350	7,563	9,749	25%	0.25	0	0.581	0.000	0.143	0.143	**85.7%**
1982	51,165	4,212	7,644	11,856	18,186	23%	0.23	0	0.767	0.000	0.178	0.178	**82.2%**
1983	59,150	4,212	2,651	6,863	21,172	23%	0.23	0	0.551	0.000	0.126	0.126	**87.4%**
1984	47,359	1,334	2,879	4,212	16,762	23%	0.23	0	0.436	0.000	0.102	0.102	**89.8%**
1985	16,800	4,212	3,871	8,083	5,333	61%	0.27	0	0.604	0.000	0.161	0.161	**83.9%**
1986	21,500	4,212	7,351	11,563	7,091	58%	0.26	0	0.755	0.000	0.193	0.193	**80.7%**
1987	16,735	1,106	6,359	7,465	5,309	61%	0.27	0	0.577	0.000	0.154	0.154	**84.6%**
1988	25,534	4,212	7,058	11,271	8,600	25%	0.25	0	0.742	0.000	0.185	0.185	**81.5%**
1989	12,002	4,196	4,521	8,717	3,539	66%	0.29	0	0.631	0.000	0.181	0.181	**81.9%**
1990	21,582	2,553	7,058	9,612	7,122	58%	0.26	0	0.670	0.000	0.171	0.171	**82.9%**
1991	6,847	1,691	1,708	3,399	1,611	78%	0.33	0	0.400	0.000	0.133	0.133	**86.7%**
1992	12,133	4,212	4,781	8,994	3,588	66%	0.29	0	0.643	0.000	0.184	0.184	**81.6%**

FEBRUARY

Year	Sac River Flow	CVP	SWP	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	34,409	4,249	6,356	10,606	11,919	24%	0.24	0	0.767	0.000	0.184	0.184	**81.6%**
1923	24,326	4,285	2,377	6,662	8,148	58%	0.25	0	0.596	0.000	0.150	0.150	**85.0%**
1924	16,898	4,068	4,624	8,693	5,370	60%	0.27	0	0.684	0.000	0.183	0.183	**81.7%**
1925	44,583	4,213	7,581	11,794	15,724	23%	0.23	0	0.819	0.000	0.192	0.192	**80.8%**
1926	36,714	4,231	7,635	11,866	12,781	24%	0.24	0	0.822	0.000	0.196	0.196	**80.4%**
1927	88,121	2,827	8,499	11,326	32,007	22%	0.22	0	0.798	0.000	0.179	0.179	**82.1%**
1928	27,364	4,103	4,225	8,327	9,284	25%	0.25	0	0.668	0.000	0.165	0.165	**83.5%**
1929	18,528	4,231	3,853	8,085	5,980	60%	0.26	0	0.658	0.000	0.173	0.173	**82.7%**
1930	15,683	2,791	3,997	6,788	4,916	62%	0.27	0	0.601	0.000	0.163	0.163	**83.7%**
1931	11,092	3,331	1,891	5,222	3,198	66%	0.29	0	0.533	0.000	0.156	0.156	**84.4%**
1932	13,995	4,085	5,894	9,979	4,284	64%	0.28	0	0.740	0.000	0.205	0.205	**79.5%**
1933	11,974	3,835	2,701	6,536	3,528	64%	0.29	0	0.590	0.000	0.169	0.169	**83.1%**
1934	12,748	1,621	4,411	6,032	3,818	66%	0.28	0	0.569	0.000	0.161	0.161	**83.9%**
1935	11,974	684	3,943	4,628	3,528	67%	0.29	0	0.508	0.000	0.146	0.146	**85.4%**
1936	47,548	4,103	8,206	12,309	16,833	23%	0.23	0	0.841	0.000	0.196	0.196	**80.4%**
1937	33,455	4,231	4,556	8,787	11,562	24%	0.24	0	0.688	0.000	0.166	0.166	**83.4%**
1938	82,359	4,267	3,943	8,211	29,852	22%	0.22	0	0.663	0.000	0.149	0.149	**85.1%**
1939	19,032	2,593	3,961	6,554	6,168	59%	0.26	0	0.591	0.000	0.154	0.154	**84.6%**
1940	42,646	4,085	8,206	12,291	14,999	23%	0.24	0	0.840	0.000	0.198	0.198	**80.2%**
1941	75,031	4,285	6,878	11,164	27,112	23%	0.23	0	0.791	0.000	0.178	0.178	**82.2%**
1942	78,344	4,285	3,961	8,247	28,351	22%	0.23	0	0.665	0.000	0.150	0.150	**85.0%**
1943	52,253	4,267	3,997	8,265	18,593	23%	0.23	0	0.665	0.000	0.154	0.154	**84.6%**
1944	29,937	4,103	3,825	7,928	10,246	24%	0.24	0	0.651	0.000	0.159	0.159	**84.1%**
1945	40,621	4,249	3,997	8,247	14,242	23%	0.24	0	0.665	0.000	0.157	0.157	**84.3%**
1946	24,362	4,267	3,979	8,247	8,161	57%	0.25	0	0.665	0.000	0.167	0.167	**83.3%**
1947	21,571	4,249	3,997	8,247	7,118	58%	0.26	0	0.665	0.000	0.170	0.170	**83.0%**
1948	15,594	4,085	1,791	5,876	4,882	64%	0.27	0	0.562	0.000	0.152	0.152	**84.8%**
1949	16,277	4,249	4,177	8,427	5,138	61%	0.27	0	0.673	0.000	0.181	0.181	**81.9%**
1950	35,166	4,249	7,526	11,776	12,202	24%	0.24	0	0.818	0.000	0.196	0.196	**80.4%**
1951	60,572	4,285	4,682	8,967	21,704	23%	0.23	0	0.696	0.000	0.159	0.159	**84.1%**
1952	62,499	4,138	3,773	7,910	22,425	23%	0.23	0	0.650	0.000	0.148	0.148	**85.2%**
1953	28,341	4,285	4,051	8,337	9,650	25%	0.25	0	0.669	0.000	0.164	0.164	**83.6%**
1954	57,151	4,267	4,628	8,895	20,424	23%	0.23	0	0.693	0.000	0.159	0.159	**84.1%**
1955	16,295	4,249	3,889	8,139	5,144	61%	0.27	0	0.660	0.000	0.177	0.177	**82.3%**
1956	61,543	4,138	4,520	8,658	22,067	23%	0.23	0	0.683	0.000	0.156	0.156	**84.4%**
1957	33,149	4,249	4,646	8,895	11,448	24%	0.24	0	0.693	0.000	0.167	0.167	**83.3%**
1958	63,003	4,249	4,051	8,301	22,613	23%	0.23	0	0.667	0.000	0.152	0.152	**84.8%**
1959	50,075	4,249	4,051	8,301	17,778	23%	0.23	0	0.667	0.000	0.155	0.155	**84.5%**
1960	26,217	4,085	7,041	11,126	8,855	25%	0.25	0	0.790	0.000	0.196	0.196	**80.4%**
1961	32,843	4,249	7,112	11,362	11,333	24%	0.24	0	0.800	0.000	0.193	0.193	**80.7%**
1962	45,177	4,231	8,481	12,712	15,946	23%	0.23	0	0.859	0.000	0.201	0.201	**79.9%**
1963	58,699	4,285	8,499	12,784	21,004	23%	0.23	0	0.862	0.000	0.197	0.197	**80.3%**
1964	19,019	4,120	3,512	7,632	6,163	61%	0.26	0	0.638	0.000	0.167	0.167	**83.3%**
1965	33,329	4,249	5,618	9,867	11,515	24%	0.24	0	0.735	0.000	0.177	0.177	**82.3%**
1966	26,775	4,285	4,375	8,661	9,064	25%	0.25	0	0.683	0.000	0.169	0.169	**83.1%**
1967	43,106	4,285	3,205	7,490	15,172	24%	0.23	0	0.632	0.000	0.148	0.148	**85.2%**
1968	54,520	2,677	3,912	6,589	19,440	23%	0.23	0	0.593	0.000	0.137	0.137	**86.3%**
1969	67,486	4,285	3,169	7,454	24,290	23%	0.23	0	0.630	0.000	0.143	0.143	**85.7%**
1970	57,565	1,206	4,051	5,258	20,579	23%	0.23	0	0.535	0.000	0.123	0.123	**87.7%**
1971	29,206	4,285	4,285	8,571	9,973	24%	0.25	0	0.679	0.000	0.166	0.166	**83.4%**
1972	24,217	4,103	4,485	8,588	8,107	57%	0.25	0	0.680	0.000	0.171	0.171	**82.9%**
1973	70,961	4,267	4,429	8,697	25,590	23%	0.23	0	0.684	0.000	0.155	0.155	**84.5%**
1974	41,918	4,267	4,375	8,643	14,727	24%	0.24	0	0.682	0.000	0.161	0.161	**83.9%**
1975	58,807	4,249	4,628	8,877	21,044	23%	0.23	0	0.692	0.000	0.159	0.159	**84.1%**
1976	19,523	4,085	4,085	8,171	6,352	59%	0.26	0	0.661	0.000	0.172	0.172	**82.8%**
1977	12,172	666	1,404	2,071	3,602	68%	0.29	0	0.397	0.000	0.113	0.113	**88.7%**
1978	50,129	1,711	7,418	9,129	17,798	23%	0.23	0	0.703	0.000	0.163	0.163	**83.7%**
1979	42,044	4,249	3,961	8,211	14,774	24%	0.24	0	0.663	0.000	0.156	0.156	**84.4%**
1980	69,453	4,103	3,633	7,736	25,026	23%	0.23	0	0.643	0.000	0.146	0.146	**85.4%**
1981	29,674	2,899	4,069	6,968	10,148	24%	0.24	0	0.609	0.000	0.149	0.149	**85.1%**
1982	65,650	4,285	4,628	8,913	23,603	23%	0.23	0	0.694	0.000	0.158	0.158	**84.2%**
1983	82,917	3,421	2,791	6,212	30,061	22%	0.22	0	0.576	0.000	0.129	0.129	**87.1%**
1984	36,004	1,443	3,720	5,163	12,516	24%	0.24	0	0.531	0.000	0.127	0.127	**87.3%**
1985	20,131	4,249	4,646	8,895	6,579	58%	0.26	0	0.693	0.000	0.179	0.179	**82.1%**
1986	95,486	4,249	7,328	11,578	34,762	22%	0.22	0	0.809	0.000	0.180	0.180	**82.0%**
1987	23,030	1,260	4,213	5,474	7,663	57%	0.25	0	0.544	0.000	0.138	0.138	**86.2%**
1988	17,072	3,981	2,538	6,519	5,435	62%	0.27	0	0.590	0.000	0.157	0.157	**84.3%**
1989	11,830	954	1,765	2,719	3,474	67%	0.29	0	0.425	0.000	0.122	0.122	**87.8%**
1990	16,944	1,224	6,572	7,797	5,387	61%	0.27	0	0.645	0.000	0.172	0.172	**82.8%**
1991	11,002	396	846	1,242	3,165	67%	0.29	0	0.361	0.000	0.106	0.106	**89.4%**
1992	31,415	1,565	7,197	8,762	10,799	24%	0.24	0	0.687	0.000	0.167	0.167	**83.3%**

MARCH

Year	Sac River Flow	CVP	SWP	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	31,551	3,773	4,147	7,920	10,850	24%	0.24	0	0.740	0.144	0.289	0.289	**71.1%**
1923	17,174	4,228	3,367	7,595	5,473	27%	0.27	0	0.726	0.144	0.299	0.299	**70.1%**
1924	12,100	1,480	1,675	3,155	3,575	29%	0.29	0	0.534	0.144	0.256	0.256	**74.4%**
1925	18,557	3,708	4,163	7,872	5,990	26%	0.26	0	0.738	0.144	0.300	0.300	**70.0%**
1926	18,947	4,228	3,497	7,725	6,136	26%	0.26	0	0.732	0.144	0.298	0.298	**70.2%**
1927	43,863	3,236	4,147	7,384	15,455	23%	0.23	0	0.717	0.144	0.279	0.279	**72.1%**
1928	86,229	4,228	4,424	8,652	31,300	22%	0.22	0	0.772	0.144	0.285	0.285	**71.5%**
1929	16,930	4,066	2,765	6,831	5,382	27%	0.27	0	0.693	0.144	0.291	0.291	**70.9%**
1930	30,087	2,976	4,066	7,042	10,303	24%	0.24	0	0.702	0.144	0.280	0.280	**72.0%**
1931	8,701	1,659	1,626	3,285	2,304	31%	0.31	0	0.539	0.144	0.267	0.267	**73.3%**
1932	10,522	927	2,732	3,659	2,985	30%	0.30	0	0.555	0.144	0.266	0.266	**73.4%**
1933	10,392	293	4,342	4,635	2,937	30%	0.30	0	0.598	0.144	0.279	0.279	**72.1%**
1934	14,735	2,179	2,277	4,456	4,561	27%	0.27	0	0.590	0.144	0.266	0.266	**73.4%**
1935	24,916	4,228	6,977	11,206	8,368	25%	0.25	0	0.883	0.144	0.329	0.329	**67.1%**
1936	33,454	4,228	7,058	11,287	11,562	24%	0.24	0	0.886	0.144	0.323	0.323	**67.7%**
1937	38,463	4,228	4,001	8,229	13,435	24%	0.24	0	0.754	0.144	0.289	0.289	**71.1%**
1938	78,634	4,228	3,968	8,197	28,459	22%	0.22	0	0.752	0.144	0.281	0.281	**71.9%**
1939	16,394	2,667	3,985	6,652	5,181	27%	0.27	0	0.685	0.144	0.289	0.289	**71.1%**
1940	59,134	4,228	4,651	8,880	21,166	23%	0.23	0	0.782	0.144	0.290	0.290	**71.0%**
1941	58,581	4,228	3,838	8,067	20,959	23%	0.23	0	0.747	0.144	0.282	0.282	**71.8%**
1942	27,095	4,228	4,001	8,229	9,183	25%	0.25	0	0.754	0.144	0.295	0.295	**70.5%**
1943	64,598	4,228	4,050	8,278	23,210	23%	0.23	0	0.756	0.144	0.283	0.283	**71.7%**
1944	25,094	4,228	4,001	8,229	8,435	25%	0.25	0	0.754	0.144	0.297	0.297	**70.3%**
1945	27,030	4,228	4,131	8,359	9,159	25%	0.25	0	0.759	0.144	0.297	0.297	**70.3%**
1946	23,647	4,228	4,424	8,652	7,894	25%	0.25	0	0.772	0.144	0.303	0.303	**69.7%**
1947	22,509	4,228	3,985	8,213	7,468	25%	0.25	0	0.753	0.144	0.299	0.299	**70.1%**
1948	19,240	4,228	3,432	7,660	6,246	26%	0.26	0	0.729	0.144	0.297	0.297	**70.3%**
1949	41,716	3,773	7,107	10,880	14,652	24%	0.24	0	0.869	0.144	0.315	0.315	**68.5%**
1950	22,655	4,228	4,603	8,831	7,523	25%	0.25	0	0.780	0.144	0.306	0.306	**69.4%**
1951	29,827	4,228	4,700	8,929	10,205	24%	0.24	0	0.784	0.144	0.301	0.301	**69.9%**
1952	57,524	4,228	3,936	8,164	20,564	23%	0.23	0	0.751	0.144	0.283	0.283	**71.7%**
1953	24,899	3,448	4,115	7,563	8,362	25%	0.25	0	0.725	0.144	0.290	0.290	**71.0%**
1954	49,538	4,228	4,684	8,912	17,577	23%	0.23	0	0.783	0.144	0.293	0.293	**70.7%**
1955	17,678	4,228	3,025	7,253	5,662	26%	0.26	0	0.711	0.144	0.294	0.294	**70.6%**
1956	36,674	2,488	4,700	7,188	12,766	24%	0.24	0	0.709	0.144	0.279	0.279	**72.1%**
1957	44,383	4,228	4,375	8,603	15,649	23%	0.23	0	0.770	0.144	0.291	0.291	**70.9%**
1958	93,612	4,228	4,066	8,294	34,061	22%	0.22	0	0.757	0.144	0.281	0.281	**71.9%**
1959	23,387	4,228	3,025	7,253	7,797	25%	0.25	0	0.711	0.144	0.288	0.288	**71.2%**
1960	22,606	3,432	4,033	7,465	7,505	25%	0.25	0	0.721	0.144	0.291	0.291	**70.9%**
1961	20,947	3,497	4,554	8,050	6,884	26%	0.26	0	0.746	0.144	0.299	0.299	**70.1%**
1962	27,664	4,228	3,497	7,725	9,396	25%	0.25	0	0.732	0.144	0.289	0.289	**71.1%**
1963	32,641	4,228	4,375	8,603	11,258	24%	0.24	0	0.770	0.144	0.296	0.296	**70.4%**
1964	17,174	3,643	3,350	6,993	5,473	27%	0.27	0	0.700	0.144	0.292	0.292	**70.8%**
1965	21,386	4,228	4,277	8,506	7,049	26%	0.26	0	0.766	0.144	0.303	0.303	**69.7%**
1966	28,689	4,228	4,424	8,652	9,780	25%	0.25	0	0.772	0.144	0.298	0.298	**70.2%**
1967	54,483	4,228	3,285	7,514	19,426	23%	0.23	0	0.723	0.144	0.277	0.277	**72.3%**
1968	36,788	2,992	4,115	7,107	12,809	24%	0.24	0	0.705	0.144	0.278	0.278	**72.2%**
1969	45,326	3,643	3,253	6,896	16,002	23%	0.23	0	0.696	0.144	0.273	0.273	**72.7%**
1970	35,812	3,106	4,115	7,221	12,444	24%	0.24	0	0.710	0.144	0.280	0.280	**72.0%**
1971	50,888	4,228	4,700	8,929	18,082	23%	0.23	0	0.784	0.144	0.292	0.292	**70.8%**
1972	32,933	3,724	4,359	8,083	11,367	24%	0.24	0	0.747	0.144	0.290	0.290	**71.0%**
1973	47,554	4,228	4,456	8,685	16,835	23%	0.23	0	0.774	0.144	0.291	0.291	**70.9%**
1974	100,199	4,228	4,424	8,652	36,524	22%	0.22	0	0.772	0.144	0.284	0.284	**71.6%**
1975	75,999	4,228	4,684	8,912	27,474	23%	0.23	0	0.783	0.144	0.288	0.288	**71.2%**
1976	20,069	4,228	3,627	7,855	6,556	26%	0.26	0	0.738	0.144	0.298	0.298	**70.2%**
1977	7,546	797	1,252	2,049	1,872	32%	0.32	0	0.486	0.144	0.254	0.254	**74.6%**
1978	46,448	2,114	3,903	6,017	16,422	23%	0.23	0	0.658	0.144	0.264	0.264	**73.6%**
1979	32,592	4,228	4,001	8,229	11,239	24%	0.24	0	0.754	0.144	0.292	0.292	**70.8%**
1980	36,479	3,757	3,350	7,107	12,693	24%	0.24	0	0.705	0.144	0.278	0.278	**72.2%**
1981	32,494	2,992	4,115	7,107	11,203	24%	0.24	0	0.705	0.144	0.280	0.280	**72.0%**
1982	69,087	4,228	4,651	8,880	24,889	23%	0.23	0	0.782	0.144	0.289	0.289	**71.1%**
1983	81,935	2,049	2,635	4,684	29,694	22%	0.22	0	0.600	0.144	0.247	0.247	**75.3%**
1984	36,495	3,204	4,001	7,205	12,699	24%	0.24	0	0.709	0.144	0.279	0.279	**72.1%**
1985	21,809	4,228	4,619	8,847	7,207	26%	0.26	0	0.781	0.144	0.307	0.307	**69.3%**
1986	72,535	4,228	4,180	8,408	26,178	23%	0.23	0	0.762	0.144	0.284	0.284	**71.6%**
1987	29,551	2,342	4,131	6,473	10,102	24%	0.24	0	0.678	0.144	0.275	0.275	**72.5%**
1988	11,010	2,000	1,773	3,773	3,168	29%	0.29	0	0.560	0.144	0.266	0.266	**73.4%**
1989	42,496	4,228	6,961	11,189	14,944	24%	0.24	0	0.882	0.144	0.318	0.318	**68.2%**
1990	14,832	2,228	3,643	5,871	4,597	27%	0.27	0	0.651	0.144	0.283	0.283	**71.7%**
1991	29,681	4,228	7,075	11,303	10,151	24%	0.24	0	0.887	0.144	0.326	0.326	**67.4%**
1992	20,102	1,984	6,245	8,229	6,568	26%	0.26	0	0.754	0.144	0.302	0.302	**69.8%**

Formulas: Sacramento River Spring Run Young of Year Smolt Survival Model

```
C10 ='Study 468 Flow Data'!C7
D10 ='Study 468 Flow Data'!M7
E10 ='Study 468 Flow Data'!W7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.45*(0.133*C10+829)/(C10-G10))+(0.55*H10)
J10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
K10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*F10)
L10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 468 Flow Data'!D7
R10 ='Study 468 Flow Data'!N7
S10 ='Study 468 Flow Data'!X7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
Y10 =(-0.5916024)+(0.017968*$T$3)+(0.0000434*T10)
Z10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 468 Flow Data'!E7
AF10 ='Study 468 Flow Data'!O7
AG10 ='Study 468 Flow Data'!Y7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
AM10 =(-0.5916024)+(0.017968*$BC$2)+(0.0000434*AH10)
AN10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

AS10 ='Study 468 Flow Data'!F7
AT10 ='Study 468 Flow Data'!P7
AU10 ='Study 468 Flow Data'!Z7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$G$2,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BA10 =IF(((-0.5916024)+(0.017968*$BC$3)+(0.0000434*AV10))>1,1,((-0.5916024)+(0.017968*$BC$3)+(0.000043
BB10 =-1.613493+(0.0319584*$BC$3)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =(AZ10+BC10-(AZ10*BC10))
BE10 =1-BD10
```

Study 468 Sacramento River Spring Run YOY Smolt Survival Model (continued)

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15
Sacramento River temperatures based on limited historical data from USBR

APRIL

Row	BG Sac River Flows	BH CVP	BI SWP	BJ CVP + SWP exports	BK Calculated Sutter & Steamboat Slough Q	BL Percent	BM X-Channel Closed	BN observed temp	BO m1	BP m2	BQ m3	BR Calculated Mortality m23	BS m123	BT Calculated Survival s123
10	22,822	4,185	4,185	8,369	7,585	25%	0.25	58.5	0.002	0.823	0.256	0.400	0.401	**59.9%**
11	22,721	3,966	3,966	7,932	7,548	25%	0.25	58.3	0.000	0.800	0.250	0.389	0.389	**61.1%**
12	8,067	1,395	1,395	2,790	2,067	32%	0.32	61.5	0.128	0.635	0.352	0.442	0.513	**48.7%**
13	22,654	3,479	3,479	6,958	7,523	25%	0.25	59.1	0.027	0.772	0.275	0.401	0.418	**58.2%**
14	21,427	3,328	3,328	6,655	7,064	26%	0.26	61.6	0.133	0.804	0.355	0.470	0.540	**46.0%**
15	48,215	4,050	4,050	8,100	17,082	23%	0.23	56.8	0.000	0.781	0.202	0.336	0.336	**66.4%**
16	29,208	3,815	3,815	7,630	9,974	25%	0.25	58.7	0.011	0.794	0.262	0.393	0.399	**60.1%**
17	8,436	538	1,815	2,353	2,205	31%	0.31	56.3	0.000	0.522	0.186	0.291	0.291	**70.9%**
18	12,638	1,949	1,949	3,899	3,777	28%	0.28	59.6	0.048	0.649	0.291	0.392	0.422	**57.8%**
19	9,193	1,479	1,479	2,958	2,488	31%	0.31	62.8	0.183	0.665	0.393	0.477	0.572	**42.8%**
20	13,075	2,689	2,689	5,378	3,940	28%	0.28	58.9	0.019	0.700	0.269	0.390	0.402	**59.8%**
21	12,739	2,067	2,067	4,134	3,814	28%	0.28	60.1	0.069	0.668	0.307	0.409	0.450	**55.0%**
22	12,839	1,781	1,781	3,563	3,852	28%	0.28	63.6	0.217	0.706	0.419	0.500	0.608	**39.2%**
23	24,637	4,470	4,622	9,092	8,264	25%	0.25	58.9	0.019	0.861	0.269	0.417	0.428	**57.2%**
24	21,276	4,185	4,185	8,369	7,007	26%	0.26	59.7	0.053	0.844	0.294	0.435	0.465	**53.5%**
25	23,511	3,075	4,974	8,050	7,843	25%	0.25	58.8	0.015	0.814	0.266	0.404	0.413	**58.7%**
26	47,173	4,050	4,369	8,420	16,693	23%	0.23	56.3	0.000	0.785	0.186	0.326	0.326	**67.4%**
27	12,234	2,067	2,067	4,134	3,626	29%	0.29	63.3	0.204	0.725	0.409	0.500	0.602	**39.8%**
28	41,728	4,134	4,134	8,268	14,656	24%	0.24	57.4	0.000	0.799	0.221	0.357	0.357	**64.3%**
29	42,367	4,605	4,706	9,310	14,895	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
30	43,308	4,453	4,453	8,907	15,247	23%	0.23	56.5	0.000	0.810	0.192	0.337	0.337	**66.3%**
31	29,410	4,605	4,857	9,462	10,049	24%	0.24	58.8	0.015	0.876	0.266	0.415	0.424	**57.6%**
32	9,814	2,118	2,118	4,235	2,721	30%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	**63.0%**
33	11,747	3,126	3,126	6,252	3,443	29%	0.29	60.6	0.090	0.769	0.323	0.451	0.501	**49.9%**
34	12,218	2,975	2,975	5,949	3,619	29%	0.29	60.7	0.095	0.757	0.326	0.449	0.501	**49.9%**
35	13,797	2,454	2,454	4,907	4,210	28%	0.28	62.5	0.170	0.744	0.384	0.484	0.572	**42.8%**
36	23,040	3,412	3,412	6,823	7,667	25%	0.25	56.6	0.000	0.722	0.195	0.329	0.329	**67.1%**
37	13,209	2,538	2,538	5,075	3,990	28%	0.28	61.7	0.137	0.737	0.358	0.465	0.538	**46.2%**
38	19,276	3,126	3,126	6,252	6,259	26%	0.26	61.3	0.120	0.781	0.346	0.459	0.524	**47.6%**
39	14,856	3,193	3,193	6,386	4,606	27%	0.27	59.9	0.061	0.762	0.301	0.427	0.462	**53.8%**
40	56,652	4,605	4,168	8,773	20,238	23%	0.23	55.5	0.000	0.785	0.160	0.304	0.304	**69.6%**
41	16,184	2,823	2,823	5,647	5,103	27%	0.27	58.8	0.015	0.710	0.266	0.385	0.394	**60.6%**
42	39,863	3,680	3,680	7,361	13,959	24%	0.24	58.4	0.000	0.777	0.253	0.377	0.377	**62.3%**
43	9,478	1,832	1,832	3,664	2,595	30%	0.30	56.4	0.000	0.581	0.189	0.308	0.308	**69.2%**
44	20,436	3,983	3,983	7,966	6,693	26%	0.26	59.7	0.053	0.827	0.294	0.432	0.462	**53.8%**
45	21,209	3,227	3,227	6,453	6,982	26%	0.26	60.5	0.086	0.776	0.320	0.437	0.485	**51.5%**
46	52,282	4,605	5,058	9,663	18,603	23%	0.23	57.4	0.000	0.859	0.221	0.368	0.368	**63.2%**
47	10,487	1,899	1,899	3,798	2,972	30%	0.30	63	0.191	0.705	0.400	0.490	0.588	**41.2%**
48	13,545	303	3,731	4,033	4,116	28%	0.28	59.5	0.044	0.653	0.288	0.390	0.417	**58.3%**
49	12,789	303	3,243	3,546	3,833	28%	0.28	60.1	0.069	0.642	0.307	0.402	0.443	**55.7%**
50	15,411	2,790	2,790	5,579	4,814	27%	0.27	61.8	0.141	0.761	0.362	0.470	0.545	**45.5%**
51	69,457	4,050	4,050	8,100	25,027	23%	0.23	53.7	0.000	0.725	0.103	0.244	0.244	**75.6%**
52	8,957	1,748	1,748	3,496	2,400	31%	0.31	59.3	0.036	0.626	0.282	0.388	0.410	**59.0%**
53	45,173	4,269	4,269	8,537	15,945	23%	0.23	56.9	0.000	0.801	0.205	0.344	0.344	**65.6%**
54	12,806	2,487	2,487	4,974	3,839	28%	0.28	61.9	0.145	0.737	0.365	0.470	0.547	**45.3%**
55	39,930	4,605	4,941	9,546	13,984	24%	0.24	53.8	0.000	0.789	0.106	0.268	0.268	**73.2%**
56	15,646	2,622	2,622	5,243	4,902	27%	0.27	61.5	0.128	0.741	0.352	0.457	0.527	**47.3%**
57	44,787	3,344	4,168	7,512	15,800	23%	0.23	56.4	0.000	0.748	0.189	0.320	0.320	**68.0%**
58	16,604	3,294	3,294	6,588	5,260	27%	0.27	58.8	0.015	0.751	0.266	0.396	0.404	**59.6%**
59	21,948	3,294	3,294	6,588	7,259	26%	0.26	58.7	0.011	0.749	0.262	0.387	0.393	**60.7%**
60	12,453	2,353	2,353	4,706	3,707	28%	0.28	58.5	0.002	0.664	0.256	0.372	0.373	**62.7%**
61	19,511	3,714	3,714	7,428	6,347	26%	0.26	61.3	0.120	0.832	0.346	0.472	0.535	**46.5%**
62	33,208	4,605	4,722	9,327	11,470	24%	0.24	56.8	0.000	0.834	0.202	0.354	0.354	**64.6%**
63	25,763	4,386	4,386	8,773	8,685	25%	0.25	56.8	0.000	0.810	0.202	0.353	0.353	**64.7%**
64	9,428	639	2,370	3,008	2,576	30%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
65	9,142	1,059	1,949	3,008	2,469	31%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	**36.3%**
66	38,703	3,445	4,067	7,512	13,525	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
67	17,696	3,428	3,428	6,857	5,668	26%	0.26	59.8	0.057	0.780	0.298	0.425	0.458	**54.2%**
68	19,814	3,008	3,949	6,958	6,460	26%	0.26	57.1	0.000	0.736	0.211	0.348	0.348	**65.2%**
69	16,990	2,723	2,723	5,445	5,404	27%	0.27	61.5	0.128	0.750	0.352	0.458	0.528	**47.2%**
70	75,843	3,596	5,563	9,159	27,415	23%	0.23	54.1	0.000	0.778	0.115	0.265	0.265	**73.5%**
71	68,298	3,311	3,647	6,958	24,593	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
72	17,864	3,428	3,428	6,857	5,731	26%	0.26	59.7	0.053	0.779	0.294	0.422	0.453	**54.7%**
73	13,327	2,118	2,118	4,235	4,034	28%	0.28	60.8	0.099	0.685	0.330	0.429	0.485	**51.5%**
74	20,772	2,302	5,210	7,512	6,819	26%	0.26	60.4	0.082	0.820	0.317	0.446	0.492	**50.8%**
75	12,369	319	3,176	3,496	3,676	28%	0.28	65.7	0.305	0.741	0.486	0.559	0.693	**30.7%**
76	8,621	1,428	1,428	2,857	2,274	31%	0.31	59.9	0.061	0.609	0.301	0.397	0.433	**56.7%**
77	23,629	2,823	2,823	5,647	7,887	25%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	**48.0%**
78	12,436	1,765	1,765	3,529	3,701	28%	0.28	61.6	0.133	0.668	0.355	0.444	0.518	**48.2%**
79	15,276	2,084	2,168	4,252	4,763	27%	0.27	60.8	0.099	0.685	0.330	0.426	0.483	**51.7%**
80	12,470	1,865	1,865	3,731	3,714	28%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	**49.9%**

MAY

Row	BV Sac River Flows	BW CVP	BX SWP	BY CVP + SWP Exports	BZ Calculated Steamboat & Sutter Slough Q	CA Percent	CB X-channel Closed	CC USBR observed temp f	CD m1	CE m2	CF m3	CG Calculated Mortality m23	CH m123	CI Calculated Survival s123
10	46,530	4,185	4,342	8,527	16,452	23%	0.23	61.2	0.116	0.878	0.342	0.467	0.529	**47.1%**
11	14,214	3,966	3,123	7,089	4,366	64%	0.47	62.4	0.166	0.837	0.381	0.597	0.664	**33.6%**
12	8,278	1,395	358	1,753	2,146	74%	0.55	69.2	0.452	0.728	0.598	0.669	0.819	**18.1%**
13	12,067	3,479	2,521	6,000	3,563	66%	0.49	63.2	0.200	0.804	0.406	0.602	0.682	**31.8%**
14	13,613	3,328	2,440	5,767	4,141	64%	0.48	65.7	0.305	0.839	0.486	0.655	0.760	**24.0%**
15	26,786	4,050	4,163	8,214	9,068	25%	0.25	62.6	0.175	0.890	0.387	0.512	0.597	**40.3%**
16	20,606	3,815	3,383	7,198	6,757	59%	0.44	66.6	0.343	0.917	0.515	0.692	0.797	**20.3%**
17	9,807	538	114	652	2,718	70%	0.52	66.1	0.322	0.624	0.499	0.564	0.705	**29.5%**
18	12,067	1,949	1,756	3,706	3,563	66%	0.49	63.1	0.196	0.703	0.403	0.551	0.639	**36.1%**
19	9,807	1,479	1,301	2,780	2,718	70%	0.52	70.5	0.507	0.796	0.640	0.721	0.862	**13.8%**
20	12,019	2,689	2,423	5,112	3,545	66%	0.49	65.5	0.297	0.807	0.480	0.641	0.748	**25.2%**
21	7,741	2,067	1,073	3,140	1,945	75%	0.56	63.7	0.221	0.689	0.422	0.571	0.666	**33.4%**
22	8,912	1,781	1,008	2,790	2,383	72%	0.53	68.3	0.414	0.757	0.569	0.670	0.806	**19.4%**
23	28,624	4,470	2,472	6,942	9,755	25%	0.25	64	0.234	0.860	0.432	0.537	0.645	**35.5%**
24	14,100	4,185	3,155	7,340	4,324	64%	0.47	64.9	0.271	0.893	0.461	0.666	0.756	**24.4%**
25	16,182	3,075	4,050	7,125	5,102	62%	0.46	64.5	0.255	0.877	0.448	0.645	0.735	**26.5%**
26	57,426	4,050	5,448	9,498	20,527	23%	0.23	62.5	0.170	0.944	0.384	0.512	0.595	**40.5%**
27	8,571	2,067	1,740	3,807	2,255	73%	0.54	68	0.402	0.795	0.560	0.687	0.813	**18.7%**
28	18,280	4,134	3,285	7,419	5,887	60%	0.45	65.6	0.301	0.909	0.483	0.674	0.772	**22.8%**
29	39,488	4,605	5,123	9,728	13,818	24%	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**
30	36,040	4,453	4,342	8,796	12,529	24%	0.24	60.1	0.069	0.870	0.307	0.442	0.481	**51.9%**
31	21,077	4,605	4,163	8,768	6,933	58%	0.44	65.4	0.292	0.964	0.477	0.690	0.780	**22.0%**
32	8,912	2,118	1,870	3,988	2,383	72%	0.53	65.9	0.313	0.766	0.493	0.639	0.752	**24.8%**
33	13,222	3,126	2,618	5,744	3,995	65%	0.48	63.1	0.196	0.791	0.403	0.590	0.670	**33.0%**
34	13,694	2,975	2,635	5,609	4,171	64%	0.48	63.9	0.229	0.800	0.429	0.606	0.696	**30.4%**
35	8,864	2,454	1,740	4,194	2,365	72%	0.54	68.7	0.431	0.825	0.582	0.712	0.836	**16.4%**
36	28,835	3,412	3,838	7,250	9,834	25%	0.25	62.3	0.162	0.842	0.378	0.492	0.574	**42.6%**
37	14,914	2,538	2,374	4,912	4,628	63%	0.47	65.2	0.284	0.793	0.470	0.621	0.729	**27.1%**
38	13,873	3,126	2,635	5,761	4,238	64%	0.48	64.3	0.246	0.814	0.441	0.619	0.713	**28.7%**
39	18,784	3,193	3,562	6,755	6,075	60%	0.45	64.4	0.250	0.859	0.445	0.629	0.722	**27.8%**
40	59,557	4,605	5,269	9,874	21,324	23%	0.23	61.7	0.137	0.946	0.358	0.493	0.562	**43.8%**
41	26,867	2,823	3,838	6,662	9,098	25%	0.25	60.9	0.103	0.792	0.333	0.446	0.504	**49.6%**
42	25,403	3,680	4,440	8,120	8,551	25%	0.25	65.9	0.313	0.945	0.493	0.606	0.729	**27.1%**
43	11,271	1,832	1,984	3,816	3,265	67%	0.50	66.9	0.356	0.776	0.525	0.651	0.775	**22.5%**
44	39,000	3,983	4,342	8,325	13,636	24%	0.24	61.4	0.124	0.873	0.349	0.473	0.538	**46.2%**
45	16,816	3,227	2,976	6,203	5,339	61%	0.46	64	0.234	0.828	0.432	0.612	0.703	**29.7%**
46	43,488	4,605	6,083	10,687	15,315	23%	0.23	62.9	0.187	1.000	0.397	0.538	0.625	**37.5%**
47	9,417	1,899	1,838	3,737	2,572	71%	0.53	65.9	0.313	0.755	0.493	0.631	0.746	**25.4%**
48	10,913	303	1,675	1,978	3,131	68%	0.51	65.9	0.313	0.678	0.493	0.586	0.716	**28.4%**
49	9,238	303	1,496	1,799	2,505	71%	0.53	64.3	0.246	0.642	0.441	0.548	0.659	**34.1%**
50	14,735	2,790	2,667	5,457	4,561	63%	0.47	64.8	0.267	0.810	0.457	0.623	0.724	**27.6%**
51	29,095	4,050	4,163	8,214	9,932	25%	0.25	62.5	0.170	0.888	0.384	0.507	0.591	**40.9%**
52	10,295	1,748	1,870	3,618	2,900	69%	0.51	65.2	0.284	0.737	0.470	0.607	0.719	**28.1%**
53	24,851	4,269	4,733	9,001	8,344	57%	0.42	63.6	0.217	0.942	0.419	0.641	0.719	**28.1%**
54	14,930	2,487	2,391	4,878	4,634	63%	0.47	67.3	0.372	0.829	0.537	0.674	0.795	**20.5%**
55	44,790	4,605	5,448	10,053	15,801	23%	0.23	62.1	0.154	0.961	0.371	0.509	0.584	**41.6%**
56	9,384	2,622	1,822	4,443	2,560	71%	0.53	66.1	0.322	0.789	0.499	0.652	0.764	**23.6%**
57	45,538	3,344	5,025	8,370	16,081	23%	0.23	63.2	0.200	0.907	0.406	0.523	0.619	**38.1%**
58	12,149	3,294	2,960	6,254	3,594	66%	0.49	68.6	0.427	0.912	0.579	0.743	0.853	**14.7%**
59	29,404	3,294	3,838	7,132	10,047	24%	0.24	61	0.107	0.814	0.336	0.453	0.512	**48.8%**
60	10,799	2,353	1,935	4,288	3,089	68%	0.51	67.3	0.372	0.804	0.537	0.672	0.794	**20.6%**
61	15,743	3,714	3,253	6,967	4,938	62%	0.46	66.9	0.356	0.913	0.525	0.704	0.809	**19.1%**
62	26,949	4,605	4,342	8,947	9,129	25%	0.25	63.4	0.208	0.936	0.413	0.542	0.638	**36.2%**
63	28,542	4,386	4,342	8,729	9,725	25%	0.25	63.8	0.225	0.934	0.425	0.550	0.652	**34.8%**
64	10,067	639	1,561	2,200	2,815	69%	0.52	69.6	0.469	0.754	0.611	0.685	0.833	**16.7%**
65	6,993	1,059	439	1,498	1,665	78%	0.58	64	0.234	0.623	0.432	0.542	0.649	**35.1%**
66	21,061	3,445	4,098	7,544	6,927	58%	0.44	63	0.191	0.868	0.400	0.604	0.680	**32.0%**
67	12,572	3,428	2,992	6,421	3,752	65%	0.49	63.8	0.225	0.833	0.425	0.624	0.709	**29.1%**
68	14,783	3,008	3,871	6,879	4,579	63%	0.47	63.6	0.217	0.850	0.419	0.621	0.703	**29.7%**
69	8,750	2,723	1,756	4,479	2,322	72%	0.54	66.7	0.347	0.801	0.518	0.670	0.785	**21.5%**
70	38,431	3,596	6,684	10,281	13,423	24%	0.24	61.1	0.112	0.952	0.339	0.485	0.542	**45.8%**
71	54,515	3,311	3,594	6,905	19,439	23%	0.23	60.1	0.069	0.788	0.307	0.418	0.458	**54.2%**
72	13,417	3,428	3,074	6,502	4,068	64%	0.48	66.5	0.339	0.885	0.512	0.691	0.796	**20.4%**
73	13,141	2,118	2,114	4,232	3,965	65%	0.48	65.8	0.309	0.774	0.489	0.627	0.742	**25.8%**
74	13,125	2,302	5,481	7,783	3,959	65%	0.48	66.2	0.326	0.936	0.502	0.711	0.805	**19.5%**
75	8,457	319	1,415	1,734	2,213	73%	0.54	70.5	0.507	0.750	0.640	0.700	0.852	**14.8%**
76	9,774	1,428	1,529	2,957	2,706	70%	0.52	65.8	0.309	0.719	0.489	0.609	0.730	**27.0%**
77	14,328	2,823	1,968	4,791	4,409	63%	0.47	64.7	0.263	0.779	0.454	0.608	0.711	**28.9%**
78	7,709	1,765	1,350	3,114	1,933	75%	0.56	66.4	0.335	0.737	0.509	0.636	0.758	**24.2%**
79	8,685	2,084	1,415	3,499	2,298	73%	0.54	65.7	0.305	0.741	0.486	0.623	0.738	**26.2%**
80	9,026	1,865	1,041	2,906	2,426	72%	0.53	66	0.318	0.720	0.496	0.615	0.738	**26.2%**

JUNE

Row	CK Sac River Flow	CL CVP	CM SWP	CN CVP + SWP exports	CO Caculated Steamboat & Sutter Slough Q	CP percent	CQ X-channel closed	CR USBR observed temp f	CS m1	CT m2	CU m3	CV Calculated Mortality m23	CW m123	CX Calculated Survival s123	CZ Weighted Total Survival
10	34,720	4,605	6,672	11,277	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**63.58%**
11	18,150	4,218	3,395	7,613	5,838	60%	0.45	65.3	0.288	0.912	0.473	0.671	0.766	**23.4%**	**62.35%**
12	10,151	454	471	924	2,846	69%	0.52	70.6	0.511	0.717	0.643	0.681	0.844	**15.6%**	**56.37%**
13	16,352	3,479	2,941	6,420	5,166	62%	0.46	68.3	0.414	0.914	0.569	0.728	0.841	**15.9%**	**59.80%**
14	15,276	3,580	2,487	6,067	4,763	62%	0.47	71.2	0.536	0.951	0.662	0.797	0.906	**9.4%**	**54.85%**
15	18,889	4,605	3,748	8,352	6,115	60%	0.45	68.1	0.406	0.995	0.563	0.755	0.855	**14.5%**	**63.77%**
16	14,100	3,025	2,672	5,697	4,323	64%	0.47	69.7	0.473	0.908	0.614	0.754	0.870	**13.0%**	**59.19%**
17	11,411	3,025	101	3,126	3,318	67%	0.50	70.1	0.490	0.804	0.627	0.715	0.855	**14.5%**	**62.85%**
18	18,621	4,302	2,672	6,974	6,014	60%	0.45	69.6	0.469	0.962	0.611	0.768	0.877	**12.3%**	**60.99%**
19	12,487	1,563	1,328	2,891	3,720	66%	0.49	70.7	0.515	0.804	0.646	0.723	0.866	**13.4%**	**54.34%**
20	19,058	3,596	3,798	7,394	6,178	60%	0.45	69.5	0.465	0.978	0.608	0.773	0.878	**12.2%**	**59.33%**
21	11,041	1,697	84	1,781	3,179	68%	0.50	69.8	0.478	0.740	0.617	0.679	0.832	**16.8%**	**60.18%**
22	14,991	4,101	1,311	5,411	4,656	63%	0.47	70.7	0.515	0.914	0.646	0.771	0.889	**11.1%**	**53.94%**
23	17,663	4,101	3,512	7,613	5,656	61%	0.45	71	0.528	1.000	0.656	0.811	0.911	**8.9%**	**59.46%**
24	18,587	4,605	3,361	7,966	6,002	60%	0.45	69.2	0.452	0.998	0.598	0.777	0.878	**12.2%**	**56.35%**
25	18,133	3,042	4,605	7,647	5,832	60%	0.45	69.7	0.473	0.993	0.614	0.784	0.886	**11.4%**	**59.22%**
26	35,510	4,605	6,672	11,277	12,331	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**65.34%**
27	18,587	4,302	3,075	7,378	6,002	60%	0.45	71	0.528	1.000	0.656	0.810	0.910	**9.0%**	**53.67%**
28	15,343	4,084	3,092	7,176	4,788	62%	0.47	71.5	0.549	1.000	0.672	0.824	0.921	**7.9%**	**59.36%**
29	20,805	4,605	6,302	10,907	6,831	59%	0.44	69	0.444	1.000	0.592	0.770	0.872	**12.8%**	**63.91%**
30	27,124	4,605	6,672	11,277	9,194	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**66.58%**
31	16,856	4,605	3,143	7,747	5,354	61%	0.46	66.6	0.343	0.941	0.515	0.709	0.809	**19.1%**	**59.77%**
32	18,217	4,168	3,176	7,344	5,863	60%	0.45	67.8	0.393	0.945	0.553	0.729	0.836	**16.4%**	**60.61%**
33	16,671	3,378	3,798	7,176	5,285	61%	0.46	70.6	0.511	0.988	0.643	0.801	0.903	**9.7%**	**57.99%**
34	16,285	3,361	3,596	6,958	5,140	62%	0.46	68.1	0.406	0.934	0.563	0.733	0.842	**15.8%**	**58.10%**
35	18,822	4,302	2,958	7,260	6,090	60%	0.45	70	0.486	0.981	0.624	0.783	0.889	**11.1%**	**53.32%**
36	23,259	4,605	4,521	9,125	7,749	57%	0.43	69	0.444	1.000	0.592	0.767	0.870	**13.0%**	**64.18%**
37	17,091	3,630	3,159	6,789	5,442	61%	0.45	70.9	0.524	0.977	0.652	0.800	0.905	**9.5%**	**55.12%**
38	20,301	4,605	3,529	8,134	6,643	59%	0.44	68.9	0.440	0.999	0.588	0.769	0.871	**12.9%**	**56.07%**
39	17,646	4,605	2,823	7,428	5,650	61%	0.45	70.3	0.499	0.994	0.633	0.796	0.898	**10.2%**	**58.28%**
40	38,972	4,605	6,672	11,277	13,626	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**66.85%**
41	25,881	4,605	5,781	10,386	8,729	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**65.01%**
42	14,234	3,277	2,739	6,016	4,374	63%	0.47	68.7	0.431	0.904	0.582	0.734	0.849	**15.1%**	**60.91%**
43	18,133	4,050	3,025	7,075	5,832	60%	0.45	70.1	0.490	0.975	0.627	0.783	0.890	**11.0%**	**61.17%**
44	22,301	4,605	6,672	11,277	7,391	58%	0.43	68.7	0.431	1.000	0.582	0.763	0.865	**13.5%**	**62.08%**
45	19,108	4,504	3,462	7,966	6,196	60%	0.44	72	0.570	1.000	0.688	0.827	0.925	**7.5%**	**57.88%**
46	33,930	4,605	6,672	11,277	11,740	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**63.66%**
47	17,915	4,201	2,991	7,193	5,750	60%	0.45	72.1	0.574	1.000	0.691	0.830	0.928	**7.2%**	**55.07%**
48	18,217	4,353	2,689	7,042	5,863	60%	0.45	72.7	0.600	1.000	0.710	0.840	0.936	**6.4%**	**58.64%**
49	19,814	4,554	3,008	7,563	6,460	59%	0.44	73.2	0.621	1.000	0.726	0.847	0.942	**5.8%**	**58.58%**
50	17,243	3,949	2,874	6,823	5,499	61%	0.45	70.4	0.503	0.969	0.636	0.788	0.894	**10.6%**	**55.66%**
51	19,562	4,605	4,017	8,621	6,366	59%	0.44	69	0.444	1.000	0.592	0.773	0.874	**12.6%**	**65.34%**
52	18,150	4,168	2,840	7,008	5,838	60%	0.45	69.5	0.465	0.961	0.608	0.767	0.875	**12.5%**	**59.89%**
53	18,402	4,605	3,630	8,235	5,932	60%	0.45	67.1	0.364	0.971	0.531	0.728	0.827	**17.3%**	**61.31%**
54	15,562	3,630	2,622	6,252	4,870	62%	0.46	70.4	0.503	0.945	0.636	0.779	0.890	**11.0%**	**54.95%**
55	39,342	4,605	6,672	11,277	13,764	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**67.11%**
56	17,394	4,218	2,807	7,025	5,555	61%	0.45	72	0.570	1.000	0.688	0.829	0.927	**7.3%**	**56.89%**
57	24,133	4,605	6,638	11,243	8,076	57%	0.43	68.3	0.414	1.000	0.569	0.753	0.855	**14.5%**	**64.82%**
58	15,512	4,185	2,622	6,806	4,851	62%	0.46	70.7	0.515	0.974	0.646	0.798	0.902	**9.8%**	**59.10%**
59	23,629	4,605	5,042	9,646	7,887	57%	0.43	68.1	0.406	1.000	0.563	0.750	0.852	**14.8%**	**63.90%**
60	17,142	4,101	2,706	6,806	5,461	61%	0.45	70.7	0.515	0.974	0.646	0.795	0.901	**9.9%**	**59.38%**
61	19,427	2,454	5,579	8,033	6,316	59%	0.44	70.1	0.490	1.000	0.627	0.792	0.894	**10.6%**	**55.45%**
62	21,629	4,605	4,924	9,529	7,139	58%	0.43	69.7	0.473	1.000	0.614	0.782	0.885	**11.5%**	**63.10%**
63	24,788	4,605	6,672	11,277	8,321	57%	0.43	69.1	0.448	1.000	0.595	0.767	0.871	**12.9%**	**62.65%**
64	19,360	4,453	2,941	7,394	6,291	59%	0.44	71.8	0.562	1.000	0.681	0.823	0.922	**7.8%**	**58.18%**
65	9,579	50	387	437	2,633	70%	0.52	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**	**57.12%**
66	16,469	4,605	3,899	8,504	5,210	61%	0.46	70	0.486	1.000	0.624	0.796	0.895	**10.5%**	**62.97%**
67	19,427	2,823	5,227	8,050	6,316	59%	0.44	69.2	0.452	1.000	0.598	0.776	0.878	**12.2%**	**59.10%**
68	16,268	4,605	4,067	8,672	5,134	62%	0.46	66.9	0.356	0.987	0.525	0.737	0.831	**16.9%**	**62.88%**
69	18,066	4,302	2,891	7,193	5,807	60%	0.45	71.9	0.566	1.000	0.684	0.826	0.925	**7.5%**	**56.27%**
70	24,418	4,605	6,672	11,277	8,183	57%	0.43	66	0.318	1.000	0.496	0.711	0.803	**19.7%**	**67.08%**
71	55,576	4,605	4,689	9,293	19,835	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**71.43%**
72	18,436	4,403	3,361	7,764	5,945	60%	0.45	68.4	0.419	0.974	0.572	0.753	0.856	**14.4%**	**59.26%**
73	16,638	3,899	2,622	6,521	5,272	61%	0.46	69.4	0.461	0.938	0.604	0.757	0.869	**13.1%**	**56.99%**
74	12,688	3,933	3,848	7,781	3,795	65%	0.49	71.6	0.553	1.000	0.675	0.833	0.925	**7.5%**	**55.83%**
75	20,318	4,605	3,143	7,747	6,649	59%	0.44	73.2	0.621	1.000	0.726	0.846	0.942	**5.8%**	**51.15%**
76	15,058	4,470	1,378	5,848	4,682	63%	0.47	69.4	0.461	0.909	0.604	0.747	0.864	**13.6%**	**59.87%**
77	16,873	4,067	2,487	6,554	5,360	61%	0.46	68.6	0.427	0.925	0.579	0.737	0.849	**15.1%**	**57.36%**
78	19,629	4,538	2,907	7,445	6,391	59%	0.44	68.5	0.423	0.962	0.576	0.747	0.854	**14.6%**	**56.74%**
79	10,974	1,949	1,076	3,025	3,154	68%	0.50	69.4	0.461	0.787	0.604	0.696	0.836	**16.4%**	**58.29%**
80	14,470	3,764	1,378	5,143	4,462	63%	0.47	69	0.444	0.871	0.592	0.724	0.846	**15.4%**	**57.10%**

Average 59.80%

BG10 ='Study 468 Flow Data'!G7
BH10 ='Study 468 Flow Data'!Q7
BI10 ='Study 468 Flow Data'!AA7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$G$2,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10
BO10 =IF((-2.45925+(0.0420748*BN10))<0,0,(-2.45925+(0.0420748*BN10)))
BP10 =IF(((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10))>1,1,((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10)
BQ10 =-1.613493+(0.0319584*BN10)
BR10 =(BP10*BM10)+(BQ10*(1-BM10))
BS10 =BO10+BR10-(BO10*BR10)
BT10 =1-BS10

BV10 ='Study 468 Flow Data'!H7
BX10 ='Study 468 Flow Data'!R7
BY10 ='Study 468 Flow Data'!AB7
BZ10 =0.374*BV10-950
CA10 =IF(BV10>$K$4,(0.133*BV10+829)/(BV10-BZ10),(0.293*BV10+2090)/(BV10-BZ10))
CB10 =(0.45*(0.133*BV10+829)/(BV10-BZ10))+(0.55*CA10)
CC10
CD10 =IF((-2.45925+(0.0420748*CC10))<0,0,(-2.45925+(0.0420748*CC10)))
CE10 =IF(((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10))>1,1,((-0.5916024)+(0.017968*CC10)+(0.0000434*BY1
CF10 =-1.613493+(0.0319584*CC10)
CG10 =(CE10*CB10)+(CF10*(1-CB10))
CH10 =CD10+CG10-(CD10*CG10)
CI10 =1-CH10

CK10 ='Study 468 Flow Data'!I7
CL10 ='Study 468 Flow Data!S7
CM10 ='Study 468 Flow Data'!AC7
CN10 =(CL10+CM10)
CO10 =0.374*CK10-950
CP10 =IF(CK10>$K$4,(0.133*CK10+829)/(CK10-CO10),(0.293*CK10+2090)/(CK10-CO10))
CQ10 =(0.45*(0.133*CK10+829)/(CK10-CO10))+(0.55*CP10)
CR10
CS10 =IF((-2.45925+(0.0420748*CR10))<0,0,(-2.45925+(0.0420748*CR10)))
CT10 =IF(((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10))>1,1,((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10)))
CU10 =-1.613493+(0.0319584*CR10)
CV10 =(CT10*CQ10)+(CU10*(1-CQ10))
CW10 =CS10+CV10-(CS10*CV10)
CX10 =1-CW10
CZ10 =(0.01*O10)+(0.06*AC10)+(0.17*AQ10)+(0.28*BE10)+(0.25*BT10)+(0.16*CI10)+(0.07*CX10)

Study 506 Sacramento River Spring Run YOY Smolt Survival Model

Modified m2 by changing the slope to 0.0000434 — December Sacramento River Temp: 47 degrees F — February Water Temp 50 F

Cross Channel closed for 45 consecutive days, Dec 18-Jan 31 — January Sacramento River Temp: 47 degrees F — Cross Channel Closed Over 25000 cfs — March Water Temp 55 F

Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs — Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

DECEMBER

Year	Water Year Type	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	A	17,142	4,212	7,107	11,319	5,461	61%	0.45	0	0.744	0.000	0.338	0.338	66.2%
1923	B	34,544	4,212	4,456	8,668	11,969	24%	0.24	0	0.629	0.000	0.151	0.151	84.9%
1924	C	13,873	3,919	6,424	10,344	4,238	64%	0.48	0	0.702	0.000	0.334	0.334	66.6%
1925	D	11,254	4,212	4,847	9,059	3,259	67%	0.50	0	0.646	0.000	0.324	0.324	67.6%
1926	D	11,547	4,212	3,822	8,034	3,369	67%	0.50	0	0.602	0.000	0.300	0.300	70.0%
1927	W	14,556	4,212	7,042	11,254	4,494	63%	0.47	0	0.741	0.000	0.349	0.349	65.1%
1928	A	16,572	4,212	6,164	10,376	5,248	61%	0.46	0	0.703	0.000	0.322	0.322	67.8%
1929	C	13,710	4,212	6,180	10,392	4,178	64%	0.48	0	0.704	0.000	0.336	0.336	66.4%
1930	D	14,442	4,212	6,294	10,506	4,451	63%	0.47	0	0.709	0.000	0.334	0.334	66.6%
1931	C	9,563	2,423	2,976	5,399	2,627	71%	0.52	0	0.487	0.000	0.255	0.255	74.5%
1932	D	14,653	4,212	7,188	11,401	4,530	63%	0.47	0	0.748	0.000	0.352	0.352	64.8%
1933	C	8,148	2,017	2,472	4,489	2,097	74%	0.55	0	0.448	0.000	0.246	0.246	75.4%
1934	C	12,474	4,163	5,546	9,709	3,715	66%	0.49	0	0.674	0.000	0.329	0.329	67.1%
1935	B	8,506	3,220	3,399	6,619	2,231	73%	0.54	0	0.540	0.000	0.293	0.293	70.7%
1936	B	11,628	4,212	4,033	8,246	3,399	67%	0.50	0	0.611	0.000	0.304	0.304	69.6%
1937	B	12,458	4,212	5,578	9,791	3,709	66%	0.49	0	0.678	0.000	0.331	0.331	66.9%
1938	W	51,149	4,212	7,530	11,742	18,180	23%	0.23	0	0.763	0.000	0.177	0.177	82.3%
1939	D	18,687	4,212	3,741	7,953	6,039	60%	0.45	0	0.598	0.000	0.267	0.267	73.3%
1940	A	7,839	1,431	2,683	4,115	1,982	75%	0.56	0	0.431	0.000	0.240	0.240	76.0%
1941	W	35,601	4,212	7,335	11,547	12,365	24%	0.24	0	0.754	0.000	0.181	0.181	81.9%
1942	W	65,623	4,212	3,610	7,823	23,593	23%	0.23	0	0.592	0.000	0.135	0.135	86.5%
1943	W	28,803	4,212	3,773	7,985	9,822	25%	0.25	0	0.599	0.000	0.147	0.147	85.3%
1944	D	13,775	4,212	6,424	10,636	4,202	64%	0.48	0	0.715	0.000	0.341	0.341	65.9%
1945	B	16,068	4,212	6,961	11,173	5,060	62%	0.46	0	0.738	0.000	0.340	0.340	66.0%
1946	B	55,344	4,212	7,595	11,807	19,749	23%	0.23	0	0.765	0.000	0.176	0.176	82.4%
1947	D	18,134	4,212	7,140	11,352	5,832	60%	0.45	0	0.746	0.000	0.335	0.335	66.5%
1948	B	11,433	4,212	3,236	7,449	3,326	67%	0.50	0	0.576	0.000	0.288	0.288	71.2%
1949	D	15,564	4,212	6,896	11,108	4,871	62%	0.46	0	0.735	0.000	0.341	0.341	65.9%
1950	B	11,693	4,212	3,676	7,888	3,423	67%	0.50	0	0.595	0.000	0.296	0.296	70.4%
1951	A	68,095	4,212	7,595	11,807	24,518	23%	0.23	0	0.765	0.000	0.174	0.174	82.6%
1952	W	47,408	4,212	7,107	11,319	16,781	23%	0.23	0	0.744	0.000	0.173	0.173	82.7%
1953	W	42,334	4,212	3,741	7,953	14,883	24%	0.24	0	0.598	0.000	0.141	0.141	85.9%
1954	A	14,914	4,212	3,903	8,115	4,628	63%	0.47	0	0.605	0.000	0.283	0.283	71.7%
1955	D	26,022	4,212	6,912	11,124	8,782	25%	0.25	0	0.736	0.000	0.183	0.183	81.7%
1956	W	27,355	4,212	7,595	11,807	9,281	25%	0.25	0	0.765	0.000	0.189	0.189	81.1%
1957	A	14,149	4,212	5,839	10,051	4,342	64%	0.47	0	0.689	0.000	0.327	0.327	67.3%
1958	W	23,745	4,212	6,928	11,140	7,930	57%	0.43	0	0.736	0.000	0.315	0.315	68.5%
1959	B	14,621	4,212	3,854	8,067	4,518	63%	0.47	0	0.603	0.000	0.284	0.284	71.6%
1960	D	11,075	4,212	2,797	7,010	3,192	68%	0.50	0	0.557	0.000	0.281	0.281	71.9%
1961	D	19,484	4,212	6,896	11,108	6,337	59%	0.44	0	0.735	0.000	0.326	0.326	67.4%
1962	B	16,947	4,212	6,879	11,092	5,388	61%	0.46	0	0.734	0.000	0.335	0.335	66.5%
1963	W	27,550	4,212	6,896	11,108	9,354	25%	0.25	0	0.735	0.000	0.181	0.181	81.9%
1964	D	14,849	4,212	6,034	10,246	4,603	63%	0.47	0	0.698	0.000	0.327	0.327	67.3%
1965	W	29,079	4,212	7,302	11,515	9,926	25%	0.25	0	0.753	0.000	0.185	0.185	81.5%
1966	B	16,995	4,212	6,245	10,457	5,406	61%	0.46	0	0.707	0.000	0.322	0.322	67.8%
1967	W	39,699	4,212	7,123	11,336	13,897	24%	0.24	0	0.745	0.000	0.176	0.176	82.4%
1968	B	16,686	4,212	3,741	7,953	5,291	61%	0.46	0	0.598	0.000	0.273	0.273	72.7%
1969	W	25,160	4,212	6,977	11,189	8,460	25%	0.25	0	0.739	0.000	0.185	0.185	81.5%
1970	W	50,156	4,212	3,480	7,693	17,809	23%	0.23	0	0.587	0.000	0.136	0.136	86.4%
1971	W	54,401	4,212	7,042	11,254	19,396	23%	0.23	0	0.741	0.000	0.171	0.171	82.9%
1972	B	20,134	4,212	6,180	10,392	6,580	59%	0.44	0	0.704	0.000	0.310	0.310	69.0%
1973	A	26,200	4,212	6,896	11,108	8,849	25%	0.25	0	0.735	0.000	0.183	0.183	81.7%
1974	W	61,590	4,212	7,140	11,352	22,085	23%	0.23	0	0.746	0.000	0.170	0.170	83.0%
1975	W	17,613	4,212	4,245	8,457	5,637	61%	0.45	0	0.620	0.000	0.280	0.280	72.0%
1976	C	16,768	4,212	4,651	8,864	5,321	61%	0.46	0	0.638	0.000	0.291	0.291	70.9%
1977	C	8,229	1,691	3,106	4,798	2,128	74%	0.55	0	0.461	0.000	0.253	0.253	74.7%
1978	A	12,279	4,131	5,530	9,660	3,642	66%	0.49	0	0.672	0.000	0.330	0.330	67.0%
1979	B	12,751	4,212	3,676	7,888	3,819	65%	0.49	0	0.595	0.000	0.289	0.289	71.1%
1980	A	20,833	4,212	6,993	11,206	6,842	59%	0.44	0	0.739	0.000	0.324	0.324	67.6%
1981	D	15,613	4,212	4,066	8,278	4,889	62%	0.46	0	0.612	0.000	0.284	0.284	71.6%
1982	W	68,599	4,212	6,944	11,157	24,706	23%	0.23	0	0.737	0.000	0.167	0.167	83.3%
1983	W	55,410	4,212	4,424	8,636	19,773	23%	0.23	0	0.628	0.000	0.144	0.144	85.6%
1984	W	82,944	2,992	3,106	6,099	30,071	22%	0.22	0	0.518	0.000	0.116	0.116	88.4%
1985	D	23,875	4,212	5,741	9,953	7,979	57%	0.43	0	0.685	0.000	0.293	0.293	70.7%
1986	W	15,971	4,212	6,944	11,157	5,023	62%	0.46	0	0.737	0.000	0.340	0.340	66.0%
1987	D	13,791	4,212	6,099	10,311	4,208	64%	0.48	0	0.700	0.000	0.334	0.334	66.6%
1988	C	15,841	4,212	6,879	11,092	4,974	62%	0.46	0	0.734	0.000	0.339	0.339	66.1%
1989	D	9,303	3,285	3,562	6,847	2,529	71%	0.53	0	0.550	0.000	0.291	0.291	70.9%
1990	C	14,637	4,212	6,196	10,409	4,524	63%	0.47	0	0.705	0.000	0.331	0.331	66.9%
1991	C	8,782	1,740	3,139	4,879	2,335	72%	0.54	0	0.465	0.000	0.250	0.250	75.0%
1992	C	7,465	2,960	1,610	4,570	1,842	76%	0.56	0	0.451	0.000	0.255	0.255	74.5%

JANUARY

Year	Sac River Flows	CVP	SWP	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	17,499	4,212	7,579	11,791	5,595	61%	0.27	0	0.765	0.000	0.203	0.203	79.7%
1923	32,283	4,212	3,643	7,855	11,124	24%	0.24	0	0.594	0.000	0.144	0.144	85.6%
1924	14,621	4,212	6,652	10,864	4,518	63%	0.27	0	0.724	0.000	0.199	0.199	80.1%
1925	10,213	3,545	3,155	6,701	2,870	69%	0.30	0	0.544	0.000	0.162	0.162	83.8%
1926	19,776	4,212	7,091	11,303	6,446	59%	0.26	0	0.743	0.000	0.193	0.193	80.7%
1927	32,624	4,212	7,286	11,498	11,252	24%	0.24	0	0.752	0.000	0.182	0.182	81.8%
1928	26,509	4,212	3,643	7,855	8,965	25%	0.25	0	0.594	0.000	0.147	0.147	85.3%
1929	15,515	4,212	7,091	11,303	4,853	62%	0.27	0	0.743	0.000	0.202	0.202	79.8%
1930	20,768	4,212	7,091	11,303	6,817	59%	0.26	0	0.743	0.000	0.191	0.191	80.9%
1931	12,214	4,212	5,058	9,270	3,618	66%	0.29	0	0.655	0.000	0.187	0.187	81.3%
1932	17,256	4,212	7,790	12,002	5,504	61%	0.27	0	0.774	0.000	0.206	0.206	79.4%
1933	12,100	4,212	5,416	9,628	3,575	66%	0.29	0	0.671	0.000	0.192	0.192	80.8%
1934	16,101	4,212	7,091	11,303	5,072	62%	0.27	0	0.743	0.000	0.200	0.200	80.0%
1935	25,469	4,212	7,660	11,872	8,575	25%	0.25	0	0.768	0.000	0.192	0.192	80.8%
1936	32,527	4,212	7,449	11,661	11,215	24%	0.24	0	0.759	0.000	0.184	0.184	81.6%
1937	15,971	4,212	7,579	11,791	5,023	62%	0.27	0	0.765	0.000	0.206	0.206	79.4%
1938	31,535	4,212	3,236	7,449	10,844	24%	0.24	0	0.576	0.000	0.140	0.140	86.0%
1939	18,410	4,212	3,236	7,449	5,935	60%	0.26	0	0.576	0.000	0.151	0.151	84.9%
1940	23,452	4,212	8,018	12,230	7,821	57%	0.25	0	0.784	0.000	0.198	0.198	80.2%
1941	73,169	4,212	8,164	12,376	26,415	23%	0.23	0	0.790	0.000	0.178	0.178	82.2%
1942	63,265	4,212	3,236	7,449	22,711	23%	0.23	0	0.576	0.000	0.131	0.131	86.9%
1943	58,060	4,212	3,301	7,514	20,765	23%	0.23	0	0.579	0.000	0.133	0.133	86.7%
1944	17,678	4,212	3,269	7,481	5,662	60%	0.26	0	0.578	0.000	0.153	0.153	84.7%
1945	13,255	4,212	5,595	9,807	4,007	65%	0.28	0	0.679	0.000	0.190	0.190	81.0%
1946	43,228	4,212	3,643	7,855	15,217	23%	0.23	0	0.594	0.000	0.139	0.139	86.1%
1947	15,223	4,212	6,733	10,945	4,743	63%	0.27	0	0.728	0.000	0.198	0.198	80.2%
1948	15,645	4,212	7,010	11,222	4,901	62%	0.27	0	0.740	0.000	0.200	0.200	80.0%
1949	14,930	4,212	6,814	11,027	4,634	63%	0.27	0	0.731	0.000	0.200	0.200	80.0%
1950	21,191	4,212	7,172	11,384	6,976	58%	0.26	0	0.747	0.000	0.192	0.192	80.8%
1951	62,208	4,212	7,449	11,661	22,316	23%	0.23	0	0.759	0.000	0.173	0.173	82.7%
1952	67,347	4,212	6,766	10,978	24,238	23%	0.23	0	0.729	0.000	0.166	0.166	83.4%
1953	64,078	4,212	3,334	7,546	23,015	23%	0.23	0	0.580	0.000	0.132	0.132	86.8%
1954	33,421	4,212	3,854	8,067	11,550	24%	0.24	0	0.603	0.000	0.145	0.145	85.5%
1955	22,265	4,212	5,920	10,132	7,377	58%	0.25	0	0.693	0.000	0.176	0.176	82.4%
1956	84,716	4,212	7,985	12,198	30,734	22%	0.22	0	0.782	0.000	0.175	0.175	82.5%
1957	18,638	4,212	3,887	8,099	6,021	60%	0.26	0	0.604	0.000	0.158	0.158	84.2%
1958	36,463	4,212	3,562	7,774	12,687	24%	0.24	0	0.590	0.000	0.141	0.141	85.9%
1959	35,162	4,212	3,334	7,546	12,200	24%	0.24	0	0.580	0.000	0.139	0.139	86.1%
1960	14,523	4,212	6,408	10,620	4,482	63%	0.27	0	0.714	0.000	0.196	0.196	80.4%
1961	15,011	4,212	7,075	11,287	4,664	63%	0.27	0	0.743	0.000	0.203	0.203	79.7%
1962	12,897	4,212	4,163	8,376	3,873	65%	0.28	0	0.616	0.000	0.174	0.174	82.6%
1963	17,808	4,212	7,253	11,466	5,710	60%	0.26	0	0.751	0.000	0.198	0.198	80.2%
1964	25,713	4,212	3,871	8,083	8,666	25%	0.25	0	0.604	0.000	0.150	0.150	85.0%
1965	81,236	4,212	8,506	12,718	29,432	22%	0.22	0	0.805	0.000	0.181	0.181	81.9%
1966	29,632	4,212	3,659	7,872	10,132	24%	0.24	0	0.595	0.000	0.145	0.145	85.5%
1967	34,153	4,212	7,676	11,889	11,823	24%	0.24	0	0.769	0.000	0.185	0.185	81.5%
1968	30,640	4,212	3,334	7,546	10,509	24%	0.24	0	0.580	0.000	0.141	0.141	85.9%
1969	70,177	4,212	6,310	10,522	25,296	23%	0.23	0	0.710	0.000	0.161	0.161	83.9%
1970	92,669	4,163	3,334	7,497	33,708	22%	0.22	0	0.578	0.000	0.129	0.129	87.1%
1971	47,262	4,212	5,465	9,677	16,726	23%	0.23	0	0.673	0.000	0.157	0.157	84.3%
1972	20,394	4,212	3,887	8,099	6,677	59%	0.26	0	0.604	0.000	0.156	0.156	84.4%
1973	50,156	4,212	6,912	11,124	17,809	23%	0.23	0	0.736	0.000	0.171	0.171	82.9%
1974	78,422	4,212	3,643	7,855	28,380	22%	0.22	0	0.594	0.000	0.134	0.134	86.6%
1975	18,670	4,212	3,854	8,067	6,033	60%	0.26	0	0.603	0.000	0.158	0.158	84.2%
1976	16,768	4,212	3,806	8,018	5,321	61%	0.27	0	0.601	0.000	0.161	0.161	83.9%
1977	7,660	2,098	2,440	4,538	1,915	75%	0.32	0	0.450	0.000	0.145	0.145	85.5%
1978	43,066	3,074	7,758	10,831	15,157	23%	0.23	0	0.723	0.000	0.170	0.170	83.0%
1979	27,241	4,212	3,269	7,481	9,238	25%	0.25	0	0.578	0.000	0.143	0.143	85.7%
1980	64,452	4,212	3,155	7,367	23,155	23%	0.23	0	0.573	0.000	0.130	0.130	87.0%
1981	28,656	4,212	3,350	7,563	9,767	25%	0.25	0	0.581	0.000	0.143	0.143	85.7%
1982	51,165	4,212	7,709	11,921	18,186	23%	0.23	0	0.770	0.000	0.178	0.178	82.2%
1983	59,150	4,212	2,651	6,863	21,172	23%	0.23	0	0.551	0.000	0.126	0.126	87.4%
1984	47,359	1,334	2,879	4,212	16,762	23%	0.23	0	0.436	0.000	0.102	0.102	89.8%
1985	16,800	4,212	3,871	8,083	5,333	61%	0.27	0	0.604	0.000	0.161	0.161	83.9%
1986	23,354	4,212	7,172	11,384	7,785	57%	0.25	0	0.747	0.000	0.189	0.189	81.1%
1987	16,735	1,480	6,261	7,741	5,309	61%	0.27	0	0.589	0.000	0.157	0.157	84.3%
1988	25,534	4,212	7,058	11,271	8,600	25%	0.25	0	0.742	0.000	0.185	0.185	81.5%
1989	12,490	4,212	4,847	9,059	3,721	66%	0.28	0	0.646	0.000	0.183	0.183	81.7%
1990	21,582	2,781	7,058	9,839	7,122	58%	0.26	0	0.680	0.000	0.174	0.174	82.6%
1991	6,847	1,691	1,708	3,399	1,611	78%	0.33	0	0.400	0.000	0.133	0.133	86.7%
1992	12,133	4,212	4,781	8,994	3,588	66%	0.29	0	0.643	0.000	0.184	0.184	81.6%

FEBRUARY

Year	Sac River Flow	CVP	SWP	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	34,409	4,249	6,392	10,642	11,919	24%	0.24	0	0.769	0.000	0.185	0.185	81.5%
1923	24,326	4,285	2,377	6,662	8,148	58%	0.25	0	0.596	0.000	0.150	0.150	85.0%
1924	16,898	4,068	4,624	8,693	5,370	60%	0.27	0	0.684	0.000	0.183	0.183	81.7%
1925	44,655	4,213	7,581	11,794	15,751	23%	0.23	0	0.819	0.000	0.192	0.192	80.8%
1926	36,714	4,231	7,454	11,686	12,781	24%	0.24	0	0.814	0.000	0.194	0.194	80.6%
1927	86,122	4,285	6,590	10,876	31,260	22%	0.22	0	0.779	0.000	0.174	0.174	82.6%
1928	27,364	4,103	4,225	8,327	9,284	25%	0.25	0	0.668	0.000	0.165	0.165	83.5%
1929	18,528	4,231	3,799	8,031	5,980	60%	0.26	0	0.655	0.000	0.172	0.172	82.8%
1930	15,683	2,773	4,015	6,788	4,916	62%	0.27	0	0.601	0.000	0.163	0.163	83.7%
1931	11,326	3,565	1,873	5,438	3,286	66%	0.29	0	0.543	0.000	0.158	0.158	84.2%
1932	13,995	4,103	5,442	9,544	4,284	64%	0.28	0	0.721	0.000	0.200	0.200	80.0%
1933	11,974	3,835	2,701	6,536	3,528	64%	0.29	0	0.590	0.000	0.169	0.169	83.1%
1934	12,748	1,260	4,538	5,798	3,818	66%	0.28	0	0.558	0.000	0.158	0.158	84.2%
1935	12,478	1,188	3,943	5,132	3,717	67%	0.28	0	0.530	0.000	0.150	0.150	85.0%
1936	49,843	4,103	8,206	12,309	17,691	23%	0.23	0	0.841	0.000	0.195	0.195	80.5%
1937	33,203	4,231	5,042	9,273	11,468	24%	0.24	0	0.709	0.000	0.171	0.171	82.9%
1938	82,269	4,267	3,907	8,175	29,819	22%	0.22	0	0.662	0.000	0.148	0.148	85.2%
1939	19,032	2,629	3,961	6,590	6,168	59%	0.26	0	0.593	0.000	0.155	0.155	84.5%
1940	43,654	4,103	8,206	12,309	15,377	23%	0.23	0	0.841	0.000	0.197	0.197	80.3%
1941	75,031	4,285	6,842	11,128	27,112	23%	0.23	0	0.790	0.000	0.178	0.178	82.2%
1942	78,344	4,285	3,961	8,247	28,351	22%	0.23	0	0.665	0.000	0.150	0.150	85.0%
1943	52,253	4,285	3,997	8,283	18,593	23%	0.23	0	0.666	0.000	0.154	0.154	84.6%
1944	30,163	4,103	3,825	7,928	10,331	24%	0.24	0	0.651	0.000	0.159	0.159	84.1%
1945	41,378	4,249	3,997	8,247	14,525	23%	0.24	0	0.665	0.000	0.157	0.157	84.3%
1946	24,092	4,285	4,213	8,499	8,060	57%	0.25	0	0.676	0.000	0.170	0.170	83.0%
1947	21,571	4,249	3,961	8,211	7,118	58%	0.26	0	0.663	0.000	0.170	0.170	83.0%
1948	15,525	4,085	1,721	5,807	4,856	64%	0.27	0	0.559	0.000	0.152	0.152	84.8%
1949	16,277	4,249	4,177	8,427	5,138	61%	0.27	0	0.673	0.000	0.181	0.181	81.9%
1950	35,562	4,249	7,526	11,776	12,350	24%	0.24	0	0.818	0.000	0.196	0.196	80.4%
1951	60,572	4,285	4,682	8,967	21,704	23%	0.23	0	0.696	0.000	0.159	0.159	84.1%
1952	62,499	4,138	3,773	7,910	22,425	23%	0.23	0	0.650	0.000	0.148	0.148	85.2%
1953	28,341	4,285	4,051	8,337	9,650	25%	0.25	0	0.669	0.000	0.164	0.164	83.6%
1954	57,151	4,267	4,628	8,895	20,424	23%	0.23	0	0.693	0.000	0.159	0.159	84.1%
1955	16,295	4,267	3,925	8,193	5,144	61%	0.27	0	0.662	0.000	0.178	0.178	82.2%
1956	61,543	4,138	4,520	8,658	22,067	23%	0.23	0	0.683	0.000	0.156	0.156	84.4%
1957	33,149	4,249	4,646	8,895	11,448	24%	0.24	0	0.693	0.000	0.167	0.167	83.3%
1958	62,283	4,249	4,051	8,301	22,344	23%	0.23	0	0.667	0.000	0.152	0.152	84.8%
1959	50,075	4,249	4,051	8,301	17,778	23%	0.23	0	0.667	0.000	0.155	0.155	84.5%
1960	26,512	4,085	7,041	11,126	8,966	25%	0.25	0	0.790	0.000	0.196	0.196	80.4%
1961	32,843	4,249	7,112	11,362	11,333	24%	0.24	0	0.800	0.000	0.193	0.193	80.7%
1962	45,537	4,249	8,499	12,748	16,081	23%	0.23	0	0.860	0.000	0.201	0.201	79.9%
1963	57,565	4,285	8,265	12,550	20,579	23%	0.23	0	0.851	0.000	0.195	0.195	80.5%
1964	19,019	4,120	3,512	7,632	6,163	61%	0.26	0	0.638	0.000	0.167	0.167	83.3%
1965	33,329	4,249	6,050	10,299	11,515	24%	0.24	0	0.754	0.000	0.182	0.182	81.8%
1966	26,775	4,285	4,375	8,661	9,064	25%	0.25	0	0.683	0.000	0.169	0.169	83.1%
1967	43,106	4,285	3,205	7,490	15,172	24%	0.23	0	0.632	0.000	0.148	0.148	85.2%
1968	54,520	2,660	3,912	6,572	19,440	23%	0.23	0	0.592	0.000	0.136	0.136	86.4%
1969	67,486	4,285	3,169	7,454	24,290	23%	0.23	0	0.630	0.000	0.143	0.143	85.7%
1970	57,565	1,206	4,051	5,258	20,579	23%	0.23	0	0.535	0.000	0.123	0.123	87.7%
1971	29,332	4,285	4,195	8,481	10,020	24%	0.24	0	0.675	0.000	0.165	0.165	83.5%
1972	24,217	4,120	4,485	8,606	8,107	57%	0.25	0	0.680	0.000	0.171	0.171	82.9%
1973	70,961	4,267	4,429	8,697	25,590	23%	0.23	0	0.684	0.000	0.155	0.155	84.5%
1974	43,304	4,267	4,375	8,643	15,246	24%	0.23	0	0.682	0.000	0.160	0.160	84.0%
1975	58,807	4,249	4,628	8,877	21,044	23%	0.23	0	0.692	0.000	0.159	0.159	84.1%
1976	19,523	4,085	4,172	8,258	6,352	59%	0.26	0	0.665	0.000	0.173	0.173	82.7%
1977	12,172	684	1,422	2,107	3,602	68%	0.29	0	0.398	0.000	0.114	0.114	88.6%
1978	50,939	1,747	6,554	8,301	18,101	23%	0.23	0	0.667	0.000	0.154	0.154	84.6%
1979	42,044	4,249	3,961	8,211	14,774	24%	0.24	0	0.663	0.000	0.156	0.156	84.4%
1980	69,453	4,103	3,668	7,771	25,026	23%	0.23	0	0.644	0.000	0.146	0.146	85.4%
1981	29,674	2,647	4,069	6,716	10,148	24%	0.24	0	0.598	0.000	0.146	0.146	85.4%
1982	65,650	4,285	4,628	8,913	23,603	23%	0.23	0	0.694	0.000	0.158	0.158	84.2%
1983	82,917	3,421	2,791	6,212	30,061	22%	0.22	0	0.576	0.000	0.129	0.129	87.1%
1984	36,004	1,443	3,720	5,163	12,516	24%	0.24	0	0.531	0.000	0.127	0.127	87.3%
1985	20,689	4,249	4,646	8,895	6,788	58%	0.26	0	0.693	0.000	0.178	0.178	82.2%
1986	97,916	4,249	7,689	11,938	35,671	22%	0.22	0	0.825	0.000	0.184	0.184	81.6%
1987	23,030	1,278	4,267	5,546	7,663	57%	0.25	0	0.547	0.000	0.139	0.139	86.1%
1988	16,638	3,894	2,469	6,363	5,272	62%	0.27	0	0.583	0.000	0.156	0.156	84.4%
1989	12,766	972	1,837	2,809	3,825	67%	0.28	0	0.429	0.000	0.121	0.121	87.9%
1990	16,944	1,296	6,500	7,797	5,387	61%	0.27	0	0.645	0.000	0.172	0.172	82.8%
1991	11,056	432	828	1,260	3,185	67%	0.29	0	0.361	0.000	0.106	0.106	89.4%
1992	31,415	1,147	7,197	8,345	10,799	24%	0.24	0	0.669	0.000	0.162	0.162	83.8%

MARCH

Year	Sac River Flow	CVP	SWP	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	31,551	3,806	4,147	7,953	10,850	24%	0.24	0	0.742	0.144	0.289	0.289	71.1%
1923	17,174	4,228	3,367	7,595	5,473	27%	0.27	0	0.726	0.144	0.299	0.299	70.1%
1924	12,198	1,513	1,740	3,253	3,612	29%	0.29	0	0.538	0.144	0.257	0.257	74.3%
1925	18,557	3,708	4,163	7,872	5,990	26%	0.26	0	0.738	0.144	0.300	0.300	70.0%
1926	18,947	4,228	3,497	7,725	6,136	26%	0.26	0	0.732	0.144	0.298	0.298	70.2%
1927	43,863	3,741	4,147	7,888	15,455	23%	0.23	0	0.739	0.144	0.284	0.284	71.6%
1928	86,229	4,228	4,424	8,652	31,300	22%	0.22	0	0.772	0.144	0.285	0.285	71.5%
1929	16,930	4,017	2,814	6,831	5,382	27%	0.27	0	0.693	0.144	0.291	0.291	70.9%
1930	30,087	2,944	4,375	7,319	10,303	24%	0.24	0	0.714	0.144	0.283	0.283	71.7%
1931	9,856	2,114	1,903	4,017	2,736	30%	0.30	0	0.571	0.144	0.272	0.272	72.8%
1932	12,100	2,553	2,700	5,253	3,575	29%	0.29	0	0.625	0.144	0.282	0.282	71.8%
1933	10,392	1,561	3,074	4,635	2,937	30%	0.30	0	0.598	0.144	0.279	0.279	72.1%
1934	14,231	2,293	1,675	3,968	4,372	28%	0.28	0	0.569	0.144	0.261	0.261	73.9%
1935	24,916	4,228	6,977	11,206	8,368	25%	0.25	0	0.883	0.144	0.329	0.329	67.1%
1936	33,698	4,228	5,790	10,018	11,653	24%	0.24	0	0.831	0.144	0.310	0.310	69.0%
1937	38,203	4,228	4,001	8,229	13,338	24%	0.24	0	0.754	0.144	0.289	0.289	71.1%
1938	78,634	4,228	3,952	8,181	28,459	22%	0.22	0	0.752	0.144	0.281	0.281	71.9%
1939	16,394	2,716	4,001	6,717	5,181	27%	0.27	0	0.688	0.144	0.290	0.290	71.0%
1940	59,443	4,228	4,651	8,880	21,282	23%	0.23	0	0.782	0.144	0.290	0.290	71.0%
1941	58,581	4,228	3,838	8,067	20,959	23%	0.23	0	0.747	0.144	0.282	0.282	71.8%
1942	27,095	4,228	4,001	8,229	9,183	25%	0.25	0	0.754	0.144	0.295	0.295	70.5%
1943	64,598	4,228	4,050	8,278	23,210	23%	0.23	0	0.756	0.144	0.283	0.283	71.7%
1944	25,094	4,228	4,001	8,229	8,435	25%	0.25	0	0.754	0.144	0.297	0.297	70.3%
1945	27,274	4,228	4,131	8,359	9,250	25%	0.25	0	0.759	0.144	0.296	0.296	70.4%
1946	23,712	4,228	4,424	8,652	7,918	25%	0.25	0	0.772	0.144	0.303	0.303	69.7%
1947	22,509	4,228	3,919	8,148	7,468	25%	0.25	0	0.750	0.144	0.298	0.298	70.2%
1948	19,353	4,228	3,480	7,709	6,288	26%	0.26	0	0.731	0.144	0.297	0.297	70.3%
1949	41,716	4,228	7,107	11,336	14,652	24%	0.24	0	0.889	0.144	0.320	0.320	68.0%
1950	22,899	4,228	4,554	8,782	7,614	25%	0.25	0	0.778	0.144	0.305	0.305	69.5%
1951	29,827	4,228	4,700	8,929	10,205	24%	0.24	0	0.784	0.144	0.301	0.301	69.9%
1952	57,524	4,228	3,936	8,164	20,564	23%	0.23	0	0.751	0.144	0.283	0.283	71.7%
1953	24,899	3,448	4,115	7,563	8,362	25%	0.25	0	0.725	0.144	0.290	0.290	71.0%
1954	49,538	4,228	4,684	8,912	17,577	23%	0.23	0	0.783	0.144	0.293	0.293	70.7%
1955	17,678	4,228	3,025	7,253	5,662	26%	0.26	0	0.711	0.144	0.294	0.294	70.6%
1956	36,674	2,472	4,700	7,172	12,766	24%	0.24	0	0.708	0.144	0.279	0.279	72.1%
1957	44,383	4,228	4,440	8,668	15,649	23%	0.23	0	0.773	0.144	0.291	0.291	70.9%
1958	93,612	4,228	4,066	8,294	34,061	22%	0.22	0	0.757	0.144	0.281	0.281	71.9%
1959	23,354	4,228	3,058	7,286	7,785	25%	0.25	0	0.713	0.144	0.288	0.288	71.2%
1960	22,606	3,545	3,985	7,530	7,505	25%	0.25	0	0.723	0.144	0.291	0.291	70.9%
1961	20,947	3,513	4,538	8,050	6,884	26%	0.26	0	0.746	0.144	0.299	0.299	70.1%
1962	27,664	4,228	3,497	7,725	9,396	25%	0.25	0	0.732	0.144	0.289	0.289	71.1%
1963	32,641	4,228	4,700	8,929	11,258	24%	0.24	0	0.784	0.144	0.299	0.299	70.1%
1964	16,638	3,415	3,318	6,733	5,272	27%	0.27	0	0.689	0.144	0.290	0.290	71.0%
1965	21,386	4,228	4,375	8,603	7,049	26%	0.26	0	0.770	0.144	0.305	0.305	69.5%
1966	28,689	4,228	4,424	8,652	9,780	25%	0.25	0	0.772	0.144	0.298	0.298	70.2%
1967	54,483	4,228	3,285	7,514	19,426	23%	0.23	0	0.723	0.144	0.277	0.277	72.3%
1968	36,788	2,992	4,115	7,107	12,809	24%	0.24	0	0.705	0.144	0.278	0.278	72.2%
1969	45,326	3,643	3,253	6,896	16,002	23%	0.23	0	0.696	0.144	0.273	0.273	72.7%
1970	35,812	3,106	4,115	7,221	12,444	24%	0.24	0	0.710	0.144	0.280	0.280	72.0%
1971	50,774	4,228	4,700	8,929	18,040	23%	0.23	0	0.784	0.144	0.292	0.292	70.8%
1972	32,933	3,741	4,424	8,164	11,367	24%	0.24	0	0.751	0.144	0.291	0.291	70.9%
1973	47,554	4,228	4,456	8,685	16,835	23%	0.23	0	0.774	0.144	0.291	0.291	70.9%
1974	99,418	4,228	4,424	8,652	36,232	22%	0.22	0	0.772	0.144	0.284	0.284	71.6%
1975	75,999	4,228	4,684	8,912	27,474	23%	0.23	0	0.783	0.144	0.288	0.288	71.2%
1976	20,069	4,228	3,627	7,855	6,556	26%	0.26	0	0.738	0.144	0.298	0.298	70.2%
1977	7,514	829	1,187	2,017	1,860	32%	0.32	0	0.484	0.144	0.254	0.254	74.6%
1978	45,375	2,114	3,903	6,017	16,020	23%	0.23	0	0.658	0.144	0.264	0.264	73.6%
1979	32,592	4,228	4,001	8,229	11,239	24%	0.24	0	0.754	0.144	0.292	0.292	70.8%
1980	36,479	3,773	3,350	7,123	12,693	24%	0.24	0	0.706	0.144	0.278	0.278	72.2%
1981	32,494	2,992	4,115	7,107	11,203	24%	0.24	0	0.705	0.144	0.280	0.280	72.0%
1982	69,087	4,228	4,651	8,880	24,889	23%	0.23	0	0.782	0.144	0.289	0.289	71.1%
1983	81,935	2,049	2,635	4,684	29,694	22%	0.22	0	0.600	0.144	0.247	0.247	75.3%
1984	36,495	3,204	4,001	7,205	12,699	24%	0.24	0	0.709	0.144	0.279	0.279	72.1%
1985	21,809	4,228	4,635	8,864	7,207	26%	0.26	0	0.781	0.144	0.307	0.307	69.3%
1986	72,535	4,228	4,180	8,408	26,178	23%	0.23	0	0.762	0.144	0.284	0.284	71.6%
1987	29,502	2,358	4,163	6,522	10,084	24%	0.24	0	0.680	0.144	0.275	0.275	72.5%
1988	11,075	2,082	1,756	3,838	3,192	29%	0.29	0	0.563	0.144	0.267	0.267	73.3%
1989	41,098	4,228	6,766	10,994	14,421	24%	0.24	0	0.874	0.144	0.316	0.316	68.4%
1990	14,832	2,326	3,545	5,871	4,597	27%	0.27	0	0.651	0.144	0.283	0.283	71.7%
1991	29,681	4,228	7,075	11,303	10,151	24%	0.24	0	0.887	0.144	0.326	0.326	67.4%
1992	20,102	2,098	6,131	8,229	6,568	26%	0.26	0	0.754	0.144	0.302	0.302	69.8%

Formulas: Sacramento River Spring Run Young of Year Smolt Survival Model

```
C10 ='Study 513 Revised Flow Data'!C7
D10 ='Study 513 Revised Flow Data'!M7
E10 ='Study 513 Revised Flow Data'!X7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.45*(0.133*C10+829)/(C10-G10))+(0.55*H10)
J10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
K10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*F10)
L10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 513 Revised Flow Data'!D7
R10 ='Study 513 Revised Flow Data'!N7
S10 ='Study 513 Revised Flow Data'!X7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*T10)
Z10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 513 Revised Flow Data'!E7
AF10 ='Study 513 Revised Flow Data'!O7
AG10 ='Study 513 Revised Flow Data'!Y7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$G$2,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
AM10 =(-0.5916024)+(0.017968*$BC$2)+(0.0000434*AH10)
AN10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

AS10 ='Study 513 Revised Flow Data'!D7
AT10 ='Study 513 Revised Flow Data'!N7
AU10 ='Study 513 Revised Flow Data'!X7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$G$2,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BA10 =IF(((-0.5916024)+(0.017968*$BC$3)+(0.0000434*AV10))>1,1,((-0.5916024)+(0.017968*$BC$3)+(0.00004
BB10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =(AZ10+BC10-(AZ10*BC10))
BE10 =1-BD10
```

Study 506 Sacramento River Spring Run YOY Smolt Survival Model (continued)

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

APRIL

Row	Sac River Flows (BG)	CVP (BH)	SWP (BI)	CVP + SWP exports (BJ)	Calculated Sutter & Steamboat Slough Q (BK)	Percent (BL)	X-Channel Closed (BM)	observed temp (BN)	m1 (BO)	m2 (BP)	Calculated Mortality m3 (BQ)	m23 (BR)	m123 (BS)	Calculated Survival s123 (BT)
10	22,822	4,185	4,185	8,369	7,585	25%	0.25	58.5	0.002	0.823	0.256	0.400	0.401	**59.9%**
11	22,721	3,966	3,966	7,932	7,548	25%	0.25	58.3	0.000	0.800	0.250	0.389	0.389	**61.1%**
12	7,999	1,462	1,462	2,924	2,042	32%	0.32	61.5	0.128	0.640	0.352	0.444	0.515	**48.5%**
13	22,654	3,479	3,479	6,958	7,523	25%	0.25	59.1	0.027	0.772	0.275	0.401	0.418	**58.2%**
14	21,511	3,344	3,344	6,689	7,095	26%	0.26	61.6	0.133	0.806	0.355	0.470	0.541	**45.9%**
15	48,215	4,050	4,050	8,100	17,082	23%	0.23	56.8	0.000	0.781	0.202	0.336	0.336	**66.4%**
16	29,208	3,680	3,680	7,361	9,974	25%	0.25	58.7	0.011	0.783	0.262	0.390	0.396	**60.4%**
17	8,773	823	1,882	2,706	2,331	31%	0.31	56.3	0.000	0.537	0.186	0.295	0.295	**70.5%**
18	12,638	1,949	1,949	3,899	3,777	28%	0.28	59.6	0.048	0.649	0.291	0.392	0.422	**57.8%**
19	9,109	1,529	1,529	3,059	2,457	31%	0.31	62.8	0.183	0.670	0.393	0.478	0.574	**42.6%**
20	13,075	2,487	2,891	5,378	3,940	28%	0.28	58.9	0.019	0.700	0.269	0.390	0.402	**59.8%**
21	12,739	2,067	2,067	4,134	3,814	28%	0.28	60.1	0.069	0.668	0.307	0.409	0.450	**55.0%**
22	12,839	1,781	1,781	3,563	3,852	28%	0.28	63.6	0.217	0.706	0.419	0.500	0.608	**39.2%**
23	24,183	4,420	4,420	8,840	8,095	25%	0.25	58.9	0.019	0.850	0.269	0.415	0.426	**57.4%**
24	21,528	4,201	4,201	8,403	7,101	26%	0.26	59.7	0.053	0.846	0.294	0.436	0.465	**53.5%**
25	23,259	3,243	4,974	8,218	7,749	25%	0.25	58.8	0.015	0.822	0.266	0.406	0.415	**58.5%**
26	47,173	4,050	4,369	8,420	16,693	23%	0.23	56.3	0.000	0.785	0.186	0.326	0.326	**67.4%**
27	12,234	2,067	2,067	4,134	3,626	29%	0.29	63.3	0.204	0.725	0.409	0.500	0.602	**39.8%**
28	41,728	4,285	4,285	8,571	14,656	24%	0.24	57.4	0.000	0.812	0.221	0.360	0.360	**64.0%**
29	42,367	4,605	4,706	9,310	14,895	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
30	43,308	4,453	4,453	8,907	15,247	23%	0.23	56.5	0.000	0.810	0.192	0.337	0.337	**66.3%**
31	29,410	4,605	4,857	9,462	10,049	24%	0.24	58.8	0.015	0.876	0.266	0.415	0.424	**57.6%**
32	9,814	2,118	2,118	4,235	2,721	30%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	**63.0%**
33	11,999	3,344	3,344	6,689	3,538	29%	0.29	60.6	0.090	0.788	0.323	0.456	0.505	**49.5%**
34	12,218	2,975	2,975	5,949	3,619	29%	0.29	60.7	0.095	0.757	0.326	0.449	0.501	**49.9%**
35	13,797	2,470	2,470	4,941	4,210	28%	0.28	62.5	0.170	0.746	0.384	0.484	0.572	**42.8%**
36	23,293	3,428	3,428	6,857	7,761	25%	0.25	56.6	0.000	0.723	0.195	0.329	0.329	**67.1%**
37	13,209	2,538	2,538	5,075	3,990	28%	0.28	61.7	0.137	0.737	0.358	0.465	0.538	**46.2%**
38	19,528	3,143	3,143	6,285	6,353	26%	0.26	61.3	0.120	0.783	0.346	0.459	0.524	**47.6%**
39	14,772	3,176	3,176	6,353	4,575	27%	0.27	59.9	0.061	0.760	0.301	0.427	0.462	**53.8%**
40	56,652	4,605	4,168	8,773	20,238	23%	0.23	55.5	0.000	0.786	0.160	0.304	0.304	**69.6%**
41	16,184	2,823	2,823	5,647	5,103	27%	0.27	58.8	0.015	0.710	0.266	0.385	0.394	**60.6%**
42	39,863	3,680	3,680	7,361	13,959	24%	0.24	58.4	0.000	0.777	0.253	0.377	0.377	**62.3%**
43	9,478	1,832	1,832	3,664	2,595	30%	0.30	56.4	0.000	0.581	0.189	0.308	0.308	**69.2%**
44	20,436	4,000	4,000	7,999	6,693	26%	0.26	59.7	0.053	0.828	0.294	0.432	0.462	**53.8%**
45	21,108	3,210	3,210	6,420	6,944	26%	0.26	60.5	0.086	0.774	0.320	0.437	0.485	**51.5%**
46	52,282	4,605	5,058	9,663	18,603	23%	0.23	57.4	0.000	0.859	0.221	0.368	0.368	**63.2%**
47	10,487	1,899	1,899	3,798	2,972	30%	0.30	63	0.191	0.705	0.400	0.490	0.588	**41.2%**
48	13,545	303	3,731	4,033	4,116	28%	0.28	59.5	0.044	0.653	0.288	0.390	0.417	**58.3%**
49	12,789	303	3,243	3,546	3,833	28%	0.28	60.1	0.069	0.642	0.307	0.402	0.443	**55.7%**
50	15,411	2,790	2,790	5,579	4,814	27%	0.27	61.8	0.141	0.761	0.362	0.470	0.545	**45.5%**
51	69,457	4,050	4,050	8,100	25,027	23%	0.23	53.7	0.000	0.725	0.103	0.244	0.244	**75.6%**
52	8,957	1,748	1,748	3,496	2,400	31%	0.31	59.3	0.036	0.626	0.282	0.388	0.410	**59.0%**
53	45,173	4,269	4,269	8,537	15,945	23%	0.23	56.9	0.000	0.801	0.205	0.344	0.344	**65.6%**
54	12,806	2,487	2,487	4,974	3,839	28%	0.28	61.9	0.145	0.737	0.365	0.470	0.547	**45.3%**
55	39,930	4,605	4,941	9,546	13,984	24%	0.24	53.8	0.000	0.789	0.106	0.268	0.268	**73.2%**
56	15,612	2,622	2,622	5,244	4,889	27%	0.27	61.5	0.128	0.741	0.352	0.457	0.527	**47.3%**
57	44,787	3,344	4,168	7,512	15,800	23%	0.23	56.4	0.000	0.748	0.189	0.320	0.320	**68.0%**
58	16,604	3,294	3,294	6,588	5,260	27%	0.27	58.8	0.015	0.751	0.266	0.396	0.404	**59.6%**
59	22,133	3,311	3,311	6,621	7,328	25%	0.25	58.7	0.011	0.750	0.262	0.387	0.393	**60.7%**
60	12,453	2,370	2,370	4,739	3,707	28%	0.28	58.5	0.002	0.665	0.256	0.372	0.374	**62.6%**
61	19,511	3,748	3,748	7,495	6,347	26%	0.26	61.3	0.120	0.835	0.346	0.473	0.536	**46.4%**
62	32,720	4,605	4,722	9,327	11,287	24%	0.24	56.8	0.000	0.834	0.202	0.355	0.355	**64.5%**
63	25,763	4,386	4,386	8,773	8,685	25%	0.25	56.8	0.000	0.810	0.202	0.353	0.353	**64.7%**
64	9,428	639	2,370	3,008	2,576	30%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
65	9,142	1,109	1,882	2,991	2,469	31%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	**36.3%**
66	38,703	3,445	4,067	7,512	13,525	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
67	17,696	3,428	3,428	6,857	5,668	26%	0.26	59.8	0.057	0.780	0.298	0.425	0.458	**54.2%**
68	19,814	2,991	3,949	6,941	6,460	26%	0.26	57.1	0.000	0.736	0.211	0.347	0.347	**65.3%**
69	16,990	2,723	2,723	5,445	5,404	27%	0.27	61.5	0.128	0.750	0.352	0.458	0.528	**47.2%**
70	75,843	3,596	5,563	9,159	27,415	23%	0.23	54.1	0.000	0.778	0.115	0.265	0.265	**73.5%**
71	68,298	3,311	3,647	6,958	24,593	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
72	17,864	3,428	3,428	6,857	5,731	26%	0.26	59.7	0.053	0.779	0.294	0.422	0.453	**54.7%**
73	13,327	2,437	2,437	4,874	4,034	28%	0.28	60.8	0.099	0.712	0.330	0.437	0.492	**50.8%**
74	21,024	2,336	5,210	7,546	6,913	26%	0.26	60.4	0.082	0.821	0.317	0.446	0.492	**50.8%**
75	12,386	319	3,176	3,496	3,682	28%	0.28	65.7	0.305	0.741	0.486	0.559	0.693	**30.7%**
76	9,092	1,462	1,462	2,924	2,450	31%	0.31	59.9	0.061	0.612	0.301	0.396	0.433	**56.7%**
77	23,629	2,823	2,823	5,647	7,887	25%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	**48.0%**
78	12,436	235	3,311	3,546	3,701	28%	0.28	61.6	0.133	0.669	0.355	0.444	0.518	**48.2%**
79	15,276	2,084	2,168	4,252	4,763	27%	0.27	60.8	0.099	0.685	0.330	0.426	0.483	**51.7%**
80	12,470	1,865	1,865	3,731	3,714	28%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	**49.9%**

MAY

Row	Sac River Flows (BV)	CVP (BW)	SWP (BX)	CVP + SWP Exports (BY)	Calculated Steamboat & Sutter Slough Q (BZ)	Percent (CA)	X-channel Closed (CB)	USBR observed temp f (CC)	m1 (CD)	m2 (CE)	Calculated Mortality m3 (CF)	m23 (CG)	m123 (CH)	Calculated Survival s123 (CI)
10	46,530	4,185	4,342	8,527	16,452	23%	0.23	61.2	0.116	0.878	0.342	0.467	0.529	**47.1%**
11	14,214	3,966	3,123	7,089	4,366	64%	0.47	62.4	0.166	0.837	0.381	0.597	0.664	**33.6%**
12	8,636	1,462	390	1,852	2,280	73%	0.54	69.2	0.452	0.732	0.598	0.670	0.820	**18.0%**
13	12,067	3,479	2,521	6,000	3,563	66%	0.49	63.2	0.200	0.804	0.406	0.602	0.682	**31.8%**
14	13,596	3,344	2,440	5,784	4,135	64%	0.48	65.7	0.305	0.840	0.486	0.655	0.761	**23.9%**
15	26,786	4,050	4,163	8,214	9,068	25%	0.25	62.6	0.175	0.890	0.387	0.512	0.597	**40.3%**
16	20,655	3,680	3,383	7,063	6,775	59%	0.44	66.6	0.343	0.912	0.515	0.689	0.796	**20.4%**
17	9,872	823	114	937	2,742	70%	0.52	66.1	0.322	0.637	0.499	0.571	0.709	**29.1%**
18	12,067	1,949	1,756	3,706	3,563	66%	0.49	63.1	0.196	0.703	0.403	0.551	0.639	**36.1%**
19	10,035	1,529	1,610	3,139	2,803	70%	0.52	70.5	0.507	0.811	0.640	0.728	0.866	**13.4%**
20	12,019	2,487	2,423	4,910	3,545	66%	0.49	65.5	0.297	0.798	0.480	0.637	0.745	**25.5%**
21	8,181	2,067	1,073	3,140	2,110	74%	0.55	63.7	0.221	0.689	0.422	0.569	0.664	**33.6%**
22	8,929	1,781	764	2,546	2,389	72%	0.53	68.3	0.414	0.746	0.569	0.664	0.803	**19.7%**
23	28,786	4,420	2,635	7,055	9,816	25%	0.25	64	0.234	0.865	0.432	0.538	0.646	**35.4%**
24	14,100	4,201	3,155	7,356	4,324	64%	0.47	64.9	0.271	0.894	0.461	0.666	0.757	**24.3%**
25	16,036	3,243	4,066	7,309	5,047	62%	0.46	64.5	0.255	0.885	0.448	0.649	0.738	**26.2%**
26	57,426	4,050	5,448	9,498	20,527	23%	0.23	62.5	0.170	0.944	0.384	0.512	0.595	**40.5%**
27	8,424	2,067	1,854	3,921	2,201	73%	0.54	68	0.402	0.800	0.560	0.691	0.815	**18.5%**
28	18,166	4,285	3,204	7,489	5,844	60%	0.45	65.6	0.301	0.912	0.483	0.676	0.773	**22.7%**
29	39,488	4,605	5,123	9,728	13,818	24%	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**
30	36,040	4,453	4,342	8,796	12,529	24%	0.24	60.1	0.069	0.870	0.307	0.442	0.481	**51.9%**
31	21,077	4,605	4,163	8,768	6,933	58%	0.44	65.4	0.292	0.964	0.477	0.690	0.780	**22.0%**
32	8,912	2,118	1,870	3,988	2,383	72%	0.53	65.9	0.313	0.766	0.493	0.639	0.752	**24.8%**
33	12,539	3,344	2,618	5,963	3,740	66%	0.49	63.1	0.196	0.801	0.403	0.597	0.676	**32.4%**
34	13,694	2,975	2,635	5,609	4,171	64%	0.48	63.9	0.229	0.800	0.429	0.606	0.696	**30.4%**
35	8,847	2,470	1,773	4,243	2,359	72%	0.54	68.7	0.431	0.827	0.582	0.713	0.837	**16.3%**
36	29,047	3,428	3,838	7,267	9,913	25%	0.25	62.3	0.162	0.843	0.378	0.492	0.574	**42.6%**
37	14,914	2,538	2,374	4,912	4,628	63%	0.47	65.2	0.284	0.793	0.470	0.621	0.729	**27.1%**
38	13,726	3,143	2,635	5,777	4,184	64%	0.48	64.3	0.246	0.814	0.441	0.620	0.713	**28.7%**
39	18,833	3,176	3,562	6,738	6,094	60%	0.45	64.4	0.250	0.858	0.445	0.629	0.722	**27.8%**
40	59,557	4,605	5,269	9,874	21,324	23%	0.23	61.7	0.137	0.946	0.358	0.493	0.562	**43.8%**
41	26,867	2,823	3,838	6,662	9,098	25%	0.25	60.9	0.103	0.792	0.333	0.446	0.504	**49.6%**
42	25,403	3,680	4,440	8,120	8,551	25%	0.25	65.9	0.313	0.945	0.493	0.606	0.729	**27.1%**
43	11,271	1,832	1,984	3,816	3,265	67%	0.50	66.9	0.356	0.776	0.525	0.651	0.775	**22.5%**
44	39,000	4,000	4,342	8,342	13,636	24%	0.24	61.4	0.124	0.874	0.349	0.473	0.539	**46.1%**
45	16,865	3,210	2,992	6,202	5,358	61%	0.46	64	0.234	0.828	0.432	0.612	0.703	**29.7%**
46	43,488	4,605	6,083	10,687	15,315	23%	0.23	62.9	0.187	1.000	0.397	0.538	0.625	**37.5%**
47	9,417	1,899	1,838	3,737	2,572	71%	0.53	65.9	0.313	0.755	0.493	0.631	0.746	**25.4%**
48	10,913	303	1,675	1,978	3,131	68%	0.51	65.9	0.313	0.678	0.493	0.586	0.716	**28.4%**
49	9,238	303	1,496	1,799	2,505	71%	0.53	64.3	0.246	0.642	0.441	0.548	0.659	**34.1%**
50	14,735	2,790	2,667	5,457	4,561	63%	0.47	64.8	0.267	0.810	0.457	0.623	0.724	**27.6%**
51	29,095	4,050	4,163	8,214	9,932	25%	0.25	62.5	0.170	0.888	0.384	0.507	0.591	**40.9%**
52	11,043	1,748	1,748	3,496	3,180	68%	0.50	65.2	0.284	0.748	0.470	0.606	0.718	**28.2%**
53	24,655	4,269	4,944	9,213	8,271	57%	0.43	63.6	0.217	0.951	0.419	0.645	0.722	**27.8%**
54	14,930	2,487	2,391	4,878	4,634	63%	0.47	67.3	0.372	0.829	0.537	0.674	0.795	**20.5%**
55	44,790	4,605	5,448	10,053	15,801	23%	0.23	62.1	0.154	0.961	0.371	0.509	0.584	**41.6%**
56	9,384	2,622	1,822	4,443	2,560	71%	0.53	66.1	0.322	0.789	0.499	0.652	0.764	**23.6%**
57	45,538	3,344	5,025	8,370	16,081	23%	0.23	63.2	0.200	0.907	0.406	0.523	0.619	**38.1%**
58	12,149	3,294	2,960	6,254	3,594	66%	0.49	68.6	0.427	0.912	0.579	0.743	0.853	**14.7%**
59	29,274	3,311	3,838	7,149	9,999	24%	0.24	61	0.107	0.815	0.336	0.453	0.512	**48.8%**
60	10,539	2,370	1,952	4,321	2,991	69%	0.51	67.3	0.372	0.805	0.537	0.674	0.795	**20.5%**
61	15,743	3,748	3,285	7,033	4,938	62%	0.46	66.9	0.356	0.916	0.525	0.706	0.810	**19.0%**
62	26,949	4,605	4,342	8,947	9,129	25%	0.25	63.4	0.208	0.936	0.413	0.542	0.638	**36.2%**
63	28,542	4,386	4,342	8,729	9,725	25%	0.25	63.8	0.225	0.934	0.425	0.550	0.652	**34.8%**
64	10,002	639	1,626	2,265	2,791	70%	0.52	69.6	0.469	0.757	0.611	0.687	0.834	**16.6%**
65	6,993	1,109	439	1,548	1,665	78%	0.58	64	0.234	0.626	0.432	0.543	0.650	**35.0%**
66	21,061	3,445	4,098	7,544	6,927	58%	0.44	63	0.191	0.868	0.400	0.604	0.680	**32.0%**
67	12,572	3,428	2,992	6,421	3,752	65%	0.49	63.8	0.225	0.833	0.425	0.624	0.709	**29.1%**
68	14,783	2,991	3,887	6,878	4,579	63%	0.47	63.6	0.217	0.850	0.419	0.621	0.703	**29.7%**
69	8,750	2,723	1,756	4,479	2,322	72%	0.54	66.7	0.347	0.801	0.518	0.670	0.785	**21.5%**
70	38,431	3,596	6,684	10,281	13,423	24%	0.24	61.1	0.112	0.952	0.339	0.485	0.542	**45.8%**
71	54,515	3,311	3,594	6,905	19,439	23%	0.23	60.1	0.069	0.788	0.307	0.418	0.458	**54.2%**
72	13,417	3,428	3,074	6,502	4,068	64%	0.48	66.5	0.339	0.885	0.512	0.691	0.796	**20.4%**
73	12,572	2,437	2,261	4,697	3,752	65%	0.49	65.8	0.309	0.795	0.489	0.638	0.750	**25.0%**
74	13,125	2,336	5,383	7,719	3,959	65%	0.48	66.2	0.326	0.933	0.502	0.710	0.805	**19.5%**
75	8,343	319	1,496	1,816	2,170	73%	0.55	70.5	0.507	0.754	0.640	0.702	0.853	**14.7%**
76	9,628	1,462	1,513	2,975	2,651	70%	0.52	65.8	0.309	0.720	0.489	0.610	0.731	**26.9%**
77	14,344	2,823	1,968	4,791	4,415	63%	0.47	64.7	0.263	0.779	0.454	0.608	0.711	**28.9%**
78	7,709	235	1,350	1,585	1,933	75%	0.56	66.4	0.335	0.670	0.509	0.599	0.733	**26.7%**
79	8,685	2,084	1,415	3,499	2,298	73%	0.54	65.7	0.305	0.741	0.486	0.623	0.738	**26.2%**
80	8,457	1,865	1,041	2,906	2,213	73%	0.54	66	0.318	0.720	0.496	0.618	0.739	**26.1%**

JUNE

Row	Sac River Flow (CK)	CVP (CL)	SWP (CM)	CVP + SWP exports (CN)	Caculated Steamboat & Sutter Slough Q (CO)	percent (CP)	X-channel closed (CQ)	USBR observed temp f (CR)	m1 (CS)	m2 (CT)	Calculated Mortality m3 (CU)	m23 (CV)	m123 (CW)	Calculated Survival s123 (CX)	Weighted Total Survival (CZ)
10	34,720	4,605	6,672	11,277	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**63.57%**
11	17,058	4,605	3,395	7,999	5,430	61%	0.46	65.3	0.288	0.929	0.473	0.681	0.773	**22.7%**	**62.30%**
12	10,083	823	487	1,311	2,821	69%	0.52	70.6	0.511	0.734	0.643	0.690	0.848	**15.2%**	**56.26%**
13	12,856	3,479	2,689	6,168	3,858	65%	0.48	68.3	0.414	0.903	0.569	0.731	0.843	**15.7%**	**59.79%**
14	14,923	3,580	2,487	6,067	4,631	63%	0.47	71.2	0.536	0.951	0.662	0.797	0.906	**9.4%**	**54.87%**
15	18,889	4,605	3,748	8,352	6,115	60%	0.45	68.1	0.406	0.995	0.563	0.755	0.855	**14.5%**	**63.71%**
16	13,461	3,025	2,672	5,697	4,085	64%	0.48	69.7	0.473	0.908	0.614	0.755	0.871	**12.9%**	**59.28%**
17	9,898	3,025	101	3,126	2,752	70%	0.52	70.1	0.490	0.804	0.627	0.719	0.857	**14.3%**	**62.69%**
18	16,016	4,302	2,874	7,176	5,040	62%	0.46	69.6	0.469	0.970	0.611	0.777	0.881	**11.9%**	**60.88%**
19	14,167	3,445	2,067	5,512	4,348	64%	0.47	70.7	0.515	0.918	0.646	0.775	0.891	**10.9%**	**53.88%**
20	19,377	3,596	4,117	7,714	6,297	59%	0.44	69.5	0.465	0.992	0.608	0.778	0.881	**11.9%**	**59.01%**
21	11,478	2,168	84	2,252	3,343	67%	0.50	69.8	0.478	0.760	0.617	0.689	0.837	**16.3%**	**60.18%**
22	13,495	3,832	1,008	4,840	4,097	64%	0.48	70.7	0.515	0.889	0.646	0.762	0.885	**11.5%**	**54.21%**
23	17,696	4,101	3,546	7,647	5,668	60%	0.45	71	0.528	1.000	0.656	0.811	0.911	**8.9%**	**59.42%**
24	19,058	4,605	3,361	7,966	6,178	60%	0.45	69.2	0.452	0.998	0.598	0.776	0.877	**12.3%**	**56.73%**
25	17,679	3,395	4,269	7,663	5,662	60%	0.45	69.7	0.473	0.993	0.614	0.785	0.887	**11.3%**	**59.03%**
26	35,510	4,605	6,672	11,277	12,331	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**65.39%**
27	17,982	4,201	3,109	7,310	5,775	60%	0.45	71	0.528	1.000	0.656	0.811	0.911	**8.9%**	**53.61%**
28	15,293	4,605	3,092	7,697	4,770	62%	0.47	71.5	0.549	1.000	0.672	0.825	0.921	**7.9%**	**59.27%**
29	20,805	4,605	6,302	10,907	6,831	59%	0.44	69	0.444	1.000	0.592	0.770	0.872	**12.8%**	**63.92%**
30	27,124	4,605	6,672	11,277	9,194	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**66.58%**
31	16,856	4,605	3,143	7,747	5,354	61%	0.46	66.6	0.343	0.941	0.515	0.709	0.809	**19.1%**	**59.76%**
32	16,822	4,168	3,243	7,411	5,342	61%	0.46	67.8	0.393	0.948	0.553	0.734	0.838	**16.2%**	**60.59%**
33	16,688	3,378	3,798	7,176	5,291	61%	0.46	70.6	0.511	0.988	0.643	0.801	0.903	**9.7%**	**57.79%**
34	14,940	3,378	3,596	6,974	4,638	63%	0.47	68.1	0.406	0.935	0.563	0.737	0.844	**15.6%**	**58.04%**
35	17,881	4,269	2,975	7,243	5,738	60%	0.45	70	0.486	0.981	0.624	0.784	0.889	**11.1%**	**53.32%**
36	23,259	4,605	4,521	9,125	7,749	57%	0.43	69	0.444	1.000	0.592	0.767	0.870	**13.0%**	**64.12%**
37	15,831	3,647	3,159	6,806	4,971	62%	0.46	70.9	0.524	0.978	0.652	0.803	0.906	**9.4%**	**54.98%**
38	18,184	4,605	3,529	8,134	5,851	60%	0.45	68.9	0.440	0.999	0.588	0.773	0.873	**12.7%**	**56.07%**
39	17,259	4,605	2,907	7,512	5,505	61%	0.45	70.3	0.499	0.998	0.633	0.799	0.899	**10.1%**	**58.28%**
40	38,972	4,605	6,672	11,277	13,626	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**66.86%**
41	25,881	4,605	5,781	10,386	8,729	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**65.01%**
42	14,083	3,277	2,739	6,016	4,317	64%	0.47	68.7	0.431	0.904	0.582	0.735	0.849	**15.1%**	**60.91%**
43	16,385	4,050	3,126	7,176	5,178	61%	0.46	70.1	0.490	0.979	0.627	0.789	0.892	**10.8%**	**61.15%**
44	22,301	4,605	6,521	11,125	7,391	58%	0.43	68.7	0.431	1.000	0.582	0.763	0.865	**13.5%**	**62.08%**
45	19,125	4,504	3,462	7,966	6,203	60%	0.44	72	0.570	1.000	0.688	0.827	0.925	**7.5%**	**57.86%**
46	33,930	4,605	6,672	11,277	11,740	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**63.64%**
47	17,629	4,201	3,042	7,243	5,643	61%	0.45	72.1	0.574	1.000	0.691	0.831	0.928	**7.2%**	**55.06%**
48	17,629	4,353	2,756	7,109	5,643	61%	0.45	72.7	0.600	1.000	0.710	0.841	0.936	**6.4%**	**58.62%**
49	19,444	4,554	3,042	7,596	6,322	59%	0.44	73.2	0.621	1.000	0.726	0.847	0.942	**5.8%**	**58.58%**
50	17,243	3,949	2,874	6,823	5,499	61%	0.45	70.4	0.503	0.969	0.636	0.788	0.894	**10.6%**	**55.65%**
51	19,562	4,605	4,017	8,621	6,366	59%	0.44	69	0.444	1.000	0.592	0.773	0.874	**12.6%**	**65.27%**
52	17,175	4,101	2,823	6,924	5,474	61%	0.45	69.5	0.465	0.958	0.608	0.767	0.875	**12.5%**	**59.97%**
53	18,167	4,605	3,714	8,319	5,844	60%	0.45	67.1	0.364	0.975	0.531	0.731	0.829	**17.1%**	**61.15%**
54	15,209	3,630	2,622	6,252	4,738	63%	0.47	70.4	0.503	0.945	0.636	0.780	0.891	**10.9%**	**54.94%**
55	39,342	4,605	6,672	11,277	13,764	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**67.10%**
56	17,142	4,218	2,857	7,075	5,461	61%	0.45	72	0.570	1.000	0.688	0.830	0.927	**7.3%**	**56.89%**
57	24,133	4,605	6,638	11,243	8,076	57%	0.43	68.3	0.414	1.000	0.569	0.753	0.855	**14.5%**	**64.89%**
58	14,570	4,185	2,723	6,907	4,499	63%	0.47	70.7	0.515	0.979	0.646	0.803	0.904	**9.6%**	**59.09%**
59	23,629	4,605	5,042	9,646	7,887	57%	0.43	68.1	0.406	1.000	0.563	0.750	0.852	**14.8%**	**63.91%**
60	16,436	4,084	2,790	6,873	5,197	61%	0.46	70.7	0.515	0.977	0.646	0.798	0.902	**9.8%**	**59.32%**
61	17,142	4,554	4,017	8,571	5,461	61%	0.45	70.1	0.490	1.000	0.627	0.796	0.896	**10.4%**	**55.38%**
62	21,629	4,605	4,924	9,529	7,139	58%	0.44	69.7	0.473	1.000	0.614	0.782	0.885	**11.5%**	**63.10%**
63	24,788	4,605	6,672	11,277	8,321	57%	0.43	69.1	0.448	1.000	0.595	0.767	0.871	**12.9%**	**62.65%**
64	18,772	4,420	2,941	7,361	6,071	60%	0.45	71.8	0.562	1.000	0.681	0.824	0.923	**7.7%**	**58.15%**
65	9,092	50	387	437	2,450	72%	0.53	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**	**57.11%**
66	15,965	4,605	3,899	8,504	5,021	62%	0.46	70	0.486	1.000	0.624	0.797	0.896	**10.4%**	**63.07%**
67	17,108	2,823	5,227	8,050	5,448	61%	0.45	69.2	0.452	1.000	0.598	0.781	0.880	**12.0%**	**59.08%**
68	16,268	4,605	4,067	8,672	5,134	62%	0.46	66.9	0.356	0.987	0.525	0.737	0.831	**16.9%**	**62.87%**
69	17,797	4,302	2,924	7,226	5,706	60%	0.45	71.9	0.566	1.000	0.684	0.827	0.925	**7.5%**	**56.32%**
70	24,418	4,605	6,672	11,277	8,183	57%	0.43	66	0.318	1.000	0.496	0.711	0.803	**19.7%**	**67.08%**
71	55,576	4,605	4,689	9,293	19,835	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**71.43%**
72	17,276	4,521	3,361	7,882	5,511	61%	0.45	68.4	0.419	0.979	0.572	0.757	0.859	**14.1%**	**59.24%**
73	15,377	3,764	2,605	6,369	4,801	62%	0.47	69.4	0.461	0.932	0.604	0.757	0.869	**13.1%**	**56.72%**
74	13,209	4,117	3,848	7,966	3,990	65%	0.48	71.6	0.553	1.000	0.675	0.831	0.925	**7.5%**	**55.82%**
75	19,797	4,538	3,176	7,714	6,454	59%	0.44	73.2	0.621	1.000	0.726	0.847	0.942	**5.8%**	**51.08%**
76	14,218	4,487	1,176	5,663	4,367	64%	0.47	69.4	0.461	0.901	0.604	0.745	0.862	**13.8%**	**59.88%**
77	15,528	4,067	2,487	6,554	4,858	62%	0.46	68.6	0.427	0.925	0.579	0.740	0.851	**14.9%**	**57.37%**
78	19,158	4,554	2,907	7,462	6,215	60%	0.44	68.5	0.423	0.963	0.576	0.748	0.855	**14.5%**	**57.11%**
79	9,495	2,622	1,344	3,966	2,601	71%	0.53	69.4	0.461	0.828	0.604	0.722	0.850	**15.0%**	**58.19%**
80	13,125	3,311	1,361	4,672	3,959	65%	0.48	69	0.444	0.851	0.592	0.717	0.842	**15.8%**	**57.18%**
81														**Average**	**59.78%**

BG10 ='Study 513 Revised Flow Data'!G7
BH10 ='Study 513 Revised Flow Data'!Q7
BI10 ='Study 513 Revised Flow Data'!AA7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$G$2,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10
BO10 =IF((-2.45925+(0.0420748*BN10))<0,0,(-2.45925+(0.0420748*BN10)))
BP10 =IF(((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10))>1,1,((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ
BQ10 =-1.613493+(0.0319584*BN10)
BR10 =(BP10*BM10)+(BQ10*(1-BM10))
BS10 =BO10+BR10-(BO10*BR10)
BT10 =1-BS10

BV10 ='Study 513 (Revised) Flow Data'!H7
BX10 ='Study 513 Revised Flow Data'!R7
BY10 ='Study 513 Revised Flow Data'!AB7
BZ10 =0.374*BV10-950
CA10 =IF(BV10>$K$4,(0.133*BV10+829)/(BV10-BZ10),(0.293*BV10+2090)/(BV10-BZ10))
CB10 =(0.45*(0.133*BV10+829)/(BV10-BZ10))+(0.55*CA10)
CC10
CD10 =IF((-2.45925+(0.0420748*CC10))<0,0,(-2.45925+(0.0420748*CC10)))
CE10 =IF(((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10))>1,1,((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10))
CF10 =-1.613493+(0.0319584*CC10)
CG10 =(CE10*CB10)+(CF10*(1-CB10))
CH10 =CD10+CG10-(CD10*CG10)
CI10 =1-CH10

CK10 ='Study 513 Revised Flow Data'!I7
CL10 ='Study 513 Revised Flow Data'!S7
CM10 ='Study 513 Flow Revised Data'!AC7
CN10 =(CL10+CM10)
CO10 =0.374*CK10-950
CP10 =IF(CK10>$K$4,(0.133*CK10+829)/(CK10-CO10),(0.293*CK10+2090)/(CK10-CO10))
CQ10 =(0.45*(0.133*CK10+829)/(CK10-CO10))+(0.55*CP10)
CR10
CS10 =IF((-2.45925+(0.0420748*CR10))<0,0,(-2.45925+(0.0420748*CR10)))
CT10 =IF(((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10))>1,1,((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10)))
CU10 =-1.613493+(0.0319584*CR10)
CV10 =(CT10*CQ10)+(CU10*(1-CQ10))
CW10 =CS10+CV10-(CS10*CV10)
CX10 =1-CW10
CZ10 =(0.01*O10)+(0.06*AC10)+(0.17*AQ10)+(0.28*BE10)+(0.25*BT10)+(0.16*CI10)+(0.07*CX10)

Study 507 Sacramento River Spring Run YOY Smolt Survival Model

Modified m2 by changing the slope to 0.0000434
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

Cross Channel Closed Over 25000 cfs
Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

February Water Temp 50 F
March Water Temp 55 F

DECEMBER

Year	Water Year Type	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	A	17,142	4,212	7,107	11,319	5,461	61%	0.45	0	0.744	0.000	0.338	0.338	**66.2%**
1923	B	34,544	4,212	4,359	8,571	11,969	24%	0.24	0	0.625	0.000	0.150	0.150	**85.0%**
1924	C	13,873	3,919	6,424	10,344	4,238	64%	0.48	0	0.702	0.000	0.334	0.334	**66.6%**
1925	D	11,254	4,212	4,847	9,059	3,259	67%	0.50	0	0.646	0.000	0.324	0.324	**67.6%**
1926	D	11,547	4,212	3,822	8,034	3,369	67%	0.50	0	0.602	0.000	0.300	0.300	**70.0%**
1927	W	14,556	4,212	7,042	11,254	4,494	63%	0.47	0	0.741	0.000	0.349	0.349	**65.1%**
1928	A	16,572	4,212	5,465	9,677	5,248	61%	0.46	0	0.673	0.000	0.308	0.308	**69.2%**
1929	C	13,710	4,212	6,180	10,392	4,178	64%	0.48	0	0.704	0.000	0.336	0.336	**66.4%**
1930	D	14,442	4,212	6,294	10,506	4,451	63%	0.47	0	0.709	0.000	0.334	0.334	**66.6%**
1931	C	9,563	2,423	2,976	5,399	2,627	71%	0.52	0	0.487	0.000	0.255	0.255	**74.5%**
1932	D	14,653	4,212	7,188	11,401	4,530	63%	0.47	0	0.748	0.000	0.352	0.352	**64.8%**
1933	C	8,148	2,017	2,472	4,489	2,097	74%	0.55	0	0.448	0.000	0.246	0.246	**75.4%**
1934	C	12,474	4,163	5,546	9,709	3,715	66%	0.49	0	0.674	0.000	0.329	0.329	**67.1%**
1935	B	8,506	3,220	3,399	6,619	2,231	73%	0.54	0	0.540	0.000	0.293	0.293	**70.7%**
1936	B	11,628	4,212	4,033	8,246	3,399	67%	0.50	0	0.611	0.000	0.304	0.304	**69.6%**
1937	B	12,458	4,212	5,578	9,791	3,709	66%	0.49	0	0.678	0.000	0.331	0.331	**66.9%**
1938	W	49,652	4,212	7,530	11,742	17,620	23%	0.23	0	0.763	0.000	0.177	0.177	**82.3%**
1939	D	18,687	4,212	3,741	7,953	6,039	60%	0.45	0	0.598	0.000	0.267	0.267	**73.3%**
1940	A	7,839	1,431	2,683	4,115	1,982	75%	0.56	0	0.431	0.000	0.240	0.240	**76.0%**
1941	W	35,454	4,212	7,319	11,531	12,310	24%	0.24	0	0.753	0.000	0.180	0.180	**82.0%**
1942	W	65,623	4,212	3,610	7,823	23,593	23%	0.23	0	0.592	0.000	0.135	0.135	**86.5%**
1943	W	28,803	4,212	3,773	7,985	9,822	25%	0.25	0	0.599	0.000	0.147	0.147	**85.3%**
1944	D	13,775	4,212	6,424	10,636	4,202	64%	0.48	0	0.715	0.000	0.341	0.341	**65.9%**
1945	B	16,068	4,212	6,961	11,173	5,060	62%	0.46	0	0.738	0.000	0.340	0.340	**66.0%**
1946	B	55,231	4,212	7,595	11,807	19,706	23%	0.23	0	0.765	0.000	0.176	0.176	**82.4%**
1947	D	18,134	4,212	7,140	11,352	5,832	60%	0.45	0	0.746	0.000	0.335	0.335	**66.5%**
1948	B	11,433	4,212	3,236	7,449	3,326	67%	0.50	0	0.576	0.000	0.288	0.288	**71.2%**
1949	D	15,564	4,212	6,896	11,108	4,871	62%	0.46	0	0.735	0.000	0.341	0.341	**65.9%**
1950	B	11,693	4,212	3,676	7,888	3,423	67%	0.50	0	0.595	0.000	0.296	0.296	**70.4%**
1951	A	68,095	4,212	7,595	11,807	24,518	23%	0.23	0	0.765	0.000	0.174	0.174	**82.6%**
1952	W	47,408	4,212	7,107	11,319	16,781	23%	0.23	0	0.744	0.000	0.173	0.173	**82.7%**
1953	W	42,334	4,212	3,741	7,953	14,883	24%	0.24	0	0.598	0.000	0.141	0.141	**85.9%**
1954	A	14,914	4,212	3,903	8,115	4,628	63%	0.47	0	0.605	0.000	0.283	0.283	**71.7%**
1955	D	26,022	4,212	6,912	11,124	8,782	25%	0.25	0	0.736	0.000	0.183	0.183	**81.7%**
1956	W	27,648	4,212	7,595	11,807	9,390	25%	0.25	0	0.765	0.000	0.189	0.189	**81.1%**
1957	A	14,149	4,212	5,790	10,002	4,342	64%	0.47	0	0.687	0.000	0.326	0.326	**67.4%**
1958	W	23,745	4,212	6,928	11,140	7,930	57%	0.43	0	0.736	0.000	0.315	0.315	**68.5%**
1959	B	14,621	4,212	3,854	8,067	4,518	63%	0.47	0	0.603	0.000	0.284	0.284	**71.6%**
1960	D	11,075	4,212	2,797	7,010	3,192	68%	0.50	0	0.557	0.000	0.281	0.281	**71.9%**
1961	D	19,484	4,212	6,896	11,108	6,337	59%	0.44	0	0.735	0.000	0.326	0.326	**67.4%**
1962	B	16,947	4,212	6,879	11,092	5,388	61%	0.46	0	0.734	0.000	0.335	0.335	**66.5%**
1963	W	27,550	4,212	6,896	11,108	9,354	25%	0.25	0	0.735	0.000	0.181	0.181	**81.9%**
1964	D	14,849	4,212	6,034	10,246	4,603	63%	0.47	0	0.698	0.000	0.327	0.327	**67.3%**
1965	W	29,079	4,212	7,416	11,628	9,926	25%	0.25	0	0.758	0.000	0.186	0.186	**81.4%**
1966	B	16,995	4,212	6,213	10,425	5,406	61%	0.46	0	0.705	0.000	0.321	0.321	**67.9%**
1967	W	39,699	4,212	7,123	11,336	13,897	24%	0.24	0	0.745	0.000	0.176	0.176	**82.4%**
1968	B	16,686	4,212	3,741	7,953	5,291	61%	0.46	0	0.598	0.000	0.273	0.273	**72.7%**
1969	W	25,176	4,212	6,977	11,189	8,466	25%	0.25	0	0.739	0.000	0.185	0.185	**81.5%**
1970	W	50,156	4,212	3,480	7,693	17,809	23%	0.23	0	0.587	0.000	0.136	0.136	**86.4%**
1971	W	54,352	4,212	7,042	11,254	19,378	23%	0.23	0	0.741	0.000	0.171	0.171	**82.9%**
1972	B	20,167	4,212	6,180	10,392	6,592	59%	0.44	0	0.704	0.000	0.310	0.310	**69.0%**
1973	A	26,200	4,212	6,896	11,108	8,849	25%	0.25	0	0.735	0.000	0.183	0.183	**81.7%**
1974	W	61,590	4,212	7,140	11,352	22,085	23%	0.23	0	0.746	0.000	0.170	0.170	**83.0%**
1975	W	17,613	4,212	4,245	8,457	5,637	61%	0.45	0	0.620	0.000	0.280	0.280	**72.0%**
1976	C	16,768	4,212	4,651	8,864	5,321	61%	0.46	0	0.638	0.000	0.291	0.291	**70.9%**
1977	C	8,229	1,691	3,106	4,798	2,128	74%	0.55	0	0.461	0.000	0.253	0.253	**74.7%**
1978	A	12,279	4,131	5,530	9,660	3,642	66%	0.49	0	0.672	0.000	0.330	0.330	**67.0%**
1979	B	12,751	4,212	3,676	7,888	3,819	65%	0.49	0	0.595	0.000	0.289	0.289	**71.1%**
1980	A	20,833	4,212	6,993	11,206	6,842	59%	0.44	0	0.739	0.000	0.324	0.324	**67.6%**
1981	D	15,613	4,212	4,033	8,246	4,889	62%	0.46	0	0.611	0.000	0.283	0.283	**71.7%**
1982	W	68,599	4,212	6,977	11,189	24,706	23%	0.23	0	0.739	0.000	0.167	0.167	**83.3%**
1983	W	55,410	4,212	4,424	8,636	19,773	23%	0.23	0	0.628	0.000	0.144	0.144	**85.6%**
1984	W	82,944	2,992	3,106	6,099	30,071	22%	0.22	0	0.518	0.000	0.116	0.116	**88.4%**
1985	D	23,875	4,212	5,741	9,953	7,979	57%	0.43	0	0.685	0.000	0.293	0.293	**70.7%**
1986	W	15,971	4,212	6,944	11,157	5,023	62%	0.46	0	0.737	0.000	0.340	0.340	**66.0%**
1987	D	13,791	4,212	6,099	10,311	4,208	64%	0.48	0	0.700	0.000	0.334	0.334	**66.6%**
1988	C	15,841	4,212	6,879	11,092	4,974	62%	0.46	0	0.734	0.000	0.339	0.339	**66.1%**
1989	D	8,847	2,846	3,562	6,408	2,359	72%	0.54	0	0.531	0.000	0.285	0.285	**71.5%**
1990	C	14,637	4,212	6,196	10,409	4,524	63%	0.47	0	0.705	0.000	0.331	0.331	**66.9%**
1991	C	8,815	1,773	3,139	4,912	2,347	72%	0.54	0	0.466	0.000	0.250	0.250	**75.0%**
1992	C	7,465	2,960	1,610	4,570	1,842	76%	0.56	0	0.451	0.000	0.255	0.255	**74.5%**

JANUARY

Year	Sac River Flows	CVP	SWP	CVP+SWP & Sutter exports	Calculated Steamboat Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	17,499	4,212	7,579	11,791	5,595	61%	0.27	0	0.765	0.000	0.203	0.203	**79.7%**
1923	32,283	4,212	3,643	7,855	11,124	24%	0.24	0	0.594	0.000	0.144	0.144	**85.6%**
1924	14,621	4,212	6,652	10,864	4,518	63%	0.27	0	0.724	0.000	0.199	0.199	**80.1%**
1925	10,213	3,545	3,155	6,701	2,870	69%	0.30	0	0.544	0.000	0.162	0.162	**83.8%**
1926	19,776	4,212	7,091	11,303	6,446	59%	0.26	0	0.743	0.000	0.193	0.193	**80.7%**
1927	32,624	4,212	7,286	11,498	11,252	24%	0.24	0	0.752	0.000	0.182	0.182	**81.8%**
1928	26,526	4,212	3,643	7,855	8,971	25%	0.25	0	0.594	0.000	0.147	0.147	**85.3%**
1929	15,515	4,212	7,091	11,303	4,853	62%	0.27	0	0.743	0.000	0.202	0.202	**79.8%**
1930	20,768	4,212	7,091	11,303	6,817	59%	0.26	0	0.743	0.000	0.191	0.191	**80.9%**
1931	12,214	4,212	5,058	9,270	3,618	66%	0.29	0	0.655	0.000	0.187	0.187	**81.3%**
1932	17,256	4,212	7,823	12,035	5,504	61%	0.27	0	0.775	0.000	0.206	0.206	**79.4%**
1933	12,100	4,212	5,416	9,628	3,575	66%	0.29	0	0.671	0.000	0.192	0.192	**80.8%**
1934	16,101	4,212	7,091	11,303	5,072	62%	0.27	0	0.743	0.000	0.200	0.200	**80.0%**
1935	25,469	4,212	7,660	11,872	8,575	25%	0.25	0	0.768	0.000	0.192	0.192	**80.8%**
1936	32,543	4,212	7,449	11,661	11,221	24%	0.24	0	0.759	0.000	0.184	0.184	**81.6%**
1937	15,971	4,212	7,579	11,791	5,023	62%	0.27	0	0.765	0.000	0.206	0.206	**79.4%**
1938	31,535	4,212	3,676	7,888	10,844	24%	0.24	0	0.595	0.000	0.145	0.145	**85.5%**
1939	18,410	4,212	3,236	7,449	5,935	60%	0.26	0	0.576	0.000	0.151	0.151	**84.9%**
1940	23,452	4,212	8,018	12,230	7,821	57%	0.25	0	0.784	0.000	0.198	0.198	**80.2%**
1941	72,990	4,212	8,148	12,360	26,348	23%	0.23	0	0.789	0.000	0.178	0.178	**82.2%**
1942	63,265	4,212	3,236	7,449	22,711	23%	0.23	0	0.576	0.000	0.131	0.131	**86.9%**
1943	58,060	4,212	3,301	7,514	20,765	23%	0.23	0	0.579	0.000	0.133	0.133	**86.7%**
1944	17,678	4,212	3,269	7,481	5,662	60%	0.26	0	0.578	0.000	0.153	0.153	**84.7%**
1945	13,255	4,212	5,595	9,807	4,007	65%	0.28	0	0.679	0.000	0.190	0.190	**81.0%**
1946	43,228	4,212	3,643	7,855	15,217	23%	0.23	0	0.594	0.000	0.139	0.139	**86.1%**
1947	15,223	4,212	6,554	10,766	4,743	63%	0.27	0	0.720	0.000	0.196	0.196	**80.4%**
1948	15,645	4,212	7,010	11,222	4,901	62%	0.27	0	0.740	0.000	0.200	0.200	**80.0%**
1949	14,930	4,212	6,814	11,027	4,634	63%	0.27	0	0.731	0.000	0.200	0.200	**80.0%**
1950	21,191	4,212	7,172	11,384	6,976	58%	0.26	0	0.747	0.000	0.192	0.192	**80.8%**
1951	62,208	4,212	7,449	11,661	22,316	23%	0.23	0	0.759	0.000	0.173	0.173	**82.7%**
1952	67,347	4,212	6,766	10,978	24,238	23%	0.23	0	0.729	0.000	0.166	0.166	**83.4%**
1953	64,078	4,212	3,334	7,546	23,015	23%	0.23	0	0.580	0.000	0.132	0.132	**86.8%**
1954	33,421	4,212	3,854	8,067	11,550	24%	0.24	0	0.603	0.000	0.145	0.145	**85.5%**
1955	22,265	4,212	5,920	10,132	7,377	58%	0.25	0	0.693	0.000	0.176	0.176	**82.4%**
1956	84,716	4,212	7,985	12,198	30,734	22%	0.22	0	0.782	0.000	0.175	0.175	**82.5%**
1957	18,638	4,212	3,887	8,099	6,021	60%	0.26	0	0.604	0.000	0.158	0.158	**84.2%**
1958	36,463	4,212	3,562	7,774	12,687	24%	0.24	0	0.590	0.000	0.141	0.141	**85.9%**
1959	35,162	4,212	3,334	7,546	12,200	24%	0.24	0	0.580	0.000	0.139	0.139	**86.1%**
1960	14,523	4,212	6,408	10,620	4,482	63%	0.27	0	0.714	0.000	0.196	0.196	**80.4%**
1961	15,011	4,212	7,075	11,287	4,664	63%	0.27	0	0.743	0.000	0.203	0.203	**79.7%**
1962	12,897	4,212	4,163	8,376	3,873	65%	0.28	0	0.616	0.000	0.174	0.174	**82.6%**
1963	17,808	4,212	7,270	11,482	5,710	60%	0.26	0	0.751	0.000	0.199	0.199	**80.1%**
1964	25,745	4,212	3,871	8,083	8,679	25%	0.25	0	0.604	0.000	0.150	0.150	**85.0%**
1965	81,236	4,212	8,506	12,718	29,432	22%	0.22	0	0.805	0.000	0.181	0.181	**81.9%**
1966	29,632	4,212	3,659	7,872	10,132	24%	0.24	0	0.595	0.000	0.145	0.145	**85.5%**
1967	34,153	4,212	7,676	11,889	11,823	24%	0.24	0	0.769	0.000	0.185	0.185	**81.5%**
1968	30,640	4,212	3,334	7,546	10,509	24%	0.24	0	0.580	0.000	0.141	0.141	**85.9%**
1969	70,209	4,212	6,310	10,522	25,308	23%	0.23	0	0.710	0.000	0.161	0.161	**83.9%**
1970	92,669	4,163	3,334	7,497	33,708	22%	0.22	0	0.578	0.000	0.129	0.129	**87.1%**
1971	47,359	4,212	5,465	9,677	16,762	23%	0.23	0	0.673	0.000	0.157	0.157	**84.3%**
1972	20,394	4,212	3,887	8,099	6,677	59%	0.26	0	0.604	0.000	0.156	0.156	**84.4%**
1973	50,254	4,212	6,912	11,124	17,845	23%	0.23	0	0.736	0.000	0.171	0.171	**82.9%**
1974	78,422	4,212	3,643	7,855	28,380	22%	0.22	0	0.594	0.000	0.134	0.134	**86.6%**
1975	18,670	4,212	3,854	8,067	6,033	60%	0.26	0	0.603	0.000	0.158	0.158	**84.2%**
1976	16,768	4,212	3,806	8,018	5,321	61%	0.27	0	0.601	0.000	0.161	0.161	**83.9%**
1977	7,660	2,098	2,440	4,538	1,915	75%	0.32	0	0.450	0.000	0.145	0.145	**85.5%**
1978	43,066	3,074	7,758	10,831	15,157	23%	0.23	0	0.723	0.000	0.170	0.170	**83.0%**
1979	27,241	4,212	3,269	7,481	9,238	25%	0.25	0	0.578	0.000	0.143	0.143	**85.7%**
1980	64,468	4,212	3,155	7,367	23,161	23%	0.23	0	0.573	0.000	0.130	0.130	**87.0%**
1981	28,640	4,212	3,350	7,563	9,761	25%	0.25	0	0.581	0.000	0.143	0.143	**85.7%**
1982	51,165	4,212	7,676	11,889	18,186	23%	0.23	0	0.769	0.000	0.178	0.178	**82.2%**
1983	59,150	4,212	2,651	6,863	21,172	23%	0.23	0	0.551	0.000	0.126	0.126	**87.4%**
1984	47,359	1,334	2,879	4,212	16,762	23%	0.23	0	0.436	0.000	0.102	0.102	**89.8%**
1985	16,800	4,212	3,871	8,083	5,333	61%	0.27	0	0.604	0.000	0.161	0.161	**83.9%**
1986	23,615	4,212	7,172	11,384	7,882	57%	0.25	0	0.747	0.000	0.188	0.188	**81.2%**
1987	16,735	1,480	6,245	7,725	5,309	61%	0.27	0	0.588	0.000	0.157	0.157	**84.3%**
1988	25,534	4,212	7,058	11,271	8,600	25%	0.25	0	0.742	0.000	0.185	0.185	**81.5%**
1989	12,002	3,936	4,554	8,490	3,539	66%	0.29	0	0.621	0.000	0.178	0.178	**82.2%**
1990	21,582	2,521	7,058	9,579	7,122	58%	0.26	0	0.669	0.000	0.171	0.171	**82.9%**
1991	6,847	1,691	1,708	3,399	1,611	78%	0.33	0	0.400	0.000	0.133	0.133	**86.7%**
1992	12,133	4,212	4,781	8,994	3,588	66%	0.29	0	0.643	0.000	0.184	0.184	**81.6%**

FEBRUARY

Year	Sac River Flow	CVP	SWP	CVP + SWP Exports	Calculated Steamboat Sutter & Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	34,409	4,249	6,392	10,642	11,919	24%	0.24	0	0.769	0.000	0.185	0.185	**81.5%**
1923	24,326	4,285	2,377	6,662	8,148	58%	0.25	0	0.596	0.000	0.150	0.150	**85.0%**
1924	16,898	4,068	4,624	8,693	5,370	60%	0.27	0	0.684	0.000	0.183	0.183	**81.7%**
1925	44,673	4,213	7,581	11,794	15,758	23%	0.23	0	0.819	0.000	0.192	0.192	**80.8%**
1926	36,714	4,231	7,508	11,740	12,781	24%	0.24	0	0.816	0.000	0.195	0.195	**80.5%**
1927	86,122	4,285	6,626	10,912	31,260	22%	0.22	0	0.780	0.000	0.175	0.175	**82.5%**
1928	27,364	4,103	4,225	8,327	9,284	25%	0.25	0	0.668	0.000	0.165	0.165	**83.5%**
1929	18,528	4,231	3,799	8,031	5,980	60%	0.26	0	0.655	0.000	0.172	0.172	**82.8%**
1930	15,683	2,773	4,015	6,788	4,916	62%	0.27	0	0.601	0.000	0.163	0.163	**83.7%**
1931	11,326	3,565	1,873	5,438	3,286	66%	0.29	0	0.543	0.000	0.158	0.158	**84.2%**
1932	13,995	4,103	5,563	9,666	4,284	64%	0.28	0	0.726	0.000	0.201	0.201	**79.9%**
1933	11,974	3,835	2,701	6,536	3,528	64%	0.29	0	0.590	0.000	0.169	0.169	**83.1%**
1934	12,748	1,621	4,411	6,032	3,818	66%	0.28	0	0.569	0.000	0.161	0.161	**83.9%**
1935	12,478	1,188	3,943	5,132	3,717	67%	0.28	0	0.530	0.000	0.150	0.150	**85.0%**
1936	49,982	4,103	8,206	12,309	17,743	23%	0.23	0	0.841	0.000	0.195	0.195	**80.5%**
1937	33,203	4,231	5,042	9,273	11,468	24%	0.24	0	0.709	0.000	0.171	0.171	**82.9%**
1938	82,269	4,267	3,943	8,211	29,819	22%	0.22	0	0.663	0.000	0.149	0.149	**85.1%**
1939	19,032	2,629	3,961	6,590	6,168	59%	0.26	0	0.593	0.000	0.155	0.155	**84.5%**
1940	43,306	4,103	8,206	12,309	15,247	23%	0.23	0	0.841	0.000	0.197	0.197	**80.3%**
1941	75,031	4,285	6,860	11,146	27,112	23%	0.23	0	0.791	0.000	0.178	0.178	**82.2%**
1942	78,344	4,285	3,961	8,247	28,351	22%	0.23	0	0.665	0.000	0.150	0.150	**85.0%**
1943	52,253	4,267	3,997	8,265	18,593	23%	0.23	0	0.665	0.000	0.154	0.154	**84.6%**
1944	30,163	4,103	3,825	7,928	10,331	24%	0.24	0	0.651	0.000	0.159	0.159	**84.1%**
1945	41,378	4,249	3,997	8,247	14,525	23%	0.24	0	0.665	0.000	0.157	0.157	**84.3%**
1946	24,092	4,285	4,213	8,499	8,060	57%	0.25	0	0.676	0.000	0.170	0.170	**83.0%**
1947	21,571	4,249	3,961	8,211	7,118	58%	0.26	0	0.663	0.000	0.170	0.170	**83.0%**
1948	15,525	4,085	1,721	5,807	4,856	64%	0.27	0	0.559	0.000	0.152	0.152	**84.8%**
1949	16,277	4,249	4,177	8,427	5,138	61%	0.27	0	0.673	0.000	0.181	0.181	**81.9%**
1950	35,562	4,249	7,526	11,776	12,350	24%	0.24	0	0.818	0.000	0.196	0.196	**80.4%**
1951	60,572	4,285	4,682	8,967	21,704	23%	0.23	0	0.696	0.000	0.159	0.159	**84.1%**
1952	62,499	4,138	3,773	7,910	22,425	23%	0.23	0	0.650	0.000	0.148	0.148	**85.2%**
1953	28,341	4,285	4,051	8,337	9,650	25%	0.25	0	0.669	0.000	0.164	0.164	**83.6%**
1954	57,151	4,267	4,628	8,895	20,424	23%	0.23	0	0.693	0.000	0.159	0.159	**84.1%**
1955	16,295	4,267	3,925	8,193	5,144	61%	0.27	0	0.662	0.000	0.178	0.178	**82.2%**
1956	61,543	4,138	4,520	8,658	22,067	23%	0.23	0	0.683	0.000	0.156	0.156	**84.4%**
1957	33,149	4,249	4,646	8,895	11,448	24%	0.24	0	0.693	0.000	0.167	0.167	**83.3%**
1958	62,427	4,249	4,051	8,301	22,398	23%	0.23	0	0.667	0.000	0.152	0.152	**84.8%**
1959	50,075	4,249	4,051	8,301	17,778	23%	0.23	0	0.667	0.000	0.155	0.155	**84.5%**
1960	26,512	4,085	7,041	11,126	8,966	25%	0.25	0	0.790	0.000	0.196	0.196	**80.4%**
1961	32,843	4,249	7,112	11,362	11,333	24%	0.24	0	0.800	0.000	0.193	0.193	**80.7%**
1962	45,537	4,249	8,499	12,748	16,081	23%	0.23	0	0.860	0.000	0.201	0.201	**79.9%**
1963	57,565	4,285	8,499	12,784	20,579	23%	0.23	0	0.862	0.000	0.198	0.198	**80.2%**
1964	19,019	4,120	3,512	7,632	6,163	61%	0.26	0	0.638	0.000	0.167	0.167	**83.3%**
1965	33,329	4,249	5,924	10,173	11,515	24%	0.24	0	0.748	0.000	0.181	0.181	**81.9%**
1966	26,775	4,285	4,375	8,661	9,064	25%	0.25	0	0.683	0.000	0.169	0.169	**83.1%**
1967	43,106	4,285	3,205	7,490	15,172	24%	0.23	0	0.632	0.000	0.148	0.148	**85.2%**
1968	54,520	2,660	3,912	6,572	19,440	23%	0.23	0	0.592	0.000	0.136	0.136	**86.4%**
1969	67,486	4,285	3,169	7,454	24,290	23%	0.23	0	0.630	0.000	0.143	0.143	**85.7%**
1970	57,565	1,206	4,051	5,258	20,579	23%	0.23	0	0.535	0.000	0.123	0.123	**87.7%**
1971	29,332	4,285	4,195	8,481	10,020	24%	0.24	0	0.675	0.000	0.165	0.165	**83.5%**
1972	24,217	4,120	4,485	8,606	8,107	57%	0.25	0	0.680	0.000	0.171	0.171	**82.9%**
1973	70,961	4,267	4,429	8,697	25,590	23%	0.23	0	0.684	0.000	0.155	0.155	**84.5%**
1974	41,918	4,267	4,375	8,643	14,727	24%	0.24	0	0.682	0.000	0.161	0.161	**83.9%**
1975	58,807	4,249	4,628	8,877	21,044	23%	0.23	0	0.692	0.000	0.159	0.159	**84.1%**
1976	19,523	4,085	4,172	8,258	6,352	59%	0.26	0	0.665	0.000	0.173	0.173	**82.7%**
1977	12,172	684	1,422	2,107	3,602	68%	0.29	0	0.398	0.000	0.114	0.114	**88.6%**
1978	51,083	1,765	6,554	8,319	18,155	23%	0.23	0	0.668	0.000	0.155	0.155	**84.5%**
1979	42,044	4,249	3,961	8,211	14,774	24%	0.24	0	0.663	0.000	0.156	0.156	**84.4%**
1980	69,453	4,103	3,668	7,771	25,026	23%	0.23	0	0.644	0.000	0.146	0.146	**85.4%**
1981	29,674	2,737	4,069	6,806	10,148	24%	0.24	0	0.602	0.000	0.147	0.147	**85.3%**
1982	65,650	4,285	4,628	8,913	23,603	23%	0.23	0	0.694	0.000	0.158	0.158	**84.2%**
1983	82,917	3,421	2,791	6,212	30,061	22%	0.22	0	0.576	0.000	0.129	0.129	**87.1%**
1984	36,004	1,443	3,720	5,163	12,516	24%	0.24	0	0.531	0.000	0.127	0.127	**87.3%**
1985	20,707	4,249	4,646	8,895	6,794	58%	0.26	0	0.693	0.000	0.178	0.178	**82.2%**
1986	98,439	4,249	7,725	11,974	35,866	22%	0.22	0	0.826	0.000	0.184	0.184	**81.6%**
1987	23,030	1,278	4,267	5,546	7,663	57%	0.25	0	0.547	0.000	0.139	0.139	**86.1%**
1988	16,603	3,894	2,469	6,363	5,259	62%	0.27	0	0.583	0.000	0.156	0.156	**84.4%**
1989	12,658	990	1,801	2,791	3,784	67%	0.28	0	0.428	0.000	0.121	0.121	**87.9%**
1990	16,944	1,314	6,482	7,797	5,387	61%	0.27	0	0.645	0.000	0.172	0.172	**82.8%**
1991	11,074	432	828	1,260	3,192	67%	0.29	0	0.361	0.000	0.106	0.106	**89.4%**
1992	31,415	1,321	7,197	8,519	10,799	24%	0.24	0	0.677	0.000	0.164	0.164	**83.6%**

MARCH

Year	Sac River Flow	CVP	SWP	CVP + SWP exports	Calculated Steamboat Sutter & Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	31,551	3,806	4,147	7,953	10,850	24%	0.24	0	0.742	0.144	0.289	0.289	**71.1%**
1923	17,174	4,228	3,367	7,595	5,473	27%	0.27	0	0.726	0.144	0.299	0.299	**70.1%**
1924	12,246	1,529	1,789	3,318	3,630	29%	0.29	0	0.541	0.144	0.257	0.257	**74.3%**
1925	18,557	3,757	4,131	7,888	5,990	26%	0.26	0	0.739	0.144	0.300	0.300	**70.0%**
1926	18,947	4,228	3,497	7,725	6,136	26%	0.26	0	0.732	0.144	0.298	0.298	**70.2%**
1927	43,863	3,773	4,147	7,920	15,455	23%	0.23	0	0.740	0.144	0.284	0.284	**71.6%**
1928	86,229	4,228	4,424	8,652	31,300	22%	0.22	0	0.772	0.144	0.285	0.285	**71.5%**
1929	16,930	4,017	2,814	6,831	5,382	27%	0.27	0	0.693	0.144	0.291	0.291	**70.9%**
1930	30,087	2,944	4,375	7,319	10,303	24%	0.24	0	0.714	0.144	0.283	0.283	**71.7%**
1931	9,856	2,114	1,903	4,017	2,736	30%	0.30	0	0.571	0.144	0.272	0.272	**72.8%**
1932	12,100	2,537	2,700	5,237	3,575	29%	0.29	0	0.624	0.144	0.281	0.281	**71.9%**
1933	10,392	1,561	3,074	4,635	2,937	30%	0.30	0	0.598	0.144	0.279	0.279	**72.1%**
1934	14,263	2,309	1,691	4,001	4,384	28%	0.28	0	0.570	0.144	0.262	0.262	**73.8%**
1935	24,916	4,228	6,977	11,206	8,368	25%	0.25	0	0.883	0.144	0.329	0.329	**67.1%**
1936	33,698	4,228	5,790	10,018	11,653	24%	0.24	0	0.831	0.144	0.310	0.310	**69.0%**
1937	38,203	4,228	4,001	8,229	13,338	24%	0.24	0	0.754	0.144	0.289	0.289	**71.1%**
1938	78,634	4,228	3,968	8,197	28,459	22%	0.22	0	0.752	0.144	0.281	0.281	**71.9%**
1939	16,394	2,716	4,001	6,717	5,181	27%	0.27	0	0.688	0.144	0.290	0.290	**71.0%**
1940	59,183	4,228	4,651	8,880	21,184	23%	0.23	0	0.782	0.144	0.290	0.290	**71.0%**
1941	58,581	4,228	3,838	8,067	20,959	23%	0.23	0	0.747	0.144	0.282	0.282	**71.8%**
1942	27,095	4,228	4,001	8,229	9,183	25%	0.25	0	0.754	0.144	0.295	0.295	**70.5%**
1943	64,598	4,228	4,050	8,278	23,210	23%	0.23	0	0.756	0.144	0.283	0.283	**71.7%**
1944	25,094	4,228	4,001	8,229	8,435	25%	0.25	0	0.754	0.144	0.297	0.297	**70.3%**
1945	27,274	4,228	4,131	8,359	9,250	25%	0.25	0	0.759	0.144	0.296	0.296	**70.4%**
1946	23,712	4,228	4,424	8,652	7,918	25%	0.25	0	0.772	0.144	0.303	0.303	**69.7%**
1947	22,509	4,228	3,919	8,148	7,468	25%	0.25	0	0.750	0.144	0.298	0.298	**70.2%**
1948	19,353	4,228	3,480	7,709	6,288	26%	0.26	0	0.731	0.144	0.297	0.297	**70.3%**
1949	41,716	4,228	7,107	11,336	14,652	24%	0.24	0	0.889	0.144	0.320	0.320	**68.0%**
1950	22,899	4,228	4,554	8,782	7,614	25%	0.25	0	0.778	0.144	0.305	0.305	**69.5%**
1951	29,827	4,228	4,700	8,929	10,205	24%	0.24	0	0.784	0.144	0.301	0.301	**69.9%**
1952	57,524	4,228	3,936	8,164	20,564	23%	0.23	0	0.751	0.144	0.283	0.283	**71.7%**
1953	24,899	3,448	4,115	7,563	8,362	25%	0.25	0	0.725	0.144	0.290	0.290	**71.0%**
1954	49,538	4,228	4,684	8,912	17,577	23%	0.23	0	0.783	0.144	0.293	0.293	**70.7%**
1955	18,117	4,228	3,188	7,416	5,826	26%	0.26	0	0.718	0.144	0.296	0.296	**70.4%**
1956	36,674	2,472	4,700	7,172	12,766	24%	0.24	0	0.708	0.144	0.279	0.279	**72.1%**
1957	44,383	4,228	4,440	8,668	15,649	23%	0.23	0	0.773	0.144	0.291	0.291	**70.9%**
1958	93,612	4,228	4,066	8,294	34,061	22%	0.22	0	0.757	0.144	0.281	0.281	**71.9%**
1959	23,354	4,228	3,058	7,286	7,785	25%	0.25	0	0.713	0.144	0.288	0.288	**71.2%**
1960	22,606	3,545	3,985	7,530	7,505	25%	0.25	0	0.723	0.144	0.291	0.291	**70.9%**
1961	20,947	3,513	4,538	8,050	6,884	26%	0.26	0	0.746	0.144	0.299	0.299	**70.1%**
1962	27,664	4,228	3,497	7,725	9,396	25%	0.25	0	0.732	0.144	0.289	0.289	**71.1%**
1963	32,641	4,228	4,489	8,717	11,258	24%	0.24	0	0.775	0.144	0.297	0.297	**70.3%**
1964	16,638	3,415	3,318	6,733	5,272	27%	0.27	0	0.689	0.144	0.290	0.290	**71.0%**
1965	21,386	4,228	4,375	8,603	7,049	26%	0.26	0	0.770	0.144	0.305	0.305	**69.5%**
1966	28,689	4,228	4,424	8,652	9,780	25%	0.25	0	0.772	0.144	0.298	0.298	**70.2%**
1967	54,483	4,228	3,285	7,514	19,426	23%	0.23	0	0.723	0.144	0.277	0.277	**72.3%**
1968	36,788	2,992	4,115	7,107	12,809	24%	0.24	0	0.705	0.144	0.278	0.278	**72.2%**
1969	45,326	3,643	3,253	6,896	16,002	23%	0.23	0	0.696	0.144	0.273	0.273	**72.7%**
1970	35,812	3,106	4,115	7,221	12,444	24%	0.24	0	0.710	0.144	0.280	0.280	**72.0%**
1971	50,791	4,228	4,700	8,929	18,046	23%	0.23	0	0.784	0.144	0.292	0.292	**70.8%**
1972	32,933	3,789	4,424	8,213	11,367	24%	0.24	0	0.753	0.144	0.291	0.291	**70.9%**
1973	47,554	4,228	4,456	8,685	16,835	23%	0.23	0	0.774	0.144	0.291	0.291	**70.9%**
1974	100,199	4,228	4,424	8,652	36,524	22%	0.22	0	0.772	0.144	0.284	0.284	**71.6%**
1975	75,999	4,228	4,684	8,912	27,474	23%	0.23	0	0.783	0.144	0.288	0.288	**71.2%**
1976	20,069	4,228	3,627	7,855	6,556	26%	0.26	0	0.738	0.144	0.298	0.298	**70.2%**
1977	7,286	829	1,187	2,017	1,775	33%	0.33	0	0.484	0.144	0.255	0.255	**74.5%**
1978	45,473	2,114	3,903	6,017	16,057	23%	0.23	0	0.658	0.144	0.264	0.264	**73.6%**
1979	32,592	4,228	4,001	8,229	11,239	24%	0.24	0	0.754	0.144	0.292	0.292	**70.8%**
1980	36,479	3,757	3,350	7,107	12,693	24%	0.24	0	0.705	0.144	0.278	0.278	**72.2%**
1981	32,494	2,992	4,115	7,107	11,203	24%	0.24	0	0.705	0.144	0.280	0.280	**72.0%**
1982	69,087	4,228	4,651	8,880	24,889	23%	0.23	0	0.782	0.144	0.289	0.289	**71.1%**
1983	81,935	2,049	2,635	4,684	29,694	22%	0.22	0	0.600	0.144	0.247	0.247	**75.3%**
1984	36,495	3,204	4,001	7,205	12,699	24%	0.24	0	0.709	0.144	0.279	0.279	**72.1%**
1985	21,809	4,228	4,635	8,864	7,207	26%	0.26	0	0.781	0.144	0.307	0.307	**69.3%**
1986	72,535	4,228	4,180	8,408	26,178	23%	0.23	0	0.762	0.144	0.284	0.284	**71.6%**
1987	29,567	2,358	4,163	6,522	10,108	24%	0.24	0	0.680	0.144	0.275	0.275	**72.5%**
1988	11,075	2,082	1,756	3,838	3,192	29%	0.29	0	0.563	0.144	0.267	0.267	**73.3%**
1989	41,992	4,228	6,961	11,189	14,755	24%	0.24	0	0.882	0.144	0.318	0.318	**68.2%**
1990	14,832	2,358	3,497	5,855	4,597	27%	0.27	0	0.651	0.144	0.283	0.283	**71.7%**
1991	29,681	4,228	7,075	11,303	10,151	24%	0.24	0	0.887	0.144	0.326	0.326	**67.4%**
1992	20,102	2,082	6,164	8,246	6,568	26%	0.26	0	0.754	0.144	0.302	0.302	**69.8%**

Formulas: Sacramento River Spring Run Young of Year Smolt Survival Model

```
C10 ='Study 513 Revised Flow Data'!C7
D10 ='Study 513 Revised Flow Data'!M7
E10 ='Study 513 Revised Flow Data'!X7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.45*(0.133*C10+829)/(C10-G10))+(0.55*H10)
J10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
K10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*F10)
L10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 513 Revised Flow Data'!D7
R10 ='Study 513 Revised Flow Data'!N7
S10 ='Study 513 Revised Flow Data'!X7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*T10)
Z10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 513 Revised Flow Data'!E7
AF10 ='Study 513 Revised Flow Data'!O7
AG10 ='Study 513 Revised Flow Data'!Y7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$G$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
AM10 =(-0.5916024)+(0.017968*$BC$2)+(0.0000434*AH10)
AN10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

AS10 ='Study 513 Revised Flow Data'!D7
AT10 ='Study 513 Revised Flow Data'!N7
AU10 ='Study 513 Revised Flow Data'!X7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$G$2,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BA10 =IF(((-0.5916024)+(0.017968*$BC$3)+(0.0000434*AV10))>1,1,((-0.5916024)+(0.017968*$BC$3)+(0.00004…
BB10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =(AZ10+BC10-(AZ10*BC10))
BE10 =1-BD10
```

Study 507 Sacramento River Spring Run YOY Smolt Survival Model (continued)

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

APRIL

BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT
Sac River Flows	CVP	SWP	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	observed temp	m1	m2 (Calculated Mortality)	m3	m23	m123	Calculated Survival s123
22,822	4,185	4,185	8,369	7,585	25%	0.25	58.5	0.002	0.823	0.256	0.400	0.401	**59.9%**
22,721	3,966	3,966	7,932	7,548	25%	0.25	58.3	0.000	0.800	0.250	0.389	0.389	**61.1%**
8,050	1,412	1,412	2,823	2,061	32%	0.32	61.5	0.128	0.636	0.352	0.442	0.514	**48.6%**
22,654	3,479	3,479	6,958	7,523	25%	0.25	59.1	0.027	0.772	0.275	0.401	0.418	**58.2%**
21,242	3,311	3,311	6,621	6,995	26%	0.26	61.6	0.133	0.803	0.355	0.470	0.540	**46.0%**
48,215	4,050	4,050	8,100	17,082	23%	0.23	56.8	0.000	0.781	0.202	0.336	0.336	**66.4%**
29,208	3,680	3,680	7,361	9,974	25%	0.25	58.7	0.011	0.783	0.262	0.390	0.396	**60.4%**
8,773	823	1,882	2,706	2,331	31%	0.31	56.3	0.000	0.537	0.186	0.295	0.295	**70.5%**
12,638	1,949	1,949	3,899	3,777	28%	0.28	59.6	0.048	0.649	0.291	0.392	0.422	**57.8%**
9,109	1,529	1,529	3,059	2,457	31%	0.31	62.8	0.183	0.670	0.393	0.478	0.574	**42.6%**
13,075	2,487	2,891	5,378	3,940	28%	0.28	58.9	0.019	0.700	0.269	0.390	0.402	**59.8%**
12,739	2,067	2,067	4,134	3,814	28%	0.28	60.1	0.069	0.668	0.307	0.409	0.450	**55.0%**
12,839	1,781	1,781	3,563	3,852	28%	0.28	63.6	0.217	0.706	0.419	0.500	0.608	**39.2%**
24,166	4,504	4,622	9,125	8,088	25%	0.25	58.9	0.019	0.863	0.269	0.418	0.429	**57.1%**
21,528	4,201	4,201	8,403	7,101	26%	0.26	59.7	0.053	0.846	0.294	0.436	0.465	**53.5%**
23,259	3,260	4,974	8,235	7,749	25%	0.25	58.8	0.015	0.822	0.266	0.406	0.415	**58.5%**
47,173	4,050	4,369	8,420	16,693	23%	0.23	56.3	0.000	0.785	0.186	0.326	0.326	**67.4%**
12,234	2,067	2,067	4,134	3,626	29%	0.29	63.3	0.204	0.725	0.409	0.500	0.602	**39.8%**
41,728	4,168	4,168	8,336	14,656	24%	0.24	57.4	0.000	0.802	0.221	0.358	0.358	**64.2%**
42,367	4,605	4,706	9,310	14,895	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
43,308	4,453	4,453	8,907	15,247	23%	0.23	56.5	0.000	0.810	0.192	0.337	0.337	**66.3%**
29,410	4,605	4,857	9,462	10,049	24%	0.24	58.8	0.015	0.876	0.266	0.415	0.424	**57.6%**
9,814	2,118	2,118	4,235	2,721	30%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	**63.0%**
11,999	3,294	3,294	6,588	3,538	29%	0.29	60.6	0.090	0.783	0.323	0.455	0.504	**49.6%**
12,218	2,975	2,975	5,949	3,619	29%	0.29	60.7	0.095	0.757	0.326	0.449	0.501	**49.9%**
13,797	2,470	2,470	4,941	4,210	28%	0.28	62.5	0.170	0.746	0.384	0.484	0.572	**42.8%**
23,293	3,428	3,428	6,857	7,761	25%	0.25	56.6	0.000	0.723	0.195	0.329	0.329	**67.1%**
13,209	2,538	2,538	5,075	3,990	28%	0.28	61.7	0.137	0.737	0.358	0.465	0.538	**46.2%**
19,528	3,143	3,143	6,285	6,353	26%	0.26	61.3	0.120	0.783	0.346	0.459	0.524	**47.6%**
14,789	3,193	3,193	6,386	4,581	27%	0.27	59.9	0.061	0.762	0.301	0.427	0.462	**53.8%**
56,652	4,605	4,168	8,773	20,238	23%	0.23	55.5	0.000	0.786	0.160	0.304	0.304	**69.6%**
16,184	2,823	2,823	5,647	5,103	27%	0.27	58.8	0.015	0.710	0.266	0.385	0.394	**60.6%**
39,863	3,680	3,680	7,361	13,959	24%	0.24	58.4	0.000	0.777	0.253	0.377	0.377	**62.3%**
9,478	1,832	1,832	3,664	2,595	30%	0.30	56.4	0.000	0.581	0.189	0.308	0.308	**69.2%**
20,436	3,983	3,983	7,966	6,693	26%	0.26	59.7	0.053	0.827	0.294	0.432	0.462	**53.8%**
21,158	3,210	3,210	6,420	6,963	26%	0.26	60.5	0.086	0.774	0.320	0.437	0.485	**51.5%**
52,282	4,605	5,058	9,663	18,603	23%	0.23	57.4	0.000	0.859	0.221	0.368	0.368	**63.2%**
10,487	1,899	1,899	3,798	2,972	30%	0.30	63	0.191	0.705	0.400	0.490	0.588	**41.2%**
13,545	303	3,731	4,033	4,116	28%	0.28	59.5	0.044	0.653	0.288	0.390	0.417	**58.3%**
12,789	303	3,243	3,546	3,833	28%	0.28	60.1	0.069	0.642	0.307	0.402	0.443	**55.7%**
15,411	2,790	2,790	5,579	4,814	27%	0.27	61.8	0.141	0.761	0.362	0.470	0.545	**45.5%**
69,457	4,050	4,050	8,100	25,027	23%	0.23	53.7	0.000	0.725	0.103	0.244	0.244	**75.6%**
8,957	1,748	1,748	3,496	2,400	31%	0.31	59.3	0.036	0.626	0.282	0.388	0.410	**59.0%**
45,173	4,269	4,269	8,537	15,945	23%	0.23	56.9	0.000	0.801	0.205	0.344	0.344	**65.6%**
12,806	2,487	2,487	4,974	3,839	28%	0.28	61.9	0.145	0.737	0.365	0.470	0.547	**45.3%**
39,930	4,605	4,941	9,546	13,984	24%	0.24	53.8	0.000	0.789	0.106	0.268	0.268	**73.2%**
15,629	2,622	2,622	5,243	4,895	27%	0.27	61.5	0.128	0.741	0.352	0.457	0.527	**47.3%**
44,787	3,344	4,168	7,512	15,800	23%	0.23	56.4	0.000	0.748	0.189	0.320	0.320	**68.0%**
16,604	3,294	3,294	6,588	5,260	27%	0.27	58.8	0.015	0.751	0.266	0.396	0.404	**59.6%**
22,133	3,311	3,311	6,621	7,328	25%	0.25	58.7	0.011	0.750	0.262	0.387	0.393	**60.7%**
12,453	2,370	2,370	4,739	3,707	28%	0.28	58.5	0.002	0.665	0.256	0.372	0.374	**62.6%**
19,511	3,748	3,748	7,495	6,347	26%	0.26	61.3	0.120	0.835	0.346	0.473	0.536	**46.4%**
33,208	4,605	4,722	9,327	11,470	24%	0.24	56.8	0.000	0.834	0.202	0.354	0.354	**64.6%**
25,763	4,386	4,386	8,773	8,685	25%	0.25	56.8	0.000	0.810	0.202	0.353	0.353	**64.7%**
9,428	639	2,370	3,008	2,576	30%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
9,142	1,109	1,882	2,991	2,469	31%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	**36.3%**
38,703	3,445	4,067	7,512	13,525	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
17,696	3,428	3,428	6,857	5,668	26%	0.26	59.8	0.057	0.780	0.298	0.425	0.458	**54.2%**
19,814	2,991	3,949	6,941	6,460	26%	0.26	57.1	0.000	0.736	0.211	0.347	0.347	**65.3%**
16,990	2,723	2,723	5,445	5,404	27%	0.27	61.5	0.128	0.750	0.352	0.458	0.528	**47.2%**
75,843	3,596	5,563	9,159	27,415	23%	0.23	54.1	0.000	0.778	0.115	0.265	0.265	**73.5%**
68,298	3,311	3,647	6,958	24,593	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
17,864	3,428	3,428	6,857	5,731	26%	0.26	59.7	0.053	0.779	0.294	0.422	0.453	**54.7%**
13,327	2,437	2,437	4,874	4,034	28%	0.28	60.8	0.099	0.712	0.330	0.437	0.492	**50.8%**
21,024	2,336	5,210	7,546	6,913	26%	0.26	60.4	0.082	0.821	0.317	0.446	0.492	**50.8%**
12,386	319	3,176	3,496	3,682	28%	0.28	65.7	0.305	0.741	0.486	0.559	0.693	**30.7%**
8,621	1,428	1,428	2,857	2,274	31%	0.31	59.9	0.061	0.609	0.301	0.397	0.433	**56.7%**
23,629	2,823	2,823	5,647	7,887	25%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	**48.0%**
12,436	235	3,294	3,529	3,701	28%	0.28	61.6	0.133	0.668	0.355	0.444	0.518	**48.2%**
15,276	2,084	2,168	4,252	4,763	27%	0.27	60.8	0.099	0.685	0.330	0.426	0.483	**51.7%**
12,470	1,865	1,865	3,731	3,714	28%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	**49.9%**

MAY

BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI
Sac River Flows	CVP	SWP	CVP + SWP Exports	Calculated Steamboat & Sutter Slough Q	Percent	X-channel Closed	USBR observed temp f	m1	m2 (Calculated Mortality)	m3	m23	m123	Calculated Survival s123
46,530	4,185	4,342	8,527	16,452	23%	0.23	61.2	0.116	0.878	0.342	0.467	0.529	**47.1%**
14,214	3,966	3,123	7,089	4,366	64%	0.47	62.4	0.166	0.837	0.381	0.597	0.664	**33.6%**
8,766	1,412	553	1,965	2,328	72%	0.54	69.2	0.452	0.737	0.598	0.673	0.821	**17.9%**
12,067	3,479	2,521	6,000	3,563	66%	0.49	63.2	0.200	0.804	0.406	0.602	0.682	**31.8%**
13,645	3,311	2,440	5,750	4,153	64%	0.48	65.7	0.305	0.838	0.486	0.655	0.760	**24.0%**
26,786	4,050	4,163	8,214	9,068	25%	0.25	62.6	0.175	0.890	0.387	0.512	0.597	**40.3%**
20,655	3,680	3,383	7,063	6,775	59%	0.44	66.6	0.343	0.912	0.515	0.689	0.796	**20.4%**
9,872	823	114	937	2,742	70%	0.52	66.1	0.322	0.637	0.499	0.571	0.709	**29.1%**
12,067	1,949	1,756	3,706	3,563	66%	0.49	63.1	0.196	0.703	0.403	0.551	0.639	**36.1%**
10,100	1,529	1,561	3,091	2,827	69%	0.52	70.5	0.507	0.809	0.640	0.727	0.866	**13.4%**
12,019	2,487	2,423	4,910	3,545	66%	0.49	65.5	0.297	0.798	0.480	0.637	0.745	**25.5%**
8,181	2,067	1,073	3,140	2,110	74%	0.55	63.7	0.221	0.689	0.422	0.569	0.664	**33.6%**
8,912	1,781	781	2,562	2,383	72%	0.53	68.3	0.414	0.747	0.569	0.664	0.803	**19.7%**
28,770	4,504	2,618	7,122	9,810	25%	0.25	64	0.234	0.867	0.432	0.539	0.647	**35.3%**
14,100	4,201	3,155	7,356	4,324	64%	0.47	64.9	0.271	0.894	0.461	0.666	0.757	**24.3%**
16,198	3,260	4,066	7,326	5,108	62%	0.46	64.5	0.255	0.885	0.448	0.649	0.738	**26.2%**
57,426	4,050	5,448	9,498	20,527	23%	0.23	62.5	0.170	0.944	0.384	0.512	0.595	**40.5%**
8,571	2,067	1,740	3,807	2,255	73%	0.54	68	0.402	0.795	0.560	0.687	0.813	**18.7%**
18,199	4,168	3,220	7,388	5,856	60%	0.45	65.6	0.301	0.908	0.483	0.674	0.772	**22.8%**
39,488	4,605	5,123	9,728	13,818	24%	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**
36,040	4,453	4,342	8,796	12,529	24%	0.24	60.1	0.069	0.870	0.307	0.442	0.481	**51.9%**
21,077	4,605	4,163	8,768	6,933	58%	0.44	65.4	0.292	0.964	0.477	0.690	0.780	**22.0%**
8,912	2,118	1,870	3,988	2,383	72%	0.53	65.9	0.313	0.766	0.493	0.639	0.752	**24.8%**
12,539	3,294	2,586	5,880	3,740	66%	0.49	63.1	0.196	0.797	0.403	0.595	0.675	**32.5%**
13,694	2,975	2,635	5,609	4,171	64%	0.48	63.9	0.229	0.800	0.429	0.606	0.696	**30.4%**
8,847	2,470	1,773	4,243	2,359	72%	0.54	68.7	0.431	0.827	0.582	0.713	0.837	**16.3%**
29,030	3,428	3,838	7,267	9,907	25%	0.25	62.3	0.162	0.843	0.378	0.492	0.574	**42.6%**
14,914	2,538	2,374	4,912	4,628	63%	0.47	65.2	0.284	0.793	0.470	0.621	0.729	**27.1%**
13,726	3,143	2,635	5,777	4,184	64%	0.48	64.3	0.246	0.814	0.441	0.620	0.713	**28.7%**
18,817	3,193	3,562	6,755	6,087	60%	0.45	64.4	0.250	0.859	0.445	0.629	0.722	**27.8%**
59,557	4,605	5,269	9,874	21,324	23%	0.23	61.7	0.137	0.946	0.358	0.493	0.562	**43.8%**
26,867	2,823	3,838	6,662	9,098	25%	0.25	60.9	0.103	0.792	0.333	0.446	0.504	**49.6%**
25,403	3,680	4,440	8,120	8,551	25%	0.25	65.9	0.313	0.945	0.493	0.606	0.729	**27.1%**
10,278	1,832	1,887	3,718	2,894	69%	0.51	66.9	0.356	0.772	0.525	0.652	0.775	**22.5%**
39,000	3,983	4,375	8,358	13,636	24%	0.24	61.4	0.124	0.874	0.349	0.473	0.539	**46.1%**
16,833	3,210	2,976	6,186	5,345	61%	0.46	64	0.234	0.827	0.432	0.612	0.703	**29.7%**
43,488	4,605	6,083	10,687	15,315	23%	0.23	62.9	0.187	1.000	0.397	0.538	0.625	**37.5%**
9,417	1,899	1,838	3,737	2,572	71%	0.53	65.9	0.313	0.755	0.493	0.631	0.746	**25.4%**
10,913	303	1,675	1,978	3,131	68%	0.51	65.9	0.313	0.678	0.493	0.586	0.716	**28.4%**
9,238	303	1,496	1,799	2,505	71%	0.53	64.3	0.246	0.642	0.441	0.548	0.659	**34.1%**
14,735	2,790	2,667	5,457	4,561	63%	0.47	64.8	0.267	0.810	0.457	0.623	0.724	**27.6%**
29,095	4,050	4,163	8,214	9,932	25%	0.25	62.5	0.170	0.888	0.384	0.507	0.591	**40.9%**
11,043	1,748	1,935	3,683	3,180	68%	0.50	65.2	0.284	0.740	0.470	0.606	0.718	**28.2%**
24,655	4,269	4,944	9,213	8,271	57%	0.43	63.6	0.217	0.951	0.419	0.645	0.722	**27.8%**
14,930	2,487	2,391	4,878	4,634	63%	0.47	67.3	0.372	0.829	0.537	0.674	0.795	**20.5%**
44,790	4,605	5,448	10,053	15,801	23%	0.23	62.1	0.154	0.961	0.371	0.509	0.584	**41.6%**
9,384	2,622	1,822	4,443	2,560	71%	0.53	66.1	0.322	0.789	0.499	0.652	0.764	**23.6%**
45,538	3,344	5,025	8,370	16,081	23%	0.23	63.2	0.200	0.907	0.406	0.523	0.619	**38.1%**
12,149	3,294	2,960	6,254	3,594	66%	0.49	68.6	0.427	0.912	0.579	0.743	0.853	**14.7%**
29,274	3,311	3,838	7,149	9,999	24%	0.24	61	0.107	0.815	0.336	0.453	0.512	**48.8%**
10,539	2,370	1,952	4,321	2,991	69%	0.51	67.3	0.372	0.805	0.537	0.674	0.795	**20.5%**
15,743	3,748	3,285	7,033	4,938	62%	0.46	66.9	0.356	0.916	0.525	0.706	0.810	**19.0%**
26,949	4,605	4,342	8,947	9,129	25%	0.25	63.4	0.208	0.936	0.413	0.542	0.638	**36.2%**
28,542	4,386	4,342	8,729	9,725	25%	0.25	63.8	0.225	0.934	0.425	0.550	0.652	**34.8%**
10,002	639	1,626	2,265	2,791	70%	0.52	69.6	0.469	0.757	0.611	0.687	0.834	**16.6%**
6,993	1,109	439	1,548	1,665	78%	0.58	64	0.234	0.626	0.432	0.543	0.650	**35.0%**
21,061	3,445	4,098	7,544	6,927	58%	0.44	63	0.191	0.868	0.400	0.604	0.680	**32.0%**
12,572	3,428	2,992	6,421	3,752	65%	0.49	63.8	0.225	0.833	0.425	0.624	0.709	**29.1%**
14,783	2,991	3,887	6,878	4,579	63%	0.47	63.6	0.217	0.850	0.419	0.621	0.703	**29.7%**
8,750	2,723	1,756	4,479	2,322	72%	0.54	66.7	0.347	0.801	0.518	0.670	0.785	**21.5%**
38,431	3,596	6,684	10,281	13,423	24%	0.24	61.1	0.112	0.952	0.339	0.485	0.542	**45.8%**
54,515	3,311	3,594	6,905	19,439	23%	0.23	60.1	0.069	0.788	0.307	0.418	0.458	**54.2%**
13,417	3,428	3,074	6,502	4,068	64%	0.48	66.5	0.339	0.885	0.512	0.691	0.796	**20.4%**
12,376	2,437	2,391	4,828	3,679	66%	0.49	65.8	0.309	0.800	0.489	0.642	0.752	**24.8%**
13,125	2,336	5,383	7,719	3,959	65%	0.48	66.2	0.326	0.933	0.502	0.710	0.805	**19.5%**
8,441	319	1,431	1,750	2,207	73%	0.54	70.5	0.507	0.751	0.640	0.700	0.852	**14.8%**
9,774	1,428	1,529	2,957	2,706	70%	0.52	65.8	0.309	0.719	0.489	0.609	0.730	**27.0%**
14,328	2,823	1,968	4,791	4,409	63%	0.47	64.7	0.263	0.779	0.454	0.608	0.711	**28.9%**
7,709	235	1,350	1,585	1,933	75%	0.56	66.4	0.335	0.670	0.509	0.599	0.733	**26.7%**
8,685	2,084	1,431	3,515	2,298	73%	0.54	65.7	0.305	0.741	0.486	0.624	0.739	**26.1%**
8,620	1,865	1,008	2,874	2,274	73%	0.54	66	0.318	0.719	0.496	0.616	0.738	**26.2%**

JUNE

CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CZ
Sac River Flow	CVP	SWP	CVP + SWP exports	Caculated Steamboat & Sutter Slough Q	percent	X-channel closed	USBR observed temp f	m1	m2 (Calculated Mortality)	m3	m23	m123	Calculated Survival s123	Weighted Total Survival
34,720	4,605	6,672	11,277	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**63.57%**
16,990	4,605	3,395	7,999	5,404	61%	0.46	65.3	0.288	0.929	0.473	0.681	0.773	**22.7%**	**62.30%**
10,218	790	672	1,462	2,871	69%	0.51	70.6	0.511	0.740	0.643	0.693	0.850	**15.0%**	**56.24%**
12,839	3,479	2,672	6,151	3,852	65%	0.49	68.3	0.414	0.903	0.569	0.731	0.842	**15.8%**	**59.79%**
14,907	3,580	2,487	6,067	4,625	63%	0.47	71.2	0.536	0.951	0.662	0.797	0.906	**9.4%**	**54.88%**
18,889	4,605	3,748	8,352	6,115	60%	0.45	68.1	0.406	0.995	0.563	0.755	0.855	**14.5%**	**63.69%**
13,461	3,025	2,672	5,697	4,085	64%	0.48	69.7	0.473	0.908	0.614	0.755	0.871	**12.9%**	**59.29%**
9,898	3,025	101	3,126	2,752	70%	0.52	70.1	0.490	0.804	0.627	0.719	0.857	**14.3%**	**62.69%**
16,016	4,302	2,874	7,176	5,040	62%	0.46	69.6	0.469	0.970	0.611	0.777	0.881	**11.9%**	**60.88%**
14,251	3,479	2,101	5,579	4,380	63%	0.47	70.7	0.515	0.921	0.646	0.776	0.891	**10.9%**	**53.88%**
19,175	3,596	4,117	7,714	6,222	60%	0.44	69.5	0.465	0.992	0.608	0.779	0.881	**11.9%**	**58.99%**
11,461	2,168	84	2,252	3,337	67%	0.50	69.8	0.478	0.760	0.617	0.689	0.837	**16.3%**	**60.18%**
13,528	3,848	1,025	4,874	4,110	64%	0.48	70.7	0.515	0.890	0.646	0.763	0.885	**11.5%**	**54.15%**
17,679	4,101	3,529	7,630	5,662	60%	0.45	71	0.528	1.000	0.656	0.811	0.911	**8.9%**	**59.33%**
19,058	4,605	3,361	7,966	6,178	60%	0.45	69.2	0.452	0.998	0.598	0.776	0.877	**12.3%**	**56.73%**
18,184	3,008	4,655	7,663	5,851	60%	0.45	69.7	0.473	0.993	0.614	0.784	0.886	**11.4%**	**59.03%**
35,510	4,605	6,672	11,277	12,331	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**65.36%**
18,301	4,302	3,109	7,411	5,895	60%	0.45	71	0.528	1.000	0.656	0.810	0.910	**9.0%**	**53.64%**
15,293	4,605	3,092	7,697	4,770	62%	0.47	71.5	0.549	1.000	0.672	0.825	0.921	**7.9%**	**59.35%**
20,805	4,605	6,302	10,907	6,831	59%	0.44	69	0.444	1.000	0.592	0.770	0.872	**12.8%**	**63.92%**
27,124	4,605	6,672	11,277	9,194	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**66.58%**
16,856	4,605	3,143	7,747	5,354	61%	0.46	66.6	0.343	0.941	0.515	0.709	0.809	**19.1%**	**59.77%**
16,822	4,168	3,243	7,411	5,342	61%	0.46	67.8	0.393	0.948	0.553	0.734	0.838	**16.2%**	**60.59%**
16,688	3,378	3,798	7,176	5,291	61%	0.46	70.6	0.511	0.988	0.643	0.801	0.903	**9.7%**	**57.84%**
14,940	3,361	3,596	6,958	4,638	63%	0.47	68.1	0.406	0.934	0.563	0.737	0.844	**15.6%**	**58.04%**
17,881	4,269	2,975	7,243	5,738	60%	0.45	70	0.486	0.981	0.624	0.784	0.889	**11.1%**	**53.33%**
23,259	4,605	4,521	9,125	7,749	57%	0.43	69	0.444	1.000	0.592	0.767	0.870	**13.0%**	**64.12%**
15,831	3,647	3,159	6,806	4,971	62%	0.46	70.9	0.524	0.978	0.652	0.803	0.906	**9.4%**	**54.98%**
18,184	4,605	3,529	8,134	5,851	60%	0.45	68.9	0.440	0.999	0.588	0.773	0.873	**12.7%**	**56.07%**
17,243	4,605	2,907	7,512	5,499	61%	0.45	70.3	0.499	0.998	0.633	0.799	0.899	**10.1%**	**58.27%**
38,972	4,605	6,672	11,277	13,626	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**66.86%**
25,881	4,605	5,781	10,386	8,729	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**65.01%**
13,865	3,277	2,739	6,016	4,235	64%	0.48	68.7	0.431	0.904	0.582	0.735	0.849	**15.1%**	**60.91%**
16,688	4,151	3,176	7,327	5,291	61%	0.46	70.1	0.490	0.986	0.627	0.791	0.893	**10.7%**	**61.10%**
22,301	4,605	6,672	11,277	7,391	58%	0.43	68.7	0.431	1.000	0.582	0.763	0.865	**13.5%**	**62.08%**
19,108	4,504	3,462	7,966	6,196	60%	0.44	72	0.570	1.000	0.688	0.827	0.925	**7.5%**	**57.87%**
33,930	4,605	6,672	11,277	11,740	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**63.64%**
17,629	4,201	3,042	7,243	5,643	61%	0.45	72.1	0.574	1.000	0.691	0.831	0.928	**7.2%**	**55.06%**
17,629	4,353	2,756	7,109	5,643	61%	0.45	72.7	0.600	1.000	0.710	0.841	0.936	**6.4%**	**58.62%**
19,444	4,554	3,042	7,596	6,322	59%	0.44	73.2	0.621	1.000	0.726	0.847	0.942	**5.8%**	**58.58%**
17,243	3,949	2,874	6,823	5,499	61%	0.45	70.4	0.503	0.969	0.636	0.788	0.894	**10.6%**	**55.65%**
19,562	4,605	4,017	8,621	6,366	59%	0.44	69	0.444	1.000	0.592	0.773	0.874	**12.6%**	**65.29%**
17,175	4,101	2,823	6,924	5,474	61%	0.45	69.5	0.465	0.958	0.608	0.767	0.875	**12.5%**	**59.97%**
18,167	4,605	3,714	8,319	5,844	60%	0.45	67.1	0.364	0.975	0.531	0.731	0.829	**17.1%**	**61.17%**
15,209	3,630	2,622	6,252	4,738	63%	0.47	70.4	0.503	0.945	0.636	0.780	0.891	**10.9%**	**54.94%**
39,342	4,605	6,672	11,277	13,764	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**67.10%**
17,142	4,218	2,857	7,075	5,461	61%	0.45	72	0.570	1.000	0.688	0.830	0.927	**7.3%**	**56.89%**
24,133	4,605	6,638	11,243	8,076	57%	0.43	68.3	0.414	1.000	0.569	0.753	0.855	**14.5%**	**64.89%**
14,839	4,353	2,739	7,092	4,600	63%	0.47	70.7	0.515	0.987	0.646	0.806	0.906	**9.4%**	**59.08%**
23,629	4,605	5,042	9,646	7,887	57%	0.43	68.1	0.406	1.000	0.563	0.750	0.852	**14.8%**	**63.91%**
16,436	4,084	2,790	6,873	5,197	61%	0.46	70.7	0.515	0.977	0.646	0.798	0.902	**9.8%**	**59.31%**
17,091	4,521	4,017	8,537	5,442	61%	0.45	70.1	0.490	1.000	0.627	0.797	0.896	**10.4%**	**55.38%**
21,629	4,605	4,924	9,529	7,139	58%	0.43	69.7	0.473	1.000	0.614	0.782	0.885	**11.5%**	**63.10%**
24,788	4,605	6,672	11,277	8,321	57%	0.43	69.1	0.448	1.000	0.595	0.767	0.871	**12.9%**	**62.65%**
18,772	4,420	2,941	7,361	6,071	60%	0.45	71.8	0.562	1.000	0.681	0.824	0.923	**7.7%**	**58.15%**
9,092	50	387	437	2,450	72%	0.53	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**	**57.08%**
15,965	4,605	3,899	8,504	5,021	62%	0.46	70	0.486	1.000	0.624	0.797	0.896	**10.4%**	**63.07%**
17,108	2,823	5,227	8,050	5,448	61%	0.45	69.2	0.452	1.000	0.598	0.781	0.880	**12.0%**	**59.08%**
16,268	4,605	4,067	8,672	5,134	62%	0.46	66.9	0.356	0.987	0.525	0.737	0.831	**16.9%**	**62.88%**
17,797	4,302	2,924	7,226	5,706	60%	0.45	71.9	0.566	1.000	0.684	0.827	0.925	**7.5%**	**56.30%**
24,418	4,605	6,672	11,277	8,183	57%	0.43	66	0.318	1.000	0.496	0.711	0.803	**19.7%**	**67.08%**
55,576	4,605	4,689	9,293	19,835	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**71.43%**
17,276	4,521	3,361	7,882	5,511	61%	0.45	68.4	0.419	0.979	0.572	0.757	0.859	**14.1%**	**59.24%**
14,957	3,613	2,605	6,218	4,644	63%	0.47	69.4	0.461	0.925	0.604	0.755	0.868	**13.2%**	**56.69%**
13,209	4,117	3,848	7,966	3,990	65%	0.48	71.6	0.553	1.000	0.675	0.831	0.925	**7.5%**	**55.82%**
19,948	4,605	3,176	7,781	6,511	59%	0.44	73.2	0.621	1.000	0.726	0.847	0.942	**5.8%**	**51.10%**
14,201	4,487	1,160	5,647	4,361	64%	0.47	69.4	0.461	0.900	0.604	0.745	0.862	**13.8%**	**59.88%**
15,528	4,067	2,487	6,554	4,858	62%	0.46	68.6	0.427	0.925	0.579	0.740	0.851	**14.9%**	**57.36%**
19,192	4,571	2,907	7,478	6,228	59%	0.44	68.5	0.423	0.964	0.576	0.748	0.855	**14.5%**	**57.14%**
11,545	2,706	1,344	4,050	3,368	67%	0.50	69.4	0.461	0.831	0.604	0.717	0.848	**15.2%**	**58.20%**
13,293	3,512	1,344	4,857	4,022	65%	0.48	69	0.444	0.859	0.592	0.720	0.844	**15.6%**	**57.15%**
													Average	**59.78%**

BG10 ='Study 513 Revised Flow Data'!G7
BH10 ='Study 513 Revised Flow Data'!Q7
BI10 ='Study 513 Revised Flow Data'!AA7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$G$2,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10
BO10 =IF((-2.45925+(0.0420748*BN10))<0,0,(-2.45925+(0.0420748*BN10)))
BP10 =IF(((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10))>1,1,((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ1(
BQ10 =-1.613493+(0.0319584*BN10)
BR10 =(BP10*BM10)+(BQ10*(1-BM10))
BS10 =BO10+BR10-(BO10*BR10)
BT10 =1-BS10

BV10 ='Study 513 (Revised) Flow Data'!H7
BX10 ='Study 513 Revised Flow Data'!R7
BY10 ='Study 513 Revised Flow Data'!AB7
BZ10 =0.374*BV10-950
CA10 =IF(BV10>$K$4,(0.133*BV10+829)/(BV10-BZ10),(0.293*BV10+2090)/(BV10-BZ10))
CB10 =(0.45*(0.133*BV10+829)/(BV10-BZ10))+(0.55*CA10)
CC10
CD10 =IF((-2.45925+(0.0420748*CC10))<0,0,(-2.45925+(0.0420748*CC10)))
CE10 =IF(((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10))>1,1,((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10)))
CF10 =-1.613493+(0.0319584*CC10)
CG10 =(CE10*CB10)+(CF10*(1-CB10))
CH10 =CD10+CG10-(CD10*CG10)
CI10 =1-CH10

CK10 ='Study 513 Revised Flow Data'!I7
CL10 ='Study 513 Revised Flow Data'!S7
CM10 ='Study 513 Flow Revised Data'!AC7
CN10 =(CL10+CM10)
CO10 =0.374*CK10-950
CP10 =IF(CK10>$K$4,(0.133*CK10+829)/(CK10-CO10),(0.293*CK10+2090)/(CK10-CO10))
CQ10 =(0.45*(0.133*CK10+829)/(CK10-CO10))+(0.55*CP10)
CR10
CS10 =IF((-2.45925+(0.0420748*CR10))<0,0,(-2.45925+(0.0420748*CR10)))
CT10 =IF(((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10))>1,1,((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10)))
CU10 =-1.613493+(0.0319584*CR10)
CV10 =(CT10*CQ10)+(CU10*(1-CQ10))
CW10 =CS10+CV10-(CS10*CV10)
CX10 =1-CW10
CZ10 =(0.01*O10)+(0.06*AC10)+(0.17*AQ10)+(0.28*BE10)+(0.25*BT10)+(0.16*CI10)+(0.07*CX10)

Study 513 Sacramento River Spring Run YOY Smolt Survival Model

Modified m2 by changing the slope to 0.0000434 — December Sacramento River Temp: 47 degrees F

Cross Channel closed for 45 consecutive days, Dec 18-Jan 31 — January Sacramento River Temp: 47 degrees F

Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

Cross Channel Closed Over 25000 cfs — February Water Temp 50 F

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs — March Water Temp 55 F

DECEMBER

Year	Water Year Type	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	A	17,142	4,347	7,122	11,469	5,461	61%	0.45	0	0.751	0.000	0.341	0.341	**65.9%**
1923	B	33,600	4,347	3,897	8,244	11,617	24%	0.24	0	0.611	0.000	0.147	0.147	**85.3%**
1924	C	13,759	4,341	6,154	10,495	4,196	64%	0.48	0	0.708	0.000	0.338	0.338	**66.2%**
1925	D	11,726	4,378	5,252	9,630	3,436	67%	0.50	0	0.671	0.000	0.333	0.333	**66.7%**
1926	D	11,108	4,347	3,466	7,813	3,204	68%	0.50	0	0.592	0.000	0.298	0.298	**70.2%**
1927	W	15,483	4,347	7,022	11,369	4,841	62%	0.46	0	0.746	0.000	0.347	0.347	**65.3%**
1928	A	16,491	4,347	7,024	11,371	5,218	61%	0.46	0	0.746	0.000	0.342	0.342	**65.8%**
1929	C	14,279	4,347	6,669	11,016	4,390	63%	0.47	0	0.731	0.000	0.346	0.346	**65.4%**
1930	D	14,572	4,378	6,436	10,814	4,500	63%	0.47	0	0.722	0.000	0.340	0.340	**66.0%**
1931	C	10,165	3,042	3,180	6,222	2,852	69%	0.52	0	0.523	0.000	0.270	0.270	**73.0%**
1932	D	14,686	4,378	7,213	11,591	4,543	63%	0.47	0	0.756	0.000	0.355	0.355	**64.5%**
1933	C	9,547	3,651	2,495	6,146	2,620	71%	0.52	0	0.520	0.000	0.273	0.273	**72.7%**
1934	C	12,198	4,378	5,417	9,795	3,612	66%	0.49	0	0.678	0.000	0.333	0.333	**66.7%**
1935	B	8,750	3,435	3,363	6,798	2,322	72%	0.54	0	0.548	0.000	0.295	0.295	**70.5%**
1936	B	13,401	4,347	5,854	10,201	4,062	64%	0.48	0	0.696	0.000	0.334	0.334	**66.6%**
1937	B	12,474	4,347	5,667	10,014	3,715	66%	0.49	0	0.688	0.000	0.336	0.336	**66.4%**
1938	W	54,824	4,347	7,476	11,823	19,554	23%	0.23	0	0.766	0.000	0.176	0.176	**82.4%**
1939	D	18,687	4,347	3,735	8,082	6,039	60%	0.45	0	0.604	0.000	0.270	0.270	**73.0%**
1940	A	8,668	2,476	2,701	5,177	2,292	73%	0.54	0	0.478	0.000	0.258	0.258	**74.2%**
1941	W	39,390	4,347	7,176	11,523	13,782	24%	0.24	0	0.753	0.000	0.178	0.178	**82.2%**
1942	W	65,135	4,347	3,608	7,955	23,411	23%	0.23	0	0.598	0.000	0.136	0.136	**86.4%**
1943	W	28,738	4,347	3,779	8,126	9,798	25%	0.25	0	0.606	0.000	0.149	0.149	**85.1%**
1944	D	13,759	4,347	6,445	10,792	4,196	64%	0.48	0	0.721	0.000	0.344	0.344	**65.6%**
1945	B	17,499	4,347	6,993	11,340	5,595	61%	0.45	0	0.745	0.000	0.337	0.337	**66.3%**
1946	B	57,410	4,347	7,478	11,825	20,521	23%	0.23	0	0.766	0.000	0.176	0.176	**82.4%**
1947	D	18,280	4,347	7,047	11,394	5,887	60%	0.45	0	0.747	0.000	0.335	0.335	**66.5%**
1948	B	11,515	4,347	3,483	7,830	3,356	67%	0.50	0	0.593	0.000	0.296	0.296	**70.4%**
1949	D	15,580	4,347	6,922	11,269	4,877	62%	0.46	0	0.742	0.000	0.344	0.344	**65.6%**
1950	B	11,758	4,347	3,945	8,292	3,448	67%	0.50	0	0.613	0.000	0.304	0.304	**69.6%**
1951	A	67,705	4,347	7,592	11,939	24,372	23%	0.23	0	0.771	0.000	0.175	0.175	**82.5%**
1952	W	50,287	4,347	7,131	11,478	17,857	23%	0.23	0	0.751	0.000	0.174	0.174	**82.6%**
1953	W	42,626	4,347	3,742	8,089	14,992	24%	0.24	0	0.604	0.000	0.142	0.142	**85.8%**
1954	A	15,011	4,347	3,897	8,244	4,664	63%	0.47	0	0.611	0.000	0.286	0.286	**71.4%**
1955	D	26,005	4,347	6,932	11,279	8,776	25%	0.25	0	0.742	0.000	0.185	0.185	**81.5%**
1956	W	32,462	4,347	7,592	11,939	11,191	24%	0.24	0	0.771	0.000	0.187	0.187	**81.3%**
1957	A	14,198	4,347	5,456	9,803	4,360	64%	0.47	0	0.678	0.000	0.321	0.321	**67.9%**
1958	W	24,021	4,347	6,948	11,295	8,034	57%	0.43	0	0.743	0.000	0.318	0.318	**68.2%**
1959	B	14,637	4,347	3,852	8,199	4,524	63%	0.47	0	0.609	0.000	0.286	0.286	**71.4%**
1960	D	10,929	4,347	2,791	7,138	3,137	68%	0.51	0	0.563	0.000	0.284	0.284	**71.6%**
1961	D	22,248	4,347	6,916	11,263	7,371	58%	0.43	0	0.742	0.000	0.321	0.321	**67.9%**
1962	B	17,321	4,347	6,898	11,245	5,528	61%	0.45	0	0.741	0.000	0.336	0.336	**66.4%**
1963	W	27,144	4,347	6,918	11,265	9,202	25%	0.25	0	0.742	0.000	0.184	0.184	**81.6%**
1964	D	14,881	4,347	6,201	10,548	4,616	63%	0.47	0	0.711	0.000	0.333	0.333	**66.7%**
1965	W	31,909	4,347	7,264	11,611	10,984	24%	0.24	0	0.757	0.000	0.183	0.183	**81.7%**
1966	B	17,093	4,347	6,021	10,368	5,443	61%	0.45	0	0.703	0.000	0.320	0.320	**68.0%**
1967	W	39,910	4,347	7,150	11,497	13,977	24%	0.24	0	0.752	0.000	0.178	0.178	**82.2%**
1968	B	16,621	4,347	3,735	8,082	5,266	61%	0.46	0	0.604	0.000	0.276	0.276	**72.4%**
1969	W	27,745	4,347	6,997	11,344	9,427	25%	0.25	0	0.745	0.000	0.184	0.184	**81.6%**
1970	W	49,506	4,347	3,481	7,828	17,565	23%	0.23	0	0.593	0.000	0.138	0.138	**86.2%**
1971	W	57,117	4,347	7,069	11,416	20,412	23%	0.23	0	0.748	0.000	0.172	0.172	**82.8%**
1972	B	22,183	4,347	5,918	10,265	7,347	58%	0.43	0	0.698	0.000	0.302	0.302	**69.8%**
1973	A	26,867	4,347	6,927	11,274	9,098	25%	0.25	0	0.742	0.000	0.184	0.184	**81.6%**
1974	W	60,776	4,347	7,024	11,371	21,780	23%	0.23	0	0.746	0.000	0.171	0.171	**82.9%**
1975	W	17,613	4,347	4,248	8,595	5,637	61%	0.45	0	0.626	0.000	0.283	0.283	**71.7%**
1976	C	16,768	4,347	4,652	8,999	5,321	61%	0.46	0	0.643	0.000	0.294	0.294	**70.6%**
1977	C	8,002	2,140	3,154	5,294	2,043	74%	0.55	0	0.483	0.000	0.267	0.267	**73.3%**
1978	A	11,970	4,228	5,576	9,804	3,527	66%	0.49	0	0.678	0.000	0.335	0.335	**66.5%**
1979	B	12,783	4,347	3,665	8,012	3,831	65%	0.49	0	0.601	0.000	0.292	0.292	**70.8%**
1980	A	21,191	4,347	6,972	11,319	6,976	58%	0.44	0	0.744	0.000	0.325	0.325	**67.5%**
1981	D	17,353	4,347	4,660	9,007	5,540	61%	0.45	0	0.644	0.000	0.292	0.292	**70.8%**
1982	W	68,372	4,347	6,969	11,316	24,621	23%	0.23	0	0.744	0.000	0.169	0.169	**83.1%**
1983	W	54,385	4,347	4,318	8,665	19,390	23%	0.23	0	0.629	0.000	0.145	0.145	**85.5%**
1984	W	82,748	3,134	3,104	6,238	29,998	22%	0.22	0	0.524	0.000	0.117	0.117	**88.3%**
1985	D	23,793	4,347	4,548	8,895	7,949	57%	0.43	0	0.639	0.000	0.273	0.273	**72.7%**
1986	W	16,719	4,347	6,968	11,315	5,303	61%	0.46	0	0.744	0.000	0.340	0.340	**66.0%**
1987	D	13,629	4,347	6,092	10,439	4,147	64%	0.48	0	0.706	0.000	0.338	0.338	**66.2%**
1988	C	15,027	4,347	6,896	11,243	4,670	63%	0.47	0	0.741	0.000	0.346	0.346	**65.4%**
1989	D	9,433	3,239	3,353	6,592	2,578	71%	0.53	0	0.539	0.000	0.284	0.284	**71.6%**
1990	C	14,523	4,347	6,216	10,563	4,482	63%	0.47	0	0.711	0.000	0.335	0.335	**66.5%**
1991	C	8,424	2,104	2,909	5,013	2,201	73%	0.54	0	0.470	0.000	0.256	0.256	**74.4%**
1992	C	7,384	3,201	1,661	4,862	1,811	76%	0.57	0	0.464	0.000	0.263	0.263	**73.7%**

JANUARY

Year	Water Year Type	Sac River Flows	CVP	SWP	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	A	17,727	4,324	7,642	11,966	5,680	60%	0.26	0	0.772	0.000	0.204	0.204	**79.6%**
1923	B	32,039	4,324	3,614	7,938	11,033	24%	0.24	0	0.597	0.000	0.145	0.145	**85.5%**
1924	C	15,044	4,324	7,013	11,337	4,676	63%	0.27	0	0.745	0.000	0.203	0.203	**79.7%**
1925	D	10,360	3,923	3,222	7,145	2,925	69%	0.30	0	0.563	0.000	0.167	0.167	**83.3%**
1926	D	20,053	4,324	7,146	11,470	6,550	59%	0.26	0	0.751	0.000	0.194	0.194	**80.6%**
1927	W	33,080	4,324	7,337	11,661	11,422	24%	0.24	0	0.759	0.000	0.183	0.183	**81.7%**
1928	A	27,225	4,324	3,637	7,961	9,232	25%	0.25	0	0.598	0.000	0.148	0.148	**85.2%**
1929	C	15,759	4,324	7,135	11,459	4,944	62%	0.27	0	0.750	0.000	0.203	0.203	**79.7%**
1930	D	21,679	4,346	7,156	11,502	7,158	58%	0.26	0	0.752	0.000	0.192	0.192	**80.8%**
1931	C	12,767	4,324	5,524	9,848	3,825	65%	0.28	0	0.680	0.000	0.192	0.192	**80.8%**
1932	D	15,873	4,346	7,854	12,200	4,987	62%	0.27	0	0.782	0.000	0.211	0.211	**78.9%**
1933	C	13,531	4,346	6,412	10,758	4,111	64%	0.28	0	0.720	0.000	0.201	0.201	**79.9%**
1934	C	16,507	4,346	7,150	11,496	5,224	61%	0.27	0	0.752	0.000	0.202	0.202	**79.8%**
1935	B	24,639	4,346	7,731	12,077	8,265	57%	0.25	0	0.777	0.000	0.195	0.195	**80.5%**
1936	B	33,893	4,324	7,322	11,646	11,726	24%	0.24	0	0.758	0.000	0.183	0.183	**81.7%**
1937	B	16,052	4,324	7,595	11,919	5,053	62%	0.27	0	0.770	0.000	0.208	0.208	**79.2%**
1938	W	31,323	4,324	3,812	8,136	10,765	24%	0.24	0	0.606	0.000	0.147	0.147	**85.3%**
1939	D	18,605	4,324	3,239	7,563	6,008	60%	0.26	0	0.581	0.000	0.152	0.152	**84.8%**
1940	A	23,387	4,324	8,012	12,336	7,797	57%	0.25	0	0.788	0.000	0.199	0.199	**80.1%**
1941	W	72,307	4,324	8,218	12,542	26,093	23%	0.23	0	0.797	0.000	0.180	0.180	**82.0%**
1942	W	62,631	4,324	3,239	7,563	22,474	23%	0.23	0	0.581	0.000	0.133	0.133	**86.7%**
1943	W	57,003	4,324	3,303	7,627	20,369	23%	0.23	0	0.584	0.000	0.134	0.134	**86.6%**
1944	D	18,361	4,324	3,262	7,586	5,917	60%	0.26	0	0.582	0.000	0.153	0.153	**84.7%**
1945	B	13,759	4,324	6,308	10,632	4,196	64%	0.28	0	0.714	0.000	0.199	0.199	**80.1%**
1946	B	42,545	4,324	4,591	8,915	14,962	24%	0.24	0	0.640	0.000	0.150	0.150	**85.0%**
1947	D	15,320	4,324	6,727	11,051	4,780	62%	0.27	0	0.733	0.000	0.199	0.199	**80.1%**
1948	B	16,312	4,324	7,082	11,406	5,151	62%	0.27	0	0.748	0.000	0.201	0.201	**79.9%**
1949	D	15,044	4,324	7,001	11,325	4,676	63%	0.27	0	0.744	0.000	0.203	0.203	**79.7%**
1950	B	22,444	4,324	7,239	11,563	7,444	58%	0.25	0	0.755	0.000	0.192	0.192	**80.8%**
1951	A	62,663	4,324	8,500	12,824	22,486	23%	0.23	0	0.809	0.000	0.185	0.185	**81.5%**
1952	W	65,786	4,324	5,205	9,529	23,654	23%	0.23	0	0.666	0.000	0.152	0.152	**84.8%**
1953	W	62,972	4,324	3,333	7,657	22,602	23%	0.23	0	0.585	0.000	0.133	0.133	**86.7%**
1954	A	33,291	4,324	3,850	8,174	11,501	24%	0.24	0	0.608	0.000	0.147	0.147	**85.3%**
1955	D	22,606	4,324	5,331	9,655	7,505	58%	0.25	0	0.672	0.000	0.171	0.171	**82.9%**
1956	W	85,204	4,324	7,374	11,698	30,916	22%	0.22	0	0.761	0.000	0.170	0.170	**83.0%**
1957	A	18,947	4,324	3,872	8,196	6,136	60%	0.26	0	0.609	0.000	0.159	0.159	**84.1%**
1958	W	37,552	4,324	4,112	8,436	13,095	24%	0.24	0	0.619	0.000	0.147	0.147	**85.3%**
1959	B	35,324	4,324	3,333	7,657	12,261	24%	0.24	0	0.585	0.000	0.140	0.140	**86.0%**
1960	D	15,369	4,324	7,123	11,447	4,798	62%	0.27	0	0.750	0.000	0.204	0.204	**79.6%**
1961	D	15,450	4,324	7,134	11,458	4,828	62%	0.27	0	0.750	0.000	0.204	0.204	**79.6%**
1962	B	13,401	4,324	4,921	9,245	4,062	64%	0.28	0	0.654	0.000	0.183	0.183	**81.7%**
1963	W	24,639	4,324	7,319	11,643	8,265	57%	0.25	0	0.758	0.000	0.190	0.190	**81.0%**
1964	D	26,705	4,324	3,872	8,196	9,038	25%	0.25	0	0.609	0.000	0.151	0.151	**84.9%**
1965	W	81,870	4,324	8,287	12,611	29,669	22%	0.22	0	0.800	0.000	0.180	0.180	**82.0%**
1966	B	29,258	4,324	3,657	7,981	9,992	25%	0.25	0	0.599	0.000	0.147	0.147	**85.3%**
1967	W	35,292	4,324	7,485	11,809	12,249	24%	0.24	0	0.765	0.000	0.183	0.183	**81.7%**
1968	B	30,640	4,324	3,333	7,657	10,509	24%	0.24	0	0.585	0.000	0.143	0.143	**85.7%**
1969	W	71,218	4,324	4,552	8,876	25,685	23%	0.23	0	0.638	0.000	0.144	0.144	**85.6%**
1970	W	92,002	4,324	3,333	7,657	33,459	22%	0.22	0	0.585	0.000	0.131	0.131	**86.9%**
1971	W	47,310	4,324	5,919	10,243	16,744	23%	0.23	0	0.697	0.000	0.162	0.162	**83.8%**
1972	B	20,378	4,324	3,891	8,215	6,671	59%	0.26	0	0.609	0.000	0.157	0.157	**84.3%**
1973	A	49,669	4,324	6,835	11,159	17,626	23%	0.23	0	0.737	0.000	0.171	0.171	**82.9%**
1974	W	78,796	4,324	3,668	7,992	28,520	22%	0.22	0	0.600	0.000	0.135	0.135	**86.5%**
1975	W	18,882	4,324	3,848	8,172	6,112	60%	0.26	0	0.608	0.000	0.159	0.159	**84.1%**
1976	C	16,719	4,324	3,842	8,166	5,303	61%	0.27	0	0.607	0.000	0.162	0.162	**83.8%**
1977	C	8,392	3,050	2,491	5,541	2,189	73%	0.31	0	0.493	0.000	0.155	0.155	**84.5%**
1978	A	49,603	2,776	7,822	10,598	17,602	23%	0.23	0	0.713	0.000	0.165	0.165	**83.5%**
1979	B	27,583	4,324	3,262	7,586	9,366	25%	0.25	0	0.582	0.000	0.144	0.144	**85.6%**
1980	A	64,663	4,324	3,737	8,061	23,234	23%	0.23	0	0.603	0.000	0.137	0.137	**86.3%**
1981	D	29,307	4,324	3,356	7,680	10,011	24%	0.24	0	0.586	0.000	0.144	0.144	**85.6%**
1982	W	51,392	4,324	6,546	10,870	18,271	23%	0.23	0	0.725	0.000	0.168	0.168	**83.2%**
1983	W	58,809	4,324	2,648	6,972	21,044	23%	0.23	0	0.555	0.000	0.127	0.127	**87.3%**
1984	W	47,538	1,448	2,881	4,329	16,829	23%	0.23	0	0.441	0.000	0.103	0.103	**89.7%**
1985	D	17,727	4,324	3,872	8,196	5,680	60%	0.26	0	0.609	0.000	0.161	0.161	**83.9%**
1986	W	23,631	4,324	7,245	11,569	7,888	57%	0.25	0	0.755	0.000	0.190	0.190	**81.0%**
1987	D	17,109	2,108	5,918	8,026	5,449	61%	0.27	0	0.601	0.000	0.160	0.160	**84.0%**
1988	C	25,290	4,324	7,094	11,418	8,508	25%	0.25	0	0.748	0.000	0.187	0.187	**81.3%**
1989	D	12,393	4,324	4,939	9,263	3,685	66%	0.28	0	0.655	0.000	0.186	0.186	**81.4%**
1990	C	22,037	2,835	7,089	9,924	7,292	58%	0.25	0	0.684	0.000	0.174	0.174	**82.6%**
1991	C	7,156	2,231	1,623	3,854	1,726	77%	0.33	0	0.420	0.000	0.138	0.138	**86.2%**
1992	C	12,181	4,346	4,930	9,276	3,606	66%	0.29	0	0.655	0.000	0.187	0.187	**81.3%**

FEBRUARY

Year	Water Year Type	Sac River Flow	CVP	SWP	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	A	33,923	4,351	5,326	9,677	11,737	24%	0.24	0	0.727	0.000	0.175	0.175	**82.5%**
1923	B	22,363	4,382	2,377	6,759	7,414	58%	0.25	0	0.600	0.000	0.153	0.153	**84.7%**
1924	C	17,924	4,325	5,313	9,638	5,754	60%	0.26	0	0.725	0.000	0.191	0.191	**80.9%**
1925	D	44,997	3,748	7,931	11,679	15,879	23%	0.23	0	0.814	0.000	0.190	0.190	**81.0%**
1926	D	36,516	4,334	7,726	12,060	12,707	24%	0.24	0	0.830	0.000	0.198	0.198	**80.2%**
1927	W	85,240	4,341	4,199	8,540	30,930	22%	0.22	0	0.677	0.000	0.152	0.152	**84.8%**
1928	A	27,729	4,359	4,377	8,736	9,421	25%	0.25	0	0.686	0.000	0.169	0.169	**83.1%**
1929	C	19,014	4,336	4,074	8,410	6,161	60%	0.26	0	0.672	0.000	0.176	0.176	**82.4%**
1930	D	15,809	3,552	3,557	7,109	4,963	62%	0.27	0	0.615	0.000	0.166	0.166	**83.4%**
1931	C	11,902	4,327	2,092	6,419	3,501	66%	0.29	0	0.585	0.000	0.168	0.168	**83.2%**
1932	D	13,613	4,406	6,104	10,510	4,141	64%	0.28	0	0.763	0.000	0.213	0.213	**78.7%**
1933	C	14,117	4,384	3,781	8,165	4,330	64%	0.28	0	0.661	0.000	0.183	0.183	**81.7%**
1934	C	12,460	1,916	4,055	5,971	3,710	66%	0.28	0	0.566	0.000	0.161	0.161	**83.9%**
1935	B	11,524	2,080	4,560	6,640	3,360	67%	0.29	0	0.595	0.000	0.172	0.172	**82.8%**
1936	B	56,171	4,354	8,500	12,854	20,058	23%	0.23	0	0.865	0.000	0.199	0.199	**80.1%**
1937	B	33,725	4,332	5,295	9,627	11,663	24%	0.24	0	0.725	0.000	0.175	0.175	**82.5%**
1938	W	81,027	4,370	3,939	8,309	29,354	22%	0.22	0	0.667	0.000	0.150	0.150	**85.0%**
1939	D	19,392	4,354	3,955	8,309	6,303	59%	0.26	0	0.667	0.000	0.174	0.174	**82.6%**
1940	A	44,784	4,346	8,393	12,739	15,799	23%	0.23	0	0.860	0.000	0.201	0.201	**79.9%**
1941	W	75,481	4,392	7,046	11,438	27,280	23%	0.23	0	0.803	0.000	0.181	0.181	**81.9%**
1942	W	78,614	4,381	3,955	8,336	28,452	22%	0.22	0	0.669	0.000	0.150	0.150	**85.0%**
1943	W	52,577	4,377	4,005	8,382	18,714	23%	0.23	0	0.671	0.000	0.155	0.155	**84.5%**
1944	D	33,275	4,343	3,958	8,301	11,495	24%	0.24	0	0.667	0.000	0.161	0.161	**83.9%**
1945	B	42,962	4,344	4,099	8,443	15,118	23%	0.23	0	0.673	0.000	0.158	0.158	**84.2%**
1946	B	23,948	4,379	4,413	8,792	8,007	57%	0.25	0	0.688	0.000	0.173	0.173	**82.7%**
1947	D	22,165	4,348	4,140	8,488	7,340	58%	0.25	0	0.675	0.000	0.172	0.172	**82.8%**
1948	B	13,439	3,288	1,890	5,178	4,076	64%	0.28	0	0.532	0.000	0.149	0.149	**85.1%**
1949	D	16,511	4,344	4,879	9,223	5,225	61%	0.27	0	0.707	0.000	0.190	0.190	**81.0%**
1950	B	36,012	4,351	7,939	12,290	12,518	24%	0.24	0	0.840	0.000	0.201	0.201	**79.9%**
1951	A	61,238	4,381	4,675	9,056	21,953	23%	0.23	0	0.700	0.000	0.160	0.160	**84.0%**
1952	W	62,812	4,392	3,909	8,301	22,542	23%	0.23	0	0.667	0.000	0.152	0.152	**84.8%**
1953	W	28,990	4,381	4,060	8,441	9,892	25%	0.25	0	0.673	0.000	0.165	0.165	**83.5%**
1954	A	57,151	4,373	4,636	9,009	20,424	23%	0.23	0	0.698	0.000	0.160	0.160	**84.0%**
1955	D	16,674	4,360	4,026	8,386	5,286	61%	0.27	0	0.671	0.000	0.179	0.179	**82.1%**
1956	W	62,534	4,384	4,675	9,059	22,438	23%	0.23	0	0.700	0.000	0.160	0.160	**84.0%**
1957	A	32,969	4,347	4,638	8,985	11,380	24%	0.24	0	0.697	0.000	0.168	0.168	**83.2%**
1958	W	64,731	4,358	4,044	8,402	23,260	23%	0.23	0	0.671	0.000	0.153	0.153	**84.7%**
1959	B	50,363	4,355	4,060	8,415	17,886	23%	0.23	0	0.672	0.000	0.156	0.156	**84.4%**
1960	D	28,268	4,339	7,384	11,723	9,622	25%	0.25	0	0.816	0.000	0.201	0.201	**79.9%**
1961	D	33,527	4,350	7,192	11,542	11,589	24%	0.24	0	0.808	0.000	0.195	0.195	**80.5%**
1962	B	45,609	4,344	8,500	12,844	16,108	23%	0.23	0	0.864	0.000	0.202	0.202	**79.8%**
1963	W	59,150	4,380	8,490	12,870	21,172	23%	0.23	0	0.865	0.000	0.198	0.198	**80.2%**
1964	D	17,333	3,248	4,345	7,593	5,533	61%	0.27	0	0.636	0.000	0.169	0.169	**83.1%**
1965	W	34,283	4,357	6,121	10,478	11,872	24%	0.24	0	0.762	0.000	0.183	0.183	**81.7%**
1966	B	27,099	4,381	4,377	8,758	9,185	25%	0.25	0	0.687	0.000	0.170	0.170	**83.0%**
1967	W	42,800	4,391	3,201	7,592	15,057	24%	0.24	0	0.636	0.000	0.150	0.150	**85.0%**
1968	B	53,494	4,379	4,060	8,439	19,057	23%	0.23	0	0.673	0.000	0.155	0.155	**84.5%**
1969	W	67,792	4,393	3,171	7,564	24,404	23%	0.23	0	0.635	0.000	0.144	0.144	**85.6%**
1970	W	58,771	2,305	4,060	6,365	21,031	23%	0.23	0	0.583	0.000	0.134	0.134	**86.6%**
1971	W	29,476	4,392	4,675	9,067	10,074	24%	0.24	0	0.700	0.000	0.171	0.171	**82.9%**
1972	B	24,565	4,361	4,638	8,999	8,237	57%	0.25	0	0.697	0.000	0.175	0.175	**82.5%**
1973	A	71,376	4,368	4,423	8,791	25,744	23%	0.23	0	0.688	0.000	0.156	0.156	**84.4%**
1974	W	42,440	4,366	4,413	8,779	14,923	24%	0.24	0	0.688	0.000	0.162	0.162	**83.8%**
1975	W	57,871	4,349	4,636	8,985	20,694	23%	0.23	0	0.697	0.000	0.160	0.160	**84.0%**
1976	C	19,819	4,339	4,370	8,709	6,462	59%	0.26	0	0.685	0.000	0.178	0.178	**82.2%**
1977	C	10,822	441	1,458	1,899	3,097	68%	0.29	0	0.389	0.000	0.114	0.114	**88.6%**
1978	A	50,327	2,148	6,284	8,432	17,872	23%	0.23	0	0.673	0.000	0.156	0.156	**84.4%**
1979	B	42,134	4,345	3,955	8,300	14,808	24%	0.24	0	0.667	0.000	0.157	0.157	**84.3%**
1980	A	70,531	4,353	3,804	8,157	25,429	23%	0.23	0	0.661	0.000	0.150	0.150	**85.0%**
1981	D	30,124	4,363	4,062	8,425	10,316	24%	0.24	0	0.672	0.000	0.164	0.164	**83.6%**
1982	W	67,486	4,382	4,620	9,002	24,290	23%	0.23	0	0.697	0.000	0.158	0.158	**84.2%**
1983	W	83,368	4,392	2,793	7,185	30,229	22%	0.22	0	0.619	0.000	0.139	0.139	**86.1%**
1984	W	36,700	1,739	3,847	5,586	12,776	24%	0.24	0	0.549	0.000	0.131	0.131	**86.9%**
1985	D	22,543	4,354	4,638	8,992	7,481	58%	0.25	0	0.697	0.000	0.177	0.177	**82.3%**
1986	W	98,673	4,350	7,774	12,124	35,954	22%	0.22	0	0.833	0.000	0.185	0.185	**81.5%**
1987	D	23,624	1,417	4,362	5,779	7,885	57%	0.25	0	0.558	0.000	0.141	0.141	**85.9%**
1988	C	16,255	3,941	2,721	6,662	5,129	62%	0.27	0	0.596	0.000	0.160	0.160	**84.0%**
1989	D	11,362	1,182	2,080	3,262	3,299	67%	0.29	0	0.448	0.000	0.130	0.130	**87.0%**
1990	C	17,556	1,556	6,704	8,260	5,616	61%	0.26	0	0.665	0.000	0.176	0.176	**82.4%**
1991	C	11,580	769	920	1,689	3,373	67%	0.29	0	0.380	0.000	0.110	0.110	**89.0%**
1992	C	32,110	1,235	7,546	8,781	11,059	24%	0.24	0	0.688	0.000	0.167	0.167	**83.3%**

MARCH

Year	Water Year Type	Sac River Flow	CVP	SWP	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	A	32,413	4,200	4,142	8,342	11,172	24%	0.24	0	0.759	0.144	0.293	0.293	**70.7%**
1923	B	17,337	4,321	4,026	8,347	5,534	27%	0.27	0	0.759	0.144	0.307	0.307	**69.3%**
1924	C	12,458	2,005	2,159	4,164	3,709	28%	0.28	0	0.577	0.144	0.267	0.267	**73.3%**
1925	D	28,087	3,409	2,449	5,858	9,555	25%	0.25	0	0.651	0.144	0.269	0.269	**73.1%**
1926	D	18,866	4,321	3,798	8,119	6,106	26%	0.26	0	0.749	0.144	0.302	0.302	**69.8%**
1927	W	44,058	3,334	4,148	7,482	15,528	23%	0.23	0	0.721	0.144	0.280	0.280	**72.0%**
1928	A	85,285	4,321	4,424	8,745	30,947	22%	0.22	0	0.776	0.144	0.286	0.286	**71.4%**
1929	C	18,036	4,417	3,110	7,527	5,796	26%	0.26	0	0.723	0.144	0.297	0.297	**70.3%**
1930	D	30,104	3,145	7,055	10,200	10,309	24%	0.24	0	0.839	0.144	0.314	0.314	**68.6%**
1931	C	10,880	2,821	1,946	4,767	3,119	29%	0.29	0	0.604	0.144	0.279	0.279	**72.1%**
1932	D	10,701	2,920	3,731	6,651	3,052	29%	0.29	0	0.685	0.144	0.304	0.304	**69.6%**
1933	C	10,653	1,865	3,516	5,381	3,034	29%	0.29	0	0.630	0.144	0.287	0.287	**71.3%**
1934	C	16,524	2,760	4,155	6,915	5,230	27%	0.27	0	0.697	0.144	0.292	0.292	**70.8%**
1935	B	24,363	4,321	7,592	11,913	8,162	25%	0.25	0	0.914	0.144	0.337	0.337	**66.3%**
1936	B	35,048	4,321	4,160	8,481	12,158	24%	0.24	0	0.765	0.144	0.293	0.293	**70.7%**
1937	B	38,187	4,321	4,000	8,321	13,332	24%	0.24	0	0.758	0.144	0.290	0.290	**71.0%**
1938	W	79,187	4,321	3,966	8,287	28,666	22%	0.22	0	0.756	0.144	0.282	0.282	**71.8%**
1939	D	16,914	2,952	4,007	6,959	5,376	27%	0.27	0	0.699	0.144	0.292	0.292	**70.8%**
1940	A	62,078	4,321	4,622	8,943	22,267	23%	0.23	0	0.785	0.144	0.290	0.290	**71.0%**
1941	W	58,939	4,321	3,846	8,167	21,093	23%	0.23	0	0.751	0.144	0.283	0.283	**71.7%**
1942	W	27,550	4,321	4,007	8,328	9,354	25%	0.25	0	0.758	0.144	0.296	0.296	**70.4%**
1943	W	65,119	4,321	4,056	8,377	23,404	23%	0.23	0	0.760	0.144	0.284	0.284	**71.6%**
1944	D	25,127	4,321	4,007	8,328	8,448	25%	0.25	0	0.758	0.144	0.298	0.298	**70.2%**
1945	B	27,908	4,321	4,126	8,447	9,488	25%	0.25	0	0.763	0.144	0.297	0.297	**70.3%**
1946	B	25,127	4,321	4,439	8,760	8,448	25%	0.25	0	0.777	0.144	0.302	0.302	**69.8%**
1947	D	23,127	4,321	4,126	8,447	7,699	25%	0.25	0	0.763	0.144	0.301	0.301	**69.9%**
1948	B	18,931	4,321	3,884	8,205	6,130	26%	0.26	0	0.753	0.144	0.303	0.303	**69.7%**
1949	D	41,277	3,998	7,314	11,312	14,487	24%	0.24	0	0.888	0.144	0.320	0.320	**68.0%**
1950	B	23,875	4,321	5,954	10,275	7,979	25%	0.25	0	0.843	0.144	0.320	0.320	**68.0%**
1951	A	30,331	4,308	4,699	9,007	10,394	24%	0.24	0	0.788	0.144	0.301	0.301	**69.9%**
1952	W	58,174	4,321	3,934	8,255	20,807	23%	0.23	0	0.755	0.144	0.284	0.284	**71.6%**
1953	W	25,989	4,321	4,111	8,432	8,770	25%	0.25	0	0.763	0.144	0.298	0.298	**70.2%**
1954	A	49,701	4,321	4,685	9,006	17,638	23%	0.23	0	0.787	0.144	0.293	0.293	**70.7%**
1955	D	17,825	4,321	3,427	7,748	5,716	26%	0.26	0	0.733	0.144	0.300	0.300	**70.0%**
1956	W	37,081	2,579	4,699	7,278	12,918	24%	0.24	0	0.713	0.144	0.280	0.280	**72.0%**
1957	A	44,513	4,321	4,503	8,824	15,698	23%	0.23	0	0.780	0.144	0.293	0.293	**70.7%**
1958	W	93,547	4,321	4,070	8,391	34,037	22%	0.22	0	0.761	0.144	0.282	0.282	**71.8%**
1959	B	22,818	4,321	3,952	8,273	7,584	25%	0.25	0	0.756	0.144	0.299	0.299	**70.1%**
1960	D	25,176	3,015	4,081	7,096	8,466	25%	0.25	0	0.705	0.144	0.284	0.284	**71.6%**
1961	D	21,549	3,387	4,052	7,439	7,109	26%	0.26	0	0.719	0.144	0.291	0.291	**70.9%**
1962	B	27,908	3,601	4,492	8,093	9,488	25%	0.25	0	0.748	0.144	0.293	0.293	**70.7%**
1963	W	32,267	4,321	4,508	8,829	11,118	24%	0.24	0	0.780	0.144	0.298	0.298	**70.2%**
1964	D	16,572	3,085	4,056	7,141	5,248	27%	0.27	0	0.707	0.144	0.295	0.295	**70.5%**
1965	W	21,988	4,321	4,431	8,752	7,274	26%	0.26	0	0.776	0.144	0.305	0.305	**69.5%**
1966	B	29,356	4,321	4,424	8,745	10,029	24%	0.24	0	0.776	0.144	0.299	0.299	**70.1%**
1967	W	54,548	4,321	3,283	7,604	19,451	23%	0.23	0	0.727	0.144	0.278	0.278	**72.2%**
1968	B	37,276	4,321	4,111	8,432	12,991	24%	0.24	0	0.763	0.144	0.292	0.292	**70.8%**
1969	W	45,717	3,152	3,251	6,403	16,148	23%	0.23	0	0.675	0.144	0.268	0.268	**73.2%**
1970	W	35,942	3,241	4,111	7,352	12,492	24%	0.24	0	0.716	0.144	0.281	0.281	**71.9%**
1971	W	51,197	4,321	4,699	9,020	18,198	23%	0.23	0	0.788	0.144	0.293	0.293	**70.7%**
1972	B	33,259	3,602	4,482	8,084	11,489	24%	0.24	0	0.747	0.144	0.290	0.290	**71.0%**
1973	A	48,156	4,321	4,451	8,772	17,060	23%	0.23	0	0.777	0.144	0.292	0.292	**70.8%**
1974	W	100,199	4,321	4,439	8,760	36,524	22%	0.22	0	0.777	0.144	0.285	0.285	**71.5%**
1975	W	75,007	4,321	4,685	9,006	27,103	23%	0.23	0	0.787	0.144	0.289	0.289	**71.1%**
1976	C	20,004	4,417	3,769	8,186	6,532	26%	0.26	0	0.752	0.144	0.302	0.302	**69.8%**
1977	C	7,091	1,588	1,264	2,852	1,702	33%	0.33	0	0.520	0.144	0.268	0.268	**73.2%**
1978	A	47,310	2,209	3,895	6,104	16,744	23%	0.23	0	0.662	0.144	0.265	0.265	**73.5%**
1979	B	33,210	4,321	4,007	8,328	11,471	24%	0.24	0	0.758	0.144	0.292	0.292	**70.8%**
1980	A	36,983	2,752	3,358	6,110	12,882	24%	0.24	0	0.662	0.144	0.268	0.268	**73.2%**
1981	D	31,990	3,878	4,111	7,989	11,014	24%	0.24	0	0.743	0.144	0.289	0.289	**71.1%**
1982	W	68,957	4,321	4,644	8,965	24,840	23%	0.23	0	0.786	0.144	0.290	0.290	**71.0%**
1983	W	83,627	2,832	2,628	5,460	30,326	22%	0.22	0	0.634	0.144	0.254	0.254	**74.6%**
1984	W	36,528	3,320	4,007	7,327	12,711	24%	0.24	0	0.715	0.144	0.280	0.280	**72.0%**
1985	D	21,956	4,321	4,685	9,006	7,261	26%	0.26	0	0.787	0.144	0.308	0.308	**69.2%**
1986	W	72,828	2,194	4,159	6,353	26,288	23%	0.23	0	0.672	0.144	0.264	0.264	**73.6%**
1987	D	32,039	2,512	4,283	6,795	11,033	24%	0.24	0	0.692	0.144	0.277	0.277	**72.3%**
1988	C	10,945	2,436	1,990	4,426	3,144	29%	0.29	0	0.589	0.144	0.274	0.274	**72.6%**
1989	D	42,789	4,321	7,006	11,327	15,053	24%	0.24	0	0.888	0.144	0.319	0.319	**68.1%**
1990	C	15,239	2,726	3,635	6,361	4,749	27%	0.27	0	0.673	0.144	0.288	0.288	**71.2%**
1991	C	30,819	4,417	7,130	11,547	10,576	24%	0.24	0	0.898	0.144	0.328	0.328	**67.2%**
1992	C	20,508	2,459	6,309	8,768	6,720	26%	0.26	0	0.777	0.144	0.307	0.307	**69.3%**

Formulas: Sacramento River Spring Run Young of Year Smolt Survival Model

C10 ='Study 513 Revised Flow Data'!C7
D10 ='Study 513 Revised Flow Data'!M7
E10 ='Study 513 Revised Flow Data'!X7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.45*(0.133*C10+829)/(C10-G10))+(0.55*H10)
J10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
K10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*F10)
L10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 513 Revised Flow Data'!D7
R10 ='Study 513 Revised Flow Data'!N7
S10 ='Study 513 Revised Flow Data'!X7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
Y10 =(-0.5916024)+(0.017968*$T$3)+(0.0000434*T10)
Z10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 513 Revised Flow Data'!E7
AF10 ='Study 513 Revised Flow Data'!O7
AG10 ='Study 513 Revised Flow Data'!Y7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
AM10 =(-0.5916024)+(0.017968*$BC$2)+(0.0000434*AH10)
AN10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

AS10 ='Study 513 Revised Flow Data'!D7
AT10 ='Study 513 Revised Flow Data'!N7
AU10 ='Study 513 Revised Flow Data'!X7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$G$2,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BA10 =IF(((-0.5916024)+(0.017968*$BC$3)+(0.0000434*AV10))>1,1,((-0.5916024)+(0.017968*$BC$3)+(0.00004
BB10 =-1.613493+(0.0319584*$BC$3)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =(AZ10+BC10-(AZ10*BC10))
BE10 =1-BD10

Study 513 Sacramento River Spring Run YOY Smolt Survival Model (continued)

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

APRIL

Row	Sac River Flows (BG)	CVP (BH)	SWP (BI)	CVP + SWP exports (BJ)	Calculated Sutter & Steamboat Slough Q (BK)	Percent (BL)	X-Channel Closed (BM)	observed temp (BN)	m1 (BO)	Calculated Mortality m2 (BP)	m3 (BQ)	m23 (BR)	m123 (BS)	Calculated Survival s123 (BT)
10	23,242	4,707	5,160	9,867	7,743	25%	0.25	58.5	0.002	0.888	0.256	0.416	0.417	**58.3%**
11	24,150	4,651	5,037	9,688	8,082	25%	0.25	58.3	0.000	0.876	0.250	0.407	0.407	**59.3%**
12	7,260	1,849	1,676	3,525	1,765	33%	0.33	61.5	0.128	0.666	0.352	0.455	0.525	**47.5%**
13	20,469	3,998	3,891	7,889	6,705	26%	0.26	59.1	0.027	0.813	0.275	0.414	0.430	**57.0%**
14	19,763	3,711	3,604	7,315	6,441	26%	0.26	61.6	0.133	0.833	0.355	0.479	0.548	**45.2%**
15	48,501	4,707	5,166	9,873	17,189	23%	0.23	56.8	0.000	0.857	0.202	0.354	0.354	**64.6%**
16	29,763	4,245	4,137	8,382	10,181	24%	0.24	58.7	0.011	0.827	0.262	0.400	0.407	**59.3%**
17	7,378	459	2,573	3,032	1,809	33%	0.33	56.3	0.000	0.552	0.186	0.305	0.305	**69.5%**
18	13,092	2,395	2,288	4,683	3,946	28%	0.28	59.6	0.048	0.683	0.291	0.401	0.430	**57.0%**
19	8,369	1,885	1,712	3,597	2,180	31%	0.31	62.8	0.183	0.693	0.393	0.487	0.581	**41.9%**
20	11,243	3,775	3,602	7,377	3,255	29%	0.29	58.9	0.019	0.787	0.269	0.420	0.431	**56.9%**
21	11,798	3,042	2,017	5,059	3,462	29%	0.29	60.1	0.069	0.708	0.307	0.422	0.463	**53.7%**
22	12,083	978	3,449	4,427	3,569	29%	0.29	63.6	0.217	0.743	0.419	0.512	0.618	**38.2%**
23	23,729	4,669	5,855	10,524	7,925	25%	0.25	58.9	0.019	0.923	0.269	0.434	0.445	**55.5%**
24	23,175	4,707	5,184	9,891	7,717	25%	0.25	59.7	0.053	0.910	0.294	0.450	0.479	**52.1%**
25	23,578	4,459	4,971	9,430	7,868	25%	0.25	58.8	0.015	0.874	0.266	0.419	0.428	**57.2%**
26	47,543	4,707	4,377	9,084	16,831	23%	0.23	56.3	0.000	0.814	0.186	0.332	0.332	**66.8%**
27	11,142	2,696	2,588	5,284	3,217	29%	0.29	63.3	0.204	0.775	0.409	0.516	0.615	**38.5%**
28	42,686	4,699	5,546	10,245	15,015	24%	0.24	57.4	0.000	0.884	0.221	0.377	0.377	**62.3%**
29	42,770	4,707	4,708	9,415	15,046	24%	0.24	56.9	0.000	0.839	0.205	0.354	0.354	**64.6%**
30	43,678	4,707	5,046	9,753	15,385	23%	0.23	56.5	0.000	0.847	0.192	0.346	0.346	**65.4%**
31	29,427	4,707	5,062	9,769	10,056	24%	0.24	58.8	0.015	0.889	0.266	0.418	0.427	**57.3%**
32	10,100	3,032	2,924	5,956	2,827	30%	0.30	58.4	0.000	0.716	0.253	0.391	0.391	**60.9%**
33	12,890	4,366	4,258	8,624	3,871	28%	0.28	60.6	0.090	0.872	0.323	0.478	0.525	**47.5%**
34	12,722	3,928	3,820	7,748	3,808	28%	0.28	60.7	0.095	0.835	0.326	0.470	0.520	**48.0%**
35	14,251	2,788	2,681	5,469	4,380	28%	0.28	62.5	0.170	0.769	0.384	0.490	0.577	**42.3%**
36	24,469	4,210	4,103	8,313	8,201	25%	0.25	56.6	0.000	0.786	0.195	0.344	0.344	**65.6%**
37	14,016	3,149	3,041	6,190	4,292	28%	0.28	61.7	0.137	0.786	0.358	0.477	0.548	**45.2%**
38	20,570	3,756	3,648	7,404	6,743	26%	0.26	61.3	0.120	0.831	0.346	0.471	0.534	**46.6%**
39	14,722	4,023	3,916	7,939	4,556	27%	0.27	59.9	0.061	0.829	0.301	0.446	0.480	**52.0%**
40	57,324	4,707	4,166	8,873	20,489	23%	0.23	55.5	0.000	0.791	0.160	0.305	0.305	**69.5%**
41	16,822	3,354	3,246	6,600	5,342	27%	0.27	58.8	0.015	0.751	0.266	0.395	0.404	**59.6%**
42	40,434	4,143	4,035	8,178	14,172	24%	0.24	58.4	0.000	0.813	0.253	0.385	0.385	**61.5%**
43	9,730	2,416	2,309	4,725	2,689	30%	0.30	56.4	0.000	0.627	0.189	0.321	0.321	**67.9%**
44	21,125	4,707	5,353	10,060	6,951	26%	0.26	59.7	0.053	0.918	0.294	0.454	0.483	**51.7%**
45	19,965	3,551	3,444	6,995	6,517	26%	0.26	60.5	0.086	0.799	0.320	0.444	0.492	**50.8%**
46	52,669	4,707	5,062	9,769	18,748	23%	0.23	57.4	0.000	0.864	0.221	0.369	0.369	**63.1%**
47	9,495	2,398	2,291	4,689	2,601	30%	0.30	63	0.191	0.744	0.400	0.504	0.599	**40.1%**
48	11,999	2,354	2,247	4,601	3,538	29%	0.29	59.5	0.044	0.677	0.288	0.400	0.426	**57.4%**
49	11,730	2,140	2,032	4,172	3,437	29%	0.29	60.1	0.069	0.669	0.307	0.412	0.452	**54.8%**
50	14,285	3,611	3,504	7,115	4,392	28%	0.28	61.8	0.141	0.828	0.362	0.490	0.562	**43.8%**
51	70,684	4,668	5,416	10,084	25,486	23%	0.23	53.7	0.000	0.811	0.103	0.263	0.263	**73.7%**
52	9,394	2,324	2,216	4,540	2,563	30%	0.30	59.3	0.036	0.671	0.282	0.400	0.422	**57.8%**
53	44,938	4,634	5,359	9,993	15,857	23%	0.23	56.9	0.000	0.864	0.205	0.359	0.359	**64.1%**
54	15,764	3,159	3,051	6,210	4,946	27%	0.27	61.9	0.145	0.790	0.365	0.480	0.555	**44.5%**
55	40,922	4,707	4,949	9,656	14,355	24%	0.24	53.8	0.000	0.794	0.106	0.268	0.268	**73.2%**
56	15,058	2,869	2,762	5,631	4,682	27%	0.27	61.5	0.128	0.758	0.352	0.463	0.532	**46.8%**
57	45,476	3,456	4,166	7,622	16,058	23%	0.23	56.4	0.000	0.753	0.189	0.321	0.321	**67.9%**
58	15,444	4,362	3,860	8,222	4,826	27%	0.27	58.8	0.015	0.822	0.266	0.417	0.425	**57.5%**
59	21,595	3,703	3,595	7,298	7,127	26%	0.26	58.7	0.011	0.780	0.262	0.395	0.401	**59.9%**
60	12,722	2,557	2,450	5,007	3,808	28%	0.28	58.5	0.002	0.677	0.256	0.375	0.376	**62.4%**
61	20,049	4,707	5,515	10,222	6,548	26%	0.26	61.3	0.120	0.953	0.346	0.503	0.563	**43.7%**
62	33,460	4,707	5,501	10,208	11,564	24%	0.24	56.8	0.000	0.872	0.202	0.363	0.363	**63.7%**
63	26,200	4,707	5,785	10,492	8,849	25%	0.25	56.8	0.000	0.884	0.202	0.371	0.371	**62.9%**
64	9,663	1,527	2,460	3,987	2,664	30%	0.30	58.9	0.019	0.640	0.269	0.381	0.393	**60.7%**
65	8,588	645	2,768	3,413	2,262	31%	0.31	64.3	0.246	0.712	0.441	0.526	0.642	**35.8%**
66	38,821	3,544	4,062	7,606	13,569	24%	0.24	56.9	0.000	0.761	0.205	0.337	0.337	**66.3%**
67	18,217	4,660	4,849	9,509	5,863	26%	0.26	59.8	0.057	0.896	0.298	0.455	0.486	**51.4%**
68	20,570	4,327	3,952	8,279	6,743	26%	0.26	57.1	0.000	0.794	0.211	0.361	0.361	**63.9%**
69	17,377	3,105	2,998	6,103	5,549	27%	0.27	61.5	0.128	0.778	0.352	0.465	0.534	**46.6%**
70	76,247	4,181	5,569	9,750	27,566	23%	0.23	54.1	0.000	0.804	0.115	0.271	0.271	**72.9%**
71	67,609	3,422	3,649	7,071	24,336	23%	0.23	55	0.000	0.704	0.144	0.271	0.271	**72.9%**
72	17,175	4,169	4,062	8,231	5,474	27%	0.27	59.7	0.053	0.838	0.294	0.439	0.469	**53.1%**
73	13,898	2,802	2,694	5,496	4,248	28%	0.28	60.8	0.099	0.739	0.330	0.443	0.498	**50.2%**
74	21,982	2,585	5,188	7,773	7,271	26%	0.26	60.4	0.082	0.831	0.317	0.448	0.493	**50.7%**
75	11,024	429	3,834	4,263	3,173	29%	0.29	65.7	0.305	0.774	0.486	0.570	0.701	**29.9%**
76	9,226	1,840	1,936	3,776	2,501	31%	0.31	59.9	0.061	0.649	0.301	0.407	0.443	**55.7%**
77	24,351	3,246	3,138	6,384	8,157	25%	0.25	61.4	0.124	0.789	0.349	0.459	0.526	**47.4%**
78	11,697	1,382	2,889	4,271	3,425	29%	0.29	61.6	0.133	0.701	0.355	0.455	0.527	**47.3%**
79	16,335	2,815	2,642	5,457	5,159	27%	0.27	60.8	0.099	0.738	0.330	0.439	0.495	**50.5%**
80	12,167	2,445	2,272	4,717	3,601	29%	0.29	61.2	0.116	0.713	0.342	0.448	0.512	**48.8%**

MAY

Row	Sac River Flows (BV)	CVP (BW)	SWP (BX)	CVP + SWP Exports (BY)	Calculated Steamboat & Sutter Slough Q (BZ)	Percent (CA)	X-channel Closed (CB)	USBR observed temp f (CC)	m1 (CD)	Calculated Mortality m2 (CE)	m3 (CF)	m23 (CG)	m123 (CH)	Calculated Survival s123 (CI)
10	46,302	4,707	6,123	10,830	16,367	23%	0.23	61.2	0.116	0.978	0.342	0.491	0.550	**45.0%**
11	15,092	4,651	3,764	8,415	4,695	63%	0.47	62.4	0.166	0.895	0.381	0.621	0.684	**31.6%**
12	10,067	1,849	2,264	4,113	2,815	69%	0.52	69.2	0.452	0.830	0.598	0.718	0.846	**15.4%**
13	12,328	3,998	2,930	6,928	3,661	66%	0.49	63.2	0.200	0.845	0.406	0.621	0.697	**30.3%**
14	13,108	3,711	2,485	6,196	3,953	65%	0.48	65.7	0.305	0.858	0.486	0.666	0.768	**23.2%**
15	26,640	4,707	4,489	9,196	9,013	25%	0.25	62.6	0.175	0.932	0.387	0.522	0.606	**39.4%**
16	18,752	4,245	3,852	8,097	6,063	60%	0.45	66.6	0.343	0.956	0.515	0.712	0.811	**18.9%**
17	9,091	459	893	1,352	2,450	72%	0.53	66.1	0.322	0.655	0.499	0.582	0.716	**28.4%**
18	12,133	2,395	1,999	4,394	3,588	66%	0.49	63.1	0.196	0.733	0.403	0.565	0.650	**35.0%**
19	9,254	1,885	1,657	3,542	2,511	71%	0.53	70.5	0.507	0.829	0.640	0.740	0.872	**12.8%**
20	12,962	3,775	3,238	7,013	3,898	65%	0.48	65.5	0.297	0.890	0.480	0.678	0.774	**22.6%**
21	7,530	3,042	1,616	4,658	1,866	76%	0.56	63.7	0.221	0.755	0.422	0.610	0.696	**30.4%**
22	8,246	978	1,600	2,578	2,134	74%	0.55	68.3	0.414	0.747	0.569	0.667	0.805	**19.5%**
23	26,509	4,669	2,820	7,489	8,965	25%	0.25	64	0.234	0.883	0.432	0.544	0.650	**35.0%**
24	18,801	4,707	4,829	9,536	6,081	60%	0.45	64.9	0.271	0.988	0.461	0.696	0.779	**22.1%**
25	14,735	4,459	4,550	9,009	4,561	63%	0.47	64.5	0.255	0.958	0.448	0.688	0.767	**23.3%**
26	57,020	4,707	5,445	10,152	20,375	23%	0.23	62.5	0.170	0.972	0.384	0.519	0.601	**39.9%**
27	8,164	2,696	2,029	4,725	2,103	74%	0.55	68	0.402	0.835	0.560	0.711	0.827	**17.3%**
28	16,036	4,699	2,735	7,434	5,047	62%	0.46	65.6	0.301	0.910	0.483	0.680	0.776	**22.4%**
29	39,536	4,707	5,119	9,826	13,837	24%	0.24	61.6	0.133	0.942	0.355	0.494	0.561	**43.9%**
30	36,267	4,707	5,305	10,012	12,614	24%	0.24	60.1	0.069	0.923	0.307	0.454	0.492	**50.8%**
31	20,427	4,707	5,595	10,302	6,690	59%	0.44	65.4	0.292	1.000	0.477	0.707	0.792	**20.8%**
32	9,709	3,032	2,594	5,626	2,681	70%	0.52	65.9	0.313	0.837	0.493	0.672	0.775	**22.5%**
33	13,726	4,366	3,782	8,148	4,184	64%	0.48	63.1	0.196	0.896	0.403	0.638	0.709	**29.1%**
34	12,393	3,928	3,316	7,244	3,685	66%	0.49	63.9	0.229	0.871	0.429	0.645	0.726	**27.4%**
35	9,579	2,788	2,069	4,857	2,633	70%	0.52	68.7	0.431	0.854	0.582	0.724	0.843	**15.7%**
36	31,551	4,210	4,108	8,318	10,850	24%	0.24	62.3	0.162	0.889	0.378	0.502	0.582	**41.8%**
37	13,775	3,149	2,841	5,990	4,202	64%	0.48	65.2	0.284	0.840	0.470	0.647	0.747	**25.3%**
38	16,182	3,756	3,046	6,802	5,102	62%	0.46	64.3	0.246	0.859	0.441	0.634	0.724	**27.6%**
39	18,833	4,023	3,958	7,981	6,094	60%	0.45	64.4	0.250	0.912	0.445	0.653	0.740	**26.0%**
40	59,768	4,707	5,270	9,977	21,403	23%	0.23	61.7	0.137	0.950	0.358	0.494	0.563	**43.7%**
41	27,355	3,354	3,989	7,343	9,281	25%	0.25	60.9	0.103	0.821	0.333	0.454	0.510	**49.0%**
42	23,712	4,143	4,892	9,035	7,918	57%	0.43	65.9	0.313	0.985	0.493	0.703	0.796	**20.4%**
43	11,921	2,416	2,388	4,804	3,508	66%	0.49	66.9	0.356	0.819	0.525	0.670	0.787	**21.3%**
44	38,349	4,707	6,651	11,358	13,393	24%	0.24	61.4	0.124	1.000	0.349	0.503	0.565	**43.5%**
45	18,768	3,551	3,428	6,979	6,069	60%	0.45	64	0.234	0.861	0.432	0.624	0.711	**28.9%**
46	43,228	4,707	6,083	10,790	15,217	23%	0.23	62.9	0.187	1.000	0.397	0.538	0.625	**37.5%**
47	10,197	2,398	2,145	4,543	2,864	69%	0.51	65.9	0.313	0.790	0.493	0.646	0.757	**24.3%**
48	13,547	2,354	2,221	4,575	4,117	64%	0.48	65.9	0.313	0.791	0.493	0.636	0.750	**25.0%**
49	8,912	2,140	1,675	3,815	2,383	72%	0.53	64.3	0.246	0.729	0.441	0.595	0.695	**30.5%**
50	13,613	3,611	2,929	6,540	4,141	64%	0.48	64.8	0.267	0.857	0.457	0.648	0.742	**25.8%**
51	28,868	4,668	4,998	9,666	9,846	25%	0.25	62.5	0.170	0.951	0.384	0.523	0.604	**39.6%**
52	11,791	2,324	2,248	4,572	3,460	67%	0.50	65.2	0.284	0.778	0.470	0.623	0.730	**27.0%**
53	23,192	4,634	5,035	9,669	7,724	57%	0.43	63.6	0.217	0.971	0.419	0.656	0.731	**26.9%**
54	12,751	3,159	2,711	5,870	3,819	65%	0.49	67.3	0.372	0.872	0.537	0.700	0.812	**18.8%**
55	45,651	4,707	5,445	10,152	16,124	23%	0.23	62.1	0.154	0.965	0.371	0.510	0.585	**41.5%**
56	9,888	2,869	2,154	5,023	2,748	70%	0.52	66.1	0.322	0.814	0.499	0.663	0.771	**22.9%**
57	45,261	3,456	5,026	8,482	15,978	23%	0.23	63.2	0.200	0.912	0.406	0.525	0.620	**38.0%**
58	13,287	4,362	3,555	7,917	4,019	65%	0.48	68.6	0.427	0.985	0.579	0.774	0.871	**12.9%**
59	30,998	3,703	3,950	7,653	10,643	24%	0.24	61	0.107	0.837	0.336	0.458	0.516	**48.4%**
60	11,466	2,557	2,225	4,782	3,338	67%	0.50	67.3	0.372	0.825	0.537	0.681	0.800	**20.0%**
61	16,638	4,707	3,908	8,615	5,272	61%	0.46	66.9	0.356	0.984	0.525	0.735	0.829	**17.1%**
62	27,371	4,707	5,571	10,278	9,287	25%	0.25	63.4	0.208	0.994	0.413	0.556	0.649	**35.1%**
63	29,941	4,707	5,146	9,853	10,248	24%	0.24	63.8	0.225	0.982	0.425	0.562	0.660	**34.0%**
64	8,945	1,527	1,683	3,210	2,395	72%	0.53	69.6	0.469	0.798	0.611	0.711	0.847	**15.3%**
65	7,253	645	655	1,300	1,763	77%	0.57	64	0.234	0.615	0.432	0.536	0.644	**35.6%**
66	21,809	3,544	4,088	7,632	7,207	58%	0.43	63	0.191	0.872	0.400	0.605	0.680	**32.0%**
67	13,352	4,660	3,587	8,247	4,044	64%	0.48	63.8	0.225	0.913	0.425	0.660	0.736	**26.4%**
68	14,881	4,327	5,005	9,332	4,616	63%	0.47	63.6	0.217	0.956	0.419	0.671	0.742	**25.8%**
69	9,010	3,105	2,052	5,157	2,420	72%	0.53	66.7	0.347	0.831	0.518	0.685	0.794	**20.6%**
70	38,089	4,181	6,684	10,865	13,295	24%	0.24	61.1	0.112	0.978	0.339	0.491	0.548	**45.2%**
71	54,710	3,422	3,590	7,012	19,512	23%	0.23	60.1	0.069	0.793	0.307	0.419	0.459	**54.1%**
72	15,336	4,169	3,623	7,792	4,786	62%	0.47	66.5	0.339	0.941	0.512	0.712	0.809	**19.1%**
73	11,889	2,802	2,316	5,118	3,496	66%	0.49	65.8	0.309	0.813	0.489	0.649	0.758	**24.2%**
74	13,434	2,585	5,709	8,294	4,074	64%	0.48	66.2	0.326	0.958	0.502	0.721	0.812	**18.8%**
75	8,294	429	1,660	2,089	2,152	74%	0.55	70.5	0.507	0.766	0.640	0.709	0.856	**14.4%**
76	8,603	1,840	1,638	3,478	2,268	73%	0.54	65.8	0.309	0.742	0.489	0.626	0.741	**25.9%**
77	13,369	3,246	2,100	5,346	4,050	64%	0.48	64.7	0.263	0.803	0.454	0.622	0.721	**27.9%**
78	7,221	1,382	1,488	2,870	1,751	77%	0.57	66.4	0.335	0.726	0.509	0.633	0.755	**24.5%**
79	9,140	2,815	1,800	4,615	2,468	71%	0.53	65.7	0.305	0.789	0.486	0.647	0.755	**24.5%**
80	8,181	2,445	1,443	3,888	2,110	74%	0.55	66	0.318	0.763	0.496	0.642	0.756	**24.4%**

JUNE

Row	Sac River Flow (CK)	CVP (CL)	SWP (CM)	CVP + SWP exports (CN)	Caculated Steamboat & Sutter Slough Q (CO)	percent (CP)	X-channel closed (CQ)	USBR observed temp f (CR)	m1 (CS)	Calculated Mortality m2 (CT)	m3 (CU)	m23 (CV)	m123 (CW)	Calculated Survival s123 (CX)	Weighted Total Survival (CZ)
10	34,115	4,872	6,672	11,544	11,809	24%	0.24	65.9	0.313	1.000	0.493	0.615	0.735	**26.5%**	**62.89%**
11	17,125	4,872	3,378	8,250	5,455	61%	0.45	65.3	0.288	0.940	0.473	0.685	0.776	**22.4%**	**61.22%**
12	13,142	422	4,907	5,329	3,965	65%	0.48	70.6	0.511	0.908	0.643	0.771	0.888	**11.2%**	**54.84%**
13	11,831	3,329	408	3,737	3,475	66%	0.50	68.3	0.414	0.798	0.569	0.682	0.814	**18.6%**	**60.30%**
14	13,730	3,809	2,496	6,305	4,185	64%	0.48	71.2	0.536	0.961	0.662	0.805	0.910	**9.0%**	**54.35%**
15	18,957	4,872	4,005	8,877	6,140	60%	0.45	68.1	0.406	1.000	0.563	0.758	0.856	**14.4%**	**63.61%**
16	16,285	4,872	2,668	7,540	5,140	62%	0.46	69.7	0.473	0.988	0.614	0.786	0.887	**11.3%**	**58.54%**
17	11,243	3,727	855	4,582	3,255	67%	0.50	70.1	0.490	0.867	0.627	0.747	0.871	**12.9%**	**61.96%**
18	16,402	4,319	2,633	6,952	5,184	61%	0.46	69.6	0.469	0.961	0.611	0.771	0.879	**12.1%**	**59.58%**
19	14,049	2,023	4,002	6,025	4,304	64%	0.47	70.7	0.515	0.940	0.646	0.786	0.896	**10.4%**	**53.16%**
20	17,528	3,774	4,179	7,953	5,606	61%	0.45	69.5	0.465	1.000	0.608	0.785	0.885	**11.5%**	**56.92%**
21	11,697	4,183	139	4,322	3,425	67%	0.50	69.8	0.478	0.850	0.617	0.733	0.860	**14.0%**	**58.64%**
22	17,192	4,683	2,503	7,186	5,480	61%	0.45	70.7	0.515	0.991	0.646	0.803	0.904	**9.6%**	**52.89%**
23	17,948	4,872	3,647	8,519	5,763	60%	0.45	71	0.528	1.000	0.656	0.811	0.911	**8.9%**	**58.26%**
24	17,394	4,872	3,386	8,258	5,555	61%	0.45	69.2	0.452	1.000	0.598	0.780	0.880	**12.0%**	**56.39%**
25	17,713	4,872	3,795	8,667	5,675	60%	0.45	69.7	0.473	1.000	0.614	0.788	0.889	**11.1%**	**58.14%**
26	35,645	4,872	6,672	11,544	12,381	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**65.05%**
27	16,520	4,289	3,143	7,432	5,228	61%	0.46	71	0.528	1.000	0.656	0.813	0.912	**8.8%**	**52.69%**
28	16,806	4,872	3,189	8,061	5,335	61%	0.46	71.5	0.549	1.000	0.672	0.821	0.920	**8.0%**	**58.72%**
29	21,847	4,872	6,672	11,544	7,221	58%	0.43	69	0.444	1.000	0.592	0.769	0.872	**12.8%**	**63.80%**
30	27,275	4,872	6,672	11,544	9,251	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**66.14%**
31	16,722	4,872	3,568	8,440	5,304	61%	0.46	66.6	0.343	0.971	0.515	0.724	0.818	**18.2%**	**59.37%**
32	14,318	3,697	3,156	6,853	4,405	63%	0.47	67.8	0.393	0.924	0.553	0.729	0.835	**16.5%**	**59.64%**
33	17,780	4,872	3,575	8,447	5,700	60%	0.45	70.6	0.511	1.000	0.643	0.804	0.904	**9.6%**	**56.67%**
34	16,873	4,584	3,488	8,072	5,360	61%	0.46	68.1	0.406	0.982	0.563	0.754	0.854	**14.6%**	**56.89%**
35	15,713	4,244	2,888	7,132	4,927	62%	0.46	70	0.486	0.976	0.624	0.787	0.890	**11.0%**	**52.97%**
36	23,444	4,872	5,141	10,013	7,818	57%	0.43	69	0.444	1.000	0.592	0.767	0.870	**13.0%**	**63.48%**
37	14,268	3,448	3,154	6,602	4,386	63%	0.47	70.9	0.524	0.969	0.652	0.802	0.906	**9.4%**	**54.27%**
38	18,789	4,872	3,520	8,392	6,077	60%	0.45	68.9	0.440	1.000	0.588	0.772	0.872	**12.8%**	**55.12%**
39	17,142	4,872	3,278	8,150	5,461	61%	0.45	70.3	0.499	1.000	0.633	0.800	0.900	**10.0%**	**57.44%**
40	38,418	4,872	6,672	11,544	13,418	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**66.82%**
41	26,469	4,872	6,381	11,253	8,949	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**64.40%**
42	16,251	4,872	2,742	7,614	5,128	62%	0.46	68.7	0.431	0.973	0.582	0.762	0.865	**13.5%**	**59.47%**
43	14,923	3,909	3,010	6,919	4,631	63%	0.47	70.1	0.490	0.968	0.627	0.787	0.891	**10.9%**	**60.49%**
44	23,225	4,872	6,672	11,544	7,736	57%	0.43	68.7	0.431	1.000	0.582	0.762	0.864	**13.6%**	**61.07%**
45	18,016	4,872	3,400	8,272	5,788	60%	0.45	72	0.570	1.000	0.688	0.828	0.926	**7.4%**	**57.49%**
46	34,098	4,872	6,672	11,544	11,803	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**63.54%**
47	15,293	4,151	2,941	7,092	4,770	62%	0.47	72.1	0.574	1.000	0.691	0.835	0.930	**7.0%**	**54.25%**
48	15,259	4,089	2,623	6,712	4,757	62%	0.47	72.7	0.600	1.000	0.710	0.845	0.938	**6.2%**	**57.91%**
49	18,100	4,651	3,026	7,677	5,819	60%	0.45	73.2	0.621	1.000	0.726	0.849	0.943	**5.7%**	**57.96%**
50	17,461	4,872	2,881	7,753	5,580	61%	0.45	70.4	0.503	1.000	0.636	0.801	0.901	**9.9%**	**54.69%**
51	18,805	4,872	4,070	8,942	6,083	60%	0.45	69	0.444	1.000	0.592	0.774	0.874	**12.6%**	**64.60%**
52	16,049	4,354	2,733	7,087	5,052	62%	0.46	69.5	0.465	0.965	0.608	0.772	0.878	**12.2%**	**59.27%**
53	17,730	4,872	4,096	8,968	5,681	60%	0.45	67.1	0.364	1.000	0.531	0.743	0.836	**16.4%**	**60.54%**
54	12,419	3,575	2,604	6,179	3,695	66%	0.49	70.4	0.503	0.942	0.636	0.786	0.893	**10.7%**	**54.41%**
55	38,938	4,872	6,672	11,544	13,613	24%	0.24	66.5	0.339	1.000	0.512	0.628	0.754	**24.6%**	**67.04%**
56	15,528	4,383	2,805	7,188	4,858	62%	0.46	72	0.570	1.000	0.688	0.833	0.928	**7.2%**	**55.94%**
57	24,234	4,872	6,643	11,515	8,113	57%	0.43	68.3	0.414	1.000	0.569	0.753	0.855	**14.5%**	**65.07%**
58	16,184	4,872	3,082	7,954	5,103	62%	0.46	70.7	0.515	1.000	0.646	0.809	0.907	**9.3%**	**58.03%**
59	24,318	4,872	5,635	10,507	8,145	57%	0.43	68.1	0.406	1.000	0.563	0.749	0.851	**14.9%**	**63.49%**
60	14,335	4,083	2,714	6,797	4,411	63%	0.47	70.7	0.515	0.974	0.646	0.801	0.904	**9.6%**	**59.13%**
61	18,385	4,797	3,877	8,674	5,926	60%	0.45	70.1	0.490	1.000	0.627	0.794	0.895	**10.5%**	**54.38%**
62	22,200	4,872	5,640	10,512	7,353	58%	0.43	69.7	0.473	1.000	0.614	0.781	0.885	**11.5%**	**62.64%**
63	25,141	4,872	6,672	11,544	8,453	25%	0.25	69.1	0.448	1.000	0.595	0.696	0.832	**16.8%**	**62.27%**
64	16,066	3,968	2,948	6,916	5,059	62%	0.46	71.8	0.562	0.999	0.681	0.827	0.924	**7.6%**	**57.44%**
65	8,756	284	393	677	2,325	72%	0.54	73.9	0.650	0.766	0.748	0.758	0.915	**8.5%**	**56.58%**
66	16,100	4,872	4,169	9,041	5,071	62%	0.46	70	0.486	1.000	0.624	0.797	0.896	**10.4%**	**63.03%**
67	17,747	2,673	5,645	8,318	5,687	60%	0.45	69.2	0.452	1.000	0.598	0.780	0.879	**12.1%**	**57.91%**
68	16,385	4,872	4,278	9,150	5,178	61%	0.46	66.9	0.356	1.000	0.525	0.743	0.834	**16.6%**	**62.06%**
69	15,747	4,265	2,893	7,158	4,939	62%	0.46	71.9	0.566	1.000	0.684	0.830	0.926	**7.4%**	**55.42%**
70	25,326	4,872	6,672	11,544	8,522	25%	0.25	66	0.318	1.000	0.496	0.622	0.742	**25.8%**	**67.30%**
71	54,215	4,872	4,685	9,557	19,326	23%	0.23	63.6	0.217	0.966	0.419	0.545	0.644	**35.6%**	**70.99%**
72	17,259	4,872	3,339	8,211	5,505	61%	0.45	68.4	0.419	0.994	0.572	0.764	0.863	**13.7%**	**58.48%**
73	14,218	3,981	2,648	6,629	4,367	64%	0.47	69.4	0.461	0.943	0.604	0.765	0.873	**12.7%**	**56.42%**
74	14,285	4,872	4,443	9,315	4,392	63%	0.47	71.6	0.553	1.000	0.675	0.829	0.923	**7.7%**	**56.20%**
75	18,469	4,655	3,132	7,787	5,958	60%	0.45	73.2	0.621	1.000	0.726	0.849	0.943	**5.7%**	**50.73%**
76	17,679	4,676	2,828	7,504	5,662	60%	0.45	69.4	0.461	0.981	0.604	0.775	0.878	**12.2%**	**59.03%**
77	15,343	4,211	2,493	6,704	4,788	62%	0.47	68.6	0.427	0.932	0.579	0.743	0.853	**14.7%**	**56.78%**
78	18,621	4,811	2,886	7,697	6,014	60%	0.45	68.5	0.423	0.973	0.576	0.753	0.858	**14.2%**	**56.29%**
79	10,386	2,702	1,117	3,819	2,934	69%	0.51	69.4	0.461	0.821	0.604	0.715	0.847	**15.3%**	**57.51%**
80	15,360	4,440	1,905	6,345	4,795	62%	0.47	69	0.444	0.924	0.592	0.746	0.859	**14.1%**	**56.26%**
81														**Average:**	**59.12%**

Row			
85	BG10 ='Study 513 Revised Flow Data'!G7	BV10 ='Study 513 (Revised) Flow Data'!H7	CK10 ='Study 513 Revised Flow Data'!I7
86	BH10 ='Study 513 Revised Flow Data'!Q7	BX10 ='Study 513 Revised Flow Data'!R7	CL10 ='Study 513 Revised Flow Data'!S7
87	BI10 ='Study 513 Revised Flow Data'!AA7	BY10 ='Study 513 Revised Flow Data'!AB7	CM10 ='Study 513 Flow Revised Data'!AC7
88	BJ10 =(BH10+BI10)	BZ10 =0.374*BV10-950	CN10 =(CL10+CM10)
89	BK10 =0.374*BG10-950	CA10 =IF(BV10>$K$4,(0.133*BV10+829)/(BV10-BZ10),(0.293*BV10+2090)/(BV10-BZ10))	CO10 =0.374*CK10-950
90	BL10 =IF(BG10>$G$2,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))	CB10 =(0.45*(0.133*BV10+829)/(BV10-BZ10))+(0.55*CA10)	CP10 =IF(CK10>$K$4,(0.133*CK10+829)/(CK10-CO10),(0.293*CK10+2090)/(CK10-CO10))
91	BM10 =(0.133*BG10+829)/(BG10-BK10)	CC10	CQ10 =(0.45*(0.133*CK10+829)/(CK10-CO10))+(0.55*CP10)
92	BN10	CD10 =IF((-2.45925+(0.0420748*CC10))<0,0,(-2.45925+(0.0420748*CC10)))	CR10
93	BO10 =IF((-2.45925+(0.0420748*BN10))<0,0,(-2.45925+(0.0420748*BN10)))	CE10 =IF(((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10))>1,1,((-0.5916024)+(0.017968*CC10)+(0.0000434*BY1(	CS10 =IF((-2.45925+(0.0420748*CR10))<0,0,(-2.45925+(0.0420748*CR10)))
94	BP10 =IF(((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10))>1,1,((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ1(	CF10 =-1.613493+(0.0319584*CC10)	CT10 =IF(((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10))>1,1,((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10)))
95	BQ10 =-1.613493+(0.0319584*BN10)	CG10 =(CE10*CB10)+(CF10*(1-CB10))	CU10 =-1.613493+(0.0319584*CR10)
96	BR10 =(BP10*BM10)+(BQ10*(1-BM10))	CH10 =CD10+CG10-(CD10*CG10)	CV10 =(CT10*CQ10)+(CU10*(1-CQ10))
97	BS10 =BO10+BR10-(BO10*BR10)	CI10 =1-CH10	CW10 =CS10+CV10-(CS10*CV10)
98	BT10 =1-BS10		CX10 =1-CW10
99			CZ10 =(0.01*O10)+(0.06*AC10)+(0.17*AQ10)+(0.28*BE10)+(0.25*BT10)+(0.16*CI10)+(0.07*CX10)

Study 485 Sacramento River Spring Run YOY Smolt Survival Model

Modified m2 by changing the slope to 0.0000434
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

Cross Channel Closed Over 25000 cfs
Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

February Water Temp 50 F
March Water Temp 55 F

DECEMBER

Year	Water Year Type	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	A	17,142	4,212	7,107	11,319	5,461	61%	0.45	0	0.744	0.000	0.338	0.338	66.2%
1923	B	34,544	4,212	4,635	8,847	11,969	24%	0.24	0	0.637	0.000	0.153	0.153	84.7%
1924	C	13,417	2,960	6,928	9,888	4,068	64%	0.48	0	0.682	0.000	0.327	0.327	67.3%
1925	D	11,254	4,212	4,847	9,059	3,259	67%	0.50	0	0.646	0.000	0.324	0.324	67.6%
1926	D	12,962	4,212	2,879	7,091	3,898	65%	0.48	0	0.561	0.000	0.271	0.271	72.9%
1927	W	14,312	4,212	7,042	11,254	4,403	63%	0.47	0	0.741	0.000	0.351	0.351	64.9%
1928	A	16,572	4,212	7,075	11,287	5,248	61%	0.46	0	0.743	0.000	0.340	0.340	66.0%
1929	C	13,206	4,212	5,871	10,083	3,989	65%	0.48	0	0.691	0.000	0.333	0.333	66.7%
1930	D	14,442	4,212	6,294	10,506	4,451	63%	0.47	0	0.709	0.000	0.334	0.334	66.6%
1931	C	9,335	2,196	2,976	5,172	2,541	71%	0.53	0	0.477	0.000	0.252	0.252	74.8%
1932	D	14,653	4,212	7,188	11,401	4,530	63%	0.47	0	0.748	0.000	0.352	0.352	64.8%
1933	C	8,197	2,017	2,505	4,521	2,116	74%	0.55	0	0.449	0.000	0.246	0.246	75.4%
1934	C	12,474	4,163	5,546	9,709	3,715	66%	0.49	0	0.674	0.000	0.329	0.329	67.1%
1935	B	8,506	3,220	3,399	6,619	2,231	73%	0.54	0	0.540	0.000	0.293	0.293	70.7%
1936	B	9,400	3,058	2,976	6,034	2,566	71%	0.53	0	0.515	0.000	0.271	0.271	72.9%
1937	B	14,003	4,212	6,603	10,815	4,287	64%	0.48	0	0.722	0.000	0.343	0.343	65.7%
1938	W	41,781	4,212	7,530	11,742	14,676	24%	0.24	0	0.763	0.000	0.180	0.180	82.0%
1939	D	18,687	4,212	3,741	7,953	6,039	60%	0.45	0	0.598	0.000	0.267	0.267	73.3%
1940	A	7,839	1,431	2,683	4,115	1,982	75%	0.56	0	0.431	0.000	0.240	0.240	76.0%
1941	W	30,852	4,212	7,351	11,563	10,589	24%	0.24	0	0.755	0.000	0.184	0.184	81.6%
1942	W	65,623	4,212	3,610	7,823	23,593	23%	0.23	0	0.592	0.000	0.135	0.135	86.5%
1943	W	28,803	4,212	3,773	7,985	9,822	25%	0.25	0	0.599	0.000	0.147	0.147	85.3%
1944	D	13,775	4,212	6,424	10,636	4,202	64%	0.48	0	0.715	0.000	0.341	0.341	65.9%
1945	B	15,824	4,212	6,961	11,173	4,968	62%	0.46	0	0.738	0.000	0.341	0.341	65.9%
1946	B	54,808	4,212	7,595	11,807	19,548	23%	0.23	0	0.765	0.000	0.176	0.176	82.4%
1947	D	18,134	4,212	7,140	11,352	5,832	60%	0.45	0	0.746	0.000	0.335	0.335	66.5%
1948	B	9,742	2,537	3,204	5,741	2,693	70%	0.52	0	0.502	0.000	0.262	0.262	73.8%
1949	D	15,564	4,212	6,896	11,108	4,871	62%	0.46	0	0.735	0.000	0.341	0.341	65.9%
1950	B	10,994	4,082	3,106	7,188	3,162	68%	0.50	0	0.565	0.000	0.285	0.285	71.5%
1951	A	67,997	4,212	7,595	11,807	24,481	23%	0.23	0	0.765	0.000	0.174	0.174	82.6%
1952	W	45,586	4,212	7,107	11,319	16,099	23%	0.23	0	0.744	0.000	0.174	0.174	82.6%
1953	W	42,334	4,212	3,741	7,953	14,883	24%	0.24	0	0.598	0.000	0.141	0.141	85.9%
1954	A	14,914	4,212	3,903	8,115	4,628	63%	0.47	0	0.605	0.000	0.283	0.283	71.7%
1955	D	25,517	4,212	6,912	11,124	8,593	25%	0.25	0	0.736	0.000	0.184	0.184	81.6%
1956	W	24,964	4,212	7,595	11,807	8,387	57%	0.42	0	0.765	0.000	0.325	0.325	67.5%
1957	A	14,149	4,212	5,806	10,018	4,342	64%	0.47	0	0.688	0.000	0.326	0.326	67.4%
1958	W	23,745	4,212	6,928	11,140	7,930	57%	0.43	0	0.736	0.000	0.315	0.315	68.5%
1959	B	14,621	4,212	3,854	8,067	4,518	63%	0.47	0	0.603	0.000	0.284	0.284	71.6%
1960	D	9,807	2,944	2,797	5,741	2,718	70%	0.52	0	0.502	0.000	0.261	0.261	73.9%
1961	D	16,507	4,212	6,896	11,108	5,224	61%	0.46	0	0.735	0.000	0.337	0.337	66.3%
1962	B	16,703	4,212	6,879	11,092	5,297	61%	0.46	0	0.734	0.000	0.336	0.336	66.4%
1963	W	27,550	4,212	6,896	11,108	9,354	25%	0.25	0	0.735	0.000	0.181	0.181	81.9%
1964	D	14,849	4,212	6,993	11,206	4,603	63%	0.47	0	0.739	0.000	0.347	0.347	65.3%
1965	W	24,330	4,212	7,465	11,677	8,149	57%	0.43	0	0.760	0.000	0.324	0.324	67.6%
1966	B	16,995	4,212	6,424	10,636	5,406	61%	0.46	0	0.715	0.000	0.325	0.325	67.5%
1967	W	34,495	4,212	7,123	11,336	11,951	24%	0.24	0	0.745	0.000	0.179	0.179	82.1%
1968	B	16,686	4,212	3,741	7,953	5,291	61%	0.46	0	0.598	0.000	0.273	0.273	72.7%
1969	W	23,338	4,212	6,977	11,189	7,778	57%	0.43	0	0.739	0.000	0.317	0.317	68.3%
1970	W	50,156	4,212	3,480	7,693	17,809	23%	0.23	0	0.587	0.000	0.136	0.136	86.4%
1971	W	52,368	4,212	7,042	11,254	18,636	23%	0.23	0	0.741	0.000	0.171	0.171	82.9%
1972	B	19,988	4,212	6,213	10,425	6,525	59%	0.44	0	0.705	0.000	0.311	0.311	68.9%
1973	A	26,200	4,212	6,896	11,108	8,849	25%	0.25	0	0.735	0.000	0.183	0.183	81.7%
1974	W	61,590	4,212	7,172	11,384	22,085	23%	0.23	0	0.747	0.000	0.171	0.171	82.9%
1975	W	17,613	4,212	4,245	8,457	5,637	61%	0.45	0	0.620	0.000	0.280	0.280	72.0%
1976	C	16,768	4,212	4,847	9,059	5,321	61%	0.46	0	0.646	0.000	0.295	0.295	70.5%
1977	C	8,148	1,789	3,106	4,895	2,097	74%	0.55	0	0.465	0.000	0.256	0.256	74.4%
1978	A	12,279	4,131	5,530	9,660	3,642	66%	0.49	0	0.672	0.000	0.330	0.330	67.0%
1979	B	14,019	4,212	3,676	7,888	4,293	64%	0.48	0	0.595	0.000	0.283	0.283	71.7%
1980	A	20,329	4,212	6,993	11,206	6,653	59%	0.44	0	0.739	0.000	0.325	0.325	67.5%
1981	D	15,613	4,212	4,115	8,327	4,889	62%	0.46	0	0.614	0.000	0.285	0.285	71.5%
1982	W	68,453	4,212	7,026	11,238	24,651	23%	0.23	0	0.741	0.000	0.168	0.168	83.2%
1983	W	55,410	4,212	4,424	8,636	19,773	23%	0.23	0	0.628	0.000	0.144	0.144	85.6%
1984	W	82,944	2,992	3,106	6,099	30,071	22%	0.22	0	0.518	0.000	0.116	0.116	88.4%
1985	D	23,875	4,212	6,961	11,173	7,979	57%	0.43	0	0.738	0.000	0.316	0.316	68.4%
1986	W	15,467	4,212	6,944	11,157	4,834	62%	0.46	0	0.737	0.000	0.343	0.343	65.7%
1987	D	13,369	3,350	6,522	9,872	4,050	64%	0.48	0	0.681	0.000	0.327	0.327	67.3%
1988	C	15,841	4,212	6,879	11,092	4,974	62%	0.46	0	0.734	0.000	0.339	0.339	66.1%
1989	D	8,847	2,846	3,562	6,408	2,359	72%	0.54	0	0.531	0.000	0.285	0.285	71.5%
1990	C	12,751	4,212	4,310	8,522	3,819	65%	0.49	0	0.623	0.000	0.303	0.303	69.7%
1991	C	8,278	1,626	2,765	4,391	2,146	74%	0.55	0	0.443	0.000	0.242	0.242	75.8%
1992	C	7,465	2,960	1,610	4,570	1,842	76%	0.56	0	0.451	0.000	0.255	0.255	74.5%

JANUARY

Year	Sac River Flows	CVP	SWP	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	18,557	4,212	7,579	11,791	5,990	60%	0.26	0	0.765	0.000	0.201	0.201	79.9%
1923	32,283	4,212	3,643	7,855	11,124	24%	0.24	0	0.594	0.000	0.144	0.144	85.6%
1924	13,369	4,212	5,839	10,051	4,050	64%	0.28	0	0.689	0.000	0.193	0.193	80.7%
1925	10,213	3,545	3,155	6,701	2,870	69%	0.30	0	0.544	0.000	0.162	0.162	83.8%
1926	18,768	2,537	7,140	9,677	6,069	60%	0.26	0	0.673	0.000	0.176	0.176	82.4%
1927	28,640	4,212	7,270	11,482	9,761	25%	0.25	0	0.751	0.000	0.185	0.185	81.5%
1928	25,257	4,212	3,643	7,855	8,496	25%	0.25	0	0.594	0.000	0.148	0.148	85.2%
1929	14,767	4,212	6,635	10,848	4,573	63%	0.27	0	0.724	0.000	0.198	0.198	80.2%
1930	20,768	4,212	7,091	11,303	6,817	59%	0.26	0	0.743	0.000	0.191	0.191	80.9%
1931	11,710	4,212	4,733	8,945	3,429	67%	0.29	0	0.641	0.000	0.185	0.185	81.5%
1932	17,256	4,212	7,823	12,035	5,504	61%	0.27	0	0.775	0.000	0.206	0.206	79.4%
1933	12,100	4,212	5,416	9,628	3,575	66%	0.29	0	0.671	0.000	0.192	0.192	80.8%
1934	16,101	4,212	7,156	11,368	5,072	62%	0.27	0	0.746	0.000	0.201	0.201	79.9%
1935	25,469	4,212	7,660	11,872	8,575	25%	0.25	0	0.768	0.000	0.192	0.192	80.8%
1936	31,584	4,212	7,449	11,661	10,862	24%	0.24	0	0.759	0.000	0.184	0.184	81.6%
1937	17,272	4,212	7,579	11,791	5,510	61%	0.27	0	0.765	0.000	0.203	0.203	79.7%
1938	30,543	4,212	3,236	7,449	10,473	24%	0.24	0	0.576	0.000	0.140	0.140	86.0%
1939	18,410	2,716	3,236	5,952	5,935	60%	0.26	0	0.511	0.000	0.134	0.134	86.6%
1940	23,452	4,212	8,018	12,230	7,821	57%	0.25	0	0.784	0.000	0.198	0.198	80.2%
1941	71,494	4,212	8,164	12,376	25,789	23%	0.23	0	0.790	0.000	0.179	0.179	82.1%
1942	63,265	4,212	3,236	7,449	22,711	23%	0.23	0	0.576	0.000	0.131	0.131	86.9%
1943	58,060	4,212	3,301	7,514	20,765	23%	0.23	0	0.579	0.000	0.133	0.133	86.7%
1944	17,678	4,212	3,269	7,481	5,662	60%	0.26	0	0.578	0.000	0.153	0.153	84.7%
1945	14,052	4,212	4,928	9,140	4,305	64%	0.28	0	0.650	0.000	0.180	0.180	82.0%
1946	43,228	4,212	3,643	7,855	15,217	23%	0.23	0	0.594	0.000	0.139	0.139	86.1%
1947	14,979	4,212	7,123	11,336	4,652	63%	0.27	0	0.745	0.000	0.203	0.203	79.7%
1948	14,653	4,212	6,359	10,571	4,530	63%	0.27	0	0.712	0.000	0.195	0.195	80.5%
1949	14,930	4,212	6,814	11,027	4,634	63%	0.27	0	0.731	0.000	0.200	0.200	80.0%
1950	19,435	4,212	7,172	11,384	6,319	59%	0.26	0	0.747	0.000	0.194	0.194	80.6%
1951	62,208	4,212	7,644	11,856	22,316	23%	0.23	0	0.767	0.000	0.175	0.175	82.5%
1952	67,347	4,212	7,205	11,417	24,238	23%	0.23	0	0.748	0.000	0.170	0.170	83.0%
1953	64,078	2,716	3,334	6,050	23,015	23%	0.23	0	0.515	0.000	0.117	0.117	88.3%
1954	33,421	4,212	3,854	8,067	11,550	24%	0.24	0	0.603	0.000	0.145	0.145	85.5%
1955	22,004	4,212	7,188	11,401	7,280	58%	0.26	0	0.748	0.000	0.191	0.191	80.9%
1956	84,489	4,212	8,034	12,246	30,649	22%	0.22	0	0.784	0.000	0.176	0.176	82.4%
1957	18,638	4,212	3,887	8,099	6,021	60%	0.26	0	0.604	0.000	0.158	0.158	84.2%
1958	36,219	4,212	3,529	7,741	12,596	24%	0.24	0	0.589	0.000	0.141	0.141	85.9%
1959	35,162	2,732	3,334	6,066	12,200	24%	0.24	0	0.516	0.000	0.124	0.124	87.6%
1960	14,279	4,212	6,245	10,457	4,390	63%	0.28	0	0.707	0.000	0.195	0.195	80.5%
1961	13,515	4,212	6,099	10,311	4,105	64%	0.28	0	0.700	0.000	0.195	0.195	80.5%
1962	12,653	2,895	5,237	8,132	3,782	65%	0.28	0	0.606	0.000	0.172	0.172	82.8%
1963	18,605	4,212	7,253	11,466	6,008	60%	0.26	0	0.751	0.000	0.197	0.197	80.3%
1964	25,631	4,212	3,871	8,083	8,636	25%	0.25	0	0.604	0.000	0.151	0.151	84.9%
1965	81,236	4,212	8,506	12,718	29,432	22%	0.22	0	0.805	0.000	0.181	0.181	81.9%
1966	29,632	4,212	3,659	7,872	10,132	24%	0.24	0	0.595	0.000	0.145	0.145	85.5%
1967	33,486	4,212	7,676	11,889	11,574	24%	0.24	0	0.769	0.000	0.185	0.185	81.5%
1968	30,640	2,732	3,334	6,066	10,509	24%	0.24	0	0.516	0.000	0.126	0.126	87.4%
1969	66,404	4,212	7,400	11,612	23,885	23%	0.23	0	0.757	0.000	0.172	0.172	82.8%
1970	92,669	2,505	3,334	5,839	33,708	22%	0.22	0	0.506	0.000	0.113	0.113	88.7%
1971	46,904	4,212	6,635	10,848	16,592	23%	0.23	0	0.724	0.000	0.169	0.169	83.1%
1972	20,394	4,212	3,887	8,099	6,677	59%	0.26	0	0.604	0.000	0.156	0.156	84.4%
1973	49,392	4,212	7,465	11,677	17,523	23%	0.23	0	0.760	0.000	0.176	0.176	82.4%
1974	78,422	4,212	3,773	7,985	28,380	22%	0.22	0	0.599	0.000	0.135	0.135	86.5%
1975	18,670	4,212	3,854	8,067	6,033	60%	0.26	0	0.603	0.000	0.158	0.158	84.2%
1976	16,768	4,212	3,838	8,050	5,321	61%	0.27	0	0.602	0.000	0.161	0.161	83.9%
1977	7,904	2,358	2,440	4,798	2,006	75%	0.32	0	0.461	0.000	0.147	0.147	85.3%
1978	43,033	2,423	7,774	10,197	15,144	23%	0.23	0	0.695	0.000	0.163	0.163	83.7%
1979	27,241	4,212	3,269	7,481	9,238	25%	0.25	0	0.578	0.000	0.143	0.143	85.7%
1980	60,484	4,212	3,155	7,367	21,671	23%	0.23	0	0.573	0.000	0.131	0.131	86.9%
1981	28,607	2,537	3,350	5,887	9,749	25%	0.25	0	0.508	0.000	0.125	0.125	87.5%
1982	51,165	4,212	7,758	11,970	18,186	23%	0.23	0	0.772	0.000	0.179	0.179	82.1%
1983	59,150	2,895	2,651	5,546	21,172	23%	0.23	0	0.494	0.000	0.113	0.113	88.7%
1984	47,359	1,334	2,879	4,212	16,762	23%	0.23	0	0.436	0.000	0.102	0.102	89.8%
1985	16,556	4,212	3,871	8,083	5,242	61%	0.27	0	0.604	0.000	0.162	0.162	83.8%
1986	21,256	4,212	7,351	11,563	7,000	58%	0.26	0	0.755	0.000	0.194	0.194	80.6%
1987	16,735	960	5,692	6,652	5,309	61%	0.27	0	0.542	0.000	0.145	0.145	85.5%
1988	25,534	4,212	7,058	11,271	8,600	25%	0.25	0	0.742	0.000	0.185	0.185	81.5%
1989	12,002	4,050	4,651	8,701	3,539	66%	0.29	0	0.631	0.000	0.181	0.181	81.9%
1990	20,833	2,992	7,058	10,051	6,842	59%	0.26	0	0.689	0.000	0.177	0.177	82.3%
1991	6,847	1,691	1,708	3,399	1,611	78%	0.33	0	0.400	0.000	0.133	0.133	86.7%
1992	12,133	4,212	4,781	8,994	3,588	66%	0.29	0	0.643	0.000	0.184	0.184	81.6%

FEBRUARY

Year	Sac River Flow	CVP	SWP	CVP + SWP Exports	Calculated Steamboat Sutter & Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	31,781	4,249	5,564	9,813	10,936	24%	0.24	0	0.733	0.000	0.178	0.178	82.2%
1923	22,615	2,539	2,377	4,916	7,508	58%	0.25	0	0.520	0.000	0.132	0.132	86.8%
1924	15,925	4,068	4,190	8,258	5,006	60%	0.27	0	0.665	0.000	0.180	0.180	82.0%
1925	44,691	4,213	7,581	11,794	15,764	23%	0.23	0	0.819	0.000	0.192	0.192	80.8%
1926	35,724	954	7,635	8,589	12,411	24%	0.24	0	0.680	0.000	0.163	0.163	83.7%
1927	82,503	2,521	8,499	11,020	29,906	22%	0.22	0	0.785	0.000	0.176	0.176	82.4%
1928	27,399	4,120	4,259	8,380	9,297	25%	0.25	0	0.670	0.000	0.166	0.166	83.4%
1929	17,538	3,151	5,150	8,301	5,609	60%	0.27	0	0.667	0.000	0.177	0.177	82.3%
1930	15,683	2,791	3,997	6,788	4,916	62%	0.27	0	0.601	0.000	0.163	0.163	83.7%
1931	10,840	3,007	1,837	4,844	3,104	66%	0.29	0	0.517	0.000	0.152	0.152	84.8%
1932	13,995	4,085	5,894	9,979	4,284	64%	0.28	0	0.740	0.000	0.205	0.205	79.5%
1933	11,974	3,835	2,701	6,536	3,528	64%	0.29	0	0.590	0.000	0.169	0.169	83.1%
1934	12,748	1,621	4,429	6,050	3,818	66%	0.28	0	0.569	0.000	0.161	0.161	83.9%
1935	11,974	684	3,943	4,628	3,528	67%	0.29	0	0.508	0.000	0.146	0.146	85.4%
1936	46,053	4,103	8,206	12,309	16,274	23%	0.23	0	0.841	0.000	0.196	0.196	80.4%
1937	33,833	2,773	3,727	6,500	11,704	24%	0.24	0	0.589	0.000	0.142	0.142	85.8%
1938	82,269	1,206	3,943	5,150	29,819	22%	0.22	0	0.530	0.000	0.119	0.119	88.1%
1939	19,032	1,531	3,961	5,492	6,168	59%	0.26	0	0.545	0.000	0.142	0.142	85.8%
1940	41,064	4,085	8,206	12,291	14,408	23%	0.24	0	0.840	0.000	0.198	0.198	80.2%
1941	75,031	4,285	6,950	11,236	27,112	23%	0.23	0	0.794	0.000	0.179	0.179	82.1%
1942	78,344	1,657	3,961	5,618	28,351	22%	0.23	0	0.551	0.000	0.124	0.124	87.6%
1943	52,253	1,999	3,997	5,996	18,593	23%	0.23	0	0.567	0.000	0.131	0.131	86.9%
1944	30,772	2,312	3,825	6,137	10,559	24%	0.24	0	0.573	0.000	0.140	0.140	86.0%
1945	38,911	4,231	4,051	8,283	13,603	23%	0.24	0	0.666	0.000	0.158	0.158	84.2%
1946	23,840	2,449	4,393	6,842	7,966	57%	0.25	0	0.604	0.000	0.152	0.152	84.8%
1947	21,067	4,231	3,961	8,193	6,929	58%	0.26	0	0.662	0.000	0.170	0.170	83.0%
1948	15,681	4,311	1,669	5,980	4,915	64%	0.27	0	0.566	0.000	0.153	0.153	84.7%
1949	16,277	4,249	4,177	8,427	5,138	61%	0.27	0	0.673	0.000	0.181	0.181	81.9%
1950	31,294	1,458	7,526	8,985	10,754	24%	0.24	0	0.697	0.000	0.169	0.169	83.1%
1951	60,572	4,285	4,682	8,967	21,704	23%	0.23	0	0.696	0.000	0.159	0.159	84.1%
1952	62,499	4,138	3,773	7,910	22,425	23%	0.23	0	0.650	0.000	0.148	0.148	85.2%
1953	28,341	1,999	4,051	6,050	9,650	25%	0.25	0	0.569	0.000	0.140	0.140	86.0%
1954	57,151	3,043	4,628	7,671	20,424	23%	0.23	0	0.640	0.000	0.147	0.147	85.3%
1955	16,583	4,249	3,439	7,689	5,252	61%	0.27	0	0.640	0.000	0.172	0.172	82.8%
1956	61,543	4,138	4,520	8,658	22,067	23%	0.23	0	0.683	0.000	0.156	0.156	84.4%
1957	33,149	4,249	4,646	8,895	11,448	24%	0.24	0	0.693	0.000	0.167	0.167	83.3%
1958	62,121	3,295	4,051	7,346	22,283	23%	0.23	0	0.626	0.000	0.143	0.143	85.7%
1959	50,075	1,801	4,051	5,852	17,778	23%	0.23	0	0.561	0.000	0.130	0.130	87.0%
1960	25,852	2,521	7,041	9,562	8,718	25%	0.25	0	0.722	0.000	0.180	0.180	82.0%
1961	28,647	2,359	7,112	9,471	9,764	24%	0.25	0	0.718	0.000	0.176	0.176	82.4%
1962	37,020	1,080	8,211	9,291	12,896	23%	0.24	0	0.710	0.000	0.169	0.169	83.1%
1963	58,699	4,285	8,499	12,784	21,004	23%	0.23	0	0.862	0.000	0.197	0.197	80.3%
1964	19,923	4,451	3,512	7,962	6,501	61%	0.26	0	0.652	0.000	0.169	0.169	83.1%
1965	33,077	4,249	5,906	10,155	11,421	24%	0.24	0	0.748	0.000	0.180	0.180	82.0%
1966	26,775	2,035	4,375	6,410	9,064	25%	0.25	0	0.585	0.000	0.145	0.145	85.5%
1967	42,872	4,285	3,205	7,490	15,084	24%	0.24	0	0.632	0.000	0.149	0.149	85.1%
1968	54,520	1,895	3,912	5,807	19,440	23%	0.23	0	0.559	0.000	0.129	0.129	87.1%
1969	67,486	1,693	3,169	4,862	24,290	23%	0.23	0	0.518	0.000	0.118	0.118	88.2%
1970	57,565	1,170	4,051	5,222	20,579	23%	0.23	0	0.533	0.000	0.122	0.122	87.8%
1971	29,152	4,267	4,321	8,589	9,953	24%	0.25	0	0.680	0.000	0.167	0.167	83.3%
1972	24,217	4,451	4,485	8,936	8,107	57%	0.25	0	0.695	0.000	0.175	0.175	82.5%
1973	70,961	4,267	4,429	8,697	25,590	23%	0.23	0	0.684	0.000	0.155	0.155	84.5%
1974	41,918	3,799	4,411	8,211	14,727	24%	0.24	0	0.663	0.000	0.156	0.156	84.4%
1975	58,807	1,603	4,628	6,230	21,044	23%	0.23	0	0.577	0.000	0.132	0.132	86.8%
1976	19,523	3,547	4,172	7,719	6,352	59%	0.26	0	0.642	0.000	0.167	0.167	83.3%
1977	12,460	684	1,368	2,053	3,710	68%	0.28	0	0.396	0.000	0.112	0.112	88.8%
1978	48,814	1,639	6,050	7,689	17,306	23%	0.23	0	0.640	0.000	0.149	0.149	85.1%
1979	41,684	1,422	3,961	5,384	14,640	24%	0.24	0	0.540	0.000	0.127	0.127	87.3%
1980	69,453	852	3,633	4,485	25,026	23%	0.23	0	0.501	0.000	0.114	0.114	88.6%
1981	29,674	1,729	4,069	5,798	10,148	24%	0.24	0	0.558	0.000	0.137	0.137	86.3%
1982	65,650	2,791	4,628	7,418	23,603	23%	0.23	0	0.629	0.000	0.143	0.143	85.7%
1983	82,917	1,386	2,791	4,177	30,061	22%	0.22	0	0.488	0.000	0.109	0.109	89.1%
1984	36,004	1,408	3,720	5,129	12,516	24%	0.24	0	0.529	0.000	0.127	0.127	87.3%
1985	20,131	3,925	4,646	8,571	6,579	58%	0.26	0	0.679	0.000	0.176	0.176	82.4%
1986	96,692	4,249	8,031	12,280	35,213	22%	0.22	0	0.840	0.000	0.187	0.187	81.3%
1987	23,030	1,278	4,267	5,546	7,663	57%	0.25	0	0.547	0.000	0.139	0.139	86.1%
1988	17,229	4,103	2,486	6,589	5,493	62%	0.27	0	0.593	0.000	0.158	0.158	84.2%
1989	13,072	900	1,801	2,701	3,939	67%	0.28	0	0.424	0.000	0.119	0.119	88.1%
1990	16,223	1,224	6,284	7,508	5,118	61%	0.27	0	0.633	0.000	0.170	0.170	83.0%
1991	11,074	360	828	1,188	3,192	67%	0.29	0	0.358	0.000	0.105	0.105	89.5%
1992	31,415	1,217	7,197	8,414	10,799	24%	0.24	0	0.672	0.000	0.163	0.163	83.7%

MARCH

Year	Sac River Flow	CVP	SWP	CVP + SWP exports	Calculated Steamboat Sutter & Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	31,551	2,830	4,147	6,977	10,850	24%	0.24	0	0.699	0.144	0.279	0.279	72.1%
1923	17,028	4,033	3,497	7,530	5,418	27%	0.27	0	0.723	0.144	0.299	0.299	70.1%
1924	12,100	1,399	1,740	3,139	3,575	29%	0.29	0	0.533	0.144	0.255	0.255	74.5%
1925	19,337	4,228	3,952	8,181	6,282	26%	0.26	0	0.752	0.144	0.302	0.302	69.8%
1926	16,019	2,749	3,952	6,701	5,041	27%	0.27	0	0.687	0.144	0.291	0.291	70.9%
1927	43,863	3,480	4,147	7,628	15,455	23%	0.23	0	0.728	0.144	0.281	0.281	71.9%
1928	86,261	3,139	4,440	7,579	31,312	22%	0.22	0	0.726	0.144	0.274	0.274	72.6%
1929	13,515	1,870	2,797	4,668	4,105	28%	0.28	0	0.599	0.144	0.271	0.271	72.9%
1930	30,087	2,651	4,521	7,172	10,303	24%	0.24	0	0.708	0.144	0.282	0.282	71.8%
1931	9,221	1,610	2,196	3,806	2,499	31%	0.31	0	0.562	0.144	0.272	0.272	72.8%
1932	10,539	927	2,749	3,676	2,991	30%	0.30	0	0.556	0.144	0.266	0.266	73.4%
1933	10,392	293	4,342	4,635	2,937	30%	0.30	0	0.598	0.144	0.279	0.279	72.1%
1934	14,084	2,098	1,724	3,822	4,317	28%	0.28	0	0.563	0.144	0.260	0.260	74.0%
1935	24,916	4,228	6,977	11,206	8,368	25%	0.25	0	0.883	0.144	0.329	0.329	67.1%
1936	33,194	4,228	7,465	11,693	11,464	24%	0.24	0	0.904	0.144	0.328	0.328	67.2%
1937	37,861	2,374	3,871	6,245	13,210	24%	0.24	0	0.668	0.144	0.269	0.269	73.1%
1938	78,634	2,065	3,952	6,017	28,459	22%	0.22	0	0.658	0.144	0.260	0.260	74.0%
1939	16,394	2,683	3,985	6,668	5,181	27%	0.27	0	0.686	0.144	0.290	0.290	71.0%
1940	59,166	4,228	4,651	8,880	21,178	23%	0.23	0	0.782	0.144	0.290	0.290	71.0%
1941	58,581	4,228	3,838	8,067	20,959	23%	0.23	0	0.747	0.144	0.282	0.282	71.8%
1942	27,095	3,432	4,001	7,432	9,183	25%	0.25	0	0.719	0.144	0.287	0.287	71.3%
1943	64,598	1,822	4,050	5,871	23,210	23%	0.23	0	0.651	0.144	0.260	0.260	74.0%
1944	25,094	2,960	4,001	6,961	8,435	25%	0.25	0	0.699	0.144	0.283	0.283	71.7%
1945	27,030	3,171	4,147	7,319	9,159	25%	0.25	0	0.714	0.144	0.285	0.285	71.5%
1946	23,777	3,448	4,424	7,872	7,943	25%	0.25	0	0.738	0.144	0.294	0.294	70.6%
1947	22,102	2,781	3,887	6,668	7,316	25%	0.25	0	0.686	0.144	0.282	0.282	71.8%
1948	19,110	4,228	3,399	7,628	6,197	26%	0.26	0	0.728	0.144	0.297	0.297	70.3%
1949	41,716	4,228	7,107	11,336	14,652	24%	0.24	0	0.889	0.144	0.320	0.320	68.0%
1950	22,151	2,635	4,424	7,058	7,334	25%	0.25	0	0.703	0.144	0.287	0.287	71.3%
1951	29,583	3,253	4,700	7,953	10,114	24%	0.24	0	0.742	0.144	0.290	0.290	71.0%
1952	57,524	3,204	3,936	7,140	20,564	23%	0.23	0	0.706	0.144	0.273	0.273	72.7%
1953	24,899	3,155	4,115	7,270	8,362	25%	0.25	0	0.712	0.144	0.286	0.286	71.4%
1954	49,538	3,171	4,684	7,855	17,577	23%	0.23	0	0.738	0.144	0.282	0.282	71.8%
1955	18,752	4,603	3,025	7,628	6,063	26%	0.26	0	0.728	0.144	0.297	0.297	70.3%
1956	36,674	2,065	4,700	6,766	12,766	24%	0.24	0	0.690	0.144	0.275	0.275	72.5%
1957	44,383	3,188	4,440	7,628	15,649	23%	0.23	0	0.728	0.144	0.281	0.281	71.9%
1958	93,612	3,464	4,066	7,530	34,061	22%	0.22	0	0.723	0.144	0.273	0.273	72.7%
1959	22,021	2,992	3,139	6,131	7,286	26%	0.26	0	0.663	0.144	0.276	0.276	72.4%
1960	20,329	2,293	4,001	6,294	6,653	26%	0.26	0	0.670	0.144	0.280	0.280	72.0%
1961	20,541	2,765	5,156	7,920	6,732	26%	0.26	0	0.740	0.144	0.298	0.298	70.2%
1962	26,265	3,285	4,326	7,611	8,873	25%	0.25	0	0.727	0.144	0.289	0.289	71.1%
1963	32,641	4,603	4,651	9,254	11,258	24%	0.24	0	0.798	0.144	0.302	0.302	69.8%
1964	19,175	4,342	3,350	7,693	6,221	26%	0.26	0	0.730	0.144	0.297	0.297	70.3%
1965	21,126	3,253	4,375	7,628	6,951	26%	0.26	0	0.728	0.144	0.294	0.294	70.6%
1966	28,689	3,220	4,424	7,644	9,780	25%	0.25	0	0.728	0.144	0.288	0.288	71.2%
1967	54,483	3,204	3,285	6,489	19,426	23%	0.23	0	0.678	0.144	0.267	0.267	73.3%
1968	36,788	2,992	4,115	7,107	12,809	24%	0.24	0	0.705	0.144	0.278	0.278	72.2%
1969	45,326	2,049	3,253	5,302	16,002	23%	0.23	0	0.627	0.144	0.257	0.257	74.3%
1970	35,812	3,058	4,115	7,172	12,444	24%	0.24	0	0.708	0.144	0.279	0.279	72.1%
1971	50,953	3,220	4,700	7,920	18,107	23%	0.23	0	0.740	0.144	0.282	0.282	71.8%
1972	32,933	3,448	4,424	7,872	11,367	24%	0.24	0	0.738	0.144	0.288	0.288	71.2%
1973	47,554	3,480	4,456	7,937	16,835	23%	0.23	0	0.741	0.144	0.283	0.283	71.7%
1974	100,199	3,448	4,440	7,888	36,524	22%	0.22	0	0.739	0.144	0.276	0.276	72.4%
1975	75,999	3,448	4,684	8,132	27,474	23%	0.23	0	0.750	0.144	0.281	0.281	71.9%
1976	18,361	2,049	4,294	6,343	5,917	26%	0.26	0	0.672	0.144	0.283	0.283	71.7%
1977	7,351	732	1,138	1,870	1,799	33%	0.33	0	0.478	0.144	0.253	0.253	74.7%
1978	45,619	2,114	3,903	6,017	16,111	23%	0.23	0	0.658	0.144	0.264	0.264	73.6%
1979	32,494	3,171	4,001	7,172	11,203	24%	0.24	0	0.708	0.144	0.281	0.281	71.9%
1980	36,479	1,822	3,350	5,172	12,693	24%	0.24	0	0.621	0.144	0.258	0.258	74.2%
1981	32,137	2,992	4,115	7,107	11,069	24%	0.24	0	0.705	0.144	0.280	0.280	72.0%
1982	69,087	2,927	4,651	7,579	24,889	23%	0.23	0	0.726	0.144	0.276	0.276	72.4%
1983	81,935	2,049	2,635	4,684	29,694	22%	0.22	0	0.600	0.144	0.247	0.247	75.3%
1984	36,495	3,236	4,001	7,237	12,699	24%	0.24	0	0.711	0.144	0.280	0.280	72.0%
1985	22,297	2,992	4,684	7,676	7,389	25%	0.25	0	0.730	0.144	0.293	0.293	70.7%
1986	72,535	4,228	4,180	8,408	26,178	23%	0.23	0	0.762	0.144	0.284	0.284	71.6%
1987	29,974	2,293	4,163	6,457	10,260	24%	0.24	0	0.677	0.144	0.274	0.274	72.6%
1988	10,929	1,984	1,708	3,692	3,137	29%	0.29	0	0.557	0.144	0.265	0.265	73.5%
1989	41,862	4,228	6,489	10,718	14,706	24%	0.24	0	0.862	0.144	0.313	0.313	68.7%
1990	13,987	2,212	3,350	5,562	4,281	28%	0.28	0	0.638	0.144	0.281	0.281	71.9%
1991	29,681	4,228	7,075	11,303	10,151	24%	0.24	0	0.887	0.144	0.326	0.326	67.4%
1992	20,102	2,000	6,245	8,246	6,568	26%	0.26	0	0.754	0.144	0.302	0.302	69.8%

Formulas: Sacramento River Spring Run Young of Year Smolt Survival Model

C10 ='Study 485 Flow Data'!C7
D10 ='Study 485 Flow Data'!M7
E10 ='Study 485 Flow Data'!X7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.45*(0.133*C10+829)/(C10-G10))+(0.55*H10)
J10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
K10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*F10)
L10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 485 Flow Data'!D7
R10 ='Study 485 Flow Data'!N7
S10 ='Study 485 Flow Data'!X7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*T10)
Z10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 485 Flow Data'!E7
AF10 ='Study 485 Flow Data'!O7
AG10 ='Study 485 Flow Data'!Y7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
AM10 =(-0.5916024)+(0.017968*$BC$2)+(0.0000434*AH10)
AN10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

AS10 ='Study 485 Flow Data'!D7
AT10 ='Study 485 Flow Data'!N7
AU10 ='Study 485 Flow Data'!X7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$G$2,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BA10 =IF(((-0.5916024)+(0.017968*$BC$3)+(0.0000434*AV10))>1,1,((-0.5916024)+(0.017968*$BC$3)+(0.00004
BB10 =-1.613493+(0.0319584*$BC$3)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =(AZ10+BC10-(AZ10*BC10))
BE10 =1-BD10

Study 485 Sacramento River Spring Run YOY Smolt Survival Model (continued)

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

Row	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT
6	APRIL				Calculated									
7	Sac				Sutter &									Calculated
8	River		CVP + SWP		Steamboat		X-Channel	observed			Calculated Mortality			Survival
9	Flows	CVP	SWP	exports	Slough Q	Percent	Closed	temp	m1	m2	m3	m23	m123	s123
10	22,822	4,185	4,185	8,369	7,585	25%	0.25	58.5	0.002	0.823	0.256	0.400	0.401	**59.9%**
11	23,007	3,983	3,983	7,966	7,655	25%	0.25	58.3	0.000	0.802	0.250	0.390	0.390	**61.0%**
12	8,134	1,395	1,395	2,790	2,092	32%	0.32	61.5	0.128	0.635	0.352	0.441	0.513	**48.7%**
13	22,251	3,462	3,462	6,924	7,372	25%	0.25	59.1	0.027	0.771	0.275	0.401	0.418	**58.2%**
14	20,049	3,210	3,210	6,420	6,548	26%	0.26	61.6	0.133	0.794	0.355	0.469	0.539	**46.1%**
15	48,215	4,033	4,033	8,067	17,082	23%	0.23	56.8	0.000	0.779	0.202	0.336	0.336	**66.4%**
16	29,208	3,815	3,815	7,630	9,974	25%	0.25	58.7	0.011	0.794	0.262	0.393	0.399	**60.1%**
17	9,092	1,479	1,479	2,958	2,450	31%	0.31	56.3	0.000	0.548	0.186	0.297	0.297	**70.3%**
18	12,638	1,949	1,949	3,899	3,777	28%	0.28	59.6	0.048	0.649	0.291	0.392	0.422	**57.8%**
19	9,193	1,479	1,479	2,958	2,488	31%	0.31	62.8	0.183	0.665	0.393	0.477	0.572	**42.8%**
20	13,092	2,689	2,689	5,378	3,946	28%	0.28	58.9	0.019	0.700	0.269	0.390	0.402	**59.8%**
21	12,739	2,840	1,277	4,117	3,814	28%	0.28	60.1	0.069	0.667	0.307	0.409	0.450	**55.0%**
22	12,856	1,781	1,781	3,563	3,858	28%	0.28	63.6	0.217	0.706	0.419	0.500	0.608	**39.2%**
23	24,637	4,437	4,638	9,075	8,264	25%	0.25	58.9	0.019	0.861	0.269	0.417	0.428	**57.2%**
24	21,024	4,185	4,185	8,369	6,913	26%	0.26	59.7	0.053	0.844	0.294	0.436	0.465	**53.5%**
25	21,965	2,958	5,008	7,966	7,265	26%	0.26	58.8	0.015	0.811	0.266	0.405	0.413	**58.7%**
26	47,173	3,344	4,369	7,714	16,693	23%	0.23	56.3	0.000	0.755	0.186	0.318	0.318	**68.2%**
27	12,234	2,067	2,067	4,134	3,626	29%	0.29	63.3	0.204	0.725	0.409	0.500	0.602	**39.8%**
28	41,728	4,252	4,252	8,504	14,656	24%	0.24	57.4	0.000	0.809	0.221	0.359	0.359	**64.1%**
29	42,367	4,605	4,706	9,310	14,895	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
30	43,308	4,453	4,453	8,907	15,247	23%	0.23	56.5	0.000	0.810	0.192	0.337	0.337	**66.3%**
31	29,410	4,067	5,058	9,125	10,049	24%	0.24	58.8	0.015	0.861	0.266	0.411	0.420	**58.0%**
32	9,814	2,118	2,118	4,235	2,721	30%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	**63.0%**
33	11,747	3,210	3,210	6,420	3,443	29%	0.29	60.6	0.090	0.776	0.323	0.454	0.503	**49.7%**
34	12,218	2,975	2,975	5,949	3,619	29%	0.29	60.7	0.095	0.757	0.326	0.449	0.501	**49.9%**
35	13,797	2,470	2,470	4,941	4,210	28%	0.28	62.5	0.170	0.746	0.384	0.484	0.572	**42.8%**
36	22,788	3,395	3,395	6,789	7,573	25%	0.25	56.6	0.000	0.720	0.195	0.328	0.328	**67.2%**
37	13,209	2,538	2,538	5,075	3,990	28%	0.28	61.7	0.137	0.737	0.358	0.465	0.538	**46.2%**
38	18,772	3,092	3,092	6,184	6,071	26%	0.26	61.3	0.120	0.778	0.346	0.459	0.524	**47.6%**
39	14,738	3,176	3,176	6,353	4,562	27%	0.27	59.9	0.061	0.760	0.301	0.427	0.462	**53.8%**
40	56,652	3,680	4,168	7,848	20,238	23%	0.23	55.5	0.000	0.746	0.160	0.295	0.295	**70.5%**
41	16,184	2,823	2,823	5,647	5,103	27%	0.27	58.8	0.015	0.710	0.266	0.385	0.394	**60.6%**
42	39,863	3,680	3,680	7,361	13,959	24%	0.24	58.4	0.000	0.777	0.253	0.377	0.377	**62.3%**
43	9,478	1,832	1,832	3,664	2,595	30%	0.30	56.4	0.000	0.581	0.189	0.308	0.308	**69.2%**
44	20,436	3,983	3,983	7,966	6,693	26%	0.26	59.7	0.053	0.827	0.294	0.432	0.462	**53.8%**
45	21,209	3,227	3,227	6,453	6,982	26%	0.26	60.5	0.086	0.776	0.320	0.437	0.485	**51.5%**
46	52,282	4,420	5,058	9,478	18,603	23%	0.23	57.4	0.000	0.851	0.221	0.367	0.367	**63.3%**
47	10,487	1,882	1,882	3,764	2,972	30%	0.30	63	0.191	0.704	0.400	0.490	0.587	**41.3%**
48	13,764	471	3,580	4,050	4,198	28%	0.28	59.5	0.044	0.653	0.288	0.390	0.417	**58.3%**
49	12,806	1,765	1,765	3,529	3,839	28%	0.28	60.1	0.069	0.641	0.307	0.402	0.443	**55.7%**
50	10,739	2,420	2,420	4,840	3,066	29%	0.29	61.8	0.141	0.729	0.362	0.470	0.544	**45.6%**
51	69,457	4,050	4,050	8,100	25,027	23%	0.23	53.7	0.000	0.725	0.103	0.244	0.244	**75.6%**
52	8,957	1,748	1,748	3,496	2,400	31%	0.31	59.3	0.036	0.626	0.282	0.388	0.410	**59.0%**
53	45,661	4,302	4,655	8,957	16,127	23%	0.23	56.9	0.000	0.820	0.205	0.349	0.349	**65.1%**
54	16,520	2,807	2,807	5,613	5,228	27%	0.27	61.9	0.145	0.764	0.365	0.472	0.548	**45.2%**
55	39,930	3,529	4,958	8,487	13,984	24%	0.24	53.8	0.000	0.743	0.106	0.257	0.257	**74.3%**
56	15,596	2,622	2,622	5,243	4,883	27%	0.27	61.5	0.128	0.741	0.352	0.457	0.527	**47.3%**
57	44,787	3,344	4,168	7,512	15,800	23%	0.23	56.4	0.000	0.748	0.189	0.320	0.320	**68.0%**
58	16,604	3,294	3,294	6,588	5,260	27%	0.27	58.8	0.015	0.751	0.266	0.396	0.404	**59.6%**
59	21,814	3,277	3,277	6,554	7,208	26%	0.26	58.7	0.011	0.748	0.262	0.386	0.393	**60.7%**
60	12,453	2,370	2,370	4,739	3,707	28%	0.28	58.5	0.002	0.665	0.256	0.372	0.374	**62.6%**
61	19,511	4,050	4,050	8,100	6,347	26%	0.26	61.3	0.120	0.861	0.346	0.480	0.542	**45.8%**
62	33,208	4,605	4,722	9,327	11,470	24%	0.24	56.8	0.000	0.834	0.202	0.354	0.354	**64.6%**
63	25,763	4,386	4,386	8,773	8,685	25%	0.25	56.8	0.000	0.810	0.202	0.353	0.353	**64.7%**
64	9,428	723	2,286	3,008	2,576	30%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
65	9,125	1,496	1,496	2,991	2,463	31%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	**36.3%**
66	38,703	3,445	4,067	7,512	13,525	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
67	17,696	3,546	3,546	7,092	5,668	26%	0.26	59.8	0.057	0.791	0.298	0.428	0.461	**53.9%**
68	19,814	2,924	3,949	6,873	6,460	26%	0.26	57.1	0.000	0.733	0.211	0.347	0.347	**65.3%**
69	16,990	2,723	2,723	5,445	5,404	27%	0.27	61.5	0.128	0.750	0.352	0.458	0.528	**47.2%**
70	75,843	3,378	5,563	8,941	27,415	23%	0.23	54.1	0.000	0.768	0.115	0.263	0.263	**73.7%**
71	68,298	3,311	3,647	6,958	24,593	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
72	17,881	3,428	3,428	6,857	5,738	26%	0.26	59.7	0.053	0.779	0.294	0.422	0.453	**54.7%**
73	12,335	2,050	2,050	4,101	3,663	28%	0.28	60.8	0.099	0.679	0.330	0.429	0.486	**51.4%**
74	20,536	4,470	5,210	9,680	6,731	26%	0.26	60.4	0.082	0.914	0.317	0.471	0.514	**48.6%**
75	12,285	706	2,773	3,479	3,645	29%	0.29	65.7	0.305	0.740	0.486	0.558	0.693	**30.7%**
76	8,621	1,428	1,428	2,857	2,274	31%	0.31	59.9	0.061	0.609	0.301	0.397	0.433	**56.7%**
77	23,629	2,823	2,823	5,647	7,887	25%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	**48.0%**
78	12,453	1,765	1,765	3,529	3,707	28%	0.28	61.6	0.133	0.668	0.355	0.444	0.518	**48.2%**
79	15,276	2,084	2,168	4,252	4,763	27%	0.27	60.8	0.099	0.685	0.330	0.426	0.483	**51.7%**
80	12,470	1,865	1,865	3,731	3,714	28%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	**49.9%**

Row	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI
6	MAY				Calculated									
7	Sac				Steamboat			USBR						Calculated
8	River			CVP + SWP & Sutter			X-channel	observed			Calculated Mortality			Survival
9	Flows	CVP	SWP	Exports	Slough Q	Percent	Closed	temp f	m1	m2	m3	m23	m123	s123
10	46,269	4,185	4,342	8,527	16,355	23%	0.23	61.2	0.116	0.878	0.342	0.467	0.529	**47.1%**
11	14,344	3,983	3,123	7,105	4,415	63%	0.47	62.4	0.166	0.838	0.381	0.597	0.664	**33.6%**
12	10,181	1,395	472	1,867	2,858	69%	0.52	69.2	0.452	0.733	0.598	0.667	0.818	**18.2%**
13	12,067	3,462	2,553	6,015	3,563	66%	0.49	63.2	0.200	0.805	0.406	0.603	0.682	**31.8%**
14	14,003	3,210	2,472	5,682	4,287	64%	0.48	65.7	0.305	0.835	0.486	0.652	0.758	**24.2%**
15	26,786	4,033	4,163	8,197	9,068	25%	0.25	62.6	0.175	0.889	0.387	0.511	0.597	**40.3%**
16	20,215	3,815	3,188	7,002	6,611	59%	0.44	66.6	0.343	0.909	0.515	0.688	0.795	**20.5%**
17	9,709	1,479	114	1,593	2,681	70%	0.52	66.1	0.322	0.665	0.499	0.586	0.719	**28.1%**
18	12,067	1,949	1,740	3,690	3,563	66%	0.49	63.1	0.196	0.702	0.403	0.550	0.638	**36.2%**
19	10,132	1,479	1,545	3,024	2,839	69%	0.52	70.5	0.507	0.806	0.640	0.726	0.865	**13.5%**
20	12,019	2,689	2,423	5,112	3,545	66%	0.49	65.5	0.297	0.807	0.480	0.641	0.748	**25.2%**
21	8,424	2,840	1,464	4,304	2,201	73%	0.54	63.7	0.221	0.740	0.422	0.595	0.684	**31.6%**
22	8,912	1,781	894	2,676	2,383	72%	0.53	68.3	0.414	0.752	0.569	0.667	0.805	**19.5%**
23	28,624	4,437	2,488	6,925	9,755	25%	0.25	64	0.234	0.859	0.432	0.537	0.645	**35.5%**
24	14,100	4,185	3,188	7,372	4,324	64%	0.47	64.9	0.271	0.894	0.461	0.666	0.757	**24.3%**
25	16,068	2,958	4,098	7,056	5,060	62%	0.46	64.5	0.255	0.874	0.448	0.644	0.735	**26.5%**
26	57,426	3,344	5,448	8,793	20,527	23%	0.23	62.5	0.170	0.913	0.384	0.505	0.590	**41.0%**
27	8,571	2,067	1,740	3,807	2,255	73%	0.54	68	0.402	0.795	0.560	0.687	0.813	**18.7%**
28	18,996	4,252	3,236	7,488	6,154	60%	0.45	65.6	0.301	0.912	0.483	0.674	0.772	**22.8%**
29	39,488	4,605	5,123	9,728	13,818	24%	0.24	61.6	0.133	0.913	0.355	0.493	0.560	**44.0%**
30	36,040	4,453	4,342	8,796	12,529	24%	0.24	60.1	0.069	0.870	0.307	0.442	0.481	**51.9%**
31	20,297	4,067	4,180	8,247	6,641	59%	0.44	65.4	0.292	0.941	0.477	0.681	0.774	**22.6%**
32	8,912	2,118	1,870	3,988	2,383	72%	0.53	65.9	0.313	0.766	0.493	0.639	0.752	**24.8%**
33	11,628	3,210	2,472	5,682	3,399	67%	0.50	63.1	0.196	0.789	0.403	0.595	0.674	**32.6%**
34	13,710	2,975	2,635	5,609	4,178	64%	0.48	63.9	0.229	0.800	0.429	0.606	0.696	**30.4%**
35	8,847	2,470	1,773	4,243	2,359	72%	0.54	68.7	0.431	0.827	0.582	0.713	0.837	**16.3%**
36	23,826	3,395	3,545	6,940	7,961	57%	0.43	62.3	0.162	0.829	0.378	0.571	0.640	**36.0%**
37	14,914	2,538	2,374	4,912	4,628	63%	0.47	65.2	0.284	0.793	0.470	0.621	0.729	**27.1%**
38	13,726	3,092	2,651	5,743	4,184	64%	0.48	64.3	0.246	0.813	0.441	0.619	0.713	**28.7%**
39	19,126	3,176	3,594	6,770	6,203	60%	0.44	64.4	0.250	0.859	0.445	0.629	0.722	**27.8%**
40	59,557	3,680	5,269	8,950	21,324	23%	0.23	61.7	0.137	0.905	0.358	0.484	0.554	**44.6%**
41	26,867	2,823	3,838	6,662	9,098	25%	0.25	60.9	0.103	0.792	0.333	0.446	0.504	**49.6%**
42	25,403	3,680	3,708	7,388	8,551	25%	0.25	65.9	0.313	0.913	0.493	0.598	0.724	**27.6%**
43	10,278	1,832	1,887	3,718	2,894	69%	0.51	66.9	0.356	0.772	0.525	0.652	0.775	**22.5%**
44	39,000	3,983	4,391	8,374	13,636	24%	0.24	61.4	0.124	0.875	0.349	0.474	0.539	**46.1%**
45	16,816	3,227	2,976	6,203	5,339	61%	0.46	64	0.234	0.828	0.432	0.612	0.703	**29.7%**
46	43,488	4,420	6,083	10,502	15,315	23%	0.23	62.9	0.187	0.994	0.397	0.537	0.624	**37.6%**
47	9,417	1,882	1,838	3,720	2,572	71%	0.53	65.9	0.313	0.754	0.493	0.630	0.746	**25.4%**
48	10,913	471	1,691	2,162	3,131	68%	0.51	65.9	0.313	0.686	0.493	0.591	0.719	**28.1%**
49	8,717	1,765	1,447	3,212	2,310	72%	0.54	64.3	0.246	0.703	0.441	0.582	0.685	**31.5%**
50	15,320	2,420	2,423	4,843	4,780	62%	0.47	64.8	0.267	0.783	0.457	0.609	0.713	**28.7%**
51	29,095	4,050	4,163	8,214	9,932	25%	0.25	62.5	0.170	0.888	0.384	0.507	0.591	**40.9%**
52	10,100	1,748	1,854	3,602	2,827	69%	0.52	65.2	0.284	0.736	0.470	0.608	0.719	**28.1%**
53	25,257	4,302	4,342	8,645	8,496	25%	0.25	63.6	0.217	0.926	0.419	0.546	0.644	**35.6%**
54	14,149	2,807	2,342	5,148	4,342	64%	0.47	67.3	0.372	0.841	0.537	0.681	0.800	**20.0%**
55	44,790	3,529	5,448	8,977	15,801	23%	0.23	62.1	0.154	0.914	0.371	0.498	0.575	**42.5%**
56	9,384	2,622	1,822	4,443	2,560	71%	0.53	66.1	0.322	0.789	0.499	0.652	0.764	**23.6%**
57	45,538	3,344	5,025	8,370	16,081	23%	0.23	63.2	0.200	0.907	0.406	0.523	0.619	**38.1%**
58	12,149	3,294	2,960	6,254	3,594	66%	0.49	68.6	0.427	0.912	0.579	0.743	0.853	**14.7%**
59	29,616	3,277	3,838	7,115	10,126	24%	0.24	61	0.107	0.813	0.336	0.453	0.511	**48.9%**
60	10,539	2,370	1,952	4,321	2,991	69%	0.51	67.3	0.372	0.805	0.537	0.674	0.795	**20.5%**
61	15,743	4,050	3,383	7,433	4,938	62%	0.46	66.9	0.356	0.933	0.525	0.714	0.815	**18.5%**
62	26,949	4,605	4,342	8,947	9,129	25%	0.25	63.4	0.208	0.936	0.413	0.542	0.638	**36.2%**
63	28,542	4,386	4,342	8,729	9,725	25%	0.25	63.8	0.225	0.934	0.425	0.550	0.652	**34.8%**
64	10,116	723	1,578	2,300	2,833	69%	0.52	69.6	0.469	0.759	0.611	0.687	0.834	**16.6%**
65	7,481	1,496	439	1,935	1,848	76%	0.56	64	0.234	0.642	0.432	0.551	0.655	**34.5%**
66	21,061	3,445	4,098	7,544	6,927	58%	0.44	63	0.191	0.868	0.400	0.604	0.680	**32.0%**
67	12,572	3,546	2,992	6,538	3,752	65%	0.49	63.8	0.225	0.839	0.425	0.627	0.711	**28.9%**
68	14,783	2,924	3,985	6,909	4,579	63%	0.47	63.6	0.217	0.851	0.419	0.622	0.704	**29.6%**
69	8,750	2,723	1,756	4,479	2,322	72%	0.54	66.7	0.347	0.801	0.518	0.670	0.785	**21.5%**
70	38,431	3,378	6,684	10,062	13,423	24%	0.24	61.1	0.112	0.943	0.339	0.483	0.540	**46.0%**
71	54,515	3,311	3,594	6,905	19,439	23%	0.23	60.1	0.069	0.788	0.307	0.418	0.458	**54.2%**
72	13,417	3,428	3,058	6,486	4,068	64%	0.48	66.5	0.339	0.885	0.512	0.691	0.796	**20.4%**
73	12,783	2,050	2,114	4,165	3,831	65%	0.49	65.8	0.309	0.771	0.489	0.626	0.742	**25.8%**
74	13,125	4,470	5,399	9,870	3,959	65%	0.48	66.2	0.326	1.000	0.502	0.742	0.826	**17.4%**
75	8,457	706	1,415	2,121	2,213	73%	0.54	70.5	0.507	0.767	0.640	0.709	0.856	**14.4%**
76	9,758	1,428	1,399	2,827	2,700	70%	0.52	65.8	0.309	0.713	0.489	0.606	0.728	**27.2%**
77	14,296	2,823	1,968	4,791	4,397	63%	0.47	64.7	0.263	0.779	0.454	0.608	0.711	**28.9%**
78	7,774	1,765	1,350	3,114	1,957	75%	0.56	66.4	0.335	0.737	0.509	0.636	0.758	**24.2%**
79	8,685	2,084	1,415	3,499	2,298	73%	0.54	65.7	0.305	0.741	0.486	0.623	0.738	**26.2%**
80	9,042	1,865	1,106	2,971	2,432	72%	0.53	66	0.318	0.723	0.496	0.617	0.739	**26.1%**

Row	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CZ
6	JUNE				Caculated										
7	Sac				Steamboat			USBR						Calculated	
8	River			CVP + SWP & Sutter			X-channel	observed			Calculated Mortality			Survival	Weighted
9	Flow	CVP	SWP	exports	Slough Q	percent	closed	temp f	m1	m2	m3	m23	m123	s123	Total Survival
10	34,720	4,605	6,672	11,277	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**63.99%**
11	19,209	4,605	3,395	7,999	6,234	59%	0.44	65.3	0.288	0.929	0.473	0.676	0.769	**23.1%**	**62.63%**
12	11,545	1,748	622	2,370	3,368	67%	0.50	70.6	0.511	0.780	0.643	0.711	0.859	**14.1%**	**56.39%**
13	18,116	4,605	2,823	7,428	5,826	60%	0.45	68.3	0.414	0.958	0.569	0.744	0.850	**15.0%**	**59.67%**
14	18,167	4,605	2,487	7,092	5,844	60%	0.45	71.2	0.536	0.996	0.662	0.812	0.913	**8.7%**	**55.77%**
15	17,898	4,605	3,563	8,168	5,744	60%	0.45	68.1	0.406	0.986	0.563	0.754	0.854	**14.6%**	**63.75%**
16	17,780	4,605	2,672	7,277	5,700	60%	0.45	69.7	0.473	0.977	0.614	0.778	0.883	**11.7%**	**59.39%**
17	10,588	2,689	101	2,790	3,010	69%	0.51	70.1	0.490	0.789	0.627	0.709	0.852	**14.8%**	**62.98%**
18	19,024	4,605	2,672	7,277	6,165	60%	0.45	69.6	0.469	0.975	0.611	0.773	0.879	**12.1%**	**60.94%**
19	13,159	2,470	1,597	4,067	3,971	65%	0.48	70.7	0.515	0.855	0.646	0.747	0.877	**12.3%**	**54.16%**
20	21,444	4,588	3,865	8,453	7,070	58%	0.44	69.5	0.465	1.000	0.608	0.779	0.882	**11.8%**	**59.31%**
21	11,008	1,798	101	1,899	3,167	68%	0.50	69.8	0.478	0.745	0.617	0.682	0.834	**16.6%**	**59.88%**
22	14,890	4,605	1,176	5,781	4,619	63%	0.47	70.7	0.515	0.930	0.646	0.779	0.893	**10.7%**	**54.11%**
23	17,629	4,117	3,496	7,613	5,643	61%	0.45	71	0.528	1.000	0.656	0.811	0.911	**8.9%**	**59.46%**
24	18,083	4,605	3,361	7,966	5,813	60%	0.45	69.2	0.452	0.998	0.598	0.778	0.878	**12.2%**	**56.22%**
25	17,679	3,378	4,285	7,663	5,662	60%	0.45	69.7	0.473	0.993	0.614	0.785	0.887	**11.3%**	**60.20%**
26	35,510	4,605	6,672	11,277	12,331	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**66.75%**
27	19,360	4,605	3,092	7,697	6,291	59%	0.44	71	0.528	1.000	0.656	0.808	0.910	**9.0%**	**53.98%**
28	16,486	4,487	3,092	7,579	5,216	61%	0.46	71.5	0.549	1.000	0.672	0.822	0.920	**8.0%**	**59.30%**
29	20,805	4,605	6,302	10,907	6,831	59%	0.44	69	0.444	1.000	0.592	0.770	0.872	**12.8%**	**63.89%**
30	27,124	4,605	6,672	11,277	9,194	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**67.26%**
31	16,856	4,605	3,143	7,747	5,354	61%	0.46	66.6	0.343	0.941	0.515	0.709	0.809	**19.1%**	**61.00%**
32	19,444	4,605	3,176	7,781	6,322	59%	0.44	67.8	0.393	0.964	0.553	0.736	0.840	**16.0%**	**61.30%**
33	18,822	4,336	3,596	7,932	6,090	60%	0.45	70.6	0.511	1.000	0.643	0.802	0.903	**9.7%**	**58.22%**
34	19,478	4,605	3,479	8,083	6,335	59%	0.44	68.1	0.406	0.983	0.563	0.749	0.851	**14.9%**	**58.53%**
35	19,058	4,605	2,941	7,546	6,178	60%	0.45	70	0.486	0.994	0.624	0.788	0.891	**10.9%**	**53.71%**
36	22,889	4,605	4,386	8,991	7,611	58%	0.43	69	0.444	1.000	0.592	0.768	0.871	**12.9%**	**63.11%**
37	19,847	4,605	3,159	7,764	6,473	59%	0.44	70.9	0.524	1.000	0.652	0.806	0.908	**9.2%**	**54.97%**
38	19,780	4,605	3,529	8,134	6,448	59%	0.44	68.9	0.440	0.999	0.588	0.770	0.871	**12.9%**	**57.05%**
39	17,646	4,605	2,823	7,428	5,650	61%	0.45	70.3	0.499	0.994	0.633	0.796	0.898	**10.2%**	**58.56%**
40	38,972	4,605	6,672	11,277	13,626	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**67.47%**
41	25,881	4,605	5,781	10,386	8,729	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**65.60%**
42	17,058	4,437	2,739	7,176	5,430	61%	0.46	68.7	0.431	0.954	0.582	0.751	0.859	**14.1%**	**61.44%**
43	19,814	4,605	3,075	7,680	6,460	59%	0.44	70.1	0.490	1.000	0.627	0.792	0.894	**10.6%**	**61.08%**
44	22,301	4,605	6,672	11,277	7,391	58%	0.43	68.7	0.431	1.000	0.582	0.763	0.865	**13.5%**	**62.06%**
45	19,410	4,605	3,462	8,067	6,309	59%	0.44	72	0.570	1.000	0.688	0.826	0.925	**7.5%**	**58.15%**
46	33,930	4,605	6,672	11,277	11,740	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**64.08%**
47	19,007	4,605	3,008	7,613	6,159	60%	0.45	72.1	0.574	1.000	0.691	0.828	0.927	**7.3%**	**55.91%**
48	18,889	4,588	2,689	7,277	6,115	60%	0.45	72.7	0.600	1.000	0.710	0.839	0.936	**6.4%**	**59.21%**
49	20,133	4,605	3,075	7,680	6,580	59%	0.44	73.2	0.621	1.000	0.726	0.847	0.942	**5.8%**	**58.52%**
50	19,125	4,605	2,891	7,495	6,203	60%	0.44	70.4	0.503	0.999	0.636	0.798	0.899	**10.1%**	**56.34%**
51	19,578	4,605	4,017	8,621	6,372	59%	0.44	69	0.444	1.000	0.592	0.773	0.873	**12.7%**	**65.15%**
52	19,360	4,605	2,857	7,462	6,291	59%	0.44	69.5	0.465	0.981	0.608	0.773	0.879	**12.1%**	**59.66%**
53	18,167	4,605	3,714	8,319	5,844	60%	0.45	67.1	0.364	0.975	0.531	0.731	0.829	**17.1%**	**62.47%**
54	17,780	4,605	2,605	7,210	5,700	60%	0.45	70.4	0.503	0.986	0.636	0.794	0.898	**10.2%**	**55.49%**
55	39,342	4,605	6,672	11,277	13,764	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**67.80%**
56	18,436	4,605	2,823	7,428	5,945	60%	0.45	72	0.570	1.000	0.688	0.828	0.926	**7.4%**	**57.12%**
57	24,133	4,605	6,638	11,243	8,076	57%	0.43	68.3	0.414	1.000	0.569	0.753	0.855	**14.5%**	**65.57%**
58	16,722	4,605	2,622	7,226	5,304	61%	0.46	70.7	0.515	0.992	0.646	0.804	0.905	**9.5%**	**59.20%**
59	23,629	4,605	5,025	9,630	7,887	57%	0.43	68.1	0.406	1.000	0.563	0.750	0.852	**14.8%**	**64.12%**
60	18,133	4,605	2,739	7,344	5,832	60%	0.45	70.7	0.515	0.997	0.646	0.804	0.905	**9.5%**	**59.32%**
61	18,688	2,924	5,042	7,966	6,039	60%	0.45	70.1	0.490	1.000	0.627	0.794	0.895	**10.5%**	**55.33%**
62	21,629	4,605	4,924	9,529	7,139	58%	0.43	69.7	0.473	1.000	0.614	0.782	0.885	**11.5%**	**63.37%**
63	24,788	4,605	6,672	11,277	8,321	57%	0.43	69.1	0.448	1.000	0.595	0.767	0.871	**12.9%**	**63.31%**
64	19,730	4,605	2,941	7,546	6,429	59%	0.44	71.8	0.562	1.000	0.681	0.822	0.922	**7.8%**	**58.67%**
65	9,781	353	387	739	2,708	70%	0.52	73.9	0.650	0.768	0.748	0.759	0.916	**8.4%**	**57.05%**
66	15,965	4,605	3,899	8,504	5,021	62%	0.46	70	0.486	1.000	0.624	0.797	0.896	**10.4%**	**63.21%**
67	21,074	4,605	4,033	8,638	6,932	58%	0.44	69.2	0.452	1.000	0.598	0.774	0.876	**12.4%**	**59.82%**
68	16,268	4,605	4,067	8,672	5,134	62%	0.46	66.9	0.356	0.987	0.525	0.737	0.831	**16.9%**	**63.99%**
69	18,889	4,605	2,891	7,495	6,115	60%	0.45	71.9	0.566	1.000	0.684	0.825	0.924	**7.6%**	**56.59%**
70	24,418	4,605	6,672	11,277	8,183	57%	0.43	66	0.318	1.000	0.496	0.711	0.803	**19.7%**	**67.77%**
71	55,576	4,605	4,689	9,293	19,835	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**71.84%**
72	19,024	4,605	3,361	7,966	6,165	60%	0.45	68.4	0.419	0.983	0.572	0.755	0.858	**14.2%**	**59.25%**
73	18,083	4,605	2,622	7,226	5,813	60%	0.45	69.4	0.461	0.969	0.604	0.768	0.875	**12.5%**	**57.38%**
74	12,419	3,647	4,033	7,680	3,695	66%	0.49	71.6	0.553	1.000	0.675	0.834	0.926	**7.4%**	**54.82%**
75	20,284	4,605	3,143	7,747	6,636	59%	0.44	73.2	0.621	1.000	0.726	0.846	0.942	**5.8%**	**51.14%**
76	14,520	4,605	975	5,579	4,480	63%	0.47	69.4	0.461	0.898	0.604	0.743	0.861	**13.9%**	**59.94%**
77	18,368	4,605	2,487	7,092	5,920	60%	0.45	68.6	0.427	0.949	0.579	0.745	0.854	**14.6%**	**57.49%**
78	19,763	4,605	2,907	7,512	6,441	59%	0.44	68.5	0.423	0.965	0.576	0.748	0.855	**14.5%**	**56.82%**
79	10,789	1,966	1,344	3,311	3,085	68%	0.51	69.4	0.461	0.799	0.604	0.703	0.840	**16.0%**	**58.28%**
80	14,503	4,185	1,462	5,647	4,474	63%	0.47	69	0.444	0.893	0.592	0.734	0.852	**14.8%**	**57.11%**
81														**Average:**	**60.08%**

BG10 ='Study 485 Flow Data'!G7
BH10 ='Study 485 Flow Data'!Q7
BI10 ='Study 485 Flow Data'!AA7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$G$2,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10
BO10 =IF((-2.45925+(0.0420748*BN10))<0,0,(-2.45925+(0.0420748*BN10)))
BP10 =IF(((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10))>1,1,((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10)
BQ10 =-1.613493+(0.0319584*BN10)
BR10 =(BP10*BM10)+(BQ10*(1-BM10))
BS10 =BO10+BR10-(BO10*BR10)
BT10 =1-BS10

BV10 ='Study 485 Flow Data'!H7
BX10 ='Study 485 Flow Data'!R7
BY10 ='Study 485 Flow Data'!AB7
BZ10 =0.374*BV10-950
CA10 =IF(BV10>$K$4,(0.133*BV10+829)/(BV10-BZ10),(0.293*BV10+2090)/(BV10-BZ10))
CB10 =(0.45*(0.133*BV10+829)/(BV10-BZ10))+(0.55*CA10)
CC10
CD10 =IF((-2.45925+(0.0420748*CC10))<0,0,(-2.45925+(0.0420748*CC10)))
CE10 =IF(((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10))>1,1,((-0.5916024)+(0.017968*CC10)+(0.0000434*BY
CF10 =-1.613493+(0.0319584*CC10)
CG10 =(CE10*CB10)+(CF10*(1-CB10))
CH10 =CD10+CG10-(CD10*CG10)
CI10 =1-CH10

CK10 ='Study 485 Flow Data'!I7
CL10 ='Study 485 Flow Data'!S7
CM10 ='Study 513 Flow Revised Data'!AC7
CN10 =(CL10+CM10)
CO10 =0.374*CK10-950
CP10 =IF(CK10>$K$4,(0.133*CK10+829)/(CK10-CO10),(0.293*CK10+2090)/(CK10-CO10))
CQ10 =(0.45*(0.133*CK10+829)/(CK10-CO10))+(0.55*CP10)
CR10
CS10 =IF((-2.45925+(0.0420748*CR10))<0,0,(-2.45925+(0.0420748*CR10)))
CT10 =IF(((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10))>1,1,((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10)))
CU10 =-1.613493+(0.0319584*CR10)
CV10 =(CT10*CQ10)+(CU10*(1-CQ10))
CW10 =CS10+CV10-(CS10*CV10)
CX10 =1-CW10
CZ10 =(0.01*O10)+(0.06*AC10)+(0.17*AQ10)+(0.28*BE10)+(0.25*BT10)+(0.16*CI10)+(0.07*CX10)

Study 519a Sacramento River Spring Run YOY Smolt Survival Model

Modified m2 by changing the slope to 0.0000434
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

Cross Channel Closed Over 25000 cfs
Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

February Water Temp 50 F
March Water Temp 55 F

DECEMBER

Year	Water Year Type	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	A	17,142	4,342	7,123	11,466	5,461	61%	0.45	0	0.751	0.000	0.341	0.341	**65.9%**
1923	B	34,365	4,342	5,058	9,400	11,902	24%	0.24	0	0.661	0.000	0.159	0.159	**84.1%**
1924	C	10,051	3,627	3,139	6,766	2,809	70%	0.52	0	0.547	0.000	0.283	0.283	**71.7%**
1925	D	11,254	4,375	4,944	9,319	3,259	67%	0.50	0	0.657	0.000	0.330	0.330	**67.0%**
1926	D	10,295	4,342	2,700	7,042	2,900	69%	0.51	0	0.559	0.000	0.287	0.287	**71.3%**
1927	W	14,296	4,342	7,075	11,417	4,397	63%	0.47	0	0.748	0.000	0.354	0.354	**64.6%**
1928	A	16,572	4,342	5,839	10,181	5,248	61%	0.46	0	0.695	0.000	0.318	0.318	**68.2%**
1929	C	13,206	4,342	5,936	10,278	3,989	65%	0.48	0	0.699	0.000	0.337	0.337	**66.3%**
1930	D	14,881	4,375	6,619	10,994	4,616	63%	0.47	0	0.730	0.000	0.342	0.342	**65.8%**
1931	C	9,351	2,374	3,025	5,399	2,547	71%	0.53	0	0.487	0.000	0.257	0.257	**74.3%**
1932	D	14,653	4,375	7,221	11,596	4,530	63%	0.47	0	0.756	0.000	0.356	0.356	**64.4%**
1933	C	8,457	2,700	2,391	5,090	2,213	73%	0.54	0	0.474	0.000	0.257	0.257	**74.3%**
1934	C	12,474	4,375	5,578	9,953	3,715	66%	0.49	0	0.685	0.000	0.335	0.335	**66.5%**
1935	B	8,506	3,464	3,464	6,928	2,231	73%	0.54	0	0.554	0.000	0.300	0.300	**70.0%**
1936	B	13,287	4,342	5,855	10,197	4,019	65%	0.48	0	0.695	0.000	0.335	0.335	**66.5%**
1937	B	12,458	4,342	5,676	10,018	3,709	66%	0.49	0	0.688	0.000	0.336	0.336	**66.4%**
1938	W	49,929	4,342	7,563	11,905	17,723	23%	0.23	0	0.770	0.000	0.178	0.178	**82.2%**
1939	D	18,687	4,342	3,741	8,083	6,039	60%	0.45	0	0.604	0.000	0.270	0.270	**73.0%**
1940	A	7,839	1,643	2,732	4,375	1,982	75%	0.56	0	0.443	0.000	0.246	0.246	**75.4%**
1941	W	34,706	4,342	7,481	11,824	12,030	24%	0.24	0	0.766	0.000	0.184	0.184	**81.6%**
1942	W	65,623	4,342	3,610	7,953	23,593	23%	0.23	0	0.598	0.000	0.136	0.136	**86.4%**
1943	W	28,803	4,342	3,773	8,115	9,822	25%	0.25	0	0.605	0.000	0.149	0.149	**85.1%**
1944	D	13,775	4,342	6,570	10,913	4,202	64%	0.48	0	0.727	0.000	0.347	0.347	**65.3%**
1945	B	15,824	4,342	6,993	11,336	4,968	62%	0.46	0	0.745	0.000	0.344	0.344	**65.6%**
1946	B	54,678	4,342	7,595	11,937	19,499	23%	0.23	0	0.771	0.000	0.178	0.178	**82.2%**
1947	D	18,134	4,342	7,205	11,547	5,832	60%	0.45	0	0.754	0.000	0.339	0.339	**66.1%**
1948	B	9,238	2,472	3,025	5,497	2,505	71%	0.53	0	0.491	0.000	0.260	0.260	**74.0%**
1949	D	15,564	4,342	6,912	11,254	4,871	62%	0.46	0	0.741	0.000	0.344	0.344	**65.6%**
1950	B	10,978	4,342	3,090	7,432	3,156	68%	0.50	0	0.575	0.000	0.290	0.290	**71.0%**
1951	A	68,095	4,342	7,595	11,937	24,518	23%	0.23	0	0.771	0.000	0.175	0.175	**82.5%**
1952	W	43,537	4,342	7,156	11,498	15,333	23%	0.23	0	0.752	0.000	0.176	0.176	**82.4%**
1953	W	42,334	4,342	3,741	8,083	14,883	24%	0.24	0	0.604	0.000	0.142	0.142	**85.8%**
1954	A	14,914	4,342	4,651	8,994	4,628	63%	0.47	0	0.643	0.000	0.301	0.301	**69.9%**
1955	D	25,517	4,342	6,928	11,271	8,593	25%	0.25	0	0.742	0.000	0.185	0.185	**81.5%**
1956	W	25,160	4,342	7,595	11,937	8,460	25%	0.25	0	0.771	0.000	0.193	0.193	**80.7%**
1957	A	14,149	4,342	6,619	10,962	4,342	64%	0.47	0	0.729	0.000	0.345	0.345	**65.5%**
1958	W	23,745	4,342	6,944	11,287	7,930	57%	0.43	0	0.743	0.000	0.318	0.318	**68.2%**
1959	B	14,621	4,342	3,854	8,197	4,518	63%	0.47	0	0.609	0.000	0.286	0.286	**71.4%**
1960	D	10,978	4,342	2,797	7,140	3,156	68%	0.50	0	0.563	0.000	0.284	0.284	**71.6%**
1961	D	17,499	4,342	6,912	11,254	5,595	61%	0.45	0	0.741	0.000	0.336	0.336	**66.4%**
1962	B	16,703	4,342	6,896	11,238	5,297	61%	0.46	0	0.741	0.000	0.339	0.339	**66.1%**
1963	W	27,550	4,342	6,912	11,254	9,354	25%	0.25	0	0.741	0.000	0.183	0.183	**81.7%**
1964	D	14,849	4,342	6,229	10,571	4,603	63%	0.47	0	0.712	0.000	0.334	0.334	**66.6%**
1965	W	24,265	4,342	7,465	11,807	8,125	57%	0.43	0	0.765	0.000	0.326	0.326	**67.4%**
1966	B	16,995	4,342	6,180	10,522	5,406	61%	0.46	0	0.710	0.000	0.323	0.323	**67.7%**
1967	W	38,609	4,342	7,156	11,498	13,490	24%	0.24	0	0.752	0.000	0.179	0.179	**82.1%**
1968	B	16,686	4,342	3,741	8,083	5,291	61%	0.46	0	0.604	0.000	0.276	0.276	**72.4%**
1969	W	23,842	4,342	7,010	11,352	7,967	57%	0.43	0	0.746	0.000	0.319	0.319	**68.1%**
1970	W	50,156	4,342	3,480	7,823	17,809	23%	0.23	0	0.592	0.000	0.137	0.137	**86.3%**
1971	W	53,734	4,342	7,075	11,417	19,147	23%	0.23	0	0.748	0.000	0.173	0.173	**82.7%**
1972	B	18,378	4,342	7,107	11,449	5,923	60%	0.45	0	0.750	0.000	0.336	0.336	**66.4%**
1973	A	26,200	4,342	6,928	11,271	8,849	25%	0.25	0	0.742	0.000	0.184	0.184	**81.6%**
1974	W	61,590	4,342	7,400	11,742	22,085	23%	0.23	0	0.763	0.000	0.174	0.174	**82.6%**
1975	W	17,613	4,342	4,310	8,652	5,637	61%	0.45	0	0.628	0.000	0.284	0.284	**71.6%**
1976	C	16,768	4,342	6,164	10,506	5,321	61%	0.46	0	0.709	0.000	0.324	0.324	**67.6%**
1977	C	8,050	1,919	2,992	4,912	2,061	74%	0.55	0	0.466	0.000	0.257	0.257	**74.3%**
1978	A	12,279	4,375	5,562	9,937	3,642	66%	0.49	0	0.684	0.000	0.336	0.336	**66.4%**
1979	B	12,751	4,342	3,676	8,018	3,819	65%	0.49	0	0.601	0.000	0.292	0.292	**70.8%**
1980	A	20,833	4,342	7,010	11,352	6,842	59%	0.44	0	0.746	0.000	0.326	0.326	**67.4%**
1981	D	15,613	4,342	4,668	9,010	4,889	62%	0.46	0	0.644	0.000	0.299	0.299	**70.1%**
1982	W	67,623	4,342	7,026	11,368	24,341	23%	0.23	0	0.746	0.000	0.169	0.169	**83.1%**
1983	W	55,410	4,342	4,424	8,766	19,773	23%	0.23	0	0.633	0.000	0.146	0.146	**85.4%**
1984	W	82,944	3,139	3,106	6,245	30,071	22%	0.22	0	0.524	0.000	0.118	0.118	**88.2%**
1985	D	23,875	4,342	7,026	11,368	7,979	57%	0.43	0	0.746	0.000	0.319	0.319	**68.1%**
1986	W	15,467	4,342	6,977	11,319	4,834	62%	0.46	0	0.744	0.000	0.346	0.346	**65.4%**
1987	D	13,417	4,342	6,099	10,441	4,068	64%	0.48	0	0.706	0.000	0.339	0.339	**66.1%**
1988	C	15,841	4,342	6,879	11,222	4,974	62%	0.46	0	0.740	0.000	0.342	0.342	**65.8%**
1989	D	8,847	3,025	3,594	6,619	2,359	72%	0.54	0	0.540	0.000	0.290	0.290	**71.0%**
1990	C	14,540	4,342	6,196	10,539	4,488	63%	0.47	0	0.710	0.000	0.335	0.335	**66.5%**
1991	C	8,620	1,756	3,155	4,912	2,274	73%	0.54	0	0.466	0.000	0.252	0.252	**74.8%**
1992	C	7,449	3,171	1,643	4,814	1,836	76%	0.56	0	0.462	0.000	0.261	0.261	**73.9%**

JANUARY

Year	Water Year Type	Sac River Flows	CVP	SWP	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	A	17,499	4,326	7,644	11,970	5,595	61%	0.27	0	0.772	0.000	0.205	0.205	**79.5%**
1923	B	32,283	4,326	3,643	7,969	11,124	24%	0.24	0	0.599	0.000	0.145	0.145	**85.5%**
1924	C	14,377	4,326	6,554	10,880	4,427	63%	0.28	0	0.725	0.000	0.200	0.200	**80.0%**
1925	D	10,197	3,757	3,204	6,961	2,864	69%	0.30	0	0.555	0.000	0.165	0.165	**83.5%**
1926	D	18,768	4,326	7,123	11,449	6,069	60%	0.26	0	0.750	0.000	0.196	0.196	**80.4%**
1927	W	29,469	4,326	7,335	11,661	10,072	24%	0.24	0	0.759	0.000	0.186	0.186	**81.4%**
1928	A	25,208	4,326	3,643	7,969	8,478	25%	0.25	0	0.599	0.000	0.150	0.150	**85.0%**
1929	C	14,767	4,326	6,701	11,027	4,573	63%	0.27	0	0.731	0.000	0.200	0.200	**80.0%**
1930	D	21,273	4,342	7,123	11,466	7,006	58%	0.26	0	0.751	0.000	0.192	0.192	**80.8%**
1931	C	11,970	4,326	4,944	9,270	3,527	66%	0.29	0	0.655	0.000	0.188	0.188	**81.2%**
1932	D	17,256	4,342	7,904	12,246	5,504	61%	0.27	0	0.784	0.000	0.209	0.209	**79.1%**
1933	C	12,604	4,342	5,839	10,181	3,764	65%	0.28	0	0.695	0.000	0.197	0.197	**80.3%**
1934	C	16,101	4,342	7,140	11,482	5,072	62%	0.27	0	0.751	0.000	0.202	0.202	**79.8%**
1935	B	25,469	4,342	7,758	12,100	8,575	25%	0.25	0	0.778	0.000	0.194	0.194	**80.6%**
1936	B	32,413	4,326	7,530	11,856	11,172	24%	0.24	0	0.767	0.000	0.186	0.186	**81.4%**
1937	B	15,971	4,326	7,644	11,970	5,023	62%	0.27	0	0.772	0.000	0.208	0.208	**79.2%**
1938	W	31,535	4,326	3,562	7,888	10,844	24%	0.24	0	0.595	0.000	0.145	0.145	**85.5%**
1939	D	18,410	4,326	3,236	7,563	5,935	60%	0.26	0	0.581	0.000	0.153	0.153	**84.7%**
1940	A	23,452	4,326	8,115	12,442	7,821	57%	0.25	0	0.793	0.000	0.200	0.200	**80.0%**
1941	W	71,998	4,326	8,506	12,832	25,977	23%	0.23	0	0.810	0.000	0.183	0.183	**81.7%**
1942	W	63,265	4,326	3,236	7,563	22,711	23%	0.23	0	0.581	0.000	0.132	0.132	**86.8%**
1943	W	58,060	4,326	3,301	7,628	20,765	23%	0.23	0	0.584	0.000	0.134	0.134	**86.6%**
1944	D	17,678	4,326	3,269	7,595	5,662	60%	0.26	0	0.583	0.000	0.154	0.154	**84.6%**
1945	B	12,409	4,326	4,912	9,238	3,691	66%	0.28	0	0.654	0.000	0.186	0.186	**81.4%**
1946	B	43,228	4,326	3,643	7,969	15,217	23%	0.23	0	0.599	0.000	0.141	0.141	**85.9%**
1947	D	14,979	4,326	6,993	11,319	4,652	63%	0.27	0	0.744	0.000	0.203	0.203	**79.7%**
1948	B	14,653	4,326	6,392	10,718	4,530	63%	0.27	0	0.718	0.000	0.197	0.197	**80.3%**
1949	D	14,930	4,326	6,896	11,222	4,634	63%	0.27	0	0.740	0.000	0.202	0.202	**79.8%**
1950	B	20,427	4,326	7,253	11,580	6,690	59%	0.26	0	0.755	0.000	0.195	0.195	**80.5%**
1951	A	62,208	4,326	7,026	11,352	22,316	23%	0.23	0	0.746	0.000	0.170	0.170	**83.0%**
1952	W	67,233	4,326	8,132	12,458	24,195	23%	0.23	0	0.794	0.000	0.180	0.180	**82.0%**
1953	W	64,078	4,326	3,334	7,660	23,015	23%	0.23	0	0.585	0.000	0.133	0.133	**86.7%**
1954	A	33,421	4,326	3,838	8,164	11,550	24%	0.24	0	0.607	0.000	0.146	0.146	**85.4%**
1955	D	22,004	4,326	7,270	11,596	7,280	58%	0.26	0	0.756	0.000	0.193	0.193	**80.7%**
1956	W	84,017	4,326	8,164	12,490	30,472	22%	0.22	0	0.795	0.000	0.178	0.178	**82.2%**
1957	A	18,638	4,326	3,887	8,213	6,021	60%	0.26	0	0.609	0.000	0.160	0.160	**84.0%**
1958	W	36,381	4,326	4,098	8,424	12,657	24%	0.24	0	0.619	0.000	0.148	0.148	**85.2%**
1959	B	35,162	4,326	3,334	7,660	12,200	24%	0.24	0	0.585	0.000	0.140	0.140	**86.0%**
1960	D	13,515	4,326	5,822	10,148	4,105	64%	0.28	0	0.693	0.000	0.194	0.194	**80.6%**
1961	D	14,263	4,326	6,652	10,978	4,384	63%	0.28	0	0.729	0.000	0.201	0.201	**79.9%**
1962	B	12,653	4,326	3,985	8,311	3,782	65%	0.28	0	0.614	0.000	0.174	0.174	**82.6%**
1963	W	17,548	4,326	7,319	11,645	5,613	61%	0.27	0	0.758	0.000	0.201	0.201	**79.9%**
1964	D	24,200	4,326	3,822	8,148	8,101	57%	0.25	0	0.607	0.000	0.152	0.152	**84.8%**
1965	W	81,236	4,326	8,506	12,832	29,432	22%	0.22	0	0.810	0.000	0.182	0.182	**81.8%**
1966	B	29,632	4,326	3,659	7,985	10,132	24%	0.24	0	0.599	0.000	0.147	0.147	**85.3%**
1967	W	35,210	4,326	7,758	12,084	12,219	24%	0.24	0	0.777	0.000	0.186	0.186	**81.4%**
1968	B	30,640	4,326	3,334	7,660	10,509	24%	0.24	0	0.585	0.000	0.143	0.143	**85.7%**
1969	W	66,761	4,326	7,888	12,214	24,019	23%	0.23	0	0.783	0.000	0.178	0.178	**82.2%**
1970	W	92,669	4,277	3,334	7,611	33,708	22%	0.22	0	0.583	0.000	0.130	0.130	**87.0%**
1971	W	45,245	4,326	6,473	10,799	15,972	23%	0.23	0	0.722	0.000	0.169	0.169	**83.1%**
1972	B	20,394	4,326	3,887	8,213	6,677	59%	0.26	0	0.609	0.000	0.157	0.157	**84.3%**
1973	A	49,002	4,326	6,245	10,571	17,377	23%	0.23	0	0.712	0.000	0.165	0.165	**83.5%**
1974	W	78,422	4,326	3,643	7,969	28,380	22%	0.22	0	0.599	0.000	0.135	0.135	**86.5%**
1975	W	18,670	4,326	3,854	8,181	6,033	60%	0.26	0	0.608	0.000	0.159	0.159	**84.1%**
1976	C	16,768	4,326	3,806	8,132	5,321	61%	0.27	0	0.606	0.000	0.162	0.162	**83.8%**
1977	C	7,660	2,277	2,472	4,749	1,915	75%	0.32	0	0.459	0.000	0.148	0.148	**85.2%**
1978	A	43,066	1,545	7,855	9,400	15,157	23%	0.23	0	0.661	0.000	0.155	0.155	**84.5%**
1979	B	27,241	4,326	3,269	7,595	9,238	25%	0.25	0	0.583	0.000	0.144	0.144	**85.6%**
1980	A	61,053	4,326	3,155	7,481	21,884	23%	0.23	0	0.578	0.000	0.132	0.132	**86.8%**
1981	D	27,843	4,326	3,350	7,676	9,463	25%	0.25	0	0.586	0.000	0.145	0.145	**85.5%**
1982	W	51,165	4,326	8,506	12,832	18,186	23%	0.23	0	0.810	0.000	0.187	0.187	**81.3%**
1983	W	59,150	4,326	2,651	6,977	21,172	23%	0.23	0	0.556	0.000	0.127	0.127	**87.3%**
1984	W	47,359	1,447	2,879	4,326	16,762	23%	0.23	0	0.441	0.000	0.103	0.103	**89.7%**
1985	D	16,800	4,326	3,871	8,197	5,333	61%	0.27	0	0.609	0.000	0.163	0.163	**83.7%**
1986	W	21,500	4,326	7,319	11,645	7,091	58%	0.26	0	0.758	0.000	0.194	0.194	**80.6%**
1987	D	16,735	1,220	6,457	7,676	5,309	61%	0.27	0	0.586	0.000	0.157	0.157	**84.3%**
1988	C	25,534	4,326	7,075	11,401	8,600	25%	0.25	0	0.748	0.000	0.187	0.187	**81.3%**
1989	D	12,002	4,212	4,684	8,896	3,539	66%	0.29	0	0.639	0.000	0.183	0.183	**81.7%**
1990	C	21,338	2,765	7,091	9,856	7,030	58%	0.26	0	0.681	0.000	0.174	0.174	**82.6%**
1991	C	6,847	1,822	1,708	3,529	1,611	78%	0.33	0	0.406	0.000	0.135	0.135	**86.5%**
1992	C	11,889	4,342	4,668	9,010	3,496	66%	0.29	0	0.644	0.000	0.185	0.185	**81.5%**

FEBRUARY

Year	Water Year Type	Sac River Flow	CVP	SWP	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	A	34,463	4,339	6,176	10,515	11,939	24%	0.24	0	0.763	0.000	0.183	0.183	**81.7%**
1923	B	24,092	4,375	2,377	6,752	8,060	58%	0.25	0	0.600	0.000	0.151	0.151	**84.9%**
1924	C	16,898	4,172	4,659	8,832	5,370	60%	0.27	0	0.690	0.000	0.184	0.184	**81.6%**
1925	D	44,709	4,375	7,671	12,046	15,771	23%	0.23	0	0.830	0.000	0.194	0.194	**80.6%**
1926	D	35,958	4,321	7,599	11,920	12,498	24%	0.24	0	0.824	0.000	0.197	0.197	**80.3%**
1927	W	86,465	2,521	6,716	9,237	31,388	22%	0.22	0	0.708	0.000	0.158	0.158	**84.2%**
1928	A	25,521	4,207	4,225	8,432	8,595	25%	0.25	0	0.673	0.000	0.168	0.168	**83.2%**
1929	C	17,538	4,321	4,916	9,237	5,609	60%	0.27	0	0.708	0.000	0.188	0.188	**81.2%**
1930	D	16,169	3,529	3,655	7,184	5,097	62%	0.27	0	0.619	0.000	0.166	0.166	**83.4%**
1931	C	11,092	3,529	1,963	5,492	3,198	66%	0.29	0	0.545	0.000	0.159	0.159	**84.1%**
1932	D	13,995	4,242	5,859	10,101	4,284	64%	0.28	0	0.745	0.000	0.206	0.206	**79.4%**
1933	C	12,730	3,799	3,295	7,094	3,811	64%	0.28	0	0.615	0.000	0.174	0.174	**82.6%**
1934	C	12,748	1,855	4,375	6,230	3,818	66%	0.28	0	0.577	0.000	0.163	0.163	**83.7%**
1935	B	12,334	1,296	4,033	5,330	3,663	67%	0.28	0	0.538	0.000	0.153	0.153	**84.7%**
1936	B	49,269	4,190	8,206	12,396	17,477	23%	0.23	0	0.845	0.000	0.196	0.196	**80.4%**
1937	B	33,203	4,339	4,844	9,183	11,468	24%	0.24	0	0.705	0.000	0.170	0.170	**83.0%**
1938	W	82,269	4,357	3,943	8,301	29,819	22%	0.22	0	0.667	0.000	0.150	0.150	**85.0%**
1939	D	19,032	2,683	3,961	6,644	6,168	59%	0.26	0	0.595	0.000	0.155	0.155	**84.5%**
1940	A	39,134	4,190	8,206	12,396	13,686	23%	0.24	0	0.845	0.000	0.200	0.200	**80.0%**
1941	W	75,031	4,393	6,194	10,588	27,112	23%	0.23	0	0.766	0.000	0.173	0.173	**82.7%**
1942	W	78,344	4,375	3,961	8,337	28,351	22%	0.23	0	0.669	0.000	0.150	0.150	**85.0%**
1943	W	52,253	4,375	3,997	8,373	18,593	23%	0.23	0	0.670	0.000	0.155	0.155	**84.5%**
1944	D	28,268	4,190	3,825	8,015	9,622	24%	0.25	0	0.655	0.000	0.161	0.161	**83.9%**
1945	B	40,045	4,339	3,997	8,337	14,027	23%	0.24	0	0.669	0.000	0.158	0.158	**84.2%**
1946	B	24,074	4,375	4,213	8,589	8,054	57%	0.25	0	0.680	0.000	0.171	0.171	**82.9%**
1947	D	21,067	4,339	3,943	8,283	6,929	58%	0.26	0	0.666	0.000	0.171	0.171	**82.9%**
1948	B	15,664	4,172	1,756	5,928	4,908	64%	0.27	0	0.564	0.000	0.153	0.153	**84.7%**
1949	D	16,187	4,339	4,213	8,553	5,104	61%	0.27	0	0.678	0.000	0.182	0.182	**81.8%**
1950	B	35,220	4,339	7,599	11,938	12,222	24%	0.24	0	0.825	0.000	0.198	0.198	**80.2%**
1951	A	60,572	4,375	4,682	9,057	21,704	23%	0.23	0	0.700	0.000	0.160	0.160	**84.0%**
1952	W	62,499	4,242	3,773	8,015	22,425	23%	0.23	0	0.655	0.000	0.149	0.149	**85.1%**
1953	W	28,341	4,375	4,051	8,427	9,650	25%	0.25	0	0.673	0.000	0.165	0.165	**83.5%**
1954	A	57,151	4,357	4,646	9,003	20,424	23%	0.23	0	0.698	0.000	0.160	0.160	**84.0%**
1955	D	16,295	4,357	3,673	8,031	5,144	61%	0.27	0	0.655	0.000	0.176	0.176	**82.4%**
1956	W	61,543	4,225	4,520	8,745	22,067	23%	0.23	0	0.686	0.000	0.157	0.157	**84.3%**
1957	A	33,149	4,339	4,646	8,985	11,448	24%	0.24	0	0.697	0.000	0.168	0.168	**83.2%**
1958	W	61,130	4,357	4,051	8,409	21,913	23%	0.23	0	0.672	0.000	0.153	0.153	**84.7%**
1959	B	50,075	4,357	4,051	8,409	17,778	23%	0.23	0	0.672	0.000	0.156	0.156	**84.4%**
1960	D	25,121	4,172	7,110	11,283	8,445	25%	0.25	0	0.796	0.000	0.199	0.199	**80.1%**
1961	D	31,168	4,339	7,130	11,470	10,707	24%	0.24	0	0.805	0.000	0.196	0.196	**80.4%**
1962	B	44,421	4,339	8,499	12,838	15,663	23%	0.23	0	0.864	0.000	0.202	0.202	**79.8%**
1963	W	57,349	4,375	8,499	12,874	20,499	23%	0.23	0	0.866	0.000	0.199	0.199	**80.1%**
1964	D	18,932	4,225	3,529	7,754	6,131	61%	0.26	0	0.643	0.000	0.168	0.168	**83.2%**
1965	W	33,077	4,357	5,456	9,813	11,421	24%	0.24	0	0.733	0.000	0.177	0.177	**82.3%**
1966	B	26,775	4,375	4,375	8,751	9,064	25%	0.25	0	0.687	0.000	0.170	0.170	**83.0%**
1967	W	43,106	4,375	3,205	7,581	15,172	24%	0.23	0	0.636	0.000	0.149	0.149	**85.1%**
1968	B	54,520	2,851	3,912	6,763	19,440	23%	0.23	0	0.600	0.000	0.138	0.138	**86.2%**
1969	W	67,486	4,393	3,169	7,563	24,290	23%	0.23	0	0.635	0.000	0.144	0.144	**85.6%**
1970	W	57,565	1,278	4,051	5,330	20,579	23%	0.23	0	0.538	0.000	0.123	0.123	**87.7%**
1971	W	29,116	4,393	4,357	8,751	9,939	24%	0.25	0	0.687	0.000	0.168	0.168	**83.2%**
1972	B	24,217	4,207	4,433	8,640	8,107	57%	0.25	0	0.682	0.000	0.171	0.171	**82.9%**
1973	A	70,961	4,357	4,429	8,787	25,590	23%	0.23	0	0.688	0.000	0.156	0.156	**84.4%**
1974	W	41,918	4,357	4,375	8,733	14,727	24%	0.24	0	0.686	0.000	0.162	0.162	**83.8%**
1975	W	58,807	4,339	4,628	8,967	21,044	23%	0.23	0	0.696	0.000	0.159	0.159	**84.1%**
1976	C	19,523	4,190	4,068	8,258	6,352	59%	0.26	0	0.665	0.000	0.173	0.173	**82.7%**
1977	C	12,100	792	1,404	2,197	3,575	68%	0.29	0	0.402	0.000	0.115	0.115	**88.5%**
1978	A	50,183	1,837	6,680	8,517	17,818	23%	0.23	0	0.676	0.000	0.157	0.157	**84.3%**
1979	B	42,044	4,339	3,961	8,301	14,774	24%	0.24	0	0.667	0.000	0.157	0.157	**84.3%**
1980	A	69,453	4,190	3,668	7,858	25,026	23%	0.23	0	0.648	0.000	0.147	0.147	**85.3%**
1981	D	29,674	3,259	4,069	7,328	10,148	24%	0.24	0	0.625	0.000	0.153	0.153	**84.7%**
1982	W	65,650	4,375	4,628	9,003	23,603	23%	0.23	0	0.698	0.000	0.159	0.159	**84.1%**
1983	W	82,917	3,565	2,791	6,356	30,061	22%	0.22	0	0.583	0.000	0.131	0.131	**86.9%**
1984	W	36,004	1,495	3,720	5,216	12,516	24%	0.24	0	0.533	0.000	0.128	0.128	**87.2%**
1985	D	18,978	4,357	4,574	8,931	6,148	58%	0.26	0	0.694	0.000	0.181	0.181	**81.9%**
1986	W	94,333	4,339	7,202	11,542	34,331	22%	0.22	0	0.808	0.000	0.180	0.180	**82.0%**
1987	D	23,030	1,314	4,213	5,528	7,663	57%	0.25	0	0.547	0.000	0.138	0.138	**86.2%**
1988	C	15,907	3,807	2,364	6,172	4,999	62%	0.27	0	0.575	0.000	0.155	0.155	**84.5%**
1989	D	13,054	1,026	1,837	2,863	3,932	67%	0.28	0	0.431	0.000	0.121	0.121	**87.9%**
1990	C	16,692	1,296	6,554	7,851	5,293	61%	0.27	0	0.648	0.000	0.173	0.173	**82.7%**
1991	C	11,164	468	954	1,422	3,225	67%	0.29	0	0.369	0.000	0.107	0.107	**89.3%**
1992	C	30,928	2,121	7,267	9,388	10,617	24%	0.24	0	0.714	0.000	0.174	0.174	**82.6%**

MARCH

Year	Water Year Type	Sac River Flow	CVP	SWP	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	A	31,551	3,806	4,147	7,953	10,850	24%	0.24	0	0.742	0.144	0.289	0.289	**71.1%**
1923	B	17,939	4,326	3,367	7,693	5,759	26%	0.26	0	0.730	0.144	0.299	0.299	**70.1%**
1924	C	12,409	1,659	2,098	3,757	3,691	28%	0.28	0	0.560	0.144	0.262	0.262	**73.8%**
1925	D	31,307	4,147	3,562	7,709	10,759	24%	0.24	0	0.731	0.144	0.287	0.287	**71.3%**
1926	D	18,768	4,326	3,301	7,628	6,069	26%	0.26	0	0.728	0.144	0.297	0.297	**70.3%**
1927	W	43,863	3,350	4,147	7,497	15,455	23%	0.23	0	0.722	0.144	0.280	0.280	**72.0%**
1928	A	86,229	4,326	4,424	8,750	31,300	22%	0.22	0	0.776	0.144	0.286	0.286	**71.4%**
1929	C	14,361	3,318	2,830	6,148	4,421	28%	0.28	0	0.663	0.144	0.287	0.287	**71.3%**
1930	D	30,348	4,326	4,912	9,238	10,400	24%	0.24	0	0.798	0.144	0.304	0.304	**69.6%**
1931	C	8,880	2,114	1,626	3,741	2,371	31%	0.31	0	0.559	0.144	0.272	0.272	**72.8%**
1932	D	11,677	2,586	2,586	5,172	3,417	29%	0.29	0	0.621	0.144	0.282	0.282	**71.8%**
1933	C	9,937	1,724	2,976	4,700	2,766	30%	0.30	0	0.601	0.144	0.281	0.281	**71.9%**
1934	C	14,588	2,358	2,212	4,570	4,506	27%	0.27	0	0.595	0.144	0.268	0.268	**73.2%**
1935	B	24,916	4,326	7,042	11,368	8,368	25%	0.25	0	0.890	0.144	0.331	0.331	**66.9%**
1936	B	33,698	4,326	4,196	8,522	11,653	24%	0.24	0	0.766	0.144	0.294	0.294	**70.6%**
1937	B	38,203	3,936	4,001	7,937	13,338	24%	0.24	0	0.741	0.144	0.286	0.286	**71.4%**
1938	W	78,634	4,326	3,968	8,294	28,459	22%	0.22	0	0.757	0.144	0.282	0.282	**71.8%**
1939	D	16,394	2,732	3,985	6,717	5,181	27%	0.27	0	0.688	0.144	0.290	0.290	**71.0%**
1940	A	58,939	4,326	4,586	8,912	21,093	23%	0.23	0	0.783	0.144	0.291	0.291	**70.9%**
1941	W	58,581	4,326	3,838	8,164	20,959	23%	0.23	0	0.751	0.144	0.283	0.283	**71.7%**
1942	W	27,095	4,326	4,001	8,327	9,183	25%	0.25	0	0.758	0.144	0.296	0.296	**70.4%**
1943	W	64,598	4,326	4,050	8,376	23,210	23%	0.23	0	0.760	0.144	0.284	0.284	**71.6%**
1944	D	25,094	4,326	4,001	8,327	8,435	25%	0.25	0	0.758	0.144	0.298	0.298	**70.2%**
1945	B	26,038	4,326	4,147	8,473	8,788	25%	0.25	0	0.764	0.144	0.299	0.299	**70.1%**
1946	B	23,728	4,326	4,424	8,750	7,924	25%	0.25	0	0.776	0.144	0.304	0.304	**69.6%**
1947	D	22,297	4,326	3,952	8,278	7,389	25%	0.25	0	0.756	0.144	0.300	0.300	**70.0%**
1948	B	19,061	4,326	3,415	7,741	6,179	26%	0.26	0	0.733	0.144	0.298	0.298	**70.2%**
1949	D	41,765	3,594	7,140	10,734	14,670	24%	0.24	0	0.862	0.144	0.313	0.313	**68.7%**
1950	B	22,411	4,326	4,895	9,221	7,432	25%	0.25	0	0.797	0.144	0.310	0.310	**69.0%**
1951	A	30,071	4,326	4,700	9,026	10,297	24%	0.24	0	0.788	0.144	0.302	0.302	**69.8%**
1952	W	57,524	4,326	3,936	8,262	20,564	23%	0.23	0	0.755	0.144	0.284	0.284	**71.6%**
1953	W	24,899	3,610	4,115	7,725	8,362	25%	0.25	0	0.732	0.144	0.291	0.291	**70.9%**
1954	A	49,538	4,326	4,684	9,010	17,577	23%	0.23	0	0.788	0.144	0.294	0.294	**70.6%**
1955	D	18,345	4,326	3,106	7,432	5,911	26%	0.26	0	0.719	0.144	0.295	0.295	**70.5%**
1956	W	36,674	4,212	4,700	8,912	12,766	24%	0.24	0	0.783	0.144	0.297	0.297	**70.3%**
1957	A	44,383	4,326	4,342	8,668	15,649	23%	0.23	0	0.773	0.144	0.291	0.291	**70.9%**
1958	W	93,612	4,326	4,066	8,392	34,061	22%	0.22	0	0.761	0.144	0.282	0.282	**71.8%**
1959	B	23,354	4,326	3,058	7,384	7,785	25%	0.25	0	0.717	0.144	0.289	0.289	**71.1%**
1960	D	21,565	3,301	4,001	7,302	7,115	26%	0.26	0	0.714	0.144	0.290	0.290	**71.0%**
1961	D	20,752	3,578	4,538	8,115	6,811	26%	0.26	0	0.749	0.144	0.300	0.300	**70.0%**
1962	B	27,599	4,326	3,545	7,872	9,372	25%	0.25	0	0.738	0.144	0.291	0.291	**70.9%**
1963	W	32,641	4,326	4,342	8,668	11,258	24%	0.24	0	0.773	0.144	0.296	0.296	**70.4%**
1964	D	18,557	4,326	3,253	7,579	5,990	26%	0.26	0	0.726	0.144	0.297	0.297	**70.3%**
1965	W	21,126	4,326	4,245	8,571	6,951	26%	0.26	0	0.769	0.144	0.305	0.305	**69.5%**
1966	B	28,689	4,326	4,424	8,750	9,780	25%	0.25	0	0.776	0.144	0.299	0.299	**70.1%**
1967	W	54,483	4,326	3,285	7,611	19,426	23%	0.23	0	0.727	0.144	0.278	0.278	**72.2%**
1968	B	36,788	3,090	4,115	7,205	12,809	24%	0.24	0	0.709	0.144	0.279	0.279	**72.1%**
1969	W	45,326	3,708	3,253	6,961	16,002	23%	0.23	0	0.699	0.144	0.274	0.274	**72.6%**
1970	W	35,812	3,139	4,115	7,253	12,444	24%	0.24	0	0.711	0.144	0.280	0.280	**72.0%**
1971	W	50,970	4,326	4,700	9,026	18,113	23%	0.23	0	0.788	0.144	0.293	0.293	**70.7%**
1972	B	32,933	4,326	4,310	8,636	11,367	24%	0.24	0	0.771	0.144	0.296	0.296	**70.4%**
1973	A	47,554	4,326	4,456	8,782	16,835	23%	0.23	0	0.778	0.144	0.292	0.292	**70.8%**
1974	W	100,199	4,326	4,424	8,750	36,524	22%	0.22	0	0.776	0.144	0.285	0.285	**71.5%**
1975	W	75,999	4,326	4,684	9,010	27,474	23%	0.23	0	0.788	0.144	0.289	0.289	**71.1%**
1976	C	20,020	4,424	3,643	8,067	6,538	26%	0.26	0	0.747	0.144	0.300	0.300	**70.0%**
1977	C	7,319	813	1,285	2,098	1,787	33%	0.33	0	0.488	0.144	0.256	0.256	**74.4%**
1978	A	45,521	2,212	3,903	6,115	16,075	23%	0.23	0	0.662	0.144	0.265	0.265	**73.5%**
1979	B	32,592	4,326	4,001	8,327	11,239	24%	0.24	0	0.758	0.144	0.293	0.293	**70.7%**
1980	A	36,479	2,781	3,350	6,131	12,693	24%	0.24	0	0.663	0.144	0.268	0.268	**73.2%**
1981	D	32,494	3,090	4,115	7,205	11,203	24%	0.24	0	0.709	0.144	0.281	0.281	**71.9%**
1982	W	69,087	4,326	4,651	8,977	24,889	23%	0.23	0	0.786	0.144	0.290	0.290	**71.0%**
1983	W	81,935	2,131	2,635	4,765	29,694	22%	0.22	0	0.603	0.144	0.247	0.247	**75.3%**
1984	W	36,495	3,301	4,001	7,302	12,699	24%	0.24	0	0.714	0.144	0.280	0.280	**72.0%**
1985	D	20,720	4,326	4,245	8,571	6,799	26%	0.26	0	0.769	0.144	0.305	0.305	**69.5%**
1986	W	72,535	4,326	4,180	8,506	26,178	23%	0.23	0	0.766	0.144	0.285	0.285	**71.5%**
1987	D	29,762	2,309	4,131	6,440	10,181	24%	0.24	0	0.676	0.144	0.274	0.274	**72.6%**
1988	C	10,913	2,049	1,773	3,822	3,131	29%	0.29	0	0.563	0.144	0.267	0.267	**73.3%**
1989	D	41,911	4,326	6,977	11,303	14,725	24%	0.24	0	0.887	0.144	0.319	0.319	**68.1%**
1990	C	14,588	2,326	3,659	5,985	4,506	27%	0.27	0	0.656	0.144	0.285	0.285	**71.5%**
1991	C	29,681	4,424	7,091	11,515	10,151	24%	0.24	0	0.896	0.144	0.328	0.328	**67.2%**
1992	C	19,711	2,196	6,131	8,327	6,422	26%	0.26	0	0.758	0.144	0.304	0.304	**69.6%**

Formulas: Sacramento River Spring Run Young of Year Smolt Survival Model

```
C10 ='Study 513 Revised Flow Data'!C7
D10 ='Study 513 Revised Flow Data'!M7
E10 ='Study 513 Revised Flow Data'!X7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.45*(0.133*C10+829)/(C10-G10))+(0.55*H10)
J10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
K10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*F10)
L10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 513 Revised Flow Data'!D7
R10 ='Study 513 Revised Flow Data'!N7
S10 ='Study 513 Revised Flow Data'!X7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*T10)
Z10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 513 Revised Flow Data'!E7
AF10 ='Study 513 Revised Flow Data'!O7
AG10 ='Study 513 Revised Flow Data'!Y7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
AM10 =(-0.5916024)+(0.017968*$BC$2)+(0.0000434*AH10)
AN10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

AS10 ='Study 513 Revised Flow Data'!D7
AT10 ='Study 513 Revised Flow Data'!N7
AU10 ='Study 513 Revised Flow Data'!X7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$G$2,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BA10 =IF(((-0.5916024)+(0.017968*$BC$3)+(0.0000434*AV10))>1,1,((-0.5916024)+(0.017968*$BC$3)+(0.000043
BB10 =-1.613493+(0.0319584*$BC$3)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =(AZ10+BC10-(AZ10*BC10))
BE10 =1-BD10
```

Study 519a Sacramento River Spring Run YOY Smolt Survival Model (continued)

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15
Sacramento River temperatures based on limited historical data from USBR

APRIL

Row	Sac River Flows	CVP	SWP	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	observed temp	m1	m2	m3	m23	m123	Calculated Survival s123
10	22,822	4,521	5,159	9,680	7,585	25%	0.25	58.5	0.002	0.880	0.256	0.414	0.415	**58.5%**
11	22,772	4,655	5,680	10,335	7,567	25%	0.25	58.3	0.000	0.904	0.250	0.416	0.416	**58.4%**
12	9,613	2,151	2,218	4,369	2,645	30%	0.30	61.5	0.128	0.703	0.352	0.458	0.528	**47.2%**
13	20,335	4,706	4,874	9,579	6,655	26%	0.26	59.1	0.027	0.886	0.275	0.433	0.449	**55.1%**
14	17,663	4,403	4,302	8,705	5,656	26%	0.26	61.6	0.133	0.893	0.355	0.498	0.564	**43.6%**
15	48,215	4,706	5,159	9,865	17,082	23%	0.23	56.8	0.000	0.857	0.202	0.354	0.354	**64.6%**
16	29,208	4,689	5,495	10,184	9,974	25%	0.25	58.7	0.011	0.905	0.262	0.420	0.426	**57.4%**
17	9,613	1,597	1,933	3,529	2,645	30%	0.30	56.3	0.000	0.573	0.186	0.303	0.303	**69.7%**
18	14,604	3,159	3,126	6,285	4,512	27%	0.27	59.6	0.048	0.752	0.291	0.418	0.446	**55.4%**
19	11,142	2,319	2,538	4,857	3,217	29%	0.29	62.8	0.183	0.748	0.393	0.497	0.589	**41.1%**
20	14,066	3,613	3,445	7,058	4,311	28%	0.28	58.9	0.019	0.773	0.269	0.408	0.420	**58.0%**
21	15,327	2,857	3,748	6,605	4,782	27%	0.27	60.1	0.069	0.775	0.307	0.434	0.474	**52.6%**
22	15,276	3,294	2,773	6,067	4,763	27%	0.27	63.6	0.217	0.814	0.419	0.527	0.629	**37.1%**
23	24,318	4,588	5,949	10,537	8,145	25%	0.25	58.9	0.019	0.924	0.269	0.433	0.444	**55.6%**
24	21,528	4,706	5,227	9,932	7,101	26%	0.26	59.7	0.053	0.912	0.294	0.453	0.481	**51.9%**
25	23,259	3,092	4,974	8,067	7,749	25%	0.25	58.8	0.015	0.815	0.266	0.405	0.413	**58.7%**
26	47,173	4,017	4,369	8,386	16,693	23%	0.23	56.3	0.000	0.784	0.186	0.325	0.325	**67.5%**
27	14,486	3,277	3,176	6,453	4,468	28%	0.28	63.3	0.204	0.826	0.409	0.524	0.621	**37.9%**
28	41,728	4,706	5,748	10,453	14,656	24%	0.24	57.4	0.000	0.893	0.221	0.379	0.379	**62.1%**
29	42,367	4,706	4,706	9,411	14,895	24%	0.24	56.9	0.000	0.839	0.205	0.354	0.354	**64.6%**
30	43,308	4,706	5,042	9,747	15,247	23%	0.23	56.5	0.000	0.847	0.192	0.346	0.346	**65.4%**
31	29,410	4,706	5,058	9,764	10,049	24%	0.24	58.8	0.015	0.889	0.266	0.418	0.427	**57.3%**
32	10,705	2,857	2,739	5,596	3,054	29%	0.29	58.4	0.000	0.701	0.253	0.385	0.385	**61.5%**
33	12,520	3,664	3,546	7,210	3,733	28%	0.28	60.6	0.090	0.810	0.323	0.461	0.510	**49.0%**
34	12,218	3,243	3,126	6,369	3,619	29%	0.29	60.7	0.095	0.775	0.326	0.455	0.506	**49.4%**
35	15,444	2,033	3,714	5,748	4,826	27%	0.27	62.5	0.170	0.781	0.384	0.492	0.578	**42.2%**
36	22,788	4,487	5,495	9,983	7,573	25%	0.25	56.6	0.000	0.859	0.195	0.364	0.364	**63.6%**
37	13,209	2,521	3,731	6,252	3,990	28%	0.28	61.7	0.137	0.788	0.358	0.479	0.550	**45.0%**
38	19,024	4,369	4,269	8,638	6,165	26%	0.26	61.3	0.120	0.885	0.346	0.486	0.548	**45.2%**
39	18,083	4,185	4,084	8,268	5,813	26%	0.26	59.9	0.061	0.844	0.301	0.444	0.478	**52.2%**
40	56,652	4,706	4,168	8,873	20,238	23%	0.23	55.5	0.000	0.791	0.160	0.305	0.305	**69.5%**
41	16,184	3,680	3,580	7,260	5,103	27%	0.27	58.8	0.015	0.780	0.266	0.404	0.413	**58.7%**
42	39,863	4,672	5,781	10,453	13,959	24%	0.24	58.4	0.000	0.911	0.253	0.409	0.409	**59.1%**
43	9,478	2,370	2,269	4,638	2,595	30%	0.30	56.4	0.000	0.623	0.189	0.321	0.321	**67.9%**
44	20,436	4,706	4,605	9,310	6,693	26%	0.26	59.7	0.053	0.885	0.294	0.447	0.476	**52.4%**
45	24,503	4,672	3,949	8,621	8,214	25%	0.25	60.5	0.086	0.870	0.320	0.458	0.505	**49.5%**
46	52,282	4,706	5,058	9,764	18,603	23%	0.23	57.4	0.000	0.864	0.221	0.369	0.369	**63.1%**
47	12,705	2,857	2,756	5,613	3,802	28%	0.28	63	0.191	0.784	0.400	0.509	0.603	**39.7%**
48	14,201	487	3,865	4,353	4,361	28%	0.28	59.5	0.044	0.666	0.288	0.393	0.419	**58.1%**
49	13,495	403	3,781	4,185	4,097	28%	0.28	60.1	0.069	0.670	0.307	0.408	0.450	**55.0%**
50	17,612	4,117	4,017	8,134	5,637	26%	0.26	61.8	0.141	0.872	0.362	0.497	0.568	**43.2%**
51	69,457	4,689	5,529	10,218	25,027	23%	0.23	53.7	0.000	0.817	0.103	0.264	0.264	**73.6%**
52	9,125	2,235	2,134	4,369	2,463	31%	0.31	59.3	0.036	0.664	0.282	0.399	0.420	**58.0%**
53	45,661	4,638	5,109	9,747	16,127	23%	0.23	56.9	0.000	0.854	0.205	0.357	0.357	**64.3%**
54	12,991	3,025	2,907	5,932	3,909	28%	0.28	61.9	0.145	0.778	0.365	0.481	0.556	**44.4%**
55	39,930	4,706	4,941	9,646	13,984	24%	0.24	53.8	0.000	0.794	0.106	0.269	0.269	**73.1%**
56	19,646	4,269	3,865	8,134	6,397	26%	0.26	61.5	0.128	0.866	0.352	0.486	0.552	**44.8%**
57	44,787	3,445	4,168	7,613	15,800	23%	0.23	56.4	0.000	0.752	0.189	0.321	0.321	**67.9%**
58	19,629	4,706	3,865	8,571	6,391	26%	0.26	58.8	0.015	0.837	0.266	0.414	0.423	**57.7%**
59	25,713	4,706	4,487	9,193	8,666	25%	0.25	58.7	0.011	0.862	0.262	0.412	0.418	**58.2%**
60	14,402	3,159	3,042	6,201	4,436	28%	0.28	58.5	0.002	0.729	0.256	0.386	0.388	**61.2%**
61	19,511	4,706	4,958	9,663	6,347	26%	0.26	61.3	0.120	0.929	0.346	0.497	0.558	**44.2%**
62	33,208	4,706	5,495	10,201	11,470	24%	0.24	56.8	0.000	0.872	0.202	0.363	0.363	**63.7%**
63	25,763	4,706	5,781	10,487	8,685	25%	0.25	56.8	0.000	0.884	0.202	0.372	0.372	**62.8%**
64	10,302	521	3,680	4,201	2,903	30%	0.30	58.9	0.019	0.649	0.269	0.382	0.394	**60.6%**
65	11,260	992	3,949	4,941	3,261	29%	0.29	64.3	0.246	0.778	0.441	0.539	0.653	**34.7%**
66	38,703	3,546	4,067	7,613	13,525	24%	0.24	56.9	0.000	0.761	0.205	0.337	0.337	**66.3%**
67	18,537	4,672	3,748	8,420	5,983	26%	0.26	59.8	0.057	0.848	0.298	0.442	0.474	**52.6%**
68	19,814	3,059	3,949	7,008	6,460	26%	0.26	57.1	0.000	0.739	0.211	0.348	0.348	**65.2%**
69	20,301	4,538	3,865	8,403	6,643	26%	0.26	61.5	0.128	0.878	0.352	0.488	0.554	**44.6%**
70	75,843	3,664	5,563	9,226	27,415	23%	0.23	54.1	0.000	0.781	0.115	0.265	0.265	**73.5%**
71	68,298	3,428	3,647	7,075	24,593	23%	0.23	55	0.000	0.704	0.144	0.271	0.271	**72.9%**
72	20,940	4,706	3,748	8,453	6,881	26%	0.26	59.7	0.053	0.848	0.294	0.437	0.466	**53.4%**
73	13,327	3,042	2,941	5,983	4,034	28%	0.28	60.8	0.099	0.761	0.330	0.450	0.505	**49.5%**
74	20,536	2,269	5,227	7,495	6,731	26%	0.26	60.4	0.082	0.819	0.317	0.446	0.492	**50.8%**
75	14,856	3,126	3,008	6,134	4,606	27%	0.27	65.7	0.305	0.855	0.486	0.587	0.713	**28.7%**
76	10,319	2,286	2,185	4,470	2,909	30%	0.30	59.9	0.061	0.679	0.301	0.413	0.449	**55.1%**
77	23,629	4,538	4,756	9,293	7,887	25%	0.25	61.4	0.124	0.915	0.349	0.492	0.555	**44.5%**
78	15,310	3,243	3,176	6,420	4,776	27%	0.27	61.6	0.133	0.794	0.355	0.474	0.544	**45.6%**
79	16,772	2,218	4,756	6,974	5,323	27%	0.27	60.8	0.099	0.804	0.330	0.456	0.510	**49.0%**
80	14,738	3,361	2,790	6,151	4,562	27%	0.27	61.2	0.116	0.775	0.342	0.461	0.523	**47.7%**

MAY

Row	Sac River Flows	CVP	SWP	CVP + SWP & Sutter Exports	Calculated Steamboat Slough Q	Percent	X-channel Closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123
10	46,530	4,521	2,277	6,798	16,452	23%	0.23	61.2	0.116	0.803	0.342	0.450	0.514	**48.6%**
11	14,214	4,655	1,903	6,558	4,366	64%	0.47	62.4	0.166	0.814	0.381	0.586	0.655	**34.5%**
12	8,392	2,151	472	2,623	2,189	73%	0.54	69.2	0.452	0.766	0.598	0.689	0.830	**17.0%**
13	10,962	4,706	1,529	6,234	3,150	68%	0.51	63.2	0.200	0.815	0.406	0.612	0.690	**31.0%**
14	13,352	4,403	1,187	5,590	4,044	64%	0.48	65.7	0.305	0.832	0.486	0.652	0.758	**24.2%**
15	26,786	4,706	1,870	6,576	9,068	25%	0.25	62.6	0.175	0.819	0.387	0.494	0.582	**41.8%**
16	18,313	4,689	1,464	6,152	5,899	60%	0.45	66.6	0.343	0.872	0.515	0.675	0.787	**21.3%**
17	8,733	1,597	130	1,727	2,316	72%	0.54	66.1	0.322	0.671	0.499	0.592	0.723	**27.7%**
18	11,758	3,159	829	3,989	3,448	67%	0.50	63.1	0.196	0.715	0.403	0.558	0.644	**35.6%**
19	8,864	2,319	748	3,067	2,365	72%	0.54	70.5	0.507	0.808	0.640	0.730	0.867	**13.3%**
20	10,929	3,613	1,675	5,288	3,137	68%	0.51	65.5	0.297	0.815	0.480	0.649	0.753	**24.7%**
21	7,465	2,857	846	3,703	1,842	76%	0.56	63.7	0.221	0.714	0.422	0.587	0.678	**32.2%**
22	7,839	3,294	764	4,058	1,982	75%	0.56	68.3	0.414	0.812	0.569	0.704	0.827	**17.3%**
23	28,201	4,588	2,537	7,125	9,597	25%	0.25	64	0.234	0.868	0.432	0.539	0.647	**35.3%**
24	14,100	4,706	2,358	7,064	4,324	64%	0.47	64.9	0.271	0.881	0.461	0.660	0.752	**24.8%**
25	15,971	3,092	4,066	7,158	5,023	62%	0.46	64.5	0.255	0.878	0.448	0.646	0.736	**26.4%**
26	57,426	4,017	5,448	9,465	20,527	23%	0.23	62.5	0.170	0.942	0.384	0.512	0.595	**40.5%**
27	8,148	3,277	1,138	4,416	2,097	74%	0.55	68	0.402	0.822	0.560	0.704	0.823	**17.7%**
28	17,613	4,706	2,261	6,966	5,637	61%	0.45	65.6	0.301	0.889	0.483	0.667	0.767	**23.3%**
29	39,488	4,706	4,749	9,454	13,818	24%	0.24	61.6	0.133	0.812	0.355	0.490	0.558	**44.2%**
30	36,040	4,706	2,781	7,487	12,529	24%	0.24	60.1	0.069	0.813	0.307	0.428	0.468	**53.2%**
31	20,134	4,706	2,976	7,682	6,580	59%	0.44	65.4	0.292	0.917	0.477	0.671	0.767	**23.3%**
32	9,075	2,857	1,496	4,353	2,444	72%	0.53	65.9	0.313	0.781	0.493	0.646	0.757	**24.3%**
33	11,498	3,664	2,033	5,697	3,350	67%	0.50	63.1	0.196	0.789	0.403	0.596	0.675	**32.5%**
34	12,620	3,243	1,789	5,032	3,770	65%	0.49	63.9	0.229	0.775	0.429	0.597	0.690	**31.0%**
35	9,839	2,033	1,073	3,107	2,730	70%	0.52	68.7	0.431	0.778	0.582	0.684	0.820	**18.0%**
36	26,542	4,487	1,578	6,065	8,977	25%	0.25	62.3	0.162	0.791	0.378	0.480	0.564	**43.6%**
37	13,141	2,521	1,399	3,919	3,965	65%	0.48	65.2	0.284	0.750	0.470	0.605	0.717	**28.3%**
38	13,954	4,369	1,350	5,719	4,269	64%	0.48	64.3	0.246	0.812	0.441	0.618	0.712	**28.8%**
39	16,914	4,185	1,691	5,876	5,376	61%	0.46	64.4	0.250	0.821	0.445	0.616	0.712	**28.8%**
40	59,557	4,706	5,269	9,975	21,324	23%	0.23	61.7	0.137	0.950	0.358	0.494	0.563	**43.7%**
41	26,867	3,680	1,350	5,030	9,098	25%	0.25	60.9	0.103	0.721	0.333	0.429	0.488	**51.2%**
42	22,639	4,672	1,447	6,119	7,517	58%	0.43	65.9	0.313	0.858	0.493	0.650	0.760	**24.0%**
43	10,278	2,370	1,138	3,508	2,894	69%	0.51	66.9	0.356	0.763	0.525	0.647	0.772	**22.8%**
44	39,000	4,706	2,944	7,649	13,636	24%	0.24	61.4	0.124	0.844	0.349	0.466	0.532	**46.8%**
45	15,320	4,672	1,399	6,071	4,780	62%	0.47	64	0.234	0.822	0.432	0.613	0.704	**29.6%**
46	43,488	4,706	6,083	10,788	15,315	23%	0.23	62.9	0.187	1.000	0.397	0.538	0.625	**37.5%**
47	9,173	2,857	1,041	3,898	2,481	71%	0.53	65.9	0.313	0.762	0.493	0.635	0.750	**25.0%**
48	10,913	487	911	1,398	3,131	68%	0.51	65.9	0.313	0.653	0.493	0.574	0.707	**29.3%**
49	10,116	403	797	1,200	2,833	69%	0.52	64.3	0.246	0.616	0.441	0.531	0.647	**35.3%**
50	13,238	4,117	1,415	5,532	4,001	65%	0.48	64.8	0.267	0.813	0.457	0.629	0.728	**27.2%**
51	29,095	4,689	2,261	6,949	9,932	25%	0.25	62.5	0.170	0.833	0.384	0.494	0.580	**42.0%**
52	11,352	2,235	1,090	3,325	3,296	67%	0.50	65.2	0.284	0.724	0.470	0.597	0.712	**28.8%**
53	23,029	4,638	2,033	6,671	7,663	58%	0.43	63.6	0.217	0.841	0.419	0.600	0.687	**31.3%**
54	13,190	3,025	1,285	4,310	3,983	65%	0.48	67.3	0.372	0.805	0.537	0.666	0.790	**21.0%**
55	44,790	4,706	5,448	10,154	15,801	23%	0.23	62.1	0.154	0.965	0.371	0.510	0.585	**41.5%**
56	9,384	4,269	1,090	5,358	2,560	71%	0.53	66.1	0.322	0.829	0.499	0.673	0.778	**22.2%**
57	45,538	3,445	5,025	8,471	16,081	23%	0.23	63.2	0.200	0.912	0.406	0.524	0.619	**38.1%**
58	12,149	4,706	1,789	6,495	3,594	66%	0.49	68.6	0.427	0.923	0.579	0.748	0.856	**14.4%**
59	25,973	4,706	1,334	6,039	8,764	25%	0.25	61	0.107	0.767	0.336	0.443	0.503	**49.7%**
60	9,628	3,159	992	4,152	2,651	70%	0.52	67.3	0.372	0.798	0.537	0.674	0.795	**20.5%**
61	15,743	4,706	2,635	7,340	4,938	62%	0.46	66.9	0.356	0.929	0.525	0.712	0.814	**18.6%**
62	26,949	4,706	2,602	7,308	9,129	25%	0.23	63.4	0.208	0.865	0.413	0.525	0.624	**37.6%**
63	28,542	4,706	2,212	6,917	9,725	25%	0.25	63.8	0.225	0.855	0.425	0.531	0.637	**36.3%**
64	8,864	521	813	1,334	2,365	72%	0.54	69.6	0.469	0.717	0.611	0.668	0.824	**17.6%**
65	7,010	992	358	1,349	1,672	78%	0.58	64	0.234	0.617	0.432	0.538	0.646	**35.4%**
66	21,061	3,546	4,098	7,644	6,927	58%	0.44	63	0.191	0.872	0.400	0.606	0.682	**31.8%**
67	12,442	4,672	2,212	6,884	3,703	66%	0.49	63.8	0.225	0.854	0.425	0.635	0.717	**28.3%**
68	14,783	3,059	3,188	6,246	4,579	63%	0.47	63.6	0.217	0.822	0.419	0.608	0.693	**30.7%**
69	8,750	4,538	1,073	5,611	2,322	72%	0.54	66.7	0.347	0.850	0.518	0.697	0.802	**19.8%**
70	38,431	3,664	6,684	10,348	13,423	24%	0.24	61.1	0.112	0.955	0.339	0.486	0.543	**45.7%**
71	54,515	3,428	3,594	7,023	19,439	23%	0.23	60.1	0.069	0.793	0.307	0.419	0.459	**54.1%**
72	12,084	4,706	1,659	6,364	3,569	66%	0.49	66.5	0.339	0.879	0.512	0.693	0.797	**20.3%**
73	11,856	3,042	1,106	4,148	3,484	66%	0.49	65.8	0.309	0.771	0.489	0.629	0.743	**25.7%**
74	13,125	2,269	5,286	7,554	3,959	65%	0.48	66.2	0.326	0.926	0.502	0.707	0.802	**19.8%**
75	7,481	3,126	846	3,972	1,848	76%	0.56	70.5	0.507	0.848	0.640	0.757	0.880	**12.0%**
76	8,587	2,286	797	3,082	2,262	73%	0.54	65.8	0.309	0.724	0.489	0.616	0.735	**26.5%**
77	13,027	4,538	813	5,351	3,922	65%	0.48	64.7	0.263	0.803	0.454	0.623	0.722	**27.8%**
78	6,896	3,243	764	4,008	1,629	78%	0.58	66.4	0.335	0.775	0.509	0.663	0.776	**22.4%**
79	8,685	2,218	911	3,129	2,298	73%	0.54	65.7	0.305	0.725	0.486	0.615	0.732	**26.8%**
80	7,969	3,361	846	4,207	2,030	75%	0.55	66	0.318	0.777	0.496	0.651	0.762	**23.8%**

JUNE

Row	Sac River Flow	CVP	SWP	CVP + SWP & Sutter exports	Caculated Steamboat Slough Q	percent	X-channel closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123	Weighted Total Survival
10	34,720	4,874	6,672	11,545	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**63.46%**
11	18,234	4,403	3,395	7,798	5,870	60%	0.45	65.3	0.288	0.920	0.473	0.674	0.768	**23.2%**	**61.79%**
12	10,033	420	622	1,042	2,802	70%	0.52	70.6	0.511	0.722	0.643	0.684	0.845	**15.5%**	**55.65%**
13	16,016	4,790	1,580	6,369	5,040	62%	0.46	68.3	0.414	0.912	0.569	0.727	0.840	**16.0%**	**59.21%**
14	18,016	4,806	2,504	7,310	5,788	60%	0.45	71.2	0.536	1.000	0.662	0.814	0.914	**8.6%**	**54.24%**
15	19,494	4,874	3,529	8,403	6,341	59%	0.44	68.1	0.406	0.997	0.563	0.755	0.855	**14.5%**	**63.85%**
16	18,251	4,857	2,672	7,529	5,876	60%	0.45	69.7	0.473	0.988	0.614	0.782	0.885	**11.5%**	**58.50%**
17	9,781	2,033	101	2,134	2,708	70%	0.52	70.1	0.490	0.761	0.627	0.696	0.845	**15.5%**	**62.17%**
18	18,889	4,874	2,622	7,495	6,115	60%	0.45	69.6	0.469	0.984	0.611	0.777	0.882	**11.8%**	**59.54%**
19	12,453	2,084	1,428	3,512	3,707	66%	0.49	70.7	0.515	0.831	0.646	0.736	0.872	**12.8%**	**53.59%**
20	18,822	4,622	2,756	7,378	6,090	60%	0.45	69.5	0.465	0.977	0.608	0.773	0.878	**12.2%**	**58.31%**
21	10,453	1,378	101	1,479	2,959	69%	0.51	69.8	0.478	0.727	0.617	0.673	0.829	**17.1%**	**59.24%**
22	14,806	4,756	1,126	5,882	4,587	63%	0.47	70.7	0.515	0.934	0.646	0.781	0.894	**10.6%**	**52.96%**
23	17,612	4,437	3,496	7,932	5,637	61%	0.45	71	0.528	1.000	0.656	0.811	0.911	**8.9%**	**58.83%**
24	17,915	4,806	3,311	8,117	5,750	60%	0.45	69.2	0.452	1.000	0.598	0.779	0.879	**12.1%**	**56.76%**
25	17,763	2,857	4,857	7,714	5,694	60%	0.45	69.7	0.473	0.996	0.614	0.786	0.887	**11.3%**	**59.18%**
26	35,510	4,874	6,672	11,545	12,331	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**65.33%**
27	19,814	4,874	3,042	7,915	6,460	59%	0.44	71	0.528	1.000	0.656	0.808	0.909	**9.1%**	**52.99%**
28	16,184	4,050	3,092	7,142	5,103	62%	0.46	71.5	0.549	1.000	0.672	0.823	0.920	**8.0%**	**58.81%**
29	20,805	4,874	6,168	11,041	6,831	59%	0.44	69	0.444	1.000	0.592	0.770	0.872	**12.8%**	**63.96%**
30	27,124	4,874	6,672	11,545	9,194	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**66.52%**
31	17,696	4,874	3,042	7,915	5,668	60%	0.45	66.6	0.343	0.949	0.515	0.711	0.810	**19.0%**	**59.84%**
32	19,713	4,823	3,143	7,966	6,423	59%	0.44	67.8	0.393	0.972	0.553	0.739	0.841	**15.9%**	**60.03%**
33	17,074	3,865	3,596	7,462	5,436	61%	0.46	70.6	0.511	1.000	0.643	0.805	0.905	**9.5%**	**57.61%**
34	18,906	4,521	3,479	7,999	6,121	60%	0.45	68.1	0.406	0.979	0.563	0.749	0.851	**14.9%**	**57.93%**
35	18,923	4,874	2,689	7,563	6,127	60%	0.45	70	0.486	0.994	0.624	0.789	0.891	**10.9%**	**53.31%**
36	23,007	4,874	4,353	9,226	7,655	58%	0.43	69	0.444	1.000	0.592	0.767	0.871	**12.9%**	**63.41%**
37	19,864	4,874	3,159	8,033	6,479	59%	0.44	70.9	0.524	1.000	0.652	0.806	0.908	**9.2%**	**54.98%**
38	20,284	4,874	3,529	8,403	6,636	59%	0.44	68.9	0.440	1.000	0.588	0.770	0.871	**12.9%**	**55.31%**
39	18,167	4,874	2,807	7,680	5,844	60%	0.45	70.3	0.499	1.000	0.633	0.798	0.899	**10.1%**	**58.01%**
40	38,972	4,874	6,672	11,545	13,626	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**66.68%**
41	25,881	4,874	5,445	10,319	8,729	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**64.72%**
42	18,503	4,874	2,739	7,613	5,970	60%	0.45	68.7	0.431	0.973	0.582	0.757	0.862	**13.8%**	**59.47%**
43	19,696	4,874	3,025	7,899	6,416	59%	0.44	70.1	0.490	1.000	0.627	0.792	0.894	**10.6%**	**60.76%**
44	22,301	4,874	6,672	11,545	7,391	58%	0.43	68.7	0.431	1.000	0.582	0.763	0.865	**13.5%**	**61.29%**
45	20,284	4,874	3,445	8,319	6,636	59%	0.44	72	0.570	1.000	0.688	0.825	0.925	**7.5%**	**57.33%**
46	33,930	4,874	6,672	11,545	11,740	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**63.53%**
47	19,242	4,874	2,874	7,747	6,247	59%	0.44	72.1	0.574	1.000	0.691	0.828	0.927	**7.3%**	**54.58%**
48	18,755	4,874	2,638	7,512	6,064	60%	0.45	72.7	0.600	1.000	0.710	0.839	0.936	**6.4%**	**58.70%**
49	19,209	4,874	2,739	7,613	6,234	59%	0.44	73.2	0.621	1.000	0.726	0.848	0.942	**5.8%**	**58.55%**
50	19,108	4,874	2,874	7,747	6,196	60%	0.44	70.4	0.503	1.000	0.636	0.798	0.900	**10.0%**	**54.90%**
51	20,150	4,874	3,983	8,857	6,586	59%	0.44	69	0.444	1.000	0.592	0.772	0.873	**12.7%**	**64.93%**
52	18,721	4,874	2,605	7,478	6,052	60%	0.45	69.5	0.465	0.982	0.608	0.775	0.879	**12.1%**	**59.53%**
53	18,637	4,874	3,546	8,420	6,020	60%	0.45	67.1	0.364	0.979	0.531	0.731	0.829	**17.1%**	**61.34%**
54	18,368	4,874	2,622	7,495	5,920	60%	0.45	70.4	0.503	0.999	0.636	0.799	0.900	**10.0%**	**54.66%**
55	39,342	4,874	6,672	11,545	13,764	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**67.01%**
56	18,570	4,874	2,672	7,546	5,995	60%	0.45	72	0.570	1.000	0.688	0.827	0.926	**7.4%**	**55.98%**
57	24,133	4,874	6,638	11,512	8,076	57%	0.43	68.3	0.414	1.000	0.569	0.753	0.855	**14.5%**	**64.57%**
58	16,301	4,538	2,622	7,159	5,147	62%	0.46	70.7	0.515	0.989	0.646	0.804	0.905	**9.5%**	**58.55%**
59	23,629	4,874	4,689	9,562	7,887	57%	0.43	68.1	0.406	1.000	0.563	0.750	0.852	**14.8%**	**63.28%**
60	18,637	4,874	2,723	7,596	6,020	60%	0.45	70.7	0.515	1.000	0.646	0.804	0.905	**9.5%**	**58.78%**
61	18,940	2,655	5,512	8,168	6,134	60%	0.45	70.1	0.490	1.000	0.627	0.793	0.895	**10.5%**	**54.78%**
62	21,780	4,874	4,538	9,411	7,196	58%	0.43	69.7	0.473	1.000	0.614	0.782	0.885	**11.5%**	**63.04%**
63	24,788	4,874	6,672	11,545	8,321	57%	0.43	69.1	0.448	1.000	0.595	0.767	0.871	**12.9%**	**62.37%**
64	19,326	4,672	2,941	7,613	6,278	59%	0.44	71.8	0.562	1.000	0.681	0.823	0.922	**7.8%**	**57.88%**
65	9,613	286	387	672	2,645	70%	0.52	73.9	0.650	0.765	0.748	0.757	0.915	**8.5%**	**56.67%**
66	16,352	4,874	3,899	8,773	5,166	62%	0.46	70	0.486	1.000	0.624	0.796	0.895	**10.5%**	**63.04%**
67	19,881	3,916	4,403	8,319	6,485	59%	0.44	69.2	0.452	1.000	0.598	0.776	0.877	**12.3%**	**58.52%**
68	16,453	4,874	4,000	8,873	5,203	61%	0.46	66.9	0.356	0.996	0.525	0.741	0.833	**16.7%**	**63.26%**
69	19,158	4,874	2,790	7,663	6,215	60%	0.44	71.9	0.566	1.000	0.684	0.825	0.924	**7.6%**	**55.23%**
70	24,418	4,874	6,672	11,545	8,183	57%	0.43	66	0.318	1.000	0.496	0.711	0.803	**19.7%**	**66.96%**
71	55,576	4,874	4,689	9,562	19,835	23%	0.23	63.6	0.217	0.966	0.419	0.545	0.644	**35.6%**	**71.31%**
72	19,007	4,672	3,361	8,033	6,159	60%	0.45	68.4	0.419	0.986	0.572	0.757	0.859	**14.1%**	**58.83%**
73	18,671	4,874	2,638	7,512	6,033	60%	0.45	69.4	0.461	0.981	0.604	0.773	0.878	**12.2%**	**56.43%**
74	12,655	4,134	3,764	7,899	3,783	65%	0.49	71.6	0.553	1.000	0.675	0.833	0.925	**7.5%**	**55.85%**
75	20,318	4,874	3,143	8,016	6,649	59%	0.44	73.2	0.621	1.000	0.726	0.846	0.942	**5.8%**	**50.19%**
76	14,486	4,739	992	5,731	4,468	63%	0.47	69.4	0.461	0.904	0.604	0.746	0.863	**13.7%**	**59.41%**
77	18,234	4,823	2,487	7,310	5,870	60%	0.45	68.6	0.427	0.958	0.579	0.749	0.856	**14.4%**	**56.20%**
78	19,578	4,756	2,907	7,663	6,372	59%	0.44	68.5	0.423	0.972	0.576	0.751	0.856	**14.4%**	**55.69%**
79	11,327	3,075	1,059	4,134	3,286	67%	0.50	69.4	0.461	0.835	0.604	0.720	0.849	**15.1%**	**57.52%**
80	14,369	4,050	1,681	5,731	4,424	63%	0.47	69	0.444	0.897	0.592	0.736	0.853	**14.7%**	**55.93%**
81														**Average**	**59.35%**

BG10 ='Study 513 Revised Flow Data'!G7
BH10 ='Study 513 Revised Flow Data'!Q7
BI10 ='Study 513 Revised Flow Data'!AA7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$G$2,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10
BO10 =IF((-2.45925+(0.0420748*BN10))<0,0,(-2.45925+(0.0420748*BN10)))
BP10 =IF(((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10))>1,1,((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10
BQ10 =-1.613493+(0.0319584*BN10)
BR10 =(BP10*BM10)+(BQ10*(1-BM10))
BS10 =BO10+BR10-(BO10*BR10)
BT10 =1-BS10

BV10 ='Study 513 (Revised) Flow Data'!H7
BX10 ='Study 513 Revised Flow Data'!R7
BY10 ='Study 513 Revised Flow Data'!AB7
BZ10 =0.374*BV10-950
CA10 =IF(BV10>$K$4,(0.133*BV10+829)/(BV10-BZ10),(0.293*BV10+2090)/(BV10-BZ10))
CB10 =(0.45*(0.133*BV10+829)/(BV10-BZ10))+(0.55*CA10)
CC10
CD10 =IF((-2.45925+(0.0420748*CC10))<0,0,(-2.45925+(0.0420748*CC10)))
CE10 =IF(((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10))>1,1,((-0.5916024)+(0.017968*CC10)+(0.0000434*BY1
CF10 =-1.613493+(0.0319584*CC10)
CG10 =(CE10*CB10)+(CF10*(1-CB10))
CH10 =CD10+CG10-(CD10*CG10)
CI10 =1-CH10

CK10 ='Study 513 Revised Flow Data'!I7
CL10 ='Study 513 Revised Flow Data'!S7
CM10 ='Study 513 Flow Revised Data'!AC7
CN10 =(CL10+CM10)
CO10 =0.374*CK10-950
CP10 =IF(CK10>$K$4,(0.133*CK10+829)/(CK10-CO10),(0.293*CK10+2090)/(CK10-CO10))
CQ10 =(0.45*(0.133*CK10+829)/(CK10-CO10))+(0.55*CP10)
CR10
CS10 =IF((-2.45925+(0.0420748*CR10))<0,0,(-2.45925+(0.0420748*CR10)))
CT10 =IF(((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10))>1,1,((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10)))
CU10 =-1.613493+(0.0319584*CR10)
CV10 =(CT10*CQ10)+(CU10*(1-CQ10))
CW10 =CS10+CV10-(CS10*CV10)
CX10 =1-CW10
CZ10 =(0.01*O10)+(0.06*AC10)+(0.17*AQ10)+(0.28*BE10)+(0.25*BT10)+(0.16*CI10)+(0.07*CX10)

Study 622a Sacramento River Spring Run YOY Smolt Survival Model

Modified m2 by changing the slope to 0.0000434

Cross Channel closed for 45 consecutive days, Dec 18-Jan 31

Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

December Sacramento River Temp: 47 degrees F

January Sacramento River Temp: 47 degrees F

Cross Channel Closed Over 25000 cfs

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

February Water Temp 50 F

March Water Temp 55 F

DECEMBER

Year	Water Year Type	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	A	17,142	4,347	7,115	11,462	5,461	61%	0.45	0	0.750	0.000	0.341	0.341	**65.9%**
1923	B	34,072	4,347	4,453	8,800	11,793	24%	0.24	0	0.635	0.000	0.153	0.153	**84.7%**
1924	C	10,539	4,163	3,173	7,336	2,991	69%	0.51	0	0.571	0.000	0.292	0.292	**70.8%**
1925	D	11,254	4,378	4,908	9,286	3,259	67%	0.50	0	0.656	0.000	0.329	0.329	**67.1%**
1926	D	11,547	4,347	3,956	8,303	3,369	67%	0.50	0	0.613	0.000	0.306	0.306	**69.4%**
1927	W	14,312	4,347	7,009	11,356	4,403	63%	0.47	0	0.746	0.000	0.353	0.353	**64.7%**
1928	A	16,572	4,347	5,464	9,811	5,248	61%	0.46	0	0.679	0.000	0.311	0.311	**68.9%**
1929	C	13,710	4,347	6,280	10,627	4,178	64%	0.48	0	0.714	0.000	0.341	0.341	**65.9%**
1930	D	14,442	4,378	6,331	10,709	4,451	63%	0.47	0	0.718	0.000	0.339	0.339	**66.1%**
1931	C	9,335	2,365	3,004	5,369	2,541	71%	0.53	0	0.486	0.000	0.256	0.256	**74.4%**
1932	D	14,653	4,378	7,207	11,585	4,530	63%	0.47	0	0.756	0.000	0.355	0.355	**64.5%**
1933	C	8,132	2,235	2,485	4,720	2,091	74%	0.55	0	0.458	0.000	0.252	0.252	**74.8%**
1934	C	12,474	4,378	5,551	9,929	3,715	66%	0.49	0	0.684	0.000	0.334	0.334	**66.6%**
1935	B	8,506	3,428	3,428	6,856	2,231	73%	0.54	0	0.550	0.000	0.298	0.298	**70.2%**
1936	B	11,872	4,347	4,348	8,695	3,490	66%	0.49	0	0.630	0.000	0.312	0.312	**68.8%**
1937	B	12,458	4,347	5,639	9,986	3,709	66%	0.49	0	0.686	0.000	0.335	0.335	**66.5%**
1938	W	44,611	4,347	7,553	11,900	15,734	23%	0.23	0	0.769	0.000	0.180	0.180	**82.0%**
1939	D	18,687	4,347	3,735	8,082	6,039	60%	0.45	0	0.604	0.000	0.270	0.270	**73.0%**
1940	A	7,839	1,664	2,752	4,416	1,982	75%	0.56	0	0.445	0.000	0.247	0.247	**75.3%**
1941	W	36,999	4,347	7,370	11,717	12,888	24%	0.24	0	0.761	0.000	0.182	0.182	**81.8%**
1942	W	65,623	4,347	3,608	7,955	23,593	23%	0.23	0	0.598	0.000	0.136	0.136	**86.4%**
1943	W	28,803	4,347	3,779	8,126	9,822	25%	0.25	0	0.606	0.000	0.149	0.149	**85.1%**
1944	D	13,775	4,347	6,674	11,021	4,202	64%	0.48	0	0.731	0.000	0.349	0.349	**65.1%**
1945	B	15,824	4,347	6,998	11,345	4,968	62%	0.46	0	0.745	0.000	0.345	0.345	**65.5%**
1946	B	52,986	4,347	7,592	11,939	18,867	23%	0.23	0	0.771	0.000	0.178	0.178	**82.2%**
1947	D	18,134	4,347	7,109	11,456	5,832	60%	0.45	0	0.750	0.000	0.337	0.337	**66.3%**
1948	B	9,433	2,596	3,135	5,731	2,578	71%	0.53	0	0.502	0.000	0.264	0.264	**73.6%**
1949	D	15,564	4,347	6,914	11,261	4,871	62%	0.46	0	0.742	0.000	0.344	0.344	**65.6%**
1950	B	10,978	4,347	3,066	7,413	3,156	68%	0.50	0	0.575	0.000	0.290	0.290	**71.0%**
1951	A	68,095	4,347	7,592	11,939	24,518	23%	0.23	0	0.771	0.000	0.175	0.175	**82.5%**
1952	W	45,456	4,347	7,138	11,485	16,051	23%	0.23	0	0.751	0.000	0.176	0.176	**82.4%**
1953	W	42,334	4,347	3,742	8,089	14,883	24%	0.24	0	0.604	0.000	0.142	0.142	**85.8%**
1954	A	14,914	4,347	3,897	8,244	4,628	63%	0.47	0	0.611	0.000	0.286	0.286	**71.4%**
1955	D	26,022	4,347	6,940	11,287	8,782	25%	0.25	0	0.743	0.000	0.185	0.185	**81.5%**
1956	W	25,647	4,347	7,592	11,939	8,642	25%	0.25	0	0.771	0.000	0.192	0.192	**80.8%**
1957	A	14,149	4,347	6,004	10,351	4,342	64%	0.47	0	0.702	0.000	0.333	0.333	**66.7%**
1958	W	23,745	4,347	6,958	11,305	7,930	57%	0.43	0	0.744	0.000	0.318	0.318	**68.2%**
1959	B	14,621	4,347	3,852	8,199	4,518	63%	0.47	0	0.609	0.000	0.286	0.286	**71.4%**
1960	D	10,897	4,347	2,791	7,138	3,125	68%	0.51	0	0.563	0.000	0.285	0.285	**71.5%**
1961	D	18,849	4,347	6,905	11,252	6,100	60%	0.45	0	0.741	0.000	0.331	0.331	**66.9%**
1962	B	16,703	4,347	6,887	11,234	5,297	61%	0.46	0	0.740	0.000	0.338	0.338	**66.2%**
1963	W	27,550	4,347	6,906	11,253	9,354	25%	0.25	0	0.741	0.000	0.183	0.183	**81.7%**
1964	D	14,849	4,347	5,453	9,800	4,603	63%	0.47	0	0.678	0.000	0.318	0.318	**68.2%**
1965	W	27,355	4,347	7,365	11,712	9,281	25%	0.25	0	0.761	0.000	0.188	0.188	**81.2%**
1966	B	16,995	4,347	5,637	9,984	5,406	61%	0.46	0	0.686	0.000	0.313	0.313	**68.7%**
1967	W	39,797	4,347	7,148	11,495	13,934	24%	0.24	0	0.752	0.000	0.178	0.178	**82.2%**
1968	B	16,686	4,347	3,735	8,082	5,291	61%	0.46	0	0.604	0.000	0.276	0.276	**72.4%**
1969	W	24,769	4,347	7,001	11,348	8,314	57%	0.43	0	0.745	0.000	0.317	0.317	**68.3%**
1970	W	50,156	4,347	3,481	7,828	17,809	23%	0.23	0	0.593	0.000	0.137	0.137	**86.3%**
1971	W	54,580	4,347	7,257	11,604	19,463	23%	0.23	0	0.757	0.000	0.174	0.174	**82.6%**
1972	B	19,858	4,347	6,967	11,314	6,477	59%	0.44	0	0.744	0.000	0.329	0.329	**67.1%**
1973	A	26,200	4,347	6,933	11,280	8,849	25%	0.25	0	0.742	0.000	0.185	0.185	**81.5%**
1974	W	61,590	4,347	7,175	11,522	22,085	23%	0.23	0	0.753	0.000	0.172	0.172	**82.8%**
1975	W	17,613	4,347	4,302	8,649	5,637	61%	0.45	0	0.628	0.000	0.284	0.284	**71.6%**
1976	C	16,768	4,347	5,630	9,977	5,321	61%	0.46	0	0.686	0.000	0.313	0.313	**68.7%**
1977	C	8,050	1,962	3,016	4,978	2,061	74%	0.55	0	0.469	0.000	0.258	0.258	**74.2%**
1978	A	12,279	4,376	5,516	9,892	3,642	66%	0.49	0	0.682	0.000	0.335	0.335	**66.5%**
1979	B	12,751	4,347	3,676	8,023	3,819	65%	0.49	0	0.601	0.000	0.292	0.292	**70.8%**
1980	A	20,833	4,347	7,016	11,363	6,842	59%	0.44	0	0.746	0.000	0.327	0.327	**67.3%**
1981	D	15,613	4,347	4,093	8,440	4,889	62%	0.46	0	0.619	0.000	0.287	0.287	**71.3%**
1982	W	68,144	4,347	6,972	11,319	24,536	23%	0.23	0	0.744	0.000	0.169	0.169	**83.1%**
1983	W	55,410	4,347	4,428	8,775	19,773	23%	0.23	0	0.634	0.000	0.146	0.146	**85.4%**
1984	W	82,944	3,134	3,104	6,238	30,071	22%	0.22	0	0.524	0.000	0.117	0.117	**88.3%**
1985	D	23,875	4,347	4,469	8,816	7,979	57%	0.43	0	0.636	0.000	0.272	0.272	**72.8%**
1986	W	15,727	4,347	6,973	11,320	4,932	62%	0.46	0	0.744	0.000	0.345	0.345	**65.5%**
1987	D	13,417	4,347	6,093	10,440	4,068	64%	0.48	0	0.706	0.000	0.339	0.339	**66.1%**
1988	C	15,841	4,347	6,898	11,245	4,974	62%	0.46	0	0.741	0.000	0.343	0.343	**65.7%**
1989	D	9,286	3,387	3,528	6,915	2,523	71%	0.53	0	0.553	0.000	0.292	0.292	**70.8%**
1990	C	14,588	4,347	6,202	10,549	4,506	63%	0.47	0	0.711	0.000	0.335	0.335	**66.5%**
1991	C	8,668	1,811	3,115	4,926	2,292	73%	0.54	0	0.467	0.000	0.252	0.252	**74.8%**
1992	C	7,449	3,151	1,623	4,774	1,836	76%	0.56	0	0.460	0.000	0.260	0.260	**74.0%**

JANUARY

Year	Sac River Flows	CVP	SWP	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	17,499	4,324	7,594	11,918	5,595	61%	0.27	0	0.770	0.000	0.204	0.204	**79.6%**
1923	32,283	4,324	3,637	7,961	11,124	24%	0.24	0	0.598	0.000	0.145	0.145	**85.5%**
1924	14,621	4,324	6,768	11,092	4,518	63%	0.27	0	0.734	0.000	0.202	0.202	**79.8%**
1925	10,197	3,706	3,166	6,872	2,864	69%	0.30	0	0.551	0.000	0.164	0.164	**83.6%**
1926	19,776	4,324	7,132	11,456	6,446	59%	0.26	0	0.750	0.000	0.195	0.195	**80.5%**
1927	29,469	4,324	7,277	11,601	10,072	24%	0.24	0	0.756	0.000	0.185	0.185	**81.5%**
1928	25,208	4,324	3,638	7,962	8,478	25%	0.25	0	0.598	0.000	0.150	0.150	**85.0%**
1929	15,515	4,324	7,131	11,455	4,853	62%	0.27	0	0.750	0.000	0.203	0.203	**79.7%**
1930	20,768	4,346	7,102	11,448	6,817	59%	0.26	0	0.750	0.000	0.193	0.193	**80.7%**
1931	11,970	4,324	4,877	9,201	3,527	66%	0.29	0	0.652	0.000	0.187	0.187	**81.3%**
1932	17,256	4,346	7,832	12,178	5,504	61%	0.27	0	0.781	0.000	0.208	0.208	**79.2%**
1933	12,100	4,346	5,434	9,780	3,575	66%	0.29	0	0.677	0.000	0.194	0.194	**80.6%**
1934	16,101	4,346	7,098	11,444	5,072	62%	0.27	0	0.750	0.000	0.202	0.202	**79.8%**
1935	25,469	4,346	7,671	12,017	8,575	25%	0.25	0	0.774	0.000	0.193	0.193	**80.7%**
1936	33,177	4,324	7,455	11,779	11,458	24%	0.24	0	0.764	0.000	0.184	0.184	**81.6%**
1937	15,971	4,324	7,597	11,921	5,023	62%	0.27	0	0.770	0.000	0.208	0.208	**79.2%**
1938	31,437	4,324	3,741	8,065	10,808	24%	0.24	0	0.603	0.000	0.146	0.146	**85.4%**
1939	18,410	4,324	3,239	7,563	5,935	60%	0.26	0	0.581	0.000	0.153	0.153	**84.7%**
1940	23,452	4,324	8,067	12,391	7,821	57%	0.25	0	0.791	0.000	0.200	0.200	**80.0%**
1941	72,242	4,324	8,207	12,531	26,069	23%	0.23	0	0.797	0.000	0.180	0.180	**82.0%**
1942	63,265	4,324	3,239	7,563	22,711	23%	0.23	0	0.581	0.000	0.132	0.132	**86.8%**
1943	58,060	4,324	3,304	7,628	20,765	23%	0.23	0	0.584	0.000	0.134	0.134	**86.6%**
1944	17,678	4,324	3,262	7,586	5,662	60%	0.26	0	0.582	0.000	0.154	0.154	**84.6%**
1945	12,393	4,324	4,927	9,251	3,685	66%	0.28	0	0.654	0.000	0.186	0.186	**81.4%**
1946	43,228	4,324	3,637	7,961	15,217	23%	0.23	0	0.598	0.000	0.141	0.141	**85.9%**
1947	15,223	4,324	7,432	11,756	4,743	63%	0.27	0	0.763	0.000	0.208	0.208	**79.2%**
1948	14,897	4,316	6,584	10,900	4,622	63%	0.27	0	0.726	0.000	0.199	0.199	**80.1%**
1949	14,930	4,324	6,873	11,197	4,634	63%	0.27	0	0.739	0.000	0.202	0.202	**79.8%**
1950	21,305	4,324	7,190	11,514	7,018	58%	0.26	0	0.753	0.000	0.193	0.193	**80.7%**
1951	62,208	4,324	6,696	11,020	22,316	23%	0.23	0	0.731	0.000	0.167	0.167	**83.3%**
1952	67,347	4,324	7,959	12,283	24,238	23%	0.23	0	0.786	0.000	0.178	0.178	**82.2%**
1953	64,078	4,324	3,333	7,657	23,015	23%	0.23	0	0.585	0.000	0.133	0.133	**86.7%**
1954	33,421	4,324	3,850	8,174	11,550	24%	0.24	0	0.608	0.000	0.147	0.147	**85.3%**
1955	22,265	4,324	7,257	11,581	7,377	58%	0.25	0	0.756	0.000	0.192	0.192	**80.8%**
1956	83,610	4,324	8,079	12,403	30,320	22%	0.22	0	0.791	0.000	0.177	0.177	**82.3%**
1957	18,638	4,324	3,891	8,215	6,021	60%	0.26	0	0.609	0.000	0.160	0.160	**84.0%**
1958	36,463	4,324	3,317	7,641	12,687	24%	0.24	0	0.585	0.000	0.140	0.140	**86.0%**
1959	35,162	4,324	3,333	7,657	12,200	24%	0.24	0	0.585	0.000	0.140	0.140	**86.0%**
1960	14,279	4,324	6,354	10,678	4,390	63%	0.28	0	0.716	0.000	0.198	0.198	**80.2%**
1961	15,011	4,324	7,087	11,411	4,664	63%	0.27	0	0.748	0.000	0.204	0.204	**79.6%**
1962	12,653	4,324	3,885	8,209	3,782	65%	0.28	0	0.609	0.000	0.172	0.172	**82.8%**
1963	17,808	4,324	7,254	11,578	5,710	60%	0.26	0	0.755	0.000	0.200	0.200	**80.0%**
1964	24,200	4,324	3,853	8,177	8,101	57%	0.25	0	0.608	0.000	0.153	0.153	**84.7%**
1965	81,236	4,324	8,500	12,824	29,432	22%	0.22	0	0.809	0.000	0.182	0.182	**81.8%**
1966	29,632	4,324	3,657	7,981	10,132	24%	0.24	0	0.599	0.000	0.147	0.147	**85.3%**
1967	35,097	4,324	7,697	12,021	12,176	24%	0.24	0	0.775	0.000	0.186	0.186	**81.4%**
1968	30,640	4,324	3,333	7,657	10,509	24%	0.24	0	0.585	0.000	0.143	0.143	**85.7%**
1969	68,681	4,324	5,697	10,021	24,737	23%	0.23	0	0.688	0.000	0.156	0.156	**84.4%**
1970	92,669	4,292	3,333	7,625	33,708	22%	0.22	0	0.584	0.000	0.130	0.130	**87.0%**
1971	45,847	4,324	4,737	9,061	16,197	23%	0.23	0	0.646	0.000	0.151	0.151	**84.9%**
1972	20,394	4,324	3,891	8,215	6,677	59%	0.26	0	0.609	0.000	0.157	0.157	**84.3%**
1973	49,750	4,324	7,274	11,598	17,656	23%	0.23	0	0.756	0.000	0.175	0.175	**82.5%**
1974	78,422	4,324	3,637	7,961	28,380	22%	0.22	0	0.598	0.000	0.135	0.135	**86.5%**
1975	18,670	4,324	3,848	8,172	6,033	60%	0.26	0	0.608	0.000	0.159	0.159	**84.1%**
1976	16,768	4,324	3,827	8,151	5,321	61%	0.27	0	0.607	0.000	0.162	0.162	**83.8%**
1977	7,904	2,565	2,498	5,063	2,006	75%	0.32	0	0.473	0.000	0.151	0.151	**84.9%**
1978	43,066	2,684	7,767	10,451	15,157	23%	0.23	0	0.706	0.000	0.166	0.166	**83.4%**
1979	27,241	4,324	3,262	7,586	9,238	25%	0.25	0	0.582	0.000	0.144	0.144	**85.6%**
1980	61,557	4,324	3,159	7,483	22,072	23%	0.23	0	0.578	0.000	0.132	0.132	**86.8%**
1981	28,705	4,324	3,356	7,680	9,786	25%	0.25	0	0.586	0.000	0.144	0.144	**85.6%**
1982	51,165	4,324	7,641	11,965	18,186	23%	0.23	0	0.772	0.000	0.179	0.179	**82.1%**
1983	59,150	4,324	2,648	6,972	21,172	23%	0.23	0	0.555	0.000	0.127	0.127	**87.3%**
1984	47,359	1,448	2,881	4,329	16,762	23%	0.23	0	0.441	0.000	0.103	0.103	**89.7%**
1985	16,800	4,324	3,872	8,196	5,333	61%	0.27	0	0.609	0.000	0.163	0.163	**83.7%**
1986	21,500	4,324	7,236	11,560	7,091	58%	0.26	0	0.755	0.000	0.193	0.193	**80.7%**
1987	16,735	1,484	5,663	7,147	5,309	61%	0.27	0	0.563	0.000	0.151	0.151	**84.9%**
1988	25,534	4,324	7,092	11,416	8,600	25%	0.25	0	0.748	0.000	0.187	0.187	**81.3%**
1989	12,490	4,324	4,849	9,173	3,721	66%	0.28	0	0.651	0.000	0.185	0.185	**81.5%**
1990	21,338	2,868	7,051	9,919	7,030	58%	0.26	0	0.683	0.000	0.175	0.175	**82.5%**
1991	6,847	1,787	1,668	3,455	1,611	78%	0.33	0	0.403	0.000	0.134	0.134	**86.6%**
1992	12,133	4,346	4,759	9,105	3,588	66%	0.29	0	0.648	0.000	0.185	0.185	**81.5%**

FEBRUARY

Year	Sac River Flow	CVP	SWP	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	34,571	4,348	6,300	10,648	11,980	24%	0.24	0	0.769	0.000	0.185	0.185	**81.5%**
1923	24,164	4,381	2,380	6,761	8,087	58%	0.25	0	0.600	0.000	0.151	0.151	**84.9%**
1924	16,898	4,321	4,868	9,189	5,370	60%	0.27	0	0.706	0.000	0.188	0.188	**81.2%**
1925	44,709	4,378	7,584	11,962	15,771	23%	0.23	0	0.826	0.000	0.193	0.193	**80.7%**
1926	36,714	4,332	7,299	11,631	12,781	24%	0.24	0	0.812	0.000	0.194	0.194	**80.6%**
1927	85,852	3,228	8,271	11,499	31,159	22%	0.22	0	0.806	0.000	0.180	0.180	**82.0%**
1928	25,695	4,354	4,377	8,731	8,660	25%	0.25	0	0.686	0.000	0.171	0.171	**82.9%**
1929	18,528	4,333	4,152	8,485	5,980	60%	0.26	0	0.675	0.000	0.177	0.177	**82.3%**
1930	15,863	3,157	3,872	7,029	4,983	62%	0.27	0	0.612	0.000	0.165	0.165	**83.5%**
1931	11,092	3,347	1,819	5,166	3,198	66%	0.29	0	0.531	0.000	0.155	0.155	**84.5%**
1932	13,995	4,397	5,643	10,040	4,284	64%	0.28	0	0.743	0.000	0.206	0.206	**79.4%**
1933	11,524	3,872	2,600	6,472	3,360	64%	0.29	0	0.588	0.000	0.170	0.170	**83.0%**
1934	12,748	1,518	4,510	6,028	3,818	66%	0.28	0	0.568	0.000	0.161	0.161	**83.9%**
1935	12,406	1,282	3,952	5,234	3,690	67%	0.28	0	0.534	0.000	0.152	0.152	**84.8%**
1936	48,348	4,244	8,500	12,744	17,132	23%	0.23	0	0.860	0.000	0.200	0.200	**80.0%**
1937	33,203	4,329	4,288	8,617	11,468	24%	0.24	0	0.681	0.000	0.164	0.164	**83.6%**
1938	82,359	4,368	3,939	8,307	29,852	22%	0.22	0	0.667	0.000	0.150	0.150	**85.0%**
1939	19,032	1,837	3,955	5,792	6,168	59%	0.26	0	0.558	0.000	0.146	0.146	**85.4%**
1940	42,906	4,339	8,465	12,804	15,097	23%	0.24	0	0.862	0.000	0.203	0.203	**79.7%**
1941	75,031	4,393	6,719	11,112	27,112	23%	0.23	0	0.789	0.000	0.178	0.178	**82.2%**
1942	78,344	4,380	3,955	8,335	28,351	22%	0.23	0	0.669	0.000	0.150	0.150	**85.0%**
1943	52,253	4,375	4,005	8,380	18,593	23%	0.23	0	0.670	0.000	0.155	0.155	**84.5%**
1944	30,215	4,340	3,958	8,298	10,350	24%	0.24	0	0.667	0.000	0.163	0.163	**83.7%**
1945	40,495	4,339	3,998	8,337	14,195	23%	0.24	0	0.669	0.000	0.158	0.158	**84.2%**
1946	24,812	4,377	3,612	7,989	8,330	57%	0.25	0	0.654	0.000	0.164	0.164	**83.6%**
1947	21,571	4,342	4,026	8,368	7,118	58%	0.26	0	0.670	0.000	0.171	0.171	**82.9%**
1948	15,577	4,331	1,775	6,106	4,876	64%	0.27	0	0.572	0.000	0.155	0.155	**84.5%**
1949	16,223	4,342	4,200	8,542	5,118	61%	0.27	0	0.678	0.000	0.182	0.182	**81.8%**
1950	35,580	4,345	7,539	11,884	12,357	24%	0.24	0	0.823	0.000	0.197	0.197	**80.3%**
1951	60,572	4,381	4,675	9,056	21,704	23%	0.23	0	0.700	0.000	0.160	0.160	**84.0%**
1952	62,499	4,392	3,909	8,301	22,425	23%	0.23	0	0.667	0.000	0.152	0.152	**84.8%**
1953	28,341	4,381	4,060	8,441	9,650	25%	0.25	0	0.673	0.000	0.166	0.166	**83.4%**
1954	57,151	4,370	4,636	9,006	20,424	23%	0.23	0	0.698	0.000	0.160	0.160	**84.0%**
1955	16,295	4,356	3,352	7,708	5,144	61%	0.27	0	0.641	0.000	0.172	0.172	**82.8%**
1956	61,543	4,382	4,675	9,057	22,067	23%	0.23	0	0.700	0.000	0.160	0.160	**84.0%**
1957	33,149	4,343	4,638	8,981	11,448	24%	0.24	0	0.697	0.000	0.168	0.168	**83.2%**
1958	62,661	4,354	4,045	8,399	22,485	23%	0.23	0	0.671	0.000	0.153	0.153	**84.7%**
1959	50,075	4,356	4,060	8,416	17,778	23%	0.23	0	0.672	0.000	0.156	0.156	**84.4%**
1960	25,852	4,330	7,356	11,686	8,718	25%	0.25	0	0.814	0.000	0.203	0.203	**79.7%**
1961	32,843	4,346	7,116	11,462	11,333	24%	0.24	0	0.804	0.000	0.194	0.194	**80.6%**
1962	44,313	4,337	8,346	12,683	15,623	23%	0.23	0	0.857	0.000	0.201	0.201	**79.9%**
1963	58,231	4,380	7,779	12,159	20,828	23%	0.23	0	0.834	0.000	0.191	0.191	**80.9%**
1964	19,176	4,376	3,572	7,948	6,222	61%	0.26	0	0.652	0.000	0.170	0.170	**83.0%**
1965	33,077	4,353	6,834	11,187	11,421	24%	0.24	0	0.792	0.000	0.191	0.191	**80.9%**
1966	26,775	4,380	4,377	8,757	9,064	25%	0.25	0	0.687	0.000	0.170	0.170	**83.0%**
1967	43,106	4,393	3,201	7,594	15,172	24%	0.23	0	0.636	0.000	0.149	0.149	**85.1%**
1968	54,520	2,347	4,060	6,407	19,440	23%	0.23	0	0.585	0.000	0.135	0.135	**86.5%**
1969	67,486	4,393	3,171	7,564	24,290	23%	0.23	0	0.635	0.000	0.144	0.144	**85.6%**
1970	57,565	1,312	4,060	5,372	20,579	23%	0.23	0	0.540	0.000	0.124	0.124	**87.6%**
1971	28,810	4,392	4,624	9,016	9,825	24%	0.25	0	0.698	0.000	0.171	0.171	**82.9%**
1972	24,217	3,642	4,638	8,280	8,107	57%	0.25	0	0.666	0.000	0.167	0.167	**83.3%**
1973	70,961	4,362	4,423	8,785	25,590	23%	0.23	0	0.688	0.000	0.156	0.156	**84.4%**
1974	41,918	4,367	4,377	8,744	14,727	24%	0.24	0	0.686	0.000	0.162	0.162	**83.8%**
1975	58,807	4,346	4,636	8,982	21,044	23%	0.23	0	0.697	0.000	0.160	0.160	**84.0%**
1976	19,523	4,336	4,237	8,573	6,352	59%	0.26	0	0.679	0.000	0.177	0.177	**82.3%**
1977	12,154	872	1,415	2,287	3,596	68%	0.29	0	0.406	0.000	0.116	0.116	**88.4%**
1978	51,173	1,911	7,923	9,834	18,189	23%	0.23	0	0.734	0.000	0.170	0.170	**83.0%**
1979	42,044	4,342	3,955	8,297	14,774	24%	0.24	0	0.667	0.000	0.157	0.157	**84.3%**
1980	69,453	4,351	3,768	8,119	25,026	23%	0.23	0	0.659	0.000	0.149	0.149	**85.1%**
1981	29,674	3,190	4,062	7,252	10,148	24%	0.24	0	0.622	0.000	0.152	0.152	**84.8%**
1982	65,650	4,381	4,620	9,001	23,603	23%	0.23	0	0.697	0.000	0.159	0.159	**84.1%**
1983	82,917	3,534	2,793	6,327	30,061	22%	0.22	0	0.581	0.000	0.130	0.130	**87.0%**
1984	36,004	1,594	3,847	5,441	12,516	24%	0.24	0	0.543	0.000	0.130	0.130	**87.0%**
1985	18,978	4,351	4,636	8,987	6,148	58%	0.26	0	0.697	0.000	0.182	0.182	**81.8%**
1986	96,764	4,344	7,635	11,979	35,240	22%	0.22	0	0.827	0.000	0.184	0.184	**81.6%**
1987	23,030	1,359	4,219	5,578	7,663	57%	0.25	0	0.549	0.000	0.139	0.139	**86.1%**
1988	17,281	4,251	2,700	6,951	5,513	62%	0.27	0	0.608	0.000	0.162	0.162	**83.8%**
1989	12,460	1,055	1,790	2,845	3,710	67%	0.28	0	0.430	0.000	0.122	0.122	**87.8%**
1990	16,692	1,317	6,471	7,788	5,293	61%	0.27	0	0.645	0.000	0.172	0.172	**82.8%**
1991	10,443	553	111	664	2,956	67%	0.30	0	0.336	0.000	0.099	0.099	**90.1%**
1992	31,415	1,257	7,456	8,713	10,799	24%	0.24	0	0.685	0.000	0.166	0.166	**83.4%**

MARCH

Year	Sac River Flow	CVP	SWP	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	31,551	3,872	4,143	8,015	10,850	24%	0.24	0	0.744	0.144	0.290	0.290	**71.0%**
1923	17,939	4,321	3,368	7,689	5,759	26%	0.26	0	0.730	0.144	0.299	0.299	**70.1%**
1924	12,718	1,736	2,275	4,011	3,807	28%	0.28	0	0.571	0.144	0.265	0.265	**73.5%**
1925	19,142	4,264	3,964	8,228	6,209	26%	0.26	0	0.754	0.144	0.303	0.303	**69.7%**
1926	19,175	4,321	3,416	7,737	6,221	26%	0.26	0	0.732	0.144	0.298	0.298	**70.2%**
1927	43,863	3,210	4,155	7,365	15,455	23%	0.23	0	0.716	0.144	0.278	0.278	**72.2%**
1928	86,229	4,321	4,424	8,745	31,300	22%	0.22	0	0.776	0.144	0.286	0.286	**71.4%**
1929	14,491	3,395	2,782	6,177	4,470	28%	0.28	0	0.665	0.144	0.287	0.287	**71.3%**
1930	30,608	3,121	4,690	7,811	10,497	24%	0.24	0	0.736	0.144	0.288	0.288	**71.2%**
1931	9,205	2,075	1,918	3,993	2,493	31%	0.31	0	0.570	0.144	0.274	0.274	**72.6%**
1932	10,506	1,142	2,714	3,856	2,979	30%	0.30	0	0.564	0.144	0.268	0.268	**73.2%**
1933	10,392	425	4,403	4,828	2,937	30%	0.30	0	0.606	0.144	0.281	0.281	**71.9%**
1934	14,165	2,338	1,765	4,103	4,348	28%	0.28	0	0.575	0.144	0.263	0.263	**73.7%**
1935	24,916	4,321	6,987	11,308	8,368	25%	0.25	0	0.887	0.144	0.330	0.330	**67.0%**
1936	33,942	3,237	5,141	8,378	11,744	24%	0.24	0	0.760	0.144	0.293	0.293	**70.7%**
1937	38,203	4,321	4,024	8,345	13,338	24%	0.24	0	0.759	0.144	0.290	0.290	**71.0%**
1938	78,634	4,321	3,966	8,287	28,459	22%	0.22	0	0.756	0.144	0.282	0.282	**71.8%**
1939	16,394	2,760	3,985	6,745	5,181	27%	0.27	0	0.689	0.144	0.291	0.291	**70.9%**
1940	59,589	4,321	4,648	8,969	21,336	23%	0.23	0	0.786	0.144	0.291	0.291	**70.9%**
1941	58,581	4,151	3,846	7,997	20,959	23%	0.23	0	0.744	0.144	0.282	0.282	**71.8%**
1942	27,095	4,321	4,007	8,328	9,183	25%	0.25	0	0.758	0.144	0.296	0.296	**70.4%**
1943	64,598	4,321	4,056	8,377	23,210	23%	0.23	0	0.760	0.144	0.284	0.284	**71.6%**
1944	25,094	4,321	4,007	8,328	8,435	25%	0.25	0	0.758	0.144	0.298	0.298	**70.2%**
1945	27,030	4,321	4,149	8,470	9,159	25%	0.25	0	0.764	0.144	0.298	0.298	**70.2%**
1946	23,533	4,321	4,424	8,745	7,851	25%	0.25	0	0.776	0.144	0.304	0.304	**69.6%**
1947	22,509	4,275	4,005	8,280	7,468	25%	0.25	0	0.756	0.144	0.300	0.300	**70.0%**
1948	19,191	4,321	3,455	7,776	6,227	26%	0.26	0	0.734	0.144	0.298	0.298	**70.2%**
1949	41,748	2,794	7,123	9,917	14,664	24%	0.24	0	0.827	0.144	0.305	0.305	**69.5%**
1950	22,655	4,321	4,669	8,990	7,523	25%	0.25	0	0.787	0.144	0.307	0.307	**69.3%**
1951	29,827	4,072	4,699	8,771	10,205	24%	0.24	0	0.777	0.144	0.299	0.299	**70.1%**
1952	57,524	4,321	3,934	8,255	20,564	23%	0.23	0	0.755	0.144	0.284	0.284	**71.6%**
1953	24,899	3,482	4,111	7,593	8,362	25%	0.25	0	0.726	0.144	0.290	0.290	**71.0%**
1954	49,538	4,321	4,685	9,006	17,577	23%	0.23	0	0.787	0.144	0.294	0.294	**70.6%**
1955	17,906	4,321	2,951	7,272	5,747	26%	0.26	0	0.712	0.144	0.294	0.294	**70.6%**
1956	36,674	4,201	4,699	8,900	12,766	24%	0.24	0	0.783	0.144	0.297	0.297	**70.3%**
1957	44,383	4,321	4,381	8,702	15,649	23%	0.23	0	0.774	0.144	0.292	0.292	**70.8%**
1958	93,612	3,928	4,057	7,985	34,061	22%	0.22	0	0.743	0.144	0.278	0.278	**72.2%**
1959	22,948	4,005	3,121	7,126	7,632	25%	0.25	0	0.706	0.144	0.287	0.287	**71.3%**
1960	22,086	3,763	4,064	7,827	7,310	25%	0.25	0	0.736	0.144	0.295	0.295	**70.5%**
1961	20,947	3,534	4,064	7,598	6,884	26%	0.26	0	0.726	0.144	0.294	0.294	**70.6%**
1962	27,648	4,321	3,503	7,824	9,390	25%	0.25	0	0.736	0.144	0.290	0.290	**71.0%**
1963	32,641	4,321	4,931	9,252	11,258	24%	0.24	0	0.798	0.144	0.302	0.302	**69.8%**
1964	15,564	3,002	3,348	6,350	4,871	27%	0.27	0	0.672	0.144	0.287	0.287	**71.3%**
1965	21,175	4,321	4,277	8,598	6,969	26%	0.26	0	0.770	0.144	0.305	0.305	**69.5%**
1966	28,689	4,321	4,424	8,745	9,780	25%	0.25	0	0.776	0.144	0.299	0.299	**70.1%**
1967	54,483	4,321	3,283	7,604	19,426	23%	0.23	0	0.727	0.144	0.278	0.278	**72.2%**
1968	36,788	3,084	4,111	7,195	12,809	24%	0.24	0	0.709	0.144	0.279	0.279	**72.1%**
1969	45,326	4,164	3,251	7,415	16,002	23%	0.23	0	0.718	0.144	0.279	0.279	**72.1%**
1970	35,812	3,202	4,111	7,313	12,444	24%	0.24	0	0.714	0.144	0.281	0.281	**71.9%**
1971	51,262	4,321	4,699	9,020	18,222	23%	0.23	0	0.788	0.144	0.293	0.293	**70.7%**
1972	32,933	3,095	4,355	7,450	11,367	24%	0.24	0	0.720	0.144	0.283	0.283	**71.7%**
1973	47,554	4,321	4,452	8,773	16,835	23%	0.23	0	0.777	0.144	0.292	0.292	**70.8%**
1974	100,199	4,321	4,424	8,745	36,524	22%	0.22	0	0.776	0.144	0.285	0.285	**71.5%**
1975	75,999	4,321	4,685	9,006	27,474	23%	0.23	0	0.787	0.144	0.289	0.289	**71.1%**
1976	19,988	4,417	3,656	8,073	6,525	26%	0.26	0	0.747	0.144	0.300	0.300	**70.0%**
1977	7,579	1,023	1,286	2,309	1,884	32%	0.32	0	0.497	0.144	0.258	0.258	**74.2%**
1978	46,676	2,211	3,905	6,116	16,507	23%	0.23	0	0.662	0.144	0.265	0.265	**73.5%**
1979	32,592	4,321	4,007	8,328	11,239	24%	0.24	0	0.758	0.144	0.293	0.293	**70.7%**
1980	36,479	2,288	3,344	5,632	12,693	24%	0.24	0	0.641	0.144	0.263	0.263	**73.7%**
1981	32,494	3,083	4,111	7,194	11,203	24%	0.24	0	0.709	0.144	0.281	0.281	**71.9%**
1982	69,087	4,321	4,644	8,965	24,889	23%	0.23	0	0.786	0.144	0.290	0.290	**71.0%**
1983	81,935	2,138	2,628	4,766	29,694	22%	0.22	0	0.603	0.144	0.247	0.247	**75.3%**
1984	36,495	3,185	4,007	7,192	12,699	24%	0.24	0	0.709	0.144	0.279	0.279	**72.1%**
1985	20,833	4,321	4,265	8,586	6,842	26%	0.26	0	0.769	0.144	0.305	0.305	**69.5%**
1986	72,535	4,275	4,180	8,455	26,178	23%	0.23	0	0.764	0.144	0.284	0.284	**71.6%**
1987	30,022	2,439	4,136	6,575	10,278	24%	0.24	0	0.682	0.144	0.276	0.276	**72.4%**
1988	11,124	2,155	1,860	4,015	3,210	29%	0.29	0	0.571	0.144	0.269	0.269	**73.1%**
1989	41,667	4,321	6,961	11,282	14,633	24%	0.24	0	0.886	0.144	0.319	0.319	**68.1%**
1990	14,588	2,405	3,566	5,971	4,506	27%	0.27	0	0.656	0.144	0.285	0.285	**71.5%**
1991	29,681	4,417	7,081	11,498	10,151	24%	0.24	0	0.896	0.144	0.328	0.328	**67.2%**
1992	20,102	2,173	6,261	8,434	6,568	26%	0.26	0	0.763	0.144	0.304	0.304	**69.6%**

Formulas: Sacramento River Spring Run Young of Year Smolt Survival Model

C10 ='Study 622a Flow Data'!C7
D10 ='Study 622a Flow Data'!M7
E10 ='Study 622a Flow Data'!W7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.45*(0.133*C10+829)/(C10-G10))+(0.55*H10)
J10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
K10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*F10)
L10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 622a Flow Data'!D7
R10 ='Study 622a Flow Data'!N7
S10 ='Study 622a Flow Data'!X7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
Y10 =(-0.5916024)+(0.017968*$T$3)+(0.0000434*T10)
Z10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 622a Flow Data'!E7
AF10 ='Study 622a Flow Data'!O7
AG10 ='Study 622a Flow Data'!Y7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
AM10 =(-0.5916024)+(0.017968*$BC$2)+(0.0000434*AH10)
AN10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

AS10 ='Study 622a Flow Data'!F7
AT10 ='Study 622a Flow Data'!P7
AU10 ='Study 622a Flow Data'!Z7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$G$2,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BA10 =IF(((-0.5916024)+(0.017968*$BC$3)+(0.0000434*AV10))>1,1,((-0.5916024)+(0.017968*$BC$3)+(0.0000434*AV10)))
BB10 =(-1.613493+(0.0319584*$BC$3)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =(AZ10+BC10-(AZ10*BC10))
BE10 =1-BD10

Study 622a Sacramento River Spring Run YOY Smolt Survival Model (continued)

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

APRIL

Row	Sac River Flows (BG)	CVP (BH)	SWP (BI)	CVP + SWP exports (BJ)	Calculated Sutter & Steamboat Slough Q (BK)	Percent (BL)	X-Channel Closed (BM)	observed temp (BN)	m1 (BO)	m2 (BP)	Calculated Mortality m3 (BQ)	m23 (BR)	m123 (BS)	Calculated Survival s123 (BT)
10	22,822	3,073	2,965	6,038	7,585	25%	0.25	58.5	0.002	0.722	0.256	0.374	0.375	**62.5%**
11	22,234	3,466	3,358	6,824	7,365	25%	0.25	58.3	0.000	0.752	0.250	0.378	0.378	**62.2%**
12	7,327	1,412	1,238	2,650	1,790	33%	0.33	61.5	0.128	0.628	0.352	0.442	0.514	**48.6%**
13	22,385	3,155	3,047	6,202	7,422	25%	0.25	59.1	0.027	0.739	0.275	0.393	0.410	**59.0%**
14	21,057	2,841	2,733	5,574	6,925	26%	0.26	61.6	0.133	0.757	0.355	0.458	0.530	**47.0%**
15	48,215	3,126	3,018	6,144	17,082	23%	0.23	56.8	0.000	0.696	0.202	0.317	0.317	**68.3%**
16	29,208	3,326	3,218	6,544	9,974	25%	0.25	58.7	0.011	0.747	0.262	0.381	0.388	**61.2%**
17	8,218	1,491	1,317	2,808	2,124	32%	0.32	56.3	0.000	0.542	0.186	0.298	0.298	**70.2%**
18	12,638	1,836	1,728	3,564	3,777	28%	0.28	59.6	0.048	0.634	0.291	0.388	0.418	**58.2%**
19	9,159	1,502	1,328	2,830	2,475	31%	0.31	62.8	0.183	0.660	0.393	0.475	0.571	**42.9%**
20	11,277	2,156	1,982	4,138	3,267	29%	0.29	58.9	0.019	0.646	0.269	0.379	0.390	**61.0%**
21	12,083	1,910	1,554	3,464	3,569	29%	0.29	60.1	0.069	0.639	0.307	0.402	0.444	**55.6%**
22	12,150	1,806	1,633	3,439	3,594	29%	0.29	63.6	0.217	0.700	0.419	0.499	0.608	**39.2%**
23	24,250	3,526	3,418	6,944	8,120	25%	0.25	58.9	0.019	0.768	0.269	0.394	0.406	**59.4%**
24	21,780	3,007	2,899	5,906	7,196	26%	0.26	59.7	0.053	0.737	0.294	0.408	0.439	**56.1%**
25	23,259	3,541	4,610	8,151	7,749	25%	0.25	58.8	0.015	0.819	0.266	0.406	0.414	**58.6%**
26	47,173	4,006	4,377	8,383	16,693	23%	0.23	56.3	0.000	0.784	0.186	0.325	0.325	**67.5%**
27	10,705	2,016	1,909	3,925	3,054	29%	0.29	63.3	0.204	0.716	0.409	0.500	0.602	**39.8%**
28	41,728	3,526	3,418	6,944	14,656	24%	0.24	57.4	0.000	0.741	0.221	0.343	0.343	**65.7%**
29	42,367	4,707	4,708	9,415	14,895	24%	0.24	56.9	0.000	0.839	0.205	0.354	0.354	**64.6%**
30	43,308	3,526	3,418	6,944	15,247	23%	0.23	56.5	0.000	0.725	0.192	0.317	0.317	**68.3%**
31	29,410	4,707	4,876	9,583	10,049	24%	0.24	58.8	0.015	0.881	0.266	0.416	0.425	**57.5%**
32	9,814	2,293	2,185	4,478	2,721	30%	0.30	58.4	0.000	0.652	0.253	0.373	0.373	**62.7%**
33	11,747	2,181	2,073	4,254	3,443	29%	0.29	60.6	0.090	0.682	0.323	0.426	0.478	**52.2%**
34	12,218	2,518	2,410	4,928	3,619	29%	0.29	60.7	0.095	0.713	0.326	0.437	0.490	**51.0%**
35	13,797	1,976	1,868	3,844	4,210	28%	0.28	62.5	0.170	0.698	0.384	0.471	0.561	**43.9%**
36	23,040	2,864	2,756	5,620	7,667	25%	0.25	56.6	0.000	0.669	0.195	0.315	0.315	**68.5%**
37	13,209	1,970	1,862	3,832	3,990	28%	0.28	61.7	0.137	0.683	0.358	0.449	0.525	**47.5%**
38	19,276	2,555	2,447	5,002	6,259	26%	0.26	61.3	0.120	0.727	0.346	0.445	0.512	**48.8%**
39	14,738	2,302	2,194	4,496	4,562	27%	0.27	59.9	0.061	0.680	0.301	0.405	0.441	**55.9%**
40	56,652	4,707	4,166	8,873	20,238	23%	0.23	55.5	0.000	0.791	0.160	0.305	0.305	**69.5%**
41	16,184	2,533	2,425	4,958	5,103	27%	0.27	58.8	0.015	0.680	0.266	0.377	0.386	**61.4%**
42	39,863	3,126	3,018	6,144	13,959	24%	0.24	58.4	0.000	0.724	0.253	0.364	0.364	**63.6%**
43	9,478	1,595	1,487	3,082	2,595	30%	0.30	56.4	0.000	0.556	0.189	0.300	0.300	**70.0%**
44	20,436	2,829	2,721	5,550	6,693	26%	0.26	59.7	0.053	0.722	0.294	0.405	0.436	**56.4%**
45	19,578	2,772	2,664	5,436	6,372	26%	0.26	60.5	0.086	0.731	0.320	0.427	0.476	**52.4%**
46	52,282	4,564	5,062	9,626	18,603	23%	0.23	57.4	0.000	0.858	0.221	0.368	0.368	**63.2%**
47	8,823	1,824	1,716	3,540	2,350	31%	0.31	63	0.191	0.694	0.400	0.491	0.588	**41.2%**
48	12,856	401	3,183	3,584	3,858	28%	0.28	59.5	0.044	0.633	0.288	0.385	0.413	**58.7%**
49	12,655	410	2,926	3,336	3,783	28%	0.28	60.1	0.069	0.633	0.307	0.399	0.441	**55.9%**
50	13,512	2,280	2,172	4,452	4,103	28%	0.28	61.8	0.141	0.712	0.362	0.459	0.536	**46.4%**
51	69,457	3,526	3,418	6,944	25,027	23%	0.23	53.7	0.000	0.675	0.103	0.232	0.232	**76.8%**
52	8,957	1,505	1,397	2,902	2,400	31%	0.31	59.3	0.036	0.600	0.282	0.380	0.402	**59.8%**
53	45,627	3,526	3,418	6,944	16,115	23%	0.23	56.9	0.000	0.732	0.205	0.328	0.328	**67.2%**
54	12,806	2,155	2,047	4,202	3,839	28%	0.28	61.9	0.145	0.703	0.365	0.460	0.539	**46.1%**
55	39,930	4,190	4,947	9,137	13,984	24%	0.24	53.8	0.000	0.772	0.106	0.263	0.263	**73.7%**
56	14,251	2,279	2,171	4,450	4,380	28%	0.28	61.5	0.128	0.707	0.352	0.450	0.520	**48.0%**
57	44,787	3,447	4,166	7,613	15,800	23%	0.23	56.4	0.000	0.752	0.189	0.321	0.321	**67.9%**
58	13,814	2,181	2,073	4,254	4,216	28%	0.28	58.8	0.015	0.650	0.266	0.372	0.382	**61.8%**
59	20,755	2,902	2,794	5,696	6,812	26%	0.26	58.7	0.011	0.710	0.262	0.378	0.384	**61.6%**
60	12,453	1,826	1,718	3,544	3,707	28%	0.28	58.5	0.002	0.613	0.256	0.358	0.359	**64.1%**
61	19,511	3,218	3,110	6,328	6,347	26%	0.26	61.3	0.120	0.784	0.346	0.460	0.525	**47.5%**
62	33,208	4,707	4,738	9,445	11,470	24%	0.24	56.8	0.000	0.839	0.202	0.355	0.355	**64.5%**
63	25,763	3,526	3,418	6,944	8,685	25%	0.25	56.8	0.000	0.730	0.202	0.333	0.333	**66.7%**
64	9,428	996	2,036	3,032	2,576	30%	0.30	58.9	0.019	0.598	0.269	0.369	0.381	**61.9%**
65	9,125	1,274	1,583	2,857	2,463	31%	0.31	64.3	0.246	0.688	0.441	0.517	0.636	**36.4%**
66	38,703	3,547	4,074	7,621	13,525	24%	0.24	56.9	0.000	0.762	0.205	0.337	0.337	**66.3%**
67	17,696	2,997	2,889	5,886	5,668	26%	0.26	59.8	0.057	0.738	0.298	0.414	0.448	**55.2%**
68	19,814	2,799	2,691	5,490	6,460	26%	0.26	57.1	0.000	0.673	0.211	0.331	0.331	**66.9%**
69	16,990	2,528	2,420	4,948	5,404	27%	0.27	61.5	0.128	0.728	0.352	0.452	0.523	**47.7%**
70	75,843	3,940	5,569	9,509	27,415	23%	0.23	54.1	0.000	0.793	0.115	0.268	0.268	**73.2%**
71	68,298	3,422	3,649	7,071	24,593	23%	0.23	55	0.000	0.704	0.144	0.271	0.271	**72.9%**
72	16,016	2,372	2,264	4,636	5,040	27%	0.27	59.7	0.053	0.682	0.294	0.399	0.431	**56.9%**
73	13,327	1,985	1,877	3,862	4,034	28%	0.28	60.8	0.099	0.668	0.330	0.424	0.481	**51.9%**
74	20,772	2,317	5,214	7,531	6,819	26%	0.26	60.4	0.082	0.821	0.317	0.446	0.492	**50.8%**
75	10,974	431	2,814	3,245	3,154	29%	0.29	65.7	0.305	0.730	0.486	0.557	0.692	**30.8%**
76	9,092	1,481	1,373	2,854	2,450	31%	0.31	59.9	0.061	0.609	0.301	0.395	0.432	**56.8%**
77	23,629	2,666	2,558	5,224	7,887	25%	0.25	61.4	0.124	0.738	0.349	0.447	0.516	**48.4%**
78	12,285	1,784	1,611	3,395	3,645	29%	0.29	61.6	0.133	0.663	0.355	0.443	0.517	**48.3%**
79	15,276	2,047	1,874	3,921	4,763	27%	0.27	60.8	0.099	0.671	0.330	0.422	0.480	**52.0%**
80	11,999	1,800	1,626	3,426	3,538	29%	0.29	61.2	0.116	0.657	0.342	0.432	0.498	**50.2%**

MAY

Row	Sac River Flows (BV)	CVP (BW)	SWP (BX)	CVP + SWP & Sutter Exports (BY)	Calculated Steamboat Slough Q (BZ)	Percent (CA)	X-channel Closed (CB)	USBR observed temp f (CC)	m1 (CD)	m2 (CE)	Calculated Mortality m3 (CF)	m23 (CG)	m123 (CH)	Calculated Survival s123 (CI)
10	46,530	3,073	3,275	6,348	16,452	23%	0.23	61.2	0.116	0.784	0.342	0.445	0.509	**49.1%**
11	14,377	3,466	2,618	6,084	4,427	63%	0.47	62.4	0.166	0.794	0.381	0.576	0.646	**35.4%**
12	8,327	1,412	761	2,173	2,164	74%	0.55	69.2	0.452	0.746	0.598	0.679	0.824	**17.6%**
13	12,067	3,155	2,186	5,341	3,563	66%	0.49	63.2	0.200	0.776	0.406	0.588	0.671	**32.9%**
14	12,555	2,841	1,825	4,666	3,746	65%	0.49	65.7	0.305	0.791	0.486	0.635	0.746	**25.4%**
15	26,786	3,126	3,275	6,401	9,068	25%	0.25	62.6	0.175	0.811	0.387	0.492	0.581	**41.9%**
16	19,240	3,326	2,701	6,027	6,246	59%	0.44	66.6	0.343	0.867	0.515	0.671	0.784	**21.6%**
17	9,303	1,491	118	1,609	2,529	71%	0.53	66.1	0.322	0.666	0.499	0.587	0.720	**28.0%**
18	11,433	1,836	1,646	3,482	3,326	67%	0.50	63.1	0.196	0.693	0.403	0.548	0.636	**36.4%**
19	10,278	1,502	1,460	2,962	2,894	69%	0.51	70.5	0.507	0.804	0.640	0.724	0.864	**13.6%**
20	10,831	2,156	1,946	4,102	3,101	68%	0.51	65.5	0.297	0.763	0.480	0.623	0.735	**26.5%**
21	8,018	1,910	941	2,851	2,049	74%	0.55	63.7	0.221	0.677	0.422	0.563	0.659	**34.1%**
22	8,506	1,806	932	2,738	2,231	73%	0.54	68.3	0.414	0.754	0.569	0.670	0.807	**19.3%**
23	28,786	3,526	2,856	6,382	9,816	25%	0.25	64	0.234	0.835	0.432	0.531	0.640	**36.0%**
24	17,630	3,007	3,059	6,066	5,643	61%	0.45	64.9	0.271	0.838	0.461	0.631	0.731	**26.9%**
25	15,727	3,541	3,937	7,478	4,932	62%	0.46	64.5	0.255	0.892	0.448	0.653	0.742	**25.8%**
26	57,426	4,006	5,445	9,451	20,527	23%	0.23	62.5	0.170	0.942	0.384	0.512	0.595	**40.5%**
27	7,953	2,016	1,635	3,651	2,024	75%	0.55	68	0.402	0.789	0.560	0.686	0.812	**18.8%**
28	17,776	3,526	3,040	6,566	5,698	60%	0.45	65.6	0.301	0.872	0.483	0.659	0.761	**23.9%**
29	39,488	4,707	5,119	9,826	13,818	24%	0.24	61.6	0.133	0.942	0.355	0.494	0.561	**43.9%**
30	36,040	3,526	3,637	7,163	12,529	24%	0.24	60.1	0.069	0.799	0.307	0.425	0.465	**53.5%**
31	20,134	4,707	3,368	8,075	6,580	59%	0.44	65.4	0.292	0.934	0.477	0.678	0.772	**22.8%**
32	8,912	2,293	1,784	4,077	2,383	72%	0.53	65.9	0.313	0.769	0.493	0.641	0.753	**24.7%**
33	12,881	2,181	2,180	4,361	3,867	65%	0.48	63.1	0.196	0.731	0.403	0.562	0.648	**35.2%**
34	12,442	2,518	2,382	4,900	3,703	66%	0.49	63.9	0.229	0.769	0.429	0.595	0.688	**31.2%**
35	8,847	1,976	1,501	3,477	2,359	72%	0.54	68.7	0.431	0.794	0.582	0.695	0.827	**17.3%**
36	27,941	2,864	3,275	6,139	9,500	25%	0.25	62.3	0.162	0.794	0.378	0.480	0.564	**43.6%**
37	13,678	1,970	1,946	3,916	4,165	64%	0.48	65.2	0.284	0.750	0.470	0.604	0.716	**28.4%**
38	13,726	2,555	2,025	4,580	4,184	64%	0.48	64.3	0.246	0.763	0.441	0.595	0.694	**30.6%**
39	18,866	2,302	2,791	5,093	6,106	60%	0.45	64.4	0.250	0.787	0.445	0.597	0.698	**30.2%**
40	59,557	4,707	5,260	9,967	21,324	23%	0.23	61.7	0.137	0.950	0.358	0.494	0.563	**43.7%**
41	26,867	2,533	3,456	5,989	9,098	25%	0.25	60.9	0.103	0.763	0.333	0.439	0.497	**50.3%**
42	23,761	3,126	3,012	6,138	7,937	57%	0.43	65.9	0.313	0.859	0.493	0.649	0.759	**24.1%**
43	11,271	1,595	1,693	3,288	3,265	67%	0.50	66.9	0.356	0.753	0.525	0.639	0.767	**23.3%**
44	39,000	2,829	3,275	6,104	13,636	24%	0.24	61.4	0.124	0.777	0.349	0.450	0.518	**48.2%**
45	17,434	2,772	2,696	5,468	5,570	61%	0.45	64	0.234	0.796	0.432	0.597	0.691	**30.9%**
46	43,488	4,564	6,083	10,647	15,315	23%	0.23	62.9	0.187	1.000	0.397	0.538	0.625	**37.5%**
47	9,417	1,824	1,578	3,402	2,572	71%	0.53	65.9	0.313	0.740	0.493	0.623	0.741	**25.9%**
48	11,254	401	1,678	2,079	3,259	67%	0.50	65.9	0.313	0.683	0.493	0.588	0.717	**28.3%**
49	9,156	410	1,370	1,780	2,474	71%	0.53	64.3	0.246	0.641	0.441	0.547	0.659	**34.1%**
50	13,889	2,280	2,196	4,476	4,244	64%	0.48	64.8	0.267	0.767	0.457	0.605	0.710	**29.0%**
51	29,095	3,526	3,637	7,163	9,932	25%	0.25	62.5	0.170	0.842	0.384	0.496	0.582	**41.8%**
52	11,043	1,505	1,638	3,143	3,180	68%	0.50	65.2	0.284	0.716	0.470	0.594	0.709	**29.1%**
53	24,021	3,526	4,271	7,797	8,034	57%	0.43	63.6	0.217	0.890	0.419	0.620	0.702	**29.8%**
54	13,694	2,155	1,952	4,107	4,171	64%	0.48	67.3	0.372	0.796	0.537	0.661	0.787	**21.3%**
55	44,790	4,190	5,445	9,635	15,801	23%	0.23	62.1	0.154	0.942	0.371	0.505	0.581	**41.9%**
56	9,384	2,279	1,585	3,864	2,560	71%	0.53	66.1	0.322	0.764	0.499	0.639	0.755	**24.5%**
57	45,538	3,447	5,026	8,473	16,081	23%	0.23	63.2	0.200	0.912	0.406	0.524	0.619	**38.1%**
58	12,149	2,181	2,040	4,221	3,594	66%	0.49	68.6	0.427	0.824	0.579	0.700	0.828	**17.2%**
59	30,266	2,902	3,456	6,358	10,370	24%	0.24	61	0.107	0.780	0.336	0.444	0.504	**49.6%**
60	10,539	1,826	1,645	3,471	2,991	69%	0.51	67.3	0.372	0.768	0.537	0.655	0.784	**21.6%**
61	15,743	3,218	2,862	6,080	4,938	62%	0.46	66.9	0.356	0.874	0.525	0.686	0.798	**20.2%**
62	26,949	4,707	3,275	7,982	9,129	25%	0.25	63.4	0.208	0.894	0.413	0.532	0.629	**37.1%**
63	28,542	3,526	3,637	7,163	9,725	25%	0.25	63.8	0.225	0.866	0.425	0.534	0.639	**36.1%**
64	8,912	996	1,433	2,429	2,383	72%	0.53	69.6	0.469	0.764	0.611	0.693	0.837	**16.3%**
65	7,188	1,274	567	1,841	1,738	77%	0.57	64	0.234	0.638	0.432	0.550	0.655	**34.5%**
66	21,061	3,547	4,103	7,650	6,927	58%	0.44	63	0.191	0.872	0.400	0.606	0.682	**31.8%**
67	12,572	2,997	2,515	5,512	3,752	65%	0.49	63.8	0.225	0.794	0.425	0.605	0.694	**30.6%**
68	14,783	2,799	3,930	6,729	4,579	63%	0.47	63.6	0.217	0.843	0.419	0.618	0.701	**29.9%**
69	8,750	2,528	1,717	4,245	2,322	72%	0.54	66.7	0.347	0.791	0.518	0.665	0.781	**21.9%**
70	38,431	3,940	6,684	10,624	13,423	24%	0.24	61.1	0.112	0.967	0.339	0.488	0.545	**45.5%**
71	54,515	3,422	3,590	7,012	19,439	23%	0.23	60.1	0.069	0.793	0.307	0.419	0.459	**54.1%**
72	15,109	2,372	2,456	4,828	4,701	63%	0.47	66.5	0.339	0.813	0.512	0.652	0.770	**23.0%**
73	11,433	1,985	1,770	3,755	3,326	67%	0.50	65.8	0.309	0.754	0.489	0.621	0.738	**26.2%**
74	13,125	2,317	5,694	8,011	3,959	65%	0.48	66.2	0.326	0.946	0.502	0.716	0.809	**19.1%**
75	7,367	431	1,309	1,740	1,805	76%	0.57	70.5	0.507	0.751	0.640	0.703	0.853	**14.7%**
76	8,831	1,481	1,389	2,870	2,353	72%	0.54	65.8	0.309	0.715	0.489	0.611	0.731	**26.9%**
77	14,133	2,666	1,851	4,517	4,336	64%	0.47	64.7	0.263	0.767	0.454	0.603	0.707	**29.3%**
78	7,790	1,784	1,241	3,025	1,964	75%	0.56	66.4	0.335	0.733	0.509	0.633	0.756	**24.4%**
79	8,685	2,047	1,239	3,286	2,298	73%	0.54	65.7	0.305	0.732	0.486	0.618	0.735	**26.5%**
80	8,929	1,800	996	2,796	2,389	72%	0.53	66	0.318	0.716	0.496	0.613	0.736	**26.4%**

JUNE

Row	Sac River Flow (CK)	CVP (CL)	SWP (CM)	CVP + SWP & Sutter exports (CN)	Calculated Steamboat Slough Q (CO)	percent (CP)	X-channel closed (CQ)	USBR observed temp f (CR)	m1 (CS)	m2 (CT)	Calculated Mortality m3 (CU)	m23 (CV)	m123 (CW)	Calculated Survival s123 (CX)	Weighted Total Survival (CZ)
10	34,720	4,872	6,672	11,544	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**64.49%**
11	15,848	3,655	3,383	7,038	4,977	62%	0.46	65.3	0.288	0.887	0.473	0.665	0.761	**23.9%**	**62.93%**
12	10,537	609	1,015	1,624	2,991	69%	0.51	70.6	0.511	0.747	0.643	0.696	0.852	**14.8%**	**55.90%**
13	16,990	4,121	3,058	7,179	5,404	61%	0.46	68.3	0.414	0.947	0.569	0.741	0.849	**15.1%**	**59.99%**
14	17,024	4,492	2,494	6,986	5,417	61%	0.46	71.2	0.536	0.991	0.662	0.812	0.913	**8.7%**	**55.31%**
15	19,511	4,872	3,531	8,403	6,347	59%	0.44	68.1	0.406	0.997	0.563	0.755	0.855	**14.5%**	**64.48%**
16	14,470	3,586	2,668	6,254	4,462	63%	0.47	69.7	0.473	0.932	0.614	0.764	0.876	**12.4%**	**59.52%**
17	11,024	3,353	97	3,450	3,173	68%	0.50	70.1	0.490	0.818	0.627	0.723	0.859	**14.1%**	**62.40%**
18	18,436	4,676	2,669	7,345	5,945	60%	0.45	69.6	0.469	0.978	0.611	0.775	0.881	**11.9%**	**60.82%**
19	14,537	3,563	2,038	5,601	4,487	63%	0.47	70.7	0.515	0.922	0.646	0.776	0.891	**10.9%**	**53.96%**
20	20,217	4,323	3,861	8,184	6,611	59%	0.44	69.5	0.465	1.000	0.608	0.780	0.882	**11.8%**	**59.69%**
21	11,882	2,801	92	2,893	3,494	66%	0.49	69.8	0.478	0.788	0.617	0.702	0.844	**15.6%**	**60.27%**
22	14,638	4,472	1,231	5,703	4,524	63%	0.47	70.7	0.515	0.926	0.646	0.778	0.892	**10.8%**	**54.00%**
23	18,402	4,353	3,910	8,263	5,932	60%	0.45	71	0.528	1.000	0.656	0.810	0.910	**9.0%**	**59.95%**
24	17,898	4,665	3,169	7,834	5,744	60%	0.45	69.2	0.452	0.992	0.598	0.775	0.877	**12.3%**	**58.18%**
25	17,747	2,856	4,823	7,679	5,687	60%	0.45	69.7	0.473	0.994	0.614	0.786	0.887	**11.3%**	**59.06%**
26	35,510	4,872	6,672	11,544	12,331	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**65.32%**
27	18,923	4,687	2,988	7,675	6,127	60%	0.45	71	0.528	1.000	0.656	0.809	0.910	**9.0%**	**53.79%**
28	13,932	3,304	3,161	6,465	4,260	64%	0.48	71.5	0.549	0.974	0.672	0.815	0.917	**8.3%**	**59.77%**
29	20,805	4,872	6,486	11,358	6,831	59%	0.44	69	0.444	1.000	0.592	0.770	0.872	**12.8%**	**63.89%**
30	27,124	4,872	6,672	11,544	9,194	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**67.28%**
31	16,772	4,872	3,178	8,050	5,323	61%	0.46	66.6	0.343	0.954	0.515	0.716	0.813	**18.7%**	**59.78%**
32	18,520	4,526	3,097	7,623	5,976	60%	0.45	67.8	0.393	0.957	0.553	0.734	0.839	**16.1%**	**60.37%**
33	16,688	3,711	3,707	7,418	5,291	61%	0.46	70.6	0.511	0.999	0.643	0.806	0.905	**9.5%**	**58.86%**
34	16,806	3,906	3,482	7,388	5,335	61%	0.46	68.1	0.406	0.953	0.563	0.741	0.846	**15.4%**	**58.51%**
35	18,822	4,823	2,768	7,591	6,090	60%	0.45	70	0.486	0.996	0.624	0.790	0.892	**10.8%**	**53.60%**
36	22,956	4,872	4,371	9,243	7,636	58%	0.43	69	0.444	1.000	0.592	0.767	0.871	**12.9%**	**64.55%**
37	18,284	4,360	3,150	7,510	5,888	60%	0.45	70.9	0.524	1.000	0.652	0.808	0.909	**9.1%**	**55.86%**
38	20,167	4,872	3,524	8,396	6,592	59%	0.44	68.9	0.440	1.000	0.588	0.770	0.871	**12.9%**	**56.60%**
39	17,864	4,872	2,784	7,656	5,731	60%	0.45	70.3	0.499	1.000	0.633	0.799	0.899	**10.1%**	**59.25%**
40	38,972	4,872	6,672	11,544	13,626	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**66.65%**
41	25,881	4,872	5,572	10,444	8,729	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**65.28%**
42	13,764	3,290	2,742	6,032	4,198	64%	0.48	68.7	0.431	0.905	0.582	0.736	0.850	**15.0%**	**60.69%**
43	18,805	4,621	3,010	7,631	6,083	60%	0.45	70.1	0.490	0.999	0.627	0.793	0.894	**10.6%**	**61.45%**
44	22,301	4,872	6,672	11,544	7,391	58%	0.43	68.7	0.431	1.000	0.582	0.763	0.865	**13.5%**	**62.47%**
45	18,738	4,478	3,408	7,886	6,058	60%	0.45	72	0.570	1.000	0.688	0.827	0.926	**7.4%**	**58.24%**
46	33,930	4,872	6,672	11,544	11,740	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**63.73%**
47	18,570	4,740	2,838	7,578	5,995	60%	0.45	72.1	0.574	1.000	0.691	0.829	0.927	**7.3%**	**55.14%**
48	17,999	4,633	2,653	7,286	5,782	60%	0.45	72.7	0.600	1.000	0.710	0.840	0.936	**6.4%**	**58.48%**
49	19,982	4,872	3,020	7,892	6,523	59%	0.44	73.2	0.621	1.000	0.726	0.847	0.942	**5.8%**	**58.75%**
50	16,873	4,098	2,879	6,977	5,360	61%	0.46	70.4	0.503	0.976	0.636	0.791	0.896	**10.4%**	**56.05%**
51	20,200	4,872	4,002	8,874	6,605	59%	0.44	69	0.444	1.000	0.592	0.771	0.873	**12.7%**	**65.67%**
52	18,385	4,679	2,705	7,384	5,926	60%	0.45	69.5	0.465	0.978	0.608	0.774	0.879	**12.1%**	**60.28%**
53	18,705	4,872	3,522	8,394	6,046	60%	0.45	67.1	0.364	0.978	0.531	0.731	0.829	**17.1%**	**61.69%**
54	16,654	4,338	2,608	6,946	5,279	61%	0.46	70.4	0.503	0.975	0.636	0.791	0.896	**10.4%**	**55.20%**
55	39,342	4,872	6,672	11,544	13,764	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**67.22%**
56	17,915	4,737	2,645	7,382	5,750	60%	0.45	72	0.570	1.000	0.688	0.828	0.926	**7.4%**	**57.20%**
57	24,133	4,872	6,643	11,515	8,076	57%	0.43	68.3	0.414	1.000	0.569	0.753	0.855	**14.5%**	**64.58%**
58	14,503	4,265	2,605	6,870	4,474	63%	0.47	70.7	0.515	0.977	0.646	0.802	0.904	**9.6%**	**60.01%**
59	23,629	4,872	4,809	9,681	7,887	57%	0.43	68.1	0.406	1.000	0.563	0.750	0.852	**14.8%**	**64.16%**
60	17,629	4,671	2,633	7,304	5,643	61%	0.45	70.7	0.515	0.996	0.646	0.804	0.905	**9.5%**	**60.10%**
61	17,982	2,751	5,249	8,000	5,775	60%	0.45	70.1	0.490	1.000	0.627	0.795	0.895	**10.5%**	**55.80%**
62	21,629	4,872	4,956	9,828	7,139	58%	0.43	69.7	0.473	1.000	0.614	0.782	0.885	**11.5%**	**63.15%**
63	24,788	4,872	6,672	11,544	8,321	57%	0.43	69.1	0.448	1.000	0.595	0.767	0.871	**12.9%**	**63.30%**
64	19,192	4,691	2,946	7,637	6,228	59%	0.44	71.8	0.562	1.000	0.681	0.823	0.922	**7.8%**	**57.93%**
65	9,663	284	496	780	2,664	70%	0.52	73.9	0.650	0.770	0.748	0.760	0.916	**8.4%**	**56.86%**
66	16,301	4,872	3,894	8,766	5,147	62%	0.46	70	0.486	1.000	0.624	0.797	0.895	**10.5%**	**62.76%**
67	19,881	3,600	4,719	8,319	6,485	59%	0.44	69.2	0.452	1.000	0.598	0.776	0.877	**12.3%**	**59.55%**
68	15,797	4,872	4,237	9,109	4,958	62%	0.46	66.9	0.356	1.000	0.525	0.744	0.835	**16.5%**	**63.65%**
69	18,032	4,603	2,735	7,338	5,794	60%	0.45	71.9	0.566	1.000	0.684	0.826	0.925	**7.5%**	**56.37%**
70	24,418	4,872	6,672	11,544	8,183	57%	0.43	66	0.318	1.000	0.496	0.711	0.803	**19.7%**	**66.90%**
71	55,576	4,872	4,685	9,557	19,835	23%	0.23	63.6	0.217	0.966	0.419	0.545	0.643	**35.7%**	**71.32%**
72	16,301	4,092	3,340	7,432	5,147	62%	0.46	68.4	0.419	0.960	0.572	0.751	0.855	**14.5%**	**60.17%**
73	17,394	4,533	2,600	7,133	5,555	61%	0.45	69.4	0.461	0.965	0.604	0.768	0.875	**12.5%**	**57.14%**
74	12,419	4,244	4,049	8,293	3,695	66%	0.49	71.6	0.553	1.000	0.675	0.834	0.926	**7.4%**	**55.69%**
75	20,167	4,872	3,154	8,026	6,592	59%	0.44	73.2	0.621	1.000	0.726	0.847	0.942	**5.8%**	**51.12%**
76	16,587	4,762	1,925	6,687	5,254	61%	0.46	69.4	0.461	0.946	0.604	0.761	0.871	**12.9%**	**59.67%**
77	17,158	4,460	2,490	6,950	5,467	61%	0.45	68.6	0.427	0.943	0.579	0.744	0.853	**14.7%**	**57.41%**
78	19,629	4,769	2,907	7,676	6,391	59%	0.44	68.5	0.423	0.972	0.576	0.751	0.856	**14.4%**	**56.70%**
79	10,588	2,101	1,242	3,343	3,010	69%	0.51	69.4	0.461	0.800	0.604	0.704	0.841	**15.9%**	**58.44%**
80	14,218	4,264	1,314	5,578	4,367	64%	0.47	69	0.444	0.890	0.592	0.733	0.852	**14.8%**	**57.09%**
81														**Average**	**60.03%**

Row	April formulas	May formulas	June formulas
85	BG10 ='Study 622a Flow Data'!G7	BV10 ='Study 622a Flow Data'!H7	CK10 ='Study 622a Flow Data'!I7
86	BH10 ='Study 622a Flow Data'!Q7	BW10 ='Study 622a Flow Data'!R7	CL10 ='Study 622a Flow Data'!S7
87	BI10 ='Study 622a Flow Data'!AA7	BX10 ='Study 622a Flow Data'!AB7	CM10 ='Study 622a Flow Data'!AC7
88	BJ10 =(BH10+BI10)	BY10 =(BW10+BX10)	CN10 =(CL10+CM10)
89	BK10 =0.374*BG10-950	BZ10 =0.374*BV10-950	CO10 =0.374*CK10-950
90	BL10 =IF(BG10>$G$2,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))	CA10 =IF(BV10>$K$4,(0.133*BV10+829)/(BV10-BZ10),(0.293*BV10+2090)/(BV10-BZ10))	CP10 =IF(CK10>$K$4,(0.133*CK10+829)/(CK10-CO10),(0.293*CK10+2090)/(CK10-CO10))
91	BM10 =(0.133*BG10+829)/(BG10-BK10)	CB10 =(0.45*(0.133*BV10+829)/(BV10-BZ10))+(0.55*CA10)	CQ10 =(0.45*(0.133*CK10+829)/(CK10-CO10))+(0.55*CP10)
92	BN10	CC10	CR10
93	BO10 =IF((-2.45925+(0.0420748*BN10))<0,0,(-2.45925+(0.0420748*BN10)))	CD10 =IF((-2.45925+(0.0420748*CC10))<0,0,(-2.45925+(0.0420748*CC10)))	CS10 =IF((-2.45925+(0.0420748*CR10))<0,0,(-2.45925+(0.0420748*CR10)))
94	BP10 =IF(((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10))>1,1,((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10)))	CE10 =IF(((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10))>1,1,((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10)))	CT10 =IF(((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10))>1,1,((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10)))
95	BQ10 =-1.613493+(0.0319584*BN10)	CF10 =-1.613493+(0.0319584*CC10)	CU10 =-1.613493+(0.0319584*CR10)
96	BR10 =(BP10*BM10)+(BQ10*(1-BM10))	CG10 =(CE10*CB10)+(CF10*(1-CB10))	CV10 =(CT10*CQ10)+(CU10*(1-CQ10))
97	BS10 =BO10+BR10-(BO10*BR10)	CH10 =CD10+CG10-(CD10*CG10)	CW10 =CS10+CV10-(CS10*CV10)
98	BT10 =1-BS10	CI10 =1-CH10	CX10 =1-CW10
99			CZ10 =(0.01*O10)+(0.06*AC10)+(0.17*AQ10)+(0.28*BE10)+(0.25*BT10)+(0.16*CI10)+(0.07*CX10)

Study 492 Sacramento River Fall Run Smolt Survival Model

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

APRIL

Row	Year	Water Year Type	Sac River Flows	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	observed temp f	m1	m2 (Calculated Mortality)	m3	m23	m123	**Calculated Survival s123**
8	1922	A	22,927	8,487	7,625	58%	0.25	58.5	0.002	0.828	0.256	0.401	0.402	**59.8%**
9	1923	B	24,339	8,201	8,153	57%	0.25	58.3	0.000	0.812	0.250	0.391	0.391	**60.9%**
10	1924	C	7,864	2,756	1,991	75%	0.32	61.5	0.128	0.633	0.352	0.442	0.513	**48.7%**
11	1925	D	22,570	7,042	7,491	58%	0.25	59.1	0.027	0.776	0.275	0.402	0.419	**58.1%**
12	1926	D	18,610	6,184	6,010	60%	0.26	61.6	0.133	0.784	0.355	0.468	0.538	**46.2%**
13	1927	W	48,222	9,814	17,085	23%	0.23	56.8	0.000	0.855	0.202	0.354	0.354	**64.6%**
14	1928	A	29,212	7,932	9,975	25%	0.25	58.7	0.011	0.807	0.262	0.396	0.402	**59.8%**
15	1929	C	8,901	2,924	2,379	72%	0.31	56.3	0.000	0.547	0.186	0.297	0.297	**70.3%**
16	1930	D	12,751	4,050	3,819	65%	0.28	59.6	0.048	0.655	0.291	0.394	0.423	**57.7%**
17	1931	C	9,004	2,924	2,417	72%	0.31	62.8	0.183	0.664	0.393	0.477	0.572	**42.8%**
18	1932	D	13,094	5,563	3,947	65%	0.28	58.9	0.019	0.708	0.269	0.392	0.404	**59.6%**
19	1933	C	12,595	4,151	3,761	65%	0.28	60.1	0.069	0.668	0.307	0.410	0.451	**54.9%**
20	1934	C	12,874	3,764	3,865	65%	0.28	63.6	0.217	0.715	0.419	0.502	0.610	**39.0%**
21	1935	B	24,812	10,453	8,330	57%	0.25	58.9	0.019	0.920	0.269	0.432	0.443	**55.7%**
22	1936	B	21,031	8,302	6,916	58%	0.26	59.7	0.053	0.841	0.294	0.435	0.465	**53.5%**
23	1937	B	23,257	9,125	7,748	57%	0.25	58.8	0.015	0.861	0.266	0.416	0.425	**57.5%**
24	1938	W	47,172	10,319	16,692	23%	0.23	56.3	0.000	0.868	0.186	0.345	0.345	**65.5%**
25	1939	D	12,114	4,134	3,581	66%	0.29	63.3	0.204	0.725	0.409	0.500	0.602	**39.8%**
26	1940	A	41,731	10,033	14,657	24%	0.24	57.4	0.000	0.875	0.221	0.375	0.375	**62.5%**
27	1941	W	42,372	12,268	14,897	24%	0.24	56.9	0.000	0.963	0.205	0.383	0.383	**61.7%**
28	1942	W	43,228	10,638	15,217	23%	0.23	56.5	0.000	0.885	0.192	0.355	0.355	**64.5%**
29	1943	W	29,406	10,705	10,048	24%	0.24	58.8	0.015	0.930	0.266	0.428	0.437	**56.3%**
30	1944	D	9,626	4,235	2,650	70%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	**63.0%**
31	1945	B	11,976	6,386	3,529	66%	0.29	60.6	0.090	0.774	0.323	0.453	0.502	**49.8%**
32	1946	B	11,847	5,916	3,481	66%	0.29	60.7	0.095	0.756	0.326	0.450	0.502	**49.8%**
33	1947	D	13,772	4,302	4,201	64%	0.28	62.5	0.170	0.718	0.384	0.477	0.566	**43.4%**
34	1948	B	22,904	6,789	7,616	58%	0.25	56.6	0.000	0.720	0.195	0.328	0.328	**67.2%**
35	1949	D	13,321	5,109	4,032	65%	0.28	61.7	0.137	0.739	0.358	0.465	0.538	**46.2%**
36	1950	B	18,776	6,184	6,072	60%	0.26	61.3	0.120	0.778	0.346	0.459	0.524	**47.6%**
37	1951	A	14,732	6,353	4,560	63%	0.27	59.9	0.061	0.760	0.301	0.427	0.462	**53.8%**
38	1952	W	56,648	10,520	20,236	23%	0.23	55.5	0.000	0.862	0.160	0.321	0.321	**67.9%**
39	1953	W	16,288	5,680	5,142	62%	0.27	58.8	0.015	0.711	0.266	0.385	0.395	**60.5%**
40	1954	A	39,868	9,075	13,961	24%	0.24	58.4	0.000	0.852	0.253	0.395	0.395	**60.5%**
41	1955	D	9,584	3,865	2,634	70%	0.30	56.4	0.000	0.590	0.189	0.310	0.310	**69.0%**
42	1956	W	20,548	7,999	6,735	59%	0.26	59.7	0.053	0.828	0.294	0.432	0.462	**53.8%**
43	1957	A	21,164	6,420	6,965	58%	0.26	60.5	0.086	0.774	0.320	0.437	0.485	**51.5%**
44	1958	W	52,284	11,579	18,604	23%	0.23	57.4	0.000	0.942	0.221	0.388	0.388	**61.2%**
45	1959	B	10,398	3,764	2,939	69%	0.30	63	0.191	0.704	0.400	0.490	0.588	**41.2%**
46	1960	D	13,629	3,949	4,147	64%	0.28	59.5	0.044	0.649	0.288	0.389	0.416	**58.4%**
47	1961	D	12,670	3,529	3,789	65%	0.28	60.1	0.069	0.641	0.307	0.402	0.443	**55.7%**
48	1962	B	11,575	4,941	3,379	67%	0.29	61.8	0.141	0.733	0.362	0.469	0.544	**45.6%**
49	1963	W	69,377	9,814	24,997	23%	0.23	53.7	0.000	0.799	0.103	0.261	0.261	**73.9%**
50	1964	D	9,064	3,563	2,440	72%	0.31	59.3	0.036	0.629	0.282	0.388	0.410	**59.0%**
51	1965	W	45,099	10,268	15,917	23%	0.23	56.9	0.000	0.876	0.205	0.362	0.362	**63.8%**
52	1966	B	12,914	5,008	3,880	65%	0.28	61.9	0.145	0.738	0.365	0.470	0.547	**45.3%**
53	1967	W	39,925	10,722	13,982	24%	0.24	53.8	0.000	0.840	0.106	0.280	0.280	**72.0%**
54	1968	B	15,724	5,277	4,931	62%	0.27	61.5	0.128	0.742	0.352	0.458	0.527	**47.3%**
55	1969	W	44,707	10,302	15,770	23%	0.23	56.4	0.000	0.869	0.189	0.348	0.348	**65.2%**
56	1970	W	16,710	6,621	5,300	61%	0.27	58.8	0.015	0.752	0.266	0.396	0.405	**59.5%**
57	1971	W	22,154	6,756	7,336	58%	0.25	58.7	0.011	0.756	0.262	0.388	0.395	**60.5%**
58	1972	B	12,562	4,706	3,748	65%	0.28	58.5	0.002	0.664	0.256	0.372	0.373	**62.7%**
59	1973	A	19,512	7,462	6,347	59%	0.26	61.3	0.120	0.834	0.346	0.473	0.536	**46.4%**
60	1974	W	33,122	11,041	11,438	24%	0.24	56.8	0.000	0.908	0.202	0.372	0.372	**62.8%**
61	1975	W	25,874	9,310	8,727	25%	0.25	56.8	0.000	0.833	0.202	0.359	0.359	**64.1%**
62	1976	C	9,481	3,008	2,596	71%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
63	1977	C	9,100	3,176	2,453	72%	0.31	64.3	0.246	0.702	0.441	0.521	0.639	**36.1%**
64	1978	A	38,698	10,823	13,523	24%	0.24	56.9	0.000	0.900	0.205	0.370	0.370	**63.0%**
65	1979	B	17,813	6,924	5,712	60%	0.26	59.8	0.057	0.783	0.298	0.426	0.459	**54.1%**
66	1980	A	19,818	8,151	6,462	59%	0.26	57.1	0.000	0.788	0.211	0.361	0.361	**63.9%**
67	1981	D	17,108	5,479	5,448	61%	0.27	61.5	0.128	0.751	0.352	0.458	0.528	**47.2%**
68	1982	W	75,838	10,604	27,413	23%	0.23	54.1	0.000	0.841	0.115	0.279	0.279	**72.1%**
69	1983	W	68,301	9,764	24,595	23%	0.23	55	0.000	0.820	0.144	0.298	0.298	**70.2%**
70	1984	W	18,169	6,890	5,845	60%	0.26	59.7	0.053	0.780	0.294	0.422	0.453	**54.7%**
71	1985	D	12,439	4,269	3,702	66%	0.28	60.8	0.099	0.686	0.330	0.431	0.487	**51.3%**
72	1986	W	20,639	9,058	6,769	59%	0.26	60.4	0.082	0.887	0.317	0.464	0.508	**49.2%**
73	1987	D	12,681	3,580	3,793	65%	0.28	65.7	0.305	0.744	0.486	0.559	0.694	**30.6%**
74	1988	C	9,202	2,857	2,492	71%	0.31	59.9	0.061	0.609	0.301	0.395	0.432	**56.8%**
75	1989	D	23,637	5,764	7,890	57%	0.25	61.4	0.124	0.762	0.349	0.453	0.521	**47.9%**
76	1990	C	12,260	3,496	3,635	66%	0.29	61.6	0.133	0.667	0.355	0.444	0.518	**48.2%**
77	1991	C	15,374	4,453	4,800	62%	0.27	60.8	0.099	0.694	0.330	0.429	0.485	**51.5%**
78	1992	C	12,514	3,916	3,730	66%	0.28	61.2	0.116	0.678	0.342	0.438	0.503	**49.7%**

MAY

Year	Sac River Flows	CVP + SWP Exports	Calculated Steamboat & Sutter Slough Q	Percent	X-channel Closed	USBR observed temp f	m1	m2 (Calculated Mortality)	m3	m23	m123	**Calculated Survival s123**
1922	45,862	10,783	16,202	0.23	0.23	61.2	0.116	0.976	0.342	0.490	0.549	**45.1%**
1923	14,437	6,505	4,449	0.63	0.33	62.4	0.166	0.812	0.381	0.524	0.603	**39.7%**
1924	8,364	1,317	2,178	0.73	0.38	69.2	0.452	0.709	0.598	0.640	0.803	**19.7%**
1925	12,068	5,269	3,563	0.66	0.35	63.2	0.200	0.773	0.406	0.533	0.626	**37.4%**
1926	14,401	5,253	4,436	0.63	0.33	65.7	0.305	0.817	0.486	0.596	0.719	**28.1%**
1927	26,781	8,766	9,066	0.25	0.25	62.6	0.175	0.914	0.387	0.518	0.602	**39.8%**
1928	20,914	6,652	6,872	0.59	0.31	66.6	0.343	0.894	0.515	0.632	0.758	**24.2%**
1929	9,598	3,171	2,640	0.70	0.37	66.1	0.322	0.734	0.499	0.585	0.719	**28.1%**
1930	12,072	3,838	3,565	0.66	0.35	63.1	0.196	0.709	0.403	0.509	0.605	**39.5%**
1931	9,800	2,911	2,715	0.70	0.36	70.5	0.507	0.801	0.640	0.699	0.851	**14.9%**
1932	12,027	5,172	3,548	0.66	0.35	65.5	0.297	0.810	0.480	0.594	0.715	**28.5%**
1933	7,743	2,765	1,946	0.75	0.39	63.7	0.221	0.673	0.422	0.520	0.626	**37.4%**
1934	8,911	3,269	2,383	0.72	0.37	68.3	0.414	0.777	0.569	0.647	0.793	**20.7%**
1935	30,992	7,855	10,641	0.24	0.24	64	0.234	0.899	0.432	0.546	0.652	**34.8%**
1936	14,238	6,554	4,375	0.63	0.33	64.9	0.271	0.859	0.461	0.593	0.704	**29.6%**
1937	14,045	4,781	4,303	0.64	0.33	64.5	0.255	0.775	0.448	0.557	0.670	**33.0%**
1938	57,429	11,580	20,528	0.23	0.23	62.5	0.170	1.034	0.384	0.533	0.613	**38.7%**
1939	8,598	4,098	2,266	0.73	0.38	68	0.402	0.808	0.560	0.654	0.793	**20.7%**
1940	19,454	7,595	6,326	0.59	0.31	65.6	0.301	0.917	0.483	0.619	0.734	**26.6%**
1941	39,485	11,954	13,817	0.24	0.24	61.6	0.133	1.034	0.355	0.516	0.580	**42.0%**
1942	36,037	10,783	12,528	0.24	0.24	60.1	0.069	0.956	0.307	0.462	0.500	**50.0%**
1943	21,355	8,636	7,037	0.58	0.31	65.4	0.292	0.958	0.477	0.625	0.735	**26.5%**
1944	10,052	4,277	2,809	0.70	0.36	65.9	0.313	0.778	0.493	0.596	0.723	**27.7%**
1945	11,747	5,172	3,443	0.67	0.35	63.1	0.196	0.767	0.403	0.530	0.622	**37.8%**
1946	13,744	5,513	4,190	0.64	0.34	63.9	0.229	0.796	0.429	0.552	0.655	**34.5%**
1947	8,985	3,887	2,410	0.72	0.37	68.7	0.431	0.811	0.582	0.668	0.811	**18.9%**
1948	28,655	7,839	9,767	0.25	0.25	62.3	0.162	0.868	0.378	0.498	0.579	**42.1%**
1949	14,950	4,993	4,641	0.63	0.33	65.2	0.284	0.797	0.470	0.578	0.698	**30.2%**
1950	13,980	5,481	4,279	0.64	0.33	64.3	0.246	0.802	0.441	0.562	0.670	**33.0%**
1951	18,870	7,351	6,107	0.60	0.32	64.4	0.250	0.885	0.445	0.583	0.688	**31.2%**
1952	59,563	11,498	21,327	0.23	0.23	61.7	0.137	1.016	0.358	0.509	0.576	**42.4%**
1953	27,013	7,855	9,153	0.25	0.25	60.9	0.103	0.844	0.333	0.459	0.515	**48.5%**
1954	25,881	7,741	8,729	0.25	0.25	65.9	0.313	0.928	0.493	0.601	0.726	**27.4%**
1955	11,417	4,196	3,320	0.67	0.35	66.9	0.356	0.793	0.525	0.619	0.754	**24.6%**
1956	38,837	10,864	13,575	0.24	0.24	61.4	0.124	0.983	0.349	0.499	0.561	**43.9%**
1957	16,952	6,213	5,390	0.61	0.32	64	0.234	0.828	0.432	0.559	0.662	**33.8%**
1958	43,486	12,230	15,314	0.23	0.23	62.9	0.187	1.069	0.397	0.555	0.638	**36.2%**
1959	9,319	4,277	2,535	0.71	0.37	65.9	0.313	0.778	0.493	0.598	0.724	**27.6%**
1960	11,060	3,643	3,186	0.68	0.35	65.9	0.313	0.751	0.493	0.584	0.714	**28.6%**
1961	8,704	3,480	2,305	0.73	0.38	64.3	0.246	0.715	0.441	0.544	0.657	**34.3%**
1962	15,353	5,090	4,792	0.62	0.33	64.8	0.267	0.794	0.457	0.568	0.683	**31.7%**
1963	29,094	9,530	9,931	0.25	0.25	62.5	0.170	0.945	0.384	0.521	0.603	**39.7%**
1964	11,187	4,603	3,234	0.67	0.35	65.2	0.284	0.780	0.470	0.579	0.699	**30.1%**
1965	24,739	7,969	8,302	0.57	0.30	63.6	0.217	0.897	0.419	0.563	0.658	**34.2%**
1966	14,968	5,009	4,648	0.63	0.33	67.3	0.372	0.835	0.537	0.636	0.771	**22.9%**
1967	44,790	11,661	15,801	0.23	0.23	62.1	0.154	1.030	0.371	0.525	0.598	**40.2%**
1968	9,524	3,903	2,612	0.71	0.37	66.1	0.322	0.765	0.499	0.597	0.727	**27.3%**
1969	45,533	11,384	16,079	0.23	0.23	63.2	0.200	1.038	0.406	0.554	0.643	**35.7%**
1970	12,300	6,164	3,650	0.66	0.34	68.6	0.427	0.909	0.579	0.692	0.824	**17.6%**
1971	29,398	8,181	10,045	0.24	0.24	61	0.107	0.859	0.336	0.464	0.522	**47.8%**
1972	10,834	4,245	3,102	0.68	0.36	67.3	0.372	0.802	0.537	0.631	0.769	**23.1%**
1973	15,751	6,733	4,941	0.62	0.33	66.9	0.356	0.903	0.525	0.648	0.773	**22.7%**
1974	26,945	9,433	9,127	0.25	0.25	63.4	0.208	0.957	0.413	0.547	0.642	**35.8%**
1975	28,435	9,726	9,685	0.25	0.25	63.8	0.225	0.977	0.425	0.561	0.660	**34.0%**
1976	10,021	3,269	2,798	0.70	0.36	69.6	0.469	0.801	0.611	0.680	0.830	**17.0%**
1977	7,717	2,082	1,936	0.75	0.39	64	0.234	0.649	0.432	0.516	0.629	**37.1%**
1978	21,056	11,059	6,925	0.58	0.31	63	0.191	1.020	0.400	0.592	0.670	**33.0%**
1979	12,459	6,196	3,710	0.66	0.34	63.8	0.225	0.824	0.425	0.562	0.661	**33.9%**
1980	14,921	7,709	4,630	0.63	0.33	63.6	0.217	0.886	0.419	0.573	0.666	**33.4%**
1981	8,897	3,757	2,377	0.72	0.37	66.7	0.347	0.770	0.518	0.612	0.747	**25.3%**
1982	38,429	11,937	13,422	0.24	0.24	61.1	0.112	1.024	0.339	0.502	0.557	**44.3%**
1983	54,514	9,969	19,438	0.23	0.23	60.1	0.069	0.921	0.307	0.449	0.487	**51.3%**
1984	13,514	6,375	4,104	0.64	0.34	66.5	0.339	0.880	0.512	0.636	0.759	**24.1%**
1985	13,222	4,554	3,995	0.65	0.34	65.8	0.309	0.788	0.489	0.591	0.717	**28.3%**
1986	13,272	8,376	4,014	0.65	0.34	66.2	0.326	0.961	0.502	0.658	0.769	**23.1%**
1987	8,489	3,399	2,225	0.73	0.38	70.5	0.507	0.823	0.640	0.709	0.857	**14.3%**
1988	9,611	3,285	2,645	0.70	0.37	65.8	0.309	0.733	0.489	0.579	0.709	**29.1%**
1989	14,474	4,180	4,463	0.63	0.33	64.7	0.263	0.752	0.454	0.553	0.671	**32.9%**
1990	7,753	2,992	1,950	0.75	0.39	66.4	0.335	0.731	0.509	0.595	0.731	**26.9%**
1991	8,807	3,204	2,344	0.72	0.38	65.7	0.305	0.728	0.486	0.577	0.706	**29.4%**
1992	9,028	3,253	2,426	0.72	0.37	66	0.318	0.735	0.496	0.585	0.717	**28.3%**

JUNE

Year	Sac River Flow	CVP + SWP exports	Caculated Steamboat & Sutter Slough Q	percent	X-channel closed	USBR observed temp f	m1	m2 (Calculated Mortality)	m3	m23	m123	**Calculated Survival s123**	**Weighted Total Survival**
1922	34,719	15,377	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**44.2%**
1923	16,026	7,310	5,044	62%	0.52	65.3	0.288	0.899	0.473	0.696	0.784	**21.6%**	**40.0%**
1924	10,132	1,378	2,839	69%	0.59	70.6	0.511	0.737	0.643	0.698	0.852	**14.8%**	**23.7%**
1925	15,894	6,168	4,994	62%	0.52	68.3	0.414	0.903	0.569	0.745	0.850	**15.0%**	**36.9%**
1926	12,471	5,899	3,714	66%	0.56	71.2	0.536	0.944	0.662	0.818	0.916	**8.4%**	**27.6%**
1927	16,647	8,033	5,276	61%	0.52	68.1	0.406	0.981	0.563	0.780	0.869	**13.1%**	**39.2%**
1928	13,024	5,848	3,921	65%	0.55	69.7	0.473	0.915	0.614	0.779	0.884	**11.6%**	**28.0%**
1929	10,759	3,328	3,074	68%	0.58	70.1	0.490	0.812	0.627	0.734	0.864	**13.6%**	**32.7%**
1930	13,941	6,672	4,264	64%	0.54	69.6	0.469	0.949	0.611	0.793	0.890	**11.0%**	**37.5%**
1931	12,159	2,991	3,597	66%	0.56	70.7	0.515	0.809	0.646	0.737	0.872	**12.8%**	**19.2%**
1932	17,895	6,353	5,743	60%	0.51	69.5	0.465	0.933	0.608	0.774	0.879	**12.1%**	**30.9%**
1933	11,337	2,050	3,290	67%	0.57	69.8	0.478	0.752	0.617	0.694	0.840	**16.0%**	**36.5%**
1934	15,046	6,100	4,677	63%	0.53	70.7	0.515	0.943	0.646	0.804	0.905	**9.5%**	**21.8%**
1935	18,258	8,436	5,878	60%	0.51	71	0.528	1.000	0.656	0.831	0.920	**8.0%**	**33.5%**
1936	15,871	7,327	4,986	62%	0.52	69.2	0.452	0.970	0.598	0.793	0.887	**11.3%**	**30.4%**
1937	15,301	4,991	4,773	62%	0.53	69.7	0.473	0.877	0.614	0.753	0.870	**13.0%**	**33.6%**
1938	35,517	13,260	12,333	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**40.1%**
1939	15,086	6,756	4,692	63%	0.53	71	0.528	0.977	0.656	0.826	0.918	**8.2%**	**21.7%**
1940	14,196	6,806	4,359	64%	0.54	71.5	0.549	0.989	0.672	0.842	0.929	**7.1%**	**29.2%**
1941	21,005	11,377	6,906	58%	0.50	69	0.444	1.000	0.592	0.794	0.886	**11.4%**	**39.8%**
1942	27,117	12,806	9,192	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**47.2%**
1943	13,228	6,605	3,997	65%	0.55	66.6	0.343	0.892	0.515	0.721	0.817	**18.3%**	**30.1%**
1944	15,393	7,042	4,807	62%	0.53	67.8	0.393	0.932	0.553	0.754	0.851	**14.9%**	**31.4%**
1945	16,980	7,764	5,401	61%	0.52	70.6	0.511	1.000	0.643	0.828	0.916	**8.4%**	**34.6%**
1946	16,573	7,563	5,248	61%	0.52	68.1	0.406	0.960	0.563	0.770	0.863	**13.7%**	**33.4%**
1947	15,094	7,109	4,695	63%	0.53	70	0.486	0.975	0.624	0.810	0.902	**9.8%**	**21.4%**
1948	23,247	9,562	7,744	57%	0.49	69	0.444	1.000	0.592	0.791	0.884	**11.6%**	**40.9%**
1949	16,003	6,958	5,035	62%	0.52	70.9	0.524	0.984	0.652	0.826	0.917	**8.3%**	**29.0%**
1950	17,590	7,714	5,629	61%	0.51	68.9	0.440	0.981	0.588	0.790	0.882	**11.8%**	**31.7%**
1951	12,767	6,134	3,825	65%	0.55	70.3	0.499	0.938	0.633	0.801	0.900	**10.0%**	**31.2%**
1952	38,968	13,260	13,624	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**44.4%**
1953	26,082	10,772	8,805	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**46.4%**
1954	12,950	6,000	3,893	65%	0.55	68.7	0.431	0.903	0.582	0.759	0.863	**13.7%**	**30.6%**
1955	15,402	6,974	4,810	62%	0.53	70.1	0.490	0.971	0.627	0.808	0.902	**9.8%**	**29.5%**
1956	22,288	11,831	7,386	58%	0.49	68.7	0.431	1.000	0.582	0.787	0.879	**12.1%**	**39.8%**
1957	16,835	7,445	5,346	61%	0.52	72	0.570	1.000	0.688	0.849	0.935	**6.5%**	**31.9%**
1958	33,938	13,293	11,743	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**37.7%**
1959	14,706	7,159	4,550	63%	0.53	72.1	0.574	1.000	0.691	0.856	0.939	**6.1%**	**26.0%**
1960	13,371	6,487	4,051	64%	0.55	72.7	0.600	0.996	0.710	0.866	0.946	**5.4%**	**29.5%**
1961	15,990	7,142	5,030	62%	0.52	73.2	0.621	1.000	0.726	0.870	0.951	**4.9%**	**32.7%**
1962	14,517	6,689	4,479	63%	0.54	70.4	0.503	0.964	0.636	0.812	0.906	**9.4%**	**30.0%**
1963	18,247	8,571	5,874	60%	0.51	69	0.444	1.000	0.592	0.800	0.889	**11.1%**	**40.4%**
1964	13,918	6,353	4,255	64%	0.54	69.5	0.465	0.933	0.608	0.784	0.884	**11.6%**	**31.7%**
1965	15,818	7,915	4,966	62%	0.53	67.1	0.364	0.958	0.531	0.755	0.844	**15.6%**	**35.9%**
1966	12,924	6,235	3,884	65%	0.55	70.4	0.503	0.944	0.636	0.806	0.903	**9.7%**	**24.3%**
1967	39,345	13,260	13,765	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**42.8%**
1968	13,370	7,294	4,050	64%	0.55	72	0.570	1.000	0.688	0.858	0.939	**6.1%**	**26.9%**
1969	24,130	13,293	8,075	57%	0.48	68.3	0.414	1.000	0.569	0.778	0.870	**13.0%**	**36.6%**
1970	11,326	6,588	3,286	67%	0.57	70.7	0.515	0.965	0.646	0.827	0.916	**8.4%**	**23.1%**
1971	23,831	10,134	7,963	57%	0.49	68.1	0.406	1.000	0.563	0.775	0.866	**13.4%**	**43.8%**
1972	13,246	6,991	4,004	65%	0.55	70.7	0.515	0.982	0.646	0.830	0.918	**8.2%**	**27.2%**
1973	19,721	8,621	6,426	59%	0.50	70.1	0.490	1.000	0.627	0.814	0.905	**9.5%**	**24.3%**
1974	21,819	10,016	7,210	58%	0.49	69.7	0.473	1.000	0.614	0.804	0.897	**10.3%**	**35.8%**
1975	24,787	12,050	8,320	57%	0.48	69.1	0.448	1.000	0.595	0.790	0.884	**11.6%**	**35.1%**
1976	15,104	6,168	4,699	63%	0.53	71.8	0.562	0.966	0.681	0.832	0.927	**7.3%**	**22.9%**
1977	10,224	1,462	2,874	69%	0.59	73.9	0.650	0.800	0.748	0.778	0.922	**7.8%**	**31.6%**
1978	14,732	8,184	4,560	63%	0.53	70	0.486	1.000	0.624	0.825	0.910	**9.0%**	**33.8%**
1979	19,761	8,638	6,441	59%	0.50	69.2	0.452	1.000	0.598	0.800	0.890	**11.0%**	**33.2%**
1980	14,951	8,621	4,642	63%	0.53	66.9	0.356	0.985	0.525	0.769	0.851	**14.9%**	**35.3%**
1981	14,113	7,159	4,328	64%	0.54	71.9	0.566	1.000	0.684	0.855	0.937	**6.3%**	**25.6%**
1982	24,415	13,276	8,181	57%	0.48	66	0.318	1.000	0.496	0.740	0.822	**17.8%**	**44.2%**
1983	55,568	11,579	19,832	23%	0.23	63.6	0.217	1.000	0.419	0.553	0.650	**35.0%**	**51.6%**
1984	15,750	7,462	4,941	62%	0.53	68.4	0.419	0.961	0.572	0.777	0.870	**13.0%**	**27.3%**
1985	13,377	6,336	4,053	64%	0.55	69.4	0.461	0.930	0.604	0.782	0.883	**11.7%**	**29.2%**
1986	12,610	8,184	3,766	65%	0.55	71.6	0.553	1.000	0.675	0.855	0.935	**6.5%**	**24.5%**
1987	16,308	7,260	5,149	62%	0.52	73.2	0.621	1.000	0.726	0.869	0.950	**5.0%**	**15.4%**
1988	14,811	6,050	4,589	63%	0.53	69.4	0.461	0.918	0.604	0.772	0.877	**12.3%**	**30.8%**
1989	12,705	6,033	3,802	65%	0.55	68.6	0.427	0.903	0.579	0.758	0.861	**13.9%**	**32.0%**
1990	15,033	6,067	4,672	63%	0.53	68.5	0.423	0.903	0.576	0.749	0.855	**14.5%**	**28.3%**
1991	9,469	2,151	2,591	71%	0.60	69.4	0.461	0.749	0.604	0.691	0.833	**16.7%**	**30.9%**
1992	14,709	6,033	4,551	63%	0.53	69	0.444	0.910	0.592	0.762	0.867	**13.3%**	**29.2%**
												Average:	**32.53%**

Formulas — Sacramento River Fall Run Smolt Survival

C8 ='Study 467 Flow Data'!G7
D8 ='Study 467 Flow Data'!Q7 (HIDDEN)
E8 ='Study 467 Flow Data'!AA7 (HIDDEN)
F8 =(D8+E8)
G8 =0.374*C8-950
H8 =IF(C8>25000,(0.133*C8+829)/(C8-G8),(0.293*C8+2090)/(C8-G8))
I8 =(0.133*C8+829)/(C8-G8)
K8 =IF((-2.45925+(0.0420748*J8))<0,0,(-2.45925+(0.0420748*J8)))
L8 =(-0.5916024)+(0.017968*J8)+(0.0000434*F8)
M8 =-1.613493+(0.0319584*J8)
N8 =(L8*I8)+(M8*(1-I8))
O8 =K8+N8-(K8*N8)
P8 =1-O8

R8 ='Study 467 Flow Data'!H7
S8 ='Study 467 Flow Data'!R7 (HIDDEN)
T8 ='Study 467 Flow Data'!AB7 (HIDDEN)
U8 =(S8+T8)
V8 =0.374*R8-950
W8 =IF(R8>25000,(0.133*R8+829)/(R8-V8),(0.293*R8+2090)/(R8-V8))
X8 =(0.84*(0.133*R8+829)/(R8-V8))+(0.16*W8)
Z8 =(-2.45925+(0.0420748*Y8))
AA8 =(-0.5916024)+(0.017968*Y8)+(0.0000434*U8)
AB8 =-1.613493+(0.0319584*Y8)
AC8 =(AA8*X8)+(AB8*(1-X8))
AD8 =Z8+AC8-(Z8*AC8)
AE8 =1-AD8

AG8 ='Study 467 Flow Data'!I7 (HIDDEN)
AH8 ='Study 467 Flow Data'!S7 (HIDDEN)
AI8 ='Study 513 Flow Revised Data'!AC7
AJ8 =(AH8+AI8)
AK8 =0.374*AG8-950
AL8 =IF(AG8>25000,(0.133*AG8+829)/(AG8-AK8),(0.293*AG8+2090)/(AG8-AK8))
AM8 =(0.27*(0.133*AG8+829)/(AG8-AK8))+(0.73*AL8)
AO8 =(-2.45925+(0.0420748*AN8))
AP8 =IF(((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8))>1,1,((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8)))
AQ8 =-1.613493+(0.0319584*AN8)
AR8 =(AP8*AM8)+(AQ8*(1-AM8))
AS8 =AO8+AR8-(AO8*AR8)
AT8 =1-AS8

Study 492 Sacramento River Late Fall Run Smolt Survival Model

Modified m2 by changing the slope to 0.000054

Cross Channel closed for 45 consecutive days, Dec 18-Jan 31

Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Year	Water Year Type	Sac River Flow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	Calculated Mortality m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	A	13,006	9,949	3,914	65%	0.28		0.898	0.080	0.611	0.611	**38.9%**
1923	B	18,216	14,167	5,863	60%	0.26		1.126	0.080	0.709	0.709	**29.1%**
1924	C	11,330	7,310	3,287	67%	0.29		0.755	0.080	0.534	0.534	**46.6%**
1925	D	7,024	4,739	1,677	78%	0.33		0.617	0.080	0.496	0.496	**50.4%**
1926	D	10,547	7,142	2,995	69%	0.30		0.746	0.080	0.537	0.537	**46.3%**
1927	W	20,382	14,738	6,673	59%	0.26		1.157	0.080	0.713	0.713	**28.7%**
1928	A	22,725	14,789	7,549	58%	0.25		1.159	0.080	0.702	0.702	**29.8%**
1929	C	12,974	9,747	3,902	65%	0.28		0.887	0.080	0.604	0.604	**39.6%**
1930	D	7,254	4,386	1,763	77%	0.33		0.598	0.080	0.477	0.477	**52.3%**
1931	C	9,843	6,134	2,731	70%	0.30		0.692	0.080	0.508	0.508	**49.2%**
1932	D	8,098	4,403	2,079	74%	0.32		0.598	0.080	0.464	0.464	**53.6%**
1933	C	9,511	5,848	2,607	71%	0.30		0.677	0.080	0.501	0.501	**49.9%**
1934	C	8,216	4,285	2,123	74%	0.32		0.592	0.080	0.458	0.458	**54.2%**
1935	B	9,277	7,075	2,520	71%	0.31		0.743	0.080	0.552	0.552	**44.8%**
1936	B	10,943	7,210	3,143	68%	0.29		0.750	0.080	0.535	0.535	**46.5%**
1937	B	14,280	10,739	4,391	63%	0.28		0.941	0.080	0.626	0.626	**37.4%**
1938	W	23,782	14,772	7,944	57%	0.25		1.158	0.080	0.697	0.697	**30.3%**
1939	D	19,522	13,008	6,351	59%	0.26		1.063	0.080	0.663	0.663	**33.7%**
1940	A	9,300	5,596	2,528	71%	0.31		0.663	0.080	0.495	0.495	**50.5%**
1941	W	13,836	10,621	4,225	64%	0.28		0.934	0.080	0.626	0.626	**37.4%**
1942	W	18,268	13,848	5,882	60%	0.26		1.108	0.080	0.698	0.698	**30.2%**
1943	W	21,794	14,789	7,201	58%	0.26		1.159	0.080	0.707	0.707	**29.3%**
1944	D	15,200	11,579	4,735	63%	0.27		0.986	0.080	0.647	0.647	**35.3%**
1945	B	14,111	11,260	4,328	64%	0.28		0.969	0.080	0.646	0.646	**35.4%**
1946	B	17,176	13,411	5,474	61%	0.27		1.085	0.080	0.692	0.692	**30.8%**
1947	D	13,608	10,470	4,139	64%	0.28		0.926	0.080	0.623	0.623	**37.7%**
1948	B	10,298	6,655	2,901	69%	0.30		0.720	0.080	0.522	0.522	**47.8%**
1949	D	14,530	10,756	4,484	63%	0.27		0.942	0.080	0.624	0.624	**37.6%**
1950	B	11,742	8,067	3,442	67%	0.29		0.796	0.080	0.557	0.557	**44.3%**
1951	A	44,115	14,755	15,549	23%	0.23		1.157	0.080	0.333	0.333	**66.7%**
1952	W	16,230	12,251	5,120	62%	0.27		1.022	0.080	0.661	0.661	**33.9%**
1953	W	16,617	11,108	5,265	61%	0.27		0.961	0.080	0.620	0.620	**38.0%**
1954	A	18,619	13,579	6,014	60%	0.26		1.094	0.080	0.687	0.687	**31.3%**
1955	D	20,499	14,201	6,717	59%	0.26		1.128	0.080	0.695	0.695	**30.5%**
1956	W	11,709	8,184	3,429	67%	0.29		0.803	0.080	0.562	0.562	**43.8%**
1957	A	15,552	11,629	4,866	62%	0.27		0.989	0.080	0.645	0.645	**35.5%**
1958	W	19,338	13,999	6,282	59%	0.26		1.117	0.080	0.696	0.696	**30.4%**
1959	B	16,212	12,201	5,113	62%	0.27		1.020	0.080	0.659	0.659	**34.1%**
1960	D	12,520	8,655	3,732	66%	0.28		0.828	0.080	0.570	0.570	**43.0%**
1961	D	14,083	10,403	4,317	64%	0.28		0.922	0.080	0.616	0.616	**38.4%**
1962	B	10,692	6,991	3,049	68%	0.29		0.738	0.080	0.530	0.530	**47.0%**
1963	W	21,242	14,772	6,995	58%	0.26		1.158	0.080	0.709	0.709	**29.1%**
1964	D	28,546	14,789	9,726	25%	0.25		1.159	0.080	0.346	0.346	**65.4%**
1965	W	13,741	10,571	4,189	64%	0.28		0.932	0.080	0.625	0.625	**37.5%**
1966	B	28,015	14,772	9,528	25%	0.25		1.158	0.080	0.346	0.346	**65.4%**
1967	W	15,112	11,764	4,702	63%	0.27		0.996	0.080	0.654	0.654	**34.6%**
1968	B	16,161	10,856	5,094	62%	0.27		0.947	0.080	0.615	0.615	**38.5%**
1969	W	14,400	10,856	4,436	63%	0.28		0.947	0.080	0.629	0.629	**37.1%**
1970	W	17,727	11,966	5,680	60%	0.26		1.007	0.080	0.641	0.641	**35.9%**
1971	W	22,503	14,772	7,466	58%	0.25		1.158	0.080	0.703	0.703	**29.7%**
1972	B	15,429	11,445	4,820	62%	0.27		0.979	0.080	0.640	0.640	**36.0%**
1973	A	23,605	14,755	7,878	57%	0.25		1.157	0.080	0.697	0.697	**30.3%**
1974	W	52,021	14,789	18,506	23%	0.23		1.159	0.080	0.330	0.330	**67.0%**
1975	W	17,663	13,260	5,656	61%	0.26		1.077	0.080	0.683	0.683	**31.7%**
1976	C	19,117	14,100	6,200	60%	0.26		1.122	0.080	0.701	0.701	**29.9%**
1977	C	8,282	6,218	2,147	74%	0.31		0.696	0.080	0.534	0.534	**46.6%**
1978	A	6,922	4,420	1,639	78%	0.33		0.599	0.080	0.485	0.485	**51.5%**
1979	B	14,394	11,075	4,433	63%	0.28		0.959	0.080	0.637	0.637	**36.3%**
1980	A	16,379	12,302	5,176	61%	0.27		1.025	0.080	0.661	0.661	**33.9%**
1981	D	13,099	10,117	3,949	65%	0.28		0.907	0.080	0.616	0.616	**38.4%**
1982	W	32,280	14,755	11,123	24%	0.24		1.157	0.080	0.341	0.341	**65.9%**
1983	W	39,001	11,344	13,636	24%	0.24		0.973	0.080	0.292	0.292	**70.8%**
1984	W	62,687	9,680	22,495	23%	0.23		0.883	0.080	0.263	0.263	**73.7%**
1985	D	33,219	14,789	11,474	24%	0.24		1.159	0.080	0.341	0.341	**65.9%**
1986	W	9,836	6,974	2,729	70%	0.30		0.737	0.080	0.540	0.540	**46.0%**
1987	D	11,761	8,470	3,449	67%	0.29		0.818	0.080	0.572	0.572	**42.8%**
1988	C	8,448	4,991	2,210	73%	0.31		0.630	0.080	0.483	0.483	**51.7%**
1989	D	9,571	6,907	2,630	71%	0.30		0.734	0.080	0.541	0.541	**45.9%**
1990	C	11,588	7,310	3,384	67%	0.29		0.755	0.080	0.532	0.532	**46.8%**
1991	C	8,142	5,042	2,095	74%	0.32		0.633	0.080	0.489	0.489	**51.1%**
1992	C	7,599	4,790	1,892	76%	0.32		0.619	0.080	0.488	0.488	**51.2%**

DECEMBER

Year	Sac River Flows	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	Calculated Mortality m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	17,208	14,149	5,486	61%	0.45		1.017		0.462	0.462	**53.8%**
1923	34,350	14,653	11,897	24%	0.24		1.044		0.251	0.251	**74.9%**
1924	11,807	7,920	3,466	67%	0.50		0.681		0.337	0.337	**66.3%**
1925	11,302	9,270	3,277	67%	0.50		0.753		0.377	0.377	**62.3%**
1926	13,229	9,856	3,998	65%	0.48		0.785		0.378	0.378	**62.2%**
1927	15,160	13,108	4,720	63%	0.47		0.961		0.448	0.448	**55.2%**
1928	16,574	13,336	5,249	61%	0.46		0.973		0.446	0.446	**55.4%**
1929	13,776	10,409	4,202	64%	0.48		0.815		0.389	0.389	**61.1%**
1930	14,941	10,880	4,638	63%	0.47		0.840		0.394	0.394	**60.6%**
1931	14,604	10,571	4,512	63%	0.47		0.824		0.388	0.388	**61.2%**
1932	14,673	13,092	4,538	63%	0.47		0.960		0.451	0.451	**54.9%**
1933	8,763	5,757	2,327	72%	0.54		0.564		0.303	0.303	**69.7%**
1934	12,973	10,213	3,902	65%	0.48		0.804		0.389	0.389	**61.1%**
1935	8,556	6,814	2,250	73%	0.54		0.621		0.336	0.336	**66.4%**
1936	13,114	9,726	3,955	65%	0.48		0.778		0.376	0.376	**62.4%**
1937	14,203	11,027	4,362	64%	0.47		0.848		0.402	0.402	**59.8%**
1938	40,313	14,653	14,127	24%	0.24		1.044		0.247	0.247	**75.3%**
1939	18,749	9,742	6,062	60%	0.45		0.779		0.348	0.348	**65.2%**
1940	8,184	4,326	2,111	74%	0.55		0.487		0.267	0.267	**73.3%**
1941	33,904	14,653	11,730	24%	0.24		1.044		0.251	0.251	**74.9%**
1942	65,430	13,726	23,521	23%	0.23		0.994		0.226	0.226	**77.4%**
1943	28,806	13,710	9,823	25%	0.25		0.993		0.244	0.244	**75.6%**
1944	13,839	10,799	4,226	64%	0.48		0.836		0.398	0.398	**60.2%**
1945	16,140	12,458	5,086	62%	0.46		0.926		0.426	0.426	**57.4%**
1946	51,890	14,653	18,457	23%	0.23		1.044		0.241	0.241	**75.9%**
1947	17,947	13,661	5,762	60%	0.45		0.991		0.446	0.446	**55.4%**
1948	9,665	5,790	2,665	70%	0.52		0.566		0.296	0.296	**70.4%**
1949	15,628	11,596	4,895	62%	0.46		0.879		0.408	0.408	**59.2%**
1950	12,031	8,278	3,550	66%	0.49		0.700		0.345	0.345	**65.5%**
1951	68,100	14,653	24,519	23%	0.23		1.044		0.237	0.237	**76.3%**
1952	44,904	14,653	15,844	23%	0.23		1.044		0.244	0.244	**75.6%**
1953	42,142	10,035	14,811	24%	0.24		0.795		0.187	0.187	**81.3%**
1954	14,115	10,555	4,329	64%	0.47		0.823		0.390	0.390	**61.0%**
1955	26,085	14,653	8,806	25%	0.25		1.044		0.260	0.260	**74.0%**
1956	30,689	14,653	10,528	24%	0.24		1.044		0.254	0.254	**74.6%**
1957	14,208	10,799	4,364	64%	0.47		0.836		0.396	0.396	**60.4%**
1958	23,817	11,791	7,958	57%	0.43		0.890		0.381	0.381	**61.9%**
1959	14,692	10,718	4,545	63%	0.47		0.832		0.391	0.391	**60.9%**
1960	11,693	7,497	3,423	67%	0.50		0.658		0.327	0.327	**67.3%**
1961	18,065	12,881	5,806	60%	0.45		0.948		0.427	0.427	**57.3%**
1962	16,766	11,937	5,320	61%	0.46		0.898		0.410	0.410	**59.0%**
1963	27,555	14,653	9,356	25%	0.25		1.044		0.258	0.258	**74.2%**
1964	14,912	11,466	4,627	63%	0.47		0.872		0.409	0.409	**59.1%**
1965	29,971	14,670	10,259	24%	0.24		1.045		0.255	0.255	**74.5%**
1966	17,062	11,742	5,431	61%	0.46		0.887		0.404	0.404	**59.6%**
1967	36,997	14,670	12,887	24%	0.24		1.045		0.249	0.249	**75.1%**
1968	16,757	9,856	5,317	61%	0.46		0.785		0.359	0.359	**64.1%**
1969	25,438	14,653	8,564	25%	0.25		1.044		0.261	0.261	**73.9%**
1970	49,970	9,579	17,739	23%	0.23		0.770		0.179	0.179	**82.1%**
1971	53,366	14,653	19,009	23%	0.23		1.044		0.241	0.241	**75.9%**
1972	19,628	13,954	6,391	59%	0.44		1.006		0.446	0.446	**55.4%**
1973	26,263	14,653	8,872	25%	0.25		1.044		0.260	0.260	**74.0%**
1974	61,593	14,653	22,086	23%	0.23		1.044		0.238	0.238	**76.2%**
1975	17,684	12,344	5,664	60%	0.45		0.919		0.415	0.415	**58.5%**
1976	16,839	12,572	5,348	61%	0.46		0.932		0.425	0.425	**57.5%**
1977	8,084	5,530	2,073	74%	0.55		0.551		0.304	0.304	**69.6%**
1978	12,308	9,872	3,653	66%	0.49		0.786		0.385	0.385	**61.5%**
1979	14,179	10,701	4,353	64%	0.47		0.831		0.394	0.394	**60.6%**
1980	20,897	14,653	6,865	59%	0.44		1.044		0.457	0.457	**54.3%**
1981	15,676	11,840	4,913	62%	0.46		0.892		0.413	0.413	**58.7%**
1982	68,166	14,653	24,544	23%	0.23		1.044		0.237	0.237	**76.3%**
1983	55,416	10,409	19,776	23%	0.23		0.815		0.187	0.187	**81.3%**
1984	82,951	9,205	30,074	22%	0.22		0.750		0.168	0.168	**83.2%**
1985	23,880	14,377	7,981	57%	0.43		1.029		0.440	0.440	**56.0%**
1986	15,538	11,954	4,861	62%	0.46		0.898		0.417	0.417	**58.3%**
1987	13,840	10,490	4,226	64%	0.48		0.819		0.390	0.390	**61.0%**
1988	15,909	12,035	5,000	62%	0.46		0.903		0.417	0.417	**58.3%**
1989	9,863	7,530	2,739	70%	0.52		0.660		0.343	0.343	**65.7%**
1990	14,695	8,896	4,546	63%	0.47		0.733		0.345	0.345	**65.5%**
1991	7,913	4,944	2,009	75%	0.55		0.520		0.288	0.288	**71.2%**
1992	7,570	4,830	1,881	76%	0.56		0.514		0.289	0.289	**71.1%**

JANUARY

Year	Sac River Flows	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	Calculated Mortality m1	m2	m3	m23	m123	**Calculated Survival s123**	**Weighted Total Survival**
1922	17,566	14,263	5,620	61%	0.26		1.023		0.271	0.271	**72.9%**	**54.8%**
1923	32,280	14,377	11,123	24%	0.24		1.029		0.249	0.249	**75.1%**	**63.5%**
1924	14,681	10,864	4,541	63%	0.27		0.840		0.230	0.230	**77.0%**	**64.0%**
1925	10,261	6,896	2,888	69%	0.30		0.625		0.186	0.186	**81.4%**	**64.1%**
1926	18,831	13,710	6,093	60%	0.26		0.993		0.260	0.260	**74.0%**	**61.2%**
1927	30,244	13,238	10,361	24%	0.24		0.968		0.236	0.236	**76.4%**	**53.8%**
1928	25,269	14,621	8,501	25%	0.25		1.042		0.260	0.260	**74.0%**	**53.7%**
1929	15,578	11,173	4,876	62%	0.27		0.856		0.232	0.232	**76.8%**	**59.7%**
1930	21,321	14,621	7,024	58%	0.26		1.042		0.267	0.267	**73.3%**	**61.7%**
1931	11,777	9,075	3,455	67%	0.29		0.743		0.214	0.214	**78.6%**	**62.6%**
1932	17,276	14,605	5,511	61%	0.27		1.042		0.277	0.277	**72.3%**	**58.9%**
1933	12,653	10,295	3,782	65%	0.28		0.809		0.229	0.229	**77.1%**	**66.6%**
1934	16,654	12,994	5,279	61%	0.27		0.955		0.255	0.255	**74.5%**	**62.7%**
1935	25,521	14,605	8,595	25%	0.25		1.042		0.260	0.260	**74.0%**	**62.9%**
1936	31,500	14,572	10,831	24%	0.24		1.040		0.252	0.252	**74.8%**	**61.5%**
1937	17,713	13,987	5,675	60%	0.26		1.008		0.267	0.267	**73.3%**	**57.6%**
1938	31,443	11,043	10,810	24%	0.24		0.849		0.206	0.206	**79.4%**	**65.1%**
1939	18,469	8,945	5,957	60%	0.26		0.736		0.193	0.193	**80.7%**	**61.2%**
1940	24,388	14,523	8,171	57%	0.25		1.037		0.260	0.260	**74.0%**	**67.8%**
1941	67,284	14,621	24,214	23%	0.23		1.042		0.237	0.237	**76.3%**	**65.9%**
1942	63,260	9,579	22,709	23%	0.23		0.770		0.176	0.176	**82.4%**	**66.9%**
1943	58,056	9,238	20,763	23%	0.23		0.752		0.172	0.172	**82.8%**	**65.8%**
1944	17,739	13,482	5,684	60%	0.26		0.981		0.259	0.259	**74.1%**	**57.4%**
1945	14,139	10,962	4,338	64%	0.28		0.845		0.234	0.234	**76.6%**	**56.7%**
1946	43,023	14,637	15,141	23%	0.23		1.043		0.245	0.245	**75.5%**	**64.5%**
1947	14,783	11,401	4,579	63%	0.27		0.869		0.238	0.238	**76.2%**	**56.2%**
1948	14,711	10,734	4,552	63%	0.27		0.833		0.228	0.228	**77.2%**	**66.5%**
1949	14,990	11,189	4,656	63%	0.27		0.857		0.234	0.234	**76.6%**	**58.2%**
1950	20,245	14,556	6,622	59%	0.26		1.039		0.269	0.269	**73.1%**	**62.1%**
1951	62,213	10,165	22,318	23%	0.23		0.802		0.183	0.183	**81.7%**	**75.3%**
1952	67,352	14,637	24,240	23%	0.23		1.043		0.237	0.237	**76.3%**	**65.3%**
1953	64,078	9,563	23,015	23%	0.23		0.769		0.175	0.175	**82.5%**	**70.8%**
1954	32,850	10,457	11,336	24%	0.24		0.818		0.198	0.198	**80.2%**	**58.4%**
1955	22,319	10,116	7,397	58%	0.25		0.799		0.203	0.203	**79.7%**	**64.5%**
1956	84,719	13,580	30,735	22%	0.22		0.986		0.221	0.221	**77.9%**	**67.7%**
1957	18,701	13,661	6,044	60%	0.26		0.991		0.260	0.260	**74.0%**	**57.6%**
1958	36,525	8,441	12,710	24%	0.24		0.709		0.169	0.169	**83.1%**	**59.3%**
1959	35,228	9,189	12,225	24%	0.24		0.749		0.180	0.180	**82.0%**	**59.5%**
1960	14,834	10,783	4,598	63%	0.27		0.835		0.229	0.229	**77.1%**	**63.7%**
1961	14,820	11,124	4,593	63%	0.27		0.854		0.234	0.234	**76.6%**	**57.4%**
1962	15,493	8,050	4,844	62%	0.27		0.688		0.187	0.187	**81.3%**	**61.6%**
1963	21,042	13,499	6,920	58%	0.26		0.982		0.252	0.252	**74.8%**	**63.1%**
1964	24,841	13,417	8,341	57%	0.25		0.977		0.245	0.245	**75.5%**	**64.8%**
1965	81,240	14,621	29,434	22%	0.22		1.042		0.234	0.234	**76.6%**	**65.8%**
1966	29,539	9,498	10,098	24%	0.24		0.766		0.187	0.187	**81.3%**	**66.5%**
1967	34,002	12,994	11,767	24%	0.24		0.955		0.230	0.230	**77.0%**	**65.5%**
1968	30,538	9,384	10,471	24%	0.24		0.760		0.185	0.185	**81.5%**	**62.1%**
1969	67,262	11,856	24,206	23%	0.23		0.893		0.203	0.203	**79.7%**	**66.2%**
1970	92,665	9,270	33,707	22%	0.22		0.753		0.168	0.168	**83.2%**	**70.9%**
1971	45,053	10,620	15,900	23%	0.23		0.826		0.193	0.193	**80.7%**	**65.5%**
1972	20,457	9,303	6,701	59%	0.26		0.755		0.195	0.195	**80.5%**	**56.8%**
1973	50,676	8,246	18,003	23%	0.23		0.698		0.162	0.162	**83.8%**	**65.6%**
1974	78,417	12,994	28,378	22%	0.22		0.955		0.215	0.215	**78.5%**	**74.5%**
1975	18,734	9,351	6,057	60%	0.26		0.758		0.199	0.199	**80.1%**	**57.2%**
1976	16,831	10,750	5,345	61%	0.27		0.833		0.223	0.223	**77.7%**	**55.7%**
1977	7,930	4,570	2,016	75%	0.32		0.500		0.159	0.159	**84.1%**	**67.5%**
1978	43,752	14,605	15,413	23%	0.23		1.042		0.244	0.244	**75.6%**	**62.5%**
1979	23,187	14,621	7,722	57%	0.25		1.042		0.264	0.264	**73.6%**	**57.8%**
1980	58,025	10,620	20,751	23%	0.23		0.826		0.189	0.189	**81.1%**	**55.9%**
1981	26,965	9,010	9,135	25%	0.25		0.739		0.183	0.183	**81.7%**	**59.4%**
1982	51,172	10,246	18,188	23%	0.23		0.806		0.187	0.187	**81.3%**	**75.0%**
1983	59,148	9,075	21,171	23%	0.23		0.743		0.170	0.170	**83.0%**	**79.1%**
1984	47,354	6,489	16,760	23%	0.23		0.603		0.141	0.141	**85.9%**	**81.5%**
1985	16,860	12,311	5,356	61%	0.27		0.918		0.245	0.245	**75.5%**	**63.3%**
1986	22,730	14,572	7,551	58%	0.25		1.040		0.264	0.264	**73.6%**	**59.1%**
1987	16,545	12,165	5,238	61%	0.27		0.910		0.244	0.244	**75.6%**	**60.1%**
1988	25,591	14,588	8,621	25%	0.25		1.041		0.260	0.260	**74.0%**	**60.6%**
1989	12,810	9,368	3,841	65%	0.28		0.759		0.214	0.214	**78.6%**	**64.0%**
1990	21,396	13,238	7,052	58%	0.26		0.968		0.248	0.248	**75.2%**	**63.3%**
1991	7,451	3,757	1,837	76%	0.32		0.456		0.148	0.148	**85.2%**	**69.7%**
1992	12,238	9,173	3,627	66%	0.29		0.748		0.213	0.213	**78.7%**	**68.0%**
											Average:	**63.25%**

Formulas: Sacramento River Late Fall Run Smolt Survival Model

C10 ='Study 467 Flow Data'!B7
D10 ='Study 467 Flow Data'!L7 (HIDDEN)
E10 ='Study 467 Flow Data'!V7 (HIDDEN)
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =-1.613493+(0.0319584*$T$1)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!C7
R10 ='Study 467 Flow Data'!M7 (HIDDEN)
S10 ='Study 467 Flow Data'!W7 (HIDDEN)
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!D7
AF10 ='Study 467 Flow Data'!N7 (HIDDEN)
AG10 ='Study 467 Flow Data'!X7 (HIDDEN)
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
AS10 =(O10*0.25)+(AC10*0.5)+(AQ10*0.25)

Study 492 Winter Run Smolt Survival Model   February Water Temp 50 F   April Water Temperatures based on limited historical data from USBR

Cross Channel Closed Over 25000 cfs   March Water Temp 55 F

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

Year	Water Year Type	FEBRUARY Sac River Flow	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survivability s123
1922	A	32,338	12,226	11,144	24%	0.24		0.967		0.234	0.234	76.6%
1923	B	19,053	8,877	6,176	60%	0.26		0.786		0.205	0.205	79.5%
1924	C	17,567	8,814	5,620	61%	0.26		0.783		0.207	0.207	79.3%
1925	D	46,006	13,955	16,256	23%	0.23		1.060		0.248	0.248	75.2%
1926	D	36,033	14,639	12,526	24%	0.24		1.097		0.262	0.262	73.8%
1927	W	89,151	8,319	32,392	22%	0.22		0.756		0.169	0.169	83.1%
1928	A	25,190	11,179	8,471	25%	0.25		0.910		0.228	0.228	77.2%
1929	C	18,603	9,327	6,008	60%	0.26		0.810		0.213	0.213	78.7%
1930	D	16,231	7,148	5,120	62%	0.27		0.693		0.186	0.186	81.4%
1931	C	11,180	5,312	3,231	68%	0.29		0.594		0.173	0.173	82.7%
1932	D	16,200	9,562	5,109	62%	0.27		0.823		0.221	0.221	77.9%
1933	C	12,083	6,860	3,569	66%	0.29		0.677		0.194	0.194	80.6%
1934	C	13,296	6,140	4,023	65%	0.28		0.638		0.179	0.179	82.1%
1935	B	12,411	4,808	3,692	66%	0.28		0.566		0.161	0.161	83.9%
1936	B	41,258	14,134	14,480	24%	0.24		1.070		0.252	0.252	74.8%
1937	B	34,541	14,621	11,968	24%	0.24		1.096		0.263	0.263	73.7%
1938	W	82,366	11,218	29,855	22%	0.22		0.913		0.205	0.205	79.5%
1939	D	19,090	10,263	6,190	60%	0.26		0.861		0.225	0.225	77.5%
1940	A	44,251	13,839	15,600	23%	0.23		1.054		0.247	0.247	75.3%
1941	W	75,037	14,387	27,114	23%	0.23		1.084		0.244	0.244	75.6%
1942	W	78,349	11,470	28,353	23%	0.23		0.926		0.208	0.208	79.2%
1943	W	52,259	11,830	18,595	23%	0.23		0.946		0.219	0.219	78.1%
1944	D	30,935	10,779	10,620	24%	0.24		0.889		0.216	0.216	78.4%
1945	B	39,710	14,639	13,902	24%	0.24		1.097		0.260	0.260	74.0%
1946	B	29,467	11,344	10,071	24%	0.24		0.919		0.225	0.225	77.5%
1947	D	20,886	11,074	6,861	59%	0.26		0.905		0.233	0.233	76.7%
1948	B	16,342	6,085	5,162	62%	0.27		0.635		0.171	0.171	82.9%
1949	D	16,198	8,499	5,108	62%	0.27		0.766		0.206	0.206	79.4%
1950	B	33,441	13,829	11,557	24%	0.24		1.054		0.254	0.254	74.6%
1951	A	60,566	12,118	21,702	23%	0.23		0.961		0.220	0.220	78.0%
1952	W	64,731	11,891	23,259	23%	0.23		0.949		0.216	0.216	78.4%
1953	W	28,344	12,046	9,651	25%	0.25		0.957		0.236	0.236	76.4%
1954	A	56,717	11,596	20,262	23%	0.23		0.933		0.214	0.214	78.6%
1955	D	16,364	8,211	5,170	62%	0.27		0.750		0.201	0.201	79.9%
1956	W	63,748	9,597	22,892	23%	0.23		0.825		0.188	0.188	81.2%
1957	A	32,794	11,164	11,315	24%	0.24		0.910		0.220	0.220	78.0%
1958	W	65,092	10,678	23,394	23%	0.23		0.883		0.201	0.201	79.9%
1959	B	50,072	11,092	17,777	23%	0.23		0.906		0.210	0.210	79.0%
1960	D	27,340	13,908	9,275	25%	0.25		1.058		0.261	0.261	73.9%
1961	D	32,271	9,759	11,119	24%	0.24		0.834		0.202	0.202	79.8%
1962	B	40,990	14,621	14,380	24%	0.24		1.096		0.259	0.259	74.1%
1963	W	58,694	12,154	21,002	23%	0.23		0.963		0.221	0.221	77.9%
1964	D	17,927	6,989	5,755	60%	0.26		0.684		0.181	0.181	81.9%
1965	W	33,326	12,334	11,514	24%	0.24		0.973		0.235	0.235	76.5%
1966	B	26,844	11,794	9,090	25%	0.25		0.944		0.234	0.234	76.6%
1967	W	38,113	11,038	13,304	24%	0.24		0.903		0.215	0.215	78.5%
1968	B	56,470	10,118	20,170	23%	0.23		0.853		0.196	0.196	80.4%
1969	W	67,482	9,993	24,288	23%	0.23		0.846		0.192	0.192	80.8%
1970	W	57,565	9,813	20,579	23%	0.23		0.837		0.192	0.192	80.8%
1971	W	28,687	10,407	9,779	25%	0.25		0.869		0.213	0.213	78.7%
1972	B	25,015	10,240	8,406	25%	0.25		0.860		0.215	0.215	78.5%
1973	A	70,967	11,254	25,592	23%	0.23		0.914		0.207	0.207	79.3%
1974	W	41,926	11,920	14,730	24%	0.24		0.950		0.224	0.224	77.6%
1975	W	58,461	11,056	20,914	23%	0.23		0.904		0.207	0.207	79.3%
1976	C	20,296	9,962	6,641	59%	0.26		0.845		0.218	0.218	78.2%
1977	C	13,485	2,449	4,093	64%	0.28		0.439		0.123	0.123	87.7%
1978	A	49,287	9,489	17,483	23%	0.23		0.819		0.190	0.190	81.0%
1979	B	41,473	14,369	14,561	24%	0.24		1.083		0.255	0.255	74.5%
1980	A	71,932	9,666	25,953	23%	0.23		0.829		0.187	0.187	81.3%
1981	D	29,739	8,877	10,172	24%	0.24		0.786		0.192	0.192	80.8%
1982	W	65,645	10,461	23,601	23%	0.23		0.872		0.198	0.198	80.2%
1983	W	82,910	10,389	30,058	22%	0.22		0.868		0.195	0.195	80.5%
1984	W	37,282	7,267	12,993	24%	0.24		0.699		0.167	0.167	83.3%
1985	D	19,043	9,363	6,172	60%	0.26		0.812		0.212	0.212	78.8%
1986	W	91,098	14,315	33,121	22%	0.22		1.080		0.241	0.241	75.9%
1987	D	22,844	6,968	7,594	58%	0.25		0.683		0.173	0.173	82.7%
1988	C	14,676	6,259	4,539	63%	0.27		0.645		0.177	0.177	82.3%
1989	D	12,705	3,133	3,802	65%	0.28		0.476		0.135	0.135	86.5%
1990	C	16,763	7,617	5,319	61%	0.27		0.718		0.192	0.192	80.8%
1991	C	12,519	1,693	3,732	66%	0.28		0.398		0.113	0.113	88.7%
1992	C	32,637	10,640	11,256	24%	0.24		0.881		0.213	0.213	78.7%

Year	MARCH Sac River Flow	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survivability s123
1922	31,632	9,579	10,880	0.24	0.24		0.914	0.144	0.331	0.331	66.9%
1923	17,414	7,774	5,563	0.61	0.27		0.816	0.144	0.323	0.323	67.7%
1924	12,404	3,627	3,689	0.66	0.28		0.592	0.144	0.272	0.272	72.8%
1925	18,642	8,002	6,022	0.60	0.26		0.829	0.144	0.324	0.324	67.6%
1926	16,197	6,847	5,108	0.62	0.27		0.766	0.144	0.312	0.312	68.8%
1927	43,865	10,165	15,456	0.23	0.23		0.946	0.144	0.332	0.332	66.8%
1928	85,759	8,701	31,124	0.22	0.22		0.866	0.144	0.306	0.306	69.4%
1929	14,477	5,936	4,464	0.63	0.28		0.717	0.144	0.302	0.302	69.8%
1930	30,166	7,660	10,332	0.24	0.24		0.810	0.144	0.307	0.307	69.3%
1931	9,235	3,985	2,504	0.71	0.31		0.612	0.144	0.287	0.287	71.3%
1932	12,086	4,001	3,570	0.66	0.29		0.613	0.144	0.278	0.278	72.2%
1933	10,457	4,847	2,961	0.69	0.30		0.658	0.144	0.296	0.296	70.4%
1934	15,340	5,318	4,787	0.62	0.27		0.684	0.144	0.291	0.291	70.9%
1935	24,996	11,336	8,399	0.57	0.25		1.000	0.144	0.358	0.358	64.2%
1936	32,648	13,922	11,260	0.24	0.24		1.000	0.144	0.351	0.351	64.9%
1937	38,849	8,473	13,580	0.24	0.24		0.854	0.144	0.313	0.313	68.7%
1938	78,637	8,685	28,460	0.22	0.22		0.866	0.144	0.307	0.307	69.3%
1939	16,468	7,188	5,209	0.61	0.27		0.785	0.144	0.316	0.316	68.4%
1940	62,482	12,620	22,418	0.23	0.23		1.000	0.144	0.339	0.339	66.1%
1941	58,575	12,653	20,957	0.23	0.23		1.000	0.144	0.340	0.340	66.0%
1942	27,177	9,888	9,214	0.25	0.25		0.931	0.144	0.339	0.339	66.1%
1943	64,601	7,660	23,211	0.23	0.23		0.810	0.144	0.296	0.296	70.4%
1944	25,179	8,766	8,467	0.25	0.25		0.870	0.144	0.326	0.326	67.4%
1945	23,280	9,644	7,757	0.57	0.25		0.917	0.144	0.340	0.340	66.0%
1946	22,467	10,067	7,453	0.58	0.25		0.940	0.144	0.347	0.347	65.3%
1947	21,934	8,701	7,253	0.58	0.26		0.866	0.144	0.329	0.329	67.1%
1948	16,820	6,928	5,341	0.61	0.27		0.771	0.144	0.312	0.312	68.8%
1949	41,885	11,791	14,715	0.24	0.24		1.000	0.144	0.346	0.346	65.4%
1950	22,154	8,164	7,336	0.58	0.25		0.838	0.144	0.321	0.321	67.9%
1951	29,827	9,612	10,205	0.24	0.24		0.916	0.144	0.333	0.333	66.7%
1952	57,518	9,774	20,562	0.23	0.23		0.924	0.144	0.323	0.323	67.7%
1953	24,971	9,026	8,389	0.57	0.25		0.884	0.144	0.329	0.329	67.1%
1954	49,536	9,156	17,576	0.23	0.23		0.891	0.144	0.318	0.318	68.2%
1955	14,335	5,985	4,411	0.63	0.28		0.720	0.144	0.303	0.303	69.7%
1956	36,754	8,701	12,796	0.24	0.24		0.866	0.144	0.317	0.317	68.3%
1957	44,377	8,685	15,647	0.23	0.23		0.866	0.144	0.313	0.313	68.7%
1958	93,616	9,612	34,062	0.22	0.22		0.916	0.144	0.316	0.316	68.4%
1959	23,853	7,351	7,971	0.57	0.25		0.794	0.144	0.308	0.308	69.2%
1960	21,434	6,261	7,066	0.58	0.26		0.735	0.144	0.295	0.295	70.5%
1961	21,022	7,058	6,912	0.58	0.26		0.778	0.144	0.307	0.307	69.3%
1962	26,341	8,977	8,902	0.25	0.25		0.881	0.144	0.327	0.327	67.3%
1963	32,723	8,977	11,288	0.24	0.24		0.881	0.144	0.322	0.322	67.8%
1964	16,418	6,440	5,190	0.61	0.27		0.744	0.144	0.305	0.305	69.5%
1965	21,459	8,197	7,076	0.58	0.26		0.839	0.144	0.322	0.322	67.8%
1966	28,761	9,547	9,807	0.25	0.25		0.912	0.144	0.333	0.333	66.7%
1967	53,773	9,189	19,161	0.23	0.23		0.893	0.144	0.317	0.317	68.3%
1968	36,789	8,668	12,809	0.24	0.24		0.865	0.144	0.316	0.316	68.4%
1969	45,397	8,034	16,028	0.23	0.23		0.830	0.144	0.305	0.305	69.5%
1970	35,897	8,961	12,475	0.24	0.24		0.881	0.144	0.320	0.320	68.0%
1971	49,622	9,937	17,609	0.23	0.23		0.933	0.144	0.327	0.327	67.3%
1972	32,930	8,896	11,366	0.24	0.24		0.877	0.144	0.321	0.321	67.9%
1973	47,552	9,693	16,834	0.23	0.23		0.920	0.144	0.325	0.325	67.5%
1974	34,518	9,872	11,960	0.24	0.24		0.930	0.144	0.333	0.333	66.7%
1975	75,998	9,579	27,473	0.23	0.23		0.914	0.144	0.318	0.318	68.2%
1976	18,389	7,351	5,927	0.60	0.26		0.794	0.144	0.315	0.315	68.5%
1977	7,647	2,846	1,910	0.75	0.32		0.550	0.144	0.275	0.275	72.5%
1978	46,888	8,148	16,586	0.23	0.23		0.837	0.144	0.306	0.306	69.4%
1979	32,545	10,799	11,222	0.24	0.24		0.980	0.144	0.346	0.346	65.4%
1980	36,480	7,010	12,694	0.24	0.24		0.775	0.144	0.295	0.295	70.5%
1981	32,579	8,538	11,235	0.24	0.24		0.858	0.144	0.317	0.317	68.3%
1982	69,087	9,221	24,889	0.23	0.23		0.895	0.144	0.314	0.314	68.6%
1983	81,934	7,400	29,693	0.22	0.22		0.796	0.144	0.291	0.291	70.9%
1984	36,581	9,791	12,731	0.24	0.24		0.925	0.144	0.331	0.331	66.9%
1985	17,331	7,221	5,532	0.61	0.27		0.787	0.144	0.315	0.315	68.5%
1986	73,135	8,571	26,402	0.23	0.23		0.859	0.144	0.306	0.306	69.4%
1987	29,728	7,188	10,168	0.24	0.24		0.785	0.144	0.301	0.301	69.9%
1988	11,866	4,570	3,488	0.66	0.29		0.643	0.144	0.288	0.288	71.2%
1989	40,707	12,474	14,274	0.24	0.24		1.000	0.144	0.346	0.346	65.4%
1990	14,652	5,822	4,530	0.63	0.27		0.711	0.144	0.300	0.300	70.0%
1991	29,739	12,181	10,172	0.24	0.24		1.000	0.144	0.353	0.353	64.7%
1992	20,217	8,473	6,611	0.59	0.26		0.854	0.144	0.328	0.328	67.2%

Year	APRIL Sac River Flow	CVP + SWP Exports	Calculated Steamboat & Sutter Slough flows	Percent	X-Channel Closed	Water temp f	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survivability s123	Weighted Total Survival
1922	22,927	8,487	7,625	0.58	0.25	58.5	0.002	0.918	0.256	0.424	0.425	57.5%	65.34%
1923	24,339	8,201	8,153	0.57	0.25	58.3	0.000	0.899	0.250	0.413	0.413	58.7%	66.56%
1924	7,864	2,756	1,991	0.75	0.32	61.5	0.128	0.662	0.352	0.451	0.521	47.9%	66.17%
1925	22,570	7,042	7,491	0.58	0.25	59.1	0.027	0.851	0.275	0.421	0.437	56.3%	65.21%
1926	18,610	6,184	6,010	0.60	0.26	61.6	0.133	0.849	0.355	0.485	0.553	44.7%	62.24%
1927	48,222	9,814	17,085	0.23	0.23	56.8	0.000	0.959	0.202	0.378	0.378	62.2%	67.53%
1928	29,212	7,932	9,975	0.25	0.25	58.7	0.011	0.891	0.262	0.417	0.423	57.7%	66.92%
1929	8,901	2,924	2,379	0.72	0.31	56.3	0.000	0.578	0.186	0.307	0.307	69.3%	70.83%
1930	12,751	4,050	3,819	0.65	0.28	59.6	0.048	0.698	0.291	0.406	0.435	56.5%	67.04%
1931	9,004	2,924	2,417	0.72	0.31	62.8	0.183	0.695	0.393	0.486	0.580	42.0%	63.98%
1932	13,094	5,563	3,947	0.65	0.28	58.9	0.019	0.767	0.269	0.409	0.420	58.0%	68.66%
1933	12,595	4,151	3,761	0.65	0.28	60.1	0.069	0.712	0.307	0.422	0.462	53.8%	66.72%
1934	12,874	3,764	3,865	0.65	0.28	63.6	0.217	0.754	0.419	0.514	0.619	38.1%	62.52%
1935	24,812	10,453	8,330	0.57	0.25	58.9	0.019	1.000	0.269	0.452	0.462	53.8%	63.61%
1936	21,031	8,302	6,916	0.58	0.26	59.7	0.053	0.929	0.294	0.458	0.486	51.4%	62.12%
1937	23,257	9,125	7,748	0.57	0.25	58.8	0.015	0.958	0.266	0.441	0.449	55.1%	65.29%
1938	47,172	10,319	16,692	0.23	0.23	56.3	0.000	0.977	0.186	0.370	0.370	63.0%	68.76%
1939	12,114	4,134	3,581	0.66	0.29	63.3	0.204	0.769	0.409	0.512	0.612	38.8%	60.71%
1940	41,731	10,033	14,657	0.24	0.24	57.4	0.000	0.982	0.221	0.400	0.400	60.0%	65.44%
1941	42,372	12,268	14,897	0.24	0.24	56.9	0.000	1.000	0.205	0.392	0.392	60.8%	65.66%
1942	43,228	10,638	15,217	0.23	0.23	56.5	0.000	0.998	0.192	0.381	0.381	61.9%	66.54%
1943	29,406	10,705	10,048	0.24	0.24	58.8	0.015	1.000	0.266	0.445	0.454	54.6%	66.69%
1944	9,626	4,235	2,650	0.70	0.30	58.4	0.000	0.686	0.253	0.384	0.384	61.6%	67.11%
1945	11,976	6,386	3,529	0.66	0.29	60.6	0.090	0.842	0.323	0.472	0.520	48.0%	61.67%
1946	11,847	5,916	3,481	0.66	0.29	60.7	0.095	0.818	0.326	0.468	0.518	48.2%	61.77%
1947	13,772	4,302	4,201	0.64	0.28	62.5	0.170	0.764	0.384	0.489	0.576	42.4%	60.95%
1948	22,904	6,789	7,616	0.58	0.25	56.6	0.000	0.792	0.195	0.347	0.347	65.3%	69.62%
1949	13,321	5,109	4,032	0.65	0.28	61.7	0.137	0.793	0.358	0.480	0.551	44.9%	61.08%
1950	18,776	6,184	6,072	0.60	0.26	61.3	0.120	0.844	0.346	0.476	0.539	46.1%	62.24%
1951	14,732	6,353	4,560	0.63	0.27	59.9	0.061	0.828	0.301	0.445	0.479	52.1%	63.80%
1952	56,648	10,520	20,236	0.23	0.23	55.5	0.000	0.974	0.160	0.347	0.347	65.3%	68.36%
1953	16,288	5,680	5,142	0.62	0.27	58.8	0.015	0.772	0.266	0.402	0.410	59.0%	65.85%
1954	39,868	9,075	13,961	0.24	0.24	58.4	0.000	0.948	0.253	0.417	0.417	58.3%	66.59%
1955	9,584	3,865	2,634	0.70	0.30	56.4	0.000	0.631	0.189	0.323	0.323	67.7%	70.44%
1956	20,548	7,999	6,735	0.59	0.26	59.7	0.053	0.913	0.294	0.454	0.483	51.7%	65.03%
1957	21,164	6,420	6,965	0.58	0.26	60.5	0.086	0.842	0.320	0.454	0.501	49.9%	64.26%
1958	52,284	11,579	18,604	0.23	0.23	57.4	0.000	1.000	0.221	0.401	0.401	59.9%	67.33%
1959	10,398	3,764	2,939	0.69	0.30	63	0.191	0.744	0.400	0.502	0.597	40.3%	61.81%
1960	13,629	3,949	4,147	0.64	0.28	59.5	0.044	0.691	0.288	0.400	0.427	57.3%	66.96%
1961	12,670	3,529	3,789	0.65	0.28	60.1	0.069	0.679	0.307	0.412	0.453	54.7%	66.28%
1962	11,575	4,941	3,379	0.67	0.29	61.8	0.141	0.786	0.362	0.484	0.557	44.3%	61.27%
1963	69,377	9,814	24,997	0.23	0.23	53.7	0.000	0.903	0.103	0.284	0.284	71.6%	70.23%
1964	9,064	3,563	2,440	0.72	0.31	59.3	0.036	0.666	0.282	0.400	0.421	57.9%	67.61%
1965	45,099	10,268	15,917	0.23	0.23	56.9	0.000	0.985	0.205	0.387	0.387	61.3%	66.96%
1966	12,914	5,008	3,880	0.65	0.28	61.9	0.145	0.791	0.365	0.485	0.560	44.0%	61.20%
1967	39,925	10,722	13,982	0.24	0.24	53.8	0.000	0.954	0.106	0.307	0.307	69.3%	69.95%
1968	15,724	5,277	4,931	0.62	0.27	61.5	0.128	0.798	0.352	0.473	0.540	46.0%	63.22%
1969	44,707	10,302	15,770	0.23	0.23	56.4	0.000	0.978	0.189	0.374	0.374	62.6%	68.92%
1970	16,710	6,621	5,300	0.61	0.27	58.8	0.015	0.822	0.266	0.415	0.423	57.7%	66.55%
1971	22,154	6,756	7,336	0.58	0.25	58.7	0.011	0.828	0.262	0.407	0.413	58.7%	66.19%
1972	12,562	4,706	3,748	0.65	0.28	58.5	0.002	0.714	0.256	0.386	0.387	61.3%	67.28%
1973	19,512	7,462	6,347	0.59	0.26	61.3	0.120	0.913	0.346	0.493	0.554	44.6%	62.17%
1974	33,122	11,041	11,438	0.24	0.24	56.8	0.000	1.000	0.202	0.394	0.394	60.6%	66.28%
1975	25,874	9,310	8,727	0.25	0.25	56.8	0.000	0.932	0.202	0.384	0.384	61.6%	67.69%
1976	9,481	3,008	2,596	0.71	0.30	58.9	0.019	0.629	0.269	0.378	0.390	61.0%	67.51%
1977	9,100	3,176	2,453	0.72	0.31	64.3	0.246	0.735	0.441	0.532	0.647	35.3%	63.33%
1978	38,698	10,823	13,523	0.24	0.24	56.9	0.000	1.000	0.205	0.394	0.394	60.6%	68.29%
1979	17,813	6,924	5,712	0.60	0.26	59.8	0.057	0.857	0.298	0.445	0.477	52.3%	62.63%
1980	19,818	8,151	6,462	0.59	0.26	57.1	0.000	0.875	0.211	0.383	0.383	61.7%	69.25%
1981	17,108	5,479	5,448	0.61	0.27	61.5	0.128	0.809	0.352	0.474	0.541	45.9%	63.21%
1982	75,838	10,604	27,413	0.23	0.23	54.1	0.000	0.953	0.115	0.304	0.304	69.6%	70.38%
1983	68,301	9,764	24,595	0.23	0.23	55	0.000	0.924	0.144	0.321	0.321	67.9%	71.27%
1984	18,169	6,890	5,845	0.60	0.26	59.7	0.053	0.853	0.294	0.442	0.471	52.9%	64.85%
1985	12,439	4,269	3,702	0.66	0.28	60.8	0.099	0.731	0.330	0.444	0.499	50.1%	64.33%
1986	20,639	9,058	6,769	0.59	0.26	60.4	0.082	0.983	0.317	0.488	0.530	47.0%	63.52%
1987	12,681	3,580	3,793	0.65	0.28	65.7	0.305	0.782	0.486	0.570	0.701	29.9%	59.56%
1988	9,202	2,857	2,492	0.71	0.31	59.9	0.061	0.639	0.301	0.404	0.441	55.9%	68.09%
1989	23,637	5,764	7,890	0.57	0.25	61.4	0.124	0.823	0.349	0.468	0.534	46.6%	62.48%
1990	12,260	3,496	3,635	0.66	0.29	61.6	0.133	0.704	0.355	0.455	0.527	47.3%	64.61%
1991	15,374	4,453	4,800	0.62	0.27	60.8	0.099	0.741	0.330	0.441	0.497	50.3%	63.48%
1992	12,514	3,916	3,730	0.66	0.28	61.2	0.116	0.719	0.342	0.449	0.513	48.7%	63.15%
												Average:	64.60%

Formulas: Winter Run Salmon Smolt Survival Model

C10 ='Study 467 Flow Data'!E7
D10 ='Study 467 Flow Data'!O7 (HIDDEN)
E10 ='Study 467 Flow Data'!Y7 (HIDDEN)
F10 =(D9+E9)
G10 =0.374*C9-950
H10 =IF(C9>$G$2,(0.133*C9+829)/(C9-G9),(0.293*C9+2090)/(C9-G9))
I10 =(0.133*C9+829)/(C9-G9)
K10 =(-0.5916024)+(0.017968*$M$1)+(0.000054*F9)
M10 =(K9*I9)+L9*(1-I9)
N10 =J9+M9-(J9*M9)
O10 =1-N9

Q10 ='Study 467 Flow Data'!F7
R10 ='Study 467 Flow Data'!P7 (HIDDEN)
S10 ='Study 467 Flow Data'!Z7 (HIDDEN)
T10 =(R9+S9)
U10 =0.374*Q9-950
V10 =IF(Q9>$G$2,(0.133*Q9+829)/(Q9-U9),(0.293*Q9+2090)/(Q9-U9))
Y10 =(0.133*Q9+829)/(Q9-U9)
W10 =IF(((-0.5916024)+(0.017968*$M$2)+(0.000054*T9))>1,1,((-0.5916024)+(0.017968*$M$2)+(0.000054*T9)))
Z10 =-1.613493+(0.0319584*$M$2)
AA10 =(Y9*W9)+Z9*(1-W9)
AB10 =X9+AA9-(X9*AA9)
AC10 =1-AB9

(HIDDEN)
AE10 ='Study 467 Flow Data'!G7 (HIDDEN)
AF10 ='Study 467 Flow Data'!Q7
AG10 ='Study 467 Flow Data'!AA7
AH10 =AF9+AG9
AI10 =0.374*AE9-950
AJ10 =IF(AE9>$G$2,(0.133*AE9+829)/(AE9-AI9),(0.293*AE9+2090)/(AE9-AI9))
AK10 =(0.133*AE9+829)/(AE9-AI9)
AM10 =IF((-2.45925+(0.0420748*AL9))<0,0,(-2.45925+(0.0420748*AL9)))
AN10 =IF(((-0.5916024)+(0.017968*AL9)+(0.000054*AH9))>1,1,((-0.5916024)+(0.017968*AL9)+(0.000054*AH
AO10 =-1.613493+(0.0319584*AL9)
AP10 =(AN9*AK9)+(AO9*(1-AK9))
AQ10 =AM9+AP9-(AM9*AP9)

Study 492 Sacramento River Spring Run Yearling Survival Model

Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Year	Water Year Type	Sac River Flow	CVP Flow	SWP Flow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2 (Calculated Mortality)	m3	m23	m123	**Calculated Survival s123**
1922	A	13,006	5,546	4,403	9,949	3,914	65%	0.28	0	0.898	0.080	0.611	0.611	**38.9%**
1923	B	18,216	4,487	9,680	14,167	5,863	60%	0.26	0	1.126	0.080	0.709	0.709	**29.1%**
1924	C	11,330	3,580	3,731	7,310	3,287	67%	0.29	0	0.755	0.080	0.534	0.534	**46.6%**
1925	D	7,024	1,496	3,243	4,739	1,677	78%	0.33	0	0.617	0.080	0.496	0.496	**50.4%**
1926	D	10,547	4,336	2,807	7,142	2,995	69%	0.30	0	0.746	0.080	0.537	0.537	**46.3%**
1927	W	20,382	4,437	10,302	14,738	6,673	59%	0.26	0	1.157	0.080	0.713	0.713	**28.7%**
1928	A	22,725	4,487	10,302	14,789	7,549	58%	0.25	0	1.159	0.080	0.702	0.702	**29.8%**
1929	C	12,974	4,470	5,277	9,747	3,902	65%	0.28	0	0.887	0.080	0.604	0.604	**39.6%**
1930	D	7,254	2,470	1,916	4,386	1,763	77%	0.33	0	0.598	0.080	0.477	0.477	**52.3%**
1931	C	9,843	2,823	3,311	6,134	2,731	70%	0.30	0	0.692	0.080	0.508	0.508	**49.2%**
1932	D	8,098	2,706	1,697	4,403	2,079	74%	0.32	0	0.598	0.080	0.464	0.464	**53.6%**
1933	C	9,511	3,243	2,605	5,848	2,607	71%	0.30	0	0.677	0.080	0.501	0.501	**49.9%**
1934	C	8,216	2,521	1,765	4,285	2,123	74%	0.32	0	0.592	0.080	0.458	0.458	**54.2%**
1935	B	9,277	2,807	4,269	7,075	2,520	71%	0.31	0	0.743	0.080	0.552	0.552	**44.8%**
1936	B	10,943	3,798	3,412	7,210	3,143	68%	0.29	0	0.750	0.080	0.535	0.535	**46.5%**
1937	B	14,280	5,865	4,874	10,739	4,391	63%	0.28	0	0.941	0.080	0.626	0.626	**37.4%**
1938	W	23,782	4,470	10,302	14,772	7,944	57%	0.25	0	1.158	0.080	0.697	0.697	**30.3%**
1939	D	19,522	4,487	8,520	13,008	6,351	59%	0.26	0	1.063	0.080	0.663	0.663	**33.7%**
1940	A	9,300	2,991	2,605	5,596	2,528	71%	0.31	0	0.663	0.080	0.495	0.495	**50.5%**
1941	W	13,836	4,571	6,050	10,621	4,225	64%	0.28	0	0.934	0.080	0.626	0.626	**37.4%**
1942	W	18,268	4,487	9,361	13,848	5,882	60%	0.26	0	1.108	0.080	0.698	0.698	**30.2%**
1943	W	21,794	4,487	10,302	14,789	7,201	58%	0.26	0	1.159	0.080	0.707	0.707	**29.3%**
1944	D	15,200	4,470	7,109	11,579	4,735	63%	0.27	0	0.986	0.080	0.647	0.647	**35.3%**
1945	B	14,111	4,437	6,823	11,260	4,328	64%	0.28	0	0.969	0.080	0.646	0.646	**35.4%**
1946	B	17,176	4,470	8,941	13,411	5,474	61%	0.27	0	1.085	0.080	0.692	0.692	**30.8%**
1947	D	13,608	4,453	6,016	10,470	4,139	64%	0.28	0	0.926	0.080	0.623	0.623	**37.7%**
1948	B	10,298	3,042	3,613	6,655	2,901	69%	0.30	0	0.720	0.080	0.522	0.522	**47.8%**
1949	D	14,530	4,453	6,302	10,756	4,484	63%	0.27	0	0.942	0.080	0.624	0.624	**37.6%**
1950	B	11,742	4,706	3,361	8,067	3,442	67%	0.29	0	0.796	0.080	0.557	0.557	**44.3%**
1951	A	44,115	4,453	10,302	14,755	15,549	23%	0.23	0	1.157	0.080	0.333	0.333	**66.7%**
1952	W	16,230	4,487	7,764	12,251	5,120	62%	0.27	0	1.022	0.080	0.661	0.661	**33.9%**
1953	W	16,617	5,159	5,949	11,108	5,265	61%	0.27	0	0.961	0.080	0.620	0.620	**38.0%**
1954	A	18,619	4,470	9,109	13,579	6,014	60%	0.26	0	1.094	0.080	0.687	0.687	**31.3%**
1955	D	20,499	4,470	9,730	14,201	6,717	59%	0.26	0	1.128	0.080	0.695	0.695	**30.5%**
1956	W	11,709	3,966	4,218	8,184	3,429	67%	0.29	0	0.803	0.080	0.562	0.562	**43.8%**
1957	A	15,552	4,487	7,142	11,629	4,866	62%	0.27	0	0.989	0.080	0.645	0.645	**35.5%**
1958	W	19,338	4,470	9,529	13,999	6,282	59%	0.26	0	1.117	0.080	0.696	0.696	**30.4%**
1959	B	16,212	5,680	6,521	12,201	5,113	62%	0.27	0	1.020	0.080	0.659	0.659	**34.1%**
1960	D	12,520	5,462	3,193	8,655	3,732	66%	0.28	0	0.828	0.080	0.570	0.570	**43.0%**
1961	D	14,083	4,437	5,966	10,403	4,317	64%	0.28	0	0.922	0.080	0.616	0.616	**38.4%**
1962	B	10,692	4,000	2,991	6,991	3,049	68%	0.29	0	0.738	0.080	0.530	0.530	**47.0%**
1963	W	21,242	4,470	10,302	14,772	6,995	58%	0.26	0	1.158	0.080	0.709	0.709	**29.1%**
1964	D	28,546	4,487	10,302	14,789	9,726	25%	0.25	0	1.159	0.080	0.346	0.346	**65.4%**
1965	W	13,741	4,336	6,235	10,571	4,189	64%	0.28	0	0.932	0.080	0.625	0.625	**37.5%**
1966	B	28,015	4,470	10,302	14,772	9,528	25%	0.25	0	1.158	0.080	0.346	0.346	**65.4%**
1967	W	15,112	4,453	7,310	11,764	4,702	63%	0.27	0	0.996	0.080	0.654	0.654	**34.6%**
1968	B	16,161	4,487	6,369	10,856	5,094	62%	0.27	0	0.947	0.080	0.615	0.615	**38.5%**
1969	W	14,400	4,453	6,403	10,856	4,436	63%	0.28	0	0.947	0.080	0.629	0.629	**37.1%**
1970	W	17,727	4,487	7,478	11,966	5,680	60%	0.26	0	1.007	0.080	0.641	0.641	**35.9%**
1971	W	22,503	4,470	10,302	14,772	7,466	58%	0.25	0	1.158	0.080	0.703	0.703	**29.7%**
1972	B	15,429	4,470	6,974	11,445	4,820	62%	0.27	0	0.979	0.080	0.640	0.640	**36.0%**
1973	A	23,605	4,453	10,302	14,755	7,878	57%	0.25	0	1.157	0.080	0.697	0.697	**30.3%**
1974	W	52,021	4,487	10,302	14,789	18,506	23%	0.23	0	1.159	0.080	0.330	0.330	**67.0%**
1975	W	17,663	6,991	6,268	13,260	5,656	61%	0.26	0	1.077	0.080	0.683	0.683	**31.7%**
1976	C	19,117	5,411	8,688	14,100	6,200	60%	0.26	0	1.122	0.080	0.701	0.701	**29.9%**
1977	C	8,282	2,907	3,311	6,218	2,147	74%	0.31	0	0.696	0.080	0.534	0.534	**46.6%**
1978	A	6,922	2,689	1,731	4,420	1,639	78%	0.33	0	0.599	0.080	0.485	0.485	**51.5%**
1979	B	14,394	4,487	6,588	11,075	4,433	63%	0.28	0	0.959	0.080	0.637	0.637	**36.3%**
1980	A	16,379	4,470	7,831	12,302	5,176	61%	0.27	0	1.025	0.080	0.661	0.661	**33.9%**
1981	D	13,099	4,470	5,647	10,117	3,949	65%	0.28	0	0.907	0.080	0.616	0.616	**38.4%**
1982	W	32,280	4,453	10,302	14,755	11,123	24%	0.24	0	1.157	0.080	0.341	0.341	**65.9%**
1983	W	39,001	4,655	6,689	11,344	13,636	24%	0.24	0	0.973	0.080	0.292	0.292	**70.8%**
1984	W	62,687	4,453	5,227	9,680	22,495	23%	0.23	0	0.883	0.080	0.263	0.263	**73.7%**
1985	D	33,219	4,487	10,302	14,789	11,474	24%	0.24	0	1.159	0.080	0.341	0.341	**65.9%**
1986	W	9,836	2,756	4,218	6,974	2,729	70%	0.30	0	0.737	0.080	0.540	0.540	**46.0%**
1987	D	11,761	4,437	4,033	8,470	3,449	67%	0.29	0	0.818	0.080	0.572	0.572	**42.8%**
1988	C	8,448	3,143	1,849	4,991	2,210	73%	0.31	0	0.630	0.080	0.483	0.483	**51.7%**
1989	D	9,571	3,546	3,361	6,907	2,630	71%	0.30	0	0.734	0.080	0.541	0.541	**45.9%**
1990	C	11,588	4,437	2,874	7,310	3,384	67%	0.29	0	0.755	0.080	0.532	0.532	**46.8%**
1991	C	8,142	2,689	2,353	5,042	2,095	74%	0.32	0	0.633	0.080	0.489	0.489	**51.1%**
1992	C	7,599	3,328	1,462	4,790	1,892	76%	0.32	0	0.619	0.080	0.488	0.488	**51.2%**

DECEMBER

Year	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter	percent	xchannel closed	m1	m2 (Calculated Mortality)	m3	m23	m123	**Calculated Survival s123**
1922	17,208	4,359	9,791	14,149	5,486	61%	0.45	0	1.017	0.000	0.462	0.462	**53.8%**
1923	34,350	4,359	10,295	14,653	11,897	24%	0.24	0	1.044	0.000	0.251	0.251	**74.9%**
1924	11,807	3,643	4,277	7,920	3,466	67%	0.50	0	0.681	0.000	0.337	0.337	**66.3%**
1925	11,302	4,391	4,879	9,270	3,277	67%	0.50	0	0.753	0.000	0.377	0.377	**62.3%**
1926	13,229	7,123	2,732	9,856	3,998	65%	0.48	0	0.785	0.000	0.378	0.378	**62.2%**
1927	15,160	4,115	8,994	13,108	4,720	63%	0.47	0	0.961	0.000	0.448	0.448	**55.2%**
1928	16,574	4,359	8,977	13,336	5,249	61%	0.46	0	0.973	0.000	0.446	0.446	**55.4%**
1929	13,776	4,342	6,066	10,409	4,202	64%	0.48	0	0.815	0.000	0.389	0.389	**61.1%**
1930	14,941	4,261	6,619	10,880	4,638	63%	0.47	0	0.840	0.000	0.394	0.394	**60.6%**
1931	14,604	2,342	8,229	10,571	4,512	63%	0.47	0	0.824	0.000	0.388	0.388	**61.2%**
1932	14,673	4,391	8,701	13,092	4,538	63%	0.47	0	0.960	0.000	0.451	0.451	**54.9%**
1933	8,763	3,188	2,570	5,757	2,327	72%	0.54	0	0.564	0.000	0.303	0.303	**69.7%**
1934	12,973	4,391	5,822	10,213	3,902	65%	0.48	0	0.804	0.000	0.389	0.389	**61.1%**
1935	8,556	3,432	3,383	6,814	2,250	73%	0.54	0	0.621	0.000	0.336	0.336	**66.4%**
1936	13,114	4,245	5,481	9,726	3,955	65%	0.48	0	0.778	0.000	0.376	0.376	**62.4%**
1937	14,203	4,310	6,717	11,027	4,362	64%	0.47	0	0.848	0.000	0.402	0.402	**59.8%**
1938	40,313	4,359	10,295	14,653	14,127	24%	0.24	0	1.044	0.000	0.247	0.247	**75.3%**
1939	18,749	4,359	5,383	9,742	6,062	60%	0.45	0	0.779	0.000	0.348	0.348	**65.2%**
1940	8,184	1,578	2,749	4,326	2,111	74%	0.55	0	0.487	0.000	0.267	0.267	**73.3%**
1941	33,904	4,359	10,295	14,653	11,730	24%	0.24	0	1.044	0.000	0.251	0.251	**74.9%**
1942	65,430	8,115	5,611	13,726	23,521	23%	0.23	0	0.994	0.000	0.226	0.226	**77.4%**
1943	28,806	8,278	5,432	13,710	9,823	25%	0.25	0	0.993	0.000	0.244	0.244	**75.6%**
1944	13,839	4,326	6,473	10,799	4,226	64%	0.48	0	0.836	0.000	0.398	0.398	**60.2%**
1945	16,140	4,359	8,099	12,458	5,086	62%	0.46	0	0.926	0.000	0.426	0.426	**57.4%**
1946	51,890	4,359	10,295	14,653	18,457	23%	0.23	0	1.044	0.000	0.241	0.241	**75.9%**
1947	17,947	4,359	9,303	13,661	5,762	60%	0.45	0	0.991	0.000	0.446	0.446	**55.4%**
1948	9,665	2,553	3,236	5,790	2,665	70%	0.52	0	0.566	0.000	0.296	0.296	**70.4%**
1949	15,628	4,342	7,253	11,596	4,895	62%	0.46	0	0.879	0.000	0.408	0.408	**59.2%**
1950	12,031	4,928	3,350	8,278	3,550	66%	0.49	0	0.700	0.000	0.345	0.345	**65.5%**
1951	68,100	4,359	10,295	14,653	24,519	23%	0.23	0	1.044	0.000	0.237	0.237	**76.3%**
1952	44,904	4,359	10,295	14,653	15,844	23%	0.23	0	1.044	0.000	0.244	0.244	**75.6%**
1953	42,142	4,651	5,383	10,035	14,811	24%	0.24	0	0.795	0.000	0.187	0.187	**81.3%**
1954	14,115	5,383	5,172	10,555	4,329	64%	0.47	0	0.823	0.000	0.390	0.390	**61.0%**
1955	26,085	4,359	10,295	14,653	8,806	25%	0.25	0	1.044	0.000	0.260	0.260	**74.0%**
1956	30,689	4,359	10,295	14,653	10,528	24%	0.24	0	1.044	0.000	0.254	0.254	**74.6%**
1957	14,208	4,863	5,936	10,799	4,364	64%	0.47	0	0.836	0.000	0.396	0.396	**60.4%**
1958	23,817	7,156	4,635	11,791	7,958	57%	0.43	0	0.890	0.000	0.381	0.381	**61.9%**
1959	14,692	5,139	5,578	10,718	4,545	63%	0.47	0	0.832	0.000	0.391	0.391	**60.9%**
1960	11,693	3,659	3,838	7,497	3,423	67%	0.50	0	0.658	0.000	0.327	0.327	**67.3%**
1961	18,065	4,359	8,522	12,881	5,806	60%	0.45	0	0.948	0.000	0.427	0.427	**57.3%**
1962	16,766	4,359	7,579	11,937	5,320	61%	0.46	0	0.898	0.000	0.410	0.410	**59.0%**
1963	27,555	4,359	10,295	14,653	9,356	25%	0.24	0	1.044	0.000	0.258	0.258	**74.2%**
1964	14,912	4,359	7,107	11,466	4,627	63%	0.47	0	0.872	0.000	0.409	0.409	**59.1%**
1965	29,971	4,375	10,295	14,670	10,259	24%	0.24	0	1.045	0.000	0.255	0.255	**74.5%**
1966	17,062	7,237	4,505	11,742	5,431	61%	0.46	0	0.887	0.000	0.404	0.404	**59.6%**
1967	36,997	4,375	10,295	14,670	12,887	24%	0.24	0	1.045	0.000	0.249	0.249	**75.1%**
1968	16,757	4,359	5,497	9,856	5,317	61%	0.46	0	0.785	0.000	0.359	0.359	**64.1%**
1969	25,438	4,359	10,295	14,653	8,564	25%	0.25	0	1.044	0.000	0.261	0.261	**73.9%**
1970	49,970	4,359	5,221	9,579	17,739	23%	0.23	0	0.770	0.000	0.179	0.179	**82.1%**
1971	53,366	4,359	10,295	14,653	19,009	23%	0.23	0	1.044	0.000	0.241	0.241	**75.9%**
1972	19,628	6,131	7,823	13,954	6,391	59%	0.44	0	1.006	0.000	0.446	0.446	**55.4%**
1973	26,263	5,107	9,547	14,653	8,872	25%	0.25	0	1.044	0.000	0.260	0.260	**74.0%**
1974	61,593	4,716	9,937	14,653	22,086	23%	0.23	0	1.044	0.000	0.238	0.238	**76.2%**
1975	17,684	6,961	5,383	12,344	5,664	60%	0.45	0	0.919	0.000	0.415	0.415	**58.5%**
1976	16,839	6,766	5,806	12,572	5,348	61%	0.46	0	0.932	0.000	0.425	0.425	**57.5%**
1977	8,084	2,261	3,269	5,530	2,073	74%	0.55	0	0.551	0.000	0.304	0.304	**69.6%**
1978	12,308	3,643	6,229	9,872	3,653	66%	0.49	0	0.786	0.000	0.385	0.385	**61.5%**
1979	14,179	4,375	6,326	10,701	4,353	64%	0.47	0	0.831	0.000	0.394	0.394	**60.6%**
1980	20,897	4,359	10,295	14,653	6,865	59%	0.44	0	1.044	0.000	0.457	0.457	**54.3%**
1981	15,676	4,359	7,481	11,840	4,913	62%	0.46	0	0.892	0.000	0.413	0.413	**58.7%**
1982	68,166	4,359	10,295	14,653	24,544	23%	0.23	0	1.044	0.000	0.237	0.237	**76.3%**
1983	55,416	5,204	5,204	10,409	19,776	23%	0.23	0	0.815	0.000	0.187	0.187	**81.3%**
1984	82,951	4,342	4,863	9,205	30,074	22%	0.22	0	0.750	0.000	0.168	0.168	**83.2%**
1985	23,880	4,391	9,986	14,377	7,981	57%	0.43	0	1.029	0.000	0.440	0.440	**56.0%**
1986	15,538	4,359	7,595	11,954	4,861	62%	0.46	0	0.898	0.000	0.417	0.417	**58.3%**
1987	13,840	4,359	6,131	10,490	4,226	64%	0.48	0	0.819	0.000	0.390	0.390	**61.0%**
1988	15,909	4,310	7,725	12,035	5,000	62%	0.46	0	0.903	0.000	0.417	0.417	**58.3%**
1989	9,863	3,985	3,545	7,530	2,739	70%	0.52	0	0.660	0.000	0.343	0.343	**65.7%**
1990	14,695	4,359	4,538	8,896	4,546	63%	0.47	0	0.733	0.000	0.345	0.345	**65.5%**
1991	7,913	2,196	2,749	4,944	2,009	75%	0.55	0	0.520	0.000	0.288	0.288	**71.2%**
1992	7,570	3,236	1,594	4,830	1,881	76%	0.56	0	0.514	0.000	0.289	0.289	**71.1%**

JANUARY

Year	Sac River Flows	CVP Flows	SWP Flows	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2 (Calculated Mortality)	m3	m23	m123	**Calculated Survival s123**
1922	17,566	4,326	9,937	14,263	5,620	61%	0.26	0	1.023	0.000	0.271	0.271	**72.9%**
1923	32,280	9,124	5,253	14,377	11,123	24%	0.24	0	1.029	0.000	0.249	0.249	**75.1%**
1924	14,681	4,326	6,538	10,864	4,541	63%	0.27	0	0.840	0.000	0.230	0.230	**77.0%**
1925	10,261	3,741	3,155	6,896	2,888	69%	0.30	0	0.625	0.000	0.186	0.186	**81.4%**
1926	18,831	4,326	9,384	13,710	6,093	60%	0.26	0	0.993	0.000	0.260	0.260	**74.0%**
1927	30,244	4,326	8,912	13,238	10,361	24%	0.24	0	0.968	0.000	0.236	0.236	**76.4%**
1928	25,269	8,148	6,473	14,621	8,501	25%	0.25	0	1.042	0.000	0.260	0.260	**74.0%**
1929	15,578	4,326	6,847	11,173	4,876	62%	0.27	0	0.856	0.000	0.232	0.232	**76.8%**
1930	21,321	4,359	10,262	14,621	7,024	58%	0.26	0	1.042	0.000	0.267	0.267	**73.3%**
1931	11,777	4,294	4,781	9,075	3,455	67%	0.29	0	0.743	0.000	0.214	0.214	**78.6%**
1932	17,276	4,359	10,246	14,605	5,511	61%	0.27	0	1.042	0.000	0.277	0.277	**72.3%**
1933	12,653	4,359	5,936	10,295	3,782	65%	0.28	0	0.809	0.000	0.229	0.229	**77.1%**
1934	16,654	4,359	8,636	12,994	5,279	61%	0.27	0	0.955	0.000	0.255	0.255	**74.5%**
1935	25,521	4,359	10,246	14,605	8,595	25%	0.25	0	1.042	0.000	0.260	0.260	**74.0%**
1936	31,500	4,326	10,246	14,572	10,831	24%	0.24	0	1.040	0.000	0.252	0.252	**74.8%**
1937	17,713	4,310	9,677	13,987	5,675	60%	0.26	0	1.008	0.000	0.267	0.267	**73.3%**
1938	31,443	4,928	6,115	11,043	10,810	24%	0.24	0	0.849	0.000	0.206	0.206	**79.4%**
1939	18,469	4,326	4,619	8,945	5,957	60%	0.26	0	0.736	0.000	0.193	0.193	**80.7%**
1940	24,388	4,294	10,230	14,523	8,171	57%	0.25	0	1.037	0.000	0.260	0.260	**74.0%**
1941	67,284	4,326	10,295	14,621	24,214	23%	0.23	0	1.042	0.000	0.237	0.237	**76.3%**
1942	63,260	4,326	5,253	9,579	22,709	23%	0.23	0	0.770	0.000	0.176	0.176	**82.4%**
1943	58,056	4,326	4,912	9,238	20,763	23%	0.23	0	0.752	0.000	0.172	0.172	**82.8%**
1944	17,739	5,578	7,904	13,482	5,684	60%	0.26	0	0.981	0.000	0.259	0.259	**74.1%**
1945	14,139	5,643	5,318	10,962	4,338	64%	0.28	0	0.845	0.000	0.234	0.234	**76.6%**
1946	43,023	5,172	9,465	14,637	15,141	23%	0.23	0	1.043	0.000	0.245	0.245	**75.5%**
1947	14,783	4,603	6,798	11,401	4,579	63%	0.27	0	0.869	0.000	0.238	0.238	**76.2%**
1948	14,711	4,082	6,652	10,734	4,552	63%	0.27	0	0.833	0.000	0.228	0.228	**77.2%**
1949	14,990	4,326	6,863	11,189	4,656	63%	0.27	0	0.857	0.000	0.234	0.234	**76.6%**
1950	20,245	4,310	10,246	14,556	6,622	59%	0.26	0	1.039	0.000	0.269	0.269	**73.1%**
1951	62,213	5,090	5,074	10,165	22,318	23%	0.23	0	0.802	0.000	0.183	0.183	**81.7%**
1952	67,352	7,172	7,465	14,637	24,240	23%	0.23	0	1.043	0.000	0.237	0.237	**76.3%**
1953	64,078	4,326	5,237	9,563	23,015	23%	0.23	0	0.769	0.000	0.175	0.175	**82.5%**
1954	32,850	5,790	4,668	10,457	11,336	24%	0.24	0	0.818	0.000	0.198	0.198	**80.2%**
1955	22,319	5,286	4,830	10,116	7,397	58%	0.25	0	0.799	0.000	0.203	0.203	**79.7%**
1956	84,719	4,310	9,270	13,580	30,735	22%	0.22	0	0.986	0.000	0.221	0.221	**77.9%**
1957	18,701	8,717	4,944	13,661	6,044	60%	0.26	0	0.991	0.000	0.260	0.260	**74.0%**
1958	36,525	4,326	4,115	8,441	12,710	24%	0.24	0	0.709	0.000	0.169	0.169	**83.1%**
1959	35,228	4,326	4,863	9,189	12,225	24%	0.24	0	0.749	0.000	0.180	0.180	**82.0%**
1960	14,834	4,326	6,457	10,783	4,598	63%	0.27	0	0.835	0.000	0.229	0.229	**77.1%**
1961	14,820	4,326	6,798	11,124	4,593	63%	0.27	0	0.854	0.000	0.234	0.234	**76.6%**
1962	15,493	4,326	3,724	8,050	4,844	62%	0.27	0	0.688	0.000	0.187	0.187	**81.3%**
1963	21,042	7,611	5,887	13,499	6,920	58%	0.26	0	0.982	0.000	0.252	0.252	**74.8%**
1964	24,841	8,652	4,765	13,417	8,341	57%	0.25	0	0.977	0.000	0.245	0.245	**75.5%**
1965	81,240	4,798	9,823	14,621	29,434	22%	0.22	0	1.042	0.000	0.234	0.234	**76.6%**
1966	29,539	4,326	5,172	9,498	10,098	24%	0.24	0	0.766	0.000	0.187	0.187	**81.3%**
1967	34,002	4,603	8,392	12,994	11,767	24%	0.24	0	0.955	0.000	0.230	0.230	**77.0%**
1968	30,538	4,326	5,058	9,384	10,471	24%	0.24	0	0.760	0.000	0.185	0.185	**81.5%**
1969	67,262	4,326	7,530	11,856	24,206	23%	0.23	0	0.893	0.000	0.203	0.203	**79.7%**
1970	92,665	4,245	5,025	9,270	33,707	22%	0.22	0	0.753	0.000	0.168	0.168	**83.2%**
1971	45,053	4,375	6,245	10,620	15,900	23%	0.23	0	0.826	0.000	0.193	0.193	**80.7%**
1972	20,457	4,375	4,928	9,303	6,701	59%	0.26	0	0.755	0.000	0.195	0.195	**80.5%**
1973	50,676	4,326	3,919	8,246	18,003	23%	0.23	0	0.698	0.000	0.162	0.162	**83.8%**
1974	78,417	7,790	5,204	12,994	28,378	22%	0.22	0	0.955	0.000	0.215	0.215	**78.5%**
1975	18,734	4,326	5,025	9,351	6,057	60%	0.26	0	0.758	0.000	0.199	0.199	**80.1%**
1976	16,831	6,050	4,700	10,750	5,345	61%	0.27	0	0.833	0.000	0.223	0.223	**77.7%**
1977	7,930	2,309	2,261	4,570	2,016	75%	0.32	0	0.500	0.000	0.159	0.159	**84.1%**
1978	43,752	4,359	10,246	14,605	15,413	23%	0.23	0	1.042	0.000	0.244	0.244	**75.6%**
1979	23,187	4,326	10,295	14,621	7,722	57%	0.25	0	1.042	0.000	0.264	0.264	**73.6%**
1980	58,025	5,936	4,684	10,620	20,751	23%	0.23	0	0.826	0.000	0.189	0.189	**81.1%**
1981	26,965	4,326	4,684	9,010	9,135	25%	0.25	0	0.739	0.000	0.183	0.183	**81.7%**
1982	51,172	4,326	5,920	10,246	18,188	23%	0.23	0	0.806	0.000	0.187	0.187	**81.3%**
1983	59,148	4,326	4,749	9,075	21,171	23%	0.23	0	0.743	0.000	0.170	0.170	**83.0%**
1984	47,354	1,610	4,879	6,489	16,760	23%	0.23	0	0.603	0.000	0.141	0.141	**85.9%**
1985	16,860	7,660	4,651	12,311	5,356	61%	0.27	0	0.918	0.000	0.245	0.245	**75.5%**
1986	22,730	4,326	10,246	14,572	7,551	58%	0.25	0	1.040	0.000	0.264	0.264	**73.6%**
1987	16,545	1,870	10,295	12,165	5,238	61%	0.27	0	0.910	0.000	0.244	0.244	**75.6%**
1988	25,591	4,326	10,262	14,588	8,621	25%	0.25	0	1.041	0.000	0.260	0.260	**74.0%**
1989	12,810	4,326	5,042	9,368	3,841	65%	0.28	0	0.759	0.000	0.214	0.214	**78.6%**
1990	21,396	2,992	10,246	13,238	7,052	58%	0.26	0	0.968	0.000	0.248	0.248	**75.2%**
1991	7,451	2,228	1,529	3,757	1,837	76%	0.32	0	0.456	0.000	0.148	0.148	**85.2%**
1992	12,238	3,513	5,660	9,173	3,627	66%	0.29	0	0.748	0.000	0.213	0.213	**78.7%**

Formulas: Sacramento River Spring Smolt Yearling Survival Model

C10 ='Study 467 Flow Data'!B7
D10 ='Study 467 Flow Data'!L7
E10 ='Study 467 Flow Data'!V7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
J10 =IF(-2.45925+(0.0420748*$T$1)>0,-2.45925+(0.0420748*$T$1),0)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =IF(-1.613493+(0.0319584*$T$1)>0,-1.613493+(0.0319584*$T$1),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!C7
R10 ='Study 467 Flow Data'!M7
S10 ='Study 467 Flow Data'!W7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
Z10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!D7
AF10 ='Study 467 Flow Data'!N7
AG10 ='Study 467 Flow Data'!X7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AN10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BU
1	Study 492 Sacramento River Spring Run Yearling Survival Model (continued)																										
2									February Water Temp		50 F																
3	Cross Channel Closed Over		25000 cfs						March Water Temp		55 F																
4	Cross Channel Closed Feb to Apr when DOI greater than						12,000 cfs																				
5																											
6	**FEBRUARY**				Calculated									**MARCH**				Calculated									
7	Sac				Sutter &								**Calculated**	Sac				Sutter &								**Calculated**	**Weighted**
8	River	CVP	SWP	CVP + SW	Steamboat		X-Channel		Calculated Mortality				**Survivability**	River			CVP + SWP	Steamboat		X-Channel		Calculated Mortality				**Survivability**	**Total**
9	Flow	Flow	Flow	Exports	Slough Q	Percent	Closed	m1	m2	m3	m23	m123	**s123**	Flow	CVP	SWP	exports	Slough Q	percent	Closed	m1	m2	m3	m23	m123	**s123**	**Survival**
10	32,338	5,330	6,896	12,226	11,144	24%	0.24	0	0.967	0.000	0.234	0.234	**76.6%**	31,632	3,106	6,473	9,579	10,880	24%	0.24	0	0.914	0.144	0.331	0.331	**66.9%**	**52.3%**
11	19,053	4,375	4,501	8,877	6,176	60%	0.26	0	0.786	0.000	0.205	0.205	**79.5%**	17,414	3,936	3,838	7,774	5,563	61%	0.27	0	0.816	0.144	0.323	0.323	**67.7%**	**58.0%**
12	17,567	4,172	4,642	8,814	5,620	61%	0.26	0	0.783	0.000	0.207	0.207	**79.3%**	12,404	1,594	2,033	3,627	3,689	66%	0.28	0	0.592	0.144	0.272	0.272	**72.8%**	**61.2%**
13	46,006	3,691	10,263	13,955	16,256	23%	0.23	0	1.060	0.000	0.248	0.248	**75.2%**	18,642	3,383	4,619	8,002	6,022	60%	0.26	0	0.829	0.144	0.324	0.324	**67.6%**	**61.2%**
14	36,033	4,339	10,299	14,639	12,526	24%	0.24	0	1.097	0.000	0.262	0.262	**73.8%**	16,197	2,911	3,936	6,847	5,108	62%	0.27	0	0.766	0.144	0.312	0.312	**68.8%**	**58.6%**
15	89,151	2,881	5,438	8,319	32,392	22%	0.22	0	0.756	0.000	0.169	0.169	**83.1%**	43,865	3,724	6,440	10,165	15,456	23%	0.23	0	0.946	0.144	0.332	0.332	**66.8%**	**49.9%**
16	25,190	5,754	5,424	11,179	8,471	25%	0.25	0	0.910	0.000	0.228	0.228	**77.2%**	85,759	3,285	5,416	8,701	31,124	22%	0.22	0	0.866	0.144	0.306	0.306	**69.4%**	**49.9%**
17	18,603	4,123	5,204	9,327	6,008	60%	0.26	0	0.810	0.000	0.213	0.213	**78.7%**	14,477	2,147	3,789	5,936	4,464	63%	0.28	0	0.717	0.144	0.302	0.302	**69.8%**	**56.3%**
18	16,231	3,187	3,961	7,148	5,120	62%	0.27	0	0.693	0.000	0.186	0.186	**81.4%**	30,166	2,602	5,058	7,660	10,332	24%	0.24	0	0.810	0.144	0.307	0.307	**69.3%**	**60.5%**
19	11,180	3,241	2,071	5,312	3,231	68%	0.29	0	0.594	0.000	0.173	0.173	**82.7%**	9,235	1,935	2,049	3,985	2,504	71%	0.31	0	0.612	0.144	0.287	0.287	**71.3%**	**60.4%**
20	16,200	4,259	5,302	9,562	5,109	62%	0.27	0	0.823	0.000	0.221	0.221	**77.9%**	12,086	1,187	2,814	4,001	3,570	66%	0.29	0	0.613	0.144	0.278	0.278	**72.2%**	**58.3%**
21	12,083	2,611	4,249	6,860	3,569	66%	0.29	0	0.677	0.000	0.194	0.194	**80.6%**	10,457	228	4,619	4,847	2,961	69%	0.30	0	0.658	0.144	0.296	0.296	**70.4%**	**63.9%**
22	13,296	1,945	4,195	6,140	4,023	65%	0.28	0	0.638	0.000	0.179	0.179	**82.1%**	15,340	2,358	2,960	5,318	4,787	62%	0.27	0	0.684	0.144	0.291	0.291	**70.9%**	**61.6%**
23	12,411	900	3,907	4,808	3,692	66%	0.28	0	0.566	0.000	0.161	0.161	**83.9%**	24,996	4,326	7,010	11,336	8,399	57%	0.25	0	1.009	0.144	0.361	0.361	**63.9%**	**60.2%**
24	41,258	4,190	9,944	14,134	14,480	24%	0.24	0	1.070	0.000	0.252	0.252	**74.8%**	32,648	5,058	8,864	13,922	11,260	24%	0.24	0	1.148	0.144	0.387	0.387	**61.3%**	**58.7%**
25	34,541	4,339	10,281	14,621	11,968	24%	0.24	0	1.096	0.000	0.263	0.263	**73.7%**	38,849	3,692	4,781	8,473	13,580	24%	0.24	0	0.854	0.144	0.313	0.313	**68.7%**	**54.2%**
26	82,366	5,150	6,068	11,218	29,855	22%	0.22	0	0.913	0.000	0.205	0.205	**79.5%**	78,637	2,391	6,294	8,685	28,460	22%	0.22	0	0.866	0.144	0.307	0.307	**69.3%**	**59.2%**
27	19,090	5,240	5,024	10,263	6,190	60%	0.26	0	0.861	0.000	0.225	0.225	**77.5%**	16,468	2,716	4,472	7,188	5,209	61%	0.27	0	0.785	0.144	0.316	0.316	**68.4%**	**56.3%**
28	44,251	4,190	9,649	13,839	15,600	23%	0.23	0	1.054	0.000	0.247	0.247	**75.3%**	62,482	6,522	6,099	12,620	22,418	23%	0.23	0	1.078	0.144	0.357	0.357	**64.3%**	**64.8%**
29	75,037	4,610	9,777	14,387	27,114	23%	0.23	0	1.084	0.000	0.244	0.244	**75.6%**	58,575	6,229	6,424	12,653	20,957	23%	0.23	0	1.080	0.144	0.359	0.359	**64.1%**	**60.9%**
30	78,349	5,420	6,050	11,470	28,353	23%	0.23	0	0.926	0.000	0.208	0.208	**79.2%**	27,177	3,724	6,164	9,888	9,214	25%	0.25	0	0.931	0.144	0.339	0.339	**66.1%**	**60.3%**
31	52,259	5,762	6,068	11,830	18,595	23%	0.23	0	0.946	0.000	0.219	0.219	**78.1%**	64,601	1,984	5,676	7,660	23,211	23%	0.23	0	0.810	0.144	0.296	0.296	**70.4%**	**59.4%**
32	30,935	5,685	5,094	10,779	10,620	24%	0.24	0	0.889	0.000	0.216	0.216	**78.4%**	25,179	3,058	5,708	8,766	8,467	25%	0.25	0	0.870	0.144	0.326	0.326	**67.4%**	**53.9%**
33	39,710	4,339	10,299	14,639	13,902	24%	0.24	0	1.097	0.000	0.260	0.260	**74.0%**	23,280	4,310	5,334	9,644	7,757	57%	0.25	0	0.917	0.144	0.340	0.340	**66.0%**	**52.9%**
34	29,467	7,292	4,051	11,344	10,071	24%	0.24	0	0.919	0.000	0.225	0.225	**77.5%**	22,467	3,545	6,522	10,067	7,453	58%	0.25	0	0.940	0.144	0.347	0.347	**65.3%**	**58.9%**
35	20,886	4,339	6,734	11,074	6,861	59%	0.26	0	0.905	0.000	0.233	0.233	**76.7%**	21,934	4,326	4,375	8,701	7,253	58%	0.26	0	0.866	0.144	0.329	0.329	**67.1%**	**53.0%**
36	16,342	4,190	1,895	6,085	5,162	62%	0.27	0	0.635	0.000	0.171	0.171	**82.9%**	16,820	3,513	3,415	6,928	5,341	61%	0.27	0	0.771	0.144	0.312	0.312	**68.8%**	**63.5%**
37	16,198	4,303	4,195	8,499	5,108	62%	0.27	0	0.766	0.000	0.206	0.206	**79.4%**	41,885	3,919	7,872	11,791	14,715	24%	0.24	0	1.033	0.144	0.354	0.354	**64.6%**	**54.6%**
38	33,441	4,339	9,489	13,829	11,557	24%	0.24	0	1.054	0.000	0.254	0.254	**74.6%**	22,154	3,383	4,781	8,164	7,336	58%	0.25	0	0.838	0.144	0.321	0.321	**67.9%**	**59.2%**
39	60,566	6,068	6,050	12,118	21,702	23%	0.23	0	0.961	0.000	0.220	0.220	**78.0%**	29,827	3,513	6,099	9,612	10,205	24%	0.24	0	0.916	0.144	0.333	0.333	**66.7%**	**73.3%**
40	64,731	6,015	5,876	11,891	23,259	23%	0.23	0	0.949	0.000	0.216	0.216	**78.4%**	57,518	3,497	6,278	9,774	20,562	23%	0.23	0	0.924	0.144	0.323	0.323	**67.7%**	**60.2%**
41	28,344	5,996	6,050	12,046	9,651	25%	0.25	0	0.957	0.000	0.236	0.236	**76.4%**	24,971	3,301	5,725	9,026	8,389	57%	0.25	0	0.884	0.144	0.329	0.329	**67.1%**	**64.8%**
42	56,717	5,942	5,654	11,596	20,262	23%	0.23	0	0.933	0.000	0.214	0.214	**78.6%**	49,536	3,334	5,822	9,156	17,576	23%	0.23	0	0.891	0.144	0.318	0.318	**68.2%**	**53.6%**
43	16,364	4,357	3,853	8,211	5,170	62%	0.27	0	0.750	0.000	0.201	0.201	**79.9%**	14,335	3,041	2,944	5,985	4,411	63%	0.28	0	0.720	0.144	0.303	0.303	**69.7%**	**58.8%**
44	63,748	3,720	5,876	9,597	22,892	23%	0.23	0	0.825	0.000	0.188	0.188	**81.2%**	36,754	2,391	6,310	8,701	12,796	24%	0.24	0	0.866	0.144	0.317	0.317	**68.3%**	**63.8%**
45	32,794	5,492	5,672	11,164	11,315	24%	0.24	0	0.910	0.000	0.220	0.220	**78.0%**	44,377	3,334	5,351	8,685	15,647	23%	0.23	0	0.866	0.144	0.313	0.313	**68.7%**	**54.1%**
46	65,092	5,186	5,492	10,678	23,394	23%	0.23	0	0.883	0.000	0.201	0.201	**79.9%**	93,616	3,708	5,904	9,612	34,062	22%	0.22	0	0.916	0.144	0.316	0.316	**68.4%**	**54.1%**
47	50,072	5,636	5,456	11,092	17,777	23%	0.23	0	0.906	0.000	0.210	0.210	**79.0%**	23,853	3,123	4,228	7,351	7,971	57%	0.25	0	0.794	0.144	0.308	0.308	**69.2%**	**54.9%**
48	27,340	3,999	9,909	13,908	9,275	25%	0.25	0	1.058	0.000	0.261	0.261	**73.9%**	21,434	2,488	3,773	6,261	7,066	58%	0.26	0	0.735	0.144	0.295	0.295	**70.5%**	**60.0%**
49	32,271	4,213	5,546	9,759	11,119	24%	0.24	0	0.834	0.000	0.202	0.202	**79.8%**	21,022	2,879	4,180	7,058	6,912	58%	0.26	0	0.778	0.144	0.307	0.307	**69.3%**	**54.3%**
50	40,990	4,339	10,281	14,621	14,380	24%	0.24	0	1.096	0.000	0.259	0.259	**74.1%**	26,341	3,562	5,416	8,977	8,902	25%	0.25	0	0.881	0.144	0.327	0.327	**67.3%**	**58.5%**
51	58,694	6,050	6,104	12,154	21,002	23%	0.23	0	0.963	0.000	0.221	0.221	**77.9%**	32,723	3,610	5,367	8,977	11,288	24%	0.24	0	0.881	0.144	0.322	0.322	**67.8%**	**57.6%**
52	17,927	3,547	3,442	6,989	5,755	60%	0.26	0	0.684	0.000	0.181	0.181	**81.9%**	16,418	3,269	3,171	6,440	5,190	61%	0.27	0	0.744	0.144	0.305	0.305	**69.5%**	**65.1%**
53	33,326	6,500	5,834	12,334	11,514	24%	0.24	0	0.973	0.000	0.235	0.235	**76.5%**	21,459	3,041	5,156	8,197	7,076	58%	0.26	0	0.839	0.144	0.322	0.322	**67.8%**	**61.0%**
54	26,844	5,744	6,050	11,794	9,090	25%	0.25	0	0.944	0.000	0.234	0.234	**76.6%**	28,761	3,350	6,196	9,547	9,807	25%	0.25	0	0.912	0.144	0.333	0.333	**66.7%**	**65.6%**
55	38,113	5,600	5,438	11,038	13,304	24%	0.24	0	0.903	0.000	0.215	0.215	**78.5%**	53,773	3,708	5,481	9,189	19,161	23%	0.23	0	0.893	0.144	0.317	0.317	**68.3%**	**60.3%**
56	56,470	4,259	5,859	10,118	20,170	23%	0.23	0	0.853	0.000	0.196	0.196	**80.4%**	36,789	3,123	5,546	8,668	12,809	24%	0.24	0	0.865	0.144	0.316	0.316	**68.4%**	**57.9%**
57	67,482	4,592	5,402	9,993	24,288	23%	0.23	0	0.846	0.000	0.192	0.192	**80.8%**	45,397	2,342	5,692	8,034	16,028	23%	0.23	0	0.830	0.144	0.305	0.305	**69.5%**	**61.3%**
58	57,565	3,745	6,068	9,813	20,579	23%	0.23	0	0.837	0.000	0.192	0.192	**80.8%**	35,897	3,285	5,676	8,961	12,475	24%	0.24	0	0.881	0.144	0.320	0.320	**68.0%**	**64.7%**
59	28,687	6,356	4,051	10,407	9,779	25%	0.25	0	0.869	0.000	0.213	0.213	**78.7%**	49,622	3,367	6,570	9,937	17,609	23%	0.23	0	0.933	0.144	0.327	0.327	**67.3%**	**59.3%**
60	25,015	4,937	5,302	10,240	8,406	25%	0.25	0	0.860	0.000	0.215	0.215	**78.5%**	32,930	3,578	5,318	8,896	11,366	24%	0.24	0	0.877	0.144	0.321	0.321	**67.9%**	**53.0%**
61	70,967	5,672	5,582	11,254	25,592	23%	0.23	0	0.914	0.000	0.207	0.207	**79.3%**	47,552	3,627	6,066	9,693	16,834	23%	0.23	0	0.920	0.144	0.325	0.325	**67.5%**	**59.2%**
62	41,926	5,870	6,050	11,920	14,730	24%	0.24	0	0.950	0.000	0.224	0.224	**77.6%**	34,518	3,741	6,131	9,872	11,960	24%	0.24	0	0.930	0.144	0.333	0.333	**66.7%**	**72.9%**
63	58,461	5,510	5,546	11,056	20,914	23%	0.23	0	0.904	0.000	0.207	0.207	**79.3%**	75,998	3,741	5,839	9,579	27,473	23%	0.23	0	0.914	0.144	0.318	0.318	**68.2%**	**52.7%**
64	20,296	5,111	4,850	9,962	6,641	59%	0.26	0	0.845	0.000	0.218	0.218	**78.2%**	18,389	2,244	5,107	7,351	5,927	60%	0.26	0	0.794	0.144	0.315	0.315	**68.5%**	**51.3%**
65	13,485	918	1,531	2,449	4,093	64%	0.28	0	0.439	0.000	0.123	0.123	**87.7%**	7,647	1,529	1,317	2,846	1,910	75%	0.32	0	0.550	0.144	0.275	0.275	**72.5%**	**64.0%**
66	49,287	3,187	6,302	9,489	17,483	23%	0.23	0	0.819	0.000	0.190	0.190	**81.0%**	46,888	2,407	5,741	8,148	16,586	23%	0.23	0	0.837	0.144	0.306	0.306	**69.4%**	**60.8%**
67	41,473	9,003	5,366	14,369	14,561	24%	0.24	0	1.083	0.000	0.255	0.255	**74.5%**	32,545	5,253	5,546	10,799	11,222	24%	0.24	0	0.980	0.144	0.346	0.346	**65.4%**	**54.2%**
68	71,932	4,677	4,990	9,666	25,953	23%	0.23	0	0.829	0.000	0.187	0.187	**81.3%**	36,480	1,968	5,042	7,010	12,694	24%	0.24	0	0.775	0.144	0.295	0.295	**70.5%**	**52.1%**
69	29,739	3,313	5,564	8,877	10,172	24%	0.24	0	0.786	0.000	0.192	0.192	**80.8%**	32,579	3,106	5,432	8,538	11,235	24%	0.24	0	0.858	0.144	0.317	0.317	**68.3%**	**55.6%**
70	65,645	4,375	6,086	10,461	23,601	23%	0.23	0	0.872	0.000	0.198	0.198	**80.2%**	69,087	3,025	6,196	9,221	24,889	23%	0.23	0	0.895	0.144	0.314	0.314	**68.6%**	**73.1%**
71	82,910	5,312	5,078	10,389	30,058	22%	0.22	0	0.868	0.000	0.195	0.195	**80.5%**	81,934	2,309	5,090	7,400	29,693	22%	0.22	0	0.796	0.144	0.291	0.291	**70.9%**	**77.3%**
72	37,282	1,530	5,737	7,267	12,993	24%	0.24	0	0.699	0.000	0.167	0.167	**83.3%**	36,581	3,529	6,261	9,791	12,731	24%	0.24	0	0.925	0.144	0.331	0.331	**66.9%**	**79.5%**
73	19,043	4,357	5,006	9,363	6,172	60%	0.26	0	0.812	0.000	0.212	0.212	**78.8%**	17,331	3,659	3,562	7,221	5,532	61%	0.27	0	0.787	0.144	0.315	0.315	**68.5%**	**63.7%**
74	91,098	6,842	7,472	14,315	33,121	22%	0.22	0	1.080	0.000	0.241	0.241	**75.9%**	73,135	2,765	5,806	8,571	26,402	23%	0.23	0	0.859	0.144	0.306	0.306	**69.4%**	**57.0%**
75	22,844	1,350	5,618	6,968	7,594	58%	0.25	0	0.683	0.000	0.173	0.173	**82.7%**	29,728	2,374	4,814	7,188	10,168	24%	0.24	0	0.785	0.144	0.301	0.301	**69.9%**	**57.5%**
76	14,676	3,268	2,990	6,259	4,539	63%	0.27	0	0.645	0.000	0.177	0.177	**82.3%**	11,866	2,228	2,342	4,570	3,488	66%	0.29	0	0.643	0.144	0.288	0.288	**71.2%**	**59.5%**
77	12,705	1,044	2,089	3,133	3,802	65%	0.28	0	0.476	0.000	0.135	0.135	**86.5%**	40,707	4,326	8,148	12,474	14,274	24%	0.24	0	1.070	0.144	0.363	0.363	**63.7%**	**61.0%**
78	16,763	1,314	6,302	7,617	5,319	61%	0.27	0	0.718	0.000	0.192	0.192	**80.8%**	14,652	2,391	3,432	5,822	4,530	63%	0.27	0	0.711	0.144	0.300	0.300	**70.0%**	**60.8%**
79	12,519	594	1,098	1,693	3,732	66%	0.28	0	0.398	0.000	0.113	0.113	**88.7%**	29,739	4,424	7,758	12,181	10,172	24%	0.24	0	1.054	0.144	0.367	0.367	**63.3%**	**66.2%**
80	32,637	730	9,909	10,640	11,256	24%	0.24	0	0.881	0.000	0.213	0.213	**78.7%**	20,217	2,196	6,278	8,473	6,611	59%	0.26	0	0.854	0.144	0.328	0.328	**67.2%**	**65.0%**
81																										**AVERAGE:**	**59.74%**

Row	Formula (February)	Formula (March)
85	AS10 ='Study 467 Flow Data'!E7	BG10 ='Study 467 Flow Data'!F7
86	AT10 ='Study 467 Flow Data'!O7	BH10 ='Study 467 Flow Data'!P7
87	AU10 ='Study 467 Flow Data'!Y7	BI10 ='Study 467 Flow Data'!Z7
88	AV10 =(AT10+AU10)	BJ10 =(BH10+BI10)
89	AW10 =0.374*AS10-950	BK10 =0.374*BG10-950
90	AX10 =IF(AS10>$K$4,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))	BL10 =IF(BG10>$K$4,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
91	AY10 =(0.133*AS10+829)/(AS10-AW10)	BM10 =(0.133*BG10+829)/(BG10-BK10)
92	AZ10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)	BN10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
93	BA10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)	BO10 =(-0.5916024)+(0.017968*$BC$3)+(0.000054*BJ10)
94	BB10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)	BP10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)
95	BC10 =(BA10*AY10)+(BB10*(1-AY10))	BQ10 =(BO10*BM10)+(BP10*(1-BM10))
96	BD10 =AZ10+BC10-(AZ10*BC10)	BR10 =BN10+BQ10-(BN10*BQ10)
97	BE10 =1-BD10	BS10 =1-BR10
98		BU10 =(O10*0.37)+(AC10*0.42)+(AQ10*0.13)+(BE10*0.05)+(BS10*0.03)

Study 492 Sacramento River Spring Run YOY Smolt Survival Model

Modified m2 by changing the slope to 0.0000434
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

Cross Channel Closed Over 25000 cfs
Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

February Water Temp 50 F
March Water Temp 55 F

DECEMBER

Year	Water Year Type	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	A	17,208	4,359	9,791	14,149	5,486	61%	0.45	0	0.867	0.000	0.394	0.394	**60.6%**
1923	B	34,350	4,359	10,295	14,653	11,897	24%	0.24	0	0.889	0.000	0.214	0.214	**78.6%**
1924	C	11,807	3,643	4,277	7,920	3,466	67%	0.50	0	0.597	0.000	0.296	0.296	**70.4%**
1925	D	11,302	4,391	4,879	9,270	3,277	67%	0.50	0	0.655	0.000	0.328	0.328	**67.2%**
1926	D	13,229	7,123	2,732	9,856	3,998	65%	0.48	0	0.681	0.000	0.328	0.328	**67.2%**
1927	W	15,160	4,115	8,994	13,108	4,720	63%	0.47	0	0.822	0.000	0.384	0.384	**61.6%**
1928	A	16,574	4,359	8,977	13,336	5,249	61%	0.46	0	0.832	0.000	0.381	0.381	**61.9%**
1929	C	13,776	4,342	6,066	10,409	4,202	64%	0.48	0	0.705	0.000	0.336	0.336	**66.4%**
1930	D	14,941	4,261	6,619	10,880	4,638	63%	0.47	0	0.725	0.000	0.340	0.340	**66.0%**
1931	C	14,604	2,342	8,229	10,571	4,512	63%	0.47	0	0.712	0.000	0.335	0.335	**66.5%**
1932	D	14,673	4,391	8,701	13,092	4,538	63%	0.47	0	0.821	0.000	0.386	0.386	**61.4%**
1933	C	8,763	3,188	2,570	5,757	2,327	72%	0.54	0	0.503	0.000	0.270	0.270	**73.0%**
1934	C	12,973	4,391	5,822	10,213	3,902	65%	0.48	0	0.696	0.000	0.337	0.337	**66.3%**
1935	B	8,556	3,432	3,383	6,814	2,250	73%	0.54	0	0.549	0.000	0.297	0.297	**70.3%**
1936	B	13,114	4,245	5,481	9,726	3,955	65%	0.48	0	0.675	0.000	0.326	0.326	**67.4%**
1937	B	14,203	4,310	6,717	11,027	4,362	64%	0.47	0	0.731	0.000	0.346	0.346	**65.4%**
1938	W	40,313	4,359	10,295	14,653	14,127	24%	0.24	0	0.889	0.000	0.210	0.210	**79.0%**
1939	D	18,749	4,359	5,383	9,742	6,062	60%	0.45	0	0.676	0.000	0.302	0.302	**69.8%**
1940	A	8,184	1,578	2,749	4,326	2,111	74%	0.55	0	0.441	0.000	0.242	0.242	**75.8%**
1941	W	33,904	4,359	10,295	14,653	11,730	24%	0.24	0	0.889	0.000	0.214	0.214	**78.6%**
1942	W	65,430	8,115	5,611	13,726	23,521	23%	0.23	0	0.849	0.000	0.193	0.193	**80.7%**
1943	W	28,806	8,278	5,432	13,710	9,823	25%	0.25	0	0.848	0.000	0.208	0.208	**79.2%**
1944	D	13,839	4,326	6,473	10,799	4,226	64%	0.48	0	0.722	0.000	0.344	0.344	**65.6%**
1945	B	16,140	4,359	8,099	12,458	5,086	62%	0.46	0	0.794	0.000	0.365	0.365	**63.5%**
1946	B	51,890	4,359	10,295	14,653	18,457	23%	0.23	0	0.889	0.000	0.206	0.206	**79.4%**
1947	D	17,947	4,359	9,303	13,661	5,762	60%	0.45	0	0.846	0.000	0.381	0.381	**61.9%**
1948	B	9,665	2,553	3,236	5,790	2,665	70%	0.52	0	0.504	0.000	0.263	0.263	**73.7%**
1949	D	15,628	4,342	7,253	11,596	4,895	62%	0.46	0	0.756	0.000	0.351	0.351	**64.9%**
1950	B	12,031	4,928	3,350	8,278	3,550	66%	0.49	0	0.612	0.000	0.302	0.302	**69.8%**
1951	A	68,100	4,359	10,295	14,653	24,519	23%	0.23	0	0.889	0.000	0.202	0.202	**79.8%**
1952	W	44,904	4,359	10,295	14,653	15,844	23%	0.23	0	0.889	0.000	0.208	0.208	**79.2%**
1953	W	42,142	4,651	5,383	10,035	14,811	24%	0.24	0	0.688	0.000	0.162	0.162	**83.8%**
1954	A	14,115	5,383	5,172	10,555	4,329	64%	0.47	0	0.711	0.000	0.337	0.337	**66.3%**
1955	D	26,085	4,359	10,295	14,653	8,806	25%	0.25	0	0.889	0.000	0.221	0.221	**77.9%**
1956	W	30,689	4,359	10,295	14,653	10,528	24%	0.24	0	0.889	0.000	0.216	0.216	**78.4%**
1957	A	14,208	4,863	5,936	10,799	4,364	64%	0.47	0	0.722	0.000	0.342	0.342	**65.8%**
1958	W	23,817	7,156	4,635	11,791	7,958	57%	0.43	0	0.765	0.000	0.327	0.327	**67.3%**
1959	B	14,692	5,139	5,578	10,718	4,545	63%	0.47	0	0.718	0.000	0.337	0.337	**66.3%**
1960	D	11,693	3,659	3,838	7,497	3,423	67%	0.50	0	0.578	0.000	0.287	0.287	**71.3%**
1961	D	18,065	4,359	8,522	12,881	5,806	60%	0.45	0	0.812	0.000	0.365	0.365	**63.5%**
1962	B	16,766	4,359	7,579	11,937	5,320	61%	0.46	0	0.771	0.000	0.352	0.352	**64.8%**
1963	W	27,555	4,359	10,295	14,653	9,356	25%	0.25	0	0.889	0.000	0.219	0.219	**78.1%**
1964	D	14,912	4,359	7,107	11,466	4,627	63%	0.47	0	0.751	0.000	0.352	0.352	**64.8%**
1965	W	29,971	4,375	10,295	14,670	10,259	24%	0.24	0	0.890	0.000	0.217	0.217	**78.3%**
1966	B	17,062	7,237	4,505	11,742	5,431	61%	0.46	0	0.763	0.000	0.347	0.347	**65.3%**
1967	W	36,997	4,375	10,295	14,670	12,887	24%	0.24	0	0.890	0.000	0.212	0.212	**78.8%**
1968	B	16,757	4,359	5,497	9,856	5,317	61%	0.46	0	0.681	0.000	0.311	0.311	**68.9%**
1969	W	25,438	4,359	10,295	14,653	8,564	25%	0.25	0	0.889	0.000	0.222	0.222	**77.8%**
1970	W	49,970	4,359	5,221	9,579	17,739	23%	0.23	0	0.669	0.000	0.155	0.155	**84.5%**
1971	W	53,366	4,359	10,295	14,653	19,009	23%	0.23	0	0.889	0.000	0.205	0.205	**79.5%**
1972	B	19,628	6,131	7,823	13,954	6,391	59%	0.44	0	0.858	0.000	0.380	0.380	**62.0%**
1973	A	26,263	5,107	9,547	14,653	8,872	25%	0.25	0	0.889	0.000	0.221	0.221	**77.9%**
1974	W	61,593	4,716	9,937	14,653	22,086	23%	0.23	0	0.889	0.000	0.203	0.203	**79.7%**
1975	W	17,684	6,961	5,383	12,344	5,664	60%	0.45	0	0.789	0.000	0.356	0.356	**64.4%**
1976	C	16,839	6,766	5,806	12,572	5,348	61%	0.46	0	0.799	0.000	0.364	0.364	**63.6%**
1977	C	8,084	2,261	3,269	5,530	2,073	74%	0.55	0	0.493	0.000	0.271	0.271	**72.9%**
1978	A	12,308	3,643	6,229	9,872	3,653	66%	0.49	0	0.681	0.000	0.334	0.334	**66.6%**
1979	B	14,179	4,375	6,326	10,701	4,353	64%	0.47	0	0.717	0.000	0.340	0.340	**66.0%**
1980	A	20,897	4,359	10,295	14,653	6,865	59%	0.44	0	0.889	0.000	0.389	0.389	**61.1%**
1981	D	15,676	4,359	7,481	11,840	4,913	62%	0.46	0	0.767	0.000	0.355	0.355	**64.5%**
1982	W	68,166	4,359	10,295	14,653	24,544	23%	0.23	0	0.889	0.000	0.202	0.202	**79.8%**
1983	W	55,416	5,204	5,204	10,409	19,776	23%	0.23	0	0.705	0.000	0.162	0.162	**83.8%**
1984	W	82,951	4,342	4,863	9,205	30,074	22%	0.22	0	0.652	0.000	0.146	0.146	**85.4%**
1985	D	23,880	4,391	9,986	14,377	7,981	57%	0.43	0	0.877	0.000	0.375	0.375	**62.5%**
1986	W	15,538	4,359	7,595	11,954	4,861	62%	0.46	0	0.772	0.000	0.358	0.358	**64.2%**
1987	D	13,840	4,359	6,131	10,490	4,226	64%	0.48	0	0.708	0.000	0.337	0.337	**66.3%**
1988	C	15,909	4,310	7,725	12,035	5,000	62%	0.46	0	0.775	0.000	0.358	0.358	**64.2%**
1989	D	9,863	3,985	3,545	7,530	2,739	70%	0.52	0	0.580	0.000	0.301	0.301	**69.9%**
1990	C	14,695	4,359	4,538	8,896	4,546	63%	0.47	0	0.639	0.000	0.300	0.300	**70.0%**
1991	C	7,913	2,196	2,749	4,944	2,009	75%	0.55	0	0.467	0.000	0.259	0.259	**74.1%**
1992	C	7,570	3,236	1,594	4,830	1,881	76%	0.56	0	0.463	0.000	0.260	0.260	**74.0%**

JANUARY

Year	Sac River Flows	CVP	SWP	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	17,566	4,326	9,937	14,263	5,620	61%	0.26	0	0.872	0.000	0.231	0.231	**76.9%**
1923	32,280	9,124	5,253	14,377	11,123	24%	0.24	0	0.877	0.000	0.212	0.212	**78.8%**
1924	14,681	4,326	6,538	10,864	4,541	63%	0.27	0	0.724	0.000	0.199	0.199	**80.1%**
1925	10,261	3,741	3,155	6,896	2,888	69%	0.30	0	0.552	0.000	0.164	0.164	**83.6%**
1926	18,831	4,326	9,384	13,710	6,093	60%	0.26	0	0.848	0.000	0.222	0.222	**77.8%**
1927	30,244	4,326	8,912	13,238	10,361	24%	0.24	0	0.827	0.000	0.202	0.202	**79.8%**
1928	25,269	8,148	6,473	14,621	8,501	25%	0.25	0	0.887	0.000	0.222	0.222	**77.8%**
1929	15,578	4,326	6,847	11,173	4,876	62%	0.27	0	0.738	0.000	0.200	0.200	**80.0%**
1930	21,321	4,359	10,262	14,621	7,024	58%	0.26	0	0.887	0.000	0.227	0.227	**77.3%**
1931	11,777	4,294	4,781	9,075	3,455	67%	0.29	0	0.647	0.000	0.186	0.186	**81.4%**
1932	17,276	4,359	10,246	14,605	5,511	61%	0.27	0	0.887	0.000	0.236	0.236	**76.4%**
1933	12,653	4,359	5,936	10,295	3,782	65%	0.28	0	0.700	0.000	0.198	0.198	**80.2%**
1934	16,654	4,359	8,636	12,994	5,279	61%	0.27	0	0.817	0.000	0.219	0.219	**78.1%**
1935	25,521	4,359	10,246	14,605	8,595	25%	0.25	0	0.887	0.000	0.221	0.221	**77.9%**
1936	31,500	4,326	10,246	14,572	10,831	24%	0.24	0	0.885	0.000	0.215	0.215	**78.5%**
1937	17,713	4,310	9,677	13,987	5,675	60%	0.26	0	0.860	0.000	0.227	0.227	**77.3%**
1938	31,443	4,928	6,115	11,043	10,810	24%	0.24	0	0.732	0.000	0.178	0.178	**82.2%**
1939	18,469	4,326	4,619	8,945	5,957	60%	0.26	0	0.641	0.000	0.168	0.168	**83.2%**
1940	24,388	4,294	10,230	14,523	8,171	57%	0.25	0	0.883	0.000	0.222	0.222	**77.8%**
1941	67,284	4,326	10,295	14,621	24,214	23%	0.23	0	0.887	0.000	0.201	0.201	**79.9%**
1942	63,260	4,326	5,253	9,579	22,709	23%	0.23	0	0.669	0.000	0.152	0.152	**84.8%**
1943	58,056	4,326	4,912	9,238	20,763	23%	0.23	0	0.654	0.000	0.150	0.150	**85.0%**
1944	17,739	5,578	7,904	13,482	5,684	60%	0.26	0	0.838	0.000	0.222	0.222	**77.8%**
1945	14,139	5,643	5,318	10,962	4,338	64%	0.28	0	0.729	0.000	0.201	0.201	**79.9%**
1946	43,023	5,172	9,465	14,637	15,141	23%	0.23	0	0.888	0.000	0.209	0.209	**79.1%**
1947	14,783	4,603	6,798	11,401	4,579	63%	0.27	0	0.748	0.000	0.205	0.205	**79.5%**
1948	14,711	4,082	6,652	10,734	4,552	63%	0.27	0	0.719	0.000	0.197	0.197	**80.3%**
1949	14,990	4,326	6,863	11,189	4,656	63%	0.27	0	0.739	0.000	0.202	0.202	**79.8%**
1950	20,245	4,310	10,246	14,556	6,622	59%	0.26	0	0.885	0.000	0.229	0.229	**77.1%**
1951	62,213	5,090	5,074	10,165	22,318	23%	0.23	0	0.694	0.000	0.158	0.158	**84.2%**
1952	67,352	7,172	7,465	14,637	24,240	23%	0.23	0	0.888	0.000	0.202	0.202	**79.8%**
1953	64,078	4,326	5,237	9,563	23,015	23%	0.23	0	0.668	0.000	0.152	0.152	**84.8%**
1954	32,850	5,790	4,668	10,457	11,336	24%	0.24	0	0.707	0.000	0.171	0.171	**82.9%**
1955	22,319	5,286	4,830	10,116	7,397	58%	0.25	0	0.692	0.000	0.176	0.176	**82.4%**
1956	84,719	4,310	9,270	13,580	30,735	22%	0.22	0	0.842	0.000	0.189	0.189	**81.1%**
1957	18,701	8,717	4,944	13,661	6,044	60%	0.26	0	0.846	0.000	0.222	0.222	**77.8%**
1958	36,525	4,326	4,115	8,441	12,710	24%	0.24	0	0.619	0.000	0.148	0.148	**85.2%**
1959	35,228	4,326	4,863	9,189	12,225	24%	0.24	0	0.652	0.000	0.156	0.156	**84.4%**
1960	14,834	4,326	6,457	10,783	4,598	63%	0.27	0	0.721	0.000	0.197	0.197	**80.3%**
1961	14,820	4,326	6,798	11,124	4,593	63%	0.27	0	0.736	0.000	0.201	0.201	**79.9%**
1962	15,493	4,326	3,724	8,050	4,844	62%	0.27	0	0.602	0.000	0.163	0.163	**83.7%**
1963	21,042	7,611	5,887	13,499	6,920	58%	0.26	0	0.839	0.000	0.215	0.215	**78.5%**
1964	24,841	8,652	4,765	13,417	8,341	57%	0.25	0	0.835	0.000	0.209	0.209	**79.1%**
1965	81,240	4,798	9,823	14,621	29,434	22%	0.22	0	0.887	0.000	0.199	0.199	**80.1%**
1966	29,539	4,326	5,172	9,498	10,098	24%	0.24	0	0.665	0.000	0.163	0.163	**83.7%**
1967	34,002	4,603	8,392	12,994	11,767	24%	0.24	0	0.817	0.000	0.197	0.197	**80.3%**
1968	30,538	4,326	5,058	9,384	10,471	24%	0.24	0	0.660	0.000	0.161	0.161	**83.9%**
1969	67,262	4,326	7,530	11,856	24,206	23%	0.23	0	0.767	0.000	0.174	0.174	**82.6%**
1970	92,665	4,245	5,025	9,270	33,707	22%	0.22	0	0.655	0.000	0.146	0.146	**85.4%**
1971	45,053	4,375	6,245	10,620	15,900	23%	0.23	0	0.714	0.000	0.167	0.167	**83.3%**
1972	20,457	4,375	4,928	9,303	6,701	59%	0.26	0	0.657	0.000	0.169	0.169	**83.1%**
1973	50,676	4,326	3,919	8,246	18,003	23%	0.23	0	0.611	0.000	0.141	0.141	**85.9%**
1974	78,417	7,790	5,204	12,994	28,378	22%	0.22	0	0.817	0.000	0.184	0.184	**81.6%**
1975	18,734	4,326	5,025	9,351	6,057	60%	0.26	0	0.659	0.000	0.173	0.173	**82.7%**
1976	16,831	6,050	4,700	10,750	5,345	61%	0.27	0	0.719	0.000	0.192	0.192	**80.8%**
1977	7,930	2,309	2,261	4,570	2,016	75%	0.32	0	0.451	0.000	0.144	0.144	**85.6%**
1978	43,752	4,359	10,246	14,605	15,413	23%	0.23	0	0.887	0.000	0.208	0.208	**79.2%**
1979	23,187	4,326	10,295	14,621	7,722	57%	0.25	0	0.887	0.000	0.225	0.225	**77.5%**
1980	58,025	5,936	4,684	10,620	20,751	23%	0.23	0	0.714	0.000	0.164	0.164	**83.6%**
1981	26,965	4,326	4,684	9,010	9,135	25%	0.25	0	0.644	0.000	0.159	0.159	**84.1%**
1982	51,172	4,326	5,920	10,246	18,188	23%	0.23	0	0.698	0.000	0.161	0.161	**83.9%**
1983	59,148	4,326	4,749	9,075	21,171	23%	0.23	0	0.647	0.000	0.148	0.148	**85.2%**
1984	47,354	1,610	4,879	6,489	16,760	23%	0.23	0	0.535	0.000	0.125	0.125	**87.5%**
1985	16,860	7,660	4,651	12,311	5,356	61%	0.27	0	0.787	0.000	0.210	0.210	**79.0%**
1986	22,730	4,326	10,246	14,572	7,551	58%	0.25	0	0.885	0.000	0.225	0.225	**77.5%**
1987	16,545	1,870	10,295	12,165	5,238	61%	0.27	0	0.781	0.000	0.209	0.209	**79.1%**
1988	25,591	4,326	10,262	14,588	8,621	25%	0.25	0	0.886	0.000	0.221	0.221	**77.9%**
1989	12,810	4,326	5,042	9,368	3,841	65%	0.28	0	0.659	0.000	0.186	0.186	**81.4%**
1990	21,396	2,992	10,246	13,238	7,052	58%	0.26	0	0.827	0.000	0.212	0.212	**78.8%**
1991	7,451	2,228	1,529	3,757	1,837	76%	0.32	0	0.416	0.000	0.135	0.135	**86.5%**
1992	12,238	3,513	5,660	9,173	3,627	66%	0.29	0	0.651	0.000	0.186	0.186	**81.4%**

FEBRUARY

Year	Sac River Flow	CVP	SWP	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	32,338	5,330	6,896	12,226	11,144	24%	0.24	0	0.837	0.000	0.203	0.203	**79.7%**
1923	19,053	4,375	4,501	8,877	6,176	58%	0.26	0	0.692	0.000	0.181	0.181	**81.9%**
1924	17,567	4,172	4,642	8,814	5,620	60%	0.26	0	0.689	0.000	0.183	0.183	**81.7%**
1925	46,006	3,691	10,263	13,955	16,256	23%	0.23	0	0.912	0.000	0.213	0.213	**78.7%**
1926	36,033	4,339	10,299	14,639	12,526	24%	0.24	0	0.942	0.000	0.225	0.225	**77.5%**
1927	89,151	2,881	5,438	8,319	32,392	22%	0.22	0	0.668	0.000	0.149	0.149	**85.1%**
1928	25,190	5,754	5,424	11,179	8,471	25%	0.25	0	0.792	0.000	0.198	0.198	**80.2%**
1929	18,603	4,123	5,204	9,327	6,008	60%	0.26	0	0.712	0.000	0.187	0.187	**81.3%**
1930	16,231	3,187	3,961	7,148	5,120	62%	0.27	0	0.617	0.000	0.166	0.166	**83.4%**
1931	11,180	3,241	2,071	5,312	3,231	66%	0.29	0	0.537	0.000	0.157	0.157	**84.3%**
1932	16,200	4,259	5,302	9,562	5,109	64%	0.27	0	0.722	0.000	0.194	0.194	**80.6%**
1933	12,083	2,611	4,249	6,860	3,569	64%	0.29	0	0.605	0.000	0.173	0.173	**82.7%**
1934	13,296	1,945	4,195	6,140	4,023	66%	0.28	0	0.573	0.000	0.161	0.161	**83.9%**
1935	12,411	900	3,907	4,808	3,692	67%	0.28	0	0.515	0.000	0.147	0.147	**85.3%**
1936	41,258	4,190	9,944	14,134	14,480	23%	0.24	0	0.920	0.000	0.217	0.217	**78.3%**
1937	34,541	4,339	10,281	14,621	11,968	24%	0.24	0	0.941	0.000	0.226	0.226	**77.4%**
1938	82,366	5,150	6,068	11,218	29,855	22%	0.22	0	0.794	0.000	0.178	0.178	**82.2%**
1939	19,090	5,240	5,024	10,263	6,190	59%	0.26	0	0.752	0.000	0.196	0.196	**80.4%**
1940	44,251	4,190	9,649	13,839	15,600	23%	0.23	0	0.907	0.000	0.213	0.213	**78.7%**
1941	75,037	4,610	9,777	14,387	27,114	23%	0.23	0	0.931	0.000	0.210	0.210	**79.0%**
1942	78,349	5,420	6,050	11,470	28,353	22%	0.23	0	0.805	0.000	0.181	0.181	**81.9%**
1943	52,259	5,762	6,068	11,830	18,595	23%	0.23	0	0.820	0.000	0.190	0.190	**81.0%**
1944	30,935	5,685	5,094	10,779	10,620	24%	0.24	0	0.775	0.000	0.188	0.188	**81.2%**
1945	39,710	4,339	10,299	14,639	13,902	23%	0.24	0	0.942	0.000	0.223	0.223	**77.7%**
1946	29,467	7,292	4,051	11,344	10,071	57%	0.24	0	0.799	0.000	0.196	0.196	**80.4%**
1947	20,886	4,339	6,734	11,074	6,861	58%	0.26	0	0.787	0.000	0.203	0.203	**79.7%**
1948	16,342	4,190	1,895	6,085	5,162	64%	0.27	0	0.571	0.000	0.153	0.153	**84.7%**
1949	16,198	4,303	4,195	8,499	5,108	61%	0.27	0	0.676	0.000	0.182	0.182	**81.8%**
1950	33,441	4,339	9,489	13,829	11,557	24%	0.24	0	0.907	0.000	0.219	0.219	**78.1%**
1951	60,566	6,068	6,050	12,118	21,702	23%	0.23	0	0.833	0.000	0.190	0.190	**81.0%**
1952	64,731	6,015	5,876	11,891	23,259	23%	0.23	0	0.823	0.000	0.187	0.187	**81.3%**
1953	28,344	5,996	6,050	12,046	9,651	25%	0.25	0	0.830	0.000	0.204	0.204	**79.6%**
1954	56,717	5,942	5,654	11,596	20,262	23%	0.23	0	0.810	0.000	0.186	0.186	**81.4%**
1955	16,364	4,357	3,853	8,211	5,170	61%	0.27	0	0.663	0.000	0.178	0.178	**82.2%**
1956	63,748	3,720	5,876	9,597	22,892	23%	0.23	0	0.723	0.000	0.165	0.165	**83.5%**
1957	32,794	5,492	5,672	11,164	11,315	24%	0.24	0	0.791	0.000	0.191	0.191	**80.9%**
1958	65,092	5,186	5,492	10,678	23,394	23%	0.23	0	0.770	0.000	0.175	0.175	**82.5%**
1959	50,072	5,636	5,456	11,092	17,777	23%	0.23	0	0.788	0.000	0.183	0.183	**81.7%**
1960	27,340	3,999	9,909	13,908	9,275	25%	0.25	0	0.910	0.000	0.225	0.225	**77.5%**
1961	32,271	4,213	5,546	9,759	11,119	24%	0.24	0	0.730	0.000	0.177	0.177	**82.3%**
1962	40,990	4,339	10,281	14,621	14,380	23%	0.24	0	0.941	0.000	0.222	0.222	**77.8%**
1963	58,694	6,050	6,104	12,154	21,002	23%	0.23	0	0.834	0.000	0.191	0.191	**80.9%**
1964	17,927	3,547	3,442	6,989	5,755	61%	0.26	0	0.610	0.000	0.161	0.161	**83.9%**
1965	33,326	6,500	5,834	12,334	11,514	24%	0.24	0	0.842	0.000	0.203	0.203	**79.7%**
1966	26,844	5,744	6,050	11,794	9,090	25%	0.25	0	0.819	0.000	0.203	0.203	**79.7%**
1967	38,113	5,600	5,438	11,038	13,304	24%	0.24	0	0.786	0.000	0.187	0.187	**81.3%**
1968	56,470	4,259	5,859	10,118	20,170	23%	0.23	0	0.746	0.000	0.171	0.171	**82.9%**
1969	67,482	4,592	5,402	9,993	24,288	23%	0.23	0	0.741	0.000	0.168	0.168	**83.2%**
1970	57,565	3,745	6,068	9,813	20,579	23%	0.23	0	0.733	0.000	0.168	0.168	**83.2%**
1971	28,687	6,356	4,051	10,407	9,779	24%	0.25	0	0.758	0.000	0.186	0.186	**81.4%**
1972	25,015	4,937	5,302	10,240	8,406	57%	0.25	0	0.751	0.000	0.188	0.188	**81.2%**
1973	70,967	5,672	5,582	11,254	25,592	23%	0.23	0	0.795	0.000	0.180	0.180	**82.0%**
1974	41,926	5,870	6,050	11,920	14,730	24%	0.24	0	0.824	0.000	0.194	0.194	**80.6%**
1975	58,461	5,510	5,546	11,056	20,914	23%	0.23	0	0.787	0.000	0.180	0.180	**82.0%**
1976	20,296	5,111	4,850	9,962	6,641	59%	0.26	0	0.739	0.000	0.191	0.191	**80.9%**
1977	13,485	918	1,531	2,449	4,093	68%	0.28	0	0.413	0.000	0.115	0.115	**88.5%**
1978	49,287	3,187	6,302	9,489	17,483	23%	0.23	0	0.719	0.000	0.167	0.167	**83.3%**
1979	41,473	9,003	5,366	14,369	14,561	24%	0.24	0	0.930	0.000	0.219	0.219	**78.1%**
1980	71,932	4,677	4,990	9,666	25,953	23%	0.23	0	0.726	0.000	0.164	0.164	**83.6%**
1981	29,739	3,313	5,564	8,877	10,172	24%	0.24	0	0.692	0.000	0.169	0.169	**83.1%**
1982	65,645	4,375	6,086	10,461	23,601	23%	0.23	0	0.761	0.000	0.173	0.173	**82.7%**
1983	82,910	5,312	5,078	10,389	30,058	22%	0.22	0	0.758	0.000	0.170	0.170	**83.0%**
1984	37,282	1,530	5,737	7,267	12,993	24%	0.24	0	0.622	0.000	0.148	0.148	**85.2%**
1985	19,043	4,357	5,006	9,363	6,172	58%	0.26	0	0.713	0.000	0.186	0.186	**81.4%**
1986	91,098	6,842	7,472	14,315	33,121	22%	0.22	0	0.928	0.000	0.207	0.207	**79.3%**
1987	22,844	1,350	5,618	6,968	7,594	57%	0.25	0	0.609	0.000	0.154	0.154	**84.6%**
1988	14,676	3,268	2,990	6,259	4,539	62%	0.27	0	0.578	0.000	0.159	0.159	**84.1%**
1989	12,705	1,044	2,089	3,133	3,802	67%	0.28	0	0.443	0.000	0.125	0.125	**87.5%**
1990	16,763	1,314	6,302	7,617	5,319	61%	0.27	0	0.637	0.000	0.170	0.170	**83.0%**
1991	12,519	594	1,098	1,693	3,732	67%	0.28	0	0.380	0.000	0.108	0.108	**89.2%**
1992	32,637	730	9,909	10,640	11,256	24%	0.24	0	0.769	0.000	0.186	0.186	**81.4%**

MARCH

Year	Sac River Flow	CVP	SWP	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	31,632	3,106	6,473	9,579	10,880	24%	0.24	0	0.812	0.144	0.306	0.306	**69.4%**
1923	17,414	3,936	3,838	7,774	5,563	27%	0.27	0	0.734	0.144	0.301	0.301	**69.9%**
1924	12,404	1,594	2,033	3,627	3,689	28%	0.28	0	0.554	0.144	0.261	0.261	**73.9%**
1925	18,642	3,383	4,619	8,002	6,022	26%	0.26	0	0.744	0.144	0.301	0.301	**69.9%**
1926	16,197	2,911	3,936	6,847	5,108	27%	0.27	0	0.694	0.144	0.292	0.292	**70.8%**
1927	43,865	3,724	6,440	10,165	15,456	23%	0.23	0	0.838	0.144	0.307	0.307	**69.3%**
1928	85,759	3,285	5,416	8,701	31,124	22%	0.22	0	0.774	0.144	0.285	0.285	**71.5%**
1929	14,477	2,147	3,789	5,936	4,464	28%	0.28	0	0.654	0.144	0.285	0.285	**71.5%**
1930	30,166	2,602	5,058	7,660	10,332	24%	0.24	0	0.729	0.144	0.287	0.287	**71.3%**
1931	9,235	1,935	2,049	3,985	2,504	31%	0.31	0	0.570	0.144	0.274	0.274	**72.6%**
1932	12,086	1,187	2,814	4,001	3,570	29%	0.29	0	0.570	0.144	0.266	0.266	**73.4%**
1933	10,457	228	4,619	4,847	2,961	30%	0.30	0	0.607	0.144	0.281	0.281	**71.9%**
1934	15,340	2,358	2,960	5,318	4,787	27%	0.27	0	0.627	0.144	0.276	0.276	**72.4%**
1935	24,996	4,326	7,010	11,336	8,399	25%	0.25	0	0.889	0.144	0.330	0.330	**67.0%**
1936	32,648	5,058	8,864	13,922	11,260	24%	0.24	0	1.000	0.144	0.351	0.351	**64.9%**
1937	38,849	3,692	4,781	8,473	13,580	24%	0.24	0	0.764	0.144	0.291	0.291	**70.9%**
1938	78,637	2,391	6,294	8,685	28,460	22%	0.22	0	0.774	0.144	0.286	0.286	**71.4%**
1939	16,468	2,716	4,472	7,188	5,209	27%	0.27	0	0.709	0.144	0.296	0.296	**70.4%**
1940	62,482	6,522	6,099	12,620	22,418	23%	0.23	0	0.944	0.144	0.327	0.327	**67.3%**
1941	58,575	6,229	6,424	12,653	20,957	23%	0.23	0	0.946	0.144	0.328	0.328	**67.2%**
1942	27,177	3,724	6,164	9,888	9,214	25%	0.25	0	0.826	0.144	0.313	0.313	**68.7%**
1943	64,601	1,984	5,676	7,660	23,211	23%	0.23	0	0.729	0.144	0.277	0.277	**72.3%**
1944	25,179	3,058	5,708	8,766	8,467	25%	0.25	0	0.777	0.144	0.302	0.302	**69.8%**
1945	23,280	4,310	5,334	9,644	7,757	25%	0.25	0	0.815	0.144	0.314	0.314	**68.6%**
1946	22,467	3,545	6,522	10,067	7,453	25%	0.25	0	0.834	0.144	0.319	0.319	**68.1%**
1947	21,934	4,326	4,375	8,701	7,253	26%	0.26	0	0.774	0.144	0.305	0.305	**69.5%**
1948	16,820	3,513	3,415	6,928	5,341	27%	0.27	0	0.697	0.144	0.292	0.292	**70.8%**
1949	41,885	3,919	7,872	11,791	14,715	24%	0.24	0	0.908	0.144	0.324	0.324	**67.6%**
1950	22,154	3,383	4,781	8,164	7,336	25%	0.25	0	0.751	0.144	0.299	0.299	**70.1%**
1951	29,827	3,513	6,099	9,612	10,205	24%	0.24	0	0.814	0.144	0.308	0.308	**69.2%**
1952	57,518	3,497	6,278	9,774	20,562	23%	0.23	0	0.821	0.144	0.299	0.299	**70.1%**
1953	24,971	3,301	5,725	9,026	8,389	25%	0.25	0	0.788	0.144	0.305	0.305	**69.5%**
1954	49,536	3,334	5,822	9,156	17,576	23%	0.23	0	0.794	0.144	0.295	0.295	**70.5%**
1955	14,335	3,041	2,944	5,985	4,411	28%	0.28	0	0.656	0.144	0.285	0.285	**71.5%**
1956	36,754	2,391	6,310	8,701	12,796	24%	0.24	0	0.774	0.144	0.295	0.295	**70.5%**
1957	44,377	3,334	5,351	8,685	15,647	23%	0.23	0	0.774	0.144	0.292	0.292	**70.8%**
1958	93,616	3,708	5,904	9,612	34,062	22%	0.22	0	0.814	0.144	0.294	0.294	**70.6%**
1959	23,853	3,123	4,228	7,351	7,971	25%	0.25	0	0.716	0.144	0.288	0.288	**71.2%**
1960	21,434	2,488	3,773	6,261	7,066	26%	0.26	0	0.668	0.144	0.278	0.278	**72.2%**
1961	21,022	2,879	4,180	7,058	6,912	26%	0.26	0	0.703	0.144	0.288	0.288	**71.2%**
1962	26,341	3,562	5,416	8,977	8,902	25%	0.25	0	0.786	0.144	0.304	0.304	**69.6%**
1963	32,723	3,610	5,367	8,977	11,288	24%	0.24	0	0.786	0.144	0.299	0.299	**70.1%**
1964	16,418	3,269	3,171	6,440	5,190	27%	0.27	0	0.676	0.144	0.287	0.287	**71.3%**
1965	21,459	3,041	5,156	8,197	7,076	26%	0.26	0	0.752	0.144	0.300	0.300	**70.0%**
1966	28,761	3,350	6,196	9,547	9,807	25%	0.25	0	0.811	0.144	0.308	0.308	**69.2%**
1967	53,773	3,708	5,481	9,189	19,161	23%	0.23	0	0.795	0.144	0.294	0.294	**70.6%**
1968	36,789	3,123	5,546	8,668	12,809	24%	0.24	0	0.773	0.144	0.294	0.294	**70.6%**
1969	45,397	2,342	5,692	8,034	16,028	23%	0.23	0	0.745	0.144	0.285	0.285	**71.5%**
1970	35,897	3,285	5,676	8,961	12,475	24%	0.24	0	0.786	0.144	0.298	0.298	**70.2%**
1971	49,622	3,367	6,570	9,937	17,609	23%	0.23	0	0.828	0.144	0.303	0.303	**69.7%**
1972	32,930	3,578	5,318	8,896	11,366	24%	0.24	0	0.783	0.144	0.298	0.298	**70.2%**
1973	47,552	3,627	6,066	9,693	16,834	23%	0.23	0	0.817	0.144	0.301	0.301	**69.9%**
1974	34,518	3,741	6,131	9,872	11,960	24%	0.24	0	0.825	0.144	0.308	0.308	**69.2%**
1975	75,998	3,741	5,839	9,579	27,473	23%	0.23	0	0.812	0.144	0.295	0.295	**70.5%**
1976	18,389	2,244	5,107	7,351	5,927	26%	0.26	0	0.716	0.144	0.294	0.294	**70.6%**
1977	7,647	1,529	1,317	2,846	1,910	32%	0.32	0	0.520	0.144	0.265	0.265	**73.5%**
1978	46,888	2,407	5,741	8,148	16,586	23%	0.23	0	0.750	0.144	0.286	0.286	**71.4%**
1979	32,545	5,253	5,546	10,799	11,222	24%	0.24	0	0.865	0.144	0.319	0.319	**68.1%**
1980	36,480	1,968	5,042	7,010	12,694	24%	0.24	0	0.701	0.144	0.277	0.277	**72.3%**
1981	32,579	3,106	5,432	8,538	11,235	24%	0.24	0	0.767	0.144	0.295	0.295	**70.5%**
1982	69,087	3,025	6,196	9,221	24,889	23%	0.23	0	0.797	0.144	0.292	0.292	**70.8%**
1983	81,934	2,309	5,090	7,400	29,693	22%	0.22	0	0.718	0.144	0.273	0.273	**72.7%**
1984	36,581	3,529	6,261	9,791	12,731	24%	0.24	0	0.822	0.144	0.306	0.306	**69.4%**
1985	17,331	3,659	3,562	7,221	5,532	27%	0.27	0	0.710	0.144	0.295	0.295	**70.5%**
1986	73,135	2,765	5,806	8,571	26,402	23%	0.23	0	0.769	0.144	0.285	0.285	**71.5%**
1987	29,728	2,374	4,814	7,188	10,168	24%	0.24	0	0.709	0.144	0.282	0.282	**71.8%**
1988	11,866	2,228	2,342	4,570	3,488	29%	0.29	0	0.595	0.144	0.274	0.274	**72.6%**
1989	40,707	4,326	8,148	12,474	14,274	24%	0.24	0	0.938	0.144	0.332	0.332	**66.8%**
1990	14,652	2,391	3,432	5,822	4,530	27%	0.27	0	0.649	0.144	0.283	0.283	**71.7%**
1991	29,739	4,424	7,758	12,181	10,172	24%	0.24	0	0.925	0.144	0.335	0.335	**66.5%**
1992	20,217	2,196	6,278	8,473	6,611	26%	0.26	0	0.764	0.144	0.305	0.305	**69.5%**

Formulas: Sacramento River Spring Run Young of Year Smolt Survival Model

```
C10 ='Study 467 Flow Data'!C7
D10 ='Study 467 Flow Data'!M7
E10 ='Study 467 Flow Data'!W7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.45*(0.133*C10+829)/(C10-G10))+(0.55*H10)
J10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
K10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*F10)
L10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!D7
R10 ='Study 467 Flow Data'!N7
S10 ='Study 467 Flow Data'!X7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*T10)
Z10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AA10 =(Y10*V10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!E7
AF10 ='Study 467 Flow Data'!O7
AG10 ='Study 467 Flow Data'!Y7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
AM10 =(-0.5916024)+(0.017968*$BC$2)+(0.0000434*AH10)
AN10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

AS10 ='Study 467 Flow Data'!F7
AT10 ='Study 467 Flow Data'!P7
AU10 ='Study 467 Flow Data'!Z7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$G$2,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BA10 =IF(((-0.5916024)+(0.017968*$BC$3)+(0.0000434*AV10))>1,1,((-0.5916024)+(0.017968*$BC$3)+(0.00004
BB10 =-1.613493+(0.0319584*$BC$3)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =(AZ10+BC10-(AZ10*BC10))
BE10 =1-BD10
```

1 Study 492 Sacramento River Spring Run YOY Smolt Survival Model (continued)

3 Cross Channel closed over 25,000 cfs

4 Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

5 Sacramento River temperatures based on limited historical data from USBR

Row	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT
6	APRIL				Calculated									
7	Sac				Sutter &									Calculated
8	River	CVP + SWP			Steamboat		X-Channel	observed			Calculated Mortality			Survival
9	Flows	CVP	SWP	exports	Slough Q	Percent	Closed	temp	m1	m2	m3	m23	m123	s123
10	22,927	4,285	4,201	8,487	7,625	25%	0.25	58.5	0.002	0.828	0.256	0.401	0.402	**59.8%**
11	24,339	4,101	4,101	8,201	8,153	25%	0.25	58.3	0.000	0.812	0.250	0.391	0.391	**60.9%**
12	7,864	1,378	1,378	2,756	1,991	32%	0.32	61.5	0.128	0.633	0.352	0.442	0.513	**48.7%**
13	22,570	3,580	3,462	7,042	7,491	25%	0.25	59.1	0.027	0.776	0.275	0.402	0.419	**58.1%**
14	18,610	3,092	3,092	6,184	6,010	26%	0.26	61.6	0.133	0.784	0.355	0.468	0.538	**46.2%**
15	48,222	4,605	5,210	9,814	17,085	23%	0.23	56.8	0.000	0.855	0.202	0.354	0.354	**64.6%**
16	29,212	3,966	3,966	7,932	9,975	25%	0.25	58.7	0.011	0.807	0.262	0.396	0.402	**59.8%**
17	8,901	1,462	1,462	2,924	2,379	31%	0.31	56.3	0.000	0.547	0.186	0.297	0.297	**70.3%**
18	12,751	2,084	1,966	4,050	3,819	28%	0.28	59.6	0.048	0.655	0.291	0.394	0.423	**57.7%**
19	9,004	1,462	1,462	2,924	2,417	31%	0.31	62.8	0.183	0.664	0.393	0.477	0.572	**42.8%**
20	13,094	2,874	2,689	5,563	3,947	28%	0.28	58.9	0.019	0.708	0.269	0.392	0.404	**59.6%**
21	12,595	2,101	2,050	4,151	3,761	28%	0.28	60.1	0.069	0.668	0.307	0.410	0.451	**54.9%**
22	12,874	1,966	1,798	3,764	3,865	28%	0.28	63.6	0.217	0.715	0.419	0.502	0.610	**39.0%**
23	24,812	4,554	5,899	10,453	8,330	25%	0.25	58.9	0.019	0.920	0.269	0.432	0.443	**55.7%**
24	21,031	4,151	4,151	8,302	6,916	26%	0.26	59.7	0.053	0.841	0.294	0.435	0.465	**53.5%**
25	23,257	3,008	6,117	9,125	7,748	25%	0.25	58.8	0.015	0.861	0.266	0.416	0.425	**57.5%**
26	47,172	3,596	6,722	10,319	16,692	23%	0.23	56.3	0.000	0.868	0.186	0.345	0.345	**65.5%**
27	12,114	2,067	2,067	4,134	3,581	29%	0.29	63.3	0.204	0.725	0.409	0.500	0.602	**39.8%**
28	41,731	4,605	5,428	10,033	14,657	24%	0.24	57.4	0.000	0.875	0.221	0.375	0.375	**62.5%**
29	42,372	5,294	6,974	12,268	14,897	24%	0.24	56.9	0.000	0.963	0.205	0.383	0.383	**61.7%**
30	43,228	4,605	6,033	10,638	15,217	23%	0.23	56.5	0.000	0.885	0.192	0.355	0.355	**64.5%**
31	29,406	4,101	6,605	10,705	10,048	24%	0.24	58.8	0.015	0.930	0.266	0.428	0.437	**56.3%**
32	9,626	2,118	2,118	4,235	2,650	30%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	**63.0%**
33	11,976	3,193	3,193	6,386	3,529	29%	0.29	60.6	0.090	0.774	0.323	0.453	0.502	**49.8%**
34	11,847	2,958	2,958	5,916	3,481	29%	0.29	60.7	0.095	0.756	0.326	0.450	0.502	**49.8%**
35	13,772	2,151	2,151	4,302	4,201	28%	0.28	62.5	0.170	0.718	0.384	0.477	0.566	**43.4%**
36	22,904	3,395	3,395	6,789	7,616	25%	0.25	56.6	0.000	0.720	0.195	0.328	0.328	**67.2%**
37	13,321	2,554	2,554	5,109	4,032	28%	0.28	61.7	0.137	0.739	0.358	0.465	0.538	**46.2%**
38	18,776	3,092	3,092	6,184	6,072	26%	0.26	61.3	0.120	0.778	0.346	0.459	0.524	**47.6%**
39	14,732	3,176	3,176	6,353	4,560	27%	0.27	59.9	0.061	0.760	0.301	0.427	0.462	**53.8%**
40	56,648	3,899	6,621	10,520	20,236	23%	0.23	55.5	0.000	0.862	0.160	0.321	0.321	**67.9%**
41	16,288	2,840	2,840	5,680	5,142	27%	0.27	58.8	0.015	0.711	0.266	0.385	0.395	**60.5%**
42	39,868	4,538	4,538	9,075	13,961	24%	0.24	58.4	0.000	0.852	0.253	0.395	0.395	**60.5%**
43	9,584	1,933	1,933	3,865	2,634	30%	0.30	56.4	0.000	0.590	0.189	0.310	0.310	**69.0%**
44	20,548	4,000	4,000	7,999	6,735	26%	0.26	59.7	0.053	0.828	0.294	0.432	0.462	**53.8%**
45	21,164	3,210	3,210	6,420	6,965	26%	0.26	60.5	0.086	0.774	0.320	0.437	0.485	**51.5%**
46	52,284	4,605	6,974	11,579	18,604	23%	0.23	57.4	0.000	0.942	0.221	0.388	0.388	**61.2%**
47	10,398	1,882	1,882	3,764	2,939	30%	0.30	63	0.191	0.704	0.400	0.490	0.588	**41.2%**
48	13,629	387	3,563	3,949	4,147	28%	0.28	59.5	0.044	0.649	0.288	0.389	0.416	**58.4%**
49	12,670	1,765	1,765	3,529	3,789	28%	0.28	60.1	0.069	0.641	0.307	0.402	0.443	**55.7%**
50	11,575	2,470	2,470	4,941	3,379	29%	0.29	61.8	0.141	0.733	0.362	0.469	0.544	**45.6%**
51	69,377	4,605	5,210	9,814	24,997	23%	0.23	53.7	0.000	0.799	0.103	0.261	0.261	**73.9%**
52	9,064	1,781	1,781	3,563	2,440	31%	0.31	59.3	0.036	0.629	0.282	0.388	0.410	**59.0%**
53	45,099	4,285	5,983	10,268	15,917	23%	0.23	56.9	0.000	0.876	0.205	0.362	0.362	**63.8%**
54	12,914	2,504	2,504	5,008	3,880	28%	0.28	61.9	0.145	0.738	0.365	0.470	0.547	**45.3%**
55	39,925	3,748	6,974	10,722	13,982	24%	0.24	53.8	0.000	0.840	0.106	0.280	0.280	**72.0%**
56	15,724	2,638	2,638	5,277	4,931	27%	0.27	61.5	0.128	0.742	0.352	0.458	0.527	**47.3%**
57	44,707	3,580	6,722	10,302	15,770	23%	0.23	56.4	0.000	0.869	0.189	0.348	0.348	**65.2%**
58	16,710	3,311	3,311	6,621	5,300	27%	0.27	58.8	0.015	0.752	0.266	0.396	0.405	**59.5%**
59	22,154	3,378	3,378	6,756	7,336	25%	0.25	58.7	0.011	0.756	0.262	0.388	0.395	**60.5%**
60	12,562	2,353	2,353	4,706	3,748	28%	0.28	58.5	0.002	0.664	0.256	0.372	0.373	**62.7%**
61	19,512	3,731	3,731	7,462	6,347	26%	0.26	61.3	0.120	0.834	0.346	0.473	0.536	**46.4%**
62	33,122	4,605	6,437	11,041	11,438	24%	0.24	56.8	0.000	0.908	0.202	0.372	0.372	**62.8%**
63	25,874	4,605	4,706	9,310	8,727	25%	0.25	56.8	0.000	0.833	0.202	0.359	0.359	**64.1%**
64	9,481	807	2,202	3,008	2,596	30%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
65	9,100	1,681	1,496	3,176	2,453	31%	0.31	64.3	0.246	0.702	0.441	0.521	0.639	**36.1%**
66	38,698	3,815	7,008	10,823	13,523	24%	0.24	56.9	0.000	0.900	0.205	0.370	0.370	**63.0%**
67	17,813	3,462	3,462	6,924	5,712	26%	0.26	59.8	0.057	0.783	0.298	0.426	0.459	**54.1%**
68	19,818	2,958	5,193	8,151	6,462	26%	0.26	57.1	0.000	0.788	0.211	0.361	0.361	**63.9%**
69	17,108	2,739	2,739	5,479	5,448	27%	0.27	61.5	0.128	0.751	0.352	0.458	0.528	**47.2%**
70	75,838	3,647	6,958	10,604	27,413	23%	0.23	54.1	0.000	0.841	0.115	0.279	0.279	**72.1%**
71	68,301	3,546	6,218	9,764	24,595	23%	0.23	55	0.000	0.820	0.144	0.298	0.298	**70.2%**
72	18,169	3,445	3,445	6,890	5,845	26%	0.26	59.7	0.053	0.780	0.294	0.422	0.453	**54.7%**
73	12,439	2,134	2,134	4,269	3,702	28%	0.28	60.8	0.099	0.686	0.330	0.431	0.487	**51.3%**
74	20,639	2,235	6,823	9,058	6,769	26%	0.26	60.4	0.082	0.887	0.317	0.464	0.508	**49.2%**
75	12,681	303	3,277	3,580	3,793	28%	0.28	65.7	0.305	0.744	0.486	0.559	0.694	**30.6%**
76	9,202	1,428	1,428	2,857	2,492	31%	0.31	59.9	0.061	0.609	0.301	0.395	0.432	**56.8%**
77	23,637	2,941	2,823	5,764	7,890	25%	0.25	61.4	0.124	0.762	0.349	0.453	0.521	**47.9%**
78	12,260	1,748	1,748	3,496	3,635	29%	0.29	61.6	0.133	0.667	0.355	0.444	0.518	**48.2%**
79	15,374	2,319	2,134	4,453	4,800	27%	0.27	60.8	0.099	0.694	0.330	0.429	0.485	**51.5%**
80	12,514	2,050	1,865	3,916	3,730	28%	0.28	61.2	0.116	0.678	0.342	0.438	0.503	**49.7%**

Row	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI
6	MAY				Calculated									
7	Sac				Steamboat			USBR						Calculated
8	River		CVP + SWP & Sutter				X-channel	observed		Calculated Mortality				Survival
9	Flows	CVP	SWP	Exports	Slough Q	Percent	Closed	temp f	m1	m2	m3	m23	m123	s123
10	45,862	4,285	5,969	10,254	16,202	23%	0.23	61.2	0.116	0.953	0.342	0.485	0.545	**45.5%**
11	14,437	4,101	3,139	7,239	4,449	63%	0.47	62.4	0.166	0.844	0.381	0.599	0.666	**33.4%**
12	8,364	1,378	488	1,866	2,178	73%	0.54	69.2	0.452	0.733	0.598	0.671	0.820	**18.0%**
13	12,068	3,580	2,521	6,100	3,563	66%	0.49	63.2	0.200	0.809	0.406	0.605	0.684	**31.6%**
14	14,401	3,092	2,521	5,613	4,436	63%	0.47	65.7	0.305	0.833	0.486	0.650	0.757	**24.3%**
15	26,781	4,605	4,277	8,882	9,066	25%	0.25	62.6	0.175	0.919	0.387	0.519	0.603	**39.7%**
16	20,914	3,966	3,432	7,398	6,872	59%	0.44	66.6	0.343	0.926	0.515	0.695	0.800	**20.0%**
17	9,598	1,462	228	1,690	2,640	70%	0.52	66.1	0.322	0.669	0.499	0.588	0.721	**27.9%**
18	12,072	2,084	1,805	3,889	3,565	66%	0.49	63.1	0.196	0.711	0.403	0.555	0.642	**35.8%**
19	9,800	1,462	1,252	2,714	2,715	70%	0.52	70.5	0.507	0.793	0.640	0.719	0.862	**13.8%**
20	12,027	2,874	2,407	5,281	3,548	66%	0.49	65.5	0.297	0.814	0.480	0.645	0.750	**25.0%**
21	7,743	2,101	1,073	3,174	1,946	75%	0.56	63.7	0.221	0.691	0.422	0.572	0.667	**33.3%**
22	8,911	1,966	1,513	3,479	2,383	72%	0.53	68.3	0.414	0.787	0.569	0.686	0.816	**18.4%**
23	30,992	4,554	4,651	9,206	10,641	24%	0.24	64	0.234	0.958	0.432	0.560	0.663	**33.7%**
24	14,238	4,151	3,171	7,322	4,375	63%	0.47	64.9	0.271	0.892	0.461	0.665	0.756	**24.4%**
25	14,045	3,008	1,903	4,911	4,303	64%	0.47	64.5	0.255	0.780	0.448	0.606	0.706	**29.4%**
26	57,429	3,596	7,075	10,671	20,528	23%	0.23	62.5	0.170	0.995	0.384	0.524	0.605	**39.5%**
27	8,598	2,067	1,935	4,002	2,266	73%	0.54	68	0.402	0.804	0.560	0.692	0.816	**18.4%**
28	19,454	4,605	4,375	8,980	6,326	59%	0.44	65.6	0.301	0.977	0.483	0.702	0.792	**20.8%**
29	39,485	5,294	7,140	12,433	13,817	24%	0.24	61.6	0.133	1.000	0.355	0.508	0.573	**42.7%**
30	36,037	4,605	5,969	10,573	12,528	24%	0.24	60.1	0.069	0.947	0.307	0.460	0.498	**50.2%**
31	21,355	4,101	4,879	8,980	7,037	58%	0.44	65.4	0.292	0.973	0.477	0.693	0.783	**21.7%**
32	10,052	2,118	2,033	4,150	2,809	70%	0.52	65.9	0.313	0.773	0.493	0.637	0.751	**24.9%**
33	11,747	3,193	2,472	5,665	3,443	67%	0.50	63.1	0.196	0.788	0.403	0.594	0.673	**32.7%**
34	13,744	2,958	2,651	5,609	4,190	64%	0.48	63.9	0.229	0.800	0.429	0.606	0.696	**30.4%**
35	8,985	2,151	1,838	3,989	2,410	72%	0.53	68.7	0.431	0.816	0.582	0.707	0.833	**16.7%**
36	28,655	3,395	3,806	7,200	9,767	25%	0.25	62.3	0.162	0.840	0.378	0.491	0.574	**42.6%**
37	14,950	2,554	2,391	4,945	4,641	63%	0.47	65.2	0.284	0.795	0.470	0.622	0.729	**27.1%**
38	13,980	3,092	2,635	5,727	4,279	64%	0.48	64.3	0.246	0.812	0.441	0.618	0.712	**28.8%**
39	18,870	3,176	3,562	6,738	6,107	60%	0.45	64.4	0.250	0.858	0.445	0.629	0.722	**27.8%**
40	59,563	3,899	7,058	10,957	21,327	23%	0.23	61.7	0.137	0.993	0.358	0.503	0.571	**42.9%**
41	27,013	2,840	3,871	6,711	9,153	25%	0.25	60.9	0.103	0.794	0.333	0.447	0.504	**49.6%**
42	25,881	4,538	4,521	9,059	8,729	25%	0.25	65.9	0.313	0.986	0.493	0.615	0.736	**26.4%**
43	11,417	1,933	1,984	3,917	3,320	67%	0.50	66.9	0.356	0.780	0.525	0.652	0.776	**22.4%**
44	38,837	4,000	6,050	10,050	13,575	24%	0.24	61.4	0.124	0.948	0.349	0.491	0.554	**44.6%**
45	16,952	3,210	2,992	6,202	5,390	61%	0.46	64	0.234	0.828	0.432	0.612	0.703	**29.7%**
46	43,486	4,605	7,416	12,021	15,314	23%	0.23	62.9	0.187	1.000	0.397	0.538	0.625	**37.5%**
47	9,319	1,882	2,033	3,915	2,535	71%	0.53	65.9	0.313	0.762	0.493	0.635	0.749	**25.1%**
48	11,060	387	1,708	2,094	3,186	68%	0.50	65.9	0.313	0.683	0.493	0.589	0.718	**28.2%**
49	8,704	1,765	1,626	3,391	2,305	73%	0.54	64.3	0.246	0.711	0.441	0.587	0.688	**31.2%**
50	15,353	2,470	2,440	4,910	4,792	62%	0.47	64.8	0.267	0.786	0.457	0.610	0.714	**28.6%**
51	29,094	4,605	4,716	9,321	9,931	25%	0.25	62.5	0.170	0.936	0.384	0.519	0.601	**39.9%**
52	11,187	1,781	2,196	3,977	3,234	67%	0.50	65.2	0.284	0.753	0.470	0.612	0.722	**27.8%**
53	24,739	4,285	4,749	9,034	8,302	57%	0.43	63.6	0.217	0.943	0.419	0.642	0.720	**28.0%**
54	14,968	2,504	2,391	4,895	4,648	63%	0.47	67.3	0.372	0.830	0.537	0.674	0.796	**20.4%**
55	44,790	3,748	7,205	10,952	15,801	23%	0.23	62.1	0.154	1.000	0.371	0.518	0.592	**40.8%**
56	9,524	2,638	1,838	4,476	2,612	71%	0.52	66.1	0.322	0.790	0.499	0.652	0.764	**23.6%**
57	45,533	3,580	6,912	10,492	16,079	23%	0.23	63.2	0.200	0.999	0.406	0.545	0.636	**36.4%**
58	12,300	3,311	2,976	6,287	3,650	66%	0.49	68.6	0.427	0.914	0.579	0.743	0.853	**14.7%**
59	29,398	3,378	3,985	7,362	10,045	24%	0.24	61	0.107	0.824	0.336	0.455	0.514	**48.6%**
60	10,834	2,353	2,017	4,369	3,102	68%	0.51	67.3	0.372	0.807	0.537	0.674	0.795	**20.5%**
61	15,751	3,731	3,253	6,984	4,941	62%	0.46	66.9	0.356	0.914	0.525	0.705	0.810	**19.0%**
62	26,945	4,605	4,619	9,224	9,127	25%	0.25	63.4	0.208	0.948	0.413	0.545	0.640	**36.0%**
63	28,435	4,605	4,912	9,516	9,685	25%	0.25	63.8	0.225	0.968	0.425	0.559	0.658	**34.2%**
64	10,021	807	1,561	2,368	2,798	70%	0.52	69.6	0.469	0.762	0.611	0.689	0.835	**16.5%**
65	7,717	1,681	1,252	2,933	1,936	75%	0.56	64	0.234	0.686	0.432	0.574	0.673	**32.7%**
66	21,056	3,815	6,440	10,255	6,925	58%	0.44	63	0.191	0.985	0.400	0.656	0.722	**27.8%**
67	12,459	3,462	2,992	6,454	3,710	66%	0.49	63.8	0.225	0.835	0.425	0.626	0.710	**29.0%**
68	14,921	2,958	3,952	6,910	4,630	63%	0.47	63.6	0.217	0.851	0.419	0.621	0.703	**29.7%**
69	8,897	2,739	1,773	4,512	2,377	72%	0.54	66.7	0.347	0.803	0.518	0.670	0.785	**21.5%**
70	38,429	3,647	7,384	11,030	13,422	24%	0.24	61.1	0.112	0.985	0.339	0.493	0.549	**45.1%**
71	54,514	3,546	5,530	9,076	19,438	23%	0.23	60.1	0.069	0.882	0.307	0.440	0.479	**52.1%**
72	13,514	3,445	3,074	6,519	4,104	64%	0.48	66.5	0.339	0.886	0.512	0.691	0.796	**20.4%**
73	13,222	2,134	2,163	4,297	3,995	65%	0.48	65.8	0.309	0.777	0.489	0.628	0.743	**25.7%**
74	13,272	2,235	5,465	7,700	4,014	65%	0.48	66.2	0.326	0.932	0.502	0.709	0.804	**19.6%**
75	8,489	303	1,594	1,896	2,225	73%	0.54	70.5	0.507	0.757	0.640	0.704	0.854	**14.6%**
76	9,611	1,428	1,529	2,957	2,645	70%	0.52	65.8	0.309	0.719	0.489	0.610	0.730	**27.0%**
77	14,474	2,941	1,984	4,925	4,463	63%	0.47	64.7	0.263	0.785	0.454	0.610	0.713	**28.7%**
78	7,753	1,748	1,382	3,130	1,950	75%	0.56	66.4	0.335	0.737	0.509	0.636	0.758	**24.2%**
79	8,807	2,319	1,415	3,734	2,344	72%	0.54	65.7	0.305	0.751	0.486	0.628	0.742	**25.8%**
80	9,028	2,050	1,513	3,563	2,426	72%	0.53	66	0.318	0.749	0.496	0.631	0.748	**25.2%**

Row	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ
6	JUNE				Calculated											
7	Sac				Steamboat			USBR						Calculated		
8	River		CVP + SWP & Sutter				X-channel	observed		Calculated Mortality				Survival		Weighted
9	Flow	CVP	SWP	exports	Slough Q	percent	closed	temp f	m1	m2	m3	m23	m123	s123		Total Survival
10	34,719	5,075	10,302	15,377	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**		**62.28%**
11	16,026	3,865	3,445	7,310	5,044	62%	0.46	65.3	0.288	0.899	0.473	0.670	0.765	**23.5%**		**61.24%**
12	10,132	874	504	1,378	2,839	69%	0.52	70.6	0.511	0.737	0.643	0.691	0.849	**15.1%**		**56.21%**
13	15,894	3,966	2,202	6,168	4,994	62%	0.46	68.3	0.414	0.903	0.569	0.724	0.838	**16.2%**		**59.35%**
14	12,471	3,193	2,706	5,899	3,714	66%	0.49	71.2	0.536	0.944	0.662	0.800	0.907	**9.3%**		**54.43%**
15	16,647	4,252	3,781	8,033	5,276	61%	0.46	68.1	0.406	0.981	0.563	0.754	0.854	**14.6%**		**62.81%**
16	13,024	3,143	2,706	5,848	3,921	65%	0.48	69.7	0.473	0.915	0.614	0.759	0.873	**12.7%**		**57.97%**
17	10,759	3,075	252	3,328	3,074	68%	0.51	70.1	0.490	0.812	0.627	0.721	0.858	**14.2%**		**62.36%**
18	13,941	3,580	3,092	6,672	4,264	64%	0.48	69.6	0.469	0.949	0.611	0.771	0.879	**12.1%**		**60.43%**
19	12,159	1,731	1,260	2,991	3,597	66%	0.49	70.7	0.515	0.809	0.646	0.726	0.867	**13.3%**		**54.04%**
20	17,895	3,933	2,420	6,353	5,743	60%	0.45	69.5	0.465	0.933	0.608	0.754	0.868	**13.2%**		**59.27%**
21	11,337	1,765	286	2,050	3,290	67%	0.50	69.8	0.478	0.752	0.617	0.684	0.835	**16.5%**		**59.95%**
22	15,046	3,630	2,470	6,100	4,677	63%	0.47	70.7	0.515	0.943	0.646	0.785	0.896	**10.4%**		**53.32%**
23	18,258	4,453	3,983	8,436	5,878	60%	0.45	71	0.528	1.000	0.656	0.810	0.910	**9.0%**		**58.58%**
24	15,871	3,899	3,428	7,327	4,986	62%	0.46	69.2	0.452	0.970	0.598	0.770	0.874	**12.6%**		**55.03%**
25	15,301	2,874	2,118	4,991	4,773	62%	0.47	69.7	0.473	0.877	0.614	0.737	0.861	**13.9%**		**58.34%**
26	35,517	5,025	8,235	13,260	12,333	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**		**63.86%**
27	15,086	3,512	3,243	6,756	4,692	63%	0.47	71	0.528	0.977	0.656	0.806	0.908	**9.2%**		**52.62%**
28	14,196	3,647	3,159	6,806	4,359	64%	0.47	71.5	0.549	0.989	0.672	0.822	0.920	**8.0%**		**57.18%**
29	21,005	5,008	6,369	11,377	6,906	58%	0.44	69	0.444	1.000	0.592	0.770	0.872	**12.8%**		**60.97%**
30	27,117	5,025	7,781	12,806	9,192	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**		**64.65%**
31	13,228	3,512	3,092	6,605	3,997	65%	0.48	66.6	0.343	0.892	0.515	0.696	0.801	**19.9%**		**58.86%**
32	15,393	3,748	3,294	7,042	4,807	62%	0.47	67.8	0.393	0.932	0.553	0.730	0.836	**16.4%**		**59.53%**
33	16,980	3,781	3,983	7,764	5,401	61%	0.46	70.6	0.511	1.000	0.643	0.806	0.905	**9.5%**		**56.18%**
34	16,573	3,798	3,764	7,563	5,248	61%	0.46	68.1	0.406	0.960	0.563	0.745	0.848	**15.2%**		**56.65%**
35	15,094	3,764	3,344	7,109	4,695	63%	0.47	70	0.486	0.975	0.624	0.788	0.891	**10.9%**		**52.69%**
36	23,247	5,008	4,554	9,562	7,744	57%	0.43	69	0.444	1.000	0.592	0.767	0.870	**13.0%**		**64.29%**
37	16,003	3,697	3,260	6,958	5,035	62%	0.46	70.9	0.524	0.984	0.652	0.805	0.907	**9.3%**		**54.80%**
38	17,590	4,101	3,613	7,714	5,629	61%	0.45	68.9	0.440	0.981	0.588	0.766	0.869	**13.1%**		**55.68%**
39	12,767	3,277	2,857	6,134	3,825	65%	0.49	70.3	0.499	0.938	0.633	0.781	0.890	**11.0%**		**57.67%**
40	38,968	5,025	8,235	13,260	13,624	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**		**64.91%**
41	26,082	4,924	5,848	10,772	8,805	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**		**63.74%**
42	12,950	3,210	2,790	6,000	3,893	65%	0.48	68.7	0.431	0.903	0.582	0.738	0.851	**14.9%**		**59.62%**
43	15,402	3,697	3,277	6,974	4,810	62%	0.47	70.1	0.490	0.971	0.627	0.787	0.891	**10.9%**		**61.29%**
44	22,288	5,025	6,806	11,831	7,386	58%	0.43	68.7	0.431	1.000	0.582	0.763	0.865	**13.5%**		**61.13%**
45	16,835	3,933	3,512	7,445	5,346	61%	0.46	72	0.570	1.000	0.688	0.830	0.927	**7.3%**		**57.05%**
46	33,938	5,042	8,252	13,293	11,743	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**		**62.36%**
47	14,706	3,798	3,361	7,159	4,550	63%	0.47	72.1	0.574	1.000	0.691	0.836	0.930	**7.0%**		**54.35%**
48	13,371	3,361	3,126	6,487	4,051	64%	0.48	72.7	0.600	0.996	0.710	0.847	0.939	**6.1%**		**58.46%**
49	15,990	3,781	3,361	7,142	5,030	62%	0.46	73.2	0.621	1.000	0.726	0.852	0.944	**5.6%**		**58.66%**
50	14,517	3,580	3,109	6,689	4,479	63%	0.47	70.4	0.503	0.964	0.636	0.791	0.896	**10.4%**		**55.09%**
51	18,247	4,487	4,084	8,571	5,874	60%	0.45	69	0.444	1.000	0.592	0.775	0.875	**12.5%**		**64.60%**
52	13,918	3,395	2,958	6,353	4,255	64%	0.48	69.5	0.465	0.933	0.608	0.762	0.873	**12.7%**		**59.70%**
53	15,818	4,168	3,748	7,915	4,966	62%	0.46	67.1	0.364	0.958	0.531	0.728	0.827	**17.3%**		**60.38%**
54	12,924	3,328	2,907	6,235	3,884	65%	0.48	70.4	0.503	0.944	0.636	0.785	0.893	**10.7%**		**53.95%**
55	39,345	5,008	8,252	13,260	13,765	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**		**65.45%**
56	13,370	3,865	3,428	7,294	4,050	64%	0.48	72	0.570	1.000	0.688	0.838	0.930	**7.0%**		**55.66%**
57	24,130	5,042	8,252	13,293	8,075	57%	0.43	68.3	0.414	1.000	0.569	0.753	0.855	**14.5%**		**63.04%**
58	11,326	3,512	3,075	6,588	3,286	67%	0.50	70.7	0.515	0.965	0.646	0.806	0.906	**9.4%**		**57.67%**
59	23,831	5,025	5,109	10,134	7,963	57%	0.43	68.1	0.406	1.000	0.563	0.750	0.851	**14.9%**		**63.09%**
60	13,246	3,714	3,277	6,991	4,004	65%	0.48	70.7	0.515	0.982	0.646	0.808	0.907	**9.3%**		**58.65%**
61	19,721	2,924	5,697	8,621	6,426	59%	0.44	70.1	0.490	1.000	0.627	0.792	0.894	**10.6%**		**54.84%**
62	21,819	5,025	4,991	10,016	7,210	58%	0.43	69.7	0.473	1.000	0.614	0.782	0.885	**11.5%**		**61.04%**
63	24,787	5,025	7,025	12,050	8,320	57%	0.43	69.1	0.448	1.000	0.595	0.767	0.871	**12.9%**		**61.68%**
64	15,104	3,210	2,958	6,168	4,699	63%	0.47	71.8	0.562	0.966	0.681	0.814	0.919	**8.1%**		**57.69%**
65	10,224	286	1,176	1,462	2,874	69%	0.51	73.9	0.650	0.800	0.748	0.775	0.921	**7.9%**		**56.28%**
66	14,732	4,235	3,949	8,184	4,560	63%	0.47	70	0.486	1.000	0.624	0.800	0.897	**10.3%**		**60.51%**
67	19,761	3,328	5,311	8,638	6,441	59%	0.44	69.2	0.452	1.000	0.598	0.776	0.877	**12.3%**		**56.70%**
68	14,951	4,521	4,101	8,621	4,642	63%	0.47	66.9	0.356	0.985	0.525	0.740	0.832	**16.8%**		**61.97%**
69	14,113	3,798	3,361	7,159	4,328	64%	0.47	71.9	0.566	1.000	0.684	0.834	0.928	**7.2%**		**55.31%**
70	24,415	5,075	8,201	13,276	8,181	57%	0.43	66	0.318	1.000	0.496	0.711	0.803	**19.7%**		**66.33%**
71	55,568	5,008	6,571	11,579	19,832	23%	0.23	63.6	0.217	1.000	0.419	0.553	0.650	**35.0%**		**68.77%**
72	15,750	3,949	3,512	7,462	4,941	62%	0.46	68.4	0.419	0.961	0.572	0.752	0.856	**14.4%**		**57.98%**
73	13,377	3,378	2,958	6,336	4,053	64%	0.48	69.4	0.461	0.930	0.604	0.761	0.871	**12.9%**		**56.78%**
74	12,610	4,302	3,882	8,184	3,766	65%	0.49	71.6	0.553	1.000	0.675	0.833	0.926	**7.4%**		**54.75%**
75	16,308	3,848	3,412	7,260	5,149	62%	0.46	73.2	0.621	1.000	0.726	0.852	0.944	**5.6%**		**50.27%**
76	14,811	4,252	1,798	6,050	4,589	63%	0.47	69.4	0.461	0.918	0.604	0.752	0.866	**13.4%**		**59.41%**
77	12,705	3,260	2,773	6,033	3,802	65%	0.49	68.6	0.427	0.903	0.579	0.736	0.849	**15.1%**		**56.80%**
78	15,033	3,159	2,907	6,067	4,672	63%	0.47	68.5	0.423	0.903	0.576	0.728	0.843	**15.7%**		**56.64%**
79	9,469	1,697	454	2,151	2,591	71%	0.53	69.4	0.461	0.749	0.604	0.680	0.828	**17.2%**		**57.92%**
80	14,709	3,865	2,168	6,033	4,551	63%	0.47	69	0.444	0.910	0.592	0.741	0.856	**14.4%**		**56.41%**
81															**Average**	**58.85%**

Row	April	May	June
85	BG10 ='Study 467 Flow Data'!G7	BV10 ='Study 467 Flow Data'!H7	CK10 ='Study 467 Flow Data'!I7
86	BH10 ='Study 467 Flow Data'!Q7	BW10 ='Study 467 Flow Data'!R7	CL10 ='Study 467 Flow Data'!S7
87	BI10 ='Study 467 Flow Data'!AA7	BX10 ='Study 467 Flow Data'!AB7	CM10 ='Study 467 Flow Data'!AC7
88	BJ10 =(BH10+BI10)	BY10 =(BW10+BX10)	CN10 =(CL10+CM10)
89	BK10 =0.374*BG10-950	BZ10 =0.374*BV10-950	CO10 =0.374*CK10-950
90	BL10 =IF(BG10>$G$2,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))	CA10 =IF(BV10>$K$4,(0.133*BV10+829)/(BV10-BZ10),(0.293*BV10+2090)/(BV10-BZ10))	CP10 =IF(CK10>$K$4,(0.133*CK10+829)/(CK10-CO10),(0.293*CK10+2090)/(CK10-CO10))
91	BM10 =(0.133*BG10+829)/(BG10-BK10)	CB10 =(0.45*(0.133*BV10+829)/(BV10-BZ10))+(0.55*CA10)	CQ10 =(0.45*(0.133*CK10+829)/(CK10-CO10))+(0.55*CP10)
92	BN10	CC10	CR10
93	BO10 =IF((-2.45925+(0.0420748*BN10))<0,0,(-2.45925+(0.0420748*BN10)))	CD10 =IF((-2.45925+(0.0420748*CC10))<0,0,(-2.45925+(0.0420748*CC10)))	CS10 =IF((-2.45925+(0.0420748*CR10))<0,0,(-2.45925+(0.0420748*CR10)))
94	BP10 =IF(((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10))>1,1,((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ1(	CE10 =IF(((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10))>1,1,((-0.5916024)+(0.017968*CC10)+(0.0000434*BY	CT10 =IF(((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10))>1,1,((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10)))
95	BQ10 =-1.613493+(0.0319584*BN10)	CF10 =-1.613493+(0.0319584*CC10)	CU10 =-1.613493+(0.0319584*CR10)
96	BR10 =(BP10*BM10)+(BQ10*(1-BM10))	CG10 =(CE10*CB10)+(CF10*(1-CB10))	CV10 =(CT10*CQ10)+(CU10*(1-CQ10))
97	BS10 =BO10+BR10-(BO10*BR10)	CH10 =CD10+CG10-(CD10*CG10)	CW10 =CS10+CV10-(CS10*CV10)
98	BT10 =1-BS10	CI10 =1-CH10	CX10 =1-CW10
99			CZ10 =(0.01*O10)+(0.06*AC10)+(0.17*AQ10)+(0.28*BE10)+(0.25*BT10)+(0.16*CI10)+(0.07*CX10)

Row	A	B	C	F	G	H	I	J	K	L	M	N	O	P	R	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AG	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AV
1	Study 467 Sacramento River Fall Run Smolt Survival Model										Cross Channel closed over 25,000 cfs																												
2	Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15																																						
3	Sacramento River temperatures based on limited historical data from USBR																																						
4			APRIL		Calculated										MAY		Calculated										JUNE		Caculated										
5		Water	Sac		Sutter &									Calculated	Sac		Steamboat			USBR						Calculated	Sac		Steamboat			USBR						Calculated	
6		Year	River	CVP + SWP	Steamboat		X-Channel	observed			Calculated Mortality			Survival	River	CVP + SWP	& Sutter		X-channel	observed		Calculated Mortality				Survival	River	CVP + SWP	& Sutter		X-Channel	observed		Calculated Mortality				Survival	Weighted
7	Year	Type	Flows	exports	Slough Q	Percent	Closed	temp f	m1	m2	m3	m23	m123	s123	Flows	Exports	Slough Q	Percent	Closed	temp f	m1	m2	m3	m23	m123	s123	Flow	exports	Slough Q	percent	closed	temp f	m1	m2	m3	m23	m123	s123	Total Survival
8	1922	A	22,822	9,545	7,585	58%	0.25	58.5	0.002	0.874	0.256	0.413	0.414	**58.6%**	46,530	5,984	16,452	0.23	0.23	61.2	0.116	0.768	0.342	0.442	0.506	**49.4%**	34,720	6,016	12,035	24%	0.24	65.9	0.313	0.854	0.493	0.579	0.711	**28.9%**	**47.3%**
9	1923	B	24,418	10,100	8,182	57%	0.25	58.3	0.000	0.894	0.250	0.412	0.412	**58.8%**	15,434	5,984	4,822	0.62	0.33	62.4	0.166	0.789	0.381	0.515	0.595	**40.5%**	14,957	5,008	4,644	63%	0.53	65.3	0.288	0.799	0.473	0.647	0.748	**25.2%**	**40.8%**
10	1924	C	7,630	571	1,904	76%	0.32	61.5	0.128	0.538	0.352	0.412	0.487	**51.3%**	8,392	4,017	2,189	0.73	0.38	69.2	0.452	0.826	0.598	0.685	0.827	**17.3%**	9,327	3,697	2,538	71%	0.60	70.6	0.511	0.837	0.643	0.760	0.883	**11.7%**	**22.0%**
11	1925	D	22,906	11,226	7,617	58%	0.25	59.1	0.027	0.958	0.275	0.448	0.463	**53.7%**	14,816	5,984	4,591	0.63	0.33	63.2	0.200	0.804	0.406	0.538	0.630	**37.0%**	16,671	5,008	5,285	61%	0.52	68.3	0.414	0.853	0.569	0.717	0.834	**16.6%**	**36.2%**
12	1926	D	18,268	10,738	5,882	60%	0.26	61.6	0.133	0.981	0.355	0.520	0.584	**41.6%**	10,441	5,984	2,955	0.69	0.36	65.7	0.305	0.849	0.486	0.616	0.733	**26.7%**	13,528	4,991	4,109	64%	0.54	71.2	0.536	0.904	0.662	0.794	0.904	**9.6%**	**26.1%**
13	1927	W	48,215	9,764	17,082	23%	0.23	56.8	0.000	0.853	0.202	0.353	0.353	**64.7%**	26,786	5,984	9,068	0.25	0.25	62.6	0.175	0.793	0.387	0.488	0.577	**42.3%**	19,007	5,008	6,159	60%	0.51	68.1	0.406	0.849	0.563	0.708	0.826	**17.4%**	**41.6%**
14	1928	A	29,208	10,083	9,974	25%	0.25	58.7	0.011	0.901	0.262	0.419	0.425	**57.5%**	12,881	5,984	3,867	0.65	0.34	66.6	0.343	0.865	0.515	0.634	0.760	**24.0%**	12,520	5,008	3,732	66%	0.55	69.7	0.473	0.878	0.614	0.761	0.874	**12.6%**	**27.7%**
15	1929	C	7,075	5,395	1,696	77%	0.33	56.3	0.000	0.654	0.186	0.340	0.340	**66.0%**	8,733	4,374	2,316	0.72	0.38	66.1	0.322	0.786	0.499	0.607	0.733	**26.7%**	9,478	4,470	2,595	71%	0.60	70.1	0.490	0.862	0.627	0.767	0.881	**11.9%**	**30.7%**
16	1930	D	13,713	9,344	4,179	64%	0.28	59.6	0.048	0.885	0.291	0.456	0.483	**51.7%**	13,417	5,984	4,068	0.64	0.34	63.1	0.196	0.802	0.403	0.538	0.628	**37.2%**	12,890	5,008	3,871	65%	0.55	69.6	0.469	0.876	0.611	0.757	0.871	**12.9%**	**35.3%**
17	1931	C	13,377	4,268	4,053	64%	0.28	62.8	0.183	0.722	0.393	0.485	0.580	**42.0%**	8,164	4,326	2,103	0.74	0.38	70.5	0.507	0.863	0.640	0.725	0.865	**13.5%**	9,041	3,412	2,431	72%	0.61	70.7	0.515	0.827	0.646	0.756	0.882	**11.8%**	**18.1%**
18	1932	D	10,890	537	3,123	68%	0.29	58.9	0.019	0.490	0.269	0.334	0.346	**65.4%**	10,718	5,984	3,059	0.68	0.36	65.5	0.297	0.845	0.480	0.610	0.726	**27.4%**	12,470	5,159	3,714	66%	0.56	69.5	0.465	0.881	0.608	0.760	0.871	**12.9%**	**31.3%**
19	1933	C	10,083	1,765	2,821	69%	0.30	60.1	0.069	0.565	0.307	0.384	0.427	**57.3%**	7,839	4,473	1,982	0.75	0.39	63.7	0.221	0.747	0.422	0.548	0.648	**35.2%**	10,184	4,554	2,859	69%	0.59	69.8	0.478	0.860	0.617	0.760	0.874	**12.6%**	**34.9%**
20	1934	C	8,067	689	2,067	74%	0.32	63.6	0.217	0.581	0.419	0.470	0.585	**41.5%**	9,091	4,976	2,450	0.72	0.37	68.3	0.414	0.852	0.569	0.674	0.809	**19.1%**	10,621	5,008	3,022	68%	0.58	70.7	0.515	0.896	0.646	0.791	0.899	**10.1%**	**21.3%**
21	1935	B	23,696	11,142	7,912	57%	0.25	58.9	0.019	0.950	0.269	0.441	0.451	**54.9%**	18,134	5,984	5,832	0.60	0.32	64	0.234	0.818	0.432	0.554	0.659	**34.1%**	15,310	5,008	4,776	62%	0.53	71	0.528	0.901	0.656	0.786	0.899	**10.1%**	**33.3%**
22	1936	B	22,032	9,781	7,290	58%	0.26	59.7	0.053	0.906	0.294	0.450	0.479	**52.1%**	15,092	5,984	4,694	0.63	0.33	64.9	0.271	0.834	0.461	0.584	0.697	**30.3%**	15,142	5,008	4,713	63%	0.53	69.2	0.452	0.869	0.598	0.742	0.859	**14.1%**	**31.1%**
23	1937	B	22,503	9,579	7,466	58%	0.25	58.8	0.015	0.881	0.266	0.422	0.430	**57.0%**	15,044	5,984	4,676	0.63	0.33	64.5	0.255	0.827	0.448	0.573	0.682	**31.8%**	14,402	5,008	4,436	63%	0.54	69.7	0.473	0.878	0.614	0.756	0.871	**12.9%**	**32.7%**
24	1938	W	47,173	7,713	16,693	23%	0.23	56.3	0.000	0.755	0.186	0.318	0.318	**68.2%**	57,426	5,984	20,527	0.23	0.23	62.5	0.170	0.791	0.384	0.477	0.566	**43.4%**	35,510	6,016	12,331	24%	0.24	67.7	0.389	0.886	0.550	0.631	0.774	**22.6%**	**43.8%**
25	1939	D	10,571	7,983	3,004	69%	0.30	63.3	0.204	0.892	0.409	0.552	0.643	**35.7%**	8,002	4,992	2,043	0.74	0.39	68	0.402	0.847	0.560	0.671	0.803	**19.7%**	10,067	5,008	2,815	69%	0.59	71	0.528	0.901	0.656	0.800	0.906	**9.4%**	**20.6%**
26	1940	A	41,980	10,285	14,751	24%	0.24	57.4	0.000	0.886	0.221	0.378	0.378	**62.2%**	15,808	5,984	4,962	0.62	0.33	65.6	0.301	0.847	0.483	0.602	0.722	**27.8%**	16,167	4,991	5,096	62%	0.52	71.5	0.549	0.910	0.672	0.796	0.908	**9.2%**	**30.3%**
27	1941	W	42,367	9,311	14,895	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**	39,488	5,984	13,819	0.24	0.24	61.6	0.133	0.775	0.355	0.455	0.527	**47.3%**	20,805	6,016	6,831	59%	0.50	69	0.444	0.909	0.592	0.750	0.861	**13.9%**	**44.3%**
28	1942	W	43,308	9,647	15,247	23%	0.23	56.5	0.000	0.842	0.192	0.345	0.345	**65.5%**	36,040	5,984	12,529	0.24	0.24	60.1	0.069	0.748	0.307	0.413	0.453	**54.7%**	27,124	6,016	9,194	25%	0.25	67.8	0.393	0.888	0.553	0.636	0.779	**22.1%**	**50.6%**
29	1943	W	29,410	9,663	10,049	24%	0.24	58.8	0.015	0.884	0.266	0.417	0.426	**57.4%**	20,134	5,984	6,580	0.59	0.31	65.4	0.292	0.843	0.477	0.591	0.710	**29.0%**	16,285	2,470	5,141	62%	0.52	66.6	0.343	0.712	0.515	0.618	0.749	**25.1%**	**33.1%**
30	1944	D	10,806	9,580	3,091	68%	0.29	58.4	0.000	0.874	0.253	0.435	0.435	**56.5%**	15,857	4,992	4,981	0.62	0.33	65.9	0.313	0.809	0.493	0.596	0.722	**27.8%**	10,083	5,008	2,821	69%	0.59	67.8	0.393	0.844	0.553	0.724	0.833	**16.7%**	**30.7%**
31	1945	B	12,167	9,764	3,600	66%	0.29	60.6	0.090	0.921	0.323	0.494	0.540	**46.0%**	13,905	5,854	4,250	0.64	0.34	63.1	0.196	0.796	0.403	0.535	0.626	**37.4%**	14,806	5,008	4,587	63%	0.53	70.6	0.511	0.894	0.643	0.777	0.891	**10.9%**	**34.1%**
32	1946	B	13,159	10,100	3,971	65%	0.28	60.7	0.095	0.937	0.326	0.498	0.545	**45.5%**	15,759	5,562	4,944	0.62	0.33	63.9	0.229	0.798	0.429	0.549	0.653	**34.7%**	16,520	5,008	5,228	61%	0.52	68.1	0.406	0.849	0.563	0.712	0.829	**17.1%**	**33.4%**
33	1947	D	13,310	10,133	4,028	65%	0.28	62.5	0.170	0.971	0.384	0.548	0.625	**37.5%**	14,962	4,992	4,646	0.63	0.33	68.7	0.431	0.859	0.582	0.674	0.814	**18.6%**	11,529	5,008	3,362	67%	0.57	70	0.486	0.884	0.624	0.771	0.882	**11.8%**	**20.6%**
34	1948	B	22,990	11,091	7,648	58%	0.25	56.6	0.000	0.907	0.195	0.376	0.376	**62.4%**	31,014	5,984	10,649	0.24	0.24	62.3	0.162	0.788	0.378	0.477	0.562	**43.8%**	22,301	6,016	7,391	58%	0.49	69	0.444	0.909	0.592	0.748	0.860	**14.0%**	**41.6%**
35	1949	D	13,461	9,815	4,084	64%	0.28	61.7	0.137	0.943	0.358	0.522	0.587	**41.3%**	13,856	5,984	4,232	0.64	0.34	65.2	0.284	0.840	0.470	0.594	0.709	**29.1%**	12,201	5,008	3,613	66%	0.56	70.9	0.524	0.900	0.652	0.791	0.900	**10.0%**	**27.7%**
36	1950	B	19,276	10,067	6,259	59%	0.26	61.3	0.120	0.947	0.346	0.502	0.562	**43.8%**	15,694	5,984	4,920	0.62	0.33	64.3	0.246	0.823	0.441	0.566	0.673	**32.7%**	16,638	5,764	5,273	61%	0.52	68.9	0.440	0.897	0.588	0.749	0.859	**14.1%**	**31.2%**
37	1951	A	15,495	9,092	4,845	62%	0.27	59.9	0.061	0.879	0.301	0.458	0.491	**50.9%**	19,028	5,984	6,166	0.60	0.31	64.4	0.250	0.825	0.445	0.564	0.673	**32.7%**	12,487	6,016	3,720	66%	0.56	70.3	0.499	0.933	0.633	0.799	0.899	**10.1%**	**31.7%**
38	1952	W	56,652	8,773	20,238	23%	0.23	55.5	0.000	0.786	0.160	0.304	0.304	**69.6%**	59,557	5,984	21,324	0.23	0.23	61.7	0.137	0.777	0.358	0.454	0.529	**47.1%**	38,972	6,016	13,626	24%	0.24	65	0.276	0.837	0.464	0.552	0.676	**32.4%**	**48.3%**
39	1953	W	16,621	9,764	5,266	61%	0.27	58.8	0.015	0.889	0.266	0.432	0.441	**55.9%**	26,558	5,984	8,983	0.25	0.25	60.9	0.103	0.762	0.333	0.439	0.497	**50.3%**	25,881	6,016	8,729	25%	0.25	66.2	0.326	0.859	0.502	0.591	0.724	**27.6%**	**47.2%**
40	1954	A	39,863	10,386	13,959	24%	0.24	58.4	0.000	0.908	0.253	0.408	0.408	**59.2%**	16,394	5,822	5,181	0.61	0.32	65.9	0.313	0.845	0.493	0.607	0.730	**27.0%**	17,091	5,008	5,442	61%	0.52	68.7	0.431	0.860	0.582	0.726	0.844	**15.6%**	**30.4%**
41	1955	D	12,722	9,008	3,808	65%	0.28	56.4	0.000	0.813	0.189	0.365	0.365	**63.5%**	14,279	4,992	4,390	0.63	0.33	66.9	0.356	0.827	0.525	0.625	0.759	**24.1%**	11,327	5,008	3,286	67%	0.57	70.1	0.490	0.885	0.627	0.774	0.885	**11.5%**	**28.6%**
42	1956	W	20,436	10,386	6,693	59%	0.26	59.7	0.053	0.932	0.294	0.459	0.487	**51.3%**	39,000	5,984	13,636	0.24	0.24	61.4	0.124	0.771	0.349	0.449	0.517	**48.3%**	22,301	6,016	7,391	58%	0.49	68.7	0.431	0.904	0.582	0.740	0.852	**14.8%**	**42.7%**
43	1957	A	13,596	10,184	4,135	64%	0.28	60.5	0.086	0.937	0.320	0.492	0.536	**46.4%**	20,590	5,984	6,751	0.59	0.31	64	0.234	0.818	0.432	0.552	0.656	**34.4%**	15,394	4,941	4,807	62%	0.53	72	0.570	0.917	0.688	0.809	0.918	**8.2%**	**31.7%**
44	1958	W	52,282	9,663	18,603	23%	0.23	57.4	0.000	0.859	0.221	0.368	0.368	**63.2%**	43,488	5,984	15,315	0.23	0.23	62.9	0.187	0.798	0.397	0.491	0.586	**41.4%**	33,930	6,016	11,740	24%	0.24	67.7	0.389	0.886	0.550	0.631	0.775	**22.5%**	**41.7%**
45	1959	B	11,680	8,470	3,418	67%	0.29	63	0.191	0.908	0.400	0.546	0.633	**36.7%**	14,995	4,992	4,658	0.63	0.33	65.9	0.313	0.809	0.493	0.597	0.723	**27.7%**	11,361	5,008	3,299	67%	0.57	72.1	0.574	0.921	0.691	0.822	0.924	**7.6%**	**25.6%**
46	1960	D	9,730	6,857	2,689	70%	0.30	59.5	0.044	0.775	0.288	0.435	0.460	**54.0%**	15,987	4,992	5,029	0.62	0.33	65.9	0.313	0.809	0.493	0.596	0.722	**27.8%**	12,839	5,008	3,852	65%	0.55	72.7	0.600	0.932	0.710	0.832	0.933	**6.7%**	**28.4%**
47	1961	D	11,781	7,932	3,456	67%	0.29	60.1	0.069	0.833	0.307	0.458	0.496	**50.4%**	13,629	4,992	4,147	0.64	0.34	64.3	0.246	0.780	0.441	0.556	0.665	**33.5%**	13,159	5,008	3,971	65%	0.55	73.2	0.621	0.941	0.726	0.844	0.941	**5.9%**	**31.4%**
48	1962	B	12,403	10,487	3,689	66%	0.28	61.8	0.141	0.974	0.362	0.536	0.601	**39.9%**	16,280	4,992	5,139	0.62	0.32	64.8	0.267	0.789	0.457	0.565	0.681	**31.9%**	16,755	5,008	5,316	61%	0.52	70.4	0.503	0.891	0.636	0.768	0.885	**11.5%**	**29.6%**
49	1963	W	69,457	10,117	25,027	23%	0.23	53.7	0.000	0.812	0.103	0.263	0.263	**73.7%**	29,095	5,984	9,932	0.25	0.25	62.5	0.170	0.791	0.384	0.484	0.572	**42.8%**	18,604	5,008	6,008	60%	0.51	69	0.444	0.866	0.592	0.731	0.850	**15.0%**	**43.1%**
50	1964	D	13,697	9,008	4,173	64%	0.28	59.3	0.036	0.865	0.282	0.444	0.464	**53.6%**	16,800	4,992	5,333	0.61	0.32	65.2	0.284	0.797	0.470	0.575	0.696	**30.4%**	10,873	5,008	3,117	68%	0.58	69.5	0.465	0.875	0.608	0.761	0.872	**12.8%**	**31.2%**
51	1965	W	45,173	9,932	15,945	23%	0.23	56.9	0.000	0.862	0.205	0.359	0.359	**64.1%**	19,581	5,984	6,373	0.59	0.31	63.6	0.217	0.811	0.419	0.542	0.641	**35.9%**	17,377	4,268	5,549	61%	0.51	67.1	0.364	0.799	0.531	0.669	0.790	**21.0%**	**38.0%**
52	1966	B	12,806	9,966	3,839	65%	0.28	61.9	0.145	0.953	0.365	0.531	0.599	**40.1%**	14,052	4,992	4,305	0.64	0.33	67.3	0.372	0.834	0.537	0.637	0.772	**22.8%**	12,907	5,008	3,877	65%	0.55	70.4	0.503	0.891	0.636	0.776	0.889	**11.1%**	**23.6%**
53	1967	W	39,930	8,722	13,984	24%	0.24	53.8	0.000	0.754	0.106	0.259	0.259	**74.1%**	44,790	5,984	15,801	0.23	0.23	62.1	0.154	0.784	0.371	0.468	0.550	**45.0%**	39,342	6,016	13,764	24%	0.24	66.5	0.339	0.864	0.512	0.595	0.732	**26.8%**	**46.7%**
54	1968	B	11,293	8,470	3,274	67%	0.29	61.5	0.128	0.881	0.352	0.506	0.569	**43.1%**	14,426	4,992	4,445	0.63	0.33	66.1	0.322	0.813	0.499	0.603	0.731	**26.9%**	12,503	5,008	3,726	66%	0.56	72	0.570	0.919	0.688	0.816	0.921	**7.9%**	**26.2%**
55	1969	W	44,787	7,496	15,800	23%	0.23	56.4	0.000	0.747	0.189	0.320	0.320	**68.0%**	45,538	5,984	16,081	0.23	0.23	63.2	0.200	0.804	0.406	0.499	0.599	**40.1%**	24,133	6,016	8,076	57%	0.48	68.3	0.414	0.897	0.569	0.728	0.841	**15.9%**	**40.5%**
56	1970	W	15,108	8,470	4,700	63%	0.27	58.8	0.015	0.833	0.266	0.420	0.429	**57.1%**	12,149	5,984	3,594	0.66	0.35	68.6	0.427	0.901	0.579	0.690	0.822	**17.8%**	13,545	5,008	4,116	64%	0.54	70.7	0.515	0.896	0.646	0.782	0.894	**10.6%**	**23.2%**
57	1971	W	20,755	10,386	6,812	59%	0.26	58.7	0.011	0.914	0.262	0.430	0.436	**56.4%**	30,266	5,984	10,369	0.24	0.24	61	0.107	0.764	0.336	0.440	0.500	**50.0%**	23,629	6,016	7,887	57%	0.49	68.1	0.406	0.893	0.563	0.723	0.836	**16.4%**	**45.0%**
58	1972	B	12,890	9,647	3,871	65%	0.28	58.5	0.002	0.878	0.256	0.432	0.433	**56.7%**	14,540	4,992	4,488	0.63	0.33	67.3	0.372	0.834	0.537	0.636	0.771	**22.9%**	12,520	5,008	3,732	66%	0.55	70.7	0.515	0.896	0.646	0.785	0.896	**10.4%**	**26.4%**
59	1973	A	19,511	10,117	6,347	59%	0.26	61.3	0.120	0.949	0.346	0.502	0.562	**43.8%**	15,743	5,984	4,938	0.62	0.33	66.9	0.356	0.870	0.525	0.637	0.766	**23.4%**	18,100	4,017	5,819	60%	0.51	70.1	0.490	0.842	0.627	0.737	0.866	**13.4%**	**25.0%**
60	1974	W	33,208	10,100	11,470	24%	0.24	56.8	0.000	0.867	0.202	0.362	0.362	**63.8%**	26,949	5,984	9,129	0.25	0.25	63.4	0.208	0.807	0.413	0.510	0.612	**38.8%**	21,629	6,016	7,139	58%	0.49	69.7	0.473	0.922	0.614	0.766	0.877	**12.3%**	**38.3%**
61	1975	W	25,763	10,386	8,685	25%	0.25	56.8	0.000	0.880	0.202	0.371	0.371	**62.9%**	28,542	5,984	9,725	0.25	0.25	63.8	0.225	0.814	0.425	0.521	0.629	**37.1%**	24,788	6,016	8,321	57%	0.48	69.1	0.448	0.911	0.595	0.747	0.861	**13.9%**	**37.3%**
62	1976	C	9,428	7,613	2,576	71%	0.30	58.9	0.019	0.797	0.269	0.429	0.440	**56.0%**	9,059	4,358	2,438	0.72	0.37	69.6	0.469	0.848	0.611	0.699	0.840	**16.0%**	9,898	4,454	2,752	70%	0.59	71.8	0.562	0.892	0.681	0.806	0.915	**8.5%**	**21.4%**
63	1977	C	16,990	9,008	5,404	61%	0.27	64.3	0.246	0.955	0.441	0.578	0.682	**31.8%**	6,993	3,887	1,665	0.78	0.40	64	0.234	0.727	0.432	0.550	0.655	**34.5%**	10,151	471	2,846	69%	0.59	73.9	0.650	0.757	0.748	0.753	0.914	**8.6%**	**29.4%**
64	1978	A	38,703	8,672	13,525	24%	0.24	56.9	0.000	0.807	0.205	0.348	0.348	**65.2%**	21,061	5,984	6,927	0.58	0.31	63	0.191	0.800	0.400	0.524	0.615	**38.5%**	13,965	4,100	4,273	64%	0.54	70	0.486	0.844	0.624	0.743	0.868	**13.2%**	**38.5%**
65	1979	B	17,696	9,647	5,668	60%	0.26	59.8	0.057	0.902	0.298	0.457	0.488	**51.2%**	13,564	5,984	4,123	0.64	0.34	63.8	0.225	0.814	0.425	0.557	0.656	**34.4%**	10,352	5,848	2,922	69%	0.58	69.2	0.452	0.906	0.598	0.777	0.878	**12.2%**	**33.2%**
66	1980	A	19,814	8,554	6,460	59%	0.26	57.1	0.000	0.806	0.211	0.366	0.366	**63.4%**	14,783	5,984	4,579	0.63	0.33	63.6	0.217	0.811	0.419	0.549	0.646	**35.4%**	14,755	5,126	4,568	63%	0.53	66.9	0.356	0.833	0.525	0.689	0.800	**20.0%**	**37.4%**
67	1981	D	16,990	9,764	5,404	61%	0.27	61.5	0.128	0.937	0.352	0.508	0.571	**42.9%**	9,953	5,497	2,772	0.70	0.36	66.7	0.347	0.845	0.518	0.637	0.763	**23.7%**	13,898	5,008	4,248	64%	0.54	71.9	0.566	0.918	0.684	0.811	0.918	**8.2%**	**24.2%**
68	1982	W	75,843	8,975	27,415	23%	0.23	54.1	0.000	0.770	0.115	0.263	0.263	**73.7%**	38,431	5,984	13,423	0.24	0.24	61.1	0.112	0.766	0.339	0.441	0.503	**49.7%**	24,418	6,016	8,182	57%	0.48	66	0.318	0.855	0.496	0.670	0.775	**22.5%**	**48.9%**
69	1983	W	68,298	6,958	24,593	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**	54,515	5,984	19,439	0.23	0.23	60.1	0.069	0.748	0.307	0.409	0.450	**55.0%**	55,576	6,016	19,835	23%	0.23	63.6	0.217	0.812	0.419	0.509	0.616	**38.4%**	**55.1%**
70	1984	W	16,301	9,647	5,147	62%	0.27	59.7	0.053	0.900	0.294	0.457	0.486	**51.4%**	14,897	5,984	4,621	0.63	0.33	66.5	0.339	0.863	0.512	0.628	0.754	**24.6%**	11,730	5,411	3,437	67%	0.56	68.4	0.419	0.872	0.572	0.742	0.850	**15.0%**	**27.4%**
71	1985	D	13,327	10,335	4,034	65%	0.28	60.8	0.099	0.949	0.330	0.503	0.552	**44.8%**	13,450	4,992	4,080	0.64	0.34	65.8	0.309	0.807	0.489	0.597	0.721	**27.9%**	12,234	5,008	3,626	66%	0.56	69.4	0.461	0.873	0.604	0.754	0.867	**13.3%**	**28.1%**
72	1986	W	20,772	7,714	6,819	59%	0.26	60.4	0.082	0.828	0.317	0.448	0.494	**50.6%**	13,125	5,984	3,959	0.65	0.34	66.2	0.326	0.858	0.502	0.623	0.746	**25.4%**	12,419	6,016	3,695	66%	0.56	71.6	0.553	0.956	0.675	0.831	0.925	**7.5%**	**26.5%**
73	1987	D	8,789	5,092	2,337	72%	0.31	65.7	0.305	0.810	0.486	0.586	0.713	**28.7%**	8,912	4,992	2,383	0.72	0.37	70.5	0.507	0.892	0.640	0.734	0.869	**13.1%**	10,554	5,008	2,997	69%	0.58	73.2	0.621	0.941	0.726	0.851	0.943	**5.7%**	**14.4%**
74	1988	C	10,016	2,067	2,796	70%	0.30	59.9	0.061	0.574	0.301	0.383	0.420	**58.0%**	8,701	4,976	2,304	0.73	0.38	65.8	0.309	0.807	0.489	0.609	0.730	**27.0%**	10,386	5,008	2,934	69%	0.58	69.4	0.461	0.873	0.604	0.761	0.871	**12.9%**	**29.7%**
75	1989	D	24,133	11,074	8,076	57%	0.25	61.4	0.124	0.992	0.349	0.511	0.571	**42.9%**	11,384	5,984	3,308	0.67	0.35	64.7	0.263	0.831	0.454	0.586	0.695	**30.5%**	13,092	4,773	3,946	65%	0.55	68.6	0.427	0.848	0.579	0.727	0.843	**15.7%**	**29.9%**
76	1990	C	8,420	6,621	2,199	73%	0.31	61.6	0.133	0.803	0.355	0.495	0.562	**43.8%**	9,189	5,009	2,487	0.71	0.37	66.4	0.335	0.819	0.509	0.624	0.750	**25.0%**	10,369	4,756	2,928	69%	0.58	68.5	0.423	0.846	0.576	0.733	0.846	**15.4%**	**26.5%**
77	1991	C	16,033	10,990	5,046	62%	0.27	60.8	0.099	0.978	0.330	0.504	0.553	**44.7%**	8,685	5,204	2,298	0.73	0.38	65.7	0.305	0.815	0.486	0.610	0.729	**27.1%**	9,058	4,117	2,438	72%	0.61	69.4	0.461	0.834	0.604	0.744	0.862	**13.8%**	**27.7%**
78	1992	C	11,730	9,899	3,437	67%	0.29	61.2	0.116	0.938	0.342	0.514	0.570	**43.0%**	8,050	4,131	2,061	0.74	0.39	66	0.318	0.774	0.496	0.603	0.729	**27.1%**	10,268	4,722	2,890	69%	0.58	69	0.444	0.853	0.592	0.745	0.858	**14.2%**	**27.5%**
79																																						Average:	**32.96%**

80 Formulas Sacramento River Fall Run Smolt Survival

Row	April	May	June
82	C8 ='Study 467 Flow Data'!G7	R8 ='Study 467 Flow Data'!H7	AG8 ='Study 467 Flow Data'!I7 (HIDDEN)
83	D8 ='Study 467 Flow Data'!Q7 (HIDDEN)	S8 ='Study 467 Flow Data'!R7 (HIDDEN)	AH8 ='Study 467 Flow Data'!S7 (HIDDEN)
84	E8 ='Study 467 Flow Data'!AA7 (HIDDEN)	T8 ='Study 467 Flow Data'!AB7 (HIDDEN)	AI8 ='Study 513 Flow Revised Data'!AC7
85	F8 =(D8+E8)	U8 =(S8+T8)	AJ8 =(AH8+AI8)
86	G8 =0.374*C8-950	V8 =0.374*R8-950	AK8 =0.374*AG8-950
87	H8 =IF(C8>25000,(0.133*C8+829)/(C8-G8),(0.293*C8+2090)/(C8-G8))	W8 =IF(R8>25000,(0.133*R8+829)/(R8-V8),(0.293*R8+2090)/(R8-V8))	AL8 =IF(AG8>25000,(0.133*AG8+829)/(AG8-AK8),(0.293*AG8+2090)/(AG8-AK8))
88	I8 =(0.133*C8+829)/(C8-G8)	X8 =(0.84*(0.133*R8+829)/(R8-V8))+(0.16*W8)	AM8 =(0.27*(0.133*AG8+829)/(AG8-AK8))+(0.73*AL8)
89	K8 =IF((-2.45925+(0.0420748*J8))<0,0,(-2.45925+(0.0420748*J8)))	Z8 =(-2.45925+(0.0420748*Y8))	AO8 =(-2.45925+(0.0420748*AN8))
90	L8 =(-0.5916024)+(0.017968*J8)+(0.0000434*F8)	AA8 =(-0.5916024)+(0.017968*Y8)+(0.0000434*U8)	AP8 =IF(((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8))>1,1,((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8)))
91	M8 =-1.613493+(0.0319584*J8)	AB8 =-1.613493+(0.0319584*Y8)	AQ8 =-1.613493+(0.0319584*AN8)
92	N8 =(L8*I8)+(M8*(1-I8))	AC8 =(AA8*X8)+(AB8*(1-X8))	AR8 =(AP8*AM8)+(AQ8*(1-AM8))
93	O8 =K8+N8-(K8*N8)	AD8 =Z8+AC8-(Z8*AC8)	AS8 =AO8+AR8-(AO8*AR8)
94	P8 =1-O8	AE8 =1-AD8	AT8 =1-AS8

Study 469 Sacramento River Fall Run Smolt Survival Model

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

APRIL

Row	Year	Water Year Type	Sac River Flows	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123
8	1922	A	22,816	8,378	7,583	58%	0.25	58.5	0.002	0.823	0.256	0.400	0.401	**59.9%**
9	1923	B	22,724	7,926	7,549	58%	0.25	58.3	0.000	0.800	0.250	0.389	0.389	**61.1%**
10	1924	C	8,072	2,790	2,069	74%	0.32	61.5	0.128	0.635	0.352	0.442	0.513	**48.7%**
11	1925	D	22,651	6,950	7,521	58%	0.25	59.1	0.027	0.772	0.275	0.401	0.418	**58.2%**
12	1926	D	21,513	6,672	7,096	58%	0.26	61.6	0.133	0.805	0.355	0.470	0.540	**46.0%**
13	1927	W	48,222	8,084	17,085	23%	0.23	56.8	0.000	0.780	0.202	0.336	0.336	**66.4%**
14	1928	A	29,212	7,362	9,975	25%	0.25	58.7	0.011	0.783	0.262	0.390	0.396	**60.4%**
15	1929	C	8,536	2,473	2,242	73%	0.31	56.3	0.000	0.527	0.186	0.292	0.292	**70.8%**
16	1930	D	12,640	3,912	3,777	65%	0.28	59.6	0.048	0.649	0.291	0.393	0.422	**57.8%**
17	1931	C	9,199	2,968	2,490	71%	0.31	62.8	0.183	0.666	0.393	0.477	0.573	**42.7%**
18	1932	D	13,081	5,373	3,942	65%	0.28	58.9	0.019	0.700	0.269	0.390	0.402	**59.8%**
19	1933	C	12,734	4,124	3,813	65%	0.28	60.1	0.069	0.667	0.307	0.409	0.450	**55.0%**
20	1934	C	12,849	3,578	3,856	65%	0.28	63.6	0.217	0.706	0.419	0.500	0.608	**39.2%**
21	1935	B	24,199	8,634	8,100	57%	0.25	58.9	0.019	0.841	0.269	0.413	0.424	**57.6%**
22	1936	B	21,281	8,370	7,009	58%	0.26	59.7	0.053	0.844	0.294	0.435	0.465	**53.5%**
23	1937	B	23,507	8,005	7,842	57%	0.25	58.8	0.015	0.812	0.266	0.404	0.412	**58.8%**
24	1938	W	47,172	8,411	16,692	23%	0.23	56.3	0.000	0.785	0.186	0.325	0.325	**67.5%**
25	1939	D	12,230	4,146	3,624	66%	0.29	63.3	0.204	0.726	0.409	0.500	0.602	**39.8%**
26	1940	A	41,731	8,278	14,657	24%	0.24	57.4	0.000	0.799	0.221	0.357	0.357	**64.3%**
27	1941	W	42,372	9,308	14,897	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
28	1942	W	43,308	8,918	15,247	23%	0.23	56.5	0.000	0.811	0.192	0.337	0.337	**66.3%**
29	1943	W	29,406	9,458	10,048	24%	0.24	58.8	0.015	0.875	0.266	0.415	0.424	**57.6%**
30	1944	D	9,823	4,244	2,724	70%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	**63.0%**
31	1945	B	11,753	6,258	3,446	67%	0.29	60.6	0.090	0.769	0.323	0.452	0.501	**49.9%**
32	1946	B	12,226	5,960	3,623	66%	0.29	60.7	0.095	0.758	0.326	0.449	0.502	**49.8%**
33	1947	D	13,800	4,910	4,211	64%	0.28	62.5	0.170	0.744	0.384	0.484	0.572	**42.8%**
34	1948	B	23,043	6,820	7,668	58%	0.25	56.6	0.000	0.721	0.195	0.329	0.329	**67.1%**
35	1949	D	13,210	5,088	3,991	65%	0.28	61.7	0.137	0.738	0.358	0.465	0.538	**46.2%**
36	1950	B	19,276	6,250	6,259	59%	0.26	61.3	0.120	0.781	0.346	0.459	0.524	**47.6%**
37	1951	A	14,778	6,370	4,577	63%	0.27	59.9	0.061	0.761	0.301	0.427	0.462	**53.8%**
38	1952	W	56,648	8,766	20,236	23%	0.23	55.5	0.000	0.786	0.160	0.304	0.304	**69.6%**
39	1953	W	16,177	5,650	5,100	62%	0.27	58.8	0.015	0.710	0.266	0.385	0.394	**60.6%**
40	1954	A	39,868	7,362	13,961	24%	0.24	58.4	0.000	0.777	0.253	0.377	0.377	**62.3%**
41	1955	D	9,473	3,672	2,593	71%	0.30	56.4	0.000	0.581	0.189	0.308	0.308	**69.2%**
42	1956	W	20,437	7,982	6,693	59%	0.26	59.7	0.053	0.828	0.294	0.432	0.462	**53.8%**
43	1957	A	21,193	6,438	6,976	58%	0.26	60.5	0.086	0.775	0.320	0.437	0.485	**51.5%**
44	1958	W	52,284	9,662	18,604	23%	0.23	57.4	0.000	0.859	0.221	0.368	0.368	**63.2%**
45	1959	B	10,494	3,788	2,975	69%	0.30	63	0.191	0.705	0.400	0.490	0.588	**41.2%**
46	1960	D	13,548	4,031	4,117	64%	0.28	59.5	0.044	0.652	0.288	0.390	0.417	**58.3%**
47	1961	D	12,785	3,541	3,832	65%	0.28	60.1	0.069	0.642	0.307	0.402	0.443	**55.7%**
48	1962	B	15,418	5,586	4,816	62%	0.27	61.8	0.141	0.761	0.362	0.470	0.545	**45.5%**
49	1963	W	69,458	8,084	25,027	23%	0.23	53.7	0.000	0.724	0.103	0.243	0.243	**75.7%**
50	1964	D	8,953	3,512	2,398	72%	0.31	59.3	0.036	0.626	0.282	0.388	0.410	**59.0%**
51	1965	W	45,179	8,540	15,947	23%	0.23	56.9	0.000	0.801	0.205	0.344	0.344	**65.6%**
52	1966	B	12,803	4,976	3,838	65%	0.28	61.9	0.145	0.737	0.365	0.470	0.547	**45.3%**
53	1967	W	39,925	9,549	13,982	24%	0.24	53.8	0.000	0.790	0.106	0.268	0.268	**73.2%**
54	1968	B	15,621	5,248	4,892	62%	0.27	61.5	0.128	0.741	0.352	0.457	0.527	**47.3%**
55	1969	W	44,787	7,506	15,800	23%	0.23	56.4	0.000	0.748	0.189	0.320	0.320	**68.0%**
56	1970	W	16,604	6,600	5,260	61%	0.27	58.8	0.015	0.751	0.266	0.396	0.405	**59.5%**
57	1971	W	21,954	6,596	7,261	58%	0.26	58.7	0.011	0.749	0.262	0.387	0.393	**60.7%**
58	1972	B	12,452	4,698	3,707	66%	0.28	58.5	0.002	0.663	0.256	0.372	0.373	**62.7%**
59	1973	A	19,512	7,442	6,347	59%	0.26	61.3	0.120	0.833	0.346	0.472	0.536	**46.4%**
60	1974	W	33,208	9,320	11,470	24%	0.24	56.8	0.000	0.833	0.202	0.354	0.354	**64.6%**
61	1975	W	25,763	8,766	8,685	25%	0.25	56.8	0.000	0.809	0.202	0.353	0.353	**64.7%**
62	1976	C	9,434	3,002	2,578	71%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
63	1977	C	9,148	2,996	2,471	71%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	**36.3%**
64	1978	A	38,698	7,518	13,523	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
65	1979	B	17,702	6,852	5,671	60%	0.26	59.8	0.057	0.780	0.298	0.425	0.458	**54.2%**
66	1980	A	19,818	6,946	6,462	59%	0.26	57.1	0.000	0.736	0.211	0.347	0.347	**65.3%**
67	1981	D	16,998	5,450	5,407	61%	0.27	61.5	0.128	0.750	0.352	0.458	0.528	**47.2%**
68	1982	W	75,838	9,173	27,413	23%	0.23	54.1	0.000	0.779	0.115	0.265	0.265	**73.5%**
69	1983	W	68,301	6,963	24,595	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
70	1984	W	17,869	6,844	5,733	60%	0.26	59.7	0.053	0.778	0.294	0.422	0.453	**54.7%**
71	1985	D	13,328	4,250	4,035	65%	0.28	60.8	0.099	0.685	0.330	0.429	0.486	**51.4%**
72	1986	W	20,778	7,553	6,821	59%	0.26	60.4	0.082	0.821	0.317	0.447	0.492	**50.8%**
73	1987	D	12,368	3,494	3,676	66%	0.28	65.7	0.305	0.741	0.486	0.559	0.693	**30.7%**
74	1988	C	8,620	2,850	2,274	73%	0.31	59.9	0.061	0.608	0.301	0.397	0.433	**56.7%**
75	1989	D	23,637	5,650	7,890	57%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	**48.0%**
76	1990	C	12,441	3,534	3,703	66%	0.28	61.6	0.133	0.669	0.355	0.444	0.518	**48.2%**
77	1991	C	15,284	4,249	4,766	62%	0.27	60.8	0.099	0.685	0.330	0.426	0.483	**51.7%**
78	1992	C	12,474	3,732	3,715	66%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	**49.9%**

MAY

Row	Year	Sac River Flows	CVP + SWP Exports	Calculated Steamboat & Sutter Slough Q	Percent	X-channel Closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123
8	1922	46,533	8,696	16,453	0.23	0.23	61.2	0.116	0.885	0.342	0.469	0.531	**46.9%**
9	1923	14,217	6,242	4,367	0.64	0.33	62.4	0.166	0.801	0.381	0.521	0.600	**40.0%**
10	1924	8,353	851	2,174	0.73	0.38	69.2	0.452	0.689	0.598	0.633	0.799	**20.1%**
11	1925	12,068	5,054	3,563	0.66	0.35	63.2	0.200	0.763	0.406	0.530	0.624	**37.6%**
12	1926	13,594	4,880	4,134	0.64	0.34	65.7	0.305	0.801	0.486	0.592	0.717	**28.3%**
13	1927	26,781	8,322	9,066	0.25	0.25	62.6	0.175	0.894	0.387	0.513	0.598	**40.2%**
14	1928	20,657	6,376	6,776	0.59	0.31	66.6	0.343	0.882	0.515	0.629	0.756	**24.4%**
15	1929	9,842	3,106	2,731	0.70	0.36	66.1	0.322	0.731	0.499	0.583	0.718	**28.2%**
16	1930	12,030	3,548	3,549	0.66	0.35	63.1	0.196	0.696	0.403	0.505	0.602	**39.8%**
17	1931	10,085	3,209	2,822	0.69	0.36	70.5	0.507	0.814	0.640	0.703	0.854	**14.6%**
18	1932	12,015	4,834	3,544	0.66	0.35	65.5	0.297	0.795	0.480	0.589	0.711	**28.9%**
19	1933	7,967	2,929	2,030	0.75	0.39	63.7	0.221	0.680	0.422	0.522	0.628	**37.2%**
20	1934	8,879	3,012	2,371	0.72	0.37	68.3	0.414	0.766	0.569	0.643	0.791	**20.9%**
21	1935	28,890	5,720	9,855	0.25	0.25	64	0.234	0.807	0.432	0.524	0.635	**36.5%**
22	1936	14,094	6,314	4,321	0.64	0.33	64.9	0.271	0.849	0.461	0.590	0.701	**29.9%**
23	1937	16,191	6,750	5,105	0.62	0.32	64.5	0.255	0.860	0.448	0.582	0.688	**31.2%**
24	1938	57,429	9,439	20,528	0.23	0.23	62.5	0.170	0.941	0.384	0.512	0.595	**40.5%**
25	1939	8,576	3,476	2,257	0.73	0.38	68	0.402	0.781	0.560	0.643	0.787	**21.3%**
26	1940	18,267	6,258	5,882	0.60	0.32	65.6	0.301	0.859	0.483	0.602	0.722	**27.8%**
27	1941	39,485	9,718	13,817	0.24	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**
28	1942	36,037	8,696	12,528	0.24	0.24	60.1	0.069	0.866	0.307	0.441	0.480	**52.0%**
29	1943	21,072	8,342	6,931	0.58	0.31	65.4	0.292	0.946	0.477	0.622	0.732	**26.8%**
30	1944	8,907	3,740	2,381	0.72	0.37	65.9	0.313	0.755	0.493	0.591	0.719	**28.1%**
31	1945	13,218	5,240	3,994	0.65	0.34	63.1	0.196	0.770	0.403	0.527	0.620	**38.0%**
32	1946	13,701	5,274	4,174	0.64	0.34	63.9	0.229	0.785	0.429	0.549	0.652	**34.8%**
33	1947	8,857	3,470	2,363	0.72	0.38	68.7	0.431	0.793	0.582	0.661	0.807	**19.3%**
34	1948	28,843	7,676	9,837	0.25	0.25	62.3	0.162	0.861	0.378	0.496	0.578	**42.2%**
35	1949	14,912	4,760	4,627	0.63	0.33	65.2	0.284	0.786	0.470	0.575	0.695	**30.5%**
36	1950	13,818	5,272	4,218	0.64	0.34	64.3	0.246	0.793	0.441	0.559	0.668	**33.2%**
37	1951	18,827	7,128	6,091	0.60	0.32	64.4	0.250	0.875	0.445	0.580	0.685	**31.5%**
38	1952	59,563	9,712	21,327	0.23	0.23	61.7	0.137	0.939	0.358	0.491	0.561	**43.9%**
39	1953	26,868	7,676	9,099	0.25	0.25	60.9	0.103	0.836	0.333	0.457	0.513	**48.7%**
40	1954	25,396	7,425	8,548	0.25	0.25	65.9	0.313	0.915	0.493	0.598	0.724	**27.6%**
41	1955	11,273	3,954	3,266	0.67	0.35	66.9	0.356	0.782	0.525	0.615	0.752	**24.8%**
42	1956	39,005	8,734	13,638	0.24	0.24	61.4	0.124	0.891	0.349	0.477	0.542	**45.8%**
43	1957	16,822	5,964	5,341	0.61	0.32	64	0.234	0.817	0.432	0.556	0.660	**34.0%**
44	1958	43,486	10,682	15,314	0.23	0.23	62.9	0.187	1.002	0.397	0.539	0.625	**37.5%**
45	1959	9,424	3,688	2,575	0.71	0.37	65.9	0.313	0.753	0.493	0.588	0.717	**28.3%**
46	1960	10,915	3,356	3,132	0.68	0.35	65.9	0.313	0.738	0.493	0.580	0.711	**28.9%**
47	1961	9,232	3,000	2,503	0.71	0.37	64.3	0.246	0.694	0.441	0.535	0.650	**35.0%**
48	1962	14,739	5,324	4,562	0.63	0.33	64.8	0.267	0.804	0.457	0.572	0.686	**31.4%**
49	1963	29,094	8,322	9,931	0.25	0.25	62.5	0.170	0.893	0.384	0.509	0.592	**40.8%**
50	1964	10,299	3,746	2,902	0.69	0.36	65.2	0.284	0.742	0.470	0.568	0.691	**30.9%**
51	1965	24,460	7,748	8,198	0.57	0.30	63.6	0.217	0.887	0.419	0.560	0.656	**34.4%**
52	1966	14,928	4,772	4,633	0.63	0.33	67.3	0.372	0.825	0.537	0.632	0.769	**23.1%**
53	1967	44,790	10,044	15,801	0.23	0.23	62.1	0.154	0.960	0.371	0.509	0.584	**41.6%**
54	1968	9,379	3,654	2,558	0.71	0.37	66.1	0.322	0.755	0.499	0.593	0.724	**27.6%**
55	1969	45,533	9,004	16,079	0.23	0.23	63.2	0.200	0.935	0.406	0.530	0.624	**37.6%**
56	1970	12,155	5,916	3,596	0.66	0.35	68.6	0.427	0.898	0.579	0.689	0.822	**17.8%**
57	1971	29,401	7,676	10,046	0.24	0.24	61	0.107	0.838	0.336	0.459	0.517	**48.3%**
58	1972	10,802	3,884	3,090	0.68	0.36	67.3	0.372	0.786	0.537	0.626	0.765	**23.5%**
59	1973	15,751	6,510	4,941	0.62	0.33	66.9	0.356	0.893	0.525	0.645	0.771	**22.9%**
60	1974	26,945	8,696	9,127	0.25	0.25	63.4	0.208	0.925	0.413	0.540	0.635	**36.5%**
61	1975	28,542	8,696	9,725	0.25	0.25	63.8	0.225	0.932	0.425	0.550	0.651	**34.9%**
62	1976	10,074	3,136	2,818	0.69	0.36	69.6	0.469	0.795	0.611	0.678	0.829	**17.1%**
63	1977	6,994	728	1,666	0.78	0.40	64	0.234	0.590	0.432	0.495	0.613	**38.7%**
64	1978	21,056	8,206	6,925	0.58	0.31	63	0.191	0.897	0.400	0.553	0.639	**36.1%**
65	1979	12,566	6,000	3,750	0.65	0.34	63.8	0.225	0.815	0.425	0.559	0.658	**34.2%**
66	1980	14,777	7,473	4,577	0.63	0.33	63.6	0.217	0.875	0.419	0.570	0.663	**33.7%**
67	1981	8,752	3,504	2,323	0.72	0.38	66.7	0.347	0.759	0.518	0.609	0.745	**25.5%**
68	1982	38,429	10,706	13,422	0.24	0.24	61.1	0.112	0.971	0.339	0.489	0.546	**45.4%**
69	1983	54,514	7,539	19,438	0.23	0.23	60.1	0.069	0.815	0.307	0.424	0.464	**53.6%**
70	1984	13,412	6,132	4,066	0.64	0.34	66.5	0.339	0.869	0.512	0.633	0.757	**24.3%**
71	1985	13,144	4,242	3,966	0.65	0.34	65.8	0.309	0.775	0.489	0.586	0.714	**28.6%**
72	1986	13,127	8,129	3,959	0.65	0.34	66.2	0.326	0.951	0.502	0.654	0.767	**23.3%**
73	1987	8,452	2,838	2,211	0.73	0.38	70.5	0.507	0.798	0.640	0.700	0.852	**14.8%**
74	1988	9,766	3,066	2,702	0.70	0.37	65.8	0.309	0.724	0.489	0.575	0.706	**29.4%**
75	1989	14,331	3,936	4,410	0.63	0.33	64.7	0.263	0.742	0.454	0.550	0.668	**33.2%**
76	1990	7,684	2,744	1,924	0.75	0.39	66.4	0.335	0.721	0.509	0.591	0.728	**27.2%**
77	1991	8,690	2,948	2,300	0.73	0.38	65.7	0.305	0.717	0.486	0.573	0.703	**29.7%**
78	1992	8,983	3,008	2,410	0.72	0.37	66	0.318	0.725	0.496	0.581	0.714	**28.6%**

JUNE

Row	Year	Sac River Flow	CVP + SWP exports	Caculated Steamboat & Sutter Slough Q	percent	X-channel closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123	Weighted Total Survival
8	1922	34,719	11,272	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**45.5%**
9	1923	18,142	7,614	5,835	60%	0.51	65.3	0.288	0.912	0.473	0.697	0.785	**21.5%**	**40.2%**
10	1924	10,222	999	2,873	69%	0.59	70.6	0.511	0.720	0.643	0.688	0.848	**15.2%**	**24.1%**
11	1925	16,259	6,317	5,131	62%	0.52	68.3	0.414	0.910	0.569	0.747	0.852	**14.8%**	**37.0%**
12	1926	15,230	6,077	4,746	62%	0.53	71.2	0.536	0.951	0.662	0.815	0.914	**8.6%**	**27.8%**
13	1927	18,893	8,345	6,116	60%	0.51	68.1	0.406	0.994	0.563	0.781	0.870	**13.0%**	**39.8%**
14	1928	13,766	5,685	4,198	64%	0.54	69.7	0.473	0.907	0.614	0.773	0.881	**11.9%**	**28.3%**
15	1929	10,987	3,121	3,159	68%	0.57	70.1	0.490	0.803	0.627	0.728	0.861	**13.9%**	**32.9%**
16	1930	18,122	6,954	5,828	60%	0.51	69.6	0.469	0.961	0.611	0.789	0.888	**11.2%**	**37.7%**
17	1931	12,717	3,543	3,806	65%	0.55	70.7	0.515	0.833	0.646	0.749	0.878	**12.2%**	**19.0%**
18	1932	19,291	7,654	6,265	59%	0.50	69.5	0.465	0.989	0.608	0.800	0.893	**10.7%**	**30.9%**
19	1933	11,108	2,212	3,204	68%	0.57	69.8	0.478	0.759	0.617	0.698	0.842	**15.8%**	**36.4%**
20	1934	14,515	5,348	4,479	63%	0.54	70.7	0.515	0.911	0.646	0.788	0.897	**10.3%**	**22.1%**
21	1935	17,873	7,826	5,735	60%	0.51	71	0.528	1.000	0.656	0.832	0.921	**7.9%**	**34.9%**
22	1936	19,053	7,956	6,176	60%	0.51	69.2	0.452	0.997	0.598	0.800	0.890	**11.0%**	**30.5%**
23	1937	18,142	7,654	5,835	60%	0.51	69.7	0.473	0.993	0.614	0.807	0.899	**10.1%**	**32.1%**
24	1938	35,517	11,272	12,333	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**41.6%**
25	1939	18,580	7,392	5,999	60%	0.51	71	0.528	1.000	0.656	0.831	0.920	**8.0%**	**22.1%**
26	1940	15,339	7,177	4,787	62%	0.53	71.5	0.549	1.000	0.672	0.845	0.930	**7.0%**	**30.3%**
27	1941	20,808	10,898	6,832	59%	0.50	69	0.444	1.000	0.592	0.795	0.886	**11.4%**	**41.6%**
28	1942	27,117	11,272	9,192	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**48.8%**
29	1943	16,854	7,742	5,353	61%	0.52	66.6	0.343	0.941	0.515	0.736	0.826	**17.4%**	**30.3%**
30	1944	18,211	7,343	5,861	60%	0.51	67.8	0.393	0.945	0.553	0.753	0.850	**15.0%**	**31.7%**
31	1945	16,669	7,174	5,284	61%	0.52	70.6	0.511	0.988	0.643	0.822	0.913	**8.7%**	**34.8%**
32	1946	16,283	6,968	5,140	62%	0.52	68.1	0.406	0.934	0.563	0.757	0.856	**14.4%**	**33.7%**
33	1947	18,825	7,257	6,091	60%	0.51	70	0.486	0.981	0.624	0.805	0.900	**10.0%**	**21.6%**
34	1948	23,258	9,127	7,748	57%	0.49	69	0.444	1.000	0.592	0.791	0.884	**11.6%**	**41.0%**
35	1949	17,091	6,793	5,442	61%	0.52	70.9	0.524	0.977	0.652	0.820	0.914	**8.6%**	**29.2%**
36	1950	20,291	8,131	6,639	59%	0.50	68.9	0.440	0.999	0.588	0.794	0.884	**11.6%**	**31.8%**
37	1951	17,641	7,425	5,648	61%	0.51	70.3	0.499	0.994	0.633	0.818	0.909	**9.1%**	**31.2%**
38	1952	38,968	11,272	13,624	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**45.7%**
39	1953	25,885	10,381	8,731	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**46.5%**
40	1954	14,239	6,027	4,375	63%	0.54	68.7	0.431	0.904	0.582	0.755	0.861	**13.9%**	**31.0%**
41	1955	18,101	7,076	5,820	60%	0.51	70.1	0.490	0.975	0.627	0.805	0.900	**10.0%**	**29.7%**
42	1956	22,306	11,272	7,392	58%	0.49	68.7	0.431	1.000	0.582	0.787	0.879	**12.1%**	**41.1%**
43	1957	19,113	7,963	6,198	60%	0.51	72	0.570	1.000	0.688	0.845	0.934	**6.6%**	**32.1%**
44	1958	33,938	11,272	11,743	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**38.9%**
45	1959	17,916	7,183	5,751	60%	0.51	72.1	0.574	1.000	0.691	0.849	0.936	**6.4%**	**26.5%**
46	1960	18,219	7,055	5,864	60%	0.51	72.7	0.600	1.000	0.710	0.858	0.943	**5.7%**	**29.7%**
47	1961	19,790	7,550	6,451	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**33.2%**
48	1962	17,152	6,822	5,465	61%	0.52	70.4	0.503	0.969	0.636	0.808	0.905	**9.5%**	**29.8%**
49	1963	19,560	8,620	6,365	59%	0.50	69	0.444	1.000	0.592	0.797	0.887	**11.3%**	**41.4%**
50	1964	18,019	7,015	5,789	60%	0.51	69.5	0.465	0.962	0.608	0.789	0.887	**11.3%**	**32.2%**
51	1965	18,160	8,311	5,842	60%	0.51	67.1	0.364	0.975	0.531	0.757	0.846	**15.4%**	**36.3%**
52	1966	15,565	6,238	4,871	62%	0.53	70.4	0.503	0.944	0.636	0.799	0.900	**10.0%**	**24.5%**
53	1967	39,345	11,272	13,765	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**43.9%**
54	1968	17,390	7,030	5,554	61%	0.51	72	0.570	1.000	0.688	0.848	0.935	**6.5%**	**27.1%**
55	1969	24,130	11,243	8,075	57%	0.48	68.3	0.414	1.000	0.569	0.778	0.870	**13.0%**	**38.4%**
56	1970	15,514	6,804	4,852	62%	0.53	70.7	0.515	0.974	0.646	0.819	0.912	**8.8%**	**23.3%**
57	1971	23,634	9,634	7,889	57%	0.49	68.1	0.406	1.000	0.563	0.775	0.867	**13.3%**	**44.1%**
58	1972	17,121	6,806	5,453	61%	0.52	70.7	0.515	0.974	0.646	0.815	0.911	**8.9%**	**27.5%**
59	1973	19,428	8,044	6,316	59%	0.50	70.1	0.490	1.000	0.627	0.815	0.906	**9.4%**	**24.5%**
60	1974	21,622	9,529	7,137	58%	0.49	69.7	0.473	1.000	0.614	0.805	0.897	**10.3%**	**36.5%**
61	1975	24,787	11,272	8,320	57%	0.48	69.1	0.448	1.000	0.595	0.790	0.884	**11.6%**	**35.7%**
62	1976	19,366	7,396	6,293	59%	0.50	71.8	0.562	1.000	0.681	0.842	0.931	**6.9%**	**22.9%**
63	1977	9,579	422	2,633	70%	0.60	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**	**32.9%**
64	1978	16,475	8,504	5,212	61%	0.52	70	0.486	1.000	0.624	0.820	0.907	**9.3%**	**36.4%**
65	1979	19,425	8,049	6,315	59%	0.50	69.2	0.452	1.000	0.598	0.800	0.891	**10.9%**	**33.4%**
66	1980	16,268	8,670	5,134	62%	0.52	66.9	0.356	0.987	0.525	0.766	0.849	**15.1%**	**35.7%**
67	1981	18,074	7,188	5,810	60%	0.51	71.9	0.566	1.000	0.684	0.846	0.933	**6.7%**	**25.8%**
68	1982	24,415	11,272	8,181	57%	0.48	66	0.318	1.000	0.496	0.740	0.822	**17.8%**	**45.2%**
69	1983	55,568	9,285	19,832	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**53.7%**
70	1984	18,436	7,751	5,945	60%	0.51	68.4	0.419	0.974	0.572	0.777	0.870	**13.0%**	**27.4%**
71	1985	16,635	6,522	5,271	61%	0.52	69.4	0.461	0.938	0.604	0.778	0.880	**12.0%**	**29.5%**
72	1986	12,785	7,816	3,832	65%	0.55	71.6	0.553	1.000	0.675	0.854	0.935	**6.5%**	**24.9%**
73	1987	20,311	7,740	6,646	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**15.8%**
74	1988	14,853	5,784	4,605	63%	0.53	69.4	0.461	0.906	0.604	0.765	0.873	**12.7%**	**31.0%**
75	1989	16,869	6,555	5,359	61%	0.52	68.6	0.427	0.925	0.579	0.758	0.862	**13.8%**	**32.2%**
76	1990	19,632	7,439	6,392	59%	0.50	68.5	0.423	0.962	0.576	0.770	0.867	**13.3%**	**28.3%**
77	1991	10,619	3,116	3,022	68%	0.58	69.4	0.461	0.791	0.604	0.712	0.845	**15.5%**	**30.9%**
78	1992	14,033	5,157	4,298	64%	0.54	69	0.444	0.872	0.592	0.743	0.857	**14.3%**	**29.6%**
													Average:	**33.01%**

Formulas   Sacramento River Fall Run Smolt Survival

C8 ='Study 467 Flow Data'!G7
D8 ='Study 467 Flow Data'!Q7 (HIDDEN)
E8 ='Study 467 Flow Data'!AA7 (HIDDEN)
F8 =(D8+E8)
G8 =0.374*C8-950
H8 =IF(C8>25000,(0.133*C8+829)/(C8-G8),(0.293*C8+2090)/(C8-G8))
I8 =(0.133*C8+829)/(C8-G8)
K8 =IF((-2.45925+(0.0420748*J8))<0,0,(-2.45925+(0.0420748*J8)))
L8 =(-0.5916024)+(0.017968*J8)+(0.0000434*F8)
M8 =-1.613493+(0.0319584*J8)
N8 =(L8*I8)+(M8*(1-I8))
O8 =K8+N8-(K8*N8)
P8 =1-O8

R8 ='Study 467 Flow Data'!H7
S8 ='Study 467 Flow Data'!R7 (HIDDEN)
T8 ='Study 467 Flow Data'!AB7 (HIDDEN)
U8 =(S8+T8)
V8 =0.374*R8-950
W8 =IF(R8>25000,(0.133*R8+829)/(R8-V8),(0.293*R8+2090)/(R8-V8))
X8 =(0.84*(0.133*R8+829)/(R8-V8))+(0.16*W8)
Z8 =(-2.45925+(0.0420748*Y8))
AA8 =(-0.5916024)+(0.017968*Y8)+(0.0000434*U8)
AB8 =-1.613493+(0.0319584*Y8)
AC8 =(AA8*X8)+(AB8*(1-X8))
AD8 =Z8+AC8-(Z8*AC8)
AE8 =1-AD8

AG8 ='Study 467 Flow Data'!I7 (HIDDEN)
AH8 ='Study 467 Flow Data'!S7 (HIDDEN)
AI8 ='Study 513 Flow Revised Data'!AC7
AJ8 =(AH8+AI8)
AK8 =0.374*AG8-950
AL8 =IF(AG8>25000,(0.133*AG8+829)/(AG8-AK8),(0.293*AG8+2090)/(AG8-AK8))
AM8 =(0.27*(0.133*AG8+829)/(AG8-AK8))+(0.73*AL8)
AO8 =(-2.45925+(0.0420748*AN8))
AP8 =IF(((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8))>1,1,((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8)))
AQ8 =-1.613493+(0.0319584*AN8)
AR8 =(AP8*AM8)+(AQ8*(1-AM8))
AS8 =AO8+AR8-(AO8*AR8)
AT8 =1-AS8

1 Study 501 Sacramento River Fall Run Smolt Survival Model — Cross Channel closed over 25,000 cfs

2 Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

3 Sacramento River temperatures based on limited historical data from USBR

APRIL

Row	A Year	B Water Year Type	C Sac River Flows	F CVP + SWP exports	G Calculated Sutter & Steamboat Slough Q	H Percent	I X-Channel Closed	J observed temp f	K m1	L m2	M m3	N m23	O m123	P Calculated Survival s123
8	1922	A	22,816	8,378	7,583	58%	0.25	58.5	0.002	0.823	0.256	0.400	0.401	**59.9%**
9	1923	B	22,855	7,946	7,598	58%	0.25	58.3	0.000	0.801	0.250	0.389	0.389	**61.1%**
10	1924	C	8,068	2,790	2,067	74%	0.32	61.5	0.128	0.635	0.352	0.442	0.513	**48.7%**
11	1925	D	22,651	6,950	7,521	58%	0.25	59.1	0.027	0.772	0.275	0.401	0.418	**58.2%**
12	1926	D	20,890	6,570	6,863	59%	0.26	61.6	0.133	0.800	0.355	0.470	0.540	**46.0%**
13	1927	W	48,222	8,084	17,085	23%	0.23	56.8	0.000	0.780	0.202	0.336	0.336	**66.4%**
14	1928	A	29,212	7,362	9,975	25%	0.25	58.7	0.011	0.783	0.262	0.390	0.396	**60.4%**
15	1929	C	9,029	2,952	2,427	72%	0.31	56.3	0.000	0.548	0.186	0.297	0.297	**70.3%**
16	1930	D	12,640	3,912	3,777	65%	0.28	59.6	0.048	0.649	0.291	0.393	0.422	**57.8%**
17	1931	C	9,200	2,968	2,491	71%	0.31	62.8	0.183	0.666	0.393	0.477	0.573	**42.7%**
18	1932	D	13,080	5,375	3,942	65%	0.28	58.9	0.019	0.700	0.269	0.390	0.402	**59.8%**
19	1933	C	12,736	4,123	3,813	65%	0.28	60.1	0.069	0.667	0.307	0.409	0.450	**55.0%**
20	1934	C	12,848	3,578	3,855	65%	0.28	63.6	0.217	0.706	0.419	0.500	0.608	**39.2%**
21	1935	B	24,635	8,636	8,263	57%	0.25	58.9	0.019	0.842	0.269	0.412	0.424	**57.6%**
22	1936	B	21,031	8,332	6,916	58%	0.26	59.7	0.053	0.843	0.294	0.435	0.465	**53.5%**
23	1937	B	23,257	7,963	7,748	57%	0.25	58.8	0.015	0.811	0.266	0.403	0.412	**58.8%**
24	1938	W	47,172	7,725	16,692	23%	0.23	56.3	0.000	0.755	0.186	0.318	0.318	**68.2%**
25	1939	D	12,231	4,146	3,624	66%	0.29	63.3	0.204	0.726	0.409	0.500	0.602	**39.8%**
26	1940	A	41,731	8,282	14,657	24%	0.24	57.4	0.000	0.799	0.221	0.357	0.357	**64.3%**
27	1941	W	42,372	9,308	14,897	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
28	1942	W	43,308	8,918	15,247	23%	0.23	56.5	0.000	0.811	0.192	0.337	0.337	**66.3%**
29	1943	W	29,406	9,138	10,048	24%	0.24	58.8	0.015	0.862	0.266	0.412	0.420	**58.0%**
30	1944	D	9,823	4,248	2,724	70%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	**63.0%**
31	1945	B	11,753	6,264	3,446	67%	0.29	60.6	0.090	0.769	0.323	0.452	0.501	**49.9%**
32	1946	B	12,226	5,960	3,623	66%	0.29	60.7	0.095	0.758	0.326	0.449	0.502	**49.8%**
33	1947	D	13,800	4,910	4,211	64%	0.28	62.5	0.170	0.744	0.384	0.484	0.572	**42.8%**
34	1948	B	23,043	6,822	7,668	58%	0.25	56.6	0.000	0.721	0.195	0.329	0.329	**67.1%**
35	1949	D	13,210	5,088	3,991	65%	0.28	61.7	0.137	0.738	0.358	0.465	0.538	**46.2%**
36	1950	B	19,026	6,208	6,166	60%	0.26	61.3	0.120	0.779	0.346	0.459	0.524	**47.6%**
37	1951	A	14,837	6,380	4,599	63%	0.27	59.9	0.061	0.762	0.301	0.427	0.462	**53.8%**
38	1952	W	56,648	7,846	20,236	23%	0.23	55.5	0.000	0.746	0.160	0.295	0.295	**70.5%**
39	1953	W	16,177	5,650	5,100	62%	0.27	58.8	0.015	0.710	0.266	0.385	0.394	**60.6%**
40	1954	A	39,868	7,362	13,961	24%	0.24	58.4	0.000	0.777	0.253	0.377	0.377	**62.3%**
41	1955	D	9,473	3,672	2,593	71%	0.30	56.4	0.000	0.581	0.189	0.308	0.308	**69.2%**
42	1956	W	20,437	7,982	6,693	59%	0.26	59.7	0.053	0.828	0.294	0.432	0.462	**53.8%**
43	1957	A	21,241	6,446	6,994	58%	0.26	60.5	0.086	0.775	0.320	0.437	0.485	**51.5%**
44	1958	W	52,284	9,516	18,604	23%	0.23	57.4	0.000	0.853	0.221	0.367	0.367	**63.3%**
45	1959	B	10,494	3,788	2,975	69%	0.30	63	0.191	0.705	0.400	0.490	0.588	**41.2%**
46	1960	D	13,518	4,025	4,106	64%	0.28	59.5	0.044	0.652	0.288	0.390	0.417	**58.3%**
47	1961	D	12,794	3,542	3,835	65%	0.28	60.1	0.069	0.642	0.307	0.402	0.443	**55.7%**
48	1962	B	15,427	5,596	4,820	62%	0.27	61.8	0.141	0.762	0.362	0.470	0.545	**45.5%**
49	1963	W	69,458	8,084	25,027	23%	0.23	53.7	0.000	0.724	0.103	0.243	0.243	**75.7%**
50	1964	D	8,953	3,512	2,398	72%	0.31	59.3	0.036	0.626	0.282	0.388	0.410	**59.0%**
51	1965	W	44,152	8,539	15,563	23%	0.23	56.9	0.000	0.801	0.205	0.345	0.345	**65.5%**
52	1966	B	12,803	4,976	3,838	65%	0.28	61.9	0.145	0.737	0.365	0.470	0.547	**45.3%**
53	1967	W	39,925	8,907	13,982	24%	0.24	53.8	0.000	0.762	0.106	0.261	0.261	**73.9%**
54	1968	B	15,608	5,246	4,887	62%	0.27	61.5	0.128	0.741	0.352	0.457	0.527	**47.3%**
55	1969	W	44,787	7,504	15,800	23%	0.23	56.4	0.000	0.747	0.189	0.320	0.320	**68.0%**
56	1970	W	16,601	6,598	5,259	61%	0.27	58.8	0.015	0.751	0.266	0.396	0.405	**59.5%**
57	1971	W	21,907	6,588	7,243	58%	0.26	58.7	0.011	0.749	0.262	0.387	0.393	**60.7%**
58	1972	B	12,452	4,698	3,707	66%	0.28	58.5	0.002	0.663	0.256	0.372	0.373	**62.7%**
59	1973	A	19,512	7,444	6,347	59%	0.26	61.3	0.120	0.833	0.346	0.472	0.536	**46.4%**
60	1974	W	33,208	9,320	11,470	24%	0.24	56.8	0.000	0.833	0.202	0.354	0.354	**64.6%**
61	1975	W	25,763	8,768	8,685	25%	0.25	56.8	0.000	0.810	0.202	0.353	0.353	**64.7%**
62	1976	C	9,434	3,001	2,578	71%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
63	1977	C	9,145	2,996	2,470	71%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	**36.3%**
64	1978	A	38,698	7,517	13,523	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
65	1979	B	17,702	6,852	5,671	60%	0.26	59.8	0.057	0.780	0.298	0.425	0.458	**54.2%**
66	1980	A	19,818	6,902	6,462	59%	0.26	57.1	0.000	0.734	0.211	0.347	0.347	**65.3%**
67	1981	D	16,998	5,450	5,407	61%	0.27	61.5	0.128	0.750	0.352	0.458	0.528	**47.2%**
68	1982	W	75,838	8,944	27,413	23%	0.23	54.1	0.000	0.769	0.115	0.263	0.263	**73.7%**
69	1983	W	68,301	6,963	24,595	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
70	1984	W	17,880	6,846	5,737	60%	0.26	59.7	0.053	0.778	0.294	0.422	0.453	**54.7%**
71	1985	D	13,328	4,250	4,035	65%	0.28	60.8	0.099	0.685	0.330	0.429	0.486	**51.4%**
72	1986	W	20,528	7,510	6,727	59%	0.26	60.4	0.082	0.820	0.317	0.446	0.492	**50.8%**
73	1987	D	12,400	3,499	3,688	66%	0.28	65.7	0.305	0.741	0.486	0.559	0.693	**30.7%**
74	1988	C	8,630	2,852	2,278	73%	0.31	59.9	0.061	0.608	0.301	0.397	0.433	**56.7%**
75	1989	D	23,637	5,650	7,890	57%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	**48.0%**
76	1990	C	12,441	3,534	3,703	66%	0.28	61.6	0.133	0.669	0.355	0.444	0.518	**48.2%**
77	1991	C	15,284	4,248	4,766	62%	0.27	60.8	0.099	0.685	0.330	0.426	0.483	**51.7%**
78	1992	C	12,473	3,732	3,715	66%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	**49.9%**

MAY

Row	Year	R Sac River Flows	U CVP + SWP Exports	V Calculated Steamboat & Sutter Slough Q	W Percent	X X-channel Closed	Y USBR observed temp f	Z m1	AA m2	AB m3	AC m23	AD m123	AE Calculated Survival s123
8	1922	46,457	8,696	16,425	0.23	0.23	61.2	0.116	0.885	0.342	0.469	0.531	**46.9%**
9	1923	14,357	6,268	4,420	0.63	0.33	62.4	0.166	0.802	0.381	0.521	0.600	**40.0%**
10	1924	8,568	1,065	2,254	0.73	0.38	69.2	0.452	0.698	0.598	0.636	0.801	**19.9%**
11	1925	12,068	5,054	3,563	0.66	0.35	63.2	0.200	0.763	0.406	0.530	0.624	**37.6%**
12	1926	13,708	4,902	4,177	0.64	0.34	65.7	0.305	0.802	0.486	0.592	0.717	**28.3%**
13	1927	26,781	8,322	9,066	0.25	0.25	62.6	0.175	0.894	0.387	0.513	0.598	**40.2%**
14	1928	20,682	6,380	6,785	0.59	0.31	66.6	0.343	0.882	0.515	0.629	0.756	**24.4%**
15	1929	9,698	2,943	2,677	0.70	0.37	66.1	0.322	0.724	0.499	0.581	0.716	**28.4%**
16	1930	12,030	3,548	3,549	0.66	0.35	63.1	0.196	0.696	0.403	0.505	0.602	**39.8%**
17	1931	10,086	3,208	2,822	0.69	0.36	70.5	0.507	0.814	0.640	0.703	0.854	**14.6%**
18	1932	12,016	4,835	3,544	0.66	0.35	65.5	0.297	0.795	0.480	0.589	0.711	**28.9%**
19	1933	7,455	2,415	1,838	0.76	0.39	63.7	0.221	0.658	0.422	0.515	0.622	**37.8%**
20	1934	8,879	3,012	2,371	0.72	0.37	68.3	0.414	0.766	0.569	0.643	0.791	**20.9%**
21	1935	28,616	5,452	9,752	0.25	0.25	64	0.234	0.795	0.432	0.521	0.633	**36.7%**
22	1936	14,094	6,314	4,321	0.64	0.33	64.9	0.271	0.849	0.461	0.590	0.701	**29.9%**
23	1937	16,203	6,764	5,110	0.62	0.32	64.5	0.255	0.861	0.448	0.582	0.688	**31.2%**
24	1938	57,429	9,433	20,528	0.23	0.23	62.5	0.170	0.941	0.384	0.512	0.595	**40.5%**
25	1939	8,577	3,476	2,258	0.73	0.38	68	0.402	0.781	0.560	0.643	0.787	**21.3%**
26	1940	18,285	6,239	5,889	0.60	0.32	65.6	0.301	0.858	0.483	0.602	0.722	**27.8%**
27	1941	39,485	9,718	13,817	0.24	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**
28	1942	36,037	8,696	12,528	0.24	0.24	60.1	0.069	0.866	0.307	0.441	0.480	**52.0%**
29	1943	20,336	7,678	6,656	0.59	0.31	65.4	0.292	0.917	0.477	0.614	0.727	**27.3%**
30	1944	8,907	3,740	2,381	0.72	0.37	65.9	0.313	0.755	0.493	0.591	0.719	**28.1%**
31	1945	12,623	5,132	3,771	0.65	0.34	63.1	0.196	0.765	0.403	0.527	0.620	**38.0%**
32	1946	13,701	5,274	4,174	0.64	0.34	63.9	0.229	0.785	0.429	0.549	0.652	**34.8%**
33	1947	8,862	3,472	2,364	0.72	0.37	68.7	0.431	0.793	0.582	0.661	0.807	**19.3%**
34	1948	27,770	7,676	9,436	0.25	0.25	62.3	0.162	0.861	0.378	0.497	0.578	**42.2%**
35	1949	14,912	4,760	4,627	0.63	0.33	65.2	0.284	0.786	0.470	0.575	0.695	**30.5%**
36	1950	13,720	5,254	4,181	0.64	0.34	64.3	0.246	0.792	0.441	0.559	0.668	**33.2%**
37	1951	18,796	7,122	6,080	0.60	0.32	64.4	0.250	0.875	0.445	0.580	0.685	**31.5%**
38	1952	59,563	9,231	21,327	0.23	0.23	61.7	0.137	0.918	0.358	0.486	0.557	**44.3%**
39	1953	26,868	7,676	9,099	0.25	0.25	60.9	0.103	0.836	0.333	0.457	0.513	**48.7%**
40	1954	25,412	7,429	8,554	0.25	0.25	65.9	0.313	0.915	0.493	0.598	0.724	**27.6%**
41	1955	11,273	3,954	3,266	0.67	0.35	66.9	0.356	0.782	0.525	0.615	0.752	**24.8%**
42	1956	39,005	8,788	13,638	0.24	0.24	61.4	0.124	0.893	0.349	0.478	0.543	**45.7%**
43	1957	16,803	5,962	5,334	0.61	0.32	64	0.234	0.817	0.432	0.556	0.660	**34.0%**
44	1958	43,486	10,638	15,314	0.23	0.23	62.9	0.187	1.000	0.397	0.538	0.625	**37.5%**
45	1959	9,424	3,688	2,575	0.71	0.37	65.9	0.313	0.753	0.493	0.588	0.717	**28.3%**
46	1960	10,915	3,356	3,132	0.68	0.35	65.9	0.313	0.738	0.493	0.580	0.711	**28.9%**
47	1961	8,702	2,906	2,305	0.73	0.38	64.3	0.246	0.690	0.441	0.535	0.650	**35.0%**
48	1962	14,760	5,328	4,570	0.63	0.33	64.8	0.267	0.804	0.457	0.572	0.686	**31.4%**
49	1963	29,094	8,322	9,931	0.25	0.25	62.5	0.170	0.893	0.384	0.509	0.592	**40.8%**
50	1964	11,043	3,880	3,180	0.68	0.35	65.2	0.284	0.748	0.470	0.569	0.691	**30.9%**
51	1965	24,751	7,851	8,307	0.57	0.30	63.6	0.217	0.892	0.419	0.562	0.657	**34.3%**
52	1966	14,928	4,772	4,633	0.63	0.33	67.3	0.372	0.825	0.537	0.632	0.769	**23.1%**
53	1967	44,790	9,436	15,801	0.23	0.23	62.1	0.154	0.934	0.371	0.503	0.579	**42.1%**
54	1968	9,379	3,654	2,558	0.71	0.37	66.1	0.322	0.755	0.499	0.593	0.724	**27.6%**
55	1969	45,533	9,002	16,079	0.23	0.23	63.2	0.200	0.935	0.406	0.530	0.624	**37.6%**
56	1970	12,155	5,916	3,596	0.66	0.35	68.6	0.427	0.898	0.579	0.689	0.822	**17.8%**
57	1971	29,495	7,676	10,081	0.24	0.24	61	0.107	0.838	0.336	0.459	0.517	**48.3%**
58	1972	10,806	3,884	3,091	0.68	0.36	67.3	0.372	0.786	0.537	0.626	0.765	**23.5%**
59	1973	15,751	6,510	4,941	0.62	0.33	66.9	0.356	0.893	0.525	0.645	0.771	**22.9%**
60	1974	26,945	8,696	9,127	0.25	0.25	63.4	0.208	0.925	0.413	0.540	0.635	**36.5%**
61	1975	28,542	8,696	9,725	0.25	0.25	63.8	0.225	0.932	0.425	0.550	0.651	**34.9%**
62	1976	10,086	3,140	2,822	0.69	0.36	69.6	0.469	0.795	0.611	0.678	0.829	**17.1%**
63	1977	6,994	729	1,666	0.78	0.40	64	0.234	0.590	0.432	0.495	0.613	**38.7%**
64	1978	21,056	8,205	6,925	0.58	0.31	63	0.191	0.896	0.400	0.553	0.639	**36.1%**
65	1979	12,566	6,000	3,750	0.65	0.34	63.8	0.225	0.815	0.425	0.559	0.658	**34.2%**
66	1980	14,777	7,472	4,577	0.63	0.33	63.6	0.217	0.875	0.419	0.570	0.663	**33.7%**
67	1981	8,752	3,504	2,323	0.72	0.38	66.7	0.347	0.759	0.518	0.609	0.745	**25.5%**
68	1982	38,429	10,704	13,422	0.24	0.24	61.1	0.112	0.971	0.339	0.489	0.546	**45.4%**
69	1983	54,514	7,539	19,438	0.23	0.23	60.1	0.069	0.815	0.307	0.424	0.464	**53.6%**
70	1984	13,407	6,132	4,064	0.64	0.34	66.5	0.339	0.869	0.512	0.633	0.757	**24.3%**
71	1985	13,145	4,242	3,966	0.65	0.34	65.8	0.309	0.775	0.489	0.586	0.714	**28.6%**
72	1986	13,127	8,127	3,959	0.65	0.34	66.2	0.326	0.951	0.502	0.654	0.767	**23.3%**
73	1987	8,453	2,838	2,211	0.73	0.38	70.5	0.507	0.798	0.640	0.700	0.852	**14.8%**
74	1988	9,777	3,068	2,707	0.70	0.37	65.8	0.309	0.724	0.489	0.575	0.706	**29.4%**
75	1989	14,311	3,932	4,402	0.63	0.33	64.7	0.263	0.742	0.454	0.550	0.668	**33.2%**
76	1990	7,683	2,744	1,923	0.75	0.39	66.4	0.335	0.721	0.509	0.591	0.728	**27.2%**
77	1991	8,690	2,947	2,300	0.73	0.38	65.7	0.305	0.717	0.486	0.573	0.703	**29.7%**
78	1992	8,982	3,007	2,409	0.72	0.37	66	0.318	0.725	0.496	0.581	0.714	**28.6%**

JUNE

Row	Year	AG Sac River Flow	AJ CVP + SWP exports	AK Caculated Steamboat & Sutter Slough Q	AL percent	AM X-channel closed	AN USBR observed temp f	AO m1	AP m2	AQ m3	AR m23	AS m123	AT Calculated Survival s123	AV Weighted Total Survival
8	1922	34,719	11,272	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**45.5%**
9	1923	18,141	7,616	5,835	60%	0.51	65.3	0.288	0.912	0.473	0.697	0.785	**21.5%**	**40.2%**
10	1924	10,428	1,200	2,950	69%	0.58	70.6	0.511	0.729	0.643	0.693	0.850	**15.0%**	**23.9%**
11	1925	16,078	6,140	5,063	62%	0.52	68.3	0.414	0.902	0.569	0.743	0.850	**15.0%**	**37.1%**
12	1926	15,231	6,078	4,746	62%	0.53	71.2	0.536	0.952	0.662	0.815	0.914	**8.6%**	**27.8%**
13	1927	18,893	8,345	6,116	60%	0.51	68.1	0.406	0.994	0.563	0.781	0.870	**13.0%**	**39.8%**
14	1928	13,778	5,692	4,203	64%	0.54	69.7	0.473	0.908	0.614	0.773	0.881	**11.9%**	**28.3%**
15	1929	10,902	3,039	3,127	68%	0.58	70.1	0.490	0.800	0.627	0.726	0.860	**14.0%**	**32.9%**
16	1930	18,118	6,953	5,826	60%	0.51	69.6	0.469	0.961	0.611	0.789	0.888	**11.2%**	**37.7%**
17	1931	13,071	3,895	3,939	65%	0.55	70.7	0.515	0.848	0.646	0.757	0.882	**11.8%**	**18.9%**
18	1932	19,360	7,724	6,291	59%	0.50	69.5	0.465	0.992	0.608	0.802	0.894	**10.6%**	**30.9%**
19	1933	10,390	1,490	2,936	69%	0.58	69.8	0.478	0.727	0.617	0.681	0.834	**16.6%**	**36.9%**
20	1934	14,250	5,083	4,380	63%	0.54	70.7	0.515	0.899	0.646	0.782	0.894	**10.6%**	**22.1%**
21	1935	17,593	7,556	5,630	61%	0.51	71	0.528	1.000	0.656	0.832	0.921	**7.9%**	**35.1%**
22	1936	19,055	7,956	6,177	60%	0.51	69.2	0.452	0.997	0.598	0.800	0.890	**11.0%**	**30.5%**
23	1937	18,158	7,658	5,841	60%	0.51	69.7	0.473	0.993	0.614	0.807	0.899	**10.1%**	**32.1%**
24	1938	35,517	11,272	12,333	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**41.7%**
25	1939	18,577	7,393	5,998	60%	0.51	71	0.528	1.000	0.656	0.831	0.920	**8.0%**	**22.1%**
26	1940	15,339	7,176	4,787	62%	0.53	71.5	0.549	1.000	0.672	0.845	0.930	**7.0%**	**30.3%**
27	1941	20,808	10,897	6,832	59%	0.50	69	0.444	1.000	0.592	0.795	0.886	**11.4%**	**41.6%**
28	1942	27,117	11,272	9,192	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**48.8%**
29	1943	16,854	7,742	5,353	61%	0.52	66.6	0.343	0.941	0.515	0.736	0.826	**17.4%**	**30.8%**
30	1944	18,223	7,348	5,865	60%	0.51	67.8	0.393	0.946	0.553	0.753	0.850	**15.0%**	**31.7%**
31	1945	16,672	7,179	5,285	61%	0.52	70.6	0.511	0.989	0.643	0.822	0.913	**8.7%**	**34.8%**
32	1946	16,283	6,968	5,140	62%	0.52	68.1	0.406	0.934	0.563	0.757	0.856	**14.4%**	**33.7%**
33	1947	18,832	7,262	6,093	60%	0.51	70	0.486	0.981	0.624	0.805	0.900	**10.0%**	**21.6%**
34	1948	22,883	8,996	7,608	58%	0.49	69	0.444	1.000	0.592	0.791	0.884	**11.6%**	**40.9%**
35	1949	17,089	6,793	5,441	61%	0.52	70.9	0.524	0.977	0.652	0.820	0.914	**8.6%**	**29.2%**
36	1950	20,282	8,129	6,635	59%	0.50	68.9	0.440	0.999	0.588	0.794	0.884	**11.6%**	**31.8%**
37	1951	17,641	7,425	5,648	61%	0.51	70.3	0.499	0.994	0.633	0.818	0.909	**9.1%**	**31.2%**
38	1952	38,968	11,272	13,624	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**46.1%**
39	1953	25,885	10,381	8,731	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**46.5%**
40	1954	14,229	6,027	4,372	63%	0.54	68.7	0.431	0.904	0.582	0.755	0.861	**13.9%**	**31.0%**
41	1955	18,110	7,076	5,823	60%	0.51	70.1	0.490	0.975	0.627	0.805	0.900	**10.0%**	**29.7%**
42	1956	22,306	11,272	7,392	58%	0.49	68.7	0.431	1.000	0.582	0.787	0.879	**12.1%**	**41.1%**
43	1957	19,107	7,961	6,196	60%	0.51	72	0.570	1.000	0.688	0.845	0.934	**6.6%**	**32.1%**
44	1958	33,938	11,272	11,743	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**38.9%**
45	1959	17,914	7,186	5,750	60%	0.51	72.1	0.574	1.000	0.691	0.849	0.936	**6.4%**	**26.5%**
46	1960	18,213	7,055	5,862	60%	0.51	72.7	0.600	1.000	0.710	0.858	0.943	**5.7%**	**29.7%**
47	1961	20,160	7,680	6,590	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**33.2%**
48	1962	17,162	6,826	5,469	61%	0.52	70.4	0.503	0.970	0.636	0.808	0.905	**9.5%**	**29.8%**
49	1963	19,569	8,623	6,369	59%	0.50	69	0.444	1.000	0.592	0.797	0.887	**11.3%**	**41.4%**
50	1964	17,627	6,874	5,642	61%	0.51	69.5	0.465	0.956	0.608	0.786	0.886	**11.4%**	**32.2%**
51	1965	18,160	8,311	5,842	60%	0.51	67.1	0.364	0.975	0.531	0.757	0.846	**15.4%**	**36.2%**
52	1966	15,590	6,252	4,881	62%	0.53	70.4	0.503	0.945	0.636	0.799	0.900	**10.0%**	**24.5%**
53	1967	39,345	11,272	13,765	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**44.3%**
54	1968	17,387	7,030	5,553	61%	0.51	72	0.570	1.000	0.688	0.848	0.935	**6.5%**	**27.1%**
55	1969	24,130	11,243	8,075	57%	0.48	68.3	0.414	1.000	0.569	0.778	0.870	**13.0%**	**38.4%**
56	1970	15,514	6,804	4,852	62%	0.53	70.7	0.515	0.974	0.646	0.819	0.912	**8.8%**	**23.3%**
57	1971	23,634	9,634	7,889	57%	0.49	68.1	0.406	1.000	0.563	0.775	0.867	**13.3%**	**44.1%**
58	1972	17,121	6,807	5,453	61%	0.52	70.7	0.515	0.974	0.646	0.815	0.911	**8.9%**	**27.5%**
59	1973	19,427	8,047	6,316	59%	0.50	70.1	0.490	1.000	0.627	0.815	0.906	**9.4%**	**24.5%**
60	1974	21,622	9,529	7,137	58%	0.49	69.7	0.473	1.000	0.614	0.805	0.897	**10.3%**	**36.5%**
61	1975	24,787	11,272	8,320	57%	0.48	69.1	0.448	1.000	0.595	0.790	0.884	**11.6%**	**35.7%**
62	1976	19,414	7,417	6,311	59%	0.50	71.8	0.562	1.000	0.681	0.842	0.931	**6.9%**	**22.9%**
63	1977	9,572	423	2,630	71%	0.60	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**	**32.9%**
64	1978	16,476	8,504	5,212	61%	0.52	70	0.486	1.000	0.624	0.820	0.907	**9.3%**	**36.4%**
65	1979	19,425	8,049	6,315	59%	0.50	69.2	0.452	1.000	0.598	0.800	0.891	**10.9%**	**33.4%**
66	1980	16,270	8,669	5,135	62%	0.52	66.9	0.356	0.987	0.525	0.766	0.849	**15.1%**	**35.7%**
67	1981	18,070	7,187	5,808	60%	0.51	71.9	0.566	1.000	0.684	0.846	0.933	**6.7%**	**25.8%**
68	1982	24,415	11,272	8,181	57%	0.48	66	0.318	1.000	0.496	0.740	0.822	**17.8%**	**45.2%**
69	1983	55,568	9,285	19,832	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**53.7%**
70	1984	18,436	7,751	5,945	60%	0.51	68.4	0.419	0.974	0.572	0.777	0.870	**13.0%**	**27.4%**
71	1985	16,649	6,530	5,277	61%	0.52	69.4	0.461	0.939	0.604	0.778	0.880	**12.0%**	**29.5%**
72	1986	13,270	7,986	4,013	65%	0.55	71.6	0.553	1.000	0.675	0.853	0.934	**6.6%**	**25.0%**
73	1987	20,310	7,740	6,646	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**15.8%**
74	1988	14,550	5,537	4,492	63%	0.54	69.4	0.461	0.896	0.604	0.760	0.871	**12.9%**	**31.0%**
75	1989	16,872	6,557	5,360	61%	0.52	68.6	0.427	0.926	0.579	0.758	0.862	**13.8%**	**32.2%**
76	1990	19,658	7,450	6,402	59%	0.50	68.5	0.423	0.963	0.576	0.770	0.867	**13.3%**	**28.3%**
77	1991	10,572	3,066	3,004	69%	0.58	69.4	0.461	0.788	0.604	0.711	0.844	**15.6%**	**30.9%**
78	1992	13,938	5,064	4,263	64%	0.54	69	0.444	0.868	0.592	0.741	0.856	**14.4%**	**29.6%**
79													**Average:**	**33.04%**

80 Formulas — Sacramento River Fall Run Smolt Survival

```
C8 ='Study 467 Flow Data'!G7
D8 ='Study 467 Flow Data'!Q7          (HIDDEN)
E8 ='Study 467 Flow Data'!AA7         (HIDDEN)
F8 =(D8+E8)
G8 =0.374*C8-950
H8 =IF(C8>25000,(0.133*C8+829)/(C8-G8),(0.293*C8+2090)/(C8-G8))
I8 =(0.133*C8+829)/(C8-G8)
K8 =IF((-2.45925+(0.0420748*J8))<0,0,(-2.45925+(0.0420748*J8)))
L8 =(-0.5916024)+(0.017968*J8)+(0.0000434*F8)
M8 =-1.613493+(0.0319584*J8)
N8 =(L8*I8)+(M8*(1-I8))
O8 =K8+N8-(K8*N8)
P8 =1-O8

R8 ='Study 467 Flow Data'!H7
S8 ='Study 467 Flow Data'!R7          (HIDDEN)
T8 ='Study 467 Flow Data'!AB7         (HIDDEN)
U8 =(S8+T8)
V8 =0.374*R8-950
W8 =IF(R8>25000,(0.133*R8+829)/(R8-V8),(0.293*R8+2090)/(R8-V8))
X8 =(0.84*(0.133*R8+829)/(R8-V8))+(0.16*W8)
Z8 =(-2.45925+(0.0420748*Y8))
AA8 =(-0.5916024)+(0.017968*Y8)+(0.0000434*U8)
AB8 =-1.613493+(0.0319584*Y8)
AC8 =(AA8*X8)+(AB8*(1-X8))
AD8 =Z8+AC8-(Z8*AC8)
AE8 =1-AD8

AG8 ='Study 467 Flow Data'!I7         (HIDDEN)
AH8 ='Study 467 Flow Data'!S7         (HIDDEN)
AI8 ='Study 513 Flow Revised Data'!AC7
AJ8 =(AH8+AI8)
AK8 =0.374*AG8-950
AL8 =IF(AG8>25000,(0.133*AG8+829)/(AG8-AK8),(0.293*AG8+2090)/(AG8-AK8))
AM8 =(0.27*(0.133*AG8+829)/(AG8-AK8))+(0.73*AL8)
AO8 =(-2.45925+(0.0420748*AN8))
AP8 =IF(((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8))>1,1,((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8)))
AQ8 =-1.613493+(0.0319584*AN8)
AR8 =(AP8*AM8)+(AQ8*(1-AM8))
AS8 =AO8+AR8-(AO8*AR8)
AT8 =1-AS8
```

1 Study 501A Sacramento River Fall Run Smolt Survival Model — Cross Channel closed over 25,000 cfs

2 Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

3 Sacramento River temperatures based on limited historical data from USBR

APRIL

Row	Year	Water Year Type	Sac River Flows	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	observed temp f	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
8	1922	A	22,816	6,726	7,583	58%	0.25	58.5	0.002	0.751	0.256	0.382	0.383	**61.7%**
9	1923	B	23,682	6,658	7,907	57%	0.25	58.3	0.000	0.745	0.250	0.375	0.375	**62.5%**
10	1924	C	7,771	2,480	1,956	75%	0.32	61.5	0.128	0.621	0.352	0.438	0.510	**49.0%**
11	1925	D	20,329	5,506	6,653	59%	0.26	59.1	0.027	0.709	0.275	0.387	0.404	**59.6%**
12	1926	D	17,495	5,038	5,593	61%	0.27	61.6	0.133	0.734	0.355	0.456	0.528	**47.2%**
13	1927	W	48,222	6,660	17,085	23%	0.23	56.8	0.000	0.718	0.202	0.322	0.322	**67.8%**
14	1928	A	29,212	6,300	9,975	25%	0.25	58.7	0.011	0.737	0.262	0.379	0.385	**61.5%**
15	1929	C	8,767	2,636	2,329	72%	0.31	56.3	0.000	0.534	0.186	0.294	0.294	**70.6%**
16	1930	D	12,640	3,422	3,777	65%	0.28	59.6	0.048	0.628	0.291	0.387	0.416	**58.4%**
17	1931	C	8,888	2,656	2,374	72%	0.31	62.8	0.183	0.652	0.393	0.473	0.570	**43.0%**
18	1932	D	11,748	3,954	3,444	67%	0.29	58.9	0.019	0.638	0.269	0.375	0.387	**61.3%**
19	1933	C	11,902	3,291	3,501	66%	0.29	60.1	0.069	0.631	0.307	0.400	0.442	**55.8%**
20	1934	C	12,536	3,266	3,738	66%	0.28	63.6	0.217	0.693	0.419	0.497	0.606	**39.4%**
21	1935	B	24,635	6,936	8,263	57%	0.25	58.9	0.019	0.768	0.269	0.394	0.405	**59.5%**
22	1936	B	21,031	6,622	6,916	58%	0.26	59.7	0.053	0.768	0.294	0.416	0.447	**55.3%**
23	1937	B	23,007	7,354	7,655	58%	0.25	58.8	0.015	0.784	0.266	0.397	0.406	**59.4%**
24	1938	W	47,172	7,719	16,692	23%	0.23	56.3	0.000	0.755	0.186	0.318	0.318	**68.2%**
25	1939	D	11,336	3,256	3,290	67%	0.29	63.3	0.204	0.687	0.409	0.490	0.594	**40.6%**
26	1940	A	41,731	6,758	14,657	24%	0.24	57.4	0.000	0.733	0.221	0.342	0.342	**65.8%**
27	1941	W	42,372	7,926	14,897	24%	0.24	56.9	0.000	0.775	0.205	0.339	0.339	**66.1%**
28	1942	W	43,308	7,078	15,247	23%	0.23	56.5	0.000	0.731	0.192	0.319	0.319	**68.1%**
29	1943	W	29,406	7,348	10,048	24%	0.24	58.8	0.015	0.784	0.266	0.393	0.401	**59.9%**
30	1944	D	9,823	3,566	2,724	70%	0.30	58.4	0.000	0.612	0.253	0.361	0.361	**63.9%**
31	1945	B	11,753	4,720	3,446	67%	0.29	60.6	0.090	0.702	0.323	0.432	0.484	**51.6%**
32	1946	B	12,226	4,536	3,623	66%	0.29	60.7	0.095	0.696	0.326	0.432	0.486	**51.4%**
33	1947	D	13,800	3,932	4,211	64%	0.28	62.5	0.170	0.702	0.384	0.472	0.562	**43.8%**
34	1948	B	22,793	5,718	7,575	58%	0.25	56.6	0.000	0.674	0.195	0.317	0.317	**68.3%**
35	1949	D	13,210	4,026	3,991	65%	0.28	61.7	0.137	0.692	0.358	0.452	0.527	**47.3%**
36	1950	B	18,776	5,104	6,072	60%	0.26	61.3	0.120	0.731	0.346	0.447	0.513	**48.7%**
37	1951	A	14,732	4,938	4,560	63%	0.27	59.9	0.061	0.699	0.301	0.410	0.446	**55.4%**
38	1952	W	56,648	7,836	20,236	23%	0.23	55.5	0.000	0.746	0.160	0.295	0.295	**70.5%**
39	1953	W	16,177	4,586	5,100	62%	0.27	58.8	0.015	0.664	0.266	0.373	0.382	**61.8%**
40	1954	A	39,868	6,300	13,961	24%	0.24	58.4	0.000	0.731	0.253	0.366	0.366	**63.4%**
41	1955	D	9,473	2,976	2,593	71%	0.30	56.4	0.000	0.551	0.189	0.299	0.299	**70.1%**
42	1956	W	20,437	6,330	6,693	59%	0.26	59.7	0.053	0.756	0.294	0.414	0.444	**55.6%**
43	1957	A	19,965	5,176	6,517	59%	0.26	60.5	0.086	0.720	0.320	0.424	0.473	**52.7%**
44	1958	W	52,284	9,212	18,604	23%	0.23	57.4	0.000	0.840	0.221	0.364	0.364	**63.6%**
45	1959	B	9,656	2,954	2,661	70%	0.30	63	0.191	0.669	0.400	0.481	0.580	**42.0%**
46	1960	D	13,089	3,466	3,945	65%	0.28	59.5	0.044	0.628	0.288	0.384	0.411	**58.9%**
47	1961	D	12,482	3,230	3,718	66%	0.28	60.1	0.069	0.628	0.307	0.398	0.440	**56.0%**
48	1962	B	14,128	4,260	4,334	64%	0.28	61.8	0.141	0.704	0.362	0.456	0.533	**46.7%**
49	1963	W	69,458	6,660	25,027	23%	0.23	53.7	0.000	0.662	0.103	0.229	0.229	**77.1%**
50	1964	D	8,953	2,814	2,398	72%	0.31	59.3	0.036	0.596	0.282	0.379	0.401	**59.9%**
51	1965	W	43,590	6,888	15,353	23%	0.23	56.9	0.000	0.730	0.205	0.328	0.328	**67.2%**
52	1966	B	15,486	4,352	4,842	62%	0.27	61.9	0.145	0.709	0.365	0.458	0.537	**46.3%**
53	1967	W	39,925	8,479	13,982	24%	0.24	53.8	0.000	0.743	0.106	0.257	0.257	**74.3%**
54	1968	B	14,410	4,072	4,439	63%	0.28	61.5	0.128	0.690	0.352	0.445	0.516	**48.4%**
55	1969	W	44,787	7,504	15,800	23%	0.23	56.4	0.000	0.747	0.189	0.320	0.320	**68.0%**
56	1970	W	14,906	4,898	4,625	63%	0.27	58.8	0.015	0.677	0.266	0.378	0.387	**61.3%**
57	1971	W	20,753	5,336	6,812	59%	0.26	58.7	0.011	0.695	0.262	0.374	0.380	**62.0%**
58	1972	B	12,452	3,720	3,707	66%	0.28	58.5	0.002	0.621	0.256	0.360	0.361	**63.9%**
59	1973	A	19,512	5,932	6,347	59%	0.26	61.3	0.120	0.767	0.346	0.455	0.521	**47.9%**
60	1974	W	33,208	7,278	11,470	24%	0.24	56.8	0.000	0.745	0.202	0.333	0.333	**66.7%**
61	1975	W	25,763	7,002	8,685	25%	0.25	56.8	0.000	0.733	0.202	0.334	0.334	**66.6%**
62	1976	C	9,434	2,740	2,578	71%	0.30	58.9	0.019	0.586	0.269	0.365	0.377	**62.3%**
63	1977	C	8,829	2,682	2,352	72%	0.31	64.3	0.246	0.680	0.441	0.515	0.635	**36.5%**
64	1978	A	38,698	7,515	13,523	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
65	1979	B	17,702	5,428	5,671	60%	0.26	59.8	0.057	0.718	0.298	0.409	0.443	**55.7%**
66	1980	A	19,818	6,355	6,462	59%	0.26	57.1	0.000	0.710	0.211	0.341	0.341	**65.9%**
67	1981	D	16,998	4,474	5,407	61%	0.27	61.5	0.128	0.708	0.352	0.447	0.518	**48.2%**
68	1982	W	75,838	8,944	27,413	23%	0.23	54.1	0.000	0.769	0.115	0.263	0.263	**73.7%**
69	1983	W	68,301	6,963	24,595	23%	0.23	55	0.000	0.689	0.144	0.270	0.270	**73.0%**
70	1984	W	16,177	5,144	5,100	62%	0.27	59.7	0.053	0.704	0.294	0.405	0.436	**56.4%**
71	1985	D	12,328	3,708	3,661	66%	0.28	60.8	0.099	0.662	0.330	0.424	0.481	**51.9%**
72	1986	W	20,528	7,527	6,727	59%	0.26	60.4	0.082	0.820	0.317	0.447	0.492	**50.8%**
73	1987	D	12,291	3,199	3,647	66%	0.29	65.7	0.305	0.728	0.486	0.555	0.691	**30.9%**
74	1988	C	8,592	2,584	2,263	73%	0.31	59.9	0.061	0.597	0.301	0.393	0.430	**57.0%**
75	1989	D	23,637	5,160	7,890	57%	0.25	61.4	0.124	0.736	0.349	0.446	0.515	**48.5%**
76	1990	C	12,128	3,222	3,586	66%	0.29	61.6	0.133	0.655	0.355	0.441	0.515	**48.5%**
77	1991	C	15,284	3,748	4,766	62%	0.27	60.8	0.099	0.664	0.330	0.420	0.478	**52.2%**
78	1992	C	11,992	3,254	3,535	66%	0.29	61.2	0.116	0.649	0.342	0.430	0.496	**50.4%**

MAY

Year	Sac River Flows	CVP + SWP Exports	Calculated Steamboat & Sutter Slough Q	Percent	X-channel Closed	USBR observed temp f	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	46,457	7,260	16,425	0.23	0.23	61.2	0.116	0.823	0.342	0.455	0.518	**48.2%**
1923	14,350	5,018	4,417	0.63	0.33	62.4	0.166	0.747	0.381	0.503	0.585	**41.5%**
1924	8,602	1,101	2,267	0.73	0.38	69.2	0.452	0.700	0.598	0.636	0.801	**19.9%**
1925	10,964	3,928	3,151	0.68	0.35	63.2	0.200	0.714	0.406	0.516	0.612	**38.8%**
1926	13,343	3,980	4,040	0.64	0.34	65.7	0.305	0.762	0.486	0.579	0.708	**29.2%**
1927	26,781	7,072	9,066	0.25	0.25	62.6	0.175	0.840	0.387	0.499	0.587	**41.3%**
1928	19,358	5,214	6,290	0.59	0.31	66.6	0.343	0.831	0.515	0.614	0.747	**25.3%**
1929	9,743	2,922	2,694	0.70	0.37	66.1	0.322	0.723	0.499	0.581	0.716	**28.4%**
1930	11,748	3,278	3,444	0.67	0.35	63.1	0.196	0.684	0.403	0.501	0.599	**40.1%**
1931	9,798	2,920	2,714	0.70	0.36	70.5	0.507	0.802	0.640	0.699	0.852	**14.8%**
1932	10,870	3,690	3,115	0.68	0.36	65.5	0.297	0.745	0.480	0.574	0.700	**30.0%**
1933	7,719	2,680	1,937	0.75	0.39	63.7	0.221	0.669	0.422	0.519	0.625	**37.5%**
1934	8,592	2,725	2,263	0.73	0.38	68.3	0.414	0.754	0.569	0.639	0.789	**21.1%**
1935	28,854	5,693	9,841	0.25	0.25	64	0.234	0.805	0.432	0.524	0.635	**36.5%**
1936	18,332	5,831	5,906	0.60	0.32	64.9	0.271	0.828	0.461	0.577	0.692	**30.8%**
1937	16,055	6,617	5,055	0.62	0.33	64.5	0.255	0.855	0.448	0.580	0.687	**31.3%**
1938	57,429	9,426	20,528	0.23	0.23	62.5	0.170	0.940	0.384	0.512	0.595	**40.5%**
1939	7,914	2,786	2,010	0.75	0.39	68	0.402	0.751	0.560	0.634	0.781	**21.9%**
1940	17,747	5,802	5,687	0.60	0.32	65.6	0.301	0.839	0.483	0.596	0.718	**28.2%**
1941	39,485	8,142	13,817	0.24	0.24	61.6	0.133	0.869	0.355	0.477	0.546	**45.4%**
1942	36,037	7,260	12,528	0.24	0.24	60.1	0.069	0.803	0.307	0.426	0.466	**53.4%**
1943	20,129	6,674	6,578	0.59	0.31	65.4	0.292	0.873	0.477	0.600	0.717	**28.3%**
1944	8,907	3,030	2,381	0.72	0.37	65.9	0.313	0.724	0.493	0.579	0.711	**28.9%**
1945	11,958	4,620	3,522	0.66	0.35	63.1	0.196	0.743	0.403	0.521	0.615	**38.5%**
1946	12,557	4,130	3,746	0.65	0.34	63.9	0.229	0.736	0.429	0.534	0.641	**35.9%**
1947	8,840	2,898	2,356	0.72	0.38	68.7	0.431	0.769	0.582	0.652	0.802	**19.8%**
1948	25,715	6,492	8,667	0.25	0.25	62.3	0.162	0.810	0.378	0.485	0.569	**43.1%**
1949	14,040	3,892	4,301	0.64	0.33	65.2	0.284	0.749	0.470	0.563	0.687	**31.3%**
1950	13,720	4,328	4,181	0.64	0.34	64.3	0.246	0.752	0.441	0.546	0.658	**34.2%**
1951	18,870	5,886	6,107	0.60	0.32	64.4	0.250	0.821	0.445	0.563	0.673	**32.7%**
1952	59,563	9,225	21,327	0.23	0.23	61.7	0.137	0.917	0.358	0.486	0.557	**44.3%**
1953	26,868	6,750	9,099	0.25	0.25	60.9	0.103	0.796	0.333	0.447	0.504	**49.6%**
1954	24,040	6,254	8,041	0.57	0.30	65.9	0.313	0.864	0.493	0.605	0.729	**27.1%**
1955	10,273	3,204	2,892	0.69	0.36	66.9	0.356	0.750	0.525	0.606	0.746	**25.4%**
1956	39,005	7,306	13,638	0.24	0.24	61.4	0.124	0.829	0.349	0.463	0.529	**47.1%**
1957	17,276	5,120	5,511	0.61	0.32	64	0.234	0.781	0.432	0.544	0.650	**35.0%**
1958	43,486	9,010	15,314	0.23	0.23	62.9	0.187	0.930	0.397	0.522	0.611	**38.9%**
1959	9,424	3,118	2,575	0.71	0.37	65.9	0.313	0.728	0.493	0.579	0.711	**28.9%**
1960	10,915	3,176	3,132	0.68	0.35	65.9	0.313	0.730	0.493	0.577	0.710	**29.0%**
1961	8,780	2,728	2,334	0.72	0.38	64.3	0.246	0.682	0.441	0.532	0.647	**35.3%**
1962	13,695	4,210	4,172	0.64	0.34	64.8	0.267	0.755	0.457	0.558	0.676	**32.4%**
1963	29,094	7,072	9,931	0.25	0.25	62.5	0.170	0.838	0.384	0.495	0.581	**41.9%**
1964	11,043	3,310	3,180	0.68	0.35	65.2	0.284	0.724	0.470	0.560	0.685	**31.5%**
1965	24,009	7,260	8,029	0.57	0.30	63.6	0.217	0.866	0.419	0.554	0.651	**34.9%**
1966	13,669	3,834	4,162	0.64	0.34	67.3	0.372	0.784	0.537	0.620	0.762	**23.8%**
1967	44,790	9,428	15,801	0.23	0.23	62.1	0.154	0.933	0.371	0.503	0.579	**42.1%**
1968	9,379	3,084	2,558	0.71	0.37	66.1	0.322	0.730	0.499	0.584	0.718	**28.2%**
1969	45,533	9,002	16,079	0.23	0.23	63.2	0.200	0.935	0.406	0.530	0.624	**37.6%**
1970	12,155	4,668	3,596	0.66	0.35	68.6	0.427	0.844	0.579	0.670	0.811	**18.9%**
1971	30,262	6,750	10,368	0.24	0.24	61	0.107	0.797	0.336	0.449	0.508	**49.2%**
1972	10,533	3,266	2,989	0.69	0.36	67.3	0.372	0.759	0.537	0.617	0.760	**24.0%**
1973	15,751	5,262	4,941	0.62	0.33	66.9	0.356	0.839	0.525	0.627	0.760	**24.0%**
1974	26,945	7,260	9,127	0.25	0.25	63.4	0.208	0.863	0.413	0.524	0.623	**37.7%**
1975	28,542	7,260	9,725	0.25	0.25	63.8	0.225	0.870	0.425	0.535	0.639	**36.1%**
1976	9,835	2,914	2,728	0.70	0.36	69.6	0.469	0.785	0.611	0.674	0.827	**17.3%**
1977	7,024	759	1,677	0.78	0.40	64	0.234	0.591	0.432	0.496	0.614	**38.6%**
1978	21,056	8,202	6,925	0.58	0.31	63	0.191	0.896	0.400	0.553	0.639	**36.1%**
1979	12,566	4,750	3,750	0.65	0.34	63.8	0.225	0.761	0.425	0.541	0.644	**35.6%**
1980	14,777	5,870	4,577	0.63	0.33	63.6	0.217	0.806	0.419	0.547	0.645	**35.5%**
1981	8,752	2,934	2,323	0.72	0.38	66.7	0.347	0.734	0.518	0.599	0.738	**26.2%**
1982	38,429	9,491	13,422	0.24	0.24	61.1	0.112	0.918	0.339	0.477	0.535	**46.5%**
1983	54,514	7,539	19,438	0.23	0.23	60.1	0.069	0.815	0.307	0.424	0.464	**53.6%**
1984	14,993	5,168	4,657	0.63	0.33	66.5	0.339	0.828	0.512	0.616	0.746	**25.4%**
1985	12,438	3,544	3,702	0.66	0.34	65.8	0.309	0.745	0.489	0.577	0.708	**29.2%**
1986	13,127	6,174	3,959	0.65	0.34	66.2	0.326	0.866	0.502	0.626	0.748	**25.2%**
1987	8,234	2,620	2,130	0.74	0.38	70.5	0.507	0.789	0.640	0.697	0.850	**15.0%**
1988	9,469	2,834	2,591	0.71	0.37	65.8	0.309	0.714	0.489	0.572	0.704	**29.6%**
1989	13,979	3,688	4,278	0.64	0.33	64.7	0.263	0.731	0.454	0.547	0.666	**33.4%**
1990	7,418	2,480	1,824	0.76	0.39	66.4	0.335	0.709	0.509	0.588	0.726	**27.4%**
1991	8,690	2,712	2,300	0.73	0.38	65.7	0.305	0.707	0.486	0.569	0.701	**29.9%**
1992	8,690	2,717	2,300	0.73	0.38	66	0.318	0.712	0.496	0.577	0.712	**28.8%**

JUNE

Year	Sac River Flow	CVP + SWP exports	Caculated Steamboat & Sutter Slough Q	percent	X-channel closed	USBR observed temp f	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**	**Weighted Total Survival**
1922	34,719	11,272	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**46.6%**
1923	18,178	7,631	5,849	60%	0.51	65.3	0.288	0.913	0.473	0.698	0.785	**21.5%**	**41.5%**
1924	10,477	1,252	2,968	69%	0.58	70.6	0.511	0.731	0.643	0.694	0.851	**14.9%**	**24.0%**
1925	15,358	5,440	4,794	62%	0.53	68.3	0.414	0.872	0.569	0.729	0.841	**15.9%**	**38.2%**
1926	16,593	6,554	5,256	61%	0.52	71.2	0.536	0.972	0.662	0.823	0.918	**8.2%**	**28.5%**
1927	18,893	8,345	6,116	60%	0.51	68.1	0.406	0.994	0.563	0.781	0.870	**13.0%**	**40.7%**
1928	14,895	6,084	4,621	63%	0.53	69.7	0.473	0.925	0.614	0.779	0.884	**11.6%**	**29.0%**
1929	11,032	3,169	3,176	68%	0.57	70.1	0.490	0.805	0.627	0.729	0.862	**13.8%**	**33.0%**
1930	18,493	7,085	5,966	60%	0.51	69.6	0.469	0.966	0.611	0.792	0.889	**11.1%**	**38.0%**
1931	13,927	4,748	4,259	64%	0.54	70.7	0.515	0.885	0.646	0.775	0.891	**10.9%**	**18.9%**
1932	20,294	8,050	6,640	59%	0.50	69.5	0.465	1.000	0.608	0.804	0.895	**10.5%**	**31.8%**
1933	11,792	2,893	3,460	67%	0.56	69.8	0.478	0.788	0.617	0.714	0.850	**15.0%**	**36.6%**
1934	14,573	5,405	4,500	63%	0.54	70.7	0.515	0.913	0.646	0.789	0.898	**10.2%**	**22.3%**
1935	17,845	7,819	5,724	60%	0.51	71	0.528	1.000	0.656	0.832	0.921	**7.9%**	**35.3%**
1936	17,321	7,801	5,528	61%	0.52	69.2	0.452	0.990	0.598	0.800	0.891	**10.9%**	**31.4%**
1937	18,150	7,655	5,838	60%	0.51	69.7	0.473	0.993	0.614	0.807	0.899	**10.1%**	**32.3%**
1938	35,517	11,272	12,333	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**41.7%**
1939	19,390	7,677	6,302	59%	0.50	71	0.528	1.000	0.656	0.829	0.919	**8.1%**	**22.6%**
1940	15,341	7,177	4,788	62%	0.53	71.5	0.549	1.000	0.672	0.845	0.930	**7.0%**	**30.8%**
1941	20,808	10,897	6,832	59%	0.50	69	0.444	1.000	0.592	0.795	0.886	**11.4%**	**42.8%**
1942	27,117	11,272	9,192	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**50.0%**
1943	16,866	7,747	5,358	61%	0.52	66.6	0.343	0.941	0.515	0.736	0.826	**17.4%**	**31.7%**
1944	19,122	7,664	6,202	60%	0.51	67.8	0.393	0.959	0.553	0.758	0.853	**14.7%**	**32.3%**
1945	16,628	7,163	5,269	61%	0.52	70.6	0.511	0.988	0.643	0.822	0.913	**8.7%**	**35.4%**
1946	17,635	7,441	5,645	61%	0.51	68.1	0.406	0.955	0.563	0.764	0.860	**14.0%**	**34.6%**
1947	19,317	7,436	6,275	59%	0.50	70	0.486	0.989	0.624	0.808	0.901	**9.9%**	**22.1%**
1948	22,883	8,996	7,608	58%	0.49	69	0.444	1.000	0.592	0.791	0.884	**11.6%**	**41.7%**
1949	18,340	7,231	5,909	60%	0.51	70.9	0.524	0.996	0.652	0.827	0.918	**8.2%**	**29.8%**
1950	20,260	8,122	6,627	59%	0.50	68.9	0.440	0.999	0.588	0.793	0.884	**11.6%**	**32.6%**
1951	17,631	7,422	5,644	61%	0.51	70.3	0.499	0.994	0.633	0.818	0.909	**9.1%**	**32.3%**
1952	38,968	11,272	13,624	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**46.1%**
1953	25,885	10,381	8,731	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**47.3%**
1954	14,224	6,027	4,370	64%	0.54	68.7	0.431	0.904	0.582	0.755	0.861	**13.9%**	**30.9%**
1955	19,229	7,468	6,242	59%	0.50	70.1	0.490	0.992	0.627	0.811	0.904	**9.6%**	**30.2%**
1956	22,306	11,272	7,392	58%	0.49	68.7	0.431	1.000	0.582	0.787	0.879	**12.1%**	**42.2%**
1957	19,253	8,013	6,251	59%	0.50	72	0.570	1.000	0.688	0.845	0.933	**6.7%**	**32.9%**
1958	33,938	11,272	11,743	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**39.8%**
1959	18,447	7,374	5,949	60%	0.51	72.1	0.574	1.000	0.691	0.848	0.935	**6.5%**	**27.1%**
1960	18,416	7,126	5,938	60%	0.51	72.7	0.600	1.000	0.710	0.858	0.943	**5.7%**	**29.9%**
1961	20,035	7,637	6,543	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**33.4%**
1962	19,028	7,479	6,166	60%	0.51	70.4	0.503	0.998	0.636	0.819	0.910	**9.0%**	**30.6%**
1963	19,523	8,607	6,352	59%	0.50	69	0.444	1.000	0.592	0.797	0.887	**11.3%**	**42.3%**
1964	18,199	7,076	5,856	60%	0.51	69.5	0.465	0.964	0.608	0.790	0.887	**11.3%**	**32.7%**
1965	18,160	8,311	5,842	60%	0.51	67.1	0.364	0.975	0.531	0.757	0.846	**15.4%**	**36.9%**
1966	16,927	6,721	5,381	61%	0.52	70.4	0.503	0.965	0.636	0.807	0.904	**9.6%**	**25.1%**
1967	39,345	11,272	13,765	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**44.4%**
1968	17,942	7,224	5,760	60%	0.51	72	0.570	1.000	0.688	0.847	0.934	**6.6%**	**27.7%**
1969	24,130	11,243	8,075	57%	0.48	68.3	0.414	1.000	0.569	0.778	0.870	**13.0%**	**38.4%**
1970	15,595	6,832	4,883	62%	0.53	70.7	0.515	0.975	0.646	0.819	0.913	**8.7%**	**24.3%**
1971	23,634	9,634	7,889	57%	0.49	68.1	0.406	1.000	0.563	0.775	0.867	**13.3%**	**44.9%**
1972	17,803	7,048	5,708	60%	0.51	70.7	0.515	0.985	0.646	0.819	0.913	**8.7%**	**28.1%**
1973	18,797	7,830	6,080	60%	0.51	70.1	0.490	1.000	0.627	0.816	0.906	**9.4%**	**25.5%**
1974	21,622	9,529	7,137	58%	0.49	69.7	0.473	1.000	0.614	0.805	0.897	**10.3%**	**37.7%**
1975	24,787	11,272	8,320	57%	0.48	69.1	0.448	1.000	0.595	0.790	0.884	**11.6%**	**36.8%**
1976	19,477	7,443	6,334	59%	0.50	71.8	0.562	1.000	0.681	0.842	0.931	**6.9%**	**23.1%**
1977	9,567	422	2,628	71%	0.60	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**	**32.9%**
1978	16,475	8,504	5,212	61%	0.52	70	0.486	1.000	0.624	0.820	0.907	**9.3%**	**36.4%**
1979	19,413	8,046	6,310	59%	0.50	69.2	0.452	1.000	0.598	0.800	0.891	**10.9%**	**34.6%**
1980	16,270	8,669	5,135	62%	0.52	66.9	0.356	0.987	0.525	0.766	0.849	**15.1%**	**37.0%**
1981	18,602	7,373	6,007	60%	0.51	71.9	0.566	1.000	0.684	0.845	0.933	**6.7%**	**26.4%**
1982	24,415	11,272	8,181	57%	0.48	66	0.318	1.000	0.496	0.740	0.822	**17.8%**	**46.0%**
1983	55,568	9,285	19,832	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**53.7%**
1984	18,496	7,772	5,968	60%	0.51	68.4	0.419	0.975	0.572	0.777	0.870	**13.0%**	**28.4%**
1985	17,645	6,881	5,649	61%	0.51	69.4	0.461	0.954	0.604	0.784	0.883	**11.7%**	**29.9%**
1986	13,273	7,988	4,014	65%	0.55	71.6	0.553	1.000	0.675	0.853	0.934	**6.6%**	**26.2%**
1987	20,303	7,737	6,643	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**15.9%**
1988	14,662	5,514	4,534	63%	0.53	69.4	0.461	0.895	0.604	0.760	0.870	**13.0%**	**31.2%**
1989	17,231	6,680	5,494	61%	0.52	68.6	0.427	0.931	0.579	0.760	0.863	**13.7%**	**32.4%**
1990	19,655	7,449	6,401	59%	0.50	68.5	0.423	0.962	0.576	0.770	0.867	**13.3%**	**28.5%**
1991	10,927	3,453	3,137	68%	0.57	69.4	0.461	0.805	0.604	0.720	0.849	**15.1%**	**31.1%**
1992	14,190	5,316	4,357	64%	0.54	69	0.444	0.879	0.592	0.746	0.859	**14.1%**	**29.8%**
												Average:	**33.62%**

80 Formulas Sacramento River Fall Run Smolt Survival

C8 ='Study 467 Flow Data'!G7
D8 ='Study 467 Flow Data'!Q7 (HIDDEN)
E8 ='Study 467 Flow Data'!AA7 (HIDDEN)
F8 =(D8+E8)
G8 =0.374*C8-950
H8 =IF(C8>25000,(0.133*C8+829)/(C8-G8),(0.293*C8+2090)/(C8-G8))
I8 =(0.133*C8+829)/(C8-G8)
K8 =IF((-2.45925+(0.0420748*J8))<0,0,(-2.45925+(0.0420748*J8)))
L8 =(-0.5916024)+(0.017968*J8)+(0.0000434*F8)
M8 =-1.613493+(0.0319584*J8)
N8 =(L8*I8)+(M8*(1-I8))
O8 =K8+N8-(K8*N8)
P8 =1-O8

R8 ='Study 467 Flow Data'!H7
S8 ='Study 467 Flow Data'!R7 (HIDDEN)
T8 ='Study 467 Flow Data'!AB7 (HIDDEN)
U8 =(S8+T8)
V8 =0.374*R8-950
W8 =IF(R8>25000,(0.133*R8+829)/(R8-V8),(0.293*R8+2090)/(R8-V8))
X8 =(0.84*(0.133*R8+829)/(R8-V8))+(0.16*W8)
Z8 =(-2.45925+(0.0420748*Y8))
AA8 =(-0.5916024)+(0.017968*Y8)+(0.0000434*U8)
AB8 =-1.613493+(0.0319584*Y8)
AC8 =(AA8*X8)+(AB8*(1-X8))
AD8 =Z8+AC8-(Z8*AC8)
AE8 =1-AD8

AG8 ='Study 467 Flow Data'!I7 (HIDDEN)
AH8 ='Study 467 Flow Data'!S7 (HIDDEN)
AI8 ='Study 513 Flow Revised Data'!AC7
AJ8 =(AH8+AI8)
AK8 =0.374*AG8-950
AL8 =IF(AG8>25000,(0.133*AG8+829)/(AG8-AK8),(0.293*AG8+2090)/(AG8-AK8))
AM8 =(0.27*(0.133*AG8+829)/(AG8-AK8))+(0.73*AL8)
AO8 =(-2.45925+(0.0420748*AN8))
AP8 =IF(((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8))>1,1,((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8)))
AQ8 =-1.613493+(0.0319584*AN8)
AR8 =(AP8*AM8)+(AQ8*(1-AM8))
AS8 =AO8+AR8-(AO8*AR8)
AT8 =1-AS8

Study 524 Sacramento River Fall Run Smolt Survival Model

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

APRIL

Year	Water Year Type	Sac River Flows	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123
1922	A	22,816	8,378	7,583	58%	0.25	58.5	0.002	0.823	0.256	0.400	0.401	**59.9%**
1923	B	23,686	8,082	7,909	57%	0.25	58.3	0.000	0.807	0.250	0.390	0.390	**61.0%**
1924	C	8,059	2,788	2,064	74%	0.32	61.5	0.128	0.634	0.352	0.442	0.513	**48.7%**
1925	D	20,329	6,570	6,653	59%	0.26	59.1	0.027	0.755	0.275	0.399	0.416	**58.4%**
1926	D	17,750	6,058	5,689	60%	0.26	61.6	0.133	0.778	0.355	0.467	0.538	**46.2%**
1927	W	48,222	8,084	17,085	23%	0.23	56.8	0.000	0.780	0.202	0.336	0.336	**66.4%**
1928	A	29,212	7,362	9,975	25%	0.25	58.7	0.011	0.783	0.262	0.390	0.396	**60.4%**
1929	C	9,078	2,962	2,445	72%	0.31	56.3	0.000	0.549	0.186	0.297	0.297	**70.3%**
1930	D	12,640	3,912	3,777	65%	0.28	59.6	0.048	0.649	0.291	0.393	0.422	**57.8%**
1931	C	9,200	2,968	2,491	71%	0.31	62.8	0.183	0.666	0.393	0.477	0.573	**42.7%**
1932	D	13,081	5,376	3,942	65%	0.28	58.9	0.019	0.700	0.269	0.390	0.402	**59.8%**
1933	C	12,735	4,123	3,813	65%	0.28	60.1	0.069	0.667	0.307	0.409	0.450	**55.0%**
1934	C	12,849	3,578	3,856	65%	0.28	63.6	0.217	0.706	0.419	0.500	0.608	**39.2%**
1935	B	24,635	8,638	8,263	57%	0.25	58.9	0.019	0.842	0.269	0.412	0.424	**57.6%**
1936	B	20,781	8,292	6,822	59%	0.26	59.7	0.053	0.841	0.294	0.435	0.465	**53.5%**
1937	B	23,007	7,981	7,655	58%	0.25	58.8	0.015	0.811	0.266	0.404	0.413	**58.7%**
1938	W	47,172	7,719	16,692	23%	0.23	56.3	0.000	0.755	0.186	0.318	0.318	**68.2%**
1939	D	12,224	4,146	3,622	66%	0.29	63.3	0.204	0.726	0.409	0.500	0.602	**39.8%**
1940	A	41,731	8,294	14,657	24%	0.24	57.4	0.000	0.800	0.221	0.357	0.357	**64.3%**
1941	W	42,372	9,308	14,897	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
1942	W	43,308	8,918	15,247	23%	0.23	56.5	0.000	0.811	0.192	0.337	0.337	**66.3%**
1943	W	29,406	9,141	10,048	24%	0.24	58.8	0.015	0.862	0.266	0.412	0.420	**58.0%**
1944	D	9,823	4,248	2,724	70%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	**63.0%**
1945	B	11,753	6,262	3,446	67%	0.29	60.6	0.090	0.769	0.323	0.452	0.501	**49.9%**
1946	B	12,226	5,960	3,623	66%	0.29	60.7	0.095	0.758	0.326	0.449	0.502	**49.8%**
1947	D	13,800	4,910	4,211	64%	0.28	62.5	0.170	0.744	0.384	0.484	0.572	**42.8%**
1948	B	22,793	6,780	7,575	58%	0.25	56.6	0.000	0.720	0.195	0.328	0.328	**67.2%**
1949	D	13,210	5,088	3,991	65%	0.28	61.7	0.137	0.738	0.358	0.465	0.538	**46.2%**
1950	B	18,776	6,168	6,072	60%	0.26	61.3	0.120	0.778	0.346	0.459	0.524	**47.6%**
1951	A	14,732	6,362	4,560	63%	0.27	59.9	0.061	0.761	0.301	0.427	0.462	**53.8%**
1952	W	56,648	7,840	20,236	23%	0.23	55.5	0.000	0.746	0.160	0.295	0.295	**70.5%**
1953	W	16,177	5,650	5,100	62%	0.27	58.8	0.015	0.710	0.266	0.385	0.394	**60.6%**
1954	A	39,868	7,362	13,961	24%	0.24	58.4	0.000	0.777	0.253	0.377	0.377	**62.3%**
1955	D	9,473	3,672	2,593	71%	0.30	56.4	0.000	0.581	0.189	0.308	0.308	**69.2%**
1956	W	20,437	7,982	6,693	59%	0.26	59.7	0.053	0.828	0.294	0.432	0.462	**53.8%**
1957	A	21,137	6,430	6,955	58%	0.26	60.5	0.086	0.775	0.320	0.437	0.485	**51.5%**
1958	W	52,284	9,488	18,604	23%	0.23	57.4	0.000	0.852	0.221	0.367	0.367	**63.3%**
1959	B	10,490	3,786	2,973	69%	0.30	63	0.191	0.705	0.400	0.490	0.588	**41.2%**
1960	D	13,553	4,031	4,119	64%	0.28	59.5	0.044	0.652	0.288	0.390	0.417	**58.3%**
1961	D	12,791	3,542	3,834	65%	0.28	60.1	0.069	0.642	0.307	0.402	0.443	**55.7%**
1962	B	15,462	5,608	4,833	62%	0.27	61.8	0.141	0.762	0.362	0.470	0.545	**45.5%**
1963	W	69,458	8,094	25,027	23%	0.23	53.7	0.000	0.725	0.103	0.244	0.244	**75.6%**
1964	D	8,953	3,512	2,398	72%	0.31	59.3	0.036	0.626	0.282	0.388	0.410	**59.0%**
1965	W	45,668	8,540	16,130	23%	0.23	56.9	0.000	0.801	0.205	0.344	0.344	**65.6%**
1966	B	16,760	5,622	5,318	61%	0.27	61.9	0.145	0.765	0.365	0.472	0.548	**45.2%**
1967	W	39,925	8,471	13,982	24%	0.24	53.8	0.000	0.743	0.106	0.257	0.257	**74.3%**
1968	B	15,578	5,242	4,876	62%	0.27	61.5	0.128	0.741	0.352	0.457	0.527	**47.3%**
1969	W	44,787	7,504	15,800	23%	0.23	56.4	0.000	0.747	0.189	0.320	0.320	**68.0%**
1970	W	16,608	6,600	5,261	61%	0.27	58.8	0.015	0.751	0.266	0.396	0.405	**59.5%**
1971	W	21,756	6,564	7,187	58%	0.26	58.7	0.011	0.748	0.262	0.387	0.393	**60.7%**
1972	B	12,452	4,698	3,707	66%	0.28	58.5	0.002	0.663	0.256	0.372	0.373	**62.7%**
1973	A	19,512	7,452	6,347	59%	0.26	61.3	0.120	0.833	0.346	0.472	0.536	**46.4%**
1974	W	33,208	9,320	11,470	24%	0.24	56.8	0.000	0.833	0.202	0.354	0.354	**64.6%**
1975	W	25,763	8,768	8,685	25%	0.25	56.8	0.000	0.810	0.202	0.353	0.353	**64.7%**
1976	C	9,434	3,001	2,578	71%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
1977	C	9,144	2,996	2,470	71%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	**36.3%**
1978	A	38,698	7,516	13,523	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
1979	B	17,702	6,852	5,671	60%	0.26	59.8	0.057	0.780	0.298	0.425	0.458	**54.2%**
1980	A	19,818	6,887	6,462	59%	0.26	57.1	0.000	0.733	0.211	0.347	0.347	**65.3%**
1981	D	16,998	5,450	5,407	61%	0.27	61.5	0.128	0.750	0.352	0.458	0.528	**47.2%**
1982	W	75,838	8,945	27,413	23%	0.23	54.1	0.000	0.769	0.115	0.263	0.263	**73.7%**
1983	W	68,301	6,963	24,595	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
1984	W	17,872	6,844	5,734	60%	0.26	59.7	0.053	0.778	0.294	0.422	0.453	**54.7%**
1985	D	12,328	4,086	3,661	66%	0.28	60.8	0.099	0.678	0.330	0.429	0.485	**51.5%**
1986	W	20,778	7,524	6,821	59%	0.26	60.4	0.082	0.820	0.317	0.446	0.492	**50.8%**
1987	D	12,402	3,499	3,688	66%	0.28	65.7	0.305	0.741	0.486	0.559	0.693	**30.7%**
1988	C	8,616	2,848	2,272	73%	0.31	59.9	0.061	0.608	0.301	0.397	0.433	**56.7%**
1989	D	23,637	5,650	7,890	57%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	**48.0%**
1990	C	12,444	3,535	3,704	66%	0.28	61.6	0.133	0.669	0.355	0.444	0.518	**48.2%**
1991	C	15,284	4,249	4,766	62%	0.27	60.8	0.099	0.685	0.330	0.426	0.483	**51.7%**
1992	C	12,470	3,734	3,714	66%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	**49.9%**

MAY

Year	Sac River Flows	CVP + SWP Exports	Calculated Steamboat & Sutter Slough Q	Percent	X-channel Closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123
1922	46,457	8,696	16,425	0.23	0.23	61.2	0.116	0.885	0.342	0.469	0.531	**46.9%**
1923	14,353	6,266	4,418	0.63	0.33	62.4	0.166	0.802	0.381	0.521	0.600	**40.0%**
1924	8,843	1,338	2,357	0.72	0.38	69.2	0.452	0.710	0.598	0.640	0.803	**19.7%**
1925	10,964	4,854	3,151	0.68	0.35	63.2	0.200	0.755	0.406	0.530	0.624	**37.6%**
1926	14,552	5,054	4,492	0.63	0.33	65.7	0.305	0.808	0.486	0.593	0.717	**28.3%**
1927	26,781	8,322	9,066	0.25	0.25	62.6	0.175	0.894	0.387	0.513	0.598	**40.2%**
1928	20,653	6,375	6,774	0.59	0.31	66.6	0.343	0.882	0.515	0.629	0.756	**24.4%**
1929	9,912	3,107	2,757	0.70	0.36	66.1	0.322	0.731	0.499	0.583	0.717	**28.3%**
1930	12,029	3,549	3,549	0.66	0.35	63.1	0.196	0.696	0.403	0.505	0.602	**39.8%**
1931	10,086	3,209	2,822	0.69	0.36	70.5	0.507	0.814	0.640	0.703	0.854	**14.6%**
1932	12,017	4,836	3,544	0.66	0.35	65.5	0.297	0.795	0.480	0.589	0.711	**28.9%**
1933	7,561	2,522	1,878	0.76	0.39	63.7	0.221	0.662	0.422	0.516	0.623	**37.7%**
1934	8,878	3,013	2,370	0.72	0.37	68.3	0.414	0.766	0.569	0.643	0.791	**20.9%**
1935	28,573	5,419	9,736	0.25	0.25	64	0.234	0.794	0.432	0.521	0.633	**36.7%**
1936	14,094	6,314	4,321	0.64	0.33	64.9	0.271	0.849	0.461	0.590	0.701	**29.9%**
1937	16,218	6,766	5,116	0.62	0.32	64.5	0.255	0.861	0.448	0.582	0.688	**31.2%**
1938	57,429	9,427	20,528	0.23	0.23	62.5	0.170	0.941	0.384	0.512	0.595	**40.5%**
1939	8,570	3,474	2,255	0.73	0.38	68	0.402	0.781	0.560	0.643	0.787	**21.3%**
1940	18,311	6,256	5,898	0.60	0.32	65.6	0.301	0.859	0.483	0.602	0.722	**27.8%**
1941	39,485	9,718	13,817	0.24	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**
1942	36,037	8,696	12,528	0.24	0.24	60.1	0.069	0.866	0.307	0.441	0.480	**52.0%**
1943	20,308	7,681	6,645	0.59	0.31	65.4	0.292	0.917	0.477	0.614	0.727	**27.3%**
1944	8,907	3,740	2,381	0.72	0.37	65.9	0.313	0.755	0.493	0.591	0.719	**28.1%**
1945	12,335	5,080	3,663	0.66	0.34	63.1	0.196	0.763	0.403	0.527	0.620	**38.0%**
1946	13,701	5,274	4,174	0.64	0.34	63.9	0.229	0.785	0.429	0.549	0.652	**34.8%**
1947	8,856	3,470	2,362	0.72	0.38	68.7	0.431	0.793	0.582	0.661	0.807	**19.3%**
1948	26,604	7,580	9,000	0.25	0.25	62.3	0.162	0.857	0.378	0.496	0.578	**42.2%**
1949	14,910	4,760	4,626	0.63	0.33	65.2	0.284	0.786	0.470	0.575	0.695	**30.5%**
1950	14,365	5,372	4,423	0.63	0.33	64.3	0.246	0.797	0.441	0.560	0.668	**33.2%**
1951	18,870	7,136	6,107	0.60	0.32	64.4	0.250	0.875	0.445	0.580	0.685	**31.5%**
1952	59,563	9,228	21,327	0.23	0.23	61.7	0.137	0.918	0.358	0.486	0.557	**44.3%**
1953	26,868	7,676	9,099	0.25	0.25	60.9	0.103	0.836	0.333	0.457	0.513	**48.7%**
1954	25,380	7,423	8,542	0.25	0.25	65.9	0.313	0.915	0.493	0.598	0.724	**27.6%**
1955	10,273	3,774	2,892	0.69	0.36	66.9	0.356	0.774	0.525	0.615	0.752	**24.8%**
1956	39,005	8,788	13,638	0.24	0.24	61.4	0.124	0.893	0.349	0.478	0.543	**45.7%**
1957	16,845	5,968	5,350	0.61	0.32	64	0.234	0.817	0.432	0.556	0.660	**34.0%**
1958	43,486	10,625	15,314	0.23	0.23	62.9	0.187	1.000	0.397	0.538	0.625	**37.5%**
1959	9,424	3,688	2,575	0.71	0.37	65.9	0.313	0.753	0.493	0.588	0.717	**28.3%**
1960	10,915	3,356	3,132	0.68	0.35	65.9	0.313	0.738	0.493	0.580	0.711	**28.9%**
1961	8,699	2,906	2,303	0.73	0.38	64.3	0.246	0.690	0.441	0.535	0.650	**35.0%**
1962	14,817	5,338	4,592	0.63	0.33	64.8	0.267	0.804	0.457	0.572	0.686	**31.4%**
1963	29,094	8,322	9,931	0.25	0.25	62.5	0.170	0.893	0.384	0.509	0.592	**40.8%**
1964	10,360	3,756	2,925	0.69	0.36	65.2	0.284	0.743	0.470	0.568	0.691	**30.9%**
1965	24,427	7,795	8,186	0.57	0.30	63.6	0.217	0.889	0.419	0.561	0.656	**34.4%**
1966	14,542	4,702	4,489	0.63	0.33	67.3	0.372	0.822	0.537	0.632	0.769	**23.1%**
1967	44,790	9,420	15,801	0.23	0.23	62.1	0.154	0.933	0.371	0.503	0.579	**42.1%**
1968	9,379	3,654	2,558	0.71	0.37	66.1	0.322	0.755	0.499	0.593	0.724	**27.6%**
1969	45,533	9,002	16,079	0.23	0.23	63.2	0.200	0.935	0.406	0.530	0.624	**37.6%**
1970	12,155	5,916	3,596	0.66	0.35	68.6	0.427	0.898	0.579	0.689	0.822	**17.8%**
1971	29,603	7,676	10,122	0.24	0.24	61	0.107	0.838	0.336	0.459	0.517	**48.3%**
1972	10,809	3,886	3,093	0.68	0.36	67.3	0.372	0.786	0.537	0.626	0.765	**23.5%**
1973	15,751	6,510	4,941	0.62	0.33	66.9	0.356	0.893	0.525	0.645	0.771	**22.9%**
1974	26,945	8,696	9,127	0.25	0.25	63.4	0.208	0.925	0.413	0.540	0.635	**36.5%**
1975	28,542	8,696	9,725	0.25	0.25	63.8	0.225	0.932	0.425	0.550	0.651	**34.9%**
1976	10,091	3,140	2,824	0.69	0.36	69.6	0.469	0.795	0.611	0.678	0.829	**17.1%**
1977	7,005	739	1,670	0.78	0.40	64	0.234	0.590	0.432	0.496	0.613	**38.7%**
1978	21,056	8,204	6,925	0.58	0.31	63	0.191	0.896	0.400	0.553	0.639	**36.1%**
1979	12,566	6,000	3,750	0.65	0.34	63.8	0.225	0.815	0.425	0.559	0.658	**34.2%**
1980	14,777	7,472	4,577	0.63	0.33	63.6	0.217	0.875	0.419	0.570	0.663	**33.7%**
1981	8,752	3,504	2,323	0.72	0.38	66.7	0.347	0.759	0.518	0.609	0.745	**25.5%**
1982	38,429	10,705	13,422	0.24	0.24	61.1	0.112	0.971	0.339	0.489	0.546	**45.4%**
1983	54,514	7,539	19,438	0.23	0.23	60.1	0.069	0.815	0.307	0.424	0.464	**53.6%**
1984	13,411	6,132	4,066	0.64	0.34	66.5	0.339	0.869	0.512	0.633	0.757	**24.3%**
1985	13,155	4,244	3,970	0.65	0.34	65.8	0.309	0.775	0.489	0.586	0.714	**28.6%**
1986	13,127	8,125	3,959	0.65	0.34	66.2	0.326	0.951	0.502	0.654	0.767	**23.3%**
1987	8,452	2,838	2,211	0.73	0.38	70.5	0.507	0.798	0.640	0.700	0.852	**14.8%**
1988	9,761	3,066	2,701	0.70	0.37	65.8	0.309	0.724	0.489	0.575	0.706	**29.4%**
1989	14,340	3,936	4,413	0.63	0.33	64.7	0.263	0.742	0.454	0.550	0.668	**33.2%**
1990	7,702	2,744	1,931	0.75	0.39	66.4	0.335	0.721	0.509	0.591	0.728	**27.2%**
1991	8,690	2,948	2,300	0.73	0.38	65.7	0.305	0.717	0.486	0.573	0.703	**29.7%**
1992	8,982	3,003	2,409	0.72	0.37	66	0.318	0.725	0.496	0.581	0.714	**28.6%**

JUNE

Year	Sac River Flow	CVP + SWP exports	Caculated Steamboat & Sutter Slough Q	percent	X-channel closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123	Weighted Total Survival
1922	34,719	11,272	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**45.5%**
1923	18,138	7,616	5,834	60%	0.51	65.3	0.288	0.912	0.473	0.697	0.785	**21.5%**	**40.2%**
1924	10,720	1,493	3,059	68%	0.58	70.6	0.511	0.742	0.643	0.700	0.853	**14.7%**	**23.7%**
1925	13,865	3,925	4,236	64%	0.54	68.3	0.414	0.806	0.569	0.697	0.823	**17.7%**	**37.6%**
1926	15,019	6,004	4,667	63%	0.53	71.2	0.536	0.948	0.662	0.814	0.914	**8.6%**	**27.8%**
1927	18,893	8,345	6,116	60%	0.51	68.1	0.406	0.994	0.563	0.781	0.870	**13.0%**	**39.8%**
1928	13,775	5,691	4,202	64%	0.54	69.7	0.473	0.908	0.614	0.773	0.881	**11.9%**	**28.3%**
1929	10,981	3,124	3,157	68%	0.57	70.1	0.490	0.804	0.627	0.728	0.861	**13.9%**	**32.8%**
1930	18,112	6,953	5,824	60%	0.51	69.6	0.469	0.961	0.611	0.789	0.888	**11.2%**	**37.7%**
1931	13,380	4,204	4,054	64%	0.55	70.7	0.515	0.861	0.646	0.763	0.885	**11.5%**	**18.9%**
1932	19,361	7,725	6,291	59%	0.50	69.5	0.465	0.992	0.608	0.802	0.894	**10.6%**	**30.9%**
1933	10,498	1,598	2,976	69%	0.58	69.8	0.478	0.732	0.617	0.684	0.835	**16.5%**	**36.8%**
1934	14,390	5,226	4,432	63%	0.54	70.7	0.515	0.906	0.646	0.785	0.896	**10.4%**	**22.1%**
1935	17,571	7,549	5,622	61%	0.51	71	0.528	1.000	0.656	0.833	0.921	**7.9%**	**35.1%**
1936	19,056	7,957	6,177	60%	0.51	69.2	0.452	0.997	0.598	0.800	0.890	**11.0%**	**30.5%**
1937	18,189	7,670	5,853	60%	0.51	69.7	0.473	0.994	0.614	0.808	0.899	**10.1%**	**32.1%**
1938	35,517	11,272	12,333	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**41.7%**
1939	18,577	7,392	5,998	60%	0.51	71	0.528	1.000	0.656	0.831	0.920	**8.0%**	**22.1%**
1940	15,338	7,176	4,786	62%	0.53	71.5	0.549	1.000	0.672	0.845	0.930	**7.0%**	**30.3%**
1941	20,808	10,897	6,832	59%	0.50	69	0.444	1.000	0.592	0.795	0.886	**11.4%**	**41.6%**
1942	27,117	11,272	9,192	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**48.8%**
1943	16,854	7,742	5,353	61%	0.52	66.6	0.343	0.941	0.515	0.736	0.826	**17.4%**	**30.8%**
1944	18,219	7,348	5,864	60%	0.51	67.8	0.393	0.946	0.553	0.753	0.850	**15.0%**	**31.7%**
1945	16,681	7,182	5,289	61%	0.52	70.6	0.511	0.989	0.643	0.822	0.913	**8.7%**	**34.8%**
1946	16,282	6,967	5,139	62%	0.52	68.1	0.406	0.934	0.563	0.757	0.856	**14.4%**	**33.7%**
1947	18,817	7,260	6,088	60%	0.51	70	0.486	0.981	0.624	0.805	0.900	**10.0%**	**21.6%**
1948	22,883	8,996	7,608	58%	0.49	69	0.444	1.000	0.592	0.791	0.884	**11.6%**	**40.9%**
1949	17,044	6,777	5,424	61%	0.52	70.9	0.524	0.976	0.652	0.820	0.914	**8.6%**	**29.2%**
1950	20,276	8,128	6,633	59%	0.50	68.9	0.440	0.999	0.588	0.794	0.884	**11.6%**	**31.8%**
1951	17,640	7,425	5,647	61%	0.51	70.3	0.499	0.994	0.633	0.818	0.909	**9.1%**	**31.2%**
1952	38,968	11,272	13,624	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**46.1%**
1953	25,885	10,381	8,731	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**46.5%**
1954	14,217	6,027	4,367	64%	0.54	68.7	0.431	0.904	0.582	0.756	0.861	**13.9%**	**31.0%**
1955	18,526	7,221	5,979	60%	0.51	70.1	0.490	0.981	0.627	0.807	0.902	**9.8%**	**29.7%**
1956	22,306	11,272	7,392	58%	0.49	68.7	0.431	1.000	0.582	0.787	0.879	**12.1%**	**41.1%**
1957	19,116	7,964	6,199	60%	0.51	72	0.570	1.000	0.688	0.845	0.934	**6.6%**	**32.1%**
1958	33,938	11,272	11,743	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**38.9%**
1959	17,909	7,186	5,748	60%	0.51	72.1	0.574	1.000	0.691	0.849	0.936	**6.4%**	**26.5%**
1960	18,212	7,054	5,861	60%	0.51	72.7	0.600	1.000	0.710	0.858	0.943	**5.7%**	**29.7%**
1961	20,158	7,680	6,589	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**33.2%**
1962	17,161	6,825	5,468	61%	0.52	70.4	0.503	0.970	0.636	0.808	0.905	**9.5%**	**29.8%**
1963	19,570	8,623	6,369	59%	0.50	69	0.444	1.000	0.592	0.797	0.887	**11.3%**	**41.4%**
1964	18,000	7,004	5,782	60%	0.51	69.5	0.465	0.961	0.608	0.788	0.887	**11.3%**	**32.2%**
1965	18,160	8,311	5,842	60%	0.51	67.1	0.364	0.975	0.531	0.757	0.846	**15.4%**	**36.3%**
1966	15,583	6,254	4,878	62%	0.53	70.4	0.503	0.945	0.636	0.799	0.900	**10.0%**	**24.5%**
1967	39,345	11,272	13,765	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**44.4%**
1968	17,389	7,030	5,553	61%	0.51	72	0.570	1.000	0.688	0.848	0.935	**6.5%**	**27.1%**
1969	24,130	11,243	8,075	57%	0.48	68.3	0.414	1.000	0.569	0.778	0.870	**13.0%**	**38.4%**
1970	15,514	6,804	4,852	62%	0.53	70.7	0.515	0.974	0.646	0.819	0.912	**8.8%**	**23.3%**
1971	23,634	9,634	7,889	57%	0.49	68.1	0.406	1.000	0.563	0.775	0.867	**13.3%**	**44.1%**
1972	17,110	6,804	5,449	61%	0.52	70.7	0.515	0.974	0.646	0.815	0.911	**8.9%**	**27.5%**
1973	19,399	8,042	6,305	59%	0.50	70.1	0.490	1.000	0.627	0.815	0.906	**9.4%**	**24.5%**
1974	21,622	9,529	7,137	58%	0.49	69.7	0.473	1.000	0.614	0.805	0.897	**10.3%**	**36.5%**
1975	24,787	11,272	8,320	57%	0.48	69.1	0.448	1.000	0.595	0.790	0.884	**11.6%**	**35.7%**
1976	19,440	7,430	6,321	59%	0.50	71.8	0.562	1.000	0.681	0.842	0.931	**6.9%**	**22.9%**
1977	9,565	421	2,627	71%	0.60	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**	**32.9%**
1978	16,475	8,504	5,212	61%	0.52	70	0.486	1.000	0.624	0.820	0.907	**9.3%**	**36.4%**
1979	19,425	8,050	6,315	59%	0.50	69.2	0.452	1.000	0.598	0.800	0.891	**10.9%**	**33.4%**
1980	16,270	8,669	5,135	62%	0.52	66.9	0.356	0.987	0.525	0.766	0.849	**15.1%**	**35.7%**
1981	18,070	7,187	5,808	60%	0.51	71.9	0.566	1.000	0.684	0.846	0.933	**6.7%**	**25.8%**
1982	24,415	11,272	8,181	57%	0.48	66	0.318	1.000	0.496	0.740	0.822	**17.8%**	**45.2%**
1983	55,568	9,285	19,832	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**53.7%**
1984	18,436	7,751	5,945	60%	0.51	68.4	0.419	0.974	0.572	0.777	0.870	**13.0%**	**27.4%**
1985	16,659	6,536	5,280	61%	0.52	69.4	0.461	0.939	0.604	0.778	0.880	**12.0%**	**29.5%**
1986	13,345	8,014	4,041	64%	0.55	71.6	0.553	1.000	0.675	0.852	0.934	**6.6%**	**25.0%**
1987	20,310	7,740	6,646	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**15.8%**
1988	14,755	5,741	4,568	63%	0.53	69.4	0.461	0.905	0.604	0.765	0.873	**12.7%**	**31.0%**
1989	16,870	6,555	5,359	61%	0.52	68.6	0.427	0.925	0.579	0.758	0.862	**13.8%**	**32.2%**
1990	19,684	7,461	6,412	59%	0.50	68.5	0.423	0.963	0.576	0.770	0.867	**13.3%**	**28.3%**
1991	10,807	3,304	3,092	68%	0.58	69.4	0.461	0.799	0.604	0.716	0.847	**15.3%**	**30.8%**
1992	13,901	5,031	4,249	64%	0.54	69	0.444	0.867	0.592	0.740	0.856	**14.4%**	**29.7%**
												Average:	**33.04%**

Formulas Sacramento River Fall Run Smolt Survival

```
C8 ='Study 467 Flow Data'!G7
D8 ='Study 467 Flow Data'!Q7      (HIDDEN)
E8 ='Study 467 Flow Data'!AA7     (HIDDEN)
F8 =(D8+E8)
G8 =0.374*C8-950
H8 =IF(C8>25000,(0.133*C8+829)/(C8-G8),(0.293*C8+2090)/(C8-G8))
I8 =(0.133*C8+829)/(C8-G8)
K8 =IF((-2.45925+(0.0420748*J8))<0,0,(-2.45925+(0.0420748*J8)))
L8 =(-0.5916024)+(0.017968*J8)+(0.0000434*F8)
M8 =-1.613493+(0.0319584*J8)
N8 =(L8*I8)+(M8*(1-I8))
O8 =K8+N8-(K8*N8)
P8 =1-O8

R8 ='Study 467 Flow Data'!H7
S8 ='Study 467 Flow Data'!R7      (HIDDEN)
T8 ='Study 467 Flow Data'!AB7     (HIDDEN)
U8 =(S8+T8)
V8 =0.374*R8-950
W8 =IF(R8>25000,(0.133*R8+829)/(R8-V8),(0.293*R8+2090)/(R8-V8))
X8 =(0.84*(0.133*R8+829)/(R8-V8))+(0.16*W8)
Z8 =(-2.45925+(0.0420748*Y8))
AA8 =(-0.5916024)+(0.017968*Y8)+(0.0000434*U8)
AB8 =-1.613493+(0.0319584*Y8)
AC8 =(AA8*X8)+(AB8*(1-X8))
AD8 =Z8+AC8-(Z8*AC8)
AE8 =1-AD8

AG8 ='Study 467 Flow Data'!I7     (HIDDEN)
AH8 ='Study 467 Flow Data'!S7     (HIDDEN)
AI8 ='Study 513 Flow Revised Data'!AC7
AJ8 =(AH8+AI8)
AK8 =0.374*AG8-950
AL8 =IF(AG8>25000,(0.133*AG8+829)/(AG8-AK8),(0.293*AG8+2090)/(AG8-AK8))
AM8 =(0.27*(0.133*AG8+829)/(AG8-AK8))+(0.73*AL8)
AO8 =(-2.45925+(0.0420748*AN8))
AP8 =IF(((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8))>1,1,((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8)))
AQ8 =-1.613493+(0.0319584*AN8)
AR8 =(AP8*AM8)+(AQ8*(1-AM8))
AS8 =AO8+AR8-(AO8*AR8)
AT8 =1-AS8
```

Study 525 Sacramento River Fall Run Smolt Survival Model — Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

APRIL

Row	Year	Water Year Type	Sac River Flows	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	observed temp f	m1	m2	m3	m23	m123	**Calculated Survival s123**
8	1922	A	22,816	9,575	7,583	58%	0.25	58.5	0.002	0.875	0.256	0.413	0.414	**58.6%**
9	1923	B	23,727	10,128	7,924	57%	0.25	58.3	0.000	0.895	0.250	0.413	0.413	**58.7%**
10	1924	C	9,630	4,199	2,652	70%	0.30	61.5	0.128	0.696	0.352	0.456	0.526	**47.4%**
11	1925	D	20,329	9,461	6,653	59%	0.26	59.1	0.027	0.881	0.275	0.432	0.447	**55.3%**
12	1926	D	17,226	8,400	5,493	61%	0.27	61.6	0.133	0.880	0.355	0.495	0.562	**43.8%**
13	1927	W	48,222	9,767	17,085	23%	0.23	56.8	0.000	0.853	0.202	0.353	0.353	**64.7%**
14	1928	A	29,212	10,101	9,975	25%	0.25	58.7	0.011	0.902	0.262	0.419	0.425	**57.5%**
15	1929	C	10,833	4,590	3,102	68%	0.29	56.3	0.000	0.619	0.186	0.313	0.313	**68.7%**
16	1930	D	14,420	6,110	4,443	63%	0.28	59.6	0.048	0.744	0.291	0.416	0.444	**55.6%**
17	1931	C	11,143	4,689	3,217	68%	0.29	62.8	0.183	0.740	0.393	0.495	0.587	**41.3%**
18	1932	D	14,065	6,892	4,310	64%	0.28	58.9	0.019	0.766	0.269	0.406	0.418	**58.2%**
19	1933	C	15,322	6,439	4,780	62%	0.27	60.1	0.069	0.768	0.307	0.432	0.472	**52.8%**
20	1934	C	15,234	5,846	4,748	62%	0.27	63.6	0.217	0.805	0.419	0.524	0.627	**37.3%**
21	1935	B	24,313	10,413	8,143	57%	0.25	58.9	0.019	0.919	0.269	0.432	0.443	**55.7%**
22	1936	B	21,281	9,825	7,009	58%	0.26	59.7	0.053	0.907	0.294	0.452	0.480	**52.0%**
23	1937	B	22,882	7,956	7,608	58%	0.25	58.8	0.015	0.810	0.266	0.404	0.413	**58.7%**
24	1938	W	47,172	7,721	16,692	23%	0.23	56.3	0.000	0.755	0.186	0.318	0.318	**68.2%**
25	1939	D	14,482	6,342	4,466	63%	0.28	63.3	0.204	0.821	0.409	0.523	0.620	**38.0%**
26	1940	A	41,731	10,351	14,657	24%	0.24	57.4	0.000	0.889	0.221	0.378	0.378	**62.2%**
27	1941	W	42,372	9,308	14,897	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
28	1942	W	43,308	9,646	15,247	23%	0.23	56.5	0.000	0.842	0.192	0.345	0.345	**65.5%**
29	1943	W	29,406	9,129	10,048	24%	0.24	58.8	0.015	0.861	0.266	0.411	0.420	**58.0%**
30	1944	D	10,469	5,412	2,965	69%	0.30	58.4	0.000	0.693	0.253	0.383	0.383	**61.7%**
31	1945	B	12,493	7,088	3,722	66%	0.28	60.6	0.090	0.805	0.323	0.460	0.509	**49.1%**
32	1946	B	12,226	6,268	3,623	66%	0.29	60.7	0.095	0.771	0.326	0.453	0.505	**49.5%**
33	1947	D	15,447	5,681	4,827	62%	0.27	62.5	0.170	0.778	0.384	0.491	0.578	**42.2%**
34	1948	B	22,793	9,880	7,575	58%	0.25	56.6	0.000	0.854	0.195	0.362	0.362	**63.8%**
35	1949	D	13,210	6,146	3,991	65%	0.28	61.7	0.137	0.784	0.358	0.478	0.549	**45.1%**
36	1950	B	18,526	8,356	5,979	60%	0.26	61.3	0.120	0.872	0.346	0.484	0.546	**45.4%**
37	1951	A	17,998	8,128	5,781	60%	0.26	59.9	0.061	0.837	0.301	0.442	0.476	**52.4%**
38	1952	W	56,648	7,838	20,236	23%	0.23	55.5	0.000	0.746	0.160	0.295	0.295	**70.5%**
39	1953	W	16,177	7,176	5,100	62%	0.27	58.8	0.015	0.776	0.266	0.403	0.412	**58.8%**
40	1954	A	39,868	10,385	13,961	24%	0.24	58.4	0.000	0.908	0.253	0.408	0.408	**59.2%**
41	1955	D	9,473	4,530	2,593	71%	0.30	56.4	0.000	0.618	0.189	0.319	0.319	**68.1%**
42	1956	W	20,437	9,202	6,693	59%	0.26	59.7	0.053	0.880	0.294	0.446	0.475	**52.5%**
43	1957	A	24,575	8,551	8,241	57%	0.25	60.5	0.086	0.867	0.320	0.457	0.504	**49.6%**
44	1958	W	52,284	9,488	18,604	23%	0.23	57.4	0.000	0.852	0.221	0.367	0.367	**63.3%**
45	1959	B	12,688	5,508	3,795	65%	0.28	63	0.191	0.779	0.400	0.507	0.602	**39.8%**
46	1960	D	14,206	4,261	4,363	64%	0.28	59.5	0.044	0.662	0.288	0.391	0.418	**58.2%**
47	1961	D	15,683	6,270	4,915	62%	0.27	60.1	0.069	0.760	0.307	0.430	0.469	**53.1%**
48	1962	B	11,656	5,941	3,409	67%	0.29	61.8	0.141	0.777	0.362	0.481	0.554	**44.6%**
49	1963	W	69,458	10,112	25,027	23%	0.23	53.7	0.000	0.812	0.103	0.263	0.263	**73.7%**
50	1964	D	9,158	4,268	2,475	71%	0.31	59.3	0.036	0.659	0.282	0.397	0.419	**58.1%**
51	1965	W	45,668	9,397	16,130	23%	0.23	56.9	0.000	0.839	0.205	0.353	0.353	**64.7%**
52	1966	B	20,589	8,491	6,750	59%	0.26	61.9	0.145	0.889	0.365	0.500	0.573	**42.7%**
53	1967	W	39,925	8,479	13,982	24%	0.24	53.8	0.000	0.743	0.106	0.257	0.257	**74.3%**
54	1968	B	19,590	8,006	6,377	59%	0.26	61.5	0.128	0.861	0.352	0.484	0.550	**45.0%**
55	1969	W	44,787	7,504	15,800	23%	0.23	56.4	0.000	0.747	0.189	0.320	0.320	**68.0%**
56	1970	W	19,667	8,460	6,405	59%	0.26	58.8	0.015	0.832	0.266	0.413	0.421	**57.9%**
57	1971	W	25,808	9,085	8,702	25%	0.25	58.7	0.011	0.857	0.262	0.411	0.417	**58.3%**
58	1972	B	14,399	6,094	4,435	63%	0.28	58.5	0.002	0.724	0.256	0.385	0.386	**61.4%**
59	1973	A	19,512	9,569	6,347	59%	0.26	61.3	0.120	0.925	0.346	0.496	0.557	**44.3%**
60	1974	W	33,208	10,101	11,470	24%	0.24	56.8	0.000	0.867	0.202	0.362	0.362	**63.8%**
61	1975	W	25,763	10,385	8,685	25%	0.25	56.8	0.000	0.880	0.202	0.371	0.371	**62.9%**
62	1976	C	10,965	4,664	3,151	68%	0.29	58.9	0.019	0.669	0.269	0.386	0.398	**60.2%**
63	1977	C	11,258	4,766	3,260	67%	0.29	64.3	0.246	0.771	0.441	0.537	0.651	**34.9%**
64	1978	A	38,698	7,517	13,523	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
65	1979	B	18,581	8,347	5,999	60%	0.26	59.8	0.057	0.845	0.298	0.441	0.473	**52.7%**
66	1980	A	19,818	6,877	6,462	59%	0.26	57.1	0.000	0.733	0.211	0.347	0.347	**65.3%**
67	1981	D	20,356	8,344	6,663	59%	0.26	61.5	0.128	0.876	0.352	0.487	0.553	**44.7%**
68	1982	W	75,838	8,947	27,413	23%	0.23	54.1	0.000	0.769	0.115	0.263	0.263	**73.7%**
69	1983	W	68,301	6,963	24,595	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
70	1984	W	21,199	8,347	6,978	58%	0.26	59.7	0.053	0.843	0.294	0.435	0.465	**53.5%**
71	1985	D	12,328	5,520	3,661	66%	0.28	60.8	0.099	0.740	0.330	0.447	0.501	**49.9%**
72	1986	W	20,278	7,377	6,634	59%	0.26	60.4	0.082	0.814	0.317	0.445	0.491	**50.9%**
73	1987	D	14,852	6,032	4,605	63%	0.27	65.7	0.305	0.851	0.486	0.586	0.712	**28.8%**
74	1988	C	10,316	4,362	2,908	69%	0.30	59.9	0.061	0.674	0.301	0.412	0.448	**55.2%**
75	1989	D	23,637	9,183	7,890	57%	0.25	61.4	0.124	0.910	0.349	0.490	0.554	**44.6%**
76	1990	C	15,315	6,250	4,778	62%	0.27	61.6	0.133	0.786	0.355	0.472	0.542	**45.8%**
77	1991	C	16,777	6,806	5,325	61%	0.27	60.8	0.099	0.796	0.330	0.454	0.508	**49.2%**
78	1992	C	14,719	5,952	4,555	63%	0.27	61.2	0.116	0.766	0.342	0.459	0.521	**47.9%**

MAY

Row	Year	Sac River Flows	CVP + SWP Exports	Calculated Steamboat & Sutter Slough Q	Percent	X-channel Closed	USBR observed temp f	m1	m2	m3	m23	m123	**Calculated Survival s123**
8	1922	46,457	4,552	16,425	0.23	0.23	61.2	0.116	0.706	0.342	0.427	0.493	**50.7%**
9	1923	14,437	3,808	4,449	0.63	0.33	62.4	0.166	0.695	0.381	0.485	0.571	**42.9%**
10	1924	8,389	557	2,187	0.73	0.38	69.2	0.452	0.676	0.598	0.628	0.796	**20.4%**
11	1925	10,964	3,054	3,151	0.68	0.35	63.2	0.200	0.677	0.406	0.502	0.602	**39.8%**
12	1926	13,350	2,376	4,043	0.64	0.34	65.7	0.305	0.692	0.486	0.556	0.691	**30.9%**
13	1927	26,781	3,754	9,066	0.25	0.25	62.6	0.175	0.696	0.387	0.464	0.557	**44.3%**
14	1928	18,309	2,942	5,898	0.60	0.32	66.6	0.343	0.733	0.515	0.584	0.727	**27.3%**
15	1929	8,720	1,637	2,311	0.72	0.38	66.1	0.322	0.667	0.499	0.562	0.703	**29.7%**
16	1930	11,250	1,672	3,258	0.67	0.35	63.1	0.196	0.615	0.403	0.478	0.580	**42.0%**
17	1931	8,867	1,508	2,366	0.72	0.37	70.5	0.507	0.741	0.640	0.677	0.841	**15.9%**
18	1932	10,928	3,332	3,137	0.68	0.35	65.5	0.297	0.730	0.480	0.569	0.697	**30.3%**
19	1933	7,397	1,848	1,816	0.76	0.39	63.7	0.221	0.633	0.422	0.506	0.615	**38.5%**
20	1934	7,841	1,542	1,983	0.75	0.39	68.3	0.414	0.703	0.569	0.621	0.778	**22.2%**
21	1935	28,197	5,532	9,596	0.25	0.25	64	0.234	0.798	0.432	0.522	0.634	**36.6%**
22	1936	14,094	4,730	4,321	0.64	0.33	64.9	0.271	0.780	0.461	0.567	0.685	**31.5%**
23	1937	15,994	7,031	5,032	0.62	0.33	64.5	0.255	0.872	0.448	0.586	0.691	**30.9%**
24	1938	57,429	9,429	20,528	0.23	0.23	62.5	0.170	0.941	0.384	0.512	0.595	**40.5%**
25	1939	8,147	2,280	2,097	0.74	0.38	68	0.402	0.729	0.560	0.625	0.776	**22.4%**
26	1940	17,689	4,530	5,666	0.60	0.32	65.6	0.301	0.784	0.483	0.579	0.706	**29.4%**
27	1941	39,485	9,344	13,817	0.24	0.24	61.6	0.133	0.921	0.355	0.489	0.557	**44.3%**
28	1942	36,037	5,552	12,528	0.24	0.24	60.1	0.069	0.729	0.307	0.408	0.449	**55.1%**
29	1943	20,129	5,942	6,578	0.59	0.31	65.4	0.292	0.841	0.477	0.590	0.710	**29.0%**
30	1944	9,094	3,002	2,451	0.72	0.37	65.9	0.313	0.723	0.493	0.578	0.710	**29.0%**
31	1945	10,937	4,068	3,140	0.68	0.35	63.1	0.196	0.719	0.403	0.515	0.610	**39.0%**
32	1946	12,619	3,630	3,770	0.65	0.34	63.9	0.229	0.714	0.429	0.526	0.635	**36.5%**
33	1947	8,840	2,160	2,356	0.72	0.38	68.7	0.431	0.737	0.582	0.640	0.795	**20.5%**
34	1948	23,578	3,156	7,868	0.57	0.30	62.3	0.162	0.665	0.378	0.465	0.551	**44.9%**
35	1949	13,136	2,810	3,963	0.65	0.34	65.2	0.284	0.702	0.470	0.549	0.677	**32.3%**
36	1950	15,416	2,678	4,816	0.62	0.33	64.3	0.246	0.680	0.441	0.520	0.638	**36.2%**
37	1951	17,200	3,390	5,483	0.61	0.32	64.4	0.250	0.713	0.445	0.531	0.648	**35.2%**
38	1952	59,563	9,227	21,327	0.23	0.23	61.7	0.137	0.917	0.358	0.486	0.557	**44.3%**
39	1953	26,868	2,688	9,099	0.25	0.25	60.9	0.103	0.619	0.333	0.404	0.465	**53.5%**
40	1954	22,660	2,906	7,525	0.58	0.31	65.9	0.313	0.719	0.493	0.562	0.699	**30.1%**
41	1955	10,273	2,294	2,892	0.69	0.36	66.9	0.356	0.710	0.525	0.591	0.737	**26.3%**
42	1956	39,005	5,892	13,638	0.24	0.24	61.4	0.124	0.767	0.349	0.448	0.517	**48.3%**
43	1957	15,246	2,826	4,752	0.62	0.33	64	0.234	0.681	0.432	0.514	0.627	**37.3%**
44	1958	43,486	10,634	15,314	0.23	0.23	62.9	0.187	1.000	0.397	0.538	0.625	**37.5%**
45	1959	9,424	2,098	2,575	0.71	0.37	65.9	0.313	0.684	0.493	0.563	0.700	**30.0%**
46	1960	10,915	1,814	3,132	0.68	0.35	65.9	0.313	0.671	0.493	0.556	0.695	**30.5%**
47	1961	7,989	1,590	2,038	0.74	0.39	64.3	0.246	0.633	0.441	0.515	0.635	**36.5%**
48	1962	13,432	2,838	4,074	0.64	0.34	64.8	0.267	0.696	0.457	0.538	0.661	**33.9%**
49	1963	29,094	4,544	9,931	0.25	0.25	62.5	0.170	0.729	0.384	0.468	0.559	**44.1%**
50	1964	11,381	2,170	3,306	0.67	0.35	65.2	0.284	0.674	0.470	0.542	0.672	**32.8%**
51	1965	22,891	4,074	7,611	0.58	0.31	63.6	0.217	0.728	0.419	0.513	0.619	**38.1%**
52	1966	12,791	2,592	3,834	0.65	0.34	67.3	0.372	0.730	0.537	0.603	0.751	**24.9%**
53	1967	44,790	9,430	15,801	0.23	0.23	62.1	0.154	0.933	0.371	0.503	0.579	**42.1%**
54	1968	9,379	2,172	2,558	0.71	0.37	66.1	0.322	0.690	0.499	0.570	0.708	**29.2%**
55	1969	45,533	9,002	16,079	0.23	0.23	63.2	0.200	0.935	0.406	0.530	0.624	**37.6%**
56	1970	12,155	3,578	3,596	0.66	0.35	68.6	0.427	0.796	0.579	0.654	0.802	**19.8%**
57	1971	25,978	2,682	8,766	0.25	0.25	61	0.107	0.621	0.336	0.407	0.471	**52.9%**
58	1972	9,624	1,996	2,649	0.70	0.37	67.3	0.372	0.704	0.537	0.599	0.748	**25.2%**
59	1973	15,751	5,296	4,941	0.62	0.33	66.9	0.356	0.840	0.525	0.628	0.760	**24.0%**
60	1974	26,945	5,198	9,127	0.25	0.25	63.4	0.208	0.773	0.413	0.502	0.606	**39.4%**
61	1975	28,542	4,416	9,725	0.25	0.25	63.8	0.225	0.746	0.425	0.504	0.616	**38.4%**
62	1976	8,905	1,620	2,380	0.72	0.37	69.6	0.469	0.729	0.611	0.655	0.817	**18.3%**
63	1977	7,005	381	1,670	0.78	0.40	64	0.234	0.575	0.432	0.489	0.609	**39.1%**
64	1978	21,056	8,205	6,925	0.58	0.31	63	0.191	0.896	0.400	0.553	0.639	**36.1%**
65	1979	12,417	4,440	3,694	0.66	0.34	63.8	0.225	0.747	0.425	0.536	0.641	**35.9%**
66	1980	14,777	6,386	4,577	0.63	0.33	63.6	0.217	0.828	0.419	0.554	0.651	**34.9%**
67	1981	8,752	2,156	2,323	0.72	0.38	66.7	0.347	0.700	0.518	0.587	0.730	**27.0%**
68	1982	38,429	10,707	13,422	0.24	0.24	61.1	0.112	0.971	0.339	0.489	0.546	**45.4%**
69	1983	54,514	7,539	19,438	0.23	0.23	60.1	0.069	0.815	0.307	0.424	0.464	**53.6%**
70	1984	12,085	3,320	3,570	0.66	0.35	66.5	0.339	0.747	0.512	0.593	0.731	**26.9%**
71	1985	12,001	2,232	3,538	0.66	0.35	65.8	0.309	0.688	0.489	0.558	0.695	**30.5%**
72	1986	13,127	7,870	3,959	0.65	0.34	66.2	0.326	0.939	0.502	0.651	0.765	**23.5%**
73	1987	7,484	1,696	1,849	0.76	0.39	70.5	0.507	0.749	0.640	0.683	0.844	**15.6%**
74	1988	8,572	1,590	2,256	0.73	0.38	65.8	0.309	0.660	0.489	0.554	0.692	**30.8%**
75	1989	13,057	1,632	3,933	0.65	0.34	64.7	0.263	0.642	0.454	0.518	0.645	**35.5%**
76	1990	6,896	1,518	1,629	0.78	0.40	66.4	0.335	0.667	0.509	0.573	0.716	**28.4%**
77	1991	8,690	1,828	2,300	0.73	0.38	65.7	0.305	0.668	0.486	0.555	0.691	**30.9%**
78	1992	7,972	1,696	2,032	0.75	0.39	66	0.318	0.668	0.496	0.562	0.701	**29.9%**

JUNE

Row	Year	Sac River Flow	CVP + SWP exports	Caculated Steamboat & Sutter Slough Q	percent	X-channel closed	USBR observed temp f	m1	m2	m3	m23	m123	**Calculated Survival s123**	**Weighted Total Survival**
8	1922	34,719	11,272	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**47.6%**
9	1923	18,250	7,535	5,876	60%	0.51	65.3	0.288	0.909	0.473	0.695	0.783	**21.7%**	**41.8%**
10	1924	9,883	656	2,746	70%	0.59	70.6	0.511	0.705	0.643	0.680	0.843	**15.7%**	**24.1%**
11	1925	16,226	6,296	5,119	62%	0.52	68.3	0.414	0.909	0.569	0.747	0.852	**14.8%**	**38.0%**
12	1926	18,074	7,051	5,810	60%	0.51	71.2	0.536	0.994	0.662	0.831	0.922	**7.8%**	**28.9%**
13	1927	19,495	8,134	6,341	59%	0.50	68.1	0.406	0.985	0.563	0.775	0.867	**13.3%**	**42.2%**
14	1928	18,272	7,265	5,884	60%	0.51	69.7	0.473	0.976	0.614	0.799	0.894	**10.6%**	**29.4%**
15	1929	10,417	2,538	2,946	69%	0.58	70.1	0.490	0.778	0.627	0.715	0.855	**14.5%**	**33.6%**
16	1930	18,963	7,247	6,142	60%	0.51	69.6	0.469	0.973	0.611	0.794	0.891	**10.9%**	**38.7%**
17	1931	12,329	3,152	3,661	66%	0.56	70.7	0.515	0.816	0.646	0.740	0.874	**12.6%**	**19.6%**
18	1932	18,716	7,210	6,050	60%	0.51	69.5	0.465	0.970	0.608	0.791	0.888	**11.2%**	**31.6%**
19	1933	10,376	1,153	2,931	69%	0.58	69.8	0.478	0.713	0.617	0.673	0.829	**17.1%**	**37.1%**
20	1934	15,002	5,508	4,661	63%	0.53	70.7	0.515	0.918	0.646	0.790	0.898	**10.2%**	**22.6%**
21	1935	17,600	7,677	5,632	61%	0.51	71	0.528	1.000	0.656	0.832	0.921	**7.9%**	**34.7%**
22	1936	17,907	7,855	5,747	60%	0.51	69.2	0.452	0.993	0.598	0.800	0.890	**11.0%**	**31.3%**
23	1937	17,654	7,294	5,653	61%	0.51	69.7	0.473	0.977	0.614	0.800	0.895	**10.5%**	**31.9%**
24	1938	35,517	11,272	12,333	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**41.7%**
25	1939	19,805	7,645	6,457	59%	0.50	71	0.528	1.000	0.656	0.828	0.919	**8.1%**	**22.5%**
26	1940	16,002	6,817	5,035	62%	0.52	71.5	0.549	0.989	0.672	0.838	0.927	**7.3%**	**31.0%**
27	1941	20,808	10,771	6,832	59%	0.50	69	0.444	1.000	0.592	0.795	0.886	**11.4%**	**41.9%**
28	1942	27,117	11,272	9,192	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**50.6%**
29	1943	17,688	7,636	5,665	60%	0.51	66.6	0.343	0.936	0.515	0.731	0.823	**17.7%**	**31.9%**
30	1944	19,707	7,692	6,420	59%	0.50	67.8	0.393	0.960	0.553	0.758	0.853	**14.7%**	**32.0%**
31	1945	17,088	7,188	5,441	61%	0.52	70.6	0.511	0.989	0.643	0.822	0.913	**8.7%**	**35.3%**
32	1946	18,778	7,690	6,073	60%	0.51	68.1	0.406	0.966	0.563	0.767	0.862	**13.8%**	**34.6%**
33	1947	19,303	7,430	6,269	59%	0.50	70	0.486	0.989	0.624	0.808	0.901	**9.9%**	**22.3%**
34	1948	23,014	8,950	7,657	58%	0.49	69	0.444	1.000	0.592	0.791	0.884	**11.6%**	**42.1%**
35	1949	19,857	7,758	6,477	59%	0.50	70.9	0.524	1.000	0.652	0.827	0.917	**8.3%**	**30.1%**
36	1950	20,266	8,120	6,629	59%	0.50	68.9	0.440	0.999	0.588	0.793	0.884	**11.6%**	**33.3%**
37	1951	18,150	7,399	5,838	60%	0.51	70.3	0.499	0.993	0.633	0.817	0.908	**9.2%**	**33.4%**
38	1952	38,968	11,272	13,624	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**46.1%**
39	1953	25,885	10,040	8,731	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**49.3%**
40	1954	18,486	7,343	5,964	60%	0.51	68.7	0.431	0.961	0.582	0.775	0.872	**12.8%**	**31.9%**
41	1955	19,699	7,625	6,417	59%	0.50	70.1	0.490	0.999	0.627	0.814	0.905	**9.5%**	**30.4%**
42	1956	22,306	11,272	7,392	58%	0.49	68.7	0.431	1.000	0.582	0.787	0.879	**12.1%**	**42.5%**
43	1957	20,287	8,055	6,637	59%	0.50	72	0.570	1.000	0.688	0.844	0.933	**6.7%**	**33.9%**
44	1958	33,938	11,272	11,743	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**38.9%**
45	1959	19,106	7,429	6,196	60%	0.51	72.1	0.574	1.000	0.691	0.847	0.935	**6.5%**	**27.4%**
46	1960	18,754	7,243	6,064	60%	0.51	72.7	0.600	1.000	0.710	0.857	0.943	**5.7%**	**30.7%**
47	1961	20,010	7,629	6,534	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**33.7%**
48	1962	19,142	7,494	6,209	60%	0.51	70.4	0.503	0.999	0.636	0.819	0.910	**9.0%**	**31.2%**
49	1963	20,125	8,588	6,577	59%	0.50	69	0.444	1.000	0.592	0.796	0.887	**11.3%**	**43.2%**
50	1964	18,710	7,199	6,048	60%	0.51	69.5	0.465	0.970	0.608	0.791	0.888	**11.2%**	**33.2%**
51	1965	18,638	8,144	6,021	60%	0.51	67.1	0.364	0.968	0.531	0.753	0.843	**15.7%**	**38.6%**
52	1966	18,306	7,204	5,896	60%	0.51	70.4	0.503	0.986	0.636	0.815	0.908	**9.2%**	**25.1%**
53	1967	39,345	11,272	13,765	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**44.4%**
54	1968	18,560	7,265	5,991	60%	0.51	72	0.570	1.000	0.688	0.846	0.934	**6.6%**	**27.8%**
55	1969	24,130	11,243	8,075	57%	0.48	68.3	0.414	1.000	0.569	0.778	0.870	**13.0%**	**38.4%**
56	1970	16,310	6,881	5,150	62%	0.52	70.7	0.515	0.977	0.646	0.819	0.912	**8.8%**	**24.3%**
57	1971	23,634	9,293	7,889	57%	0.49	68.1	0.406	1.000	0.563	0.775	0.867	**13.3%**	**46.7%**
58	1972	18,623	7,319	6,015	60%	0.51	70.7	0.515	0.996	0.646	0.824	0.915	**8.5%**	**28.3%**
59	1973	18,911	7,909	6,123	60%	0.51	70.1	0.490	1.000	0.627	0.816	0.906	**9.4%**	**24.8%**
60	1974	21,788	9,142	7,199	58%	0.49	69.7	0.473	1.000	0.614	0.804	0.897	**10.3%**	**38.3%**
61	1975	24,787	11,272	8,320	57%	0.48	69.1	0.448	1.000	0.595	0.790	0.884	**11.6%**	**37.7%**
62	1976	18,932	7,248	6,131	60%	0.51	71.8	0.562	1.000	0.681	0.843	0.931	**6.9%**	**23.4%**
63	1977	9,601	421	2,641	70%	0.60	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**	**32.9%**
64	1978	16,356	8,499	5,167	62%	0.52	70	0.486	1.000	0.624	0.820	0.907	**9.3%**	**36.4%**
65	1979	19,870	8,049	6,481	59%	0.50	69.2	0.452	1.000	0.598	0.800	0.890	**11.0%**	**34.3%**
66	1980	16,451	8,606	5,203	61%	0.52	66.9	0.356	0.984	0.525	0.764	0.848	**15.2%**	**36.5%**
67	1981	19,159	7,393	6,215	60%	0.50	71.9	0.566	1.000	0.684	0.844	0.932	**6.8%**	**26.4%**
68	1982	24,415	11,272	8,181	57%	0.48	66	0.318	1.000	0.496	0.740	0.822	**17.8%**	**45.2%**
69	1983	55,568	9,285	19,832	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**53.7%**
70	1984	19,004	7,756	6,157	60%	0.51	68.4	0.419	0.974	0.572	0.776	0.870	**13.0%**	**28.9%**
71	1985	18,655	7,235	6,027	60%	0.51	69.4	0.461	0.969	0.604	0.790	0.887	**11.3%**	**30.4%**
72	1986	12,641	7,626	3,778	65%	0.55	71.6	0.553	1.000	0.675	0.855	0.935	**6.5%**	**25.1%**
73	1987	20,313	7,741	6,647	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**16.0%**
74	1988	14,786	5,460	4,580	63%	0.53	69.4	0.461	0.892	0.604	0.758	0.869	**13.1%**	**31.8%**
75	1989	18,261	7,044	5,880	60%	0.51	68.6	0.427	0.947	0.579	0.766	0.866	**13.4%**	**33.1%**
76	1990	19,580	7,417	6,373	59%	0.50	68.5	0.423	0.961	0.576	0.769	0.867	**13.3%**	**28.7%**
77	1991	11,340	3,915	3,291	67%	0.57	69.4	0.461	0.825	0.604	0.730	0.854	**14.6%**	**31.1%**
78	1992	14,238	5,351	4,375	63%	0.54	69	0.444	0.880	0.592	0.747	0.859	**14.1%**	**30.1%**
79													**Average:**	**33.90%**

Formulas — Sacramento River Fall Run Smolt Survival

C8 ='Study 467 Flow Data'!G7
D8 ='Study 467 Flow Data'!Q7 (HIDDEN)
E8 ='Study 467 Flow Data'!AA7 (HIDDEN)
F8 =(D8+E8)
G8 =0.374*C8-950
H8 =IF(C8>25000,(0.133*C8+829)/(C8-G8),(0.293*C8+2090)/(C8-G8))
I8 =(0.133*C8+829)/(C8-G8)
K8 =IF((-2.45925+(0.0420748*J8))<0,0,(-2.45925+(0.0420748*J8)))
L8 =(-0.5916024)+(0.017968*J8)+(0.0000434*F8)
M8 =-1.613493+(0.0319584*J8)
N8 =(L8*I8)+(M8*(1-I8))
O8 =K8+N8-(K8*N8)
P8 =1-O8

R8 ='Study 467 Flow Data'!H7
S8 ='Study 467 Flow Data'!R7 (HIDDEN)
T8 ='Study 467 Flow Data'!AB7 (HIDDEN)
U8 =(S8+T8)
V8 =0.374*R8-950
W8 =IF(R8>25000,(0.133*R8+829)/(R8-V8),(0.293*R8+2090)/(R8-V8))
X8 =(0.84*(0.133*R8+829)/(R8-V8))+(0.16*W8)
Z8 =(-2.45925+(0.0420748*Y8))
AA8 =(-0.5916024)+(0.017968*Y8)+(0.0000434*U8)
AB8 =-1.613493+(0.0319584*Y8)
AC8 =(AA8*X8)+(AB8*(1-X8))
AD8 =Z8+AC8-(Z8*AC8)
AE8 =1-AD8

AG8 ='Study 467 Flow Data'!I7 (HIDDEN)
AH8 ='Study 467 Flow Data'!S7 (HIDDEN)
AI8 ='Study 513 Flow Revised Data'!AC7
AJ8 =(AH8+AI8)
AK8 =0.374*AG8-950
AL8 =IF(AG8>25000,(0.133*AG8+829)/(AG8-AK8),(0.293*AG8+2090)/(AG8-AK8))
AM8 =(0.27*(0.133*AG8+829)/(AG8-AK8))+(0.73*AL8)
AO8 =(-2.45925+(0.0420748*AN8))
AP8 =IF(((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8))>1,1,((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8)))
AQ8 =-1.613493+(0.0319584*AN8)
AR8 =(AP8*AM8)+(AQ8*(1-AM8))
AS8 =AO8+AR8-(AO8*AR8)
AT8 =1-AS8

Study 526 Sacramento River Fall Run Smolt Survival Model

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

APRIL

Year	Water Year Type	Sac River Flows	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	observed temp f	m1	m2 (Calculated Mortality)	m3	m23	m123	Calculated Survival s123
1922	A	22,816	8,378	7,583	58%	0.25	58.5	0.002	0.823	0.256	0.400	0.401	**59.9%**
1923	B	23,688	8,082	7,909	57%	0.25	58.3	0.000	0.807	0.250	0.390	0.390	**61.0%**
1924	C	8,067	2,790	2,067	74%	0.32	61.5	0.128	0.635	0.352	0.442	0.513	**48.7%**
1925	D	22,651	6,950	7,521	58%	0.25	59.1	0.027	0.772	0.275	0.401	0.418	**58.2%**
1926	D	19,982	6,422	6,523	59%	0.26	61.6	0.133	0.794	0.355	0.469	0.539	**46.1%**
1927	W	48,222	9,771	17,085	23%	0.23	56.8	0.000	0.853	0.202	0.353	0.353	**64.7%**
1928	A	29,212	7,938	9,975	25%	0.25	58.7	0.011	0.808	0.262	0.396	0.402	**59.8%**
1929	C	9,056	2,956	2,437	72%	0.31	56.3	0.000	0.548	0.186	0.297	0.297	**70.3%**
1930	D	12,640	3,912	3,777	65%	0.28	59.6	0.048	0.649	0.291	0.393	0.422	**57.8%**
1931	C	9,202	2,970	2,492	71%	0.31	62.8	0.183	0.666	0.393	0.477	0.573	**42.7%**
1932	D	13,023	5,318	3,921	65%	0.28	58.9	0.019	0.698	0.269	0.389	0.401	**59.9%**
1933	C	12,736	4,123	3,813	65%	0.28	60.1	0.069	0.667	0.307	0.409	0.450	**55.0%**
1934	C	12,856	3,580	3,858	65%	0.28	63.6	0.217	0.707	0.419	0.500	0.608	**39.2%**
1935	B	24,634	9,803	8,263	57%	0.25	58.9	0.019	0.892	0.269	0.425	0.436	**56.4%**
1936	B	21,031	8,334	6,916	58%	0.26	59.7	0.053	0.843	0.294	0.435	0.465	**53.5%**
1937	B	23,257	7,985	7,748	57%	0.25	58.8	0.015	0.811	0.266	0.404	0.412	**58.8%**
1938	W	47,172	7,719	16,692	23%	0.23	56.3	0.000	0.755	0.186	0.318	0.318	**68.2%**
1939	D	12,224	4,144	3,622	66%	0.29	63.3	0.204	0.726	0.409	0.500	0.602	**39.8%**
1940	A	41,731	10,010	14,657	24%	0.24	57.4	0.000	0.874	0.221	0.375	0.375	**62.5%**
1941	W	42,372	9,308	14,897	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
1942	W	43,308	9,646	15,247	23%	0.23	56.5	0.000	0.842	0.192	0.345	0.345	**65.5%**
1943	W	29,406	9,143	10,048	24%	0.24	58.8	0.015	0.862	0.266	0.412	0.420	**58.0%**
1944	D	9,823	4,248	2,724	70%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	**63.0%**
1945	B	11,753	6,262	3,446	67%	0.29	60.6	0.090	0.769	0.323	0.452	0.501	**49.9%**
1946	B	12,226	5,960	3,623	66%	0.29	60.7	0.095	0.758	0.326	0.449	0.502	**49.8%**
1947	D	13,800	4,910	4,211	64%	0.28	62.5	0.170	0.744	0.384	0.484	0.572	**42.8%**
1948	B	22,793	6,780	7,575	58%	0.25	56.6	0.000	0.720	0.195	0.328	0.328	**67.2%**
1949	D	13,210	5,088	3,991	65%	0.28	61.7	0.137	0.738	0.358	0.465	0.538	**46.2%**
1950	B	19,263	6,248	6,254	59%	0.26	61.3	0.120	0.781	0.346	0.459	0.524	**47.6%**
1951	A	14,732	6,362	4,560	63%	0.27	59.9	0.061	0.761	0.301	0.427	0.462	**53.8%**
1952	W	56,648	7,839	20,236	23%	0.23	55.5	0.000	0.746	0.160	0.295	0.295	**70.5%**
1953	W	16,177	5,650	5,100	62%	0.27	58.8	0.015	0.710	0.266	0.385	0.394	**60.6%**
1954	A	39,868	9,080	13,961	24%	0.24	58.4	0.000	0.852	0.253	0.395	0.395	**60.5%**
1955	D	9,473	3,672	2,593	71%	0.30	56.4	0.000	0.581	0.189	0.308	0.308	**69.2%**
1956	W	20,437	7,982	6,693	59%	0.26	59.7	0.053	0.828	0.294	0.432	0.462	**53.8%**
1957	A	20,958	6,400	6,888	58%	0.26	60.5	0.086	0.773	0.320	0.436	0.485	**51.5%**
1958	W	52,284	9,482	18,604	23%	0.23	57.4	0.000	0.851	0.221	0.367	0.367	**63.3%**
1959	B	10,480	3,784	2,970	69%	0.30	63	0.191	0.705	0.400	0.490	0.588	**41.2%**
1960	D	13,493	4,022	4,096	64%	0.28	59.5	0.044	0.652	0.288	0.390	0.417	**58.3%**
1961	D	12,784	3,540	3,831	65%	0.28	60.1	0.069	0.642	0.307	0.402	0.443	**55.7%**
1962	B	11,656	4,986	3,409	67%	0.29	61.8	0.141	0.735	0.362	0.469	0.544	**45.6%**
1963	W	69,458	9,811	25,027	23%	0.23	53.7	0.000	0.799	0.103	0.260	0.260	**74.0%**
1964	D	8,953	3,512	2,398	72%	0.31	59.3	0.036	0.626	0.282	0.388	0.410	**59.0%**
1965	W	45,179	9,797	15,947	23%	0.23	56.9	0.000	0.856	0.205	0.357	0.357	**64.3%**
1966	B	16,758	5,622	5,317	61%	0.27	61.9	0.145	0.765	0.365	0.472	0.548	**45.2%**
1967	W	39,925	8,467	13,982	24%	0.24	53.8	0.000	0.743	0.106	0.257	0.257	**74.3%**
1968	B	15,565	5,240	4,871	62%	0.27	61.5	0.128	0.741	0.352	0.457	0.527	**47.3%**
1969	W	44,787	7,504	15,800	23%	0.23	56.4	0.000	0.747	0.189	0.320	0.320	**68.0%**
1970	W	16,591	6,598	5,255	61%	0.27	58.8	0.015	0.751	0.266	0.396	0.405	**59.5%**
1971	W	21,693	6,554	7,163	58%	0.26	58.7	0.011	0.748	0.262	0.386	0.393	**60.7%**
1972	B	12,452	4,698	3,707	66%	0.28	58.5	0.002	0.663	0.256	0.372	0.373	**62.7%**
1973	A	19,512	7,452	6,347	59%	0.26	61.3	0.120	0.833	0.346	0.472	0.536	**46.4%**
1974	W	33,208	10,101	11,470	24%	0.24	56.8	0.000	0.867	0.202	0.362	0.362	**63.8%**
1975	W	25,763	9,293	8,685	25%	0.25	56.8	0.000	0.832	0.202	0.359	0.359	**64.1%**
1976	C	9,434	3,002	2,578	71%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
1977	C	9,136	2,994	2,467	71%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	**36.3%**
1978	A	38,125	7,519	13,309	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
1979	B	17,702	6,852	5,671	60%	0.26	59.8	0.057	0.780	0.298	0.425	0.458	**54.2%**
1980	A	19,818	6,894	6,462	59%	0.26	57.1	0.000	0.734	0.211	0.347	0.347	**65.3%**
1981	D	16,998	5,450	5,407	61%	0.27	61.5	0.128	0.750	0.352	0.458	0.528	**47.2%**
1982	W	75,838	8,943	27,413	23%	0.23	54.1	0.000	0.769	0.115	0.263	0.263	**73.7%**
1983	W	68,301	6,963	24,595	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
1984	W	17,874	6,846	5,735	60%	0.26	59.7	0.053	0.778	0.294	0.422	0.453	**54.7%**
1985	D	12,328	4,086	3,661	66%	0.28	60.8	0.099	0.678	0.330	0.429	0.485	**51.5%**
1986	W	20,528	7,665	6,727	59%	0.26	60.4	0.082	0.826	0.317	0.448	0.493	**50.7%**
1987	D	12,490	3,514	3,721	66%	0.28	65.7	0.305	0.741	0.486	0.559	0.693	**30.7%**
1988	C	8,644	2,854	2,283	73%	0.31	59.9	0.061	0.609	0.301	0.397	0.433	**56.7%**
1989	D	23,637	5,650	7,890	57%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	**48.0%**
1990	C	12,444	3,534	3,704	66%	0.28	61.6	0.133	0.669	0.355	0.444	0.518	**48.2%**
1991	C	15,284	4,249	4,766	62%	0.27	60.8	0.099	0.685	0.330	0.426	0.483	**51.7%**
1992	C	12,482	3,738	3,718	66%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	**49.9%**

MAY

Year	Sac River Flows	CVP + SWP Exports	Calculated Steamboat & Sutter Slough Q	Percent	X-channel Closed	USBR observed temp f	m1	m2 (Calculated Mortality)	m3	m23	m123	Calculated Survival s123
1922	46,458	10,562	16,425	0.23	0.23	61.2	0.116	0.966	0.342	0.488	0.547	**45.3%**
1923	14,367	6,270	4,423	0.63	0.33	62.4	0.166	0.802	0.381	0.521	0.600	**40.0%**
1924	8,476	972	2,220	0.73	0.38	69.2	0.452	0.694	0.598	0.634	0.800	**20.0%**
1925	12,068	5,054	3,563	0.66	0.35	63.2	0.200	0.763	0.406	0.530	0.624	**37.6%**
1926	14,139	4,978	4,338	0.64	0.33	65.7	0.305	0.805	0.486	0.593	0.717	**28.3%**
1927	26,781	8,548	9,066	0.25	0.25	62.6	0.175	0.904	0.387	0.515	0.600	**40.0%**
1928	20,721	6,388	6,800	0.59	0.31	66.6	0.343	0.882	0.515	0.629	0.756	**24.4%**
1929	9,700	2,918	2,678	0.70	0.37	66.1	0.322	0.723	0.499	0.581	0.716	**28.4%**
1930	12,028	3,548	3,548	0.66	0.35	63.1	0.196	0.696	0.403	0.505	0.602	**39.8%**
1931	10,089	3,210	2,823	0.69	0.36	70.5	0.507	0.814	0.640	0.703	0.854	**14.6%**
1932	12,015	4,834	3,544	0.66	0.35	65.5	0.297	0.795	0.480	0.589	0.711	**28.9%**
1933	7,681	2,641	1,923	0.75	0.39	63.7	0.221	0.668	0.422	0.518	0.625	**37.5%**
1934	8,896	3,016	2,377	0.72	0.37	68.3	0.414	0.767	0.569	0.643	0.791	**20.9%**
1935	28,824	5,670	9,830	0.25	0.25	64	0.234	0.804	0.432	0.523	0.635	**36.5%**
1936	14,094	6,314	4,321	0.64	0.33	64.9	0.271	0.849	0.461	0.590	0.701	**29.9%**
1937	16,219	6,777	5,116	0.62	0.32	64.5	0.255	0.861	0.448	0.582	0.688	**31.2%**
1938	57,429	9,426	20,528	0.23	0.23	62.5	0.170	0.940	0.384	0.512	0.595	**40.5%**
1939	8,568	3,474	2,254	0.73	0.38	68	0.402	0.781	0.560	0.643	0.787	**21.3%**
1940	18,425	6,242	5,941	0.60	0.32	65.6	0.301	0.858	0.483	0.602	0.722	**27.8%**
1941	39,485	9,718	13,817	0.24	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**
1942	36,037	10,562	12,528	0.24	0.24	60.1	0.069	0.947	0.307	0.460	0.498	**50.2%**
1943	20,303	7,682	6,643	0.59	0.31	65.4	0.292	0.917	0.477	0.614	0.727	**27.3%**
1944	8,907	3,740	2,381	0.72	0.37	65.9	0.313	0.755	0.493	0.591	0.719	**28.1%**
1945	11,927	5,006	3,511	0.66	0.35	63.1	0.196	0.759	0.403	0.527	0.619	**38.1%**
1946	13,701	5,274	4,174	0.64	0.34	63.9	0.229	0.785	0.429	0.549	0.652	**34.8%**
1947	8,855	3,470	2,362	0.72	0.38	68.7	0.431	0.793	0.582	0.661	0.807	**19.3%**
1948	24,032	7,114	8,038	0.57	0.30	62.3	0.162	0.837	0.378	0.516	0.595	**40.5%**
1949	14,907	4,760	4,625	0.63	0.33	65.2	0.284	0.786	0.470	0.575	0.695	**30.5%**
1950	15,648	5,602	4,902	0.62	0.33	64.3	0.246	0.807	0.441	0.561	0.669	**33.1%**
1951	18,870	7,136	6,107	0.60	0.32	64.4	0.250	0.875	0.445	0.580	0.685	**31.5%**
1952	59,563	9,228	21,327	0.23	0.23	61.7	0.137	0.918	0.358	0.486	0.557	**44.3%**
1953	26,868	7,706	9,099	0.25	0.25	60.9	0.103	0.837	0.333	0.458	0.514	**48.6%**
1954	25,691	7,479	8,658	0.25	0.25	65.9	0.313	0.917	0.493	0.598	0.724	**27.6%**
1955	11,273	3,954	3,266	0.67	0.35	66.9	0.356	0.782	0.525	0.615	0.752	**24.8%**
1956	39,005	10,653	13,638	0.24	0.24	61.4	0.124	0.974	0.349	0.497	0.559	**44.1%**
1957	16,918	5,982	5,377	0.61	0.32	64	0.234	0.818	0.432	0.556	0.660	**34.0%**
1958	43,486	10,620	15,314	0.23	0.23	62.9	0.187	0.999	0.397	0.538	0.625	**37.5%**
1959	9,424	3,688	2,575	0.71	0.37	65.9	0.313	0.753	0.493	0.588	0.717	**28.3%**
1960	10,915	3,356	3,132	0.68	0.35	65.9	0.313	0.738	0.493	0.580	0.711	**28.9%**
1961	8,684	2,902	2,298	0.73	0.38	64.3	0.246	0.690	0.441	0.535	0.649	**35.1%**
1962	15,314	4,856	4,777	0.62	0.33	64.8	0.267	0.783	0.457	0.564	0.681	**31.9%**
1963	29,094	9,323	9,931	0.25	0.25	62.5	0.170	0.936	0.384	0.519	0.601	**39.9%**
1964	11,043	3,880	3,180	0.68	0.35	65.2	0.284	0.748	0.470	0.569	0.691	**30.9%**
1965	24,929	8,179	8,373	0.57	0.30	63.6	0.217	0.906	0.419	0.566	0.660	**34.0%**
1966	14,539	4,702	4,488	0.63	0.33	67.3	0.372	0.822	0.537	0.632	0.769	**23.1%**
1967	44,790	9,417	15,801	0.23	0.23	62.1	0.154	0.933	0.371	0.503	0.579	**42.1%**
1968	9,379	3,654	2,558	0.71	0.37	66.1	0.322	0.755	0.499	0.593	0.724	**27.6%**
1969	45,533	9,002	16,079	0.23	0.23	63.2	0.200	0.935	0.406	0.530	0.624	**37.6%**
1970	12,155	5,916	3,596	0.66	0.35	68.6	0.427	0.898	0.579	0.689	0.822	**17.8%**
1971	29,649	8,224	10,139	0.24	0.24	61	0.107	0.861	0.336	0.464	0.522	**47.8%**
1972	10,802	3,884	3,090	0.68	0.36	67.3	0.372	0.786	0.537	0.626	0.765	**23.5%**
1973	15,751	6,510	4,941	0.62	0.33	66.9	0.356	0.893	0.525	0.645	0.771	**22.9%**
1974	26,945	9,214	9,127	0.25	0.25	63.4	0.208	0.947	0.413	0.545	0.640	**36.0%**
1975	28,542	9,535	9,725	0.25	0.25	63.8	0.225	0.969	0.425	0.559	0.658	**34.2%**
1976	10,056	3,134	2,811	0.70	0.36	69.6	0.469	0.795	0.611	0.678	0.829	**17.1%**
1977	6,994	733	1,666	0.78	0.40	64	0.234	0.590	0.432	0.495	0.613	**38.7%**
1978	21,056	8,207	6,925	0.58	0.31	63	0.191	0.897	0.400	0.553	0.639	**36.1%**
1979	12,566	6,000	3,750	0.65	0.34	63.8	0.225	0.815	0.425	0.559	0.658	**34.2%**
1980	14,777	7,472	4,577	0.63	0.33	63.6	0.217	0.875	0.419	0.570	0.663	**33.7%**
1981	8,752	3,504	2,323	0.72	0.38	66.7	0.347	0.759	0.518	0.609	0.745	**25.5%**
1982	38,429	10,863	13,422	0.24	0.24	61.1	0.112	0.978	0.339	0.491	0.548	**45.2%**
1983	54,514	7,539	19,438	0.23	0.23	60.1	0.069	0.815	0.307	0.424	0.464	**53.6%**
1984	13,410	6,132	4,065	0.64	0.34	66.5	0.339	0.869	0.512	0.633	0.757	**24.3%**
1985	13,150	4,244	3,968	0.65	0.34	65.8	0.309	0.775	0.489	0.586	0.714	**28.6%**
1986	13,127	8,120	3,959	0.65	0.34	66.2	0.326	0.950	0.502	0.654	0.767	**23.3%**
1987	8,459	2,840	2,214	0.73	0.38	70.5	0.507	0.798	0.640	0.700	0.852	**14.8%**
1988	9,794	3,072	2,713	0.70	0.36	65.8	0.309	0.724	0.489	0.575	0.706	**29.4%**
1989	14,455	3,958	4,456	0.63	0.33	64.7	0.263	0.743	0.454	0.550	0.668	**33.2%**
1990	7,699	2,744	1,929	0.75	0.39	66.4	0.335	0.721	0.509	0.591	0.728	**27.2%**
1991	8,690	2,947	2,300	0.73	0.38	65.7	0.305	0.717	0.486	0.573	0.703	**29.7%**
1992	9,001	3,007	2,416	0.72	0.37	66	0.318	0.725	0.496	0.581	0.714	**28.6%**

JUNE

Year	Sac River Flow	CVP + SWP exports	Caculated Steamboat & Sutter Slough Q	percent	X-channel closed	USBR observed temp f	m1	m2 (Calculated Mortality)	m3	m23	m123	Calculated Survival s123	Weighted Total Survival
1922	34,719	12,757	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**44.4%**
1923	18,140	7,617	5,834	60%	0.51	65.3	0.288	0.912	0.473	0.697	0.785	**21.5%**	**40.2%**
1924	10,367	1,137	2,927	69%	0.58	70.6	0.511	0.726	0.643	0.691	0.849	**15.1%**	**24.0%**
1925	16,225	6,285	5,118	62%	0.52	68.3	0.414	0.908	0.569	0.746	0.852	**14.8%**	**37.0%**
1926	15,132	6,045	4,709	63%	0.53	71.2	0.536	0.950	0.662	0.815	0.914	**8.6%**	**27.8%**
1927	18,893	8,345	6,116	60%	0.51	68.1	0.406	0.994	0.563	0.781	0.870	**13.0%**	**39.3%**
1928	13,778	5,692	4,203	64%	0.54	69.7	0.473	0.908	0.614	0.773	0.881	**11.9%**	**28.2%**
1929	10,876	3,012	3,118	68%	0.58	70.1	0.490	0.799	0.627	0.726	0.860	**14.0%**	**32.9%**
1930	18,117	6,954	5,826	60%	0.51	69.6	0.469	0.961	0.611	0.789	0.888	**11.2%**	**37.7%**
1931	13,508	4,331	4,102	64%	0.54	70.7	0.515	0.867	0.646	0.766	0.887	**11.3%**	**18.8%**
1932	19,354	7,722	6,288	59%	0.50	69.5	0.465	0.992	0.608	0.801	0.894	**10.6%**	**30.9%**
1933	10,624	1,724	3,023	68%	0.58	69.8	0.478	0.737	0.617	0.687	0.836	**16.4%**	**36.7%**
1934	15,849	6,127	4,978	62%	0.53	70.7	0.515	0.945	0.646	0.803	0.904	**9.6%**	**22.0%**
1935	17,713	7,682	5,675	60%	0.51	71	0.528	1.000	0.656	0.832	0.921	**7.9%**	**34.8%**
1936	19,056	7,956	6,177	60%	0.51	69.2	0.452	0.997	0.598	0.800	0.890	**11.0%**	**30.5%**
1937	17,531	7,027	5,607	61%	0.51	69.7	0.473	0.966	0.614	0.795	0.892	**10.8%**	**32.2%**
1938	35,517	11,869	12,333	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**41.7%**
1939	18,580	7,393	5,999	60%	0.51	71	0.528	1.000	0.656	0.831	0.920	**8.0%**	**22.1%**
1940	15,336	7,175	4,786	62%	0.53	71.5	0.549	1.000	0.672	0.845	0.930	**7.0%**	**30.0%**
1941	20,808	10,897	6,832	59%	0.50	69	0.444	1.000	0.592	0.795	0.886	**11.4%**	**41.6%**
1942	27,117	12,376	9,192	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**47.5%**
1943	16,854	7,742	5,353	61%	0.52	66.6	0.343	0.941	0.515	0.736	0.826	**17.4%**	**30.8%**
1944	18,219	7,348	5,864	60%	0.51	67.8	0.393	0.946	0.553	0.753	0.850	**15.0%**	**31.7%**
1945	16,693	7,185	5,293	61%	0.52	70.6	0.511	0.989	0.643	0.822	0.913	**8.7%**	**34.8%**
1946	16,281	6,967	5,139	62%	0.52	68.1	0.406	0.934	0.563	0.757	0.856	**14.4%**	**33.7%**
1947	18,833	7,264	6,094	60%	0.51	70	0.486	0.981	0.624	0.805	0.900	**10.0%**	**21.6%**
1948	22,883	8,996	7,608	58%	0.49	69	0.444	1.000	0.592	0.791	0.884	**11.6%**	**39.8%**
1949	15,078	5,676	4,689	63%	0.53	70.9	0.524	0.929	0.652	0.799	0.904	**9.6%**	**29.4%**
1950	20,268	8,126	6,630	59%	0.50	68.9	0.440	0.999	0.588	0.794	0.884	**11.6%**	**31.7%**
1951	17,640	7,425	5,647	61%	0.51	70.3	0.499	0.994	0.633	0.818	0.909	**9.1%**	**31.2%**
1952	38,968	11,496	13,624	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**46.1%**
1953	25,885	10,381	8,731	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**46.4%**
1954	14,215	6,027	4,366	64%	0.54	68.7	0.431	0.904	0.582	0.756	0.861	**13.9%**	**30.7%**
1955	18,124	7,084	5,828	60%	0.51	70.1	0.490	0.975	0.627	0.805	0.900	**10.0%**	**29.7%**
1956	22,306	11,409	7,392	58%	0.49	68.7	0.431	1.000	0.582	0.787	0.879	**12.1%**	**40.0%**
1957	19,128	7,969	6,204	60%	0.51	72	0.570	1.000	0.688	0.845	0.934	**6.6%**	**32.1%**
1958	33,938	12,047	11,743	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**38.9%**
1959	17,912	7,187	5,749	60%	0.51	72.1	0.574	1.000	0.691	0.849	0.936	**6.4%**	**26.5%**
1960	18,216	7,056	5,863	60%	0.51	72.7	0.600	1.000	0.710	0.858	0.943	**5.7%**	**29.7%**
1961	20,151	7,678	6,586	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**33.2%**
1962	17,106	6,805	5,448	61%	0.52	70.4	0.503	0.969	0.636	0.808	0.905	**9.5%**	**30.2%**
1963	19,600	8,634	6,380	59%	0.50	69	0.444	1.000	0.592	0.797	0.887	**11.3%**	**40.5%**
1964	17,616	6,872	5,638	61%	0.51	69.5	0.465	0.955	0.608	0.786	0.886	**11.4%**	**32.2%**
1965	18,160	8,311	5,842	60%	0.51	67.1	0.364	0.975	0.531	0.757	0.846	**15.4%**	**35.8%**
1966	15,584	6,254	4,878	62%	0.53	70.4	0.503	0.945	0.636	0.799	0.900	**10.0%**	**24.5%**
1967	39,345	11,869	13,765	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**44.4%**
1968	17,389	7,030	5,553	61%	0.51	72	0.570	1.000	0.688	0.848	0.935	**6.5%**	**27.1%**
1969	24,130	11,243	8,075	57%	0.48	68.3	0.414	1.000	0.569	0.778	0.870	**13.0%**	**38.4%**
1970	15,515	6,804	4,853	62%	0.53	70.7	0.515	0.974	0.646	0.819	0.912	**8.8%**	**23.3%**
1971	23,634	9,634	7,889	57%	0.49	68.1	0.406	1.000	0.563	0.775	0.867	**13.3%**	**43.8%**
1972	17,116	6,807	5,451	61%	0.52	70.7	0.515	0.974	0.646	0.815	0.911	**8.9%**	**27.5%**
1973	19,398	8,042	6,305	59%	0.50	70.1	0.490	1.000	0.627	0.815	0.906	**9.4%**	**24.5%**
1974	21,622	9,529	7,137	58%	0.49	69.7	0.473	1.000	0.614	0.805	0.897	**10.3%**	**36.1%**
1975	24,787	11,618	8,320	57%	0.48	69.1	0.448	1.000	0.595	0.790	0.884	**11.6%**	**35.2%**
1976	19,464	7,437	6,330	59%	0.50	71.8	0.562	1.000	0.681	0.842	0.931	**6.9%**	**22.9%**
1977	9,565	426	2,627	71%	0.60	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**	**32.9%**
1978	16,299	8,442	5,146	62%	0.52	70	0.486	1.000	0.624	0.820	0.908	**9.2%**	**36.4%**
1979	19,425	8,050	6,315	59%	0.50	69.2	0.452	1.000	0.598	0.800	0.891	**10.9%**	**33.4%**
1980	16,270	8,669	5,135	62%	0.52	66.9	0.356	0.987	0.525	0.766	0.849	**15.1%**	**35.7%**
1981	18,070	7,187	5,808	60%	0.51	71.9	0.566	1.000	0.684	0.846	0.933	**6.7%**	**25.8%**
1982	24,415	12,623	8,181	57%	0.48	66	0.318	1.000	0.496	0.740	0.822	**17.8%**	**45.1%**
1983	55,568	9,285	19,832	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**53.7%**
1984	18,437	7,751	5,945	60%	0.51	68.4	0.419	0.974	0.572	0.777	0.870	**13.0%**	**27.4%**
1985	16,652	6,535	5,278	61%	0.52	69.4	0.461	0.939	0.604	0.778	0.880	**12.0%**	**29.5%**
1986	14,215	8,321	4,366	64%	0.54	71.6	0.553	1.000	0.675	0.850	0.933	**6.7%**	**25.0%**
1987	20,311	7,740	6,646	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**15.8%**
1988	13,660	4,643	4,159	64%	0.54	69.4	0.461	0.857	0.604	0.742	0.861	**13.9%**	**31.2%**
1989	16,894	6,563	5,368	61%	0.52	68.6	0.427	0.926	0.579	0.759	0.862	**13.8%**	**32.2%**
1990	19,713	7,473	6,423	59%	0.50	68.5	0.423	0.964	0.576	0.770	0.868	**13.2%**	**28.3%**
1991	10,780	3,274	3,082	68%	0.58	69.4	0.461	0.797	0.604	0.716	0.847	**15.3%**	**30.8%**
1992	15,595	6,105	4,883	62%	0.53	69	0.444	0.913	0.592	0.761	0.867	**13.3%**	**29.4%**
												Average:	**32.92%**

Formulas Sacramento River Fall Run Smolt Survival

C8 ='Study 467 Flow Data'!G7
D8 ='Study 467 Flow Data'!Q7 (HIDDEN)
E8 ='Study 467 Flow Data'!AA7 (HIDDEN)
F8 =(D8+E8)
G8 =0.374*C8-950
H8 =IF(C8>25000,(0.133*C8+829)/(C8-G8),(0.293*C8+2090)/(C8-G8))
I8 =(0.133*C8+829)/(C8-G8)
K8 =IF((-2.45925+(0.0420748*J8))<0,0,(-2.45925+(0.0420748*J8)))
L8 =(-0.5916024)+(0.017968*J8)+(0.0000434*F8)
M8 =-1.613493+(0.0319584*J8)
N8 =(L8*I8)+(M8*(1-I8))
O8 =K8+N8-(K8*N8)
P8 =1-O8

R8 ='Study 467 Flow Data'!H7
S8 ='Study 467 Flow Data'!R7 (HIDDEN)
T8 ='Study 467 Flow Data'!AB7 (HIDDEN)
U8 =(S8+T8)
V8 =0.374*R8-950
W8 =IF(R8>25000,(0.133*R8+829)/(R8-V8),(0.293*R8+2090)/(R8-V8))
X8 =(0.84*(0.133*R8+829)/(R8-V8))+(0.16*W8)
Z8 =(-2.45925+(0.0420748*Y8))
AA8 =(-0.5916024)+(0.017968*Y8)+(0.0000434*U8)
AB8 =-1.613493+(0.0319584*Y8)
AC8 =(AA8*X8)+(AB8*(1-X8))
AD8 =Z8+AC8-(Z8*AC8)
AE8 =1-AD8

AG8 ='Study 467 Flow Data'!I7 (HIDDEN)
AH8 ='Study 467 Flow Data'!S7 (HIDDEN)
AI8 ='Study 513 Flow Revised Data'!AC7
AJ8 =(AH8+AI8)
AK8 =0.374*AG8-950
AL8 =IF(AG8>25000,(0.133*AG8+829)/(AG8-AK8),(0.293*AG8+2090)/(AG8-AK8))
AM8 =(0.27*(0.133*AG8+829)/(AG8-AK8))+(0.73*AL8)
AO8 =(-2.45925+(0.0420748*AN8))
AP8 =IF(((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8))>1,1,((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8)))
AQ8 =-1.613493+(0.0319584*AN8)
AR8 =(AP8*AM8)+(AQ8*(1-AM8))
AS8 =AO8+AR8-(AO8*AR8)
AT8 =1-AS8

1 Study 526A Sacramento River Fall Run Smolt Survival Model — Cross Channel closed over 25,000 cfs

2 Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

3 Sacramento River temperatures based on limited historical data from USBR

	A	B	C	F	G	H	I	J	K	L	M	N	O	P
4			APRIL		Calculated									
5		Water	Sac		Sutter &									Calculated
6		Year	River	CVP + SWP	Steamboat		X-Channel	observed			Calculated Mortality			Survival
7	Year	Type	Flows	exports	Slough Q	Percent	Closed	temp f	m1	m2	m3	m23	m123	s123
8	1922	A	22,927	8,396	7,625	58%	0.25	58.5	0.002	0.824	0.256	0.400	0.401	**59.9%**
9	1923	B	23,597	8,068	7,875	57%	0.25	58.3	0.000	0.806	0.250	0.390	0.390	**61.0%**
10	1924	C	7,857	2,754	1,989	75%	0.32	61.5	0.128	0.633	0.352	0.442	0.513	**48.7%**
11	1925	D	22,570	6,936	7,491	58%	0.25	59.1	0.027	0.771	0.275	0.401	0.418	**58.2%**
12	1926	D	20,254	6,466	6,625	59%	0.26	61.6	0.133	0.796	0.355	0.469	0.539	**46.1%**
13	1927	W	48,222	9,771	17,085	23%	0.23	56.8	0.000	0.853	0.202	0.353	0.353	**64.7%**
14	1928	A	29,212	7,938	9,975	25%	0.25	58.7	0.011	0.808	0.262	0.396	0.402	**59.8%**
15	1929	C	8,866	2,922	2,366	72%	0.31	56.3	0.000	0.547	0.186	0.297	0.297	**70.3%**
16	1930	D	12,751	3,930	3,819	65%	0.28	59.6	0.048	0.650	0.291	0.393	0.422	**57.8%**
17	1931	C	8,996	2,936	2,415	72%	0.31	62.8	0.183	0.664	0.393	0.477	0.573	**42.7%**
18	1932	D	13,087	5,373	3,945	65%	0.28	58.9	0.019	0.700	0.269	0.390	0.402	**59.8%**
19	1933	C	12,582	4,098	3,756	65%	0.28	60.1	0.069	0.666	0.307	0.409	0.450	**55.0%**
20	1934	C	12,864	3,582	3,861	65%	0.28	63.6	0.217	0.707	0.419	0.500	0.609	**39.1%**
21	1935	B	24,080	9,780	8,056	57%	0.25	58.9	0.019	0.891	0.269	0.425	0.436	**56.4%**
22	1936	B	20,781	8,288	6,822	59%	0.26	59.7	0.053	0.841	0.294	0.435	0.465	**53.5%**
23	1937	B	23,257	7,978	7,748	57%	0.25	58.8	0.015	0.811	0.266	0.404	0.412	**58.8%**
24	1938	W	47,172	7,969	16,692	23%	0.23	56.3	0.000	0.766	0.186	0.321	0.321	**67.9%**
25	1939	D	12,103	4,122	3,577	66%	0.29	63.3	0.204	0.725	0.409	0.500	0.602	**39.8%**
26	1940	A	41,731	10,008	14,657	24%	0.24	57.4	0.000	0.874	0.221	0.375	0.375	**62.5%**
27	1941	W	42,372	9,308	14,897	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
28	1942	W	43,228	9,646	15,217	23%	0.23	56.5	0.000	0.842	0.192	0.345	0.345	**65.5%**
29	1943	W	29,406	9,118	10,048	24%	0.24	58.8	0.015	0.861	0.266	0.411	0.420	**58.0%**
30	1944	D	9,062	4,122	2,439	72%	0.31	58.4	0.000	0.637	0.253	0.371	0.371	**62.9%**
31	1945	B	11,726	6,254	3,436	67%	0.29	60.6	0.090	0.769	0.323	0.452	0.501	**49.9%**
32	1946	B	12,226	5,960	3,623	66%	0.29	60.7	0.095	0.758	0.326	0.449	0.502	**49.8%**
33	1947	D	13,911	4,928	4,253	64%	0.28	62.5	0.170	0.745	0.384	0.484	0.572	**42.8%**
34	1948	B	22,904	6,798	7,616	58%	0.25	56.6	0.000	0.720	0.195	0.328	0.328	**67.2%**
35	1949	D	13,321	5,106	4,032	65%	0.28	61.7	0.137	0.739	0.358	0.465	0.538	**46.2%**
36	1950	B	19,531	6,292	6,355	59%	0.26	61.3	0.120	0.783	0.346	0.459	0.524	**47.6%**
37	1951	A	14,732	6,362	4,560	63%	0.27	59.9	0.061	0.761	0.301	0.427	0.462	**53.8%**
38	1952	W	56,648	8,081	20,236	23%	0.23	55.5	0.000	0.756	0.160	0.297	0.297	**70.3%**
39	1953	W	16,288	5,668	5,142	62%	0.27	58.8	0.015	0.711	0.266	0.385	0.394	**60.6%**
40	1954	A	39,868	9,080	13,961	24%	0.24	58.4	0.000	0.852	0.253	0.395	0.395	**60.5%**
41	1955	D	9,584	3,690	2,634	70%	0.30	56.4	0.000	0.582	0.189	0.308	0.308	**69.2%**
42	1956	W	20,548	8,000	6,735	59%	0.26	59.7	0.053	0.828	0.294	0.432	0.462	**53.8%**
43	1957	A	20,975	6,404	6,895	58%	0.26	60.5	0.086	0.773	0.320	0.437	0.485	**51.5%**
44	1958	W	52,284	9,662	18,604	23%	0.23	57.4	0.000	0.859	0.221	0.368	0.368	**63.2%**
45	1959	B	10,366	3,766	2,927	69%	0.30	63	0.191	0.704	0.400	0.490	0.588	**41.2%**
46	1960	D	13,690	3,948	4,170	64%	0.28	59.5	0.044	0.649	0.288	0.388	0.415	**58.5%**
47	1961	D	12,673	3,522	3,790	65%	0.28	60.1	0.069	0.641	0.307	0.402	0.443	**55.7%**
48	1962	B	11,179	4,910	3,231	68%	0.29	61.8	0.141	0.732	0.362	0.469	0.544	**45.6%**
49	1963	W	69,377	9,812	24,997	23%	0.23	53.7	0.000	0.799	0.103	0.260	0.260	**74.0%**
50	1964	D	9,064	3,530	2,440	72%	0.31	59.3	0.036	0.627	0.282	0.388	0.410	**59.0%**
51	1965	W	45,587	9,796	16,100	23%	0.23	56.9	0.000	0.856	0.205	0.357	0.357	**64.3%**
52	1966	B	16,635	5,602	5,271	61%	0.27	61.9	0.145	0.764	0.365	0.472	0.548	**45.2%**
53	1967	W	39,925	8,714	13,982	24%	0.24	53.8	0.000	0.753	0.106	0.259	0.259	**74.1%**
54	1968	B	15,518	5,232	4,854	62%	0.27	61.5	0.128	0.740	0.352	0.457	0.527	**47.3%**
55	1969	W	44,707	7,737	15,770	23%	0.23	56.4	0.000	0.758	0.189	0.322	0.322	**67.8%**
56	1970	W	16,480	6,578	5,214	61%	0.27	58.8	0.015	0.750	0.266	0.396	0.405	**59.5%**
57	1971	W	21,629	6,544	7,139	58%	0.26	58.7	0.011	0.747	0.262	0.386	0.393	**60.7%**
58	1972	B	12,562	4,716	3,748	65%	0.28	58.5	0.002	0.664	0.256	0.372	0.373	**62.7%**
59	1973	A	19,512	7,450	6,347	59%	0.26	61.3	0.120	0.833	0.346	0.472	0.536	**46.4%**
60	1974	W	33,122	10,101	11,438	24%	0.24	56.8	0.000	0.867	0.202	0.362	0.362	**63.8%**
61	1975	W	25,874	9,312	8,727	25%	0.25	56.8	0.000	0.833	0.202	0.359	0.359	**64.1%**
62	1976	C	9,481	3,009	2,596	71%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
63	1977	C	9,145	2,995	2,470	71%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	**36.3%**
64	1978	A	37,948	7,788	13,243	24%	0.24	56.9	0.000	0.769	0.205	0.339	0.339	**66.1%**
65	1979	B	17,813	6,870	5,712	60%	0.26	59.8	0.057	0.781	0.298	0.425	0.458	**54.2%**
66	1980	A	19,818	6,884	6,462	59%	0.26	57.1	0.000	0.733	0.211	0.347	0.347	**65.3%**
67	1981	D	17,108	5,470	5,448	61%	0.27	61.5	0.128	0.751	0.352	0.458	0.528	**47.2%**
68	1982	W	75,838	9,195	27,413	23%	0.23	54.1	0.000	0.780	0.115	0.265	0.265	**73.5%**
69	1983	W	68,301	7,195	24,595	23%	0.23	55	0.000	0.709	0.144	0.272	0.272	**72.8%**
70	1984	W	17,743	6,824	5,686	60%	0.26	59.7	0.053	0.777	0.294	0.422	0.453	**54.7%**
71	1985	D	13,439	4,868	4,076	64%	0.28	60.8	0.099	0.712	0.330	0.436	0.492	**50.8%**
72	1986	W	20,389	7,652	6,675	59%	0.26	60.4	0.082	0.826	0.317	0.448	0.493	**50.7%**
73	1987	D	12,309	3,484	3,654	66%	0.28	65.7	0.305	0.740	0.486	0.559	0.693	**30.7%**
74	1988	C	8,702	2,862	2,305	73%	0.31	59.9	0.061	0.609	0.301	0.396	0.433	**56.7%**
75	1989	D	23,637	5,650	7,890	57%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	**48.0%**
76	1990	C	12,244	3,501	3,629	66%	0.29	61.6	0.133	0.667	0.355	0.444	0.518	**48.2%**
77	1991	C	15,374	4,264	4,800	62%	0.27	60.8	0.099	0.686	0.330	0.426	0.483	**51.7%**
78	1992	C	12,491	3,732	3,722	66%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	**49.9%**

	R	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
4	MAY		Calculated									
5	Sac		Steamboat			USBR						Calculated
6	River	CVP + SWP	& Sutter		X-channel	observed		Calculated Mortality				Survival
7	Flows	Exports	Slough Q	Percent	Closed	temp f	m1	m2	m3	m23	m123	s123
8	46,218	10,562	16,336	0.23	0.23	61.2	0.116	0.966	0.342	0.488	0.547	**45.3%**
9	14,346	6,266	4,415	0.63	0.33	62.4	0.166	0.802	0.381	0.521	0.600	**40.0%**
10	8,526	1,012	2,239	0.73	0.38	69.2	0.452	0.696	0.598	0.635	0.800	**20.0%**
11	12,068	5,054	3,563	0.66	0.35	63.2	0.200	0.763	0.406	0.530	0.624	**37.6%**
12	14,109	4,974	4,327	0.64	0.33	65.7	0.305	0.805	0.486	0.593	0.717	**28.3%**
13	26,781	8,548	9,066	0.25	0.25	62.6	0.175	0.904	0.387	0.515	0.600	**40.0%**
14	20,730	6,389	6,803	0.59	0.31	66.6	0.343	0.882	0.515	0.629	0.756	**24.4%**
15	9,681	2,872	2,671	0.70	0.37	66.1	0.322	0.721	0.499	0.580	0.715	**28.5%**
16	12,033	3,548	3,550	0.66	0.35	63.1	0.196	0.696	0.403	0.505	0.602	**39.8%**
17	10,100	3,210	2,827	0.69	0.36	70.5	0.507	0.814	0.640	0.703	0.854	**14.6%**
18	12,024	4,836	3,547	0.66	0.35	65.5	0.297	0.795	0.480	0.589	0.711	**28.9%**
19	7,556	2,510	1,876	0.76	0.39	63.7	0.221	0.662	0.422	0.516	0.623	**37.7%**
20	8,907	3,016	2,381	0.72	0.37	68.3	0.414	0.767	0.569	0.643	0.791	**20.9%**
21	28,817	5,652	9,828	0.25	0.25	64	0.234	0.804	0.432	0.523	0.634	**36.6%**
22	14,238	6,340	4,375	0.63	0.33	64.9	0.271	0.850	0.461	0.590	0.702	**29.8%**
23	16,211	6,777	5,113	0.62	0.32	64.5	0.255	0.861	0.448	0.582	0.688	**31.2%**
24	57,429	9,718	20,528	0.23	0.23	62.5	0.170	0.953	0.384	0.515	0.597	**40.3%**
25	8,584	3,478	2,260	0.73	0.38	68	0.402	0.781	0.560	0.643	0.787	**21.3%**
26	18,419	6,236	5,939	0.60	0.32	65.6	0.301	0.858	0.483	0.602	0.721	**27.9%**
27	39,485	9,718	13,817	0.24	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**
28	36,037	10,562	12,528	0.24	0.24	60.1	0.069	0.947	0.307	0.460	0.498	**50.2%**
29	20,274	7,675	6,632	0.59	0.31	65.4	0.292	0.917	0.477	0.614	0.727	**27.3%**
30	10,052	3,946	2,809	0.70	0.36	65.9	0.313	0.764	0.493	0.591	0.719	**28.1%**
31	11,674	4,960	3,416	0.67	0.35	63.1	0.196	0.757	0.403	0.527	0.619	**38.1%**
32	13,709	5,276	4,177	0.64	0.34	63.9	0.229	0.786	0.429	0.549	0.652	**34.8%**
33	8,985	3,494	2,410	0.72	0.37	68.7	0.431	0.794	0.582	0.661	0.807	**19.3%**
34	23,972	7,104	8,016	0.57	0.30	62.3	0.162	0.836	0.378	0.516	0.595	**40.5%**
35	14,914	4,761	4,628	0.63	0.33	65.2	0.284	0.787	0.470	0.575	0.695	**30.5%**
36	15,648	5,602	4,902	0.62	0.33	64.3	0.246	0.807	0.441	0.561	0.669	**33.1%**
37	18,870	7,136	6,107	0.60	0.32	64.4	0.250	0.875	0.445	0.580	0.685	**31.5%**
38	59,563	9,509	21,327	0.23	0.23	61.7	0.137	0.930	0.358	0.489	0.559	**44.1%**
39	27,013	7,732	9,153	0.25	0.25	60.9	0.103	0.838	0.333	0.458	0.514	**48.6%**
40	25,700	7,480	8,662	0.25	0.25	65.9	0.313	0.917	0.493	0.598	0.724	**27.6%**
41	11,417	3,980	3,320	0.67	0.35	66.9	0.356	0.783	0.525	0.615	0.752	**24.8%**
42	38,837	10,655	13,575	0.24	0.24	61.4	0.124	0.974	0.349	0.497	0.560	**44.0%**
43	17,165	6,026	5,470	0.61	0.32	64	0.234	0.820	0.432	0.556	0.660	**34.0%**
44	43,486	10,682	15,314	0.23	0.23	62.9	0.187	1.002	0.397	0.539	0.625	**37.5%**
45	9,319	3,668	2,535	0.71	0.37	65.9	0.313	0.752	0.493	0.588	0.717	**28.3%**
46	11,060	3,386	3,186	0.68	0.35	65.9	0.313	0.739	0.493	0.580	0.712	**28.8%**
47	8,720	2,910	2,311	0.72	0.38	64.3	0.246	0.690	0.441	0.535	0.650	**35.0%**
48	15,322	4,858	4,780	0.62	0.33	64.8	0.267	0.784	0.457	0.564	0.681	**31.9%**
49	29,094	9,323	9,931	0.25	0.25	62.5	0.170	0.936	0.384	0.519	0.601	**39.9%**
50	11,187	3,906	3,234	0.67	0.35	65.2	0.284	0.749	0.470	0.569	0.691	**30.9%**
51	24,892	8,178	8,360	0.57	0.30	63.6	0.217	0.906	0.419	0.566	0.660	**34.0%**
52	14,555	4,704	4,494	0.63	0.33	67.3	0.372	0.822	0.537	0.632	0.769	**23.1%**
53	44,790	9,703	15,801	0.23	0.23	62.1	0.154	0.945	0.371	0.506	0.581	**41.9%**
54	9,524	3,680	2,612	0.71	0.37	66.1	0.322	0.756	0.499	0.593	0.724	**27.6%**
55	45,533	9,273	16,079	0.23	0.23	63.2	0.200	0.946	0.406	0.533	0.626	**37.4%**
56	12,300	5,942	3,650	0.66	0.34	68.6	0.427	0.899	0.579	0.689	0.822	**17.8%**
57	29,874	8,264	10,223	0.24	0.24	61	0.107	0.863	0.336	0.465	0.522	**47.8%**
58	10,807	3,884	3,092	0.68	0.36	67.3	0.372	0.786	0.537	0.626	0.765	**23.5%**
59	15,751	6,510	4,941	0.62	0.33	66.9	0.356	0.893	0.525	0.645	0.771	**22.9%**
60	26,945	9,214	9,127	0.25	0.25	63.4	0.208	0.947	0.413	0.545	0.640	**36.0%**
61	28,435	9,516	9,685	0.25	0.25	63.8	0.225	0.968	0.425	0.559	0.658	**34.2%**
62	9,918	3,108	2,759	0.70	0.36	69.6	0.469	0.794	0.611	0.677	0.829	**17.1%**
63	7,056	786	1,689	0.77	0.40	64	0.234	0.592	0.432	0.496	0.614	**38.6%**
64	21,056	8,519	6,925	0.58	0.31	63	0.191	0.910	0.400	0.558	0.642	**35.8%**
65	12,459	5,980	3,710	0.66	0.34	63.8	0.225	0.814	0.425	0.559	0.658	**34.2%**
66	14,921	7,502	4,630	0.63	0.33	63.6	0.217	0.877	0.419	0.570	0.663	**33.7%**
67	8,897	3,530	2,377	0.72	0.37	66.7	0.347	0.760	0.518	0.609	0.745	**25.5%**
68	38,429	11,157	13,422	0.24	0.24	61.1	0.112	0.990	0.339	0.494	0.550	**45.0%**
69	54,514	7,808	19,438	0.23	0.23	60.1	0.069	0.827	0.307	0.427	0.467	**53.3%**
70	13,720	6,188	4,181	0.64	0.34	66.5	0.339	0.872	0.512	0.633	0.757	**24.3%**
71	13,139	4,242	3,964	0.65	0.34	65.8	0.309	0.775	0.489	0.586	0.714	**28.6%**
72	13,272	8,151	4,014	0.65	0.34	66.2	0.326	0.952	0.502	0.654	0.767	**23.3%**
73	8,467	2,840	2,217	0.73	0.38	70.5	0.507	0.798	0.640	0.700	0.852	**14.8%**
74	9,741	3,062	2,693	0.70	0.37	65.8	0.309	0.724	0.489	0.575	0.706	**29.4%**
75	14,358	3,948	4,420	0.63	0.33	64.7	0.263	0.742	0.454	0.550	0.668	**33.2%**
76	7,778	2,756	1,959	0.75	0.39	66.4	0.335	0.721	0.509	0.591	0.728	**27.2%**
77	8,807	2,969	2,344	0.72	0.38	65.7	0.305	0.718	0.486	0.573	0.703	**29.7%**
78	9,001	3,010	2,416	0.72	0.37	66	0.318	0.725	0.496	0.581	0.714	**28.6%**

	AG	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AV
4	JUNE		Caculated										
5	Sac		Steamboat			USBR						Calculated	
6	River	CVP + SWP	& Sutter		X-channel	observed		Calculated Mortality				Survival	Weighted
7	Flow	exports	Slough Q	percent	closed	temp f	m1	m2	m3	m23	m123	s123	Total Survival
8	34,719	12,757	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**44.4%**
9	18,383	7,701	5,925	60%	0.51	65.3	0.288	0.916	0.473	0.699	0.786	**21.4%**	**40.2%**
10	10,414	1,176	2,945	69%	0.58	70.6	0.511	0.728	0.643	0.692	0.850	**15.0%**	**24.0%**
11	16,480	6,328	5,214	61%	0.52	68.3	0.414	0.910	0.569	0.747	0.852	**14.8%**	**37.0%**
12	15,307	6,104	4,775	62%	0.53	71.2	0.536	0.953	0.662	0.816	0.915	**8.5%**	**27.8%**
13	18,991	8,379	6,153	60%	0.51	68.1	0.406	0.996	0.563	0.782	0.870	**13.0%**	**39.3%**
14	13,897	5,734	4,247	64%	0.54	69.7	0.473	0.910	0.614	0.774	0.881	**11.9%**	**28.2%**
15	10,840	2,964	3,104	68%	0.58	70.1	0.490	0.797	0.627	0.725	0.860	**14.0%**	**33.0%**
16	18,278	7,008	5,886	60%	0.51	69.6	0.469	0.963	0.611	0.790	0.889	**11.1%**	**37.7%**
17	13,484	4,296	4,093	64%	0.54	70.7	0.515	0.865	0.646	0.765	0.886	**11.4%**	**18.8%**
18	19,675	7,833	6,408	59%	0.50	69.5	0.465	0.997	0.608	0.803	0.895	**10.5%**	**30.9%**
19	10,485	1,588	2,971	69%	0.58	69.8	0.478	0.731	0.617	0.684	0.835	**16.5%**	**36.8%**
20	16,145	6,228	5,088	62%	0.52	70.7	0.515	0.949	0.646	0.804	0.905	**9.5%**	**21.9%**
21	17,902	7,656	5,745	60%	0.51	71	0.528	1.000	0.656	0.832	0.921	**7.9%**	**34.8%**
22	19,216	8,013	6,237	59%	0.50	69.2	0.452	1.000	0.598	0.801	0.891	**10.9%**	**30.5%**
23	17,724	7,035	5,679	60%	0.51	69.7	0.473	0.966	0.614	0.795	0.892	**10.8%**	**32.2%**
24	35,517	11,869	12,333	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**41.5%**
25	18,585	7,393	6,001	60%	0.51	71	0.528	1.000	0.656	0.831	0.920	**8.0%**	**22.1%**
26	15,462	7,220	4,833	62%	0.53	71.5	0.549	1.000	0.672	0.845	0.930	**7.0%**	**30.0%**
27	21,005	10,967	6,906	58%	0.50	69	0.444	1.000	0.592	0.794	0.886	**11.4%**	**41.6%**
28	27,117	12,377	9,192	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**47.5%**
29	16,964	7,781	5,395	61%	0.52	66.6	0.343	0.943	0.515	0.736	0.827	**17.3%**	**30.8%**
30	17,912	7,239	5,749	60%	0.51	67.8	0.393	0.941	0.553	0.752	0.849	**15.1%**	**31.7%**
31	16,939	7,269	5,385	61%	0.52	70.6	0.511	0.992	0.643	0.824	0.914	**8.6%**	**34.8%**
32	16,518	7,050	5,228	61%	0.52	68.1	0.406	0.938	0.563	0.758	0.856	**14.4%**	**33.7%**
33	18,814	7,256	6,086	60%	0.51	70	0.486	0.981	0.624	0.805	0.900	**10.0%**	**21.6%**
34	22,981	9,030	7,645	58%	0.49	69	0.444	1.000	0.592	0.791	0.884	**11.6%**	**39.8%**
35	15,423	5,864	4,818	62%	0.53	70.9	0.524	0.937	0.652	0.803	0.906	**9.4%**	**29.3%**
36	20,434	8,182	6,692	59%	0.50	68.9	0.440	1.000	0.588	0.794	0.884	**11.6%**	**31.7%**
37	17,738	7,459	5,684	60%	0.51	70.3	0.499	0.995	0.633	0.819	0.909	**9.1%**	**31.2%**
38	38,968	11,496	13,624	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**45.9%**
39	26,082	10,450	8,805	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**46.4%**
40	14,462	6,114	4,459	63%	0.54	68.7	0.431	0.908	0.582	0.757	0.862	**13.8%**	**30.7%**
41	18,189	7,107	5,853	60%	0.51	70.1	0.490	0.976	0.627	0.805	0.901	**9.9%**	**29.7%**
42	22,288	11,404	7,386	58%	0.49	68.7	0.431	1.000	0.582	0.787	0.879	**12.1%**	**40.0%**
43	17,681	7,317	5,663	60%	0.51	72	0.570	1.000	0.688	0.848	0.935	**6.5%**	**32.0%**
44	33,938	12,047	11,743	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**38.9%**
45	17,984	7,222	5,776	60%	0.51	72.1	0.574	1.000	0.691	0.849	0.936	**6.4%**	**26.5%**
46	18,114	7,022	5,825	60%	0.51	72.7	0.600	1.000	0.710	0.858	0.943	**5.7%**	**29.7%**
47	20,190	7,702	6,601	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**33.2%**
48	17,232	6,850	5,495	61%	0.52	70.4	0.503	0.971	0.636	0.809	0.905	**9.5%**	**30.2%**
49	19,705	8,670	6,420	59%	0.50	69	0.444	1.000	0.592	0.797	0.887	**11.3%**	**40.5%**
50	17,595	6,863	5,631	61%	0.51	69.5	0.465	0.955	0.608	0.786	0.886	**11.4%**	**32.2%**
51	18,258	8,346	5,878	60%	0.51	67.1	0.364	0.976	0.531	0.758	0.846	**15.4%**	**35.8%**
52	15,685	6,291	4,916	62%	0.53	70.4	0.503	0.946	0.636	0.800	0.900	**10.0%**	**24.5%**
53	39,345	11,869	13,765	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**44.2%**
54	17,331	7,012	5,532	61%	0.52	72	0.570	1.000	0.688	0.849	0.935	**6.5%**	**27.1%**
55	24,130	11,243	8,075	57%	0.48	68.3	0.414	1.000	0.569	0.778	0.870	**13.0%**	**38.2%**
56	15,754	6,888	4,942	62%	0.53	70.7	0.515	0.978	0.646	0.820	0.913	**8.7%**	**23.3%**
57	23,831	9,703	7,963	57%	0.49	68.1	0.406	1.000	0.563	0.775	0.866	**13.4%**	**43.8%**
58	17,152	6,822	5,465	61%	0.52	70.7	0.515	0.975	0.646	0.816	0.911	**8.9%**	**27.5%**
59	19,679	8,140	6,410	59%	0.50	70.1	0.490	1.000	0.627	0.814	0.905	**9.5%**	**24.5%**
60	21,819	9,598	7,210	58%	0.49	69.7	0.473	1.000	0.614	0.804	0.897	**10.3%**	**36.1%**
61	24,787	11,619	8,320	57%	0.48	69.1	0.448	1.000	0.595	0.790	0.884	**11.6%**	**35.2%**
62	19,439	7,427	6,320	59%	0.50	71.8	0.562	1.000	0.681	0.842	0.931	**6.9%**	**22.9%**
63	9,547	403	2,621	71%	0.60	73.9	0.650	0.754	0.748	0.752	0.913	**8.7%**	**32.8%**
64	16,219	8,416	5,116	62%	0.52	70	0.486	1.000	0.624	0.820	0.908	**9.2%**	**36.1%**
65	19,736	8,159	6,431	59%	0.50	69.2	0.452	1.000	0.598	0.800	0.890	**11.0%**	**33.4%**
66	16,371	8,703	5,173	61%	0.52	66.9	0.356	0.988	0.525	0.766	0.849	**15.1%**	**35.7%**
67	18,021	7,173	5,790	60%	0.51	71.9	0.566	1.000	0.684	0.846	0.933	**6.7%**	**25.8%**
68	24,415	12,638	8,181	57%	0.48	66	0.318	1.000	0.496	0.740	0.822	**17.8%**	**44.9%**
69	55,568	9,285	19,832	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**53.5%**
70	18,662	7,829	6,030	60%	0.51	68.4	0.419	0.977	0.572	0.778	0.871	**12.9%**	**27.4%**
71	16,737	6,566	5,310	61%	0.52	69.4	0.461	0.940	0.604	0.779	0.881	**11.9%**	**29.4%**
72	14,240	8,327	4,376	63%	0.54	71.6	0.553	1.000	0.675	0.850	0.933	**6.7%**	**25.0%**
73	20,396	7,770	6,678	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**15.8%**
74	13,720	4,686	4,181	64%	0.54	69.4	0.461	0.859	0.604	0.742	0.861	**13.9%**	**31.2%**
75	16,690	6,524	5,292	61%	0.52	68.6	0.427	0.924	0.579	0.758	0.861	**13.9%**	**32.2%**
76	17,220	6,588	5,490	61%	0.52	68.5	0.423	0.925	0.576	0.756	0.859	**14.1%**	**28.4%**
77	10,509	3,007	2,980	69%	0.58	69.4	0.461	0.786	0.604	0.710	0.844	**15.6%**	**30.9%**
78	16,542	6,432	5,237	61%	0.52	69	0.444	0.927	0.592	0.766	0.870	**13.0%**	**29.4%**
79												**Average:**	**32.90%**

80 Formulas — Sacramento River Fall Run Smolt Survival

82 C8 ='Study 467 Flow Data'!G7

83 D8 ='Study 467 Flow Data'!Q7 (HIDDEN)

84 E8 ='Study 467 Flow Data'!AA7 (HIDDEN)

85 F8 =(D8+E8)

86 G8 =0.374*C8-950

87 H8 =IF(C8>25000,(0.133*C8+829)/(C8-G8),(0.293*C8+2090)/(C8-G8))

88 I8 =(0.133*C8+829)/(C8-G8)

89 K8 =IF((-2.45925+(0.0420748*J8))<0,0,(-2.45925+(0.0420748*J8)))

90 L8 =(-0.5916024)+(0.017968*J8)+(0.0000434*F8)

91 M8 =-1.613493+(0.0319584*J8)

92 N8 =(L8*I8)+(M8*(1-I8))

93 O8 =K8+N8-(K8*N8)

94 P8 =1-O8

82 R8 ='Study 467 Flow Data'!H7

83 S8 ='Study 467 Flow Data'!R7 (HIDDEN)

84 T8 ='Study 467 Flow Data'!AB7 (HIDDEN)

85 U8 =(S8+T8)

86 V8 =0.374*R8-950

87 W8 =IF(R8>25000,(0.133*R8+829)/(R8-V8),(0.293*R8+2090)/(R8-V8))

88 X8 =(0.84*(0.133*R8+829)/(R8-V8))+(0.16*W8)

89 Z8 =(-2.45925+(0.0420748*Y8))

90 AA8 =(-0.5916024)+(0.017968*Y8)+(0.0000434*U8)

91 AB8 =-1.613493+(0.0319584*Y8)

92 AC8 =(AA8*X8)+(AB8*(1-X8))

93 AD8 =Z8+AC8-(Z8*AC8)

94 AE8 =1-AD8

82 AG8 ='Study 467 Flow Data'!I7 (HIDDEN)

83 AH8 ='Study 467 Flow Data'!S7 (HIDDEN)

84 AI8 ='Study 513 Flow Revised Data'!AC7

85 AJ8 =(AH8+AI8)

86 AK8 =0.374*AG8-950

87 AL8 =IF(AG8>25000,(0.133*AG8+829)/(AG8-AK8),(0.293*AG8+2090)/(AG8-AK8))

88 AM8 =(0.27*(0.133*AG8+829)/(AG8-AK8))+(0.73*AL8)

89 AO8 =(-2.45925+(0.0420748*AN8))

90 AP8 =IF(((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8))>1,1,((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8)))

91 AQ8 =-1.613493+(0.0319584*AN8)

92 AR8 =(AP8*AM8)+(AQ8*(1-AM8))

93 AS8 =AO8+AR8-(AO8*AR8)

94 AT8 =1-AS8

Study 634 Sacramento River Fall Run Smolt Survival Model

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

Row	Year	Water Year Type	APRIL Sac River Flows	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123
8	1922	A	22,816	5,930	7,583	58%	0.25	58.5	0.002	0.717	0.256	0.373	0.374	**62.6%**
9	1923	B	23,703	6,716	7,915	57%	0.25	58.3	0.000	0.747	0.250	0.375	0.375	**62.5%**
10	1924	C	7,322	2,476	1,788	77%	0.33	61.5	0.128	0.621	0.352	0.440	0.511	**48.9%**
11	1925	D	20,329	6,094	6,653	59%	0.26	59.1	0.027	0.735	0.275	0.394	0.411	**58.9%**
12	1926	D	18,258	5,466	5,878	60%	0.26	61.6	0.133	0.752	0.355	0.460	0.531	**46.9%**
13	1927	W	48,222	6,036	17,085	23%	0.23	56.8	0.000	0.691	0.202	0.316	0.316	**68.4%**
14	1928	A	29,212	6,436	9,975	25%	0.25	58.7	0.011	0.742	0.262	0.380	0.387	**61.3%**
15	1929	C	8,219	2,634	2,124	74%	0.32	56.3	0.000	0.534	0.186	0.296	0.296	**70.4%**
16	1930	D	12,640	3,456	3,777	65%	0.28	59.6	0.048	0.629	0.291	0.387	0.417	**58.3%**
17	1931	C	9,155	2,656	2,474	71%	0.31	62.8	0.183	0.652	0.393	0.473	0.569	**43.1%**
18	1932	D	11,281	3,964	3,269	67%	0.29	58.9	0.019	0.639	0.269	0.376	0.388	**61.2%**
19	1933	C	12,090	3,291	3,572	66%	0.29	60.1	0.069	0.631	0.307	0.400	0.442	**55.8%**
20	1934	C	12,152	3,266	3,595	66%	0.29	63.6	0.217	0.693	0.419	0.497	0.606	**39.4%**
21	1935	B	24,245	6,836	8,118	57%	0.25	58.9	0.019	0.763	0.269	0.393	0.405	**59.5%**
22	1936	B	21,531	5,798	7,103	58%	0.26	59.7	0.053	0.733	0.294	0.407	0.438	**56.2%**
23	1937	B	23,007	8,044	7,655	58%	0.25	58.8	0.015	0.814	0.266	0.405	0.413	**58.7%**
24	1938	W	47,172	7,716	16,692	23%	0.23	56.3	0.000	0.755	0.186	0.318	0.318	**68.2%**
25	1939	D	10,698	3,818	3,051	68%	0.29	63.3	0.204	0.711	0.409	0.498	0.601	**39.9%**
26	1940	A	41,731	6,836	14,657	24%	0.24	57.4	0.000	0.736	0.221	0.342	0.342	**65.8%**
27	1941	W	42,372	9,308	14,897	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
28	1942	W	43,308	6,836	15,247	23%	0.23	56.5	0.000	0.720	0.192	0.316	0.316	**68.4%**
29	1943	W	29,406	9,179	10,048	24%	0.24	58.8	0.015	0.863	0.266	0.412	0.421	**57.9%**
30	1944	D	9,823	4,370	2,724	70%	0.30	58.4	0.000	0.647	0.253	0.372	0.372	**62.8%**
31	1945	B	11,753	4,146	3,446	67%	0.29	60.6	0.090	0.677	0.323	0.425	0.477	**52.3%**
32	1946	B	12,226	4,820	3,623	66%	0.29	60.7	0.095	0.708	0.326	0.435	0.489	**51.1%**
33	1947	D	13,800	3,736	4,211	64%	0.28	62.5	0.170	0.694	0.384	0.470	0.560	**44.0%**
34	1948	B	22,793	5,512	7,575	58%	0.25	56.6	0.000	0.665	0.195	0.314	0.314	**68.6%**
35	1949	D	13,210	3,724	3,991	65%	0.28	61.7	0.137	0.679	0.358	0.448	0.524	**47.6%**
36	1950	B	18,776	4,894	6,072	60%	0.26	61.3	0.120	0.722	0.346	0.444	0.511	**48.9%**
37	1951	A	14,732	4,388	4,560	63%	0.27	59.9	0.061	0.675	0.301	0.403	0.440	**56.0%**
38	1952	W	56,648	7,847	20,236	23%	0.23	55.5	0.000	0.746	0.160	0.295	0.295	**70.5%**
39	1953	W	16,177	4,850	5,100	62%	0.27	58.8	0.015	0.675	0.266	0.376	0.385	**61.5%**
40	1954	A	39,868	6,036	13,961	24%	0.24	58.4	0.000	0.720	0.253	0.363	0.363	**63.7%**
41	1955	D	9,473	2,974	2,593	71%	0.30	56.4	0.000	0.551	0.189	0.299	0.299	**70.1%**
42	1956	W	20,437	5,442	6,693	59%	0.26	59.7	0.053	0.717	0.294	0.404	0.435	**56.5%**
43	1957	A	19,655	5,328	6,401	59%	0.26	60.5	0.086	0.727	0.320	0.426	0.475	**52.5%**
44	1958	W	52,284	9,483	18,604	23%	0.23	57.4	0.000	0.851	0.221	0.367	0.367	**63.3%**
45	1959	B	8,822	3,432	2,349	72%	0.31	63	0.191	0.689	0.400	0.489	0.587	**41.3%**
46	1960	D	12,667	3,477	3,787	65%	0.28	59.5	0.044	0.628	0.288	0.384	0.412	**58.8%**
47	1961	D	12,647	3,228	3,780	65%	0.28	60.1	0.069	0.628	0.307	0.398	0.440	**56.0%**
48	1962	B	13,553	4,344	4,119	64%	0.28	61.8	0.141	0.707	0.362	0.458	0.534	**46.6%**
49	1963	W	69,458	6,836	25,027	23%	0.23	53.7	0.000	0.670	0.103	0.231	0.231	**76.9%**
50	1964	D	8,953	2,794	2,398	72%	0.31	59.3	0.036	0.595	0.282	0.378	0.400	**60.0%**
51	1965	W	45,179	6,836	15,947	23%	0.23	56.9	0.000	0.727	0.205	0.327	0.327	**67.3%**
52	1966	B	14,922	4,094	4,631	63%	0.27	61.9	0.145	0.698	0.365	0.456	0.535	**46.5%**
53	1967	W	39,925	8,483	13,982	24%	0.24	53.8	0.000	0.743	0.106	0.257	0.257	**74.3%**
54	1968	B	14,216	4,342	4,367	64%	0.28	61.5	0.128	0.702	0.352	0.449	0.519	**48.1%**
55	1969	W	44,787	7,506	15,800	23%	0.23	56.4	0.000	0.748	0.189	0.320	0.320	**68.0%**
56	1970	W	13,811	4,146	4,215	64%	0.28	58.8	0.015	0.645	0.266	0.371	0.380	**62.0%**
57	1971	W	20,753	5,588	6,812	59%	0.26	58.7	0.011	0.706	0.262	0.377	0.383	**61.7%**
58	1972	B	12,452	3,436	3,707	66%	0.28	58.5	0.002	0.609	0.256	0.356	0.358	**64.2%**
59	1973	A	19,512	6,220	6,347	59%	0.26	61.3	0.120	0.780	0.346	0.458	0.523	**47.7%**
60	1974	W	33,208	9,338	11,470	24%	0.24	56.8	0.000	0.834	0.202	0.354	0.354	**64.6%**
61	1975	W	25,763	6,836	8,685	25%	0.25	56.8	0.000	0.726	0.202	0.332	0.332	**66.8%**
62	1976	C	9,434	2,859	2,578	71%	0.30	58.9	0.019	0.591	0.269	0.367	0.379	**62.1%**
63	1977	C	9,122	2,684	2,462	72%	0.31	64.3	0.246	0.680	0.441	0.515	0.634	**36.6%**
64	1978	A	38,698	7,513	13,523	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
65	1979	B	17,702	5,778	5,671	60%	0.26	59.8	0.057	0.734	0.298	0.413	0.446	**55.4%**
66	1980	A	19,818	5,382	6,462	59%	0.26	57.1	0.000	0.668	0.211	0.330	0.330	**67.0%**
67	1981	D	16,998	4,840	5,407	61%	0.27	61.5	0.128	0.723	0.352	0.451	0.521	**47.9%**
68	1982	W	75,838	8,950	27,413	23%	0.23	54.1	0.000	0.769	0.115	0.263	0.263	**73.7%**
69	1983	W	68,301	6,963	24,595	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
70	1984	W	16,021	4,528	5,042	62%	0.27	59.7	0.053	0.678	0.294	0.398	0.429	**57.1%**
71	1985	D	13,328	3,754	4,035	65%	0.28	60.8	0.099	0.664	0.330	0.423	0.480	**52.0%**
72	1986	W	20,778	7,418	6,821	59%	0.26	60.4	0.082	0.816	0.317	0.445	0.491	**50.9%**
73	1987	D	10,971	3,137	3,153	68%	0.29	65.7	0.305	0.725	0.486	0.556	0.692	**30.8%**
74	1988	C	9,091	2,746	2,450	72%	0.31	59.9	0.061	0.604	0.301	0.394	0.431	**56.9%**
75	1989	D	23,637	5,116	7,890	57%	0.25	61.4	0.124	0.734	0.349	0.446	0.515	**48.5%**
76	1990	C	12,293	3,222	3,648	66%	0.29	61.6	0.133	0.655	0.355	0.441	0.515	**48.5%**
77	1991	C	15,284	3,748	4,766	62%	0.27	60.8	0.099	0.664	0.330	0.420	0.478	**52.2%**
78	1992	C	12,002	3,252	3,539	66%	0.29	61.2	0.116	0.649	0.342	0.430	0.496	**50.4%**

Row	Year	MAY Sac River Flows	CVP + SWP Exports	Calculated Steamboat & Sutter Slough Q	Percent	X-channel Closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123
8	1922	46,457	6,550	16,425	0.23	0.23	61.2	0.116	0.792	0.342	0.447	0.511	**48.9%**
9	1923	14,418	5,236	4,442	0.63	0.33	62.4	0.166	0.757	0.381	0.506	0.588	**41.2%**
10	1924	8,046	826	2,059	0.74	0.39	69.2	0.452	0.688	0.598	0.633	0.799	**20.1%**
11	1925	11,007	4,372	3,167	0.68	0.35	63.2	0.200	0.734	0.406	0.522	0.618	**38.2%**
12	1926	13,257	3,650	4,008	0.65	0.34	65.7	0.305	0.747	0.486	0.575	0.704	**29.6%**
13	1927	26,781	6,550	9,066	0.25	0.25	62.6	0.175	0.817	0.387	0.494	0.582	**41.8%**
14	1928	19,205	5,402	6,233	0.59	0.31	66.6	0.343	0.840	0.515	0.617	0.748	**25.2%**
15	1929	9,269	2,880	2,517	0.71	0.37	66.1	0.322	0.721	0.499	0.581	0.716	**28.4%**
16	1930	11,436	3,292	3,327	0.67	0.35	63.1	0.196	0.685	0.403	0.502	0.599	**40.1%**
17	1931	10,274	2,920	2,892	0.69	0.36	70.5	0.507	0.802	0.640	0.698	0.851	**14.9%**
18	1932	10,831	3,892	3,101	0.68	0.36	65.5	0.297	0.754	0.480	0.577	0.703	**29.7%**
19	1933	8,017	2,681	2,048	0.74	0.39	63.7	0.221	0.669	0.422	0.518	0.624	**37.6%**
20	1934	8,500	2,724	2,229	0.73	0.38	68.3	0.414	0.754	0.569	0.639	0.789	**21.1%**
21	1935	28,784	5,712	9,815	0.25	0.25	64	0.234	0.806	0.432	0.524	0.635	**36.5%**
22	1936	17,635	5,183	5,645	0.61	0.32	64.9	0.271	0.799	0.461	0.569	0.686	**31.4%**
23	1937	15,726	7,049	4,932	0.62	0.33	64.5	0.255	0.873	0.448	0.587	0.692	**30.8%**
24	1938	57,429	9,329	20,528	0.23	0.23	62.5	0.170	0.936	0.384	0.511	0.594	**40.6%**
25	1939	7,956	3,270	2,026	0.75	0.39	68	0.402	0.772	0.560	0.642	0.786	**21.4%**
26	1940	17,819	6,025	5,714	0.60	0.32	65.6	0.301	0.849	0.483	0.599	0.720	**28.0%**
27	1941	39,485	9,718	13,817	0.24	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**
28	1942	36,037	7,274	12,528	0.24	0.24	60.1	0.069	0.804	0.307	0.426	0.466	**53.4%**
29	1943	20,129	6,736	6,578	0.59	0.31	65.4	0.292	0.876	0.477	0.601	0.718	**28.2%**
30	1944	8,907	3,568	2,381	0.72	0.37	65.9	0.313	0.747	0.493	0.588	0.717	**28.3%**
31	1945	12,012	4,360	3,542	0.66	0.35	63.1	0.196	0.731	0.403	0.517	0.611	**38.9%**
32	1946	12,428	4,764	3,698	0.66	0.34	63.9	0.229	0.763	0.429	0.544	0.648	**35.2%**
33	1947	8,840	3,002	2,356	0.72	0.38	68.7	0.431	0.773	0.582	0.654	0.803	**19.7%**
34	1948	28,404	6,550	9,673	0.25	0.25	62.3	0.162	0.812	0.378	0.484	0.568	**43.2%**
35	1949	13,671	3,892	4,163	0.64	0.34	65.2	0.284	0.749	0.470	0.564	0.688	**31.2%**
36	1950	13,720	4,050	4,181	0.64	0.34	64.3	0.246	0.740	0.441	0.542	0.654	**34.6%**
37	1951	18,870	5,582	6,107	0.60	0.32	64.4	0.250	0.808	0.445	0.559	0.670	**33.0%**
38	1952	59,563	9,236	21,327	0.23	0.23	61.7	0.137	0.918	0.358	0.486	0.557	**44.3%**
39	1953	26,868	6,912	9,099	0.25	0.25	60.9	0.103	0.803	0.333	0.449	0.506	**49.4%**
40	1954	23,710	6,000	7,918	0.57	0.30	65.9	0.313	0.853	0.493	0.602	0.727	**27.3%**
41	1955	10,273	3,386	2,892	0.69	0.36	66.9	0.356	0.757	0.525	0.608	0.748	**25.2%**
42	1956	39,005	6,550	13,638	0.24	0.24	61.4	0.124	0.796	0.349	0.455	0.522	**47.8%**
43	1957	17,408	5,392	5,561	0.61	0.32	64	0.234	0.792	0.432	0.547	0.653	**34.7%**
44	1958	43,486	10,629	15,314	0.23	0.23	62.9	0.187	1.000	0.397	0.538	0.625	**37.5%**
45	1959	9,424	3,156	2,575	0.71	0.37	65.9	0.313	0.729	0.493	0.580	0.712	**28.8%**
46	1960	11,130	3,356	3,213	0.68	0.35	65.9	0.313	0.738	0.493	0.579	0.711	**28.9%**
47	1961	8,807	2,740	2,344	0.72	0.38	64.3	0.246	0.683	0.441	0.532	0.647	**35.3%**
48	1962	13,949	4,392	4,267	0.64	0.33	64.8	0.267	0.763	0.457	0.560	0.677	**32.3%**
49	1963	29,094	7,274	9,931	0.25	0.25	62.5	0.170	0.847	0.384	0.497	0.583	**41.7%**
50	1964	11,043	3,276	3,180	0.68	0.35	65.2	0.284	0.722	0.470	0.559	0.684	**31.6%**
51	1965	24,030	7,261	8,037	0.57	0.30	63.6	0.217	0.866	0.419	0.554	0.651	**34.9%**
52	1966	13,341	3,904	4,040	0.64	0.34	67.3	0.372	0.787	0.537	0.622	0.763	**23.7%**
53	1967	44,790	9,434	15,801	0.23	0.23	62.1	0.154	0.934	0.371	0.503	0.579	**42.1%**
54	1968	9,379	3,170	2,558	0.71	0.37	66.1	0.322	0.734	0.499	0.586	0.719	**28.1%**
55	1969	45,533	9,004	16,079	0.23	0.23	63.2	0.200	0.935	0.406	0.530	0.624	**37.6%**
56	1970	12,155	4,080	3,596	0.66	0.35	68.6	0.427	0.818	0.579	0.662	0.806	**19.4%**
57	1971	30,262	6,912	10,368	0.24	0.24	61	0.107	0.804	0.336	0.450	0.509	**49.1%**
58	1972	10,533	3,290	2,989	0.69	0.36	67.3	0.372	0.760	0.537	0.617	0.760	**24.0%**
59	1973	15,751	5,724	4,941	0.62	0.33	66.9	0.356	0.859	0.525	0.634	0.764	**23.6%**
60	1974	26,945	6,550	9,127	0.25	0.25	63.4	0.208	0.832	0.413	0.516	0.617	**38.3%**
61	1975	28,542	7,274	9,725	0.25	0.25	63.8	0.225	0.870	0.425	0.535	0.640	**36.0%**
62	1976	8,934	2,866	2,391	0.72	0.37	69.6	0.469	0.783	0.611	0.675	0.828	**17.2%**
63	1977	7,224	681	1,752	0.77	0.40	64	0.234	0.588	0.432	0.494	0.612	**38.8%**
64	1978	21,056	8,200	6,925	0.58	0.31	63	0.191	0.896	0.400	0.553	0.639	**36.1%**
65	1979	12,566	5,030	3,750	0.65	0.34	63.8	0.225	0.773	0.425	0.545	0.647	**35.3%**
66	1980	14,777	7,829	4,577	0.63	0.33	63.6	0.217	0.891	0.419	0.575	0.667	**33.3%**
67	1981	8,752	3,434	2,323	0.72	0.38	66.7	0.347	0.756	0.518	0.608	0.744	**25.6%**
68	1982	38,429	10,706	13,422	0.24	0.24	61.1	0.112	0.971	0.339	0.489	0.546	**45.4%**
69	1983	54,514	7,539	19,438	0.23	0.23	60.1	0.069	0.815	0.307	0.424	0.464	**53.6%**
70	1984	15,107	4,912	4,700	0.63	0.33	66.5	0.339	0.816	0.512	0.612	0.743	**25.7%**
71	1985	11,420	3,540	3,321	0.67	0.35	65.8	0.309	0.744	0.489	0.579	0.709	**29.1%**
72	1986	13,127	8,352	3,959	0.65	0.34	66.2	0.326	0.960	0.502	0.658	0.769	**23.1%**
73	1987	7,370	2,618	1,806	0.76	0.40	70.5	0.507	0.789	0.640	0.699	0.851	**14.9%**
74	1988	8,833	2,778	2,354	0.72	0.38	65.8	0.309	0.711	0.489	0.573	0.705	**29.5%**
75	1989	14,133	3,702	4,336	0.64	0.33	64.7	0.263	0.732	0.454	0.547	0.666	**33.4%**
76	1990	7,791	2,482	1,964	0.75	0.39	66.4	0.335	0.709	0.509	0.587	0.725	**27.5%**
77	1991	8,690	2,693	2,300	0.73	0.38	65.7	0.305	0.706	0.486	0.569	0.700	**30.0%**
78	1992	8,933	2,718	2,391	0.72	0.37	66	0.318	0.712	0.496	0.577	0.711	**28.9%**

Row	Year	JUNE Sac River Flow	CVP + SWP exports	Caculated Steamboat & Sutter Slough Q	percent	X-channel closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123	Weighted Total Survival
8	1922	34,719	11,272	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**47.2%**
9	1923	15,884	6,787	4,991	62%	0.52	65.3	0.288	0.876	0.473	0.685	0.776	**22.4%**	**41.4%**
10	1924	10,096	949	2,826	69%	0.59	70.6	0.511	0.718	0.643	0.687	0.847	**15.3%**	**24.1%**
11	1925	15,166	5,394	4,722	63%	0.53	68.3	0.414	0.870	0.569	0.729	0.841	**15.9%**	**37.7%**
12	1926	17,055	6,724	5,429	61%	0.52	71.2	0.536	0.980	0.662	0.826	0.919	**8.1%**	**28.6%**
13	1927	19,503	8,131	6,344	59%	0.50	68.1	0.406	0.985	0.563	0.775	0.866	**13.4%**	**41.2%**
14	1928	14,470	5,986	4,462	63%	0.54	69.7	0.473	0.921	0.614	0.778	0.883	**11.7%**	**28.9%**
15	1929	10,790	2,973	3,085	68%	0.58	70.1	0.490	0.797	0.627	0.725	0.860	**14.0%**	**33.0%**
16	1930	18,431	7,073	5,943	60%	0.51	69.6	0.469	0.966	0.611	0.791	0.889	**11.1%**	**37.9%**
17	1931	14,110	4,929	4,327	64%	0.54	70.7	0.515	0.893	0.646	0.779	0.893	**10.7%**	**18.9%**
18	1932	20,235	7,948	6,618	59%	0.50	69.5	0.465	1.000	0.608	0.804	0.895	**10.5%**	**31.6%**
19	1933	11,246	2,019	3,256	67%	0.57	69.8	0.478	0.750	0.617	0.693	0.840	**16.0%**	**36.8%**
20	1934	14,639	5,461	4,525	63%	0.53	70.7	0.515	0.916	0.646	0.790	0.898	**10.2%**	**22.3%**
21	1935	18,402	7,996	5,932	60%	0.51	71	0.528	1.000	0.656	0.831	0.920	**8.0%**	**35.3%**
22	1936	17,887	7,559	5,740	60%	0.51	69.2	0.452	0.980	0.598	0.793	0.887	**11.3%**	**32.0%**
23	1937	17,724	7,376	5,679	60%	0.51	69.7	0.473	0.981	0.614	0.802	0.896	**10.4%**	**31.9%**
24	1938	35,517	11,272	12,333	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**41.7%**
25	1939	18,919	7,402	6,126	60%	0.51	71	0.528	1.000	0.656	0.830	0.920	**8.0%**	**22.2%**
26	1940	13,923	6,193	4,257	64%	0.54	71.5	0.549	0.962	0.672	0.829	0.923	**7.7%**	**30.8%**
27	1941	20,808	11,087	6,832	59%	0.50	69	0.444	1.000	0.592	0.795	0.886	**11.4%**	**41.6%**
28	1942	27,117	11,272	9,192	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**50.0%**
29	1943	16,774	7,779	5,323	61%	0.52	66.6	0.343	0.943	0.515	0.737	0.827	**17.3%**	**31.3%**
30	1944	18,532	7,356	5,981	60%	0.51	67.8	0.393	0.946	0.553	0.753	0.850	**15.0%**	**31.8%**
31	1945	16,702	7,153	5,297	61%	0.52	70.6	0.511	0.987	0.643	0.822	0.913	**8.7%**	**35.7%**
32	1946	16,802	7,123	5,334	61%	0.52	68.1	0.406	0.941	0.563	0.759	0.857	**14.3%**	**34.1%**
33	1947	18,815	7,315	6,087	60%	0.51	70	0.486	0.984	0.624	0.806	0.900	**10.0%**	**22.1%**
34	1948	22,951	8,972	7,634	58%	0.49	69	0.444	1.000	0.592	0.791	0.884	**11.6%**	**41.8%**
35	1949	18,262	7,231	5,880	60%	0.51	70.9	0.524	0.996	0.652	0.828	0.918	**8.2%**	**29.9%**
36	1950	20,145	8,123	6,584	59%	0.50	68.9	0.440	0.999	0.588	0.794	0.884	**11.6%**	**32.9%**
37	1951	17,859	7,383	5,729	60%	0.51	70.3	0.499	0.992	0.633	0.817	0.908	**9.2%**	**32.7%**
38	1952	38,968	11,272	13,624	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**46.1%**
39	1953	25,885	10,174	8,731	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**47.1%**
40	1954	13,754	5,761	4,194	64%	0.54	68.7	0.431	0.893	0.582	0.751	0.858	**14.2%**	**31.1%**
41	1955	18,887	7,384	6,114	60%	0.51	70.1	0.490	0.988	0.627	0.810	0.903	**9.7%**	**30.1%**
42	1956	22,306	11,272	7,392	58%	0.49	68.7	0.431	1.000	0.582	0.787	0.879	**12.1%**	**42.8%**
43	1957	18,766	7,637	6,068	60%	0.51	72	0.570	1.000	0.688	0.846	0.934	**6.6%**	**32.7%**
44	1958	33,938	11,272	11,743	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**38.9%**
45	1959	18,574	7,308	5,997	60%	0.51	72.1	0.574	1.000	0.691	0.848	0.935	**6.5%**	**26.9%**
46	1960	18,002	7,014	5,783	60%	0.51	72.7	0.600	1.000	0.710	0.858	0.943	**5.7%**	**29.8%**
47	1961	20,144	7,677	6,584	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**33.4%**
48	1962	18,153	7,159	5,839	60%	0.51	70.4	0.503	0.984	0.636	0.814	0.907	**9.3%**	**30.5%**
49	1963	20,212	8,605	6,609	59%	0.50	69	0.444	1.000	0.592	0.796	0.886	**11.4%**	**42.2%**
50	1964	18,388	7,113	5,927	60%	0.51	69.5	0.465	0.966	0.608	0.790	0.888	**11.2%**	**32.7%**
51	1965	18,700	8,122	6,044	60%	0.51	67.1	0.364	0.967	0.531	0.752	0.842	**15.8%**	**37.0%**
52	1966	16,667	6,686	5,283	61%	0.52	70.4	0.503	0.964	0.636	0.806	0.904	**9.6%**	**25.1%**
53	1967	39,345	11,272	13,765	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**44.4%**
54	1968	17,931	7,112	5,756	60%	0.51	72	0.570	1.000	0.688	0.847	0.934	**6.6%**	**27.6%**
55	1969	24,130	11,243	8,075	57%	0.48	68.3	0.414	1.000	0.569	0.778	0.870	**13.0%**	**38.4%**
56	1970	14,497	6,597	4,472	63%	0.54	70.7	0.515	0.965	0.646	0.817	0.911	**8.9%**	**24.7%**
57	1971	23,634	9,419	7,889	57%	0.49	68.1	0.406	1.000	0.563	0.775	0.867	**13.3%**	**44.8%**
58	1972	17,656	7,035	5,653	61%	0.51	70.7	0.515	0.984	0.646	0.819	0.913	**8.7%**	**28.1%**
59	1973	17,940	7,723	5,760	60%	0.51	70.1	0.490	1.000	0.627	0.818	0.907	**9.3%**	**25.1%**
60	1974	21,622	9,558	7,137	58%	0.49	69.7	0.473	1.000	0.614	0.805	0.897	**10.3%**	**37.7%**
61	1975	24,787	11,272	8,320	57%	0.48	69.1	0.448	1.000	0.595	0.790	0.884	**11.6%**	**36.9%**
62	1976	19,270	7,425	6,257	59%	0.50	71.8	0.562	1.000	0.681	0.842	0.931	**6.9%**	**23.0%**
63	1977	9,679	573	2,670	70%	0.59	73.9	0.650	0.761	0.748	0.756	0.915	**8.5%**	**33.0%**
64	1978	16,295	8,494	5,144	62%	0.52	70	0.486	1.000	0.624	0.820	0.908	**9.2%**	**36.4%**
65	1979	19,870	8,046	6,481	59%	0.50	69.2	0.452	1.000	0.598	0.800	0.890	**11.0%**	**34.3%**
66	1980	15,790	8,837	4,955	62%	0.53	66.9	0.356	0.994	0.525	0.771	0.853	**14.7%**	**35.7%**
67	1981	18,045	7,067	5,799	60%	0.51	71.9	0.566	1.000	0.684	0.846	0.933	**6.7%**	**26.0%**
68	1982	24,415	11,272	8,181	57%	0.48	66	0.318	1.000	0.496	0.740	0.822	**17.8%**	**45.2%**
69	1983	55,568	9,285	19,832	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**53.7%**
70	1984	16,298	7,162	5,145	62%	0.52	68.4	0.419	0.948	0.572	0.769	0.865	**13.5%**	**28.8%**
71	1985	17,412	6,871	5,562	61%	0.51	69.4	0.461	0.954	0.604	0.784	0.884	**11.6%**	**29.8%**
72	1986	12,413	8,021	3,692	66%	0.56	71.6	0.553	1.000	0.675	0.856	0.936	**6.4%**	**24.8%**
73	1987	20,169	7,754	6,593	59%	0.50	73.2	0.621	1.000	0.726	0.863	0.948	**5.2%**	**15.8%**
74	1988	16,586	6,413	5,253	61%	0.52	69.4	0.461	0.934	0.604	0.776	0.879	**12.1%**	**31.0%**
75	1989	17,163	6,678	5,469	61%	0.52	68.6	0.427	0.931	0.579	0.761	0.863	**13.7%**	**32.4%**
76	1990	19,624	7,436	6,389	59%	0.50	68.5	0.423	0.962	0.576	0.770	0.867	**13.3%**	**28.5%**
77	1991	10,600	3,117	3,014	68%	0.58	69.4	0.461	0.791	0.604	0.712	0.845	**15.5%**	**31.1%**
78	1992	14,041	5,160	4,301	64%	0.54	69	0.444	0.872	0.592	0.743	0.857	**14.3%**	**29.9%**
79													Average:	**33.54%**

Formulas Sacramento River Fall Run Smolt Survival

```
C8 ='Study 467 Flow Data'!G7
D8 ='Study 467 Flow Data'!Q7        (HIDDEN)
E8 ='Study 467 Flow Data'!AA7       (HIDDEN)
F8 =(D8+E8)
G8 =0.374*C8-950
H8 =IF(C8>25000,(0.133*C8+829)/(C8-G8),(0.293*C8+2090)/(C8-G8))
I8 =(0.133*C8+829)/(C8-G8)
K8 =IF((-2.45925+(0.0420748*J8))<0,0,(-2.45925+(0.0420748*J8)))
L8 =(-0.5916024)+(0.017968*J8)+(0.0000434*F8)
M8 =-1.613493+(0.0319584*J8)
N8 =(L8*I8)+(M8*(1-I8))
O8 =K8+N8-(K8*N8)
P8 =1-O8

R8 ='Study 467 Flow Data'!H7
S8 ='Study 467 Flow Data'!R7        (HIDDEN)
T8 ='Study 467 Flow Data'!AB7       (HIDDEN)
U8 =(S8+T8)
V8 =0.374*R8-950
W8 =IF(R8>25000,(0.133*R8+829)/(R8-V8),(0.293*R8+2090)/(R8-V8))
X8 =(0.84*(0.133*R8+829)/(R8-V8))+(0.16*W8)
Z8 =(-2.45925+(0.0420748*Y8))
AA8 =(-0.5916024)+(0.017968*Y8)+(0.0000434*U8)
AB8 =-1.613493+(0.0319584*Y8)
AC8 =(AA8*X8)+(AB8*(1-X8))
AD8 =Z8+AC8-(Z8*AC8)
AE8 =1-AD8

AG8 ='Study 467 Flow Data'!I7       (HIDDEN)
AH8 ='Study 467 Flow Data'!S7       (HIDDEN)
AI8 ='Study 513 Flow Revised Data'!AC7
AJ8 =(AH8+AI8)
AK8 =0.374*AG8-950
AL8 =IF(AG8>25000,(0.133*AG8+829)/(AG8-AK8),(0.293*AG8+2090)/(AG8-AK8))
AM8 =(0.27*(0.133*AG8+829)/(AG8-AK8))+(0.73*AL8)
AO8 =(-2.45925+(0.0420748*AN8))
AP8 =IF(((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8))>1,1,((-0.5916024)+(0.017968*AN8)+(0.0000434*AJ8)))
AQ8 =-1.613493+(0.0319584*AN8)
AR8 =(AP8*AM8)+(AQ8*(1-AM8))
AS8 =AO8+AR8-(AO8*AR8)
AT8 =1-AS8
```

	A	B	C	F	G	H	I	J	K	L	M	N	O	P	Q	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT

1 Study 467 Sacramento River Late Fall Run Smolt Survival Model — November Sacramento River Temp: 53 degrees F

2 Modified m2 by changing the slope to 0.000054 — December Sacramento River Temp: 47 degrees F

3 Cross Channel closed for 45 consecutive days, Dec 18-Jan 31 — January Sacramento River Temp: 47 degrees F

4 Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

5

NOVEMBER

Row	Year	Water Year Type	Sac River Flow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
10	1922	A	11,008	7,512	3,167	68%	0.29		0.766	0.080	0.545	0.545	**45.5%**
11	1923	B	16,940	10,974	5,386	61%	0.27		0.953	0.080	0.613	0.613	**38.7%**
12	1924	C	10,991	9,008	3,161	68%	0.29		0.847	0.080	0.600	0.600	**40.0%**
13	1925	D	6,941	5,546	1,646	78%	0.33		0.660	0.080	0.532	0.532	**46.8%**
14	1926	D	9,344	6,907	2,545	71%	0.30		0.734	0.080	0.544	0.544	**45.6%**
15	1927	W	21,478	10,924	7,083	58%	0.26		0.951	0.080	0.587	0.587	**41.3%**
16	1928	A	21,629	10,974	7,139	58%	0.26		0.953	0.080	0.588	0.588	**41.2%**
17	1929	C	13,108	10,957	3,952	65%	0.28		0.952	0.080	0.645	0.645	**35.5%**
18	1930	D	8,151	5,293	2,098	74%	0.32		0.647	0.080	0.499	0.499	**50.1%**
19	1931	C	11,041	9,361	3,179	68%	0.29		0.866	0.080	0.613	0.613	**38.7%**
20	1932	D	7,075	4,521	1,696	77%	0.33		0.605	0.080	0.486	0.486	**51.4%**
21	1933	C	7,495	5,697	1,853	76%	0.32		0.668	0.080	0.527	0.527	**47.3%**
22	1934	C	6,487	4,168	1,476	80%	0.34		0.586	0.080	0.483	0.483	**51.7%**
23	1935	B	9,209	7,680	2,494	71%	0.31		0.775	0.080	0.576	0.576	**42.4%**
24	1936	B	12,369	9,780	3,676	66%	0.28		0.889	0.080	0.612	0.612	**38.8%**
25	1937	B	10,907	8,251	3,129	68%	0.29		0.806	0.080	0.574	0.574	**42.6%**
26	1938	W	22,956	10,974	7,636	58%	0.25		0.953	0.080	0.583	0.583	**41.7%**
27	1939	D	19,444	10,974	6,322	59%	0.26		0.953	0.080	0.598	0.598	**40.2%**
28	1940	A	7,915	5,831	2,010	75%	0.32		0.676	0.080	0.525	0.525	**47.5%**
29	1941	W	13,411	10,974	4,066	64%	0.28		0.953	0.080	0.643	0.643	**35.7%**
30	1942	W	18,184	10,974	5,851	60%	0.26		0.953	0.080	0.605	0.605	**39.5%**
31	1943	W	21,326	10,974	7,026	58%	0.26		0.953	0.080	0.589	0.589	**41.1%**
32	1944	D	12,823	10,806	3,846	65%	0.28		0.944	0.080	0.643	0.643	**35.7%**
33	1945	B	15,175	10,941	4,725	63%	0.27		0.952	0.080	0.625	0.625	**37.5%**
34	1946	B	17,293	10,974	5,518	61%	0.27		0.953	0.080	0.611	0.611	**38.9%**
35	1947	D	13,276	10,974	4,015	65%	0.28		0.953	0.080	0.644	0.644	**35.6%**
36	1948	B	11,108	9,412	3,204	68%	0.29		0.869	0.080	0.614	0.614	**38.6%**
37	1949	D	13,680	10,957	4,166	64%	0.28		0.952	0.080	0.639	0.639	**36.1%**
38	1950	B	12,050	10,369	3,557	66%	0.29		0.921	0.080	0.636	0.636	**36.4%**
39	1951	A	40,922	10,957	14,355	24%	0.24		0.952	0.080	0.286	0.286	**71.4%**
40	1952	W	16,822	10,974	5,341	61%	0.27		0.953	0.080	0.614	0.614	**38.6%**
41	1953	W	16,537	10,856	5,235	61%	0.27		0.947	0.080	0.612	0.612	**38.8%**
42	1954	A	21,007	10,974	6,907	58%	0.26		0.953	0.080	0.591	0.591	**40.9%**
43	1955	D	19,999	10,957	6,530	59%	0.26		0.952	0.080	0.595	0.595	**40.5%**
44	1956	W	12,134	10,486	3,588	66%	0.29		0.927	0.080	0.640	0.640	**36.0%**
45	1957	A	15,478	10,974	4,839	62%	0.27		0.953	0.080	0.624	0.624	**37.6%**
46	1958	W	19,259	10,957	6,253	59%	0.26		0.952	0.080	0.599	0.599	**40.1%**
47	1959	B	16,133	10,974	5,084	62%	0.27		0.953	0.080	0.619	0.619	**38.1%**
48	1960	D	10,184	8,251	2,859	69%	0.30		0.806	0.080	0.583	0.583	**41.7%**
49	1961	D	14,251	10,941	4,380	63%	0.28		0.952	0.080	0.633	0.633	**36.7%**
50	1962	B	10,403	8,790	2,941	69%	0.30		0.835	0.080	0.600	0.600	**40.0%**
51	1963	W	21,730	10,974	7,177	58%	0.26		0.953	0.080	0.588	0.588	**41.2%**
52	1964	D	28,805	10,974	9,823	25%	0.25		0.953	0.080	0.295	0.295	**70.5%**
53	1965	W	14,554	10,941	4,493	63%	0.27		0.952	0.080	0.631	0.631	**36.9%**
54	1966	B	29,628	10,974	10,131	24%	0.24		0.953	0.080	0.294	0.294	**70.6%**
55	1967	W	18,301	10,957	5,895	60%	0.26		0.952	0.080	0.604	0.604	**39.6%**
56	1968	B	16,234	8,537	5,122	62%	0.27		0.822	0.080	0.537	0.537	**46.3%**
57	1969	W	14,638	10,957	4,525	63%	0.27		0.952	0.080	0.630	0.630	**37.0%**
58	1970	W	17,646	10,974	5,650	61%	0.26		0.953	0.080	0.609	0.609	**39.1%**
59	1971	W	23,141	10,974	7,705	57%	0.25		0.953	0.080	0.582	0.582	**41.8%**
60	1972	B	16,755	10,957	5,316	61%	0.27		0.952	0.080	0.614	0.614	**38.6%**
61	1973	A	25,662	10,957	8,648	25%	0.25		0.952	0.080	0.298	0.298	**70.2%**
62	1974	W	58,920	10,974	21,086	23%	0.23		0.953	0.080	0.280	0.280	**72.0%**
63	1975	W	17,579	10,957	5,625	61%	0.26		0.952	0.080	0.609	0.609	**39.1%**
64	1976	C	19,226	10,974	6,241	59%	0.26		0.953	0.080	0.600	0.600	**40.0%**
65	1977	C	8,016	6,101	2,048	74%	0.32		0.690	0.080	0.534	0.534	**46.6%**
66	1978	A	5,243	3,042	1,011	86%	0.36		0.525	0.080	0.461	0.461	**53.9%**
67	1979	B	15,125	10,957	4,707	63%	0.27		0.952	0.080	0.626	0.626	**37.4%**
68	1980	A	16,301	10,974	5,147	62%	0.27		0.953	0.080	0.618	0.618	**38.2%**
69	1981	D	13,024	10,974	3,921	65%	0.28		0.953	0.080	0.647	0.647	**35.3%**
70	1982	W	37,897	10,957	13,223	24%	0.24		0.952	0.080	0.288	0.288	**71.2%**
71	1983	W	39,107	10,974	13,676	24%	0.24		0.953	0.080	0.287	0.287	**71.3%**
72	1984	W	62,802	7,932	22,538	23%	0.23		0.789	0.080	0.242	0.242	**75.8%**
73	1985	D	35,813	10,974	12,444	24%	0.24		0.953	0.080	0.289	0.289	**71.1%**
74	1986	W	9,949	9,075	2,771	70%	0.30		0.851	0.080	0.618	0.618	**38.2%**
75	1987	D	11,125	8,420	3,211	68%	0.29		0.815	0.080	0.577	0.577	**42.3%**
76	1988	C	8,688	6,941	2,299	73%	0.31		0.736	0.080	0.556	0.556	**44.4%**
77	1989	D	9,730	7,848	2,689	70%	0.30		0.784	0.080	0.574	0.574	**42.6%**
78	1990	C	12,251	10,487	3,632	66%	0.29		0.927	0.080	0.638	0.638	**36.2%**
79	1991	C	7,512	5,176	1,859	76%	0.32		0.640	0.080	0.505	0.505	**49.5%**
80	1992	C	7,714	4,588	1,935	75%	0.32		0.608	0.080	0.478	0.478	**52.2%**

DECEMBER

Row	Year	Sac River Flows	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
10	1922	17,142	11,319	5,461	61%	0.45		0.864		0.393	0.393	**60.7%**
11	1923	34,202	11,303	11,842	24%	0.24		0.863		0.208	0.208	**79.2%**
12	1924	15,353	11,156	4,792	62%	0.47		0.855		0.398	0.398	**60.2%**
13	1925	11,271	8,506	3,265	67%	0.50		0.712		0.357	0.357	**64.3%**
14	1926	10,620	7,026	3,022	68%	0.51		0.632		0.322	0.322	**67.8%**
15	1927	15,841	11,254	4,975	62%	0.46		0.861		0.398	0.398	**60.2%**
16	1928	16,572	11,287	5,248	61%	0.46		0.862		0.395	0.395	**60.5%**
17	1929	13,954	11,140	4,269	64%	0.48		0.854		0.406	0.406	**59.4%**
18	1930	14,767	10,994	4,573	63%	0.47		0.847		0.397	0.397	**60.3%**
19	1931	11,449	6,490	3,332	67%	0.50		0.603		0.301	0.301	**69.9%**
20	1932	14,653	11,400	4,530	63%	0.47		0.868		0.408	0.408	**59.2%**
21	1933	9,904	5,399	2,754	70%	0.52		0.544		0.283	0.283	**71.7%**
22	1934	12,474	9,319	3,715	66%	0.49		0.756		0.369	0.369	**63.1%**
23	1935	8,522	4,896	2,237	73%	0.54		0.517		0.280	0.280	**72.0%**
24	1936	14,767	11,156	4,573	63%	0.47		0.855		0.402	0.402	**59.8%**
25	1937	14,052	11,205	4,305	64%	0.47		0.858		0.407	0.407	**59.3%**
26	1938	51,246	11,742	18,216	23%	0.23		0.887		0.205	0.205	**79.5%**
27	1939	18,687	8,750	6,039	60%	0.45		0.725		0.324	0.324	**67.6%**
28	1940	9,579	5,090	2,633	70%	0.52		0.528		0.277	0.277	**72.3%**
29	1941	32,413	11,563	11,172	24%	0.24		0.877		0.212	0.212	**78.8%**
30	1942	65,623	9,368	23,593	23%	0.23		0.759		0.173	0.173	**82.7%**
31	1943	28,803	10,034	9,822	25%	0.25		0.795		0.195	0.195	**80.5%**
32	1944	13,775	10,473	4,202	64%	0.48		0.818		0.390	0.390	**61.0%**
33	1945	17,272	11,173	5,510	61%	0.45		0.856		0.389	0.389	**61.1%**
34	1946	56,109	11,807	20,035	23%	0.23		0.890		0.205	0.205	**79.5%**
35	1947	17,630	11,352	5,644	61%	0.45		0.866		0.391	0.391	**60.9%**
36	1948	12,149	7,334	3,594	66%	0.49		0.649		0.319	0.319	**68.1%**
37	1949	15,564	11,140	4,871	62%	0.46		0.854		0.397	0.397	**60.3%**
38	1950	12,263	7,644	3,636	66%	0.49		0.666		0.327	0.327	**67.3%**
39	1951	66,631	11,807	23,970	23%	0.23		0.890		0.202	0.202	**79.8%**
40	1952	51,962	11,319	18,484	23%	0.23		0.864		0.200	0.200	**80.0%**
41	1953	42,334	7,953	14,883	24%	0.24		0.682		0.161	0.161	**83.9%**
42	1954	14,914	11,091	4,628	63%	0.47		0.852		0.399	0.399	**60.1%**
43	1955	25,517	11,140	8,593	25%	0.25		0.854		0.213	0.213	**78.7%**
44	1956	32,933	11,807	11,367	24%	0.24		0.890		0.215	0.215	**78.5%**
45	1957	14,149	11,238	4,342	64%	0.47		0.860		0.408	0.408	**59.2%**
46	1958	23,745	11,140	7,931	57%	0.43		0.854		0.366	0.366	**63.4%**
47	1959	14,621	9,937	4,518	63%	0.47		0.789		0.371	0.371	**62.9%**
48	1960	11,856	7,009	3,484	66%	0.49		0.631		0.312	0.312	**68.8%**
49	1961	19,711	11,124	6,422	59%	0.44		0.854		0.378	0.378	**62.2%**
50	1962	18,004	11,124	5,783	60%	0.45		0.854		0.384	0.384	**61.6%**
51	1963	28,054	11,140	9,542	25%	0.25		0.854		0.210	0.210	**79.0%**
52	1964	14,849	11,205	4,604	63%	0.47		0.858		0.402	0.402	**59.8%**
53	1965	27,371	11,677	9,287	25%	0.25		0.883		0.218	0.218	**78.2%**
54	1966	16,995	11,726	5,406	61%	0.46		0.886		0.404	0.404	**59.6%**
55	1967	39,699	11,335	13,897	24%	0.24		0.865		0.205	0.205	**79.5%**
56	1968	16,686	7,953	5,291	61%	0.46		0.682		0.312	0.312	**68.8%**
57	1969	27,144	11,189	9,202	25%	0.25		0.857		0.212	0.212	**78.8%**
58	1970	50,156	7,692	17,808	23%	0.23		0.668		0.155	0.155	**84.5%**
59	1971	57,101	11,254	20,406	23%	0.23		0.861		0.198	0.198	**80.2%**
60	1972	22,053	11,156	7,298	58%	0.43		0.855		0.371	0.371	**62.9%**
61	1973	26,753	11,140	9,056	25%	0.25		0.854		0.212	0.212	**78.8%**
62	1974	61,590	11,384	22,085	23%	0.23		0.868		0.198	0.198	**80.2%**
63	1975	17,613	11,303	5,637	61%	0.45		0.863		0.390	0.390	**61.0%**
64	1976	16,768	11,205	5,321	61%	0.46		0.858		0.392	0.392	**60.8%**
65	1977	9,205	5,058	2,493	71%	0.53		0.526		0.279	0.279	**72.1%**
66	1978	12,295	9,660	3,648	66%	0.49		0.775		0.380	0.380	**62.0%**
67	1979	12,751	9,758	3,819	65%	0.49		0.780		0.379	0.379	**62.1%**
68	1980	21,842	11,205	7,219	58%	0.43		0.858		0.373	0.373	**62.7%**
69	1981	15,613	9,254	4,889	62%	0.46		0.753		0.349	0.349	**65.1%**
70	1982	68,599	11,238	24,706	23%	0.23		0.860		0.195	0.195	**80.5%**
71	1983	55,410	11,807	19,773	23%	0.23		0.890		0.205	0.205	**79.5%**
72	1984	82,944	7,318	30,071	22%	0.22		0.648		0.145	0.145	**85.5%**
73	1985	23,875	11,173	7,979	57%	0.43		0.856		0.366	0.366	**63.4%**
74	1986	16,166	11,156	5,096	62%	0.46		0.855		0.394	0.394	**60.6%**
75	1987	12,864	9,384	3,861	65%	0.48		0.760		0.368	0.368	**63.2%**
76	1988	16,345	11,124	5,163	62%	0.46		0.854		0.392	0.392	**60.8%**
77	1989	10,083	6,018	2,821	69%	0.52		0.578		0.298	0.298	**70.2%**
78	1990	16,117	11,124	5,078	62%	0.46		0.854		0.393	0.393	**60.7%**
79	1991	10,360	5,578	2,925	69%	0.51		0.554		0.284	0.284	**71.6%**
80	1992	8,164	4,440	2,103	74%	0.55		0.493		0.270	0.270	**73.0%**

JANUARY

Row	Year	Sac River Flows	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**	**Weighted Total Survival**
10	1922	17,499	11,791	5,595	61%	0.27		0.890		0.236	0.236	**76.4%**	**60.8%**
11	1923	32,283	7,855	11,124	24%	0.24		0.677		0.164	0.164	**83.6%**	**70.2%**
12	1924	18,036	10,522	5,795	60%	0.26		0.821		0.217	0.217	**78.3%**	**59.7%**
13	1925	10,213	3,171	2,870	69%	0.30		0.424		0.126	0.126	**87.4%**	**65.7%**
14	1926	18,085	10,847	5,814	60%	0.26		0.839		0.221	0.221	**77.9%**	**64.8%**
15	1927	30,608	11,498	10,497	24%	0.24		0.874		0.213	0.213	**78.7%**	**60.1%**
16	1928	25,208	7,855	8,478	25%	0.25		0.677		0.169	0.169	**83.1%**	**61.3%**
17	1929	15,776	8,701	4,950	62%	0.27		0.723		0.195	0.195	**80.5%**	**58.7%**
18	1930	21,077	11,368	6,933	58%	0.26		0.867		0.223	0.223	**77.7%**	**62.1%**
19	1931	13,775	6,928	4,202	64%	0.28		0.627		0.174	0.174	**82.6%**	**65.3%**
20	1932	17,256	12,035	5,504	61%	0.27		0.903		0.240	0.240	**76.0%**	**61.4%**
21	1933	13,905	8,001	4,250	64%	0.28		0.685		0.190	0.190	**81.0%**	**67.9%**
22	1934	16,101	9,693	5,072	62%	0.27		0.776		0.209	0.209	**79.1%**	**64.2%**
23	1935	25,469	11,872	8,575	25%	0.25		0.894		0.223	0.223	**77.7%**	**66.0%**
24	1936	32,966	11,661	11,379	24%	0.24		0.883		0.213	0.213	**78.7%**	**59.3%**
25	1937	15,223	9,904	4,743	63%	0.27		0.788		0.214	0.214	**78.6%**	**59.9%**
26	1938	31,437	11,108	10,807	24%	0.24		0.853		0.207	0.207	**79.3%**	**70.0%**
27	1939	18,410	7,481	5,935	60%	0.26		0.657		0.173	0.173	**82.7%**	**64.5%**
28	1940	23,696	12,230	7,912	57%	0.25		0.913		0.230	0.230	**77.0%**	**67.3%**
29	1941	73,885	12,393	26,683	23%	0.23		0.922		0.208	0.208	**79.2%**	**68.1%**
30	1942	63,265	7,481	22,711	23%	0.23		0.657		0.150	0.150	**85.0%**	**72.5%**
31	1943	58,060	7,546	20,764	23%	0.23		0.660		0.151	0.151	**84.9%**	**71.7%**
32	1944	17,678	9,530	5,662	60%	0.26		0.768		0.203	0.203	**79.7%**	**59.3%**
33	1945	13,856	11,465	4,232	64%	0.28		0.872		0.242	0.242	**75.8%**	**58.9%**
34	1946	43,228	9,937	15,217	23%	0.23		0.789		0.185	0.185	**81.5%**	**69.9%**
35	1947	14,474	11,628	4,463	63%	0.28		0.881		0.242	0.242	**75.8%**	**58.3%**
36	1948	16,312	8,294	5,151	62%	0.27		0.701		0.188	0.188	**81.2%**	**64.0%**
37	1949	15,906	11,352	4,999	62%	0.27		0.866		0.234	0.234	**76.6%**	**58.3%**
38	1950	22,183	11,400	7,346	58%	0.25		0.868		0.221	0.221	**77.9%**	**62.2%**
39	1951	62,208	12,279	22,316	23%	0.23		0.916		0.209	0.209	**79.1%**	**77.5%**
40	1952	67,347	12,718	24,238	23%	0.23		0.940		0.213	0.213	**78.7%**	**69.3%**
41	1953	64,078	7,546	23,015	23%	0.23		0.660		0.150	0.150	**85.0%**	**72.9%**
42	1954	33,421	8,083	11,549	24%	0.24		0.689		0.166	0.166	**83.4%**	**61.1%**
43	1955	22,004	11,400	7,279	58%	0.26		0.868		0.222	0.222	**77.8%**	**68.9%**
44	1956	84,716	12,718	30,734	22%	0.22		0.940		0.211	0.211	**78.9%**	**68.0%**
45	1957	18,638	11,579	6,021	60%	0.26		0.878		0.230	0.230	**77.0%**	**58.3%**
46	1958	43,179	11,433	15,199	23%	0.23		0.870		0.204	0.204	**79.6%**	**61.6%**
47	1959	35,162	7,562	12,201	24%	0.24		0.661		0.159	0.159	**84.1%**	**62.0%**
48	1960	15,776	8,554	4,950	62%	0.27		0.715		0.193	0.193	**80.7%**	**65.0%**
49	1961	15,255	11,352	4,755	62%	0.27		0.866		0.236	0.236	**76.4%**	**59.4%**
50	1962	13,710	11,335	4,178	64%	0.28		0.865		0.241	0.241	**75.9%**	**59.8%**
51	1963	18,313	11,465	5,899	60%	0.26		0.872		0.229	0.229	**77.1%**	**69.1%**
52	1964	27,046	10,766	9,165	25%	0.25		0.834		0.207	0.207	**79.3%**	**67.4%**
53	1965	81,236	12,718	29,432	22%	0.22		0.940		0.211	0.211	**78.9%**	**68.0%**
54	1966	29,632	11,742	10,132	24%	0.24		0.887		0.217	0.217	**78.3%**	**67.0%**
55	1967	36,837	11,888	12,827	24%	0.24		0.895		0.213	0.213	**78.7%**	**69.3%**
56	1968	30,640	7,546	10,509	24%	0.24		0.660		0.161	0.161	**83.9%**	**67.0%**
57	1969	71,868	12,718	25,929	23%	0.23		0.940		0.212	0.212	**78.8%**	**68.3%**
58	1970	92,669	7,546	33,708	22%	0.22		0.660		0.147	0.147	**85.3%**	**73.4%**
59	1971	47,538	11,677	16,829	23%	0.23		0.883		0.206	0.206	**79.4%**	**70.4%**
60	1972	20,394	11,384	6,677	59%	0.26		0.868		0.224	0.224	**77.6%**	**60.5%**
61	1973	48,400	11,775	17,152	23%	0.23		0.889		0.207	0.207	**79.3%**	**76.8%**
62	1974	78,422	12,555	28,380	22%	0.22		0.931		0.209	0.209	**79.1%**	**77.9%**
63	1975	18,670	9,969	6,033	60%	0.26		0.791		0.207	0.207	**79.3%**	**60.1%**
64	1976	16,768	11,498	5,321	61%	0.27		0.874		0.234	0.234	**76.6%**	**59.6%**
65	1977	10,701	2,131	3,052	68%	0.29		0.368		0.108	0.108	**89.2%**	**70.0%**
66	1978	47,668	11,986	16,878	23%	0.23		0.900		0.210	0.210	**79.0%**	**64.2%**
67	1979	27,241	7,481	9,238	25%	0.25		0.657		0.162	0.162	**83.8%**	**61.3%**
68	1980	69,884	9,563	25,187	23%	0.23		0.769		0.174	0.174	**82.6%**	**61.6%**
69	1981	28,185	7,562	9,591	25%	0.25		0.661		0.163	0.163	**83.7%**	**62.3%**
70	1982	51,165	12,718	18,186	23%	0.23		0.940		0.218	0.218	**78.2%**	**77.6%**
71	1983	59,150	10,132	21,172	23%	0.23		0.800		0.183	0.183	**81.7%**	**78.0%**
72	1984	47,359	4,505	16,762	23%	0.23		0.496		0.116	0.116	**88.4%**	**83.8%**
73	1985	17,646	8,083	5,650	61%	0.26		0.689		0.183	0.183	**81.7%**	**69.9%**
74	1986	21,712	11,563	7,170	58%	0.26		0.877		0.224	0.224	**77.6%**	**59.3%**
75	1987	16,735	8,619	5,309	61%	0.27		0.718		0.192	0.192	**80.8%**	**62.4%**
76	1988	26,022	11,335	8,782	25%	0.25		0.865		0.215	0.215	**78.5%**	**61.1%**
77	1989	12,994	4,749	3,910	65%	0.28		0.509		0.143	0.143	**85.7%**	**67.1%**
78	1990	22,395	9,888	7,426	58%	0.25		0.787		0.200	0.200	**80.0%**	**59.4%**
79	1991	10,653	1,968	3,034	68%	0.29		0.359		0.106	0.106	**89.4%**	**70.5%**
80	1992	12,149	3,774	3,594	66%	0.29		0.457		0.131	0.131	**86.9%**	**71.3%**
81												**Average:**	**65.79%**

82 Formulas: Sacramento River Late Fall Run Smolt Survival Model

Row	November	December	January
85	C10 ='Study 467 Flow Data'!B7	Q10 ='Study 467 Flow Data'!C7	AE10 ='Study 467 Flow Data'!D7
86	D10 ='Study 467 Flow Data'!L7 (HIDDEN)	R10 ='Study 467 Flow Data'!M7 (HIDDEN)	AF10 ='Study 467 Flow Data'!N7 (HIDDEN)
87	E10 ='Study 467 Flow Data'!V7 (HIDDEN)	S10 ='Study 467 Flow Data'!W7 (HIDDEN)	AG10 ='Study 467 Flow Data'!X7 (HIDDEN)
88	F10 =(D10+E10)	T10 =(R10+S10)	AH10 =(AF10+AG10)
89	G10 =0.374*C10-950	U10 =0.374*Q10-950	AI10 =0.374*AE10-950
90	H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))	V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))	AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
91	I10 =(0.133*C10+829)/(C10-G10)	W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)	AK10 =(0.133*AE10+829)/(AE10-AI10)
92	K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)	Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)	AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
93	L10 =-1.613493+(0.0319584*$T$1)	AA10 =(Y10*W10)+(Z10*(1-W10))	AO10 =(AM10*AK10)+(AN10*(1-AK10))
94	M10 =(K10*H10)+(L10*(1-H10))	AB10 =X10+AA10-(X10*AA10)	AP10 =AL10+AO10-(AL10*AO10)
95	N10 =J10+M10-(J10*M10)	AC10 =1-AB10	AQ10 =1-AP10
96	O10 =1-N10		AS10 =(O10*0.25)+(AC10*0.5)+(AQ10*0.25)

Study 469 Sacramento River Late Fall Run Smolt Survival Model
Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

		NOVEMBER		Calculated									DECEMBER		Calculated									JANUARY		Calculated									
	Water	Sac		Steamboat								Calculated	Sac		Steamboat								Calculated	Sac		Steamboat								Calculated	
	Year	River	CVP+SWP	& Sutter		xchannel	Calculated Mortality					Survival	River	SWP+CVP	& Sutter		xchannel	Calculated Mortality					Survival	River	CVP+SWP	& Sutter		xchannel	Calculated Mortality					Survival	Weighted
Year	Type	Flow	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	s123	Flows	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	s123	Flows	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	s123	Total Survival
1922	A	11,814	8,606	3,468	67%	0.29		0.825	0.080	0.576	0.576	42.4%	17,143	11,307	5,461	61%	0.45		0.863		0.393	0.393	60.7%	17,504	11,783	5,596	61%	0.27		0.889		0.236	0.236	76.4%	60.1%
1923	B	18,133	10,978	5,832	60%	0.26		0.954	0.080	0.606	0.606	39.4%	34,539	8,714	11,968	24%	0.24		0.723		0.174	0.174	82.6%	32,280	7,844	11,123	24%	0.24		0.676		0.164	0.164	83.6%	72.1%
1924	C	11,247	7,573	3,256	67%	0.29		0.770	0.080	0.545	0.545	45.5%	13,874	10,355	4,239	64%	0.48		0.812		0.387	0.387	61.3%	14,620	10,856	4,518	63%	0.27		0.839		0.230	0.230	77.0%	61.3%
1925	D	7,024	4,522	1,677	78%	0.33		0.605	0.080	0.487	0.487	51.3%	11,248	9,057	3,257	67%	0.50		0.742		0.372	0.372	62.8%	10,206	6,701	2,867	69%	0.30		0.615		0.183	0.183	81.7%	64.6%
1926	D	10,919	7,396	3,134	68%	0.29		0.760	0.080	0.542	0.542	45.8%	11,552	8,028	3,370	67%	0.50		0.686		0.342	0.342	65.8%	19,769	11,294	6,444	59%	0.26		0.863		0.224	0.224	77.6%	63.8%
1927	W	20,291	10,923	6,639	59%	0.26		0.951	0.080	0.593	0.593	40.7%	14,304	11,202	4,400	63%	0.47		0.858		0.406	0.406	59.4%	29,551	11,471	10,102	24%	0.24		0.872		0.213	0.213	78.7%	59.6%
1928	A	22,937	10,965	7,628	58%	0.25		0.953	0.080	0.582	0.582	41.8%	16,574	10,173	5,249	61%	0.46		0.802		0.367	0.367	63.3%	26,083	7,845	8,805	25%	0.25		0.677		0.168	0.168	83.2%	62.9%
1929	C	12,862	9,734	3,860	65%	0.28		0.886	0.080	0.605	0.605	39.5%	13,711	10,394	4,178	64%	0.48		0.814		0.389	0.389	61.1%	15,516	11,291	4,853	62%	0.27		0.863		0.234	0.234	76.6%	59.6%
1930	D	7,159	4,046	1,727	77%	0.33		0.579	0.080	0.465	0.465	53.5%	14,442	10,507	4,451	63%	0.47		0.820		0.387	0.387	61.3%	20,771	11,299	6,818	59%	0.26		0.863		0.222	0.222	77.8%	63.5%
1931	C	9,788	5,917	2,711	70%	0.30		0.680	0.080	0.501	0.501	49.9%	9,337	5,178	2,542	71%	0.53		0.533		0.281	0.281	71.9%	11,965	9,103	3,525	66%	0.29		0.744		0.213	0.213	78.7%	68.1%
1932	D	8,056	2,849	2,063	74%	0.32		0.515	0.080	0.403	0.403	59.7%	14,650	11,401	4,529	63%	0.47		0.869		0.409	0.409	59.1%	17,253	12,034	5,503	61%	0.27		0.903		0.240	0.240	76.0%	63.5%
1933	C	9,511	5,662	2,607	71%	0.30		0.666	0.080	0.494	0.494	50.6%	8,188	4,524	2,112	74%	0.55		0.497		0.273	0.273	72.7%	12,102	9,623	3,576	66%	0.29		0.773		0.221	0.221	77.9%	68.5%
1934	C	8,557	3,068	2,250	73%	0.31		0.526	0.080	0.405	0.405	59.5%	12,474	9,710	3,715	66%	0.49		0.777		0.380	0.380	62.0%	16,103	11,300	5,073	62%	0.27		0.863		0.232	0.232	76.8%	65.1%
1935	B	9,209	6,834	2,494	71%	0.31		0.730	0.080	0.543	0.543	45.7%	8,503	6,609	2,230	73%	0.54		0.610		0.331	0.331	66.9%	25,471	11,873	8,576	25%	0.25		0.894		0.223	0.223	77.7%	64.3%
1936	B	11,356	7,718	3,297	67%	0.29		0.777	0.080	0.549	0.549	45.1%	10,875	7,491	3,117	68%	0.51		0.657		0.333	0.333	66.7%	32,450	11,659	11,186	24%	0.24		0.882		0.214	0.214	78.6%	64.3%
1937	B	11,657	7,955	3,410	67%	0.29		0.790	0.080	0.554	0.554	44.6%	12,704	9,949	3,801	65%	0.49		0.790		0.384	0.384	61.6%	16,217	11,788	5,115	62%	0.27		0.889		0.239	0.239	76.1%	60.9%
1938	W	23,700	10,965	7,914	57%	0.25		0.953	0.080	0.580	0.580	42.0%	48,016	11,738	17,008	23%	0.23		0.887		0.206	0.206	79.4%	31,443	8,147	10,810	24%	0.24		0.693		0.168	0.168	83.2%	71.0%
1939	D	19,439	9,586	6,320	59%	0.26		0.878	0.080	0.554	0.554	44.6%	18,684	7,942	6,038	60%	0.45		0.682		0.305	0.305	69.5%	18,407	7,446	5,934	60%	0.26		0.655		0.172	0.172	82.8%	66.6%
1940	A	8,444	4,558	2,208	73%	0.31		0.607	0.080	0.466	0.466	53.4%	7,841	4,107	1,983	75%	0.56		0.475		0.264	0.264	73.6%	23,448	12,224	7,820	57%	0.25		0.913		0.231	0.231	76.9%	69.4%
1941	W	13,766	10,373	4,198	64%	0.28		0.921	0.080	0.618	0.618	38.2%	35,978	11,544	12,506	24%	0.24		0.876		0.210	0.210	79.0%	72,303	12,348	26,091	23%	0.23		0.920		0.208	0.208	79.2%	68.9%
1942	W	18,186	10,469	5,852	60%	0.26		0.926	0.080	0.589	0.589	41.1%	65,619	7,815	23,592	23%	0.23		0.675		0.153	0.153	84.7%	63,260	7,446	22,709	23%	0.23		0.655		0.149	0.149	85.1%	73.9%
1943	W	21,906	10,821	7,243	58%	0.26		0.945	0.080	0.582	0.582	41.8%	28,806	7,986	9,823	25%	0.25		0.684		0.168	0.168	83.2%	58,056	7,510	20,763	23%	0.23		0.658		0.151	0.151	84.9%	73.3%
1944	D	14,899	10,961	4,622	63%	0.27		0.953	0.080	0.628	0.628	37.2%	13,774	10,630	4,201	64%	0.48		0.827		0.394	0.394	60.6%	17,677	7,469	5,661	60%	0.26		0.656		0.174	0.174	82.6%	60.2%
1945	B	13,770	10,875	4,200	64%	0.28		0.948	0.080	0.636	0.636	36.4%	15,826	11,174	4,969	62%	0.46		0.856		0.396	0.396	60.4%	12,555	9,267	3,746	65%	0.28		0.753		0.214	0.214	78.6%	59.0%
1946	B	20,633	10,958	6,767	59%	0.26		0.952	0.080	0.592	0.592	40.8%	54,845	11,799	19,562	23%	0.23		0.890		0.205	0.205	79.5%	43,229	7,844	15,218	23%	0.23		0.676		0.159	0.159	84.1%	71.0%
1947	D	13,776	10,899	4,202	64%	0.28		0.949	0.080	0.636	0.636	36.4%	18,132	11,343	5,831	60%	0.45		0.865		0.389	0.389	61.1%	15,221	10,894	4,743	63%	0.27		0.841		0.229	0.229	77.1%	58.9%
1948	B	10,458	6,653	2,961	69%	0.30		0.720	0.080	0.520	0.520	48.0%	9,393	5,388	2,563	71%	0.53		0.544		0.287	0.287	71.3%	14,897	10,724	4,621	63%	0.27		0.832		0.228	0.228	77.2%	67.0%
1949	D	14,447	10,509	4,453	63%	0.28		0.928	0.080	0.617	0.617	38.3%	15,563	11,105	4,871	62%	0.46		0.853		0.396	0.396	60.4%	14,928	11,025	4,633	63%	0.27		0.848		0.232	0.232	76.8%	59.0%
1950	B	11,427	7,682	3,324	67%	0.29		0.776	0.080	0.547	0.547	45.3%	11,442	7,648	3,329	67%	0.50		0.666		0.333	0.333	66.7%	20,934	11,383	6,879	59%	0.26		0.868		0.223	0.223	77.7%	64.1%
1951	A	41,878	10,946	14,712	24%	0.24		0.952	0.080	0.286	0.286	71.4%	68,100	11,799	24,519	23%	0.23		0.890		0.202	0.202	79.8%	62,213	11,386	22,318	23%	0.23		0.868		0.198	0.198	80.2%	77.8%
1952	W	16,780	10,957	5,326	61%	0.27		0.952	0.080	0.614	0.614	38.6%	46,745	11,311	16,533	23%	0.23		0.864		0.201	0.201	79.9%	67,352	11,062	24,240	23%	0.23		0.850		0.193	0.193	80.7%	69.8%
1953	W	16,535	8,394	5,234	61%	0.27		0.814	0.080	0.531	0.531	46.9%	42,331	7,949	14,882	24%	0.24		0.682		0.161	0.161	83.9%	64,078	7,540	23,015	23%	0.23		0.660		0.150	0.150	85.0%	75.0%
1954	A	20,920	10,963	6,874	59%	0.26		0.953	0.080	0.591	0.591	40.9%	14,919	8,104	4,630	63%	0.47		0.691		0.323	0.323	67.7%	33,414	8,050	11,547	24%	0.24		0.688		0.166	0.166	83.4%	64.9%
1955	D	20,862	10,949	6,852	59%	0.26		0.952	0.080	0.591	0.591	40.9%	26,020	11,115	8,781	25%	0.25		0.853		0.212	0.212	78.8%	22,257	10,226	7,374	58%	0.25		0.805		0.205	0.205	79.5%	69.5%
1956	W	12,181	8,491	3,606	66%	0.29		0.819	0.080	0.568	0.568	43.2%	25,321	11,799	8,520	25%	0.25		0.890		0.222	0.222	77.8%	83,709	12,231	30,357	22%	0.22		0.913		0.205	0.205	79.5%	69.6%
1957	A	15,470	10,978	4,836	62%	0.27		0.954	0.080	0.624	0.624	37.6%	14,143	10,013	4,339	64%	0.47		0.794		0.376	0.376	62.4%	18,639	8,098	6,021	60%	0.26		0.690		0.181	0.181	81.9%	61.1%
1958	W	19,256	10,950	6,252	59%	0.26		0.952	0.080	0.599	0.599	40.1%	23,752	11,131	7,933	57%	0.43		0.854		0.366	0.366	63.4%	36,464	7,586	12,688	24%	0.24		0.663		0.158	0.158	84.2%	62.8%
1959	B	16,130	8,492	5,083	62%	0.27		0.819	0.080	0.536	0.536	46.4%	14,627	8,059	4,520	63%	0.47		0.688		0.324	0.324	67.6%	35,167	7,540	12,202	24%	0.24		0.660		0.158	0.158	84.2%	66.5%
1960	D	11,403	7,350	3,315	67%	0.29		0.758	0.080	0.535	0.535	46.5%	11,068	6,998	3,189	68%	0.50		0.631		0.318	0.318	68.2%	14,522	10,618	4,481	63%	0.27		0.826		0.227	0.227	77.3%	65.1%
1961	D	14,251	10,494	4,380	63%	0.28		0.927	0.080	0.618	0.618	38.2%	18,328	11,097	5,905	60%	0.45		0.852		0.382	0.382	61.8%	15,008	11,280	4,663	63%	0.27		0.862		0.235	0.235	76.5%	59.6%
1962	B	9,828	6,073	2,726	70%	0.30		0.689	0.080	0.506	0.506	49.4%	16,701	11,083	5,296	61%	0.46		0.851		0.389	0.389	61.1%	12,652	8,121	3,782	65%	0.28		0.691		0.196	0.196	80.4%	63.0%
1963	W	21,242	10,952	6,995	58%	0.26		0.952	0.080	0.589	0.589	41.1%	27,555	11,100	9,356	25%	0.25		0.852		0.210	0.210	79.0%	18,049	11,453	5,800	60%	0.26		0.871		0.230	0.230	77.0%	69.0%
1964	D	28,658	10,946	9,768	25%	0.25		0.952	0.080	0.294	0.294	70.6%	14,847	10,260	4,603	63%	0.47		0.807		0.378	0.378	62.2%	25,539	8,079	8,602	25%	0.25		0.689		0.172	0.172	82.8%	69.4%
1965	W	13,651	10,325	4,155	64%	0.28		0.918	0.080	0.618	0.618	38.2%	28,023	11,538	9,531	25%	0.25		0.876		0.216	0.216	78.4%	81,240	12,707	29,434	22%	0.22		0.939		0.211	0.211	78.9%	68.5%
1966	B	26,250	10,966	8,868	25%	0.25		0.953	0.080	0.297	0.297	70.3%	16,997	10,095	5,407	61%	0.46		0.798		0.363	0.363	63.7%	29,635	7,864	10,133	24%	0.24		0.678		0.166	0.166	83.4%	70.3%
1967	W	16,065	10,946	5,058	62%	0.27		0.952	0.080	0.618	0.618	38.2%	39,750	11,330	13,917	24%	0.24		0.865		0.205	0.205	79.5%	34,626	11,878	12,000	24%	0.24		0.894		0.215	0.215	78.5%	68.9%
1968	B	16,241	8,360	5,124	62%	0.27		0.812	0.080	0.531	0.531	46.9%	16,692	7,942	5,293	61%	0.46		0.682		0.312	0.312	68.8%	30,635	7,540	10,507	24%	0.24		0.660		0.161	0.161	83.9%	67.1%
1969	W	14,318	10,626	4,405	63%	0.28		0.935	0.080	0.622	0.622	37.8%	24,986	11,178	8,395	57%	0.42		0.857		0.364	0.364	63.6%	68,505	9,497	24,671	23%	0.23		0.766		0.174	0.174	82.6%	61.9%
1970	W	17,644	8,394	5,649	61%	0.26		0.814	0.080	0.524	0.524	47.6%	50,159	7,688	17,809	23%	0.23		0.668		0.155	0.155	84.5%	92,665	7,492	33,707	22%	0.22		0.657		0.147	0.147	85.3%	75.5%
1971	W	23,541	10,961	7,854	57%	0.25		0.953	0.080	0.580	0.580	42.0%	54,139	11,249	19,298	23%	0.23		0.860		0.198	0.198	80.2%	46,894	9,676	16,588	23%	0.23		0.775		0.181	0.181	81.9%	71.1%
1972	B	15,347	10,947	4,790	62%	0.27		0.952	0.080	0.624	0.624	37.6%	20,009	10,398	6,533	59%	0.44		0.814		0.359	0.359	64.1%	20,395	8,098	6,678	59%	0.26		0.690		0.178	0.178	82.2%	62.0%
1973	A	23,524	10,947	7,848	57%	0.25		0.952	0.080	0.580	0.580	42.0%	26,198	11,111	8,848	25%	0.25		0.853		0.212	0.212	78.8%	49,390	10,681	17,522	23%	0.23		0.830		0.193	0.193	80.7%	70.1%
1974	W	54,292	10,957	19,355	23%	0.23		0.952	0.080	0.281	0.281	71.9%	61,593	11,349	22,086	23%	0.23		0.866		0.198	0.198	80.2%	78,417	7,844	28,378	22%	0.22		0.676		0.152	0.152	84.8%	79.3%
1975	W	17,581	9,715	5,625	61%	0.26		0.885	0.080	0.568	0.568	43.2%	17,619	8,455	5,640	61%	0.45		0.709		0.321	0.321	67.9%	18,672	8,055	6,033	60%	0.26		0.688		0.180	0.180	82.0%	65.3%
1976	C	19,229	10,969	6,242	59%	0.26		0.953	0.080	0.599	0.599	40.1%	16,774	8,859	5,323	61%	0.46		0.731		0.334	0.334	66.6%	16,769	8,000	5,322	61%	0.27		0.685		0.183	0.183	81.7%	63.7%
1977	C	8,299	6,003	2,154	74%	0.31		0.685	0.080	0.525	0.525	47.5%	8,133	4,737	2,092	74%	0.55		0.509		0.280	0.280	72.0%	7,656	4,546	1,913	75%	0.32		0.498		0.160	0.160	84.0%	68.9%
1978	A	6,922	4,155	1,639	78%	0.33		0.585	0.080	0.474	0.474	52.6%	12,285	9,667	3,645	66%	0.49		0.775		0.380	0.380	62.0%	43,061	10,293	15,155	23%	0.23		0.809		0.190	0.190	81.0%	64.4%
1979	B	14,388	10,883	4,431	63%	0.28		0.948	0.080	0.630	0.630	37.0%	12,756	7,892	3,821	65%	0.49		0.679		0.330	0.330	67.0%	27,242	7,469	9,239	25%	0.25		0.656		0.162	0.162	83.8%	63.7%
1980	A	16,943	10,945	5,387	61%	0.27		0.952	0.080	0.612	0.612	38.8%	20,832	11,192	6,841	59%	0.44		0.857		0.375	0.375	62.5%	63,624	7,366	22,845	23%	0.23		0.651		0.148	0.148	85.2%	62.2%
1981	D	13,017	9,864	3,918	65%	0.28		0.893	0.080	0.608	0.608	39.2%	15,611	8,319	4,889	62%	0.46		0.702		0.326	0.326	67.4%	28,603	7,563	9,748	25%	0.25		0.661		0.162	0.162	83.8%	64.5%
1982	W	33,256	10,950	11,488	24%	0.24		0.952	0.080	0.291	0.291	70.9%	68,599	11,218	24,706	23%	0.23		0.859		0.195	0.195	80.5%	51,172	11,850	18,188	23%	0.23		0.893		0.207	0.207	79.3%	77.8%
1983	W	39,113	10,978	13,678	24%	0.24		0.954	0.080	0.287	0.287	71.3%	55,416	8,635	19,776	23%	0.23		0.719		0.165	0.165	83.5%	59,148	6,855	21,171	23%	0.23		0.623		0.143	0.143	85.7%	81.0%
1984	W	62,800	6,956	22,537	23%	0.23		0.736	0.080	0.230	0.230	77.0%	82,951	6,098	30,074	22%	0.22		0.582		0.131	0.131	86.9%	47,354	4,212	16,760	23%	0.23		0.480		0.112	0.112	88.8%	84.9%
1985	D	34,002	10,964	11,767	24%	0.24		0.953	0.080	0.290	0.290	71.0%	23,880	10,827	7,981	57%	0.43		0.838		0.358	0.358	64.2%	16,799	8,079	5,333	61%	0.27		0.689		0.184	0.184	81.6%	70.2%
1986	W	9,546	6,661	2,620	71%	0.30		0.720	0.080	0.532	0.532	46.8%	15,722	11,149	4,930	62%	0.46		0.855		0.396	0.396	60.4%	21,503	11,537	7,092	58%	0.26		0.876		0.224	0.224	77.6%	61.3%
1987	D	11,217	7,763	3,245	67%	0.29		0.780	0.080	0.552	0.552	44.8%	13,789	10,300	4,207	64%	0.48		0.809		0.386	0.386	61.4%	16,734	7,596	5,309	61%	0.27		0.663		0.177	0.177	82.3%	62.5%
1988	C	8,448	4,845	2,210	73%	0.31		0.622	0.080	0.477	0.477	52.3%	15,842	11,082	4,975	62%	0.46		0.851		0.394	0.394	60.6%	25,530	11,265	8,598	25%	0.25		0.861		0.215	0.215	78.5%	63.0%
1989	D	8,582	5,747	2,260	73%	0.31		0.671	0.080	0.511	0.511	48.9%	8,849	5,752	2,360	72%	0.54		0.564		0.302	0.302	69.8%	11,998	8,725	3,537	66%	0.29		0.724		0.208	0.208	79.2%	66.9%
1990	C	11,756	7,812	3,447	67%	0.29		0.783	0.080	0.548	0.548	45.2%	14,638	10,410	4,525	63%	0.47		0.815		0.383	0.383	61.7%	21,584	9,597	7,122	58%	0.26		0.771		0.197	0.197	80.3%	62.2%
1991	C	8,142	4,864	2,095	74%	0.32		0.623	0.080	0.482	0.482	51.8%	8,786	4,854	2,336	72%	0.54		0.515		0.277	0.277	72.3%	6,851	3,405	1,612	78%	0.33		0.437		0.145	0.145	85.5%	70.5%
1992	C	7,538	4,579	1,869	76%	0.32		0.608	0.080	0.480	0.480	52.0%	7,464	4,572	1,842	76%	0.56		0.500		0.282	0.282	71.8%	12,140	8,987	3,590	66%	0.29		0.738		0.211	0.211	78.9%	68.6%
																																		Average:	66.81%

Formulas: Sacramento River Late Fall Run Smolt Survival Model

C10 ='Study 467 Flow Data'!B7
D10 ='Study 467 Flow Data'!L7 (HIDDEN)
E10 ='Study 467 Flow Data'!V7 (HIDDEN)
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =-1.613493+(0.0319584*$T$1)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!C7
R10 ='Study 467 Flow Data'!M7 (HIDDEN)
S10 ='Study 467 Flow Data'!W7 (HIDDEN)
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!D7
AF10 ='Study 467 Flow Data'!N7 (HIDDEN)
AG10 ='Study 467 Flow Data'!X7 (HIDDEN)
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
AS10 =(O10*0.25)+(AC10*0.5)+(AQ10*0.25)

1 Study 501 Sacramento River Late Fall Run Smolt Survival Model — November Sacramento River Temp: 53 degrees F
2 Modified m2 by changing the slope to 0.000054 — December Sacramento River Temp: 47 degrees F
3 Cross Channel closed for 45 consecutive days, Dec 18-Jan 31 — January Sacramento River Temp: 47 degrees F
4 Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

Row	Year (A)	Water Year Type (B)	NOVEMBER Sac River Flow (C)	CVP+SWP exports (F)	Calculated Steamboat & Sutter Slough Q (G)	percent (H)	xchannel closed (I)	m1 (J)	Calculated Mortality m2 (K)	m3 (L)	m23 (M)	m123 (N)	Calculated Survival s123 (O)	DECEMBER Sac River Flows (Q)	SWP+CVP exports (T)	Calculated Steamboat & Sutter Slough Q (U)	percent (V)	xchannel closed (W)	m1 (X)	Calculated Mortality m2 (Y)	m3 (Z)	m23 (AA)	m123 (AB)	Calculated Survival s123 (AC)	JANUARY Sac River Flows (AE)	CVP+SWP exports (AH)	Calculated Steamboat & Sutter Slough Q (AI)	percent (AJ)	xchannel closed (AK)	m1 (AL)	Calculated Mortality m2 (AM)	m3 (AN)	m23 (AO)	m123 (AP)	Calculated Survival s123 (AQ)	Weighted Total Survival (AS)
10	1922	A	12,033	8,606	3,550	66%	0.29		0.825	0.080	0.574	0.574	42.6%	17,143	11,307	5,461	61%	0.45		0.863		0.393	0.393	60.7%	17,504	11,783	5,596	61%	0.27		0.889		0.236	0.236	76.4%	60.1%
11	1923	B	17,311	10,978	5,524	61%	0.27		0.954	0.080	0.611	0.611	38.9%	34,539	9,051	11,968	24%	0.24		0.742		0.178	0.178	82.2%	32,280	7,844	11,123	24%	0.24		0.676		0.164	0.164	83.6%	71.7%
12	1924	C	10,747	7,079	3,069	68%	0.29		0.743	0.080	0.532	0.532	46.8%	13,868	10,356	4,237	64%	0.48		0.812		0.387	0.387	61.3%	14,370	10,696	4,424	63%	0.28		0.830		0.229	0.229	77.1%	61.6%
13	1925	D	7,024	4,516	1,677	78%	0.33		0.605	0.080	0.487	0.487	51.3%	11,248	9,055	3,257	67%	0.50		0.742		0.372	0.372	62.8%	10,209	6,702	2,868	69%	0.30		0.615		0.183	0.183	81.7%	64.6%
14	1926	D	12,298	7,285	3,649	66%	0.28		0.754	0.080	0.524	0.524	47.6%	11,366	7,280	3,301	67%	0.50		0.646		0.323	0.323	67.7%	19,269	11,294	6,257	59%	0.26		0.863		0.225	0.225	77.5%	65.1%
15	1927	W	20,291	10,924	6,639	59%	0.26		0.951	0.080	0.593	0.593	40.7%	14,304	11,202	4,400	63%	0.47		0.858		0.406	0.406	59.4%	29,594	11,471	10,118	24%	0.24		0.872		0.213	0.213	78.7%	59.6%
16	1928	A	20,609	10,973	6,758	59%	0.26		0.953	0.080	0.593	0.593	40.7%	16,574	11,106	5,249	61%	0.46		0.853		0.390	0.390	61.0%	25,777	7,844	8,691	25%	0.25		0.676		0.169	0.169	83.1%	61.5%
17	1929	C	12,862	9,738	3,860	65%	0.28		0.887	0.080	0.605	0.605	39.5%	13,711	10,397	4,178	64%	0.48		0.814		0.389	0.389	61.1%	15,516	11,292	4,853	62%	0.27		0.863		0.234	0.234	76.6%	59.6%
18	1930	D	7,159	4,047	1,727	77%	0.33		0.579	0.080	0.465	0.465	53.5%	14,442	10,507	4,451	63%	0.47		0.820		0.387	0.387	61.3%	20,771	11,299	6,818	59%	0.26		0.863		0.222	0.222	77.8%	63.5%
19	1931	C	9,758	5,887	2,699	70%	0.30		0.679	0.080	0.500	0.500	50.0%	9,310	5,152	2,532	71%	0.53		0.531		0.281	0.281	71.9%	11,965	9,104	3,525	66%	0.29		0.745		0.214	0.214	78.6%	68.1%
20	1932	D	8,085	2,870	2,074	74%	0.32		0.516	0.080	0.403	0.403	59.7%	14,650	11,401	4,529	63%	0.47		0.869		0.409	0.409	59.1%	17,253	12,034	5,503	61%	0.27		0.903		0.240	0.240	76.0%	63.5%
21	1933	C	9,511	5,663	2,607	71%	0.30		0.667	0.080	0.494	0.494	50.6%	8,632	4,967	2,278	73%	0.54		0.521		0.281	0.281	71.9%	12,602	9,948	3,763	65%	0.28		0.790		0.224	0.224	77.6%	68.0%
22	1934	C	8,110	2,623	2,083	74%	0.32		0.502	0.080	0.393	0.393	60.7%	12,474	9,708	3,715	66%	0.49		0.777		0.380	0.380	62.0%	16,103	11,300	5,073	62%	0.27		0.863		0.232	0.232	76.8%	65.4%
23	1935	B	9,209	6,835	2,494	71%	0.31		0.730	0.080	0.543	0.543	45.7%	8,503	6,610	2,230	73%	0.54		0.610		0.331	0.331	66.9%	25,471	11,873	8,576	25%	0.25		0.894		0.223	0.223	77.7%	64.3%
24	1936	B	11,845	7,724	3,480	66%	0.29		0.778	0.080	0.544	0.544	45.6%	10,625	7,245	3,024	68%	0.51		0.644		0.328	0.328	67.2%	30,207	11,660	10,347	24%	0.24		0.883		0.215	0.215	78.5%	64.6%
25	1937	B	11,525	7,710	3,360	67%	0.29		0.777	0.080	0.547	0.547	45.3%	12,454	9,790	3,708	66%	0.49		0.782		0.382	0.382	61.8%	15,967	11,788	5,022	62%	0.27		0.889		0.240	0.240	76.0%	61.2%
26	1938	W	23,450	10,963	7,820	57%	0.25		0.953	0.080	0.580	0.580	42.0%	45,730	11,738	16,153	23%	0.23		0.887		0.207	0.207	79.3%	31,443	8,900	10,810	24%	0.24		0.733		0.178	0.178	82.2%	70.7%
27	1939	D	19,439	9,587	6,320	59%	0.26		0.878	0.080	0.554	0.554	44.6%	18,684	7,942	6,038	60%	0.45		0.682		0.305	0.305	69.5%	18,407	7,446	5,934	60%	0.26		0.655		0.172	0.172	82.8%	66.6%
28	1940	A	8,444	4,559	2,208	73%	0.31		0.607	0.080	0.466	0.466	53.4%	7,841	4,108	1,983	75%	0.56		0.475		0.264	0.264	73.6%	23,448	12,224	7,820	57%	0.25		0.913		0.231	0.231	76.9%	69.4%
29	1941	W	13,762	10,372	4,197	64%	0.28		0.921	0.080	0.618	0.618	38.2%	36,071	11,545	12,541	24%	0.24		0.876		0.210	0.210	79.0%	72,496	12,348	26,164	23%	0.23		0.920		0.208	0.208	79.2%	68.9%
30	1942	W	18,186	10,469	5,852	60%	0.26		0.926	0.080	0.589	0.589	41.1%	65,619	7,815	23,592	23%	0.23		0.675		0.153	0.153	84.7%	63,260	7,446	22,709	23%	0.23		0.655		0.149	0.149	85.1%	73.9%
31	1943	W	21,906	10,820	7,243	58%	0.26		0.945	0.080	0.582	0.582	41.8%	28,806	7,986	9,823	25%	0.25		0.684		0.168	0.168	83.2%	58,056	7,510	20,763	23%	0.23		0.658		0.151	0.151	84.9%	73.3%
32	1944	D	14,392	10,866	4,433	63%	0.28		0.947	0.080	0.629	0.629	37.1%	13,774	10,630	4,201	64%	0.48		0.827		0.394	0.394	60.6%	17,677	7,469	5,661	60%	0.26		0.656		0.174	0.174	82.6%	60.2%
33	1945	B	13,770	10,878	4,200	64%	0.28		0.948	0.080	0.636	0.636	36.4%	15,826	11,174	4,969	62%	0.46		0.856		0.396	0.396	60.4%	13,516	9,126	4,105	64%	0.28		0.746		0.208	0.208	79.2%	59.1%
34	1946	B	20,032	10,969	6,542	59%	0.26		0.953	0.080	0.595	0.595	40.5%	54,779	11,799	19,537	23%	0.23		0.890		0.205	0.205	79.5%	43,229	7,844	15,218	23%	0.23		0.676		0.159	0.159	84.1%	70.9%
35	1947	D	13,776	10,903	4,202	64%	0.28		0.949	0.080	0.636	0.636	36.4%	18,132	11,344	5,831	60%	0.45		0.865		0.389	0.389	61.1%	15,221	10,883	4,743	63%	0.27		0.841		0.229	0.229	77.1%	58.9%
36	1948	B	10,458	6,654	2,961	69%	0.30		0.720	0.080	0.520	0.520	48.0%	9,637	5,633	2,654	70%	0.52		0.557		0.291	0.291	70.9%	14,897	10,724	4,621	63%	0.27		0.832		0.228	0.228	77.2%	66.7%
37	1949	D	14,447	10,510	4,453	63%	0.28		0.928	0.080	0.617	0.617	38.3%	15,563	11,105	4,871	62%	0.46		0.853		0.396	0.396	60.4%	14,928	11,026	4,633	63%	0.27		0.848		0.232	0.232	76.8%	59.0%
38	1950	B	11,450	7,707	3,332	67%	0.29		0.777	0.080	0.548	0.548	45.2%	11,113	7,321	3,206	68%	0.50		0.648		0.326	0.326	67.4%	20,434	11,383	6,692	59%	0.26		0.868		0.224	0.224	77.6%	64.4%
39	1951	A	41,295	10,952	14,494	24%	0.24		0.952	0.080	0.286	0.286	71.4%	68,100	11,799	24,519	23%	0.23		0.890		0.202	0.202	79.8%	62,213	11,238	22,318	23%	0.23		0.860		0.196	0.196	80.4%	77.9%
40	1952	W	16,666	10,965	5,283	61%	0.27		0.953	0.080	0.615	0.615	38.5%	45,652	11,312	16,124	23%	0.23		0.864		0.202	0.202	79.8%	67,352	11,279	24,240	23%	0.23		0.862		0.196	0.196	80.4%	69.6%
41	1953	W	16,535	8,393	5,234	61%	0.27		0.814	0.080	0.530	0.530	47.0%	42,331	7,949	14,882	24%	0.24		0.682		0.161	0.161	83.9%	64,078	7,540	23,015	23%	0.23		0.660		0.150	0.150	85.0%	75.0%
42	1954	A	20,905	10,966	6,868	59%	0.26		0.953	0.080	0.591	0.591	40.9%	14,919	8,104	4,630	63%	0.47		0.691		0.323	0.323	67.7%	33,414	8,040	11,547	24%	0.24		0.687		0.166	0.166	83.4%	64.9%
43	1955	D	20,855	10,962	6,850	59%	0.26		0.953	0.080	0.591	0.591	40.9%	26,020	11,116	8,781	25%	0.25		0.853		0.212	0.212	78.8%	22,257	10,706	7,374	58%	0.25		0.831		0.212	0.212	78.8%	69.3%
44	1956	W	10,720	7,029	3,059	68%	0.29		0.740	0.080	0.531	0.531	46.9%	23,950	11,799	8,007	57%	0.43		0.890		0.380	0.380	62.0%	84,015	12,177	30,472	22%	0.22		0.910		0.204	0.204	79.6%	62.6%
45	1957	A	15,470	10,978	4,836	62%	0.27		0.954	0.080	0.624	0.624	37.6%	14,143	10,013	4,339	64%	0.47		0.794		0.376	0.376	62.4%	18,639	8,098	6,021	60%	0.26		0.690		0.181	0.181	81.9%	61.1%
46	1958	W	19,256	10,959	6,252	59%	0.26		0.952	0.080	0.599	0.599	40.1%	23,752	11,132	7,933	57%	0.43		0.854		0.366	0.366	63.4%	36,464	7,660	12,688	24%	0.24		0.667		0.159	0.159	84.1%	62.8%
47	1959	B	16,130	8,491	5,083	62%	0.27		0.819	0.080	0.536	0.536	46.4%	14,627	8,059	4,520	63%	0.47		0.688		0.324	0.324	67.6%	35,167	7,540	12,202	24%	0.24		0.660		0.158	0.158	84.2%	66.5%
48	1960	D	11,406	7,357	3,316	67%	0.29		0.758	0.080	0.535	0.535	46.5%	10,612	6,546	3,019	68%	0.51		0.606		0.309	0.309	69.1%	14,522	10,618	4,481	63%	0.27		0.826		0.227	0.227	77.3%	65.5%
49	1961	D	13,501	10,008	4,099	64%	0.28		0.901	0.080	0.608	0.608	39.2%	17,500	11,098	5,595	61%	0.45		0.852		0.386	0.386	61.4%	14,258	10,796	4,382	63%	0.28		0.836		0.231	0.231	76.9%	59.7%
50	1962	B	11,477	7,727	3,342	67%	0.29		0.778	0.080	0.548	0.548	45.2%	16,951	11,084	5,390	61%	0.46		0.851		0.388	0.388	61.2%	12,902	8,372	3,875	65%	0.28		0.705		0.199	0.199	80.1%	61.9%
51	1963	W	21,242	10,968	6,995	58%	0.26		0.953	0.080	0.590	0.590	41.0%	27,555	11,102	9,356	25%	0.25		0.852		0.210	0.210	79.0%	17,805	11,454	5,709	60%	0.26		0.871		0.230	0.230	77.0%	69.0%
52	1964	D	28,658	10,949	9,768	25%	0.25		0.952	0.080	0.294	0.294	70.6%	14,847	10,252	4,603	63%	0.47		0.807		0.378	0.378	62.2%	25,556	8,079	8,608	25%	0.25		0.689		0.172	0.172	82.8%	69.4%
53	1965	W	13,401	10,163	4,062	64%	0.28		0.910	0.080	0.614	0.614	38.6%	28,471	11,562	9,698	25%	0.25		0.877		0.216	0.216	78.4%	81,240	12,707	29,434	22%	0.22		0.939		0.211	0.211	78.9%	68.6%
54	1966	B	25,663	10,965	8,648	25%	0.25		0.953	0.080	0.298	0.298	70.2%	16,997	10,502	5,407	61%	0.46		0.820		0.373	0.373	62.7%	29,635	7,864	10,133	24%	0.24		0.678		0.166	0.166	83.4%	69.7%
55	1967	W	15,280	10,961	4,765	62%	0.27		0.953	0.080	0.625	0.625	37.5%	37,937	11,332	13,238	24%	0.24		0.865		0.206	0.206	79.4%	34,241	11,879	11,856	24%	0.24		0.894		0.215	0.215	78.5%	68.7%
56	1968	B	16,241	8,359	5,124	62%	0.27		0.812	0.080	0.531	0.531	46.9%	16,692	7,942	5,293	61%	0.46		0.682		0.312	0.312	68.8%	30,635	7,540	10,507	24%	0.24		0.660		0.161	0.161	83.9%	67.1%
57	1969	W	13,818	10,301	4,218	64%	0.28		0.917	0.080	0.615	0.615	38.5%	24,093	11,178	8,061	57%	0.43		0.857		0.366	0.366	63.4%	67,985	10,515	24,476	23%	0.23		0.821		0.186	0.186	81.4%	61.7%
58	1970	W	17,644	8,394	5,649	61%	0.26		0.814	0.080	0.524	0.524	47.6%	50,159	7,688	17,809	23%	0.23		0.668		0.155	0.155	84.5%	92,665	7,490	33,707	22%	0.22		0.657		0.147	0.147	85.3%	75.5%
59	1971	W	21,328	10,960	7,027	58%	0.26		0.953	0.080	0.589	0.589	41.1%	53,440	11,249	19,037	23%	0.23		0.860		0.198	0.198	80.2%	46,895	9,920	16,589	23%	0.23		0.789		0.184	0.184	81.6%	70.8%
60	1972	B	15,347	10,960	4,790	62%	0.27		0.953	0.080	0.624	0.624	37.6%	19,987	10,402	6,525	59%	0.44		0.815		0.359	0.359	64.1%	20,395	8,098	6,678	59%	0.26		0.690		0.178	0.178	82.2%	62.0%
61	1973	A	23,526	10,947	7,849	57%	0.25		0.952	0.080	0.580	0.580	42.0%	26,198	11,111	8,848	25%	0.25		0.853		0.212	0.212	78.8%	49,382	11,139	17,519	23%	0.23		0.854		0.198	0.198	80.2%	69.9%
62	1974	W	54,390	10,964	19,392	23%	0.23		0.953	0.080	0.281	0.281	71.9%	61,593	11,350	22,086	23%	0.23		0.866		0.198	0.198	80.2%	78,417	7,844	28,378	22%	0.22		0.676		0.152	0.152	84.8%	79.3%
63	1975	W	17,581	9,714	5,625	61%	0.26		0.885	0.080	0.568	0.568	43.2%	17,619	8,455	5,640	61%	0.45		0.709		0.321	0.321	67.9%	18,672	8,055	6,033	60%	0.26		0.688		0.180	0.180	82.0%	65.3%
64	1976	C	19,229	10,978	6,242	59%	0.26		0.954	0.080	0.600	0.600	40.0%	16,774	8,859	5,323	61%	0.46		0.731		0.334	0.334	66.6%	16,769	7,996	5,322	61%	0.27		0.685		0.183	0.183	81.7%	63.7%
65	1977	C	8,363	6,046	2,178	73%	0.31		0.687	0.080	0.526	0.526	47.4%	8,171	4,799	2,106	74%	0.55		0.512		0.281	0.281	71.9%	7,657	4,546	1,914	75%	0.32		0.498		0.160	0.160	84.0%	68.8%
66	1978	A	6,922	4,160	1,639	78%	0.33		0.585	0.080	0.474	0.474	52.6%	12,285	9,668	3,645	66%	0.49		0.775		0.380	0.380	62.0%	43,062	10,822	15,155	23%	0.23		0.837		0.197	0.197	80.3%	64.2%
67	1979	B	14,388	10,883	4,431	63%	0.28		0.948	0.080	0.630	0.630	37.0%	13,285	8,301	4,019	65%	0.48		0.701		0.337	0.337	66.3%	27,242	7,469	9,239	25%	0.25		0.656		0.162	0.162	83.8%	63.3%
68	1980	A	16,297	10,963	5,145	62%	0.27		0.953	0.080	0.617	0.617	38.3%	20,832	11,194	6,841	59%	0.44		0.857		0.375	0.375	62.5%	63,162	7,366	22,673	23%	0.23		0.651		0.148	0.148	85.2%	62.1%
69	1981	D	13,017	9,863	3,918	65%	0.28		0.893	0.080	0.608	0.608	39.2%	15,611	8,316	4,889	62%	0.46		0.702		0.326	0.326	67.4%	28,602	7,563	9,747	25%	0.25		0.661		0.162	0.162	83.8%	64.5%
70	1982	W	30,934	10,952	10,619	24%	0.24		0.952	0.080	0.292	0.292	70.8%	68,599	11,218	24,706	23%	0.23		0.859		0.195	0.195	80.5%	51,172	11,854	18,188	23%	0.23		0.893		0.207	0.207	79.3%	77.8%
71	1983	W	39,113	10,978	13,678	24%	0.24		0.954	0.080	0.287	0.287	71.3%	55,416	8,635	19,776	23%	0.23		0.719		0.165	0.165	83.5%	59,148	6,855	21,171	23%	0.23		0.623		0.143	0.143	85.7%	81.0%
72	1984	W	62,800	6,973	22,537	23%	0.23		0.737	0.080	0.230	0.230	77.0%	82,951	6,098	30,074	22%	0.22		0.582		0.131	0.131	86.9%	47,354	4,212	16,760	23%	0.23		0.480		0.112	0.112	88.8%	84.9%
73	1985	D	33,560	10,970	11,601	24%	0.24		0.953	0.080	0.291	0.291	70.9%	23,880	11,174	7,981	57%	0.43		0.856		0.366	0.366	63.4%	16,799	8,079	5,333	61%	0.27		0.689		0.184	0.184	81.6%	69.8%
74	1986	W	9,546	6,666	2,620	71%	0.30		0.721	0.080	0.532	0.532	46.8%	15,472	11,149	4,837	62%	0.46		0.855		0.397	0.397	60.3%	21,253	11,538	6,999	58%	0.26		0.876		0.225	0.225	77.5%	61.2%
75	1987	D	11,216	7,764	3,245	67%	0.29		0.780	0.080	0.552	0.552	44.8%	13,788	10,300	4,207	64%	0.48		0.809		0.386	0.386	61.4%	16,734	8,255	5,309	61%	0.27		0.699		0.187	0.187	81.3%	62.2%
76	1988	C	8,448	4,844	2,210	73%	0.31		0.622	0.080	0.477	0.477	52.3%	15,842	11,082	4,975	62%	0.46		0.851		0.394	0.394	60.6%	25,530	11,265	8,598	25%	0.25		0.861		0.215	0.215	78.5%	63.0%
77	1989	D	8,582	5,749	2,260	73%	0.31		0.671	0.080	0.511	0.511	48.9%	8,852	6,400	2,361	72%	0.54		0.598		0.321	0.321	67.9%	12,003	8,700	3,539	66%	0.29		0.723		0.207	0.207	79.3%	66.0%
78	1990	C	11,756	7,814	3,447	67%	0.29		0.783	0.080	0.548	0.548	45.2%	14,633	10,406	4,523	63%	0.47		0.815		0.383	0.383	61.7%	21,584	9,615	7,122	58%	0.26		0.772		0.198	0.198	80.2%	62.2%
79	1991	C	8,142	4,859	2,095	74%	0.32		0.623	0.080	0.482	0.482	51.8%	8,805	4,883	2,343	72%	0.54		0.517		0.277	0.277	72.3%	6,851	3,405	1,612	78%	0.33		0.437		0.145	0.145	85.5%	70.5%
80	1992	C	7,579	4,617	1,885	76%	0.32		0.610	0.080	0.481	0.481	51.9%	7,465	4,572	1,842	76%	0.56		0.500		0.282	0.282	71.8%	12,140	8,987	3,590	66%	0.29		0.738		0.211	0.211	78.9%	68.6%
81																																			Average:	66.65%

82 Formulas: Sacramento River Late Fall Run Smolt Survival Model

Row	November	December	January
85	C10 ='Study 467 Flow Data'!B7	Q10 ='Study 467 Flow Data'!C7	AE10 ='Study 467 Flow Data'!D7
86	D10 ='Study 467 Flow Data'!L7 (HIDDEN)	R10 ='Study 467 Flow Data'!M7 (HIDDEN)	AF10 ='Study 467 Flow Data'!N7 (HIDDEN)
87	E10 ='Study 467 Flow Data'!V7 (HIDDEN)	S10 ='Study 467 Flow Data'!W7 (HIDDEN)	AG10 ='Study 467 Flow Data'!X7 (HIDDEN)
88	F10 =(D10+E10)	T10 =(R10+S10)	AH10 =(AF10+AG10)
89	G10 =0.374*C10-950	U10 =0.374*Q10-950	AI10 =0.374*AE10-950
90	H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))	V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))	AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
91	I10 =(0.133*C10+829)/(C10-G10)	W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)	AK10 =(0.133*AE10+829)/(AE10-AI10)
92	K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)	Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)	AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
93	L10 =-1.613493+(0.0319584*$T$1)	AA10 =(Y10*W10)+(Z10*(1-W10))	AO10 =(AM10*AK10)+(AN10*(1-AK10))
94	M10 =(K10*H10)+(L10*(1-H10))	AB10 =X10+AA10-(X10*AA10)	AP10 =AL10+AO10-(AL10*AO10)
95	N10 =J10+M10-(J10*M10)	AC10 =1-AB10	AQ10 =1-AP10
96	O10 =1-N10		AS10 =(O10*0.25)+(AC10*0.5)+(AQ10*0.25)

Study 501A Sacramento River Late Fall Run Smolt Survival Model

Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

		NOVEMBER		Calculated									DECEMBER		Calculated									JANUARY		Calculated									
	Water	Sac		Steamboat			Calculated Mortality					Calculated	Sac		Steamboat			Calculated Mortality					Calculated	Sac		Steamboat			Calculated Mortality					Calculated	
	Year	River	CVP+SWP	& Sutter		xchannel						Survival	River	SWP+CVP	& Sutter		xchannel						Survival	River	CVP+SWP	& Sutter		xchannel						Survival	Weighted
Year	Type	Flow	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	s123	Flows	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	s123	Flows	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	s123	Total Survival
1922	A	12,033	8,606	3,550	66%	0.29		0.825	0.080	0.574	0.574	42.6%	17,143	11,307	5,461	61%	0.45		0.863		0.393	0.393	60.7%	17,504	11,783	5,596	61%	0.27		0.889		0.236	0.236	76.4%	60.1%
1923	B	16,305	10,978	5,148	62%	0.27		0.954	0.080	0.618	0.618	38.2%	34,539	9,270	11,968	24%	0.24		0.753		0.181	0.181	81.9%	32,280	7,844	11,123	24%	0.24		0.676		0.164	0.164	83.6%	71.4%
1924	C	10,997	7,331	3,163	68%	0.29		0.757	0.080	0.539	0.539	46.1%	13,864	10,355	4,235	64%	0.48		0.812		0.387	0.387	61.3%	14,370	10,697	4,424	63%	0.28		0.831		0.229	0.229	77.1%	61.5%
1925	D	7,024	4,520	1,677	78%	0.33		0.605	0.080	0.487	0.487	51.3%	11,248	9,055	3,257	67%	0.50		0.742		0.372	0.372	62.8%	10,209	6,702	2,868	69%	0.30		0.615		0.183	0.183	81.7%	64.6%
1926	D	10,792	6,775	3,086	68%	0.29		0.727	0.080	0.521	0.521	47.9%	12,631	6,695	3,774	65%	0.49		0.614		0.299	0.299	70.1%	17,769	11,294	5,696	60%	0.26		0.863		0.228	0.228	77.2%	66.3%
1927	W	20,291	10,923	6,639	59%	0.26		0.951	0.080	0.593	0.593	40.7%	14,304	11,202	4,400	63%	0.47		0.858		0.406	0.406	59.4%	29,780	11,471	10,188	24%	0.24		0.872		0.213	0.213	78.7%	59.6%
1928	A	19,551	10,973	6,362	59%	0.26		0.953	0.080	0.598	0.598	40.2%	16,574	11,278	5,249	61%	0.46		0.862		0.395	0.395	60.5%	25,207	7,844	8,477	25%	0.25		0.676		0.169	0.169	83.1%	61.1%
1929	C	12,612	9,489	3,767	65%	0.28		0.873	0.080	0.599	0.599	40.1%	13,461	10,236	4,084	64%	0.48		0.806		0.386	0.386	61.4%	15,016	11,006	4,666	63%	0.27		0.847		0.231	0.231	76.9%	59.9%
1930	D	7,159	4,047	1,727	77%	0.33		0.579	0.080	0.465	0.465	53.5%	14,442	10,507	4,451	63%	0.47		0.820		0.387	0.387	61.3%	20,771	11,299	6,818	59%	0.26		0.863		0.222	0.222	77.8%	63.5%
1931	C	9,778	5,908	2,707	70%	0.30		0.680	0.080	0.500	0.500	50.0%	9,328	5,170	2,539	71%	0.53		0.532		0.281	0.281	71.9%	11,965	9,104	3,525	66%	0.29		0.745		0.214	0.214	78.6%	68.1%
1932	D	8,090	2,872	2,076	74%	0.32		0.516	0.080	0.403	0.403	59.7%	14,650	11,401	4,529	63%	0.47		0.869		0.409	0.409	59.1%	17,253	12,034	5,503	61%	0.27		0.903		0.240	0.240	76.0%	63.5%
1933	C	9,511	5,663	2,607	71%	0.30		0.667	0.080	0.494	0.494	50.6%	8,189	4,525	2,113	74%	0.55		0.497		0.273	0.273	72.7%	12,102	9,623	3,576	66%	0.29		0.773		0.221	0.221	77.9%	68.5%
1934	C	8,121	2,632	2,087	74%	0.32		0.503	0.080	0.393	0.393	60.7%	12,474	9,708	3,715	66%	0.49		0.777		0.380	0.380	62.0%	16,103	11,300	5,073	62%	0.27		0.863		0.232	0.232	76.8%	65.4%
1935	B	9,209	6,834	2,494	71%	0.31		0.730	0.080	0.543	0.543	45.7%	8,503	6,608	2,230	73%	0.54		0.610		0.331	0.331	66.9%	25,471	11,873	8,576	25%	0.25		0.894		0.223	0.223	77.7%	64.3%
1936	B	10,701	7,064	3,052	68%	0.29		0.742	0.080	0.532	0.532	46.8%	10,625	7,245	3,024	68%	0.51		0.644		0.328	0.328	67.2%	31,259	11,660	10,741	24%	0.24		0.883		0.214	0.214	78.6%	64.9%
1937	B	11,241	7,458	3,254	67%	0.29		0.763	0.080	0.541	0.541	45.9%	12,309	9,585	3,654	66%	0.49		0.770		0.378	0.378	62.2%	15,467	11,788	4,835	62%	0.27		0.889		0.241	0.241	75.9%	61.6%
1938	W	23,700	10,964	7,914	57%	0.25		0.953	0.080	0.580	0.580	42.0%	42,450	11,738	14,926	24%	0.24		0.887		0.209	0.209	79.1%	31,443	8,702	10,810	24%	0.24		0.723		0.176	0.176	82.4%	70.7%
1939	D	19,439	9,587	6,320	59%	0.26		0.878	0.080	0.554	0.554	44.6%	18,684	7,942	6,038	60%	0.45		0.682		0.305	0.305	69.5%	18,407	4,815	5,934	60%	0.26		0.513		0.135	0.135	86.5%	67.5%
1940	A	8,444	4,559	2,208	73%	0.31		0.607	0.080	0.466	0.466	53.4%	7,841	4,108	1,983	75%	0.56		0.475		0.264	0.264	73.6%	23,448	12,224	7,820	57%	0.25		0.913		0.231	0.231	76.9%	69.4%
1941	W	13,764	10,372	4,198	64%	0.28		0.921	0.080	0.618	0.618	38.2%	34,942	11,545	12,118	24%	0.24		0.876		0.210	0.210	79.0%	71,845	12,348	25,920	23%	0.23		0.920		0.208	0.208	79.2%	68.8%
1942	W	18,186	10,926	5,852	60%	0.26		0.951	0.080	0.604	0.604	39.6%	65,619	7,815	23,592	23%	0.23		0.675		0.153	0.153	84.7%	63,260	7,446	22,709	23%	0.23		0.655		0.149	0.149	85.1%	73.5%
1943	W	21,906	10,976	7,243	58%	0.26		0.953	0.080	0.587	0.587	41.3%	28,806	7,986	9,823	25%	0.25		0.684		0.168	0.168	83.2%	58,056	7,511	20,763	23%	0.23		0.658		0.151	0.151	84.9%	73.2%
1944	D	13,869	10,527	4,237	64%	0.28		0.929	0.080	0.623	0.623	37.7%	13,774	10,631	4,201	64%	0.48		0.827		0.395	0.395	60.5%	17,677	7,469	5,661	60%	0.26		0.656		0.174	0.174	82.6%	60.4%
1945	B	13,770	10,878	4,200	64%	0.28		0.948	0.080	0.636	0.636	36.4%	15,826	11,174	4,969	62%	0.46		0.856		0.396	0.396	60.4%	13,621	9,126	4,144	64%	0.28		0.746		0.208	0.208	79.2%	59.1%
1946	B	17,944	10,966	5,761	60%	0.26		0.953	0.080	0.607	0.607	39.3%	53,556	11,799	19,080	23%	0.23		0.890		0.205	0.205	79.5%	43,229	7,844	15,218	23%	0.23		0.676		0.159	0.159	84.1%	70.6%
1947	D	13,776	10,861	4,202	64%	0.28		0.947	0.080	0.635	0.635	36.5%	18,132	11,331	5,831	60%	0.45		0.865		0.389	0.389	61.1%	14,971	11,394	4,649	63%	0.27		0.868		0.237	0.237	76.3%	58.8%
1948	B	10,208	6,409	2,868	69%	0.30		0.707	0.080	0.514	0.514	48.6%	9,844	5,847	2,732	70%	0.52		0.569		0.296	0.296	70.4%	14,649	10,564	4,529	63%	0.27		0.823		0.226	0.226	77.4%	66.7%
1949	D	14,447	10,509	4,453	63%	0.28		0.928	0.080	0.617	0.617	38.3%	15,563	11,105	4,871	62%	0.46		0.853		0.396	0.396	60.4%	14,928	11,025	4,633	63%	0.27		0.848		0.232	0.232	76.8%	59.0%
1950	B	11,649	7,642	3,407	67%	0.29		0.773	0.080	0.543	0.543	45.7%	11,700	7,263	3,426	67%	0.50		0.645		0.320	0.320	68.0%	19,934	11,383	6,505	59%	0.26		0.868		0.225	0.225	77.5%	64.8%
1951	A	42,918	10,953	15,101	24%	0.24		0.952	0.080	0.285	0.285	71.5%	68,100	11,799	24,519	23%	0.23		0.890		0.202	0.202	79.8%	62,213	12,707	22,318	23%	0.23		0.939		0.214	0.214	78.6%	77.4%
1952	W	16,567	10,970	5,246	61%	0.27		0.953	0.080	0.616	0.616	38.4%	45,618	11,313	16,111	23%	0.23		0.864		0.202	0.202	79.8%	67,352	12,576	24,240	23%	0.23		0.932		0.212	0.212	78.8%	69.2%
1953	W	16,535	8,393	5,234	61%	0.27		0.814	0.080	0.530	0.530	47.0%	42,331	7,949	14,882	24%	0.24		0.682		0.161	0.161	83.9%	64,078	4,894	23,015	23%	0.23		0.517		0.118	0.118	88.2%	75.8%
1954	A	20,245	10,967	6,622	59%	0.26		0.953	0.080	0.594	0.594	40.6%	14,919	8,104	4,630	63%	0.47		0.691		0.323	0.323	67.7%	33,414	8,040	11,547	24%	0.24		0.687		0.166	0.166	83.4%	64.8%
1955	D	20,430	10,967	6,691	59%	0.26		0.953	0.080	0.593	0.593	40.7%	26,020	11,116	8,781	25%	0.25		0.853		0.212	0.212	78.8%	22,257	11,401	7,374	58%	0.25		0.869		0.221	0.221	77.9%	69.0%
1956	W	10,470	6,777	2,966	69%	0.30		0.727	0.080	0.525	0.525	47.5%	26,142	11,799	8,827	25%	0.25		0.890		0.221	0.221	77.9%	83,983	12,271	30,460	22%	0.22		0.916		0.205	0.205	79.5%	70.7%
1957	A	15,470	10,978	4,836	62%	0.27		0.954	0.080	0.624	0.624	37.6%	14,143	10,099	4,339	64%	0.47		0.798		0.378	0.378	62.2%	18,639	8,098	6,021	60%	0.26		0.690		0.181	0.181	81.9%	61.0%
1958	W	19,256	10,963	6,252	59%	0.26		0.953	0.080	0.599	0.599	40.1%	23,752	11,133	7,933	57%	0.43		0.854		0.366	0.366	63.4%	36,214	8,157	12,594	24%	0.24		0.693		0.166	0.166	83.4%	62.6%
1959	B	16,130	8,491	5,083	62%	0.27		0.819	0.080	0.536	0.536	46.4%	14,627	8,059	4,520	63%	0.47		0.688		0.324	0.324	67.6%	35,167	4,913	12,202	24%	0.24		0.518		0.124	0.124	87.6%	67.3%
1960	D	11,810	7,359	3,467	67%	0.29		0.758	0.080	0.531	0.531	46.9%	10,422	6,359	2,948	69%	0.51		0.596		0.305	0.305	69.5%	14,522	10,618	4,481	63%	0.27		0.826		0.227	0.227	77.3%	65.8%
1961	D	13,251	9,845	4,006	65%	0.28		0.892	0.080	0.605	0.605	39.5%	17,250	11,098	5,502	61%	0.45		0.852		0.387	0.387	61.3%	14,008	10,633	4,289	64%	0.28		0.827		0.229	0.229	77.1%	59.8%
1962	B	11,489	7,739	3,347	67%	0.29		0.779	0.080	0.548	0.548	45.2%	16,951	11,084	5,390	61%	0.46		0.851		0.388	0.388	61.2%	12,902	8,372	3,875	65%	0.28		0.705		0.199	0.199	80.1%	61.9%
1963	W	20,835	10,968	6,842	59%	0.26		0.953	0.080	0.591	0.591	40.9%	27,555	11,102	9,356	25%	0.25		0.852		0.210	0.210	79.0%	17,805	11,454	5,709	60%	0.26		0.871		0.230	0.230	77.0%	68.9%
1964	D	28,658	10,951	9,768	25%	0.25		0.952	0.080	0.294	0.294	70.6%	14,847	10,040	4,603	63%	0.47		0.795		0.373	0.373	62.7%	24,193	8,054	8,098	57%	0.25		0.688		0.173	0.173	82.7%	69.7%
1965	W	13,651	10,327	4,155	64%	0.28		0.918	0.080	0.618	0.618	38.2%	29,335	11,562	10,021	24%	0.24		0.877		0.215	0.215	78.5%	81,240	12,707	29,434	22%	0.22		0.939		0.211	0.211	78.9%	68.5%
1966	B	25,033	10,964	8,412	25%	0.25		0.953	0.080	0.299	0.299	70.1%	16,997	10,692	5,407	61%	0.46		0.830		0.378	0.378	62.2%	29,635	7,864	10,133	24%	0.24		0.678		0.166	0.166	83.4%	69.5%
1967	W	14,530	10,967	4,484	63%	0.27		0.953	0.080	0.632	0.632	36.8%	35,155	11,332	12,198	24%	0.24		0.865		0.207	0.207	79.3%	33,973	11,880	11,756	24%	0.24		0.894		0.215	0.215	78.5%	68.5%
1968	B	16,241	8,359	5,124	62%	0.27		0.812	0.080	0.531	0.531	46.9%	16,692	7,100	5,293	61%	0.46		0.636		0.291	0.291	70.9%	30,635	4,895	10,507	24%	0.24		0.517		0.126	0.126	87.4%	69.0%
1969	W	13,818	10,301	4,218	64%	0.28		0.917	0.080	0.615	0.615	38.5%	24,093	11,178	8,061	57%	0.43		0.857		0.366	0.366	63.4%	67,423	11,054	24,266	23%	0.23		0.850		0.193	0.193	80.7%	61.5%
1970	W	17,644	8,394	5,649	61%	0.26		0.814	0.080	0.524	0.524	47.6%	50,159	7,688	17,809	23%	0.23		0.668		0.155	0.155	84.5%	92,665	4,689	33,707	22%	0.22		0.506		0.113	0.113	88.7%	76.3%
1971	W	21,519	10,960	7,098	58%	0.26		0.953	0.080	0.588	0.588	41.2%	53,503	11,249	19,060	23%	0.23		0.860		0.198	0.198	80.2%	45,772	9,140	16,169	23%	0.23		0.746		0.174	0.174	82.6%	71.0%
1972	B	15,347	10,965	4,790	62%	0.27		0.953	0.080	0.625	0.625	37.5%	20,347	11,140	6,660	59%	0.44		0.854		0.376	0.376	62.4%	20,395	8,098	6,678	59%	0.26		0.690		0.178	0.178	82.2%	61.1%
1973	A	21,510	10,952	7,095	58%	0.26		0.952	0.080	0.588	0.588	41.2%	26,198	11,111	8,848	25%	0.25		0.853		0.212	0.212	78.8%	49,326	11,664	17,498	23%	0.23		0.883		0.205	0.205	79.5%	69.6%
1974	W	52,301	10,973	18,611	23%	0.23		0.953	0.080	0.282	0.282	71.8%	61,593	11,351	22,086	23%	0.23		0.866		0.198	0.198	80.2%	78,417	7,844	28,378	22%	0.22		0.676		0.152	0.152	84.8%	79.3%
1975	W	17,581	10,930	5,625	61%	0.26		0.951	0.080	0.608	0.608	39.2%	17,619	8,509	5,640	61%	0.45		0.712		0.322	0.322	67.8%	18,672	8,057	6,033	60%	0.26		0.688		0.180	0.180	82.0%	64.2%
1976	C	19,229	10,978	6,242	59%	0.26		0.954	0.080	0.600	0.600	40.0%	16,774	9,601	5,323	61%	0.46		0.771		0.352	0.352	64.8%	16,769	8,025	5,322	61%	0.27		0.686		0.183	0.183	81.7%	62.8%
1977	C	8,371	6,036	2,181	73%	0.31		0.687	0.080	0.525	0.525	47.5%	8,158	4,815	2,101	74%	0.55		0.513		0.282	0.282	71.8%	7,906	4,796	2,007	75%	0.32		0.512		0.163	0.163	83.7%	68.7%
1978	A	6,922	4,163	1,639	78%	0.33		0.586	0.080	0.474	0.474	52.6%	12,285	9,668	3,645	66%	0.49		0.775		0.380	0.380	62.0%	43,064	11,057	15,156	23%	0.23		0.850		0.200	0.200	80.0%	64.2%
1979	B	14,388	10,883	4,431	63%	0.28		0.948	0.080	0.630	0.630	37.0%	14,021	8,282	4,294	64%	0.48		0.700		0.333	0.333	66.7%	27,242	7,469	9,239	25%	0.25		0.656		0.162	0.162	83.8%	63.6%
1980	A	15,797	10,963	4,958	62%	0.27		0.953	0.080	0.621	0.621	37.9%	20,332	11,194	6,654	59%	0.44		0.857		0.377	0.377	62.3%	59,143	7,366	21,169	23%	0.23		0.651		0.149	0.149	85.1%	61.9%
1981	D	13,017	9,863	3,918	65%	0.28		0.893	0.080	0.608	0.608	39.2%	15,611	8,300	4,889	62%	0.46		0.701		0.325	0.325	67.5%	27,778	5,737	9,439	25%	0.25		0.563		0.139	0.139	86.1%	65.1%
1982	W	29,987	10,952	10,265	24%	0.24		0.952	0.080	0.293	0.293	70.7%	68,133	11,218	24,532	23%	0.23		0.859		0.195	0.195	80.5%	51,172	12,257	18,188	23%	0.23		0.915		0.212	0.212	78.8%	77.6%
1983	W	39,113	10,978	13,678	24%	0.24		0.954	0.080	0.287	0.287	71.3%	55,416	8,635	19,776	23%	0.23		0.719		0.165	0.165	83.5%	59,148	5,523	21,171	23%	0.23		0.551		0.126	0.126	87.4%	81.4%
1984	W	62,800	5,366	22,537	23%	0.23		0.650	0.080	0.210	0.210	79.0%	82,951	6,098	30,074	22%	0.22		0.582		0.131	0.131	86.9%	47,354	4,212	16,760	23%	0.23		0.480		0.112	0.112	88.8%	85.4%
1985	D	33,413	10,970	11,546	24%	0.24		0.953	0.080	0.291	0.291	70.9%	23,880	11,094	7,981	57%	0.43		0.852		0.364	0.364	63.6%	16,549	8,079	5,239	61%	0.27		0.689		0.185	0.185	81.5%	69.9%
1986	W	9,546	6,671	2,620	71%	0.30		0.721	0.080	0.532	0.532	46.8%	15,472	11,150	4,837	62%	0.46		0.855		0.397	0.397	60.3%	21,253	11,533	6,999	58%	0.26		0.876		0.225	0.225	77.5%	61.2%
1987	D	11,222	7,770	3,247	67%	0.29		0.780	0.080	0.552	0.552	44.8%	13,788	10,301	4,207	64%	0.48		0.809		0.386	0.386	61.4%	16,734	8,274	5,309	61%	0.27		0.700		0.187	0.187	81.3%	62.2%
1988	C	8,448	4,844	2,210	73%	0.31		0.622	0.080	0.477	0.477	52.3%	15,842	11,082	4,975	62%	0.46		0.851		0.394	0.394	60.6%	25,530	11,265	8,598	25%	0.25		0.861		0.215	0.215	78.5%	63.0%
1989	D	8,582	5,749	2,260	73%	0.31		0.671	0.080	0.511	0.511	48.9%	8,852	6,400	2,361	72%	0.54		0.598		0.321	0.321	67.9%	12,003	8,700	3,539	66%	0.29		0.723		0.207	0.207	79.3%	66.0%
1990	C	11,756	7,812	3,447	67%	0.29		0.783	0.080	0.548	0.548	45.2%	14,632	10,405	4,522	63%	0.47		0.815		0.383	0.383	61.7%	21,584	9,499	7,122	58%	0.26		0.766		0.196	0.196	80.4%	62.2%
1991	C	8,142	4,860	2,095	74%	0.32		0.623	0.080	0.482	0.482	51.8%	8,800	4,875	2,341	72%	0.54		0.516		0.277	0.277	72.3%	6,851	3,404	1,612	78%	0.33		0.437		0.145	0.145	85.5%	70.5%
1992	C	7,570	4,608	1,881	76%	0.32		0.610	0.080	0.481	0.481	51.9%	7,465	4,572	1,842	76%	0.56		0.500		0.282	0.282	71.8%	12,140	8,988	3,590	66%	0.29		0.738		0.211	0.211	78.9%	68.6%
																																		Average:	66.81%

Formulas: Sacramento River Late Fall Run Smolt Survival Model

C10 ='Study 467 Flow Data'!B7
D10 ='Study 467 Flow Data'!L7 (HIDDEN)
E10 ='Study 467 Flow Data'!V7 (HIDDEN)
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =-1.613493+(0.0319584*$T$1)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!C7
R10 ='Study 467 Flow Data'!M7 (HIDDEN)
S10 ='Study 467 Flow Data'!W7 (HIDDEN)
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!D7
AF10 ='Study 467 Flow Data'!N7 (HIDDEN)
AG10 ='Study 467 Flow Data'!X7 (HIDDEN)
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
AS10 =(O10*0.25)+(AC10*0.5)+(AQ10*0.25)

Study 524 Sacramento River Late Fall Run Smolt Survival Model

Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Year	Water Year Type	Sac River Flow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	A	12,033	8,606	3,550	66%	0.29		0.825	0.080	0.574	0.574	**42.6%**
1923	B	17,311	10,978	5,524	61%	0.27		0.954	0.080	0.611	0.611	**38.9%**
1924	C	10,997	7,331	3,163	68%	0.29		0.757	0.080	0.539	0.539	**46.1%**
1925	D	7,024	4,518	1,677	78%	0.33		0.605	0.080	0.487	0.487	**51.3%**
1926	D	10,496	6,583	2,976	69%	0.30		0.716	0.080	0.517	0.517	**48.3%**
1927	W	20,291	10,924	6,639	59%	0.26		0.951	0.080	0.593	0.593	**40.7%**
1928	A	19,611	10,978	6,385	59%	0.26		0.954	0.080	0.598	0.598	**40.2%**
1929	C	12,612	9,489	3,767	65%	0.28		0.873	0.080	0.599	0.599	**40.1%**
1930	D	7,159	4,049	1,727	77%	0.33		0.579	0.080	0.465	0.465	**53.5%**
1931	C	9,729	5,860	2,689	70%	0.30		0.677	0.080	0.499	0.499	**50.1%**
1932	D	8,082	2,868	2,073	74%	0.32		0.516	0.080	0.403	0.403	**59.7%**
1933	C	9,511	5,663	2,607	71%	0.30		0.667	0.080	0.494	0.494	**50.6%**
1934	C	8,091	2,602	2,076	74%	0.32		0.501	0.080	0.392	0.392	**60.8%**
1935	B	9,209	6,836	2,494	71%	0.31		0.730	0.080	0.543	0.543	**45.7%**
1936	B	9,954	6,324	2,773	70%	0.30		0.702	0.080	0.514	0.514	**48.6%**
1937	B	11,762	7,459	3,449	67%	0.29		0.763	0.080	0.535	0.535	**46.5%**
1938	W	23,700	10,963	7,914	57%	0.25		0.953	0.080	0.580	0.580	**42.0%**
1939	D	19,439	9,587	6,320	59%	0.26		0.878	0.080	0.554	0.554	**44.6%**
1940	A	8,444	4,560	2,208	73%	0.31		0.607	0.080	0.466	0.466	**53.4%**
1941	W	13,745	10,353	4,191	64%	0.28		0.920	0.080	0.618	0.618	**38.2%**
1942	W	18,186	10,469	5,852	60%	0.26		0.926	0.080	0.589	0.589	**41.1%**
1943	W	21,906	10,820	7,243	58%	0.26		0.945	0.080	0.582	0.582	**41.8%**
1944	D	14,384	10,862	4,430	63%	0.28		0.947	0.080	0.629	0.629	**37.1%**
1945	B	13,770	10,878	4,200	64%	0.28		0.948	0.080	0.636	0.636	**36.4%**
1946	B	17,796	10,966	5,706	60%	0.26		0.953	0.080	0.607	0.607	**39.3%**
1947	D	13,776	10,910	4,202	64%	0.28		0.950	0.080	0.637	0.637	**36.3%**
1948	B	10,208	6,409	2,868	69%	0.30		0.707	0.080	0.514	0.514	**48.6%**
1949	D	14,322	10,306	4,406	63%	0.28		0.917	0.080	0.611	0.611	**38.9%**
1950	B	11,322	7,579	3,284	67%	0.29		0.770	0.080	0.544	0.544	**45.6%**
1951	A	44,749	10,952	15,786	23%	0.23		0.952	0.080	0.284	0.284	**71.6%**
1952	W	16,571	10,967	5,248	61%	0.27		0.953	0.080	0.616	0.616	**38.4%**
1953	W	16,535	8,393	5,234	61%	0.27		0.814	0.080	0.530	0.530	**47.0%**
1954	A	20,911	10,977	6,871	59%	0.26		0.953	0.080	0.591	0.591	**40.9%**
1955	D	20,327	10,977	6,652	59%	0.26		0.953	0.080	0.594	0.594	**40.6%**
1956	W	10,720	7,027	3,059	68%	0.29		0.740	0.080	0.531	0.531	**46.9%**
1957	A	15,470	10,978	4,836	62%	0.27		0.954	0.080	0.624	0.624	**37.6%**
1958	W	19,256	10,962	6,252	59%	0.26		0.953	0.080	0.599	0.599	**40.1%**
1959	B	16,130	8,491	5,083	62%	0.27		0.819	0.080	0.536	0.536	**46.4%**
1960	D	11,407	7,360	3,316	67%	0.29		0.758	0.080	0.535	0.535	**46.5%**
1961	D	13,251	9,845	4,006	65%	0.28		0.892	0.080	0.605	0.605	**39.5%**
1962	B	11,448	7,698	3,332	67%	0.29		0.776	0.080	0.547	0.547	**45.3%**
1963	W	20,439	10,980	6,694	59%	0.26		0.954	0.080	0.594	0.594	**40.6%**
1964	D	28,658	10,977	9,768	25%	0.25		0.953	0.080	0.295	0.295	**70.5%**
1965	W	13,401	10,163	4,062	64%	0.28		0.910	0.080	0.614	0.614	**38.6%**
1966	B	26,056	10,964	8,795	25%	0.25		0.953	0.080	0.297	0.297	**70.3%**
1967	W	14,530	10,977	4,484	63%	0.27		0.953	0.080	0.632	0.632	**36.8%**
1968	B	16,241	8,359	5,124	62%	0.27		0.812	0.080	0.531	0.531	**46.9%**
1969	W	13,818	10,301	4,218	64%	0.28		0.917	0.080	0.615	0.615	**38.5%**
1970	W	17,644	8,394	5,649	61%	0.26		0.814	0.080	0.524	0.524	**47.6%**
1971	W	21,336	10,960	7,030	58%	0.26		0.953	0.080	0.589	0.589	**41.1%**
1972	B	15,347	10,977	4,790	62%	0.27		0.953	0.080	0.625	0.625	**37.5%**
1973	A	22,858	10,951	7,599	58%	0.25		0.952	0.080	0.582	0.582	**41.8%**
1974	W	53,645	10,978	19,113	23%	0.23		0.954	0.080	0.282	0.282	**71.8%**
1975	W	17,581	9,714	5,625	61%	0.26		0.885	0.080	0.568	0.568	**43.2%**
1976	C	19,229	10,977	6,242	59%	0.26		0.953	0.080	0.600	0.600	**40.0%**
1977	C	8,332	6,013	2,166	73%	0.31		0.685	0.080	0.525	0.525	**47.5%**
1978	A	6,922	4,163	1,639	78%	0.33		0.586	0.080	0.474	0.474	**52.6%**
1979	B	14,388	10,884	4,431	63%	0.28		0.948	0.080	0.630	0.630	**37.0%**
1980	A	16,297	10,962	5,145	62%	0.27		0.953	0.080	0.617	0.617	**38.3%**
1981	D	13,017	9,863	3,918	65%	0.28		0.893	0.080	0.608	0.608	**39.2%**
1982	W	30,951	10,952	10,626	24%	0.24		0.952	0.080	0.292	0.292	**70.8%**
1983	W	39,113	10,978	13,678	24%	0.24		0.954	0.080	0.287	0.287	**71.3%**
1984	W	62,800	5,366	22,537	23%	0.23		0.650	0.080	0.210	0.210	**79.0%**
1985	D	33,604	10,967	11,618	24%	0.24		0.953	0.080	0.291	0.291	**70.9%**
1986	W	9,546	6,671	2,620	71%	0.30		0.721	0.080	0.532	0.532	**46.8%**
1987	D	11,217	7,764	3,245	67%	0.29		0.780	0.080	0.552	0.552	**44.8%**
1988	C	8,448	4,845	2,210	73%	0.31		0.622	0.080	0.477	0.477	**52.3%**
1989	D	8,582	5,749	2,260	73%	0.31		0.671	0.080	0.511	0.511	**48.9%**
1990	C	11,506	7,559	3,353	67%	0.29		0.769	0.080	0.542	0.542	**45.8%**
1991	C	8,142	4,852	2,095	74%	0.32		0.623	0.080	0.482	0.482	**51.8%**
1992	C	7,552	4,591	1,874	76%	0.32		0.609	0.080	0.481	0.481	**51.9%**

DECEMBER

Year	Sac River Flows	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	17,143	11,307	5,461	61%	0.45		0.863		0.393	0.393	**60.7%**
1923	34,539	9,050	11,968	24%	0.24		0.742		0.178	0.178	**82.2%**
1924	13,865	10,355	4,236	64%	0.48		0.812		0.387	0.387	**61.3%**
1925	11,248	9,056	3,257	67%	0.50		0.742		0.372	0.372	**62.8%**
1926	12,614	6,697	3,768	65%	0.49		0.615		0.299	0.299	**70.1%**
1927	14,304	11,202	4,400	63%	0.47		0.858		0.406	0.406	**59.4%**
1928	16,574	11,279	5,249	61%	0.46		0.862		0.395	0.395	**60.5%**
1929	13,461	10,236	4,084	64%	0.48		0.806		0.386	0.386	**61.4%**
1930	14,442	10,507	4,451	63%	0.47		0.820		0.387	0.387	**61.3%**
1931	9,294	5,136	2,526	71%	0.53		0.530		0.280	0.280	**72.0%**
1932	14,650	11,401	4,529	63%	0.47		0.869		0.409	0.409	**59.1%**
1933	8,655	4,991	2,287	73%	0.54		0.522		0.282	0.282	**71.8%**
1934	12,474	9,708	3,715	66%	0.49		0.777		0.380	0.380	**62.0%**
1935	8,503	6,610	2,230	73%	0.54		0.610		0.331	0.331	**66.9%**
1936	9,877	6,505	2,744	70%	0.52		0.604		0.314	0.314	**68.6%**
1937	12,308	9,694	3,653	66%	0.49		0.776		0.381	0.381	**61.9%**
1938	45,569	11,738	16,093	23%	0.23		0.887		0.207	0.207	**79.3%**
1939	18,684	7,942	6,038	60%	0.45		0.682		0.305	0.305	**69.5%**
1940	7,841	4,109	1,983	75%	0.56		0.475		0.264	0.264	**73.6%**
1941	30,776	11,548	10,560	24%	0.24		0.876		0.213	0.213	**78.7%**
1942	65,619	7,815	23,592	23%	0.23		0.675		0.153	0.153	**84.7%**
1943	28,806	7,986	9,823	25%	0.25		0.684		0.168	0.168	**83.2%**
1944	13,774	10,630	4,201	64%	0.48		0.827		0.394	0.394	**60.6%**
1945	15,826	11,174	4,969	62%	0.46		0.856		0.396	0.396	**60.4%**
1946	54,727	11,799	19,518	23%	0.23		0.890		0.205	0.205	**79.5%**
1947	18,132	11,346	5,831	60%	0.45		0.866		0.389	0.389	**61.1%**
1948	9,828	5,831	2,726	70%	0.52		0.568		0.295	0.295	**70.5%**
1949	15,983	11,107	5,028	62%	0.46		0.853		0.393	0.393	**60.7%**
1950	11,008	7,217	3,167	68%	0.50		0.643		0.324	0.324	**67.6%**
1951	68,100	11,799	24,519	23%	0.23		0.890		0.202	0.202	**79.8%**
1952	45,581	11,312	16,097	23%	0.23		0.864		0.202	0.202	**79.8%**
1953	42,331	7,949	14,882	24%	0.24		0.682		0.161	0.161	**83.9%**
1954	14,919	8,104	4,630	63%	0.47		0.691		0.323	0.323	**67.7%**
1955	26,020	11,118	8,781	25%	0.25		0.853		0.212	0.212	**78.8%**
1956	23,548	11,799	7,857	57%	0.43		0.890		0.382	0.382	**61.8%**
1957	14,143	10,013	4,339	64%	0.47		0.794		0.376	0.376	**62.4%**
1958	23,752	11,133	7,933	57%	0.43		0.854		0.366	0.366	**63.4%**
1959	14,627	8,059	4,520	63%	0.47		0.688		0.324	0.324	**67.6%**
1960	10,428	6,365	2,950	69%	0.51		0.597		0.305	0.305	**69.5%**
1961	17,250	11,098	5,502	61%	0.45		0.852		0.387	0.387	**61.3%**
1962	16,951	11,084	5,390	61%	0.46		0.851		0.388	0.388	**61.2%**
1963	27,555	11,103	9,356	25%	0.25		0.852		0.210	0.210	**79.0%**
1964	14,847	11,194	4,603	63%	0.47		0.857		0.402	0.402	**59.8%**
1965	27,931	11,562	9,496	25%	0.25		0.877		0.216	0.216	**78.4%**
1966	16,997	10,573	5,407	61%	0.46		0.824		0.375	0.375	**62.5%**
1967	35,175	11,334	12,205	24%	0.24		0.865		0.207	0.207	**79.3%**
1968	16,692	7,092	5,293	61%	0.46		0.636		0.291	0.291	**70.9%**
1969	24,093	11,178	8,061	57%	0.43		0.857		0.366	0.366	**63.4%**
1970	50,159	7,688	17,809	23%	0.23		0.668		0.155	0.155	**84.5%**
1971	53,442	11,249	19,037	23%	0.23		0.860		0.198	0.198	**80.2%**
1972	20,058	10,414	6,552	59%	0.44		0.815		0.359	0.359	**64.1%**
1973	26,198	11,111	8,848	25%	0.25		0.853		0.212	0.212	**78.8%**
1974	61,593	11,351	22,086	23%	0.23		0.866		0.198	0.198	**80.2%**
1975	17,619	8,455	5,640	61%	0.45		0.709		0.321	0.321	**67.9%**
1976	16,774	9,052	5,323	61%	0.46		0.742		0.339	0.339	**66.1%**
1977	8,137	4,778	2,093	74%	0.55		0.511		0.281	0.281	**71.9%**
1978	12,285	9,669	3,645	66%	0.49		0.775		0.380	0.380	**62.0%**
1979	14,021	8,286	4,294	64%	0.48		0.700		0.333	0.333	**66.7%**
1980	20,832	11,194	6,841	59%	0.44		0.857		0.375	0.375	**62.5%**
1981	15,611	8,315	4,889	62%	0.46		0.702		0.326	0.326	**67.4%**
1982	68,599	11,218	24,706	23%	0.23		0.859		0.195	0.195	**80.5%**
1983	55,416	8,635	19,776	23%	0.23		0.719		0.165	0.165	**83.5%**
1984	82,951	6,098	30,074	22%	0.22		0.582		0.131	0.131	**86.9%**
1985	23,880	11,174	7,981	57%	0.43		0.856		0.366	0.366	**63.4%**
1986	15,722	11,150	4,930	62%	0.46		0.855		0.396	0.396	**60.4%**
1987	13,787	10,300	4,206	64%	0.48		0.809		0.386	0.386	**61.4%**
1988	15,842	11,082	4,975	62%	0.46		0.851		0.394	0.394	**60.6%**
1989	8,849	5,683	2,360	72%	0.54		0.560		0.300	0.300	**70.0%**
1990	14,642	10,412	4,526	63%	0.47		0.815		0.383	0.383	**61.7%**
1991	8,806	4,893	2,343	72%	0.54		0.517		0.278	0.278	**72.2%**
1992	7,465	4,573	1,842	76%	0.56		0.500		0.282	0.282	**71.8%**

JANUARY

Year	Sac River Flows	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**	**Weighted Total Survival**
1922	17,504	11,783	5,596	61%	0.27		0.889		0.236	0.236	**76.4%**	**60.1%**
1923	32,280	7,844	11,123	24%	0.24		0.676		0.164	0.164	**83.6%**	**71.7%**
1924	14,620	10,859	4,518	63%	0.27		0.839		0.230	0.230	**77.0%**	**61.4%**
1925	10,208	6,702	2,868	69%	0.30		0.615		0.183	0.183	**81.7%**	**64.6%**
1926	18,269	11,294	5,883	60%	0.26		0.863		0.227	0.227	**77.3%**	**66.4%**
1927	30,262	11,471	10,368	24%	0.24		0.872		0.213	0.213	**78.7%**	**59.6%**
1928	25,816	7,844	8,705	25%	0.25		0.676		0.169	0.169	**83.1%**	**61.1%**
1929	15,016	11,006	4,666	63%	0.27		0.847		0.231	0.231	**76.9%**	**59.9%**
1930	20,771	11,299	6,818	59%	0.26		0.863		0.222	0.222	**77.8%**	**63.5%**
1931	11,965	9,104	3,525	66%	0.29		0.745		0.214	0.214	**78.6%**	**68.2%**
1932	17,253	12,034	5,503	61%	0.27		0.903		0.240	0.240	**76.0%**	**63.5%**
1933	12,602	9,948	3,763	65%	0.28		0.790		0.224	0.224	**77.6%**	**68.0%**
1934	16,103	11,300	5,073	62%	0.27		0.863		0.232	0.232	**76.8%**	**65.4%**
1935	25,471	11,873	8,576	25%	0.25		0.894		0.223	0.223	**77.7%**	**64.3%**
1936	31,440	11,661	10,809	24%	0.24		0.883		0.214	0.214	**78.6%**	**66.1%**
1937	15,467	11,788	4,835	62%	0.27		0.889		0.241	0.241	**75.9%**	**61.6%**
1938	31,443	8,670	10,810	24%	0.24		0.721		0.175	0.175	**82.5%**	**70.8%**
1939	18,407	4,817	5,934	60%	0.26		0.513		0.135	0.135	**86.5%**	**67.5%**
1940	23,448	12,224	7,820	57%	0.25		0.913		0.231	0.231	**76.9%**	**69.4%**
1941	71,291	12,350	25,713	23%	0.23		0.920		0.208	0.208	**79.2%**	**68.7%**
1942	63,260	7,121	22,709	23%	0.23		0.637		0.145	0.145	**85.5%**	**74.0%**
1943	58,056	7,510	20,763	23%	0.23		0.658		0.151	0.151	**84.9%**	**73.3%**
1944	17,677	7,469	5,661	60%	0.26		0.656		0.174	0.174	**82.6%**	**60.2%**
1945	14,047	9,131	4,304	64%	0.28		0.746		0.207	0.207	**79.3%**	**59.1%**
1946	43,229	7,844	15,218	23%	0.23		0.676		0.159	0.159	**84.1%**	**70.6%**
1947	14,971	11,349	4,649	63%	0.27		0.866		0.237	0.237	**76.3%**	**58.7%**
1948	14,649	10,564	4,529	63%	0.27		0.823		0.226	0.226	**77.4%**	**66.7%**
1949	15,099	11,141	4,697	63%	0.27		0.855		0.233	0.233	**76.7%**	**59.2%**
1950	20,184	11,383	6,599	59%	0.26		0.868		0.224	0.224	**77.6%**	**64.6%**
1951	62,213	12,707	22,318	23%	0.23		0.939		0.214	0.214	**78.6%**	**77.4%**
1952	67,352	11,310	24,240	23%	0.23		0.864		0.196	0.196	**80.4%**	**69.6%**
1953	64,078	4,888	23,015	23%	0.23		0.517		0.118	0.118	**88.2%**	**75.8%**
1954	33,414	8,057	11,547	24%	0.24		0.688		0.166	0.166	**83.4%**	**64.9%**
1955	22,257	11,402	7,374	58%	0.25		0.869		0.221	0.221	**77.9%**	**69.0%**
1956	83,368	12,156	30,230	22%	0.22		0.909		0.204	0.204	**79.6%**	**62.6%**
1957	18,639	8,098	6,021	60%	0.26		0.690		0.181	0.181	**81.9%**	**61.1%**
1958	36,334	7,625	12,639	24%	0.24		0.665		0.159	0.159	**84.1%**	**62.8%**
1959	35,167	4,908	12,202	24%	0.24		0.518		0.124	0.124	**87.6%**	**67.3%**
1960	14,522	10,618	4,481	63%	0.27		0.826		0.227	0.227	**77.3%**	**65.7%**
1961	14,008	10,633	4,289	64%	0.28		0.827		0.229	0.229	**77.1%**	**59.8%**
1962	15,469	8,371	4,835	62%	0.27		0.705		0.191	0.191	**80.9%**	**62.1%**
1963	17,805	11,455	5,709	60%	0.26		0.871		0.230	0.230	**77.0%**	**68.9%**
1964	25,567	8,079	8,612	25%	0.25		0.689		0.172	0.172	**82.8%**	**68.2%**
1965	81,240	12,707	29,434	22%	0.22		0.939		0.211	0.211	**78.9%**	**68.6%**
1966	29,635	7,864	10,133	24%	0.24		0.678		0.166	0.166	**83.4%**	**69.7%**
1967	33,964	11,881	11,753	24%	0.24		0.894		0.215	0.215	**78.5%**	**68.4%**
1968	30,635	4,892	10,507	24%	0.24		0.517		0.126	0.126	**87.4%**	**69.0%**
1969	67,764	10,514	24,394	23%	0.23		0.821		0.186	0.186	**81.4%**	**61.7%**
1970	92,665	4,690	33,707	22%	0.22		0.506		0.113	0.113	**88.7%**	**76.3%**
1971	46,893	9,920	16,588	23%	0.23		0.789		0.184	0.184	**81.6%**	**70.8%**
1972	20,395	8,098	6,678	59%	0.26		0.690		0.178	0.178	**82.2%**	**61.9%**
1973	49,109	11,000	17,417	23%	0.23		0.847		0.197	0.197	**80.3%**	**69.9%**
1974	78,417	7,898	28,378	22%	0.22		0.679		0.153	0.153	**84.7%**	**79.3%**
1975	18,672	8,055	6,033	60%	0.26		0.688		0.180	0.180	**82.0%**	**65.3%**
1976	16,769	8,039	5,322	61%	0.27		0.687		0.184	0.184	**81.6%**	**63.5%**
1977	7,906	4,796	2,007	75%	0.32		0.512		0.163	0.163	**83.7%**	**68.8%**
1978	43,063	11,188	15,156	23%	0.23		0.857		0.201	0.201	**79.9%**	**64.1%**
1979	27,242	7,469	9,239	25%	0.25		0.656		0.162	0.162	**83.8%**	**63.6%**
1980	60,630	7,366	21,726	23%	0.23		0.651		0.149	0.149	**85.1%**	**62.1%**
1981	28,602	5,111	9,747	25%	0.25		0.529		0.130	0.130	**87.0%**	**65.3%**
1982	51,172	11,854	18,188	23%	0.23		0.893		0.207	0.207	**79.3%**	**77.8%**
1983	59,148	5,531	21,171	23%	0.23		0.552		0.126	0.126	**87.4%**	**81.4%**
1984	47,354	4,212	16,760	23%	0.23		0.480		0.112	0.112	**88.8%**	**85.4%**
1985	16,549	8,079	5,239	61%	0.27		0.689		0.185	0.185	**81.5%**	**69.8%**
1986	21,503	11,538	7,092	58%	0.26		0.876		0.224	0.224	**77.6%**	**61.3%**
1987	16,734	8,303	5,309	61%	0.27		0.701		0.187	0.187	**81.3%**	**62.2%**
1988	25,530	11,265	8,598	25%	0.25		0.861		0.215	0.215	**78.5%**	**63.0%**
1989	11,998	8,725	3,537	66%	0.29		0.724		0.208	0.208	**79.2%**	**67.0%**
1990	21,334	9,546	7,029	58%	0.26		0.768		0.197	0.197	**80.3%**	**62.4%**
1991	6,851	3,405	1,612	78%	0.33		0.437		0.145	0.145	**85.5%**	**70.5%**
1992	12,140	8,987	3,590	66%	0.29		0.738		0.211	0.211	**78.9%**	**68.6%**
											Average:	**66.77%**

Formulas: Sacramento River Late Fall Run Smolt Survival Model

```
C10 ='Study 467 Flow Data'!B7
D10 ='Study 467 Flow Data'!L7     (HIDDEN)
E10 ='Study 467 Flow Data'!V7     (HIDDEN)
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =-1.613493+(0.0319584*$T$1)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!C7
R10 ='Study 467 Flow Data'!M7     (HIDDEN)
S10 ='Study 467 Flow Data'!W7     (HIDDEN)
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!D7
AF10 ='Study 467 Flow Data'!N7     (HIDDEN)
AG10 ='Study 467 Flow Data'!X7     (HIDDEN)
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
AS10 =(O10*0.25)+(AC10*0.5)+(AQ10*0.25)
```

	A	B	C	F	G	H	I	J	K	L	M	N	O
1	Study 525 Sacramento River Late Fall Run Smolt Survival Model												
2	Modified m2 by changing the slope to 0.000054												
3	Cross Channel closed for 45 consecutive days, Dec 18-Jan 31												
4			Cross Channel Closed when Sacramento River flow exceeds		25,000 cfs								

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Row	Year	Water Year Type	Sac River Flow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
10	1922	A	12,033	8,679	3,550	66%	0.29		0.829	0.080	0.576	0.576	**42.4%**
11	1923	B	15,692	10,979	4,919	62%	0.27		0.954	0.080	0.622	0.622	**37.8%**
12	1924	C	10,997	7,358	3,163	68%	0.29		0.758	0.080	0.540	0.540	**46.0%**
13	1925	D	7,024	4,569	1,677	78%	0.33		0.607	0.080	0.489	0.489	**51.1%**
14	1926	D	10,684	6,702	3,046	68%	0.29		0.723	0.080	0.519	0.519	**48.1%**
15	1927	W	20,291	10,918	6,639	59%	0.26		0.950	0.080	0.592	0.592	**40.8%**
16	1928	A	19,571	10,978	6,370	59%	0.26		0.954	0.080	0.598	0.598	**40.2%**
17	1929	C	12,362	9,269	3,673	66%	0.28		0.861	0.080	0.594	0.594	**40.6%**
18	1930	D	7,159	4,069	1,727	77%	0.33		0.580	0.080	0.466	0.466	**53.4%**
19	1931	C	9,824	5,978	2,724	70%	0.30		0.684	0.080	0.502	0.502	**49.8%**
20	1932	D	7,699	3,340	1,929	75%	0.32		0.541	0.080	0.427	0.427	**57.3%**
21	1933	C	9,488	5,687	2,599	71%	0.30		0.668	0.080	0.496	0.496	**50.4%**
22	1934	C	8,042	3,148	2,058	74%	0.32		0.531	0.080	0.415	0.415	**58.5%**
23	1935	B	9,209	6,914	2,494	71%	0.31		0.734	0.080	0.546	0.546	**45.4%**
24	1936	B	12,085	7,785	3,570	66%	0.29		0.781	0.080	0.544	0.544	**45.6%**
25	1937	B	12,451	7,547	3,707	66%	0.28		0.768	0.080	0.532	0.532	**46.8%**
26	1938	W	23,700	10,962	7,914	57%	0.25		0.953	0.080	0.580	0.580	**42.0%**
27	1939	D	19,439	10,313	6,320	59%	0.26		0.918	0.080	0.577	0.577	**42.3%**
28	1940	A	8,444	4,625	2,208	73%	0.31		0.610	0.080	0.468	0.468	**53.2%**
29	1941	W	13,427	10,373	4,072	64%	0.28		0.921	0.080	0.622	0.622	**37.8%**
30	1942	W	18,186	10,790	5,852	60%	0.26		0.943	0.080	0.599	0.599	**40.1%**
31	1943	W	21,906	10,976	7,243	58%	0.26		0.953	0.080	0.587	0.587	**41.3%**
32	1944	D	13,987	10,737	4,281	64%	0.28		0.940	0.080	0.629	0.629	**37.1%**
33	1945	B	13,770	10,948	4,200	64%	0.28		0.952	0.080	0.638	0.638	**36.2%**
34	1946	B	17,158	10,964	5,467	61%	0.27		0.953	0.080	0.611	0.611	**38.9%**
35	1947	D	13,776	10,958	4,202	64%	0.28		0.952	0.080	0.638	0.638	**36.2%**
36	1948	B	10,208	6,456	2,868	69%	0.30		0.709	0.080	0.516	0.516	**48.4%**
37	1949	D	14,447	10,543	4,453	63%	0.28		0.930	0.080	0.618	0.618	**38.2%**
38	1950	B	11,562	7,667	3,374	67%	0.29		0.775	0.080	0.545	0.545	**45.5%**
39	1951	A	40,151	10,951	14,066	24%	0.24		0.952	0.080	0.286	0.286	**71.4%**
40	1952	W	16,398	10,969	5,183	61%	0.27		0.953	0.080	0.617	0.617	**38.3%**
41	1953	W	16,535	8,393	5,234	61%	0.27		0.814	0.080	0.530	0.530	**47.0%**
42	1954	A	19,707	10,967	6,420	59%	0.26		0.953	0.080	0.597	0.597	**40.3%**
43	1955	D	16,183	10,967	5,102	62%	0.27		0.953	0.080	0.618	0.618	**38.2%**
44	1956	W	10,470	6,856	2,966	69%	0.30		0.731	0.080	0.527	0.527	**47.3%**
45	1957	A	15,470	10,978	4,836	62%	0.27		0.954	0.080	0.624	0.624	**37.6%**
46	1958	W	19,256	10,962	6,252	59%	0.26		0.953	0.080	0.599	0.599	**40.1%**
47	1959	B	16,130	8,491	5,083	62%	0.27		0.819	0.080	0.536	0.536	**46.4%**
48	1960	D	11,025	6,998	3,173	68%	0.29		0.739	0.080	0.526	0.526	**47.4%**
49	1961	D	13,251	9,861	4,006	65%	0.28		0.893	0.080	0.605	0.605	**39.5%**
50	1962	B	11,372	7,633	3,303	67%	0.29		0.773	0.080	0.546	0.546	**45.4%**
51	1963	W	20,941	10,970	6,882	59%	0.26		0.953	0.080	0.591	0.591	**40.9%**
52	1964	D	28,658	10,978	9,768	25%	0.25		0.954	0.080	0.295	0.295	**70.5%**
53	1965	W	13,401	10,223	4,062	64%	0.28		0.913	0.080	0.617	0.617	**38.3%**
54	1966	B	25,278	10,963	8,504	25%	0.25		0.953	0.080	0.298	0.298	**70.2%**
55	1967	W	13,623	10,676	4,145	64%	0.28		0.937	0.080	0.630	0.630	**37.0%**
56	1968	B	16,241	8,359	5,124	62%	0.27		0.812	0.080	0.531	0.531	**46.9%**
57	1969	W	13,568	10,188	4,124	64%	0.28		0.911	0.080	0.614	0.614	**38.6%**
58	1970	W	17,644	8,394	5,649	61%	0.26		0.814	0.080	0.524	0.524	**47.6%**
59	1971	W	19,407	10,959	6,308	59%	0.26		0.952	0.080	0.598	0.598	**40.2%**
60	1972	B	15,347	10,967	4,790	62%	0.27		0.953	0.080	0.625	0.625	**37.5%**
61	1973	A	20,709	10,953	6,795	59%	0.26		0.952	0.080	0.591	0.591	**40.9%**
62	1974	W	54,360	10,978	19,381	23%	0.23		0.954	0.080	0.281	0.281	**71.9%**
63	1975	W	17,581	10,977	5,625	61%	0.26		0.953	0.080	0.609	0.609	**39.1%**
64	1976	C	19,229	10,978	6,242	59%	0.26		0.954	0.080	0.600	0.600	**40.0%**
65	1977	C	8,225	6,020	2,126	74%	0.32		0.686	0.080	0.527	0.527	**47.3%**
66	1978	A	6,922	4,218	1,639	78%	0.33		0.588	0.080	0.476	0.476	**52.4%**
67	1979	B	14,540	10,980	4,488	63%	0.27		0.954	0.080	0.632	0.632	**36.8%**
68	1980	A	15,797	10,962	4,958	62%	0.27		0.953	0.080	0.621	0.621	**37.9%**
69	1981	D	13,017	9,860	3,918	65%	0.28		0.893	0.080	0.608	0.608	**39.2%**
70	1982	W	27,992	10,952	9,519	25%	0.25		0.952	0.080	0.295	0.295	**70.5%**
71	1983	W	39,113	10,978	13,678	24%	0.24		0.954	0.080	0.287	0.287	**71.3%**
72	1984	W	62,800	5,366	22,537	23%	0.23		0.650	0.080	0.210	0.210	**79.0%**
73	1985	D	33,484	10,968	11,573	24%	0.24		0.953	0.080	0.291	0.291	**70.9%**
74	1986	W	9,546	6,786	2,620	71%	0.30		0.727	0.080	0.537	0.537	**46.3%**
75	1987	D	11,130	8,053	3,213	68%	0.29		0.796	0.080	0.564	0.564	**43.6%**
76	1988	C	8,448	4,872	2,210	73%	0.31		0.624	0.080	0.478	0.478	**52.2%**
77	1989	D	8,582	5,772	2,260	73%	0.31		0.672	0.080	0.512	0.512	**48.8%**
78	1990	C	11,506	7,592	3,353	67%	0.29		0.771	0.080	0.543	0.543	**45.7%**
79	1991	C	8,142	4,892	2,095	74%	0.32		0.625	0.080	0.483	0.483	**51.7%**
80	1992	C	7,466	4,551	1,842	76%	0.32		0.606	0.080	0.481	0.481	**51.9%**

DECEMBER

Year	Sac River Flows	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	17,143	11,338	5,461	61%	0.45		0.865		0.393	0.393	**60.7%**
1923	34,367	10,319	11,903	24%	0.24		0.810		0.195	0.195	**80.5%**
1924	13,768	10,356	4,199	64%	0.48		0.812		0.387	0.387	**61.3%**
1925	11,248	9,143	3,257	67%	0.50		0.747		0.374	0.374	**62.6%**
1926	12,616	6,773	3,768	65%	0.49		0.619		0.301	0.301	**69.9%**
1927	14,394	11,281	4,433	63%	0.47		0.862		0.407	0.407	**59.3%**
1928	16,574	10,991	5,249	61%	0.46		0.846		0.388	0.388	**61.2%**
1929	13,211	10,141	3,991	65%	0.48		0.801		0.386	0.386	**61.4%**
1930	14,442	10,543	4,451	63%	0.47		0.822		0.388	0.388	**61.2%**
1931	9,357	5,256	2,550	71%	0.53		0.537		0.283	0.283	**71.7%**
1932	14,650	11,426	4,529	63%	0.47		0.870		0.409	0.409	**59.1%**
1933	8,472	4,924	2,219	73%	0.54		0.519		0.282	0.282	**71.8%**
1934	12,474	9,787	3,715	66%	0.49		0.781		0.382	0.382	**61.8%**
1935	8,503	6,765	2,230	73%	0.54		0.618		0.335	0.335	**66.5%**
1936	13,278	10,064	4,016	65%	0.48		0.796		0.383	0.383	**61.7%**
1937	12,204	9,734	3,614	66%	0.49		0.779		0.382	0.382	**61.8%**
1938	47,150	11,772	16,684	23%	0.23		0.889		0.207	0.207	**79.3%**
1939	18,684	7,942	6,038	60%	0.45		0.682		0.305	0.305	**69.5%**
1940	7,841	4,244	1,983	75%	0.56		0.482		0.268	0.268	**73.2%**
1941	30,657	11,694	10,516	24%	0.24		0.884		0.215	0.215	**78.5%**
1942	65,619	7,815	23,592	23%	0.23		0.675		0.153	0.153	**84.7%**
1943	28,806	7,986	9,823	25%	0.25		0.684		0.168	0.168	**83.2%**
1944	13,774	10,778	4,201	64%	0.48		0.835		0.398	0.398	**60.2%**
1945	15,826	11,204	4,969	62%	0.46		0.858		0.397	0.397	**60.3%**
1946	54,515	11,799	19,439	23%	0.23		0.890		0.205	0.205	**79.5%**
1947	18,132	11,417	5,831	60%	0.45		0.869		0.391	0.391	**60.9%**
1948	9,535	5,653	2,616	71%	0.52		0.558		0.293	0.293	**70.7%**
1949	15,563	11,125	4,871	62%	0.46		0.854		0.396	0.396	**60.4%**
1950	11,488	7,295	3,347	67%	0.50		0.647		0.323	0.323	**67.7%**
1951	68,100	11,799	24,519	23%	0.23		0.890		0.202	0.202	**79.8%**
1952	42,853	11,356	15,077	24%	0.24		0.866		0.204	0.204	**79.6%**
1953	42,331	7,949	14,882	24%	0.24		0.682		0.161	0.161	**83.9%**
1954	14,919	10,052	4,630	63%	0.47		0.796		0.373	0.373	**62.7%**
1955	25,397	11,144	8,548	25%	0.25		0.855		0.213	0.213	**78.7%**
1956	25,596	11,799	8,623	25%	0.25		0.890		0.222	0.222	**77.8%**
1957	14,143	10,828	4,339	64%	0.47		0.838		0.397	0.397	**60.3%**
1958	23,752	11,160	7,933	57%	0.43		0.856		0.366	0.366	**63.4%**
1959	14,627	8,059	4,520	63%	0.47		0.688		0.324	0.324	**67.6%**
1960	9,432	5,456	2,578	71%	0.53		0.548		0.288	0.288	**71.2%**
1961	17,250	11,114	5,502	61%	0.45		0.853		0.387	0.387	**61.3%**
1962	16,701	11,100	5,296	61%	0.46		0.852		0.390	0.390	**61.0%**
1963	27,555	11,128	9,356	25%	0.25		0.854		0.211	0.211	**78.9%**
1964	14,847	11,214	4,603	63%	0.47		0.858		0.403	0.403	**59.7%**
1965	24,946	11,710	8,380	57%	0.42		0.885		0.376	0.376	**62.4%**
1966	16,997	11,619	5,407	61%	0.46		0.880		0.401	0.401	**59.9%**
1967	32,555	11,372	11,226	24%	0.24		0.867		0.210	0.210	**79.0%**
1968	16,692	7,095	5,293	61%	0.46		0.636		0.291	0.291	**70.9%**
1969	23,843	11,211	7,967	57%	0.43		0.858		0.367	0.367	**63.3%**
1970	50,159	7,688	17,809	23%	0.23		0.668		0.155	0.155	**84.5%**
1971	53,000	11,289	18,872	23%	0.23		0.862		0.199	0.199	**80.1%**
1972	18,336	11,316	5,908	60%	0.45		0.864		0.388	0.388	**61.2%**
1973	26,198	11,139	8,848	25%	0.25		0.854		0.212	0.212	**78.8%**
1974	61,593	11,603	22,086	23%	0.23		0.879		0.201	0.201	**79.9%**
1975	17,619	8,509	5,640	61%	0.45		0.712		0.322	0.322	**67.8%**
1976	16,774	10,354	5,323	61%	0.46		0.812		0.371	0.371	**62.9%**
1977	8,065	4,734	2,066	74%	0.55		0.509		0.280	0.280	**72.0%**
1978	12,285	9,766	3,645	66%	0.49		0.780		0.383	0.383	**61.7%**
1979	13,861	8,206	4,234	64%	0.48		0.696		0.332	0.332	**66.8%**
1980	20,332	11,223	6,654	59%	0.44		0.859		0.378	0.378	**62.2%**
1981	15,611	8,880	4,889	62%	0.46		0.732		0.340	0.340	**66.0%**
1982	67,631	11,250	24,344	23%	0.23		0.860		0.195	0.195	**80.5%**
1983	55,416	8,635	19,776	23%	0.23		0.719		0.165	0.165	**83.5%**
1984	82,951	6,098	30,074	22%	0.22		0.582		0.131	0.131	**86.9%**
1985	23,880	11,234	7,981	57%	0.43		0.860		0.368	0.368	**63.2%**
1986	15,224	11,179	4,744	63%	0.47		0.857		0.399	0.399	**60.1%**
1987	13,420	10,301	4,069	64%	0.48		0.809		0.388	0.388	**61.2%**
1988	15,842	11,093	4,975	62%	0.46		0.852		0.394	0.394	**60.6%**
1989	8,852	6,491	2,361	72%	0.54		0.603		0.323	0.323	**67.7%**
1990	14,536	10,405	4,486	63%	0.47		0.815		0.384	0.384	**61.6%**
1991	8,618	4,732	2,273	73%	0.54		0.508		0.275	0.275	**72.5%**
1992	7,455	4,632	1,838	76%	0.56		0.503		0.284	0.284	**71.6%**

JANUARY

Year	Sac River Flows	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**	**Weighted Total Survival**
1922	17,504	11,848	5,596	61%	0.27		0.893		0.237	0.237	**76.3%**	**60.0%**
1923	32,280	7,845	11,123	24%	0.24		0.677		0.164	0.164	**83.6%**	**70.6%**
1924	14,370	10,759	4,424	63%	0.28		0.834		0.230	0.230	**77.0%**	**61.4%**
1925	10,200	6,822	2,865	69%	0.30		0.621		0.185	0.185	**81.5%**	**64.4%**
1926	18,269	11,386	5,883	60%	0.26		0.868		0.228	0.228	**77.2%**	**66.2%**
1927	30,244	11,547	10,361	24%	0.24		0.876		0.214	0.214	**78.6%**	**59.5%**
1928	25,207	7,844	8,477	25%	0.25		0.676		0.169	0.169	**83.1%**	**61.5%**
1929	14,766	10,915	4,572	63%	0.27		0.842		0.231	0.231	**76.9%**	**60.1%**
1930	20,771	11,330	6,818	59%	0.26		0.865		0.223	0.223	**77.7%**	**63.4%**
1931	11,965	9,154	3,525	66%	0.29		0.747		0.214	0.214	**78.6%**	**67.9%**
1932	17,253	12,105	5,503	61%	0.27		0.907		0.241	0.241	**75.9%**	**62.8%**
1933	12,602	10,040	3,763	65%	0.28		0.795		0.225	0.225	**77.5%**	**67.9%**
1934	16,103	11,399	5,073	62%	0.27		0.868		0.234	0.234	**76.6%**	**64.7%**
1935	25,471	11,958	8,576	25%	0.25		0.899		0.224	0.224	**77.6%**	**64.0%**
1936	30,625	11,743	10,504	24%	0.24		0.887		0.216	0.216	**78.4%**	**61.8%**
1937	15,467	11,852	4,835	62%	0.27		0.893		0.242	0.242	**75.8%**	**61.5%**
1938	31,443	7,945	10,810	24%	0.24		0.682		0.166	0.166	**83.4%**	**71.0%**
1939	18,407	4,805	5,934	60%	0.26		0.512		0.135	0.135	**86.5%**	**67.0%**
1940	23,448	12,315	7,820	57%	0.25		0.918		0.232	0.232	**76.8%**	**69.1%**
1941	71,319	12,707	25,723	23%	0.23		0.939		0.212	0.212	**78.8%**	**68.4%**
1942	63,260	7,287	22,709	23%	0.23		0.646		0.147	0.147	**85.3%**	**73.7%**
1943	58,056	7,510	20,763	23%	0.23		0.658		0.151	0.151	**84.9%**	**73.2%**
1944	17,677	7,469	5,661	60%	0.26		0.656		0.174	0.174	**82.6%**	**60.0%**
1945	13,952	9,171	4,268	64%	0.28		0.748		0.207	0.207	**79.3%**	**59.0%**
1946	43,229	7,935	15,218	23%	0.23		0.681		0.160	0.160	**84.0%**	**70.5%**
1947	14,971	11,235	4,649	63%	0.27		0.860		0.235	0.235	**76.5%**	**58.6%**
1948	14,649	10,594	4,529	63%	0.27		0.825		0.226	0.226	**77.4%**	**66.8%**
1949	14,928	11,109	4,633	63%	0.27		0.853		0.233	0.233	**76.7%**	**58.9%**
1950	19,684	11,456	6,412	59%	0.26		0.872		0.226	0.226	**77.4%**	**64.6%**
1951	62,213	12,479	22,318	23%	0.23		0.927		0.211	0.211	**78.9%**	**77.5%**
1952	67,041	12,524	24,123	23%	0.23		0.929		0.211	0.211	**78.9%**	**69.1%**
1953	64,078	4,893	23,015	23%	0.23		0.517		0.118	0.118	**88.2%**	**75.8%**
1954	33,414	8,045	11,547	24%	0.24		0.687		0.166	0.166	**83.4%**	**62.3%**
1955	22,007	11,479	7,281	58%	0.26		0.873		0.223	0.223	**77.7%**	**68.3%**
1956	84,032	12,369	30,478	22%	0.22		0.921		0.206	0.206	**79.4%**	**70.6%**
1957	18,639	8,098	6,021	60%	0.26		0.690		0.181	0.181	**81.9%**	**60.0%**
1958	36,384	8,304	12,658	24%	0.24		0.701		0.168	0.168	**83.2%**	**62.5%**
1959	35,167	4,909	12,202	24%	0.24		0.518		0.124	0.124	**87.6%**	**67.3%**
1960	13,522	10,025	4,107	64%	0.28		0.794		0.222	0.222	**77.8%**	**66.9%**
1961	14,008	10,696	4,289	64%	0.28		0.830		0.230	0.230	**77.0%**	**59.7%**
1962	15,396	8,191	4,808	62%	0.27		0.695		0.189	0.189	**81.1%**	**62.2%**
1963	22,522	11,520	7,473	58%	0.25		0.875		0.222	0.222	**77.8%**	**69.1%**
1964	24,193	8,039	8,098	57%	0.25		0.687		0.173	0.173	**82.7%**	**68.2%**
1965	81,240	12,707	29,434	22%	0.22		0.939		0.211	0.211	**78.9%**	**60.5%**
1966	29,635	7,864	10,133	24%	0.24		0.678		0.166	0.166	**83.4%**	**68.4%**
1967	33,456	11,971	11,563	24%	0.24		0.899		0.217	0.217	**78.3%**	**68.3%**
1968	30,635	4,896	10,507	24%	0.24		0.517		0.126	0.126	**87.4%**	**69.0%**
1969	63,934	12,102	22,961	23%	0.23		0.906		0.206	0.206	**79.4%**	**61.1%**
1970	92,665	4,689	33,707	22%	0.22		0.506		0.113	0.113	**88.7%**	**76.3%**
1971	45,238	11,123	15,969	23%	0.23		0.854		0.200	0.200	**80.0%**	**70.1%**
1972	20,395	8,098	6,678	59%	0.26		0.690		0.178	0.178	**82.2%**	**60.6%**
1973	48,422	10,464	17,160	23%	0.23		0.818		0.190	0.190	**81.0%**	**69.8%**
1974	78,417	8,160	28,378	22%	0.22		0.694		0.156	0.156	**84.4%**	**79.0%**
1975	18,672	8,055	6,033	60%	0.26		0.688		0.180	0.180	**82.0%**	**64.2%**
1976	16,769	8,020	5,322	61%	0.27		0.686		0.183	0.183	**81.7%**	**61.9%**
1977	8,153	5,116	2,099	74%	0.32		0.529		0.167	0.167	**83.3%**	**68.6%**
1978	44,423	9,395	15,664	23%	0.23		0.760		0.178	0.178	**82.2%**	**64.5%**
1979	27,242	7,469	9,239	25%	0.25		0.656		0.162	0.162	**83.8%**	**63.6%**
1980	59,992	7,366	21,487	23%	0.23		0.651		0.149	0.149	**85.1%**	**61.9%**
1981	27,836	6,293	9,461	25%	0.25		0.593		0.146	0.146	**85.4%**	**64.2%**
1982	51,172	12,707	18,188	23%	0.23		0.939		0.217	0.217	**78.3%**	**77.4%**
1983	59,148	5,528	21,171	23%	0.23		0.551		0.126	0.126	**87.4%**	**81.4%**
1984	47,354	4,212	16,760	23%	0.23		0.480		0.112	0.112	**88.8%**	**85.4%**
1985	16,549	8,079	5,239	61%	0.27		0.689		0.185	0.185	**81.5%**	**69.7%**
1986	21,006	11,595	6,906	58%	0.26		0.879		0.226	0.226	**77.4%**	**61.0%**
1987	16,734	7,532	5,309	61%	0.27		0.660		0.176	0.176	**82.4%**	**62.1%**
1988	25,530	11,276	8,598	25%	0.25		0.862		0.215	0.215	**78.5%**	**63.0%**
1989	11,998	8,761	3,537	66%	0.29		0.726		0.208	0.208	**79.2%**	**65.8%**
1990	21,334	9,818	7,029	58%	0.26		0.783		0.201	0.201	**79.9%**	**62.2%**
1991	6,851	3,392	1,612	78%	0.33		0.436		0.145	0.145	**85.5%**	**70.6%**
1992	11,890	8,867	3,497	66%	0.29		0.732		0.210	0.210	**79.0%**	**68.5%**
											Average:	**66.44%**

Formulas: Sacramento River Late Fall Run Smolt Survival Model

C10 ='Study 467 Flow Data'!B7
D10 ='Study 467 Flow Data'!L7 (HIDDEN)
E10 ='Study 467 Flow Data'!V7 (HIDDEN)
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =-1.613493+(0.0319584*$T$1)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!C7
R10 ='Study 467 Flow Data'!M7 (HIDDEN)
S10 ='Study 467 Flow Data'!W7 (HIDDEN)
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!D7
AF10 ='Study 467 Flow Data'!N7 (HIDDEN)
AG10 ='Study 467 Flow Data'!X7 (HIDDEN)
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
AS10 =(O10*0.25)+(AC10*0.5)+(AQ10*0.25)

	A	B	C	F	G	H	I	J	K	L	M	N	O	P	Q	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT
1	Study 526 Sacramento River Late Fall Run Smolt Survival Model												November Sacramento River Temp:				53 degrees F																							
2	Modified m2 by changing the slope to 0.000054												December Sacramento River Temp:				47 degrees F																							
3	Cross Channel closed for 45 consecutive days, Dec 18-Jan 31												January Sacramento River Temp:				47 degrees F																							
4	Cross Channel Closed when Sacramento River flow exceeds								25,000	cfs																														
5																																								
6	**NOVEMBER**				Calculated										**DECEMBER**		Calculated										**JANUARY**		Calculated											
7		Water	Sac		Steamboat								**Calculated**		Sac		Steamboat								**Calculated**		Sac		Steamboat								**Calculated**			
8		Year	River	CVP+SWP	& Sutter		xchannel		Calculated Mortality				**Survival**		River	SWP+CVP	& Sutter		xchannel		Calculated Mortality				**Survival**		River	CVP+SWP	& Sutter		xchannel		Calculated Mortality				**Survival**		**Weighted**	
9	Year	Type	Flow	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	**s123**		Flows	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	**s123**		Flows	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	**s123**		**Total Survival**	
10	1922	A	11,230	7,804	3,250	67%	0.29		0.782	0.080	0.553	0.553	**44.7%**		17,143	13,942	5,461	61%	0.45		1.006		0.457	0.457	**54.3%**		17,504	13,514	5,596	61%	0.27		0.983		0.261	0.261	**73.9%**		**56.8%**	
11	1923	B	18,133	10,953	5,832	60%	0.26		0.952	0.080	0.605	0.605	**39.5%**		34,539	8,104	11,968	24%	0.24		0.691		0.166	0.166	**83.4%**		32,280	4,979	11,123	24%	0.24		0.522		0.126	0.126	**87.4%**		**73.4%**	
12	1924	C	10,997	7,331	3,163	68%	0.29		0.757	0.080	0.539	0.539	**46.1%**		13,865	10,355	4,236	64%	0.48		0.812		0.387	0.387	**61.3%**		14,620	10,859	4,518	63%	0.27		0.839		0.230	0.230	**77.0%**		**61.4%**	
13	1925	D	7,024	4,517	1,677	78%	0.33		0.605	0.080	0.487	0.487	**51.3%**		11,248	9,056	3,257	67%	0.50		0.742		0.372	0.372	**62.8%**		10,209	6,703	2,868	69%	0.30		0.615		0.183	0.183	**81.7%**		**64.6%**	
14	1926	D	10,728	7,206	3,062	68%	0.29		0.750	0.080	0.537	0.537	**46.3%**		12,596	7,029	3,761	65%	0.49		0.632		0.308	0.308	**69.2%**		19,019	13,708	6,163	60%	0.26		0.993		0.259	0.259	**74.1%**		**64.7%**	
15	1927	W	20,291	14,553	6,639	59%	0.26		1.147	0.080	0.708	0.708	**29.2%**		14,342	12,088	4,414	63%	0.47		0.906		0.428	0.428	**57.2%**		30,312	11,883	10,387	24%	0.24		0.895		0.218	0.218	**78.2%**		**55.4%**	
16	1928	A	20,011	14,606	6,534	59%	0.26		1.149	0.080	0.711	0.711	**28.9%**		16,574	8,109	5,249	61%	0.46		0.691		0.316	0.316	**68.4%**		25,913	7,285	8,741	25%	0.25		0.646		0.161	0.161	**83.9%**		**62.4%**	
17	1929	C	12,612	9,489	3,767	65%	0.28		0.873	0.080	0.599	0.599	**40.1%**		13,461	10,236	4,084	64%	0.48		0.806		0.386	0.386	**61.4%**		15,266	11,169	4,759	62%	0.27		0.856		0.233	0.233	**76.7%**		**59.9%**	
18	1930	D	7,159	4,047	1,727	77%	0.33		0.579	0.080	0.465	0.465	**53.5%**		14,442	10,507	4,451	63%	0.47		0.820		0.387	0.387	**61.3%**		20,771	13,852	6,818	59%	0.26		1.001		0.258	0.258	**74.2%**		**62.6%**	
19	1931	C	9,720	5,851	2,685	70%	0.30		0.677	0.080	0.499	0.499	**50.1%**		9,276	5,119	2,519	71%	0.53		0.529		0.280	0.280	**72.0%**		11,965	9,104	3,525	66%	0.29		0.745		0.214	0.214	**78.6%**		**68.2%**	
20	1932	D	8,226	3,023	2,127	74%	0.32		0.524	0.080	0.408	0.408	**59.2%**		14,650	12,884	4,529	63%	0.47		0.949		0.446	0.446	**55.4%**		17,253	14,436	5,503	61%	0.27		1.032		0.274	0.274	**72.6%**		**60.6%**	
21	1933	C	9,511	5,667	2,607	71%	0.30		0.667	0.080	0.495	0.495	**50.5%**		8,582	4,922	2,260	73%	0.54		0.519		0.281	0.281	**71.9%**		12,602	9,949	3,763	65%	0.28		0.790		0.224	0.224	**77.6%**		**68.0%**	
22	1934	C	8,121	2,633	2,087	74%	0.32		0.503	0.080	0.393	0.393	**60.7%**		12,474	9,708	3,715	66%	0.49		0.777		0.380	0.380	**62.0%**		16,103	12,479	5,073	62%	0.27		0.927		0.250	0.250	**75.0%**		**64.9%**	
23	1935	B	9,209	6,831	2,494	71%	0.31		0.730	0.080	0.543	0.543	**45.7%**		8,503	6,606	2,230	73%	0.54		0.610		0.331	0.331	**66.9%**		25,471	14,452	8,576	25%	0.25		1.033		0.258	0.258	**74.2%**		**63.4%**	
24	1936	B	10,361	6,735	2,925	69%	0.30		0.724	0.080	0.524	0.524	**47.6%**		10,125	6,754	2,837	69%	0.52		0.618		0.319	0.319	**68.1%**		31,753	14,460	10,926	24%	0.24		1.034		0.251	0.251	**74.9%**		**64.7%**	
25	1937	B	11,407	7,712	3,316	67%	0.29		0.777	0.080	0.548	0.548	**45.2%**		12,454	9,791	3,708	66%	0.49		0.782		0.382	0.382	**61.8%**		15,717	12,589	4,928	62%	0.27		0.933		0.252	0.252	**74.8%**		**60.9%**	
26	1938	W	23,450	14,591	7,820	57%	0.25		1.149	0.080	0.693	0.693	**30.7%**		45,721	11,030	16,150	23%	0.23		0.849		0.198	0.198	**80.2%**		31,443	6,675	10,810	24%	0.24		0.613		0.149	0.149	**85.1%**		**69.0%**	
27	1939	D	19,439	7,219	6,320	59%	0.26		0.751	0.080	0.478	0.478	**52.2%**		18,684	7,083	6,038	60%	0.45		0.635		0.284	0.284	**71.6%**		18,407	4,801	5,934	60%	0.26		0.512		0.135	0.135	**86.5%**		**70.5%**	
28	1940	A	8,444	4,559	2,208	73%	0.31		0.607	0.080	0.466	0.466	**53.4%**		7,841	4,108	1,983	75%	0.56		0.475		0.264	0.264	**73.6%**		23,448	14,439	7,820	57%	0.25		1.033		0.261	0.261	**73.9%**		**68.6%**	
29	1941	W	13,746	10,373	4,191	64%	0.28		0.921	0.080	0.618	0.618	**38.2%**		30,791	14,507	10,566	24%	0.24		1.036		0.252	0.252	**74.8%**		73,830	14,507	26,662	23%	0.23		1.036		0.234	0.234	**76.6%**		**66.1%**	
30	1942	W	18,186	8,263	5,852	60%	0.26		0.807	0.080	0.517	0.517	**48.3%**		65,619	7,084	23,592	23%	0.23		0.635		0.144	0.144	**85.6%**		63,260	4,570	22,709	23%	0.23		0.500		0.114	0.114	**88.6%**		**77.0%**	
31	1943	W	21,906	8,397	7,243	58%	0.26		0.814	0.080	0.506	0.506	**49.4%**		28,806	7,986	9,823	25%	0.25		0.684		0.168	0.168	**83.2%**		58,056	4,640	20,763	23%	0.23		0.503		0.115	0.115	**88.5%**		**76.1%**	
32	1944	D	14,380	10,859	4,428	63%	0.28		0.947	0.080	0.629	0.629	**37.1%**		13,774	10,630	4,201	64%	0.48		0.827		0.394	0.394	**60.6%**		17,677	7,469	5,661	60%	0.26		0.656		0.174	0.174	**82.6%**		**60.2%**	
33	1945	B	13,770	10,878	4,200	64%	0.28		0.948	0.080	0.636	0.636	**36.4%**		15,826	12,105	4,969	62%	0.46		0.907		0.419	0.419	**58.1%**		14,052	9,129	4,305	64%	0.28		0.746		0.206	0.206	**79.4%**		**58.0%**	
34	1946	B	16,828	12,972	5,344	61%	0.27		1.061	0.080	0.680	0.680	**32.0%**		54,672	10,744	19,497	23%	0.23		0.833		0.192	0.192	**80.8%**		43,229	7,844	15,218	23%	0.23		0.676		0.159	0.159	**84.1%**		**69.4%**	
35	1947	D	13,776	10,910	4,202	64%	0.28		0.950	0.080	0.637	0.637	**36.3%**		18,132	14,113	5,831	60%	0.45		1.015		0.456	0.456	**54.4%**		14,971	8,584	4,649	63%	0.27		0.716		0.196	0.196	**80.4%**		**56.4%**	
36	1948	B	10,275	6,465	2,893	69%	0.30		0.710	0.080	0.515	0.515	**48.5%**		9,901	5,892	2,753	70%	0.52		0.571		0.296	0.296	**70.4%**		14,649	10,564	4,529	63%	0.27		0.823		0.226	0.226	**77.4%**		**66.6%**	
37	1949	D	14,307	9,708	4,401	63%	0.28		0.885	0.080	0.591	0.591	**40.9%**		15,563	11,423	4,871	62%	0.46		0.870		0.404	0.404	**59.6%**		14,678	10,868	4,540	63%	0.27		0.840		0.230	0.230	**77.0%**		**59.3%**	
38	1950	B	11,117	7,379	3,208	68%	0.29		0.759	0.080	0.539	0.539	**46.1%**		10,825	7,036	3,099	68%	0.51		0.633		0.321	0.321	**67.9%**		20,184	14,454	6,599	59%	0.26		1.033		0.267	0.267	**73.3%**		**63.8%**	
39	1951	A	39,167	14,584	13,698	24%	0.24		1.148	0.080	0.333	0.333	**66.7%**		68,100	14,174	24,519	23%	0.23		1.018		0.231	0.231	**76.9%**		62,213	8,111	22,318	23%	0.23		0.691		0.158	0.158	**84.2%**		**76.2%**	
40	1952	W	16,148	12,005	5,089	62%	0.27		1.009	0.080	0.653	0.653	**34.7%**		43,335	14,507	15,257	23%	0.23		1.036		0.243	0.243	**75.7%**		67,352	7,479	24,240	23%	0.23		0.657		0.149	0.149	**85.1%**		**67.8%**	
41	1953	W	16,535	6,693	5,234	61%	0.27		0.722	0.080	0.474	0.474	**52.6%**		42,331	7,069	14,882	24%	0.24		0.635		0.149	0.149	**85.1%**		64,078	4,886	23,015	23%	0.23		0.517		0.118	0.118	**88.2%**		**77.7%**	
42	1954	A	20,850	11,738	6,848	59%	0.26		0.995	0.080	0.616	0.616	**38.4%**		14,919	8,104	4,630	63%	0.47		0.691		0.323	0.323	**67.7%**		33,414	7,167	11,547	24%	0.24		0.640		0.154	0.154	**84.6%**		**64.6%**	
43	1955	D	17,119	12,509	5,453	61%	0.27		1.036	0.080	0.663	0.663	**33.7%**		25,520	14,507	8,594	25%	0.25		1.036		0.259	0.259	**74.1%**		22,007	7,481	7,281	58%	0.26		0.657		0.168	0.168	**83.2%**		**66.3%**	
44	1956	W	11,127	7,444	3,211	68%	0.29		0.763	0.080	0.542	0.542	**45.8%**		25,954	14,507	8,757	25%	0.25		1.036		0.258	0.258	**74.2%**		84,719	9,527	30,735	22%	0.22		0.767		0.172	0.172	**82.8%**		**69.3%**	
45	1957	A	15,470	9,245	4,836	62%	0.27		0.860	0.080	0.566	0.566	**43.4%**		14,143	8,748	4,339	64%	0.47		0.725		0.344	0.344	**65.6%**		18,639	8,049	6,021	60%	0.26		0.688		0.180	0.180	**82.0%**		**64.2%**	
46	1958	W	19,256	13,754	6,252	59%	0.26		1.103	0.080	0.689	0.689	**31.1%**		23,752	8,723	7,933	57%	0.43		0.724		0.310	0.310	**69.0%**		36,219	5,764	12,596	24%	0.24		0.564		0.135	0.135	**86.5%**		**63.9%**	
47	1959	B	16,130	6,811	5,083	62%	0.27		0.728	0.080	0.480	0.480	**52.0%**		14,627	7,220	4,520	63%	0.47		0.643		0.302	0.302	**69.8%**		35,167	4,903	12,202	24%	0.24		0.518		0.124	0.124	**87.6%**		**69.8%**	
48	1960	D	11,048	7,002	3,182	68%	0.29		0.739	0.080	0.526	0.526	**47.4%**		10,418	6,354	2,946	69%	0.51		0.596		0.305	0.305	**69.5%**		13,772	10,131	4,201	64%	0.28		0.800		0.222	0.222	**77.8%**		**66.0%**	
49	1961	D	14,001	10,333	4,286	64%	0.28		0.919	0.080	0.615	0.615	**38.5%**		18,000	12,843	5,782	60%	0.45		0.946		0.426	0.426	**57.4%**		14,758	11,121	4,569	63%	0.27		0.853		0.234	0.234	**76.6%**		**57.5%**	
50	1962	B	11,523	7,771	3,360	67%	0.29		0.780	0.080	0.549	0.549	**45.1%**		16,256	11,622	5,130	62%	0.46		0.880		0.405	0.405	**59.5%**		15,094	7,622	4,695	63%	0.27		0.664		0.181	0.181	**81.9%**		**61.5%**	
51	1963	W	20,557	14,474	6,738	59%	0.26		1.142	0.080	0.704	0.704	**29.6%**		27,555	14,507	9,356	25%	0.25		1.036		0.256	0.256	**74.4%**		18,194	7,888	5,855	60%	0.26		0.679		0.179	0.179	**82.1%**		**65.1%**	
52	1964	D	28,658	13,272	9,768	25%	0.25		1.077	0.080	0.325	0.325	**67.5%**		14,847	8,509	4,603	63%	0.47		0.712		0.334	0.334	**66.6%**		26,403	8,045	8,925	25%	0.25		0.687		0.171	0.171	**82.9%**		**70.9%**	
53	1965	W	13,651	10,327	4,155	64%	0.28		0.918	0.080	0.618	0.618	**38.2%**		28,466	14,507	9,696	25%	0.25		1.036		0.255	0.255	**74.5%**		81,240	11,153	29,434	22%	0.22		0.855		0.192	0.192	**80.8%**		**67.0%**	
54	1966	B	24,586	14,592	8,245	57%	0.25		1.149	0.080	0.688	0.688	**31.2%**		16,994	8,922	5,406	61%	0.46		0.735		0.335	0.335	**66.5%**		29,635	5,826	10,133	24%	0.24		0.567		0.139	0.139	**86.1%**		**62.6%**	
55	1967	W	13,623	10,625	4,145	64%	0.28		0.934	0.080	0.628	0.628	**37.2%**		32,878	14,507	11,346	24%	0.24		1.036		0.250	0.250	**75.0%**		33,553	8,171	11,599	24%	0.24		0.694		0.167	0.167	**83.3%**		**67.6%**	
56	1968	B	16,241	6,156	5,124	62%	0.27		0.693	0.080	0.458	0.458	**54.2%**		16,692	7,075	5,293	61%	0.46		0.635		0.290	0.290	**71.0%**		30,635	4,891	10,507	24%	0.24		0.517		0.126	0.126	**87.4%**		**70.9%**	
57	1969	W	13,818	10,301	4,218	64%	0.28		0.917	0.080	0.615	0.615	**38.5%**		24,093	14,507	8,061	57%	0.43		1.036		0.443	0.443	**55.7%**		67,731	7,460	24,381	23%	0.23		0.656		0.149	0.149	**85.1%**		**58.8%**	
58	1970	W	17,644	6,706	5,649	61%	0.26		0.723	0.080	0.469	0.469	**53.1%**		50,159	6,824	17,809	23%	0.23		0.621		0.144	0.144	**85.6%**		92,665	4,675	33,707	22%	0.22		0.505		0.113	0.113	**88.7%**		**78.2%**	
59	1971	W	21,019	14,588	6,911	58%	0.26		1.148	0.080	0.705	0.705	**29.5%**		53,335	11,001	18,997	23%	0.23		0.847		0.195	0.195	**80.5%**		46,793	7,118	16,551	23%	0.23		0.637		0.149	0.149	**85.1%**		**68.9%**	
60	1972	B	15,347	11,206	4,790	62%	0.27		0.966	0.080	0.633	0.633	**36.7%**		21,044	9,914	6,920	58%	0.44		0.788		0.345	0.345	**65.5%**		20,395	8,058	6,678	59%	0.26		0.688		0.178	0.178	**82.2%**		**62.5%**	
61	1973	A	22,322	14,580	7,398	58%	0.25		1.148	0.080	0.698	0.698	**30.2%**		26,198	12,436	8,848	25%	0.25		0.924		0.230	0.230	**77.0%**		47,499	7,379	16,815	23%	0.23		0.651		0.152	0.152	**84.8%**		**67.3%**	
62	1974	W	52,027	14,606	18,508	23%	0.23		1.149	0.080	0.327	0.327	**67.3%**		61,593	9,669	22,086	23%	0.23		0.775		0.177	0.177	**82.3%**		78,417	7,310	28,378	22%	0.22		0.648		0.146	0.146	**85.4%**		**79.3%**	
63	1975	W	17,581	8,919	5,625	61%	0.26		0.842	0.080	0.542	0.542	**45.8%**		17,619	7,592	5,640	61%	0.45		0.663		0.300	0.300	**70.0%**		18,672	5,405	6,033	60%	0.26		0.545		0.143	0.143	**85.7%**		**67.9%**	
64	1976	C	19,229	9,247	6,242	59%	0.26		0.860	0.080	0.544	0.544	**45.6%**		16,774	8,749	5,323	61%	0.46		0.725		0.331	0.331	**66.9%**		16,769	5,345	5,322	61%	0.27		0.542		0.145	0.145	**85.5%**		**66.2%**	
65	1977	C	8,416	6,064	2,198	73%	0.31		0.688	0.080	0.526	0.526	**47.4%**		8,315	4,975	2,160	74%	0.55		0.522		0.285	0.285	**71.5%**		7,906	4,798	2,007	75%	0.32		0.512		0.163	0.163	**83.7%**		**68.5%**	
66	1978	A	6,922	4,168	1,639	78%	0.33		0.586	0.080	0.474	0.474	**52.6%**		12,285	9,669	3,645	66%	0.49		0.775		0.380	0.380	**62.0%**		43,250	12,826	15,226	23%	0.23		0.945		0.222	0.222	**77.8%**		**63.6%**	
67	1979	B	14,374	10,532	4,426	63%	0.28		0.929	0.080	0.618	0.618	**38.2%**		13,792	7,885	4,208	64%	0.48		0.679		0.324	0.324	**67.6%**		27,242	7,469	9,239	25%	0.25		0.656		0.162	0.162	**83.8%**		**64.3%**	
68	1980	A	16,297	12,027	5,145	62%	0.27		1.010	0.080	0.653	0.653	**34.7%**		20,832	11,206	6,841	59%	0.44		0.858		0.376	0.376	**62.4%**		60,771	7,366	21,778	23%	0.23		0.651		0.149	0.149	**85.1%**		**61.2%**	
69	1981	D	13,017	8,904	3,918	65%	0.28		0.842	0.080	0.574	0.574	**42.6%**		15,611	7,831	4,889	62%	0.46		0.676		0.313	0.313	**68.7%**		28,602	4,731	9,747	25%	0.25		0.508		0.125	0.125	**87.5%**		**66.9%**	
70	1982	W	31,126	14,580	10,691	24%	0.24		1.148	0.080	0.340	0.340	**66.0%**		68,518	13,046	24,676	23%	0.23		0.957		0.217	0.217	**78.3%**		51,172	8,027	18,188	23%	0.23		0.686		0.159	0.159	**84.1%**		**76.7%**	
71	1983	W	39,113	9,207	13,678	24%	0.24		0.858	0.080	0.265	0.265	**73.5%**		55,416	7,384	19,776	23%	0.23		0.652		0.150	0.150	**85.0%**		59,148	4,006	21,171	23%	0.23		0.469		0.107	0.107	**89.3%**		**83.2%**	
72	1984	W	62,800	5,366	22,537	23%	0.23		0.650	0.080	0.210	0.210	**79.0%**		82,951	6,098	30,074	22%	0.22		0.582		0.131	0.131	**86.9%**		47,354	4,212	16,760	23%	0.23		0.480		0.112	0.112	**88.8%**		**85.4%**	
73	1985	D	33,527	14,596	11,589	24%	0.24		1.149	0.080	0.338	0.338	**66.2%**		23,880	7,986	7,981	57%	0.43		0.684		0.293	0.293	**70.7%**		16,549	5,489	5,239	61%	0.27		0.549		0.147	0.147	**85.3%**		**73.2%**	
74	1986	W	9,546	6,671	2,620	71%	0.30		0.721	0.080	0.532	0.532	**46.8%**		15,472	11,923	4,837	62%	0.46		0.897		0.417	0.417	**58.3%**		21,253	14,098	6,999	58%	0.26		1.014		0.260	0.260	**74.0%**		**59.4%**	
75	1987	D	11,210	7,761	3,243	67%	0.29		0.780	0.080	0.552	0.552	**44.8%**		13,783	10,300	4,205	64%	0.48		0.809		0.386	0.386	**61.4%**		16,734	9,046	5,309	61%	0.27		0.741		0.198	0.198	**80.2%**		**61.9%**	
76	1988	C	8,448	4,840	2,210	73%	0.31		0.622	0.080	0.477	0.477	**52.3%**		15,842	11,886	4,975	62%	0.46		0.895		0.414	0.414	**58.6%**		25,530	14,459	8,598	25%	0.25		1.034		0.258	0.258	**74.2%**		**61.0%**	
77	1989	D	8,577	5,673	2,258	73%	0.31		0.667	0.080	0.508	0.508	**49.2%**		8,849	5,720	2,360	72%	0.54		0.562		0.301	0.301	**69.9%**		11,998	8,725	3,537	66%	0.29		0.724		0.208	0.208	**79.2%**		**67.1%**	
78	1990	C	11,756	7,807	3,447	67%	0.29		0.782	0.080	0.548	0.548	**45.2%**		12,785	8,546	3,832	65%	0.49		0.714		0.347	0.347	**65.3%**		21,584	11,956	7,122	58%	0.26		0.899		0.230	0.230	**77.0%**		**63.2%**	
79	1991	C	8,142	4,713	2,095	74%	0.32		0.615	0.080	0.476	0.476	**52.4%**		8,487	4,737	2,224	73%	0.54		0.509		0.276	0.276	**72.4%**		6,851	3,404	1,612	78%	0.33		0.437		0.145	0.145	**85.5%**		**70.7%**	
80	1992	C	7,589	4,629	1,888	76%	0.32		0.611	0.080	0.482	0.482	**51.8%**		7,466	4,573	1,842	76%	0.56		0.500		0.282	0.282	**71.8%**		11,890	8,825	3,497	66%	0.29		0.729		0.209	0.209	**79.1%**		**68.6%**	
81																																					**Average:**		**66.56%**	
82	Formulas: Sacramento River Late Fall Run Smolt Survival Model																																							
83																																								
84																																								
85	C10 ='Study 467 Flow Data'!B7														Q10 ='Study 467 Flow Data'!C7												AE10 ='Study 467 Flow Data'!D7													
86	D10 ='Study 467 Flow Data'!L7					(HIDDEN)									R10 ='Study 467 Flow Data'!M7				(HIDDEN)								AF10 ='Study 467 Flow Data'!N7				(HIDDEN)									
87	E10 ='Study 467 Flow Data'!V7					(HIDDEN)									S10 ='Study 467 Flow Data'!W7				(HIDDEN)								AG10 ='Study 467 Flow Data'!X7				(HIDDEN)									
88	F10 =(D10+E10)														T10 =(R10+S10)												AH10 =(AF10+AG10)													
89	G10 =0.374*C10-950														U10 =0.374*Q10-950												AI10 =0.374*AE10-950													
90	H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))														V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))												AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))													
91	I10 =(0.133*C10+829)/(C10-G10)														W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)												AK10 =(0.133*AE10+829)/(AE10-AI10)													
92	K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)														Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)												AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)													
93	L10 =-1.613493+(0.0319584*$T$1)														AA10 =(Y10*W10)+(Z10*(1-W10))												AO10 =(AM10*AK10)+(AN10*(1-AK10))													
94	M10 =(K10*H10)+(L10*(1-H10))														AB10 =X10+AA10-(X10*AA10)												AP10 =AL10+AO10-(AL10*AO10)													
95	N10 =J10+M10-(J10*M10)														AC10 =1-AB10												AQ10 =1-AP10													
96	O10 =1-N10																										AS10 =(O10*0.25)+(AC10*0.5)+(AQ10*0.25)													

1 Study 526A Sacramento River Late Fall Run Smolt Survival Model

November Sacramento River Temp:	53	degrees F
December Sacramento River Temp:	47	degrees F
January Sacramento River Temp:	47	degrees F

2 Modified m2 by changing the slope to 0.000054

3 Cross Channel closed for 45 consecutive days, Dec 18-Jan 31

4 Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

NOVEMBER

Row	A: Year	B: Water Year Type	C: Sac River Flow	F: CVP+SWP exports	G: Calculated Steamboat & Sutter Slough Q	H: percent	I: xchannel closed	J: m1	K: m2	L: m3	M: m23	N: m123	O: Calculated Survival s123
10	1922	A	11,464	7,925	3,338	67%	0.29		0.789	0.080	0.555	0.555	**44.5%**
11	1923	B	16,485	12,083	5,215	61%	0.27		1.013	0.080	0.653	0.653	**34.7%**
12	1924	C	11,080	7,405	3,194	68%	0.29		0.761	0.080	0.541	0.541	**45.9%**
13	1925	D	7,024	4,529	1,677	78%	0.33		0.605	0.080	0.488	0.488	**51.2%**
14	1926	D	10,800	7,270	3,089	68%	0.29		0.753	0.080	0.539	0.539	**46.1%**
15	1927	W	20,382	14,551	6,673	59%	0.26		1.146	0.080	0.707	0.707	**29.3%**
16	1928	A	18,385	13,716	5,926	60%	0.26		1.101	0.080	0.693	0.693	**30.7%**
17	1929	C	12,695	9,565	3,798	65%	0.28		0.877	0.080	0.601	0.601	**39.9%**
18	1930	D	7,159	4,186	1,727	77%	0.33		0.587	0.080	0.471	0.471	**52.9%**
19	1931	C	9,723	5,878	2,686	70%	0.30		0.678	0.080	0.500	0.500	**50.0%**
20	1932	D	8,258	3,042	2,138	74%	0.31		0.525	0.080	0.408	0.408	**59.2%**
21	1933	C	9,511	5,660	2,607	71%	0.30		0.666	0.080	0.494	0.494	**50.6%**
22	1934	C	8,126	2,628	2,089	74%	0.32		0.503	0.080	0.393	0.393	**60.7%**
23	1935	B	9,281	6,897	2,521	71%	0.31		0.733	0.080	0.545	0.545	**45.5%**
24	1936	B	9,693	6,060	2,675	70%	0.30		0.688	0.080	0.507	0.507	**49.3%**
25	1937	B	11,490	7,782	3,347	67%	0.29		0.781	0.080	0.550	0.550	**45.0%**
26	1938	W	23,782	14,584	7,944	57%	0.25		1.148	0.080	0.691	0.691	**30.9%**
27	1939	D	19,522	8,360	6,351	59%	0.26		0.812	0.080	0.514	0.514	**48.6%**
28	1940	A	8,444	4,550	2,208	73%	0.31		0.606	0.080	0.465	0.465	**53.5%**
29	1941	W	13,764	10,385	4,198	64%	0.28		0.921	0.080	0.619	0.619	**38.1%**
30	1942	W	18,268	8,263	5,882	60%	0.26		0.807	0.080	0.517	0.517	**48.3%**
31	1943	W	21,794	8,398	7,201	58%	0.26		0.814	0.080	0.507	0.507	**49.3%**
32	1944	D	14,618	11,013	4,517	63%	0.27		0.955	0.080	0.632	0.632	**36.8%**
33	1945	B	13,861	10,936	4,234	64%	0.28		0.951	0.080	0.637	0.637	**36.3%**
34	1946	B	16,866	12,996	5,358	61%	0.27		1.062	0.080	0.680	0.680	**32.0%**
35	1947	D	13,358	10,640	4,046	64%	0.28		0.935	0.080	0.632	0.632	**36.8%**
36	1948	B	10,366	6,548	2,927	69%	0.30		0.714	0.080	0.517	0.517	**48.3%**
37	1949	D	14,329	10,053	4,409	63%	0.28		0.904	0.080	0.602	0.602	**39.8%**
38	1950	B	11,109	7,363	3,205	68%	0.29		0.758	0.080	0.539	0.539	**46.1%**
39	1951	A	38,338	14,574	13,388	24%	0.24		1.148	0.080	0.334	0.334	**66.6%**
40	1952	W	16,230	12,057	5,120	62%	0.27		1.012	0.080	0.654	0.654	**34.6%**
41	1953	W	16,617	8,394	5,265	61%	0.27		0.814	0.080	0.530	0.530	**47.0%**
42	1954	A	20,523	13,450	6,726	59%	0.26		1.087	0.080	0.672	0.672	**32.8%**
43	1955	D	16,266	11,957	5,133	62%	0.27		1.006	0.080	0.651	0.651	**34.9%**
44	1956	W	10,811	7,122	3,093	68%	0.29		0.745	0.080	0.533	0.533	**46.7%**
45	1957	A	15,552	9,245	4,866	62%	0.27		0.860	0.080	0.565	0.565	**43.5%**
46	1958	W	19,338	13,807	6,282	59%	0.26		1.106	0.080	0.690	0.690	**31.0%**
47	1959	B	16,212	8,491	5,113	62%	0.27		0.819	0.080	0.536	0.536	**46.4%**
48	1960	D	9,814	5,775	2,720	70%	0.30		0.673	0.080	0.495	0.495	**50.5%**
49	1961	D	12,583	9,269	3,756	65%	0.28		0.861	0.080	0.591	0.591	**40.9%**
50	1962	B	9,698	5,981	2,677	70%	0.30		0.684	0.080	0.504	0.504	**49.6%**
51	1963	W	20,838	14,608	6,843	59%	0.26		1.150	0.080	0.706	0.706	**29.4%**
52	1964	D	28,492	14,518	9,706	25%	0.25		1.145	0.080	0.342	0.342	**65.8%**
53	1965	W	13,491	10,223	4,096	64%	0.28		0.913	0.080	0.616	0.616	**38.4%**
54	1966	B	24,741	14,584	8,303	57%	0.25		1.148	0.080	0.687	0.687	**31.3%**
55	1967	W	13,714	10,686	4,179	64%	0.28		0.938	0.080	0.630	0.630	**37.0%**
56	1968	B	16,161	8,359	5,094	62%	0.27		0.812	0.080	0.532	0.532	**46.8%**
57	1969	W	13,150	9,779	3,968	65%	0.28		0.889	0.080	0.604	0.604	**39.6%**
58	1970	W	17,727	8,394	5,680	60%	0.26		0.814	0.080	0.524	0.524	**47.6%**
59	1971	W	21,030	14,581	6,915	58%	0.26		1.148	0.080	0.705	0.705	**29.5%**
60	1972	B	15,429	11,261	4,820	62%	0.27		0.969	0.080	0.634	0.634	**36.6%**
61	1973	A	20,583	14,582	6,748	59%	0.26		1.148	0.080	0.707	0.707	**29.3%**
62	1974	W	50,542	14,601	17,953	23%	0.23		1.149	0.080	0.328	0.328	**67.2%**
63	1975	W	17,663	8,919	5,656	61%	0.26		0.842	0.080	0.541	0.541	**45.9%**
64	1976	C	19,117	9,247	6,200	60%	0.26		0.860	0.080	0.545	0.545	**45.5%**
65	1977	C	8,416	6,192	2,198	73%	0.31		0.695	0.080	0.531	0.531	**46.9%**
66	1978	A	6,922	4,163	1,639	78%	0.33		0.586	0.080	0.474	0.474	**52.6%**
67	1979	B	14,631	11,044	4,522	63%	0.27		0.957	0.080	0.633	0.633	**36.7%**
68	1980	A	15,879	11,755	4,989	62%	0.27		0.995	0.080	0.647	0.647	**35.3%**
69	1981	D	13,099	9,101	3,949	65%	0.28		0.852	0.080	0.580	0.580	**42.0%**
70	1982	W	27,214	14,586	9,228	25%	0.25		1.148	0.080	0.344	0.344	**65.6%**
71	1983	W	39,001	9,208	13,636	24%	0.24		0.858	0.080	0.265	0.265	**73.5%**
72	1984	W	62,687	7,927	22,495	23%	0.23		0.789	0.080	0.242	0.242	**75.8%**
73	1985	D	33,125	14,588	11,439	24%	0.24		1.148	0.080	0.338	0.338	**66.2%**
74	1986	W	9,636	6,792	2,654	70%	0.30		0.727	0.080	0.536	0.536	**46.4%**
75	1987	D	11,212	7,755	3,243	67%	0.29		0.779	0.080	0.552	0.552	**44.8%**
76	1988	C	8,448	4,947	2,210	73%	0.31		0.628	0.080	0.481	0.481	**51.9%**
77	1989	D	8,668	5,247	2,292	73%	0.31		0.644	0.080	0.490	0.490	**51.0%**
78	1990	C	11,532	6,920	3,363	67%	0.29		0.734	0.080	0.518	0.518	**48.2%**
79	1991	C	7,821	4,550	1,975	75%	0.32		0.606	0.080	0.475	0.475	**52.5%**
80	1992	C	7,726	4,760	1,940	75%	0.32		0.618	0.080	0.485	0.485	**51.5%**

DECEMBER

Row	Year	Q: Sac River Flows	T: SWP+CVP exports	U: Calculated Steamboat & Sutter Slough Q	V: percent	W: xchannel closed	X: m1	Y: m2	Z: m3	AA: m23	AB: m123	AC: Calculated Survival s123
10	1922	17,208	13,985	5,486	61%	0.45		1.008		0.458	0.458	**54.2%**
11	1923	34,350	8,104	11,897	24%	0.24		0.691		0.166	0.166	**83.4%**
12	1924	13,877	10,365	4,240	64%	0.48		0.813		0.387	0.387	**61.3%**
13	1925	11,302	9,089	3,277	67%	0.50		0.744		0.373	0.373	**62.7%**
14	1926	12,986	7,091	3,907	65%	0.48		0.636		0.308	0.308	**69.2%**
15	1927	14,370	12,106	4,424	63%	0.47		0.907		0.428	0.428	**57.2%**
16	1928	16,447	9,269	5,201	61%	0.46		0.753		0.346	0.346	**65.4%**
17	1929	13,526	10,279	4,109	64%	0.48		0.808		0.387	0.387	**61.3%**
18	1930	14,496	10,542	4,472	63%	0.47		0.822		0.388	0.388	**61.2%**
19	1931	9,333	5,155	2,541	71%	0.53		0.531		0.280	0.280	**72.0%**
20	1932	14,673	12,898	4,538	63%	0.47		0.949		0.446	0.446	**55.4%**
21	1933	8,635	4,970	2,279	73%	0.54		0.521		0.281	0.281	**71.9%**
22	1934	12,528	9,742	3,735	66%	0.49		0.779		0.380	0.380	**62.0%**
23	1935	8,556	6,653	2,250	73%	0.54		0.612		0.331	0.331	**66.9%**
24	1936	9,547	6,217	2,621	71%	0.52		0.589		0.309	0.309	**69.1%**
25	1937	12,519	9,832	3,732	66%	0.49		0.784		0.383	0.383	**61.7%**
26	1938	45,937	10,681	16,230	23%	0.23		0.830		0.194	0.194	**80.6%**
27	1939	18,749	7,942	6,062	60%	0.45		0.682		0.304	0.304	**69.6%**
28	1940	7,841	4,103	1,983	75%	0.56		0.474		0.264	0.264	**73.6%**
29	1941	29,348	14,507	10,026	24%	0.24		1.036		0.254	0.254	**74.6%**
30	1942	65,430	7,815	23,521	23%	0.23		0.675		0.153	0.153	**84.7%**
31	1943	28,806	7,986	9,823	25%	0.25		0.684		0.168	0.168	**83.2%**
32	1944	13,839	10,674	4,226	64%	0.48		0.829		0.395	0.395	**60.5%**
33	1945	15,893	12,148	4,994	62%	0.46		0.909		0.420	0.420	**58.0%**
34	1946	54,704	10,948	19,509	23%	0.23		0.844		0.194	0.194	**80.6%**
35	1947	17,697	13,836	5,669	60%	0.45		1.000		0.452	0.452	**54.8%**
36	1948	9,978	5,973	2,782	70%	0.52		0.575		0.298	0.298	**70.2%**
37	1949	15,628	11,466	4,895	62%	0.46		0.872		0.404	0.404	**59.6%**
38	1950	10,794	7,029	3,087	68%	0.51		0.632		0.321	0.321	**67.9%**
39	1951	68,100	14,093	24,519	23%	0.23		1.014		0.230	0.230	**77.0%**
40	1952	42,890	14,507	15,091	24%	0.24		1.036		0.244	0.244	**75.6%**
41	1953	42,142	7,949	14,811	24%	0.24		0.682		0.161	0.161	**83.9%**
42	1954	14,984	8,104	4,654	63%	0.47		0.691		0.323	0.323	**67.7%**
43	1955	24,919	14,507	8,370	57%	0.42		1.036		0.440	0.440	**56.0%**
44	1956	25,003	14,507	8,401	25%	0.25		1.036		0.259	0.259	**74.1%**
45	1957	14,208	8,748	4,364	64%	0.47		0.725		0.344	0.344	**65.6%**
46	1958	23,817	8,723	7,958	57%	0.43		0.724		0.310	0.310	**69.0%**
47	1959	14,692	8,059	4,545	63%	0.47		0.688		0.323	0.323	**67.7%**
48	1960	10,409	6,367	2,943	69%	0.51		0.597		0.306	0.306	**69.4%**
49	1961	16,565	11,915	5,245	61%	0.46		0.896		0.410	0.410	**59.0%**
50	1962	15,823	11,345	4,968	62%	0.46		0.866		0.400	0.400	**60.0%**
51	1963	27,555	14,363	9,356	25%	0.25		1.028		0.254	0.254	**74.6%**
52	1964	14,912	8,509	4,627	63%	0.47		0.712		0.334	0.334	**66.6%**
53	1965	28,407	14,507	9,674	25%	0.25		1.036		0.255	0.255	**74.5%**
54	1966	17,062	9,151	5,431	61%	0.46		0.747		0.340	0.340	**66.0%**
55	1967	32,472	14,507	11,195	24%	0.24		1.036		0.251	0.251	**74.9%**
56	1968	16,757	7,942	5,317	61%	0.46		0.682		0.311	0.311	**68.9%**
57	1969	23,408	14,507	7,805	57%	0.43		1.036		0.445	0.445	**55.5%**
58	1970	49,970	7,688	17,739	23%	0.23		0.668		0.155	0.155	**84.5%**
59	1971	52,804	11,206	18,799	23%	0.23		0.858		0.198	0.198	**80.2%**
60	1972	20,536	11,195	6,730	59%	0.44		0.857		0.376	0.376	**62.4%**
61	1973	25,763	12,917	8,685	25%	0.25		0.950		0.237	0.237	**76.3%**
62	1974	61,593	9,464	22,086	23%	0.23		0.764		0.174	0.174	**82.6%**
63	1975	17,684	8,455	5,664	60%	0.45		0.709		0.321	0.321	**67.9%**
64	1976	16,839	8,749	5,348	61%	0.46		0.725		0.331	0.331	**66.9%**
65	1977	8,319	5,094	2,161	74%	0.55		0.528		0.288	0.288	**71.2%**
66	1978	12,308	9,684	3,653	66%	0.49		0.776		0.380	0.380	**62.0%**
67	1979	13,708	7,886	4,177	64%	0.48		0.679		0.324	0.324	**67.6%**
68	1980	20,397	11,387	6,678	59%	0.44		0.868		0.381	0.381	**61.9%**
69	1981	15,676	7,831	4,913	62%	0.46		0.676		0.313	0.313	**68.7%**
70	1982	68,450	13,047	24,650	23%	0.23		0.957		0.217	0.217	**78.3%**
71	1983	55,416	8,525	19,776	23%	0.23		0.713		0.164	0.164	**83.6%**
72	1984	82,951	7,266	30,074	22%	0.22		0.645		0.145	0.145	**85.5%**
73	1985	23,880	7,986	7,981	57%	0.43		0.684		0.293	0.293	**70.7%**
74	1986	15,291	11,810	4,769	62%	0.47		0.891		0.415	0.415	**58.5%**
75	1987	13,796	10,309	4,210	64%	0.48		0.810		0.386	0.386	**61.4%**
76	1988	15,909	11,930	5,000	62%	0.46		0.897		0.414	0.414	**58.6%**
77	1989	8,916	6,411	2,385	72%	0.53		0.599		0.320	0.320	**68.0%**
78	1990	14,647	8,994	4,528	63%	0.47		0.739		0.347	0.347	**65.3%**
79	1991	7,187	3,739	1,738	77%	0.57		0.455		0.260	0.260	**74.0%**
80	1992	7,571	4,671	1,882	76%	0.56		0.505		0.284	0.284	**71.6%**

JANUARY

Row	Year	AE: Sac River Flows	AH: CVP+SWP exports	AI: Calculated Steamboat & Sutter Slough Q	AJ: percent	AK: xchannel closed	AL: m1	AM: m2	AN: m3	AO: m23	AP: m123	AQ: Calculated Survival s123	AS: Weighted Total Survival
10	1922	17,566	13,227	5,620	61%	0.26		0.967		0.256	0.256	**74.4%**	**56.8%**
11	1923	32,280	7,821	11,123	24%	0.24		0.675		0.163	0.163	**83.7%**	**71.3%**
12	1924	14,681	10,900	4,541	63%	0.27		0.841		0.231	0.231	**76.9%**	**61.4%**
13	1925	10,260	6,751	2,887	69%	0.30		0.617		0.184	0.184	**81.6%**	**64.6%**
14	1926	18,831	13,586	6,093	60%	0.26		0.987		0.258	0.258	**74.2%**	**64.7%**
15	1927	29,902	12,175	10,233	24%	0.24		0.910		0.222	0.222	**77.8%**	**55.3%**
16	1928	26,188	7,844	8,844	25%	0.25		0.676		0.168	0.168	**83.2%**	**61.2%**
17	1929	15,078	11,047	4,689	63%	0.27		0.849		0.232	0.232	**76.8%**	**59.8%**
18	1930	20,821	13,869	6,837	59%	0.26		1.002		0.258	0.258	**74.2%**	**62.4%**
19	1931	12,027	9,144	3,548	66%	0.29		0.747		0.214	0.214	**78.6%**	**68.1%**
20	1932	17,276	14,451	5,511	61%	0.27		1.033		0.275	0.275	**72.5%**	**60.6%**
21	1933	12,653	9,981	3,782	65%	0.28		0.792		0.224	0.224	**77.6%**	**68.0%**
22	1934	16,154	12,511	5,092	62%	0.27		0.928		0.250	0.250	**75.0%**	**64.9%**
23	1935	25,521	14,452	8,595	25%	0.25		1.033		0.258	0.258	**74.2%**	**63.4%**
24	1936	32,137	14,460	11,069	24%	0.24		1.034		0.250	0.250	**75.0%**	**65.6%**
25	1937	15,779	12,629	4,951	62%	0.27		0.935		0.253	0.253	**74.7%**	**60.8%**
26	1938	31,443	7,440	10,810	24%	0.24		0.655		0.159	0.159	**84.1%**	**69.1%**
27	1939	18,469	7,446	5,957	60%	0.26		0.655		0.172	0.172	**82.8%**	**67.6%**
28	1940	23,510	14,439	7,843	57%	0.25		1.033		0.261	0.261	**73.9%**	**68.7%**
29	1941	72,901	14,507	26,315	23%	0.23		1.036		0.234	0.234	**76.6%**	**66.0%**
30	1942	63,260	7,446	22,709	23%	0.23		0.655		0.149	0.149	**85.1%**	**75.7%**
31	1943	58,056	7,510	20,763	23%	0.23		0.658		0.151	0.151	**84.9%**	**75.2%**
32	1944	17,739	7,469	5,684	60%	0.26		0.656		0.174	0.174	**82.6%**	**60.1%**
33	1945	14,141	9,128	4,339	64%	0.28		0.746		0.206	0.206	**79.4%**	**57.9%**
34	1946	43,229	7,844	15,218	23%	0.23		0.676		0.159	0.159	**84.1%**	**69.3%**
35	1947	14,783	9,039	4,579	63%	0.27		0.741		0.203	0.203	**79.7%**	**56.5%**
36	1948	14,711	10,605	4,552	63%	0.27		0.826		0.226	0.226	**77.4%**	**66.5%**
37	1949	14,740	10,908	4,563	63%	0.27		0.842		0.231	0.231	**76.9%**	**59.0%**
38	1950	19,995	14,454	6,528	59%	0.26		1.033		0.268	0.268	**73.2%**	**63.8%**
39	1951	62,213	8,116	22,318	23%	0.23		0.691		0.158	0.158	**84.2%**	**76.2%**
40	1952	67,352	7,479	24,240	23%	0.23		0.657		0.149	0.149	**85.1%**	**67.7%**
41	1953	64,078	7,540	23,015	23%	0.23		0.660		0.150	0.150	**85.0%**	**75.0%**
42	1954	33,476	7,999	11,570	24%	0.24		0.685		0.165	0.165	**83.5%**	**62.9%**
43	1955	21,819	8,122	7,210	58%	0.26		0.691		0.177	0.177	**82.3%**	**57.3%**
44	1956	84,719	9,516	30,735	22%	0.22		0.767		0.172	0.172	**82.8%**	**69.4%**
45	1957	18,701	8,049	6,044	60%	0.26		0.688		0.180	0.180	**82.0%**	**64.2%**
46	1958	36,275	7,425	12,617	24%	0.24		0.654		0.156	0.156	**84.4%**	**63.4%**
47	1959	35,228	7,540	12,225	24%	0.24		0.660		0.158	0.158	**84.2%**	**66.5%**
48	1960	13,334	9,848	4,037	65%	0.28		0.785		0.220	0.220	**78.0%**	**66.9%**
49	1961	13,570	10,351	4,125	64%	0.28		0.812		0.226	0.226	**77.4%**	**59.0%**
50	1962	15,471	7,183	4,836	62%	0.27		0.641		0.174	0.174	**82.6%**	**63.0%**
51	1963	18,176	7,888	5,848	60%	0.26		0.679		0.179	0.179	**82.1%**	**65.2%**
52	1964	26,401	8,049	8,924	25%	0.25		0.688		0.171	0.171	**82.9%**	**70.5%**
53	1965	81,240	11,099	29,434	22%	0.22		0.852		0.191	0.191	**80.9%**	**67.1%**
54	1966	29,539	7,770	10,098	24%	0.24		0.672		0.165	0.165	**83.5%**	**61.7%**
55	1967	32,904	8,108	11,356	24%	0.24		0.691		0.167	0.167	**83.3%**	**67.6%**
56	1968	30,538	7,540	10,471	24%	0.24		0.660		0.161	0.161	**83.9%**	**67.1%**
57	1969	66,806	8,288	24,035	23%	0.23		0.700		0.159	0.159	**84.1%**	**58.7%**
58	1970	92,665	7,540	33,707	22%	0.22		0.660		0.147	0.147	**85.3%**	**75.5%**
59	1971	46,797	8,057	16,552	23%	0.23		0.688		0.160	0.160	**84.0%**	**68.5%**
60	1972	20,457	8,078	6,701	59%	0.26		0.689		0.178	0.178	**82.2%**	**60.9%**
61	1973	47,927	7,379	16,975	23%	0.23		0.651		0.152	0.152	**84.8%**	**66.7%**
62	1974	78,417	7,840	28,378	22%	0.22		0.676		0.152	0.152	**84.8%**	**79.3%**
63	1975	18,734	8,055	6,057	60%	0.26		0.688		0.180	0.180	**82.0%**	**65.9%**
64	1976	16,831	7,981	5,345	61%	0.27		0.684		0.183	0.183	**81.7%**	**65.3%**
65	1977	7,925	4,841	2,014	75%	0.32		0.514		0.164	0.164	**83.6%**	**68.2%**
66	1978	43,266	12,339	15,231	23%	0.23		0.919		0.216	0.216	**78.4%**	**63.7%**
67	1979	27,304	7,469	9,262	25%	0.25		0.656		0.162	0.162	**83.8%**	**63.9%**
68	1980	61,290	7,366	21,972	23%	0.23		0.651		0.149	0.149	**85.1%**	**61.0%**
69	1981	28,694	7,540	9,782	25%	0.25		0.660		0.162	0.162	**83.8%**	**65.8%**
70	1982	51,172	8,027	18,188	23%	0.23		0.686		0.159	0.159	**84.1%**	**76.6%**
71	1983	59,148	6,855	21,171	23%	0.23		0.623		0.143	0.143	**85.7%**	**81.6%**
72	1984	47,354	4,368	16,760	23%	0.23		0.489		0.114	0.114	**88.6%**	**83.9%**
73	1985	16,610	8,057	5,262	61%	0.27		0.688		0.184	0.184	**81.6%**	**72.3%**
74	1986	20,850	14,328	6,848	59%	0.26		1.027		0.264	0.264	**73.6%**	**59.3%**
75	1987	16,795	9,361	5,331	61%	0.27		0.758		0.203	0.203	**79.7%**	**61.8%**
76	1988	25,591	14,459	8,621	25%	0.25		1.034		0.258	0.258	**74.2%**	**60.8%**
77	1989	12,060	8,765	3,560	66%	0.29		0.726		0.208	0.208	**79.2%**	**66.5%**
78	1990	19,146	13,625	6,211	60%	0.26		0.989		0.258	0.258	**74.2%**	**63.2%**
79	1991	6,957	3,442	1,652	78%	0.33		0.439		0.145	0.145	**85.5%**	**71.5%**
80	1992	12,238	9,051	3,627	66%	0.29		0.742		0.212	0.212	**78.8%**	**68.4%**
81												**Average:**	**65.98%**

82 Formulas: Sacramento River Late Fall Run Smolt Survival Model

Row			
85	C10 ='Study 467 Flow Data'!B7	Q10 ='Study 467 Flow Data'!C7	AE10 ='Study 467 Flow Data'!D7
86	D10 ='Study 467 Flow Data'!L7 (HIDDEN)	R10 ='Study 467 Flow Data'!M7 (HIDDEN)	AF10 ='Study 467 Flow Data'!N7 (HIDDEN)
87	E10 ='Study 467 Flow Data'!V7 (HIDDEN)	S10 ='Study 467 Flow Data'!W7 (HIDDEN)	AG10 ='Study 467 Flow Data'!X7 (HIDDEN)
88	F10 =(D10+E10)	T10 =(R10+S10)	AH10 =(AF10+AG10)
89	G10 =0.374*C10-950	U10 =0.374*Q10-950	AI10 =0.374*AE10-950
90	H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))	V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))	AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
91	I10 =(0.133*C10+829)/(C10-G10)	W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)	AK10 =(0.133*AE10+829)/(AE10-AI10)
92	K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)	Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)	AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
93	L10 =-1.613493+(0.0319584*$T$1)	AA10 =(Y10*W10)+(Z10*(1-W10))	AO10 =(AM10*AK10)+(AN10*(1-AK10))
94	M10 =(K10*H10)+(L10*(1-H10))	AB10 =X10+AA10-(X10*AA10)	AP10 =AL10+AO10-(AL10*AO10)
95	N10 =J10+M10-(J10*M10)	AC10 =1-AB10	AQ10 =1-AP10
96	O10 =1-N10		AS10 =(O10*0.25)+(AC10*0.5)+(AQ10*0.25)

A B C F G H I J K L M N O P Q T U V W X Y Z AA AB AC AD AE AH AI AJ AK AL AM AN AO AP AQ AR AS AT

1 Study 634 Sacramento River Late Fall Run Smolt Survival Model — November Sacramento River Temp: 53 degrees F
2 Modified m2 by changing the slope to 0.000054 — December Sacramento River Temp: 47 degrees F
3 Cross Channel closed for 45 consecutive days, Dec 18-Jan 31 — January Sacramento River Temp: 47 degrees F
4 Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs
5

Row	A	B	C	F	G	H	I	J	K	L	M	N	O	Q	T	U	V	W	X	Y	Z	AA	AB	AC	AE	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AS
6	NOVEMBER				Calculated									DECEMBER		Calculated									JANUARY		Calculated									
7		Water	Sac		Steamboat								Calculated	Sac		Steamboat								Calculated	Sac		Steamboat								Calculated	
8		Year	River	CVP+SWP	& Sutter		xchannel		Calculated Mortality				Survival	River	SWP+CVP	& Sutter		xchannel		Calculated Mortality				Survival	River	CVP+SWP	& Sutter		xchannel		Calculated Mortality				Survival	Weighted
9	Year	Type	Flow	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	s123	Flows	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	s123	Flows	exports	Slough Q	percent	closed	m1	m2	m3	m23	m123	s123	Total Survival
10	1922	A	12,033	8,623	3,550	66%	0.29		0.826	0.080	0.574	0.574	42.6%	17,143	11,322	5,461	61%	0.45		0.864		0.393	0.393	60.7%	17,504	11,801	5,596	61%	0.27		0.890		0.236	0.236	76.4%	60.1%
11	1923	B	15,692	10,978	4,919	62%	0.27		0.954	0.080	0.622	0.622	37.8%	34,069	9,634	11,792	24%	0.24		0.773		0.186	0.186	81.4%	32,280	7,845	11,123	24%	0.24		0.677		0.164	0.164	83.6%	71.0%
12	1924	C	10,997	7,447	3,163	68%	0.29		0.763	0.080	0.543	0.543	45.7%	13,681	10,355	4,167	64%	0.48		0.812		0.388	0.388	61.2%	14,620	10,980	4,518	63%	0.27		0.846		0.232	0.232	76.8%	61.2%
13	1925	D	7,024	4,542	1,677	78%	0.33		0.606	0.080	0.488	0.488	51.2%	11,248	9,113	3,257	67%	0.50		0.745		0.374	0.374	62.6%	10,200	6,731	2,865	69%	0.30		0.616		0.184	0.184	81.6%	64.5%
14	1926	D	10,370	6,845	2,928	69%	0.30		0.730	0.080	0.528	0.528	47.2%	12,688	6,925	3,795	65%	0.49		0.627		0.305	0.305	69.5%	18,519	11,341	5,976	60%	0.26		0.865		0.227	0.227	77.3%	65.9%
15	1927	W	20,291	10,923	6,639	59%	0.26		0.951	0.080	0.593	0.593	40.7%	14,304	11,216	4,400	63%	0.47		0.859		0.406	0.406	59.4%	29,956	11,484	10,254	24%	0.24		0.873		0.213	0.213	78.7%	59.6%
16	1928	A	20,617	10,961	6,761	59%	0.26		0.953	0.080	0.592	0.592	40.8%	16,574	10,671	5,249	61%	0.46		0.829		0.380	0.380	62.0%	25,207	7,844	8,477	25%	0.25		0.676		0.169	0.169	83.1%	62.0%
17	1929	C	12,612	9,568	3,767	65%	0.28		0.877	0.080	0.602	0.602	39.8%	13,461	10,331	4,084	64%	0.48		0.811		0.389	0.389	61.1%	15,016	11,101	4,666	63%	0.27		0.852		0.233	0.233	76.7%	59.7%
18	1930	D	7,159	4,061	1,727	77%	0.33		0.580	0.080	0.466	0.466	53.4%	14,442	10,538	4,451	63%	0.47		0.822		0.388	0.388	61.2%	20,771	11,309	6,818	59%	0.26		0.864		0.222	0.222	77.8%	63.4%
19	1931	C	9,804	5,947	2,717	70%	0.30		0.682	0.080	0.502	0.502	49.8%	9,339	5,228	2,543	71%	0.53		0.535		0.282	0.282	71.8%	11,965	9,084	3,525	66%	0.29		0.743		0.213	0.213	78.7%	68.0%
20	1932	D	8,179	2,995	2,109	74%	0.32		0.522	0.080	0.407	0.407	59.3%	14,650	11,414	4,529	63%	0.47		0.869		0.409	0.409	59.1%	17,253	12,039	5,503	61%	0.27		0.903		0.240	0.240	76.0%	63.4%
21	1933	C	9,511	5,676	2,607	71%	0.30		0.667	0.080	0.495	0.495	50.5%	8,130	4,549	2,091	74%	0.55		0.499		0.274	0.274	72.6%	12,102	9,641	3,576	66%	0.29		0.774		0.221	0.221	77.9%	68.4%
22	1934	C	8,094	2,612	2,077	74%	0.32		0.502	0.080	0.393	0.393	60.7%	12,474	9,758	3,715	66%	0.49		0.780		0.381	0.381	61.9%	16,103	11,305	5,073	62%	0.27		0.863		0.233	0.233	76.7%	65.3%
23	1935	B	9,204	5,327	2,492	71%	0.31		0.648	0.080	0.485	0.485	51.5%	8,503	6,686	2,230	73%	0.54		0.614		0.333	0.333	66.7%	25,471	11,878	8,576	25%	0.25		0.894		0.223	0.223	77.7%	65.6%
24	1936	B	11,180	7,539	3,231	68%	0.29		0.768	0.080	0.544	0.544	45.6%	11,625	8,307	3,398	67%	0.50		0.701		0.349	0.349	65.1%	32,125	11,663	11,065	24%	0.24		0.883		0.214	0.214	78.6%	63.6%
25	1937	B	11,577	7,481	3,380	67%	0.29		0.765	0.080	0.538	0.538	46.2%	12,218	9,675	3,620	66%	0.49		0.775		0.381	0.381	61.9%	15,717	11,804	4,928	62%	0.27		0.890		0.241	0.241	75.9%	61.5%
26	1938	W	23,700	10,965	7,914	57%	0.25		0.953	0.080	0.580	0.580	42.0%	43,461	11,760	15,304	23%	0.23		0.888		0.208	0.208	79.2%	31,443	7,967	10,810	24%	0.24		0.683		0.166	0.166	83.4%	70.9%
27	1939	D	19,439	9,909	6,320	59%	0.26		0.896	0.080	0.564	0.564	43.6%	18,684	7,942	6,038	60%	0.45		0.682		0.305	0.305	69.5%	18,407	4,806	5,934	60%	0.26		0.512		0.135	0.135	86.5%	67.3%
28	1940	A	8,444	4,659	2,208	73%	0.31		0.612	0.080	0.470	0.470	53.0%	7,841	4,276	1,983	75%	0.56		0.484		0.269	0.269	73.1%	23,448	12,274	7,820	57%	0.25		0.916		0.231	0.231	76.9%	69.0%
29	1941	W	13,756	10,446	4,195	64%	0.28		0.925	0.080	0.621	0.621	37.9%	37,244	11,578	12,979	24%	0.24		0.878		0.209	0.209	79.1%	72,229	12,414	26,064	23%	0.23		0.923		0.209	0.209	79.1%	68.8%
30	1942	W	18,186	10,606	5,852	60%	0.26		0.933	0.080	0.593	0.593	40.7%	65,619	7,815	23,592	23%	0.23		0.675		0.153	0.153	84.7%	63,260	7,359	22,709	23%	0.23		0.650		0.148	0.148	85.2%	73.8%
31	1943	W	21,906	10,976	7,243	58%	0.26		0.953	0.080	0.587	0.587	41.3%	28,806	7,986	9,823	25%	0.25		0.684		0.168	0.168	83.2%	58,056	7,511	20,763	23%	0.23		0.658		0.151	0.151	84.9%	73.2%
32	1944	D	13,893	10,963	4,246	64%	0.28		0.953	0.080	0.637	0.637	36.3%	13,774	10,885	4,201	64%	0.48		0.841		0.401	0.401	59.9%	17,677	7,469	5,661	60%	0.26		0.656		0.174	0.174	82.6%	59.7%
33	1945	B	13,770	10,950	4,200	64%	0.28		0.952	0.080	0.638	0.638	36.2%	15,826	11,206	4,969	62%	0.46		0.858		0.397	0.397	60.3%	14,027	9,140	4,296	64%	0.28		0.746		0.207	0.207	79.3%	59.0%
34	1946	B	18,093	10,962	5,817	60%	0.26		0.953	0.080	0.606	0.606	39.4%	52,999	11,799	18,872	23%	0.23		0.890		0.205	0.205	79.5%	43,229	7,844	15,218	23%	0.23		0.676		0.159	0.159	84.1%	70.6%
35	1947	D	13,776	10,637	4,202	64%	0.28		0.935	0.080	0.627	0.627	37.3%	18,132	11,318	5,831	60%	0.45		0.864		0.388	0.388	61.2%	14,971	11,566	4,649	63%	0.27		0.877		0.240	0.240	76.0%	58.9%
36	1948	B	10,208	6,499	2,868	69%	0.30		0.712	0.080	0.517	0.517	48.3%	9,379	5,539	2,558	71%	0.53		0.552		0.291	0.291	70.9%	14,649	10,622	4,529	63%	0.27		0.826		0.227	0.227	77.3%	66.8%
37	1949	D	14,447	10,533	4,453	63%	0.28		0.929	0.080	0.618	0.618	38.2%	15,563	11,122	4,871	62%	0.46		0.853		0.396	0.396	60.4%	14,928	11,081	4,633	63%	0.27		0.851		0.233	0.233	76.7%	58.9%
38	1950	B	11,663	7,643	3,412	67%	0.29		0.773	0.080	0.543	0.543	45.7%	11,679	7,266	3,418	67%	0.50		0.645		0.321	0.321	67.9%	19,934	11,398	6,505	59%	0.26		0.868		0.225	0.225	77.5%	64.8%
39	1951	A	39,461	10,956	13,808	24%	0.24		0.952	0.080	0.287	0.287	71.3%	68,100	11,799	24,519	23%	0.23		0.890		0.202	0.202	79.8%	62,213	11,058	22,318	23%	0.23		0.850		0.194	0.194	80.6%	77.9%
40	1952	W	16,718	10,961	5,303	61%	0.27		0.953	0.080	0.614	0.614	38.6%	45,041	11,346	15,895	23%	0.23		0.866		0.203	0.203	79.7%	67,352	12,503	24,240	23%	0.23		0.928		0.211	0.211	78.9%	69.2%
41	1953	W	16,535	8,394	5,234	61%	0.27		0.814	0.080	0.531	0.531	46.9%	42,331	7,949	14,882	24%	0.24		0.682		0.161	0.161	83.9%	64,078	4,898	23,015	23%	0.23		0.517		0.118	0.118	88.2%	75.8%
42	1954	A	20,132	10,961	6,579	59%	0.26		0.953	0.080	0.594	0.594	40.6%	14,919	8,104	4,630	63%	0.47		0.691		0.323	0.323	67.7%	33,414	8,057	11,547	24%	0.24		0.688		0.166	0.166	83.4%	64.8%
43	1955	D	20,689	10,961	6,788	59%	0.26		0.953	0.080	0.592	0.592	40.8%	26,020	11,148	8,781	25%	0.25		0.855		0.213	0.213	78.7%	22,257	11,465	7,374	58%	0.25		0.872		0.222	0.222	77.8%	69.0%
44	1956	W	11,127	7,471	3,211	68%	0.29		0.764	0.080	0.543	0.543	45.7%	25,204	11,799	8,476	25%	0.25		0.890		0.222	0.222	77.8%	83,596	12,292	30,315	22%	0.22		0.917		0.206	0.206	79.4%	70.2%
45	1957	A	15,470	10,978	4,836	62%	0.27		0.954	0.080	0.624	0.624	37.6%	14,143	10,211	4,339	64%	0.47		0.804		0.381	0.381	61.9%	18,639	8,098	6,021	60%	0.26		0.690		0.181	0.181	81.9%	60.8%
46	1958	W	19,256	10,961	6,252	59%	0.26		0.953	0.080	0.599	0.599	40.1%	23,752	11,167	7,933	57%	0.43		0.856		0.366	0.366	63.4%	36,257	7,524	12,610	24%	0.24		0.659		0.158	0.158	84.2%	62.8%
47	1959	B	16,130	8,491	5,083	62%	0.27		0.819	0.080	0.536	0.536	46.4%	14,627	8,059	4,520	63%	0.47		0.688		0.324	0.324	67.6%	35,167	4,919	12,202	24%	0.24		0.519		0.124	0.124	87.6%	67.3%
48	1960	D	10,818	6,871	3,096	68%	0.29		0.732	0.080	0.524	0.524	47.6%	10,482	6,580	2,970	69%	0.51		0.608		0.311	0.311	68.9%	14,772	10,886	4,575	63%	0.27		0.841		0.230	0.230	77.0%	65.6%
49	1961	D	14,001	10,347	4,286	64%	0.28		0.919	0.080	0.615	0.615	38.5%	18,000	11,113	5,782	60%	0.45		0.853		0.384	0.384	61.6%	14,758	11,150	4,569	63%	0.27		0.855		0.234	0.234	76.6%	59.6%
50	1962	B	11,336	7,598	3,290	67%	0.29		0.771	0.080	0.545	0.545	45.5%	16,256	11,095	5,130	62%	0.46		0.852		0.392	0.392	60.8%	15,046	7,594	4,677	63%	0.27		0.663		0.181	0.181	81.9%	62.3%
51	1963	W	20,725	10,963	6,801	59%	0.26		0.953	0.080	0.592	0.592	40.8%	27,555	11,115	9,356	25%	0.25		0.853		0.211	0.211	78.9%	17,986	11,463	5,777	60%	0.26		0.872		0.230	0.230	77.0%	68.9%
52	1964	D	28,658	10,946	9,768	25%	0.25		0.952	0.080	0.294	0.294	70.6%	14,847	9,668	4,603	63%	0.47		0.775		0.363	0.363	63.7%	24,193	7,776	8,098	25%	0.25		0.673		0.169	0.169	83.1%	70.2%
53	1965	W	13,651	10,337	4,155	64%	0.28		0.919	0.080	0.618	0.618	38.2%	28,871	11,572	9,848	25%	0.25		0.878		0.215	0.215	78.5%	81,240	12,707	29,434	22%	0.22		0.939		0.211	0.211	78.9%	68.5%
54	1966	B	25,116	10,966	8,443	25%	0.25		0.953	0.080	0.299	0.299	70.1%	16,997	11,176	5,407	61%	0.46		0.856		0.390	0.390	61.0%	29,635	7,864	10,133	24%	0.24		0.678		0.166	0.166	83.4%	68.9%
55	1967	W	14,530	10,961	4,484	63%	0.27		0.953	0.080	0.631	0.631	36.9%	36,255	11,358	12,609	24%	0.24		0.866		0.207	0.207	79.3%	34,592	11,907	11,987	24%	0.24		0.896		0.215	0.215	78.5%	68.5%
56	1968	B	16,241	8,359	5,124	62%	0.27		0.812	0.080	0.531	0.531	46.9%	16,692	7,095	5,293	61%	0.46		0.636		0.291	0.291	70.9%	30,635	4,898	10,507	24%	0.24		0.517		0.126	0.126	87.4%	69.0%
57	1969	W	14,318	10,696	4,405	63%	0.28		0.938	0.080	0.624	0.624	37.6%	24,593	11,208	8,248	57%	0.43		0.858		0.365	0.365	63.5%	68,303	9,894	24,595	23%	0.23		0.787		0.179	0.179	82.1%	61.7%
58	1970	W	17,644	8,394	5,649	61%	0.26		0.814	0.080	0.524	0.524	47.6%	50,159	7,688	17,809	23%	0.23		0.668		0.155	0.155	84.5%	92,665	4,685	33,707	22%	0.22		0.506		0.113	0.113	88.7%	76.3%
59	1971	W	22,555	10,961	7,486	58%	0.25		0.953	0.080	0.584	0.584	41.6%	53,904	11,465	19,210	23%	0.23		0.872		0.201	0.201	79.9%	45,855	8,956	16,200	23%	0.23		0.737		0.172	0.172	82.8%	71.1%
60	1972	B	15,347	10,961	4,790	62%	0.27		0.953	0.080	0.625	0.625	37.5%	19,914	11,176	6,498	59%	0.44		0.856		0.378	0.378	62.2%	20,395	8,098	6,678	59%	0.26		0.690		0.178	0.178	82.2%	61.0%
61	1973	A	23,631	10,943	7,888	57%	0.25		0.952	0.080	0.579	0.579	42.1%	26,198	11,140	8,848	25%	0.25		0.854		0.212	0.212	78.8%	49,956	11,473	17,734	23%	0.23		0.872		0.202	0.202	79.8%	69.8%
62	1974	W	53,558	10,962	19,081	23%	0.23		0.953	0.080	0.282	0.282	71.8%	61,593	11,383	22,086	23%	0.23		0.868		0.198	0.198	80.2%	78,417	7,844	28,378	22%	0.22		0.676		0.152	0.152	84.8%	79.3%
63	1975	W	17,581	10,866	5,625	61%	0.26		0.947	0.080	0.606	0.606	39.4%	17,619	8,509	5,640	61%	0.45		0.712		0.322	0.322	67.8%	18,672	8,055	6,033	60%	0.26		0.688		0.180	0.180	82.0%	64.3%
64	1976	C	19,229	10,978	6,242	59%	0.26		0.954	0.080	0.600	0.600	40.0%	16,774	9,826	5,323	61%	0.46		0.783		0.358	0.358	64.2%	16,769	8,034	5,322	61%	0.27		0.687		0.184	0.184	81.6%	62.5%
65	1977	C	8,260	6,034	2,139	74%	0.31		0.687	0.080	0.527	0.527	47.3%	8,034	4,828	2,055	74%	0.55		0.514		0.283	0.283	71.7%	8,314	5,343	2,159	74%	0.31		0.541		0.170	0.170	83.0%	68.4%
66	1978	A	6,922	4,182	1,639	78%	0.33		0.587	0.080	0.475	0.475	52.5%	12,285	9,723	3,645	66%	0.49		0.778		0.382	0.382	61.8%	44,206	10,882	15,583	23%	0.23		0.841		0.197	0.197	80.3%	64.1%
67	1979	B	14,686	10,980	4,543	63%	0.27		0.954	0.080	0.631	0.631	36.9%	13,859	7,901	4,233	64%	0.48		0.680		0.324	0.324	67.6%	27,242	7,469	9,239	25%	0.25		0.656		0.162	0.162	83.8%	64.0%
68	1980	A	15,797	10,961	4,958	62%	0.27		0.953	0.080	0.621	0.621	37.9%	20,332	11,225	6,654	59%	0.44		0.859		0.378	0.378	62.2%	58,894	7,366	21,076	23%	0.23		0.651		0.149	0.149	85.1%	61.9%
69	1981	D	13,017	9,863	3,918	65%	0.28		0.893	0.080	0.608	0.608	39.2%	15,611	8,299	4,889	62%	0.46		0.701		0.325	0.325	67.5%	28,711	5,629	9,788	25%	0.25		0.557		0.137	0.137	86.3%	65.1%
70	1982	W	31,939	10,943	10,995	24%	0.24		0.952	0.080	0.292	0.292	70.8%	68,137	11,179	24,533	23%	0.23		0.857		0.194	0.194	80.6%	51,172	11,544	18,188	23%	0.23		0.876		0.203	0.203	79.7%	77.9%
71	1983	W	39,113	10,978	13,678	24%	0.24		0.954	0.080	0.287	0.287	71.3%	55,416	8,635	19,776	23%	0.23		0.719		0.165	0.165	83.5%	59,148	5,573	21,171	23%	0.23		0.554		0.127	0.127	87.3%	81.4%
72	1984	W	62,800	5,366	22,537	23%	0.23		0.650	0.080	0.210	0.210	79.0%	82,951	6,098	30,074	22%	0.22		0.582		0.131	0.131	86.9%	47,354	4,212	16,760	23%	0.23		0.480		0.112	0.112	88.8%	85.4%
73	1985	D	33,781	10,961	11,684	24%	0.24		0.953	0.080	0.290	0.290	71.0%	23,880	10,333	7,981	57%	0.43		0.811		0.347	0.347	65.3%	16,799	8,079	5,333	61%	0.27		0.689		0.184	0.184	81.6%	70.8%
74	1986	W	9,546	6,793	2,620	71%	0.30		0.728	0.080	0.537	0.537	46.3%	15,722	11,181	4,930	62%	0.46		0.857		0.397	0.397	60.3%	21,544	11,444	7,107	58%	0.26		0.871		0.223	0.223	77.7%	61.2%
75	1987	D	11,130	8,349	3,213	68%	0.29		0.812	0.080	0.575	0.575	42.5%	13,429	10,306	4,072	64%	0.48		0.809		0.388	0.388	61.2%	16,734	6,976	5,309	61%	0.27		0.630		0.168	0.168	83.2%	62.0%
76	1988	C	8,448	4,946	2,210	73%	0.31		0.628	0.080	0.481	0.481	51.9%	15,842	11,105	4,975	62%	0.46		0.853		0.394	0.394	60.6%	25,530	11,299	8,598	25%	0.25		0.863		0.215	0.215	78.5%	62.9%
77	1989	D	8,989	6,170	2,412	72%	0.31		0.694	0.080	0.521	0.521	47.9%	9,294	6,777	2,526	71%	0.53		0.619		0.327	0.327	67.3%	12,498	9,056	3,724	66%	0.28		0.742		0.211	0.211	78.9%	65.4%
78	1990	C	11,506	7,581	3,353	67%	0.29		0.770	0.080	0.542	0.542	45.8%	14,594	10,409	4,508	63%	0.47		0.815		0.384	0.384	61.6%	21,334	9,807	7,029	58%	0.26		0.782		0.201	0.201	79.9%	62.2%
79	1991	C	8,142	4,877	2,095	74%	0.32		0.624	0.080	0.483	0.483	51.7%	8,669	4,759	2,292	73%	0.54		0.510		0.275	0.275	72.5%	6,851	3,316	1,612	78%	0.33		0.432		0.143	0.143	85.7%	70.6%
80	1992	C	7,488	4,536	1,851	76%	0.32		0.606	0.080	0.480	0.480	52.0%	7,455	4,603	1,838	76%	0.56		0.501		0.283	0.283	71.7%	12,140	8,967	3,590	66%	0.29		0.737		0.211	0.211	78.9%	68.6%
81																																			Average:	66.79%

82 Formulas: Sacramento River Late Fall Run Smolt Survival Model
83
84

Row			
85	C10 ='Study 467 Flow Data'!B7	Q10 ='Study 467 Flow Data'!C7	AE10 ='Study 467 Flow Data'!D7
86	D10 ='Study 467 Flow Data'!L7 (HIDDEN)	R10 ='Study 467 Flow Data'!M7 (HIDDEN)	AF10 ='Study 467 Flow Data'!N7 (HIDDEN)
87	E10 ='Study 467 Flow Data'!V7 (HIDDEN)	S10 ='Study 467 Flow Data'!W7 (HIDDEN)	AG10 ='Study 467 Flow Data'!X7 (HIDDEN)
88	F10 =(D10+E10)	T10 =(R10+S10)	AH10 =(AF10+AG10)
89	G10 =0.374*C10-950	U10 =0.374*Q10-950	AI10 =0.374*AE10-950
90	H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))	V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))	AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
91	I10 =(0.133*C10+829)/(C10-G10)	W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)	AK10 =(0.133*AE10+829)/(AE10-AI10)
92	K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)	Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)	AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
93	L10 =-1.613493+(0.0319584*$T$1)	AA10 =(Y10*W10)+(Z10*(1-W10))	AO10 =(AM10*AK10)+(AN10*(1-AK10))
94	M10 =(K10*H10)+(L10*(1-H10))	AB10 =X10+AA10-(X10*AA10)	AP10 =AL10+AO10-(AL10*AO10)
95	N10 =J10+M10-(J10*M10)	AC10 =1-AB10	AQ10 =1-AP10
96	O10 =1-N10		AS10 =(O10*0.25)+(AC10*0.5)+(AQ10*0.25)

Study 467 Winter Run Smolt Survival Model

Cross Channel Closed Over 25000 cfs

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

February Water Temp 50 F

March Water Temp 55 F

April Water Temperatures based on limited historical data from USBR

FEBRUARY

Year	Water Year Type	Sac River Flow	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survivability s123**
1922	A	35,436	11,469	12,303	24%	0.24		0.926		0.222	0.222	**77.8%**
1923	B	19,050	8,660	6,175	60%	0.26		0.774		0.202	0.202	**79.8%**
1924	C	16,655	11,074	5,279	61%	0.27		0.905		0.242	0.242	**75.8%**
1925	D	45,105	11,812	15,919	23%	0.23		0.945		0.221	0.221	**77.9%**
1926	D	35,274	11,866	12,242	24%	0.24		0.948		0.227	0.227	**77.3%**
1927	W	88,337	11,776	32,088	22%	0.22		0.943		0.211	0.211	**78.9%**
1928	A	25,469	8,328	8,575	25%	0.25		0.757		0.189	0.189	**81.1%**
1929	C	18,780	11,469	6,074	60%	0.26		0.926		0.242	0.242	**75.8%**
1930	D	17,592	11,487	5,629	61%	0.26		0.927		0.246	0.246	**75.4%**
1931	C	12,640	10,983	3,777	65%	0.28		0.900		0.255	0.255	**74.5%**
1932	D	15,403	12,309	4,811	62%	0.27		0.971		0.264	0.264	**73.6%**
1933	C	13,324	11,595	4,033	65%	0.28		0.933		0.261	0.261	**73.9%**
1934	C	13,018	11,739	3,919	65%	0.28		0.941		0.265	0.265	**73.5%**
1935	B	13,000	5,059	3,912	65%	0.28		0.580		0.163	0.163	**83.7%**
1936	B	53,442	11,631	19,037	23%	0.23		0.935		0.216	0.216	**78.4%**
1937	B	32,033	12,586	11,030	24%	0.24		0.986		0.239	0.239	**76.1%**
1938	W	82,359	8,228	29,852	22%	0.22		0.751		0.169	0.169	**83.1%**
1939	D	19,032	8,210	6,168	60%	0.26		0.750		0.196	0.196	**80.4%**
1940	A	47,722	12,309	16,898	23%	0.23		0.971		0.226	0.226	**77.4%**
1941	W	75,031	10,065	27,112	23%	0.23		0.850		0.192	0.192	**80.8%**
1942	W	78,344	8,246	28,351	23%	0.23		0.752		0.169	0.169	**83.1%**
1943	W	52,253	8,300	18,593	23%	0.23		0.755		0.174	0.174	**82.6%**
1944	D	27,451	7,962	9,317	25%	0.25		0.737		0.182	0.182	**81.8%**
1945	B	39,451	8,642	13,805	24%	0.24		0.773		0.183	0.183	**81.7%**
1946	B	23,588	8,696	7,872	57%	0.25		0.776		0.196	0.196	**80.4%**
1947	D	20,563	11,001	6,741	59%	0.26		0.901		0.232	0.232	**76.8%**
1948	B	11,109	10,031	3,205	68%	0.29		0.848		0.248	0.248	**75.2%**
1949	D	16,133	11,469	5,084	62%	0.27		0.926		0.249	0.249	**75.1%**
1950	B	36,372	11,793	12,653	24%	0.24		0.944		0.225	0.225	**77.5%**
1951	A	60,572	8,967	21,704	23%	0.23		0.791		0.181	0.181	**81.9%**
1952	W	62,499	8,762	22,425	23%	0.23		0.780		0.178	0.178	**82.2%**
1953	W	28,341	8,336	9,650	25%	0.25		0.757		0.186	0.186	**81.4%**
1954	A	57,151	8,931	20,424	23%	0.23		0.789		0.181	0.181	**81.9%**
1955	D	16,295	11,505	5,144	62%	0.27		0.928		0.249	0.249	**75.1%**
1956	W	61,543	8,658	22,067	23%	0.23		0.774		0.177	0.177	**82.3%**
1957	A	33,149	9,057	11,448	24%	0.24		0.796		0.192	0.192	**80.8%**
1958	W	65,740	9,327	23,637	23%	0.23		0.810		0.184	0.184	**81.6%**
1959	B	50,075	8,336	17,778	23%	0.23		0.757		0.176	0.176	**82.4%**
1960	D	27,051	11,143	9,167	25%	0.25		0.909		0.225	0.225	**77.5%**
1961	D	33,347	9,831	11,522	24%	0.24		0.838		0.202	0.202	**79.8%**
1962	B	46,707	11,163	16,518	23%	0.23		0.910		0.212	0.212	**78.8%**
1963	W	54,846	12,694	19,562	23%	0.23		0.992		0.228	0.228	**77.2%**
1964	D	17,246	8,640	5,500	61%	0.27		0.773		0.206	0.206	**79.4%**
1965	W	33,329	12,208	11,515	24%	0.24		0.966		0.233	0.233	**76.7%**
1966	B	26,775	8,696	9,064	25%	0.25		0.776		0.192	0.192	**80.8%**
1967	W	43,106	8,895	15,172	23%	0.23		0.787		0.185	0.185	**81.5%**
1968	B	54,520	8,050	19,440	23%	0.23		0.741		0.171	0.171	**82.9%**
1969	W	67,486	7,454	24,290	23%	0.23		0.709		0.161	0.161	**83.9%**
1970	W	57,565	7,850	20,579	23%	0.23		0.731		0.168	0.168	**83.2%**
1971	W	28,521	8,967	9,717	25%	0.25		0.791		0.194	0.194	**80.6%**
1972	B	24,217	9,075	8,107	57%	0.25		0.797		0.200	0.200	**80.0%**
1973	A	70,961	9,669	25,589	23%	0.23		0.829		0.188	0.188	**81.2%**
1974	W	41,918	8,678	14,727	24%	0.24		0.775		0.183	0.183	**81.7%**
1975	W	58,807	8,931	21,044	23%	0.23		0.789		0.181	0.181	**81.9%**
1976	C	19,523	8,536	6,352	59%	0.26		0.768		0.200	0.200	**80.0%**
1977	C	7,256	5,798	1,764	77%	0.33		0.620		0.202	0.202	**79.8%**
1978	A	51,371	12,406	18,263	23%	0.23		0.977		0.226	0.226	**77.4%**
1979	B	42,044	8,210	14,774	24%	0.24		0.750		0.177	0.177	**82.3%**
1980	A	69,453	7,771	25,025	23%	0.23		0.726		0.165	0.165	**83.5%**
1981	D	29,674	8,336	10,148	24%	0.24		0.757		0.185	0.185	**81.5%**
1982	W	65,650	9,417	23,603	23%	0.23		0.815		0.185	0.185	**81.5%**
1983	W	82,917	7,112	30,061	22%	0.22		0.691		0.155	0.155	**84.5%**
1984	W	36,004	5,285	12,515	24%	0.24		0.592		0.142	0.142	**85.8%**
1985	D	22,381	8,895	7,420	58%	0.25		0.787		0.200	0.200	**80.0%**
1986	W	99,825	12,748	36,385	22%	0.22		0.995		0.221	0.221	**77.9%**
1987	D	23,030	5,851	7,663	58%	0.25		0.623		0.158	0.158	**84.2%**
1988	C	11,248	10,205	3,257	67%	0.29		0.858		0.250	0.250	**75.0%**
1989	D	9,093	8,354	2,451	72%	0.31		0.758		0.233	0.233	**76.7%**
1990	C	17,754	8,715	5,690	60%	0.26		0.777		0.206	0.206	**79.4%**
1991	C	8,211	6,932	2,121	74%	0.32		0.681		0.215	0.215	**78.5%**
1992	C	31,415	11,300	10,799	24%	0.24		0.917		0.223	0.223	**77.7%**

MARCH

Year	Sac River Flow	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survivability s123**
1922	31,551	8,034	10,850	0.24	0.24		0.830	0.144	0.311	0.311	**68.9%**
1923	17,337	8,652	5,534	0.61	0.27		0.864	0.144	0.335	0.335	**66.5%**
1924	8,603	7,286	2,268	0.73	0.31		0.790	0.144	0.345	0.345	**65.5%**
1925	18,557	10,083	5,990	0.60	0.26		0.941	0.144	0.353	0.353	**64.7%**
1926	16,019	11,205	5,041	0.62	0.27		1.000	0.144	0.375	0.375	**62.5%**
1927	43,863	7,611	15,455	0.23	0.23		0.808	0.144	0.300	0.300	**70.0%**
1928	86,229	8,652	31,300	0.22	0.22		0.864	0.144	0.305	0.305	**69.5%**
1929	14,670	7,579	4,537	0.63	0.27		0.806	0.144	0.326	0.326	**67.4%**
1930	30,852	8,944	10,589	0.24	0.24		0.880	0.144	0.323	0.323	**67.7%**
1931	9,319	7,709	2,535	0.71	0.30		0.813	0.144	0.348	0.348	**65.2%**
1932	10,116	8,619	2,833	0.69	0.30		0.862	0.144	0.359	0.359	**64.1%**
1933	10,994	10,945	3,162	0.68	0.29		0.988	0.144	0.391	0.391	**60.9%**
1934	12,214	10,863	3,618	0.66	0.29		0.983	0.144	0.384	0.384	**61.6%**
1935	24,916	11,498	8,369	0.57	0.25		1.000	0.144	0.358	0.358	**64.2%**
1936	34,202	8,391	11,842	0.24	0.24		0.850	0.144	0.314	0.314	**68.6%**
1937	37,260	8,229	12,985	0.24	0.24		0.841	0.144	0.310	0.310	**69.0%**
1938	78,634	7,595	28,459	0.22	0.22		0.807	0.144	0.293	0.293	**70.7%**
1939	16,394	7,611	5,181	0.61	0.27		0.808	0.144	0.322	0.322	**67.8%**
1940	63,606	9,871	22,839	0.23	0.23		0.930	0.144	0.323	0.323	**67.7%**
1941	58,581	8,066	20,959	0.23	0.23		0.832	0.144	0.302	0.302	**69.8%**
1942	27,095	8,229	9,184	0.25	0.25		0.841	0.144	0.317	0.317	**68.3%**
1943	64,598	8,278	23,210	0.23	0.23		0.844	0.144	0.303	0.303	**69.7%**
1944	25,094	8,245	8,435	0.25	0.25		0.842	0.144	0.319	0.319	**68.1%**
1945	27,030	7,497	9,159	0.25	0.25		0.801	0.144	0.307	0.307	**69.3%**
1946	23,533	8,668	7,851	0.57	0.25		0.865	0.144	0.326	0.326	**67.4%**
1947	21,874	8,408	7,231	0.58	0.26		0.851	0.144	0.325	0.325	**67.5%**
1948	16,735	7,238	5,309	0.61	0.27		0.787	0.144	0.316	0.316	**68.4%**
1949	41,813	9,318	14,688	0.24	0.24		0.900	0.144	0.322	0.322	**67.8%**
1950	23,615	8,684	7,882	0.57	0.25		0.866	0.144	0.326	0.326	**67.4%**
1951	29,323	8,928	10,017	0.24	0.24		0.879	0.144	0.324	0.324	**67.6%**
1952	57,524	8,180	20,564	0.23	0.23		0.838	0.144	0.303	0.303	**69.7%**
1953	24,899	8,343	8,362	0.57	0.25		0.847	0.144	0.320	0.320	**68.0%**
1954	49,538	8,912	17,577	0.23	0.23		0.878	0.144	0.314	0.314	**68.6%**
1955	15,158	8,473	4,719	0.63	0.27		0.854	0.144	0.338	0.338	**66.2%**
1956	36,674	8,278	12,766	0.24	0.24		0.844	0.144	0.311	0.311	**68.9%**
1957	44,383	8,814	15,649	0.23	0.23		0.873	0.144	0.315	0.315	**68.5%**
1958	93,612	8,310	34,061	0.22	0.22		0.845	0.144	0.301	0.301	**69.9%**
1959	21,760	8,343	7,188	0.58	0.26		0.847	0.144	0.324	0.324	**67.6%**
1960	21,809	10,620	7,207	0.58	0.26		0.970	0.144	0.355	0.355	**64.5%**
1961	21,338	8,148	7,030	0.58	0.26		0.837	0.144	0.322	0.322	**67.8%**
1962	27,014	8,570	9,153	0.25	0.25		0.859	0.144	0.321	0.321	**67.9%**
1963	32,641	8,684	11,258	0.24	0.24		0.866	0.144	0.319	0.319	**68.1%**
1964	16,345	8,928	5,163	0.62	0.27		0.879	0.144	0.341	0.341	**65.9%**
1965	21,386	8,082	7,048	0.58	0.26		0.833	0.144	0.321	0.321	**67.9%**
1966	28,689	8,668	9,780	0.25	0.25		0.865	0.144	0.321	0.321	**67.9%**
1967	54,483	7,529	19,427	0.23	0.23		0.803	0.144	0.296	0.296	**70.4%**
1968	36,788	7,742	12,809	0.24	0.24		0.815	0.144	0.304	0.304	**69.6%**
1969	45,326	6,733	16,002	0.23	0.23		0.760	0.144	0.288	0.288	**71.2%**
1970	35,812	7,335	12,444	0.24	0.24		0.793	0.144	0.299	0.299	**70.1%**
1971	51,506	8,928	18,313	0.23	0.23		0.879	0.144	0.314	0.314	**68.6%**
1972	32,933	8,798	11,367	0.24	0.24		0.872	0.144	0.320	0.320	**68.0%**
1973	47,554	8,700	16,835	0.23	0.23		0.866	0.144	0.312	0.312	**68.8%**
1974	100,199	8,668	36,524	0.22	0.22		0.865	0.144	0.304	0.304	**69.6%**
1975	75,999	8,928	27,474	0.23	0.23		0.879	0.144	0.310	0.310	**69.0%**
1976	18,361	8,652	5,917	0.60	0.26		0.864	0.144	0.333	0.333	**66.7%**
1977	6,863	3,708	1,617	0.78	0.33		0.597	0.144	0.295	0.295	**70.5%**
1978	46,465	8,115	16,428	0.23	0.23		0.835	0.144	0.305	0.305	**69.5%**
1979	32,592	8,229	11,239	0.24	0.24		0.841	0.144	0.313	0.313	**68.7%**
1980	36,479	7,578	12,693	0.24	0.24		0.806	0.144	0.302	0.302	**69.8%**
1981	32,494	8,343	11,203	0.24	0.24		0.847	0.144	0.314	0.314	**68.6%**
1982	69,087	8,896	24,889	0.23	0.23		0.877	0.144	0.310	0.310	**69.0%**
1983	81,935	4,684	29,694	0.22	0.22		0.650	0.144	0.258	0.258	**74.2%**
1984	36,495	7,416	12,699	0.24	0.24		0.797	0.144	0.300	0.300	**70.0%**
1985	21,809	8,912	7,207	0.58	0.26		0.878	0.144	0.332	0.332	**66.8%**
1986	72,535	6,245	26,178	0.23	0.23		0.734	0.144	0.277	0.277	**72.3%**
1987	29,876	6,863	10,224	0.24	0.24		0.767	0.144	0.296	0.296	**70.4%**
1988	7,075	5,350	1,696	0.77	0.33		0.686	0.144	0.322	0.322	**67.8%**
1989	46,611	11,189	16,483	0.23	0.23		1.000	0.144	0.344	0.344	**65.6%**
1990	15,483	6,603	4,841	0.62	0.27		0.753	0.144	0.309	0.309	**69.1%**
1991	30,429	11,319	10,430	0.24	0.24		1.000	0.144	0.353	0.353	**64.7%**
1992	20,102	10,913	6,568	0.59	0.26		0.986	0.144	0.362	0.362	**63.8%**

APRIL

Year	Sac River Flow	CVP + SWF Exports	Calculated Steamboat & Sutter Slough flows	Percent	X-Channel Closed	Water temp f	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survivability s123**	**Weighted Total Survival**
1922	22,822	9,545	7,585	0.58	0.25	58.5	0.002	0.975	0.256	0.438	0.440	**56.0%**	**66.21%**
1923	24,418	10,100	8,182	0.57	0.25	58.3	0.000	1.000	0.250	0.438	0.438	**56.2%**	**65.11%**
1924	7,630	571	1,904	0.76	0.32	61.5	0.128	0.544	0.352	0.414	0.489	**51.1%**	**62.49%**
1925	22,906	11,226	7,617	0.58	0.25	59.1	0.027	1.000	0.275	0.459	0.474	**52.6%**	**62.78%**
1926	18,268	10,738	5,882	0.60	0.26	61.6	0.133	1.000	0.355	0.525	0.588	**41.2%**	**58.04%**
1927	48,215	9,764	17,082	0.23	0.23	56.8	0.000	0.956	0.202	0.377	0.377	**62.3%**	**68.85%**
1928	29,208	10,083	9,974	0.25	0.25	58.7	0.011	1.000	0.262	0.443	0.449	**55.1%**	**66.67%**
1929	7,075	5,395	1,696	0.77	0.33	56.3	0.000	0.711	0.186	0.359	0.359	**64.1%**	**67.52%**
1930	13,713	9,344	4,179	0.64	0.28	59.6	0.048	0.984	0.291	0.484	0.509	**49.1%**	**63.12%**
1931	13,377	4,268	4,053	0.64	0.28	62.8	0.183	0.767	0.393	0.498	0.590	**41.0%**	**59.15%**
1932	10,890	537	3,123	0.68	0.29	58.9	0.019	0.496	0.269	0.335	0.348	**65.2%**	**65.69%**
1933	10,083	1,765	2,821	0.69	0.30	60.1	0.069	0.584	0.307	0.390	0.432	**56.8%**	**61.35%**
1934	8,067	689	2,067	0.74	0.32	63.6	0.217	0.588	0.419	0.473	0.587	**41.3%**	**57.08%**
1935	23,696	11,142	7,912	0.57	0.25	58.9	0.019	1.000	0.269	0.453	0.464	**53.6%**	**63.54%**
1936	22,032	9,781	7,290	0.58	0.26	59.7	0.053	1.000	0.294	0.474	0.502	**49.8%**	**64.24%**
1937	22,503	9,579	7,466	0.58	0.25	58.8	0.015	0.982	0.266	0.448	0.456	**54.4%**	**65.53%**
1938	47,173	7,713	16,693	0.23	0.23	56.3	0.000	0.836	0.186	0.337	0.337	**66.3%**	**70.97%**
1939	10,571	7,983	3,004	0.69	0.30	63.3	0.204	0.977	0.409	0.577	0.663	**33.7%**	**59.18%**
1940	41,980	10,285	14,751	0.24	0.24	57.4	0.000	0.995	0.221	0.403	0.403	**59.7%**	**66.54%**
1941	42,367	9,311	14,895	0.24	0.24	56.9	0.000	0.934	0.205	0.376	0.376	**62.4%**	**69.01%**
1942	43,308	9,647	15,247	0.23	0.23	56.5	0.000	0.945	0.192	0.369	0.369	**63.1%**	**68.69%**
1943	29,410	9,663	10,049	0.24	0.24	58.8	0.015	0.987	0.266	0.442	0.450	**55.0%**	**66.92%**
1944	10,806	9,580	3,091	0.68	0.29	58.4	0.000	0.975	0.253	0.465	0.465	**53.5%**	**65.52%**
1945	12,167	9,764	3,600	0.66	0.29	60.6	0.090	1.000	0.323	0.517	0.560	**44.0%**	**63.31%**
1946	13,159	10,100	3,971	0.65	0.28	60.7	0.095	1.000	0.326	0.515	0.561	**43.9%**	**62.02%**
1947	13,310	10,133	4,028	0.65	0.28	62.5	0.170	1.000	0.384	0.556	0.632	**36.8%**	**59.52%**
1948	22,990	11,091	7,648	0.58	0.25	56.6	0.000	1.000	0.195	0.399	0.399	**60.1%**	**66.78%**
1949	13,461	9,815	4,084	0.64	0.28	61.7	0.137	1.000	0.358	0.538	0.601	**39.9%**	**60.37%**
1950	19,276	10,067	6,259	0.59	0.26	61.3	0.120	1.000	0.346	0.516	0.574	**42.6%**	**61.25%**
1951	15,495	9,092	4,845	0.62	0.27	59.9	0.061	0.976	0.301	0.484	0.515	**48.5%**	**63.71%**
1952	56,652	8,773	20,238	0.23	0.23	55.5	0.000	0.879	0.160	0.325	0.325	**67.5%**	**70.63%**
1953	16,621	9,764	5,266	0.61	0.27	58.8	0.015	0.992	0.266	0.460	0.468	**53.2%**	**65.28%**
1954	39,863	10,386	13,959	0.24	0.24	58.4	0.000	1.000	0.253	0.430	0.430	**57.0%**	**66.83%**
1955	12,722	9,008	3,808	0.65	0.28	56.4	0.000	0.908	0.189	0.392	0.392	**60.8%**	**65.74%**
1956	20,436	10,386	6,693	0.59	0.26	59.7	0.053	1.000	0.294	0.477	0.504	**49.6%**	**64.84%**
1957	13,596	10,184	4,135	0.64	0.28	60.5	0.086	1.000	0.320	0.510	0.552	**44.8%**	**63.00%**
1958	52,282	9,663	18,603	0.23	0.23	57.4	0.000	0.962	0.221	0.392	0.392	**60.8%**	**68.71%**
1959	11,680	8,470	3,418	0.67	0.29	63	0.191	0.998	0.400	0.572	0.654	**34.6%**	**59.63%**
1960	9,730	6,857	2,689	0.70	0.30	59.5	0.044	0.848	0.288	0.457	0.481	**51.9%**	**62.41%**
1961	11,781	7,932	3,456	0.67	0.29	60.1	0.069	0.917	0.307	0.483	0.519	**48.1%**	**63.48%**
1962	12,403	10,487	3,689	0.66	0.28	61.8	0.141	1.000	0.362	0.543	0.608	**39.2%**	**60.70%**
1963	69,457	10,117	25,027	0.23	0.23	53.7	0.000	0.920	0.103	0.288	0.288	**71.2%**	**70.23%**
1964	13,697	9,008	4,173	0.64	0.28	59.3	0.036	0.960	0.282	0.471	0.489	**51.1%**	**63.18%**
1965	45,173	9,932	15,945	0.23	0.23	56.9	0.000	0.967	0.205	0.383	0.383	**61.7%**	**67.19%**
1966	12,806	9,966	3,839	0.65	0.28	61.9	0.145	1.000	0.365	0.544	0.610	**39.0%**	**60.88%**
1967	39,930	8,722	13,984	0.24	0.24	53.8	0.000	0.846	0.106	0.281	0.281	**71.9%**	**72.29%**
1968	11,293	8,470	3,274	0.67	0.29	61.5	0.128	0.971	0.352	0.532	0.592	**40.8%**	**62.68%**
1969	44,787	7,496	15,800	0.23	0.23	56.4	0.000	0.827	0.189	0.338	0.338	**66.2%**	**71.33%**
1970	15,108	8,470	4,700	0.63	0.27	58.8	0.015	0.922	0.266	0.445	0.453	**54.7%**	**67.17%**
1971	20,755	10,386	6,812	0.59	0.26	58.7	0.011	1.000	0.262	0.452	0.458	**54.2%**	**65.82%**
1972	12,890	9,647	3,871	0.65	0.28	58.5	0.002	0.980	0.256	0.460	0.461	**53.9%**	**65.31%**
1973	19,511	10,117	6,347	0.59	0.26	61.3	0.120	1.000	0.346	0.516	0.574	**42.6%**	**62.54%**
1974	33,208	10,100	11,470	0.24	0.24	56.8	0.000	0.974	0.202	0.388	0.388	**61.2%**	**68.63%**
1975	25,763	10,386	8,685	0.25	0.25	56.8	0.000	0.990	0.202	0.398	0.398	**60.2%**	**68.05%**
1976	9,428	7,613	2,576	0.71	0.30	58.9	0.019	0.878	0.269	0.454	0.464	**53.6%**	**64.47%**
1977	16,990	9,008	5,404	0.61	0.27	64.3	0.246	1.000	0.441	0.590	0.691	**30.9%**	**59.85%**
1978	38,703	8,672	13,525	0.24	0.24	56.9	0.000	0.899	0.205	0.370	0.370	**63.0%**	**68.56%**
1979	17,696	9,647	5,668	0.60	0.26	59.8	0.057	1.000	0.298	0.483	0.513	**48.7%**	**64.49%**
1980	19,814	8,554	6,460	0.59	0.26	57.1	0.000	0.896	0.211	0.389	0.389	**61.1%**	**68.96%**
1981	16,990	9,764	5,404	0.61	0.27	61.5	0.128	1.000	0.352	0.525	0.586	**41.4%**	**62.11%**
1982	75,843	8,975	27,415	0.23	0.23	54.1	0.000	0.865	0.115	0.284	0.284	**71.6%**	**71.37%**
1983	68,298	6,958	24,593	0.23	0.23	55	0.000	0.772	0.144	0.287	0.287	**71.3%**	**74.70%**
1984	16,301	9,647	5,147	0.62	0.27	59.7	0.053	1.000	0.294	0.484	0.511	**48.9%**	**65.72%**
1985	13,327	10,335	4,034	0.65	0.28	60.8	0.099	1.000	0.330	0.517	0.565	**43.5%**	**61.55%**
1986	20,772	7,714	6,819	0.59	0.26	60.4	0.082	0.910	0.317	0.470	0.513	**48.7%**	**65.92%**
1987	8,789	5,092	2,337	0.72	0.31	65.7	0.305	0.864	0.486	0.603	0.724	**27.6%**	**59.32%**
1988	10,016	2,067	2,796	0.70	0.30	59.9	0.061	0.596	0.301	0.389	0.427	**57.3%**	**65.59%**
1989	24,133	11,074	8,076	0.57	0.25	61.4	0.124	1.000	0.349	0.513	0.573	**42.7%**	**60.18%**
1990	8,420	6,621	2,199	0.73	0.31	61.6	0.133	0.873	0.355	0.517	0.581	**41.9%**	**62.25%**
1991	16,033	10,990	5,046	0.62	0.27	60.8	0.099	1.000	0.330	0.510	0.559	**44.1%**	**60.33%**
1992	11,730	9,899	3,437	0.67	0.29	61.2	0.116	1.000	0.342	0.532	0.586	**41.4%**	**58.89%**
												Average:	**63.78%**

Formulas: Winter Run Salmon Smolt Survival Model

```
C10 ='Study 467 Flow Data'!E7
D10 ='Study 467 Flow Data'!O7        (HIDDEN)
E10 ='Study 467 Flow Data'!Y7        (HIDDEN)
F10 =(D9+E9)
G10 =0.374*C9-950
H10 =IF(C9>$G$2,(0.133*C9+829)/(C9-G9),(0.293*C9+2090)/(C9-G9))
I10 =(0.133*C9+829)/(C9-G9)
K10 =(-0.5916024)+(0.017968*$M$1)+(0.000054*F9)
M10 =(K9*I9)+L9*(1-I9)
N10 =J9+M9-(J9*M9)
O10 =1-N9

Q10 ='Study 467 Flow Data'!F7
R10 ='Study 467 Flow Data'!P7        (HIDDEN)
S10 ='Study 467 Flow Data'!Z7        (HIDDEN)
T10 =(R9+S9)
U10 =0.374*Q9-950
V10 =IF(Q9>$G$2,(0.133*Q9+829)/(Q9-U9),(0.293*Q9+2090)/(Q9-U9))
Y10 =(0.133*Q9+829)/(Q9-U9)
W10 =IF(((-0.5916024)+(0.017968*$M$2)+(0.000054*T9))>1,1,((-0.5916024)+(0.017968*$M$2)+(0.000054*T9)))
Z10 =-1.613493+(0.0319584*$M$2)
AA10 =(Y9*W9)+Z9*(1-W9)
AB10 =X9+AA9-(X9*AA9)
AC10 =1-AB9

AE10 ='Study 467 Flow Data'!G7       (HIDDEN)
AF10 ='Study 467 Flow Data'!Q7       (HIDDEN)
AG10 ='Study 467 Flow Data'!AA7
AH10 =AF9+AG9
AI10 =0.374*AE9-950
AJ10 =IF(AE9>$G$2,(0.133*AE9+829)/(AE9-AI9),(0.293*AE9+2090)/(AE9-AI9))
AK10 =(0.133*AE9+829)/(AE9-AI9)
AM10 =IF((-2.45925+(0.0420748*AL9))<0,0,(-2.45925+(0.0420748*AL9)))
AN10 =IF(((-0.5916024)+(0.017968*AL9)+(0.000054*AH9))>1,1,((-0.5916024)+(0.017968*AL9)+(0.000054*AH
AO10 =-1.613493+(0.0319584*AL9)
AP10 =(AN9*AK9)+(AO9*(1-AK9))
AQ10 =AM9+AP9-(AM9*AP9)
```

Study 469 Winter Run Smolt Survival Model

Cross Channel Closed Over 25000 cfs

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

February Water Temp 50 F

March Water Temp 55 F

April Water Temperatures based on limited historical data from USBR

FEBRUARY

Year	Water Year Type	Sac River Flow	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	m2 (Calculated Mortality)	m3	m23	m123	**Calculated Survivability s123**
1922	A	34,403	10,607	11,917	24%	0.24		0.880		0.211	0.211	**78.9%**
1923	B	24,325	6,662	8,148	57%	0.25		0.667		0.167	0.167	**83.3%**
1924	C	17,501	9,003	5,595	61%	0.27		0.793		0.210	0.210	**79.0%**
1925	D	44,698	11,804	15,767	23%	0.23		0.944		0.221	0.221	**77.9%**
1926	D	36,717	11,735	12,782	24%	0.24		0.940		0.224	0.224	**77.6%**
1927	W	87,642	11,495	31,828	22%	0.22		0.928		0.207	0.207	**79.3%**
1928	A	28,340	8,632	9,649	25%	0.25		0.773		0.190	0.190	**81.0%**
1929	C	18,537	7,974	5,983	60%	0.26		0.737		0.194	0.194	**80.6%**
1930	D	15,675	6,785	4,912	62%	0.27		0.673		0.182	0.182	**81.8%**
1931	C	11,083	5,226	3,195	68%	0.29		0.589		0.172	0.172	**82.8%**
1932	D	14,488	10,130	4,469	63%	0.28		0.854		0.235	0.235	**76.5%**
1933	C	11,976	6,535	3,529	66%	0.29		0.660		0.189	0.189	**81.1%**
1934	C	12,740	5,786	3,815	65%	0.28		0.619		0.175	0.175	**82.5%**
1935	B	12,448	5,100	3,706	66%	0.28		0.582		0.165	0.165	**83.5%**
1936	B	50,696	12,750	18,010	23%	0.23		0.995		0.231	0.231	**76.9%**
1937	B	33,459	9,260	11,564	24%	0.24		0.807		0.195	0.195	**80.5%**
1938	W	82,366	8,208	29,855	22%	0.22		0.750		0.168	0.168	**83.2%**
1939	D	19,024	6,561	6,165	60%	0.26		0.661		0.173	0.173	**82.7%**
1940	A	44,171	12,740	15,570	23%	0.23		0.995		0.233	0.233	**76.7%**
1941	W	75,037	11,167	27,114	23%	0.23		0.910		0.205	0.205	**79.5%**
1942	W	78,349	8,236	28,353	23%	0.23		0.752		0.169	0.169	**83.1%**
1943	W	52,259	8,280	18,595	23%	0.23		0.754		0.174	0.174	**82.6%**
1944	D	31,007	8,199	10,647	24%	0.24		0.750		0.182	0.182	**81.8%**
1945	B	40,622	8,240	14,243	24%	0.24		0.752		0.178	0.178	**82.2%**
1946	B	24,371	8,254	8,165	57%	0.25		0.753		0.189	0.189	**81.1%**
1947	D	21,569	8,247	7,117	58%	0.26		0.752		0.192	0.192	**80.8%**
1948	B	16,122	6,057	5,080	62%	0.27		0.634		0.171	0.171	**82.9%**
1949	D	16,272	8,421	5,136	62%	0.27		0.762		0.205	0.205	**79.5%**
1950	B	35,170	11,777	12,204	24%	0.24		0.943		0.226	0.226	**77.4%**
1951	A	60,566	8,956	21,702	23%	0.23		0.790		0.181	0.181	**81.9%**
1952	W	64,731	8,202	23,259	23%	0.23		0.750		0.171	0.171	**82.9%**
1953	W	28,344	8,341	9,651	25%	0.25		0.757		0.186	0.186	**81.4%**
1954	A	57,158	8,904	20,427	23%	0.23		0.788		0.181	0.181	**81.9%**
1955	D	16,298	8,149	5,145	62%	0.27		0.747		0.201	0.201	**79.9%**
1956	W	63,748	8,958	22,892	23%	0.23		0.791		0.180	0.180	**82.0%**
1957	A	33,144	8,885	11,446	24%	0.24		0.787		0.190	0.190	**81.0%**
1958	W	62,959	8,299	22,597	23%	0.23		0.755		0.172	0.172	**82.8%**
1959	B	50,082	8,316	17,781	23%	0.23		0.756		0.175	0.175	**82.5%**
1960	D	27,163	11,527	9,209	25%	0.25		0.929		0.230	0.230	**77.0%**
1961	D	32,844	11,357	11,334	24%	0.24		0.920		0.222	0.222	**77.8%**
1962	B	45,216	12,739	15,961	23%	0.23		0.995		0.233	0.233	**76.7%**
1963	W	58,694	12,538	21,002	23%	0.23		0.984		0.225	0.225	**77.5%**
1964	D	19,698	7,907	6,417	59%	0.26		0.734		0.191	0.191	**80.9%**
1965	W	33,326	10,023	11,514	24%	0.24		0.848		0.205	0.205	**79.5%**
1966	B	26,777	8,658	9,065	25%	0.25		0.774		0.192	0.192	**80.8%**
1967	W	43,101	7,488	15,170	23%	0.23		0.711		0.167	0.167	**83.3%**
1968	B	56,470	6,847	20,170	23%	0.23		0.677		0.155	0.155	**84.5%**
1969	W	67,482	7,464	24,288	23%	0.23		0.710		0.161	0.161	**83.9%**
1970	W	57,565	5,272	20,579	23%	0.23		0.591		0.136	0.136	**86.4%**
1971	W	29,208	8,584	9,974	25%	0.25		0.770		0.189	0.189	**81.1%**
1972	B	25,083	8,896	8,431	25%	0.25		0.787		0.197	0.197	**80.3%**
1973	A	70,967	8,691	25,592	23%	0.23		0.776		0.176	0.176	**82.4%**
1974	W	41,926	8,640	14,730	24%	0.24		0.773		0.182	0.182	**81.8%**
1975	W	58,811	8,883	21,045	23%	0.23		0.786		0.180	0.180	**82.0%**
1976	C	20,229	8,481	6,616	59%	0.26		0.765		0.198	0.198	**80.2%**
1977	C	12,195	2,081	3,611	66%	0.29		0.419		0.120	0.120	**88.0%**
1978	A	49,884	9,046	17,707	23%	0.23		0.795		0.184	0.184	**81.6%**
1979	B	42,046	8,202	14,775	24%	0.24		0.750		0.177	0.177	**82.3%**
1980	A	71,932	8,018	25,953	23%	0.23		0.740		0.167	0.167	**83.3%**
1981	D	29,672	6,894	10,147	24%	0.24		0.679		0.166	0.166	**83.4%**
1982	W	65,645	8,902	23,601	23%	0.23		0.788		0.179	0.179	**82.1%**
1983	W	82,910	6,212	30,058	22%	0.22		0.642		0.144	0.144	**85.6%**
1984	W	37,282	5,342	12,993	24%	0.24		0.595		0.142	0.142	**85.8%**
1985	D	20,137	8,891	6,581	59%	0.26		0.787		0.204	0.204	**79.6%**
1986	W	95,483	11,608	34,761	22%	0.22		0.934		0.208	0.208	**79.2%**
1987	D	23,028	5,488	7,662	58%	0.25		0.603		0.153	0.153	**84.7%**
1988	C	17,684	6,754	5,664	60%	0.26		0.672		0.178	0.178	**82.2%**
1989	D	11,877	2,736	3,492	66%	0.29		0.455		0.131	0.131	**86.9%**
1990	C	16,946	7,801	5,388	61%	0.27		0.728		0.194	0.194	**80.6%**
1991	C	10,999	1,233	3,164	68%	0.29		0.373		0.109	0.109	**89.1%**
1992	C	32,538	8,490	11,219	24%	0.24		0.765		0.185	0.185	**81.5%**

MARCH

Year	Sac River Flow	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	m2 (Calculated Mortality)	m3	m23	m123	**Calculated Survivability s123**
1922	31,554	7,926	10,851	0.24	0.24		0.825	0.144	0.309	0.309	**69.1%**
1923	17,173	7,589	5,473	0.61	0.27		0.806	0.144	0.320	0.320	**68.0%**
1924	12,116	3,173	3,581	0.66	0.29		0.568	0.144	0.265	0.265	**73.5%**
1925	18,563	7,879	5,993	0.60	0.26		0.822	0.144	0.322	0.322	**67.8%**
1926	18,944	7,724	6,135	0.60	0.26		0.814	0.144	0.319	0.319	**68.1%**
1927	43,865	7,395	15,456	0.23	0.23		0.796	0.144	0.297	0.297	**70.3%**
1928	86,223	8,649	31,297	0.22	0.22		0.864	0.144	0.305	0.305	**69.5%**
1929	16,934	6,832	5,383	0.61	0.27		0.766	0.144	0.310	0.310	**69.0%**
1930	30,090	6,999	10,304	0.24	0.24		0.775	0.144	0.298	0.298	**70.2%**
1931	8,762	3,337	2,327	0.72	0.31		0.577	0.144	0.278	0.278	**72.2%**
1932	12,082	5,214	3,569	0.66	0.29		0.678	0.144	0.297	0.297	**70.3%**
1933	10,393	4,630	2,937	0.69	0.30		0.647	0.144	0.293	0.293	**70.7%**
1934	14,785	4,519	4,580	0.63	0.27		0.641	0.144	0.280	0.280	**72.0%**
1935	24,918	11,207	8,369	0.57	0.25		1.000	0.144	0.358	0.358	**64.2%**
1936	33,448	11,261	11,560	0.24	0.24		1.000	0.144	0.351	0.351	**64.9%**
1937	38,456	8,106	13,433	0.24	0.24		0.834	0.144	0.308	0.308	**69.2%**
1938	78,637	8,191	28,460	0.22	0.22		0.839	0.144	0.301	0.301	**69.9%**
1939	16,390	6,666	5,180	0.61	0.27		0.757	0.144	0.309	0.309	**69.1%**
1940	59,094	8,875	21,151	0.23	0.23		0.876	0.144	0.312	0.312	**68.8%**
1941	58,575	8,071	20,957	0.23	0.23		0.832	0.144	0.302	0.302	**69.8%**
1942	27,099	8,232	9,185	0.25	0.25		0.841	0.144	0.317	0.317	**68.3%**
1943	64,601	8,281	23,211	0.23	0.23		0.844	0.144	0.303	0.303	**69.7%**
1944	25,100	8,232	8,437	0.25	0.25		0.841	0.144	0.319	0.319	**68.1%**
1945	27,033	8,359	9,160	0.25	0.25		0.848	0.144	0.318	0.318	**68.2%**
1946	23,649	8,649	7,895	0.57	0.25		0.864	0.144	0.326	0.326	**67.4%**
1947	22,506	8,199	7,467	0.58	0.25		0.839	0.144	0.321	0.321	**67.9%**
1948	19,234	7,665	6,244	0.59	0.26		0.811	0.144	0.318	0.318	**68.2%**
1949	41,715	10,894	14,651	0.24	0.24		0.985	0.144	0.342	0.342	**65.8%**
1950	22,654	8,849	7,523	0.58	0.25		0.874	0.144	0.330	0.330	**67.0%**
1951	29,827	8,924	10,205	0.24	0.24		0.879	0.144	0.324	0.324	**67.6%**
1952	57,518	8,159	20,562	0.23	0.23		0.837	0.144	0.303	0.303	**69.7%**
1953	24,893	7,549	8,360	0.57	0.25		0.804	0.144	0.309	0.309	**69.1%**
1954	49,536	8,910	17,576	0.23	0.23		0.878	0.144	0.314	0.314	**68.6%**
1955	17,670	7,256	5,659	0.61	0.26		0.788	0.144	0.315	0.315	**68.5%**
1956	36,676	7,182	12,767	0.24	0.24		0.784	0.144	0.297	0.297	**70.3%**
1957	44,377	8,609	15,647	0.23	0.23		0.862	0.144	0.312	0.312	**68.8%**
1958	93,616	8,296	34,062	0.22	0.22		0.845	0.144	0.300	0.300	**70.0%**
1959	23,365	7,269	7,789	0.57	0.25		0.789	0.144	0.307	0.307	**69.3%**
1960	22,599	7,498	7,502	0.58	0.25		0.802	0.144	0.311	0.311	**68.9%**
1961	20,944	8,056	6,883	0.59	0.26		0.832	0.144	0.321	0.321	**67.9%**
1962	27,660	7,716	9,395	0.25	0.25		0.813	0.144	0.309	0.309	**69.1%**
1963	32,645	8,811	11,259	0.24	0.24		0.872	0.144	0.320	0.320	**68.0%**
1964	17,198	6,999	5,482	0.61	0.27		0.775	0.144	0.312	0.312	**68.8%**
1965	21,381	8,514	7,046	0.58	0.26		0.856	0.144	0.327	0.327	**67.3%**
1966	28,683	8,649	9,777	0.25	0.25		0.864	0.144	0.321	0.321	**67.9%**
1967	54,488	7,508	19,429	0.23	0.23		0.802	0.144	0.296	0.296	**70.4%**
1968	36,789	7,100	12,809	0.24	0.24		0.780	0.144	0.296	0.296	**70.4%**
1969	45,319	6,901	15,999	0.23	0.23		0.769	0.144	0.290	0.290	**71.0%**
1970	35,819	7,218	12,446	0.24	0.24		0.786	0.144	0.298	0.298	**70.2%**
1971	50,896	8,924	18,085	0.23	0.23		0.879	0.144	0.314	0.314	**68.6%**
1972	32,930	8,098	11,366	0.24	0.24		0.834	0.144	0.311	0.311	**68.9%**
1973	47,552	8,677	16,834	0.23	0.23		0.865	0.144	0.312	0.312	**68.8%**
1974	34,827	8,649	12,075	0.24	0.24		0.864	0.144	0.317	0.317	**68.3%**
1975	75,998	8,910	27,473	0.23	0.23		0.878	0.144	0.310	0.310	**69.0%**
1976	20,062	7,853	6,553	0.59	0.26		0.821	0.144	0.319	0.319	**68.1%**
1977	7,538	2,042	1,869	0.76	0.32		0.507	0.144	0.261	0.261	**73.9%**
1978	46,209	6,023	16,332	0.23	0.23		0.722	0.144	0.279	0.279	**72.1%**
1979	32,593	8,232	11,240	0.24	0.24		0.841	0.144	0.313	0.313	**68.7%**
1980	36,480	7,099	12,694	0.24	0.24		0.780	0.144	0.296	0.296	**70.4%**
1981	32,501	7,099	11,205	0.24	0.24		0.780	0.144	0.298	0.298	**70.2%**
1982	69,087	8,869	24,889	0.23	0.23		0.876	0.144	0.310	0.310	**69.0%**
1983	81,934	4,670	29,693	0.22	0.22		0.649	0.144	0.257	0.257	**74.3%**
1984	36,503	7,215	12,702	0.24	0.24		0.786	0.144	0.298	0.298	**70.2%**
1985	21,803	8,847	7,204	0.58	0.26		0.874	0.144	0.331	0.331	**66.9%**
1986	72,539	8,406	26,180	0.23	0.23		0.851	0.144	0.304	0.304	**69.6%**
1987	29,552	6,478	10,102	0.24	0.24		0.746	0.144	0.292	0.292	**70.8%**
1988	11,012	3,770	3,168	0.68	0.29		0.600	0.144	0.278	0.278	**72.2%**
1989	42,478	11,181	14,937	0.24	0.24		1.000	0.144	0.346	0.346	**65.4%**
1990	14,838	5,861	4,599	0.63	0.27		0.713	0.144	0.300	0.300	**70.0%**
1991	29,675	11,303	10,148	0.24	0.24		1.000	0.144	0.354	0.354	**64.6%**
1992	20,106	8,238	6,570	0.59	0.26		0.841	0.144	0.325	0.325	**67.5%**

APRIL

Year	Sac River Flow	CVP + SWF Exports	Calculated Steamboat & Sutter Slough flows	Percent	X-Channel Closed	Water temp f	m1	m2 (Calculated Mortality)	m3	m23	m123	**Calculated Survivability s123**	**Weighted Total Survival**
1922	22,816	8,378	7,583	0.58	0.25	58.5	0.002	0.912	0.256	0.422	0.424	**57.6%**	**66.91%**
1923	22,724	7,926	7,549	0.58	0.25	58.3	0.000	0.884	0.250	0.411	0.411	**58.9%**	**67.24%**
1924	8,072	2,790	2,069	0.74	0.32	61.5	0.128	0.664	0.352	0.451	0.521	**47.9%**	**66.50%**
1925	22,651	6,950	7,521	0.58	0.25	59.1	0.027	0.846	0.275	0.420	0.436	**56.4%**	**65.69%**
1926	21,513	6,672	7,096	0.58	0.26	61.6	0.133	0.876	0.355	0.488	0.556	**44.4%**	**62.20%**
1927	48,222	8,084	17,085	0.23	0.23	56.8	0.000	0.866	0.202	0.356	0.356	**64.4%**	**69.69%**
1928	29,212	7,362	9,975	0.25	0.25	58.7	0.011	0.861	0.262	0.409	0.415	**58.5%**	**67.67%**
1929	8,536	2,473	2,242	0.73	0.31	56.3	0.000	0.554	0.186	0.301	0.301	**69.9%**	**70.80%**
1930	12,640	3,912	3,777	0.65	0.28	59.6	0.048	0.691	0.291	0.404	0.433	**56.7%**	**67.64%**
1931	9,199	2,968	2,490	0.71	0.31	62.8	0.183	0.697	0.393	0.486	0.580	**42.0%**	**64.49%**
1932	13,081	5,373	3,942	0.65	0.28	58.9	0.019	0.757	0.269	0.406	0.417	**58.3%**	**67.50%**
1933	12,734	4,124	3,813	0.65	0.28	60.1	0.069	0.711	0.307	0.421	0.462	**53.8%**	**66.98%**
1934	12,849	3,578	3,856	0.65	0.28	63.6	0.217	0.744	0.419	0.511	0.617	**38.3%**	**63.25%**
1935	24,199	8,634	8,100	0.57	0.25	58.9	0.019	0.933	0.269	0.436	0.447	**55.3%**	**64.02%**
1936	21,281	8,370	7,009	0.58	0.26	59.7	0.053	0.933	0.294	0.458	0.487	**51.3%**	**62.42%**
1937	23,507	8,005	7,842	0.57	0.25	58.8	0.015	0.897	0.266	0.425	0.434	**56.6%**	**66.90%**
1938	47,172	8,411	16,692	0.23	0.23	56.3	0.000	0.874	0.186	0.346	0.346	**65.4%**	**70.30%**
1939	12,230	4,146	3,624	0.66	0.29	63.3	0.204	0.770	0.409	0.512	0.612	**38.8%**	**61.81%**
1940	41,731	8,278	14,657	0.24	0.24	57.4	0.000	0.887	0.221	0.378	0.378	**62.2%**	**67.86%**
1941	42,372	9,308	14,897	0.24	0.24	56.9	0.000	0.933	0.205	0.376	0.376	**62.4%**	**68.83%**
1942	43,308	8,918	15,247	0.23	0.23	56.5	0.000	0.905	0.192	0.360	0.360	**64.0%**	**68.96%**
1943	29,406	9,458	10,048	0.24	0.24	58.8	0.015	0.976	0.266	0.440	0.448	**55.2%**	**67.00%**
1944	9,823	4,244	2,724	0.70	0.30	58.4	0.000	0.687	0.253	0.383	0.383	**61.7%**	**67.97%**
1945	11,753	6,258	3,446	0.67	0.29	60.6	0.090	0.835	0.323	0.471	0.519	**48.1%**	**63.98%**
1946	12,226	5,960	3,623	0.66	0.29	60.7	0.095	0.821	0.326	0.467	0.518	**48.2%**	**63.44%**
1947	13,800	4,910	4,211	0.64	0.28	62.5	0.170	0.797	0.384	0.499	0.584	**41.6%**	**61.69%**
1948	23,043	6,820	7,668	0.58	0.25	56.6	0.000	0.794	0.195	0.347	0.347	**65.3%**	**69.25%**
1949	13,210	5,088	3,991	0.65	0.28	61.7	0.137	0.792	0.358	0.480	0.551	**44.9%**	**61.30%**
1950	19,276	6,250	6,259	0.59	0.26	61.3	0.120	0.847	0.346	0.476	0.539	**46.1%**	**62.10%**
1951	14,778	6,370	4,577	0.63	0.27	59.9	0.061	0.829	0.301	0.445	0.479	**52.1%**	**64.82%**
1952	56,648	8,766	20,236	0.23	0.23	55.5	0.000	0.879	0.160	0.325	0.325	**67.5%**	**70.74%**
1953	16,177	5,650	5,100	0.62	0.27	58.8	0.015	0.770	0.266	0.401	0.410	**59.0%**	**67.63%**
1954	39,868	7,362	13,961	0.24	0.24	58.4	0.000	0.855	0.253	0.395	0.395	**60.5%**	**67.86%**
1955	9,473	3,672	2,593	0.71	0.30	56.4	0.000	0.620	0.189	0.320	0.320	**68.0%**	**69.86%**
1956	20,437	7,982	6,693	0.59	0.26	59.7	0.053	0.912	0.294	0.454	0.483	**51.7%**	**66.25%**
1957	21,193	6,438	6,976	0.58	0.26	60.5	0.086	0.843	0.320	0.454	0.501	**49.9%**	**64.69%**
1958	52,284	9,662	18,604	0.23	0.23	57.4	0.000	0.962	0.221	0.392	0.392	**60.8%**	**68.88%**
1959	10,494	3,788	2,975	0.69	0.30	63	0.191	0.745	0.400	0.502	0.597	**40.3%**	**62.29%**
1960	13,548	4,031	4,117	0.64	0.28	59.5	0.044	0.695	0.288	0.402	0.428	**57.2%**	**66.43%**
1961	12,785	3,541	3,832	0.65	0.28	60.1	0.069	0.679	0.307	0.412	0.453	**54.7%**	**65.22%**
1962	15,418	5,586	4,816	0.62	0.27	61.8	0.141	0.820	0.362	0.486	0.559	**44.1%**	**62.58%**
1963	69,458	8,084	25,027	0.23	0.23	53.7	0.000	0.810	0.103	0.263	0.263	**73.7%**	**70.93%**
1964	8,953	3,512	2,398	0.72	0.31	59.3	0.036	0.664	0.282	0.399	0.421	**57.9%**	**67.12%**
1965	45,179	8,540	15,947	0.23	0.23	56.9	0.000	0.892	0.205	0.366	0.366	**63.4%**	**67.75%**
1966	12,803	4,976	3,838	0.65	0.28	61.9	0.145	0.789	0.365	0.485	0.559	**44.1%**	**62.43%**
1967	39,945	9,549	13,982	0.24	0.24	53.8	0.000	0.891	0.106	0.292	0.292	**70.8%**	**72.22%**
1968	15,621	5,248	4,892	0.62	0.27	61.5	0.128	0.797	0.352	0.472	0.540	**46.0%**	**64.91%**
1969	44,787	7,506	15,800	0.23	0.23	56.4	0.000	0.827	0.189	0.338	0.338	**66.2%**	**71.20%**
1970	16,604	6,600	5,260	0.61	0.27	58.8	0.015	0.821	0.266	0.414	0.423	**57.7%**	**68.56%**
1971	21,954	6,596	7,261	0.58	0.26	58.7	0.011	0.819	0.262	0.405	0.411	**58.9%**	**67.31%**
1972	12,452	4,698	3,707	0.66	0.28	58.5	0.002	0.713	0.256	0.386	0.387	**61.3%**	**68.11%**
1973	19,512	7,442	6,347	0.59	0.26	61.3	0.120	0.912	0.346	0.493	0.554	**44.6%**	**63.32%**
1974	33,208	9,320	11,470	0.24	0.24	56.8	0.000	0.932	0.202	0.378	0.378	**62.2%**	**68.23%**
1975	25,763	8,766	8,685	0.25	0.25	56.8	0.000	0.902	0.202	0.376	0.376	**62.4%**	**68.72%**
1976	9,434	3,002	2,578	0.71	0.30	58.9	0.019	0.629	0.269	0.378	0.390	**61.0%**	**67.53%**
1977	9,148	2,996	2,471	0.71	0.31	64.3	0.246	0.726	0.441	0.528	0.645	**35.5%**	**64.21%**
1978	38,698	7,518	13,523	0.24	0.24	56.9	0.000	0.837	0.205	0.355	0.355	**64.5%**	**71.05%**
1979	17,702	6,852	5,671	0.60	0.26	59.8	0.057	0.853	0.298	0.445	0.476	**52.4%**	**65.59%**
1980	19,818	6,946	6,462	0.59	0.26	57.1	0.000	0.809	0.211	0.366	0.366	**63.4%**	**69.96%**
1981	16,998	5,450	5,407	0.61	0.27	61.5	0.128	0.808	0.352	0.473	0.541	**45.9%**	**64.62%**
1982	75,838	9,173	27,413	0.23	0.23	54.1	0.000	0.876	0.115	0.287	0.287	**71.3%**	**71.40%**
1983	68,301	6,963	24,595	0.23	0.23	55	0.000	0.773	0.144	0.287	0.287	**71.3%**	**74.85%**
1984	17,869	6,844	5,733	0.60	0.26	59.7	0.053	0.851	0.294	0.441	0.471	**52.9%**	**67.07%**
1985	13,328	4,250	4,035	0.65	0.28	60.8	0.099	0.730	0.330	0.442	0.497	**50.3%**	**63.59%**
1986	20,778	7,553	6,821	0.59	0.26	60.4	0.082	0.902	0.317	0.467	0.511	**48.9%**	**64.65%**
1987	12,368	3,494	3,676	0.66	0.28	65.7	0.305	0.778	0.486	0.569	0.701	**29.9%**	**60.38%**
1988	8,620	2,850	2,274	0.73	0.31	59.9	0.061	0.639	0.301	0.406	0.442	**55.8%**	**68.60%**
1989	23,637	5,650	7,890	0.57	0.25	61.4	0.124	0.817	0.349	0.467	0.533	**46.7%**	**62.62%**
1990	12,441	3,534	3,703	0.66	0.28	61.6	0.133	0.706	0.355	0.455	0.527	**47.3%**	**64.56%**
1991	15,284	4,249	4,766	0.62	0.27	60.8	0.099	0.730	0.330	0.439	0.494	**50.6%**	**63.61%**
1992	12,474	3,732	3,715	0.66	0.28	61.2	0.116	0.710	0.342	0.447	0.511	**48.9%**	**63.77%**
												Average:	**65.56%**

Formulas: Winter Run Salmon Smolt Survival Model

C10 ='Study 467 Flow Data'!E7
D10 ='Study 467 Flow Data'!O7 (HIDDEN)
E10 ='Study 467 Flow Data'!Y7 (HIDDEN)
F10 =(D9+E9)
G10 =0.374*C9-950
H10 =IF(C9>$G$2,(0.133*C9+829)/(C9-G9),(0.293*C9+2090)/(C9-G9))
I10 =(0.133*C9+829)/(C9-G9)
K10 =(-0.5916024)+(0.017968*$M$1)+(0.000054*F9)
M10 =(K9*I9)+L9*(1-I9)
N10 =J9+M9-(J9*M9)
O10 =1-N9

Q10 ='Study 467 Flow Data'!F7
R10 ='Study 467 Flow Data'!P7 (HIDDEN)
S10 ='Study 467 Flow Data'!Z7 (HIDDEN)
T10 =(R9+S9)
U10 =0.374*Q9-950
V10 =IF(Q9>$G$2,(0.133*Q9+829)/(Q9-U9),(0.293*Q9+2090)/(Q9-U9))
Y10 =(0.133*Q9+829)/(Q9-U9)
W10 =IF(((-0.5916024)+(0.017968*$M$2)+(0.000054*T9))>1,1,((-0.5916024)+(0.017968*$M$2)+(0.000054*T9)))
Z10 =-1.613493+(0.0319584*$M$2)
AA10 =(Y9*W9)+Z9*(1-W9)
AB10 =X9+AA9-(X9*AA9)
AC10 =1-AB9

(HIDDEN)
AE10 ='Study 467 Flow Data'!G7 (HIDDEN)
AF10 ='Study 467 Flow Data'!Q7
AG10 ='Study 467 Flow Data'!AA7
AH10 =AF9+AG9
AI10 =0.374*AE9-950
AJ10 =IF(AE9>$G$2,(0.133*AE9+829)/(AE9-AI9),(0.293*AE9+2090)/(AE9-AI9))
AK10 =(0.133*AE9+829)/(AE9-AI9)
AM10 =IF((-2.45925+(0.0420748*AL9))<0,0,(-2.45925+(0.0420748*AL9)))
AN10 =IF(((-0.5916024)+(0.017968*AL9)+(0.000054*AH9))>1,1,((-0.5916024)+(0.017968*AL9)+(0.000054*AH9
AO10 =-1.613493+(0.0319584*AL9)
AP10 =(AN9*AK9)+(AO9*(1-AK9))
AQ10 =AM9+AP9-(AM9*AP9)

Study 501 Winter Run Smolt Survival Model — February Water Temp 50 F — March Water Temp 55 F — April Water Temperatures based on limited historical data from USBR

Cross Channel Closed Over 25000 cfs

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

FEBRUARY

Year (A)	Water Year Type (B)	Sac River Flow (C)	CVP + SWP Exports (F)	Calculated Sutter & Steamboat Slough Q (G)	Percent (H)	X-Channel Closed (I)	m1 (J)	m2 (K)	m3 (L)	m23 (M)	m123 (N)	Calculated Survivability s123 (O)
1922	A	34,253	10,623	11,861	24%	0.24		0.880		0.212	0.212	78.8%
1923	B	22,521	4,851	7,473	58%	0.25		0.569		0.145	0.145	85.5%
1924	C	17,501	8,860	5,595	61%	0.27		0.785		0.208	0.208	79.2%
1925	D	44,695	11,803	15,766	23%	0.23		0.944		0.221	0.221	77.9%
1926	D	36,467	11,741	12,689	24%	0.24		0.941		0.225	0.225	77.5%
1927	W	86,145	11,529	31,268	22%	0.22		0.929		0.208	0.208	79.2%
1928	A	28,340	8,636	9,649	25%	0.25		0.773		0.190	0.190	81.0%
1929	C	18,537	7,863	5,983	60%	0.26		0.731		0.192	0.192	80.8%
1930	D	15,675	6,786	4,912	62%	0.27		0.673		0.182	0.182	81.8%
1931	C	11,083	5,223	3,195	68%	0.29		0.589		0.172	0.172	82.8%
1932	D	14,487	10,130	4,468	63%	0.28		0.854		0.235	0.235	76.5%
1933	C	13,116	7,048	3,955	65%	0.28		0.687		0.193	0.193	80.7%
1934	C	12,740	5,786	3,815	65%	0.28		0.619		0.175	0.175	82.5%
1935	B	11,977	4,629	3,529	66%	0.29		0.557		0.160	0.160	84.0%
1936	B	49,186	12,750	17,446	23%	0.23		0.995		0.231	0.231	76.9%
1937	B	32,775	9,652	11,308	24%	0.24		0.828		0.200	0.200	80.0%
1938	W	82,366	8,049	29,855	22%	0.22		0.741		0.166	0.166	83.4%
1939	D	19,024	6,559	6,165	60%	0.26		0.661		0.173	0.173	82.7%
1940	A	43,497	12,741	15,318	23%	0.23		0.995		0.233	0.233	76.7%
1941	W	75,037	11,184	27,114	23%	0.23		0.911		0.205	0.205	79.5%
1942	W	78,349	8,236	28,353	23%	0.23		0.752		0.169	0.169	83.1%
1943	W	52,259	8,285	18,595	23%	0.23		0.754		0.174	0.174	82.6%
1944	D	31,830	8,203	10,954	24%	0.24		0.750		0.182	0.182	81.8%
1945	B	39,754	8,323	13,918	24%	0.24		0.756		0.179	0.179	82.1%
1946	B	24,540	8,118	8,228	57%	0.25		0.745		0.187	0.187	81.3%
1947	D	21,569	8,216	7,117	58%	0.26		0.750		0.192	0.192	80.8%
1948	B	16,037	5,974	5,048	62%	0.27		0.629		0.170	0.170	83.0%
1949	D	16,132	8,362	5,083	62%	0.27		0.758		0.204	0.204	79.6%
1950	B	34,005	11,778	11,768	24%	0.24		0.943		0.227	0.227	77.3%
1951	A	60,566	8,955	21,702	23%	0.23		0.790		0.181	0.181	81.9%
1952	W	64,731	8,202	23,259	23%	0.23		0.750		0.171	0.171	82.9%
1953	W	28,344	8,341	9,651	25%	0.25		0.757		0.186	0.186	81.4%
1954	A	57,158	8,909	20,427	23%	0.23		0.788		0.181	0.181	81.9%
1955	D	16,298	7,414	5,145	62%	0.27		0.707		0.190	0.190	81.0%
1956	W	63,748	8,958	22,892	23%	0.23		0.791		0.180	0.180	82.0%
1957	A	33,144	8,887	11,446	24%	0.24		0.787		0.190	0.190	81.0%
1958	W	62,490	8,300	22,421	23%	0.23		0.755		0.172	0.172	82.8%
1959	B	50,082	8,321	17,781	23%	0.23		0.756		0.175	0.175	82.5%
1960	D	27,024	11,527	9,157	25%	0.25		0.929		0.230	0.230	77.0%
1961	D	30,815	11,297	10,575	24%	0.24		0.917		0.223	0.223	77.7%
1962	B	42,179	12,740	14,825	24%	0.24		0.995		0.234	0.234	76.6%
1963	W	57,821	12,540	20,675	23%	0.23		0.984		0.226	0.226	77.4%
1964	D	19,699	7,907	6,417	59%	0.26		0.734		0.191	0.191	80.9%
1965	W	33,076	10,179	11,420	24%	0.24		0.856		0.207	0.207	79.3%
1966	B	26,777	8,659	9,065	25%	0.25		0.774		0.192	0.192	80.8%
1967	W	43,101	7,494	15,170	23%	0.23		0.711		0.167	0.167	83.3%
1968	B	56,470	6,049	20,170	23%	0.23		0.633		0.146	0.146	85.4%
1969	W	67,482	7,008	24,288	23%	0.23		0.685		0.156	0.156	84.4%
1970	W	57,565	5,248	20,579	23%	0.23		0.590		0.135	0.135	86.5%
1971	W	28,275	7,460	9,625	25%	0.25		0.710		0.175	0.175	82.5%
1972	B	25,083	8,882	8,431	25%	0.25		0.786		0.197	0.197	80.3%
1973	A	70,967	8,693	25,592	23%	0.23		0.776		0.176	0.176	82.4%
1974	W	41,926	8,643	14,730	24%	0.24		0.774		0.182	0.182	81.8%
1975	W	58,811	8,888	21,045	23%	0.23		0.787		0.180	0.180	82.0%
1976	C	20,229	8,527	6,616	59%	0.26		0.767		0.198	0.198	80.2%
1977	C	12,276	2,115	3,641	66%	0.29		0.421		0.120	0.120	88.0%
1978	A	50,197	8,577	17,824	23%	0.23		0.770		0.179	0.179	82.1%
1979	B	41,848	8,206	14,701	24%	0.24		0.750		0.177	0.177	82.3%
1980	A	71,932	8,020	25,953	23%	0.23		0.740		0.167	0.167	83.3%
1981	D	29,672	6,487	10,147	24%	0.24		0.657		0.161	0.161	83.9%
1982	W	65,645	8,738	23,601	23%	0.23		0.779		0.177	0.177	82.3%
1983	W	82,910	6,215	30,058	22%	0.22		0.642		0.144	0.144	85.6%
1984	W	37,282	5,330	12,993	24%	0.24		0.595		0.142	0.142	85.8%
1985	D	20,136	8,894	6,581	59%	0.26		0.787		0.204	0.204	79.6%
1986	W	95,411	11,715	34,734	22%	0.22		0.939		0.209	0.209	79.1%
1987	D	23,028	5,540	7,662	58%	0.25		0.606		0.153	0.153	84.7%
1988	C	16,277	6,075	5,138	62%	0.27		0.635		0.171	0.171	82.9%
1989	D	13,134	2,761	3,962	65%	0.28		0.456		0.128	0.128	87.2%
1990	C	16,946	7,802	5,388	61%	0.27		0.728		0.194	0.194	80.6%
1991	C	11,038	1,253	3,178	68%	0.29		0.374		0.109	0.109	89.1%
1992	C	32,538	8,106	11,219	24%	0.24		0.745		0.180	0.180	82.0%

MARCH

Year	Sac River Flow (Q)	CVP + SWP exports (T)	Calculated Sutter & Steamboat Slough Q (U)	percent (V)	X-Channel Closed (W)	m1 (X)	m2 (Y)	m3 (Z)	m23 (AA)	m123 (AB)	Calculated Survivability s123 (AC)
1922	31,554	7,732	10,851	0.24	0.24		0.814	0.144	0.307	0.307	69.3%
1923	17,559	7,725	5,617	0.61	0.26		0.814	0.144	0.322	0.322	67.8%
1924	12,110	3,167	3,579	0.66	0.29		0.568	0.144	0.265	0.265	73.5%
1925	18,563	7,880	5,993	0.60	0.26		0.822	0.144	0.322	0.322	67.8%
1926	18,819	7,680	6,088	0.60	0.26		0.811	0.144	0.319	0.319	68.1%
1927	43,865	7,523	15,456	0.23	0.23		0.803	0.144	0.299	0.299	70.1%
1928	86,223	8,649	31,297	0.22	0.22		0.864	0.144	0.305	0.305	69.5%
1929	14,413	4,767	4,440	0.63	0.28		0.654	0.144	0.285	0.285	71.5%
1930	30,090	7,253	10,304	0.24	0.24		0.788	0.144	0.301	0.301	69.9%
1931	8,767	3,341	2,329	0.72	0.31		0.577	0.144	0.278	0.278	72.2%
1932	10,538	3,672	2,991	0.69	0.30		0.595	0.144	0.277	0.277	72.3%
1933	9,943	4,472	2,769	0.70	0.30		0.638	0.144	0.292	0.292	70.8%
1934	14,232	3,966	4,373	0.63	0.28		0.611	0.144	0.273	0.273	72.7%
1935	24,918	11,207	8,369	0.57	0.25		1.000	0.144	0.358	0.358	64.2%
1936	33,198	11,463	11,466	0.24	0.24		1.000	0.144	0.351	0.351	64.9%
1937	37,439	6,578	13,052	0.24	0.24		0.752	0.144	0.289	0.289	71.1%
1938	78,637	6,027	28,460	0.22	0.22		0.722	0.144	0.274	0.274	72.6%
1939	16,390	6,716	5,180	0.61	0.27		0.759	0.144	0.309	0.309	69.1%
1940	59,083	8,874	21,147	0.23	0.23		0.876	0.144	0.312	0.312	68.8%
1941	58,573	8,071	20,956	0.23	0.23		0.832	0.144	0.302	0.302	69.8%
1942	27,099	8,230	9,185	0.25	0.25		0.841	0.144	0.317	0.317	68.3%
1943	64,601	6,966	23,211	0.23	0.23		0.773	0.144	0.287	0.287	71.3%
1944	25,100	7,516	8,437	0.25	0.25		0.803	0.144	0.309	0.309	69.1%
1945	27,033	8,375	9,160	0.25	0.25		0.849	0.144	0.319	0.319	68.1%
1946	23,608	8,649	7,879	0.57	0.25		0.864	0.144	0.326	0.326	67.4%
1947	22,506	8,151	7,467	0.58	0.25		0.837	0.144	0.320	0.320	68.0%
1948	19,235	7,664	6,244	0.59	0.26		0.810	0.144	0.318	0.318	68.2%
1949	41,807	9,729	14,686	0.24	0.24		0.922	0.144	0.327	0.327	67.3%
1950	22,404	8,840	7,429	0.58	0.25		0.874	0.144	0.330	0.330	67.0%
1951	29,827	8,924	10,205	0.24	0.24		0.879	0.144	0.324	0.324	67.6%
1952	57,518	8,159	20,562	0.23	0.23		0.837	0.144	0.303	0.303	69.7%
1953	24,893	7,466	8,360	0.57	0.25		0.800	0.144	0.308	0.308	69.2%
1954	49,536	8,910	17,576	0.23	0.23		0.878	0.144	0.314	0.314	68.6%
1955	17,945	7,159	5,761	0.60	0.26		0.783	0.144	0.313	0.313	68.7%
1956	36,676	7,094	12,767	0.24	0.24		0.780	0.144	0.296	0.296	70.4%
1957	44,377	8,635	15,647	0.23	0.23		0.863	0.144	0.313	0.313	68.7%
1958	93,616	8,296	34,062	0.22	0.22		0.845	0.144	0.300	0.300	70.0%
1959	22,915	6,830	7,620	0.58	0.25		0.765	0.144	0.302	0.302	69.8%
1960	21,898	6,639	7,240	0.58	0.26		0.755	0.144	0.300	0.300	70.0%
1961	20,744	7,985	6,808	0.59	0.26		0.828	0.144	0.320	0.320	68.0%
1962	26,934	6,988	9,123	0.25	0.25		0.774	0.144	0.300	0.300	70.0%
1963	32,645	9,024	11,259	0.24	0.24		0.884	0.144	0.323	0.323	67.7%
1964	16,340	6,509	5,161	0.62	0.27		0.748	0.144	0.306	0.306	69.4%
1965	22,601	8,565	7,503	0.58	0.25		0.859	0.144	0.326	0.326	67.4%
1966	28,683	8,649	9,777	0.25	0.25		0.864	0.144	0.321	0.321	67.9%
1967	54,488	7,508	19,429	0.23	0.23		0.802	0.144	0.296	0.296	70.4%
1968	36,789	7,134	12,809	0.24	0.24		0.782	0.144	0.296	0.296	70.4%
1969	45,319	5,306	15,999	0.23	0.23		0.683	0.144	0.270	0.270	73.0%
1970	35,819	7,188	12,446	0.24	0.24		0.785	0.144	0.298	0.298	70.2%
1971	51,739	8,924	18,400	0.23	0.23		0.879	0.144	0.314	0.314	68.6%
1972	32,930	8,533	11,366	0.24	0.24		0.857	0.144	0.316	0.316	68.4%
1973	47,552	8,679	16,834	0.23	0.23		0.865	0.144	0.312	0.312	68.8%
1974	34,705	8,649	12,030	0.24	0.24		0.864	0.144	0.317	0.317	68.3%
1975	75,998	8,910	27,473	0.23	0.23		0.878	0.144	0.310	0.310	69.0%
1976	20,060	7,854	6,552	0.59	0.26		0.821	0.144	0.319	0.319	68.1%
1977	7,533	2,042	1,867	0.76	0.32		0.507	0.144	0.261	0.261	73.9%
1978	45,401	6,023	16,030	0.23	0.23		0.722	0.144	0.279	0.279	72.1%
1979	32,593	7,861	11,240	0.24	0.24		0.821	0.144	0.308	0.308	69.2%
1980	36,480	6,493	12,694	0.24	0.24		0.747	0.144	0.288	0.288	71.2%
1981	32,501	7,133	11,205	0.24	0.24		0.782	0.144	0.298	0.298	70.2%
1982	69,087	7,584	24,889	0.23	0.23		0.806	0.144	0.294	0.294	70.6%
1983	81,934	4,670	29,693	0.22	0.22		0.649	0.144	0.257	0.257	74.3%
1984	36,503	7,312	12,702	0.24	0.24		0.791	0.144	0.299	0.299	70.1%
1985	21,803	8,848	7,204	0.58	0.26		0.874	0.144	0.331	0.331	66.9%
1986	72,539	8,389	26,180	0.23	0.23		0.850	0.144	0.304	0.304	69.6%
1987	29,576	6,528	10,111	0.24	0.24		0.749	0.144	0.292	0.292	70.8%
1988	11,061	3,802	3,187	0.68	0.29		0.602	0.144	0.278	0.278	72.2%
1989	41,581	10,907	14,601	0.24	0.24		0.986	0.144	0.343	0.343	65.7%
1990	14,838	5,861	4,599	0.63	0.27		0.713	0.144	0.300	0.300	70.0%
1991	29,675	11,303	10,148	0.24	0.24		1.000	0.144	0.354	0.354	64.6%
1992	20,106	8,238	6,570	0.59	0.26		0.841	0.144	0.325	0.325	67.5%

APRIL

Year	Sac River Flow (AE)	CVP + SWP Exports (AH)	Calculated Steamboat & Sutter Slough flows (AI)	Percent (AJ)	X-Channel Closed (AK)	Water temp f (AL)	m1 (AM)	m2 (AN)	m3 (AO)	m23 (AP)	m123 (AQ)	Calculated Survivability s123 (AR)	Weighted Total Survival (AS)
1922	22,816	8,378	7,583	0.58	0.25	58.5	0.002	0.912	0.256	0.422	0.424	57.6%	67.05%
1923	22,855	7,946	7,598	0.58	0.25	58.3	0.000	0.885	0.250	0.411	0.411	58.9%	67.46%
1924	8,068	2,790	2,067	0.74	0.32	61.5	0.128	0.664	0.352	0.451	0.521	47.9%	66.53%
1925	22,651	6,950	7,521	0.58	0.25	59.1	0.027	0.846	0.275	0.420	0.436	56.4%	65.69%
1926	20,890	6,570	6,863	0.59	0.26	61.6	0.133	0.870	0.355	0.488	0.555	44.5%	62.24%
1927	48,222	8,084	17,085	0.23	0.23	56.8	0.000	0.866	0.202	0.356	0.356	64.4%	69.59%
1928	29,212	7,362	9,975	0.25	0.25	58.7	0.011	0.861	0.262	0.409	0.415	58.5%	67.67%
1929	9,029	2,952	2,427	0.72	0.31	56.3	0.000	0.579	0.186	0.307	0.307	69.3%	72.08%
1930	12,640	3,912	3,777	0.65	0.28	59.6	0.048	0.691	0.291	0.404	0.433	56.7%	67.45%
1931	9,200	2,968	2,491	0.71	0.31	62.8	0.183	0.697	0.393	0.486	0.580	42.0%	64.49%
1932	13,080	5,375	3,942	0.65	0.28	58.9	0.019	0.757	0.269	0.406	0.417	58.3%	68.61%
1933	12,736	4,123	3,813	0.65	0.28	60.1	0.069	0.711	0.307	0.421	0.462	53.8%	66.98%
1934	12,848	3,578	3,855	0.65	0.28	63.6	0.217	0.744	0.419	0.511	0.617	38.3%	63.66%
1935	24,635	8,636	8,263	0.57	0.25	58.9	0.019	0.933	0.269	0.435	0.446	55.4%	64.11%
1936	21,031	8,332	6,916	0.58	0.26	59.7	0.053	0.931	0.294	0.458	0.486	51.4%	62.41%
1937	23,257	7,963	7,748	0.57	0.25	58.8	0.015	0.895	0.266	0.425	0.433	56.7%	67.93%
1938	47,172	7,725	16,692	0.23	0.23	56.3	0.000	0.837	0.186	0.338	0.338	66.2%	72.08%
1939	12,231	4,146	3,624	0.66	0.29	63.3	0.204	0.770	0.409	0.512	0.612	38.8%	61.77%
1940	41,731	8,282	14,657	0.24	0.24	57.4	0.000	0.887	0.221	0.378	0.378	62.2%	67.86%
1941	42,372	9,308	14,897	0.24	0.24	56.9	0.000	0.933	0.205	0.376	0.376	62.4%	68.83%
1942	43,308	8,918	15,247	0.23	0.23	56.5	0.000	0.905	0.192	0.360	0.360	64.0%	68.96%
1943	29,406	9,138	10,048	0.24	0.24	58.8	0.015	0.958	0.266	0.435	0.444	55.6%	68.05%
1944	9,823	4,248	2,724	0.70	0.30	58.4	0.000	0.687	0.253	0.383	0.383	61.7%	68.53%
1945	11,753	6,264	3,446	0.67	0.29	60.6	0.090	0.836	0.323	0.471	0.519	48.1%	63.95%
1946	12,226	5,960	3,623	0.66	0.29	60.7	0.095	0.821	0.326	0.467	0.518	48.2%	63.46%
1947	13,800	4,910	4,211	0.64	0.28	62.5	0.170	0.797	0.384	0.499	0.584	41.6%	61.73%
1948	23,043	6,822	7,668	0.58	0.25	56.6	0.000	0.794	0.195	0.347	0.347	65.3%	69.26%
1949	13,210	5,088	3,991	0.65	0.28	61.7	0.137	0.792	0.358	0.480	0.551	44.9%	62.15%
1950	19,026	6,208	6,166	0.60	0.26	61.3	0.120	0.845	0.346	0.476	0.539	46.1%	62.08%
1951	14,837	6,380	4,599	0.63	0.27	59.9	0.061	0.829	0.301	0.445	0.479	52.1%	64.82%
1952	56,648	7,846	20,236	0.23	0.23	55.5	0.000	0.829	0.160	0.314	0.314	68.6%	71.08%
1953	16,177	5,650	5,100	0.62	0.27	58.8	0.015	0.770	0.266	0.401	0.410	59.0%	67.70%
1954	39,868	7,362	13,961	0.24	0.24	58.4	0.000	0.855	0.253	0.395	0.395	60.5%	67.86%
1955	9,473	3,672	2,593	0.71	0.30	56.4	0.000	0.620	0.189	0.320	0.320	68.0%	70.10%
1956	20,437	7,982	6,693	0.59	0.26	59.7	0.053	0.912	0.294	0.454	0.483	51.7%	66.31%
1957	21,241	6,446	6,994	0.58	0.26	60.5	0.086	0.844	0.320	0.454	0.501	49.9%	64.67%
1958	52,284	9,516	18,604	0.23	0.23	57.4	0.000	0.954	0.221	0.390	0.390	61.0%	68.93%
1959	10,494	3,788	2,975	0.69	0.30	63	0.191	0.745	0.400	0.502	0.597	40.3%	62.61%
1960	13,518	4,025	4,106	0.64	0.28	59.5	0.044	0.695	0.288	0.402	0.428	57.2%	67.06%
1961	12,794	3,542	3,835	0.65	0.28	60.1	0.069	0.680	0.307	0.412	0.453	54.7%	65.25%
1962	15,427	5,596	4,820	0.62	0.27	61.8	0.141	0.821	0.362	0.486	0.559	44.1%	63.08%
1963	69,458	8,084	25,027	0.23	0.23	53.7	0.000	0.810	0.103	0.263	0.263	73.7%	70.76%
1964	8,953	3,512	2,398	0.72	0.31	59.3	0.036	0.664	0.282	0.399	0.421	57.9%	67.43%
1965	44,152	8,539	15,563	0.23	0.23	56.9	0.000	0.892	0.205	0.366	0.366	63.4%	67.76%
1966	12,803	4,976	3,838	0.65	0.28	61.9	0.145	0.789	0.365	0.485	0.559	44.1%	62.43%
1967	39,925	8,907	13,982	0.24	0.24	53.8	0.000	0.856	0.106	0.283	0.283	71.7%	72.47%
1968	15,608	5,246	4,887	0.62	0.27	61.5	0.128	0.797	0.352	0.472	0.540	46.0%	65.01%
1969	44,787	7,504	15,800	0.23	0.23	56.4	0.000	0.827	0.189	0.338	0.338	66.2%	72.42%
1970	16,601	6,598	5,259	0.61	0.27	58.8	0.015	0.821	0.266	0.414	0.423	57.7%	68.59%
1971	21,907	6,588	7,243	0.58	0.26	58.7	0.011	0.819	0.262	0.404	0.411	58.9%	67.51%
1972	12,452	4,698	3,707	0.66	0.28	58.5	0.002	0.713	0.256	0.386	0.387	61.3%	67.78%
1973	19,512	7,444	6,347	0.59	0.26	61.3	0.120	0.912	0.346	0.493	0.554	44.6%	63.31%
1974	33,208	9,320	11,470	0.24	0.24	56.8	0.000	0.932	0.202	0.378	0.378	62.2%	68.22%
1975	25,763	8,768	8,685	0.25	0.25	56.8	0.000	0.902	0.202	0.376	0.376	62.4%	68.72%
1976	9,434	3,001	2,578	0.71	0.30	58.9	0.019	0.629	0.269	0.378	0.390	61.0%	67.52%
1977	9,145	2,996	2,470	0.71	0.31	64.3	0.246	0.726	0.441	0.528	0.645	35.5%	64.20%
1978	38,698	7,517	13,523	0.24	0.24	56.9	0.000	0.837	0.205	0.355	0.355	64.5%	71.11%
1979	17,702	6,852	5,671	0.60	0.26	59.8	0.057	0.853	0.298	0.445	0.476	52.4%	65.87%
1980	19,818	6,902	6,462	0.59	0.26	57.1	0.000	0.807	0.211	0.366	0.366	63.4%	70.42%
1981	16,998	5,450	5,407	0.61	0.27	61.5	0.128	0.808	0.352	0.473	0.541	45.9%	64.67%
1982	75,838	8,944	27,413	0.23	0.23	54.1	0.000	0.863	0.115	0.284	0.284	71.6%	72.40%
1983	68,301	6,963	24,595	0.23	0.23	55	0.000	0.773	0.144	0.287	0.287	71.3%	74.85%
1984	17,880	6,846	5,737	0.60	0.26	59.7	0.053	0.851	0.294	0.441	0.471	52.9%	67.00%
1985	13,328	4,250	4,035	0.65	0.28	60.8	0.099	0.730	0.330	0.442	0.497	50.3%	63.59%
1986	20,528	7,510	6,727	0.59	0.26	60.4	0.082	0.899	0.317	0.467	0.511	48.9%	64.65%
1987	12,400	3,499	3,688	0.66	0.28	65.7	0.305	0.778	0.486	0.569	0.701	29.9%	60.33%
1988	8,630	2,852	2,278	0.73	0.31	59.9	0.061	0.639	0.301	0.406	0.442	55.8%	68.67%
1989	23,637	5,650	7,890	0.57	0.25	61.4	0.124	0.817	0.349	0.467	0.533	46.7%	62.82%
1990	12,441	3,534	3,703	0.66	0.28	61.6	0.133	0.706	0.355	0.455	0.527	47.3%	64.56%
1991	15,284	4,248	4,766	0.62	0.27	60.8	0.099	0.730	0.330	0.439	0.494	50.6%	63.60%
1992	12,473	3,732	3,715	0.66	0.28	61.2	0.116	0.710	0.342	0.447	0.511	48.9%	63.83%
												Average:	65.76%

Formulas: Winter Run Salmon Smolt Survival Model

```
C10 ='Study 467 Flow Data'!E7
D10 ='Study 467 Flow Data'!O7     (HIDDEN)
E10 ='Study 467 Flow Data'!Y7     (HIDDEN)
F10 =(D9+E9)
G10 =0.374*C9-950
H10 =IF(C9>$G$2,(0.133*C9+829)/(C9-G9),(0.293*C9+2090)/(C9-G9))
I10 =(0.133*C9+829)/(C9-G9)
K10 =(-0.5916024)+(0.017968*$M$1)+(0.000054*F9)
M10 =(K9*I9)+L9*(1-I9)
N10 =J9+M9-(J9*M9)
O10 =1-N9

Q10 ='Study 467 Flow Data'!F7
R10 ='Study 467 Flow Data'!P7     (HIDDEN)
S10 ='Study 467 Flow Data'!Z7     (HIDDEN)
T10 =(R9+S9)
U10 =0.374*Q9-950
V10 =IF(Q9>$G$2,(0.133*Q9+829)/(Q9-U9),(0.293*Q9+2090)/(Q9-U9))
Y10 =(0.133*Q9+829)/(Q9-U9)
W10 =IF(((-0.5916024)+(0.017968*$M$2)+(0.000054*T9))>1,1,((-0.5916024)+(0.017968*$M$2)+(0.000054*T9)))
Z10 =-1.613493+(0.0319584*$M$2)
AA10 =(Y9*W9)+Z9*(1-W9)
AB10 =X9+AA9-(X9*AA9)
AC10 =1-AB9

AE10 ='Study 467 Flow Data'!G7     (HIDDEN)
AF10 ='Study 467 Flow Data'!Q7     (HIDDEN)
AG10 ='Study 467 Flow Data'!AA7
AH10 =AF9+AG9
AI10 =0.374*AE9-950
AJ10 =IF(AE9>$G$2,(0.133*AE9+829)/(AE9-AI9),(0.293*AE9+2090)/(AE9-AI9))
AK10 =(0.133*AE9+829)/(AE9-AI9)
AM10 =IF((-2.45925+(0.0420748*AL9))<0,0,(-2.45925+(0.0420748*AL9)))
AN10 =IF(((-0.5916024)+(0.017968*AL9)+(0.000054*AH9))>1,1,((-0.5916024)+(0.017968*AL9)+(0.000054*AH
AO10 =-1.613493+(0.0319584*AL9)
AP10 =(AN9*AK9)+(AO9*(1-AK9))
AQ10 =AM9+AP9-(AM9*AP9)
```

Study 501A Winter Run Smolt Survival Model — February Water Temp 50 F — April Water Temperatures based on limited historical data from USBR

Cross Channel Closed Over 25000 cfs — March Water Temp 55 F

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

FEBRUARY

Row	Year	Water Year Type	Sac River Flow	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survivability s123
10	1922	A	34,253	10,623	11,861	24%	0.24		0.880		0.212	0.212	**78.8%**
11	1923	B	22,238	4,552	7,367	58%	0.25		0.553		0.141	0.141	**85.9%**
12	1924	C	17,251	8,889	5,502	61%	0.27		0.787		0.209	0.209	**79.1%**
13	1925	D	44,691	10,771	15,764	23%	0.23		0.888		0.208	0.208	**79.2%**
14	1926	D	34,967	11,735	12,128	24%	0.24		0.940		0.226	0.226	**77.4%**
15	1927	W	86,738	11,430	31,490	22%	0.22		0.924		0.207	0.207	**79.3%**
16	1928	A	27,680	6,514	9,402	25%	0.25		0.659		0.163	0.163	**83.7%**
17	1929	C	17,787	9,195	5,702	60%	0.26		0.803		0.212	0.212	**78.8%**
18	1930	D	15,675	6,786	4,912	62%	0.27		0.673		0.182	0.182	**81.8%**
19	1931	C	11,083	5,225	3,195	68%	0.29		0.589		0.172	0.172	**82.8%**
20	1932	D	14,487	10,126	4,468	63%	0.28		0.854		0.235	0.235	**76.5%**
21	1933	C	11,975	6,535	3,529	66%	0.29		0.660		0.189	0.189	**81.1%**
22	1934	C	12,740	5,785	3,815	65%	0.28		0.619		0.175	0.175	**82.5%**
23	1935	B	11,977	4,628	3,529	66%	0.29		0.557		0.160	0.160	**84.0%**
24	1936	B	47,463	12,749	16,801	23%	0.23		0.995		0.232	0.232	**76.8%**
25	1937	B	32,025	9,481	11,027	24%	0.24		0.819		0.198	0.198	**80.2%**
26	1938	W	82,366	5,166	29,855	22%	0.22		0.586		0.131	0.131	**86.9%**
27	1939	D	19,024	5,525	6,165	60%	0.26		0.605		0.158	0.158	**84.2%**
28	1940	A	43,629	12,740	15,367	23%	0.23		0.995		0.233	0.233	**76.7%**
29	1941	W	75,037	10,955	27,114	23%	0.23		0.898		0.203	0.203	**79.7%**
30	1942	W	78,349	5,632	28,353	23%	0.23		0.611		0.137	0.137	**86.3%**
31	1943	W	52,259	6,020	18,595	23%	0.23		0.632		0.146	0.146	**85.4%**
32	1944	D	31,089	5,424	10,677	24%	0.24		0.600		0.146	0.146	**85.4%**
33	1945	B	38,099	8,294	13,299	24%	0.24		0.755		0.179	0.179	**82.1%**
34	1946	B	23,843	5,783	7,967	57%	0.25		0.619		0.156	0.156	**84.4%**
35	1947	D	21,069	8,203	6,930	58%	0.26		0.750		0.193	0.193	**80.7%**
36	1948	B	16,018	5,955	5,041	62%	0.27		0.628		0.169	0.169	**83.1%**
37	1949	D	16,274	8,424	5,136	62%	0.27		0.762		0.205	0.205	**79.5%**
38	1950	B	32,496	11,777	11,204	24%	0.24		0.943		0.228	0.228	**77.2%**
39	1951	A	60,566	11,354	21,702	23%	0.23		0.920		0.210	0.210	**79.0%**
40	1952	W	64,731	8,202	23,259	23%	0.23		0.750		0.171	0.171	**82.9%**
41	1953	W	28,344	6,065	9,651	25%	0.25		0.634		0.156	0.156	**84.4%**
42	1954	A	57,158	6,609	20,427	23%	0.23		0.664		0.152	0.152	**84.8%**
43	1955	D	16,298	7,412	5,145	62%	0.27		0.707		0.190	0.190	**81.0%**
44	1956	W	63,748	8,957	22,892	23%	0.23		0.790		0.180	0.180	**82.0%**
45	1957	A	33,144	8,889	11,446	24%	0.24		0.787		0.190	0.190	**81.0%**
46	1958	W	62,990	7,780	22,608	23%	0.23		0.727		0.166	0.166	**83.4%**
47	1959	B	50,082	5,874	17,781	23%	0.23		0.624		0.145	0.145	**85.5%**
48	1960	D	27,024	11,526	9,157	25%	0.25		0.929		0.230	0.230	**77.0%**
49	1961	D	30,874	11,150	10,597	24%	0.24		0.909		0.221	0.221	**77.9%**
50	1962	B	41,753	12,740	14,666	24%	0.24		0.995		0.234	0.234	**76.6%**
51	1963	W	58,178	12,544	20,809	23%	0.23		0.984		0.226	0.226	**77.4%**
52	1964	D	17,842	6,614	5,723	60%	0.26		0.664		0.175	0.175	**82.5%**
53	1965	W	33,326	11,429	11,514	24%	0.24		0.924		0.223	0.223	**77.7%**
54	1966	B	26,777	6,431	9,065	25%	0.25		0.654		0.162	0.162	**83.8%**
55	1967	W	43,080	7,495	15,162	23%	0.23		0.712		0.167	0.167	**83.3%**
56	1968	B	56,470	6,041	20,170	23%	0.23		0.633		0.145	0.145	**85.5%**
57	1969	W	67,482	4,910	24,288	23%	0.23		0.572		0.130	0.130	**87.0%**
58	1970	W	57,565	5,248	20,579	23%	0.23		0.590		0.135	0.135	**86.5%**
59	1971	W	28,525	7,252	9,718	25%	0.25		0.698		0.172	0.172	**82.8%**
60	1972	B	25,083	8,882	8,431	25%	0.25		0.786		0.197	0.197	**80.3%**
61	1973	A	70,967	8,692	25,592	23%	0.23		0.776		0.176	0.176	**82.4%**
62	1974	W	41,926	8,307	14,730	24%	0.24		0.755		0.178	0.178	**82.2%**
63	1975	W	58,811	7,827	21,045	23%	0.23		0.729		0.167	0.167	**83.3%**
64	1976	C	20,229	8,531	6,616	59%	0.26		0.767		0.198	0.198	**80.2%**
65	1977	C	12,358	2,145	3,672	66%	0.28		0.423		0.120	0.120	**88.0%**
66	1978	A	51,351	8,691	18,255	23%	0.23		0.776		0.180	0.180	**82.0%**
67	1979	B	41,682	5,459	14,639	24%	0.24		0.602		0.142	0.142	**85.8%**
68	1980	A	71,932	4,679	25,953	23%	0.23		0.559		0.126	0.126	**87.4%**
69	1981	D	29,672	5,831	10,147	24%	0.24		0.622		0.152	0.152	**84.8%**
70	1982	W	65,645	8,261	23,601	23%	0.23		0.753		0.171	0.171	**82.9%**
71	1983	W	82,910	4,188	30,058	22%	0.22		0.533		0.120	0.120	**88.0%**
72	1984	W	37,282	5,330	12,993	24%	0.24		0.595		0.142	0.142	**85.8%**
73	1985	D	18,931	8,733	6,130	60%	0.26		0.778		0.204	0.204	**79.6%**
74	1986	W	95,999	12,743	34,954	22%	0.22		0.995		0.222	0.222	**77.8%**
75	1987	D	23,028	5,487	7,662	58%	0.25		0.603		0.153	0.153	**84.7%**
76	1988	C	16,624	6,384	5,267	61%	0.27		0.652		0.174	0.174	**82.6%**
77	1989	D	13,102	2,731	3,950	65%	0.28		0.454		0.128	0.128	**87.2%**
78	1990	C	16,946	7,802	5,388	61%	0.27		0.728		0.194	0.194	**80.6%**
79	1991	C	10,301	520	2,903	69%	0.30		0.335		0.100	0.100	**90.0%**
80	1992	C	32,538	8,102	11,219	24%	0.24		0.744		0.180	0.180	**82.0%**

MARCH

Year	Sac River Flow	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survivability s123
1922	31,554	6,968	10,851	0.24	0.24		0.773	0.144	0.297	0.297	**70.3%**
1923	15,486	6,999	4,842	0.62	0.27		0.775	0.144	0.315	0.315	**68.5%**
1924	12,013	3,068	3,543	0.66	0.29		0.562	0.144	0.264	0.264	**73.6%**
1925	30,216	6,416	10,351	0.24	0.24		0.743	0.144	0.290	0.290	**71.0%**
1926	15,519	6,525	4,854	0.62	0.27		0.749	0.144	0.308	0.308	**69.2%**
1927	43,865	7,523	15,456	0.23	0.23		0.803	0.144	0.299	0.299	**70.1%**
1928	86,223	7,561	31,297	0.22	0.22		0.805	0.144	0.292	0.292	**70.8%**
1929	13,763	4,776	4,197	0.64	0.28		0.655	0.144	0.286	0.286	**71.4%**
1930	30,090	7,604	10,304	0.24	0.24		0.807	0.144	0.306	0.306	**69.4%**
1931	8,761	3,335	2,327	0.72	0.31		0.577	0.144	0.278	0.278	**72.2%**
1932	10,540	3,674	2,992	0.69	0.30		0.595	0.144	0.277	0.277	**72.3%**
1933	10,393	4,629	2,937	0.69	0.30		0.647	0.144	0.293	0.293	**70.7%**
1934	14,236	3,970	4,374	0.63	0.28		0.611	0.144	0.273	0.273	**72.7%**
1935	24,918	11,207	8,369	0.57	0.25		1.000	0.144	0.358	0.358	**64.2%**
1936	33,198	11,585	11,466	0.24	0.24		1.000	0.144	0.351	0.351	**64.9%**
1937	37,120	6,608	12,933	0.24	0.24		0.753	0.144	0.289	0.289	**71.1%**
1938	78,637	6,024	28,460	0.22	0.22		0.722	0.144	0.274	0.274	**72.6%**
1939	16,390	6,716	5,180	0.61	0.27		0.759	0.144	0.309	0.309	**69.1%**
1940	59,413	8,873	21,270	0.23	0.23		0.876	0.144	0.312	0.312	**68.8%**
1941	58,575	7,290	20,957	0.23	0.23		0.790	0.144	0.292	0.292	**70.8%**
1942	27,099	7,439	9,185	0.25	0.25		0.798	0.144	0.306	0.306	**69.4%**
1943	64,601	5,885	23,211	0.23	0.23		0.714	0.144	0.274	0.274	**72.6%**
1944	25,100	6,997	8,437	0.25	0.25		0.774	0.144	0.302	0.302	**69.8%**
1945	26,908	7,345	9,114	0.25	0.25		0.793	0.144	0.305	0.305	**69.5%**
1946	23,778	7,773	7,943	0.57	0.25		0.816	0.144	0.314	0.314	**68.6%**
1947	22,106	6,568	7,318	0.58	0.25		0.751	0.144	0.299	0.299	**70.1%**
1948	19,112	7,621	6,198	0.60	0.26		0.808	0.144	0.318	0.318	**68.2%**
1949	41,714	9,799	14,651	0.24	0.24		0.926	0.144	0.328	0.328	**67.2%**
1950	22,154	7,798	7,336	0.58	0.25		0.818	0.144	0.316	0.316	**68.4%**
1951	29,827	8,013	10,205	0.24	0.24		0.829	0.144	0.312	0.312	**68.8%**
1952	57,518	7,147	20,562	0.23	0.23		0.783	0.144	0.291	0.291	**70.9%**
1953	24,893	7,275	8,360	0.57	0.25		0.789	0.144	0.306	0.306	**69.4%**
1954	49,536	7,874	17,576	0.23	0.23		0.822	0.144	0.301	0.301	**69.9%**
1955	17,945	7,159	5,761	0.60	0.26		0.783	0.144	0.313	0.313	**68.7%**
1956	36,676	6,774	12,767	0.24	0.24		0.762	0.144	0.292	0.292	**70.8%**
1957	44,377	7,610	15,647	0.23	0.23		0.808	0.144	0.300	0.300	**70.0%**
1958	93,616	7,531	34,062	0.22	0.22		0.803	0.144	0.291	0.291	**70.9%**
1959	22,084	6,130	7,309	0.58	0.25		0.728	0.144	0.293	0.293	**70.7%**
1960	21,493	6,854	7,088	0.58	0.26		0.767	0.144	0.304	0.304	**69.6%**
1961	20,744	7,985	6,808	0.59	0.26		0.828	0.144	0.320	0.320	**68.0%**
1962	26,513	7,852	8,966	0.25	0.25		0.821	0.144	0.312	0.312	**68.8%**
1963	32,645	9,108	11,259	0.24	0.24		0.888	0.144	0.324	0.324	**67.6%**
1964	15,800	6,320	4,959	0.62	0.27		0.738	0.144	0.305	0.305	**69.5%**
1965	22,919	8,565	7,622	0.58	0.25		0.859	0.144	0.325	0.325	**67.5%**
1966	28,683	7,689	9,777	0.25	0.25		0.812	0.144	0.308	0.308	**69.2%**
1967	54,488	6,499	19,429	0.23	0.23		0.748	0.144	0.283	0.283	**71.7%**
1968	36,789	7,134	12,809	0.24	0.24		0.782	0.144	0.296	0.296	**70.4%**
1969	45,319	5,306	15,999	0.23	0.23		0.683	0.144	0.270	0.270	**73.0%**
1970	35,819	7,188	12,446	0.24	0.24		0.785	0.144	0.298	0.298	**70.2%**
1971	51,513	8,217	18,316	0.23	0.23		0.840	0.144	0.305	0.305	**69.5%**
1972	32,930	7,424	11,366	0.24	0.24		0.798	0.144	0.302	0.302	**69.8%**
1973	47,552	7,823	16,834	0.23	0.23		0.819	0.144	0.301	0.301	**69.9%**
1974	34,713	7,868	12,033	0.24	0.24		0.822	0.144	0.307	0.307	**69.3%**
1975	75,998	8,139	27,473	0.23	0.23		0.836	0.144	0.300	0.300	**70.0%**
1976	18,356	6,343	5,915	0.60	0.26		0.739	0.144	0.301	0.301	**69.9%**
1977	7,542	2,055	1,871	0.76	0.32		0.508	0.144	0.262	0.262	**73.8%**
1978	45,479	6,021	16,059	0.23	0.23		0.722	0.144	0.279	0.279	**72.1%**
1979	32,494	7,190	11,203	0.24	0.24		0.785	0.144	0.299	0.299	**70.1%**
1980	36,480	5,170	12,694	0.24	0.24		0.676	0.144	0.271	0.271	**72.9%**
1981	32,501	7,133	11,205	0.24	0.24		0.782	0.144	0.298	0.298	**70.2%**
1982	69,087	7,584	24,889	0.23	0.23		0.806	0.144	0.294	0.294	**70.6%**
1983	81,934	4,670	29,693	0.22	0.22		0.649	0.144	0.257	0.257	**74.3%**
1984	36,503	7,312	12,702	0.24	0.24		0.791	0.144	0.299	0.299	**70.1%**
1985	22,167	7,708	7,340	0.58	0.25		0.813	0.144	0.315	0.315	**68.5%**
1986	72,539	8,409	26,180	0.23	0.23		0.851	0.144	0.304	0.304	**69.6%**
1987	27,918	6,471	9,491	0.25	0.25		0.746	0.144	0.293	0.293	**70.7%**
1988	11,051	3,793	3,183	0.68	0.29		0.601	0.144	0.278	0.278	**72.2%**
1989	42,096	10,936	14,794	0.24	0.24		0.987	0.144	0.343	0.343	**65.7%**
1990	14,838	5,861	4,599	0.63	0.27		0.713	0.144	0.300	0.300	**70.0%**
1991	29,675	11,303	10,148	0.24	0.24		1.000	0.144	0.354	0.354	**64.6%**
1992	20,106	8,238	6,570	0.59	0.26		0.841	0.144	0.325	0.325	**67.5%**

APRIL

Year	Sac River Flow	CVP + SWF Exports	Calculated Steamboat & Sutter Slough flows	Percent	X-Channel Closed	Water temp f	m1	m2	m3	m23	m123	Calculated Survivability s123	Weighted Total Survival
1922	22,816	6,726	7,583	0.58	0.25	58.5	0.002	0.823	0.256	0.400	0.401	**59.9%**	**68.30%**
1923	23,682	6,658	7,907	0.57	0.25	58.3	0.000	0.815	0.250	0.392	0.392	**60.8%**	**68.43%**
1924	7,771	2,480	1,956	0.75	0.32	61.5	0.128	0.647	0.352	0.447	0.518	**48.2%**	**66.70%**
1925	20,329	5,506	6,653	0.59	0.26	59.1	0.027	0.768	0.275	0.402	0.419	**58.1%**	**68.18%**
1926	17,495	5,038	5,593	0.61	0.27	61.6	0.133	0.787	0.355	0.470	0.540	**46.0%**	**63.29%**
1927	48,222	6,660	17,085	0.23	0.23	56.8	0.000	0.789	0.202	0.338	0.338	**66.2%**	**70.14%**
1928	29,212	6,300	9,975	0.25	0.25	58.7	0.011	0.803	0.262	0.395	0.401	**59.9%**	**69.19%**
1929	8,767	2,636	2,329	0.72	0.31	56.3	0.000	0.562	0.186	0.302	0.302	**69.8%**	**71.86%**
1930	12,640	3,422	3,777	0.65	0.28	59.6	0.048	0.664	0.291	0.397	0.426	**57.4%**	**67.40%**
1931	8,888	2,656	2,374	0.72	0.31	62.8	0.183	0.680	0.393	0.482	0.577	**42.3%**	**64.60%**
1932	11,748	3,954	3,444	0.67	0.29	58.9	0.019	0.680	0.269	0.387	0.399	**60.1%**	**69.16%**
1933	11,902	3,291	3,501	0.66	0.29	60.1	0.069	0.666	0.307	0.410	0.451	**54.9%**	**67.29%**
1934	12,536	3,266	3,738	0.66	0.28	63.6	0.217	0.728	0.419	0.507	0.614	**38.6%**	**63.75%**
1935	24,635	6,936	8,263	0.57	0.25	58.9	0.019	0.841	0.269	0.412	0.424	**57.6%**	**64.79%**
1936	21,031	6,622	6,916	0.58	0.26	59.7	0.053	0.839	0.294	0.434	0.464	**53.6%**	**63.07%**
1937	23,007	7,354	7,655	0.58	0.25	58.8	0.015	0.862	0.266	0.417	0.425	**57.5%**	**68.16%**
1938	47,172	7,719	16,692	0.23	0.23	56.3	0.000	0.837	0.186	0.337	0.337	**66.3%**	**72.54%**
1939	11,336	3,256	3,290	0.67	0.29	63.3	0.204	0.722	0.409	0.500	0.602	**39.8%**	**62.25%**
1940	41,731	6,758	14,657	0.24	0.24	57.4	0.000	0.805	0.221	0.358	0.358	**64.2%**	**68.45%**
1941	42,372	7,926	14,897	0.24	0.24	56.9	0.000	0.859	0.205	0.359	0.359	**64.1%**	**69.94%**
1942	43,308	7,078	15,247	0.23	0.23	56.5	0.000	0.806	0.192	0.336	0.336	**66.4%**	**70.68%**
1943	29,406	7,348	10,048	0.24	0.24	58.8	0.015	0.862	0.266	0.412	0.420	**58.0%**	**69.87%**
1944	9,823	3,566	2,724	0.70	0.30	58.4	0.000	0.650	0.253	0.372	0.372	**62.8%**	**69.73%**
1945	11,753	4,720	3,446	0.67	0.29	60.6	0.090	0.752	0.323	0.447	0.497	**50.3%**	**65.38%**
1946	12,226	4,536	3,623	0.66	0.29	60.7	0.095	0.744	0.326	0.446	0.498	**50.2%**	**65.15%**
1947	13,800	3,932	4,211	0.64	0.28	62.5	0.170	0.744	0.384	0.484	0.572	**42.8%**	**63.30%**
1948	22,793	5,718	7,575	0.58	0.25	56.6	0.000	0.734	0.195	0.332	0.332	**66.8%**	**69.74%**
1949	13,210	4,026	3,991	0.65	0.28	61.7	0.137	0.734	0.358	0.464	0.537	**46.3%**	**62.51%**
1950	18,776	5,104	6,072	0.60	0.26	61.3	0.120	0.785	0.346	0.461	0.525	**47.5%**	**63.27%**
1951	14,732	4,938	4,560	0.63	0.27	59.9	0.061	0.751	0.301	0.424	0.459	**54.1%**	**65.72%**
1952	56,648	7,836	20,236	0.23	0.23	55.5	0.000	0.829	0.160	0.314	0.314	**68.6%**	**71.80%**
1953	16,177	4,586	5,100	0.62	0.27	58.8	0.015	0.713	0.266	0.386	0.395	**60.5%**	**68.69%**
1954	39,868	6,300	13,961	0.24	0.24	58.4	0.000	0.798	0.253	0.382	0.382	**61.8%**	**69.38%**
1955	9,473	2,976	2,593	0.71	0.30	56.4	0.000	0.582	0.189	0.308	0.308	**69.2%**	**70.44%**
1956	20,437	6,330	6,693	0.59	0.26	59.7	0.053	0.823	0.294	0.431	0.461	**53.9%**	**67.20%**
1957	19,965	5,176	6,517	0.59	0.26	60.5	0.086	0.775	0.320	0.438	0.486	**51.4%**	**65.86%**
1958	52,284	9,212	18,604	0.23	0.23	57.4	0.000	0.937	0.221	0.386	0.386	**61.4%**	**69.65%**
1959	9,656	2,954	2,661	0.70	0.30	63	0.191	0.700	0.400	0.491	0.588	**41.2%**	**63.78%**
1960	13,089	3,466	3,945	0.65	0.28	59.5	0.044	0.665	0.288	0.394	0.421	**57.9%**	**67.08%**
1961	12,482	3,230	3,718	0.66	0.28	60.1	0.069	0.663	0.307	0.408	0.449	**55.1%**	**65.39%**
1962	14,128	4,260	4,334	0.64	0.28	61.8	0.141	0.749	0.362	0.469	0.544	**45.6%**	**62.86%**
1963	69,458	6,660	25,027	0.23	0.23	53.7	0.000	0.733	0.103	0.245	0.245	**75.5%**	**71.23%**
1964	8,953	2,814	2,398	0.72	0.31	59.3	0.036	0.626	0.282	0.388	0.410	**59.0%**	**68.06%**
1965	43,590	6,888	15,353	0.23	0.23	56.9	0.000	0.803	0.205	0.345	0.345	**65.5%**	**68.20%**
1966	15,486	4,352	4,842	0.62	0.27	61.9	0.145	0.756	0.365	0.471	0.548	**45.2%**	**63.90%**
1967	39,925	8,479	13,982	0.24	0.24	53.8	0.000	0.833	0.106	0.278	0.278	**72.2%**	**73.35%**
1968	14,410	4,072	4,439	0.63	0.28	61.5	0.128	0.733	0.352	0.457	0.527	**47.3%**	**65.42%**
1969	44,787	7,504	15,800	0.23	0.23	56.4	0.000	0.827	0.189	0.338	0.338	**66.2%**	**72.76%**
1970	14,906	4,898	4,625	0.63	0.27	58.8	0.015	0.729	0.266	0.392	0.401	**59.9%**	**69.24%**
1971	20,753	5,336	6,812	0.59	0.26	58.7	0.011	0.751	0.262	0.388	0.395	**60.5%**	**68.53%**
1972	12,452	3,720	3,707	0.66	0.28	58.5	0.002	0.660	0.256	0.371	0.372	**62.8%**	**69.06%**
1973	19,512	5,932	6,347	0.59	0.26	61.3	0.120	0.830	0.346	0.472	0.535	**46.5%**	**64.49%**
1974	33,208	7,278	11,470	0.24	0.24	56.8	0.000	0.822	0.202	0.351	0.351	**64.9%**	**69.65%**
1975	25,763	7,002	8,685	0.25	0.25	56.8	0.000	0.807	0.202	0.353	0.353	**64.7%**	**70.14%**
1976	9,434	2,740	2,578	0.71	0.30	58.9	0.019	0.615	0.269	0.374	0.386	**61.4%**	**68.71%**
1977	8,829	2,682	2,352	0.72	0.31	64.3	0.246	0.709	0.441	0.524	0.641	**35.9%**	**64.29%**
1978	38,698	7,515	13,523	0.24	0.24	56.9	0.000	0.837	0.205	0.355	0.355	**64.5%**	**71.10%**
1979	17,702	5,428	5,671	0.60	0.26	59.8	0.057	0.776	0.298	0.424	0.457	**54.3%**	**67.39%**
1980	19,818	6,355	6,462	0.59	0.26	57.1	0.000	0.778	0.211	0.358	0.358	**64.2%**	**72.15%**
1981	16,998	4,474	5,407	0.61	0.27	61.5	0.128	0.755	0.352	0.459	0.529	**47.1%**	**65.15%**
1982	75,838	8,944	27,413	0.23	0.23	54.1	0.000	0.863	0.115	0.284	0.284	**71.6%**	**72.48%**
1983	68,301	6,963	24,595	0.23	0.23	55	0.000	0.773	0.144	0.287	0.287	**71.3%**	**75.17%**
1984	16,177	5,144	5,100	0.62	0.27	59.7	0.053	0.759	0.294	0.419	0.450	**55.0%**	**67.63%**
1985	12,328	3,708	3,661	0.66	0.28	60.8	0.099	0.701	0.330	0.435	0.491	**50.9%**	**64.69%**
1986	20,528	7,527	6,727	0.59	0.26	60.4	0.082	0.900	0.317	0.467	0.511	**48.9%**	**64.47%**
1987	12,291	3,199	3,647	0.66	0.29	65.7	0.305	0.762	0.486	0.565	0.697	**30.3%**	**60.41%**
1988	8,592	2,584	2,263	0.73	0.31	59.9	0.061	0.624	0.301	0.402	0.438	**56.2%**	**68.75%**
1989	23,637	5,160	7,890	0.57	0.25	61.4	0.124	0.790	0.349	0.460	0.527	**47.3%**	**62.99%**
1990	12,128	3,222	3,586	0.66	0.29	61.6	0.133	0.689	0.355	0.451	0.523	**47.7%**	**64.67%**
1991	15,284	3,748	4,766	0.62	0.27	60.8	0.099	0.703	0.330	0.431	0.487	**51.3%**	**63.93%**
1992	11,992	3,254	3,535	0.66	0.29	61.2	0.116	0.684	0.342	0.440	0.505	**49.5%**	**64.00%**
												Average:	**66.49%**

Formulas: Winter Run Salmon Smolt Survival Model

C10 ='Study 467 Flow Data'!E7
D10 ='Study 467 Flow Data'!O7 (HIDDEN)
E10 ='Study 467 Flow Data'!Y7 (HIDDEN)
F10 =(D9+E9)
G10 =0.374*C9-950
H10 =IF(C9>$G$2,(0.133*C9+829)/(C9-G9),(0.293*C9+2090)/(C9-G9))
I10 =(0.133*C9+829)/(C9-G9)
K10 =(-0.5916024)+(0.017968*$M$1)+(0.000054*F9)
M10 =(K9*I9)+L9*(1-I9)
N10 =J9+M9-(J9*M9)
O10 =1-N9

Q10 ='Study 467 Flow Data'!F7
R10 ='Study 467 Flow Data'!P7 (HIDDEN)
S10 ='Study 467 Flow Data'!Z7 (HIDDEN)
T10 =(R9+S9)
U10 =0.374*Q9-950
V10 =IF(Q9>$G$2,(0.133*Q9+829)/(Q9-U9),(0.293*Q9+2090)/(Q9-U9))
Y10 =(0.133*Q9+829)/(Q9-U9)
W10 =IF(((-0.5916024)+(0.017968*$M$2)+(0.000054*T9))>1,1,((-0.5916024)+(0.017968*$M$2)+(0.000054*T9)))
Z10 =-1.613493+(0.0319584*$M$2)
AA10 =(Y9*W9)+Z9*(1-W9)
AB10 =X9+AA9-(X9*AA9)
AC10 =1-AB9

(HIDDEN)
AE10 ='Study 467 Flow Data'!G7 (HIDDEN)
AF10 ='Study 467 Flow Data'!Q7
AG10 ='Study 467 Flow Data'!AA7
AH10 =AF9+AG9
AI10 =0.374*AE9-950
AJ10 =IF(AE9>$G$2,(0.133*AE9+829)/(AE9-AI9),(0.293*AE9+2090)/(AE9-AI9))
AK10 =(0.133*AE9+829)/(AE9-AI9)
AM10 =IF((-2.45925+(0.0420748*AL9))<0,0,(-2.45925+(0.0420748*AL9)))
AN10 =IF(((-0.5916024)+(0.017968*AL9)+(0.000054*AH9))>1,1,((-0.5916024)+(0.017968*AL9)+(0.000054*AH
AO10 =-1.613493+(0.0319584*AL9)
AP10 =(AN9*AK9)+(AO9*(1-AK9))
AQ10 =AM9+AP9-(AM9*AP9)

	A	B	C	F	G	H	I	J	K	L	M	N	O
1	Study 524 Winter Run Smolt Survival Model								February Water Temp			50 F	
2		Cross Channel Closed Over		25000 cfs					March Water Temp			55 F	
3	Cross Channel Closed Feb to Apr when DOI greater than				12,000 cfs								

Row 1 (from column Q): April Water Temperatures based on limited historical data from USBR

FEBRUARY

Row	Year	Water Year Type	Sac River Flow	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survivability s123
10	1922	A	34,253	10,605	11,861	24%	0.24		0.879		0.211	0.211	78.9%
11	1923	B	22,223	4,544	7,361	58%	0.25		0.552		0.141	0.141	85.9%
12	1924	C	17,751	9,007	5,689	60%	0.26		0.793		0.210	0.210	79.0%
13	1925	D	44,692	10,908	15,765	23%	0.23		0.896		0.210	0.210	79.0%
14	1926	D	35,217	11,736	12,221	24%	0.24		0.941		0.225	0.225	77.5%
15	1927	W	86,484	9,832	31,395	22%	0.22		0.838		0.188	0.188	81.2%
16	1928	A	28,340	7,001	9,649	25%	0.25		0.685		0.168	0.168	83.2%
17	1929	C	17,787	8,274	5,702	60%	0.26		0.754		0.199	0.199	80.1%
18	1930	D	15,675	6,787	4,912	62%	0.27		0.673		0.182	0.182	81.8%
19	1931	C	11,083	5,224	3,195	68%	0.29		0.589		0.172	0.172	82.8%
20	1932	D	14,487	10,131	4,468	63%	0.28		0.854		0.235	0.235	76.5%
21	1933	C	13,117	7,048	3,956	65%	0.28		0.687		0.193	0.193	80.7%
22	1934	C	12,740	5,786	3,815	65%	0.28		0.619		0.175	0.175	82.5%
23	1935	B	11,977	4,628	3,529	66%	0.29		0.557		0.160	0.160	84.0%
24	1936	B	47,088	12,747	16,661	23%	0.23		0.995		0.232	0.232	76.8%
25	1937	B	32,025	9,458	11,027	24%	0.24		0.818		0.198	0.198	80.2%
26	1938	W	82,366	5,156	29,855	22%	0.22		0.585		0.131	0.131	86.9%
27	1939	D	19,024	5,532	6,165	60%	0.26		0.606		0.158	0.158	84.2%
28	1940	A	43,392	12,741	15,279	23%	0.23		0.995		0.234	0.234	76.6%
29	1941	W	75,037	11,308	27,114	23%	0.23		0.917		0.207	0.207	79.3%
30	1942	W	78,349	5,619	28,353	23%	0.23		0.610		0.137	0.137	86.3%
31	1943	W	52,259	6,007	18,595	23%	0.23		0.631		0.146	0.146	85.4%
32	1944	D	31,860	5,398	10,966	24%	0.24		0.598		0.145	0.145	85.5%
33	1945	B	39,099	8,285	13,673	24%	0.24		0.754		0.179	0.179	82.1%
34	1946	B	23,843	6,850	7,967	57%	0.25		0.677		0.171	0.171	82.9%
35	1947	D	21,069	8,218	6,930	58%	0.26		0.751		0.193	0.193	80.7%
36	1948	B	16,014	5,952	5,039	62%	0.27		0.628		0.169	0.169	83.1%
37	1949	D	16,240	8,406	5,124	62%	0.27		0.761		0.205	0.205	79.5%
38	1950	B	32,779	11,779	11,309	24%	0.24		0.943		0.228	0.228	77.2%
39	1951	A	60,566	11,722	21,702	23%	0.23		0.940		0.215	0.215	78.5%
40	1952	W	64,731	8,202	23,259	23%	0.23		0.750		0.171	0.171	82.9%
41	1953	W	28,344	6,060	9,651	25%	0.25		0.634		0.156	0.156	84.4%
42	1954	A	57,158	6,620	20,427	23%	0.23		0.664		0.152	0.152	84.8%
43	1955	D	16,940	8,055	5,386	61%	0.27		0.742		0.198	0.198	80.2%
44	1956	W	63,748	7,923	22,892	23%	0.23		0.735		0.167	0.167	83.3%
45	1957	A	33,144	6,848	11,446	24%	0.24		0.677		0.163	0.163	83.7%
46	1958	W	63,062	7,188	22,635	23%	0.23		0.695		0.158	0.158	84.2%
47	1959	B	50,082	5,877	17,781	23%	0.23		0.624		0.145	0.145	85.5%
48	1960	D	27,024	11,526	9,157	25%	0.25		0.929		0.230	0.230	77.0%
49	1961	D	31,432	11,169	10,806	24%	0.24		0.910		0.221	0.221	77.9%
50	1962	B	39,381	10,040	13,778	24%	0.24		0.849		0.201	0.201	79.9%
51	1963	W	58,676	12,550	20,995	23%	0.23		0.984		0.226	0.226	77.4%
52	1964	D	19,696	7,906	6,416	59%	0.26		0.734		0.191	0.191	80.9%
53	1965	W	33,076	10,064	11,420	24%	0.24		0.850		0.205	0.205	79.5%
54	1966	B	26,777	6,417	9,065	25%	0.25		0.653		0.162	0.162	83.8%
55	1967	W	42,148	7,492	14,813	24%	0.24		0.711		0.167	0.167	83.3%
56	1968	B	56,470	6,038	20,170	23%	0.23		0.633		0.145	0.145	85.5%
57	1969	W	67,482	4,580	24,288	23%	0.23		0.554		0.126	0.126	87.4%
58	1970	W	57,565	5,250	20,579	23%	0.23		0.590		0.135	0.135	86.5%
59	1971	W	28,338	7,249	9,648	25%	0.25		0.698		0.172	0.172	82.8%
60	1972	B	25,083	8,897	8,431	25%	0.25		0.787		0.197	0.197	80.3%
61	1973	A	70,967	8,694	25,592	23%	0.23		0.776		0.176	0.176	82.4%
62	1974	W	41,926	7,973	14,730	24%	0.24		0.737		0.174	0.174	82.6%
63	1975	W	58,811	6,288	21,045	23%	0.23		0.646		0.148	0.148	85.2%
64	1976	C	20,229	6,320	6,616	59%	0.26		0.648		0.168	0.168	83.2%
65	1977	C	12,318	2,140	3,657	66%	0.28		0.422		0.120	0.120	88.0%
66	1978	A	51,052	8,862	18,143	23%	0.23		0.785		0.182	0.182	81.8%
67	1979	B	41,682	5,464	14,639	24%	0.24		0.602		0.142	0.142	85.8%
68	1980	A	71,932	4,685	25,953	23%	0.23		0.560		0.127	0.127	87.3%
69	1981	D	29,672	5,835	10,147	24%	0.24		0.622		0.152	0.152	84.8%
70	1982	W	65,645	7,810	23,601	23%	0.23		0.729		0.166	0.166	83.4%
71	1983	W	82,910	4,188	30,058	22%	0.22		0.533		0.120	0.120	88.0%
72	1984	W	37,282	5,333	12,993	24%	0.24		0.595		0.142	0.142	85.8%
73	1985	D	20,092	6,733	6,564	59%	0.26		0.670		0.174	0.174	82.6%
74	1986	W	95,699	12,213	34,841	22%	0.22		0.966		0.215	0.215	78.5%
75	1987	D	23,028	5,520	7,662	58%	0.25		0.605		0.153	0.153	84.7%
76	1988	C	18,113	6,906	5,824	60%	0.26		0.680		0.179	0.179	82.1%
77	1989	D	11,772	2,752	3,453	67%	0.29		0.455		0.131	0.131	86.9%
78	1990	C	16,696	7,703	5,294	61%	0.27		0.723		0.193	0.193	80.7%
79	1991	C	10,324	520	2,911	69%	0.30		0.335		0.099	0.099	90.1%
80	1992	C	32,538	8,112	11,219	24%	0.24		0.745		0.180	0.180	82.0%

MARCH

Row	Year	Sac River Flow	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survivability s123
10	1922	31,554	6,978	10,851	0.24	0.24		0.773	0.144	0.297	0.297	70.3%
11	1923	15,486	6,999	4,842	0.62	0.27		0.775	0.144	0.315	0.315	68.5%
12	1924	12,227	3,285	3,623	0.66	0.29		0.574	0.144	0.267	0.267	73.3%
13	1925	31,741	7,943	10,921	0.24	0.24		0.826	0.144	0.310	0.310	69.0%
14	1926	15,519	6,525	4,854	0.62	0.27		0.749	0.144	0.308	0.308	69.2%
15	1927	43,865	7,612	15,456	0.23	0.23		0.808	0.144	0.300	0.300	70.0%
16	1928	86,223	7,563	31,297	0.22	0.22		0.805	0.144	0.292	0.292	70.8%
17	1929	13,763	4,790	4,197	0.64	0.28		0.655	0.144	0.286	0.286	71.4%
18	1930	30,090	7,158	10,304	0.24	0.24		0.783	0.144	0.300	0.300	70.0%
19	1931	8,961	3,536	2,401	0.72	0.31		0.588	0.144	0.281	0.281	71.9%
20	1932	10,565	3,698	3,001	0.69	0.30		0.596	0.144	0.278	0.278	72.2%
21	1933	9,943	4,472	2,769	0.70	0.30		0.638	0.144	0.292	0.292	70.8%
22	1934	14,260	3,995	4,383	0.63	0.28		0.612	0.144	0.273	0.273	72.7%
23	1935	24,918	11,207	8,369	0.57	0.25		1.000	0.144	0.358	0.358	64.2%
24	1936	32,948	11,139	11,373	0.24	0.24		0.998	0.144	0.350	0.350	65.0%
25	1937	36,459	6,580	12,686	0.24	0.24		0.752	0.144	0.289	0.289	71.1%
26	1938	78,637	6,024	28,460	0.22	0.22		0.722	0.144	0.274	0.274	72.6%
27	1939	16,390	6,700	5,180	0.61	0.27		0.758	0.144	0.309	0.309	69.1%
28	1940	59,383	8,875	21,259	0.23	0.23		0.876	0.144	0.312	0.312	68.8%
29	1941	58,573	8,071	20,956	0.23	0.23		0.832	0.144	0.302	0.302	69.8%
30	1942	27,099	7,440	9,185	0.25	0.25		0.798	0.144	0.306	0.306	69.4%
31	1943	64,601	5,879	23,211	0.23	0.23		0.714	0.144	0.274	0.274	72.6%
32	1944	25,100	7,001	8,437	0.25	0.25		0.775	0.144	0.302	0.302	69.8%
33	1945	27,033	7,349	9,160	0.25	0.25		0.793	0.144	0.305	0.305	69.5%
34	1946	23,778	7,865	7,943	0.57	0.25		0.821	0.144	0.315	0.315	68.5%
35	1947	22,106	6,581	7,318	0.58	0.25		0.752	0.144	0.299	0.299	70.1%
36	1948	19,112	7,621	6,198	0.60	0.26		0.808	0.144	0.318	0.318	68.2%
37	1949	42,033	11,340	14,770	0.24	0.24		1.000	0.144	0.346	0.346	65.4%
38	1950	22,154	9,000	7,336	0.58	0.25		0.883	0.144	0.332	0.332	66.8%
39	1951	29,827	7,959	10,205	0.24	0.24		0.826	0.144	0.311	0.311	68.9%
40	1952	57,518	7,152	20,562	0.23	0.23		0.783	0.144	0.291	0.291	70.9%
41	1953	24,893	7,272	8,360	0.57	0.25		0.789	0.144	0.306	0.306	69.4%
42	1954	49,536	7,866	17,576	0.23	0.23		0.821	0.144	0.301	0.301	69.9%
43	1955	17,946	7,159	5,762	0.60	0.26		0.783	0.144	0.313	0.313	68.7%
44	1956	36,676	6,768	12,767	0.24	0.24		0.762	0.144	0.292	0.292	70.8%
45	1957	44,377	7,584	15,647	0.23	0.23		0.806	0.144	0.299	0.299	70.1%
46	1958	93,616	7,530	34,062	0.22	0.22		0.803	0.144	0.291	0.291	70.9%
47	1959	22,081	6,132	7,308	0.58	0.25		0.728	0.144	0.293	0.293	70.7%
48	1960	21,812	6,698	7,208	0.58	0.26		0.758	0.144	0.301	0.301	69.9%
49	1961	20,744	7,986	6,808	0.59	0.26		0.828	0.144	0.320	0.320	68.0%
50	1962	26,513	7,730	8,966	0.25	0.25		0.814	0.144	0.310	0.310	69.0%
51	1963	32,645	9,221	11,259	0.24	0.24		0.895	0.144	0.326	0.326	67.4%
52	1964	17,205	6,811	5,485	0.61	0.27		0.764	0.144	0.309	0.309	69.1%
53	1965	21,133	7,619	6,954	0.58	0.26		0.808	0.144	0.315	0.315	68.5%
54	1966	28,683	7,864	9,777	0.25	0.25		0.821	0.144	0.311	0.311	68.9%
55	1967	54,488	6,498	19,429	0.23	0.23		0.748	0.144	0.283	0.283	71.7%
56	1968	36,789	7,134	12,809	0.24	0.24		0.782	0.144	0.296	0.296	70.4%
57	1969	45,319	5,306	15,999	0.23	0.23		0.683	0.144	0.270	0.270	73.0%
58	1970	35,819	7,191	12,446	0.24	0.24		0.785	0.144	0.298	0.298	70.2%
59	1971	51,682	8,135	18,379	0.23	0.23		0.836	0.144	0.304	0.304	69.6%
60	1972	32,930	7,635	11,366	0.24	0.24		0.809	0.144	0.305	0.305	69.5%
61	1973	47,552	7,930	16,834	0.23	0.23		0.825	0.144	0.303	0.303	69.7%
62	1974	34,763	7,878	12,051	0.24	0.24		0.822	0.144	0.307	0.307	69.3%
63	1975	75,998	8,137	27,473	0.23	0.23		0.836	0.144	0.300	0.300	70.0%
64	1976	18,356	6,335	5,915	0.60	0.26		0.739	0.144	0.300	0.300	70.0%
65	1977	7,579	2,091	1,885	0.76	0.32		0.510	0.144	0.262	0.262	73.8%
66	1978	45,946	6,011	16,234	0.23	0.23		0.721	0.144	0.279	0.279	72.1%
67	1979	32,494	7,184	11,203	0.24	0.24		0.785	0.144	0.299	0.299	70.1%
68	1980	36,480	5,166	12,694	0.24	0.24		0.676	0.144	0.271	0.271	72.9%
69	1981	32,501	7,133	11,205	0.24	0.24		0.782	0.144	0.298	0.298	70.2%
70	1982	69,087	7,579	24,889	0.23	0.23		0.806	0.144	0.294	0.294	70.6%
71	1983	81,934	4,670	29,693	0.22	0.22		0.649	0.144	0.257	0.257	74.3%
72	1984	36,503	7,260	12,702	0.24	0.24		0.789	0.144	0.298	0.298	70.2%
73	1985	22,303	7,708	7,391	0.58	0.25		0.813	0.144	0.314	0.314	68.6%
74	1986	72,539	8,405	26,180	0.23	0.23		0.851	0.144	0.304	0.304	69.6%
75	1987	29,533	6,505	10,095	0.24	0.24		0.748	0.144	0.292	0.292	70.8%
76	1988	11,017	3,786	3,170	0.68	0.29		0.601	0.144	0.278	0.278	72.2%
77	1989	42,433	11,096	14,920	0.24	0.24		0.996	0.144	0.345	0.345	65.5%
78	1990	14,588	5,774	4,506	0.63	0.27		0.708	0.144	0.299	0.299	70.1%
79	1991	29,675	11,303	10,148	0.24	0.24		1.000	0.144	0.354	0.354	64.6%
80	1992	20,106	8,239	6,570	0.59	0.26		0.842	0.144	0.325	0.325	67.5%

APRIL

Row	Year	Sac River Flow	CVP + SWF Exports	Calculated Steamboat & Sutter Slough flows	Percent	X-Channel Closed	Water temp f	m1	m2	m3	m23	m123	Calculated Survivability s123	Weighted Total Survival
10	1922	22,816	8,378	7,583	0.58	0.25	58.5	0.002	0.912	0.256	0.422	0.424	57.6%	67.61%
11	1923	23,686	8,082	7,909	0.57	0.25	58.3	0.000	0.892	0.250	0.412	0.412	58.8%	67.85%
12	1924	8,059	2,788	2,064	0.74	0.32	61.5	0.128	0.664	0.352	0.451	0.521	47.9%	66.42%
13	1925	20,329	6,570	6,653	0.59	0.26	59.1	0.027	0.825	0.275	0.417	0.433	56.7%	66.63%
14	1926	17,750	6,058	5,689	0.60	0.26	61.6	0.133	0.842	0.355	0.484	0.552	44.8%	62.93%
15	1927	48,222	8,084	17,085	0.23	0.23	56.8	0.000	0.866	0.202	0.356	0.356	64.4%	69.79%
16	1928	29,212	7,362	9,975	0.25	0.25	58.7	0.011	0.861	0.262	0.409	0.415	58.5%	68.70%
17	1929	9,078	2,962	2,445	0.72	0.31	56.3	0.000	0.580	0.186	0.307	0.307	69.3%	71.89%
18	1930	12,640	3,912	3,777	0.65	0.28	59.6	0.048	0.691	0.291	0.404	0.433	56.7%	67.52%
19	1931	9,200	2,968	2,491	0.71	0.31	62.8	0.183	0.697	0.393	0.486	0.580	42.0%	64.35%
20	1932	13,081	5,376	3,942	0.65	0.28	58.9	0.019	0.757	0.269	0.406	0.417	58.3%	68.59%
21	1933	12,735	4,123	3,813	0.65	0.28	60.1	0.069	0.711	0.307	0.421	0.462	53.8%	66.98%
22	1934	12,849	3,578	3,856	0.65	0.28	63.6	0.217	0.744	0.419	0.511	0.617	38.3%	63.63%
23	1935	24,635	8,638	8,263	0.57	0.25	58.9	0.019	0.933	0.269	0.435	0.446	55.4%	64.11%
24	1936	20,781	8,292	6,822	0.59	0.26	59.7	0.053	0.929	0.294	0.458	0.486	51.4%	62.42%
25	1937	23,007	7,981	7,655	0.58	0.25	58.8	0.015	0.896	0.266	0.425	0.434	56.6%	67.92%
26	1938	47,172	7,719	16,692	0.23	0.23	56.3	0.000	0.837	0.186	0.337	0.337	66.3%	72.54%
27	1939	12,224	4,146	3,622	0.66	0.29	63.3	0.204	0.770	0.409	0.512	0.612	38.8%	61.97%
28	1940	41,731	8,294	14,657	0.24	0.24	57.4	0.000	0.888	0.221	0.378	0.378	62.2%	67.86%
29	1941	42,372	9,308	14,897	0.24	0.24	56.9	0.000	0.933	0.205	0.376	0.376	62.4%	68.81%
30	1942	43,308	8,918	15,247	0.23	0.23	56.5	0.000	0.905	0.192	0.360	0.360	64.0%	69.98%
31	1943	29,406	9,141	10,048	0.24	0.24	58.8	0.015	0.959	0.266	0.435	0.444	55.6%	69.18%
32	1944	9,823	4,248	2,724	0.70	0.30	58.4	0.000	0.687	0.253	0.383	0.383	61.7%	69.40%
33	1945	11,753	6,262	3,446	0.67	0.29	60.6	0.090	0.835	0.323	0.471	0.519	48.1%	64.74%
34	1946	12,226	5,960	3,623	0.66	0.29	60.7	0.095	0.821	0.326	0.467	0.518	48.2%	64.30%
35	1947	13,800	4,910	4,211	0.64	0.28	62.5	0.170	0.797	0.384	0.499	0.584	41.6%	62.92%
36	1948	22,793	6,780	7,575	0.58	0.25	56.6	0.000	0.792	0.195	0.347	0.347	65.3%	69.30%
37	1949	13,210	5,088	3,991	0.65	0.28	61.7	0.137	0.792	0.358	0.480	0.551	44.9%	61.10%
38	1950	18,776	6,168	6,072	0.60	0.26	61.3	0.120	0.843	0.346	0.476	0.539	46.1%	61.93%
39	1951	14,732	6,362	4,560	0.63	0.27	59.9	0.061	0.828	0.301	0.445	0.479	52.1%	65.11%
40	1952	56,648	7,840	20,236	0.23	0.23	55.5	0.000	0.829	0.160	0.314	0.314	68.6%	71.80%
41	1953	16,177	5,650	5,100	0.62	0.27	58.8	0.015	0.770	0.266	0.401	0.410	59.0%	68.24%
42	1954	39,868	7,362	13,961	0.24	0.24	58.4	0.000	0.855	0.253	0.395	0.395	60.5%	68.98%
43	1955	9,473	3,672	2,593	0.71	0.30	56.4	0.000	0.620	0.189	0.320	0.320	68.0%	70.00%
44	1956	20,437	7,982	6,693	0.59	0.26	59.7	0.053	0.912	0.294	0.454	0.483	51.7%	66.72%
45	1957	21,137	6,430	6,955	0.58	0.26	60.5	0.086	0.843	0.320	0.454	0.501	49.9%	65.78%
46	1958	52,284	9,488	18,604	0.23	0.23	57.4	0.000	0.952	0.221	0.390	0.390	61.0%	69.65%
47	1959	10,490	3,786	2,973	0.69	0.30	63	0.191	0.745	0.400	0.502	0.597	40.3%	63.50%
48	1960	13,553	4,031	4,119	0.64	0.28	59.5	0.044	0.695	0.288	0.402	0.428	57.2%	67.01%
49	1961	12,791	3,542	3,834	0.65	0.28	60.1	0.069	0.680	0.307	0.412	0.453	54.7%	65.28%
50	1962	15,462	5,608	4,833	0.62	0.27	61.8	0.141	0.822	0.362	0.486	0.559	44.1%	62.92%
51	1963	69,458	8,094	25,027	0.23	0.23	53.7	0.000	0.810	0.103	0.263	0.263	73.7%	70.62%
52	1964	8,953	3,512	2,398	0.72	0.31	59.3	0.036	0.664	0.282	0.399	0.421	57.9%	67.28%
53	1965	45,668	8,540	16,130	0.23	0.23	56.9	0.000	0.892	0.205	0.365	0.365	63.5%	68.43%
54	1966	16,760	5,622	5,318	0.61	0.27	61.9	0.145	0.824	0.365	0.488	0.562	43.8%	63.34%
55	1967	39,925	8,471	13,982	0.24	0.24	53.8	0.000	0.833	0.106	0.278	0.278	72.2%	73.35%
56	1968	15,578	5,242	4,876	0.62	0.27	61.5	0.128	0.796	0.352	0.472	0.540	46.0%	65.01%
57	1969	44,787	7,504	15,800	0.23	0.23	56.4	0.000	0.827	0.189	0.338	0.338	66.2%	72.81%
58	1970	16,608	6,600	5,261	0.61	0.27	58.8	0.015	0.821	0.266	0.414	0.423	57.7%	68.59%
59	1971	21,756	6,564	7,187	0.58	0.26	58.7	0.011	0.818	0.262	0.404	0.411	58.9%	68.11%
60	1972	12,452	4,698	3,707	0.66	0.28	58.5	0.002	0.713	0.256	0.386	0.387	61.3%	68.45%
61	1973	19,512	7,452	6,347	0.59	0.26	61.3	0.120	0.912	0.346	0.493	0.554	44.6%	63.85%
62	1974	33,208	9,320	11,470	0.24	0.24	56.8	0.000	0.932	0.202	0.378	0.378	62.2%	68.91%
63	1975	25,763	8,768	8,685	0.25	0.25	56.8	0.000	0.902	0.202	0.376	0.376	62.4%	69.68%
64	1976	9,434	3,001	2,578	0.71	0.30	58.9	0.019	0.629	0.269	0.378	0.390	61.0%	68.99%
65	1977	9,144	2,996	2,470	0.71	0.31	64.3	0.246	0.726	0.441	0.528	0.645	35.5%	64.16%
66	1978	38,698	7,516	13,523	0.24	0.24	56.9	0.000	0.837	0.205	0.355	0.355	64.5%	71.09%
67	1979	17,702	6,852	5,671	0.60	0.26	59.8	0.057	0.853	0.298	0.445	0.476	52.4%	66.82%
68	1980	19,818	6,887	6,462	0.59	0.26	57.1	0.000	0.806	0.211	0.366	0.366	63.4%	71.93%
69	1981	16,998	5,450	5,407	0.61	0.27	61.5	0.128	0.808	0.352	0.473	0.541	45.9%	64.78%
70	1982	75,838	8,945	27,413	0.23	0.23	54.1	0.000	0.863	0.115	0.284	0.284	71.6%	72.56%
71	1983	68,301	6,963	24,595	0.23	0.23	55	0.000	0.773	0.144	0.287	0.287	71.3%	75.17%
72	1984	17,872	6,844	5,734	0.60	0.26	59.7	0.053	0.851	0.294	0.441	0.471	52.9%	67.04%
73	1985	12,328	4,086	3,661	0.66	0.28	60.8	0.099	0.721	0.330	0.441	0.496	50.4%	64.93%
74	1986	20,778	7,524	6,821	0.59	0.26	60.4	0.082	0.900	0.317	0.467	0.511	48.9%	64.56%
75	1987	12,402	3,499	3,688	0.66	0.28	65.7	0.305	0.778	0.486	0.569	0.701	29.9%	60.35%
76	1988	8,616	2,848	2,272	0.73	0.31	59.9	0.061	0.638	0.301	0.406	0.442	55.8%	68.57%
77	1989	23,637	5,650	7,890	0.57	0.25	61.4	0.124	0.817	0.349	0.467	0.533	46.7%	62.67%
78	1990	12,444	3,535	3,704	0.66	0.28	61.6	0.133	0.706	0.355	0.455	0.527	47.3%	64.62%
79	1991	15,284	4,249	4,766	0.62	0.27	60.8	0.099	0.730	0.330	0.439	0.494	50.6%	63.73%
80	1992	12,470	3,734	3,714	0.66	0.28	61.2	0.116	0.710	0.342	0.447	0.511	48.9%	63.83%
81													Average:	66.12%

82 Formulas: Winter Run Salmon Smolt Survival Model

84 (HIDDEN)

85 C10 ='Study 467 Flow Data'!E7 — Q10 ='Study 467 Flow Data'!F7 — AE10 ='Study 467 Flow Data'!G7 (HIDDEN)
86 D10 ='Study 467 Flow Data'!O7 (HIDDEN) — R10 ='Study 467 Flow Data'!P7 (HIDDEN) — AF10 ='Study 467 Flow Data'!Q7
87 E10 ='Study 467 Flow Data'!Y7 (HIDDEN) — S10 ='Study 467 Flow Data'!Z7 (HIDDEN) — AG10 ='Study 467 Flow Data'!AA7
88 F10 =(D9+E9) — T10 =(R9+S9) — AH10 =AF9+AG9
89 G10 =0.374*C9-950 — U10 =0.374*Q9-950 — AI10 =0.374*AE9-950
90 H10 =IF(C9>$G$2,(0.133*C9+829)/(C9-G9),(0.293*C9+2090)/(C9-G9)) — V10 =IF(Q9>$G$2,(0.133*Q9+829)/(Q9-U9),(0.293*Q9+2090)/(Q9-U9)) — AJ10 =IF(AE9>$G$2,(0.133*AE9+829)/(AE9-AI9),(0.293*AE9+2090)/(AE9-AI9))
91 I10 =(0.133*C9+829)/(C9-G9) — Y10 =(0.133*Q9+829)/(Q9-U9) — AK10 =(0.133*AE9+829)/(AE9-AI9)
92 K10 =(-0.5916024)+(0.017968*$M$1)+(0.000054*F9) — W10 =IF(((-0.5916024)+(0.017968*$M$2)+(0.000054*T9))>1,1,((-0.5916024)+(0.017968*$M$2)+(0.000054*T9))) — AM10 =IF((-2.45925+(0.0420748*AL9))<0,0,(-2.45925+(0.0420748*AL9)))
93 M10 =(K9*I9)+L9*(1-I9) — Z10 =-1.613493+(0.0319584*$M$2) — AN10 =IF(((-0.5916024)+(0.017968*AL9)+(0.000054*AH9))>1,1,((-0.5916024)+(0.017968*AL9)+(0.000054*AH9
94 N10 =J9+M9-(J9*M9) — AA10 =(Y9*W9)+Z9*(1-W9) — AO10 =-1.613493+(0.0319584*AL9)
95 O10 =1-N9 — AB10 =X9+AA9-(X9*AA9) — AP10 =(AN9*AK9)+(AO9*(1-AK9))
96 AC10 =1-AB9 — AQ10 =AM9+AP9-(AM9*AP9)

Study 525 Winter Run Smolt Survival Model   February Water Temp 50 F   April Water Temperatures based on limited historical data from USBR
Cross Channel Closed Over 25000 cfs   March Water Temp 55 F
Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

Year	Water Year Type	FEBRUARY Sac River Flow	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survivability s123	MARCH Sac River Flow	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survivability s123	APRIL Sac River Flow	CVP + SWF Exports	Calculated Steamboat & Sutter Slough flows	Percent	X-Channel Closed	Water temp f	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survivability s123	Weighted Total Survival
1922	A	34,312	10,413	11,883	24%	0.24		0.869		0.209	0.209	79.1%	31,554	6,974	10,851	0.24	0.24		0.773	0.144	0.297	0.297	70.3%	22,816	9,575	7,583	0.58	0.25	58.5	0.002	0.977	0.256	0.439	0.440	56.0%	67.16%
1923	B	22,009	4,553	7,281	58%	0.26		0.553		0.141	0.141	85.9%	15,486	6,733	4,842	0.62	0.27		0.760	0.144	0.311	0.311	68.9%	23,727	10,128	7,924	0.57	0.25	58.3	0.000	1.000	0.250	0.439	0.439	56.1%	67.25%
1924	C	17,251	8,935	5,502	61%	0.27		0.789		0.210	0.210	79.0%	11,871	3,021	3,490	0.66	0.29		0.560	0.144	0.264	0.264	73.6%	9,630	4,199	2,652	0.70	0.30	61.5	0.128	0.740	0.352	0.469	0.537	46.3%	66.12%
1925	D	44,705	11,884	15,770	23%	0.23		0.949		0.222	0.222	77.8%	30,225	6,534	10,354	0.24	0.24		0.749	0.144	0.292	0.292	70.8%	20,329	9,461	6,653	0.59	0.26	59.1	0.027	0.981	0.275	0.458	0.472	52.8%	66.30%
1926	D	35,217	11,942	12,221	24%	0.24		0.952		0.228	0.228	77.2%	15,519	6,381	4,854	0.62	0.27		0.741	0.144	0.306	0.306	69.4%	17,226	8,400	5,493	0.61	0.27	61.6	0.133	0.969	0.355	0.518	0.582	41.8%	62.12%
1927	W	87,106	9,289	31,628	22%	0.22		0.808		0.181	0.181	81.9%	43,865	7,616	15,456	0.23	0.23		0.808	0.144	0.300	0.300	70.0%	48,222	9,767	17,085	0.23	0.23	56.8	0.000	0.956	0.202	0.377	0.377	62.3%	69.24%
1928	A	26,479	8,244	8,953	25%	0.25		0.752		0.187	0.187	81.3%	86,223	7,543	31,297	0.22	0.22		0.804	0.144	0.292	0.292	70.8%	29,212	10,101	9,975	0.25	0.25	58.7	0.011	1.000	0.262	0.443	0.449	55.1%	67.46%
1929	C	17,537	9,145	5,609	61%	0.27		0.801		0.212	0.212	78.8%	13,513	4,716	4,104	0.64	0.28		0.651	0.144	0.286	0.286	71.4%	10,833	4,590	3,102	0.68	0.29	56.3	0.000	0.668	0.186	0.327	0.327	67.3%	71.13%
1930	D	15,675	6,842	4,912	62%	0.27		0.676		0.183	0.183	81.7%	30,090	7,588	10,304	0.24	0.24		0.806	0.144	0.306	0.306	69.4%	14,420	6,110	4,443	0.63	0.28	59.6	0.048	0.809	0.291	0.434	0.461	53.9%	66.35%
1931	C	11,083	5,398	3,195	68%	0.29		0.598		0.175	0.175	82.5%	8,643	3,310	2,282	0.73	0.31		0.575	0.144	0.278	0.278	72.2%	11,143	4,689	3,217	0.68	0.29	62.8	0.183	0.790	0.393	0.509	0.599	40.1%	63.89%
1932	D	14,488	10,440	4,469	63%	0.28		0.871		0.239	0.239	76.1%	11,670	4,979	3,415	0.67	0.29		0.666	0.144	0.295	0.295	70.5%	14,065	6,892	4,310	0.64	0.28	58.9	0.019	0.839	0.269	0.427	0.437	56.3%	66.97%
1933	C	12,604	6,881	3,764	65%	0.28		0.678		0.192	0.192	80.8%	9,943	4,510	2,769	0.70	0.30		0.640	0.144	0.293	0.293	70.7%	15,322	6,439	4,780	0.62	0.27	60.1	0.069	0.836	0.307	0.451	0.489	51.1%	66.13%
1934	C	12,740	6,102	3,815	65%	0.28		0.636		0.180	0.180	82.0%	14,559	4,355	4,495	0.63	0.27		0.632	0.144	0.278	0.278	72.2%	15,234	5,846	4,748	0.62	0.27	63.6	0.217	0.867	0.419	0.541	0.640	36.0%	62.59%
1935	B	12,327	5,167	3,660	66%	0.28		0.586		0.167	0.167	83.3%	24,918	11,267	8,369	0.57	0.25		1.000	0.144	0.358	0.358	64.2%	24,313	10,413	8,143	0.57	0.25	58.9	0.019	1.000	0.269	0.453	0.463	53.7%	63.51%
1936	B	48,897	12,745	17,337	23%	0.23		0.995		0.231	0.231	76.9%	33,448	8,758	11,560	0.24	0.24		0.870	0.144	0.319	0.319	68.1%	21,281	9,825	7,009	0.58	0.26	59.7	0.053	1.000	0.294	0.475	0.503	49.7%	63.72%
1937	B	32,025	9,683	11,027	24%	0.24		0.830		0.201	0.201	79.9%	36,058	6,350	12,536	0.24	0.24		0.740	0.144	0.287	0.287	71.3%	22,882	7,956	7,608	0.58	0.25	58.8	0.015	0.895	0.266	0.425	0.434	56.6%	68.04%
1938	W	82,366	5,146	29,855	22%	0.22		0.585		0.131	0.131	86.9%	78,637	6,025	28,460	0.22	0.22		0.722	0.144	0.274	0.274	72.6%	47,172	7,721	16,692	0.23	0.23	56.3	0.000	0.837	0.186	0.338	0.338	66.2%	72.54%
1939	D	19,024	5,442	6,165	60%	0.26		0.601		0.157	0.157	84.3%	16,390	6,621	5,180	0.61	0.27		0.754	0.144	0.308	0.308	69.2%	14,482	6,342	4,466	0.63	0.28	63.3	0.204	0.888	0.409	0.541	0.635	36.5%	61.36%
1940	A	40,143	12,737	14,063	24%	0.24		0.995		0.235	0.235	76.5%	58,948	8,816	21,097	0.23	0.23		0.873	0.144	0.311	0.311	68.9%	41,731	10,351	14,657	0.24	0.24	57.4	0.000	0.999	0.221	0.404	0.404	59.6%	67.09%
1941	W	75,037	10,731	27,114	23%	0.23		0.886		0.200	0.200	80.0%	58,575	8,071	20,957	0.23	0.23		0.832	0.144	0.302	0.302	69.8%	42,372	9,308	14,897	0.24	0.24	56.9	0.000	0.933	0.205	0.376	0.376	62.4%	68.90%
1942	W	78,349	5,619	28,353	23%	0.23		0.610		0.137	0.137	86.3%	27,099	7,440	9,185	0.25	0.25		0.798	0.144	0.306	0.306	69.4%	43,308	9,646	15,247	0.23	0.23	56.5	0.000	0.944	0.192	0.369	0.369	63.1%	69.70%
1943	W	52,259	5,996	18,595	23%	0.23		0.631		0.146	0.146	85.4%	64,601	5,872	23,211	0.23	0.23		0.714	0.144	0.274	0.274	72.6%	29,406	9,129	10,048	0.24	0.24	58.8	0.015	0.958	0.266	0.435	0.443	55.7%	69.19%
1944	D	29,302	5,273	10,009	24%	0.24		0.592		0.145	0.145	85.5%	25,100	6,962	8,437	0.25	0.25		0.773	0.144	0.301	0.301	69.9%	10,469	5,412	2,965	0.69	0.30	58.4	0.000	0.750	0.253	0.400	0.400	60.0%	68.94%
1945	B	38,149	8,241	13,318	24%	0.24		0.752		0.179	0.179	82.1%	26,228	7,288	8,859	0.25	0.25		0.790	0.144	0.305	0.305	69.5%	12,493	7,088	3,722	0.66	0.28	60.6	0.090	0.880	0.323	0.481	0.528	47.2%	64.46%
1946	B	23,843	6,934	7,967	57%	0.25		0.681		0.172	0.172	82.8%	23,778	7,882	7,943	0.57	0.25		0.822	0.144	0.315	0.315	68.5%	12,226	6,268	3,623	0.66	0.29	60.7	0.095	0.838	0.326	0.472	0.522	47.8%	64.14%
1947	D	21,069	8,203	6,930	58%	0.26		0.750		0.193	0.193	80.7%	22,106	6,349	7,318	0.58	0.25		0.739	0.144	0.296	0.296	70.4%	15,447	5,681	4,827	0.62	0.27	62.5	0.170	0.838	0.384	0.507	0.591	40.9%	62.89%
1948	B	16,591	6,043	5,255	61%	0.27		0.633		0.170	0.170	83.0%	19,058	7,640	6,178	0.60	0.26		0.809	0.144	0.318	0.318	68.2%	22,793	9,880	7,575	0.58	0.25	56.6	0.000	0.959	0.195	0.389	0.389	61.1%	68.01%
1949	D	16,191	8,453	5,105	62%	0.27		0.763		0.205	0.205	79.5%	41,766	10,448	14,670	0.24	0.24		0.961	0.144	0.337	0.337	66.3%	13,210	6,146	3,991	0.65	0.28	61.7	0.137	0.849	0.358	0.496	0.565	43.5%	61.20%
1950	B	31,352	11,847	10,776	24%	0.24		0.947		0.230	0.230	77.0%	21,904	8,949	7,242	0.58	0.26		0.880	0.144	0.332	0.332	66.8%	18,526	8,356	5,979	0.60	0.26	61.3	0.120	0.961	0.346	0.507	0.566	43.4%	61.10%
1951	A	60,566	8,955	21,702	23%	0.23		0.790		0.181	0.181	81.9%	29,827	7,943	10,205	0.24	0.24		0.826	0.144	0.311	0.311	68.9%	17,998	8,128	5,781	0.60	0.26	59.9	0.061	0.924	0.301	0.465	0.498	50.2%	65.01%
1952	W	64,731	8,202	23,259	23%	0.23		0.750		0.171	0.171	82.9%	57,518	7,139	20,562	0.23	0.23		0.782	0.144	0.291	0.291	70.9%	56,648	7,838	20,236	0.23	0.23	55.5	0.000	0.829	0.160	0.314	0.314	68.6%	71.81%
1953	W	28,344	6,054	9,651	25%	0.25		0.634		0.156	0.156	84.4%	24,893	7,263	8,360	0.57	0.25		0.789	0.144	0.306	0.306	69.4%	16,177	7,176	5,100	0.62	0.27	58.8	0.015	0.852	0.266	0.424	0.432	56.8%	67.59%
1954	A	57,158	6,785	20,427	23%	0.23		0.673		0.155	0.155	84.5%	49,536	7,859	17,576	0.23	0.23		0.821	0.144	0.301	0.301	69.9%	39,868	10,385	13,961	0.24	0.24	58.4	0.000	1.000	0.253	0.430	0.430	57.0%	67.93%
1955	D	16,724	7,932	5,305	61%	0.27		0.735		0.197	0.197	80.3%	17,888	7,179	5,740	0.60	0.26		0.784	0.144	0.313	0.313	68.7%	9,473	4,530	2,593	0.71	0.30	56.4	0.000	0.666	0.189	0.334	0.334	66.6%	69.57%
1956	W	63,748	8,956	22,892	23%	0.23		0.790		0.180	0.180	82.0%	36,676	6,783	12,767	0.24	0.24		0.763	0.144	0.292	0.292	70.8%	20,437	9,202	6,693	0.59	0.26	59.7	0.053	0.978	0.294	0.471	0.499	50.1%	66.06%
1957	A	33,144	7,217	11,446	24%	0.24		0.697		0.168	0.168	83.2%	44,377	7,515	15,647	0.23	0.23		0.802	0.144	0.298	0.298	70.2%	24,575	8,551	8,241	0.57	0.25	60.5	0.086	0.957	0.320	0.480	0.525	47.5%	65.06%
1958	W	61,170	7,735	21,928	23%	0.23		0.724		0.166	0.166	83.4%	93,616	7,535	34,062	0.22	0.22		0.804	0.144	0.291	0.291	70.9%	52,284	9,488	18,604	0.23	0.23	57.4	0.000	0.952	0.221	0.390	0.390	61.0%	69.55%
1959	B	50,082	5,841	17,781	23%	0.23		0.622		0.144	0.144	85.6%	22,092	6,125	7,312	0.58	0.25		0.727	0.144	0.293	0.293	70.7%	12,688	5,508	3,795	0.65	0.28	63	0.191	0.838	0.400	0.524	0.615	38.5%	62.98%
1960	D	26,024	11,583	8,783	25%	0.25		0.932		0.232	0.232	76.8%	21,126	7,258	6,951	0.58	0.26		0.789	0.144	0.310	0.310	69.0%	14,206	4,261	4,363	0.64	0.28	59.5	0.044	0.708	0.288	0.404	0.430	57.0%	66.43%
1961	D	30,450	10,858	10,438	24%	0.24		0.893		0.218	0.218	78.2%	20,744	8,019	6,808	0.59	0.26		0.830	0.144	0.321	0.321	67.9%	15,683	6,270	4,915	0.62	0.27	60.1	0.069	0.827	0.307	0.448	0.486	51.4%	64.30%
1962	B	38,521	9,956	13,457	24%	0.24		0.844		0.201	0.201	79.9%	26,263	10,782	8,872	0.25	0.25		0.979	0.144	0.352	0.352	64.8%	11,656	5,941	3,409	0.67	0.29	61.8	0.141	0.840	0.362	0.499	0.570	43.0%	60.25%
1963	W	58,694	12,778	21,002	23%	0.23		0.997		0.228	0.228	77.2%	32,645	8,939	11,259	0.24	0.24		0.879	0.144	0.322	0.322	67.8%	69,458	10,112	25,027	0.23	0.23	53.7	0.000	0.919	0.103	0.288	0.288	71.2%	70.05%
1964	D	19,616	7,921	6,386	59%	0.26		0.735		0.191	0.191	80.9%	17,999	7,280	5,782	0.60	0.26		0.790	0.144	0.315	0.315	68.5%	9,158	4,268	2,475	0.71	0.31	59.3	0.036	0.704	0.282	0.411	0.432	56.8%	66.63%
1965	W	33,076	9,662	11,420	24%	0.24		0.829		0.200	0.200	80.0%	21,133	7,160	6,954	0.58	0.26		0.783	0.144	0.308	0.308	69.2%	45,668	9,397	16,130	0.23	0.23	56.9	0.000	0.938	0.205	0.376	0.376	62.4%	68.54%
1966	B	26,777	6,418	9,065	25%	0.25		0.653		0.162	0.162	83.8%	28,683	7,691	9,777	0.25	0.25		0.812	0.144	0.308	0.308	69.2%	20,589	8,491	6,750	0.59	0.26	61.9	0.145	0.979	0.365	0.523	0.592	40.8%	62.55%
1967	W	41,066	7,494	14,409	24%	0.24		0.711		0.168	0.168	83.2%	54,488	6,486	19,429	0.23	0.23		0.747	0.144	0.283	0.283	71.7%	39,925	8,479	13,982	0.24	0.24	53.8	0.000	0.833	0.106	0.278	0.278	72.2%	73.35%
1968	B	56,470	6,031	20,170	23%	0.23		0.632		0.145	0.145	85.5%	36,789	7,135	12,809	0.24	0.24		0.782	0.144	0.296	0.296	70.4%	19,590	8,006	6,377	0.59	0.26	61.5	0.128	0.946	0.352	0.506	0.570	43.0%	64.13%
1969	W	67,482	6,026	24,288	23%	0.23		0.632		0.143	0.143	85.7%	45,319	5,306	15,999	0.23	0.23		0.683	0.144	0.270	0.270	73.0%	44,787	7,504	15,800	0.23	0.23	56.4	0.000	0.827	0.189	0.338	0.338	66.2%	72.58%
1970	W	57,565	5,234	20,579	23%	0.23		0.589		0.135	0.135	86.5%	35,819	7,161	12,446	0.24	0.24		0.783	0.144	0.297	0.297	70.3%	19,667	8,460	6,405	0.59	0.26	58.8	0.015	0.922	0.266	0.436	0.444	55.6%	67.97%
1971	W	29,019	8,609	9,903	25%	0.25		0.772		0.189	0.189	81.1%	51,067	7,964	18,149	0.23	0.23		0.827	0.144	0.302	0.302	69.8%	25,808	9,085	8,702	0.25	0.25	58.7	0.011	0.954	0.262	0.435	0.441	55.9%	67.09%
1972	B	25,083	8,848	8,431	25%	0.25		0.785		0.196	0.196	80.4%	32,930	7,347	11,366	0.24	0.24		0.793	0.144	0.301	0.301	69.9%	14,399	6,094	4,435	0.63	0.28	58.5	0.002	0.789	0.256	0.403	0.404	59.6%	68.17%
1973	A	70,967	8,691	25,592	23%	0.23		0.776		0.176	0.176	82.4%	47,552	7,912	16,834	0.23	0.23		0.824	0.144	0.302	0.302	69.8%	19,512	9,569	6,347	0.59	0.26	61.3	0.120	1.000	0.346	0.516	0.574	42.6%	63.26%
1974	W	41,926	7,718	14,730	24%	0.24		0.724		0.170	0.170	83.0%	34,651	7,880	12,009	0.24	0.24		0.822	0.144	0.307	0.307	69.3%	33,208	10,101	11,470	0.24	0.24	56.8	0.000	0.974	0.202	0.388	0.388	61.2%	68.64%
1975	W	58,811	7,011	21,045	23%	0.23		0.685		0.157	0.157	84.3%	75,998	8,144	27,473	0.23	0.23		0.836	0.144	0.300	0.300	70.0%	25,763	10,385	8,685	0.25	0.25	56.8	0.000	0.990	0.202	0.398	0.398	60.2%	68.90%
1976	C	20,229	8,449	6,616	59%	0.26		0.763		0.197	0.197	80.3%	18,356	6,138	5,915	0.60	0.26		0.728	0.144	0.298	0.298	70.2%	10,965	4,664	3,151	0.68	0.29	58.9	0.019	0.719	0.269	0.400	0.412	58.8%	68.11%
1977	C	12,176	2,150	3,604	66%	0.29		0.423		0.121	0.121	87.9%	7,338	1,924	1,794	0.76	0.33		0.501	0.144	0.260	0.260	74.0%	11,258	4,766	3,260	0.67	0.29	64.3	0.246	0.821	0.441	0.552	0.662	33.8%	63.73%
1978	A	51,370	7,268	18,262	23%	0.23		0.699		0.162	0.162	83.8%	44,443	6,022	15,672	0.23	0.23		0.722	0.144	0.280	0.280	72.0%	38,698	7,517	13,523	0.24	0.24	56.9	0.000	0.837	0.205	0.355	0.355	64.5%	71.32%
1979	B	41,682	5,341	14,639	24%	0.24		0.595		0.140	0.140	86.0%	32,548	7,183	11,223	0.24	0.24		0.785	0.144	0.299	0.299	70.1%	18,581	8,347	5,999	0.60	0.26	59.8	0.057	0.934	0.298	0.464	0.495	50.5%	66.28%
1980	A	71,932	4,656	25,953	23%	0.23		0.558		0.126	0.126	87.4%	36,480	5,160	12,694	0.24	0.24		0.675	0.144	0.271	0.271	72.9%	19,818	6,877	6,462	0.59	0.26	57.1	0.000	0.806	0.211	0.366	0.366	63.4%	71.94%
1981	D	29,672	5,802	10,147	24%	0.24		0.620		0.152	0.152	84.8%	32,501	7,134	11,205	0.24	0.24		0.782	0.144	0.298	0.298	70.2%	20,356	8,344	6,663	0.59	0.26	61.5	0.128	0.964	0.352	0.510	0.573	42.7%	63.83%
1982	W	65,645	8,768	23,601	23%	0.23		0.780		0.177	0.177	82.3%	69,087	7,570	24,889	0.23	0.23		0.805	0.144	0.294	0.294	70.6%	75,838	8,947	27,413	0.23	0.23	54.1	0.000	0.864	0.115	0.284	0.284	71.6%	72.41%
1983	W	82,910	4,188	30,058	22%	0.22		0.533		0.120	0.120	88.0%	81,934	4,670	29,693	0.22	0.22		0.649	0.144	0.257	0.257	74.3%	68,301	6,963	24,595	0.23	0.23	55	0.000	0.773	0.144	0.287	0.287	71.3%	75.17%
1984	W	37,282	5,305	12,993	24%	0.24		0.593		0.141	0.141	85.9%	36,503	7,284	12,702	0.24	0.24		0.790	0.144	0.298	0.298	70.2%	21,199	8,347	6,978	0.58	0.26	59.7	0.053	0.932	0.294	0.458	0.486	51.4%	66.56%
1985	D	18,931	7,696	6,130	60%	0.26		0.722		0.189	0.189	81.1%	21,228	7,707	6,989	0.58	0.26		0.813	0.144	0.316	0.316	68.4%	12,328	5,520	3,661	0.66	0.28	60.8	0.099	0.799	0.330	0.463	0.516	48.4%	64.06%
1986	W	95,068	12,261	34,605	22%	0.22		0.969		0.216	0.216	78.4%	72,539	8,412	26,180	0.23	0.23		0.851	0.144	0.304	0.304	69.6%	20,278	7,377	6,634	0.59	0.26	60.4	0.082	0.892	0.317	0.465	0.509	49.1%	64.59%
1987	D	23,028	5,438	7,662	58%	0.25		0.600		0.152	0.152	84.8%	29,769	6,353	10,184	0.24	0.24		0.740	0.144	0.290	0.290	71.0%	14,852	6,032	4,605	0.63	0.27	65.7	0.305	0.915	0.486	0.603	0.724	27.6%	59.77%
1988	C	17,484	6,696	5,589	61%	0.27		0.668		0.177	0.177	82.3%	10,883	3,731	3,120	0.68	0.29		0.598	0.144	0.277	0.277	72.3%	10,316	4,362	2,908	0.69	0.30	59.9	0.061	0.720	0.301	0.425	0.460	54.0%	68.07%
1989	D	13,024	2,763	3,921	65%	0.28		0.456		0.128	0.128	87.2%	41,238	11,196	14,473	0.24	0.24		1.000	0.144	0.346	0.346	65.4%	23,637	9,183	7,890	0.57	0.25	61.4	0.124	1.000	0.349	0.513	0.574	42.6%	61.40%
1990	C	16,696	7,752	5,294	61%	0.27		0.725		0.194	0.194	80.6%	14,588	5,805	4,506	0.63	0.27		0.710	0.144	0.300	0.300	70.0%	15,315	6,250	4,778	0.62	0.27	61.6	0.133	0.853	0.355	0.490	0.558	44.2%	63.66%
1991	C	11,161	1,269	3,224	68%	0.29		0.375		0.109	0.109	89.1%	29,675	11,318	10,148	0.24	0.24		1.000	0.144	0.354	0.354	64.6%	16,777	6,806	5,325	0.61	0.27	60.8	0.099	0.868	0.330	0.474	0.526	47.4%	62.66%
1992	C	32,038	8,960	11,032	24%	0.24		0.791		0.192	0.192	80.8%	19,706	8,131	6,420	0.59	0.26		0.836	0.144	0.324	0.324	67.6%	14,719	5,952	4,555	0.63	0.27	61.2	0.116	0.829	0.342	0.476	0.537	46.3%	62.96%
																																			Average:	65.59%

Formulas: Winter Run Salmon Smolt Survival Model

C10 ='Study 467 Flow Data'!E7
D10 ='Study 467 Flow Data'!O7 (HIDDEN)
E10 ='Study 467 Flow Data'!Y7 (HIDDEN)
F10 =(D9+E9)
G10 =0.374*C9-950
H10 =IF(C9>$G$2,(0.133*C9+829)/(C9-G9),(0.293*C9+2090)/(C9-G9))
I10 =(0.133*C9+829)/(C9-G9)
K10 =(-0.5916024)+(0.017968*$M$1)+(0.000054*F9)
M10 =(K9*I9)+L9*(1-I9)
N10 =J9+M9-(J9*M9)
O10 =1-N9

Q10 ='Study 467 Flow Data'!F7
R10 ='Study 467 Flow Data'!P7 (HIDDEN)
S10 ='Study 467 Flow Data'!Z7 (HIDDEN)
T10 =(R9+S9)
U10 =0.374*Q9-950
V10 =IF(Q9>$G$2,(0.133*Q9+829)/(Q9-U9),(0.293*Q9+2090)/(Q9-U9))
Y10 =(0.133*Q9+829)/(Q9-U9)
W10 =IF(((-0.5916024)+(0.017968*$M$2)+(0.000054*T9))>1,1,((-0.5916024)+(0.017968*$M$2)+(0.000054*T9)))
Z10 =-1.613493+(0.0319584*$M$2)
AA10 =(Y9*W9)+Z9*(1-W9)
AB10 =X9+AA9-(X9*AA9)
AC10 =1-AB9

AE10 ='Study 467 Flow Data'!G7 (HIDDEN)
AF10 ='Study 467 Flow Data'!Q7 (HIDDEN)
AG10 ='Study 467 Flow Data'!AA7
AH10 =AF9+AG9
AI10 =0.374*AE9-950
AJ10 =IF(AE9>$G$2,(0.133*AE9+829)/(AE9-AI9),(0.293*AE9+2090)/(AE9-AI9))
AK10 =(0.133*AE9+829)/(AE9-AI9)
AM10 =IF((-2.45925+(0.0420748*AL9))<0,0,(-2.45925+(0.0420748*AL9)))
AN10 =IF(((-0.5916024)+(0.017968*AL9)+(0.000054*AH9))>1,1,((-0.5916024)+(0.017968*AL9)+(0.000054*AH
AO10 =-1.613493+(0.0319584*AL9)
AP10 =(AN9*AK9)+(AO9*(1-AK9))
AQ10 =AM9+AP9-(AM9*AP9)

Study 526 Winter Run Smolt Survival Model   February Water Temp 50 F   April Water Temperatures based on limited historical data from USBR

Cross Channel Closed Over 25000 cfs   March Water Temp 55 F

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

FEBRUARY

Row	Year	Water Year Type	Sac River Flow	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survivability s123
	A	B	C	F	G	H	I	J	K	L	M	N	O
10	1922	A	35,290	8,350	12,248	24%	0.24		0.758		0.182	0.182	**81.8%**
11	1923	B	22,200	4,549	7,353	58%	0.25		0.552		0.141	0.141	**85.9%**
12	1924	C	17,751	9,115	5,689	60%	0.26		0.799		0.211	0.211	**78.9%**
13	1925	D	44,692	13,489	15,765	23%	0.23		1.035		0.242	0.242	**75.8%**
14	1926	D	36,217	14,530	12,595	24%	0.24		1.091		0.261	0.261	**73.9%**
15	1927	W	87,579	6,300	31,805	22%	0.22		0.647		0.145	0.145	**85.5%**
16	1928	A	28,340	6,201	9,649	25%	0.25		0.642		0.158	0.158	**84.2%**
17	1929	C	18,287	8,721	5,889	60%	0.26		0.778		0.205	0.205	**79.5%**
18	1930	D	15,675	6,599	4,912	62%	0.27		0.663		0.180	0.180	**82.0%**
19	1931	C	11,083	5,224	3,195	68%	0.29		0.589		0.172	0.172	**82.8%**
20	1932	D	14,487	9,112	4,468	63%	0.28		0.799		0.220	0.220	**78.0%**
21	1933	C	13,115	7,048	3,955	65%	0.28		0.687		0.193	0.193	**80.7%**
22	1934	C	12,740	5,786	3,815	65%	0.28		0.619		0.175	0.175	**82.5%**
23	1935	B	11,977	4,624	3,529	66%	0.29		0.556		0.160	0.160	**84.0%**
24	1936	B	49,118	14,546	17,420	23%	0.23		1.092		0.254	0.254	**74.6%**
25	1937	B	32,275	9,628	11,121	24%	0.24		0.827		0.200	0.200	**80.0%**
26	1938	W	82,366	5,119	29,855	22%	0.22		0.583		0.131	0.131	**86.9%**
27	1939	D	19,024	5,517	6,165	60%	0.26		0.605		0.158	0.158	**84.2%**
28	1940	A	43,658	10,699	15,378	23%	0.23		0.885		0.208	0.208	**79.2%**
29	1941	W	75,037	8,085	27,114	23%	0.23		0.743		0.168	0.168	**83.2%**
30	1942	W	78,349	5,619	28,353	23%	0.23		0.610		0.137	0.137	**86.3%**
31	1943	W	52,259	6,002	18,595	23%	0.23		0.631		0.146	0.146	**85.4%**
32	1944	D	31,866	5,401	10,968	24%	0.24		0.598		0.145	0.145	**85.5%**
33	1945	B	38,798	8,182	13,560	24%	0.24		0.749		0.178	0.178	**82.2%**
34	1946	B	23,843	6,373	7,967	57%	0.25		0.651		0.164	0.164	**83.6%**
35	1947	D	21,069	6,460	6,930	58%	0.26		0.656		0.168	0.168	**83.2%**
36	1948	B	15,928	5,866	5,007	62%	0.27		0.624		0.168	0.168	**83.2%**
37	1949	D	16,021	8,307	5,042	62%	0.27		0.755		0.204	0.204	**79.6%**
38	1950	B	33,536	13,749	11,592	24%	0.24		1.049		0.253	0.253	**74.7%**
39	1951	A	60,566	6,636	21,702	23%	0.23		0.665		0.152	0.152	**84.8%**
40	1952	W	64,731	5,281	23,259	23%	0.23		0.592		0.135	0.135	**86.5%**
41	1953	W	28,344	6,060	9,651	25%	0.25		0.634		0.156	0.156	**84.4%**
42	1954	A	57,158	6,581	20,427	23%	0.23		0.662		0.152	0.152	**84.8%**
43	1955	D	16,298	5,583	5,145	62%	0.27		0.608		0.163	0.163	**83.7%**
44	1956	W	63,748	6,048	22,892	23%	0.23		0.633		0.144	0.144	**85.6%**
45	1957	A	33,144	6,213	11,446	24%	0.24		0.642		0.155	0.155	**84.5%**
46	1958	W	63,593	5,755	22,834	23%	0.23		0.618		0.141	0.141	**85.9%**
47	1959	B	50,082	5,875	17,781	23%	0.23		0.624		0.145	0.145	**85.5%**
48	1960	D	26,653	12,431	9,018	25%	0.25		0.978		0.243	0.243	**75.7%**
49	1961	D	31,754	12,797	10,926	24%	0.24		0.998		0.242	0.242	**75.8%**
50	1962	B	38,281	9,978	13,367	24%	0.24		0.846		0.201	0.201	**79.9%**
51	1963	W	58,694	8,694	21,002	23%	0.23		0.776		0.178	0.178	**82.2%**
52	1964	D	17,861	6,620	5,730	60%	0.26		0.664		0.175	0.175	**82.5%**
53	1965	W	33,326	8,543	11,514	24%	0.24		0.768		0.185	0.185	**81.5%**
54	1966	B	26,777	6,402	9,065	25%	0.25		0.653		0.162	0.162	**83.8%**
55	1967	W	40,617	4,566	14,241	24%	0.24		0.553		0.131	0.131	**86.9%**
56	1968	B	56,470	6,042	20,170	23%	0.23		0.633		0.145	0.145	**85.5%**
57	1969	W	67,482	4,550	24,288	23%	0.23		0.552		0.125	0.125	**87.5%**
58	1970	W	57,565	5,262	20,579	23%	0.23		0.591		0.136	0.136	**86.4%**
59	1971	W	28,275	6,815	9,625	25%	0.25		0.675		0.166	0.166	**83.4%**
60	1972	B	25,083	6,379	8,431	25%	0.25		0.651		0.163	0.163	**83.7%**
61	1973	A	70,967	6,312	25,592	23%	0.23		0.648		0.147	0.147	**85.3%**
62	1974	W	41,926	6,302	14,730	24%	0.24		0.647		0.152	0.152	**84.8%**
63	1975	W	58,811	6,199	21,045	23%	0.23		0.642		0.147	0.147	**85.3%**
64	1976	C	20,229	5,749	6,616	59%	0.26		0.617		0.160	0.160	**84.0%**
65	1977	C	12,190	1,961	3,609	66%	0.29		0.413		0.118	0.118	**88.2%**
66	1978	A	51,370	5,533	18,262	23%	0.23		0.606		0.140	0.140	**86.0%**
67	1979	B	41,682	5,478	14,639	24%	0.24		0.603		0.142	0.142	**85.8%**
68	1980	A	71,932	4,671	25,953	23%	0.23		0.559		0.126	0.126	**87.4%**
69	1981	D	29,672	5,833	10,147	24%	0.24		0.622		0.152	0.152	**84.8%**
70	1982	W	65,645	5,854	23,601	23%	0.23		0.623		0.142	0.142	**85.8%**
71	1983	W	82,910	4,188	30,058	22%	0.22		0.533		0.120	0.120	**88.0%**
72	1984	W	37,282	5,338	12,993	24%	0.24		0.595		0.142	0.142	**85.8%**
73	1985	D	19,884	6,359	6,487	59%	0.26		0.650		0.169	0.169	**83.1%**
74	1986	W	90,600	8,120	32,934	22%	0.22		0.745		0.166	0.166	**83.4%**
75	1987	D	23,028	5,553	7,662	58%	0.25		0.607		0.154	0.154	**84.6%**
76	1988	C	16,332	6,128	5,158	62%	0.27		0.638		0.171	0.171	**82.9%**
77	1989	D	11,719	2,665	3,433	67%	0.29		0.451		0.130	0.130	**87.0%**
78	1990	C	16,946	7,803	5,388	61%	0.27		0.728		0.194	0.194	**80.6%**
79	1991	C	11,450	1,299	3,332	67%	0.29		0.377		0.109	0.109	**89.1%**
80	1992	C	32,038	10,918	11,032	24%	0.24		0.896		0.217	0.217	**78.3%**

MARCH

Year	Sac River Flow	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survivability s123
	Q	T	U	V	W	X	Y	Z	AA	AB	AC
1922	31,554	6,949	10,851	0.24	0.24		0.772	0.144	0.297	0.297	**70.3%**
1923	15,486	6,730	4,842	0.62	0.27		0.760	0.144	0.311	0.311	**68.9%**
1924	12,240	3,296	3,628	0.66	0.29		0.575	0.144	0.267	0.267	**73.3%**
1925	18,563	7,879	5,993	0.60	0.26		0.822	0.144	0.322	0.322	**67.8%**
1926	16,369	6,823	5,172	0.61	0.27		0.765	0.144	0.311	0.311	**68.9%**
1927	43,865	7,595	15,456	0.23	0.23		0.807	0.144	0.300	0.300	**70.0%**
1928	86,223	7,578	31,297	0.22	0.22		0.806	0.144	0.292	0.292	**70.8%**
1929	14,163	4,730	4,347	0.64	0.28		0.652	0.144	0.285	0.285	**71.5%**
1930	30,090	6,448	10,304	0.24	0.24		0.745	0.144	0.291	0.291	**70.9%**
1931	9,226	3,801	2,501	0.71	0.31		0.602	0.144	0.284	0.284	**71.6%**
1932	10,116	3,254	2,833	0.69	0.30		0.572	0.144	0.272	0.272	**72.8%**
1933	9,943	4,472	2,769	0.70	0.30		0.638	0.144	0.292	0.292	**70.8%**
1934	14,511	4,242	4,477	0.63	0.27		0.626	0.144	0.277	0.277	**72.3%**
1935	24,918	11,207	8,369	0.57	0.25		1.000	0.144	0.358	0.358	**64.2%**
1936	33,198	8,657	11,466	0.24	0.24		0.864	0.144	0.318	0.318	**68.2%**
1937	37,908	6,589	13,228	0.24	0.24		0.752	0.144	0.289	0.289	**71.1%**
1938	78,637	6,010	28,460	0.22	0.22		0.721	0.144	0.274	0.274	**72.6%**
1939	16,390	6,688	5,180	0.61	0.27		0.758	0.144	0.309	0.309	**69.1%**
1940	59,187	8,872	21,186	0.23	0.23		0.876	0.144	0.312	0.312	**68.8%**
1941	58,505	7,256	20,931	0.23	0.23		0.788	0.144	0.292	0.292	**70.8%**
1942	27,099	7,440	9,185	0.25	0.25		0.798	0.144	0.306	0.306	**69.4%**
1943	64,601	5,880	23,211	0.23	0.23		0.714	0.144	0.274	0.274	**72.6%**
1944	25,100	7,005	8,437	0.25	0.25		0.775	0.144	0.302	0.302	**69.8%**
1945	27,033	7,336	9,160	0.25	0.25		0.793	0.144	0.305	0.305	**69.5%**
1946	23,778	7,866	7,943	0.57	0.25		0.821	0.144	0.315	0.315	**68.5%**
1947	22,106	6,243	7,318	0.58	0.25		0.734	0.144	0.294	0.294	**70.6%**
1948	19,112	7,621	6,198	0.60	0.26		0.808	0.144	0.318	0.318	**68.2%**
1949	41,105	11,520	14,423	0.24	0.24		1.000	0.144	0.346	0.346	**65.4%**
1950	22,154	9,000	7,336	0.58	0.25		0.883	0.144	0.332	0.332	**66.8%**
1951	29,827	7,921	10,205	0.24	0.24		0.824	0.144	0.310	0.310	**69.0%**
1952	57,518	7,124	20,562	0.23	0.23		0.781	0.144	0.290	0.290	**71.0%**
1953	24,893	7,278	8,360	0.57	0.25		0.790	0.144	0.306	0.306	**69.4%**
1954	49,536	7,817	17,576	0.23	0.23		0.819	0.144	0.301	0.301	**69.9%**
1955	14,509	5,958	4,476	0.63	0.27		0.718	0.144	0.302	0.302	**69.8%**
1956	36,676	6,741	12,767	0.24	0.24		0.761	0.144	0.291	0.291	**70.9%**
1957	44,377	7,680	15,647	0.23	0.23		0.811	0.144	0.301	0.301	**69.9%**
1958	93,616	7,512	34,062	0.22	0.22		0.802	0.144	0.291	0.291	**70.9%**
1959	21,906	6,275	7,243	0.58	0.26		0.735	0.144	0.295	0.295	**70.5%**
1960	22,349	6,501	7,409	0.58	0.25		0.748	0.144	0.298	0.298	**70.2%**
1961	20,944	6,571	6,883	0.59	0.26		0.751	0.144	0.300	0.300	**70.0%**
1962	26,263	7,565	8,872	0.25	0.25		0.805	0.144	0.308	0.308	**69.2%**
1963	32,645	7,851	11,259	0.24	0.24		0.821	0.144	0.308	0.308	**69.2%**
1964	16,340	6,509	5,161	0.62	0.27		0.748	0.144	0.306	0.306	**69.4%**
1965	21,381	7,386	7,046	0.58	0.26		0.795	0.144	0.311	0.311	**68.9%**
1966	28,683	7,864	9,777	0.25	0.25		0.821	0.144	0.311	0.311	**68.9%**
1967	54,488	6,466	19,429	0.23	0.23		0.746	0.144	0.283	0.283	**71.7%**
1968	36,789	7,134	12,809	0.24	0.24		0.782	0.144	0.296	0.296	**70.4%**
1969	45,319	5,291	15,999	0.23	0.23		0.682	0.144	0.270	0.270	**73.0%**
1970	35,819	7,205	12,446	0.24	0.24		0.786	0.144	0.298	0.298	**70.2%**
1971	51,739	8,121	18,400	0.23	0.23		0.835	0.144	0.304	0.304	**69.6%**
1972	32,930	7,513	11,366	0.24	0.24		0.802	0.144	0.303	0.303	**69.7%**
1973	47,552	7,898	16,834	0.23	0.23		0.823	0.144	0.302	0.302	**69.8%**
1974	34,545	7,861	11,970	0.24	0.24		0.821	0.144	0.307	0.307	**69.3%**
1975	75,998	8,096	27,473	0.23	0.23		0.834	0.144	0.300	0.300	**70.0%**
1976	18,356	6,512	5,915	0.60	0.26		0.748	0.144	0.303	0.303	**69.7%**
1977	7,350	1,867	1,799	0.76	0.33		0.497	0.144	0.259	0.259	**74.1%**
1978	43,971	6,015	15,495	0.23	0.23		0.721	0.144	0.280	0.280	**72.0%**
1979	32,571	7,191	11,232	0.24	0.24		0.785	0.144	0.299	0.299	**70.1%**
1980	36,480	5,171	12,694	0.24	0.24		0.676	0.144	0.271	0.271	**72.9%**
1981	32,501	7,133	11,205	0.24	0.24		0.782	0.144	0.298	0.298	**70.2%**
1982	69,087	7,566	24,889	0.23	0.23		0.805	0.144	0.294	0.294	**70.6%**
1983	81,934	4,670	29,693	0.22	0.22		0.649	0.144	0.257	0.257	**74.3%**
1984	36,503	7,273	12,702	0.24	0.24		0.789	0.144	0.298	0.298	**70.2%**
1985	22,303	7,659	7,391	0.58	0.25		0.810	0.144	0.314	0.314	**68.6%**
1986	74,704	5,729	26,989	0.23	0.23		0.706	0.144	0.271	0.271	**72.9%**
1987	29,199	6,517	9,970	0.25	0.25		0.749	0.144	0.292	0.292	**70.8%**
1988	11,132	3,845	3,213	0.68	0.29		0.604	0.144	0.278	0.278	**72.2%**
1989	42,577	11,200	14,974	0.24	0.24		1.000	0.144	0.345	0.345	**65.5%**
1990	14,838	5,863	4,599	0.63	0.27		0.713	0.144	0.300	0.300	**70.0%**
1991	29,675	11,964	10,148	0.24	0.24		1.000	0.144	0.354	0.354	**64.6%**
1992	19,706	8,098	6,420	0.59	0.26		0.834	0.144	0.323	0.323	**67.7%**

APRIL

Year	Sac River Flow	CVP + SWP Exports	Calculated Steamboat & Sutter Slough flows	Percent	X-Channel Closed	Water temp f	m1	m2	m3	m23	m123	Calculated Survivability s123	Weighted Total Survival
	AE	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS
1922	22,816	8,378	7,583	0.58	0.25	58.5	0.002	0.912	0.256	0.422	0.424	**57.6%**	**68.02%**
1923	23,688	8,082	7,909	0.57	0.25	58.3	0.000	0.892	0.250	0.412	0.412	**58.8%**	**68.07%**
1924	8,067	2,790	2,067	0.74	0.32	61.5	0.128	0.664	0.352	0.451	0.521	**47.9%**	**66.39%**
1925	22,651	6,950	7,521	0.58	0.25	59.1	0.027	0.846	0.275	0.420	0.436	**56.4%**	**65.41%**
1926	19,982	6,422	6,523	0.59	0.26	61.6	0.133	0.862	0.355	0.486	0.555	**44.5%**	**62.25%**
1927	48,222	9,771	17,085	0.23	0.23	56.8	0.000	0.957	0.202	0.377	0.377	**62.3%**	**69.72%**
1928	29,212	7,938	9,975	0.25	0.25	58.7	0.011	0.892	0.262	0.417	0.423	**57.7%**	**68.60%**
1929	9,056	2,956	2,437	0.72	0.31	56.3	0.000	0.580	0.186	0.307	0.307	**69.3%**	**71.92%**
1930	12,640	3,912	3,777	0.65	0.28	59.6	0.048	0.691	0.291	0.404	0.433	**56.7%**	**68.09%**
1931	9,202	2,970	2,492	0.71	0.31	62.8	0.183	0.697	0.393	0.486	0.580	**42.0%**	**64.16%**
1932	13,023	5,318	3,921	0.65	0.28	58.9	0.019	0.754	0.269	0.405	0.417	**58.3%**	**69.14%**
1933	12,736	4,123	3,813	0.65	0.28	60.1	0.069	0.711	0.307	0.421	0.462	**53.8%**	**66.98%**
1934	12,856	3,580	3,858	0.65	0.28	63.6	0.217	0.744	0.419	0.511	0.617	**38.3%**	**63.45%**
1935	24,634	9,803	8,263	0.57	0.25	58.9	0.019	0.996	0.269	0.451	0.462	**53.8%**	**63.64%**
1936	21,031	8,334	6,916	0.58	0.26	59.7	0.053	0.931	0.294	0.458	0.487	**51.3%**	**63.98%**
1937	23,257	7,985	7,748	0.57	0.25	58.8	0.015	0.896	0.266	0.425	0.434	**56.6%**	**67.92%**
1938	47,172	7,719	16,692	0.23	0.23	56.3	0.000	0.837	0.186	0.337	0.337	**66.3%**	**72.56%**
1939	12,224	4,144	3,622	0.66	0.29	63.3	0.204	0.770	0.409	0.512	0.612	**38.8%**	**61.99%**
1940	41,731	10,010	14,657	0.24	0.24	57.4	0.000	0.980	0.221	0.400	0.400	**60.0%**	**67.54%**
1941	42,372	9,308	14,897	0.24	0.24	56.9	0.000	0.933	0.205	0.376	0.376	**62.4%**	**69.89%**
1942	43,308	9,646	15,247	0.23	0.23	56.5	0.000	0.944	0.192	0.369	0.369	**63.1%**	**69.70%**
1943	29,406	9,143	10,048	0.24	0.24	58.8	0.015	0.959	0.266	0.435	0.444	**55.6%**	**69.18%**
1944	9,823	4,248	2,724	0.70	0.30	58.4	0.000	0.687	0.253	0.383	0.383	**61.7%**	**69.40%**
1945	11,753	6,262	3,446	0.67	0.29	60.6	0.090	0.835	0.323	0.471	0.519	**48.1%**	**64.76%**
1946	12,226	5,960	3,623	0.66	0.29	60.7	0.095	0.821	0.326	0.467	0.518	**48.2%**	**64.38%**
1947	13,800	4,910	4,211	0.64	0.28	62.5	0.170	0.797	0.384	0.499	0.584	**41.6%**	**63.51%**
1948	22,793	6,780	7,575	0.58	0.25	56.6	0.000	0.792	0.195	0.347	0.347	**65.3%**	**69.32%**
1949	13,210	5,088	3,991	0.65	0.28	61.7	0.137	0.792	0.358	0.480	0.551	**44.9%**	**61.09%**
1950	19,263	6,248	6,254	0.59	0.26	61.3	0.120	0.847	0.346	0.476	0.539	**46.1%**	**61.59%**
1951	14,732	6,362	4,560	0.63	0.27	59.9	0.061	0.828	0.301	0.445	0.479	**52.1%**	**65.95%**
1952	56,648	7,839	20,236	0.23	0.23	55.5	0.000	0.829	0.160	0.314	0.314	**68.6%**	**72.28%**
1953	16,177	5,650	5,100	0.62	0.27	58.8	0.015	0.770	0.266	0.401	0.410	**59.0%**	**68.23%**
1954	39,868	9,080	13,961	0.24	0.24	58.4	0.000	0.948	0.253	0.417	0.417	**58.3%**	**68.36%**
1955	9,473	3,672	2,593	0.71	0.30	56.4	0.000	0.620	0.189	0.320	0.320	**68.0%**	**71.06%**
1956	20,437	7,982	6,693	0.59	0.26	59.7	0.053	0.912	0.294	0.454	0.483	**51.7%**	**67.04%**
1957	20,958	6,400	6,888	0.58	0.26	60.5	0.086	0.841	0.320	0.454	0.501	**49.9%**	**65.82%**
1958	52,284	9,482	18,604	0.23	0.23	57.4	0.000	0.952	0.221	0.390	0.390	**61.0%**	**69.89%**
1959	10,480	3,784	2,970	0.69	0.30	63	0.191	0.745	0.400	0.502	0.597	**40.3%**	**63.38%**
1960	13,493	4,022	4,096	0.64	0.28	59.5	0.044	0.695	0.288	0.402	0.428	**57.2%**	**67.03%**
1961	12,784	3,540	3,831	0.65	0.28	60.1	0.069	0.679	0.307	0.412	0.453	**54.7%**	**66.14%**
1962	11,656	4,986	3,409	0.67	0.29	61.8	0.141	0.788	0.362	0.485	0.557	**44.3%**	**63.09%**
1963	69,458	9,811	25,027	0.23	0.23	53.7	0.000	0.903	0.103	0.284	0.284	**71.6%**	**71.63%**
1964	8,953	3,512	2,398	0.72	0.31	59.3	0.036	0.664	0.282	0.399	0.421	**57.9%**	**67.63%**
1965	45,179	9,797	15,947	0.23	0.23	56.9	0.000	0.960	0.205	0.382	0.382	**61.8%**	**68.41%**
1966	16,758	5,622	5,317	0.61	0.27	61.9	0.145	0.824	0.365	0.488	0.562	**43.8%**	**63.34%**
1967	39,925	8,467	13,982	0.24	0.24	53.8	0.000	0.832	0.106	0.278	0.278	**72.2%**	**73.85%**
1968	15,565	5,240	4,871	0.62	0.27	61.5	0.128	0.796	0.352	0.472	0.540	**46.0%**	**65.01%**
1969	44,787	7,504	15,800	0.23	0.23	56.4	0.000	0.827	0.189	0.338	0.338	**66.2%**	**72.83%**
1970	16,591	6,598	5,255	0.61	0.27	58.8	0.015	0.821	0.266	0.414	0.423	**57.7%**	**68.58%**
1971	21,693	6,554	7,163	0.58	0.26	58.7	0.011	0.817	0.262	0.404	0.411	**58.9%**	**68.20%**
1972	12,452	4,698	3,707	0.66	0.28	58.5	0.002	0.713	0.256	0.386	0.387	**61.3%**	**68.98%**
1973	19,512	7,452	6,347	0.59	0.26	61.3	0.120	0.912	0.346	0.493	0.554	**44.6%**	**64.25%**
1974	33,208	10,101	11,470	0.24	0.24	56.8	0.000	0.974	0.202	0.388	0.388	**61.2%**	**68.88%**
1975	25,763	9,293	8,685	0.25	0.25	56.8	0.000	0.931	0.202	0.383	0.383	**61.7%**	**69.51%**
1976	9,434	3,002	2,578	0.71	0.30	58.9	0.019	0.629	0.269	0.378	0.390	**61.0%**	**68.95%**
1977	9,136	2,994	2,467	0.71	0.31	64.3	0.246	0.725	0.441	0.528	0.645	**35.5%**	**64.36%**
1978	38,125	7,519	13,309	0.24	0.24	56.9	0.000	0.837	0.205	0.355	0.355	**64.5%**	**71.59%**
1979	17,702	6,852	5,671	0.60	0.26	59.8	0.057	0.853	0.298	0.445	0.476	**52.4%**	**66.82%**
1980	19,818	6,894	6,462	0.59	0.26	57.1	0.000	0.807	0.211	0.366	0.366	**63.4%**	**71.93%**
1981	16,998	5,450	5,407	0.61	0.27	61.5	0.128	0.808	0.352	0.473	0.541	**45.9%**	**64.78%**
1982	75,838	8,943	27,413	0.23	0.23	54.1	0.000	0.863	0.115	0.284	0.284	**71.6%**	**72.88%**
1983	68,301	6,963	24,595	0.23	0.23	55	0.000	0.773	0.144	0.287	0.287	**71.3%**	**75.17%**
1984	17,874	6,846	5,735	0.60	0.26	59.7	0.053	0.851	0.294	0.441	0.471	**52.9%**	**67.03%**
1985	12,328	4,086	3,661	0.66	0.28	60.8	0.099	0.721	0.330	0.441	0.496	**50.4%**	**65.03%**
1986	20,528	7,665	6,727	0.59	0.26	60.4	0.082	0.908	0.317	0.469	0.513	**48.7%**	**67.01%**
1987	12,490	3,514	3,721	0.66	0.28	65.7	0.305	0.779	0.486	0.569	0.701	**29.9%**	**60.32%**
1988	8,644	2,854	2,283	0.73	0.31	59.9	0.061	0.639	0.301	0.406	0.442	**55.8%**	**68.64%**
1989	23,637	5,650	7,890	0.57	0.25	61.4	0.124	0.817	0.349	0.467	0.533	**46.7%**	**62.63%**
1990	12,444	3,534	3,704	0.66	0.28	61.6	0.133	0.706	0.355	0.455	0.527	**47.3%**	**64.56%**
1991	15,284	4,249	4,766	0.62	0.27	60.8	0.099	0.730	0.330	0.439	0.494	**50.6%**	**63.61%**
1992	12,482	3,738	3,718	0.66	0.28	61.2	0.116	0.710	0.342	0.447	0.511	**48.9%**	**63.42%**
												Average:	**66.26%**

Formulas: Winter Run Salmon Smolt Survival Model

C10 ='Study 467 Flow Data'!E7
D10 ='Study 467 Flow Data'!O7 (HIDDEN)
E10 ='Study 467 Flow Data'!Y7 (HIDDEN)
F10 =(D9+E9)
G10 =0.374*C9-950
H10 =IF(C9>$G$2,(0.133*C9+829)/(C9-G9),(0.293*C9+2090)/(C9-G9))
I10 =(0.133*C9+829)/(C9-G9)
K10 =(-0.5916024)+(0.017968*$M$1)+(0.000054*F9)
M10 =(K9*I9)+L9*(1-I9)
N10 =J9+M9-(J9*M9)
O10 =1-N9

Q10 ='Study 467 Flow Data'!F7
R10 ='Study 467 Flow Data'!P7 (HIDDEN)
S10 ='Study 467 Flow Data'!Z7 (HIDDEN)
T10 =(R9+S9)
U10 =0.374*Q9-950
V10 =IF(Q9>$G$2,(0.133*Q9+829)/(Q9-U9),(0.293*Q9+2090)/(Q9-U9))
Y10 =(0.133*Q9+829)/(Q9-U9)
W10 =IF(((-0.5916024)+(0.017968*$M$2)+(0.000054*T9))>1,1,((-0.5916024)+(0.017968*$M$2)+(0.000054*T9)))
Z10 =-1.613493+(0.0319584*$M$2)
AA10 =(Y9*W9)+Z9*(1-W9)
AB10 =X9+AA9-(X9*AA9)
AC10 =1-AB9

(HIDDEN)
AE10 ='Study 467 Flow Data'!G7 (HIDDEN)
AF10 ='Study 467 Flow Data'!Q7
AG10 ='Study 467 Flow Data'!AA7
AH10 =AF9+AG9
AI10 =0.374*AE9-950
AJ10 =IF(AE9>$G$2,(0.133*AE9+829)/(AE9-AI9),(0.293*AE9+2090)/(AE9-AI9))
AK10 =(0.133*AE9+829)/(AE9-AI9)
AM10 =IF((-2.45925+(0.0420748*AL9))<0,0,(-2.45925+(0.0420748*AL9)))
AN10 =IF(((-0.5916024)+(0.017968*AL9)+(0.000054*AH9))>1,1,((-0.5916024)+(0.017968*AL9)+(0.000054*AH9
AO10 =-1.613493+(0.0319584*AL9)
AP10 =(AN9*AK9)+(AO9*(1-AK9))
AQ10 =AM9+AP9-(AM9*AP9)

Study 526A Winter Run Smolt Survival Model   February Water Temp 50 F   April Water Temperatures based on limited historical data from USBR

Cross Channel Closed Over 25000 cfs   March Water Temp 55 F

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

FEBRUARY

Year	Water Year Type	Sac River Flow	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survivability s123
1922	A	34,838	8,251	12,079	24%	0.24		0.752		0.181	0.181	**81.9%**
1923	B	22,252	4,543	7,372	58%	0.25		0.552		0.141	0.141	**85.9%**
1924	C	17,817	9,144	5,714	60%	0.26		0.801		0.212	0.212	**78.8%**
1925	D	44,467	12,383	15,681	23%	0.23		0.975		0.229	0.229	**77.1%**
1926	D	35,783	14,529	12,433	24%	0.24		1.091		0.261	0.261	**73.9%**
1927	W	87,861	8,385	31,910	22%	0.22		0.760		0.170	0.170	**83.0%**
1928	A	28,407	6,199	9,674	25%	0.25		0.642		0.158	0.158	**84.2%**
1929	C	17,853	8,253	5,727	60%	0.26		0.752		0.199	0.199	**80.1%**
1930	D	15,731	6,622	4,933	62%	0.27		0.664		0.180	0.180	**82.0%**
1931	C	11,150	5,334	3,220	68%	0.29		0.595		0.173	0.173	**82.7%**
1932	D	14,442	9,256	4,451	63%	0.28		0.807		0.222	0.222	**77.8%**
1933	C	13,229	7,099	3,998	65%	0.28		0.690		0.194	0.194	**80.6%**
1934	C	12,796	5,805	3,836	65%	0.28		0.620		0.175	0.175	**82.5%**
1935	B	12,033	4,671	3,550	66%	0.29		0.559		0.160	0.160	**84.0%**
1936	B	49,713	14,542	17,643	23%	0.23		1.092		0.253	0.253	**74.7%**
1937	B	32,342	9,067	11,146	24%	0.24		0.796		0.193	0.193	**80.7%**
1938	W	82,366	5,126	29,855	22%	0.22		0.584		0.131	0.131	**86.9%**
1939	D	19,090	5,517	6,190	60%	0.26		0.605		0.158	0.158	**84.2%**
1940	A	43,518	10,757	15,326	23%	0.23		0.888		0.208	0.208	**79.2%**
1941	W	75,037	8,081	27,114	23%	0.23		0.743		0.168	0.168	**83.2%**
1942	W	78,349	5,621	28,353	23%	0.23		0.610		0.137	0.137	**86.3%**
1943	W	52,259	6,001	18,595	23%	0.23		0.631		0.146	0.146	**85.4%**
1944	D	32,384	5,381	11,162	24%	0.24		0.597		0.145	0.145	**85.5%**
1945	B	38,492	8,061	13,446	24%	0.24		0.742		0.176	0.176	**82.4%**
1946	B	23,843	6,383	7,967	57%	0.25		0.651		0.164	0.164	**83.6%**
1947	D	21,136	8,041	6,955	58%	0.26		0.741		0.190	0.190	**81.0%**
1948	B	15,931	5,865	5,008	62%	0.27		0.624		0.168	0.168	**83.2%**
1949	D	16,052	8,319	5,053	62%	0.27		0.756		0.204	0.204	**79.6%**
1950	B	32,663	13,440	11,266	24%	0.24		1.033		0.250	0.250	**75.0%**
1951	A	60,566	6,633	21,702	23%	0.23		0.665		0.152	0.152	**84.8%**
1952	W	64,731	5,387	23,259	23%	0.23		0.598		0.136	0.136	**86.4%**
1953	W	28,344	6,064	9,651	25%	0.25		0.634		0.156	0.156	**84.4%**
1954	A	56,808	6,579	20,296	23%	0.23		0.662		0.152	0.152	**84.8%**
1955	D	15,864	5,559	4,983	62%	0.27		0.607		0.164	0.164	**83.6%**
1956	W	63,748	6,039	22,892	23%	0.23		0.633		0.144	0.144	**85.6%**
1957	A	32,794	6,189	11,315	24%	0.24		0.641		0.155	0.155	**84.5%**
1958	W	63,024	5,742	22,621	23%	0.23		0.617		0.141	0.141	**85.9%**
1959	B	50,072	5,867	17,777	23%	0.23		0.624		0.145	0.145	**85.5%**
1960	D	25,840	12,715	8,714	25%	0.25		0.993		0.247	0.247	**75.3%**
1961	D	28,695	13,545	9,782	25%	0.25		1.038		0.255	0.255	**74.5%**
1962	B	34,763	13,289	12,051	24%	0.24		1.024		0.246	0.246	**75.4%**
1963	W	58,694	8,688	21,002	23%	0.23		0.776		0.178	0.178	**82.2%**
1964	D	17,927	6,615	5,755	60%	0.26		0.664		0.175	0.175	**82.5%**
1965	W	33,076	8,787	11,420	24%	0.24		0.781		0.189	0.189	**81.1%**
1966	B	26,844	6,399	9,090	25%	0.25		0.652		0.162	0.162	**83.8%**
1967	W	40,608	4,680	14,237	24%	0.24		0.560		0.132	0.132	**86.8%**
1968	B	56,470	6,040	20,170	23%	0.23		0.633		0.145	0.145	**85.5%**
1969	W	67,482	4,648	24,288	23%	0.23		0.558		0.127	0.127	**87.3%**
1970	W	57,565	5,275	20,579	23%	0.23		0.592		0.136	0.136	**86.4%**
1971	W	28,275	6,935	9,625	25%	0.25		0.681		0.168	0.168	**83.2%**
1972	B	25,015	6,376	8,406	25%	0.25		0.651		0.163	0.163	**83.7%**
1973	A	70,967	6,297	25,592	23%	0.23		0.647		0.146	0.146	**85.4%**
1974	W	41,926	6,301	14,730	24%	0.24		0.647		0.152	0.152	**84.8%**
1975	W	58,461	6,202	20,914	23%	0.23		0.642		0.147	0.147	**85.3%**
1976	C	20,296	5,752	6,641	59%	0.26		0.617		0.160	0.160	**84.0%**
1977	C	12,185	1,968	3,607	66%	0.29		0.413		0.118	0.118	**88.2%**
1978	A	51,370	5,513	18,262	23%	0.23		0.604		0.140	0.140	**86.0%**
1979	B	41,749	5,449	14,664	24%	0.24		0.601		0.142	0.142	**85.8%**
1980	A	71,932	4,676	25,953	23%	0.23		0.559		0.126	0.126	**87.4%**
1981	D	29,739	5,824	10,172	24%	0.24		0.621		0.152	0.152	**84.8%**
1982	W	65,645	5,852	23,601	23%	0.23		0.623		0.142	0.142	**85.8%**
1983	W	82,910	4,293	30,058	22%	0.22		0.539		0.121	0.121	**87.9%**
1984	W	37,282	5,332	12,993	24%	0.24		0.595		0.142	0.142	**85.8%**
1985	D	19,906	6,359	6,495	59%	0.26		0.650		0.169	0.169	**83.1%**
1986	W	91,390	8,133	33,230	22%	0.22		0.746		0.167	0.167	**83.3%**
1987	D	23,094	5,571	7,687	57%	0.25		0.608		0.154	0.154	**84.6%**
1988	C	16,341	6,129	5,162	62%	0.27		0.638		0.171	0.171	**82.9%**
1989	D	12,754	2,684	3,820	65%	0.28		0.452		0.128	0.128	**87.2%**
1990	C	15,611	6,892	4,889	62%	0.27		0.679		0.184	0.184	**81.6%**
1991	C	12,353	1,337	3,670	66%	0.28		0.379		0.108	0.108	**89.2%**
1992	C	32,637	10,906	11,256	24%	0.24		0.896		0.217	0.217	**78.3%**

MARCH

Year	Sac River Flow	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survivability s123
1922	31,632	7,132	10,880	0.24	0.24		0.782	0.144	0.299	0.299	**70.1%**
1923	15,564	7,026	4,871	0.62	0.27		0.776	0.144	0.316	0.316	**68.4%**
1924	12,237	3,289	3,627	0.66	0.29		0.574	0.144	0.267	0.267	**73.3%**
1925	18,642	7,907	6,022	0.60	0.26		0.824	0.144	0.322	0.322	**67.8%**
1926	16,097	6,728	5,070	0.62	0.27		0.760	0.144	0.310	0.310	**69.0%**
1927	43,865	8,252	15,456	0.23	0.23		0.842	0.144	0.308	0.308	**69.2%**
1928	86,069	7,591	31,240	0.22	0.22		0.807	0.144	0.293	0.293	**70.7%**
1929	13,827	4,718	4,221	0.64	0.28		0.651	0.144	0.285	0.285	**71.5%**
1930	30,156	6,447	10,328	0.24	0.24		0.745	0.144	0.291	0.291	**70.9%**
1931	9,237	3,805	2,505	0.71	0.31		0.602	0.144	0.284	0.284	**71.6%**
1932	10,180	3,309	2,857	0.69	0.30		0.575	0.144	0.273	0.273	**72.7%**
1933	10,007	4,494	2,793	0.70	0.30		0.639	0.144	0.292	0.292	**70.8%**
1934	14,504	4,227	4,474	0.63	0.27		0.625	0.144	0.276	0.276	**72.4%**
1935	24,996	11,233	8,399	0.57	0.25		1.000	0.144	0.358	0.358	**64.2%**
1936	32,948	8,663	11,373	0.24	0.24		0.864	0.144	0.318	0.318	**68.2%**
1937	37,954	6,617	13,245	0.24	0.24		0.754	0.144	0.289	0.289	**71.1%**
1938	78,637	6,195	28,460	0.22	0.22		0.731	0.144	0.276	0.276	**72.4%**
1939	16,468	6,686	5,209	0.61	0.27		0.758	0.144	0.309	0.309	**69.1%**
1940	59,353	8,871	21,248	0.23	0.23		0.876	0.144	0.312	0.312	**68.8%**
1941	58,569	7,419	20,955	0.23	0.23		0.797	0.144	0.294	0.294	**70.6%**
1942	27,177	7,620	9,214	0.25	0.25		0.808	0.144	0.308	0.308	**69.2%**
1943	64,601	5,907	23,211	0.23	0.23		0.716	0.144	0.274	0.274	**72.6%**
1944	25,179	6,998	8,467	0.25	0.25		0.775	0.144	0.302	0.302	**69.8%**
1945	27,111	7,346	9,190	0.25	0.25		0.793	0.144	0.305	0.305	**69.5%**
1946	23,778	8,052	7,943	0.57	0.25		0.831	0.144	0.317	0.317	**68.3%**
1947	22,184	6,239	7,347	0.58	0.25		0.734	0.144	0.294	0.294	**70.6%**
1948	19,151	7,634	6,212	0.60	0.26		0.809	0.144	0.318	0.318	**68.2%**
1949	41,392	11,147	14,531	0.24	0.24		0.999	0.144	0.346	0.346	**65.4%**
1950	22,192	9,012	7,350	0.58	0.25		0.883	0.144	0.332	0.332	**66.8%**
1951	29,827	7,938	10,205	0.24	0.24		0.825	0.144	0.311	0.311	**68.9%**
1952	57,518	7,304	20,562	0.23	0.23		0.791	0.144	0.293	0.293	**70.7%**
1953	24,971	7,292	8,389	0.57	0.25		0.790	0.144	0.306	0.306	**69.4%**
1954	49,536	7,831	17,576	0.23	0.23		0.820	0.144	0.301	0.301	**69.9%**
1955	14,629	6,000	4,521	0.63	0.27		0.721	0.144	0.302	0.302	**69.8%**
1956	36,754	6,925	12,796	0.24	0.24		0.771	0.144	0.294	0.294	**70.6%**
1957	44,377	7,689	15,647	0.23	0.23		0.812	0.144	0.301	0.301	**69.9%**
1958	93,616	7,700	34,062	0.22	0.22		0.812	0.144	0.293	0.293	**70.7%**
1959	22,671	6,561	7,529	0.58	0.25		0.751	0.144	0.298	0.298	**70.2%**
1960	20,297	7,227	6,641	0.59	0.26		0.787	0.144	0.310	0.310	**69.0%**
1961	20,226	6,746	6,615	0.59	0.26		0.761	0.144	0.304	0.304	**69.6%**
1962	25,841	7,525	8,715	0.25	0.25		0.803	0.144	0.308	0.308	**69.2%**
1963	32,723	7,875	11,288	0.24	0.24		0.822	0.144	0.308	0.308	**69.2%**
1964	16,418	6,536	5,190	0.61	0.27		0.750	0.144	0.307	0.307	**69.3%**
1965	21,211	7,409	6,983	0.58	0.26		0.797	0.144	0.312	0.312	**68.8%**
1966	28,761	8,051	9,807	0.25	0.25		0.831	0.144	0.313	0.313	**68.7%**
1967	54,488	6,480	19,429	0.23	0.23		0.747	0.144	0.283	0.283	**71.7%**
1968	36,789	7,294	12,809	0.24	0.24		0.791	0.144	0.298	0.298	**70.2%**
1969	45,397	5,466	16,028	0.23	0.23		0.692	0.144	0.272	0.272	**72.8%**
1970	35,897	7,218	12,475	0.24	0.24		0.786	0.144	0.298	0.298	**70.2%**
1971	51,739	8,301	18,400	0.23	0.23		0.845	0.144	0.306	0.306	**69.4%**
1972	32,930	7,673	11,366	0.24	0.24		0.811	0.144	0.305	0.305	**69.5%**
1973	47,552	7,997	16,834	0.23	0.23		0.828	0.144	0.304	0.304	**69.6%**
1974	34,465	7,948	11,940	0.24	0.24		0.826	0.144	0.308	0.308	**69.2%**
1975	75,998	8,277	27,473	0.23	0.23		0.844	0.144	0.302	0.302	**69.8%**
1976	18,389	6,499	5,927	0.60	0.26		0.748	0.144	0.303	0.303	**69.7%**
1977	7,358	1,871	1,802	0.76	0.33		0.498	0.144	0.259	0.259	**74.1%**
1978	43,971	6,069	15,495	0.23	0.23		0.724	0.144	0.280	0.280	**72.0%**
1979	31,992	7,197	11,015	0.24	0.24		0.785	0.144	0.300	0.300	**70.0%**
1980	36,480	5,197	12,694	0.24	0.24		0.677	0.144	0.272	0.272	**72.8%**
1981	32,579	7,297	11,235	0.24	0.24		0.791	0.144	0.301	0.301	**69.9%**
1982	69,087	7,577	24,889	0.23	0.23		0.806	0.144	0.294	0.294	**70.6%**
1983	81,934	4,844	29,693	0.22	0.22		0.658	0.144	0.260	0.260	**74.0%**
1984	36,581	7,285	12,731	0.24	0.24		0.790	0.144	0.298	0.298	**70.2%**
1985	21,481	7,802	7,084	0.58	0.26		0.818	0.144	0.317	0.317	**68.3%**
1986	72,974	5,749	26,342	0.23	0.23		0.707	0.144	0.271	0.271	**72.9%**
1987	29,660	6,538	10,143	0.24	0.24		0.750	0.144	0.292	0.292	**70.8%**
1988	11,108	3,816	3,204	0.68	0.29		0.603	0.144	0.278	0.278	**72.2%**
1989	41,167	11,145	14,446	0.24	0.24		0.998	0.144	0.346	0.346	**65.4%**
1990	13,978	5,557	4,278	0.64	0.28		0.697	0.144	0.297	0.297	**70.3%**
1991	29,739	11,987	10,172	0.24	0.24		1.000	0.144	0.353	0.353	**64.7%**
1992	20,217	7,722	6,611	0.59	0.26		0.814	0.144	0.317	0.317	**68.3%**

APRIL

Year	Sac River Flow	CVP + SWF Exports	Calculated Steamboat & Sutter Slough flows	Percent	X-Channel Closed	Water temp f	m1	m2	m3	m23	m123	Calculated Survivability s123	Weighted Total Survival
1922	22,927	8,396	7,625	0.58	0.25	58.5	0.002	0.913	0.256	0.423	0.424	**57.6%**	**67.90%**
1923	23,597	8,068	7,875	0.57	0.25	58.3	0.000	0.892	0.250	0.412	0.412	**58.8%**	**67.84%**
1924	7,857	2,754	1,989	0.75	0.32	61.5	0.128	0.662	0.352	0.451	0.521	**47.9%**	**66.39%**
1925	22,570	6,936	7,491	0.58	0.25	59.1	0.027	0.845	0.275	0.420	0.436	**56.4%**	**65.58%**
1926	20,254	6,466	6,625	0.59	0.26	61.6	0.133	0.864	0.355	0.487	0.555	**44.5%**	**62.29%**
1927	48,222	9,771	17,085	0.23	0.23	56.8	0.000	0.957	0.202	0.377	0.377	**62.3%**	**68.92%**
1928	29,212	7,938	9,975	0.25	0.25	58.7	0.011	0.892	0.262	0.417	0.423	**57.7%**	**68.59%**
1929	8,866	2,922	2,366	0.72	0.31	56.3	0.000	0.578	0.186	0.307	0.307	**69.3%**	**71.96%**
1930	12,751	3,930	3,819	0.65	0.28	59.6	0.048	0.692	0.291	0.404	0.433	**56.7%**	**68.09%**
1931	8,996	2,936	2,415	0.72	0.31	62.8	0.183	0.695	0.393	0.486	0.580	**42.0%**	**64.14%**
1932	13,087	5,373	3,945	0.65	0.28	58.9	0.019	0.757	0.269	0.406	0.417	**58.3%**	**69.05%**
1933	12,582	4,098	3,756	0.65	0.28	60.1	0.069	0.710	0.307	0.421	0.461	**53.9%**	**66.97%**
1934	12,864	3,582	3,861	0.65	0.28	63.6	0.217	0.745	0.419	0.511	0.617	**38.3%**	**63.46%**
1935	24,080	9,780	8,056	0.57	0.25	58.9	0.019	0.995	0.269	0.452	0.462	**53.8%**	**63.63%**
1936	20,781	8,288	6,822	0.59	0.26	59.7	0.053	0.929	0.294	0.458	0.486	**51.4%**	**63.98%**
1937	23,257	7,978	7,748	0.57	0.25	58.8	0.015	0.896	0.266	0.425	0.433	**56.7%**	**68.00%**
1938	47,172	7,969	16,692	0.23	0.23	56.3	0.000	0.850	0.186	0.341	0.341	**65.9%**	**72.33%**
1939	12,103	4,122	3,577	0.66	0.29	63.3	0.204	0.768	0.409	0.512	0.612	**38.8%**	**62.00%**
1940	41,731	10,008	14,657	0.24	0.24	57.4	0.000	0.980	0.221	0.400	0.400	**60.0%**	**67.53%**
1941	42,372	9,308	14,897	0.24	0.24	56.9	0.000	0.933	0.205	0.376	0.376	**62.4%**	**69.78%**
1942	43,228	9,646	15,217	0.23	0.23	56.5	0.000	0.944	0.192	0.369	0.369	**63.1%**	**69.57%**
1943	29,406	9,118	10,048	0.24	0.24	58.8	0.015	0.957	0.266	0.435	0.443	**55.7%**	**69.17%**
1944	9,062	4,122	2,439	0.72	0.31	58.4	0.000	0.680	0.253	0.384	0.384	**61.6%**	**69.39%**
1945	11,726	6,254	3,436	0.67	0.29	60.6	0.090	0.835	0.323	0.471	0.519	**48.1%**	**64.78%**
1946	12,226	5,960	3,623	0.66	0.29	60.7	0.095	0.821	0.326	0.467	0.518	**48.2%**	**64.23%**
1947	13,911	4,928	4,253	0.64	0.28	62.5	0.170	0.798	0.384	0.499	0.584	**41.6%**	**63.23%**
1948	22,904	6,798	7,616	0.58	0.25	56.6	0.000	0.792	0.195	0.347	0.347	**65.3%**	**69.31%**
1949	13,321	5,106	4,032	0.65	0.28	61.7	0.137	0.793	0.358	0.480	0.551	**44.9%**	**61.11%**
1950	19,531	6,292	6,355	0.59	0.26	61.3	0.120	0.850	0.346	0.477	0.539	**46.1%**	**61.62%**
1951	14,732	6,362	4,560	0.63	0.27	59.9	0.061	0.828	0.301	0.445	0.479	**52.1%**	**65.94%**
1952	56,648	8,081	20,236	0.23	0.23	55.5	0.000	0.842	0.160	0.317	0.317	**68.3%**	**72.05%**
1953	16,288	5,668	5,142	0.62	0.27	58.8	0.015	0.771	0.266	0.401	0.410	**59.0%**	**68.22%**
1954	39,868	9,080	13,961	0.24	0.24	58.4	0.000	0.948	0.253	0.417	0.417	**58.3%**	**68.35%**
1955	9,584	3,690	2,634	0.70	0.30	56.4	0.000	0.621	0.189	0.320	0.320	**68.0%**	**71.04%**
1956	20,548	8,000	6,735	0.59	0.26	59.7	0.053	0.913	0.294	0.454	0.483	**51.7%**	**66.90%**
1957	20,975	6,404	6,895	0.58	0.26	60.5	0.086	0.841	0.320	0.454	0.501	**49.9%**	**65.82%**
1958	52,284	9,662	18,604	0.23	0.23	57.4	0.000	0.962	0.221	0.392	0.392	**60.8%**	**69.70%**
1959	10,366	3,766	2,927	0.69	0.30	63	0.191	0.744	0.400	0.502	0.597	**40.3%**	**63.20%**
1960	13,690	3,948	4,170	0.64	0.28	59.5	0.044	0.691	0.288	0.400	0.427	**57.3%**	**66.30%**
1961	12,673	3,522	3,790	0.65	0.28	60.1	0.069	0.678	0.307	0.412	0.453	**54.7%**	**65.78%**
1962	11,179	4,910	3,231	0.68	0.29	61.8	0.141	0.784	0.362	0.485	0.557	**44.3%**	**62.51%**
1963	69,377	9,812	24,997	0.23	0.23	53.7	0.000	0.903	0.103	0.284	0.284	**71.6%**	**71.61%**
1964	9,064	3,530	2,440	0.72	0.31	59.3	0.036	0.665	0.282	0.399	0.421	**57.9%**	**67.62%**
1965	45,587	9,796	16,100	0.23	0.23	56.9	0.000	0.960	0.205	0.381	0.381	**61.9%**	**68.35%**
1966	16,635	5,602	5,271	0.61	0.27	61.9	0.145	0.823	0.365	0.487	0.562	**43.8%**	**63.21%**
1967	39,925	8,714	13,982	0.24	0.24	53.8	0.000	0.846	0.106	0.281	0.281	**71.9%**	**73.72%**
1968	15,518	5,232	4,854	0.62	0.27	61.5	0.128	0.796	0.352	0.472	0.540	**46.0%**	**64.90%**
1969	44,707	7,737	15,770	0.23	0.23	56.4	0.000	0.840	0.189	0.341	0.341	**65.9%**	**72.60%**
1970	16,480	6,578	5,214	0.61	0.27	58.8	0.015	0.820	0.266	0.414	0.423	**57.7%**	**68.57%**
1971	21,629	6,544	7,139	0.58	0.26	58.7	0.011	0.816	0.262	0.404	0.410	**59.0%**	**68.05%**
1972	12,562	4,716	3,748	0.65	0.28	58.5	0.002	0.714	0.256	0.386	0.387	**61.3%**	**68.86%**
1973	19,512	7,450	6,347	0.59	0.26	61.3	0.120	0.912	0.346	0.493	0.554	**44.6%**	**64.18%**
1974	33,122	10,101	11,438	0.24	0.24	56.8	0.000	0.974	0.202	0.388	0.388	**61.2%**	**68.81%**
1975	25,874	9,312	8,727	0.25	0.25	56.8	0.000	0.932	0.202	0.384	0.384	**61.6%**	**69.38%**
1976	9,481	3,009	2,596	0.71	0.30	58.9	0.019	0.629	0.269	0.378	0.390	**61.0%**	**68.97%**
1977	9,145	2,995	2,470	0.71	0.31	64.3	0.246	0.725	0.441	0.528	0.645	**35.5%**	**64.36%**
1978	37,948	7,788	13,243	0.24	0.24	56.9	0.000	0.851	0.205	0.359	0.359	**64.1%**	**71.45%**
1979	17,813	6,870	5,712	0.60	0.26	59.8	0.057	0.854	0.298	0.445	0.476	**52.4%**	**66.80%**
1980	19,818	6,884	6,462	0.59	0.26	57.1	0.000	0.806	0.211	0.366	0.366	**63.4%**	**71.91%**
1981	17,108	5,470	5,448	0.61	0.27	61.5	0.128	0.809	0.352	0.474	0.541	**45.9%**	**64.66%**
1982	75,838	9,195	27,413	0.23	0.23	54.1	0.000	0.877	0.115	0.287	0.287	**71.3%**	**72.78%**
1983	68,301	7,195	24,595	0.23	0.23	55	0.000	0.785	0.144	0.290	0.290	**71.0%**	**74.94%**
1984	17,743	6,824	5,686	0.60	0.26	59.7	0.053	0.850	0.294	0.441	0.471	**52.9%**	**67.03%**
1985	13,439	4,868	4,076	0.64	0.28	60.8	0.099	0.764	0.330	0.451	0.505	**49.5%**	**64.60%**
1986	20,389	7,652	6,675	0.59	0.26	60.4	0.082	0.907	0.317	0.469	0.513	**48.7%**	**66.99%**
1987	12,309	3,484	3,654	0.66	0.28	65.7	0.305	0.777	0.486	0.569	0.701	**29.9%**	**60.32%**
1988	8,702	2,862	2,305	0.73	0.31	59.9	0.061	0.639	0.301	0.406	0.442	**55.8%**	**68.66%**
1989	23,637	5,650	7,890	0.57	0.25	61.4	0.124	0.817	0.349	0.467	0.533	**46.7%**	**62.64%**
1990	12,244	3,501	3,629	0.66	0.29	61.6	0.133	0.704	0.355	0.455	0.527	**47.3%**	**64.85%**
1991	15,374	4,264	4,800	0.62	0.27	60.8	0.099	0.731	0.330	0.439	0.494	**50.6%**	**63.62%**
1992	12,491	3,732	3,722	0.66	0.28	61.2	0.116	0.710	0.342	0.447	0.511	**48.9%**	**63.78%**
												Average:	**66.18%**

Formulas: Winter Run Salmon Smolt Survival Model

```
C10 ='Study 467 Flow Data'!E7
D10 ='Study 467 Flow Data'!O7      (HIDDEN)
E10 ='Study 467 Flow Data'!Y7      (HIDDEN)
F10 =(D9+E9)
G10 =0.374*C9-950
H10 =IF(C9>$G$2,(0.133*C9+829)/(C9-G9),(0.293*C9+2090)/(C9-G9))
I10 =(0.133*C9+829)/(C9-G9)
K10 =(-0.5916024)+(0.017968*$M$1)+(0.000054*F9)
M10 =(K9*I9)+L9*(1-I9)
N10 =J9+M9-(J9*M9)
O10 =1-N9

Q10 ='Study 467 Flow Data'!F7
R10 ='Study 467 Flow Data'!P7      (HIDDEN)
S10 ='Study 467 Flow Data'!Z7      (HIDDEN)
T10 =(R9+S9)
U10 =0.374*Q9-950
V10 =IF(Q9>$G$2,(0.133*Q9+829)/(Q9-U9),(0.293*Q9+2090)/(Q9-U9))
Y10 =(0.133*Q9+829)/(Q9-U9)
W10 =IF(((-0.5916024)+(0.017968*$M$2)+(0.000054*T9))>1,1,((-0.5916024)+(0.017968*$M$2)+(0.000054*T9)))
Z10 =-1.613493+(0.0319584*$M$2)
AA10 =(Y9*W9)+Z9*(1-W9)
AB10 =X9+AA9-(X9*AA9)
AC10 =1-AB9

                                         (HIDDEN)
AE10 ='Study 467 Flow Data'!G7           (HIDDEN)
AF10 ='Study 467 Flow Data'!Q7
AG10 ='Study 467 Flow Data'!AA7
AH10 =AF9+AG9
AI10 =0.374*AE9-950
AJ10 =IF(AE9>$G$2,(0.133*AE9+829)/(AE9-AI9),(0.293*AE9+2090)/(AE9-AI9))
AK10 =(0.133*AE9+829)/(AE9-AI9)
AM10 =IF((-2.45925+(0.0420748*AL9))<0,0,(-2.45925+(0.0420748*AL9)))
AN10 =IF(((-0.5916024)+(0.017968*AL9)+(0.000054*AH9))>1,1,((-0.5916024)+(0.017968*AL9)+(0.000054*AH
AO10 =-1.613493+(0.0319584*AL9)
AP10 =(AN9*AK9)+(AO9*(1-AK9))
AQ10 =AM9+AP9-(AM9*AP9)
```

Study 634 Winter Run Smolt Survival Model   February Water Temp 50 F   April Water Temperatures based on limited historical data from USBR

Cross Channel Closed Over 25000 cfs   March Water Temp 55 F

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

FEBRUARY

Year	Water Year Type	Sac River Flow	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survivability s123**
1922	A	34,421	10,549	11,923	24%	0.24		0.876		0.211	0.211	**78.9%**
1923	B	22,087	4,569	7,311	58%	0.25		0.554		0.141	0.141	**85.9%**
1924	C	17,751	8,676	5,689	60%	0.26		0.775		0.205	0.205	**79.5%**
1925	D	44,705	11,418	15,770	23%	0.23		0.923		0.216	0.216	**78.4%**
1926	D	35,467	11,527	12,315	24%	0.24		0.929		0.223	0.223	**77.7%**
1927	W	86,633	11,232	31,451	22%	0.22		0.913		0.204	0.204	**79.6%**
1928	A	26,504	6,209	8,962	25%	0.25		0.642		0.159	0.159	**84.1%**
1929	C	17,787	9,058	5,702	60%	0.26		0.796		0.210	0.210	**79.0%**
1930	D	15,675	6,800	4,912	62%	0.27		0.674		0.182	0.182	**81.8%**
1931	C	11,083	5,067	3,195	68%	0.29		0.580		0.169	0.169	**83.1%**
1932	D	14,486	9,883	4,468	63%	0.28		0.840		0.231	0.231	**76.9%**
1933	C	11,527	6,315	3,361	67%	0.29		0.648		0.187	0.187	**81.3%**
1934	C	12,740	5,871	3,815	65%	0.28		0.624		0.176	0.176	**82.4%**
1935	B	12,407	5,077	3,690	66%	0.28		0.581		0.165	0.165	**83.5%**
1936	B	50,212	11,809	17,829	23%	0.23		0.944		0.219	0.219	**78.1%**
1937	B	32,525	9,397	11,214	24%	0.24		0.814		0.197	0.197	**80.3%**
1938	W	82,366	5,184	29,855	22%	0.22		0.587		0.132	0.132	**86.8%**
1939	D	19,024	5,482	6,165	60%	0.26		0.603		0.157	0.157	**84.3%**
1940	A	44,197	12,705	15,580	23%	0.23		0.993		0.233	0.233	**76.7%**
1941	W	75,037	10,236	27,114	23%	0.23		0.860		0.194	0.194	**80.6%**
1942	W	78,349	5,663	28,353	23%	0.23		0.613		0.138	0.138	**86.2%**
1943	W	52,259	6,024	18,595	23%	0.23		0.632		0.146	0.146	**85.4%**
1944	D	31,317	5,349	10,763	24%	0.24		0.596		0.145	0.145	**85.5%**
1945	B	38,590	8,238	13,483	24%	0.24		0.752		0.178	0.178	**82.2%**
1946	B	23,843	6,031	7,967	57%	0.25		0.632		0.159	0.159	**84.1%**
1947	D	21,069	8,249	6,930	58%	0.26		0.752		0.193	0.193	**80.7%**
1948	B	16,544	6,021	5,237	61%	0.27		0.632		0.169	0.169	**83.1%**
1949	D	16,132	8,402	5,083	62%	0.27		0.761		0.205	0.205	**79.5%**
1950	B	32,762	11,785	11,303	24%	0.24		0.943		0.228	0.228	**77.2%**
1951	A	60,566	8,203	21,702	23%	0.23		0.750		0.171	0.171	**82.9%**
1952	W	64,731	8,202	23,259	23%	0.23		0.750		0.171	0.171	**82.9%**
1953	W	28,344	6,075	9,651	25%	0.25		0.635		0.156	0.156	**84.4%**
1954	A	57,158	6,634	20,427	23%	0.23		0.665		0.153	0.153	**84.7%**
1955	D	17,047	7,607	5,426	61%	0.27		0.718		0.191	0.191	**80.9%**
1956	W	63,748	8,141	22,892	23%	0.23		0.746		0.170	0.170	**83.0%**
1957	A	33,144	8,886	11,446	24%	0.24		0.787		0.190	0.190	**81.0%**
1958	W	62,798	6,900	22,536	23%	0.23		0.679		0.155	0.155	**84.5%**
1959	B	50,082	5,869	17,781	23%	0.23		0.624		0.145	0.145	**85.5%**
1960	D	27,274	11,111	9,250	25%	0.25		0.907		0.224	0.224	**77.6%**
1961	D	32,704	11,363	11,281	24%	0.24		0.920		0.222	0.222	**77.8%**
1962	B	38,011	9,635	13,266	24%	0.24		0.827		0.197	0.197	**80.3%**
1963	W	58,694	12,060	21,002	23%	0.23		0.958		0.219	0.219	**78.1%**
1964	D	17,842	6,634	5,723	60%	0.26		0.665		0.176	0.176	**82.4%**
1965	W	33,326	10,937	11,514	24%	0.24		0.897		0.216	0.216	**78.4%**
1966	B	26,777	6,471	9,065	25%	0.25		0.656		0.163	0.163	**83.7%**
1967	W	43,101	7,494	15,170	23%	0.23		0.711		0.167	0.167	**83.3%**
1968	B	56,470	6,055	20,170	23%	0.23		0.634		0.146	0.146	**85.4%**
1969	W	67,482	4,585	24,288	23%	0.23		0.554		0.126	0.126	**87.4%**
1970	W	57,565	5,273	20,579	23%	0.23		0.592		0.136	0.136	**86.4%**
1971	W	28,525	7,867	9,718	25%	0.25		0.732		0.180	0.180	**82.0%**
1972	B	25,083	8,569	8,431	25%	0.25		0.770		0.192	0.192	**80.8%**
1973	A	70,967	8,691	25,592	23%	0.23		0.776		0.176	0.176	**82.4%**
1974	W	41,926	6,494	14,730	24%	0.24		0.657		0.155	0.155	**84.5%**
1975	W	58,811	6,808	21,045	23%	0.23		0.674		0.154	0.154	**84.6%**
1976	C	20,229	8,476	6,616	59%	0.26		0.765		0.198	0.198	**80.2%**
1977	C	12,279	2,187	3,642	66%	0.29		0.425		0.121	0.121	**87.9%**
1978	A	51,370	9,699	18,262	23%	0.23		0.831		0.192	0.192	**80.8%**
1979	B	41,682	5,429	14,639	24%	0.24		0.600		0.141	0.141	**85.9%**
1980	A	71,932	4,642	25,953	23%	0.23		0.557		0.126	0.126	**87.4%**
1981	D	29,672	5,833	10,147	24%	0.24		0.622		0.152	0.152	**84.8%**
1982	W	65,645	6,898	23,601	23%	0.23		0.679		0.154	0.154	**84.6%**
1983	W	82,910	4,188	30,058	22%	0.22		0.533		0.120	0.120	**88.0%**
1984	W	37,282	5,342	12,993	24%	0.24		0.595		0.142	0.142	**85.8%**
1985	D	18,976	6,989	6,147	60%	0.26		0.684		0.179	0.179	**82.1%**
1986	W	96,755	11,813	35,236	22%	0.22		0.945		0.210	0.210	**79.0%**
1987	D	23,028	5,479	7,662	58%	0.25		0.603		0.153	0.153	**84.7%**
1988	C	18,164	6,945	5,843	60%	0.26		0.682		0.180	0.180	**82.0%**
1989	D	12,455	2,745	3,708	66%	0.28		0.455		0.129	0.129	**87.1%**
1990	C	16,696	7,689	5,294	61%	0.27		0.722		0.193	0.193	**80.7%**
1991	C	10,443	507	2,956	69%	0.30		0.334		0.099	0.099	**90.1%**
1992	C	32,538	8,077	11,219	24%	0.24		0.743		0.180	0.180	**82.0%**

MARCH

Year	Sac River Flow	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survivability s123**
1922	31,554	6,977	10,851	0.24	0.24		0.773	0.144	0.297	0.297	**70.3%**
1923	15,486	6,739	4,842	0.62	0.27		0.761	0.144	0.311	0.311	**68.9%**
1924	11,956	3,059	3,522	0.66	0.29		0.562	0.144	0.264	0.264	**73.6%**
1925	29,791	6,133	10,192	0.24	0.24		0.728	0.144	0.287	0.287	**71.3%**
1926	15,769	6,445	4,948	0.62	0.27		0.745	0.144	0.307	0.307	**69.3%**
1927	43,865	7,332	15,456	0.23	0.23		0.793	0.144	0.296	0.296	**70.4%**
1928	86,223	7,595	31,297	0.22	0.22		0.807	0.144	0.293	0.293	**70.7%**
1929	13,763	4,873	4,197	0.64	0.28		0.660	0.144	0.288	0.288	**71.2%**
1930	30,470	7,663	10,446	0.24	0.24		0.810	0.144	0.307	0.307	**69.3%**
1931	9,210	3,801	2,495	0.71	0.31		0.602	0.144	0.284	0.284	**71.6%**
1932	10,502	3,664	2,978	0.69	0.30		0.594	0.144	0.277	0.277	**72.3%**
1933	10,393	4,636	2,937	0.69	0.30		0.647	0.144	0.293	0.293	**70.7%**
1934	14,161	3,908	4,346	0.64	0.28		0.608	0.144	0.272	0.272	**72.8%**
1935	24,918	11,212	8,369	0.57	0.25		1.000	0.144	0.358	0.358	**64.2%**
1936	33,698	9,580	11,653	0.24	0.24		0.914	0.144	0.330	0.330	**67.0%**
1937	37,003	6,558	12,889	0.24	0.24		0.751	0.144	0.289	0.289	**71.1%**
1938	78,637	6,022	28,460	0.22	0.22		0.722	0.144	0.274	0.274	**72.6%**
1939	16,390	6,648	5,180	0.61	0.27		0.756	0.144	0.308	0.308	**69.2%**
1940	59,588	8,873	21,336	0.23	0.23		0.876	0.144	0.312	0.312	**68.8%**
1941	58,575	7,293	20,957	0.23	0.23		0.790	0.144	0.292	0.292	**70.8%**
1942	27,099	7,437	9,185	0.25	0.25		0.798	0.144	0.306	0.306	**69.4%**
1943	64,601	5,899	23,211	0.23	0.23		0.715	0.144	0.274	0.274	**72.6%**
1944	25,100	7,007	8,437	0.25	0.25		0.775	0.144	0.302	0.302	**69.8%**
1945	27,033	7,363	9,160	0.25	0.25		0.794	0.144	0.305	0.305	**69.5%**
1946	23,778	7,588	7,943	0.57	0.25		0.806	0.144	0.311	0.311	**68.9%**
1947	22,106	6,569	7,318	0.58	0.25		0.751	0.144	0.299	0.299	**70.1%**
1948	19,067	7,636	6,181	0.60	0.26		0.809	0.144	0.318	0.318	**68.2%**
1949	41,807	9,517	14,686	0.24	0.24		0.911	0.144	0.325	0.325	**67.5%**
1950	22,154	7,823	7,336	0.58	0.25		0.819	0.144	0.316	0.316	**68.4%**
1951	29,827	7,865	10,205	0.24	0.24		0.821	0.144	0.310	0.310	**69.0%**
1952	57,518	7,155	20,562	0.23	0.23		0.783	0.144	0.291	0.291	**70.9%**
1953	24,893	7,274	8,360	0.57	0.25		0.789	0.144	0.306	0.306	**69.4%**
1954	49,536	7,849	17,576	0.23	0.23		0.820	0.144	0.301	0.301	**69.9%**
1955	17,899	7,175	5,744	0.60	0.26		0.784	0.144	0.313	0.313	**68.7%**
1956	36,676	6,768	12,767	0.24	0.24		0.762	0.144	0.292	0.292	**70.8%**
1957	44,377	7,570	15,647	0.23	0.23		0.805	0.144	0.299	0.299	**70.1%**
1958	93,616	7,518	34,062	0.22	0.22		0.803	0.144	0.291	0.291	**70.9%**
1959	21,838	6,053	7,217	0.58	0.26		0.723	0.144	0.292	0.292	**70.8%**
1960	21,550	6,587	7,110	0.58	0.26		0.752	0.144	0.300	0.300	**70.0%**
1961	20,944	6,998	6,883	0.59	0.26		0.775	0.144	0.306	0.306	**69.4%**
1962	26,263	7,559	8,872	0.25	0.25		0.805	0.144	0.308	0.308	**69.2%**
1963	32,645	9,409	11,259	0.24	0.24		0.905	0.144	0.328	0.328	**67.2%**
1964	15,544	6,243	4,863	0.62	0.27		0.734	0.144	0.304	0.304	**69.6%**
1965	21,381	8,088	7,046	0.58	0.26		0.833	0.144	0.321	0.321	**67.9%**
1966	28,683	7,587	9,777	0.25	0.25		0.806	0.144	0.307	0.307	**69.3%**
1967	54,488	6,515	19,429	0.23	0.23		0.748	0.144	0.283	0.283	**71.7%**
1968	36,789	6,981	12,809	0.24	0.24		0.774	0.144	0.294	0.294	**70.6%**
1969	45,319	5,311	15,999	0.23	0.23		0.683	0.144	0.270	0.270	**73.0%**
1970	35,819	7,220	12,446	0.24	0.24		0.787	0.144	0.298	0.298	**70.2%**
1971	51,513	7,863	18,316	0.23	0.23		0.821	0.144	0.301	0.301	**69.9%**
1972	32,930	7,225	11,366	0.24	0.24		0.787	0.144	0.299	0.299	**70.1%**
1973	47,552	7,643	16,834	0.23	0.23		0.809	0.144	0.299	0.299	**70.1%**
1974	34,721	7,871	12,036	0.24	0.24		0.822	0.144	0.307	0.307	**69.3%**
1975	75,998	8,140	27,473	0.23	0.23		0.836	0.144	0.300	0.300	**70.0%**
1976	18,356	6,205	5,915	0.60	0.26		0.732	0.144	0.299	0.299	**70.1%**
1977	7,656	2,196	1,913	0.75	0.32		0.515	0.144	0.264	0.264	**73.6%**
1978	46,722	6,020	16,524	0.23	0.23		0.722	0.144	0.279	0.279	**72.1%**
1979	32,549	7,184	11,223	0.24	0.24		0.785	0.144	0.299	0.299	**70.1%**
1980	36,480	5,191	12,694	0.24	0.24		0.677	0.144	0.271	0.271	**72.9%**
1981	32,501	6,980	11,205	0.24	0.24		0.774	0.144	0.296	0.296	**70.4%**
1982	69,087	7,607	24,889	0.23	0.23		0.807	0.144	0.295	0.295	**70.5%**
1983	81,934	4,670	29,693	0.22	0.22		0.649	0.144	0.257	0.257	**74.3%**
1984	36,503	7,155	12,702	0.24	0.24		0.783	0.144	0.297	0.297	**70.3%**
1985	20,833	7,555	6,842	0.59	0.26		0.805	0.144	0.314	0.314	**68.6%**
1986	72,539	8,161	26,180	0.23	0.23		0.837	0.144	0.301	0.301	**69.9%**
1987	30,017	6,479	10,276	0.24	0.24		0.747	0.144	0.291	0.291	**70.9%**
1988	11,108	3,912	3,204	0.68	0.29		0.608	0.144	0.280	0.280	**72.0%**
1989	41,509	11,186	14,574	0.24	0.24		1.000	0.144	0.346	0.346	**65.4%**
1990	14,588	5,779	4,506	0.63	0.27		0.709	0.144	0.299	0.299	**70.1%**
1991	29,675	11,306	10,148	0.24	0.24		1.000	0.144	0.354	0.354	**64.6%**
1992	20,106	8,242	6,570	0.59	0.26		0.842	0.144	0.325	0.325	**67.5%**

APRIL

Year	Sac River Flow	CVP + SWP Exports	Calculated Steamboat & Sutter Slough flows	Percent	X-Channel Closed	Water temp f	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survivability s123**	**Weighted Total Survival**
1922	22,816	5,930	7,583	0.58	0.25	58.5	0.002	0.780	0.256	0.389	0.390	**61.0%**	**68.63%**
1923	23,703	6,716	7,915	0.57	0.25	58.3	0.000	0.819	0.250	0.393	0.393	**60.7%**	**68.62%**
1924	7,322	2,476	1,788	0.77	0.33	61.5	0.128	0.647	0.352	0.448	0.519	**48.1%**	**66.72%**
1925	20,329	6,094	6,653	0.59	0.26	59.1	0.027	0.799	0.275	0.411	0.427	**57.3%**	**68.03%**
1926	18,258	5,466	5,878	0.60	0.26	61.6	0.133	0.810	0.355	0.475	0.545	**45.5%**	**63.29%**
1927	48,222	6,036	17,085	0.23	0.23	56.8	0.000	0.755	0.202	0.330	0.330	**67.0%**	**70.54%**
1928	29,212	6,436	9,975	0.25	0.25	58.7	0.011	0.811	0.262	0.397	0.403	**59.7%**	**69.16%**
1929	8,219	2,634	2,124	0.74	0.32	56.3	0.000	0.562	0.186	0.304	0.304	**69.6%**	**71.74%**
1930	12,640	3,456	3,777	0.65	0.28	59.6	0.048	0.666	0.291	0.397	0.427	**57.3%**	**67.35%**
1931	9,155	2,656	2,474	0.71	0.31	62.8	0.183	0.680	0.393	0.481	0.576	**42.4%**	**64.31%**
1932	11,281	3,964	3,269	0.67	0.29	58.9	0.019	0.681	0.269	0.389	0.400	**60.0%**	**69.18%**
1933	12,090	3,291	3,572	0.66	0.29	60.1	0.069	0.666	0.307	0.410	0.451	**54.9%**	**67.32%**
1934	12,152	3,266	3,595	0.66	0.29	63.6	0.217	0.728	0.419	0.507	0.614	**38.6%**	**63.77%**
1935	24,245	6,836	8,118	0.57	0.25	58.9	0.019	0.836	0.269	0.411	0.423	**57.7%**	**64.74%**
1936	21,531	5,798	7,103	0.58	0.26	59.7	0.053	0.794	0.294	0.422	0.453	**54.7%**	**64.78%**
1937	23,007	8,044	7,655	0.58	0.25	58.8	0.015	0.899	0.266	0.426	0.435	**56.5%**	**67.94%**
1938	47,172	7,716	16,692	0.23	0.23	56.3	0.000	0.837	0.186	0.337	0.337	**66.3%**	**72.54%**
1939	10,698	3,818	3,051	0.68	0.29	63.3	0.204	0.752	0.409	0.510	0.610	**39.0%**	**62.07%**
1940	41,731	6,836	14,657	0.24	0.24	57.4	0.000	0.809	0.221	0.359	0.359	**64.1%**	**68.43%**
1941	42,372	9,308	14,897	0.24	0.24	56.9	0.000	0.933	0.205	0.376	0.376	**62.4%**	**69.53%**
1942	43,308	6,836	15,247	0.23	0.23	56.5	0.000	0.793	0.192	0.333	0.333	**66.7%**	**70.77%**
1943	29,406	9,179	10,048	0.24	0.24	58.8	0.015	0.961	0.266	0.436	0.444	**55.6%**	**69.15%**
1944	9,823	4,370	2,724	0.70	0.30	58.4	0.000	0.694	0.253	0.385	0.385	**61.5%**	**69.34%**
1945	11,753	4,146	3,446	0.67	0.29	60.6	0.090	0.721	0.323	0.438	0.489	**51.1%**	**65.63%**
1946	12,226	4,820	3,623	0.66	0.29	60.7	0.095	0.759	0.326	0.450	0.502	**49.8%**	**65.13%**
1947	13,800	3,736	4,211	0.64	0.28	62.5	0.170	0.733	0.384	0.481	0.569	**43.1%**	**63.37%**
1948	22,793	5,512	7,575	0.58	0.25	56.6	0.000	0.723	0.195	0.329	0.329	**67.1%**	**69.81%**
1949	13,210	3,724	3,991	0.65	0.28	61.7	0.137	0.718	0.358	0.459	0.533	**46.7%**	**62.83%**
1950	18,776	4,894	6,072	0.60	0.26	61.3	0.120	0.774	0.346	0.458	0.523	**47.7%**	**63.33%**
1951	14,732	4,388	4,560	0.63	0.27	59.9	0.061	0.722	0.301	0.416	0.452	**54.8%**	**66.56%**
1952	56,648	7,847	20,236	0.23	0.23	55.5	0.000	0.829	0.160	0.314	0.314	**68.6%**	**71.79%**
1953	16,177	4,850	5,100	0.62	0.27	58.8	0.015	0.727	0.266	0.390	0.399	**60.1%**	**68.58%**
1954	39,868	6,036	13,961	0.24	0.24	58.4	0.000	0.784	0.253	0.378	0.378	**62.2%**	**69.49%**
1955	9,473	2,974	2,593	0.71	0.30	56.4	0.000	0.582	0.189	0.308	0.308	**69.2%**	**70.41%**
1956	20,437	5,442	6,693	0.59	0.26	59.7	0.053	0.775	0.294	0.418	0.449	**55.1%**	**67.69%**
1957	19,655	5,328	6,401	0.59	0.26	60.5	0.086	0.783	0.320	0.440	0.489	**51.1%**	**65.82%**
1958	52,284	9,483	18,604	0.23	0.23	57.4	0.000	0.952	0.221	0.390	0.390	**61.0%**	**69.70%**
1959	8,822	3,432	2,349	0.72	0.31	63	0.191	0.726	0.400	0.501	0.596	**40.4%**	**63.58%**
1960	12,667	3,477	3,787	0.65	0.28	59.5	0.044	0.665	0.288	0.395	0.422	**57.8%**	**67.35%**
1961	12,647	3,228	3,780	0.65	0.28	60.1	0.069	0.663	0.307	0.408	0.449	**55.1%**	**66.18%**
1962	13,553	4,344	4,119	0.64	0.28	61.8	0.141	0.753	0.362	0.471	0.545	**45.5%**	**63.50%**
1963	69,458	6,836	25,027	0.23	0.23	53.7	0.000	0.742	0.103	0.248	0.248	**75.2%**	**71.02%**
1964	8,953	2,794	2,398	0.72	0.31	59.3	0.036	0.625	0.282	0.387	0.409	**59.1%**	**68.10%**
1965	45,179	6,836	15,947	0.23	0.23	56.9	0.000	0.800	0.205	0.344	0.344	**65.6%**	**68.58%**
1966	14,922	4,094	4,631	0.63	0.27	61.9	0.145	0.742	0.365	0.468	0.545	**45.5%**	**64.04%**
1967	39,925	8,483	13,982	0.24	0.24	53.8	0.000	0.833	0.106	0.278	0.278	**72.2%**	**73.33%**
1968	14,216	4,342	4,367	0.64	0.28	61.5	0.128	0.748	0.352	0.461	0.530	**47.0%**	**65.41%**
1969	44,787	7,506	15,800	0.23	0.23	56.4	0.000	0.827	0.189	0.338	0.338	**66.2%**	**72.81%**
1970	13,811	4,146	4,215	0.64	0.28	58.8	0.015	0.689	0.266	0.383	0.392	**60.8%**	**69.49%**
1971	20,753	5,588	6,812	0.59	0.26	58.7	0.011	0.765	0.262	0.392	0.398	**60.2%**	**68.57%**
1972	12,452	3,436	3,707	0.66	0.28	58.5	0.002	0.645	0.256	0.367	0.368	**63.2%**	**69.39%**
1973	19,512	6,220	6,347	0.59	0.26	61.3	0.120	0.846	0.346	0.476	0.539	**46.1%**	**64.51%**
1974	33,208	9,338	11,470	0.24	0.24	56.8	0.000	0.933	0.202	0.378	0.378	**62.2%**	**69.15%**
1975	25,763	6,836	8,685	0.25	0.25	56.8	0.000	0.798	0.202	0.350	0.350	**65.0%**	**70.37%**
1976	9,434	2,859	2,578	0.71	0.30	58.9	0.019	0.621	0.269	0.376	0.388	**61.2%**	**68.77%**
1977	9,122	2,684	2,462	0.72	0.31	64.3	0.246	0.709	0.441	0.523	0.641	**35.9%**	**64.18%**
1978	38,698	7,513	13,523	0.24	0.24	56.9	0.000	0.836	0.205	0.355	0.355	**64.5%**	**70.96%**
1979	17,702	5,778	5,671	0.60	0.26	59.8	0.057	0.795	0.298	0.429	0.462	**53.8%**	**67.26%**
1980	19,818	5,382	6,462	0.59	0.26	57.1	0.000	0.725	0.211	0.345	0.345	**65.5%**	**72.55%**
1981	16,998	4,840	5,407	0.61	0.27	61.5	0.128	0.775	0.352	0.465	0.533	**46.7%**	**65.12%**
1982	75,838	8,950	27,413	0.23	0.23	54.1	0.000	0.864	0.115	0.284	0.284	**71.6%**	**72.68%**
1983	68,301	6,963	24,595	0.23	0.23	55	0.000	0.773	0.144	0.287	0.287	**71.3%**	**75.17%**
1984	16,021	4,528	5,042	0.62	0.27	59.7	0.053	0.726	0.294	0.411	0.442	**55.8%**	**67.99%**
1985	13,328	3,754	4,035	0.65	0.28	60.8	0.099	0.704	0.330	0.434	0.490	**51.0%**	**65.06%**
1986	20,778	7,418	6,821	0.59	0.26	60.4	0.082	0.894	0.317	0.465	0.509	**49.1%**	**64.84%**
1987	10,971	3,137	3,153	0.68	0.29	65.7	0.305	0.758	0.486	0.566	0.698	**30.2%**	**60.46%**
1988	9,091	2,746	2,450	0.72	0.31	59.9	0.061	0.633	0.301	0.403	0.439	**56.1%**	**68.56%**
1989	23,637	5,116	7,890	0.57	0.25	61.4	0.124	0.788	0.349	0.460	0.527	**47.3%**	**62.80%**
1990	12,293	3,222	3,648	0.66	0.29	61.6	0.133	0.689	0.355	0.450	0.523	**47.7%**	**64.74%**
1991	15,284	3,748	4,766	0.62	0.27	60.8	0.099	0.703	0.330	0.431	0.487	**51.3%**	**63.94%**
1992	12,002	3,252	3,539	0.66	0.29	61.2	0.116	0.684	0.342	0.440	0.505	**49.5%**	**64.01%**
												Average:	**66.56%**

Formulas: Winter Run Salmon Smolt Survival Model

C10 ='Study 467 Flow Data'!E7
D10 ='Study 467 Flow Data'!O7 (HIDDEN)
E10 ='Study 467 Flow Data'!Y7 (HIDDEN)
F10 =(D9+E9)
G10 =0.374*C9-950
H10 =IF(C9>$G$2,(0.133*C9+829)/(C9-G9),(0.293*C9+2090)/(C9-G9))
I10 =(0.133*C9+829)/(C9-G9)
K10 =(-0.5916024)+(0.017968*$M$1)+(0.000054*F9)
M10 =(K9*I9)+L9*(1-I9)
N10 =J9+M9-(J9*M9)
O10 =1-N9

Q10 ='Study 467 Flow Data'!F7
R10 ='Study 467 Flow Data'!P7 (HIDDEN)
S10 ='Study 467 Flow Data'!Z7 (HIDDEN)
T10 =(R9+S9)
U10 =0.374*Q9-950
V10 =IF(Q9>$G$2,(0.133*Q9+829)/(Q9-U9),(0.293*Q9+2090)/(Q9-U9))
Y10 =(0.133*Q9+829)/(Q9-U9)
W10 =IF(((-0.5916024)+(0.017968*$M$2)+(0.000054*T9))>1,1,((-0.5916024)+(0.017968*$M$2)+(0.000054*T9)))
Z10 =-1.613493+(0.0319584*$M$2)
AA10 =(Y9*W9)+Z9*(1-W9)
AB10 =X9+AA9-(X9*AA9)
AC10 =1-AB9

(HIDDEN)
AE10 ='Study 467 Flow Data'!G7 (HIDDEN)
AF10 ='Study 467 Flow Data'!Q7
AG10 ='Study 467 Flow Data'!AA7
AH10 =AF9+AG9
AI10 =0.374*AE9-950
AJ10 =IF(AE9>$G$2,(0.133*AE9+829)/(AE9-AI9),(0.293*AE9+2090)/(AE9-AI9))
AK10 =(0.133*AE9+829)/(AE9-AI9)
AM10 =IF((-2.45925+(0.0420748*AL9))<0,0,(-2.45925+(0.0420748*AL9)))
AN10 =IF(((-0.5916024)+(0.017968*AL9)+(0.000054*AH9))>1,1,((-0.5916024)+(0.017968*AL9)+(0.000054*AH9
AO10 =-1.613493+(0.0319584*AL9)
AP10 =(AN9*AK9)+(AO9*(1-AK9))
AQ10 =AM9+AP9-(AM9*AP9)

Study 467 Sacramento River Spring Run Yearling Survival Model

Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Row	Year	Water Year Type	Sac River Flow	CVP Flow	SWP Flow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
10	1922	A	11,008	4,285	3,227	7,512	3,167	68%	0.29	0	0.766	0.080	0.545	0.545	**45.5%**
11	1923	B	16,940	4,302	6,672	10,974	5,386	61%	0.27	0	0.953	0.080	0.613	0.613	**38.7%**
12	1924	C	10,991	4,302	4,706	9,008	3,161	68%	0.29	0	0.847	0.080	0.600	0.600	**40.0%**
13	1925	D	6,941	1,832	3,714	5,546	1,646	78%	0.33	0	0.660	0.080	0.532	0.532	**46.8%**
14	1926	D	9,344	3,832	3,075	6,907	2,545	71%	0.30	0	0.734	0.080	0.544	0.544	**45.6%**
15	1927	W	21,478	4,252	6,672	10,924	7,083	58%	0.26	0	0.951	0.080	0.587	0.587	**41.3%**
16	1928	A	21,629	4,302	6,672	10,974	7,139	58%	0.26	0	0.953	0.080	0.588	0.588	**41.2%**
17	1929	C	13,108	4,285	6,672	10,957	3,952	65%	0.28	0	0.952	0.080	0.645	0.645	**35.5%**
18	1930	D	8,151	2,470	2,823	5,293	2,098	74%	0.32	0	0.647	0.080	0.499	0.499	**50.1%**
19	1931	C	11,041	4,269	5,092	9,361	3,179	68%	0.29	0	0.866	0.080	0.613	0.613	**38.7%**
20	1932	D	7,075	1,681	2,840	4,521	1,696	77%	0.33	0	0.605	0.080	0.486	0.486	**51.4%**
21	1933	C	7,495	3,092	2,605	5,697	1,853	76%	0.32	0	0.668	0.080	0.527	0.527	**47.3%**
22	1934	C	6,487	1,664	2,504	4,168	1,476	80%	0.34	0	0.586	0.080	0.483	0.483	**51.7%**
23	1935	B	9,209	3,008	4,672	7,680	2,494	71%	0.31	0	0.775	0.080	0.576	0.576	**42.4%**
24	1936	B	12,369	4,285	5,495	9,780	3,676	66%	0.28	0	0.889	0.080	0.612	0.612	**38.8%**
25	1937	B	10,907	4,302	3,949	8,251	3,129	68%	0.29	0	0.806	0.080	0.574	0.574	**42.6%**
26	1938	W	22,956	4,302	6,672	10,974	7,636	58%	0.25	0	0.953	0.080	0.583	0.583	**41.7%**
27	1939	D	19,444	4,302	6,672	10,974	6,322	59%	0.26	0	0.953	0.080	0.598	0.598	**40.2%**
28	1940	A	7,915	2,907	2,924	5,831	2,010	75%	0.32	0	0.676	0.080	0.525	0.525	**47.5%**
29	1941	W	13,411	4,302	6,672	10,974	4,066	64%	0.28	0	0.953	0.080	0.643	0.643	**35.7%**
30	1942	W	18,184	4,302	6,672	10,974	5,851	60%	0.26	0	0.953	0.080	0.605	0.605	**39.5%**
31	1943	W	21,326	4,302	6,672	10,974	7,026	58%	0.26	0	0.953	0.080	0.589	0.589	**41.1%**
32	1944	D	12,823	4,302	6,504	10,806	3,846	65%	0.28	0	0.944	0.080	0.643	0.643	**35.7%**
33	1945	B	15,175	4,269	6,672	10,941	4,725	63%	0.27	0	0.952	0.080	0.625	0.625	**37.5%**
34	1946	B	17,293	4,302	6,672	10,974	5,518	61%	0.27	0	0.953	0.080	0.611	0.611	**38.9%**
35	1947	D	13,276	4,302	6,672	10,974	4,015	65%	0.28	0	0.953	0.080	0.644	0.644	**35.6%**
36	1948	B	11,108	4,269	5,143	9,412	3,204	68%	0.29	0	0.869	0.080	0.614	0.614	**38.6%**
37	1949	D	13,680	4,285	6,672	10,957	4,166	64%	0.28	0	0.952	0.080	0.639	0.639	**36.1%**
38	1950	B	12,050	4,285	6,084	10,369	3,557	66%	0.29	0	0.921	0.080	0.636	0.636	**36.4%**
39	1951	A	40,922	4,285	6,672	10,957	14,355	24%	0.24	0	0.952	0.080	0.286	0.286	**71.4%**
40	1952	W	16,822	4,302	6,672	10,974	5,341	61%	0.27	0	0.953	0.080	0.614	0.614	**38.6%**
41	1953	W	16,537	4,285	6,571	10,856	5,235	61%	0.27	0	0.947	0.080	0.612	0.612	**38.8%**
42	1954	A	21,007	4,302	6,672	10,974	6,907	58%	0.26	0	0.953	0.080	0.591	0.591	**40.9%**
43	1955	D	19,999	4,285	6,672	10,957	6,530	59%	0.26	0	0.952	0.080	0.595	0.595	**40.5%**
44	1956	W	12,134	4,285	6,201	10,486	3,588	66%	0.29	0	0.927	0.080	0.640	0.640	**36.0%**
45	1957	A	15,478	4,302	6,672	10,974	4,839	62%	0.27	0	0.953	0.080	0.624	0.624	**37.6%**
46	1958	W	19,259	4,285	6,672	10,957	6,253	59%	0.26	0	0.952	0.080	0.599	0.599	**40.1%**
47	1959	B	16,133	4,302	6,672	10,974	5,084	62%	0.27	0	0.953	0.080	0.619	0.619	**38.1%**
48	1960	D	10,184	4,285	3,966	8,251	2,859	69%	0.30	0	0.806	0.080	0.583	0.583	**41.7%**
49	1961	D	14,251	4,269	6,672	10,941	4,380	63%	0.28	0	0.952	0.080	0.633	0.633	**36.7%**
50	1962	B	10,403	4,269	4,521	8,790	2,941	69%	0.30	0	0.835	0.080	0.600	0.600	**40.0%**
51	1963	W	21,730	4,302	6,672	10,974	7,177	58%	0.26	0	0.953	0.080	0.588	0.588	**41.2%**
52	1964	D	28,805	4,302	6,672	10,974	9,823	25%	0.25	0	0.953	0.080	0.295	0.295	**70.5%**
53	1965	W	14,554	4,269	6,672	10,941	4,493	63%	0.27	0	0.952	0.080	0.631	0.631	**36.9%**
54	1966	B	29,628	4,302	6,672	10,974	10,131	24%	0.24	0	0.953	0.080	0.294	0.294	**70.6%**
55	1967	W	18,301	4,285	6,672	10,957	5,895	60%	0.26	0	0.952	0.080	0.604	0.604	**39.6%**
56	1968	B	16,234	4,302	4,235	8,537	5,122	62%	0.27	0	0.822	0.080	0.537	0.537	**46.3%**
57	1969	W	14,638	4,285	6,672	10,957	4,525	63%	0.27	0	0.952	0.080	0.630	0.630	**37.0%**
58	1970	W	17,646	4,302	6,672	10,974	5,650	61%	0.26	0	0.953	0.080	0.609	0.609	**39.1%**
59	1971	W	23,141	4,302	6,672	10,974	7,705	57%	0.25	0	0.953	0.080	0.582	0.582	**41.8%**
60	1972	B	16,755	4,285	6,672	10,957	5,316	61%	0.27	0	0.952	0.080	0.614	0.614	**38.6%**
61	1973	A	25,662	4,285	6,672	10,957	8,648	25%	0.25	0	0.952	0.080	0.298	0.298	**70.2%**
62	1974	W	58,920	4,302	6,672	10,974	21,086	23%	0.23	0	0.953	0.080	0.280	0.280	**72.0%**
63	1975	W	17,579	4,285	6,672	10,957	5,625	61%	0.26	0	0.952	0.080	0.609	0.609	**39.1%**
64	1976	C	19,226	4,302	6,672	10,974	6,241	59%	0.26	0	0.953	0.080	0.600	0.600	**40.0%**
65	1977	C	8,016	2,622	3,479	6,101	2,048	74%	0.32	0	0.690	0.080	0.534	0.534	**46.6%**
66	1978	A	5,243	1,227	1,815	3,042	1,011	86%	0.36	0	0.525	0.080	0.461	0.461	**53.9%**
67	1979	B	15,125	4,285	6,672	10,957	4,707	63%	0.27	0	0.952	0.080	0.626	0.626	**37.4%**
68	1980	A	16,301	4,302	6,672	10,974	5,147	62%	0.27	0	0.953	0.080	0.618	0.618	**38.2%**
69	1981	D	13,024	4,302	6,672	10,974	3,921	65%	0.28	0	0.953	0.080	0.647	0.647	**35.3%**
70	1982	W	37,897	4,285	6,672	10,957	13,223	24%	0.24	0	0.952	0.080	0.288	0.288	**71.2%**
71	1983	W	39,107	4,302	6,672	10,974	13,676	24%	0.24	0	0.953	0.080	0.287	0.287	**71.3%**
72	1984	W	62,802	4,302	3,630	7,932	22,538	23%	0.23	0	0.789	0.080	0.242	0.242	**75.8%**
73	1985	D	35,813	4,302	6,672	10,974	12,444	24%	0.24	0	0.953	0.080	0.289	0.289	**71.1%**
74	1986	W	9,949	4,000	5,075	9,075	2,771	70%	0.30	0	0.851	0.080	0.618	0.618	**38.2%**
75	1987	D	11,125	4,269	4,151	8,420	3,211	68%	0.29	0	0.815	0.080	0.577	0.577	**42.3%**
76	1988	C	8,688	4,235	2,706	6,941	2,299	73%	0.31	0	0.736	0.080	0.556	0.556	**44.4%**
77	1989	D	9,730	4,067	3,781	7,848	2,689	70%	0.30	0	0.784	0.080	0.574	0.574	**42.6%**
78	1990	C	12,251	4,252	6,235	10,487	3,632	66%	0.29	0	0.927	0.080	0.638	0.638	**36.2%**
79	1991	C	7,512	2,386	2,790	5,176	1,859	76%	0.32	0	0.640	0.080	0.505	0.505	**49.5%**
80	1992	C	7,714	2,504	2,084	4,588	1,935	75%	0.32	0	0.608	0.080	0.478	0.478	**52.2%**

DECEMBER

Row	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
10	17,142	4,212	7,107	11,319	5,461	61%	0.45	0	0.864	0.000	0.393	0.393	**60.7%**
11	34,202	4,212	7,091	11,303	11,842	24%	0.24	0	0.863	0.000	0.208	0.208	**79.2%**
12	15,353	4,212	6,944	11,156	4,792	62%	0.47	0	0.855	0.000	0.398	0.398	**60.2%**
13	11,271	3,871	4,635	8,506	3,265	67%	0.50	0	0.712	0.000	0.357	0.357	**64.3%**
14	10,620	4,212	2,814	7,026	3,022	68%	0.51	0	0.632	0.000	0.322	0.322	**67.8%**
15	15,841	4,212	7,042	11,254	4,975	62%	0.46	0	0.861	0.000	0.398	0.398	**60.2%**
16	16,572	4,212	7,075	11,287	5,248	61%	0.46	0	0.862	0.000	0.395	0.395	**60.5%**
17	13,954	4,212	6,928	11,140	4,269	64%	0.48	0	0.854	0.000	0.406	0.406	**59.4%**
18	14,767	4,212	6,782	10,994	4,573	63%	0.47	0	0.847	0.000	0.397	0.397	**60.3%**
19	11,449	3,432	3,058	6,490	3,332	67%	0.50	0	0.603	0.000	0.301	0.301	**69.9%**
20	14,653	4,212	7,188	11,400	4,530	63%	0.47	0	0.868	0.000	0.408	0.408	**59.2%**
21	9,904	2,992	2,407	5,399	2,754	70%	0.52	0	0.544	0.000	0.283	0.283	**71.7%**
22	12,474	3,334	5,985	9,319	3,715	66%	0.49	0	0.756	0.000	0.369	0.369	**63.1%**
23	8,522	2,261	2,635	4,896	2,237	73%	0.54	0	0.517	0.000	0.280	0.280	**72.0%**
24	14,767	4,212	6,944	11,156	4,573	63%	0.47	0	0.855	0.000	0.402	0.402	**59.8%**
25	14,052	4,212	6,993	11,205	4,305	64%	0.47	0	0.858	0.000	0.407	0.407	**59.3%**
26	51,246	4,212	7,530	11,742	18,216	23%	0.23	0	0.887	0.000	0.205	0.205	**79.5%**
27	18,687	4,212	4,538	8,750	6,039	60%	0.45	0	0.725	0.000	0.324	0.324	**67.6%**
28	9,579	2,423	2,667	5,090	2,633	70%	0.52	0	0.528	0.000	0.277	0.277	**72.3%**
29	32,413	4,212	7,351	11,563	11,172	24%	0.24	0	0.877	0.000	0.212	0.212	**78.8%**
30	65,623	4,212	5,156	9,368	23,593	23%	0.23	0	0.759	0.000	0.173	0.173	**82.7%**
31	28,803	4,212	5,822	10,034	9,822	25%	0.25	0	0.795	0.000	0.195	0.195	**80.5%**
32	13,775	4,212	6,261	10,473	4,202	64%	0.48	0	0.818	0.000	0.390	0.390	**61.0%**
33	17,272	4,212	6,961	11,173	5,510	61%	0.45	0	0.856	0.000	0.389	0.389	**61.1%**
34	56,109	4,212	7,595	11,807	20,035	23%	0.23	0	0.890	0.000	0.205	0.205	**79.5%**
35	17,630	4,212	7,140	11,352	5,644	61%	0.45	0	0.866	0.000	0.391	0.391	**60.9%**
36	12,149	3,919	3,415	7,334	3,594	66%	0.49	0	0.649	0.000	0.319	0.319	**68.1%**
37	15,564	4,212	6,928	11,140	4,871	62%	0.46	0	0.854	0.000	0.397	0.397	**60.3%**
38	12,263	4,212	3,432	7,644	3,636	66%	0.49	0	0.666	0.000	0.327	0.327	**67.3%**
39	66,631	4,212	7,595	11,807	23,970	23%	0.23	0	0.890	0.000	0.202	0.202	**79.8%**
40	51,962	4,212	7,107	11,319	18,484	23%	0.23	0	0.864	0.000	0.200	0.200	**80.0%**
41	42,334	4,212	3,741	7,953	14,883	24%	0.24	0	0.682	0.000	0.161	0.161	**83.9%**
42	14,914	4,212	6,879	11,091	4,628	63%	0.47	0	0.852	0.000	0.399	0.399	**60.1%**
43	25,517	4,212	6,928	11,140	8,593	25%	0.25	0	0.854	0.000	0.213	0.213	**78.7%**
44	32,933	4,212	7,595	11,807	11,367	24%	0.24	0	0.890	0.000	0.215	0.215	**78.5%**
45	14,149	4,212	7,026	11,238	4,342	64%	0.47	0	0.860	0.000	0.408	0.408	**59.2%**
46	23,745	4,212	6,928	11,140	7,931	57%	0.43	0	0.854	0.000	0.366	0.366	**63.4%**
47	14,621	4,212	5,725	9,937	4,518	63%	0.47	0	0.789	0.000	0.371	0.371	**62.9%**
48	11,856	4,212	2,797	7,009	3,484	66%	0.49	0	0.631	0.000	0.312	0.312	**68.8%**
49	19,711	4,212	6,912	11,124	6,422	59%	0.44	0	0.854	0.000	0.378	0.378	**62.2%**
50	18,004	4,212	6,912	11,124	5,783	60%	0.45	0	0.854	0.000	0.384	0.384	**61.6%**
51	28,054	4,212	6,928	11,140	9,542	25%	0.25	0	0.854	0.000	0.210	0.210	**79.0%**
52	14,849	4,212	6,993	11,205	4,604	63%	0.47	0	0.858	0.000	0.402	0.402	**59.8%**
53	27,371	4,212	7,465	11,677	9,287	25%	0.25	0	0.883	0.000	0.218	0.218	**78.2%**
54	16,995	4,212	7,514	11,726	5,406	61%	0.46	0	0.886	0.000	0.404	0.404	**59.6%**
55	39,699	4,212	7,123	11,335	13,897	24%	0.24	0	0.865	0.000	0.205	0.205	**79.5%**
56	16,686	4,212	3,741	7,953	5,291	61%	0.46	0	0.682	0.000	0.312	0.312	**68.8%**
57	27,144	4,212	6,977	11,189	9,202	25%	0.25	0	0.857	0.000	0.212	0.212	**78.8%**
58	50,156	4,212	3,480	7,692	17,808	23%	0.23	0	0.668	0.000	0.155	0.155	**84.5%**
59	57,101	4,212	7,042	11,254	20,406	23%	0.23	0	0.861	0.000	0.198	0.198	**80.2%**
60	22,053	4,212	6,944	11,156	7,298	58%	0.43	0	0.855	0.000	0.371	0.371	**62.9%**
61	26,753	4,212	6,928	11,140	9,056	25%	0.25	0	0.854	0.000	0.212	0.212	**78.8%**
62	61,590	4,212	7,172	11,384	22,085	23%	0.23	0	0.868	0.000	0.198	0.198	**80.2%**
63	17,613	4,212	7,091	11,303	5,637	61%	0.45	0	0.863	0.000	0.390	0.390	**61.0%**
64	16,768	4,212	6,993	11,205	5,321	61%	0.46	0	0.858	0.000	0.392	0.392	**60.8%**
65	9,205	1,870	3,188	5,058	2,493	71%	0.53	0	0.526	0.000	0.279	0.279	**72.1%**
66	12,295	2,732	6,928	9,660	3,648	66%	0.49	0	0.775	0.000	0.380	0.380	**62.0%**
67	12,751	4,212	5,546	9,758	3,819	65%	0.49	0	0.780	0.000	0.379	0.379	**62.1%**
68	21,842	4,212	6,993	11,205	7,219	58%	0.43	0	0.858	0.000	0.373	0.373	**62.7%**
69	15,613	4,212	5,042	9,254	4,889	62%	0.46	0	0.753	0.000	0.349	0.349	**65.1%**
70	68,599	4,212	7,026	11,238	24,706	23%	0.23	0	0.860	0.000	0.195	0.195	**80.5%**
71	55,410	4,212	7,595	11,807	19,773	23%	0.23	0	0.890	0.000	0.205	0.205	**79.5%**
72	82,944	4,212	3,106	7,318	30,071	22%	0.22	0	0.648	0.000	0.145	0.145	**85.5%**
73	23,875	4,212	6,961	11,173	7,979	57%	0.43	0	0.856	0.000	0.366	0.366	**63.4%**
74	16,166	4,212	6,944	11,156	5,096	62%	0.46	0	0.855	0.000	0.394	0.394	**60.6%**
75	12,864	4,212	5,172	9,384	3,861	65%	0.48	0	0.760	0.000	0.368	0.368	**63.2%**
76	16,345	4,212	6,912	11,124	5,163	62%	0.46	0	0.854	0.000	0.392	0.392	**60.8%**
77	10,083	3,188	2,830	6,018	2,821	69%	0.52	0	0.578	0.000	0.298	0.298	**70.2%**
78	16,117	4,212	6,912	11,124	5,078	62%	0.46	0	0.854	0.000	0.393	0.393	**60.7%**
79	10,360	2,781	2,797	5,578	2,925	69%	0.51	0	0.554	0.000	0.284	0.284	**71.6%**
80	8,164	2,505	1,935	4,440	2,103	74%	0.55	0	0.493	0.000	0.270	0.270	**73.0%**

JANUARY

Row	Sac River Flows	CVP Flows	SWP Flows	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
10	17,499	4,212	7,579	11,791	5,595	61%	0.27	0	0.890	0.000	0.236	0.236	**76.4%**
11	32,283	4,212	3,643	7,855	11,124	24%	0.24	0	0.677	0.000	0.164	0.164	**83.6%**
12	18,036	4,212	6,310	10,522	5,795	60%	0.26	0	0.821	0.000	0.217	0.217	**78.3%**
13	10,213	1,610	1,561	3,171	2,870	69%	0.30	0	0.424	0.000	0.126	0.126	**87.4%**
14	18,085	4,212	6,635	10,847	5,814	60%	0.26	0	0.839	0.000	0.221	0.221	**77.9%**
15	30,608	4,212	7,286	11,498	10,497	24%	0.24	0	0.874	0.000	0.213	0.213	**78.7%**
16	25,208	4,212	3,643	7,855	8,478	25%	0.25	0	0.677	0.000	0.169	0.169	**83.1%**
17	15,776	4,212	4,489	8,701	4,950	62%	0.27	0	0.723	0.000	0.195	0.195	**80.5%**
18	21,077	4,212	7,156	11,368	6,933	58%	0.26	0	0.867	0.000	0.223	0.223	**77.7%**
19	13,775	4,212	2,716	6,928	4,202	64%	0.28	0	0.627	0.000	0.174	0.174	**82.6%**
20	17,256	4,212	7,823	12,035	5,504	61%	0.27	0	0.903	0.000	0.240	0.240	**76.0%**
21	13,905	4,212	3,789	8,001	4,250	64%	0.28	0	0.685	0.000	0.190	0.190	**81.0%**
22	16,101	3,936	5,757	9,693	5,072	62%	0.27	0	0.776	0.000	0.209	0.209	**79.1%**
23	25,469	4,212	7,660	11,872	8,575	25%	0.25	0	0.894	0.000	0.223	0.223	**77.7%**
24	32,966	4,212	7,449	11,661	11,379	24%	0.24	0	0.883	0.000	0.213	0.213	**78.7%**
25	15,223	4,212	5,692	9,904	4,743	63%	0.27	0	0.788	0.000	0.214	0.214	**78.6%**
26	31,437	4,212	6,896	11,108	10,807	24%	0.24	0	0.853	0.000	0.207	0.207	**79.3%**
27	18,410	4,212	3,269	7,481	5,935	60%	0.26	0	0.657	0.000	0.173	0.173	**82.7%**
28	23,696	4,212	8,018	12,230	7,912	57%	0.25	0	0.913	0.000	0.230	0.230	**77.0%**
29	73,885	4,212	8,181	12,393	26,683	23%	0.23	0	0.922	0.000	0.208	0.208	**79.2%**
30	63,265	4,212	3,269	7,481	22,711	23%	0.23	0	0.657	0.000	0.150	0.150	**85.0%**
31	58,060	4,212	3,334	7,546	20,764	23%	0.23	0	0.660	0.000	0.151	0.151	**84.9%**
32	17,678	4,212	5,318	9,530	5,662	60%	0.26	0	0.768	0.000	0.203	0.203	**79.7%**
33	13,856	4,212	7,253	11,465	4,232	64%	0.28	0	0.872	0.000	0.242	0.242	**75.8%**
34	43,228	4,212	5,725	9,937	15,217	23%	0.23	0	0.789	0.000	0.185	0.185	**81.5%**
35	14,474	4,212	7,416	11,628	4,463	63%	0.28	0	0.881	0.000	0.242	0.242	**75.8%**
36	16,312	2,797	5,497	8,294	5,151	62%	0.27	0	0.701	0.000	0.188	0.188	**81.2%**
37	15,906	4,212	7,140	11,352	4,999	62%	0.27	0	0.866	0.000	0.234	0.234	**76.6%**
38	22,183	4,212	7,188	11,400	7,346	58%	0.25	0	0.868	0.000	0.221	0.221	**77.9%**
39	62,208	4,212	8,067	12,279	22,316	23%	0.23	0	0.916	0.000	0.209	0.209	**79.1%**
40	67,347	4,212	8,506	12,718	24,238	23%	0.23	0	0.940	0.000	0.213	0.213	**78.7%**
41	64,078	4,212	3,334	7,546	23,015	23%	0.23	0	0.660	0.000	0.150	0.150	**85.0%**
42	33,421	4,212	3,871	8,083	11,549	24%	0.24	0	0.689	0.000	0.166	0.166	**83.4%**
43	22,004	4,212	7,188	11,400	7,279	58%	0.26	0	0.868	0.000	0.222	0.222	**77.8%**
44	84,716	4,212	8,506	12,718	30,734	22%	0.22	0	0.940	0.000	0.211	0.211	**78.9%**
45	18,638	4,212	7,367	11,579	6,021	60%	0.26	0	0.878	0.000	0.230	0.230	**77.0%**
46	43,179	4,212	7,221	11,433	15,199	23%	0.23	0	0.870	0.000	0.204	0.204	**79.6%**
47	35,162	4,212	3,350	7,562	12,201	24%	0.24	0	0.661	0.000	0.159	0.159	**84.1%**
48	15,776	4,212	4,342	8,554	4,950	62%	0.27	0	0.715	0.000	0.193	0.193	**80.7%**
49	15,255	4,212	7,140	11,352	4,755	62%	0.27	0	0.866	0.000	0.236	0.236	**76.4%**
50	13,710	4,212	7,123	11,335	4,178	64%	0.28	0	0.865	0.000	0.241	0.241	**75.9%**
51	18,313	4,212	7,253	11,465	5,899	60%	0.26	0	0.872	0.000	0.229	0.229	**77.1%**
52	27,046	4,212	6,554	10,766	9,165	25%	0.25	0	0.834	0.000	0.207	0.207	**79.3%**
53	81,236	4,212	8,506	12,718	29,432	22%	0.22	0	0.940	0.000	0.211	0.211	**78.9%**
54	29,632	4,212	7,530	11,742	10,132	24%	0.24	0	0.887	0.000	0.217	0.217	**78.3%**
55	36,837	4,212	7,676	11,888	12,827	24%	0.24	0	0.895	0.000	0.213	0.213	**78.7%**
56	30,640	4,212	3,334	7,546	10,509	24%	0.24	0	0.660	0.000	0.161	0.161	**83.9%**
57	71,868	4,212	8,506	12,718	25,929	23%	0.23	0	0.940	0.000	0.212	0.212	**78.8%**
58	92,669	4,212	3,334	7,546	33,708	22%	0.22	0	0.660	0.000	0.147	0.147	**85.3%**
59	47,538	4,212	7,465	11,677	16,829	23%	0.23	0	0.883	0.000	0.206	0.206	**79.4%**
60	20,394	4,212	7,172	11,384	6,677	59%	0.26	0	0.868	0.000	0.224	0.224	**77.6%**
61	48,400	4,212	7,563	11,775	17,152	23%	0.23	0	0.889	0.000	0.207	0.207	**79.3%**
62	78,422	4,212	8,343	12,555	28,380	22%	0.22	0	0.931	0.000	0.209	0.209	**79.1%**
63	18,670	4,212	5,757	9,969	6,033	60%	0.26	0	0.791	0.000	0.207	0.207	**79.3%**
64	16,768	4,212	7,286	11,498	5,321	61%	0.27	0	0.874	0.000	0.234	0.234	**76.6%**
65	10,701	797	1,334	2,131	3,052	68%	0.29	0	0.368	0.000	0.108	0.108	**89.2%**
66	47,668	4,212	7,774	11,986	16,878	23%	0.23	0	0.900	0.000	0.210	0.210	**79.0%**
67	27,241	4,212	3,269	7,481	9,238	25%	0.25	0	0.657	0.000	0.162	0.162	**83.8%**
68	69,884	4,212	5,351	9,563	25,187	23%	0.23	0	0.769	0.000	0.174	0.174	**82.6%**
69	28,185	4,212	3,350	7,562	9,591	25%	0.25	0	0.661	0.000	0.163	0.163	**83.7%**
70	51,165	4,212	8,506	12,718	18,186	23%	0.23	0	0.940	0.000	0.218	0.218	**78.2%**
71	59,150	4,212	5,920	10,132	21,172	23%	0.23	0	0.800	0.000	0.183	0.183	**81.7%**
72	47,359	1,626	2,879	4,505	16,762	23%	0.23	0	0.496	0.000	0.116	0.116	**88.4%**
73	17,646	4,212	3,871	8,083	5,650	61%	0.26	0	0.689	0.000	0.183	0.183	**81.7%**
74	21,712	4,212	7,351	11,563	7,170	58%	0.26	0	0.877	0.000	0.224	0.224	**77.6%**
75	16,735	2,179	6,440	8,619	5,309	61%	0.27	0	0.718	0.000	0.192	0.192	**80.8%**
76	26,022	4,212	7,123	11,335	8,782	25%	0.25	0	0.865	0.000	0.215	0.215	**78.5%**
77	12,994	2,342	2,407	4,749	3,910	65%	0.28	0	0.509	0.000	0.143	0.143	**85.7%**
78	22,395	2,765	7,123	9,888	7,426	58%	0.25	0	0.787	0.000	0.200	0.200	**80.0%**
79	10,653	976	992	1,968	3,034	68%	0.29	0	0.359	0.000	0.106	0.106	**89.4%**
80	12,149	2,440	1,334	3,774	3,594	66%	0.29	0	0.457	0.000	0.131	0.131	**86.9%**

Formulas: Sacramento River Spring Smolt Yearling Survival Model

```
C10 ='Study 467 Flow Data'!B7
D10 ='Study 467 Flow Data'!L7
E10 ='Study 467 Flow Data'!V7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
J10 =IF(-2.45925+(0.0420748*$T$1)>0,-2.45925+(0.0420748*$T$1),0)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =IF(-1.613493+(0.0319584*$T$1)>0,-1.613493+(0.0319584*$T$1),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!C7
R10 ='Study 467 Flow Data'!M7
S10 ='Study 467 Flow Data'!W7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
Z10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!D7
AF10 ='Study 467 Flow Data'!N7
AG10 ='Study 467 Flow Data'!X7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AN10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
```

	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF
1	Study 467 Sacramento River Spring Run Yearling Survival Model (continued)													
2									February Water Temp		50 F			
3		Cross Channel Closed Over			25000 cfs				March Water Temp		55 F			
4		Cross Channel Closed Feb to Apr when DOI greater than					12,000 cfs							
5														
6	**FEBRUARY**				Calculated									
7	Sac				Sutter &								**Calculated**	
8	River	CVP	SWP	CVP + SWP	Steamboat		X-Channel		Calculated Mortality				**Survivability**	
9	Flow	Flow	Flow	Exports	Slough Q	Percent	Closed	m1	m2	m3	m23	m123	**s123**	
10	35,436	4,249	7,220	11,469	12,303	24%	0.24	0	0.926	0.000	0.222	0.222	**77.8%**	
11	19,050	4,285	4,375	8,660	6,175	60%	0.26	0	0.774	0.000	0.202	0.202	**79.8%**	
12	16,655	4,085	6,989	11,074	5,279	61%	0.27	0	0.905	0.000	0.242	0.242	**75.8%**	
13	45,105	4,231	7,581	11,812	15,919	23%	0.23	0	0.945	0.000	0.221	0.221	**77.9%**	
14	35,274	4,231	7,635	11,866	12,242	24%	0.24	0	0.948	0.000	0.227	0.227	**77.3%**	
15	88,337	3,277	8,499	11,776	32,088	22%	0.22	0	0.943	0.000	0.211	0.211	**78.9%**	
16	25,469	4,103	4,225	8,328	8,575	25%	0.25	0	0.757	0.000	0.189	0.189	**81.1%**	
17	18,780	4,249	7,220	11,469	6,074	60%	0.26	0	0.926	0.000	0.242	0.242	**75.8%**	
18	17,592	4,249	7,238	11,487	5,629	61%	0.26	0	0.927	0.000	0.246	0.246	**75.4%**	
19	12,640	3,781	7,202	10,983	3,777	65%	0.28	0	0.900	0.000	0.255	0.255	**74.5%**	
20	15,403	4,103	8,206	12,309	4,811	62%	0.27	0	0.971	0.000	0.264	0.264	**73.6%**	
21	13,324	4,231	7,364	11,595	4,033	65%	0.28	0	0.933	0.000	0.261	0.261	**73.9%**	
22	13,018	4,231	7,508	11,739	3,919	65%	0.28	0	0.941	0.000	0.265	0.265	**73.5%**	
23	13,000	1,386	3,673	5,059	3,912	65%	0.28	0	0.580	0.000	0.163	0.163	**83.7%**	
24	53,442	4,103	7,528	11,631	19,037	23%	0.23	0	0.935	0.000	0.216	0.216	**78.4%**	
25	32,033	4,231	8,355	12,586	11,030	24%	0.24	0	0.986	0.000	0.239	0.239	**76.1%**	
26	82,359	4,285	3,943	8,228	29,852	22%	0.22	0	0.751	0.000	0.169	0.169	**83.1%**	
27	19,032	4,249	3,961	8,210	6,168	60%	0.26	0	0.750	0.000	0.196	0.196	**80.4%**	
28	47,722	4,103	8,206	12,309	16,898	23%	0.23	0	0.971	0.000	0.226	0.226	**77.4%**	
29	75,031	4,285	5,780	10,065	27,112	23%	0.23	0	0.850	0.000	0.192	0.192	**80.8%**	
30	78,344	4,285	3,961	8,246	28,351	23%	0.23	0	0.752	0.000	0.169	0.169	**83.1%**	
31	52,253	4,285	4,015	8,300	18,593	23%	0.23	0	0.755	0.000	0.174	0.174	**82.6%**	
32	27,451	4,103	3,859	7,962	9,317	25%	0.25	0	0.737	0.000	0.182	0.182	**81.8%**	
33	39,451	4,231	4,411	8,642	13,805	24%	0.24	0	0.773	0.000	0.183	0.183	**81.7%**	
34	23,588	4,285	4,411	8,696	7,872	57%	0.25	0	0.776	0.000	0.196	0.196	**80.4%**	
35	20,563	4,249	6,752	11,001	6,741	59%	0.26	0	0.901	0.000	0.232	0.232	**76.8%**	
36	11,109	4,085	5,946	10,031	3,205	68%	0.29	0	0.848	0.000	0.248	0.248	**75.2%**	
37	16,133	4,249	7,220	11,469	5,084	62%	0.27	0	0.926	0.000	0.249	0.249	**75.1%**	
38	36,372	4,249	7,544	11,793	12,653	24%	0.24	0	0.944	0.000	0.225	0.225	**77.5%**	
39	60,572	4,285	4,682	8,967	21,704	23%	0.23	0	0.791	0.000	0.181	0.181	**81.9%**	
40	62,499	4,138	4,624	8,762	22,425	23%	0.23	0	0.780	0.000	0.178	0.178	**82.2%**	
41	28,341	4,285	4,051	8,336	9,650	25%	0.25	0	0.757	0.000	0.186	0.186	**81.4%**	
42	57,151	4,285	4,646	8,931	20,424	23%	0.23	0	0.789	0.000	0.181	0.181	**81.9%**	
43	16,295	4,267	7,238	11,505	5,144	62%	0.27	0	0.928	0.000	0.249	0.249	**75.1%**	
44	61,543	4,138	4,520	8,658	22,067	23%	0.23	0	0.774	0.000	0.177	0.177	**82.3%**	
45	33,149	4,249	4,808	9,057	11,448	24%	0.24	0	0.796	0.000	0.192	0.192	**80.8%**	
46	65,740	4,267	5,060	9,327	23,637	23%	0.23	0	0.810	0.000	0.184	0.184	**81.6%**	
47	50,075	4,267	4,069	8,336	17,778	23%	0.23	0	0.757	0.000	0.176	0.176	**82.4%**	
48	27,051	4,085	7,058	11,143	9,167	25%	0.25	0	0.909	0.000	0.225	0.225	**77.5%**	
49	33,347	2,647	7,184	9,831	11,522	24%	0.24	0	0.838	0.000	0.202	0.202	**79.8%**	
50	46,707	4,249	6,914	11,163	16,518	23%	0.23	0	0.910	0.000	0.212	0.212	**78.8%**	
51	54,846	4,285	8,409	12,694	19,562	23%	0.23	0	0.992	0.000	0.228	0.228	**77.2%**	
52	17,246	4,120	4,520	8,640	5,500	61%	0.27	0	0.773	0.000	0.206	0.206	**79.4%**	
53	33,329	4,267	7,941	12,208	11,515	24%	0.24	0	0.966	0.000	0.233	0.233	**76.7%**	
54	26,775	4,285	4,411	8,696	9,064	25%	0.25	0	0.776	0.000	0.192	0.192	**80.8%**	
55	43,106	4,285	4,610	8,895	15,172	23%	0.23	0	0.787	0.000	0.185	0.185	**81.5%**	
56	54,520	4,138	3,912	8,050	19,440	23%	0.23	0	0.741	0.000	0.171	0.171	**82.9%**	
57	67,486	4,285	3,169	7,454	24,290	23%	0.23	0	0.709	0.000	0.161	0.161	**83.9%**	
58	57,565	3,799	4,051	7,850	20,579	23%	0.23	0	0.731	0.000	0.168	0.168	**83.2%**	
59	28,521	4,285	4,682	8,967	9,717	25%	0.25	0	0.791	0.000	0.194	0.194	**80.6%**	
60	24,217	4,120	4,955	9,075	8,107	57%	0.25	0	0.797	0.000	0.200	0.200	**80.0%**	
61	70,961	4,267	5,402	9,669	25,589	23%	0.23	0	0.829	0.000	0.188	0.188	**81.2%**	
62	41,918	4,267	4,411	8,678	14,727	24%	0.24	0	0.775	0.000	0.183	0.183	**81.7%**	
63	58,807	4,249	4,682	8,931	21,044	23%	0.23	0	0.789	0.000	0.181	0.181	**81.9%**	
64	19,523	4,103	4,433	8,536	6,352	59%	0.26	0	0.768	0.000	0.200	0.200	**80.0%**	
65	7,256	3,133	2,665	5,798	1,764	77%	0.33	0	0.620	0.000	0.202	0.202	**79.8%**	
66	51,371	4,267	8,139	12,406	18,263	23%	0.23	0	0.977	0.000	0.226	0.226	**77.4%**	
67	42,044	4,249	3,961	8,210	14,774	24%	0.24	0	0.750	0.000	0.177	0.177	**82.3%**	
68	69,453	4,103	3,668	7,771	25,025	23%	0.23	0	0.726	0.000	0.165	0.165	**83.5%**	
69	29,674	4,267	4,069	8,336	10,148	24%	0.24	0	0.757	0.000	0.185	0.185	**81.5%**	
70	65,650	4,285	5,132	9,417	23,603	23%	0.23	0	0.815	0.000	0.185	0.185	**81.5%**	
71	82,917	4,285	2,827	7,112	30,061	22%	0.22	0	0.691	0.000	0.155	0.155	**84.5%**	
72	36,004	1,565	3,720	5,285	12,515	24%	0.24	0	0.592	0.000	0.142	0.142	**85.8%**	
73	22,381	4,249	4,646	8,895	7,420	58%	0.25	0	0.787	0.000	0.200	0.200	**80.0%**	
74	99,825	4,249	8,499	12,748	36,385	22%	0.22	0	0.995	0.000	0.221	0.221	**77.9%**	
75	23,030	1,494	4,357	5,851	7,663	58%	0.25	0	0.623	0.000	0.158	0.158	**84.2%**	
76	11,248	4,103	6,102	10,205	3,257	67%	0.29	0	0.858	0.000	0.250	0.250	**75.0%**	
77	9,093	4,231	4,123	8,354	2,451	72%	0.31	0	0.758	0.000	0.233	0.233	**76.7%**	
78	17,754	1,531	7,184	8,715	5,690	60%	0.26	0	0.777	0.000	0.206	0.206	**79.4%**	
79	8,211	3,961	2,971	6,932	2,121	74%	0.32	0	0.681	0.000	0.215	0.215	**78.5%**	
80	31,415	4,085	7,215	11,300	10,799	24%	0.24	0	0.917	0.000	0.223	0.223	**77.7%**	

	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV
6	**MARCH**				Calculated											
7	Sac				Sutter &								**Calculated**		**Weighted**	
8	River			CVP + SWI	Steamboat		X-Channel		Calculated Mortality				**Survivability**		**Total**	
9	Flow	CVP	SWP	exports	Slough Q	percent	Closed	m1	m2	m3	m23	m123	**s123**		**Survival**	
10	31,551	3,887	4,147	8,034	10,850	24%	0.24	0	0.830	0.144	0.311	0.311	**68.9%**		**58.2%**	
11	17,337	4,228	4,424	8,652	5,534	61%	0.27	0	0.864	0.144	0.335	0.335	**66.5%**		**64.4%**	
12	8,603	4,228	3,058	7,286	2,268	73%	0.31	0	0.790	0.144	0.345	0.345	**65.5%**		**56.0%**	
13	18,557	4,228	5,855	10,083	5,990	60%	0.26	0	0.941	0.144	0.353	0.353	**64.7%**		**61.5%**	
14	16,019	4,228	6,977	11,205	5,041	62%	0.27	0	1.002	0.144	0.375	0.375	**62.5%**		**61.2%**	
15	43,863	3,464	4,147	7,611	15,455	23%	0.23	0	0.808	0.144	0.300	0.300	**70.0%**		**56.8%**	
16	86,229	4,228	4,424	8,652	31,300	22%	0.22	0	0.864	0.144	0.305	0.305	**69.5%**		**57.6%**	
17	14,670	3,220	4,359	7,579	4,537	63%	0.27	0	0.806	0.144	0.326	0.326	**67.4%**		**54.3%**	
18	30,852	4,228	4,716	8,944	10,589	24%	0.24	0	0.880	0.144	0.323	0.323	**67.7%**		**59.7%**	
19	9,319	1,984	5,725	7,709	2,535	71%	0.30	0	0.813	0.144	0.348	0.348	**65.2%**		**60.1%**	
20	10,116	4,228	4,391	8,619	2,833	69%	0.30	0	0.862	0.144	0.359	0.359	**64.1%**		**59.3%**	
21	10,994	3,919	7,026	10,945	3,162	68%	0.29	0	0.988	0.144	0.391	0.391	**60.9%**		**63.7%**	
22	12,214	4,228	6,635	10,863	3,618	66%	0.29	0	0.983	0.144	0.384	0.384	**61.6%**		**61.4%**	
23	24,916	4,228	7,270	11,498	8,369	57%	0.25	0	1.018	0.144	0.363	0.363	**63.7%**		**62.1%**	
24	34,202	4,228	4,163	8,391	11,842	24%	0.24	0	0.850	0.144	0.314	0.314	**68.6%**		**55.7%**	
25	37,260	4,228	4,001	8,229	12,985	24%	0.24	0	0.841	0.144	0.310	0.310	**69.0%**		**56.7%**	
26	78,634	3,627	3,968	7,595	28,459	22%	0.22	0	0.807	0.144	0.293	0.293	**70.7%**		**65.4%**	
27	16,394	3,610	4,001	7,611	5,181	61%	0.27	0	0.808	0.144	0.322	0.322	**67.8%**		**60.1%**	
28	63,606	4,228	5,643	9,871	22,839	23%	0.23	0	0.930	0.144	0.323	0.323	**67.7%**		**63.9%**	
29	58,581	4,228	3,838	8,066	20,959	23%	0.23	0	0.832	0.144	0.302	0.302	**69.8%**		**62.7%**	
30	27,095	4,228	4,001	8,229	9,184	25%	0.25	0	0.841	0.144	0.317	0.317	**68.3%**		**66.6%**	
31	64,598	4,228	4,050	8,278	23,210	23%	0.23	0	0.844	0.144	0.303	0.303	**69.7%**		**66.2%**	
32	25,094	4,228	4,017	8,245	8,435	25%	0.25	0	0.842	0.144	0.319	0.319	**68.1%**		**55.3%**	
33	27,030	3,350	4,147	7,497	9,159	25%	0.25	0	0.801	0.144	0.307	0.307	**69.3%**		**55.6%**	
34	23,533	4,228	4,440	8,668	7,851	57%	0.25	0	0.865	0.144	0.326	0.326	**67.4%**		**64.4%**	
35	21,874	4,228	4,180	8,408	7,231	58%	0.26	0	0.851	0.144	0.325	0.325	**67.5%**		**54.4%**	
36	16,735	3,188	4,050	7,238	5,309	61%	0.27	0	0.787	0.144	0.316	0.316	**68.4%**		**59.3%**	
37	41,813	4,228	5,090	9,318	14,688	24%	0.24	0	0.900	0.144	0.322	0.322	**67.8%**		**54.4%**	
38	23,615	4,228	4,456	8,684	7,882	57%	0.25	0	0.866	0.144	0.326	0.326	**67.4%**		**57.8%**	
39	29,323	4,228	4,700	8,928	10,017	24%	0.24	0	0.879	0.144	0.324	0.324	**67.6%**		**76.3%**	
40	57,524	4,228	3,952	8,180	20,564	23%	0.23	0	0.838	0.144	0.303	0.303	**69.7%**		**64.3%**	
41	24,899	4,228	4,115	8,343	8,362	57%	0.25	0	0.847	0.144	0.320	0.320	**68.0%**		**66.8%**	
42	49,538	4,228	4,684	8,912	17,577	23%	0.23	0	0.878	0.144	0.314	0.314	**68.6%**		**57.4%**	
43	15,158	4,228	4,245	8,473	4,719	63%	0.27	0	0.854	0.144	0.338	0.338	**66.2%**		**63.9%**	
44	36,674	3,578	4,700	8,278	12,766	24%	0.24	0	0.844	0.144	0.311	0.311	**68.9%**		**62.7%**	
45	44,383	4,228	4,586	8,814	15,649	23%	0.23	0	0.873	0.144	0.315	0.315	**68.5%**		**54.9%**	
46	93,612	4,228	4,082	8,310	34,061	22%	0.22	0	0.845	0.144	0.301	0.301	**69.9%**		**58.0%**	
47	21,760	4,228	4,115	8,343	7,188	58%	0.26	0	0.847	0.144	0.324	0.324	**67.6%**		**57.6%**	
48	21,809	3,610	7,010	10,620	7,207	58%	0.26	0	0.970	0.144	0.355	0.355	**64.5%**		**60.6%**	
49	21,338	2,879	5,269	8,148	7,030	58%	0.26	0	0.837	0.144	0.322	0.322	**67.8%**		**55.7%**	
50	27,014	4,228	4,342	8,570	9,153	25%	0.25	0	0.859	0.144	0.321	0.321	**67.9%**		**56.5%**	
51	32,641	4,228	4,456	8,684	11,258	24%	0.24	0	0.866	0.144	0.319	0.319	**68.1%**		**64.3%**	
52	16,345	4,228	4,700	8,928	5,163	62%	0.27	0	0.879	0.144	0.341	0.341	**65.9%**		**67.5%**	
53	21,386	3,610	4,472	8,082	7,048	58%	0.26	0	0.833	0.144	0.321	0.321	**67.9%**		**62.6%**	
54	28,689	4,228	4,440	8,668	9,780	25%	0.25	0	0.865	0.144	0.321	0.321	**67.9%**		**67.4%**	
55	54,483	4,228	3,301	7,529	19,427	23%	0.23	0	0.803	0.144	0.296	0.296	**70.4%**		**64.5%**	
56	36,788	3,627	4,115	7,742	12,809	24%	0.24	0	0.815	0.144	0.304	0.304	**69.6%**		**63.2%**	
57	45,326	3,480	3,253	6,733	16,002	23%	0.23	0	0.760	0.144	0.288	0.288	**71.2%**		**63.3%**	
58	35,812	3,220	4,115	7,335	12,444	24%	0.24	0	0.793	0.144	0.299	0.299	**70.1%**		**67.3%**	
59	51,506	4,228	4,700	8,928	18,313	23%	0.23	0	0.879	0.144	0.314	0.314	**68.6%**		**65.6%**	
60	32,933	4,228	4,570	8,798	11,367	24%	0.24	0	0.872	0.144	0.320	0.320	**68.0%**		**56.8%**	
61	47,554	4,228	4,472	8,700	16,835	23%	0.23	0	0.866	0.144	0.312	0.312	**68.8%**		**75.5%**	
62	100,199	4,228	4,440	8,668	36,524	22%	0.22	0	0.865	0.144	0.304	0.304	**69.6%**		**76.8%**	
63	75,999	4,228	4,700	8,928	27,474	23%	0.23	0	0.879	0.144	0.310	0.310	**69.0%**		**56.6%**	
64	18,361	4,228	4,424	8,652	5,917	60%	0.26	0	0.864	0.144	0.333	0.333	**66.7%**		**56.3%**	
65	6,863	1,984	1,724	3,708	1,617	78%	0.33	0	0.597	0.144	0.295	0.295	**70.5%**		**65.2%**	
66	46,465	4,228	3,887	8,115	16,428	23%	0.23	0	0.835	0.144	0.305	0.305	**69.5%**		**62.2%**	
67	32,592	4,228	4,001	8,229	11,239	24%	0.24	0	0.841	0.144	0.313	0.313	**68.7%**		**57.0%**	
68	36,479	4,228	3,350	7,578	12,693	24%	0.24	0	0.806	0.144	0.302	0.302	**69.8%**		**57.5%**	
69	32,494	4,228	4,115	8,343	11,203	24%	0.24	0	0.847	0.144	0.314	0.314	**68.6%**		**57.4%**	
70	69,087	4,228	4,668	8,896	24,889	23%	0.23	0	0.877	0.144	0.310	0.310	**69.0%**		**76.5%**	
71	81,935	2,049	2,635	4,684	29,694	22%	0.22	0	0.650	0.144	0.258	0.258	**74.2%**		**76.8%**	
72	36,495	3,415	4,001	7,416	12,699	24%	0.24	0	0.797	0.144	0.300	0.300	**70.0%**		**81.8%**	
73	21,809	4,228	4,684	8,912	7,207	58%	0.26	0	0.878	0.144	0.332	0.332	**66.8%**		**69.5%**	
74	72,535	2,098	4,147	6,245	26,178	23%	0.23	0	0.734	0.144	0.277	0.277	**72.3%**		**55.8%**	
75	29,876	2,586	4,277	6,863	10,224	24%	0.24	0	0.767	0.144	0.296	0.296	**70.4%**		**59.0%**	
76	7,075	2,683	2,667	5,350	1,696	77%	0.33	0	0.686	0.144	0.322	0.322	**67.8%**		**58.0%**	
77	46,611	4,228	6,961	11,189	16,483	23%	0.23	0	1.001	0.144	0.344	0.344	**65.6%**		**62.2%**	
78	15,483	2,602	4,001	6,603	4,841	62%	0.27	0	0.753	0.144	0.309	0.309	**69.1%**		**55.3%**	
79	30,429	4,228	7,091	11,319	10,430	24%	0.24	0	1.008	0.144	0.355	0.355	**64.5%**		**65.9%**	
80	20,102	3,887	7,026	10,913	6,568	59%	0.26	0	0.986	0.144	0.362	0.362	**63.8%**		**67.1%**	
81														**AVERAGE:**	**62.04%**	

	Formula (February)	Formula (March)
85	AS10 ='Study 467 Flow Data'!E7	BG10 ='Study 467 Flow Data'!F7
86	AT10 ='Study 467 Flow Data'!O7	BH10 ='Study 467 Flow Data'!P7
87	AU10 ='Study 467 Flow Data'!Y7	BI10 ='Study 467 Flow Data'!Z7
88	AV10 =(AT10+AU10)	BJ10 =(BH10+BI10)
89	AW10 =0.374*AS10-950	BK10 =0.374*BG10-950
90	AX10 =IF(AS10>$K$4,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))	BL10 =IF(BG10>$K$4,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
91	AY10 =(0.133*AS10+829)/(AS10-AW10)	BM10 =(0.133*BG10+829)/(BG10-BK10)
92	AZ10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)	BN10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
93	BA10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)	BO10 =(-0.5916024)+(0.017968*$BC$3)+(0.000054*BJ10)
94	BB10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)	BP10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)
95	BC10 =(BA10*AY10)+(BB10*(1-AY10))	BQ10 =(BO10*BM10)+(BP10*(1-BM10))
96	BD10 =AZ10+BC10-(AZ10*BC10)	BR10 =BN10+BQ10-(BN10*BQ10)
97	BE10 =1-BD10	BS10 =1-BR10
98		BU10 =(O10*0.37)+(AC10*0.42)+(AQ10*0.13)+(BE10*0.05)+(BS10*0.03)

Study 469 Sacramento River Spring Run Yearling Survival Model
Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Row	Year	Water Year Type	Sac River Flow	CVP Flow	SWP Flow	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2 (Calculated Mortality)	m3	m23	m123	Calculated Survival s123
10	1922	A	11,814	4,290	4,316	8,606	3,468	67%	0.29	0	0.825	0.080	0.576	0.576	**42.4%**
11	1923	B	18,133	4,306	6,672	10,978	5,832	60%	0.26	0	0.954	0.080	0.606	0.606	**39.4%**
12	1924	C	11,247	3,824	3,749	7,573	3,256	67%	0.29	0	0.770	0.080	0.545	0.545	**45.5%**
13	1925	D	7,024	1,312	3,210	4,522	1,677	78%	0.33	0	0.605	0.080	0.487	0.487	**51.3%**
14	1926	D	10,919	4,295	3,101	7,396	3,134	68%	0.29	0	0.760	0.080	0.542	0.542	**45.8%**
15	1927	W	20,291	4,251	6,672	10,923	6,639	59%	0.26	0	0.951	0.080	0.593	0.593	**40.7%**
16	1928	A	22,937	4,293	6,672	10,965	7,628	58%	0.25	0	0.953	0.080	0.582	0.582	**41.8%**
17	1929	C	12,862	4,277	5,457	9,734	3,860	65%	0.28	0	0.886	0.080	0.605	0.605	**39.5%**
18	1930	D	7,159	2,281	1,765	4,046	1,727	77%	0.33	0	0.579	0.080	0.465	0.465	**53.5%**
19	1931	C	9,788	2,649	3,268	5,917	2,711	70%	0.30	0	0.680	0.080	0.501	0.501	**49.9%**
20	1932	D	8,056	1,188	1,661	2,849	2,063	74%	0.32	0	0.515	0.080	0.403	0.403	**59.7%**
21	1933	C	9,511	3,053	2,609	5,662	2,607	71%	0.30	0	0.666	0.080	0.494	0.494	**50.6%**
22	1934	C	8,557	1,489	1,579	3,068	2,250	73%	0.31	0	0.526	0.080	0.405	0.405	**59.5%**
23	1935	B	9,209	2,541	4,293	6,834	2,494	71%	0.31	0	0.730	0.080	0.543	0.543	**45.7%**
24	1936	B	11,356	4,278	3,440	7,718	3,297	67%	0.29	0	0.777	0.080	0.549	0.549	**45.1%**
25	1937	B	11,657	4,286	3,669	7,955	3,410	67%	0.29	0	0.790	0.080	0.554	0.554	**44.6%**
26	1938	W	23,700	4,293	6,672	10,965	7,914	57%	0.25	0	0.953	0.080	0.580	0.580	**42.0%**
27	1939	D	19,439	4,305	5,281	9,586	6,320	59%	0.26	0	0.878	0.080	0.554	0.554	**44.6%**
28	1940	A	8,444	2,806	1,752	4,558	2,208	73%	0.31	0	0.607	0.080	0.466	0.466	**53.4%**
29	1941	W	13,766	4,272	6,101	10,373	4,198	64%	0.28	0	0.921	0.080	0.618	0.618	**38.2%**
30	1942	W	18,186	4,305	6,164	10,469	5,852	60%	0.26	0	0.926	0.080	0.589	0.589	**41.1%**
31	1943	W	21,906	4,304	6,517	10,821	7,243	58%	0.26	0	0.945	0.080	0.582	0.582	**41.8%**
32	1944	D	14,899	4,289	6,672	10,961	4,622	63%	0.27	0	0.953	0.080	0.628	0.628	**37.2%**
33	1945	B	13,770	4,269	6,606	10,875	4,200	64%	0.28	0	0.948	0.080	0.636	0.636	**36.4%**
34	1946	B	20,633	4,286	6,672	10,958	6,767	59%	0.26	0	0.952	0.080	0.592	0.592	**40.8%**
35	1947	D	13,776	4,273	6,626	10,899	4,202	64%	0.28	0	0.949	0.080	0.636	0.636	**36.4%**
36	1948	B	10,458	3,026	3,627	6,653	2,961	69%	0.30	0	0.720	0.080	0.520	0.520	**48.0%**
37	1949	D	14,447	4,272	6,237	10,509	4,453	63%	0.28	0	0.928	0.080	0.617	0.617	**38.3%**
38	1950	B	11,427	4,290	3,392	7,682	3,324	67%	0.29	0	0.776	0.080	0.547	0.547	**45.3%**
39	1951	A	41,878	4,274	6,672	10,946	14,712	24%	0.24	0	0.952	0.080	0.286	0.286	**71.4%**
40	1952	W	16,780	4,285	6,672	10,957	5,326	61%	0.27	0	0.952	0.080	0.614	0.614	**38.6%**
41	1953	W	16,535	4,305	4,089	8,394	5,234	61%	0.27	0	0.814	0.080	0.531	0.531	**46.9%**
42	1954	A	20,920	4,291	6,672	10,963	6,874	59%	0.26	0	0.953	0.080	0.591	0.591	**40.9%**
43	1955	D	20,862	4,277	6,672	10,949	6,852	59%	0.26	0	0.952	0.080	0.591	0.591	**40.9%**
44	1956	W	12,181	4,267	4,224	8,491	3,606	66%	0.29	0	0.819	0.080	0.568	0.568	**43.2%**
45	1957	A	15,470	4,306	6,672	10,978	4,836	62%	0.27	0	0.954	0.080	0.624	0.624	**37.6%**
46	1958	W	19,256	4,278	6,672	10,950	6,252	59%	0.26	0	0.952	0.080	0.599	0.599	**40.1%**
47	1959	B	16,130	4,307	4,185	8,492	5,083	62%	0.27	0	0.819	0.080	0.536	0.536	**46.4%**
48	1960	D	11,403	4,270	3,080	7,350	3,315	67%	0.29	0	0.758	0.080	0.535	0.535	**46.5%**
49	1961	D	14,251	4,261	6,233	10,494	4,380	63%	0.28	0	0.927	0.080	0.618	0.618	**38.2%**
50	1962	B	9,828	2,677	3,396	6,073	2,726	70%	0.30	0	0.689	0.080	0.506	0.506	**49.4%**
51	1963	W	21,242	4,280	6,672	10,952	6,995	58%	0.26	0	0.952	0.080	0.589	0.589	**41.1%**
52	1964	D	28,658	4,274	6,672	10,946	9,768	25%	0.25	0	0.952	0.080	0.294	0.294	**70.6%**
53	1965	W	13,651	4,068	6,257	10,325	4,155	64%	0.28	0	0.918	0.080	0.618	0.618	**38.2%**
54	1966	B	26,250	4,294	6,672	10,966	8,868	25%	0.25	0	0.953	0.080	0.297	0.297	**70.3%**
55	1967	W	16,065	4,274	6,672	10,946	5,058	62%	0.27	0	0.952	0.080	0.618	0.618	**38.2%**
56	1968	B	16,241	4,306	4,054	8,360	5,124	62%	0.27	0	0.812	0.080	0.531	0.531	**46.9%**
57	1969	W	14,318	4,278	6,348	10,626	4,405	63%	0.28	0	0.935	0.080	0.622	0.622	**37.8%**
58	1970	W	17,644	4,305	4,089	8,394	5,649	61%	0.26	0	0.814	0.080	0.524	0.524	**47.6%**
59	1971	W	23,541	4,289	6,672	10,961	7,854	57%	0.25	0	0.953	0.080	0.580	0.580	**42.0%**
60	1972	B	15,347	4,275	6,672	10,947	4,790	62%	0.27	0	0.952	0.080	0.624	0.624	**37.6%**
61	1973	A	23,524	4,275	6,672	10,947	7,848	57%	0.25	0	0.952	0.080	0.580	0.580	**42.0%**
62	1974	W	54,292	4,285	6,672	10,957	19,355	23%	0.23	0	0.952	0.080	0.281	0.281	**71.9%**
63	1975	W	17,581	4,307	5,408	9,715	5,625	61%	0.26	0	0.885	0.080	0.568	0.568	**43.2%**
64	1976	C	19,229	4,297	6,672	10,969	6,242	59%	0.26	0	0.953	0.080	0.599	0.599	**40.1%**
65	1977	C	8,299	2,683	3,320	6,003	2,154	74%	0.31	0	0.685	0.080	0.525	0.525	**47.5%**
66	1978	A	6,922	2,461	1,694	4,155	1,639	78%	0.33	0	0.585	0.080	0.474	0.474	**52.6%**
67	1979	B	14,388	4,308	6,575	10,883	4,431	63%	0.28	0	0.948	0.080	0.630	0.630	**37.0%**
68	1980	A	16,943	4,273	6,672	10,945	5,387	61%	0.27	0	0.952	0.080	0.612	0.612	**38.8%**
69	1981	D	13,017	4,292	5,572	9,864	3,918	65%	0.28	0	0.893	0.080	0.608	0.608	**39.2%**
70	1982	W	33,256	4,278	6,672	10,950	11,488	24%	0.24	0	0.952	0.080	0.291	0.291	**70.9%**
71	1983	W	39,113	4,306	6,672	10,978	13,678	24%	0.24	0	0.954	0.080	0.287	0.287	**71.3%**
72	1984	W	62,800	3,333	3,623	6,956	22,537	23%	0.23	0	0.736	0.080	0.230	0.230	**77.0%**
73	1985	D	34,002	4,292	6,672	10,964	11,767	24%	0.24	0	0.953	0.080	0.290	0.290	**71.0%**
74	1986	W	9,546	2,491	4,170	6,661	2,620	71%	0.30	0	0.720	0.080	0.532	0.532	**46.8%**
75	1987	D	11,217	4,263	3,500	7,763	3,245	67%	0.29	0	0.780	0.080	0.552	0.552	**44.8%**
76	1988	C	8,448	2,974	1,871	4,845	2,210	73%	0.31	0	0.622	0.080	0.477	0.477	**52.3%**
77	1989	D	8,582	2,380	3,367	5,747	2,260	73%	0.31	0	0.671	0.080	0.511	0.511	**48.9%**
78	1990	C	11,756	4,247	3,565	7,812	3,447	67%	0.29	0	0.783	0.080	0.548	0.548	**45.2%**
79	1991	C	8,142	2,494	2,370	4,864	2,095	74%	0.32	0	0.623	0.080	0.482	0.482	**51.8%**
80	1992	C	7,538	3,111	1,468	4,579	1,869	76%	0.32	0	0.608	0.080	0.480	0.480	**52.0%**

DECEMBER

Year	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2 (Calculated Mortality)	m3	m23	m123	Calculated Survival s123
1922	17,143	4,207	7,100	11,307	5,461	61%	0.45	0	0.863	0.000	0.393	0.393	**60.7%**
1923	34,539	4,207	4,507	8,714	11,968	24%	0.24	0	0.723	0.000	0.174	0.174	**82.6%**
1924	13,874	3,926	6,429	10,355	4,239	64%	0.48	0	0.812	0.000	0.387	0.387	**61.3%**
1925	11,248	4,207	4,850	9,057	3,257	67%	0.50	0	0.742	0.000	0.372	0.372	**62.8%**
1926	11,552	4,207	3,821	8,028	3,370	67%	0.50	0	0.686	0.000	0.342	0.342	**65.8%**
1927	14,304	4,207	6,995	11,202	4,400	63%	0.47	0	0.858	0.000	0.406	0.406	**59.4%**
1928	16,574	4,207	5,966	10,173	5,249	61%	0.46	0	0.802	0.000	0.367	0.367	**63.3%**
1929	13,711	4,207	6,187	10,394	4,178	64%	0.48	0	0.814	0.000	0.389	0.389	**61.1%**
1930	14,442	4,207	6,300	10,507	4,451	63%	0.47	0	0.820	0.000	0.387	0.387	**61.3%**
1931	9,337	2,194	2,984	5,178	2,542	71%	0.53	0	0.533	0.000	0.281	0.281	**71.9%**
1932	14,650	4,207	7,194	11,401	4,529	63%	0.47	0	0.869	0.000	0.409	0.409	**59.1%**
1933	8,188	2,019	2,505	4,524	2,112	74%	0.55	0	0.497	0.000	0.273	0.273	**72.7%**
1934	12,474	4,167	5,543	9,710	3,715	66%	0.49	0	0.777	0.000	0.380	0.380	**62.0%**
1935	8,503	3,216	3,393	6,609	2,230	73%	0.54	0	0.610	0.000	0.331	0.331	**66.9%**
1936	10,875	4,207	3,284	7,491	3,117	68%	0.51	0	0.657	0.000	0.333	0.333	**66.7%**
1937	12,704	4,207	5,742	9,949	3,801	65%	0.49	0	0.790	0.000	0.384	0.384	**61.6%**
1938	48,016	4,207	7,531	11,738	17,008	23%	0.23	0	0.887	0.000	0.206	0.206	**79.4%**
1939	18,684	4,207	3,735	7,942	6,038	60%	0.45	0	0.682	0.000	0.305	0.305	**69.5%**
1940	7,841	1,432	2,675	4,107	1,983	75%	0.56	0	0.475	0.000	0.264	0.264	**73.6%**
1941	35,978	4,207	7,337	11,544	12,506	24%	0.24	0	0.876	0.000	0.210	0.210	**79.0%**
1942	65,619	4,207	3,608	7,815	23,592	23%	0.23	0	0.675	0.000	0.153	0.153	**84.7%**
1943	28,806	4,207	3,779	7,986	9,823	25%	0.25	0	0.684	0.000	0.168	0.168	**83.2%**
1944	13,774	4,207	6,423	10,630	4,201	64%	0.48	0	0.827	0.000	0.394	0.394	**60.6%**
1945	15,826	4,207	6,967	11,174	4,969	62%	0.46	0	0.856	0.000	0.396	0.396	**60.4%**
1946	54,845	4,207	7,592	11,799	19,562	23%	0.23	0	0.890	0.000	0.205	0.205	**79.5%**
1947	18,132	4,207	7,136	11,343	5,831	60%	0.45	0	0.865	0.000	0.389	0.389	**61.1%**
1948	9,393	2,285	3,103	5,388	2,563	71%	0.53	0	0.544	0.000	0.287	0.287	**71.3%**
1949	15,563	4,207	6,898	11,105	4,871	62%	0.46	0	0.853	0.000	0.396	0.396	**60.4%**
1950	11,442	4,207	3,441	7,648	3,329	67%	0.50	0	0.666	0.000	0.333	0.333	**66.7%**
1951	68,100	4,207	7,592	11,799	24,519	23%	0.23	0	0.890	0.000	0.202	0.202	**79.8%**
1952	46,745	4,207	7,104	11,311	16,533	23%	0.23	0	0.864	0.000	0.201	0.201	**79.9%**
1953	42,331	4,207	3,742	7,949	14,882	24%	0.24	0	0.682	0.000	0.161	0.161	**83.9%**
1954	14,919	4,207	3,897	8,104	4,630	63%	0.47	0	0.691	0.000	0.323	0.323	**67.7%**
1955	26,020	4,207	6,908	11,115	8,781	25%	0.25	0	0.853	0.000	0.212	0.212	**78.8%**
1956	25,321	4,207	7,592	11,799	8,520	25%	0.25	0	0.890	0.000	0.222	0.222	**77.8%**
1957	14,143	4,207	5,806	10,013	4,339	64%	0.47	0	0.794	0.000	0.376	0.376	**62.4%**
1958	23,752	4,207	6,924	11,131	7,933	57%	0.43	0	0.854	0.000	0.366	0.366	**63.4%**
1959	14,627	4,207	3,852	8,059	4,520	63%	0.47	0	0.688	0.000	0.324	0.324	**67.6%**
1960	11,068	4,207	2,791	6,998	3,189	68%	0.50	0	0.631	0.000	0.318	0.318	**68.2%**
1961	18,328	4,207	6,890	11,097	5,905	60%	0.45	0	0.852	0.000	0.382	0.382	**61.8%**
1962	16,701	4,207	6,876	11,083	5,296	61%	0.46	0	0.851	0.000	0.389	0.389	**61.1%**
1963	27,555	4,207	6,893	11,100	9,356	25%	0.25	0	0.852	0.000	0.210	0.210	**79.0%**
1964	14,847	4,207	6,053	10,260	4,603	63%	0.47	0	0.807	0.000	0.378	0.378	**62.2%**
1965	28,023	4,207	7,331	11,538	9,531	25%	0.25	0	0.876	0.000	0.216	0.216	**78.4%**
1966	16,997	4,207	5,888	10,095	5,407	61%	0.46	0	0.798	0.000	0.363	0.363	**63.7%**
1967	39,750	4,207	7,123	11,330	13,917	24%	0.24	0	0.865	0.000	0.205	0.205	**79.5%**
1968	16,692	4,207	3,735	7,942	5,293	61%	0.46	0	0.682	0.000	0.312	0.312	**68.8%**
1969	24,986	4,207	6,971	11,178	8,395	57%	0.42	0	0.857	0.000	0.364	0.364	**63.6%**
1970	50,159	4,207	3,481	7,688	17,809	23%	0.23	0	0.668	0.000	0.155	0.155	**84.5%**
1971	54,139	4,207	7,042	11,249	19,298	23%	0.23	0	0.860	0.000	0.198	0.198	**80.2%**
1972	20,009	4,207	6,191	10,398	6,533	59%	0.44	0	0.814	0.000	0.359	0.359	**64.1%**
1973	26,198	4,207	6,904	11,111	8,848	25%	0.25	0	0.853	0.000	0.212	0.212	**78.8%**
1974	61,593	4,207	7,142	11,349	22,086	23%	0.23	0	0.866	0.000	0.198	0.198	**80.2%**
1975	17,619	4,207	4,248	8,455	5,640	61%	0.45	0	0.709	0.000	0.321	0.321	**67.9%**
1976	16,774	4,207	4,652	8,859	5,323	61%	0.46	0	0.731	0.000	0.334	0.334	**66.6%**
1977	8,133	1,705	3,032	4,737	2,092	74%	0.55	0	0.509	0.000	0.280	0.280	**72.0%**
1978	12,285	4,136	5,531	9,667	3,645	66%	0.49	0	0.775	0.000	0.380	0.380	**62.0%**
1979	12,756	4,207	3,685	7,892	3,821	65%	0.49	0	0.679	0.000	0.330	0.330	**67.0%**
1980	20,832	4,207	6,985	11,192	6,841	59%	0.44	0	0.857	0.000	0.375	0.375	**62.5%**
1981	15,611	4,207	4,112	8,319	4,889	62%	0.46	0	0.702	0.000	0.326	0.326	**67.4%**
1982	68,599	4,207	7,011	11,218	24,706	23%	0.23	0	0.859	0.000	0.195	0.195	**80.5%**
1983	55,416	4,207	4,428	8,635	19,776	23%	0.23	0	0.719	0.000	0.165	0.165	**83.5%**
1984	82,951	2,994	3,104	6,098	30,074	22%	0.22	0	0.582	0.000	0.131	0.131	**86.9%**
1985	23,880	4,207	6,620	10,827	7,981	57%	0.43	0	0.838	0.000	0.358	0.358	**64.2%**
1986	15,722	4,207	6,942	11,149	4,930	62%	0.46	0	0.855	0.000	0.396	0.396	**60.4%**
1987	13,789	4,207	6,093	10,300	4,207	64%	0.48	0	0.809	0.000	0.386	0.386	**61.4%**
1988	15,842	4,207	6,875	11,082	4,975	62%	0.46	0	0.851	0.000	0.394	0.394	**60.6%**
1989	8,849	2,484	3,268	5,752	2,360	72%	0.54	0	0.564	0.000	0.302	0.302	**69.8%**
1990	14,638	4,207	6,203	10,410	4,525	63%	0.47	0	0.815	0.000	0.383	0.383	**61.7%**
1991	8,786	1,658	3,196	4,854	2,336	72%	0.54	0	0.515	0.000	0.277	0.277	**72.3%**
1992	7,464	2,963	1,609	4,572	1,842	76%	0.56	0	0.500	0.000	0.282	0.282	**71.8%**

JANUARY

Year	Sac River Flows	CVP Flows	SWP Flows	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2 (Calculated Mortality)	m3	m23	m123	Calculated Survival s123
1922	17,504	4,207	7,576	11,783	5,596	61%	0.27	0	0.889	0.000	0.236	0.236	**76.4%**
1923	32,280	4,207	3,637	7,844	11,123	24%	0.24	0	0.676	0.000	0.164	0.164	**83.6%**
1924	14,620	4,207	6,649	10,856	4,518	63%	0.27	0	0.839	0.000	0.230	0.230	**77.0%**
1925	10,206	3,550	3,151	6,701	2,867	69%	0.30	0	0.615	0.000	0.183	0.183	**81.7%**
1926	19,769	4,207	7,087	11,294	6,444	59%	0.26	0	0.863	0.000	0.224	0.224	**77.6%**
1927	29,551	4,207	7,264	11,471	10,102	24%	0.24	0	0.872	0.000	0.213	0.213	**78.7%**
1928	26,083	4,207	3,638	7,845	8,805	25%	0.25	0	0.677	0.000	0.168	0.168	**83.2%**
1929	15,516	4,207	7,084	11,291	4,853	62%	0.27	0	0.863	0.000	0.234	0.234	**76.6%**
1930	20,771	4,207	7,092	11,299	6,818	59%	0.26	0	0.863	0.000	0.222	0.222	**77.8%**
1931	11,965	4,207	4,896	9,103	3,525	66%	0.29	0	0.744	0.000	0.213	0.213	**78.7%**
1932	17,253	4,207	7,827	12,034	5,503	61%	0.27	0	0.903	0.000	0.240	0.240	**76.0%**
1933	12,102	4,207	5,416	9,623	3,576	66%	0.29	0	0.773	0.000	0.221	0.221	**77.9%**
1934	16,103	4,207	7,093	11,300	5,073	62%	0.27	0	0.863	0.000	0.232	0.232	**76.8%**
1935	25,471	4,207	7,666	11,873	8,576	25%	0.25	0	0.894	0.000	0.223	0.223	**77.7%**
1936	32,450	4,207	7,452	11,659	11,186	24%	0.24	0	0.882	0.000	0.214	0.214	**78.6%**
1937	16,217	4,207	7,581	11,788	5,115	62%	0.27	0	0.889	0.000	0.239	0.239	**76.1%**
1938	31,443	4,207	3,940	8,147	10,810	24%	0.24	0	0.693	0.000	0.168	0.168	**83.2%**
1939	18,407	4,207	3,239	7,446	5,934	60%	0.26	0	0.655	0.000	0.172	0.172	**82.8%**
1940	23,448	4,207	8,017	12,224	7,820	57%	0.25	0	0.913	0.000	0.231	0.231	**76.9%**
1941	72,303	4,207	8,141	12,348	26,091	23%	0.23	0	0.920	0.000	0.208	0.208	**79.2%**
1942	63,260	4,207	3,239	7,446	22,709	23%	0.23	0	0.655	0.000	0.149	0.149	**85.1%**
1943	58,056	4,207	3,303	7,510	20,763	23%	0.23	0	0.658	0.000	0.151	0.151	**84.9%**
1944	17,677	4,207	3,262	7,469	5,661	60%	0.26	0	0.656	0.000	0.174	0.174	**82.6%**
1945	12,555	4,207	5,060	9,267	3,746	65%	0.28	0	0.753	0.000	0.214	0.214	**78.6%**
1946	43,229	4,207	3,637	7,844	15,218	23%	0.23	0	0.676	0.000	0.159	0.159	**84.1%**
1947	15,221	4,207	6,687	10,894	4,743	63%	0.27	0	0.841	0.000	0.229	0.229	**77.1%**
1948	14,897	4,207	6,517	10,724	4,621	63%	0.27	0	0.832	0.000	0.228	0.228	**77.2%**
1949	14,928	4,207	6,818	11,025	4,633	63%	0.27	0	0.848	0.000	0.232	0.232	**76.8%**
1950	20,934	4,207	7,176	11,383	6,879	59%	0.26	0	0.868	0.000	0.223	0.223	**77.7%**
1951	62,213	4,207	7,179	11,386	22,318	23%	0.23	0	0.868	0.000	0.198	0.198	**80.2%**
1952	67,352	4,207	6,855	11,062	24,240	23%	0.23	0	0.850	0.000	0.193	0.193	**80.7%**
1953	64,078	4,207	3,333	7,540	23,015	23%	0.23	0	0.660	0.000	0.150	0.150	**85.0%**
1954	33,414	4,207	3,843	8,050	11,547	24%	0.24	0	0.688	0.000	0.166	0.166	**83.4%**
1955	22,257	4,207	6,019	10,226	7,374	58%	0.25	0	0.805	0.000	0.205	0.205	**79.5%**
1956	83,709	4,207	8,024	12,231	30,357	22%	0.22	0	0.913	0.000	0.205	0.205	**79.5%**
1957	18,639	4,207	3,891	8,098	6,021	60%	0.26	0	0.690	0.000	0.181	0.181	**81.9%**
1958	36,464	4,207	3,379	7,586	12,688	24%	0.24	0	0.663	0.000	0.158	0.158	**84.2%**
1959	35,167	4,207	3,333	7,540	12,202	24%	0.24	0	0.660	0.000	0.158	0.158	**84.2%**
1960	14,522	4,207	6,411	10,618	4,481	63%	0.27	0	0.826	0.000	0.227	0.227	**77.3%**
1961	15,008	4,207	7,073	11,280	4,663	63%	0.27	0	0.862	0.000	0.235	0.235	**76.5%**
1962	12,652	4,207	3,914	8,121	3,782	65%	0.28	0	0.691	0.000	0.196	0.196	**80.4%**
1963	18,049	4,207	7,246	11,453	5,800	60%	0.26	0	0.871	0.000	0.230	0.230	**77.0%**
1964	25,539	4,207	3,872	8,079	8,602	25%	0.25	0	0.689	0.000	0.172	0.172	**82.8%**
1965	81,240	4,207	8,500	12,707	29,434	22%	0.22	0	0.939	0.000	0.211	0.211	**78.9%**
1966	29,635	4,207	3,657	7,864	10,133	24%	0.24	0	0.678	0.000	0.166	0.166	**83.4%**
1967	34,626	4,207	7,671	11,878	12,000	24%	0.24	0	0.894	0.000	0.215	0.215	**78.5%**
1968	30,635	4,207	3,333	7,540	10,507	24%	0.24	0	0.660	0.000	0.161	0.161	**83.9%**
1969	68,505	4,207	5,290	9,497	24,671	23%	0.23	0	0.766	0.000	0.174	0.174	**82.6%**
1970	92,665	4,159	3,333	7,492	33,707	22%	0.22	0	0.657	0.000	0.147	0.147	**85.3%**
1971	46,894	4,207	5,469	9,676	16,588	23%	0.23	0	0.775	0.000	0.181	0.181	**81.9%**
1972	20,395	4,207	3,891	8,098	6,678	59%	0.26	0	0.690	0.000	0.178	0.178	**82.2%**
1973	49,390	4,207	6,474	10,681	17,522	23%	0.23	0	0.830	0.000	0.193	0.193	**80.7%**
1974	78,417	4,207	3,637	7,844	28,378	22%	0.22	0	0.676	0.000	0.152	0.152	**84.8%**
1975	18,672	4,207	3,848	8,055	6,033	60%	0.26	0	0.688	0.000	0.180	0.180	**82.0%**
1976	16,769	4,207	3,793	8,000	5,322	61%	0.27	0	0.685	0.000	0.183	0.183	**81.7%**
1977	7,656	2,106	2,440	4,546	1,913	75%	0.32	0	0.498	0.000	0.160	0.160	**84.0%**
1978	43,061	2,526	7,767	10,293	15,155	23%	0.23	0	0.809	0.000	0.190	0.190	**81.0%**
1979	27,242	4,207	3,262	7,469	9,239	25%	0.25	0	0.656	0.000	0.162	0.162	**83.8%**
1980	63,624	4,207	3,159	7,366	22,845	23%	0.23	0	0.651	0.000	0.148	0.148	**85.2%**
1981	28,603	4,207	3,356	7,563	9,748	25%	0.25	0	0.661	0.000	0.162	0.162	**83.8%**
1982	51,172	4,207	7,643	11,850	18,188	23%	0.23	0	0.893	0.000	0.207	0.207	**79.3%**
1983	59,148	4,207	2,648	6,855	21,171	23%	0.23	0	0.623	0.000	0.143	0.143	**85.7%**
1984	47,354	1,331	2,881	4,212	16,760	23%	0.23	0	0.480	0.000	0.112	0.112	**88.8%**
1985	16,799	4,207	3,872	8,079	5,333	61%	0.27	0	0.689	0.000	0.184	0.184	**81.6%**
1986	21,503	4,207	7,330	11,537	7,092	58%	0.26	0	0.876	0.000	0.224	0.224	**77.6%**
1987	16,734	1,225	6,371	7,596	5,309	61%	0.27	0	0.663	0.000	0.177	0.177	**82.3%**
1988	25,530	4,207	7,058	11,265	8,598	25%	0.25	0	0.861	0.000	0.215	0.215	**78.5%**
1989	11,998	4,198	4,527	8,725	3,537	66%	0.29	0	0.724	0.000	0.208	0.208	**79.2%**
1990	21,584	2,538	7,059	9,597	7,122	58%	0.26	0	0.771	0.000	0.197	0.197	**80.3%**
1991	6,851	1,697	1,708	3,405	1,612	78%	0.33	0	0.437	0.000	0.145	0.145	**85.5%**
1992	12,140	4,207	4,780	8,987	3,590	66%	0.29	0	0.738	0.000	0.211	0.211	**78.9%**

Formulas: Sacramento River Spring Smolt Yearling Survival Model

C10 ='Study 467 Flow Data'!B7
D10 ='Study 467 Flow Data'!L7
E10 ='Study 467 Flow Data'!V7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
J10 =IF(-2.45925+(0.0420748*$T$1)>0,-2.45925+(0.0420748*$T$1),0)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =IF(-1.613493+(0.0319584*$T$1)>0,-1.613493+(0.0319584*$T$1),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!C7
R10 ='Study 467 Flow Data'!M7
S10 ='Study 467 Flow Data'!W7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
Z10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!D7
AF10 ='Study 467 Flow Data'!N7
AG10 ='Study 467 Flow Data'!X7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AN10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

Study 469 Sacramento River Spring Run Yearling Survival Model (continued)

February Water Temp 50 F
Cross Channel Closed Over 25000 cfs | March Water Temp 55 F
Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

FEBRUARY

Row	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE
	Sac River Flow	CVP Flow	SWP Flow	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survivability s123**
10	34,403	4,249	6,358	10,607	11,917	24%	0.24	0	0.880	0.000	0.211	0.211	**78.9%**
11	24,325	4,282	2,380	6,662	8,148	57%	0.25	0	0.667	0.000	0.167	0.167	**83.3%**
12	17,501	4,220	4,783	9,003	5,595	61%	0.27	0	0.793	0.000	0.210	0.210	**79.0%**
13	44,698	4,221	7,583	11,804	15,767	23%	0.23	0	0.944	0.000	0.221	0.221	**77.9%**
14	36,717	4,231	7,504	11,735	12,782	24%	0.24	0	0.940	0.000	0.224	0.224	**77.6%**
15	87,642	3,026	8,469	11,495	31,828	22%	0.22	0	0.928	0.000	0.207	0.207	**79.3%**
16	28,340	4,255	4,377	8,632	9,649	25%	0.25	0	0.773	0.000	0.190	0.190	**81.0%**
17	18,537	4,233	3,741	7,974	5,983	60%	0.26	0	0.737	0.000	0.194	0.194	**80.6%**
18	15,675	2,781	4,004	6,785	4,912	62%	0.27	0	0.673	0.000	0.182	0.182	**81.8%**
19	11,083	3,335	1,891	5,226	3,195	68%	0.29	0	0.589	0.000	0.172	0.172	**82.8%**
20	14,488	4,242	5,888	10,130	4,469	63%	0.28	0	0.854	0.000	0.235	0.235	**76.5%**
21	11,976	3,836	2,699	6,535	3,529	66%	0.29	0	0.660	0.000	0.189	0.189	**81.1%**
22	12,740	1,240	4,546	5,786	3,815	65%	0.28	0	0.619	0.000	0.175	0.175	**82.5%**
23	12,448	1,157	3,943	5,100	3,706	66%	0.28	0	0.582	0.000	0.165	0.165	**83.5%**
24	50,696	4,250	8,500	12,750	18,010	23%	0.23	0	0.995	0.000	0.231	0.231	**76.9%**
25	33,459	4,232	5,028	9,260	11,564	24%	0.24	0	0.807	0.000	0.195	0.195	**80.5%**
26	82,366	4,269	3,939	8,208	29,855	22%	0.22	0	0.750	0.000	0.168	0.168	**83.2%**
27	19,024	2,606	3,955	6,561	6,165	60%	0.26	0	0.661	0.000	0.173	0.173	**82.7%**
28	44,171	4,240	8,500	12,740	15,570	23%	0.23	0	0.995	0.000	0.233	0.233	**76.7%**
29	75,037	4,294	6,873	11,167	27,114	23%	0.23	0	0.910	0.000	0.205	0.205	**79.5%**
30	78,349	4,281	3,955	8,236	28,353	23%	0.23	0	0.752	0.000	0.169	0.169	**83.1%**
31	52,259	4,275	4,005	8,280	18,595	23%	0.23	0	0.754	0.000	0.174	0.174	**82.6%**
32	31,007	4,241	3,958	8,199	10,647	24%	0.24	0	0.750	0.000	0.182	0.182	**81.8%**
33	40,622	4,241	3,999	8,240	14,243	24%	0.24	0	0.752	0.000	0.178	0.178	**82.2%**
34	24,371	4,276	3,978	8,254	8,165	57%	0.25	0	0.753	0.000	0.189	0.189	**81.1%**
35	21,569	4,244	4,003	8,247	7,117	58%	0.26	0	0.752	0.000	0.192	0.192	**80.8%**
36	16,122	4,235	1,822	6,057	5,080	62%	0.27	0	0.634	0.000	0.171	0.171	**82.9%**
37	16,272	4,242	4,179	8,421	5,136	62%	0.27	0	0.762	0.000	0.205	0.205	**79.5%**
38	35,170	4,246	7,531	11,777	12,204	24%	0.24	0	0.943	0.000	0.226	0.226	**77.4%**
39	60,566	4,281	4,675	8,956	21,702	23%	0.23	0	0.790	0.000	0.181	0.181	**81.9%**
40	64,731	4,293	3,909	8,202	23,259	23%	0.23	0	0.750	0.000	0.171	0.171	**82.9%**
41	28,344	4,281	4,060	8,341	9,651	25%	0.25	0	0.757	0.000	0.186	0.186	**81.4%**
42	57,158	4,268	4,636	8,904	20,427	23%	0.23	0	0.788	0.000	0.181	0.181	**81.9%**
43	16,298	4,256	3,893	8,149	5,145	62%	0.27	0	0.747	0.000	0.201	0.201	**79.9%**
44	63,748	4,283	4,675	8,958	22,892	23%	0.23	0	0.791	0.000	0.180	0.180	**82.0%**
45	33,144	4,247	4,638	8,885	11,446	24%	0.24	0	0.787	0.000	0.190	0.190	**81.0%**
46	62,959	4,254	4,045	8,299	22,597	23%	0.23	0	0.755	0.000	0.172	0.172	**82.8%**
47	50,082	4,256	4,060	8,316	17,781	23%	0.23	0	0.756	0.000	0.175	0.175	**82.5%**
48	27,163	4,231	7,296	11,527	9,209	25%	0.25	0	0.929	0.000	0.230	0.230	**77.0%**
49	32,844	4,248	7,109	11,357	11,334	24%	0.24	0	0.920	0.000	0.222	0.222	**77.8%**
50	45,216	4,239	8,500	12,739	15,961	23%	0.23	0	0.995	0.000	0.233	0.233	**76.7%**
51	58,694	4,281	8,257	12,538	21,002	23%	0.23	0	0.984	0.000	0.225	0.225	**77.5%**
52	19,698	4,275	3,632	7,907	6,417	59%	0.26	0	0.734	0.000	0.191	0.191	**80.9%**
53	33,326	4,255	5,768	10,023	11,514	24%	0.24	0	0.848	0.000	0.205	0.205	**79.5%**
54	26,777	4,281	4,377	8,658	9,065	25%	0.25	0	0.774	0.000	0.192	0.192	**80.8%**
55	43,101	4,287	3,201	7,488	15,170	23%	0.23	0	0.711	0.000	0.167	0.167	**83.3%**
56	56,470	2,787	4,060	6,847	20,170	23%	0.23	0	0.677	0.000	0.155	0.155	**84.5%**
57	67,482	4,293	3,171	7,464	24,288	23%	0.23	0	0.710	0.000	0.161	0.161	**83.9%**
58	57,565	1,212	4,060	5,272	20,579	23%	0.23	0	0.591	0.000	0.136	0.136	**86.4%**
59	29,208	4,293	4,291	8,584	9,974	25%	0.25	0	0.770	0.000	0.189	0.189	**81.1%**
60	25,083	4,258	4,638	8,896	8,431	25%	0.25	0	0.787	0.000	0.197	0.197	**80.3%**
61	70,967	4,268	4,423	8,691	25,592	23%	0.23	0	0.776	0.000	0.176	0.176	**82.4%**
62	41,926	4,263	4,377	8,640	14,730	24%	0.24	0	0.773	0.000	0.182	0.182	**81.8%**
63	58,811	4,247	4,636	8,883	21,045	23%	0.23	0	0.786	0.000	0.180	0.180	**82.0%**
64	20,229	4,237	4,244	8,481	6,616	59%	0.26	0	0.765	0.000	0.198	0.198	**80.2%**
65	12,195	659	1,422	2,081	3,611	66%	0.29	0	0.419	0.000	0.120	0.120	**88.0%**
66	49,884	1,705	7,341	9,046	17,707	23%	0.23	0	0.795	0.000	0.184	0.184	**81.6%**
67	42,046	4,244	3,958	8,202	14,775	24%	0.24	0	0.750	0.000	0.177	0.177	**82.3%**
68	71,932	4,250	3,768	8,018	25,953	23%	0.23	0	0.740	0.000	0.167	0.167	**83.3%**
69	29,672	2,832	4,062	6,894	10,147	24%	0.24	0	0.679	0.000	0.166	0.166	**83.4%**
70	65,645	4,282	4,620	8,902	23,601	23%	0.23	0	0.788	0.000	0.179	0.179	**82.1%**
71	82,910	3,419	2,793	6,212	30,058	22%	0.22	0	0.642	0.000	0.144	0.144	**85.6%**
72	37,282	1,495	3,847	5,342	12,993	24%	0.24	0	0.595	0.000	0.142	0.142	**85.8%**
73	20,137	4,253	4,638	8,891	6,581	59%	0.26	0	0.787	0.000	0.204	0.204	**79.6%**
74	95,483	4,245	7,363	11,608	34,761	22%	0.22	0	0.934	0.000	0.208	0.208	**79.2%**
75	23,028	1,268	4,220	5,488	7,662	58%	0.25	0	0.603	0.000	0.153	0.153	**84.7%**
76	17,684	4,124	2,630	6,754	5,664	60%	0.26	0	0.672	0.000	0.178	0.178	**82.2%**
77	11,877	963	1,773	2,736	3,492	66%	0.29	0	0.455	0.000	0.131	0.131	**86.9%**
78	16,946	1,239	6,562	7,801	5,388	61%	0.27	0	0.728	0.000	0.194	0.194	**80.6%**
79	10,999	398	835	1,233	3,164	68%	0.29	0	0.373	0.000	0.109	0.109	**89.1%**
80	32,538	1,033	7,457	8,490	11,219	24%	0.24	0	0.765	0.000	0.185	0.185	**81.5%**

MARCH

Row	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BU
	Sac River Flow	CVP	SWP	CVP + SWF exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survivability s123**	**Weighted Total Survival**
10	31,554	3,783	4,143	7,926	10,851	24%	0.24	0	0.825	0.144	0.309	0.309	**69.1%**	**57.2%**
11	17,173	4,225	3,364	7,589	5,473	61%	0.27	0	0.806	0.144	0.320	0.320	**68.0%**	**66.4%**
12	12,116	1,494	1,679	3,173	3,581	66%	0.29	0	0.568	0.144	0.265	0.265	**73.5%**	**58.8%**
13	18,563	3,771	4,108	7,879	5,993	60%	0.26	0	0.822	0.144	0.322	0.322	**67.8%**	**61.9%**
14	18,944	4,225	3,499	7,724	6,135	60%	0.26	0	0.814	0.144	0.319	0.319	**68.1%**	**60.6%**
15	43,865	3,241	4,154	7,395	15,456	23%	0.23	0	0.796	0.144	0.297	0.297	**70.3%**	**56.3%**
16	86,223	4,225	4,424	8,649	31,297	22%	0.22	0	0.864	0.144	0.305	0.305	**69.5%**	**59.0%**
17	16,934	4,059	2,773	6,832	5,383	61%	0.27	0	0.766	0.144	0.310	0.310	**69.0%**	**56.3%**
18	30,090	2,934	4,065	6,999	10,304	24%	0.24	0	0.775	0.144	0.298	0.298	**70.2%**	**61.8%**
19	8,762	1,692	1,645	3,337	2,327	72%	0.31	0	0.577	0.144	0.278	0.278	**72.2%**	**65.2%**
20	12,082	2,474	2,740	5,214	3,569	66%	0.29	0	0.678	0.144	0.297	0.297	**70.3%**	**62.8%**
21	10,393	294	4,336	4,630	2,937	69%	0.30	0	0.647	0.144	0.293	0.293	**70.7%**	**65.6%**
22	14,785	2,228	2,291	4,519	4,580	63%	0.27	0	0.641	0.144	0.280	0.280	**72.0%**	**64.3%**
23	24,918	4,225	6,982	11,207	8,369	57%	0.25	0	1.002	0.144	0.359	0.359	**64.1%**	**61.2%**
24	33,448	4,225	7,036	11,261	11,560	24%	0.24	0	1.005	0.144	0.352	0.352	**64.8%**	**60.7%**
25	38,456	4,104	4,002	8,106	13,433	24%	0.24	0	0.834	0.144	0.308	0.308	**69.2%**	**58.3%**
26	78,637	4,225	3,966	8,191	28,460	22%	0.22	0	0.839	0.144	0.301	0.301	**69.9%**	**66.0%**
27	16,390	2,678	3,988	6,666	5,180	61%	0.27	0	0.757	0.144	0.309	0.309	**69.1%**	**62.7%**
28	59,094	4,225	4,650	8,875	21,151	23%	0.23	0	0.876	0.144	0.312	0.312	**68.8%**	**66.6%**
29	58,575	4,225	3,846	8,071	20,957	23%	0.23	0	0.832	0.144	0.302	0.302	**69.8%**	**63.7%**
30	27,099	4,225	4,007	8,232	9,185	25%	0.25	0	0.841	0.144	0.317	0.317	**68.3%**	**68.0%**
31	64,601	4,225	4,056	8,281	23,211	23%	0.23	0	0.844	0.144	0.303	0.303	**69.7%**	**67.7%**
32	25,100	4,225	4,007	8,232	8,437	25%	0.25	0	0.841	0.144	0.319	0.319	**68.1%**	**56.1%**
33	27,033	4,225	4,134	8,359	9,160	25%	0.25	0	0.848	0.144	0.318	0.318	**68.2%**	**55.2%**
34	23,649	4,225	4,424	8,649	7,895	57%	0.25	0	0.864	0.144	0.326	0.326	**67.4%**	**65.5%**
35	22,506	4,225	3,974	8,199	7,467	58%	0.25	0	0.839	0.144	0.321	0.321	**67.9%**	**55.2%**
36	19,234	4,225	3,440	7,665	6,244	59%	0.26	0	0.811	0.144	0.318	0.318	**68.2%**	**64.0%**
37	41,715	3,779	7,115	10,894	14,651	24%	0.24	0	0.985	0.144	0.342	0.342	**65.8%**	**55.5%**
38	22,654	4,225	4,624	8,849	7,523	58%	0.25	0	0.874	0.144	0.330	0.330	**67.0%**	**60.8%**
39	29,827	4,225	4,699	8,924	10,205	24%	0.24	0	0.879	0.144	0.324	0.324	**67.6%**	**76.5%**
40	57,518	4,225	3,934	8,159	20,562	23%	0.23	0	0.837	0.144	0.303	0.303	**69.7%**	**64.6%**
41	24,893	3,438	4,111	7,549	8,360	57%	0.25	0	0.804	0.144	0.309	0.309	**69.1%**	**69.8%**
42	49,536	4,225	4,685	8,910	17,576	23%	0.23	0	0.878	0.144	0.314	0.314	**68.6%**	**60.6%**
43	17,670	4,225	3,031	7,256	5,659	61%	0.26	0	0.788	0.144	0.315	0.315	**68.5%**	**64.6%**
44	36,676	2,483	4,699	7,182	12,767	24%	0.24	0	0.784	0.144	0.297	0.297	**70.3%**	**65.2%**
45	44,377	4,225	4,384	8,609	15,647	23%	0.23	0	0.862	0.144	0.312	0.312	**68.8%**	**56.9%**
46	93,616	4,225	4,071	8,296	34,062	22%	0.22	0	0.845	0.144	0.300	0.300	**70.0%**	**58.7%**
47	23,365	4,225	3,044	7,269	7,789	57%	0.25	0	0.789	0.144	0.307	0.307	**69.3%**	**62.7%**
48	22,599	3,471	4,027	7,498	7,502	58%	0.25	0	0.802	0.144	0.311	0.311	**68.9%**	**61.8%**
49	20,944	3,499	4,557	8,056	6,883	59%	0.26	0	0.832	0.144	0.321	0.321	**67.9%**	**55.9%**
50	27,660	4,225	3,491	7,716	9,395	25%	0.25	0	0.813	0.144	0.309	0.309	**69.1%**	**60.3%**
51	32,645	4,225	4,586	8,811	11,259	24%	0.24	0	0.872	0.144	0.320	0.320	**68.0%**	**64.3%**
52	17,198	3,650	3,349	6,999	5,482	61%	0.27	0	0.775	0.144	0.312	0.312	**68.8%**	**69.1%**
53	21,381	4,225	4,289	8,514	7,046	58%	0.26	0	0.856	0.144	0.327	0.327	**67.3%**	**63.3%**
54	28,683	4,225	4,424	8,649	9,777	25%	0.25	0	0.864	0.144	0.321	0.321	**67.9%**	**69.7%**
55	54,488	4,225	3,283	7,508	19,429	23%	0.23	0	0.802	0.144	0.296	0.296	**70.4%**	**64.0%**
56	36,789	2,989	4,111	7,100	12,809	24%	0.24	0	0.780	0.144	0.296	0.296	**70.4%**	**63.5%**
57	45,319	3,650	3,251	6,901	15,999	23%	0.23	0	0.769	0.144	0.290	0.290	**71.0%**	**57.8%**
58	35,819	3,107	4,111	7,218	12,446	24%	0.24	0	0.786	0.144	0.298	0.298	**70.2%**	**70.6%**
59	50,896	4,225	4,699	8,924	18,085	23%	0.23	0	0.879	0.144	0.314	0.314	**68.6%**	**66.0%**
60	32,930	3,739	4,359	8,098	11,366	24%	0.24	0	0.834	0.144	0.311	0.311	**68.9%**	**57.6%**
61	47,552	4,225	4,452	8,677	16,834	23%	0.23	0	0.865	0.144	0.312	0.312	**68.8%**	**65.3%**
62	34,827	4,225	4,424	8,649	12,075	24%	0.24	0	0.864	0.144	0.317	0.317	**68.3%**	**77.5%**
63	75,998	4,225	4,685	8,910	27,473	23%	0.23	0	0.878	0.144	0.310	0.310	**69.0%**	**61.3%**
64	20,062	4,225	3,628	7,853	6,553	59%	0.26	0	0.821	0.144	0.319	0.319	**68.1%**	**59.5%**
65	7,538	789	1,253	2,042	1,869	76%	0.32	0	0.507	0.144	0.261	0.261	**73.9%**	**65.4%**
66	46,209	2,118	3,905	6,023	16,332	23%	0.23	0	0.722	0.144	0.279	0.279	**72.1%**	**62.3%**
67	32,593	4,225	4,007	8,232	11,240	24%	0.24	0	0.841	0.144	0.313	0.313	**68.7%**	**58.9%**
68	36,480	3,755	3,344	7,099	12,694	24%	0.24	0	0.780	0.144	0.296	0.296	**70.4%**	**57.9%**
69	32,501	2,988	4,111	7,099	11,205	24%	0.24	0	0.780	0.144	0.298	0.298	**70.2%**	**60.0%**
70	69,087	4,225	4,644	8,869	24,889	23%	0.23	0	0.876	0.144	0.310	0.310	**69.0%**	**76.6%**
71	81,934	2,042	2,628	4,670	29,693	22%	0.22	0	0.649	0.144	0.257	0.257	**74.3%**	**79.1%**
72	36,503	3,208	4,007	7,215	12,702	24%	0.24	0	0.786	0.144	0.298	0.298	**70.2%**	**83.0%**
73	21,803	4,225	4,622	8,847	7,204	58%	0.26	0	0.874	0.144	0.331	0.331	**66.9%**	**69.8%**
74	72,539	4,225	4,181	8,406	26,180	23%	0.23	0	0.851	0.144	0.304	0.304	**69.6%**	**58.8%**
75	29,552	2,343	4,135	6,478	10,102	24%	0.24	0	0.746	0.144	0.292	0.292	**70.8%**	**59.4%**
76	11,012	2,015	1,755	3,770	3,168	68%	0.29	0	0.600	0.144	0.278	0.278	**72.2%**	**61.3%**
77	42,478	4,225	6,956	11,181	14,937	24%	0.24	0	1.000	0.144	0.346	0.346	**65.4%**	**64.0%**
78	14,838	2,232	3,629	5,861	4,599	63%	0.27	0	0.713	0.144	0.300	0.300	**70.0%**	**59.2%**
79	29,675	4,225	7,078	11,303	10,148	24%	0.24	0	1.007	0.144	0.355	0.355	**64.5%**	**67.0%**
80	20,106	2,013	6,225	8,238	6,570	59%	0.26	0	0.841	0.144	0.325	0.325	**67.5%**	**65.7%**
81													**AVERAGE:**	**63.36%**

AS10 ='Study 467 Flow Data'!E7
AT10 ='Study 467 Flow Data'!O7
AU10 ='Study 467 Flow Data'!Y7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$K$4,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
BA10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
BB10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =AZ10+BC10-(AZ10*BC10)
BE10 =1-BD10

BG10 ='Study 467 Flow Data'!F7
BH10 ='Study 467 Flow Data'!P7
BI10 ='Study 467 Flow Data'!Z7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$K$4,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BO10 =(-0.5916024)+(0.017968*$BC$3)+(0.000054*BJ10)
BP10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)
BQ10 =(BO10*BM10)+(BP10*(1-BM10))
BR10 =BN10+BQ10-(BN10*BQ10)
BS10 =1-BR10
BU10 =(O10*0.37)+(AC10*0.42)+(AQ10*0.13)+(BE10*0.05)+(BS10*0.03)

Study 501 Sacramento River Spring Run Yearling Survival Model

Modified m2 by changing the slope to 0.000054

Cross Channel closed for 45 consecutive days, Dec 18-Jan 31

Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

Year	Water Year Type	NOVEMBER Sac River Flow	CVP Flow	SWP Flow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	A	12,033	4,290	4,316	8,606	3,550	66%	0.29	0	0.825	0.080	0.574	0.574	**42.6%**
1923	B	17,311	4,306	6,672	10,978	5,524	61%	0.27	0	0.954	0.080	0.611	0.611	**38.9%**
1924	C	10,747	3,325	3,754	7,079	3,069	68%	0.29	0	0.743	0.080	0.532	0.532	**46.8%**
1925	D	7,024	1,309	3,207	4,516	1,677	78%	0.33	0	0.605	0.080	0.487	0.487	**51.3%**
1926	D	12,298	4,298	2,987	7,285	3,649	66%	0.28	0	0.754	0.080	0.524	0.524	**47.6%**
1927	W	20,291	4,252	6,672	10,924	6,639	59%	0.26	0	0.951	0.080	0.593	0.593	**40.7%**
1928	A	20,609	4,301	6,672	10,973	6,758	59%	0.26	0	0.953	0.080	0.593	0.593	**40.7%**
1929	C	12,862	4,286	5,452	9,738	3,860	65%	0.28	0	0.887	0.080	0.605	0.605	**39.5%**
1930	D	7,159	2,282	1,765	4,047	1,727	77%	0.33	0	0.579	0.080	0.465	0.465	**53.5%**
1931	C	9,758	2,649	3,238	5,887	2,699	70%	0.30	0	0.679	0.080	0.500	0.500	**50.0%**
1932	D	8,085	1,184	1,686	2,870	2,074	74%	0.32	0	0.516	0.080	0.403	0.403	**59.7%**
1933	C	9,511	3,053	2,610	5,663	2,607	71%	0.30	0	0.667	0.080	0.494	0.494	**50.6%**
1934	C	8,110	1,009	1,614	2,623	2,083	74%	0.32	0	0.502	0.080	0.393	0.393	**60.7%**
1935	B	9,209	2,541	4,294	6,835	2,494	71%	0.31	0	0.730	0.080	0.543	0.543	**45.7%**
1936	B	11,845	4,285	3,439	7,724	3,480	66%	0.29	0	0.778	0.080	0.544	0.544	**45.6%**
1937	B	11,525	4,295	3,415	7,710	3,360	67%	0.29	0	0.777	0.080	0.547	0.547	**45.3%**
1938	W	23,450	4,291	6,672	10,963	7,820	57%	0.25	0	0.953	0.080	0.580	0.580	**42.0%**
1939	D	19,439	4,305	5,282	9,587	6,320	59%	0.26	0	0.878	0.080	0.554	0.554	**44.6%**
1940	A	8,444	2,807	1,752	4,559	2,208	73%	0.31	0	0.607	0.080	0.466	0.466	**53.4%**
1941	W	13,762	4,279	6,093	10,372	4,197	64%	0.28	0	0.921	0.080	0.618	0.618	**38.2%**
1942	W	18,186	4,305	6,164	10,469	5,852	60%	0.26	0	0.926	0.080	0.589	0.589	**41.1%**
1943	W	21,906	4,304	6,516	10,820	7,243	58%	0.26	0	0.945	0.080	0.582	0.582	**41.8%**
1944	D	14,392	4,289	6,577	10,866	4,433	63%	0.28	0	0.947	0.080	0.629	0.629	**37.1%**
1945	B	13,770	4,277	6,601	10,878	4,200	64%	0.28	0	0.948	0.080	0.636	0.636	**36.4%**
1946	B	20,032	4,297	6,672	10,969	6,542	59%	0.26	0	0.953	0.080	0.595	0.595	**40.5%**
1947	D	13,776	4,285	6,618	10,903	4,202	64%	0.28	0	0.949	0.080	0.636	0.636	**36.4%**
1948	B	10,458	3,028	3,626	6,654	2,961	69%	0.30	0	0.720	0.080	0.520	0.520	**48.0%**
1949	D	14,447	4,274	6,236	10,510	4,453	63%	0.28	0	0.928	0.080	0.617	0.617	**38.3%**
1950	B	11,450	4,294	3,413	7,707	3,332	67%	0.29	0	0.777	0.080	0.548	0.548	**45.2%**
1951	A	41,295	4,280	6,672	10,952	14,494	24%	0.24	0	0.952	0.080	0.286	0.286	**71.4%**
1952	W	16,666	4,293	6,672	10,965	5,283	61%	0.27	0	0.953	0.080	0.615	0.615	**38.5%**
1953	W	16,535	4,304	4,089	8,393	5,234	61%	0.27	0	0.814	0.080	0.530	0.530	**47.0%**
1954	A	20,905	4,294	6,672	10,966	6,868	59%	0.26	0	0.953	0.080	0.591	0.591	**40.9%**
1955	D	20,855	4,290	6,672	10,962	6,850	59%	0.26	0	0.953	0.080	0.591	0.591	**40.9%**
1956	W	10,720	2,787	4,242	7,029	3,059	68%	0.29	0	0.740	0.080	0.531	0.531	**46.9%**
1957	A	15,470	4,306	6,672	10,978	4,836	62%	0.27	0	0.954	0.080	0.624	0.624	**37.6%**
1958	W	19,256	4,287	6,672	10,959	6,252	59%	0.26	0	0.952	0.080	0.599	0.599	**40.1%**
1959	B	16,130	4,306	4,185	8,491	5,083	62%	0.27	0	0.819	0.080	0.536	0.536	**46.4%**
1960	D	11,406	4,277	3,080	7,357	3,316	67%	0.29	0	0.758	0.080	0.535	0.535	**46.5%**
1961	D	13,501	4,265	5,743	10,008	4,099	64%	0.28	0	0.901	0.080	0.608	0.608	**39.2%**
1962	B	11,477	4,259	3,468	7,727	3,342	67%	0.29	0	0.778	0.080	0.548	0.548	**45.2%**
1963	W	21,242	4,296	6,672	10,968	6,995	58%	0.26	0	0.953	0.080	0.590	0.590	**41.0%**
1964	D	28,658	4,277	6,672	10,949	9,768	25%	0.25	0	0.952	0.080	0.294	0.294	**70.6%**
1965	W	13,401	3,818	6,345	10,163	4,062	64%	0.28	0	0.910	0.080	0.614	0.614	**38.6%**
1966	B	25,663	4,293	6,672	10,965	8,648	25%	0.25	0	0.953	0.080	0.298	0.298	**70.2%**
1967	W	15,280	4,289	6,672	10,961	4,765	62%	0.27	0	0.953	0.080	0.625	0.625	**37.5%**
1968	B	16,241	4,305	4,054	8,359	5,124	62%	0.27	0	0.812	0.080	0.531	0.531	**46.9%**
1969	W	13,818	4,280	6,021	10,301	4,218	64%	0.28	0	0.917	0.080	0.615	0.615	**38.5%**
1970	W	17,644	4,305	4,089	8,394	5,649	61%	0.26	0	0.814	0.080	0.524	0.524	**47.6%**
1971	W	21,328	4,288	6,672	10,960	7,027	58%	0.26	0	0.953	0.080	0.589	0.589	**41.1%**
1972	B	15,347	4,288	6,672	10,960	4,790	62%	0.27	0	0.953	0.080	0.624	0.624	**37.6%**
1973	A	23,526	4,275	6,672	10,947	7,849	57%	0.25	0	0.952	0.080	0.580	0.580	**42.0%**
1974	W	54,390	4,292	6,672	10,964	19,392	23%	0.23	0	0.953	0.080	0.281	0.281	**71.9%**
1975	W	17,581	4,306	5,408	9,714	5,625	61%	0.26	0	0.885	0.080	0.568	0.568	**43.2%**
1976	C	19,229	4,306	6,672	10,978	6,242	59%	0.26	0	0.954	0.080	0.600	0.600	**40.0%**
1977	C	8,363	2,673	3,373	6,046	2,178	73%	0.31	0	0.687	0.080	0.526	0.526	**47.4%**
1978	A	6,922	2,463	1,697	4,160	1,639	78%	0.33	0	0.585	0.080	0.474	0.474	**52.6%**
1979	B	14,388	4,308	6,575	10,883	4,431	63%	0.28	0	0.948	0.080	0.630	0.630	**37.0%**
1980	A	16,297	4,291	6,672	10,963	5,145	62%	0.27	0	0.953	0.080	0.617	0.617	**38.3%**
1981	D	13,017	4,290	5,573	9,863	3,918	65%	0.28	0	0.893	0.080	0.608	0.608	**39.2%**
1982	W	30,934	4,280	6,672	10,952	10,619	24%	0.24	0	0.952	0.080	0.292	0.292	**70.8%**
1983	W	39,113	4,306	6,672	10,978	13,678	24%	0.24	0	0.954	0.080	0.287	0.287	**71.3%**
1984	W	62,800	3,350	3,623	6,973	22,537	23%	0.23	0	0.737	0.080	0.230	0.230	**77.0%**
1985	D	33,560	4,298	6,672	10,970	11,601	24%	0.24	0	0.953	0.080	0.291	0.291	**70.9%**
1986	W	9,546	2,494	4,172	6,666	2,620	71%	0.30	0	0.721	0.080	0.532	0.532	**46.8%**
1987	D	11,216	4,266	3,498	7,764	3,245	67%	0.29	0	0.780	0.080	0.552	0.552	**44.8%**
1988	C	8,448	2,974	1,870	4,844	2,210	73%	0.31	0	0.622	0.080	0.477	0.477	**52.3%**
1989	D	8,582	2,380	3,369	5,749	2,260	73%	0.31	0	0.671	0.080	0.511	0.511	**48.9%**
1990	C	11,756	4,247	3,567	7,814	3,447	67%	0.29	0	0.783	0.080	0.548	0.548	**45.2%**
1991	C	8,142	2,491	2,368	4,859	2,095	74%	0.32	0	0.623	0.080	0.482	0.482	**51.8%**
1992	C	7,579	3,110	1,507	4,617	1,885	76%	0.32	0	0.610	0.080	0.481	0.481	**51.9%**

Year	DECEMBER Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	17,143	4,207	7,100	11,307	5,461	61%	0.45	0	0.863	0.000	0.393	0.393	**60.7%**
1923	34,539	4,207	4,844	9,051	11,968	24%	0.24	0	0.742	0.000	0.178	0.178	**82.2%**
1924	13,868	3,434	6,922	10,356	4,237	64%	0.48	0	0.812	0.000	0.387	0.387	**61.3%**
1925	11,248	4,207	4,848	9,055	3,257	67%	0.50	0	0.742	0.000	0.372	0.372	**62.8%**
1926	11,366	4,207	3,073	7,280	3,301	67%	0.50	0	0.646	0.000	0.323	0.323	**67.7%**
1927	14,304	4,207	6,995	11,202	4,400	63%	0.47	0	0.858	0.000	0.406	0.406	**59.4%**
1928	16,574	4,207	6,899	11,106	5,249	61%	0.46	0	0.853	0.000	0.390	0.390	**61.0%**
1929	13,711	4,207	6,190	10,397	4,178	64%	0.48	0	0.814	0.000	0.389	0.389	**61.1%**
1930	14,442	4,207	6,300	10,507	4,451	63%	0.47	0	0.820	0.000	0.387	0.387	**61.3%**
1931	9,310	2,194	2,958	5,152	2,532	71%	0.53	0	0.531	0.000	0.281	0.281	**71.9%**
1932	14,650	4,207	7,194	11,401	4,529	63%	0.47	0	0.869	0.000	0.409	0.409	**59.1%**
1933	8,632	2,464	2,503	4,967	2,278	73%	0.54	0	0.521	0.000	0.281	0.281	**71.9%**
1934	12,474	4,166	5,542	9,708	3,715	66%	0.49	0	0.777	0.000	0.380	0.380	**62.0%**
1935	8,503	3,216	3,394	6,610	2,230	73%	0.54	0	0.610	0.000	0.331	0.331	**66.9%**
1936	10,625	4,207	3,038	7,245	3,024	68%	0.51	0	0.644	0.000	0.328	0.328	**67.2%**
1937	12,454	4,207	5,583	9,790	3,708	66%	0.49	0	0.782	0.000	0.382	0.382	**61.8%**
1938	45,730	4,207	7,531	11,738	16,153	23%	0.23	0	0.887	0.000	0.207	0.207	**79.3%**
1939	18,684	4,207	3,735	7,942	6,038	60%	0.45	0	0.682	0.000	0.305	0.305	**69.5%**
1940	7,841	1,432	2,676	4,108	1,983	75%	0.56	0	0.475	0.000	0.264	0.264	**73.6%**
1941	36,071	4,207	7,338	11,545	12,541	24%	0.24	0	0.876	0.000	0.210	0.210	**79.0%**
1942	65,619	4,207	3,608	7,815	23,592	23%	0.23	0	0.675	0.000	0.153	0.153	**84.7%**
1943	28,806	4,207	3,779	7,986	9,823	25%	0.25	0	0.684	0.000	0.168	0.168	**83.2%**
1944	13,774	4,207	6,423	10,630	4,201	64%	0.48	0	0.827	0.000	0.394	0.394	**60.6%**
1945	15,826	4,207	6,967	11,174	4,969	62%	0.46	0	0.856	0.000	0.396	0.396	**60.4%**
1946	54,779	4,207	7,592	11,799	19,537	23%	0.23	0	0.890	0.000	0.205	0.205	**79.5%**
1947	18,132	4,207	7,137	11,344	5,831	60%	0.45	0	0.865	0.000	0.389	0.389	**61.1%**
1948	9,637	2,471	3,162	5,633	2,654	70%	0.52	0	0.557	0.000	0.291	0.291	**70.9%**
1949	15,563	4,207	6,898	11,105	4,871	62%	0.46	0	0.853	0.000	0.396	0.396	**60.4%**
1950	11,113	4,207	3,114	7,321	3,206	68%	0.50	0	0.648	0.000	0.326	0.326	**67.4%**
1951	68,100	4,207	7,592	11,799	24,519	23%	0.23	0	0.890	0.000	0.202	0.202	**79.8%**
1952	45,652	4,207	7,105	11,312	16,124	23%	0.23	0	0.864	0.000	0.202	0.202	**79.8%**
1953	42,331	4,207	3,742	7,949	14,882	24%	0.24	0	0.682	0.000	0.161	0.161	**83.9%**
1954	14,919	4,207	3,897	8,104	4,630	63%	0.47	0	0.691	0.000	0.323	0.323	**67.7%**
1955	26,020	4,207	6,909	11,116	8,781	25%	0.25	0	0.853	0.000	0.212	0.212	**78.8%**
1956	23,950	4,207	7,592	11,799	8,007	57%	0.43	0	0.890	0.000	0.380	0.380	**62.0%**
1957	14,143	4,207	5,806	10,013	4,339	64%	0.47	0	0.794	0.000	0.376	0.376	**62.4%**
1958	23,752	4,207	6,925	11,132	7,933	57%	0.43	0	0.854	0.000	0.366	0.366	**63.4%**
1959	14,627	4,207	3,852	8,059	4,520	63%	0.47	0	0.688	0.000	0.324	0.324	**67.6%**
1960	10,612	3,755	2,791	6,546	3,019	68%	0.51	0	0.606	0.000	0.309	0.309	**69.1%**
1961	17,500	4,207	6,891	11,098	5,595	61%	0.45	0	0.852	0.000	0.386	0.386	**61.4%**
1962	16,951	4,207	6,877	11,084	5,390	61%	0.46	0	0.851	0.000	0.388	0.388	**61.2%**
1963	27,555	4,207	6,895	11,102	9,356	25%	0.25	0	0.852	0.000	0.210	0.210	**79.0%**
1964	14,847	4,207	6,045	10,252	4,603	63%	0.47	0	0.807	0.000	0.378	0.378	**62.2%**
1965	28,471	4,207	7,355	11,562	9,698	25%	0.25	0	0.877	0.000	0.216	0.216	**78.4%**
1966	16,997	4,207	6,295	10,502	5,407	61%	0.46	0	0.820	0.000	0.373	0.373	**62.7%**
1967	37,937	4,207	7,125	11,332	13,238	24%	0.24	0	0.865	0.000	0.206	0.206	**79.4%**
1968	16,692	4,207	3,735	7,942	5,293	61%	0.46	0	0.682	0.000	0.312	0.312	**68.8%**
1969	24,093	4,207	6,971	11,178	8,061	57%	0.43	0	0.857	0.000	0.366	0.366	**63.4%**
1970	50,159	4,207	3,481	7,688	17,809	23%	0.23	0	0.668	0.000	0.155	0.155	**84.5%**
1971	53,440	4,207	7,042	11,249	19,037	23%	0.23	0	0.860	0.000	0.198	0.198	**80.2%**
1972	19,987	4,207	6,195	10,402	6,525	59%	0.44	0	0.815	0.000	0.359	0.359	**64.1%**
1973	26,198	4,207	6,904	11,111	8,848	25%	0.25	0	0.853	0.000	0.212	0.212	**78.8%**
1974	61,593	4,207	7,143	11,350	22,086	23%	0.23	0	0.866	0.000	0.198	0.198	**80.2%**
1975	17,619	4,207	4,248	8,455	5,640	61%	0.45	0	0.709	0.000	0.321	0.321	**67.9%**
1976	16,774	4,207	4,652	8,859	5,323	61%	0.46	0	0.731	0.000	0.334	0.334	**66.6%**
1977	8,171	1,720	3,079	4,799	2,106	74%	0.55	0	0.512	0.000	0.281	0.281	**71.9%**
1978	12,285	4,138	5,530	9,668	3,645	66%	0.49	0	0.775	0.000	0.380	0.380	**62.0%**
1979	13,285	4,207	4,094	8,301	4,019	65%	0.48	0	0.701	0.000	0.337	0.337	**66.3%**
1980	20,832	4,207	6,987	11,194	6,841	59%	0.44	0	0.857	0.000	0.375	0.375	**62.5%**
1981	15,611	4,207	4,109	8,316	4,889	62%	0.46	0	0.702	0.000	0.326	0.326	**67.4%**
1982	68,599	4,207	7,011	11,218	24,706	23%	0.23	0	0.859	0.000	0.195	0.195	**80.5%**
1983	55,416	4,207	4,428	8,635	19,776	23%	0.23	0	0.719	0.000	0.165	0.165	**83.5%**
1984	82,951	2,994	3,104	6,098	30,074	22%	0.22	0	0.582	0.000	0.131	0.131	**86.9%**
1985	23,880	4,207	6,967	11,174	7,981	57%	0.43	0	0.856	0.000	0.366	0.366	**63.4%**
1986	15,472	4,207	6,942	11,149	4,837	62%	0.46	0	0.855	0.000	0.397	0.397	**60.3%**
1987	13,788	4,207	6,093	10,300	4,207	64%	0.48	0	0.809	0.000	0.386	0.386	**61.4%**
1988	15,842	4,207	6,875	11,082	4,975	62%	0.46	0	0.851	0.000	0.394	0.394	**60.6%**
1989	8,852	2,840	3,560	6,400	2,361	72%	0.54	0	0.598	0.000	0.321	0.321	**67.9%**
1990	14,633	4,207	6,199	10,406	4,523	63%	0.47	0	0.815	0.000	0.383	0.383	**61.7%**
1991	8,805	1,698	3,185	4,883	2,343	72%	0.54	0	0.517	0.000	0.277	0.277	**72.3%**
1992	7,465	2,964	1,608	4,572	1,842	76%	0.56	0	0.500	0.000	0.282	0.282	**71.8%**

Year	JANUARY Sac River Flows	CVP Flows	SWP Flows	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	17,504	4,207	7,576	11,783	5,596	61%	0.27	0	0.889	0.000	0.236	0.236	**76.4%**
1923	32,280	4,207	3,637	7,844	11,123	24%	0.24	0	0.676	0.000	0.164	0.164	**83.6%**
1924	14,370	4,207	6,489	10,696	4,424	63%	0.28	0	0.830	0.000	0.229	0.229	**77.1%**
1925	10,209	3,551	3,151	6,702	2,868	69%	0.30	0	0.615	0.000	0.183	0.183	**81.7%**
1926	19,269	4,207	7,087	11,294	6,257	59%	0.26	0	0.863	0.000	0.225	0.225	**77.5%**
1927	29,594	4,207	7,264	11,471	10,118	24%	0.24	0	0.872	0.000	0.213	0.213	**78.7%**
1928	25,777	4,207	3,637	7,844	8,691	25%	0.25	0	0.676	0.000	0.169	0.169	**83.1%**
1929	15,516	4,207	7,085	11,292	4,853	62%	0.27	0	0.863	0.000	0.234	0.234	**76.6%**
1930	20,771	4,207	7,092	11,299	6,818	59%	0.26	0	0.863	0.000	0.222	0.222	**77.8%**
1931	11,965	4,207	4,897	9,104	3,525	66%	0.29	0	0.745	0.000	0.214	0.214	**78.6%**
1932	17,253	4,207	7,827	12,034	5,503	61%	0.27	0	0.903	0.000	0.240	0.240	**76.0%**
1933	12,602	4,207	5,741	9,948	3,763	65%	0.28	0	0.790	0.000	0.224	0.224	**77.6%**
1934	16,103	4,207	7,093	11,300	5,073	62%	0.27	0	0.863	0.000	0.232	0.232	**76.8%**
1935	25,471	4,207	7,666	11,873	8,576	25%	0.25	0	0.894	0.000	0.223	0.223	**77.7%**
1936	30,207	4,207	7,453	11,660	10,347	24%	0.24	0	0.883	0.000	0.215	0.215	**78.5%**
1937	15,967	4,207	7,581	11,788	5,022	62%	0.27	0	0.889	0.000	0.240	0.240	**76.0%**
1938	31,443	4,207	4,693	8,900	10,810	24%	0.24	0	0.733	0.000	0.178	0.178	**82.2%**
1939	18,407	4,207	3,239	7,446	5,934	60%	0.26	0	0.655	0.000	0.172	0.172	**82.8%**
1940	23,448	4,207	8,017	12,224	7,820	57%	0.25	0	0.913	0.000	0.231	0.231	**76.9%**
1941	72,496	4,207	8,141	12,348	26,164	23%	0.23	0	0.920	0.000	0.208	0.208	**79.2%**
1942	63,260	4,207	3,239	7,446	22,709	23%	0.23	0	0.655	0.000	0.149	0.149	**85.1%**
1943	58,056	4,207	3,303	7,510	20,763	23%	0.23	0	0.658	0.000	0.151	0.151	**84.9%**
1944	17,677	4,207	3,262	7,469	5,661	60%	0.26	0	0.656	0.000	0.174	0.174	**82.6%**
1945	13,516	4,207	4,919	9,126	4,105	64%	0.28	0	0.746	0.000	0.208	0.208	**79.2%**
1946	43,229	4,207	3,637	7,844	15,218	23%	0.23	0	0.676	0.000	0.159	0.159	**84.1%**
1947	15,221	4,207	6,676	10,883	4,743	63%	0.27	0	0.841	0.000	0.229	0.229	**77.1%**
1948	14,897	4,207	6,517	10,724	4,621	63%	0.27	0	0.832	0.000	0.228	0.228	**77.2%**
1949	14,928	4,207	6,819	11,026	4,633	63%	0.27	0	0.848	0.000	0.232	0.232	**76.8%**
1950	20,434	4,207	7,176	11,383	6,692	59%	0.26	0	0.868	0.000	0.224	0.224	**77.6%**
1951	62,213	4,207	7,031	11,238	22,318	23%	0.23	0	0.860	0.000	0.196	0.196	**80.4%**
1952	67,352	4,207	7,072	11,279	24,240	23%	0.23	0	0.862	0.000	0.196	0.196	**80.4%**
1953	64,078	4,207	3,333	7,540	23,015	23%	0.23	0	0.660	0.000	0.150	0.150	**85.0%**
1954	33,414	4,207	3,833	8,040	11,547	24%	0.24	0	0.687	0.000	0.166	0.166	**83.4%**
1955	22,257	4,207	6,499	10,706	7,374	58%	0.25	0	0.831	0.000	0.212	0.212	**78.8%**
1956	84,015	4,207	7,970	12,177	30,472	22%	0.22	0	0.910	0.000	0.204	0.204	**79.6%**
1957	18,639	4,207	3,891	8,098	6,021	60%	0.26	0	0.690	0.000	0.181	0.181	**81.9%**
1958	36,464	4,207	3,453	7,660	12,688	24%	0.24	0	0.667	0.000	0.159	0.159	**84.1%**
1959	35,167	4,207	3,333	7,540	12,202	24%	0.24	0	0.660	0.000	0.158	0.158	**84.2%**
1960	14,522	4,207	6,411	10,618	4,481	63%	0.27	0	0.826	0.000	0.227	0.227	**77.3%**
1961	14,258	4,207	6,589	10,796	4,382	63%	0.28	0	0.836	0.000	0.231	0.231	**76.9%**
1962	12,902	4,207	4,165	8,372	3,875	65%	0.28	0	0.705	0.000	0.199	0.199	**80.1%**
1963	17,805	4,207	7,247	11,454	5,709	60%	0.26	0	0.871	0.000	0.230	0.230	**77.0%**
1964	25,556	4,207	3,872	8,079	8,608	25%	0.25	0	0.689	0.000	0.172	0.172	**82.8%**
1965	81,240	4,207	8,500	12,707	29,434	22%	0.22	0	0.939	0.000	0.211	0.211	**78.9%**
1966	29,635	4,207	3,657	7,864	10,133	24%	0.24	0	0.678	0.000	0.166	0.166	**83.4%**
1967	34,241	4,207	7,672	11,879	11,856	24%	0.24	0	0.894	0.000	0.215	0.215	**78.5%**
1968	30,635	4,207	3,333	7,540	10,507	24%	0.24	0	0.660	0.000	0.161	0.161	**83.9%**
1969	67,985	4,207	6,308	10,515	24,476	23%	0.23	0	0.821	0.000	0.186	0.186	**81.4%**
1970	92,665	4,157	3,333	7,490	33,707	22%	0.22	0	0.657	0.000	0.147	0.147	**85.3%**
1971	46,895	4,207	5,713	9,920	16,589	23%	0.23	0	0.789	0.000	0.184	0.184	**81.6%**
1972	20,395	4,207	3,891	8,098	6,678	59%	0.26	0	0.690	0.000	0.178	0.178	**82.2%**
1973	49,382	4,207	6,932	11,139	17,519	23%	0.23	0	0.854	0.000	0.198	0.198	**80.2%**
1974	78,417	4,207	3,637	7,844	28,378	22%	0.22	0	0.676	0.000	0.152	0.152	**84.8%**
1975	18,672	4,207	3,848	8,055	6,033	60%	0.26	0	0.688	0.000	0.180	0.180	**82.0%**
1976	16,769	4,207	3,789	7,996	5,322	61%	0.27	0	0.685	0.000	0.183	0.183	**81.7%**
1977	7,657	2,106	2,440	4,546	1,914	75%	0.32	0	0.498	0.000	0.160	0.160	**84.0%**
1978	43,062	3,055	7,767	10,822	15,155	23%	0.23	0	0.837	0.000	0.197	0.197	**80.3%**
1979	27,242	4,207	3,262	7,469	9,239	25%	0.25	0	0.656	0.000	0.162	0.162	**83.8%**
1980	63,162	4,207	3,159	7,366	22,673	23%	0.23	0	0.651	0.000	0.148	0.148	**85.2%**
1981	28,602	4,207	3,356	7,563	9,747	25%	0.25	0	0.661	0.000	0.162	0.162	**83.8%**
1982	51,172	4,207	7,647	11,854	18,188	23%	0.23	0	0.893	0.000	0.207	0.207	**79.3%**
1983	59,148	4,207	2,648	6,855	21,171	23%	0.23	0	0.623	0.000	0.143	0.143	**85.7%**
1984	47,354	1,331	2,881	4,212	16,760	23%	0.23	0	0.480	0.000	0.112	0.112	**88.8%**
1985	16,799	4,207	3,872	8,079	5,333	61%	0.27	0	0.689	0.000	0.184	0.184	**81.6%**
1986	21,253	4,207	7,331	11,538	6,999	58%	0.26	0	0.876	0.000	0.225	0.225	**77.5%**
1987	16,734	1,771	6,484	8,255	5,309	61%	0.27	0	0.699	0.000	0.187	0.187	**81.3%**
1988	25,530	4,207	7,058	11,265	8,598	25%	0.25	0	0.861	0.000	0.215	0.215	**78.5%**
1989	12,003	4,051	4,649	8,700	3,539	66%	0.29	0	0.723	0.000	0.207	0.207	**79.3%**
1990	21,584	2,556	7,059	9,615	7,122	58%	0.26	0	0.772	0.000	0.198	0.198	**80.2%**
1991	6,851	1,697	1,708	3,405	1,612	78%	0.33	0	0.437	0.000	0.145	0.145	**85.5%**
1992	12,140	3,832	5,155	8,987	3,590	66%	0.29	0	0.738	0.000	0.211	0.211	**78.9%**

Formulas: Sacramento River Spring Smolt Yearling Survival Model

```
C10 ='Study 467 Flow Data'!B7
D10 ='Study 467 Flow Data'!L7
E10 ='Study 467 Flow Data'!V7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
J10 =IF(-2.45925+(0.0420748*$T$1)>0,-2.45925+(0.0420748*$T$1),0)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =IF(-1.613493+(0.0319584*$T$1)>0,-1.613493+(0.0319584*$T$1),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!C7
R10 ='Study 467 Flow Data'!M7
S10 ='Study 467 Flow Data'!W7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
Z10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!D7
AF10 ='Study 467 Flow Data'!N7
AG10 ='Study 467 Flow Data'!X7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AN10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
```

Study 501 Sacramento River Spring Run Yearling Survival Model (continued)

February Water Temp 50 F
Cross Channel Closed Over 25000 cfs
March Water Temp 55 F
Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

FEBRUARY

	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF
	Sac River Flow	CVP Flow	SWP Flow	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survivability s123**	
10	34,253	4,250	6,373	10,623	11,861	24%	0.24	0	0.880	0.000	0.212	0.212	**78.8%**	
11	22,521	2,471	2,380	4,851	7,473	58%	0.25	0	0.569	0.000	0.145	0.145	**85.5%**	
12	17,501	4,218	4,642	8,860	5,595	61%	0.27	0	0.785	0.000	0.208	0.208	**79.2%**	
13	44,695	4,220	7,583	11,803	15,766	23%	0.23	0	0.944	0.000	0.221	0.221	**77.9%**	
14	36,467	4,231	7,510	11,741	12,689	24%	0.24	0	0.941	0.000	0.225	0.225	**77.5%**	
15	86,145	3,059	8,470	11,529	31,268	22%	0.22	0	0.929	0.000	0.208	0.208	**79.2%**	
16	28,340	4,259	4,377	8,636	9,649	25%	0.25	0	0.773	0.000	0.190	0.190	**81.0%**	
17	18,537	4,104	3,759	7,863	5,983	60%	0.26	0	0.731	0.000	0.192	0.192	**80.8%**	
18	15,675	2,789	3,997	6,786	4,912	62%	0.27	0	0.673	0.000	0.182	0.182	**81.8%**	
19	11,083	3,334	1,889	5,223	3,195	68%	0.29	0	0.589	0.000	0.172	0.172	**82.8%**	
20	14,487	4,242	5,888	10,130	4,468	63%	0.28	0	0.854	0.000	0.235	0.235	**76.5%**	
21	13,116	4,217	2,831	7,048	3,955	65%	0.28	0	0.687	0.000	0.193	0.193	**80.7%**	
22	12,740	1,231	4,555	5,786	3,815	65%	0.28	0	0.619	0.000	0.175	0.175	**82.5%**	
23	11,977	686	3,943	4,629	3,529	66%	0.29	0	0.557	0.000	0.160	0.160	**84.0%**	
24	49,186	4,250	8,500	12,750	17,446	23%	0.23	0	0.995	0.000	0.231	0.231	**76.9%**	
25	32,775	4,232	5,420	9,652	11,308	24%	0.24	0	0.828	0.000	0.200	0.200	**80.0%**	
26	82,366	4,110	3,939	8,049	29,855	22%	0.22	0	0.741	0.000	0.166	0.166	**83.4%**	
27	19,024	2,604	3,955	6,559	6,165	60%	0.26	0	0.661	0.000	0.173	0.173	**82.7%**	
28	43,497	4,241	8,500	12,741	15,318	23%	0.23	0	0.995	0.000	0.233	0.233	**76.7%**	
29	75,037	4,293	6,891	11,184	27,114	23%	0.23	0	0.911	0.000	0.205	0.205	**79.5%**	
30	78,349	4,281	3,955	8,236	28,353	23%	0.23	0	0.752	0.000	0.169	0.169	**83.1%**	
31	52,259	4,280	4,005	8,285	18,595	23%	0.23	0	0.754	0.000	0.174	0.174	**82.6%**	
32	31,830	4,245	3,958	8,203	10,954	24%	0.24	0	0.750	0.000	0.182	0.182	**81.8%**	
33	39,754	4,242	4,081	8,323	13,918	24%	0.24	0	0.756	0.000	0.179	0.179	**82.1%**	
34	24,540	4,277	3,841	8,118	8,228	57%	0.25	0	0.745	0.000	0.187	0.187	**81.3%**	
35	21,569	4,244	3,972	8,216	7,117	58%	0.26	0	0.750	0.000	0.192	0.192	**80.8%**	
36	16,037	4,233	1,741	5,974	5,048	62%	0.27	0	0.629	0.000	0.170	0.170	**83.0%**	
37	16,132	3,786	4,576	8,362	5,083	62%	0.27	0	0.758	0.000	0.204	0.204	**79.6%**	
38	34,005	4,247	7,531	11,778	11,768	24%	0.24	0	0.943	0.000	0.227	0.227	**77.3%**	
39	60,566	4,280	4,675	8,955	21,702	23%	0.23	0	0.790	0.000	0.181	0.181	**81.9%**	
40	64,731	4,293	3,909	8,202	23,259	23%	0.23	0	0.750	0.000	0.171	0.171	**82.9%**	
41	28,344	4,281	4,060	8,341	9,651	25%	0.25	0	0.757	0.000	0.186	0.186	**81.4%**	
42	57,158	4,273	4,636	8,909	20,427	23%	0.23	0	0.788	0.000	0.181	0.181	**81.9%**	
43	16,298	4,259	3,155	7,414	5,145	62%	0.27	0	0.707	0.000	0.190	0.190	**81.0%**	
44	63,748	4,283	4,675	8,958	22,892	23%	0.23	0	0.791	0.000	0.180	0.180	**82.0%**	
45	33,144	4,249	4,638	8,887	11,446	24%	0.24	0	0.787	0.000	0.190	0.190	**81.0%**	
46	62,490	4,255	4,045	8,300	22,421	23%	0.23	0	0.755	0.000	0.172	0.172	**82.8%**	
47	50,082	4,261	4,060	8,321	17,781	23%	0.23	0	0.756	0.000	0.175	0.175	**82.5%**	
48	27,024	4,231	7,296	11,527	9,157	25%	0.25	0	0.929	0.000	0.230	0.230	**77.0%**	
49	30,815	4,188	7,109	11,297	10,575	24%	0.24	0	0.917	0.000	0.223	0.223	**77.7%**	
50	42,179	4,240	8,500	12,740	14,825	24%	0.24	0	0.995	0.000	0.234	0.234	**76.6%**	
51	57,821	4,278	8,262	12,540	20,675	23%	0.23	0	0.984	0.000	0.226	0.226	**77.4%**	
52	19,699	4,275	3,632	7,907	6,417	59%	0.26	0	0.734	0.000	0.191	0.191	**80.9%**	
53	33,076	4,257	5,922	10,179	11,420	24%	0.24	0	0.856	0.000	0.207	0.207	**79.3%**	
54	26,777	4,282	4,377	8,659	9,065	25%	0.25	0	0.774	0.000	0.192	0.192	**80.8%**	
55	43,101	4,293	3,201	7,494	15,170	23%	0.23	0	0.711	0.000	0.167	0.167	**83.3%**	
56	56,470	1,989	4,060	6,049	20,170	23%	0.23	0	0.633	0.000	0.146	0.146	**85.4%**	
57	67,482	3,837	3,171	7,008	24,288	23%	0.23	0	0.685	0.000	0.156	0.156	**84.4%**	
58	57,565	1,188	4,060	5,248	20,579	23%	0.23	0	0.590	0.000	0.135	0.135	**86.5%**	
59	28,275	3,255	4,205	7,460	9,625	25%	0.25	0	0.710	0.000	0.175	0.175	**82.5%**	
60	25,083	4,260	4,622	8,882	8,431	25%	0.25	0	0.786	0.000	0.197	0.197	**80.3%**	
61	70,967	4,268	4,425	8,693	25,592	23%	0.23	0	0.776	0.000	0.176	0.176	**82.4%**	
62	41,926	4,266	4,377	8,643	14,730	24%	0.24	0	0.774	0.000	0.182	0.182	**81.8%**	
63	58,811	4,252	4,636	8,888	21,045	23%	0.23	0	0.787	0.000	0.180	0.180	**82.0%**	
64	20,229	4,239	4,288	8,527	6,616	59%	0.26	0	0.767	0.000	0.198	0.198	**80.2%**	
65	12,276	686	1,429	2,115	3,641	66%	0.29	0	0.421	0.000	0.120	0.120	**88.0%**	
66	50,197	1,705	6,872	8,577	17,824	23%	0.23	0	0.770	0.000	0.179	0.179	**82.1%**	
67	41,848	4,248	3,958	8,206	14,701	24%	0.24	0	0.750	0.000	0.177	0.177	**82.3%**	
68	71,932	4,252	3,768	8,020	25,953	23%	0.23	0	0.740	0.000	0.167	0.167	**83.3%**	
69	29,672	2,425	4,062	6,487	10,147	24%	0.24	0	0.657	0.000	0.161	0.161	**83.9%**	
70	65,645	4,118	4,620	8,738	23,601	23%	0.23	0	0.779	0.000	0.177	0.177	**82.3%**	
71	82,910	3,422	2,793	6,215	30,058	22%	0.22	0	0.642	0.000	0.144	0.144	**85.6%**	
72	37,282	1,483	3,847	5,330	12,993	24%	0.24	0	0.595	0.000	0.142	0.142	**85.8%**	
73	20,136	4,256	4,638	8,894	6,581	59%	0.26	0	0.787	0.000	0.204	0.204	**79.6%**	
74	95,411	4,245	7,470	11,715	34,734	22%	0.22	0	0.939	0.000	0.209	0.209	**79.1%**	
75	23,028	1,296	4,244	5,540	7,662	58%	0.25	0	0.606	0.000	0.153	0.153	**84.7%**	
76	16,277	3,507	2,568	6,075	5,138	62%	0.27	0	0.635	0.000	0.171	0.171	**82.9%**	
77	13,134	963	1,798	2,761	3,962	65%	0.28	0	0.456	0.000	0.128	0.128	**87.2%**	
78	16,946	1,269	6,533	7,802	5,388	61%	0.27	0	0.728	0.000	0.194	0.194	**80.6%**	
79	11,038	407	846	1,253	3,178	68%	0.29	0	0.374	0.000	0.109	0.109	**89.1%**	
80	32,538	649	7,457	8,106	11,219	24%	0.24	0	0.745	0.000	0.180	0.180	**82.0%**	

MARCH

	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU
	Sac River Flow	CVP	SWP	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survivability s123**		**Weighted Total Survival**
10	31,554	3,590	4,142	7,732	10,851	24%	0.24	0	0.814	0.144	0.307	0.307	**69.3%**		**57.2%**
11	17,559	4,225	3,500	7,725	5,617	61%	0.26	0	0.814	0.144	0.322	0.322	**67.8%**		**66.1%**
12	12,110	1,437	1,730	3,167	3,579	66%	0.29	0	0.568	0.144	0.265	0.265	**73.5%**		**59.2%**
13	18,563	3,833	4,047	7,880	5,993	60%	0.26	0	0.822	0.144	0.322	0.322	**67.8%**		**61.9%**
14	18,819	4,225	3,455	7,680	6,088	60%	0.26	0	0.811	0.144	0.319	0.319	**68.1%**		**62.0%**
15	43,865	3,370	4,153	7,523	15,456	23%	0.23	0	0.803	0.144	0.299	0.299	**70.1%**		**56.3%**
16	86,223	4,225	4,424	8,649	31,297	22%	0.22	0	0.864	0.144	0.305	0.305	**69.5%**		**57.6%**
17	14,413	1,984	2,783	4,767	4,440	63%	0.28	0	0.654	0.144	0.285	0.285	**71.5%**		**56.4%**
18	30,090	2,925	4,328	7,253	10,304	24%	0.24	0	0.788	0.144	0.301	0.301	**69.9%**		**61.8%**
19	8,767	1,669	1,672	3,341	2,329	72%	0.31	0	0.577	0.144	0.278	0.278	**72.2%**		**65.3%**
20	10,538	935	2,737	3,672	2,991	69%	0.30	0	0.595	0.144	0.277	0.277	**72.3%**		**62.8%**
21	9,943	317	4,155	4,472	2,769	70%	0.30	0	0.638	0.144	0.292	0.292	**70.8%**		**65.1%**
22	14,232	2,223	1,743	3,966	4,373	63%	0.28	0	0.611	0.144	0.273	0.273	**72.7%**		**64.8%**
23	24,918	4,225	6,982	11,207	8,369	57%	0.25	0	1.002	0.144	0.359	0.359	**64.1%**		**61.2%**
24	33,198	4,225	7,238	11,463	11,466	24%	0.24	0	1.016	0.144	0.355	0.355	**64.5%**		**61.1%**
25	37,439	2,569	4,009	6,578	13,052	24%	0.24	0	0.752	0.144	0.289	0.289	**71.1%**		**58.7%**
26	78,637	2,061	3,966	6,027	28,460	22%	0.22	0	0.722	0.144	0.274	0.274	**72.6%**		**65.8%**
27	16,390	2,727	3,989	6,716	5,180	61%	0.27	0	0.759	0.144	0.309	0.309	**69.1%**		**62.7%**
28	59,083	4,225	4,649	8,874	21,147	23%	0.23	0	0.876	0.144	0.312	0.312	**68.8%**		**66.6%**
29	58,573	4,225	3,846	8,071	20,956	23%	0.23	0	0.832	0.144	0.302	0.302	**69.8%**		**63.7%**
30	27,099	4,223	4,007	8,230	9,185	25%	0.25	0	0.841	0.144	0.317	0.317	**68.3%**		**68.0%**
31	64,601	2,910	4,056	6,966	23,211	23%	0.23	0	0.773	0.144	0.287	0.287	**71.3%**		**67.7%**
32	25,100	3,509	4,007	7,516	8,437	25%	0.25	0	0.803	0.144	0.309	0.309	**69.1%**		**56.0%**
33	27,033	4,225	4,150	8,375	9,160	25%	0.25	0	0.849	0.144	0.319	0.319	**68.1%**		**55.3%**
34	23,608	4,225	4,424	8,649	7,879	57%	0.25	0	0.864	0.144	0.326	0.326	**67.4%**		**65.4%**
35	22,506	4,225	3,926	8,151	7,467	58%	0.25	0	0.837	0.144	0.320	0.320	**68.0%**		**55.2%**
36	19,235	4,225	3,439	7,664	6,244	59%	0.26	0	0.810	0.144	0.318	0.318	**68.2%**		**63.8%**
37	41,807	2,613	7,116	9,729	14,686	24%	0.24	0	0.922	0.144	0.327	0.327	**67.3%**		**55.5%**
38	22,404	4,225	4,615	8,840	7,429	58%	0.25	0	0.874	0.144	0.330	0.330	**67.0%**		**61.0%**
39	29,827	4,225	4,699	8,924	10,205	24%	0.24	0	0.879	0.144	0.324	0.324	**67.6%**		**76.5%**
40	57,518	4,225	3,934	8,159	20,562	23%	0.23	0	0.837	0.144	0.303	0.303	**69.7%**		**64.5%**
41	24,893	3,355	4,111	7,466	8,360	57%	0.25	0	0.800	0.144	0.308	0.308	**69.2%**		**69.8%**
42	49,536	4,225	4,685	8,910	17,576	23%	0.23	0	0.878	0.144	0.314	0.314	**68.6%**		**60.5%**
43	17,945	4,225	2,934	7,159	5,761	60%	0.26	0	0.783	0.144	0.313	0.313	**68.7%**		**64.6%**
44	36,676	2,395	4,699	7,094	12,767	24%	0.24	0	0.780	0.144	0.296	0.296	**70.4%**		**59.9%**
45	44,377	4,225	4,410	8,635	15,647	23%	0.23	0	0.863	0.144	0.313	0.313	**68.7%**		**56.9%**
46	93,616	4,225	4,071	8,296	34,062	22%	0.22	0	0.845	0.144	0.300	0.300	**70.0%**		**58.7%**
47	22,915	3,781	3,049	6,830	7,620	58%	0.25	0	0.765	0.144	0.302	0.302	**69.8%**		**62.7%**
48	21,898	2,637	4,002	6,639	7,240	58%	0.26	0	0.755	0.144	0.300	0.300	**70.0%**		**62.2%**
49	20,744	2,762	5,223	7,985	6,808	59%	0.25	0	0.828	0.144	0.320	0.320	**68.0%**		**56.2%**
50	26,934	3,498	3,490	6,988	9,123	25%	0.25	0	0.774	0.144	0.300	0.300	**70.0%**		**58.8%**
51	32,645	4,225	4,799	9,024	11,259	24%	0.24	0	0.884	0.144	0.323	0.323	**67.7%**		**64.3%**
52	16,340	3,173	3,336	6,509	5,161	62%	0.27	0	0.748	0.144	0.306	0.306	**69.4%**		**69.1%**
53	22,601	4,225	4,340	8,565	7,503	58%	0.25	0	0.859	0.144	0.326	0.326	**67.4%**		**63.5%**
54	28,683	4,225	4,424	8,649	9,777	25%	0.25	0	0.864	0.144	0.321	0.321	**67.9%**		**69.2%**
55	54,488	4,225	3,283	7,508	19,429	23%	0.23	0	0.802	0.144	0.296	0.296	**70.4%**		**63.7%**
56	36,789	3,023	4,111	7,134	12,809	24%	0.24	0	0.782	0.144	0.296	0.296	**70.4%**		**63.6%**
57	45,319	2,055	3,251	5,306	15,999	23%	0.23	0	0.683	0.144	0.270	0.270	**73.0%**		**57.9%**
58	35,819	3,077	4,111	7,188	12,446	24%	0.24	0	0.785	0.144	0.298	0.298	**70.2%**		**70.6%**
59	51,739	4,225	4,699	8,924	18,400	23%	0.23	0	0.879	0.144	0.314	0.314	**68.6%**		**65.7%**
60	32,930	4,143	4,390	8,533	11,366	24%	0.24	0	0.857	0.144	0.316	0.316	**68.4%**		**57.5%**
61	47,552	4,225	4,454	8,679	16,834	23%	0.23	0	0.865	0.144	0.312	0.312	**68.8%**		**65.3%**
62	34,705	4,225	4,424	8,649	12,030	24%	0.24	0	0.864	0.144	0.317	0.317	**68.3%**		**77.4%**
63	75,998	4,225	4,685	8,910	27,473	23%	0.23	0	0.878	0.144	0.310	0.310	**69.0%**		**61.3%**
64	20,060	4,225	3,629	7,854	6,552	59%	0.26	0	0.821	0.144	0.319	0.319	**68.1%**		**59.5%**
65	7,533	825	1,217	2,042	1,867	76%	0.32	0	0.507	0.144	0.261	0.261	**73.9%**		**65.3%**
66	45,401	2,118	3,905	6,023	16,030	23%	0.23	0	0.722	0.144	0.279	0.279	**72.1%**		**62.2%**
67	32,593	3,854	4,007	7,861	11,240	24%	0.24	0	0.821	0.144	0.308	0.308	**69.2%**		**58.6%**
68	36,480	3,149	3,344	6,493	12,694	24%	0.24	0	0.747	0.144	0.288	0.288	**71.2%**		**57.8%**
69	32,501	3,022	4,111	7,133	11,205	24%	0.24	0	0.782	0.144	0.298	0.298	**70.2%**		**60.0%**
70	69,087	2,940	4,644	7,584	24,889	23%	0.23	0	0.806	0.144	0.294	0.294	**70.6%**		**76.5%**
71	81,934	2,042	2,628	4,670	29,693	22%	0.22	0	0.649	0.144	0.257	0.257	**74.3%**		**79.1%**
72	36,503	3,305	4,007	7,312	12,702	24%	0.24	0	0.791	0.144	0.299	0.299	**70.1%**		**82.9%**
73	21,803	4,225	4,623	8,848	7,204	58%	0.26	0	0.874	0.144	0.331	0.331	**66.9%**		**69.5%**
74	72,539	4,209	4,180	8,389	26,180	23%	0.23	0	0.850	0.144	0.304	0.304	**69.6%**		**58.7%**
75	29,576	2,382	4,146	6,528	10,111	24%	0.24	0	0.749	0.144	0.292	0.292	**70.8%**		**59.3%**
76	11,061	2,080	1,722	3,802	3,187	68%	0.29	0	0.602	0.144	0.278	0.278	**72.2%**		**61.3%**
77	41,581	4,225	6,682	10,907	14,601	24%	0.24	0	0.986	0.144	0.343	0.343	**65.7%**		**63.3%**
78	14,838	2,275	3,586	5,861	4,599	63%	0.27	0	0.713	0.144	0.300	0.300	**70.0%**		**59.2%**
79	29,675	4,225	7,078	11,303	10,148	24%	0.24	0	1.007	0.144	0.355	0.355	**64.5%**		**67.0%**
80	20,106	2,023	6,215	8,238	6,570	59%	0.26	0	0.841	0.144	0.325	0.325	**67.5%**		**65.7%**
81														**AVERAGE:**	**63.25%**

AS10 ='Study 467 Flow Data'!E7
AT10 ='Study 467 Flow Data'!O7
AU10 ='Study 467 Flow Data'!Y7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$K$4,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
BA10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
BB10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =AZ10+BC10-(AZ10*BC10)
BE10 =1-BD10

BG10 ='Study 467 Flow Data'!F7
BH10 ='Study 467 Flow Data'!P7
BI10 ='Study 467 Flow Data'!Z7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$K$4,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BO10 =(-0.5916024)+(0.017968*$BC$3)+(0.000054*BJ10)
BP10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)
BQ10 =(BO10*BM10)+(BP10*(1-BM10))
BR10 =BN10+BQ10-(BN10*BQ10)
BS10 =1-BR10
BU10 =(O10*0.37)+(AC10*0.42)+(AQ10*0.13)+(BE10*0.05)+(BS10*0.03)

Study 501A Sacramento River Spring Run Yearling Survival Model
Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Year	Water Year Type	Sac River Flow	CVP Flow	SWP Flow	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	A	12,033	4,290	4,316	8,606	3,550	66%	0.29	0	0.825	0.080	0.574	0.574	**42.6%**
1923	B	16,305	4,306	6,672	10,978	5,148	62%	0.27	0	0.954	0.080	0.618	0.618	**38.2%**
1924	C	10,997	3,576	3,755	7,331	3,163	68%	0.29	0	0.757	0.080	0.539	0.539	**46.1%**
1925	D	7,024	1,310	3,210	4,520	1,677	78%	0.33	0	0.605	0.080	0.487	0.487	**51.3%**
1926	D	10,792	4,293	2,482	6,775	3,086	68%	0.29	0	0.727	0.080	0.521	0.521	**47.9%**
1927	W	20,291	4,251	6,672	10,923	6,639	59%	0.26	0	0.951	0.080	0.593	0.593	**40.7%**
1928	A	19,551	4,301	6,672	10,973	6,362	59%	0.26	0	0.953	0.080	0.598	0.598	**40.2%**
1929	C	12,612	4,288	5,201	9,489	3,767	65%	0.28	0	0.873	0.080	0.599	0.599	**40.1%**
1930	D	7,159	2,282	1,765	4,047	1,727	77%	0.33	0	0.579	0.080	0.465	0.465	**53.5%**
1931	C	9,778	2,650	3,258	5,908	2,707	70%	0.30	0	0.680	0.080	0.500	0.500	**50.0%**
1932	D	8,090	1,182	1,690	2,872	2,076	74%	0.32	0	0.516	0.080	0.403	0.403	**59.7%**
1933	C	9,511	3,053	2,610	5,663	2,607	71%	0.30	0	0.667	0.080	0.494	0.494	**50.6%**
1934	C	8,121	1,008	1,624	2,632	2,087	74%	0.32	0	0.503	0.080	0.393	0.393	**60.7%**
1935	B	9,209	2,541	4,293	6,834	2,494	71%	0.31	0	0.730	0.080	0.543	0.543	**45.7%**
1936	B	10,701	3,792	3,272	7,064	3,052	68%	0.29	0	0.742	0.080	0.532	0.532	**46.8%**
1937	B	11,241	4,292	3,166	7,458	3,254	67%	0.29	0	0.763	0.080	0.541	0.541	**45.9%**
1938	W	23,700	4,292	6,672	10,964	7,914	57%	0.25	0	0.953	0.080	0.580	0.580	**42.0%**
1939	D	19,439	4,305	5,282	9,587	6,320	59%	0.26	0	0.878	0.080	0.554	0.554	**44.6%**
1940	A	8,444	2,807	1,752	4,559	2,208	73%	0.31	0	0.607	0.080	0.466	0.466	**53.4%**
1941	W	13,764	4,275	6,097	10,372	4,198	64%	0.28	0	0.921	0.080	0.618	0.618	**38.2%**
1942	W	18,186	4,305	6,621	10,926	5,852	60%	0.26	0	0.951	0.080	0.604	0.604	**39.6%**
1943	W	21,906	4,304	6,672	10,976	7,243	58%	0.26	0	0.953	0.080	0.587	0.587	**41.3%**
1944	D	13,869	4,290	6,237	10,527	4,237	64%	0.28	0	0.929	0.080	0.623	0.623	**37.7%**
1945	B	13,770	4,278	6,600	10,878	4,200	64%	0.28	0	0.948	0.080	0.636	0.636	**36.4%**
1946	B	17,944	4,294	6,672	10,966	5,761	60%	0.26	0	0.953	0.080	0.607	0.607	**39.3%**
1947	D	13,776	4,299	6,562	10,861	4,202	64%	0.28	0	0.947	0.080	0.635	0.635	**36.5%**
1948	B	10,208	2,780	3,629	6,409	2,868	69%	0.30	0	0.707	0.080	0.514	0.514	**48.6%**
1949	D	14,447	4,272	6,237	10,509	4,453	63%	0.28	0	0.928	0.080	0.617	0.617	**38.3%**
1950	B	11,649	4,294	3,348	7,642	3,407	67%	0.29	0	0.773	0.080	0.543	0.543	**45.7%**
1951	A	42,918	4,281	6,672	10,953	15,101	24%	0.24	0	0.952	0.080	0.285	0.285	**71.5%**
1952	W	16,567	4,298	6,672	10,970	5,246	61%	0.27	0	0.953	0.080	0.616	0.616	**38.4%**
1953	W	16,535	4,304	4,089	8,393	5,234	61%	0.27	0	0.814	0.080	0.530	0.530	**47.0%**
1954	A	20,245	4,295	6,672	10,967	6,622	59%	0.26	0	0.953	0.080	0.594	0.594	**40.6%**
1955	D	20,430	4,295	6,672	10,967	6,691	59%	0.26	0	0.953	0.080	0.593	0.593	**40.7%**
1956	W	10,470	2,551	4,226	6,777	2,966	69%	0.30	0	0.727	0.080	0.525	0.525	**47.5%**
1957	A	15,470	4,306	6,672	10,978	4,836	62%	0.27	0	0.954	0.080	0.624	0.624	**37.6%**
1958	W	19,256	4,291	6,672	10,963	6,252	59%	0.26	0	0.953	0.080	0.599	0.599	**40.1%**
1959	B	16,130	4,306	4,185	8,491	5,083	62%	0.27	0	0.819	0.080	0.536	0.536	**46.4%**
1960	D	11,810	4,280	3,079	7,359	3,467	67%	0.29	0	0.758	0.080	0.531	0.531	**46.9%**
1961	D	13,251	4,265	5,580	9,845	4,006	65%	0.28	0	0.892	0.080	0.605	0.605	**39.5%**
1962	B	11,489	4,264	3,475	7,739	3,347	67%	0.29	0	0.779	0.080	0.548	0.548	**45.2%**
1963	W	20,835	4,296	6,672	10,968	6,842	59%	0.26	0	0.953	0.080	0.591	0.591	**40.9%**
1964	D	28,658	4,279	6,672	10,951	9,768	25%	0.25	0	0.952	0.080	0.294	0.294	**70.6%**
1965	W	13,651	4,070	6,257	10,327	4,155	64%	0.28	0	0.918	0.080	0.618	0.618	**38.2%**
1966	B	25,033	4,292	6,672	10,964	8,412	25%	0.25	0	0.953	0.080	0.299	0.299	**70.1%**
1967	W	14,530	4,295	6,672	10,967	4,484	63%	0.27	0	0.953	0.080	0.632	0.632	**36.8%**
1968	B	16,241	4,305	4,054	8,359	5,124	62%	0.27	0	0.812	0.080	0.531	0.531	**46.9%**
1969	W	13,818	4,280	6,021	10,301	4,218	64%	0.28	0	0.917	0.080	0.615	0.615	**38.5%**
1970	W	17,644	4,305	4,089	8,394	5,649	61%	0.26	0	0.814	0.080	0.524	0.524	**47.6%**
1971	W	21,519	4,288	6,672	10,960	7,098	58%	0.26	0	0.953	0.080	0.588	0.588	**41.2%**
1972	B	15,347	4,293	6,672	10,965	4,790	62%	0.27	0	0.953	0.080	0.625	0.625	**37.5%**
1973	A	21,510	4,280	6,672	10,952	7,095	58%	0.26	0	0.952	0.080	0.588	0.588	**41.2%**
1974	W	52,301	4,301	6,672	10,973	18,611	23%	0.23	0	0.953	0.080	0.282	0.282	**71.8%**
1975	W	17,581	4,305	6,625	10,930	5,625	61%	0.26	0	0.951	0.080	0.608	0.608	**39.2%**
1976	C	19,229	4,306	6,672	10,978	6,242	59%	0.26	0	0.954	0.080	0.600	0.600	**40.0%**
1977	C	8,371	2,663	3,373	6,036	2,181	73%	0.31	0	0.687	0.080	0.525	0.525	**47.5%**
1978	A	6,922	2,465	1,698	4,163	1,639	78%	0.33	0	0.586	0.080	0.474	0.474	**52.6%**
1979	B	14,388	4,308	6,575	10,883	4,431	63%	0.28	0	0.948	0.080	0.630	0.630	**37.0%**
1980	A	15,797	4,291	6,672	10,963	4,958	62%	0.27	0	0.953	0.080	0.621	0.621	**37.9%**
1981	D	13,017	4,290	5,573	9,863	3,918	65%	0.28	0	0.893	0.080	0.608	0.608	**39.2%**
1982	W	29,987	4,280	6,672	10,952	10,265	24%	0.24	0	0.952	0.080	0.293	0.293	**70.7%**
1983	W	39,113	4,306	6,672	10,978	13,678	24%	0.24	0	0.954	0.080	0.287	0.287	**71.3%**
1984	W	62,800	1,743	3,623	5,366	22,537	23%	0.23	0	0.650	0.080	0.210	0.210	**79.0%**
1985	D	33,413	4,298	6,672	10,970	11,546	24%	0.24	0	0.953	0.080	0.291	0.291	**70.9%**
1986	W	9,546	2,497	4,174	6,671	2,620	71%	0.30	0	0.721	0.080	0.532	0.532	**46.8%**
1987	D	11,222	4,266	3,504	7,770	3,247	67%	0.29	0	0.780	0.080	0.552	0.552	**44.8%**
1988	C	8,448	2,974	1,870	4,844	2,210	73%	0.31	0	0.622	0.080	0.477	0.477	**52.3%**
1989	D	8,582	2,380	3,369	5,749	2,260	73%	0.31	0	0.671	0.080	0.511	0.511	**48.9%**
1990	C	11,756	4,245	3,567	7,812	3,447	67%	0.29	0	0.783	0.080	0.548	0.548	**45.2%**
1991	C	8,142	2,492	2,368	4,860	2,095	74%	0.32	0	0.623	0.080	0.482	0.482	**51.8%**
1992	C	7,570	3,110	1,498	4,608	1,881	76%	0.32	0	0.610	0.080	0.481	0.481	**51.9%**

DECEMBER

Year	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	17,143	4,207	7,100	11,307	5,461	61%	0.45	0	0.863	0.000	0.393	0.393	**60.7%**
1923	34,539	4,207	5,063	9,270	11,968	24%	0.24	0	0.753	0.000	0.181	0.181	**81.9%**
1924	13,864	3,686	6,669	10,355	4,235	64%	0.48	0	0.812	0.000	0.387	0.387	**61.3%**
1925	11,248	4,207	4,848	9,055	3,257	67%	0.50	0	0.742	0.000	0.372	0.372	**62.8%**
1926	12,631	4,207	2,488	6,695	3,774	65%	0.49	0	0.614	0.000	0.299	0.299	**70.1%**
1927	14,304	4,207	6,995	11,202	4,400	63%	0.47	0	0.858	0.000	0.406	0.406	**59.4%**
1928	16,574	4,207	7,071	11,278	5,249	61%	0.46	0	0.862	0.000	0.395	0.395	**60.5%**
1929	13,461	4,207	6,029	10,236	4,084	64%	0.48	0	0.806	0.000	0.386	0.386	**61.4%**
1930	14,442	4,207	6,300	10,507	4,451	63%	0.47	0	0.820	0.000	0.387	0.387	**61.3%**
1931	9,328	2,194	2,976	5,170	2,539	71%	0.53	0	0.532	0.000	0.281	0.281	**71.9%**
1932	14,650	4,207	7,194	11,401	4,529	63%	0.47	0	0.869	0.000	0.409	0.409	**59.1%**
1933	8,189	2,019	2,506	4,525	2,113	74%	0.55	0	0.497	0.000	0.273	0.273	**72.7%**
1934	12,474	4,166	5,542	9,708	3,715	66%	0.49	0	0.777	0.000	0.380	0.380	**62.0%**
1935	8,503	3,215	3,393	6,608	2,230	73%	0.54	0	0.610	0.000	0.331	0.331	**66.9%**
1936	10,625	4,207	3,038	7,245	3,024	68%	0.51	0	0.644	0.000	0.328	0.328	**67.2%**
1937	12,309	4,207	5,378	9,585	3,654	66%	0.49	0	0.770	0.000	0.378	0.378	**62.2%**
1938	42,450	4,207	7,531	11,738	14,926	24%	0.24	0	0.887	0.000	0.209	0.209	**79.1%**
1939	18,684	4,207	3,735	7,942	6,038	60%	0.45	0	0.682	0.000	0.305	0.305	**69.5%**
1940	7,841	1,432	2,676	4,108	1,983	75%	0.56	0	0.475	0.000	0.264	0.264	**73.6%**
1941	34,942	4,207	7,338	11,545	12,118	24%	0.24	0	0.876	0.000	0.210	0.210	**79.0%**
1942	65,619	4,207	3,608	7,815	23,592	23%	0.23	0	0.675	0.000	0.153	0.153	**84.7%**
1943	28,806	4,207	3,779	7,986	9,823	25%	0.25	0	0.684	0.000	0.168	0.168	**83.2%**
1944	13,774	4,207	6,424	10,631	4,201	64%	0.48	0	0.827	0.000	0.395	0.395	**60.5%**
1945	15,826	4,207	6,967	11,174	4,969	62%	0.46	0	0.856	0.000	0.396	0.396	**60.4%**
1946	53,556	4,207	7,592	11,799	19,080	23%	0.23	0	0.890	0.000	0.205	0.205	**79.5%**
1947	18,132	4,207	7,124	11,331	5,831	60%	0.45	0	0.865	0.000	0.389	0.389	**61.1%**
1948	9,844	2,705	3,142	5,847	2,732	70%	0.52	0	0.569	0.000	0.296	0.296	**70.4%**
1949	15,563	4,207	6,898	11,105	4,871	62%	0.46	0	0.853	0.000	0.396	0.396	**60.4%**
1950	11,700	4,207	3,056	7,263	3,426	67%	0.50	0	0.645	0.000	0.320	0.320	**68.0%**
1951	68,100	4,207	7,592	11,799	24,519	23%	0.23	0	0.890	0.000	0.202	0.202	**79.8%**
1952	45,618	4,207	7,106	11,313	16,111	23%	0.23	0	0.864	0.000	0.202	0.202	**79.8%**
1953	42,331	4,207	3,742	7,949	14,882	24%	0.24	0	0.682	0.000	0.161	0.161	**83.9%**
1954	14,919	4,207	3,897	8,104	4,630	63%	0.47	0	0.691	0.000	0.323	0.323	**67.7%**
1955	26,020	4,207	6,909	11,116	8,781	25%	0.25	0	0.853	0.000	0.212	0.212	**78.8%**
1956	26,142	4,207	7,592	11,799	8,827	25%	0.25	0	0.890	0.000	0.221	0.221	**77.9%**
1957	14,143	4,207	5,892	10,099	4,339	64%	0.47	0	0.798	0.000	0.378	0.378	**62.2%**
1958	23,752	4,207	6,926	11,133	7,933	57%	0.43	0	0.854	0.000	0.366	0.366	**63.4%**
1959	14,627	4,207	3,852	8,059	4,520	63%	0.47	0	0.688	0.000	0.324	0.324	**67.6%**
1960	10,422	3,568	2,791	6,359	2,948	69%	0.51	0	0.596	0.000	0.305	0.305	**69.5%**
1961	17,250	4,207	6,891	11,098	5,502	61%	0.45	0	0.852	0.000	0.387	0.387	**61.3%**
1962	16,951	4,207	6,877	11,084	5,390	61%	0.46	0	0.851	0.000	0.388	0.388	**61.2%**
1963	27,555	4,207	6,895	11,102	9,356	25%	0.25	0	0.852	0.000	0.210	0.210	**79.0%**
1964	14,847	4,207	5,833	10,040	4,603	63%	0.47	0	0.795	0.000	0.373	0.373	**62.7%**
1965	29,335	4,207	7,355	11,562	10,021	24%	0.24	0	0.877	0.000	0.215	0.215	**78.5%**
1966	16,997	4,207	6,485	10,692	5,407	61%	0.46	0	0.830	0.000	0.378	0.378	**62.2%**
1967	35,155	4,207	7,125	11,332	12,198	24%	0.24	0	0.865	0.000	0.207	0.207	**79.3%**
1968	16,692	3,365	3,735	7,100	5,293	61%	0.46	0	0.636	0.000	0.291	0.291	**70.9%**
1969	24,093	4,207	6,971	11,178	8,061	57%	0.43	0	0.857	0.000	0.366	0.366	**63.4%**
1970	50,159	4,207	3,481	7,688	17,809	23%	0.23	0	0.668	0.000	0.155	0.155	**84.5%**
1971	53,503	4,207	7,042	11,249	19,060	23%	0.23	0	0.860	0.000	0.198	0.198	**80.2%**
1972	20,347	4,207	6,933	11,140	6,660	59%	0.44	0	0.854	0.000	0.376	0.376	**62.4%**
1973	26,198	4,207	6,904	11,111	8,848	25%	0.25	0	0.853	0.000	0.212	0.212	**78.8%**
1974	61,593	4,207	7,144	11,351	22,086	23%	0.23	0	0.866	0.000	0.198	0.198	**80.2%**
1975	17,619	4,207	4,302	8,509	5,640	61%	0.45	0	0.712	0.000	0.322	0.322	**67.8%**
1976	16,774	4,207	5,394	9,601	5,323	61%	0.46	0	0.771	0.000	0.352	0.352	**64.8%**
1977	8,158	1,736	3,079	4,815	2,101	74%	0.55	0	0.513	0.000	0.282	0.282	**71.8%**
1978	12,285	4,139	5,529	9,668	3,645	66%	0.49	0	0.775	0.000	0.380	0.380	**62.0%**
1979	14,021	4,207	4,075	8,282	4,294	64%	0.48	0	0.700	0.000	0.333	0.333	**66.7%**
1980	20,332	4,207	6,987	11,194	6,654	59%	0.44	0	0.857	0.000	0.377	0.377	**62.3%**
1981	15,611	4,207	4,093	8,300	4,889	62%	0.46	0	0.701	0.000	0.325	0.325	**67.5%**
1982	68,133	4,207	7,011	11,218	24,532	23%	0.23	0	0.859	0.000	0.195	0.195	**80.5%**
1983	55,416	4,207	4,428	8,635	19,776	23%	0.23	0	0.719	0.000	0.165	0.165	**83.5%**
1984	82,951	2,994	3,104	6,098	30,074	22%	0.22	0	0.582	0.000	0.131	0.131	**86.9%**
1985	23,880	4,207	6,887	11,094	7,981	57%	0.43	0	0.852	0.000	0.364	0.364	**63.6%**
1986	15,472	4,207	6,943	11,150	4,837	62%	0.46	0	0.855	0.000	0.397	0.397	**60.3%**
1987	13,788	4,207	6,094	10,301	4,207	64%	0.48	0	0.809	0.000	0.386	0.386	**61.4%**
1988	15,842	4,207	6,875	11,082	4,975	62%	0.46	0	0.851	0.000	0.394	0.394	**60.6%**
1989	8,852	2,840	3,560	6,400	2,361	72%	0.54	0	0.598	0.000	0.321	0.321	**67.9%**
1990	14,632	4,207	6,198	10,405	4,522	63%	0.47	0	0.815	0.000	0.383	0.383	**61.7%**
1991	8,800	1,692	3,183	4,875	2,341	72%	0.54	0	0.516	0.000	0.277	0.277	**72.3%**
1992	7,465	2,964	1,608	4,572	1,842	76%	0.56	0	0.500	0.000	0.282	0.282	**71.8%**

JANUARY

Year	Sac River Flows	CVP Flows	SWP Flows	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	17,504	4,207	7,576	11,783	5,596	61%	0.27	0	0.889	0.000	0.236	0.236	**76.4%**
1923	32,280	4,207	3,637	7,844	11,123	24%	0.24	0	0.676	0.000	0.164	0.164	**83.6%**
1924	14,370	4,207	6,490	10,697	4,424	63%	0.28	0	0.831	0.000	0.229	0.229	**77.1%**
1925	10,209	3,551	3,151	6,702	2,868	69%	0.30	0	0.615	0.000	0.183	0.183	**81.7%**
1926	17,769	4,207	7,087	11,294	5,696	60%	0.26	0	0.863	0.000	0.228	0.228	**77.2%**
1927	29,780	4,207	7,264	11,471	10,188	24%	0.24	0	0.872	0.000	0.213	0.213	**78.7%**
1928	25,207	4,207	3,637	7,844	8,477	25%	0.25	0	0.676	0.000	0.169	0.169	**83.1%**
1929	15,016	4,207	6,799	11,006	4,666	63%	0.27	0	0.847	0.000	0.231	0.231	**76.9%**
1930	20,771	4,207	7,092	11,299	6,818	59%	0.26	0	0.863	0.000	0.222	0.222	**77.8%**
1931	11,965	4,207	4,897	9,104	3,525	66%	0.29	0	0.745	0.000	0.214	0.214	**78.6%**
1932	17,253	4,207	7,827	12,034	5,503	61%	0.27	0	0.903	0.000	0.240	0.240	**76.0%**
1933	12,102	4,207	5,416	9,623	3,576	66%	0.29	0	0.773	0.000	0.221	0.221	**77.9%**
1934	16,103	4,207	7,093	11,300	5,073	62%	0.27	0	0.863	0.000	0.232	0.232	**76.8%**
1935	25,471	4,207	7,666	11,873	8,576	25%	0.25	0	0.894	0.000	0.223	0.223	**77.7%**
1936	31,259	4,207	7,453	11,660	10,741	24%	0.24	0	0.883	0.000	0.214	0.214	**78.6%**
1937	15,467	4,207	7,581	11,788	4,835	62%	0.27	0	0.889	0.000	0.241	0.241	**75.9%**
1938	31,443	4,207	4,495	8,702	10,810	24%	0.24	0	0.723	0.000	0.176	0.176	**82.4%**
1939	18,407	1,576	3,239	4,815	5,934	60%	0.26	0	0.513	0.000	0.135	0.135	**86.5%**
1940	23,448	4,207	8,017	12,224	7,820	57%	0.25	0	0.913	0.000	0.231	0.231	**76.9%**
1941	71,845	4,207	8,141	12,348	25,920	23%	0.23	0	0.920	0.000	0.208	0.208	**79.2%**
1942	63,260	4,207	3,239	7,446	22,709	23%	0.23	0	0.655	0.000	0.149	0.149	**85.1%**
1943	58,056	4,207	3,304	7,511	20,763	23%	0.23	0	0.658	0.000	0.151	0.151	**84.9%**
1944	17,677	4,207	3,262	7,469	5,661	60%	0.26	0	0.656	0.000	0.174	0.174	**82.6%**
1945	13,621	4,207	4,919	9,126	4,144	64%	0.28	0	0.746	0.000	0.208	0.208	**79.2%**
1946	43,229	4,207	3,637	7,844	15,218	23%	0.23	0	0.676	0.000	0.159	0.159	**84.1%**
1947	14,971	4,207	7,187	11,394	4,649	63%	0.27	0	0.868	0.000	0.237	0.237	**76.3%**
1948	14,649	4,207	6,357	10,564	4,529	63%	0.27	0	0.823	0.000	0.226	0.226	**77.4%**
1949	14,928	4,207	6,818	11,025	4,633	63%	0.27	0	0.848	0.000	0.232	0.232	**76.8%**
1950	19,934	4,207	7,176	11,383	6,505	59%	0.26	0	0.868	0.000	0.225	0.225	**77.5%**
1951	62,213	4,207	8,500	12,707	22,318	23%	0.23	0	0.939	0.000	0.214	0.214	**78.6%**
1952	67,352	4,207	8,369	12,576	24,240	23%	0.23	0	0.932	0.000	0.212	0.212	**78.8%**
1953	64,078	1,561	3,333	4,894	23,015	23%	0.23	0	0.517	0.000	0.118	0.118	**88.2%**
1954	33,414	4,207	3,833	8,040	11,547	24%	0.24	0	0.687	0.000	0.166	0.166	**83.4%**
1955	22,257	4,207	7,194	11,401	7,374	58%	0.25	0	0.869	0.000	0.221	0.221	**77.9%**
1956	83,983	4,207	8,064	12,271	30,460	22%	0.22	0	0.916	0.000	0.205	0.205	**79.5%**
1957	18,639	4,207	3,891	8,098	6,021	60%	0.26	0	0.690	0.000	0.181	0.181	**81.9%**
1958	36,214	4,207	3,950	8,157	12,594	24%	0.24	0	0.693	0.000	0.166	0.166	**83.4%**
1959	35,167	1,580	3,333	4,913	12,202	24%	0.24	0	0.518	0.000	0.124	0.124	**87.6%**
1960	14,522	4,207	6,411	10,618	4,481	63%	0.27	0	0.826	0.000	0.227	0.227	**77.3%**
1961	14,008	4,207	6,426	10,633	4,289	64%	0.28	0	0.827	0.000	0.229	0.229	**77.1%**
1962	12,902	4,207	4,165	8,372	3,875	65%	0.28	0	0.705	0.000	0.199	0.199	**80.1%**
1963	17,805	4,207	7,247	11,454	5,709	60%	0.26	0	0.871	0.000	0.230	0.230	**77.0%**
1964	24,193	4,207	3,847	8,054	8,098	57%	0.25	0	0.688	0.000	0.173	0.173	**82.7%**
1965	81,240	4,207	8,500	12,707	29,434	22%	0.22	0	0.939	0.000	0.211	0.211	**78.9%**
1966	29,635	4,207	3,657	7,864	10,133	24%	0.24	0	0.678	0.000	0.166	0.166	**83.4%**
1967	33,973	4,207	7,673	11,880	11,756	24%	0.24	0	0.894	0.000	0.215	0.215	**78.5%**
1968	30,635	1,562	3,333	4,895	10,507	24%	0.24	0	0.517	0.000	0.126	0.126	**87.4%**
1969	67,423	4,207	6,847	11,054	24,266	23%	0.23	0	0.850	0.000	0.193	0.193	**80.7%**
1970	92,665	1,356	3,333	4,689	33,707	22%	0.22	0	0.506	0.000	0.113	0.113	**88.7%**
1971	45,772	4,207	4,933	9,140	16,169	23%	0.23	0	0.746	0.000	0.174	0.174	**82.6%**
1972	20,395	4,207	3,891	8,098	6,678	59%	0.26	0	0.690	0.000	0.178	0.178	**82.2%**
1973	49,326	4,207	7,457	11,664	17,498	23%	0.23	0	0.883	0.000	0.205	0.205	**79.5%**
1974	78,417	4,207	3,637	7,844	28,378	22%	0.22	0	0.676	0.000	0.152	0.152	**84.8%**
1975	18,672	4,207	3,850	8,057	6,033	60%	0.26	0	0.688	0.000	0.180	0.180	**82.0%**
1976	16,769	4,207	3,818	8,025	5,322	61%	0.27	0	0.686	0.000	0.183	0.183	**81.7%**
1977	7,906	2,356	2,440	4,796	2,007	75%	0.32	0	0.512	0.000	0.163	0.163	**83.7%**
1978	43,064	3,290	7,767	11,057	15,156	23%	0.23	0	0.850	0.000	0.200	0.200	**80.0%**
1979	27,242	4,207	3,262	7,469	9,239	25%	0.25	0	0.656	0.000	0.162	0.162	**83.8%**
1980	59,143	4,207	3,159	7,366	21,169	23%	0.23	0	0.651	0.000	0.149	0.149	**85.1%**
1981	27,778	2,381	3,356	5,737	9,439	25%	0.25	0	0.563	0.000	0.139	0.139	**86.1%**
1982	51,172	4,207	8,050	12,257	18,188	23%	0.23	0	0.915	0.000	0.212	0.212	**78.8%**
1983	59,148	2,875	2,648	5,523	21,171	23%	0.23	0	0.551	0.000	0.126	0.126	**87.4%**
1984	47,354	1,331	2,881	4,212	16,760	23%	0.23	0	0.480	0.000	0.112	0.112	**88.8%**
1985	16,549	4,207	3,872	8,079	5,239	61%	0.27	0	0.689	0.000	0.185	0.185	**81.5%**
1986	21,253	4,207	7,326	11,533	6,999	58%	0.26	0	0.876	0.000	0.225	0.225	**77.5%**
1987	16,734	1,774	6,500	8,274	5,309	61%	0.27	0	0.700	0.000	0.187	0.187	**81.3%**
1988	25,530	4,207	7,058	11,265	8,598	25%	0.25	0	0.861	0.000	0.215	0.215	**78.5%**
1989	12,003	4,051	4,649	8,700	3,539	66%	0.29	0	0.723	0.000	0.207	0.207	**79.3%**
1990	21,584	2,440	7,059	9,499	7,122	58%	0.26	0	0.766	0.000	0.196	0.196	**80.4%**
1991	6,851	1,697	1,707	3,404	1,612	78%	0.33	0	0.437	0.000	0.145	0.145	**85.5%**
1992	12,140	3,977	5,011	8,988	3,590	66%	0.29	0	0.738	0.000	0.211	0.211	**78.9%**

Formulas: Sacramento River Spring Smolt Yearling Survival Model

C10 ='Study 467 Flow Data'!B7
D10 ='Study 467 Flow Data'!L7
E10 ='Study 467 Flow Data'!V7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
J10 =IF(-2.45925+(0.0420748*$T$1)>0,-2.45925+(0.0420748*$T$1),0)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =IF(-1.613493+(0.0319584*$T$1)>0,-1.613493+(0.0319584*$T$1),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!C7
R10 ='Study 467 Flow Data'!M7
S10 ='Study 467 Flow Data'!W7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
Z10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!D7
AF10 ='Study 467 Flow Data'!N7
AG10 ='Study 467 Flow Data'!X7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AN10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

Study 501A Sacramento River Spring Run Yearling Survival Model (continued)

February Water Temp 50 F
March Water Temp 55 F

Cross Channel Closed Over 25000 cfs
Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

FEBRUARY

Row	AS Sac River Flow	AT CVP Flow	AU SWP Flow	AV CVP + SWP Exports	AW Calculated Sutter & Steamboat Slough Q	AX Percent	AY X-Channel Closed	AZ m1	BA m2 (Calculated Mortality)	BB m3	BC m23	BD m123	BE **Calculated Survivability s123**
10	34,253	4,250	6,373	10,623	11,861	24%	0.24	0	0.880	0.000	0.212	0.212	**78.8%**
11	22,238	2,172	2,380	4,552	7,367	58%	0.25	0	0.553	0.000	0.141	0.141	**85.9%**
12	17,251	4,218	4,671	8,889	5,502	61%	0.27	0	0.787	0.000	0.209	0.209	**79.1%**
13	44,691	3,188	7,583	10,771	15,764	23%	0.23	0	0.888	0.000	0.208	0.208	**79.2%**
14	34,967	4,228	7,507	11,735	12,128	24%	0.24	0	0.940	0.000	0.226	0.226	**77.4%**
15	86,738	2,960	8,470	11,430	31,490	22%	0.22	0	0.924	0.000	0.207	0.207	**79.3%**
16	27,680	2,137	4,377	6,514	9,402	25%	0.25	0	0.659	0.000	0.163	0.163	**83.7%**
17	17,787	4,022	5,173	9,195	5,702	60%	0.26	0	0.803	0.000	0.212	0.212	**78.8%**
18	15,675	2,782	4,004	6,786	4,912	62%	0.27	0	0.673	0.000	0.182	0.182	**81.8%**
19	11,083	3,335	1,890	5,225	3,195	68%	0.29	0	0.589	0.000	0.172	0.172	**82.8%**
20	14,487	4,242	5,884	10,126	4,468	63%	0.28	0	0.854	0.000	0.235	0.235	**76.5%**
21	11,975	3,836	2,699	6,535	3,529	66%	0.29	0	0.660	0.000	0.189	0.189	**81.1%**
22	12,740	1,230	4,555	5,785	3,815	65%	0.28	0	0.619	0.000	0.175	0.175	**82.5%**
23	11,977	685	3,943	4,628	3,529	66%	0.29	0	0.557	0.000	0.160	0.160	**84.0%**
24	47,463	4,249	8,500	12,749	16,801	23%	0.23	0	0.995	0.000	0.232	0.232	**76.8%**
25	32,025	3,979	5,502	9,481	11,027	24%	0.24	0	0.819	0.000	0.198	0.198	**80.2%**
26	82,366	1,227	3,939	5,166	29,855	22%	0.22	0	0.586	0.000	0.131	0.131	**86.9%**
27	19,024	1,570	3,955	5,525	6,165	60%	0.26	0	0.605	0.000	0.158	0.158	**84.2%**
28	43,629	4,240	8,500	12,740	15,367	23%	0.23	0	0.995	0.000	0.233	0.233	**76.7%**
29	75,037	4,083	6,872	10,955	27,114	23%	0.23	0	0.898	0.000	0.203	0.203	**79.7%**
30	78,349	1,677	3,955	5,632	28,353	23%	0.23	0	0.611	0.000	0.137	0.137	**86.3%**
31	52,259	2,015	4,005	6,020	18,595	23%	0.23	0	0.632	0.000	0.146	0.146	**85.4%**
32	31,089	1,430	3,994	5,424	10,677	24%	0.24	0	0.600	0.000	0.146	0.146	**85.4%**
33	38,099	4,240	4,054	8,294	13,299	24%	0.24	0	0.755	0.000	0.179	0.179	**82.1%**
34	23,843	2,568	3,215	5,783	7,967	57%	0.25	0	0.619	0.000	0.156	0.156	**84.4%**
35	21,069	4,242	3,961	8,203	6,930	58%	0.26	0	0.750	0.000	0.193	0.193	**80.7%**
36	16,018	4,229	1,726	5,955	5,041	62%	0.27	0	0.628	0.000	0.169	0.169	**83.1%**
37	16,274	4,244	4,180	8,424	5,136	62%	0.27	0	0.762	0.000	0.205	0.205	**79.5%**
38	32,496	4,246	7,531	11,777	11,204	24%	0.24	0	0.943	0.000	0.228	0.228	**77.2%**
39	60,566	4,280	7,074	11,354	21,702	23%	0.23	0	0.920	0.000	0.210	0.210	**79.0%**
40	64,731	4,293	3,909	8,202	23,259	23%	0.23	0	0.750	0.000	0.171	0.171	**82.9%**
41	28,344	2,005	4,060	6,065	9,651	25%	0.25	0	0.634	0.000	0.156	0.156	**84.4%**
42	57,158	1,973	4,636	6,609	20,427	23%	0.23	0	0.664	0.000	0.152	0.152	**84.8%**
43	16,298	4,258	3,154	7,412	5,145	62%	0.27	0	0.707	0.000	0.190	0.190	**81.0%**
44	63,748	4,282	4,675	8,957	22,892	23%	0.23	0	0.790	0.000	0.180	0.180	**82.0%**
45	33,144	4,251	4,638	8,889	11,446	24%	0.24	0	0.787	0.000	0.190	0.190	**81.0%**
46	62,990	3,735	4,045	7,780	22,608	23%	0.23	0	0.727	0.000	0.166	0.166	**83.4%**
47	50,082	1,814	4,060	5,874	17,781	23%	0.23	0	0.624	0.000	0.145	0.145	**85.5%**
48	27,024	4,230	7,296	11,526	9,157	25%	0.25	0	0.929	0.000	0.230	0.230	**77.0%**
49	30,874	4,041	7,109	11,150	10,597	24%	0.24	0	0.909	0.000	0.221	0.221	**77.9%**
50	41,753	4,240	8,500	12,740	14,666	24%	0.24	0	0.995	0.000	0.234	0.234	**76.6%**
51	58,178	4,279	8,265	12,544	20,809	23%	0.23	0	0.984	0.000	0.226	0.226	**77.4%**
52	17,842	1,976	4,638	6,614	5,723	60%	0.26	0	0.664	0.000	0.175	0.175	**82.5%**
53	33,326	4,255	7,174	11,429	11,514	24%	0.24	0	0.924	0.000	0.223	0.223	**77.7%**
54	26,777	2,054	4,377	6,431	9,065	25%	0.25	0	0.654	0.000	0.162	0.162	**83.8%**
55	43,080	4,293	3,202	7,495	15,162	23%	0.23	0	0.712	0.000	0.167	0.167	**83.3%**
56	56,470	1,981	4,060	6,041	20,170	23%	0.23	0	0.633	0.000	0.145	0.145	**85.5%**
57	67,482	1,739	3,171	4,910	24,288	23%	0.23	0	0.572	0.000	0.130	0.130	**87.0%**
58	57,565	1,188	4,060	5,248	20,579	23%	0.23	0	0.590	0.000	0.135	0.135	**86.5%**
59	28,525	3,253	3,999	7,252	9,718	25%	0.25	0	0.698	0.000	0.172	0.172	**82.8%**
60	25,083	4,260	4,622	8,882	8,431	25%	0.25	0	0.786	0.000	0.197	0.197	**80.3%**
61	70,967	4,267	4,425	8,692	25,592	23%	0.23	0	0.776	0.000	0.176	0.176	**82.4%**
62	41,926	3,930	4,377	8,307	14,730	24%	0.24	0	0.755	0.000	0.178	0.178	**82.2%**
63	58,811	3,191	4,636	7,827	21,045	23%	0.23	0	0.729	0.000	0.167	0.167	**83.3%**
64	20,229	4,241	4,290	8,531	6,616	59%	0.26	0	0.767	0.000	0.198	0.198	**80.2%**
65	12,358	720	1,425	2,145	3,672	66%	0.28	0	0.423	0.000	0.120	0.120	**88.0%**
66	51,351	1,740	6,951	8,691	18,255	23%	0.23	0	0.776	0.000	0.180	0.180	**82.0%**
67	41,682	1,501	3,958	5,459	14,639	24%	0.24	0	0.602	0.000	0.142	0.142	**85.8%**
68	71,932	911	3,768	4,679	25,953	23%	0.23	0	0.559	0.000	0.126	0.126	**87.4%**
69	29,672	1,769	4,062	5,831	10,147	24%	0.24	0	0.622	0.000	0.152	0.152	**84.8%**
70	65,645	3,641	4,620	8,261	23,601	23%	0.23	0	0.753	0.000	0.171	0.171	**82.9%**
71	82,910	1,395	2,793	4,188	30,058	22%	0.22	0	0.533	0.000	0.120	0.120	**88.0%**
72	37,282	1,483	3,847	5,330	12,993	24%	0.24	0	0.595	0.000	0.142	0.142	**85.8%**
73	18,931	4,095	4,638	8,733	6,130	60%	0.26	0	0.778	0.000	0.204	0.204	**79.6%**
74	95,999	4,243	8,500	12,743	34,954	22%	0.22	0	0.995	0.000	0.222	0.222	**77.8%**
75	23,028	1,296	4,191	5,487	7,662	58%	0.25	0	0.603	0.000	0.153	0.153	**84.7%**
76	16,624	3,843	2,541	6,384	5,267	61%	0.27	0	0.652	0.000	0.174	0.174	**82.6%**
77	13,102	961	1,770	2,731	3,950	65%	0.28	0	0.454	0.000	0.128	0.128	**87.2%**
78	16,946	1,265	6,537	7,802	5,388	61%	0.27	0	0.728	0.000	0.194	0.194	**80.6%**
79	10,301	408	112	520	2,903	69%	0.30	0	0.335	0.000	0.100	0.100	**90.0%**
80	32,538	645	7,457	8,102	11,219	24%	0.24	0	0.744	0.000	0.180	0.180	**82.0%**

MARCH

Row	BG Sac River Flow	BH CVP	BI SWP	BJ CVP + SWP exports	BK Calculated Sutter & Steamboat Slough Q	BL percent	BM X-Channel Closed	BN m1	BO m2 (Calculated Mortality)	BP m3	BQ m23	BR m123	BS **Calculated Survivability s123**	BU **Weighted Total Survival**
10	31,554	2,826	4,142	6,968	10,851	24%	0.24	0	0.773	0.144	0.297	0.297	**70.3%**	**57.3%**
11	15,486	3,262	3,737	6,999	4,842	62%	0.27	0	0.775	0.144	0.315	0.315	**68.5%**	**65.8%**
12	12,013	1,455	1,613	3,068	3,543	66%	0.29	0	0.562	0.144	0.264	0.264	**73.6%**	**59.0%**
13	30,216	3,241	3,175	6,416	10,351	24%	0.24	0	0.743	0.144	0.290	0.290	**71.0%**	**62.1%**
14	15,519	2,747	3,778	6,525	4,854	62%	0.27	0	0.749	0.144	0.308	0.308	**69.2%**	**63.1%**
15	43,865	3,370	4,153	7,523	15,456	23%	0.23	0	0.803	0.144	0.299	0.299	**70.1%**	**56.3%**
16	86,223	3,137	4,424	7,561	31,297	22%	0.22	0	0.805	0.144	0.292	0.292	**70.8%**	**57.4%**
17	13,763	1,983	2,793	4,776	4,197	64%	0.28	0	0.655	0.144	0.286	0.286	**71.4%**	**56.7%**
18	30,090	2,979	4,625	7,604	10,304	24%	0.24	0	0.807	0.144	0.306	0.306	**69.4%**	**61.8%**
19	8,761	1,659	1,676	3,335	2,327	72%	0.31	0	0.577	0.144	0.278	0.278	**72.2%**	**65.2%**
20	10,540	935	2,739	3,674	2,992	69%	0.30	0	0.595	0.144	0.277	0.277	**72.3%**	**62.8%**
21	10,393	293	4,336	4,629	2,937	69%	0.30	0	0.647	0.144	0.293	0.293	**70.7%**	**65.6%**
22	14,236	2,213	1,757	3,970	4,374	63%	0.28	0	0.611	0.144	0.273	0.273	**72.7%**	**64.8%**
23	24,918	4,225	6,982	11,207	8,369	57%	0.25	0	1.002	0.144	0.359	0.359	**64.1%**	**61.2%**
24	33,198	4,225	7,360	11,585	11,466	24%	0.24	0	1.022	0.144	0.356	0.356	**64.4%**	**61.5%**
25	37,120	2,578	4,030	6,608	12,933	24%	0.24	0	0.753	0.144	0.289	0.289	**71.1%**	**59.1%**
26	78,637	2,058	3,966	6,024	28,460	22%	0.22	0	0.722	0.144	0.274	0.274	**72.6%**	**66.0%**
27	16,390	2,727	3,989	6,716	5,180	61%	0.27	0	0.759	0.144	0.309	0.309	**69.1%**	**63.2%**
28	59,413	4,225	4,648	8,873	21,270	23%	0.23	0	0.876	0.144	0.312	0.312	**68.8%**	**66.6%**
29	58,575	3,444	3,846	7,290	20,957	23%	0.23	0	0.790	0.144	0.292	0.292	**70.8%**	**63.7%**
30	27,099	3,432	4,007	7,439	9,185	25%	0.25	0	0.798	0.144	0.306	0.306	**69.4%**	**67.7%**
31	64,601	1,829	4,056	5,885	23,211	23%	0.23	0	0.714	0.144	0.274	0.274	**72.6%**	**67.7%**
32	25,100	2,990	4,007	6,997	8,437	25%	0.25	0	0.774	0.144	0.302	0.302	**69.8%**	**56.5%**
33	26,908	3,194	4,151	7,345	9,114	25%	0.25	0	0.793	0.144	0.305	0.305	**69.5%**	**55.3%**
34	23,778	3,349	4,424	7,773	7,943	57%	0.25	0	0.816	0.144	0.314	0.314	**68.6%**	**65.1%**
35	22,106	2,651	3,917	6,568	7,318	58%	0.25	0	0.751	0.144	0.299	0.299	**70.1%**	**55.2%**
36	19,112	4,225	3,396	7,621	6,198	60%	0.26	0	0.808	0.144	0.318	0.318	**68.2%**	**63.8%**
37	41,714	2,849	6,950	9,799	14,651	24%	0.24	0	0.926	0.144	0.328	0.328	**67.2%**	**55.5%**
38	22,154	3,413	4,385	7,798	7,336	58%	0.25	0	0.818	0.144	0.316	0.316	**68.4%**	**61.4%**
39	29,827	3,294	4,719	8,013	10,205	24%	0.24	0	0.829	0.144	0.312	0.312	**68.8%**	**76.2%**
40	57,518	3,213	3,934	7,147	20,562	23%	0.23	0	0.783	0.144	0.291	0.291	**70.9%**	**64.3%**
41	24,893	3,164	4,111	7,275	8,360	57%	0.25	0	0.789	0.144	0.306	0.306	**69.4%**	**70.4%**
42	49,536	3,189	4,685	7,874	17,576	23%	0.23	0	0.822	0.144	0.301	0.301	**69.9%**	**60.6%**
43	17,945	4,225	2,934	7,159	5,761	60%	0.26	0	0.783	0.144	0.313	0.313	**68.7%**	**64.4%**
44	36,676	2,075	4,699	6,774	12,767	24%	0.24	0	0.762	0.144	0.292	0.292	**70.8%**	**66.9%**
45	44,377	3,200	4,410	7,610	15,647	23%	0.23	0	0.808	0.144	0.300	0.300	**70.0%**	**56.8%**
46	93,616	3,460	4,071	7,531	34,062	22%	0.22	0	0.803	0.144	0.291	0.291	**70.9%**	**58.6%**
47	22,084	3,022	3,108	6,130	7,309	58%	0.25	0	0.728	0.144	0.293	0.293	**70.7%**	**63.3%**
48	21,493	2,623	4,231	6,854	7,088	58%	0.26	0	0.767	0.144	0.304	0.304	**69.6%**	**62.5%**
49	20,744	2,762	5,223	7,985	6,808	59%	0.26	0	0.828	0.144	0.320	0.320	**68.0%**	**56.3%**
50	26,513	3,496	4,356	7,852	8,966	25%	0.25	0	0.821	0.144	0.312	0.312	**68.8%**	**58.7%**
51	32,645	4,225	4,883	9,108	11,259	24%	0.24	0	0.888	0.144	0.324	0.324	**67.6%**	**64.2%**
52	15,800	2,980	3,340	6,320	4,959	62%	0.27	0	0.738	0.144	0.305	0.305	**69.5%**	**69.4%**
53	22,919	4,225	4,340	8,565	7,622	58%	0.25	0	0.859	0.144	0.325	0.325	**67.5%**	**63.3%**
54	28,683	3,265	4,424	7,689	9,777	25%	0.25	0	0.812	0.144	0.308	0.308	**69.2%**	**69.2%**
55	54,488	3,214	3,285	6,499	19,429	23%	0.23	0	0.748	0.144	0.283	0.283	**71.7%**	**63.4%**
56	36,789	3,023	4,111	7,134	12,809	24%	0.24	0	0.782	0.144	0.296	0.296	**70.4%**	**64.9%**
57	45,319	2,055	3,251	5,306	15,999	23%	0.23	0	0.683	0.144	0.270	0.270	**73.0%**	**57.9%**
58	35,819	3,077	4,111	7,188	12,446	24%	0.24	0	0.785	0.144	0.298	0.298	**70.2%**	**71.1%**
59	51,513	3,518	4,699	8,217	18,316	23%	0.23	0	0.840	0.144	0.305	0.305	**69.5%**	**65.9%**
60	32,930	3,034	4,390	7,424	11,366	24%	0.24	0	0.798	0.144	0.302	0.302	**69.8%**	**56.9%**
61	47,552	3,368	4,455	7,823	16,834	23%	0.23	0	0.819	0.144	0.301	0.301	**69.9%**	**64.9%**
62	34,713	3,444	4,424	7,868	12,033	24%	0.24	0	0.822	0.144	0.307	0.307	**69.3%**	**77.5%**
63	75,998	3,454	4,685	8,139	27,473	23%	0.23	0	0.836	0.144	0.300	0.300	**70.0%**	**59.9%**
64	18,356	2,090	4,253	6,343	5,915	60%	0.26	0	0.739	0.144	0.301	0.301	**69.9%**	**58.7%**
65	7,542	850	1,205	2,055	1,871	76%	0.32	0	0.508	0.144	0.262	0.262	**73.8%**	**65.2%**
66	45,479	2,116	3,905	6,021	16,059	23%	0.23	0	0.722	0.144	0.279	0.279	**72.1%**	**62.2%**
67	32,494	3,183	4,007	7,190	11,203	24%	0.24	0	0.785	0.144	0.299	0.299	**70.1%**	**59.0%**
68	36,480	1,826	3,344	5,170	12,694	24%	0.24	0	0.676	0.144	0.271	0.271	**72.9%**	**57.8%**
69	32,501	3,022	4,111	7,133	11,205	24%	0.24	0	0.782	0.144	0.298	0.298	**70.2%**	**60.4%**
70	69,087	2,940	4,644	7,584	24,889	23%	0.23	0	0.806	0.144	0.294	0.294	**70.6%**	**76.5%**
71	81,934	2,042	2,628	4,670	29,693	22%	0.22	0	0.649	0.144	0.257	0.257	**74.3%**	**79.4%**
72	36,503	3,305	4,007	7,312	12,702	24%	0.24	0	0.791	0.144	0.299	0.299	**70.1%**	**83.7%**
73	22,167	3,023	4,685	7,708	7,340	58%	0.25	0	0.813	0.144	0.315	0.315	**68.5%**	**69.6%**
74	72,539	4,225	4,184	8,409	26,180	23%	0.23	0	0.851	0.144	0.304	0.304	**69.6%**	**58.7%**
75	27,918	2,382	4,089	6,471	9,491	25%	0.25	0	0.746	0.144	0.293	0.293	**70.7%**	**59.3%**
76	11,051	2,076	1,717	3,793	3,183	68%	0.29	0	0.601	0.144	0.278	0.278	**72.2%**	**61.3%**
77	42,096	4,225	6,711	10,936	14,794	24%	0.24	0	0.987	0.144	0.343	0.343	**65.7%**	**63.3%**
78	14,838	2,269	3,592	5,861	4,599	63%	0.27	0	0.713	0.144	0.300	0.300	**70.0%**	**59.2%**
79	29,675	4,225	7,078	11,303	10,148	24%	0.24	0	1.007	0.144	0.355	0.355	**64.5%**	**67.1%**
80	20,106	2,019	6,219	8,238	6,570	59%	0.26	0	0.841	0.144	0.325	0.325	**67.5%**	**65.7%**
81														**AVERAGE: 63.41%**

```
AS10 ='Study 467 Flow Data'!E7
AT10 ='Study 467 Flow Data'!O7
AU10 ='Study 467 Flow Data'!Y7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$K$4,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
BA10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
BB10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =AZ10+BC10-(AZ10*BC10)
BE10 =1-BD10

BG10 ='Study 467 Flow Data'!F7
BH10 ='Study 467 Flow Data'!P7
BI10 ='Study 467 Flow Data'!Z7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$K$4,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BO10 =(-0.5916024)+(0.017968*$BC$3)+(0.000054*BJ10)
BP10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)
BQ10 =(BO10*BM10)+(BP10*(1-BM10))
BR10 =BN10+BQ10-(BN10*BQ10)
BS10 =1-BR10
BU10 =(O10*0.37)+(AC10*0.42)+(AQ10*0.13)+(BE10*0.05)+(BS10*0.03)
```

Study 524 Sacramento River Spring Run Yearling Survival Model
Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Year	Water Year Type	Sac River Flow	CVP Flow	SWP Flow	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	A	12,033	4,290	4,316	8,606	3,550	66%	0.29	0	0.825	0.080	0.574	0.574	**42.6%**
1923	B	17,311	4,306	6,672	10,978	5,524	61%	0.27	0	0.954	0.080	0.611	0.611	**38.9%**
1924	C	10,997	3,576	3,755	7,331	3,163	68%	0.29	0	0.757	0.080	0.539	0.539	**46.1%**
1925	D	7,024	1,311	3,207	4,518	1,677	78%	0.33	0	0.605	0.080	0.487	0.487	**51.3%**
1926	D	10,496	4,293	2,290	6,583	2,976	69%	0.30	0	0.716	0.080	0.517	0.517	**48.3%**
1927	W	20,291	4,252	6,672	10,924	6,639	59%	0.26	0	0.951	0.080	0.593	0.593	**40.7%**
1928	A	19,611	4,306	6,672	10,978	6,385	59%	0.26	0	0.954	0.080	0.598	0.598	**40.2%**
1929	C	12,612	4,288	5,201	9,489	3,767	65%	0.28	0	0.873	0.080	0.599	0.599	**40.1%**
1930	D	7,159	2,283	1,766	4,049	1,727	77%	0.33	0	0.579	0.080	0.465	0.465	**53.5%**
1931	C	9,729	2,650	3,210	5,860	2,689	70%	0.30	0	0.677	0.080	0.499	0.499	**50.1%**
1932	D	8,082	1,185	1,683	2,868	2,073	74%	0.32	0	0.516	0.080	0.403	0.403	**59.7%**
1933	C	9,511	3,054	2,609	5,663	2,607	71%	0.30	0	0.667	0.080	0.494	0.494	**50.6%**
1934	C	8,091	1,008	1,594	2,602	2,076	74%	0.32	0	0.501	0.080	0.392	0.392	**60.8%**
1935	B	9,209	2,542	4,294	6,836	2,494	71%	0.31	0	0.730	0.080	0.543	0.543	**45.7%**
1936	B	9,954	3,046	3,278	6,324	2,773	70%	0.30	0	0.702	0.080	0.514	0.514	**48.6%**
1937	B	11,762	4,293	3,166	7,459	3,449	67%	0.29	0	0.763	0.080	0.535	0.535	**46.5%**
1938	W	23,700	4,291	6,672	10,963	7,914	57%	0.25	0	0.953	0.080	0.580	0.580	**42.0%**
1939	D	19,439	4,305	5,282	9,587	6,320	59%	0.26	0	0.878	0.080	0.554	0.554	**44.6%**
1940	A	8,444	2,807	1,753	4,560	2,208	73%	0.31	0	0.607	0.080	0.466	0.466	**53.4%**
1941	W	13,745	4,308	6,045	10,353	4,191	64%	0.28	0	0.920	0.080	0.618	0.618	**38.2%**
1942	W	18,186	4,304	6,165	10,469	5,852	60%	0.26	0	0.926	0.080	0.589	0.589	**41.1%**
1943	W	21,906	4,304	6,516	10,820	7,243	58%	0.26	0	0.945	0.080	0.582	0.582	**41.8%**
1944	D	14,384	4,290	6,572	10,862	4,430	63%	0.28	0	0.947	0.080	0.629	0.629	**37.1%**
1945	B	13,770	4,278	6,600	10,878	4,200	64%	0.28	0	0.948	0.080	0.636	0.636	**36.4%**
1946	B	17,796	4,294	6,672	10,966	5,706	60%	0.26	0	0.953	0.080	0.607	0.607	**39.3%**
1947	D	13,776	4,305	6,605	10,910	4,202	64%	0.28	0	0.950	0.080	0.637	0.637	**36.3%**
1948	B	10,208	2,780	3,629	6,409	2,868	69%	0.30	0	0.707	0.080	0.514	0.514	**48.6%**
1949	D	14,322	4,301	6,005	10,306	4,406	63%	0.28	0	0.917	0.080	0.611	0.611	**38.9%**
1950	B	11,322	4,292	3,287	7,579	3,284	67%	0.29	0	0.770	0.080	0.544	0.544	**45.6%**
1951	A	44,749	4,280	6,672	10,952	15,786	23%	0.23	0	0.952	0.080	0.284	0.284	**71.6%**
1952	W	16,571	4,295	6,672	10,967	5,248	61%	0.27	0	0.953	0.080	0.616	0.616	**38.4%**
1953	W	16,535	4,304	4,089	8,393	5,234	61%	0.27	0	0.814	0.080	0.530	0.530	**47.0%**
1954	A	20,911	4,305	6,672	10,977	6,871	59%	0.26	0	0.953	0.080	0.591	0.591	**40.9%**
1955	D	20,327	4,305	6,672	10,977	6,652	59%	0.26	0	0.953	0.080	0.594	0.594	**40.6%**
1956	W	10,720	2,786	4,241	7,027	3,059	68%	0.29	0	0.740	0.080	0.531	0.531	**46.9%**
1957	A	15,470	4,306	6,672	10,978	4,836	62%	0.27	0	0.954	0.080	0.624	0.624	**37.6%**
1958	W	19,256	4,290	6,672	10,962	6,252	59%	0.26	0	0.953	0.080	0.599	0.599	**40.1%**
1959	B	16,130	4,306	4,185	8,491	5,083	62%	0.27	0	0.819	0.080	0.536	0.536	**46.4%**
1960	D	11,407	4,280	3,080	7,360	3,316	67%	0.29	0	0.758	0.080	0.535	0.535	**46.5%**
1961	D	13,251	4,265	5,580	9,845	4,006	65%	0.28	0	0.892	0.080	0.605	0.605	**39.5%**
1962	B	11,448	4,265	3,433	7,698	3,332	67%	0.29	0	0.776	0.080	0.547	0.547	**45.3%**
1963	W	20,439	4,308	6,672	10,980	6,694	59%	0.26	0	0.954	0.080	0.594	0.594	**40.6%**
1964	D	28,658	4,305	6,672	10,977	9,768	25%	0.25	0	0.953	0.080	0.295	0.295	**70.5%**
1965	W	13,401	3,818	6,345	10,163	4,062	64%	0.28	0	0.910	0.080	0.614	0.614	**38.6%**
1966	B	26,056	4,292	6,672	10,964	8,795	25%	0.25	0	0.953	0.080	0.297	0.297	**70.3%**
1967	W	14,530	4,305	6,672	10,977	4,484	63%	0.27	0	0.953	0.080	0.632	0.632	**36.8%**
1968	B	16,241	4,305	4,054	8,359	5,124	62%	0.27	0	0.812	0.080	0.531	0.531	**46.9%**
1969	W	13,818	4,280	6,021	10,301	4,218	64%	0.28	0	0.917	0.080	0.615	0.615	**38.5%**
1970	W	17,644	4,305	4,089	8,394	5,649	61%	0.26	0	0.814	0.080	0.524	0.524	**47.6%**
1971	W	21,336	4,288	6,672	10,960	7,030	58%	0.26	0	0.953	0.080	0.589	0.589	**41.1%**
1972	B	15,347	4,305	6,672	10,977	4,790	62%	0.27	0	0.953	0.080	0.625	0.625	**37.5%**
1973	A	22,858	4,279	6,672	10,951	7,599	58%	0.25	0	0.952	0.080	0.582	0.582	**41.8%**
1974	W	53,645	4,306	6,672	10,978	19,113	23%	0.23	0	0.954	0.080	0.282	0.282	**71.8%**
1975	W	17,581	4,305	5,409	9,714	5,625	61%	0.26	0	0.885	0.080	0.568	0.568	**43.2%**
1976	C	19,229	4,305	6,672	10,977	6,242	59%	0.26	0	0.953	0.080	0.600	0.600	**40.0%**
1977	C	8,332	2,671	3,342	6,013	2,166	73%	0.31	0	0.685	0.080	0.525	0.525	**47.5%**
1978	A	6,922	2,465	1,698	4,163	1,639	78%	0.33	0	0.586	0.080	0.474	0.474	**52.6%**
1979	B	14,388	4,308	6,576	10,884	4,431	63%	0.28	0	0.948	0.080	0.630	0.630	**37.0%**
1980	A	16,297	4,290	6,672	10,962	5,145	62%	0.27	0	0.953	0.080	0.617	0.617	**38.3%**
1981	D	13,017	4,290	5,573	9,863	3,918	65%	0.28	0	0.893	0.080	0.608	0.608	**39.2%**
1982	W	30,951	4,280	6,672	10,952	10,626	24%	0.24	0	0.952	0.080	0.292	0.292	**70.8%**
1983	W	39,113	4,306	6,672	10,978	13,678	24%	0.24	0	0.954	0.080	0.287	0.287	**71.3%**
1984	W	62,800	1,743	3,623	5,366	22,537	23%	0.23	0	0.650	0.080	0.210	0.210	**79.0%**
1985	D	33,604	4,295	6,672	10,967	11,618	24%	0.24	0	0.953	0.080	0.291	0.291	**70.9%**
1986	W	9,546	2,497	4,174	6,671	2,620	71%	0.30	0	0.721	0.080	0.532	0.532	**46.8%**
1987	D	11,217	4,266	3,498	7,764	3,245	67%	0.29	0	0.780	0.080	0.552	0.552	**44.8%**
1988	C	8,448	2,974	1,871	4,845	2,210	73%	0.31	0	0.622	0.080	0.477	0.477	**52.3%**
1989	D	8,582	2,381	3,368	5,749	2,260	73%	0.31	0	0.671	0.080	0.511	0.511	**48.9%**
1990	C	11,506	4,246	3,313	7,559	3,353	67%	0.29	0	0.769	0.080	0.542	0.542	**45.8%**
1991	C	8,142	2,487	2,365	4,852	2,095	74%	0.32	0	0.623	0.080	0.482	0.482	**51.8%**
1992	C	7,552	3,110	1,481	4,591	1,874	76%	0.32	0	0.609	0.080	0.481	0.481	**51.9%**

DECEMBER

Year	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	17,143	4,207	7,100	11,307	5,461	61%	0.45	0	0.863	0.000	0.393	0.393	**60.7%**
1923	34,539	4,207	4,843	9,050	11,968	24%	0.24	0	0.742	0.000	0.178	0.178	**82.2%**
1924	13,865	3,685	6,670	10,355	4,236	64%	0.48	0	0.812	0.000	0.387	0.387	**61.3%**
1925	11,248	4,207	4,849	9,056	3,257	67%	0.50	0	0.742	0.000	0.372	0.372	**62.8%**
1926	12,614	4,207	2,490	6,697	3,768	65%	0.49	0	0.615	0.000	0.299	0.299	**70.1%**
1927	14,304	4,207	6,995	11,202	4,400	63%	0.47	0	0.858	0.000	0.406	0.406	**59.4%**
1928	16,574	4,207	7,072	11,279	5,249	61%	0.46	0	0.862	0.000	0.395	0.395	**60.5%**
1929	13,461	4,207	6,029	10,236	4,084	64%	0.48	0	0.806	0.000	0.386	0.386	**61.4%**
1930	14,442	4,207	6,300	10,507	4,451	63%	0.47	0	0.820	0.000	0.387	0.387	**61.3%**
1931	9,294	2,204	2,932	5,136	2,526	71%	0.53	0	0.530	0.000	0.280	0.280	**72.0%**
1932	14,650	4,207	7,194	11,401	4,529	63%	0.47	0	0.869	0.000	0.409	0.409	**59.1%**
1933	8,655	2,465	2,526	4,991	2,287	73%	0.54	0	0.522	0.000	0.282	0.282	**71.8%**
1934	12,474	4,166	5,542	9,708	3,715	66%	0.49	0	0.777	0.000	0.380	0.380	**62.0%**
1935	8,503	3,216	3,394	6,610	2,230	73%	0.54	0	0.610	0.000	0.331	0.331	**66.9%**
1936	9,877	3,540	2,965	6,505	2,744	70%	0.52	0	0.604	0.000	0.314	0.314	**68.6%**
1937	12,308	4,207	5,487	9,694	3,653	66%	0.49	0	0.776	0.000	0.381	0.381	**61.9%**
1938	45,569	4,207	7,531	11,738	16,093	23%	0.23	0	0.887	0.000	0.207	0.207	**79.3%**
1939	18,684	4,207	3,735	7,942	6,038	60%	0.45	0	0.682	0.000	0.305	0.305	**69.5%**
1940	7,841	1,432	2,677	4,109	1,983	75%	0.56	0	0.475	0.000	0.264	0.264	**73.6%**
1941	30,776	4,207	7,341	11,548	10,560	24%	0.24	0	0.876	0.000	0.213	0.213	**78.7%**
1942	65,619	4,207	3,608	7,815	23,592	23%	0.23	0	0.675	0.000	0.153	0.153	**84.7%**
1943	28,806	4,207	3,779	7,986	9,823	25%	0.25	0	0.684	0.000	0.168	0.168	**83.2%**
1944	13,774	4,207	6,423	10,630	4,201	64%	0.48	0	0.827	0.000	0.394	0.394	**60.6%**
1945	15,826	4,207	6,967	11,174	4,969	62%	0.46	0	0.856	0.000	0.396	0.396	**60.4%**
1946	54,727	4,207	7,592	11,799	19,518	23%	0.23	0	0.890	0.000	0.205	0.205	**79.5%**
1947	18,132	4,207	7,139	11,346	5,831	60%	0.45	0	0.866	0.000	0.389	0.389	**61.1%**
1948	9,828	2,698	3,133	5,831	2,726	70%	0.52	0	0.568	0.000	0.295	0.295	**70.5%**
1949	15,983	4,207	6,900	11,107	5,028	62%	0.46	0	0.853	0.000	0.393	0.393	**60.7%**
1950	11,008	4,207	3,010	7,217	3,167	68%	0.50	0	0.643	0.000	0.324	0.324	**67.6%**
1951	68,100	4,207	7,592	11,799	24,519	23%	0.23	0	0.890	0.000	0.202	0.202	**79.8%**
1952	45,581	4,207	7,105	11,312	16,097	23%	0.23	0	0.864	0.000	0.202	0.202	**79.8%**
1953	42,331	4,207	3,742	7,949	14,882	24%	0.24	0	0.682	0.000	0.161	0.161	**83.9%**
1954	14,919	4,207	3,897	8,104	4,630	63%	0.47	0	0.691	0.000	0.323	0.323	**67.7%**
1955	26,020	4,207	6,911	11,118	8,781	25%	0.25	0	0.853	0.000	0.212	0.212	**78.8%**
1956	23,548	4,207	7,592	11,799	7,857	57%	0.43	0	0.890	0.000	0.382	0.382	**61.8%**
1957	14,143	4,207	5,806	10,013	4,339	64%	0.47	0	0.794	0.000	0.376	0.376	**62.4%**
1958	23,752	4,207	6,926	11,133	7,933	57%	0.43	0	0.854	0.000	0.366	0.366	**63.4%**
1959	14,627	4,207	3,852	8,059	4,520	63%	0.47	0	0.688	0.000	0.324	0.324	**67.6%**
1960	10,428	3,574	2,791	6,365	2,950	69%	0.51	0	0.597	0.000	0.305	0.305	**69.5%**
1961	17,250	4,207	6,891	11,098	5,502	61%	0.45	0	0.852	0.000	0.387	0.387	**61.3%**
1962	16,951	4,207	6,877	11,084	5,390	61%	0.46	0	0.851	0.000	0.388	0.388	**61.2%**
1963	27,555	4,207	6,896	11,103	9,356	25%	0.25	0	0.852	0.000	0.210	0.210	**79.0%**
1964	14,847	4,207	6,987	11,194	4,603	63%	0.47	0	0.857	0.000	0.402	0.402	**59.8%**
1965	27,931	4,207	7,355	11,562	9,496	25%	0.25	0	0.877	0.000	0.216	0.216	**78.4%**
1966	16,997	4,207	6,366	10,573	5,407	61%	0.46	0	0.824	0.000	0.375	0.375	**62.5%**
1967	35,175	4,207	7,127	11,334	12,205	24%	0.24	0	0.865	0.000	0.207	0.207	**79.3%**
1968	16,692	3,357	3,735	7,092	5,293	61%	0.46	0	0.636	0.000	0.291	0.291	**70.9%**
1969	24,093	4,207	6,971	11,178	8,061	57%	0.43	0	0.857	0.000	0.366	0.366	**63.4%**
1970	50,159	4,207	3,481	7,688	17,809	23%	0.23	0	0.668	0.000	0.155	0.155	**84.5%**
1971	53,442	4,207	7,042	11,249	19,037	23%	0.23	0	0.860	0.000	0.198	0.198	**80.2%**
1972	20,058	4,207	6,207	10,414	6,552	59%	0.44	0	0.815	0.000	0.359	0.359	**64.1%**
1973	26,198	4,207	6,904	11,111	8,848	25%	0.25	0	0.853	0.000	0.212	0.212	**78.8%**
1974	61,593	4,207	7,144	11,351	22,086	23%	0.23	0	0.866	0.000	0.198	0.198	**80.2%**
1975	17,619	4,207	4,248	8,455	5,640	61%	0.45	0	0.709	0.000	0.321	0.321	**67.9%**
1976	16,774	4,207	4,845	9,052	5,323	61%	0.46	0	0.742	0.000	0.339	0.339	**66.1%**
1977	8,137	1,727	3,051	4,778	2,093	74%	0.55	0	0.511	0.000	0.281	0.281	**71.9%**
1978	12,285	4,139	5,530	9,669	3,645	66%	0.49	0	0.775	0.000	0.380	0.380	**62.0%**
1979	14,021	4,207	4,079	8,286	4,294	64%	0.48	0	0.700	0.000	0.333	0.333	**66.7%**
1980	20,832	4,207	6,987	11,194	6,841	59%	0.44	0	0.857	0.000	0.375	0.375	**62.5%**
1981	15,611	4,207	4,108	8,315	4,889	62%	0.46	0	0.702	0.000	0.326	0.326	**67.4%**
1982	68,599	4,207	7,011	11,218	24,706	23%	0.23	0	0.859	0.000	0.195	0.195	**80.5%**
1983	55,416	4,207	4,428	8,635	19,776	23%	0.23	0	0.719	0.000	0.165	0.165	**83.5%**
1984	82,951	2,994	3,104	6,098	30,074	22%	0.22	0	0.582	0.000	0.131	0.131	**86.9%**
1985	23,880	4,207	6,967	11,174	7,981	57%	0.43	0	0.856	0.000	0.366	0.366	**63.4%**
1986	15,722	4,207	6,943	11,150	4,930	62%	0.46	0	0.855	0.000	0.396	0.396	**60.4%**
1987	13,787	4,207	6,093	10,300	4,206	64%	0.48	0	0.809	0.000	0.386	0.386	**61.4%**
1988	15,842	4,207	6,875	11,082	4,975	62%	0.46	0	0.851	0.000	0.394	0.394	**60.6%**
1989	8,849	2,446	3,237	5,683	2,360	72%	0.54	0	0.560	0.000	0.300	0.300	**70.0%**
1990	14,642	4,207	6,205	10,412	4,526	63%	0.47	0	0.815	0.000	0.383	0.383	**61.7%**
1991	8,806	1,737	3,156	4,893	2,343	72%	0.54	0	0.517	0.000	0.278	0.278	**72.2%**
1992	7,465	2,964	1,609	4,573	1,842	76%	0.56	0	0.500	0.000	0.282	0.282	**71.8%**

JANUARY

Year	Sac River Flows	CVP Flows	SWP Flows	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	17,504	4,207	7,576	11,783	5,596	61%	0.27	0	0.889	0.000	0.236	0.236	**76.4%**
1923	32,280	4,207	3,637	7,844	11,123	24%	0.24	0	0.676	0.000	0.164	0.164	**83.6%**
1924	14,620	4,207	6,652	10,859	4,518	63%	0.27	0	0.839	0.000	0.230	0.230	**77.0%**
1925	10,208	3,551	3,151	6,702	2,868	69%	0.30	0	0.615	0.000	0.183	0.183	**81.7%**
1926	18,269	4,207	7,087	11,294	5,883	60%	0.26	0	0.863	0.000	0.227	0.227	**77.3%**
1927	30,262	4,207	7,264	11,471	10,368	24%	0.24	0	0.872	0.000	0.213	0.213	**78.7%**
1928	25,816	4,207	3,637	7,844	8,705	25%	0.25	0	0.676	0.000	0.169	0.169	**83.1%**
1929	15,016	4,207	6,799	11,006	4,666	63%	0.27	0	0.847	0.000	0.231	0.231	**76.9%**
1930	20,771	4,207	7,092	11,299	6,818	59%	0.26	0	0.863	0.000	0.222	0.222	**77.8%**
1931	11,965	4,207	4,897	9,104	3,525	66%	0.29	0	0.745	0.000	0.214	0.214	**78.6%**
1932	17,253	4,207	7,827	12,034	5,503	61%	0.27	0	0.903	0.000	0.240	0.240	**76.0%**
1933	12,602	4,207	5,741	9,948	3,763	65%	0.28	0	0.790	0.000	0.224	0.224	**77.6%**
1934	16,103	4,207	7,093	11,300	5,073	62%	0.27	0	0.863	0.000	0.232	0.232	**76.8%**
1935	25,471	4,207	7,666	11,873	8,576	25%	0.25	0	0.894	0.000	0.223	0.223	**77.7%**
1936	31,440	4,207	7,454	11,661	10,809	24%	0.24	0	0.883	0.000	0.214	0.214	**78.6%**
1937	15,467	4,207	7,581	11,788	4,835	62%	0.27	0	0.889	0.000	0.241	0.241	**75.9%**
1938	31,443	4,207	4,463	8,670	10,810	24%	0.24	0	0.721	0.000	0.175	0.175	**82.5%**
1939	18,407	1,578	3,239	4,817	5,934	60%	0.26	0	0.513	0.000	0.135	0.135	**86.5%**
1940	23,448	4,207	8,017	12,224	7,820	57%	0.25	0	0.913	0.000	0.231	0.231	**76.9%**
1941	71,291	4,207	8,143	12,350	25,713	23%	0.23	0	0.920	0.000	0.208	0.208	**79.2%**
1942	63,260	3,882	3,239	7,121	22,709	23%	0.23	0	0.637	0.000	0.145	0.145	**85.5%**
1943	58,056	4,207	3,303	7,510	20,763	23%	0.23	0	0.658	0.000	0.151	0.151	**84.9%**
1944	17,677	4,207	3,262	7,469	5,661	60%	0.26	0	0.656	0.000	0.174	0.174	**82.6%**
1945	14,047	4,207	4,924	9,131	4,304	64%	0.28	0	0.746	0.000	0.207	0.207	**79.3%**
1946	43,229	4,207	3,637	7,844	15,218	23%	0.23	0	0.676	0.000	0.159	0.159	**84.1%**
1947	14,971	4,207	7,142	11,349	4,649	63%	0.27	0	0.866	0.000	0.237	0.237	**76.3%**
1948	14,649	4,207	6,357	10,564	4,529	63%	0.27	0	0.823	0.000	0.226	0.226	**77.4%**
1949	15,099	4,207	6,934	11,141	4,697	63%	0.27	0	0.855	0.000	0.233	0.233	**76.7%**
1950	20,184	4,207	7,176	11,383	6,599	59%	0.26	0	0.868	0.000	0.224	0.224	**77.6%**
1951	62,213	4,207	8,500	12,707	22,318	23%	0.23	0	0.939	0.000	0.214	0.214	**78.6%**
1952	67,352	4,207	7,103	11,310	24,240	23%	0.23	0	0.864	0.000	0.196	0.196	**80.4%**
1953	64,078	1,555	3,333	4,888	23,015	23%	0.23	0	0.517	0.000	0.118	0.118	**88.2%**
1954	33,414	4,207	3,850	8,057	11,547	24%	0.24	0	0.688	0.000	0.166	0.166	**83.4%**
1955	22,257	4,207	7,195	11,402	7,374	58%	0.25	0	0.869	0.000	0.221	0.221	**77.9%**
1956	83,368	4,207	7,949	12,156	30,230	22%	0.22	0	0.909	0.000	0.204	0.204	**79.6%**
1957	18,639	4,207	3,891	8,098	6,021	60%	0.26	0	0.690	0.000	0.181	0.181	**81.9%**
1958	36,334	4,207	3,418	7,625	12,639	24%	0.24	0	0.665	0.000	0.159	0.159	**84.1%**
1959	35,167	1,575	3,333	4,908	12,202	24%	0.24	0	0.518	0.000	0.124	0.124	**87.6%**
1960	14,522	4,207	6,411	10,618	4,481	63%	0.27	0	0.826	0.000	0.227	0.227	**77.3%**
1961	14,008	4,207	6,426	10,633	4,289	64%	0.28	0	0.827	0.000	0.229	0.229	**77.1%**
1962	15,469	4,207	4,164	8,371	4,835	62%	0.27	0	0.705	0.000	0.191	0.191	**80.9%**
1963	17,805	4,207	7,248	11,455	5,709	60%	0.26	0	0.871	0.000	0.230	0.230	**77.0%**
1964	25,567	4,207	3,872	8,079	8,612	25%	0.25	0	0.689	0.000	0.172	0.172	**82.8%**
1965	81,240	4,207	8,500	12,707	29,434	22%	0.22	0	0.939	0.000	0.211	0.211	**78.9%**
1966	29,635	4,207	3,657	7,864	10,133	24%	0.24	0	0.678	0.000	0.166	0.166	**83.4%**
1967	33,964	4,207	7,674	11,881	11,753	24%	0.24	0	0.894	0.000	0.215	0.215	**78.5%**
1968	30,635	1,559	3,333	4,892	10,507	24%	0.24	0	0.517	0.000	0.126	0.126	**87.4%**
1969	67,764	4,207	6,307	10,514	24,394	23%	0.23	0	0.821	0.000	0.186	0.186	**81.4%**
1970	92,665	1,357	3,333	4,690	33,707	22%	0.22	0	0.506	0.000	0.113	0.113	**88.7%**
1971	46,893	4,207	5,713	9,920	16,588	23%	0.23	0	0.789	0.000	0.184	0.184	**81.6%**
1972	20,395	4,207	3,891	8,098	6,678	59%	0.26	0	0.690	0.000	0.178	0.178	**82.2%**
1973	49,109	4,207	6,793	11,000	17,417	23%	0.23	0	0.847	0.000	0.197	0.197	**80.3%**
1974	78,417	4,207	3,691	7,898	28,378	22%	0.22	0	0.679	0.000	0.153	0.153	**84.7%**
1975	18,672	4,207	3,848	8,055	6,033	60%	0.26	0	0.688	0.000	0.180	0.180	**82.0%**
1976	16,769	4,207	3,832	8,039	5,322	61%	0.27	0	0.687	0.000	0.184	0.184	**81.6%**
1977	7,906	2,356	2,440	4,796	2,007	75%	0.32	0	0.512	0.000	0.163	0.163	**83.7%**
1978	43,063	3,421	7,767	11,188	15,156	23%	0.23	0	0.857	0.000	0.201	0.201	**79.9%**
1979	27,242	4,207	3,262	7,469	9,239	25%	0.25	0	0.656	0.000	0.162	0.162	**83.8%**
1980	60,630	4,207	3,159	7,366	21,726	23%	0.23	0	0.651	0.000	0.149	0.149	**85.1%**
1981	28,602	1,755	3,356	5,111	9,747	25%	0.25	0	0.529	0.000	0.130	0.130	**87.0%**
1982	51,172	4,207	7,647	11,854	18,188	23%	0.23	0	0.893	0.000	0.207	0.207	**79.3%**
1983	59,148	2,883	2,648	5,531	21,171	23%	0.23	0	0.552	0.000	0.126	0.126	**87.4%**
1984	47,354	1,331	2,881	4,212	16,760	23%	0.23	0	0.480	0.000	0.112	0.112	**88.8%**
1985	16,549	4,207	3,872	8,079	5,239	61%	0.27	0	0.689	0.000	0.185	0.185	**81.5%**
1986	21,503	4,207	7,331	11,538	7,092	58%	0.26	0	0.876	0.000	0.224	0.224	**77.6%**
1987	16,734	1,860	6,443	8,303	5,309	61%	0.27	0	0.701	0.000	0.187	0.187	**81.3%**
1988	25,530	4,207	7,058	11,265	8,598	25%	0.25	0	0.861	0.000	0.215	0.215	**78.5%**
1989	11,998	4,198	4,527	8,725	3,537	66%	0.29	0	0.724	0.000	0.208	0.208	**79.2%**
1990	21,334	2,487	7,059	9,546	7,029	58%	0.26	0	0.768	0.000	0.197	0.197	**80.3%**
1991	6,851	1,697	1,708	3,405	1,612	78%	0.33	0	0.437	0.000	0.145	0.145	**85.5%**
1992	12,140	4,027	4,960	8,987	3,590	66%	0.29	0	0.738	0.000	0.211	0.211	**78.9%**

Formulas: Sacramento River Spring Smolt Yearling Survival Model

C10 ='Study 467 Flow Data'!B7
D10 ='Study 467 Flow Data'!L7
E10 ='Study 467 Flow Data'!V7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
J10 =IF(-2.45925+(0.0420748*$T$1)>0,-2.45925+(0.0420748*$T$1),0)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =IF(-1.613493+(0.0319584*$T$1)>0,-1.613493+(0.0319584*$T$1),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!C7
R10 ='Study 467 Flow Data'!M7
S10 ='Study 467 Flow Data'!W7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
Z10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!D7
AF10 ='Study 467 Flow Data'!N7
AG10 ='Study 467 Flow Data'!X7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AN10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

Study 524 Sacramento River Spring Run Yearling Survival Model (continued)

February Water Temp 50 F

Cross Channel Closed Over 25000 cfs — March Water Temp 55 F

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU
6	**FEBRUARY**				Calculated										**MARCH**				Calculated										
7	Sac				Sutter &								**Calculated**		Sac				Sutter &								**Calculated**		**Weighted**
8	River	CVP	SWP	CVP + SWP	Steamboat		X-Channel		Calculated Mortality				**Survivability**		River			CVP + SWP	Steamboat		X-Channel		Calculated Mortality				**Survivability**		**Total**
9	Flow	Flow	Flow	Exports	Slough Q	Percent	Closed	m1	m2	m3	m23	m123	**s123**		Flow	CVP	SWP	exports	Slough Q	percent	Closed	m1	m2	m3	m23	m123	**s123**		**Survival**
10	34,253	4,251	6,354	10,605	11,861	24%	0.24	0	0.879	0.000	0.211	0.211	**78.9%**		31,554	2,835	4,143	6,978	10,851	24%	0.24	0	0.773	0.144	0.297	0.297	**70.3%**		**57.3%**
11	22,223	2,164	2,380	4,544	7,361	58%	0.25	0	0.552	0.000	0.141	0.141	**85.9%**		15,486	3,224	3,775	6,999	4,842	62%	0.27	0	0.775	0.144	0.315	0.315	**68.5%**		**66.1%**
12	17,751	4,220	4,787	9,007	5,689	60%	0.26	0	0.793	0.000	0.210	0.210	**79.0%**		12,227	1,470	1,815	3,285	3,623	66%	0.29	0	0.574	0.144	0.267	0.267	**73.3%**		**59.0%**
13	44,692	3,325	7,583	10,908	15,765	23%	0.23	0	0.896	0.000	0.210	0.210	**79.0%**		31,741	3,246	4,697	7,943	10,921	24%	0.24	0	0.826	0.144	0.310	0.310	**69.0%**		**62.0%**
14	35,217	4,229	7,507	11,736	12,221	24%	0.24	0	0.941	0.000	0.225	0.225	**77.5%**		15,519	2,805	3,720	6,525	4,854	62%	0.27	0	0.749	0.144	0.308	0.308	**69.2%**		**63.3%**
15	86,484	3,054	6,778	9,832	31,395	22%	0.22	0	0.838	0.000	0.188	0.188	**81.2%**		43,865	3,462	4,150	7,612	15,456	23%	0.23	0	0.808	0.144	0.300	0.300	**70.0%**		**56.4%**
16	28,340	2,624	4,377	7,001	9,649	25%	0.25	0	0.685	0.000	0.168	0.168	**83.2%**		86,223	3,139	4,424	7,563	31,297	22%	0.22	0	0.805	0.144	0.292	0.292	**70.8%**		**57.4%**
17	17,787	3,802	4,472	8,274	5,702	60%	0.26	0	0.754	0.000	0.199	0.199	**80.1%**		13,763	2,030	2,760	4,790	4,197	64%	0.28	0	0.655	0.144	0.286	0.286	**71.4%**		**56.8%**
18	15,675	2,780	4,007	6,787	4,912	62%	0.27	0	0.673	0.000	0.182	0.182	**81.8%**		30,090	3,134	4,024	7,158	10,304	24%	0.24	0	0.783	0.144	0.300	0.300	**70.0%**		**61.8%**
19	11,083	3,334	1,890	5,224	3,195	68%	0.29	0	0.589	0.000	0.172	0.172	**82.8%**		8,961	1,874	1,662	3,536	2,401	72%	0.31	0	0.588	0.144	0.281	0.281	**71.9%**		**65.3%**
20	14,487	4,243	5,888	10,131	4,468	63%	0.28	0	0.854	0.000	0.235	0.235	**76.5%**		10,565	935	2,763	3,698	3,001	69%	0.30	0	0.596	0.144	0.278	0.278	**72.2%**		**62.8%**
21	13,117	4,217	2,831	7,048	3,956	65%	0.28	0	0.687	0.000	0.193	0.193	**80.7%**		9,943	317	4,155	4,472	2,769	70%	0.30	0	0.638	0.144	0.292	0.292	**70.8%**		**65.1%**
22	12,740	1,231	4,555	5,786	3,815	65%	0.28	0	0.619	0.000	0.175	0.175	**82.5%**		14,260	2,249	1,746	3,995	4,383	63%	0.28	0	0.612	0.144	0.273	0.273	**72.7%**		**64.8%**
23	11,977	685	3,943	4,628	3,529	66%	0.29	0	0.557	0.000	0.160	0.160	**84.0%**		24,918	4,225	6,982	11,207	8,369	57%	0.25	0	1.002	0.144	0.359	0.359	**64.1%**		**61.2%**
24	47,088	4,247	8,500	12,747	16,661	23%	0.23	0	0.995	0.000	0.232	0.232	**76.8%**		32,948	4,225	6,914	11,139	11,373	24%	0.24	0	0.998	0.144	0.350	0.350	**65.0%**		**62.8%**
25	32,025	3,757	5,701	9,458	11,027	24%	0.24	0	0.818	0.000	0.198	0.198	**80.2%**		36,459	2,566	4,014	6,580	12,686	24%	0.24	0	0.752	0.144	0.289	0.289	**71.1%**		**59.2%**
26	82,366	1,217	3,939	5,156	29,855	22%	0.22	0	0.585	0.000	0.131	0.131	**86.9%**		78,637	2,058	3,966	6,024	28,460	22%	0.22	0	0.722	0.144	0.274	0.274	**72.6%**		**66.1%**
27	19,024	1,577	3,955	5,532	6,165	60%	0.26	0	0.606	0.000	0.158	0.158	**84.2%**		16,390	2,736	3,964	6,700	5,180	61%	0.27	0	0.758	0.144	0.309	0.309	**69.1%**		**63.2%**
28	43,392	4,241	8,500	12,741	15,279	23%	0.23	0	0.995	0.000	0.234	0.234	**76.6%**		59,383	4,225	4,650	8,875	21,259	23%	0.23	0	0.876	0.144	0.312	0.312	**68.8%**		**66.6%**
29	75,037	4,293	7,015	11,308	27,114	23%	0.23	0	0.917	0.000	0.207	0.207	**79.3%**		58,573	4,225	3,846	8,071	20,956	23%	0.23	0	0.832	0.144	0.302	0.302	**69.8%**		**63.5%**
30	78,349	1,664	3,955	5,619	28,353	23%	0.23	0	0.610	0.000	0.137	0.137	**86.3%**		27,099	3,433	4,007	7,440	9,185	25%	0.25	0	0.798	0.144	0.306	0.306	**69.4%**		**68.3%**
31	52,259	2,002	4,005	6,007	18,595	23%	0.23	0	0.631	0.000	0.146	0.146	**85.4%**		64,601	1,823	4,056	5,879	23,211	23%	0.23	0	0.714	0.144	0.274	0.274	**72.6%**		**67.9%**
32	31,860	1,440	3,958	5,398	10,966	24%	0.24	0	0.598	0.000	0.145	0.145	**85.5%**		25,100	2,994	4,007	7,001	8,437	25%	0.25	0	0.775	0.144	0.302	0.302	**69.8%**		**56.3%**
33	39,099	4,242	4,043	8,285	13,673	24%	0.24	0	0.754	0.000	0.179	0.179	**82.1%**		27,033	3,198	4,151	7,349	9,160	25%	0.25	0	0.793	0.144	0.305	0.305	**69.5%**		**55.4%**
34	23,843	2,538	4,312	6,850	7,967	57%	0.25	0	0.677	0.000	0.171	0.171	**82.9%**		23,778	3,441	4,424	7,865	7,943	57%	0.25	0	0.821	0.144	0.315	0.315	**68.5%**		**65.1%**
35	21,069	4,244	3,974	8,218	6,930	58%	0.26	0	0.751	0.000	0.193	0.193	**80.7%**		22,106	2,660	3,921	6,581	7,318	58%	0.25	0	0.752	0.144	0.299	0.299	**70.1%**		**55.2%**
36	16,014	4,230	1,722	5,952	5,039	62%	0.27	0	0.628	0.000	0.169	0.169	**83.1%**		19,112	4,225	3,396	7,621	6,198	60%	0.26	0	0.808	0.144	0.318	0.318	**68.2%**		**63.8%**
37	16,240	4,242	4,164	8,406	5,124	62%	0.27	0	0.761	0.000	0.205	0.205	**79.5%**		42,033	4,225	7,115	11,340	14,770	24%	0.24	0	1.009	0.144	0.348	0.348	**65.2%**		**55.8%**
38	32,779	4,247	7,532	11,779	11,309	24%	0.24	0	0.943	0.000	0.228	0.228	**77.2%**		22,154	3,088	5,912	9,000	7,336	58%	0.25	0	0.883	0.144	0.332	0.332	**66.8%**		**61.2%**
39	60,566	4,280	7,442	11,722	21,702	23%	0.23	0	0.940	0.000	0.215	0.215	**78.5%**		29,827	3,240	4,719	7,959	10,205	24%	0.24	0	0.826	0.144	0.311	0.311	**68.9%**		**76.2%**
40	64,731	4,293	3,909	8,202	23,259	23%	0.23	0	0.750	0.000	0.171	0.171	**82.9%**		57,518	3,218	3,934	7,152	20,562	23%	0.23	0	0.783	0.144	0.291	0.291	**70.9%**		**64.5%**
41	28,344	2,000	4,060	6,060	9,651	25%	0.25	0	0.634	0.000	0.156	0.156	**84.4%**		24,893	3,161	4,111	7,272	8,360	57%	0.25	0	0.789	0.144	0.306	0.306	**69.4%**		**70.4%**
42	57,158	1,984	4,636	6,620	20,427	23%	0.23	0	0.664	0.000	0.152	0.152	**84.8%**		49,536	3,181	4,685	7,866	17,576	23%	0.23	0	0.821	0.144	0.301	0.301	**69.9%**		**60.7%**
43	16,940	4,258	3,797	8,055	5,386	61%	0.27	0	0.742	0.000	0.198	0.198	**80.2%**		17,946	4,225	2,934	7,159	5,762	60%	0.26	0	0.783	0.144	0.313	0.313	**68.7%**		**64.3%**
44	63,748	3,248	4,675	7,923	22,892	23%	0.23	0	0.735	0.000	0.167	0.167	**83.3%**		36,676	2,069	4,699	6,768	12,767	24%	0.24	0	0.762	0.144	0.292	0.292	**70.8%**		**60.0%**
45	33,144	2,210	4,638	6,848	11,446	24%	0.24	0	0.677	0.000	0.163	0.163	**83.7%**		44,377	3,178	4,406	7,584	15,647	23%	0.23	0	0.806	0.144	0.299	0.299	**70.1%**		**57.0%**
46	63,062	3,143	4,045	7,188	22,635	23%	0.23	0	0.695	0.000	0.158	0.158	**84.2%**		93,616	3,458	4,072	7,530	34,062	22%	0.22	0	0.803	0.144	0.291	0.291	**70.9%**		**58.8%**
47	50,082	1,817	4,060	5,877	17,781	23%	0.23	0	0.624	0.000	0.145	0.145	**85.5%**		22,081	3,022	3,110	6,132	7,308	58%	0.25	0	0.728	0.144	0.293	0.293	**70.7%**		**63.3%**
48	27,024	4,230	7,296	11,526	9,157	25%	0.25	0	0.929	0.000	0.230	0.230	**77.0%**		21,812	2,681	4,017	6,698	7,208	58%	0.26	0	0.758	0.144	0.301	0.301	**69.9%**		**62.4%**
49	31,432	4,060	7,109	11,169	10,806	24%	0.24	0	0.910	0.000	0.221	0.221	**77.9%**		20,744	2,761	5,225	7,986	6,808	59%	0.26	0	0.828	0.144	0.320	0.320	**68.0%**		**56.3%**
50	39,381	1,631	8,409	10,040	13,778	24%	0.24	0	0.849	0.000	0.201	0.201	**79.9%**		26,513	3,397	4,333	7,730	8,966	25%	0.25	0	0.814	0.144	0.310	0.310	**69.0%**		**59.0%**
51	58,676	4,277	8,273	12,550	20,995	23%	0.23	0	0.984	0.000	0.226	0.226	**77.4%**		32,645	4,225	4,996	9,221	11,259	24%	0.24	0	0.895	0.144	0.326	0.326	**67.4%**		**64.1%**
52	19,696	4,274	3,632	7,906	6,416	59%	0.26	0	0.734	0.000	0.191	0.191	**80.9%**		17,205	3,557	3,254	6,811	5,485	61%	0.27	0	0.764	0.144	0.309	0.309	**69.1%**		**68.1%**
53	33,076	4,257	5,807	10,064	11,420	24%	0.24	0	0.850	0.000	0.205	0.205	**79.5%**		21,133	3,307	4,312	7,619	6,954	58%	0.26	0	0.808	0.144	0.315	0.315	**68.5%**		**63.5%**
54	26,777	2,040	4,377	6,417	9,065	25%	0.25	0	0.653	0.000	0.162	0.162	**83.8%**		28,683	3,440	4,424	7,864	9,777	25%	0.25	0	0.821	0.144	0.311	0.311	**68.9%**		**69.3%**
55	42,148	4,290	3,202	7,492	14,813	24%	0.24	0	0.711	0.000	0.167	0.167	**83.3%**		54,488	3,213	3,285	6,498	19,429	23%	0.23	0	0.748	0.144	0.283	0.283	**71.7%**		**63.4%**
56	56,470	1,978	4,060	6,038	20,170	23%	0.23	0	0.633	0.000	0.145	0.145	**85.5%**		36,789	3,023	4,111	7,134	12,809	24%	0.24	0	0.782	0.144	0.296	0.296	**70.4%**		**64.9%**
57	67,482	1,409	3,171	4,580	24,288	23%	0.23	0	0.554	0.000	0.126	0.126	**87.4%**		45,319	2,055	3,251	5,306	15,999	23%	0.23	0	0.683	0.144	0.270	0.270	**73.0%**		**58.0%**
58	57,565	1,190	4,060	5,250	20,579	23%	0.23	0	0.590	0.000	0.135	0.135	**86.5%**		35,819	3,080	4,111	7,191	12,446	24%	0.24	0	0.785	0.144	0.298	0.298	**70.2%**		**71.1%**
59	28,338	3,168	4,081	7,249	9,648	25%	0.25	0	0.698	0.000	0.172	0.172	**82.8%**		51,682	3,436	4,699	8,135	18,379	23%	0.23	0	0.836	0.144	0.304	0.304	**69.6%**		**65.7%**
60	25,083	4,259	4,638	8,897	8,431	25%	0.25	0	0.787	0.000	0.197	0.197	**80.3%**		32,930	3,254	4,381	7,635	11,366	24%	0.24	0	0.809	0.144	0.305	0.305	**69.5%**		**57.6%**
61	70,967	4,269	4,425	8,694	25,592	23%	0.23	0	0.776	0.000	0.176	0.176	**82.4%**		47,552	3,476	4,454	7,930	16,834	23%	0.23	0	0.825	0.144	0.303	0.303	**69.7%**		**65.2%**
62	41,926	3,560	4,413	7,973	14,730	24%	0.24	0	0.737	0.000	0.174	0.174	**82.6%**		34,763	3,439	4,439	7,878	12,051	24%	0.24	0	0.822	0.144	0.307	0.307	**69.3%**		**77.5%**
63	58,811	1,652	4,636	6,288	21,045	23%	0.23	0	0.646	0.000	0.148	0.148	**85.2%**		75,998	3,452	4,685	8,137	27,473	23%	0.23	0	0.836	0.144	0.300	0.300	**70.0%**		**61.5%**
64	20,229	2,052	4,268	6,320	6,616	59%	0.26	0	0.648	0.000	0.168	0.168	**83.2%**		18,356	2,116	4,219	6,335	5,915	60%	0.26	0	0.739	0.144	0.300	0.300	**70.0%**		**59.5%**
65	12,318	705	1,435	2,140	3,657	66%	0.28	0	0.422	0.000	0.120	0.120	**88.0%**		7,579	856	1,235	2,091	1,885	76%	0.32	0	0.510	0.144	0.262	0.262	**73.8%**		**65.3%**
66	51,052	1,733	7,129	8,862	18,143	23%	0.23	0	0.785	0.000	0.182	0.182	**81.8%**		45,946	2,106	3,905	6,011	16,234	23%	0.23	0	0.721	0.144	0.279	0.279	**72.1%**		**62.1%**
67	41,682	1,506	3,958	5,464	14,639	24%	0.24	0	0.602	0.000	0.142	0.142	**85.8%**		32,494	3,177	4,007	7,184	11,203	24%	0.24	0	0.785	0.144	0.299	0.299	**70.1%**		**59.0%**
68	71,932	917	3,768	4,685	25,953	23%	0.23	0	0.560	0.000	0.127	0.127	**87.3%**		36,480	1,822	3,344	5,166	12,694	24%	0.24	0	0.676	0.144	0.271	0.271	**72.9%**		**58.0%**
69	29,672	1,773	4,062	5,835	10,147	24%	0.24	0	0.622	0.000	0.152	0.152	**84.8%**		32,501	3,022	4,111	7,133	11,205	24%	0.24	0	0.782	0.144	0.298	0.298	**70.2%**		**60.5%**
70	65,645	3,190	4,620	7,810	23,601	23%	0.23	0	0.729	0.000	0.166	0.166	**83.4%**		69,087	2,935	4,644	7,579	24,889	23%	0.23	0	0.806	0.144	0.294	0.294	**70.6%**		**76.6%**
71	82,910	1,395	2,793	4,188	30,058	22%	0.22	0	0.533	0.000	0.120	0.120	**88.0%**		81,934	2,042	2,628	4,670	29,693	22%	0.22	0	0.649	0.144	0.257	0.257	**74.3%**		**79.4%**
72	37,282	1,486	3,847	5,333	12,993	24%	0.24	0	0.595	0.000	0.142	0.142	**85.8%**		36,503	3,253	4,007	7,260	12,702	24%	0.24	0	0.789	0.144	0.298	0.298	**70.2%**		**83.7%**
73	20,092	2,095	4,638	6,733	6,564	59%	0.26	0	0.670	0.000	0.174	0.174	**82.6%**		22,303	3,023	4,685	7,708	7,391	58%	0.25	0	0.813	0.144	0.314	0.314	**68.6%**		**69.7%**
74	95,699	4,244	7,969	12,213	34,841	22%	0.22	0	0.966	0.000	0.215	0.215	**78.5%**		72,539	4,225	4,180	8,405	26,180	23%	0.23	0	0.851	0.144	0.304	0.304	**69.6%**		**58.8%**
75	23,028	1,308	4,212	5,520	7,662	58%	0.25	0	0.605	0.000	0.153	0.153	**84.7%**		29,533	2,391	4,114	6,505	10,095	24%	0.24	0	0.748	0.144	0.292	0.292	**70.8%**		**59.3%**
76	18,113	4,245	2,661	6,906	5,824	60%	0.26	0	0.680	0.000	0.179	0.179	**82.1%**		11,017	2,067	1,719	3,786	3,170	68%	0.29	0	0.601	0.144	0.278	0.278	**72.2%**		**61.3%**
77	11,772	943	1,809	2,752	3,453	67%	0.29	0	0.455	0.000	0.131	0.131	**86.9%**		42,433	4,225	6,871	11,096	14,920	24%	0.24	0	0.996	0.144	0.345	0.345	**65.5%**		**64.1%**
78	16,696	1,294	6,409	7,703	5,294	61%	0.27	0	0.723	0.000	0.193	0.193	**80.7%**		14,588	2,319	3,455	5,774	4,506	63%	0.27	0	0.708	0.144	0.299	0.299	**70.1%**		**59.4%**
79	10,324	410	110	520	2,911	69%	0.30	0	0.335	0.000	0.099	0.099	**90.1%**		29,675	4,225	7,078	11,303	10,148	24%	0.24	0	1.007	0.144	0.355	0.355	**64.5%**		**67.1%**
80	32,538	655	7,457	8,112	11,219	24%	0.24	0	0.745	0.000	0.180	0.180	**82.0%**		20,106	2,049	6,190	8,239	6,570	59%	0.26	0	0.842	0.144	0.325	0.325	**67.5%**		**65.8%**
81																												**AVERAGE:**	**63.41%**

```
AS10 ='Study 467 Flow Data'!E7
AT10 ='Study 467 Flow Data'!O7
AU10 ='Study 467 Flow Data'!Y7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$K$4,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
BA10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
BB10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =AZ10+BC10-(AZ10*BC10)
BE10 =1-BD10
```

```
BG10 ='Study 467 Flow Data'!F7
BH10 ='Study 467 Flow Data'!P7
BI10 ='Study 467 Flow Data'!Z7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$K$4,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BO10 =(-0.5916024)+(0.017968*$BC$3)+(0.000054*BJ10)
BP10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)
BQ10 =(BO10*BM10)+(BP10*(1-BM10))
BR10 =BN10+BQ10-(BN10*BQ10)
BS10 =1-BR10
BU10 =(O10*0.37)+(AC10*0.42)+(AQ10*0.13)+(BE10*0.05)+(BS10*0.03)
```

Study 525 Sacramento River Spring Run Yearling Survival Model
Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Year	Water Year Type	Sac River Flow	CVP Flow	SWP Flow	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	A	12,033	4,290	4,389	8,679	3,550	66%	0.29	0	0.829	0.080	0.576	0.576	**42.4%**
1923	B	15,692	4,307	6,672	10,979	4,919	62%	0.27	0	0.954	0.080	0.622	0.622	**37.8%**
1924	C	10,997	3,591	3,767	7,358	3,163	68%	0.29	0	0.758	0.080	0.540	0.540	**46.0%**
1925	D	7,024	1,337	3,232	4,569	1,677	78%	0.33	0	0.607	0.080	0.489	0.489	**51.1%**
1926	D	10,684	4,294	2,408	6,702	3,046	68%	0.29	0	0.723	0.080	0.519	0.519	**48.1%**
1927	W	20,291	4,246	6,672	10,918	6,639	59%	0.26	0	0.950	0.080	0.592	0.592	**40.8%**
1928	A	19,571	4,306	6,672	10,978	6,370	59%	0.26	0	0.954	0.080	0.598	0.598	**40.2%**
1929	C	12,362	4,287	4,982	9,269	3,673	66%	0.28	0	0.861	0.080	0.594	0.594	**40.6%**
1930	D	7,159	2,295	1,774	4,069	1,727	77%	0.33	0	0.580	0.080	0.466	0.466	**53.4%**
1931	C	9,824	2,663	3,315	5,978	2,724	70%	0.30	0	0.684	0.080	0.502	0.502	**49.8%**
1932	D	7,699	1,655	1,685	3,340	1,929	75%	0.32	0	0.541	0.080	0.427	0.427	**57.3%**
1933	C	9,488	3,074	2,613	5,687	2,599	71%	0.30	0	0.668	0.080	0.496	0.496	**50.4%**
1934	C	8,042	1,482	1,666	3,148	2,058	74%	0.32	0	0.531	0.080	0.415	0.415	**58.5%**
1935	B	9,209	2,584	4,330	6,914	2,494	71%	0.31	0	0.734	0.080	0.546	0.546	**45.4%**
1936	B	12,085	4,300	3,485	7,785	3,570	66%	0.29	0	0.781	0.080	0.544	0.544	**45.6%**
1937	B	12,451	4,306	3,241	7,547	3,707	66%	0.28	0	0.768	0.080	0.532	0.532	**46.8%**
1938	W	23,700	4,290	6,672	10,962	7,914	57%	0.25	0	0.953	0.080	0.580	0.580	**42.0%**
1939	D	19,439	4,305	6,008	10,313	6,320	59%	0.26	0	0.918	0.080	0.577	0.577	**42.3%**
1940	A	8,444	2,843	1,782	4,625	2,208	73%	0.31	0	0.610	0.080	0.468	0.468	**53.2%**
1941	W	13,427	4,308	6,065	10,373	4,072	64%	0.28	0	0.921	0.080	0.622	0.622	**37.8%**
1942	W	18,186	4,304	6,486	10,790	5,852	60%	0.26	0	0.943	0.080	0.599	0.599	**40.1%**
1943	W	21,906	4,304	6,672	10,976	7,243	58%	0.26	0	0.953	0.080	0.587	0.587	**41.3%**
1944	D	13,987	4,289	6,448	10,737	4,281	64%	0.28	0	0.940	0.080	0.629	0.629	**37.1%**
1945	B	13,770	4,276	6,672	10,948	4,200	64%	0.28	0	0.952	0.080	0.638	0.638	**36.2%**
1946	B	17,158	4,292	6,672	10,964	5,467	61%	0.27	0	0.953	0.080	0.611	0.611	**38.9%**
1947	D	13,776	4,305	6,653	10,958	4,202	64%	0.28	0	0.952	0.080	0.638	0.638	**36.2%**
1948	B	10,208	2,804	3,652	6,456	2,868	69%	0.30	0	0.709	0.080	0.516	0.516	**48.4%**
1949	D	14,447	4,276	6,267	10,543	4,453	63%	0.28	0	0.930	0.080	0.618	0.618	**38.2%**
1950	B	11,562	4,293	3,374	7,667	3,374	67%	0.29	0	0.775	0.080	0.545	0.545	**45.5%**
1951	A	40,151	4,279	6,672	10,951	14,066	24%	0.24	0	0.952	0.080	0.286	0.286	**71.4%**
1952	W	16,398	4,297	6,672	10,969	5,183	61%	0.27	0	0.953	0.080	0.617	0.617	**38.3%**
1953	W	16,535	4,304	4,089	8,393	5,234	61%	0.27	0	0.814	0.080	0.530	0.530	**47.0%**
1954	A	19,707	4,295	6,672	10,967	6,420	59%	0.26	0	0.953	0.080	0.597	0.597	**40.3%**
1955	D	16,183	4,295	6,672	10,967	5,102	62%	0.27	0	0.953	0.080	0.618	0.618	**38.2%**
1956	W	10,470	2,588	4,268	6,856	2,966	69%	0.30	0	0.731	0.080	0.527	0.527	**47.3%**
1957	A	15,470	4,306	6,672	10,978	4,836	62%	0.27	0	0.954	0.080	0.624	0.624	**37.6%**
1958	W	19,256	4,290	6,672	10,962	6,252	59%	0.26	0	0.953	0.080	0.599	0.599	**40.1%**
1959	B	16,130	4,306	4,185	8,491	5,083	62%	0.27	0	0.819	0.080	0.536	0.536	**46.4%**
1960	D	11,025	3,918	3,080	6,998	3,173	68%	0.29	0	0.739	0.080	0.526	0.526	**47.4%**
1961	D	13,251	4,261	5,600	9,861	4,006	65%	0.28	0	0.893	0.080	0.605	0.605	**39.5%**
1962	B	11,372	4,265	3,368	7,633	3,303	67%	0.29	0	0.773	0.080	0.546	0.546	**45.4%**
1963	W	20,941	4,298	6,672	10,970	6,882	59%	0.26	0	0.953	0.080	0.591	0.591	**40.9%**
1964	D	28,658	4,306	6,672	10,978	9,768	25%	0.25	0	0.954	0.080	0.295	0.295	**70.5%**
1965	W	13,401	3,869	6,354	10,223	4,062	64%	0.28	0	0.913	0.080	0.617	0.617	**38.3%**
1966	B	25,278	4,291	6,672	10,963	8,504	25%	0.25	0	0.953	0.080	0.298	0.298	**70.2%**
1967	W	13,623	4,295	6,381	10,676	4,145	64%	0.28	0	0.937	0.080	0.630	0.630	**37.0%**
1968	B	16,241	4,305	4,054	8,359	5,124	62%	0.27	0	0.812	0.080	0.531	0.531	**46.9%**
1969	W	13,568	4,280	5,908	10,188	4,124	64%	0.28	0	0.911	0.080	0.614	0.614	**38.6%**
1970	W	17,644	4,305	4,089	8,394	5,649	61%	0.26	0	0.814	0.080	0.524	0.524	**47.6%**
1971	W	19,407	4,287	6,672	10,959	6,308	59%	0.26	0	0.952	0.080	0.598	0.598	**40.2%**
1972	B	15,347	4,295	6,672	10,967	4,790	62%	0.27	0	0.953	0.080	0.625	0.625	**37.5%**
1973	A	20,709	4,281	6,672	10,953	6,795	59%	0.26	0	0.952	0.080	0.591	0.591	**40.9%**
1974	W	54,360	4,306	6,672	10,978	19,381	23%	0.23	0	0.954	0.080	0.281	0.281	**71.9%**
1975	W	17,581	4,305	6,672	10,977	5,625	61%	0.26	0	0.953	0.080	0.609	0.609	**39.1%**
1976	C	19,229	4,306	6,672	10,978	6,242	59%	0.26	0	0.954	0.080	0.600	0.600	**40.0%**
1977	C	8,225	2,745	3,275	6,020	2,126	74%	0.32	0	0.686	0.080	0.527	0.527	**47.3%**
1978	A	6,922	2,496	1,722	4,218	1,639	78%	0.33	0	0.588	0.080	0.476	0.476	**52.4%**
1979	B	14,540	4,308	6,672	10,980	4,488	63%	0.27	0	0.954	0.080	0.632	0.632	**36.8%**
1980	A	15,797	4,290	6,672	10,962	4,958	62%	0.27	0	0.953	0.080	0.621	0.621	**37.9%**
1981	D	13,017	4,289	5,571	9,860	3,918	65%	0.28	0	0.893	0.080	0.608	0.608	**39.2%**
1982	W	27,992	4,280	6,672	10,952	9,519	25%	0.25	0	0.952	0.080	0.295	0.295	**70.5%**
1983	W	39,113	4,306	6,672	10,978	13,678	24%	0.24	0	0.954	0.080	0.287	0.287	**71.3%**
1984	W	62,800	1,743	3,623	5,366	22,537	23%	0.23	0	0.650	0.080	0.210	0.210	**79.0%**
1985	D	33,484	4,296	6,672	10,968	11,573	24%	0.24	0	0.953	0.080	0.291	0.291	**70.9%**
1986	W	9,546	2,560	4,226	6,786	2,620	71%	0.30	0	0.727	0.080	0.537	0.537	**46.3%**
1987	D	11,130	4,260	3,793	8,053	3,213	68%	0.29	0	0.796	0.080	0.564	0.564	**43.6%**
1988	C	8,448	2,989	1,883	4,872	2,210	73%	0.31	0	0.624	0.080	0.478	0.478	**52.2%**
1989	D	8,582	2,394	3,378	5,772	2,260	73%	0.31	0	0.672	0.080	0.512	0.512	**48.8%**
1990	C	11,506	4,248	3,344	7,592	3,353	67%	0.29	0	0.771	0.080	0.543	0.543	**45.7%**
1991	C	8,142	2,509	2,383	4,892	2,095	74%	0.32	0	0.625	0.080	0.483	0.483	**51.7%**
1992	C	7,466	3,135	1,416	4,551	1,842	76%	0.32	0	0.606	0.080	0.481	0.481	**51.9%**

DECEMBER

Year	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	17,143	4,207	7,131	11,338	5,461	61%	0.45	0	0.865	0.000	0.393	0.393	**60.7%**
1923	34,367	4,207	6,112	10,319	11,903	24%	0.24	0	0.810	0.000	0.195	0.195	**80.5%**
1924	13,768	3,739	6,617	10,356	4,199	64%	0.48	0	0.812	0.000	0.387	0.387	**61.3%**
1925	11,248	4,207	4,936	9,143	3,257	67%	0.50	0	0.747	0.000	0.374	0.374	**62.6%**
1926	12,616	4,207	2,566	6,773	3,768	65%	0.49	0	0.619	0.000	0.301	0.301	**69.9%**
1927	14,394	4,207	7,074	11,281	4,433	63%	0.47	0	0.862	0.000	0.407	0.407	**59.3%**
1928	16,574	4,207	6,784	10,991	5,249	61%	0.46	0	0.846	0.000	0.388	0.388	**61.2%**
1929	13,211	4,207	5,934	10,141	3,991	65%	0.48	0	0.801	0.000	0.386	0.386	**61.4%**
1930	14,442	4,207	6,336	10,543	4,451	63%	0.47	0	0.822	0.000	0.388	0.388	**61.2%**
1931	9,357	2,229	3,027	5,256	2,550	71%	0.53	0	0.537	0.000	0.283	0.283	**71.7%**
1932	14,650	4,207	7,219	11,426	4,529	63%	0.47	0	0.870	0.000	0.409	0.409	**59.1%**
1933	8,472	2,526	2,398	4,924	2,219	73%	0.54	0	0.519	0.000	0.282	0.282	**71.8%**
1934	12,474	4,207	5,580	9,787	3,715	66%	0.49	0	0.781	0.000	0.382	0.382	**61.8%**
1935	8,503	3,301	3,464	6,765	2,230	73%	0.54	0	0.618	0.000	0.335	0.335	**66.5%**
1936	13,278	4,207	5,857	10,064	4,016	65%	0.48	0	0.796	0.000	0.383	0.383	**61.7%**
1937	12,204	4,207	5,527	9,734	3,614	66%	0.49	0	0.779	0.000	0.382	0.382	**61.8%**
1938	47,150	4,207	7,565	11,772	16,684	23%	0.23	0	0.889	0.000	0.207	0.207	**79.3%**
1939	18,684	4,207	3,735	7,942	6,038	60%	0.45	0	0.682	0.000	0.305	0.305	**69.5%**
1940	7,841	1,507	2,737	4,244	1,983	75%	0.56	0	0.482	0.000	0.268	0.268	**73.2%**
1941	30,657	4,207	7,487	11,694	10,516	24%	0.24	0	0.884	0.000	0.215	0.215	**78.5%**
1942	65,619	4,207	3,608	7,815	23,592	23%	0.23	0	0.675	0.000	0.153	0.153	**84.7%**
1943	28,806	4,207	3,779	7,986	9,823	25%	0.25	0	0.684	0.000	0.168	0.168	**83.2%**
1944	13,774	4,207	6,571	10,778	4,201	64%	0.48	0	0.835	0.000	0.398	0.398	**60.2%**
1945	15,826	4,207	6,997	11,204	4,969	62%	0.46	0	0.858	0.000	0.397	0.397	**60.3%**
1946	54,515	4,207	7,592	11,799	19,439	23%	0.23	0	0.890	0.000	0.205	0.205	**79.5%**
1947	18,132	4,207	7,210	11,417	5,831	60%	0.45	0	0.869	0.000	0.391	0.391	**60.9%**
1948	9,535	2,609	3,044	5,653	2,616	71%	0.52	0	0.558	0.000	0.293	0.293	**70.7%**
1949	15,563	4,207	6,918	11,125	4,871	62%	0.46	0	0.854	0.000	0.396	0.396	**60.4%**
1950	11,488	4,207	3,088	7,295	3,347	67%	0.50	0	0.647	0.000	0.323	0.323	**67.7%**
1951	68,100	4,207	7,592	11,799	24,519	23%	0.23	0	0.890	0.000	0.202	0.202	**79.8%**
1952	42,853	4,207	7,149	11,356	15,077	24%	0.24	0	0.866	0.000	0.204	0.204	**79.6%**
1953	42,331	4,207	3,742	7,949	14,882	24%	0.24	0	0.682	0.000	0.161	0.161	**83.9%**
1954	14,919	4,207	5,845	10,052	4,630	63%	0.47	0	0.796	0.000	0.373	0.373	**62.7%**
1955	25,397	4,207	6,937	11,144	8,548	25%	0.25	0	0.855	0.000	0.213	0.213	**78.7%**
1956	25,596	4,207	7,592	11,799	8,623	25%	0.25	0	0.890	0.000	0.222	0.222	**77.8%**
1957	14,143	4,207	6,621	10,828	4,339	64%	0.47	0	0.838	0.000	0.397	0.397	**60.3%**
1958	23,752	4,207	6,953	11,160	7,933	57%	0.43	0	0.856	0.000	0.366	0.366	**63.4%**
1959	14,627	4,207	3,852	8,059	4,520	63%	0.47	0	0.688	0.000	0.324	0.324	**67.6%**
1960	9,432	2,665	2,791	5,456	2,578	71%	0.53	0	0.548	0.000	0.288	0.288	**71.2%**
1961	17,250	4,207	6,907	11,114	5,502	61%	0.45	0	0.853	0.000	0.387	0.387	**61.3%**
1962	16,701	4,207	6,893	11,100	5,296	61%	0.46	0	0.852	0.000	0.390	0.390	**61.0%**
1963	27,555	4,207	6,921	11,128	9,356	25%	0.25	0	0.854	0.000	0.211	0.211	**78.9%**
1964	14,847	4,207	7,007	11,214	4,603	63%	0.47	0	0.858	0.000	0.403	0.403	**59.7%**
1965	24,946	4,207	7,503	11,710	8,380	57%	0.42	0	0.885	0.000	0.376	0.376	**62.4%**
1966	16,997	4,207	7,412	11,619	5,407	61%	0.46	0	0.880	0.000	0.401	0.401	**59.9%**
1967	32,555	4,207	7,165	11,372	11,226	24%	0.24	0	0.867	0.000	0.210	0.210	**79.0%**
1968	16,692	3,360	3,735	7,095	5,293	61%	0.46	0	0.636	0.000	0.291	0.291	**70.9%**
1969	23,843	4,207	7,004	11,211	7,967	57%	0.43	0	0.858	0.000	0.367	0.367	**63.3%**
1970	50,159	4,207	3,481	7,688	17,809	23%	0.23	0	0.668	0.000	0.155	0.155	**84.5%**
1971	53,000	4,207	7,082	11,289	18,872	23%	0.23	0	0.862	0.000	0.199	0.199	**80.1%**
1972	18,336	4,207	7,109	11,316	5,908	60%	0.45	0	0.864	0.000	0.388	0.388	**61.2%**
1973	26,198	4,207	6,932	11,139	8,848	25%	0.25	0	0.854	0.000	0.212	0.212	**78.8%**
1974	61,593	4,207	7,396	11,603	22,086	23%	0.23	0	0.879	0.000	0.201	0.201	**79.9%**
1975	17,619	4,207	4,302	8,509	5,640	61%	0.45	0	0.712	0.000	0.322	0.322	**67.8%**
1976	16,774	4,207	6,147	10,354	5,323	61%	0.46	0	0.812	0.000	0.371	0.371	**62.9%**
1977	8,065	1,743	2,991	4,734	2,066	74%	0.55	0	0.509	0.000	0.280	0.280	**72.0%**
1978	12,285	4,207	5,559	9,766	3,645	66%	0.49	0	0.780	0.000	0.383	0.383	**61.7%**
1979	13,861	4,207	3,999	8,206	4,234	64%	0.48	0	0.696	0.000	0.332	0.332	**66.8%**
1980	20,332	4,207	7,016	11,223	6,654	59%	0.44	0	0.859	0.000	0.378	0.378	**62.2%**
1981	15,611	4,207	4,673	8,880	4,889	62%	0.46	0	0.732	0.000	0.340	0.340	**66.0%**
1982	67,631	4,207	7,043	11,250	24,344	23%	0.23	0	0.860	0.000	0.195	0.195	**80.5%**
1983	55,416	4,207	4,428	8,635	19,776	23%	0.23	0	0.719	0.000	0.165	0.165	**83.5%**
1984	82,951	2,994	3,104	6,098	30,074	22%	0.22	0	0.582	0.000	0.131	0.131	**86.9%**
1985	23,880	4,207	7,027	11,234	7,981	57%	0.43	0	0.860	0.000	0.368	0.368	**63.2%**
1986	15,224	4,207	6,972	11,179	4,744	63%	0.47	0	0.857	0.000	0.399	0.399	**60.1%**
1987	13,420	4,207	6,094	10,301	4,069	64%	0.48	0	0.809	0.000	0.388	0.388	**61.2%**
1988	15,842	4,207	6,886	11,093	4,975	62%	0.46	0	0.852	0.000	0.394	0.394	**60.6%**
1989	8,852	2,890	3,601	6,491	2,361	72%	0.54	0	0.603	0.000	0.323	0.323	**67.7%**
1990	14,536	4,207	6,198	10,405	4,486	63%	0.47	0	0.815	0.000	0.384	0.384	**61.6%**
1991	8,618	1,588	3,144	4,732	2,273	73%	0.54	0	0.508	0.000	0.275	0.275	**72.5%**
1992	7,455	2,996	1,636	4,632	1,838	76%	0.56	0	0.503	0.000	0.284	0.284	**71.6%**

JANUARY

Year	Sac River Flows	CVP Flows	SWP Flows	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	17,504	4,207	7,641	11,848	5,596	61%	0.27	0	0.893	0.000	0.237	0.237	**76.3%**
1923	32,280	4,207	3,638	7,845	11,123	24%	0.24	0	0.677	0.000	0.164	0.164	**83.6%**
1924	14,370	4,207	6,552	10,759	4,424	63%	0.28	0	0.834	0.000	0.230	0.230	**77.0%**
1925	10,200	3,617	3,205	6,822	2,865	69%	0.30	0	0.621	0.000	0.185	0.185	**81.5%**
1926	18,269	4,207	7,179	11,386	5,883	60%	0.26	0	0.868	0.000	0.228	0.228	**77.2%**
1927	30,244	4,207	7,340	11,547	10,361	24%	0.24	0	0.876	0.000	0.214	0.214	**78.6%**
1928	25,207	4,207	3,637	7,844	8,477	25%	0.25	0	0.676	0.000	0.169	0.169	**83.1%**
1929	14,766	4,207	6,708	10,915	4,572	63%	0.27	0	0.842	0.000	0.231	0.231	**76.9%**
1930	20,771	4,207	7,123	11,330	6,818	59%	0.26	0	0.865	0.000	0.223	0.223	**77.7%**
1931	11,965	4,207	4,947	9,154	3,525	66%	0.29	0	0.747	0.000	0.214	0.214	**78.6%**
1932	17,253	4,207	7,898	12,105	5,503	61%	0.27	0	0.907	0.000	0.241	0.241	**75.9%**
1933	12,602	4,207	5,833	10,040	3,763	65%	0.28	0	0.795	0.000	0.225	0.225	**77.5%**
1934	16,103	4,207	7,192	11,399	5,073	62%	0.27	0	0.868	0.000	0.234	0.234	**76.6%**
1935	25,471	4,207	7,751	11,958	8,576	25%	0.25	0	0.899	0.000	0.224	0.224	**77.6%**
1936	30,625	4,207	7,536	11,743	10,504	24%	0.24	0	0.887	0.000	0.216	0.216	**78.4%**
1937	15,467	4,207	7,645	11,852	4,835	62%	0.27	0	0.893	0.000	0.242	0.242	**75.8%**
1938	31,443	4,207	3,738	7,945	10,810	24%	0.24	0	0.682	0.000	0.166	0.166	**83.4%**
1939	18,407	1,566	3,239	4,805	5,934	60%	0.26	0	0.512	0.000	0.135	0.135	**86.5%**
1940	23,448	4,207	8,108	12,315	7,820	57%	0.25	0	0.918	0.000	0.232	0.232	**76.8%**
1941	71,319	4,207	8,500	12,707	25,723	23%	0.23	0	0.939	0.000	0.212	0.212	**78.8%**
1942	63,260	4,048	3,239	7,287	22,709	23%	0.23	0	0.646	0.000	0.147	0.147	**85.3%**
1943	58,056	4,207	3,303	7,510	20,763	23%	0.23	0	0.658	0.000	0.151	0.151	**84.9%**
1944	17,677	4,207	3,262	7,469	5,661	60%	0.26	0	0.656	0.000	0.174	0.174	**82.6%**
1945	13,952	4,207	4,964	9,171	4,268	64%	0.28	0	0.748	0.000	0.207	0.207	**79.3%**
1946	43,229	4,207	3,728	7,935	15,218	23%	0.23	0	0.681	0.000	0.160	0.160	**84.0%**
1947	14,971	4,207	7,028	11,235	4,649	63%	0.27	0	0.860	0.000	0.235	0.235	**76.5%**
1948	14,649	4,207	6,387	10,594	4,529	63%	0.27	0	0.825	0.000	0.226	0.226	**77.4%**
1949	14,928	4,207	6,902	11,109	4,633	63%	0.27	0	0.853	0.000	0.233	0.233	**76.7%**
1950	19,684	4,207	7,249	11,456	6,412	59%	0.26	0	0.872	0.000	0.226	0.226	**77.4%**
1951	62,213	4,207	8,272	12,479	22,318	23%	0.23	0	0.927	0.000	0.211	0.211	**78.9%**
1952	67,041	4,207	8,317	12,524	24,123	23%	0.23	0	0.929	0.000	0.211	0.211	**78.9%**
1953	64,078	1,560	3,333	4,893	23,015	23%	0.23	0	0.517	0.000	0.118	0.118	**88.2%**
1954	33,414	4,207	3,838	8,045	11,547	24%	0.24	0	0.687	0.000	0.166	0.166	**83.4%**
1955	22,007	4,207	7,272	11,479	7,281	58%	0.26	0	0.873	0.000	0.223	0.223	**77.7%**
1956	84,032	4,207	8,162	12,369	30,478	22%	0.22	0	0.921	0.000	0.206	0.206	**79.4%**
1957	18,639	4,207	3,891	8,098	6,021	60%	0.26	0	0.690	0.000	0.181	0.181	**81.9%**
1958	36,384	4,207	4,097	8,304	12,658	24%	0.24	0	0.701	0.000	0.168	0.168	**83.2%**
1959	35,167	1,576	3,333	4,909	12,202	24%	0.24	0	0.518	0.000	0.124	0.124	**87.6%**
1960	13,522	4,207	5,818	10,025	4,107	64%	0.28	0	0.794	0.000	0.222	0.222	**77.8%**
1961	14,008	4,207	6,489	10,696	4,289	64%	0.28	0	0.830	0.000	0.230	0.230	**77.0%**
1962	15,396	4,207	3,984	8,191	4,808	62%	0.27	0	0.695	0.000	0.189	0.189	**81.1%**
1963	22,522	4,207	7,313	11,520	7,473	58%	0.25	0	0.875	0.000	0.222	0.222	**77.8%**
1964	24,193	4,207	3,832	8,039	8,098	57%	0.25	0	0.687	0.000	0.173	0.173	**82.7%**
1965	81,240	4,207	8,500	12,707	29,434	22%	0.22	0	0.939	0.000	0.211	0.211	**78.9%**
1966	29,635	4,207	3,657	7,864	10,133	24%	0.24	0	0.678	0.000	0.166	0.166	**83.4%**
1967	33,456	4,207	7,764	11,971	11,563	24%	0.24	0	0.899	0.000	0.217	0.217	**78.3%**
1968	30,635	1,563	3,333	4,896	10,507	24%	0.24	0	0.517	0.000	0.126	0.126	**87.4%**
1969	63,934	4,207	7,895	12,102	22,961	23%	0.23	0	0.906	0.000	0.206	0.206	**79.4%**
1970	92,665	1,356	3,333	4,689	33,707	22%	0.22	0	0.506	0.000	0.113	0.113	**88.7%**
1971	45,238	4,207	6,916	11,123	15,969	23%	0.23	0	0.854	0.000	0.200	0.200	**80.0%**
1972	20,395	4,207	3,891	8,098	6,678	59%	0.26	0	0.690	0.000	0.178	0.178	**82.2%**
1973	48,422	4,207	6,257	10,464	17,160	23%	0.23	0	0.818	0.000	0.190	0.190	**81.0%**
1974	78,417	4,207	3,953	8,160	28,378	22%	0.22	0	0.694	0.000	0.156	0.156	**84.4%**
1975	18,672	4,207	3,848	8,055	6,033	60%	0.26	0	0.688	0.000	0.180	0.180	**82.0%**
1976	16,769	4,207	3,813	8,020	5,322	61%	0.27	0	0.686	0.000	0.183	0.183	**81.7%**
1977	8,153	2,644	2,472	5,116	2,099	74%	0.32	0	0.529	0.000	0.167	0.167	**83.3%**
1978	44,423	1,538	7,857	9,395	15,664	23%	0.23	0	0.760	0.000	0.178	0.178	**82.2%**
1979	27,242	4,207	3,262	7,469	9,239	25%	0.25	0	0.656	0.000	0.162	0.162	**83.8%**
1980	59,992	4,207	3,159	7,366	21,487	23%	0.23	0	0.651	0.000	0.149	0.149	**85.1%**
1981	27,836	2,937	3,356	6,293	9,461	25%	0.25	0	0.593	0.000	0.146	0.146	**85.4%**
1982	51,172	4,207	8,500	12,707	18,188	23%	0.23	0	0.939	0.000	0.217	0.217	**78.3%**
1983	59,148	2,880	2,648	5,528	21,171	23%	0.23	0	0.551	0.000	0.126	0.126	**87.4%**
1984	47,354	1,331	2,881	4,212	16,760	23%	0.23	0	0.480	0.000	0.112	0.112	**88.8%**
1985	16,549	4,207	3,872	8,079	5,239	61%	0.27	0	0.689	0.000	0.185	0.185	**81.5%**
1986	21,006	4,207	7,388	11,595	6,906	58%	0.26	0	0.879	0.000	0.226	0.226	**77.4%**
1987	16,734	1,074	6,458	7,532	5,309	61%	0.27	0	0.660	0.000	0.176	0.176	**82.4%**
1988	25,530	4,207	7,069	11,276	8,598	25%	0.25	0	0.862	0.000	0.215	0.215	**78.5%**
1989	11,998	4,085	4,676	8,761	3,537	66%	0.29	0	0.726	0.000	0.208	0.208	**79.2%**
1990	21,334	2,731	7,087	9,818	7,029	58%	0.26	0	0.783	0.000	0.201	0.201	**79.9%**
1991	6,851	1,691	1,701	3,392	1,612	78%	0.33	0	0.436	0.000	0.145	0.145	**85.5%**
1992	11,890	4,207	4,660	8,867	3,497	66%	0.29	0	0.732	0.000	0.210	0.210	**79.0%**

Formulas: Sacramento River Spring Smolt Yearling Survival Model

C10 ='Study 467 Flow Data'!B7
D10 ='Study 467 Flow Data'!L7
E10 ='Study 467 Flow Data'!V7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
J10 =IF(-2.45925+(0.0420748*$T$1)>0,-2.45925+(0.0420748*$T$1),0)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =IF(-1.613493+(0.0319584*$T$1)>0,-1.613493+(0.0319584*$T$1),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!C7
R10 ='Study 467 Flow Data'!M7
S10 ='Study 467 Flow Data'!W7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
Z10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!D7
AF10 ='Study 467 Flow Data'!N7
AG10 ='Study 467 Flow Data'!X7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.374*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AN10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

1 Study 525 Sacramento River Spring Run Yearling Survival Model (continued)

2 February Water Temp 50 F

3 Cross Channel Closed Over 25000 cfs — March Water Temp 55 F

4 Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU
6	**FEBRUARY**				Calculated										**MARCH**				Calculated										
7	Sac				Sutter &								**Calculated**		Sac				Sutter &								**Calculated**		**Weighted**
8	River	CVP	SWP	CVP + SWP	Steamboat		X-Channel		Calculated Mortality				**Survivability**		River			CVP + SWF	Steamboat		X-Channel		Calculated Mortality				**Survivability**		**Total**
9	Flow	Flow	Flow	Exports	Slough Q	Percent	Closed	m1	m2	m3	m23	m123	**s123**		Flow	CVP	SWP	exports	Slough Q	percent	Closed	m1	m2	m3	m23	m123	**s123**		**Survival**
10	34,312	4,246	6,167	10,413	11,883	24%	0.24	0	0.869	0.000	0.209	0.209	79.1%		31,554	2,831	4,143	6,974	10,851	24%	0.24	0	0.773	0.144	0.297	0.297	70.3%		57.1%
11	22,009	2,173	2,380	4,553	7,281	58%	0.26	0	0.553	0.000	0.141	0.141	85.9%		15,486	3,216	3,517	6,733	4,842	62%	0.27	0	0.760	0.144	0.311	0.311	68.9%		65.0%
12	17,251	4,217	4,718	8,935	5,502	61%	0.27	0	0.789	0.000	0.210	0.210	79.0%		11,871	1,432	1,589	3,021	3,490	66%	0.29	0	0.560	0.144	0.264	0.264	73.6%		58.9%
13	44,705	4,218	7,666	11,884	15,770	23%	0.23	0	0.949	0.000	0.222	0.222	77.8%		30,225	4,191	2,343	6,534	10,354	24%	0.24	0	0.749	0.144	0.292	0.292	70.8%		61.8%
14	35,217	4,227	7,715	11,942	12,221	24%	0.24	0	0.952	0.000	0.228	0.228	77.2%		15,519	2,578	3,803	6,381	4,854	62%	0.27	0	0.741	0.144	0.306	0.306	69.4%		63.1%
15	87,106	2,581	6,708	9,289	31,628	22%	0.22	0	0.808	0.000	0.181	0.181	81.9%		43,865	3,467	4,149	7,616	15,456	23%	0.23	0	0.808	0.144	0.300	0.300	70.0%		56.4%
16	26,479	3,867	4,377	8,244	8,953	25%	0.25	0	0.752	0.000	0.187	0.187	81.3%		86,223	3,119	4,424	7,543	31,297	22%	0.22	0	0.804	0.144	0.292	0.292	70.8%		57.6%
17	17,537	3,653	5,492	9,145	5,609	61%	0.27	0	0.801	0.000	0.212	0.212	78.8%		13,513	1,858	2,858	4,716	4,104	64%	0.28	0	0.651	0.144	0.286	0.286	71.4%		56.9%
18	15,675	2,864	3,978	6,842	4,912	62%	0.27	0	0.676	0.000	0.183	0.183	81.7%		30,090	2,683	4,905	7,588	10,304	24%	0.24	0	0.806	0.144	0.306	0.306	69.4%		61.7%
19	11,083	3,430	1,968	5,398	3,195	68%	0.29	0	0.598	0.000	0.175	0.175	82.5%		8,643	1,672	1,638	3,310	2,282	73%	0.31	0	0.575	0.144	0.278	0.278	72.2%		65.0%
20	14,488	4,240	6,200	10,440	4,469	63%	0.28	0	0.871	0.000	0.239	0.239	76.1%		11,670	2,369	2,610	4,979	3,415	67%	0.29	0	0.666	0.144	0.295	0.295	70.5%		61.8%
21	12,604	3,570	3,311	6,881	3,764	65%	0.28	0	0.678	0.000	0.192	0.192	80.8%		9,943	1,507	3,003	4,510	2,769	70%	0.30	0	0.640	0.144	0.293	0.293	70.7%		65.1%
22	12,740	1,735	4,367	6,102	3,815	65%	0.28	0	0.636	0.000	0.180	0.180	82.0%		14,559	2,151	2,204	4,355	4,495	63%	0.27	0	0.632	0.144	0.278	0.278	72.2%		63.8%
23	12,327	1,140	4,027	5,167	3,660	66%	0.28	0	0.586	0.000	0.167	0.167	83.3%		24,918	4,225	7,042	11,267	8,369	57%	0.25	0	1.005	0.144	0.360	0.360	64.0%		60.9%
24	48,897	4,245	8,500	12,745	17,337	23%	0.23	0	0.995	0.000	0.231	0.231	76.9%		33,448	4,225	4,533	8,758	11,560	24%	0.24	0	0.870	0.144	0.319	0.319	68.1%		58.9%
25	32,025	4,208	5,475	9,683	11,027	24%	0.24	0	0.830	0.000	0.201	0.201	79.9%		36,058	2,338	4,012	6,350	12,536	24%	0.24	0	0.740	0.144	0.287	0.287	71.3%		59.2%
26	82,366	1,207	3,939	5,146	29,855	22%	0.22	0	0.585	0.000	0.131	0.131	86.9%		78,637	2,059	3,966	6,025	28,460	22%	0.22	0	0.722	0.144	0.274	0.274	72.6%		66.2%
27	19,024	1,487	3,955	5,442	6,165	60%	0.26	0	0.601	0.000	0.157	0.157	84.3%		16,390	2,630	3,991	6,621	5,180	61%	0.27	0	0.754	0.144	0.308	0.308	69.2%		62.4%
28	40,143	4,237	8,500	12,737	14,063	24%	0.24	0	0.995	0.000	0.235	0.235	76.5%		58,948	4,225	4,591	8,816	21,097	23%	0.23	0	0.873	0.144	0.311	0.311	68.9%		66.3%
29	75,037	4,293	6,438	10,731	27,114	23%	0.23	0	0.886	0.000	0.200	0.200	80.0%		58,575	4,225	3,846	8,071	20,957	23%	0.23	0	0.832	0.144	0.302	0.302	69.8%		63.3%
30	78,349	1,664	3,955	5,619	28,353	23%	0.23	0	0.610	0.000	0.137	0.137	86.3%		27,099	3,433	4,007	7,440	9,185	25%	0.25	0	0.798	0.144	0.306	0.306	69.4%		67.9%
31	52,259	1,991	4,005	5,996	18,595	23%	0.23	0	0.631	0.000	0.146	0.146	85.4%		64,601	1,816	4,056	5,872	23,211	23%	0.23	0	0.714	0.144	0.274	0.274	72.6%		67.7%
32	29,302	1,315	3,958	5,273	10,009	24%	0.24	0	0.592	0.000	0.145	0.145	85.5%		25,100	2,955	4,007	6,962	8,437	25%	0.25	0	0.773	0.144	0.301	0.301	69.9%		56.1%
33	38,149	4,238	4,003	8,241	13,318	24%	0.24	0	0.752	0.000	0.179	0.179	82.1%		26,228	3,154	4,134	7,288	8,859	25%	0.25	0	0.790	0.144	0.305	0.305	69.5%		55.2%
34	23,843	2,521	4,413	6,934	7,967	57%	0.25	0	0.681	0.000	0.172	0.172	82.8%		23,778	3,443	4,439	7,882	7,943	57%	0.25	0	0.822	0.144	0.315	0.315	68.5%		64.9%
35	21,069	4,238	3,965	8,203	6,930	58%	0.26	0	0.750	0.000	0.193	0.193	80.7%		22,106	2,383	3,966	6,349	7,318	58%	0.25	0	0.739	0.144	0.296	0.296	70.4%		55.1%
36	16,591	4,224	1,819	6,043	5,255	61%	0.27	0	0.633	0.000	0.170	0.170	83.0%		19,058	4,225	3,415	7,640	6,178	60%	0.26	0	0.809	0.144	0.318	0.318	68.2%		63.9%
37	16,191	4,240	4,213	8,453	5,105	62%	0.27	0	0.763	0.000	0.205	0.205	79.5%		41,766	3,315	7,133	10,448	14,670	24%	0.24	0	0.961	0.144	0.337	0.337	66.3%		55.4%
38	31,352	4,241	7,606	11,847	10,776	24%	0.24	0	0.947	0.000	0.230	0.230	77.0%		21,904	3,191	5,758	8,949	7,242	58%	0.26	0	0.880	0.144	0.332	0.332	66.8%		61.2%
39	60,566	4,280	4,675	8,955	21,702	23%	0.23	0	0.790	0.000	0.181	0.181	81.9%		29,827	3,244	4,699	7,943	10,205	24%	0.24	0	0.826	0.144	0.311	0.311	68.9%		76.3%
40	64,731	4,293	3,909	8,202	23,259	23%	0.23	0	0.750	0.000	0.171	0.171	82.9%		57,518	3,205	3,934	7,139	20,562	23%	0.23	0	0.782	0.144	0.291	0.291	70.9%		64.2%
41	28,344	1,994	4,060	6,054	9,651	25%	0.25	0	0.634	0.000	0.156	0.156	84.4%		24,893	3,152	4,111	7,263	8,360	57%	0.25	0	0.789	0.144	0.306	0.306	69.4%		70.4%
42	57,158	2,147	4,638	6,785	20,427	23%	0.23	0	0.673	0.000	0.155	0.155	84.5%		49,536	3,174	4,685	7,859	17,576	23%	0.23	0	0.821	0.144	0.301	0.301	69.9%		58.4%
43	16,724	4,254	3,678	7,932	5,305	61%	0.27	0	0.735	0.000	0.197	0.197	80.3%		17,888	4,225	2,954	7,179	5,740	60%	0.26	0	0.784	0.144	0.313	0.313	68.7%		63.3%
44	63,748	4,281	4,675	8,956	22,892	23%	0.23	0	0.790	0.000	0.180	0.180	82.0%		36,676	2,083	4,700	6,783	12,767	24%	0.24	0	0.763	0.144	0.292	0.292	70.8%		66.7%
45	33,144	2,579	4,638	7,217	11,446	24%	0.24	0	0.697	0.000	0.168	0.168	83.2%		44,377	3,176	4,339	7,515	15,647	23%	0.23	0	0.802	0.144	0.298	0.298	70.2%		56.1%
46	61,170	3,690	4,045	7,735	21,928	23%	0.23	0	0.724	0.000	0.166	0.166	83.4%		93,616	3,463	4,072	7,535	34,062	22%	0.22	0	0.804	0.144	0.291	0.291	70.9%		58.6%
47	50,082	1,781	4,060	5,841	17,781	23%	0.23	0	0.622	0.000	0.144	0.144	85.6%		22,092	3,023	3,102	6,125	7,312	58%	0.25	0	0.727	0.144	0.293	0.293	70.7%		63.3%
48	26,024	4,226	7,357	11,583	8,783	25%	0.25	0	0.932	0.000	0.232	0.232	76.8%		21,126	3,216	4,042	7,258	6,951	58%	0.26	0	0.789	0.144	0.310	0.310	69.0%		63.5%
49	30,450	3,722	7,136	10,858	10,438	24%	0.24	0	0.893	0.000	0.218	0.218	78.2%		20,744	2,771	5,248	8,019	6,808	59%	0.26	0	0.830	0.144	0.321	0.321	67.9%		56.3%
50	38,521	1,456	8,500	9,956	13,457	24%	0.24	0	0.844	0.000	0.201	0.201	79.9%		26,263	3,331	7,451	10,782	8,872	25%	0.25	0	0.979	0.144	0.352	0.352	64.8%		58.9%
51	58,694	4,278	8,500	12,778	21,002	23%	0.23	0	0.997	0.000	0.228	0.228	77.2%		32,645	4,225	4,714	8,939	11,259	24%	0.24	0	0.879	0.144	0.322	0.322	67.8%		64.3%
52	19,616	4,271	3,650	7,921	6,386	59%	0.26	0	0.735	0.000	0.191	0.191	80.9%		17,999	4,000	3,280	7,280	5,782	60%	0.26	0	0.790	0.144	0.315	0.315	68.5%		68.0%
53	33,076	4,253	5,409	9,662	11,420	24%	0.24	0	0.829	0.000	0.200	0.200	80.0%		21,133	2,910	4,250	7,160	6,954	58%	0.26	0	0.783	0.144	0.308	0.308	69.2%		56.7%
54	26,777	2,041	4,377	6,418	9,065	25%	0.25	0	0.653	0.000	0.162	0.162	83.8%		28,683	3,267	4,424	7,691	9,777	25%	0.25	0	0.812	0.144	0.308	0.308	69.2%		68.2%
55	41,066	4,293	3,201	7,494	14,409	24%	0.24	0	0.711	0.000	0.168	0.168	83.2%		54,488	3,203	3,283	6,486	19,429	23%	0.23	0	0.747	0.144	0.283	0.283	71.7%		63.4%
56	56,470	1,971	4,060	6,031	20,170	23%	0.23	0	0.632	0.000	0.145	0.145	85.5%		36,789	3,024	4,111	7,135	12,809	24%	0.24	0	0.782	0.144	0.296	0.296	70.4%		64.9%
57	67,482	2,855	3,171	6,026	24,288	23%	0.23	0	0.632	0.000	0.143	0.143	85.7%		45,319	2,055	3,251	5,306	15,999	23%	0.23	0	0.683	0.144	0.270	0.270	73.0%		57.7%
58	57,565	1,174	4,060	5,234	20,579	23%	0.23	0	0.589	0.000	0.135	0.135	86.5%		35,819	3,050	4,111	7,161	12,446	24%	0.24	0	0.783	0.144	0.297	0.297	70.3%		71.1%
59	29,019	4,223	4,386	8,609	9,903	25%	0.25	0	0.772	0.000	0.189	0.189	81.1%		51,067	3,265	4,699	7,964	18,149	23%	0.23	0	0.827	0.144	0.302	0.302	69.8%		65.1%
60	25,083	4,255	4,593	8,848	8,431	25%	0.25	0	0.785	0.000	0.196	0.196	80.4%		32,930	3,032	4,315	7,347	11,366	24%	0.24	0	0.793	0.144	0.301	0.301	69.9%		56.4%
61	70,967	4,268	4,423	8,691	25,592	23%	0.23	0	0.776	0.000	0.176	0.176	82.4%		47,552	3,461	4,451	7,912	16,834	23%	0.23	0	0.824	0.144	0.302	0.302	69.8%		64.9%
62	41,926	3,305	4,413	7,718	14,730	24%	0.24	0	0.724	0.000	0.170	0.170	83.0%		34,651	3,441	4,439	7,880	12,009	24%	0.24	0	0.822	0.144	0.307	0.307	69.3%		77.3%
63	58,811	2,375	4,636	7,011	21,045	23%	0.23	0	0.685	0.000	0.157	0.157	84.3%		75,998	3,459	4,685	8,144	27,473	23%	0.23	0	0.836	0.144	0.300	0.300	70.0%		59.9%
64	20,229	4,238	4,211	8,449	6,616	59%	0.26	0	0.763	0.000	0.197	0.197	80.3%		18,356	1,984	4,154	6,138	5,915	60%	0.26	0	0.728	0.144	0.298	0.298	70.2%		58.0%
65	12,176	750	1,400	2,150	3,604	66%	0.29	0	0.423	0.000	0.121	0.121	87.9%		7,338	666	1,258	1,924	1,794	76%	0.33	0	0.501	0.144	0.260	0.260	74.0%		65.2%
66	51,370	1,720	5,548	7,268	18,262	23%	0.23	0	0.699	0.000	0.162	0.162	83.8%		44,443	2,117	3,905	6,022	15,672	23%	0.23	0	0.722	0.144	0.280	0.280	72.0%		62.3%
67	41,682	1,383	3,958	5,341	14,639	24%	0.24	0	0.595	0.000	0.140	0.140	86.0%		32,548	3,176	4,007	7,183	11,223	24%	0.24	0	0.785	0.144	0.299	0.299	70.1%		59.0%
68	71,932	852	3,804	4,656	25,953	23%	0.23	0	0.558	0.000	0.126	0.126	87.4%		36,480	1,816	3,344	5,160	12,694	24%	0.24	0	0.675	0.144	0.271	0.271	72.9%		57.8%
69	29,672	1,740	4,062	5,802	10,147	24%	0.24	0	0.620	0.000	0.152	0.152	84.8%		32,501	3,023	4,111	7,134	11,205	24%	0.24	0	0.782	0.144	0.298	0.298	70.2%		59.7%
70	65,645	4,148	4,620	8,768	23,601	23%	0.23	0	0.780	0.000	0.177	0.177	82.3%		69,087	2,926	4,644	7,570	24,889	23%	0.23	0	0.805	0.144	0.294	0.294	70.6%		76.3%
71	82,910	1,395	2,793	4,188	30,058	22%	0.22	0	0.533	0.000	0.120	0.120	88.0%		81,934	2,042	2,628	4,670	29,693	22%	0.22	0	0.649	0.144	0.257	0.257	74.3%		79.4%
72	37,282	1,458	3,847	5,305	12,993	24%	0.24	0	0.593	0.000	0.141	0.141	85.9%		36,503	3,277	4,007	7,284	12,702	24%	0.24	0	0.790	0.144	0.298	0.298	70.2%		83.7%
73	18,931	3,128	4,568	7,696	6,130	60%	0.26	0	0.722	0.000	0.189	0.189	81.1%		21,228	3,025	4,682	7,707	6,989	58%	0.26	0	0.813	0.144	0.316	0.316	68.4%		69.5%
74	95,068	4,240	8,021	12,261	34,605	22%	0.22	0	0.969	0.000	0.216	0.216	78.4%		72,539	4,225	4,187	8,412	26,180	23%	0.23	0	0.851	0.144	0.304	0.304	69.6%		58.4%
75	23,028	1,228	4,210	5,438	7,662	58%	0.25	0	0.600	0.000	0.152	0.152	84.8%		29,769	2,220	4,133	6,353	10,184	24%	0.24	0	0.740	0.144	0.290	0.290	71.0%		58.9%
76	17,484	4,241	2,455	6,696	5,589	61%	0.27	0	0.668	0.000	0.177	0.177	82.3%		10,883	1,951	1,780	3,731	3,120	68%	0.29	0	0.598	0.144	0.277	0.277	72.3%		61.3%
77	13,024	932	1,831	2,763	3,921	65%	0.28	0	0.456	0.000	0.128	0.128	87.2%		41,238	4,225	6,971	11,196	14,473	24%	0.24	0	1.001	0.144	0.346	0.346	65.4%		63.1%
78	16,696	1,201	6,551	7,752	5,294	61%	0.27	0	0.725	0.000	0.194	0.194	80.6%		14,588	2,141	3,664	5,805	4,506	63%	0.27	0	0.710	0.144	0.300	0.300	70.0%		59.3%
79	11,161	312	957	1,269	3,224	68%	0.29	0	0.375	0.000	0.109	0.109	89.1%		29,675	4,225	7,093	11,318	10,148	24%	0.24	0	1.008	0.144	0.355	0.355	64.5%		67.1%
80	32,038	1,425	7,535	8,960	11,032	24%	0.24	0	0.791	0.000	0.192	0.192	80.8%		19,706	1,984	6,147	8,131	6,420	59%	0.26	0	0.836	0.144	0.324	0.324	67.6%		65.6%
81																												**AVERAGE:**	**63.06%**

	February	March
85	AS10 ='Study 467 Flow Data'!E7	BG10 ='Study 467 Flow Data'!F7
86	AT10 ='Study 467 Flow Data'!O7	BH10 ='Study 467 Flow Data'!P7
87	AU10 ='Study 467 Flow Data'!Y7	BI10 ='Study 467 Flow Data'!Z7
88	AV10 =(AT10+AU10)	BJ10 =(BH10+BI10)
89	AW10 =0.374*AS10-950	BK10 =0.374*BG10-950
90	AX10 =IF(AS10>$K$4,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))	BL10 =IF(BG10>$K$4,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
91	AY10 =(0.133*AS10+829)/(AS10-AW10)	BM10 =(0.133*BG10+829)/(BG10-BK10)
92	AZ10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)	BN10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
93	BA10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)	BO10 =(-0.5916024)+(0.017968*$BC$3)+(0.000054*BJ10)
94	BB10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)	BP10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)
95	BC10 =(BA10*AY10)+(BB10*(1-AY10))	BQ10 =(BO10*BM10)+(BP10*(1-BM10))
96	BD10 =AZ10+BC10-(AZ10*BC10)	BR10 =BN10+BQ10-(BN10*BQ10)
97	BE10 =1-BD10	BS10 =1-BR10
98		BU10 =(O10*0.37)+(AC10*0.42)+(AQ10*0.13)+(BE10*0.05)+(BS10*0.03)

Study 526 Sacramento River Spring Run Yearling Survival Model
Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Year	Water Year Type	Sac River Flow	CVP Flow	SWP Flow	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	A	11,230	4,290	3,514	7,804	3,250	67%	0.29	0	0.782	0.080	0.553	0.553	44.7%
1923	B	18,133	4,306	6,647	10,953	5,832	60%	0.26	0	0.952	0.080	0.605	0.605	39.5%
1924	C	10,997	3,576	3,755	7,331	3,163	68%	0.29	0	0.757	0.080	0.539	0.539	46.1%
1925	D	7,024	1,311	3,206	4,517	1,677	78%	0.33	0	0.605	0.080	0.487	0.487	51.3%
1926	D	10,728	4,227	2,979	7,206	3,062	68%	0.29	0	0.750	0.080	0.537	0.537	46.3%
1927	W	20,291	4,253	10,300	14,553	6,639	59%	0.26	0	1.147	0.080	0.708	0.708	29.2%
1928	A	20,011	4,306	10,300	14,606	6,534	59%	0.26	0	1.149	0.080	0.711	0.711	28.9%
1929	C	12,612	4,288	5,201	9,489	3,767	65%	0.28	0	0.873	0.080	0.599	0.599	40.1%
1930	D	7,159	2,282	1,765	4,047	1,727	77%	0.33	0	0.579	0.080	0.465	0.465	53.5%
1931	C	9,720	2,649	3,202	5,851	2,685	70%	0.30	0	0.677	0.080	0.499	0.499	50.1%
1932	D	8,226	1,192	1,831	3,023	2,127	74%	0.32	0	0.524	0.080	0.408	0.408	59.2%
1933	C	9,511	3,054	2,613	5,667	2,607	71%	0.30	0	0.667	0.080	0.495	0.495	50.5%
1934	C	8,121	1,009	1,624	2,633	2,087	74%	0.32	0	0.503	0.080	0.393	0.393	60.7%
1935	B	9,209	2,541	4,290	6,831	2,494	71%	0.31	0	0.730	0.080	0.543	0.543	45.7%
1936	B	10,361	3,298	3,437	6,735	2,925	69%	0.30	0	0.724	0.080	0.524	0.524	47.6%
1937	B	11,407	4,298	3,414	7,712	3,316	67%	0.29	0	0.777	0.080	0.548	0.548	45.2%
1938	W	23,450	4,291	10,300	14,591	7,820	57%	0.25	0	1.149	0.080	0.693	0.693	30.7%
1939	D	19,439	3,165	4,054	7,219	6,320	59%	0.26	0	0.751	0.080	0.478	0.478	52.2%
1940	A	8,444	2,807	1,752	4,559	2,208	73%	0.31	0	0.607	0.080	0.466	0.466	53.4%
1941	W	13,746	4,308	6,065	10,373	4,191	64%	0.28	0	0.921	0.080	0.618	0.618	38.2%
1942	W	18,186	4,304	3,959	8,263	5,852	60%	0.26	0	0.807	0.080	0.517	0.517	48.3%
1943	W	21,906	4,304	4,093	8,397	7,243	58%	0.26	0	0.814	0.080	0.506	0.506	49.4%
1944	D	14,380	4,290	6,569	10,859	4,428	63%	0.28	0	0.947	0.080	0.629	0.629	37.1%
1945	B	13,770	4,278	6,600	10,878	4,200	64%	0.28	0	0.948	0.080	0.636	0.636	36.4%
1946	B	16,828	4,293	8,679	12,972	5,344	61%	0.27	0	1.061	0.080	0.680	0.680	32.0%
1947	D	13,776	4,305	6,605	10,910	4,202	64%	0.28	0	0.950	0.080	0.637	0.637	36.3%
1948	B	10,275	2,779	3,686	6,465	2,893	69%	0.30	0	0.710	0.080	0.515	0.515	48.5%
1949	D	14,307	4,300	5,408	9,708	4,401	63%	0.28	0	0.885	0.080	0.591	0.591	40.9%
1950	B	11,117	4,293	3,086	7,379	3,208	68%	0.29	0	0.759	0.080	0.539	0.539	46.1%
1951	A	39,167	4,284	10,300	14,584	13,698	24%	0.24	0	1.148	0.080	0.333	0.333	66.7%
1952	W	16,148	4,296	7,709	12,005	5,089	62%	0.27	0	1.009	0.080	0.653	0.653	34.7%
1953	W	16,535	2,604	4,089	6,693	5,234	61%	0.27	0	0.722	0.080	0.474	0.474	52.6%
1954	A	20,850	4,305	7,433	11,738	6,848	59%	0.26	0	0.995	0.080	0.616	0.616	38.4%
1955	D	17,119	4,305	8,204	12,509	5,453	61%	0.27	0	1.036	0.080	0.663	0.663	33.7%
1956	W	11,127	3,208	4,236	7,444	3,211	68%	0.29	0	0.763	0.080	0.542	0.542	45.8%
1957	A	15,470	4,305	4,940	9,245	4,836	62%	0.27	0	0.860	0.080	0.566	0.566	43.4%
1958	W	19,256	4,290	9,464	13,754	6,252	59%	0.26	0	1.103	0.080	0.689	0.689	31.1%
1959	B	16,130	2,626	4,185	6,811	5,083	62%	0.27	0	0.728	0.080	0.480	0.480	52.0%
1960	D	11,048	3,921	3,081	7,002	3,182	68%	0.29	0	0.739	0.080	0.526	0.526	47.4%
1961	D	14,001	4,265	6,068	10,333	4,286	64%	0.28	0	0.919	0.080	0.615	0.615	38.5%
1962	B	11,523	4,256	3,515	7,771	3,360	67%	0.29	0	0.780	0.080	0.549	0.549	45.1%
1963	W	20,557	4,308	10,166	14,474	6,738	59%	0.26	0	1.142	0.080	0.704	0.704	29.6%
1964	D	28,658	4,304	8,968	13,272	9,768	25%	0.25	0	1.077	0.080	0.325	0.325	67.5%
1965	W	13,651	4,070	6,257	10,327	4,155	64%	0.28	0	0.918	0.080	0.618	0.618	38.2%
1966	B	24,586	4,292	10,300	14,592	8,245	57%	0.25	0	1.149	0.080	0.688	0.688	31.2%
1967	W	13,623	4,305	6,320	10,625	4,145	64%	0.28	0	0.934	0.080	0.628	0.628	37.2%
1968	B	16,241	2,102	4,054	6,156	5,124	62%	0.27	0	0.693	0.080	0.458	0.458	54.2%
1969	W	13,818	4,280	6,021	10,301	4,218	64%	0.28	0	0.917	0.080	0.615	0.615	38.5%
1970	W	17,644	2,617	4,089	6,706	5,649	61%	0.26	0	0.723	0.080	0.469	0.469	53.1%
1971	W	21,019	4,288	10,300	14,588	6,911	58%	0.26	0	1.148	0.080	0.705	0.705	29.5%
1972	B	15,347	4,305	6,901	11,206	4,790	62%	0.27	0	0.966	0.080	0.633	0.633	36.7%
1973	A	22,322	4,280	10,300	14,580	7,398	58%	0.25	0	1.148	0.080	0.698	0.698	30.2%
1974	W	52,027	4,306	10,300	14,606	18,508	23%	0.23	0	1.149	0.080	0.327	0.327	67.3%
1975	W	17,581	4,305	4,614	8,919	5,625	61%	0.26	0	0.842	0.080	0.542	0.542	45.8%
1976	C	19,229	4,306	4,941	9,247	6,242	59%	0.26	0	0.860	0.080	0.544	0.544	45.6%
1977	C	8,416	2,657	3,407	6,064	2,198	73%	0.31	0	0.688	0.080	0.526	0.526	47.4%
1978	A	6,922	2,466	1,702	4,168	1,639	78%	0.33	0	0.586	0.080	0.474	0.474	52.6%
1979	B	14,374	4,308	6,224	10,532	4,426	63%	0.28	0	0.929	0.080	0.618	0.618	38.2%
1980	A	16,297	4,290	7,737	12,027	5,145	62%	0.27	0	1.010	0.080	0.653	0.653	34.7%
1981	D	13,017	4,290	4,614	8,904	3,918	65%	0.28	0	0.842	0.080	0.574	0.574	42.6%
1982	W	31,126	4,280	10,300	14,580	10,691	24%	0.24	0	1.148	0.080	0.340	0.340	66.0%
1983	W	39,113	4,306	4,901	9,207	13,678	24%	0.24	0	0.858	0.080	0.265	0.265	73.5%
1984	W	62,800	1,743	3,623	5,366	22,537	23%	0.23	0	0.650	0.080	0.210	0.210	79.0%
1985	D	33,527	4,296	10,300	14,596	11,589	24%	0.24	0	1.149	0.080	0.338	0.338	66.2%
1986	W	9,546	2,497	4,174	6,671	2,620	71%	0.30	0	0.721	0.080	0.532	0.532	46.8%
1987	D	11,210	4,272	3,489	7,761	3,243	67%	0.29	0	0.780	0.080	0.552	0.552	44.8%
1988	C	8,448	2,974	1,866	4,840	2,210	73%	0.31	0	0.622	0.080	0.477	0.477	52.3%
1989	D	8,577	2,340	3,333	5,673	2,258	73%	0.31	0	0.667	0.080	0.508	0.508	49.2%
1990	C	11,756	4,246	3,561	7,807	3,447	67%	0.29	0	0.782	0.080	0.548	0.548	45.2%
1991	C	8,142	2,411	2,302	4,713	2,095	74%	0.32	0	0.615	0.080	0.476	0.476	52.4%
1992	C	7,589	3,111	1,518	4,629	1,888	76%	0.32	0	0.611	0.080	0.482	0.482	51.8%

DECEMBER

Year	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	17,143	4,207	9,735	13,942	5,461	61%	0.45	0	1.006	0.000	0.457	0.457	54.3%
1923	34,539	4,207	3,897	8,104	11,968	24%	0.24	0	0.691	0.000	0.166	0.166	83.4%
1924	13,865	3,685	6,670	10,355	4,236	64%	0.48	0	0.812	0.000	0.387	0.387	61.3%
1925	11,248	4,207	4,849	9,056	3,257	67%	0.50	0	0.742	0.000	0.372	0.372	62.8%
1926	12,596	4,207	2,822	7,029	3,761	65%	0.49	0	0.632	0.000	0.308	0.308	69.2%
1927	14,342	2,946	9,142	12,088	4,414	63%	0.47	0	0.906	0.000	0.428	0.428	57.2%
1928	16,574	4,207	3,902	8,109	5,249	61%	0.46	0	0.691	0.000	0.316	0.316	68.4%
1929	13,461	4,207	6,029	10,236	4,084	64%	0.48	0	0.806	0.000	0.386	0.386	61.4%
1930	14,442	4,207	6,300	10,507	4,451	63%	0.47	0	0.820	0.000	0.387	0.387	61.3%
1931	9,276	2,194	2,925	5,119	2,519	71%	0.53	0	0.529	0.000	0.280	0.280	72.0%
1932	14,650	4,207	8,677	12,884	4,529	63%	0.47	0	0.949	0.000	0.446	0.446	55.4%
1933	8,582	2,465	2,457	4,922	2,260	73%	0.54	0	0.519	0.000	0.281	0.281	71.9%
1934	12,474	4,166	5,542	9,708	3,715	66%	0.49	0	0.777	0.000	0.380	0.380	62.0%
1935	8,503	3,216	3,390	6,606	2,230	73%	0.54	0	0.610	0.000	0.331	0.331	66.9%
1936	10,125	3,790	2,964	6,754	2,837	69%	0.52	0	0.618	0.000	0.319	0.319	68.1%
1937	12,454	4,207	5,584	9,791	3,708	66%	0.49	0	0.782	0.000	0.382	0.382	61.8%
1938	45,721	4,207	6,823	11,030	16,150	23%	0.23	0	0.849	0.000	0.198	0.198	80.2%
1939	18,684	3,348	3,735	7,083	6,038	60%	0.45	0	0.635	0.000	0.284	0.284	71.6%
1940	7,841	1,432	2,676	4,108	1,983	75%	0.56	0	0.475	0.000	0.264	0.264	73.6%
1941	30,791	4,207	10,300	14,507	10,566	24%	0.24	0	1.036	0.000	0.252	0.252	74.8%
1942	65,619	3,476	3,608	7,084	23,592	23%	0.23	0	0.635	0.000	0.144	0.144	85.6%
1943	28,806	4,207	3,779	7,986	9,823	25%	0.25	0	0.684	0.000	0.168	0.168	83.2%
1944	13,774	4,207	6,423	10,630	4,201	64%	0.48	0	0.827	0.000	0.394	0.394	60.6%
1945	15,826	4,207	7,898	12,105	4,969	62%	0.46	0	0.907	0.000	0.419	0.419	58.1%
1946	54,672	4,207	6,537	10,744	19,497	23%	0.23	0	0.833	0.000	0.192	0.192	80.8%
1947	18,132	4,207	9,906	14,113	5,831	60%	0.45	0	1.015	0.000	0.456	0.456	54.4%
1948	9,901	2,535	3,357	5,892	2,753	70%	0.52	0	0.571	0.000	0.296	0.296	70.4%
1949	15,563	4,207	7,216	11,423	4,871	62%	0.46	0	0.870	0.000	0.404	0.404	59.6%
1950	10,825	4,207	2,829	7,036	3,099	68%	0.51	0	0.633	0.000	0.321	0.321	67.9%
1951	68,100	4,207	9,967	14,174	24,519	23%	0.23	0	1.018	0.000	0.231	0.231	76.9%
1952	43,335	4,207	10,300	14,507	15,257	23%	0.23	0	1.036	0.000	0.243	0.243	75.7%
1953	42,331	3,327	3,742	7,069	14,882	24%	0.24	0	0.635	0.000	0.149	0.149	85.1%
1954	14,919	4,207	3,897	8,104	4,630	63%	0.47	0	0.691	0.000	0.323	0.323	67.7%
1955	25,520	4,207	10,300	14,507	8,594	25%	0.25	0	1.036	0.000	0.259	0.259	74.1%
1956	25,954	4,207	10,300	14,507	8,757	25%	0.25	0	1.036	0.000	0.258	0.258	74.2%
1957	14,143	4,207	4,541	8,748	4,339	64%	0.47	0	0.725	0.000	0.344	0.344	65.6%
1958	23,752	4,207	4,516	8,723	7,933	57%	0.43	0	0.724	0.000	0.310	0.310	69.0%
1959	14,627	3,368	3,852	7,220	4,520	63%	0.47	0	0.643	0.000	0.302	0.302	69.8%
1960	10,418	3,563	2,791	6,354	2,946	69%	0.51	0	0.596	0.000	0.305	0.305	69.5%
1961	18,000	4,207	8,636	12,843	5,782	60%	0.45	0	0.946	0.000	0.426	0.426	57.4%
1962	16,256	4,207	7,415	11,622	5,130	62%	0.46	0	0.880	0.000	0.405	0.405	59.5%
1963	27,555	4,207	10,300	14,507	9,356	25%	0.25	0	1.036	0.000	0.256	0.256	74.4%
1964	14,847	4,207	4,302	8,509	4,603	63%	0.47	0	0.712	0.000	0.334	0.334	66.6%
1965	28,466	4,207	10,300	14,507	9,696	25%	0.25	0	1.036	0.000	0.255	0.255	74.5%
1966	16,994	4,207	4,715	8,922	5,406	61%	0.46	0	0.735	0.000	0.335	0.335	66.5%
1967	32,878	4,207	10,300	14,507	11,346	24%	0.24	0	1.036	0.000	0.250	0.250	75.0%
1968	16,692	3,340	3,735	7,075	5,293	61%	0.46	0	0.635	0.000	0.290	0.290	71.0%
1969	24,093	4,207	10,300	14,507	8,061	57%	0.43	0	1.036	0.000	0.443	0.443	55.7%
1970	50,159	3,343	3,481	6,824	17,809	23%	0.23	0	0.621	0.000	0.144	0.144	85.6%
1971	53,335	4,207	6,794	11,001	18,997	23%	0.23	0	0.847	0.000	0.195	0.195	80.5%
1972	21,044	4,207	5,707	9,914	6,920	58%	0.44	0	0.788	0.000	0.345	0.345	65.5%
1973	26,198	4,207	8,229	12,436	8,848	25%	0.25	0	0.924	0.000	0.230	0.230	77.0%
1974	61,593	4,207	5,462	9,669	22,086	23%	0.23	0	0.775	0.000	0.177	0.177	82.3%
1975	17,619	3,344	4,248	7,592	5,640	61%	0.45	0	0.663	0.000	0.300	0.300	70.0%
1976	16,774	4,207	4,542	8,749	5,323	61%	0.46	0	0.725	0.000	0.331	0.331	66.9%
1977	8,315	1,741	3,234	4,975	2,160	74%	0.55	0	0.522	0.000	0.285	0.285	71.5%
1978	12,285	3,450	6,219	9,669	3,645	66%	0.49	0	0.775	0.000	0.380	0.380	62.0%
1979	13,792	4,207	3,678	7,885	4,208	64%	0.48	0	0.679	0.000	0.324	0.324	67.6%
1980	20,832	4,207	6,999	11,206	6,841	59%	0.44	0	0.858	0.000	0.376	0.376	62.4%
1981	15,611	4,207	3,624	7,831	4,889	62%	0.46	0	0.676	0.000	0.313	0.313	68.7%
1982	68,518	4,207	8,839	13,046	24,676	23%	0.23	0	0.957	0.000	0.217	0.217	78.3%
1983	55,416	3,066	4,318	7,384	19,776	23%	0.23	0	0.652	0.000	0.150	0.150	85.0%
1984	82,951	2,994	3,104	6,098	30,074	22%	0.22	0	0.582	0.000	0.131	0.131	86.9%
1985	23,880	4,207	3,779	7,986	7,981	57%	0.43	0	0.684	0.000	0.293	0.293	70.7%
1986	15,472	4,207	7,716	11,923	4,837	62%	0.46	0	0.897	0.000	0.417	0.417	58.3%
1987	13,783	4,207	6,093	10,300	4,205	64%	0.48	0	0.809	0.000	0.386	0.386	61.4%
1988	15,842	4,207	7,679	11,886	4,975	62%	0.46	0	0.895	0.000	0.414	0.414	58.6%
1989	8,849	2,467	3,253	5,720	2,360	72%	0.54	0	0.562	0.000	0.301	0.301	69.9%
1990	12,785	4,207	4,339	8,546	3,832	65%	0.49	0	0.714	0.000	0.347	0.347	65.3%
1991	8,487	1,784	2,953	4,737	2,224	73%	0.54	0	0.509	0.000	0.276	0.276	72.4%
1992	7,466	2,964	1,609	4,573	1,842	76%	0.56	0	0.500	0.000	0.282	0.282	71.8%

JANUARY

Year	Sac River Flows	CVP Flows	SWP Flows	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	17,504	4,207	9,307	13,514	5,596	61%	0.27	0	0.983	0.000	0.261	0.261	73.9%
1923	32,280	1,365	3,614	4,979	11,123	24%	0.24	0	0.522	0.000	0.126	0.126	87.4%
1924	14,620	4,207	6,652	10,859	4,518	63%	0.27	0	0.839	0.000	0.230	0.230	77.0%
1925	10,209	3,551	3,152	6,703	2,868	69%	0.30	0	0.615	0.000	0.183	0.183	81.7%
1926	19,019	4,207	9,501	13,708	6,163	60%	0.26	0	0.993	0.000	0.259	0.259	74.1%
1927	30,312	4,207	7,676	11,883	10,387	24%	0.24	0	0.895	0.000	0.218	0.218	78.2%
1928	25,913	3,663	3,622	7,285	8,741	25%	0.25	0	0.646	0.000	0.161	0.161	83.9%
1929	15,266	4,207	6,962	11,169	4,759	62%	0.27	0	0.856	0.000	0.233	0.233	76.7%
1930	20,771	4,207	9,645	13,852	6,818	59%	0.26	0	1.001	0.000	0.258	0.258	74.2%
1931	11,965	4,207	4,897	9,104	3,525	66%	0.29	0	0.745	0.000	0.214	0.214	78.6%
1932	17,253	4,207	10,229	14,436	5,503	61%	0.27	0	1.032	0.000	0.274	0.274	72.6%
1933	12,602	4,207	5,742	9,949	3,763	65%	0.28	0	0.790	0.000	0.224	0.224	77.6%
1934	16,103	4,207	8,272	12,479	5,073	62%	0.27	0	0.927	0.000	0.250	0.250	75.0%
1935	25,471	4,207	10,245	14,452	8,576	25%	0.25	0	1.033	0.000	0.258	0.258	74.2%
1936	31,753	4,207	10,253	14,460	10,926	24%	0.24	0	1.034	0.000	0.251	0.251	74.9%
1937	15,717	4,207	8,382	12,589	4,928	62%	0.27	0	0.933	0.000	0.252	0.252	74.8%
1938	31,443	3,442	3,233	6,675	10,810	24%	0.24	0	0.613	0.000	0.149	0.149	85.1%
1939	18,407	1,562	3,239	4,801	5,934	60%	0.26	0	0.512	0.000	0.135	0.135	86.5%
1940	23,448	4,207	10,232	14,439	7,820	57%	0.25	0	1.033	0.000	0.261	0.261	73.9%
1941	73,830	4,207	10,300	14,507	26,662	23%	0.23	0	1.036	0.000	0.234	0.234	76.6%
1942	63,260	1,331	3,239	4,570	22,709	23%	0.23	0	0.500	0.000	0.114	0.114	88.6%
1943	58,056	1,337	3,303	4,640	20,763	23%	0.23	0	0.503	0.000	0.115	0.115	88.5%
1944	17,677	4,207	3,262	7,469	5,661	60%	0.26	0	0.656	0.000	0.174	0.174	82.6%
1945	14,052	4,207	4,922	9,129	4,305	64%	0.28	0	0.746	0.000	0.206	0.206	79.4%
1946	43,229	4,207	3,637	7,844	15,218	23%	0.23	0	0.676	0.000	0.159	0.159	84.1%
1947	14,971	4,207	4,377	8,584	4,649	63%	0.27	0	0.716	0.000	0.196	0.196	80.4%
1948	14,649	3,894	6,670	10,564	4,529	63%	0.27	0	0.823	0.000	0.226	0.226	77.4%
1949	14,678	4,207	6,661	10,868	4,540	63%	0.27	0	0.840	0.000	0.230	0.230	77.0%
1950	20,184	4,207	10,247	14,454	6,599	59%	0.26	0	1.033	0.000	0.267	0.267	73.3%
1951	62,213	4,207	3,904	8,111	22,318	23%	0.23	0	0.691	0.000	0.158	0.158	84.2%
1952	67,352	4,207	3,272	7,479	24,240	23%	0.23	0	0.657	0.000	0.149	0.149	85.1%
1953	64,078	1,553	3,333	4,886	23,015	23%	0.23	0	0.517	0.000	0.118	0.118	88.2%
1954	33,414	3,375	3,792	7,167	11,547	24%	0.24	0	0.640	0.000	0.154	0.154	84.6%
1955	22,007	4,207	3,274	7,481	7,281	58%	0.26	0	0.657	0.000	0.168	0.168	83.2%
1956	84,719	4,207	5,320	9,527	30,735	22%	0.22	0	0.767	0.000	0.172	0.172	82.8%
1957	18,639	4,207	3,842	8,049	6,021	60%	0.26	0	0.688	0.000	0.180	0.180	82.0%
1958	36,219	2,534	3,230	5,764	12,596	24%	0.24	0	0.564	0.000	0.135	0.135	86.5%
1959	35,167	1,570	3,333	4,903	12,202	24%	0.24	0	0.518	0.000	0.124	0.124	87.6%
1960	13,772	4,207	5,924	10,131	4,201	64%	0.28	0	0.800	0.000	0.222	0.222	77.8%
1961	14,758	4,207	6,914	11,121	4,569	63%	0.27	0	0.853	0.000	0.234	0.234	76.6%
1962	15,094	4,207	3,415	7,622	4,695	63%	0.27	0	0.664	0.000	0.181	0.181	81.9%
1963	18,194	4,207	3,681	7,888	5,855	60%	0.26	0	0.679	0.000	0.179	0.179	82.1%
1964	26,403	4,207	3,838	8,045	8,925	25%	0.25	0	0.687	0.000	0.171	0.171	82.9%
1965	81,240	4,207	6,946	11,153	29,434	22%	0.22	0	0.855	0.000	0.192	0.192	80.8%
1966	29,635	2,263	3,563	5,826	10,133	24%	0.24	0	0.567	0.000	0.139	0.139	86.1%
1967	33,553	4,207	3,964	8,171	11,599	24%	0.24	0	0.694	0.000	0.167	0.167	83.3%
1968	30,635	1,558	3,333	4,891	10,507	24%	0.24	0	0.517	0.000	0.126	0.126	87.4%
1969	67,731	4,207	3,253	7,460	24,381	23%	0.23	0	0.656	0.000	0.149	0.149	85.1%
1970	92,665	1,342	3,333	4,675	33,707	22%	0.22	0	0.505	0.000	0.113	0.113	88.7%
1971	46,793	3,268	3,850	7,118	16,551	23%	0.23	0	0.637	0.000	0.149	0.149	85.1%
1972	20,395	4,207	3,851	8,058	6,678	59%	0.26	0	0.688	0.000	0.178	0.178	82.2%
1973	47,499	4,207	3,172	7,379	16,815	23%	0.23	0	0.651	0.000	0.152	0.152	84.8%
1974	78,417	3,677	3,633	7,310	28,378	22%	0.22	0	0.648	0.000	0.146	0.146	85.4%
1975	18,672	1,557	3,848	5,405	6,033	60%	0.26	0	0.545	0.000	0.143	0.143	85.7%
1976	16,769	1,571	3,774	5,345	5,322	61%	0.27	0	0.542	0.000	0.145	0.145	85.5%
1977	7,906	2,356	2,442	4,798	2,007	75%	0.32	0	0.512	0.000	0.163	0.163	83.7%
1978	43,250	4,025	8,801	12,826	15,226	23%	0.23	0	0.945	0.000	0.222	0.222	77.8%
1979	27,242	4,207	3,262	7,469	9,239	25%	0.25	0	0.656	0.000	0.162	0.162	83.8%
1980	60,771	4,207	3,159	7,366	21,778	23%	0.23	0	0.651	0.000	0.149	0.149	85.1%
1981	28,602	1,398	3,333	4,731	9,747	25%	0.25	0	0.508	0.000	0.125	0.125	87.5%
1982	51,172	4,207	3,820	8,027	18,188	23%	0.23	0	0.686	0.000	0.159	0.159	84.1%
1983	59,148	1,358	2,648	4,006	21,171	23%	0.23	0	0.469	0.000	0.107	0.107	89.3%
1984	47,354	1,331	2,881	4,212	16,760	23%	0.23	0	0.480	0.000	0.112	0.112	88.8%
1985	16,549	1,639	3,850	5,489	5,239	61%	0.27	0	0.549	0.000	0.147	0.147	85.3%
1986	21,253	4,207	9,891	14,098	6,999	58%	0.26	0	1.014	0.000	0.260	0.260	74.0%
1987	16,734	2,892	6,154	9,046	5,309	61%	0.27	0	0.741	0.000	0.198	0.198	80.2%
1988	25,530	4,207	10,252	14,459	8,598	25%	0.25	0	1.034	0.000	0.258	0.258	74.2%
1989	11,998	4,198	4,527	8,725	3,537	66%	0.29	0	0.724	0.000	0.208	0.208	79.2%
1990	21,584	1,704	10,252	11,956	7,122	58%	0.26	0	0.899	0.000	0.230	0.230	77.0%
1991	6,851	1,697	1,707	3,404	1,612	78%	0.33	0	0.437	0.000	0.145	0.145	85.5%
1992	11,890	4,199	4,626	8,825	3,497	66%	0.29	0	0.729	0.000	0.209	0.209	79.1%

Formulas: Sacramento River Spring Smolt Yearling Survival Model

C10 ='Study 467 Flow Data'!B7
D10 ='Study 467 Flow Data'!L7
E10 ='Study 467 Flow Data'!V7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
J10 =IF(-2.45925+(0.0420748*$T$1)>0,-2.45925+(0.0420748*$T$1),0)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =IF(-1.613493+(0.0319584*$T$1)>0,-1.613493+(0.0319584*$T$1),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!C7
R10 ='Study 467 Flow Data'!M7
S10 ='Study 467 Flow Data'!W7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
Z10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!D7
AF10 ='Study 467 Flow Data'!N7
AG10 ='Study 467 Flow Data'!X7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AN10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

Study 526 Sacramento River Spring Run Yearling Survival Model (continued)

February Water Temp 50 F
March Water Temp 55 F

Cross Channel Closed Over 25000 cfs
Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF
6	**FEBRUARY**				Calculated									
7	Sac				Sutter &								**Calculated**	
8	River	CVP	SWP	CVP + SWF	Steamboat		X-Channel		Calculated Mortality				**Survivability**	
9	Flow	Flow	Flow	Exports	Slough Q	Percent	Closed	m1	m2	m3	m23	m123	**s123**	
10	35,290	4,251	4,099	8,350	12,248	24%	0.24	0	0.758	0.000	0.182	0.182	**81.8%**	
11	22,200	2,172	2,377	4,549	7,353	58%	0.25	0	0.552	0.000	0.141	0.141	**85.9%**	
12	17,751	4,219	4,896	9,115	5,689	60%	0.26	0	0.799	0.000	0.211	0.211	**78.9%**	
13	44,692	3,220	10,269	13,489	15,765	23%	0.23	0	1.035	0.000	0.242	0.242	**75.8%**	
14	36,217	4,231	10,299	14,530	12,595	24%	0.24	0	1.091	0.000	0.261	0.261	**73.9%**	
15	87,579	2,193	4,107	6,300	31,805	22%	0.22	0	0.647	0.000	0.145	0.145	**85.5%**	
16	28,340	1,827	4,374	6,201	9,649	25%	0.25	0	0.642	0.000	0.158	0.158	**84.2%**	
17	18,287	3,822	4,899	8,721	5,889	60%	0.26	0	0.778	0.000	0.205	0.205	**79.5%**	
18	15,675	2,708	3,891	6,599	4,912	62%	0.27	0	0.663	0.000	0.180	0.180	**82.0%**	
19	11,083	3,334	1,890	5,224	3,195	68%	0.29	0	0.589	0.000	0.172	0.172	**82.8%**	
20	14,487	4,242	4,870	9,112	4,468	63%	0.28	0	0.799	0.000	0.220	0.220	**78.0%**	
21	13,115	4,217	2,831	7,048	3,955	65%	0.28	0	0.687	0.000	0.193	0.193	**80.7%**	
22	12,740	1,231	4,555	5,786	3,815	65%	0.28	0	0.619	0.000	0.175	0.175	**82.5%**	
23	11,977	685	3,939	4,624	3,529	66%	0.29	0	0.556	0.000	0.160	0.160	**84.0%**	
24	49,118	4,247	10,299	14,546	17,420	23%	0.23	0	1.092	0.000	0.254	0.254	**74.6%**	
25	32,275	3,917	5,711	9,628	11,121	24%	0.24	0	0.827	0.000	0.200	0.200	**80.0%**	
26	82,366	1,219	3,900	5,119	29,855	22%	0.22	0	0.583	0.000	0.131	0.131	**86.9%**	
27	19,024	1,562	3,955	5,517	6,165	60%	0.26	0	0.605	0.000	0.158	0.158	**84.2%**	
28	43,658	4,241	6,458	10,699	15,378	23%	0.23	0	0.885	0.000	0.208	0.208	**79.2%**	
29	75,037	4,293	3,792	8,085	27,114	23%	0.23	0	0.743	0.000	0.168	0.168	**83.2%**	
30	78,349	1,664	3,955	5,619	28,353	23%	0.23	0	0.610	0.000	0.137	0.137	**86.3%**	
31	52,259	1,997	4,005	6,002	18,595	23%	0.23	0	0.631	0.000	0.146	0.146	**85.4%**	
32	31,866	1,443	3,958	5,401	10,968	24%	0.24	0	0.598	0.000	0.145	0.145	**85.5%**	
33	38,798	4,241	3,941	8,182	13,560	24%	0.24	0	0.749	0.000	0.178	0.178	**82.2%**	
34	23,843	1,996	4,377	6,373	7,967	57%	0.25	0	0.651	0.000	0.164	0.164	**83.6%**	
35	21,069	2,615	3,845	6,460	6,930	58%	0.26	0	0.656	0.000	0.168	0.168	**83.2%**	
36	15,928	4,227	1,639	5,866	5,007	62%	0.27	0	0.624	0.000	0.168	0.168	**83.2%**	
37	16,021	4,241	4,066	8,307	5,042	62%	0.27	0	0.755	0.000	0.204	0.204	**79.6%**	
38	33,536	4,249	9,500	13,749	11,592	24%	0.24	0	1.049	0.000	0.253	0.253	**74.7%**	
39	60,566	2,000	4,636	6,636	21,702	23%	0.23	0	0.665	0.000	0.152	0.152	**84.8%**	
40	64,731	1,408	3,873	5,281	23,259	23%	0.23	0	0.592	0.000	0.135	0.135	**86.5%**	
41	28,344	2,000	4,060	6,060	9,651	25%	0.25	0	0.634	0.000	0.156	0.156	**84.4%**	
42	57,158	1,981	4,600	6,581	20,427	23%	0.23	0	0.662	0.000	0.152	0.152	**84.8%**	
43	16,298	1,838	3,745	5,583	5,145	62%	0.27	0	0.608	0.000	0.163	0.163	**83.7%**	
44	63,748	1,410	4,638	6,048	22,892	23%	0.23	0	0.633	0.000	0.144	0.144	**85.6%**	
45	33,144	1,589	4,624	6,213	11,446	24%	0.24	0	0.642	0.000	0.155	0.155	**84.5%**	
46	63,593	1,750	4,005	5,755	22,834	23%	0.23	0	0.618	0.000	0.141	0.141	**85.9%**	
47	50,082	1,815	4,060	5,875	17,781	23%	0.23	0	0.624	0.000	0.145	0.145	**85.5%**	
48	26,653	4,231	8,200	12,431	9,018	25%	0.25	0	0.978	0.000	0.243	0.243	**75.7%**	
49	31,754	4,037	8,760	12,797	10,926	24%	0.24	0	0.998	0.000	0.242	0.242	**75.8%**	
50	38,281	1,165	8,813	9,978	13,367	24%	0.24	0	0.846	0.000	0.201	0.201	**79.9%**	
51	58,694	4,281	4,413	8,694	21,002	23%	0.23	0	0.776	0.000	0.178	0.178	**82.2%**	
52	17,861	1,984	4,636	6,620	5,730	60%	0.26	0	0.664	0.000	0.175	0.175	**82.5%**	
53	33,326	3,903	4,640	8,543	11,514	24%	0.24	0	0.768	0.000	0.185	0.185	**81.5%**	
54	26,777	2,028	4,374	6,402	9,065	25%	0.25	0	0.653	0.000	0.162	0.162	**83.8%**	
55	40,617	1,400	3,166	4,566	14,241	24%	0.24	0	0.553	0.000	0.131	0.131	**86.9%**	
56	56,470	1,982	4,060	6,042	20,170	23%	0.23	0	0.633	0.000	0.145	0.145	**85.5%**	
57	67,482	1,415	3,135	4,550	24,288	23%	0.23	0	0.552	0.000	0.125	0.125	**87.5%**	
58	57,565	1,202	4,060	5,262	20,579	23%	0.23	0	0.591	0.000	0.136	0.136	**86.4%**	
59	28,275	2,179	4,636	6,815	9,625	25%	0.25	0	0.675	0.000	0.166	0.166	**83.4%**	
60	25,083	1,825	4,554	6,379	8,431	25%	0.25	0	0.651	0.000	0.163	0.163	**83.7%**	
61	70,967	1,919	4,393	6,312	25,592	23%	0.23	0	0.648	0.000	0.147	0.147	**85.3%**	
62	41,926	1,928	4,374	6,302	14,730	24%	0.24	0	0.647	0.000	0.152	0.152	**84.8%**	
63	58,811	1,627	4,572	6,199	21,045	23%	0.23	0	0.642	0.000	0.147	0.147	**85.3%**	
64	20,229	1,319	4,430	5,749	6,616	59%	0.26	0	0.617	0.000	0.160	0.160	**84.0%**	
65	12,190	704	1,257	1,961	3,609	66%	0.29	0	0.413	0.000	0.118	0.118	**88.2%**	
66	51,370	1,752	3,781	5,533	18,262	23%	0.23	0	0.606	0.000	0.140	0.140	**86.0%**	
67	41,682	1,523	3,955	5,478	14,639	24%	0.24	0	0.603	0.000	0.142	0.142	**85.8%**	
68	71,932	903	3,768	4,671	25,953	23%	0.23	0	0.559	0.000	0.126	0.126	**87.4%**	
69	29,672	1,773	4,060	5,833	10,147	24%	0.24	0	0.622	0.000	0.152	0.152	**84.8%**	
70	65,645	1,273	4,581	5,854	23,601	23%	0.23	0	0.623	0.000	0.142	0.142	**85.8%**	
71	82,910	1,395	2,793	4,188	30,058	22%	0.22	0	0.533	0.000	0.120	0.120	**88.0%**	
72	37,282	1,491	3,847	5,338	12,993	24%	0.24	0	0.595	0.000	0.142	0.142	**85.8%**	
73	19,884	1,771	4,588	6,359	6,487	59%	0.26	0	0.650	0.000	0.169	0.169	**83.1%**	
74	90,600	4,244	3,876	8,120	32,934	22%	0.22	0	0.745	0.000	0.166	0.166	**83.4%**	
75	23,028	1,276	4,277	5,553	7,662	58%	0.25	0	0.607	0.000	0.154	0.154	**84.6%**	
76	16,332	4,244	1,884	6,128	5,158	62%	0.27	0	0.638	0.000	0.171	0.171	**82.9%**	
77	11,719	959	1,706	2,665	3,433	67%	0.29	0	0.451	0.000	0.130	0.130	**87.0%**	
78	16,946	1,315	6,488	7,803	5,388	61%	0.27	0	0.728	0.000	0.194	0.194	**80.6%**	
79	11,450	414	885	1,299	3,332	67%	0.29	0	0.377	0.000	0.109	0.109	**89.1%**	
80	32,038	653	10,265	10,918	11,032	24%	0.24	0	0.896	0.000	0.217	0.217	**78.3%**	

	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU
6	**MARCH**				Calculated										
7	Sac				Sutter &								**Calculated**		**Weighted**
8	River			CVP + SWF	Steamboat		X-Channel		Calculated Mortality				**Survivability**		**Total**
9	Flow	CVP	SWP	exports	Slough Q	percent	Closed	m1	m2	m3	m23	m123	**s123**		**Survival**
10	31,554	2,823	4,126	6,949	10,851	24%	0.24	0	0.772	0.144	0.297	0.297	**70.3%**		**55.1%**
11	15,486	3,225	3,505	6,730	4,842	62%	0.27	0	0.760	0.144	0.311	0.311	**68.9%**		**67.4%**
12	12,240	1,460	1,836	3,296	3,628	66%	0.29	0	0.575	0.144	0.267	0.267	**73.3%**		**59.0%**
13	18,563	3,260	4,619	7,879	5,993	60%	0.26	0	0.822	0.144	0.322	0.322	**67.8%**		**61.8%**
14	16,369	2,914	3,909	6,823	5,172	61%	0.27	0	0.765	0.144	0.311	0.311	**68.9%**		**61.6%**
15	43,865	3,459	4,136	7,595	15,456	23%	0.23	0	0.807	0.144	0.300	0.300	**70.0%**		**51.4%**
16	86,223	3,154	4,424	7,578	31,297	22%	0.22	0	0.806	0.144	0.292	0.292	**70.8%**		**56.6%**
17	14,163	1,978	2,752	4,730	4,347	64%	0.28	0	0.652	0.144	0.285	0.285	**71.5%**		**56.7%**
18	30,090	2,657	3,791	6,448	10,304	24%	0.24	0	0.745	0.144	0.291	0.291	**70.9%**		**61.4%**
19	9,226	1,683	2,118	3,801	2,501	71%	0.31	0	0.602	0.144	0.284	0.284	**71.6%**		**65.3%**
20	10,116	936	2,318	3,254	2,833	69%	0.30	0	0.572	0.144	0.272	0.272	**72.8%**		**60.7%**
21	9,943	26	4,446	4,472	2,769	70%	0.30	0	0.638	0.144	0.292	0.292	**70.8%**		**65.2%**
22	14,511	2,227	2,015	4,242	4,477	63%	0.27	0	0.626	0.144	0.277	0.277	**72.3%**		**64.6%**
23	24,918	4,225	6,982	11,207	8,369	57%	0.25	0	1.002	0.144	0.359	0.359	**64.1%**		**60.8%**
24	33,198	4,225	4,432	8,657	11,466	24%	0.24	0	0.864	0.144	0.318	0.318	**68.2%**		**61.7%**
25	37,908	2,572	4,017	6,589	13,228	24%	0.24	0	0.752	0.144	0.289	0.289	**71.1%**		**58.5%**
26	78,637	2,058	3,952	6,010	28,460	22%	0.22	0	0.721	0.144	0.274	0.274	**72.6%**		**62.6%**
27	16,390	2,708	3,980	6,688	5,180	61%	0.27	0	0.758	0.144	0.309	0.309	**69.1%**		**66.9%**
28	59,187	4,225	4,647	8,872	21,186	23%	0.23	0	0.876	0.144	0.312	0.312	**68.8%**		**66.3%**
29	58,505	3,441	3,815	7,256	20,931	23%	0.23	0	0.788	0.144	0.292	0.292	**70.8%**		**61.8%**
30	27,099	3,433	4,007	7,440	9,185	25%	0.25	0	0.798	0.144	0.306	0.306	**69.4%**		**71.7%**
31	64,601	1,824	4,056	5,880	23,211	23%	0.23	0	0.714	0.144	0.274	0.274	**72.6%**		**71.2%**
32	25,100	2,998	4,007	7,005	8,437	25%	0.25	0	0.775	0.144	0.302	0.302	**69.8%**		**56.3%**
33	27,033	3,201	4,135	7,336	9,160	25%	0.25	0	0.793	0.144	0.305	0.305	**69.5%**		**54.4%**
34	23,778	3,442	4,424	7,866	7,943	57%	0.25	0	0.821	0.144	0.315	0.315	**68.5%**		**63.0%**
35	22,106	2,500	3,743	6,243	7,318	58%	0.25	0	0.734	0.144	0.294	0.294	**70.6%**		**53.0%**
36	19,112	4,225	3,396	7,621	6,198	60%	0.26	0	0.808	0.144	0.318	0.318	**68.2%**		**63.8%**
37	41,105	4,225	7,295	11,520	14,423	24%	0.24	0	1.019	0.144	0.351	0.351	**64.9%**		**56.1%**
38	22,154	3,175	5,825	9,000	7,336	58%	0.25	0	0.883	0.144	0.332	0.332	**66.8%**		**60.8%**
39	29,827	3,236	4,685	7,921	10,205	24%	0.24	0	0.824	0.144	0.310	0.310	**69.0%**		**74.2%**
40	57,518	3,205	3,919	7,124	20,562	23%	0.23	0	0.781	0.144	0.290	0.290	**71.0%**		**62.1%**
41	24,893	3,167	4,111	7,278	8,360	57%	0.25	0	0.790	0.144	0.306	0.306	**69.4%**		**73.0%**
42	49,536	3,182	4,635	7,817	17,576	23%	0.23	0	0.819	0.144	0.301	0.301	**69.9%**		**60.0%**
43	14,509	3,023	2,935	5,958	4,476	63%	0.27	0	0.718	0.144	0.302	0.302	**69.8%**		**60.7%**
44	36,676	2,056	4,685	6,741	12,767	24%	0.24	0	0.761	0.144	0.291	0.291	**70.9%**		**65.3%**
45	44,377	3,183	4,497	7,680	15,647	23%	0.23	0	0.811	0.144	0.301	0.301	**69.9%**		**60.6%**
46	93,616	3,456	4,056	7,512	34,062	22%	0.22	0	0.802	0.144	0.291	0.291	**70.9%**		**58.2%**
47	21,906	3,022	3,253	6,275	7,243	58%	0.26	0	0.735	0.144	0.295	0.295	**70.5%**		**66.3%**
48	22,349	2,598	3,903	6,501	7,409	58%	0.25	0	0.748	0.144	0.298	0.298	**70.2%**		**62.7%**
49	20,944	2,763	3,808	6,571	6,883	59%	0.26	0	0.751	0.144	0.300	0.300	**70.0%**		**54.2%**
50	26,263	3,422	4,143	7,565	8,872	25%	0.25	0	0.805	0.144	0.308	0.308	**69.2%**		**58.4%**
51	32,645	3,396	4,455	7,851	11,259	24%	0.24	0	0.821	0.144	0.308	0.308	**69.2%**		**59.1%**
52	16,340	2,988	3,521	6,509	5,161	62%	0.27	0	0.748	0.144	0.306	0.306	**69.4%**		**69.9%**
53	21,381	2,934	4,452	7,386	7,046	58%	0.26	0	0.795	0.144	0.311	0.311	**68.9%**		**62.1%**
54	28,683	3,440	4,424	7,864	9,777	25%	0.25	0	0.821	0.144	0.311	0.311	**68.9%**		**56.9%**
55	54,488	3,196	3,270	6,466	19,429	23%	0.23	0	0.746	0.144	0.283	0.283	**71.7%**		**62.6%**
56	36,789	3,023	4,111	7,134	12,809	24%	0.24	0	0.782	0.144	0.296	0.296	**70.4%**		**67.6%**
57	45,319	2,055	3,236	5,291	15,999	23%	0.23	0	0.682	0.144	0.270	0.270	**73.0%**		**55.3%**
58	35,819	3,094	4,111	7,205	12,446	24%	0.24	0	0.786	0.144	0.298	0.298	**70.2%**		**73.6%**
59	51,739	3,436	4,685	8,121	18,400	23%	0.23	0	0.835	0.144	0.304	0.304	**69.6%**		**62.0%**
60	32,930	3,023	4,490	7,513	11,366	24%	0.24	0	0.802	0.144	0.303	0.303	**69.7%**		**58.1%**
61	47,552	3,453	4,445	7,898	16,834	23%	0.23	0	0.823	0.144	0.302	0.302	**69.8%**		**60.9%**
62	34,545	3,437	4,424	7,861	11,970	24%	0.24	0	0.821	0.144	0.307	0.307	**69.3%**		**76.9%**
63	75,998	3,452	4,644	8,096	27,473	23%	0.23	0	0.834	0.144	0.300	0.300	**70.0%**		**63.9%**
64	18,356	2,072	4,440	6,512	5,915	60%	0.26	0	0.748	0.144	0.303	0.303	**69.7%**		**62.4%**
65	7,350	858	1,009	1,867	1,799	76%	0.33	0	0.497	0.144	0.259	0.259	**74.1%**		**65.1%**
66	43,971	2,115	3,900	6,015	15,495	23%	0.23	0	0.721	0.144	0.280	0.280	**72.0%**		**62.1%**
67	32,571	3,184	4,007	7,191	11,232	24%	0.24	0	0.785	0.144	0.299	0.299	**70.1%**		**59.8%**
68	36,480	1,827	3,344	5,171	12,694	24%	0.24	0	0.676	0.144	0.271	0.271	**72.9%**		**56.7%**
69	32,501	3,022	4,111	7,133	11,205	24%	0.24	0	0.782	0.144	0.298	0.298	**70.2%**		**62.3%**
70	69,087	2,937	4,629	7,566	24,889	23%	0.23	0	0.805	0.144	0.294	0.294	**70.6%**		**74.6%**
71	81,934	2,042	2,628	4,670	29,693	22%	0.22	0	0.649	0.144	0.257	0.257	**74.3%**		**81.1%**
72	36,503	3,266	4,007	7,273	12,702	24%	0.24	0	0.789	0.144	0.298	0.298	**70.2%**		**83.7%**
73	22,303	3,023	4,636	7,659	7,391	58%	0.25	0	0.810	0.144	0.314	0.314	**68.6%**		**71.5%**
74	74,704	1,564	4,165	5,729	26,989	23%	0.23	0	0.706	0.144	0.271	0.271	**72.9%**		**57.8%**
75	29,199	2,383	4,134	6,517	9,970	25%	0.25	0	0.749	0.144	0.292	0.292	**70.8%**		**59.1%**
76	11,132	2,052	1,793	3,845	3,213	68%	0.29	0	0.604	0.144	0.278	0.278	**72.2%**		**59.9%**
77	42,577	4,225	6,975	11,200	14,974	24%	0.24	0	1.001	0.144	0.346	0.346	**65.4%**		**64.2%**
78	14,838	2,370	3,493	5,863	4,599	63%	0.27	0	0.713	0.144	0.300	0.300	**70.0%**		**60.3%**
79	29,675	4,225	7,739	11,964	10,148	24%	0.24	0	1.043	0.144	0.364	0.364	**63.6%**		**67.3%**
80	19,706	2,047	6,051	8,098	6,420	59%	0.26	0	0.834	0.144	0.323	0.323	**67.7%**		**65.6%**
81														**AVERAGE:**	**63.01%**

AS10 ='Study 467 Flow Data'!E7
AT10 ='Study 467 Flow Data'!O7
AU10 ='Study 467 Flow Data'!Y7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$K$4,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
BA10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
BB10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =AZ10+BC10-(AZ10*BC10)
BE10 =1-BD10

BG10 ='Study 467 Flow Data'!F7
BH10 ='Study 467 Flow Data'!P7
BI10 ='Study 467 Flow Data'!Z7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$K$4,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BO10 =(-0.5916024)+(0.017968*$BC$3)+(0.000054*BJ10)
BP10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)
BQ10 =(BO10*BM10)+(BP10*(1-BM10))
BR10 =BN10+BQ10-(BN10*BQ10)
BS10 =1-BR10
BU10 =(O10*0.37)+(AC10*0.42)+(AQ10*0.13)+(BE10*0.05)+(BS10*0.03)

Study 526A Sacramento River Spring Run Yearling Survival Model
Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

Year	Water Year Type	NOVEMBER Sac River Flow	CVP Flow	SWP Flow	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2 (Calculated Mortality)	m3	m23	m123	Calculated Survival s123
1922	A	11,464	4,283	3,642	7,925	3,338	67%	0.29	0	0.789	0.080	0.555	0.555	**44.5%**
1923	B	16,485	4,307	7,776	12,083	5,215	61%	0.27	0	1.013	0.080	0.653	0.653	**34.7%**
1924	C	11,080	3,651	3,754	7,405	3,194	68%	0.29	0	0.761	0.080	0.541	0.541	**45.9%**
1925	D	7,024	1,324	3,205	4,529	1,677	78%	0.33	0	0.605	0.080	0.488	0.488	**51.2%**
1926	D	10,800	4,288	2,982	7,270	3,089	68%	0.29	0	0.753	0.080	0.539	0.539	**46.1%**
1927	W	20,382	4,251	10,300	14,551	6,673	59%	0.26	0	1.146	0.080	0.707	0.707	**29.3%**
1928	A	18,385	4,307	9,409	13,716	5,926	60%	0.26	0	1.101	0.080	0.693	0.693	**30.7%**
1929	C	12,695	4,282	5,283	9,565	3,798	65%	0.28	0	0.877	0.080	0.601	0.601	**39.9%**
1930	D	7,159	2,421	1,765	4,186	1,727	77%	0.33	0	0.587	0.080	0.471	0.471	**52.9%**
1931	C	9,723	2,674	3,204	5,878	2,686	70%	0.30	0	0.678	0.080	0.500	0.500	**50.0%**
1932	D	8,258	1,182	1,860	3,042	2,138	74%	0.31	0	0.525	0.080	0.408	0.408	**59.2%**
1933	C	9,511	3,048	2,612	5,660	2,607	71%	0.30	0	0.666	0.080	0.494	0.494	**50.6%**
1934	C	8,126	1,001	1,627	2,628	2,089	74%	0.32	0	0.503	0.080	0.393	0.393	**60.7%**
1935	B	9,281	2,608	4,289	6,897	2,521	71%	0.31	0	0.733	0.080	0.545	0.545	**45.5%**
1936	B	9,693	2,623	3,437	6,060	2,675	70%	0.30	0	0.688	0.080	0.507	0.507	**49.3%**
1937	B	11,490	4,284	3,498	7,782	3,347	67%	0.29	0	0.781	0.080	0.550	0.550	**45.0%**
1938	W	23,782	4,284	10,300	14,584	7,944	57%	0.25	0	1.148	0.080	0.691	0.691	**30.9%**
1939	D	19,522	4,306	4,054	8,360	6,351	59%	0.26	0	0.812	0.080	0.514	0.514	**48.6%**
1940	A	8,444	2,799	1,751	4,550	2,208	73%	0.31	0	0.606	0.080	0.465	0.465	**53.5%**
1941	W	13,764	4,308	6,077	10,385	4,198	64%	0.28	0	0.921	0.080	0.619	0.619	**38.1%**
1942	W	18,268	4,304	3,959	8,263	5,882	60%	0.26	0	0.807	0.080	0.517	0.517	**48.3%**
1943	W	21,794	4,305	4,093	8,398	7,201	58%	0.26	0	0.814	0.080	0.507	0.507	**49.3%**
1944	D	14,618	4,283	6,730	11,013	4,517	63%	0.27	0	0.955	0.080	0.632	0.632	**36.8%**
1945	B	13,861	4,271	6,665	10,936	4,234	64%	0.28	0	0.951	0.080	0.637	0.637	**36.3%**
1946	B	16,866	4,285	8,711	12,996	5,358	61%	0.27	0	1.062	0.080	0.680	0.680	**32.0%**
1947	D	13,358	4,305	6,335	10,640	4,046	64%	0.28	0	0.935	0.080	0.632	0.632	**36.8%**
1948	B	10,366	2,862	3,686	6,548	2,927	69%	0.30	0	0.714	0.080	0.517	0.517	**48.3%**
1949	D	14,329	4,291	5,762	10,053	4,409	63%	0.28	0	0.904	0.080	0.602	0.602	**39.8%**
1950	B	11,109	4,285	3,078	7,363	3,205	68%	0.29	0	0.758	0.080	0.539	0.539	**46.1%**
1951	A	38,338	4,274	10,300	14,574	13,388	24%	0.24	0	1.148	0.080	0.334	0.334	**66.6%**
1952	W	16,230	4,288	7,769	12,057	5,120	62%	0.27	0	1.012	0.080	0.654	0.654	**34.6%**
1953	W	16,617	4,305	4,089	8,394	5,265	61%	0.27	0	0.814	0.080	0.530	0.530	**47.0%**
1954	A	20,523	4,306	9,144	13,450	6,726	59%	0.26	0	1.087	0.080	0.672	0.672	**32.8%**
1955	D	16,266	4,306	7,651	11,957	5,133	62%	0.27	0	1.006	0.080	0.651	0.651	**34.9%**
1956	W	10,811	2,874	4,248	7,122	3,093	68%	0.29	0	0.745	0.080	0.533	0.533	**46.7%**
1957	A	15,552	4,305	4,940	9,245	4,866	62%	0.27	0	0.860	0.080	0.565	0.565	**43.5%**
1958	W	19,338	4,283	9,524	13,807	6,282	59%	0.26	0	1.106	0.080	0.690	0.690	**31.0%**
1959	B	16,212	4,306	4,185	8,491	5,113	62%	0.27	0	0.819	0.080	0.536	0.536	**46.4%**
1960	D	9,814	2,694	3,081	5,775	2,720	70%	0.30	0	0.673	0.080	0.495	0.495	**50.5%**
1961	D	12,583	4,269	5,000	9,269	3,756	65%	0.28	0	0.861	0.080	0.591	0.591	**40.9%**
1962	B	9,698	2,446	3,535	5,981	2,677	70%	0.30	0	0.684	0.080	0.504	0.504	**49.6%**
1963	W	20,838	4,308	10,300	14,608	6,843	59%	0.26	0	1.150	0.080	0.706	0.706	**29.4%**
1964	D	28,492	4,305	10,213	14,518	9,706	25%	0.25	0	1.145	0.080	0.342	0.342	**65.8%**
1965	W	13,491	3,903	6,320	10,223	4,096	64%	0.28	0	0.913	0.080	0.616	0.616	**38.4%**
1966	B	24,741	4,284	10,300	14,584	8,303	57%	0.25	0	1.148	0.080	0.687	0.687	**31.3%**
1967	W	13,714	4,305	6,381	10,686	4,179	64%	0.28	0	0.938	0.080	0.630	0.630	**37.0%**
1968	B	16,161	4,305	4,054	8,359	5,094	62%	0.27	0	0.812	0.080	0.532	0.532	**46.8%**
1969	W	13,150	4,282	5,497	9,779	3,968	65%	0.28	0	0.889	0.080	0.604	0.604	**39.6%**
1970	W	17,727	4,305	4,089	8,394	5,680	60%	0.26	0	0.814	0.080	0.524	0.524	**47.6%**
1971	W	21,030	4,281	10,300	14,581	6,915	58%	0.26	0	1.148	0.080	0.705	0.705	**29.5%**
1972	B	15,429	4,305	6,956	11,261	4,820	62%	0.27	0	0.969	0.080	0.634	0.634	**36.6%**
1973	A	20,583	4,282	10,300	14,582	6,748	59%	0.26	0	1.148	0.080	0.707	0.707	**29.3%**
1974	W	50,542	4,301	10,300	14,601	17,953	23%	0.23	0	1.149	0.080	0.328	0.328	**67.2%**
1975	W	17,663	4,305	4,614	8,919	5,656	61%	0.26	0	0.842	0.080	0.541	0.541	**45.9%**
1976	C	19,117	4,306	4,941	9,247	6,200	60%	0.26	0	0.860	0.080	0.545	0.545	**45.5%**
1977	C	8,416	2,784	3,408	6,192	2,198	73%	0.31	0	0.695	0.080	0.531	0.531	**46.9%**
1978	A	6,922	2,461	1,702	4,163	1,639	78%	0.33	0	0.586	0.080	0.474	0.474	**52.6%**
1979	B	14,631	4,309	6,735	11,044	4,522	63%	0.27	0	0.957	0.080	0.633	0.633	**36.7%**
1980	A	15,879	4,283	7,472	11,755	4,989	62%	0.27	0	0.995	0.080	0.647	0.647	**35.3%**
1981	D	13,099	4,283	4,818	9,101	3,949	65%	0.28	0	0.852	0.080	0.580	0.580	**42.0%**
1982	W	27,214	4,286	10,300	14,586	9,228	25%	0.25	0	1.148	0.080	0.344	0.344	**65.6%**
1983	W	39,001	4,307	4,901	9,208	13,636	24%	0.24	0	0.858	0.080	0.265	0.265	**73.5%**
1984	W	62,687	4,304	3,623	7,927	22,495	23%	0.23	0	0.789	0.080	0.242	0.242	**75.8%**
1985	D	33,125	4,288	10,300	14,588	11,439	24%	0.24	0	1.148	0.080	0.338	0.338	**66.2%**
1986	W	9,636	2,616	4,176	6,792	2,654	70%	0.30	0	0.727	0.080	0.536	0.536	**46.4%**
1987	D	11,212	4,266	3,489	7,755	3,243	67%	0.29	0	0.779	0.080	0.552	0.552	**44.8%**
1988	C	8,448	3,081	1,866	4,947	2,210	73%	0.31	0	0.628	0.080	0.481	0.481	**51.9%**
1989	D	8,668	2,144	3,103	5,247	2,292	73%	0.31	0	0.644	0.080	0.490	0.490	**51.0%**
1990	C	11,532	4,287	2,633	6,920	3,363	67%	0.29	0	0.734	0.080	0.518	0.518	**48.2%**
1991	C	7,821	2,491	2,059	4,550	1,975	75%	0.32	0	0.606	0.080	0.475	0.475	**52.5%**
1992	C	7,726	3,139	1,621	4,760	1,940	75%	0.32	0	0.618	0.080	0.485	0.485	**51.5%**

Year	DECEMBER Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2 (Calculated Mortality)	m3	m23	m123	Calculated Survival s123
1922	17,208	4,207	9,778	13,985	5,486	61%	0.45	0	1.008	0.000	0.458	0.458	**54.2%**
1923	34,350	4,207	3,897	8,104	11,897	24%	0.24	0	0.691	0.000	0.166	0.166	**83.4%**
1924	13,877	3,747	6,618	10,365	4,240	64%	0.48	0	0.813	0.000	0.387	0.387	**61.3%**
1925	11,302	4,207	4,882	9,089	3,277	67%	0.50	0	0.744	0.000	0.373	0.373	**62.7%**
1926	12,986	4,207	2,884	7,091	3,907	65%	0.48	0	0.636	0.000	0.308	0.308	**69.2%**
1927	14,370	2,770	9,336	12,106	4,424	63%	0.47	0	0.907	0.000	0.428	0.428	**57.2%**
1928	16,447	4,207	5,062	9,269	5,201	61%	0.46	0	0.753	0.000	0.346	0.346	**65.4%**
1929	13,526	4,207	6,072	10,279	4,109	64%	0.48	0	0.808	0.000	0.387	0.387	**61.3%**
1930	14,496	4,207	6,335	10,542	4,472	63%	0.47	0	0.822	0.000	0.388	0.388	**61.2%**
1931	9,333	2,228	2,927	5,155	2,541	71%	0.53	0	0.531	0.000	0.280	0.280	**72.0%**
1932	14,673	4,207	8,691	12,898	4,538	63%	0.47	0	0.949	0.000	0.446	0.446	**55.4%**
1933	8,635	2,513	2,457	4,970	2,279	73%	0.54	0	0.521	0.000	0.281	0.281	**71.9%**
1934	12,528	4,207	5,535	9,742	3,735	66%	0.49	0	0.779	0.000	0.380	0.380	**62.0%**
1935	8,556	3,263	3,390	6,653	2,250	73%	0.54	0	0.612	0.000	0.331	0.331	**66.9%**
1936	9,547	3,253	2,964	6,217	2,621	71%	0.52	0	0.589	0.000	0.309	0.309	**69.1%**
1937	12,519	4,207	5,625	9,832	3,732	66%	0.49	0	0.784	0.000	0.383	0.383	**61.7%**
1938	45,937	4,207	6,474	10,681	16,230	23%	0.23	0	0.830	0.000	0.194	0.194	**80.6%**
1939	18,749	4,207	3,735	7,942	6,062	60%	0.45	0	0.682	0.000	0.304	0.304	**69.6%**
1940	7,841	1,427	2,676	4,103	1,983	75%	0.56	0	0.474	0.000	0.264	0.264	**73.6%**
1941	29,348	4,207	10,300	14,507	10,026	24%	0.24	0	1.036	0.000	0.254	0.254	**74.6%**
1942	65,430	4,207	3,608	7,815	23,521	23%	0.23	0	0.675	0.000	0.153	0.153	**84.7%**
1943	28,806	4,207	3,779	7,986	9,823	25%	0.25	0	0.684	0.000	0.168	0.168	**83.2%**
1944	13,839	4,207	6,467	10,674	4,226	64%	0.48	0	0.829	0.000	0.395	0.395	**60.5%**
1945	15,893	4,207	7,941	12,148	4,994	62%	0.46	0	0.909	0.000	0.420	0.420	**58.0%**
1946	54,704	4,207	6,741	10,948	19,509	23%	0.23	0	0.844	0.000	0.194	0.194	**80.6%**
1947	17,697	4,207	9,629	13,836	5,669	60%	0.45	0	1.000	0.000	0.452	0.452	**54.8%**
1948	9,978	2,616	3,357	5,973	2,782	70%	0.52	0	0.575	0.000	0.298	0.298	**70.2%**
1949	15,628	4,207	7,259	11,466	4,895	62%	0.46	0	0.872	0.000	0.404	0.404	**59.6%**
1950	10,794	4,207	2,822	7,029	3,087	68%	0.51	0	0.632	0.000	0.321	0.321	**67.9%**
1951	68,100	4,207	9,886	14,093	24,519	23%	0.23	0	1.014	0.000	0.230	0.230	**77.0%**
1952	42,890	4,207	10,300	14,507	15,091	24%	0.24	0	1.036	0.000	0.244	0.244	**75.6%**
1953	42,142	4,207	3,742	7,949	14,811	24%	0.24	0	0.682	0.000	0.161	0.161	**83.9%**
1954	14,984	4,207	3,897	8,104	4,654	63%	0.47	0	0.691	0.000	0.323	0.323	**67.7%**
1955	24,919	4,207	10,300	14,507	8,370	57%	0.42	0	1.036	0.000	0.440	0.440	**56.0%**
1956	25,003	4,207	10,300	14,507	8,401	25%	0.25	0	1.036	0.000	0.259	0.259	**74.1%**
1957	14,208	4,207	4,541	8,748	4,364	64%	0.47	0	0.725	0.000	0.344	0.344	**65.6%**
1958	23,817	4,207	4,516	8,723	7,958	57%	0.43	0	0.724	0.000	0.310	0.310	**69.0%**
1959	14,692	4,207	3,852	8,059	4,545	63%	0.47	0	0.688	0.000	0.323	0.323	**67.7%**
1960	10,409	3,576	2,791	6,367	2,943	69%	0.51	0	0.597	0.000	0.306	0.306	**69.4%**
1961	16,565	4,207	7,708	11,915	5,245	61%	0.46	0	0.896	0.000	0.410	0.410	**59.0%**
1962	15,823	4,207	7,138	11,345	4,968	62%	0.46	0	0.866	0.000	0.400	0.400	**60.0%**
1963	27,555	4,207	10,156	14,363	9,356	25%	0.25	0	1.028	0.000	0.254	0.254	**74.6%**
1964	14,912	4,207	4,302	8,509	4,627	63%	0.47	0	0.712	0.000	0.334	0.334	**66.6%**
1965	28,407	4,207	10,300	14,507	9,674	25%	0.25	0	1.036	0.000	0.255	0.255	**74.5%**
1966	17,062	4,207	4,944	9,151	5,431	61%	0.46	0	0.747	0.000	0.340	0.340	**66.0%**
1967	32,472	4,207	10,300	14,507	11,195	24%	0.24	0	1.036	0.000	0.251	0.251	**74.9%**
1968	16,757	4,207	3,735	7,942	5,317	61%	0.46	0	0.682	0.000	0.311	0.311	**68.9%**
1969	23,408	4,207	10,300	14,507	7,805	57%	0.43	0	1.036	0.000	0.445	0.445	**55.5%**
1970	49,970	4,207	3,481	7,688	17,739	23%	0.23	0	0.668	0.000	0.155	0.155	**84.5%**
1971	52,804	4,207	6,999	11,206	18,799	23%	0.23	0	0.858	0.000	0.198	0.198	**80.2%**
1972	20,536	4,207	6,988	11,195	6,730	59%	0.44	0	0.857	0.000	0.376	0.376	**62.4%**
1973	25,763	4,207	8,710	12,917	8,685	25%	0.25	0	0.950	0.000	0.237	0.237	**76.3%**
1974	61,593	4,207	5,257	9,464	22,086	23%	0.23	0	0.764	0.000	0.174	0.174	**82.6%**
1975	17,684	4,207	4,248	8,455	5,664	60%	0.45	0	0.709	0.000	0.321	0.321	**67.9%**
1976	16,839	4,207	4,542	8,749	5,348	61%	0.46	0	0.725	0.000	0.331	0.331	**66.9%**
1977	8,319	1,860	3,234	5,094	2,161	74%	0.55	0	0.528	0.000	0.288	0.288	**71.2%**
1978	12,308	3,470	6,214	9,684	3,653	66%	0.49	0	0.776	0.000	0.380	0.380	**62.0%**
1979	13,708	4,207	3,679	7,886	4,177	64%	0.48	0	0.679	0.000	0.324	0.324	**67.6%**
1980	20,397	4,207	7,180	11,387	6,678	59%	0.44	0	0.868	0.000	0.381	0.381	**61.9%**
1981	15,676	4,207	3,624	7,831	4,913	62%	0.46	0	0.676	0.000	0.313	0.313	**68.7%**
1982	68,450	4,207	8,840	13,047	24,650	23%	0.23	0	0.957	0.000	0.217	0.217	**78.3%**
1983	55,416	4,207	4,318	8,525	19,776	23%	0.23	0	0.713	0.000	0.164	0.164	**83.6%**
1984	82,951	4,162	3,104	7,266	30,074	22%	0.22	0	0.645	0.000	0.145	0.145	**85.5%**
1985	23,880	4,207	3,779	7,986	7,981	57%	0.43	0	0.684	0.000	0.293	0.293	**70.7%**
1986	15,291	4,207	7,603	11,810	4,769	62%	0.47	0	0.891	0.000	0.415	0.415	**58.5%**
1987	13,796	4,207	6,102	10,309	4,210	64%	0.48	0	0.810	0.000	0.386	0.386	**61.4%**
1988	15,909	4,207	7,723	11,930	5,000	62%	0.46	0	0.897	0.000	0.414	0.414	**58.6%**
1989	8,916	2,875	3,536	6,411	2,385	72%	0.53	0	0.599	0.000	0.320	0.320	**68.0%**
1990	14,647	4,207	4,787	8,994	4,528	63%	0.47	0	0.739	0.000	0.347	0.347	**65.3%**
1991	7,187	1,828	1,911	3,739	1,738	77%	0.57	0	0.455	0.000	0.260	0.260	**74.0%**
1992	7,571	3,064	1,607	4,671	1,882	76%	0.56	0	0.505	0.000	0.284	0.284	**71.6%**

Year	JANUARY Sac River Flows	CVP Flows	SWP Flows	CVP+SWF exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2 (Calculated Mortality)	m3	m23	m123	Calculated Survival s123
1922	17,566	4,207	9,020	13,227	5,620	61%	0.26	0	0.967	0.000	0.256	0.256	**74.4%**
1923	32,280	4,207	3,614	7,821	11,123	24%	0.24	0	0.675	0.000	0.163	0.163	**83.7%**
1924	14,681	4,207	6,693	10,900	4,541	63%	0.27	0	0.841	0.000	0.231	0.231	**76.9%**
1925	10,260	3,599	3,152	6,751	2,887	69%	0.30	0	0.617	0.000	0.184	0.184	**81.6%**
1926	18,831	4,207	9,379	13,586	6,093	60%	0.26	0	0.987	0.000	0.258	0.258	**74.2%**
1927	29,902	4,207	7,968	12,175	10,233	24%	0.24	0	0.910	0.000	0.222	0.222	**77.8%**
1928	26,188	4,207	3,637	7,844	8,844	25%	0.25	0	0.676	0.000	0.168	0.168	**83.2%**
1929	15,078	4,207	6,840	11,047	4,689	63%	0.27	0	0.849	0.000	0.232	0.232	**76.8%**
1930	20,821	4,207	9,662	13,869	6,837	59%	0.26	0	1.002	0.000	0.258	0.258	**74.2%**
1931	12,027	4,207	4,937	9,144	3,548	66%	0.29	0	0.747	0.000	0.214	0.214	**78.6%**
1932	17,276	4,207	10,244	14,451	5,511	61%	0.27	0	1.033	0.000	0.275	0.275	**72.5%**
1933	12,653	4,207	5,774	9,981	3,782	65%	0.28	0	0.792	0.000	0.224	0.224	**77.6%**
1934	16,154	4,207	8,304	12,511	5,092	62%	0.27	0	0.928	0.000	0.250	0.250	**75.0%**
1935	25,521	4,207	10,245	14,452	8,595	25%	0.25	0	1.033	0.000	0.258	0.258	**74.2%**
1936	32,137	4,207	10,253	14,460	11,069	24%	0.24	0	1.034	0.000	0.250	0.250	**75.0%**
1937	15,779	4,207	8,422	12,629	4,951	62%	0.27	0	0.935	0.000	0.253	0.253	**74.7%**
1938	31,443	4,207	3,233	7,440	10,810	24%	0.24	0	0.655	0.000	0.159	0.159	**84.1%**
1939	18,469	4,207	3,239	7,446	5,957	60%	0.26	0	0.655	0.000	0.172	0.172	**82.8%**
1940	23,510	4,207	10,232	14,439	7,843	57%	0.25	0	1.033	0.000	0.261	0.261	**73.9%**
1941	72,901	4,207	10,300	14,507	26,315	23%	0.23	0	1.036	0.000	0.234	0.234	**76.6%**
1942	63,260	4,207	3,239	7,446	22,709	23%	0.23	0	0.655	0.000	0.149	0.149	**85.1%**
1943	58,056	4,207	3,303	7,510	20,763	23%	0.23	0	0.658	0.000	0.151	0.151	**84.9%**
1944	17,739	4,207	3,262	7,469	5,684	60%	0.26	0	0.656	0.000	0.174	0.174	**82.6%**
1945	14,141	4,207	4,921	9,128	4,339	64%	0.28	0	0.746	0.000	0.206	0.206	**79.4%**
1946	43,229	4,207	3,637	7,844	15,218	23%	0.23	0	0.676	0.000	0.159	0.159	**84.1%**
1947	14,783	4,207	4,832	9,039	4,579	63%	0.27	0	0.741	0.000	0.203	0.203	**79.7%**
1948	14,711	3,953	6,652	10,605	4,552	63%	0.27	0	0.826	0.000	0.226	0.226	**77.4%**
1949	14,740	4,207	6,701	10,908	4,563	63%	0.27	0	0.842	0.000	0.231	0.231	**76.9%**
1950	19,995	4,207	10,247	14,454	6,528	59%	0.26	0	1.033	0.000	0.268	0.268	**73.2%**
1951	62,213	4,207	3,909	8,116	22,318	23%	0.23	0	0.691	0.000	0.158	0.158	**84.2%**
1952	67,352	4,207	3,272	7,479	24,240	23%	0.23	0	0.657	0.000	0.149	0.149	**85.1%**
1953	64,078	4,207	3,333	7,540	23,015	23%	0.23	0	0.660	0.000	0.150	0.150	**85.0%**
1954	33,476	4,207	3,792	7,999	11,570	24%	0.24	0	0.685	0.000	0.165	0.165	**83.5%**
1955	21,819	4,207	3,915	8,122	7,210	58%	0.26	0	0.691	0.000	0.177	0.177	**82.3%**
1956	84,719	4,207	5,309	9,516	30,735	22%	0.22	0	0.767	0.000	0.172	0.172	**82.8%**
1957	18,701	4,207	3,842	8,049	6,044	60%	0.26	0	0.688	0.000	0.180	0.180	**82.0%**
1958	36,275	4,207	3,218	7,425	12,617	24%	0.24	0	0.654	0.000	0.156	0.156	**84.4%**
1959	35,228	4,207	3,333	7,540	12,225	24%	0.24	0	0.660	0.000	0.158	0.158	**84.2%**
1960	13,334	4,207	5,641	9,848	4,037	65%	0.28	0	0.785	0.000	0.220	0.220	**78.0%**
1961	13,570	4,207	6,144	10,351	4,125	64%	0.28	0	0.812	0.000	0.226	0.226	**77.4%**
1962	15,471	4,207	2,976	7,183	4,836	62%	0.27	0	0.641	0.000	0.174	0.174	**82.6%**
1963	18,176	4,207	3,681	7,888	5,848	60%	0.26	0	0.679	0.000	0.179	0.179	**82.1%**
1964	26,401	4,207	3,842	8,049	8,924	25%	0.25	0	0.688	0.000	0.171	0.171	**82.9%**
1965	81,240	4,207	6,892	11,099	29,434	22%	0.22	0	0.852	0.000	0.191	0.191	**80.9%**
1966	29,539	4,207	3,563	7,770	10,098	24%	0.24	0	0.672	0.000	0.165	0.165	**83.5%**
1967	32,904	4,207	3,901	8,108	11,356	24%	0.24	0	0.691	0.000	0.167	0.167	**83.3%**
1968	30,538	4,207	3,333	7,540	10,471	24%	0.24	0	0.660	0.000	0.161	0.161	**83.9%**
1969	66,806	4,207	4,081	8,288	24,035	23%	0.23	0	0.700	0.000	0.159	0.159	**84.1%**
1970	92,665	4,207	3,333	7,540	33,707	22%	0.22	0	0.660	0.000	0.147	0.147	**85.3%**
1971	46,797	4,207	3,850	8,057	16,552	23%	0.23	0	0.688	0.000	0.160	0.160	**84.0%**
1972	20,457	4,207	3,871	8,078	6,701	59%	0.26	0	0.689	0.000	0.178	0.178	**82.2%**
1973	47,927	4,207	3,172	7,379	16,975	23%	0.23	0	0.651	0.000	0.152	0.152	**84.8%**
1974	78,417	4,207	3,633	7,840	28,378	22%	0.22	0	0.676	0.000	0.152	0.152	**84.8%**
1975	18,734	4,207	3,848	8,055	6,057	60%	0.26	0	0.688	0.000	0.180	0.180	**82.0%**
1976	16,831	4,207	3,774	7,981	5,345	61%	0.27	0	0.684	0.000	0.183	0.183	**81.7%**
1977	7,925	2,397	2,444	4,841	2,014	75%	0.32	0	0.514	0.000	0.164	0.164	**83.6%**
1978	43,266	3,695	8,644	12,339	15,231	23%	0.23	0	0.919	0.000	0.216	0.216	**78.4%**
1979	27,304	4,207	3,262	7,469	9,262	25%	0.25	0	0.656	0.000	0.162	0.162	**83.8%**
1980	61,290	4,207	3,159	7,366	21,972	23%	0.23	0	0.651	0.000	0.149	0.149	**85.1%**
1981	28,694	4,207	3,333	7,540	9,782	25%	0.25	0	0.660	0.000	0.162	0.162	**83.8%**
1982	51,172	4,207	3,820	8,027	18,188	23%	0.23	0	0.686	0.000	0.159	0.159	**84.1%**
1983	59,148	4,207	2,648	6,855	21,171	23%	0.23	0	0.623	0.000	0.143	0.143	**85.7%**
1984	47,354	1,487	2,881	4,368	16,760	23%	0.23	0	0.489	0.000	0.114	0.114	**88.6%**
1985	16,610	4,207	3,850	8,057	5,262	61%	0.27	0	0.688	0.000	0.184	0.184	**81.6%**
1986	20,850	4,207	10,121	14,328	6,848	59%	0.26	0	1.027	0.000	0.264	0.264	**73.6%**
1987	16,795	2,780	6,581	9,361	5,331	61%	0.27	0	0.758	0.000	0.203	0.203	**79.7%**
1988	25,591	4,207	10,252	14,459	8,621	25%	0.25	0	1.034	0.000	0.258	0.258	**74.2%**
1989	12,060	4,207	4,558	8,765	3,560	66%	0.29	0	0.726	0.000	0.208	0.208	**79.2%**
1990	19,146	4,207	9,418	13,625	6,211	60%	0.26	0	0.989	0.000	0.258	0.258	**74.2%**
1991	6,957	1,760	1,682	3,442	1,652	78%	0.33	0	0.439	0.000	0.145	0.145	**85.5%**
1992	12,238	3,889	5,162	9,051	3,627	66%	0.29	0	0.742	0.000	0.212	0.212	**78.8%**

Formulas: Sacramento River Spring Smolt Yearling Survival Model

C10 ='Study 467 Flow Data'!B7
D10 ='Study 467 Flow Data'!L7
E10 ='Study 467 Flow Data'!V7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
J10 =IF(-2.45925+(0.0420748*$T$1)>0,-2.45925+(0.0420748*$T$1),0)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =IF(-1.613493+(0.0319584*$T$1)>0,-1.613493+(0.0319584*$T$1),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!C7
R10 ='Study 467 Flow Data'!M7
S10 ='Study 467 Flow Data'!W7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
Z10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!D7
AF10 ='Study 467 Flow Data'!N7
AG10 ='Study 467 Flow Data'!X7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AN10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU
1	Study 526A Sacramento River Spring Run Yearling Survival Model (continued)																												
2									February Water Temp		50 F																		
3		Cross Channel Closed Over			25000 cfs				March Water Temp		55 F																		
4	Cross Channel Closed Feb to Apr when DOI greater than						12,000 cfs																						
5																													
6	**FEBRUARY**				Calculated										**MARCH**				Calculated										
7	Sac				Sutter &								**Calculated**		Sac				Sutter &								**Calculated**		**Weighted**
8	River	CVP	SWP	CVP + SWP	Steamboat		X-Channel		Calculated Mortality				**Survivability**		River			CVP + SWF	Steamboat		X-Channel		Calculated Mortality				**Survivability**		**Total**
9	Flow	Flow	Flow	Exports	Slough Q	Percent	Closed	m1	m2	m3	m23	m123	**s123**		Flow	CVP	SWP	exports	Slough Q	percent	Closed	m1	m2	m3	m23	m123	**s123**		**Survival**
10	34,838	4,152	4,099	8,251	12,079	24%	0.24	0	0.752	0.000	0.181	0.181	**81.9%**		31,632	3,006	4,126	7,132	10,880	24%	0.24	0	0.782	0.144	0.299	0.299	**70.1%**		**55.1%**
11	22,252	2,166	2,377	4,543	7,372	58%	0.25	0	0.552	0.000	0.141	0.141	**85.9%**		15,564	3,231	3,795	7,026	4,871	62%	0.27	0	0.776	0.144	0.316	0.316	**68.4%**		**65.1%**
12	17,817	4,218	4,926	9,144	5,714	60%	0.26	0	0.801	0.000	0.212	0.212	**78.8%**		12,237	1,437	1,852	3,289	3,627	66%	0.29	0	0.574	0.144	0.267	0.267	**73.3%**		**58.9%**
13	44,467	2,114	10,269	12,383	15,681	23%	0.23	0	0.975	0.000	0.229	0.229	**77.1%**		18,642	3,268	4,639	7,907	6,022	60%	0.26	0	0.824	0.144	0.322	0.322	**67.8%**		**61.8%**
14	35,783	4,230	10,299	14,529	12,433	24%	0.24	0	1.091	0.000	0.261	0.261	**73.9%**		16,097	2,930	3,798	6,728	5,070	62%	0.27	0	0.760	0.144	0.310	0.310	**69.0%**		**61.5%**
15	87,861	4,278	4,107	8,385	31,910	22%	0.22	0	0.760	0.000	0.170	0.170	**83.0%**		43,865	4,116	4,136	8,252	15,456	23%	0.23	0	0.842	0.144	0.308	0.308	**69.2%**		**51.2%**
16	28,407	1,822	4,377	6,199	9,674	25%	0.25	0	0.642	0.000	0.158	0.158	**84.2%**		86,069	3,167	4,424	7,591	31,240	22%	0.22	0	0.807	0.144	0.293	0.293	**70.7%**		**56.0%**
17	17,853	3,349	4,904	8,253	5,727	60%	0.26	0	0.752	0.000	0.199	0.199	**80.1%**		13,827	1,966	2,752	4,718	4,221	64%	0.28	0	0.651	0.144	0.285	0.285	**71.5%**		**56.7%**
18	15,731	2,731	3,891	6,622	4,933	62%	0.27	0	0.664	0.000	0.180	0.180	**82.0%**		30,156	2,656	3,791	6,447	10,328	24%	0.24	0	0.745	0.144	0.291	0.291	**70.9%**		**61.2%**
19	11,150	3,425	1,909	5,334	3,220	68%	0.29	0	0.595	0.000	0.173	0.173	**82.7%**		9,237	1,668	2,137	3,805	2,505	71%	0.31	0	0.602	0.144	0.284	0.284	**71.6%**		**65.2%**
20	14,442	4,241	5,015	9,256	4,451	63%	0.28	0	0.807	0.000	0.222	0.222	**77.8%**		10,180	992	2,317	3,309	2,857	69%	0.30	0	0.575	0.144	0.273	0.273	**72.7%**		**60.7%**
21	13,229	4,217	2,882	7,099	3,998	65%	0.28	0	0.690	0.000	0.194	0.194	**80.6%**		10,007	26	4,468	4,494	2,793	70%	0.30	0	0.639	0.144	0.292	0.292	**70.8%**		**65.1%**
22	12,796	1,280	4,525	5,805	3,836	65%	0.28	0	0.620	0.000	0.175	0.175	**82.5%**		14,504	2,200	2,027	4,227	4,474	63%	0.27	0	0.625	0.144	0.276	0.276	**72.4%**		**64.5%**
23	12,033	733	3,938	4,671	3,550	66%	0.29	0	0.559	0.000	0.160	0.160	**84.0%**		24,996	4,225	7,008	11,233	8,399	57%	0.25	0	1.003	0.144	0.359	0.359	**64.1%**		**60.7%**
24	49,713	4,243	10,299	14,542	17,643	23%	0.23	0	1.092	0.000	0.253	0.253	**74.7%**		32,948	4,225	4,438	8,663	11,373	24%	0.24	0	0.864	0.144	0.318	0.318	**68.2%**		**62.8%**
25	32,342	3,631	5,436	9,067	11,146	24%	0.24	0	0.796	0.000	0.193	0.193	**80.7%**		37,954	2,601	4,016	6,617	13,245	24%	0.24	0	0.754	0.144	0.289	0.289	**71.1%**		**58.5%**
26	82,366	1,226	3,900	5,126	29,855	22%	0.22	0	0.584	0.000	0.131	0.131	**86.9%**		78,637	2,243	3,952	6,195	28,460	22%	0.22	0	0.731	0.144	0.276	0.276	**72.4%**		**62.7%**
27	19,090	1,562	3,955	5,517	6,190	60%	0.26	0	0.605	0.000	0.158	0.158	**84.2%**		16,468	2,706	3,980	6,686	5,209	61%	0.27	0	0.758	0.144	0.309	0.309	**69.1%**		**64.2%**
28	43,518	4,239	6,518	10,757	15,326	23%	0.23	0	0.888	0.000	0.208	0.208	**79.2%**		59,353	4,225	4,646	8,871	21,248	23%	0.23	0	0.876	0.144	0.312	0.312	**68.8%**		**66.3%**
29	75,037	4,289	3,792	8,081	27,114	23%	0.23	0	0.743	0.000	0.168	0.168	**83.2%**		58,569	3,604	3,815	7,419	20,955	23%	0.23	0	0.797	0.144	0.294	0.294	**70.6%**		**61.7%**
30	78,349	1,666	3,955	5,621	28,353	23%	0.23	0	0.610	0.000	0.137	0.137	**86.3%**		27,177	3,613	4,007	7,620	9,214	25%	0.25	0	0.808	0.144	0.308	0.308	**69.2%**		**70.9%**
31	52,259	1,996	4,005	6,001	18,595	23%	0.23	0	0.631	0.000	0.146	0.146	**85.4%**		64,601	1,851	4,056	5,907	23,211	23%	0.23	0	0.716	0.144	0.274	0.274	**72.6%**		**70.7%**
32	32,384	1,423	3,958	5,381	11,162	24%	0.24	0	0.597	0.000	0.145	0.145	**85.5%**		25,179	2,991	4,007	6,998	8,467	25%	0.25	0	0.775	0.144	0.302	0.302	**69.8%**		**56.1%**
33	38,492	4,120	3,941	8,061	13,446	24%	0.24	0	0.742	0.000	0.176	0.176	**82.4%**		27,111	3,211	4,135	7,346	9,190	25%	0.25	0	0.793	0.144	0.305	0.305	**69.5%**		**54.3%**
34	23,843	2,006	4,377	6,383	7,967	57%	0.25	0	0.651	0.000	0.164	0.164	**83.6%**		23,778	3,628	4,424	8,052	7,943	57%	0.25	0	0.831	0.144	0.317	0.317	**68.3%**		**62.8%**
35	21,136	4,196	3,845	8,041	6,955	58%	0.26	0	0.741	0.000	0.190	0.190	**81.0%**		22,184	2,496	3,743	6,239	7,347	58%	0.25	0	0.734	0.144	0.294	0.294	**70.6%**		**53.2%**
36	15,931	4,226	1,639	5,865	5,008	62%	0.27	0	0.624	0.000	0.168	0.168	**83.2%**		19,151	4,225	3,409	7,634	6,212	60%	0.26	0	0.809	0.144	0.318	0.318	**68.2%**		**63.6%**
37	16,052	4,239	4,080	8,319	5,053	62%	0.27	0	0.756	0.000	0.204	0.204	**79.6%**		41,392	4,225	6,922	11,147	14,531	24%	0.24	0	0.999	0.144	0.346	0.346	**65.4%**		**55.7%**
38	32,663	4,245	9,195	13,440	11,266	24%	0.24	0	1.033	0.000	0.250	0.250	**75.0%**		22,192	3,119	5,893	9,012	7,350	58%	0.25	0	0.883	0.144	0.332	0.332	**66.8%**		**60.9%**
39	60,566	1,997	4,636	6,633	21,702	23%	0.23	0	0.665	0.000	0.152	0.152	**84.8%**		29,827	3,253	4,685	7,938	10,205	24%	0.24	0	0.825	0.144	0.311	0.311	**68.9%**		**74.2%**
40	64,731	1,514	3,873	5,387	23,259	23%	0.23	0	0.598	0.000	0.136	0.136	**86.4%**		57,518	3,385	3,919	7,304	20,562	23%	0.23	0	0.791	0.144	0.293	0.293	**70.7%**		**62.1%**
41	28,344	2,004	4,060	6,064	9,651	25%	0.25	0	0.634	0.000	0.156	0.156	**84.4%**		24,971	3,181	4,111	7,292	8,389	57%	0.25	0	0.790	0.144	0.306	0.306	**69.4%**		**70.0%**
42	56,808	1,979	4,600	6,579	20,296	23%	0.23	0	0.662	0.000	0.152	0.152	**84.8%**		49,536	3,196	4,635	7,831	17,576	23%	0.23	0	0.820	0.144	0.301	0.301	**69.9%**		**57.8%**
43	15,864	1,814	3,745	5,559	4,983	62%	0.27	0	0.607	0.000	0.164	0.164	**83.6%**		14,629	3,069	2,931	6,000	4,521	63%	0.27	0	0.721	0.144	0.302	0.302	**69.8%**		**53.4%**
44	63,748	1,401	4,638	6,039	22,892	23%	0.23	0	0.633	0.000	0.144	0.144	**85.6%**		36,754	2,240	4,685	6,925	12,796	24%	0.24	0	0.771	0.144	0.294	0.294	**70.6%**		**65.5%**
45	32,794	1,565	4,624	6,189	11,315	24%	0.24	0	0.641	0.000	0.155	0.155	**84.5%**		44,377	3,192	4,497	7,689	15,647	23%	0.23	0	0.812	0.144	0.301	0.301	**69.9%**		**60.6%**
46	63,024	1,737	4,005	5,742	22,621	23%	0.23	0	0.617	0.000	0.141	0.141	**85.9%**		93,616	3,644	4,056	7,700	34,062	22%	0.22	0	0.812	0.144	0.293	0.293	**70.7%**		**57.9%**
47	50,072	1,807	4,060	5,867	17,777	23%	0.23	0	0.624	0.000	0.145	0.145	**85.5%**		22,671	3,522	3,039	6,561	7,529	58%	0.25	0	0.751	0.144	0.298	0.298	**70.2%**		**62.9%**
48	25,840	4,222	8,493	12,715	8,714	25%	0.25	0	0.993	0.000	0.247	0.247	**75.3%**		20,297	3,324	3,903	7,227	6,641	59%	0.26	0	0.787	0.144	0.310	0.310	**69.0%**		**63.8%**
49	28,695	3,246	10,299	13,545	9,782	25%	0.25	0	1.038	0.000	0.255	0.255	**74.5%**		20,226	2,912	3,834	6,746	6,615	59%	0.26	0	0.761	0.144	0.304	0.304	**69.6%**		**55.8%**
50	34,763	3,323	9,966	13,289	12,051	24%	0.24	0	1.024	0.000	0.246	0.246	**75.4%**		25,841	3,372	4,153	7,525	8,715	25%	0.25	0	0.803	0.144	0.308	0.308	**69.2%**		**60.1%**
51	58,694	4,275	4,413	8,688	21,002	23%	0.23	0	0.776	0.000	0.178	0.178	**82.2%**		32,723	3,420	4,455	7,875	11,288	24%	0.24	0	0.822	0.144	0.308	0.308	**69.2%**		**59.1%**
52	17,927	1,979	4,636	6,615	5,755	60%	0.26	0	0.664	0.000	0.175	0.175	**82.5%**		16,418	2,997	3,539	6,536	5,190	61%	0.27	0	0.750	0.144	0.307	0.307	**69.3%**		**69.3%**
53	33,076	4,147	4,640	8,787	11,420	24%	0.24	0	0.781	0.000	0.189	0.189	**81.1%**		21,211	2,957	4,452	7,409	6,983	58%	0.26	0	0.797	0.144	0.312	0.312	**68.8%**		**62.1%**
54	26,844	2,025	4,374	6,399	9,090	25%	0.25	0	0.652	0.000	0.162	0.162	**83.8%**		28,761	3,627	4,424	8,051	9,807	25%	0.25	0	0.831	0.144	0.313	0.313	**68.7%**		**56.4%**
55	40,608	1,514	3,166	4,680	14,237	24%	0.24	0	0.560	0.000	0.132	0.132	**86.8%**		54,488	3,210	3,270	6,480	19,429	23%	0.23	0	0.747	0.144	0.283	0.283	**71.7%**		**62.5%**
56	56,470	1,980	4,060	6,040	20,170	23%	0.23	0	0.633	0.000	0.145	0.145	**85.5%**		36,789	3,183	4,111	7,294	12,809	24%	0.24	0	0.791	0.144	0.298	0.298	**70.2%**		**63.5%**
57	67,482	1,513	3,135	4,648	24,288	23%	0.23	0	0.558	0.000	0.127	0.127	**87.3%**		45,397	2,230	3,236	5,466	16,028	23%	0.23	0	0.692	0.144	0.272	0.272	**72.8%**		**55.5%**
58	57,565	1,215	4,060	5,275	20,579	23%	0.23	0	0.592	0.000	0.136	0.136	**86.4%**		35,897	3,107	4,111	7,218	12,475	24%	0.24	0	0.786	0.144	0.298	0.298	**70.2%**		**70.6%**
59	28,275	2,299	4,636	6,935	9,625	25%	0.25	0	0.681	0.000	0.168	0.168	**83.2%**		51,739	3,616	4,685	8,301	18,400	23%	0.23	0	0.845	0.144	0.306	0.306	**69.4%**		**61.8%**
60	25,015	1,822	4,554	6,376	8,406	25%	0.25	0	0.651	0.000	0.163	0.163	**83.7%**		32,930	3,183	4,490	7,673	11,366	24%	0.24	0	0.811	0.144	0.305	0.305	**69.5%**		**56.7%**
61	70,967	1,904	4,393	6,297	25,592	23%	0.23	0	0.647	0.000	0.146	0.146	**85.4%**		47,552	3,552	4,445	7,997	16,834	23%	0.23	0	0.828	0.144	0.304	0.304	**69.6%**		**60.3%**
62	41,926	1,927	4,374	6,301	14,730	24%	0.24	0	0.647	0.000	0.152	0.152	**84.8%**		34,465	3,524	4,424	7,948	11,940	24%	0.24	0	0.826	0.144	0.308	0.308	**69.2%**		**76.9%**
63	58,461	1,630	4,572	6,202	20,914	23%	0.23	0	0.642	0.000	0.147	0.147	**85.3%**		75,998	3,633	4,644	8,277	27,473	23%	0.23	0	0.844	0.144	0.302	0.302	**69.8%**		**62.5%**
64	20,296	1,322	4,430	5,752	6,641	59%	0.26	0	0.617	0.000	0.160	0.160	**84.0%**		18,389	2,059	4,440	6,499	5,927	60%	0.26	0	0.748	0.144	0.303	0.303	**69.7%**		**61.9%**
65	12,185	722	1,246	1,968	3,607	66%	0.29	0	0.413	0.000	0.118	0.118	**88.2%**		7,358	872	999	1,871	1,802	76%	0.33	0	0.498	0.144	0.259	0.259	**74.1%**		**64.8%**
66	51,370	1,745	3,768	5,513	18,262	23%	0.23	0	0.604	0.000	0.140	0.140	**86.0%**		43,971	2,168	3,901	6,069	15,495	23%	0.23	0	0.724	0.144	0.280	0.280	**72.0%**		**62.1%**
67	41,749	1,494	3,955	5,449	14,664	24%	0.24	0	0.601	0.000	0.142	0.142	**85.8%**		31,992	3,190	4,007	7,197	11,015	24%	0.24	0	0.785	0.144	0.300	0.300	**70.0%**		**59.2%**
68	71,932	908	3,768	4,676	25,953	23%	0.23	0	0.559	0.000	0.126	0.126	**87.4%**		36,480	1,853	3,344	5,197	12,694	24%	0.24	0	0.677	0.144	0.272	0.272	**72.8%**		**56.7%**
69	29,739	1,764	4,060	5,824	10,172	24%	0.24	0	0.621	0.000	0.152	0.152	**84.8%**		32,579	3,186	4,111	7,297	11,235	24%	0.24	0	0.791	0.144	0.301	0.301	**69.9%**		**61.6%**
70	65,645	1,271	4,581	5,852	23,601	23%	0.23	0	0.623	0.000	0.142	0.142	**85.8%**		69,087	2,948	4,629	7,577	24,889	23%	0.23	0	0.806	0.144	0.294	0.294	**70.6%**		**74.5%**
71	82,910	1,500	2,793	4,293	30,058	22%	0.22	0	0.539	0.000	0.121	0.121	**87.9%**		81,934	2,216	2,628	4,844	29,693	22%	0.22	0	0.658	0.144	0.260	0.260	**74.0%**		**80.1%**
72	37,282	1,485	3,847	5,332	12,993	24%	0.24	0	0.595	0.000	0.142	0.142	**85.8%**		36,581	3,278	4,007	7,285	12,731	24%	0.24	0	0.790	0.144	0.298	0.298	**70.2%**		**81.9%**
73	19,906	1,769	4,590	6,359	6,495	59%	0.26	0	0.650	0.000	0.169	0.169	**83.1%**		21,481	3,166	4,636	7,802	7,084	58%	0.26	0	0.818	0.144	0.317	0.317	**68.3%**		**71.0%**
74	91,390	4,240	3,893	8,133	33,230	22%	0.22	0	0.746	0.000	0.167	0.167	**83.3%**		72,974	1,585	4,164	5,749	26,342	23%	0.23	0	0.707	0.144	0.271	0.271	**72.9%**		**57.7%**
75	23,094	1,269	4,302	5,571	7,687	57%	0.25	0	0.608	0.000	0.154	0.154	**84.6%**		29,660	2,369	4,169	6,538	10,143	24%	0.24	0	0.750	0.144	0.292	0.292	**70.8%**		**59.1%**
76	16,341	4,241	1,888	6,129	5,162	62%	0.27	0	0.638	0.000	0.171	0.171	**82.9%**		11,108	2,018	1,798	3,816	3,204	68%	0.29	0	0.603	0.144	0.278	0.278	**72.2%**		**59.8%**
77	12,754	958	1,726	2,684	3,820	65%	0.28	0	0.452	0.000	0.128	0.128	**87.2%**		41,167	4,225	6,920	11,145	14,446	24%	0.24	0	0.998	0.144	0.346	0.346	**65.4%**		**64.0%**
78	15,611	4,235	2,657	6,892	4,889	62%	0.27	0	0.679	0.000	0.184	0.184	**81.6%**		13,978	2,853	2,704	5,557	4,278	64%	0.28	0	0.697	0.144	0.297	0.297	**70.3%**		**61.1%**
79	12,353	432	905	1,337	3,670	66%	0.28	0	0.379	0.000	0.108	0.108	**89.2%**		29,739	4,225	7,762	11,987	10,172	24%	0.24	0	1.044	0.144	0.364	0.364	**63.6%**		**68.0%**
80	32,637	638	10,268	10,906	11,256	24%	0.24	0	0.896	0.000	0.217	0.217	**78.3%**		20,217	2,003	5,719	7,722	6,611	59%	0.26	0	0.814	0.144	0.317	0.317	**68.3%**		**65.4%**
81																												**AVERAGE:**	**62.51%**
82																													
83																													
84																													

85 AS10 ='Study 467 Flow Data'!E7 — BG10 ='Study 467 Flow Data'!F7
86 AT10 ='Study 467 Flow Data'!O7 — BH10 ='Study 467 Flow Data'!P7
87 AU10 ='Study 467 Flow Data'!Y7 — BI10 ='Study 467 Flow Data'!Z7
88 AV10 =(AT10+AU10) — BJ10 =(BH10+BI10)
89 AW10 =0.374*AS10-950 — BK10 =0.374*BG10-950
90 AX10 =IF(AS10>$K$4,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10)) — BL10 =IF(BG10>$K$4,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
91 AY10 =(0.133*AS10+829)/(AS10-AW10) — BM10 =(0.133*BG10+829)/(BG10-BK10)
92 AZ10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0) — BN10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
93 BA10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10) — BO10 =(-0.5916024)+(0.017968*$BC$3)+(0.000054*BJ10)
94 BB10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0) — BP10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)
95 BC10 =(BA10*AY10)+(BB10*(1-AY10)) — BQ10 =(BO10*BM10)+(BP10*(1-BM10))
96 BD10 =AZ10+BC10-(AZ10*BC10) — BR10 =BN10+BQ10-(BN10*BQ10)
97 BE10 =1-BD10 — BS10 =1-BR10
98 BU10 =(O10*0.37)+(AC10*0.42)+(AQ10*0.13)+(BE10*0.05)+(BS10*0.03)

Study 634 Sacramento River Spring Run Yearling Survival Model
Modified m2 by changing the slope to 0.000054
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

November Sacramento River Temp: 53 degrees F
December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

NOVEMBER

Year	Water Year Type	Sac River Flow	CVP Flow	SWP Flow	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	A	12,033	4,290	4,333	8,623	3,550	66%	0.29	0	0.826	0.080	0.574	0.574	**42.6%**
1923	B	15,692	4,306	6,672	10,978	4,919	62%	0.27	0	0.954	0.080	0.622	0.622	**37.8%**
1924	C	10,997	3,638	3,809	7,447	3,163	68%	0.29	0	0.763	0.080	0.543	0.543	**45.7%**
1925	D	7,024	1,322	3,220	4,542	1,677	78%	0.33	0	0.606	0.080	0.488	0.488	**51.2%**
1926	D	10,370	4,293	2,552	6,845	2,928	69%	0.30	0	0.730	0.080	0.528	0.528	**47.2%**
1927	W	20,291	4,251	6,672	10,923	6,639	59%	0.26	0	0.951	0.080	0.593	0.593	**40.7%**
1928	A	20,617	4,289	6,672	10,961	6,761	59%	0.26	0	0.953	0.080	0.592	0.592	**40.8%**
1929	C	12,612	4,289	5,279	9,568	3,767	65%	0.28	0	0.877	0.080	0.602	0.602	**39.8%**
1930	D	7,159	2,290	1,771	4,061	1,727	77%	0.33	0	0.580	0.080	0.466	0.466	**53.4%**
1931	C	9,804	2,657	3,290	5,947	2,717	70%	0.30	0	0.682	0.080	0.502	0.502	**49.8%**
1932	D	8,179	1,202	1,793	2,995	2,109	74%	0.32	0	0.522	0.080	0.407	0.407	**59.3%**
1933	C	9,511	3,060	2,616	5,676	2,607	71%	0.30	0	0.667	0.080	0.495	0.495	**50.5%**
1934	C	8,094	1,012	1,600	2,612	2,077	74%	0.32	0	0.502	0.080	0.393	0.393	**60.7%**
1935	B	9,204	1,712	3,615	5,327	2,492	71%	0.31	0	0.648	0.080	0.485	0.485	**51.5%**
1936	B	11,180	4,259	3,280	7,539	3,231	68%	0.29	0	0.768	0.080	0.544	0.544	**45.6%**
1937	B	11,577	4,291	3,190	7,481	3,380	67%	0.29	0	0.765	0.080	0.538	0.538	**46.2%**
1938	W	23,700	4,293	6,672	10,965	7,914	57%	0.25	0	0.953	0.080	0.580	0.580	**42.0%**
1939	D	19,439	4,305	5,604	9,909	6,320	59%	0.26	0	0.896	0.080	0.564	0.564	**43.6%**
1940	A	8,444	2,862	1,797	4,659	2,208	73%	0.31	0	0.612	0.080	0.470	0.470	**53.0%**
1941	W	13,756	4,270	6,176	10,446	4,195	64%	0.28	0	0.925	0.080	0.621	0.621	**37.9%**
1942	W	18,186	4,305	6,301	10,606	5,852	60%	0.26	0	0.933	0.080	0.593	0.593	**40.7%**
1943	W	21,906	4,304	6,672	10,976	7,243	58%	0.26	0	0.953	0.080	0.587	0.587	**41.3%**
1944	D	13,893	4,291	6,672	10,963	4,246	64%	0.28	0	0.953	0.080	0.637	0.637	**36.3%**
1945	B	13,770	4,278	6,672	10,950	4,200	64%	0.28	0	0.952	0.080	0.638	0.638	**36.2%**
1946	B	18,093	4,290	6,672	10,962	5,817	60%	0.26	0	0.953	0.080	0.606	0.606	**39.4%**
1947	D	13,776	4,289	6,348	10,637	4,202	64%	0.28	0	0.935	0.080	0.627	0.627	**37.3%**
1948	B	10,208	2,829	3,670	6,499	2,868	69%	0.30	0	0.712	0.080	0.517	0.517	**48.3%**
1949	D	14,447	4,268	6,265	10,533	4,453	63%	0.28	0	0.929	0.080	0.618	0.618	**38.2%**
1950	B	11,663	4,292	3,351	7,643	3,412	67%	0.29	0	0.773	0.080	0.543	0.543	**45.7%**
1951	A	39,461	4,284	6,672	10,956	13,808	24%	0.24	0	0.952	0.080	0.287	0.287	**71.3%**
1952	W	16,718	4,289	6,672	10,961	5,303	61%	0.27	0	0.953	0.080	0.614	0.614	**38.6%**
1953	W	16,535	4,305	4,089	8,394	5,234	61%	0.27	0	0.814	0.080	0.531	0.531	**46.9%**
1954	A	20,132	4,289	6,672	10,961	6,579	59%	0.26	0	0.953	0.080	0.594	0.594	**40.6%**
1955	D	20,689	4,289	6,672	10,961	6,788	59%	0.26	0	0.953	0.080	0.592	0.592	**40.8%**
1956	W	11,127	3,229	4,242	7,471	3,211	68%	0.29	0	0.764	0.080	0.543	0.543	**45.7%**
1957	A	15,470	4,306	6,672	10,978	4,836	62%	0.27	0	0.954	0.080	0.624	0.624	**37.6%**
1958	W	19,256	4,289	6,672	10,961	6,252	59%	0.26	0	0.953	0.080	0.599	0.599	**40.1%**
1959	B	16,130	4,306	4,185	8,491	5,083	62%	0.27	0	0.819	0.080	0.536	0.536	**46.4%**
1960	D	10,818	3,791	3,080	6,871	3,096	68%	0.29	0	0.732	0.080	0.524	0.524	**47.6%**
1961	D	14,001	4,265	6,082	10,347	4,286	64%	0.28	0	0.919	0.080	0.615	0.615	**38.5%**
1962	B	11,336	4,245	3,353	7,598	3,290	67%	0.29	0	0.771	0.080	0.545	0.545	**45.5%**
1963	W	20,725	4,291	6,672	10,963	6,801	59%	0.26	0	0.953	0.080	0.592	0.592	**40.8%**
1964	D	28,658	4,274	6,672	10,946	9,768	25%	0.25	0	0.952	0.080	0.294	0.294	**70.6%**
1965	W	13,651	4,078	6,259	10,337	4,155	64%	0.28	0	0.919	0.080	0.618	0.618	**38.2%**
1966	B	25,116	4,294	6,672	10,966	8,443	25%	0.25	0	0.953	0.080	0.299	0.299	**70.1%**
1967	W	14,530	4,289	6,672	10,961	4,484	63%	0.27	0	0.953	0.080	0.631	0.631	**36.9%**
1968	B	16,241	4,305	4,054	8,359	5,124	62%	0.27	0	0.812	0.080	0.531	0.531	**46.9%**
1969	W	14,318	4,271	6,425	10,696	4,405	63%	0.28	0	0.938	0.080	0.624	0.624	**37.6%**
1970	W	17,644	4,305	4,089	8,394	5,649	61%	0.26	0	0.814	0.080	0.524	0.524	**47.6%**
1971	W	22,555	4,289	6,672	10,961	7,486	58%	0.25	0	0.953	0.080	0.584	0.584	**41.6%**
1972	B	15,347	4,289	6,672	10,961	4,790	62%	0.27	0	0.953	0.080	0.625	0.625	**37.5%**
1973	A	23,631	4,271	6,672	10,943	7,888	57%	0.25	0	0.952	0.080	0.579	0.579	**42.1%**
1974	W	53,558	4,290	6,672	10,962	19,081	23%	0.23	0	0.953	0.080	0.282	0.282	**71.8%**
1975	W	17,581	4,305	6,561	10,866	5,625	61%	0.26	0	0.947	0.080	0.606	0.606	**39.4%**
1976	C	19,229	4,306	6,672	10,978	6,242	59%	0.26	0	0.954	0.080	0.600	0.600	**40.0%**
1977	C	8,260	2,731	3,303	6,034	2,139	74%	0.31	0	0.687	0.080	0.527	0.527	**47.3%**
1978	A	6,922	2,476	1,706	4,182	1,639	78%	0.33	0	0.587	0.080	0.475	0.475	**52.5%**
1979	B	14,686	4,308	6,672	10,980	4,543	63%	0.27	0	0.954	0.080	0.631	0.631	**36.9%**
1980	A	15,797	4,289	6,672	10,961	4,958	62%	0.27	0	0.953	0.080	0.621	0.621	**37.9%**
1981	D	13,017	4,291	5,572	9,863	3,918	65%	0.28	0	0.893	0.080	0.608	0.608	**39.2%**
1982	W	31,939	4,271	6,672	10,943	10,995	24%	0.24	0	0.952	0.080	0.292	0.292	**70.8%**
1983	W	39,113	4,306	6,672	10,978	13,678	24%	0.24	0	0.954	0.080	0.287	0.287	**71.3%**
1984	W	62,800	1,743	3,623	5,366	22,537	23%	0.23	0	0.650	0.080	0.210	0.210	**79.0%**
1985	D	33,781	4,289	6,672	10,961	11,684	24%	0.24	0	0.953	0.080	0.290	0.290	**71.0%**
1986	W	9,546	2,564	4,229	6,793	2,620	71%	0.30	0	0.728	0.080	0.537	0.537	**46.3%**
1987	D	11,130	4,262	4,087	8,349	3,213	68%	0.29	0	0.812	0.080	0.575	0.575	**42.5%**
1988	C	8,448	3,030	1,916	4,946	2,210	73%	0.31	0	0.628	0.080	0.481	0.481	**51.9%**
1989	D	8,989	2,797	3,373	6,170	2,412	72%	0.31	0	0.694	0.080	0.521	0.521	**47.9%**
1990	C	11,506	4,250	3,331	7,581	3,353	67%	0.29	0	0.770	0.080	0.542	0.542	**45.8%**
1991	C	8,142	2,501	2,376	4,877	2,095	74%	0.32	0	0.624	0.080	0.483	0.483	**51.7%**
1992	C	7,488	3,115	1,421	4,536	1,851	76%	0.32	0	0.606	0.080	0.480	0.480	**52.0%**

DECEMBER

Year	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	17,143	4,207	7,115	11,322	5,461	61%	0.45	0	0.864	0.000	0.393	0.393	**60.7%**
1923	34,069	4,207	5,427	9,634	11,792	24%	0.24	0	0.773	0.000	0.186	0.186	**81.4%**
1924	13,681	3,785	6,570	10,355	4,167	64%	0.48	0	0.812	0.000	0.388	0.388	**61.2%**
1925	11,248	4,207	4,906	9,113	3,257	67%	0.50	0	0.745	0.000	0.374	0.374	**62.6%**
1926	12,688	4,207	2,718	6,925	3,795	65%	0.49	0	0.627	0.000	0.305	0.305	**69.5%**
1927	14,304	4,207	7,009	11,216	4,400	63%	0.47	0	0.859	0.000	0.406	0.406	**59.4%**
1928	16,574	4,207	6,464	10,671	5,249	61%	0.46	0	0.829	0.000	0.380	0.380	**62.0%**
1929	13,461	4,207	6,124	10,331	4,084	64%	0.48	0	0.811	0.000	0.389	0.389	**61.1%**
1930	14,442	4,207	6,331	10,538	4,451	63%	0.47	0	0.822	0.000	0.388	0.388	**61.2%**
1931	9,339	2,224	3,004	5,228	2,543	71%	0.53	0	0.535	0.000	0.282	0.282	**71.8%**
1932	14,650	4,207	7,207	11,414	4,529	63%	0.47	0	0.869	0.000	0.409	0.409	**59.1%**
1933	8,130	2,064	2,485	4,549	2,091	74%	0.55	0	0.499	0.000	0.274	0.274	**72.6%**
1934	12,474	4,207	5,551	9,758	3,715	66%	0.49	0	0.780	0.000	0.381	0.381	**61.9%**
1935	8,503	3,258	3,428	6,686	2,230	73%	0.54	0	0.614	0.000	0.333	0.333	**66.7%**
1936	11,625	4,207	4,100	8,307	3,398	67%	0.50	0	0.701	0.000	0.349	0.349	**65.1%**
1937	12,218	4,207	5,468	9,675	3,620	66%	0.49	0	0.775	0.000	0.381	0.381	**61.9%**
1938	43,461	4,207	7,553	11,760	15,304	23%	0.23	0	0.888	0.000	0.208	0.208	**79.2%**
1939	18,684	4,207	3,735	7,942	6,038	60%	0.45	0	0.682	0.000	0.305	0.305	**69.5%**
1940	7,841	1,524	2,752	4,276	1,983	75%	0.56	0	0.484	0.000	0.269	0.269	**73.1%**
1941	37,244	4,207	7,371	11,578	12,979	24%	0.24	0	0.878	0.000	0.209	0.209	**79.1%**
1942	65,619	4,207	3,608	7,815	23,592	23%	0.23	0	0.675	0.000	0.153	0.153	**84.7%**
1943	28,806	4,207	3,779	7,986	9,823	25%	0.25	0	0.684	0.000	0.168	0.168	**83.2%**
1944	13,774	4,207	6,678	10,885	4,201	64%	0.48	0	0.841	0.000	0.401	0.401	**59.9%**
1945	15,826	4,207	6,999	11,206	4,969	62%	0.46	0	0.858	0.000	0.397	0.397	**60.3%**
1946	52,999	4,207	7,592	11,799	18,872	23%	0.23	0	0.890	0.000	0.205	0.205	**79.5%**
1947	18,132	4,207	7,111	11,318	5,831	60%	0.45	0	0.864	0.000	0.388	0.388	**61.2%**
1948	9,379	2,440	3,099	5,539	2,558	71%	0.53	0	0.552	0.000	0.291	0.291	**70.9%**
1949	15,563	4,207	6,915	11,122	4,871	62%	0.46	0	0.853	0.000	0.396	0.396	**60.4%**
1950	11,679	4,207	3,059	7,266	3,418	67%	0.50	0	0.645	0.000	0.321	0.321	**67.9%**
1951	68,100	4,207	7,592	11,799	24,519	23%	0.23	0	0.890	0.000	0.202	0.202	**79.8%**
1952	45,041	4,207	7,139	11,346	15,895	23%	0.23	0	0.866	0.000	0.203	0.203	**79.7%**
1953	42,331	4,207	3,742	7,949	14,882	24%	0.24	0	0.682	0.000	0.161	0.161	**83.9%**
1954	14,919	4,207	3,897	8,104	4,630	63%	0.47	0	0.691	0.000	0.323	0.323	**67.7%**
1955	26,020	4,207	6,941	11,148	8,781	25%	0.25	0	0.855	0.000	0.213	0.213	**78.7%**
1956	25,204	4,207	7,592	11,799	8,476	25%	0.25	0	0.890	0.000	0.222	0.222	**77.8%**
1957	14,143	4,207	6,004	10,211	4,339	64%	0.47	0	0.804	0.000	0.381	0.381	**61.9%**
1958	23,752	4,207	6,960	11,167	7,933	57%	0.43	0	0.856	0.000	0.366	0.366	**63.4%**
1959	14,627	4,207	3,852	8,059	4,520	63%	0.47	0	0.688	0.000	0.324	0.324	**67.6%**
1960	10,482	3,789	2,791	6,580	2,970	69%	0.51	0	0.608	0.000	0.311	0.311	**68.9%**
1961	18,000	4,207	6,906	11,113	5,782	60%	0.45	0	0.853	0.000	0.384	0.384	**61.6%**
1962	16,256	4,207	6,888	11,095	5,130	62%	0.46	0	0.852	0.000	0.392	0.392	**60.8%**
1963	27,555	4,207	6,908	11,115	9,356	25%	0.25	0	0.853	0.000	0.211	0.211	**78.9%**
1964	14,847	4,207	5,461	9,668	4,603	63%	0.47	0	0.775	0.000	0.363	0.363	**63.7%**
1965	28,871	4,207	7,365	11,572	9,848	25%	0.25	0	0.878	0.000	0.215	0.215	**78.5%**
1966	16,997	4,207	6,969	11,176	5,407	61%	0.46	0	0.856	0.000	0.390	0.390	**61.0%**
1967	36,255	4,207	7,151	11,358	12,609	24%	0.24	0	0.866	0.000	0.207	0.207	**79.3%**
1968	16,692	3,360	3,735	7,095	5,293	61%	0.46	0	0.636	0.000	0.291	0.291	**70.9%**
1969	24,593	4,207	7,001	11,208	8,248	57%	0.43	0	0.858	0.000	0.365	0.365	**63.5%**
1970	50,159	4,207	3,481	7,688	17,809	23%	0.23	0	0.668	0.000	0.155	0.155	**84.5%**
1971	53,904	4,207	7,258	11,465	19,210	23%	0.23	0	0.872	0.000	0.201	0.201	**79.9%**
1972	19,914	4,207	6,969	11,176	6,498	59%	0.44	0	0.856	0.000	0.378	0.378	**62.2%**
1973	26,198	4,207	6,933	11,140	8,848	25%	0.25	0	0.854	0.000	0.212	0.212	**78.8%**
1974	61,593	4,207	7,176	11,383	22,086	23%	0.23	0	0.868	0.000	0.198	0.198	**80.2%**
1975	17,619	4,207	4,302	8,509	5,640	61%	0.45	0	0.712	0.000	0.322	0.322	**67.8%**
1976	16,774	4,207	5,619	9,826	5,323	61%	0.46	0	0.783	0.000	0.358	0.358	**64.2%**
1977	8,034	1,812	3,016	4,828	2,055	74%	0.55	0	0.514	0.000	0.283	0.283	**71.7%**
1978	12,285	4,207	5,516	9,723	3,645	66%	0.49	0	0.778	0.000	0.382	0.382	**61.8%**
1979	13,859	4,207	3,694	7,901	4,233	64%	0.48	0	0.680	0.000	0.324	0.324	**67.6%**
1980	20,332	4,207	7,018	11,225	6,654	59%	0.44	0	0.859	0.000	0.378	0.378	**62.2%**
1981	15,611	4,207	4,092	8,299	4,889	62%	0.46	0	0.701	0.000	0.325	0.325	**67.5%**
1982	68,137	4,207	6,972	11,179	24,533	23%	0.23	0	0.857	0.000	0.194	0.194	**80.6%**
1983	55,416	4,207	4,428	8,635	19,776	23%	0.23	0	0.719	0.000	0.165	0.165	**83.5%**
1984	82,951	2,994	3,104	6,098	30,074	22%	0.22	0	0.582	0.000	0.131	0.131	**86.9%**
1985	23,880	4,207	6,126	10,333	7,981	57%	0.43	0	0.811	0.000	0.347	0.347	**65.3%**
1986	15,722	4,207	6,974	11,181	4,930	62%	0.46	0	0.857	0.000	0.397	0.397	**60.3%**
1987	13,429	4,207	6,099	10,306	4,072	64%	0.48	0	0.809	0.000	0.388	0.388	**61.2%**
1988	15,842	4,207	6,898	11,105	4,975	62%	0.46	0	0.853	0.000	0.394	0.394	**60.6%**
1989	9,294	3,249	3,528	6,777	2,526	71%	0.53	0	0.619	0.000	0.327	0.327	**67.3%**
1990	14,594	4,207	6,202	10,409	4,508	63%	0.47	0	0.815	0.000	0.384	0.384	**61.6%**
1991	8,669	1,644	3,115	4,759	2,292	73%	0.54	0	0.510	0.000	0.275	0.275	**72.5%**
1992	7,455	2,980	1,623	4,603	1,838	76%	0.56	0	0.501	0.000	0.283	0.283	**71.7%**

JANUARY

Year	Sac River Flows	CVP Flows	SWP Flows	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	**Calculated Survival s123**
1922	17,504	4,207	7,594	11,801	5,596	61%	0.27	0	0.890	0.000	0.236	0.236	**76.4%**
1923	32,280	4,207	3,638	7,845	11,123	24%	0.24	0	0.677	0.000	0.164	0.164	**83.6%**
1924	14,620	4,207	6,773	10,980	4,518	63%	0.27	0	0.846	0.000	0.232	0.232	**76.8%**
1925	10,200	3,567	3,164	6,731	2,865	69%	0.30	0	0.616	0.000	0.184	0.184	**81.6%**
1926	18,519	4,207	7,134	11,341	5,976	60%	0.26	0	0.865	0.000	0.227	0.227	**77.3%**
1927	29,956	4,207	7,277	11,484	10,254	24%	0.24	0	0.873	0.000	0.213	0.213	**78.7%**
1928	25,207	4,207	3,637	7,844	8,477	25%	0.25	0	0.676	0.000	0.169	0.169	**83.1%**
1929	15,016	4,207	6,894	11,101	4,666	63%	0.27	0	0.852	0.000	0.233	0.233	**76.7%**
1930	20,771	4,207	7,102	11,309	6,818	59%	0.26	0	0.864	0.000	0.222	0.222	**77.8%**
1931	11,965	4,207	4,877	9,084	3,525	66%	0.29	0	0.743	0.000	0.213	0.213	**78.7%**
1932	17,253	4,207	7,832	12,039	5,503	61%	0.27	0	0.903	0.000	0.240	0.240	**76.0%**
1933	12,102	4,207	5,434	9,641	3,576	66%	0.29	0	0.774	0.000	0.221	0.221	**77.9%**
1934	16,103	4,207	7,098	11,305	5,073	62%	0.27	0	0.863	0.000	0.233	0.233	**76.7%**
1935	25,471	4,207	7,671	11,878	8,576	25%	0.25	0	0.894	0.000	0.223	0.223	**77.7%**
1936	32,125	4,207	7,456	11,663	11,065	24%	0.24	0	0.883	0.000	0.214	0.214	**78.6%**
1937	15,717	4,207	7,597	11,804	4,928	62%	0.27	0	0.890	0.000	0.241	0.241	**75.9%**
1938	31,443	4,207	3,760	7,967	10,810	24%	0.24	0	0.683	0.000	0.166	0.166	**83.4%**
1939	18,407	1,567	3,239	4,806	5,934	60%	0.26	0	0.512	0.000	0.135	0.135	**86.5%**
1940	23,448	4,207	8,067	12,274	7,820	57%	0.25	0	0.916	0.000	0.231	0.231	**76.9%**
1941	72,229	4,207	8,207	12,414	26,064	23%	0.23	0	0.923	0.000	0.209	0.209	**79.1%**
1942	63,260	4,120	3,239	7,359	22,709	23%	0.23	0	0.650	0.000	0.148	0.148	**85.2%**
1943	58,056	4,207	3,304	7,511	20,763	23%	0.23	0	0.658	0.000	0.151	0.151	**84.9%**
1944	17,677	4,207	3,262	7,469	5,661	60%	0.26	0	0.656	0.000	0.174	0.174	**82.6%**
1945	14,027	4,207	4,933	9,140	4,296	64%	0.28	0	0.746	0.000	0.207	0.207	**79.3%**
1946	43,229	4,207	3,637	7,844	15,218	23%	0.23	0	0.676	0.000	0.159	0.159	**84.1%**
1947	14,971	4,207	7,359	11,566	4,649	63%	0.27	0	0.877	0.000	0.240	0.240	**76.0%**
1948	14,649	4,207	6,415	10,622	4,529	63%	0.27	0	0.826	0.000	0.227	0.227	**77.3%**
1949	14,928	4,207	6,874	11,081	4,633	63%	0.27	0	0.851	0.000	0.233	0.233	**76.7%**
1950	19,934	4,207	7,191	11,398	6,505	59%	0.26	0	0.868	0.000	0.225	0.225	**77.5%**
1951	62,213	4,207	6,851	11,058	22,318	23%	0.23	0	0.850	0.000	0.194	0.194	**80.6%**
1952	67,352	4,207	8,296	12,503	24,240	23%	0.23	0	0.928	0.000	0.211	0.211	**78.9%**
1953	64,078	1,565	3,333	4,898	23,015	23%	0.23	0	0.517	0.000	0.118	0.118	**88.2%**
1954	33,414	4,207	3,850	8,057	11,547	24%	0.24	0	0.688	0.000	0.166	0.166	**83.4%**
1955	22,257	4,207	7,258	11,465	7,374	58%	0.25	0	0.872	0.000	0.222	0.222	**77.8%**
1956	83,596	4,207	8,085	12,292	30,315	22%	0.22	0	0.917	0.000	0.206	0.206	**79.4%**
1957	18,639	4,207	3,891	8,098	6,021	60%	0.26	0	0.690	0.000	0.181	0.181	**81.9%**
1958	36,257	4,207	3,317	7,524	12,610	24%	0.24	0	0.659	0.000	0.158	0.158	**84.2%**
1959	35,167	1,586	3,333	4,919	12,202	24%	0.24	0	0.519	0.000	0.124	0.124	**87.6%**
1960	14,772	4,207	6,679	10,886	4,575	63%	0.27	0	0.841	0.000	0.230	0.230	**77.0%**
1961	14,758	4,207	6,943	11,150	4,569	63%	0.27	0	0.855	0.000	0.234	0.234	**76.6%**
1962	15,046	4,207	3,387	7,594	4,677	63%	0.27	0	0.663	0.000	0.181	0.181	**81.9%**
1963	17,986	4,207	7,256	11,463	5,777	60%	0.26	0	0.872	0.000	0.230	0.230	**77.0%**
1964	24,193	3,925	3,851	7,776	8,098	57%	0.25	0	0.673	0.000	0.169	0.169	**83.1%**
1965	81,240	4,207	8,500	12,707	29,434	22%	0.22	0	0.939	0.000	0.211	0.211	**78.9%**
1966	29,635	4,207	3,657	7,864	10,133	24%	0.24	0	0.678	0.000	0.166	0.166	**83.4%**
1967	34,592	4,207	7,700	11,907	11,987	24%	0.24	0	0.896	0.000	0.215	0.215	**78.5%**
1968	30,635	1,565	3,333	4,898	10,507	24%	0.24	0	0.517	0.000	0.126	0.126	**87.4%**
1969	68,303	4,207	5,687	9,894	24,595	23%	0.23	0	0.787	0.000	0.179	0.179	**82.1%**
1970	92,665	1,352	3,333	4,685	33,707	22%	0.22	0	0.506	0.000	0.113	0.113	**88.7%**
1971	45,855	4,207	4,749	8,956	16,200	23%	0.23	0	0.737	0.000	0.172	0.172	**82.8%**
1972	20,395	4,207	3,891	8,098	6,678	59%	0.26	0	0.690	0.000	0.178	0.178	**82.2%**
1973	49,956	4,207	7,266	11,473	17,734	23%	0.23	0	0.872	0.000	0.202	0.202	**79.8%**
1974	78,417	4,207	3,637	7,844	28,378	22%	0.22	0	0.676	0.000	0.152	0.152	**84.8%**
1975	18,672	4,207	3,848	8,055	6,033	60%	0.26	0	0.688	0.000	0.180	0.180	**82.0%**
1976	16,769	4,207	3,827	8,034	5,322	61%	0.27	0	0.687	0.000	0.184	0.184	**81.6%**
1977	8,314	2,844	2,499	5,343	2,159	74%	0.31	0	0.541	0.000	0.170	0.170	**83.0%**
1978	44,206	3,114	7,768	10,882	15,583	23%	0.23	0	0.841	0.000	0.197	0.197	**80.3%**
1979	27,242	4,207	3,262	7,469	9,239	25%	0.25	0	0.656	0.000	0.162	0.162	**83.8%**
1980	58,894	4,207	3,159	7,366	21,076	23%	0.23	0	0.651	0.000	0.149	0.149	**85.1%**
1981	28,711	2,273	3,356	5,629	9,788	25%	0.25	0	0.557	0.000	0.137	0.137	**86.3%**
1982	51,172	4,207	7,337	11,544	18,188	23%	0.23	0	0.876	0.000	0.203	0.203	**79.7%**
1983	59,148	2,925	2,648	5,573	21,171	23%	0.23	0	0.554	0.000	0.127	0.127	**87.3%**
1984	47,354	1,331	2,881	4,212	16,760	23%	0.23	0	0.480	0.000	0.112	0.112	**88.8%**
1985	16,799	4,207	3,872	8,079	5,333	61%	0.27	0	0.689	0.000	0.184	0.184	**81.6%**
1986	21,544	4,207	7,237	11,444	7,107	58%	0.26	0	0.871	0.000	0.223	0.223	**77.7%**
1987	16,734	1,328	5,648	6,976	5,309	61%	0.27	0	0.630	0.000	0.168	0.168	**83.2%**
1988	25,530	4,207	7,092	11,299	8,598	25%	0.25	0	0.863	0.000	0.215	0.215	**78.5%**
1989	12,498	4,207	4,849	9,056	3,724	66%	0.28	0	0.742	0.000	0.211	0.211	**78.9%**
1990	21,334	2,756	7,051	9,807	7,029	58%	0.26	0	0.782	0.000	0.201	0.201	**79.9%**
1991	6,851	1,648	1,668	3,316	1,612	78%	0.33	0	0.432	0.000	0.143	0.143	**85.7%**
1992	12,140	4,039	4,928	8,967	3,590	66%	0.29	0	0.737	0.000	0.211	0.211	**78.9%**

Formulas: Sacramento River Spring Smolt Yearling Survival Model

C10 ='Study 467 Flow Data'!B7
D10 ='Study 467 Flow Data'!L7
E10 ='Study 467 Flow Data'!V7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.133*C10+829)/(C10-G10)
J10 =IF(-2.45925+(0.0420748*$T$1)>0,-2.45925+(0.0420748*$T$1),0)
K10 =(-0.5916024)+(0.017968*$T$1)+(0.000054*F10)
L10 =IF(-1.613493+(0.0319584*$T$1)>0,-1.613493+(0.0319584*$T$1),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!C7
R10 ='Study 467 Flow Data'!M7
S10 ='Study 467 Flow Data'!W7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.000054*T10)
Z10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!D7
AF10 ='Study 467 Flow Data'!N7
AG10 ='Study 467 Flow Data'!X7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
AM10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10)
AN10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE
1	Study 634 Sacramento River Spring Run Yearling Survival Model (continued)												
2								February Water Temp			50 F		
3		Cross Channel Closed Over		25000 cfs				March Water Temp			55 F		
4		Cross Channel Closed Feb to Apr when DOI greater than					12,000 cfs						
5													
6	**FEBRUARY**				Calculated								
7	Sac				Sutter &								**Calculated**
8	River	CVP	SWP	CVP + SWP	Steamboat		X-Channel		Calculated Mortality				**Survivability**
9	Flow	Flow	Flow	Exports	Slough Q	Percent	Closed	m1	m2	m3	m23	m123	**s123**
10	34,421	4,249	6,300	10,549	11,923	24%	0.24	0	0.876	0.000	0.211	0.211	**78.9%**
11	22,087	2,189	2,380	4,569	7,311	58%	0.25	0	0.554	0.000	0.141	0.141	**85.9%**
12	17,751	4,219	4,457	8,676	5,689	60%	0.26	0	0.775	0.000	0.205	0.205	**79.5%**
13	44,705	3,834	7,584	11,418	15,770	23%	0.23	0	0.923	0.000	0.216	0.216	**78.4%**
14	35,467	4,229	7,298	11,527	12,315	24%	0.24	0	0.929	0.000	0.223	0.223	**77.7%**
15	86,633	2,960	8,272	11,232	31,451	22%	0.22	0	0.913	0.000	0.204	0.204	**79.6%**
16	26,504	1,832	4,377	6,209	8,962	25%	0.25	0	0.642	0.000	0.159	0.159	**84.1%**
17	17,787	4,232	4,826	9,058	5,702	60%	0.26	0	0.796	0.000	0.210	0.210	**79.0%**
18	15,675	2,808	3,992	6,800	4,912	62%	0.27	0	0.674	0.000	0.182	0.182	**81.8%**
19	11,083	3,248	1,819	5,067	3,195	68%	0.29	0	0.580	0.000	0.169	0.169	**83.1%**
20	14,486	4,240	5,643	9,883	4,468	63%	0.28	0	0.840	0.000	0.231	0.231	**76.9%**
21	11,527	3,715	2,600	6,315	3,361	67%	0.29	0	0.648	0.000	0.187	0.187	**81.3%**
22	12,740	1,361	4,510	5,871	3,815	65%	0.28	0	0.624	0.000	0.176	0.176	**82.4%**
23	12,407	1,125	3,952	5,077	3,690	66%	0.28	0	0.581	0.000	0.165	0.165	**83.5%**
24	50,212	3,309	8,500	11,809	17,829	23%	0.23	0	0.944	0.000	0.219	0.219	**78.1%**
25	32,525	4,231	5,166	9,397	11,214	24%	0.24	0	0.814	0.000	0.197	0.197	**80.3%**
26	82,366	1,245	3,939	5,184	29,855	22%	0.22	0	0.587	0.000	0.132	0.132	**86.8%**
27	19,024	1,527	3,955	5,482	6,165	60%	0.26	0	0.603	0.000	0.157	0.157	**84.3%**
28	44,197	4,240	8,465	12,705	15,580	23%	0.23	0	0.993	0.000	0.233	0.233	**76.7%**
29	75,037	3,571	6,665	10,236	27,114	23%	0.23	0	0.860	0.000	0.194	0.194	**80.6%**
30	78,349	1,708	3,955	5,663	28,353	23%	0.23	0	0.613	0.000	0.138	0.138	**86.2%**
31	52,259	2,019	4,005	6,024	18,595	23%	0.23	0	0.632	0.000	0.146	0.146	**85.4%**
32	31,317	1,391	3,958	5,349	10,763	24%	0.24	0	0.596	0.000	0.145	0.145	**85.5%**
33	38,590	4,239	3,999	8,238	13,483	24%	0.24	0	0.752	0.000	0.178	0.178	**82.2%**
34	23,843	2,329	3,702	6,031	7,967	57%	0.25	0	0.632	0.000	0.159	0.159	**84.1%**
35	21,069	4,242	4,007	8,249	6,930	58%	0.26	0	0.752	0.000	0.193	0.193	**80.7%**
36	16,544	4,232	1,789	6,021	5,237	61%	0.27	0	0.632	0.000	0.169	0.169	**83.1%**
37	16,132	3,214	5,188	8,402	5,083	62%	0.27	0	0.761	0.000	0.205	0.205	**79.5%**
38	32,762	4,246	7,539	11,785	11,303	24%	0.24	0	0.943	0.000	0.228	0.228	**77.2%**
39	60,566	3,528	4,675	8,203	21,702	23%	0.23	0	0.750	0.000	0.171	0.171	**82.9%**
40	64,731	4,293	3,909	8,202	23,259	23%	0.23	0	0.750	0.000	0.171	0.171	**82.9%**
41	28,344	2,015	4,060	6,075	9,651	25%	0.25	0	0.635	0.000	0.156	0.156	**84.4%**
42	57,158	1,998	4,636	6,634	20,427	23%	0.23	0	0.665	0.000	0.153	0.153	**84.7%**
43	17,047	4,255	3,352	7,607	5,426	61%	0.27	0	0.718	0.000	0.191	0.191	**80.9%**
44	63,748	3,466	4,675	8,141	22,892	23%	0.23	0	0.746	0.000	0.170	0.170	**83.0%**
45	33,144	4,248	4,638	8,886	11,446	24%	0.24	0	0.787	0.000	0.190	0.190	**81.0%**
46	62,798	2,860	4,040	6,900	22,536	23%	0.23	0	0.679	0.000	0.155	0.155	**84.5%**
47	50,082	1,809	4,060	5,869	17,781	23%	0.23	0	0.624	0.000	0.145	0.145	**85.5%**
48	27,274	3,754	7,357	11,111	9,250	25%	0.25	0	0.907	0.000	0.224	0.224	**77.6%**
49	32,704	4,247	7,116	11,363	11,281	24%	0.24	0	0.920	0.000	0.222	0.222	**77.8%**
50	38,011	1,135	8,500	9,635	13,266	24%	0.24	0	0.827	0.000	0.197	0.197	**80.3%**
51	58,694	4,281	7,779	12,060	21,002	23%	0.23	0	0.958	0.000	0.219	0.219	**78.1%**
52	17,842	1,996	4,638	6,634	5,723	60%	0.26	0	0.665	0.000	0.176	0.176	**82.4%**
53	33,326	4,254	6,683	10,937	11,514	24%	0.24	0	0.897	0.000	0.216	0.216	**78.4%**
54	26,777	2,094	4,377	6,471	9,065	25%	0.25	0	0.656	0.000	0.163	0.163	**83.7%**
55	43,101	4,293	3,201	7,494	15,170	23%	0.23	0	0.711	0.000	0.167	0.167	**83.3%**
56	56,470	1,995	4,060	6,055	20,170	23%	0.23	0	0.634	0.000	0.146	0.146	**85.4%**
57	67,482	1,414	3,171	4,585	24,288	23%	0.23	0	0.554	0.000	0.126	0.126	**87.4%**
58	57,565	1,213	4,060	5,273	20,579	23%	0.23	0	0.592	0.000	0.136	0.136	**86.4%**
59	28,525	3,192	4,675	7,867	9,718	25%	0.25	0	0.732	0.000	0.180	0.180	**82.0%**
60	25,083	3,931	4,638	8,569	8,431	25%	0.25	0	0.770	0.000	0.192	0.192	**80.8%**
61	70,967	4,268	4,423	8,691	25,592	23%	0.23	0	0.776	0.000	0.176	0.176	**82.4%**
62	41,926	2,117	4,377	6,494	14,730	24%	0.24	0	0.657	0.000	0.155	0.155	**84.5%**
63	58,811	2,172	4,636	6,808	21,045	23%	0.23	0	0.674	0.000	0.154	0.154	**84.6%**
64	20,229	4,239	4,237	8,476	6,616	59%	0.26	0	0.765	0.000	0.198	0.198	**80.2%**
65	12,279	771	1,416	2,187	3,642	66%	0.29	0	0.425	0.000	0.121	0.121	**87.9%**
66	51,370	1,761	7,938	9,699	18,262	23%	0.23	0	0.831	0.000	0.192	0.192	**80.8%**
67	41,682	1,471	3,958	5,429	14,639	24%	0.24	0	0.600	0.000	0.141	0.141	**85.9%**
68	71,932	874	3,768	4,642	25,953	23%	0.23	0	0.557	0.000	0.126	0.126	**87.4%**
69	29,672	1,771	4,062	5,833	10,147	24%	0.24	0	0.622	0.000	0.152	0.152	**84.8%**
70	65,645	2,278	4,620	6,898	23,601	23%	0.23	0	0.679	0.000	0.154	0.154	**84.6%**
71	82,910	1,395	2,793	4,188	30,058	22%	0.22	0	0.533	0.000	0.120	0.120	**88.0%**
72	37,282	1,495	3,847	5,342	12,993	24%	0.24	0	0.595	0.000	0.142	0.142	**85.8%**
73	18,976	2,353	4,636	6,989	6,147	60%	0.26	0	0.684	0.000	0.179	0.179	**82.1%**
74	96,755	4,245	7,568	11,813	35,236	22%	0.22	0	0.945	0.000	0.210	0.210	**79.0%**
75	23,028	1,260	4,219	5,479	7,662	58%	0.25	0	0.603	0.000	0.153	0.153	**84.7%**
76	18,164	4,245	2,700	6,945	5,843	60%	0.26	0	0.682	0.000	0.180	0.180	**82.0%**
77	12,455	955	1,790	2,745	3,708	66%	0.28	0	0.455	0.000	0.129	0.129	**87.1%**
78	16,696	1,220	6,469	7,689	5,294	61%	0.27	0	0.722	0.000	0.193	0.193	**80.7%**
79	10,443	396	111	507	2,956	69%	0.30	0	0.334	0.000	0.099	0.099	**90.1%**
80	32,538	622	7,455	8,077	11,219	24%	0.24	0	0.743	0.000	0.180	0.180	**82.0%**

	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU
6	**MARCH**				Calculated										
7	Sac				Sutter &								**Calculated**		**Weighted**
8	River			CVP + SWP	Steamboat		X-Channel		Calculated Mortality				**Survivability**		**Total**
9	Flow	CVP	SWP	exports	Slough Q	percent	Closed	m1	m2	m3	m23	m123	**s123**		**Survival**
10	31,554	2,834	4,143	6,977	10,851	24%	0.24	0	0.773	0.144	0.297	0.297	**70.3%**		**57.2%**
11	15,486	3,164	3,575	6,739	4,842	62%	0.27	0	0.761	0.144	0.311	0.311	**68.9%**		**65.4%**
12	11,956	1,484	1,575	3,059	3,522	66%	0.29	0	0.562	0.144	0.264	0.264	**73.6%**		**58.8%**
13	29,791	3,267	2,866	6,133	10,192	24%	0.24	0	0.728	0.144	0.287	0.287	**71.3%**		**61.9%**
14	15,769	2,771	3,674	6,445	4,948	62%	0.27	0	0.745	0.144	0.307	0.307	**69.3%**		**62.7%**
15	43,865	3,178	4,154	7,332	15,456	23%	0.23	0	0.793	0.144	0.296	0.296	**70.4%**		**56.3%**
16	86,223	3,171	4,424	7,595	31,297	22%	0.22	0	0.807	0.144	0.293	0.293	**70.7%**		**58.3%**
17	13,763	2,089	2,784	4,873	4,197	64%	0.28	0	0.660	0.144	0.288	0.288	**71.2%**		**56.5%**
18	30,470	3,045	4,618	7,663	10,446	24%	0.24	0	0.810	0.144	0.307	0.307	**69.3%**		**61.8%**
19	9,210	1,880	1,921	3,801	2,495	71%	0.31	0	0.602	0.144	0.284	0.284	**71.6%**		**65.1%**
20	10,502	950	2,714	3,664	2,978	69%	0.30	0	0.594	0.144	0.277	0.277	**72.3%**		**62.7%**
21	10,393	233	4,403	4,636	2,937	69%	0.30	0	0.647	0.144	0.293	0.293	**70.7%**		**65.5%**
22	14,161	2,143	1,765	3,908	4,346	64%	0.28	0	0.608	0.144	0.272	0.272	**72.8%**		**64.7%**
23	24,918	4,225	6,987	11,212	8,369	57%	0.25	0	1.002	0.144	0.359	0.359	**64.1%**		**63.3%**
24	33,698	3,202	6,378	9,580	11,653	24%	0.24	0	0.914	0.144	0.330	0.330	**67.0%**		**60.3%**
25	37,003	2,527	4,031	6,558	12,889	24%	0.24	0	0.751	0.144	0.289	0.289	**71.1%**		**59.1%**
26	78,637	2,056	3,966	6,022	28,460	22%	0.22	0	0.722	0.144	0.274	0.274	**72.6%**		**66.2%**
27	16,390	2,663	3,985	6,648	5,180	61%	0.27	0	0.756	0.144	0.308	0.308	**69.2%**		**62.9%**
28	59,588	4,225	4,648	8,873	21,336	23%	0.23	0	0.876	0.144	0.312	0.312	**68.8%**		**66.2%**
29	58,575	3,447	3,846	7,293	20,957	23%	0.23	0	0.790	0.144	0.292	0.292	**70.8%**		**63.7%**
30	27,099	3,430	4,007	7,437	9,185	25%	0.25	0	0.798	0.144	0.306	0.306	**69.4%**		**68.1%**
31	64,601	1,843	4,056	5,899	23,211	23%	0.23	0	0.715	0.144	0.274	0.274	**72.6%**		**67.7%**
32	25,100	3,000	4,007	7,007	8,437	25%	0.25	0	0.775	0.144	0.302	0.302	**69.8%**		**55.7%**
33	27,033	3,214	4,149	7,363	9,160	25%	0.25	0	0.794	0.144	0.305	0.305	**69.5%**		**55.2%**
34	23,778	3,164	4,424	7,588	7,943	57%	0.25	0	0.806	0.144	0.311	0.311	**68.9%**		**65.2%**
35	22,106	2,585	3,984	6,569	7,318	58%	0.25	0	0.751	0.144	0.299	0.299	**70.1%**		**55.5%**
36	19,067	4,225	3,411	7,636	6,181	60%	0.26	0	0.809	0.144	0.318	0.318	**68.2%**		**63.9%**
37	41,807	2,545	6,972	9,517	14,686	24%	0.24	0	0.911	0.144	0.325	0.325	**67.5%**		**55.5%**
38	22,154	3,330	4,493	7,823	7,336	58%	0.25	0	0.819	0.144	0.316	0.316	**68.4%**		**61.4%**
39	29,827	3,166	4,699	7,865	10,205	24%	0.24	0	0.821	0.144	0.310	0.310	**69.0%**		**76.6%**
40	57,518	3,221	3,934	7,155	20,562	23%	0.23	0	0.783	0.144	0.291	0.291	**70.9%**		**64.3%**
41	24,893	3,163	4,111	7,274	8,360	57%	0.25	0	0.789	0.144	0.306	0.306	**69.4%**		**70.4%**
42	49,536	3,164	4,685	7,849	17,576	23%	0.23	0	0.820	0.144	0.301	0.301	**69.9%**		**60.6%**
43	17,899	4,225	2,950	7,175	5,744	60%	0.26	0	0.784	0.144	0.313	0.313	**68.7%**		**64.4%**
44	36,676	2,069	4,699	6,768	12,767	24%	0.24	0	0.762	0.144	0.292	0.292	**70.8%**		**66.2%**
45	44,377	3,189	4,381	7,570	15,647	23%	0.23	0	0.805	0.144	0.299	0.299	**70.1%**		**56.7%**
46	93,616	3,461	4,057	7,518	34,062	22%	0.22	0	0.803	0.144	0.291	0.291	**70.9%**		**58.8%**
47	21,838	2,869	3,184	6,053	7,217	58%	0.26	0	0.723	0.144	0.292	0.292	**70.8%**		**63.3%**
48	21,550	2,523	4,064	6,587	7,110	58%	0.26	0	0.752	0.144	0.300	0.300	**70.0%**		**62.5%**
49	20,944	2,928	4,070	6,998	6,883	59%	0.26	0	0.775	0.144	0.306	0.306	**69.4%**		**56.0%**
50	26,263	3,219	4,340	7,559	8,872	25%	0.25	0	0.805	0.144	0.308	0.308	**69.2%**		**59.1%**
51	32,645	4,225	5,184	9,409	11,259	24%	0.24	0	0.905	0.144	0.328	0.328	**67.2%**		**64.2%**
52	15,544	2,869	3,374	6,243	4,863	62%	0.27	0	0.734	0.144	0.304	0.304	**69.6%**		**69.9%**
53	21,381	3,811	4,277	8,088	7,046	58%	0.26	0	0.833	0.144	0.321	0.321	**67.9%**		**63.3%**
54	28,683	3,163	4,424	7,587	9,777	25%	0.25	0	0.806	0.144	0.307	0.307	**69.3%**		**68.7%**
55	54,488	3,232	3,283	6,515	19,429	23%	0.23	0	0.748	0.144	0.283	0.283	**71.7%**		**63.5%**
56	36,789	2,870	4,111	6,981	12,809	24%	0.24	0	0.774	0.144	0.294	0.294	**70.6%**		**64.9%**
57	45,319	2,060	3,251	5,311	15,999	23%	0.23	0	0.683	0.144	0.270	0.270	**73.0%**		**57.8%**
58	35,819	3,109	4,111	7,220	12,446	24%	0.24	0	0.787	0.144	0.298	0.298	**70.2%**		**71.1%**
59	51,513	3,164	4,699	7,863	18,316	23%	0.23	0	0.821	0.144	0.301	0.301	**69.9%**		**65.9%**
60	32,930	2,870	4,355	7,225	11,366	24%	0.24	0	0.787	0.144	0.299	0.299	**70.1%**		**56.8%**
61	47,552	3,191	4,452	7,643	16,834	23%	0.23	0	0.809	0.144	0.299	0.299	**70.1%**		**65.2%**
62	34,721	3,447	4,424	7,871	12,036	24%	0.24	0	0.822	0.144	0.307	0.307	**69.3%**		**77.6%**
63	75,998	3,455	4,685	8,140	27,473	23%	0.23	0	0.836	0.144	0.300	0.300	**70.0%**		**60.1%**
64	18,356	2,026	4,179	6,205	5,915	60%	0.26	0	0.732	0.144	0.299	0.299	**70.1%**		**58.5%**
65	7,656	910	1,286	2,196	1,913	75%	0.32	0	0.515	0.144	0.264	0.264	**73.6%**		**65.0%**
66	46,722	2,115	3,905	6,020	16,524	23%	0.23	0	0.722	0.144	0.279	0.279	**72.1%**		**62.0%**
67	32,549	3,177	4,007	7,184	11,223	24%	0.24	0	0.785	0.144	0.299	0.299	**70.1%**		**59.4%**
68	36,480	1,847	3,344	5,191	12,694	24%	0.24	0	0.677	0.144	0.271	0.271	**72.9%**		**57.8%**
69	32,501	2,869	4,111	6,980	11,205	24%	0.24	0	0.774	0.144	0.296	0.296	**70.4%**		**60.4%**
70	69,087	2,963	4,644	7,607	24,889	23%	0.23	0	0.807	0.144	0.295	0.295	**70.5%**		**76.8%**
71	81,934	2,042	2,628	4,670	29,693	22%	0.22	0	0.649	0.144	0.257	0.257	**74.3%**		**79.4%**
72	36,503	3,148	4,007	7,155	12,702	24%	0.24	0	0.783	0.144	0.297	0.297	**70.3%**		**83.7%**
73	20,833	2,870	4,685	7,555	6,842	59%	0.26	0	0.805	0.144	0.314	0.314	**68.6%**		**70.5%**
74	72,539	3,981	4,180	8,161	26,180	23%	0.23	0	0.837	0.144	0.301	0.301	**69.9%**		**58.6%**
75	30,017	2,343	4,136	6,479	10,276	24%	0.24	0	0.747	0.144	0.291	0.291	**70.9%**		**58.6%**
76	11,108	2,052	1,860	3,912	3,204	68%	0.29	0	0.608	0.144	0.280	0.280	**72.0%**		**61.1%**
77	41,509	4,225	6,961	11,186	14,574	24%	0.24	0	1.001	0.144	0.346	0.346	**65.4%**		**62.6%**
78	14,588	2,217	3,562	5,779	4,506	63%	0.27	0	0.709	0.144	0.299	0.299	**70.1%**		**59.3%**
79	29,675	4,225	7,081	11,306	10,148	24%	0.24	0	1.007	0.144	0.355	0.355	**64.5%**		**67.2%**
80	20,106	1,965	6,277	8,242	6,570	59%	0.26	0	0.842	0.144	0.325	0.325	**67.5%**		**65.8%**
81														**AVERAGE:**	**63.39%**

85 AS10 ='Study 467 Flow Data'!E7 — BG10 ='Study 467 Flow Data'!F7
86 AT10 ='Study 467 Flow Data'!O7 — BH10 ='Study 467 Flow Data'!P7
87 AU10 ='Study 467 Flow Data'!Y7 — BI10 ='Study 467 Flow Data'!Z7
88 AV10 =(AT10+AU10) — BJ10 =(BH10+BI10)
89 AW10 =0.374*AS10-950 — BK10 =0.374*BG10-950
90 AX10 =IF(AS10>$K$4,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10)) — BL10 =IF(BG10>$K$4,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
91 AY10 =(0.133*AS10+829)/(AS10-AW10) — BM10 =(0.133*BG10+829)/(BG10-BK10)
92 AZ10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0) — BN10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
93 BA10 =(-0.5916024)+(0.017968*$T$3)+(0.000054*AH10) — BO10 =(-0.5916024)+(0.017968*$BC$3)+(0.000054*BJ10)
94 BB10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0) — BP10 =IF(-1.613493+(0.0319584*$BC$3)>0,-1.613493+(0.0319584*$BC$3),0)
95 BC10 =(BA10*AY10)+(BB10*(1-AY10)) — BQ10 =(BO10*BM10)+(BP10*(1-BM10))
96 BD10 =AZ10+BC10-(AZ10*BC10) — BR10 =BN10+BQ10-(BN10*BQ10)
97 BE10 =1-BD10 — BS10 =1-BR10
98 BU10 =(O10*0.37)+(AC10*0.42)+(AQ10*0.13)+(BE10*0.05)+(BS10*0.03)

Study 467 Sacramento River Spring Run YOY Smolt Survival Model

Modified m2 by changing the slope to 0.0000434

Cross Channel closed for 45 consecutive days, Dec 18-Jan 31

Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

December Sacramento River Temp: 47 degrees F

January Sacramento River Temp: 47 degrees F

Cross Channel Closed Over 25000 cfs

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

February Water Temp 50 F

March Water Temp 55 F

DECEMBER

Row	Year	Water Year Type	Sac River Flows (C)	CVP (D)	SWP (E)	SWP+CVP exports (F)	Calculated Steamboat & Sutter Slough Q (G)	percent (H)	xchannel closed (I)	m1 (J)	m2 (K)	m3 (L)	m23 (M)	m123 (N)	**Calculated Survival s123** (O)
10	1922	A	17,142	4,212	7,107	11,319	5,461	61%	0.45	0	0.744	0.000	0.338	0.338	**66.2%**
11	1923	B	34,202	4,212	7,091	11,303	11,842	24%	0.24	0	0.743	0.000	0.179	0.179	**82.1%**
12	1924	C	15,353	4,212	6,944	11,156	4,792	62%	0.47	0	0.737	0.000	0.343	0.343	**65.7%**
13	1925	D	11,271	3,871	4,635	8,506	3,265	67%	0.50	0	0.622	0.000	0.312	0.312	**68.8%**
14	1926	D	10,620	4,212	2,814	7,026	3,022	68%	0.51	0	0.558	0.000	0.284	0.284	**71.6%**
15	1927	W	15,841	4,212	7,042	11,254	4,975	62%	0.46	0	0.741	0.000	0.343	0.343	**65.7%**
16	1928	A	16,572	4,212	7,075	11,287	5,248	61%	0.46	0	0.743	0.000	0.340	0.340	**66.0%**
17	1929	C	13,954	4,212	6,928	11,140	4,269	64%	0.48	0	0.736	0.000	0.350	0.350	**65.0%**
18	1930	D	14,767	4,212	6,782	10,994	4,573	63%	0.47	0	0.730	0.000	0.343	0.343	**65.7%**
19	1931	C	11,449	3,432	3,058	6,490	3,332	67%	0.50	0	0.535	0.000	0.267	0.267	**73.3%**
20	1932	D	14,653	4,212	7,188	11,400	4,530	63%	0.47	0	0.748	0.000	0.352	0.352	**64.8%**
21	1933	C	9,904	2,992	2,407	5,399	2,754	70%	0.52	0	0.487	0.000	0.253	0.253	**74.7%**
22	1934	C	12,474	3,334	5,985	9,319	3,715	66%	0.49	0	0.657	0.000	0.321	0.321	**67.9%**
23	1935	B	8,522	2,261	2,635	4,896	2,237	73%	0.54	0	0.465	0.000	0.252	0.252	**74.8%**
24	1936	B	14,767	4,212	6,944	11,156	4,573	63%	0.47	0	0.737	0.000	0.346	0.346	**65.4%**
25	1937	B	14,052	4,212	6,993	11,205	4,305	64%	0.47	0	0.739	0.000	0.351	0.351	**64.9%**
26	1938	W	51,246	4,212	7,530	11,742	18,216	23%	0.23	0	0.762	0.000	0.176	0.176	**82.4%**
27	1939	D	18,687	4,212	4,538	8,750	6,039	60%	0.45	0	0.633	0.000	0.283	0.283	**71.7%**
28	1940	A	9,579	2,423	2,667	5,090	2,633	70%	0.52	0	0.474	0.000	0.248	0.248	**75.2%**
29	1941	W	32,413	4,212	7,351	11,563	11,172	24%	0.24	0	0.755	0.000	0.183	0.183	**81.7%**
30	1942	W	65,623	4,212	5,156	9,368	23,593	23%	0.23	0	0.659	0.000	0.150	0.150	**85.0%**
31	1943	W	28,803	4,212	5,822	10,034	9,822	25%	0.25	0	0.688	0.000	0.169	0.169	**83.1%**
32	1944	D	13,775	4,212	6,261	10,473	4,202	64%	0.48	0	0.707	0.000	0.337	0.337	**66.3%**
33	1945	B	17,272	4,212	6,961	11,173	5,510	61%	0.45	0	0.738	0.000	0.335	0.335	**66.5%**
34	1946	B	56,109	4,212	7,595	11,807	20,035	23%	0.23	0	0.765	0.000	0.176	0.176	**82.4%**
35	1947	D	17,630	4,212	7,140	11,352	5,644	61%	0.45	0	0.746	0.000	0.337	0.337	**66.3%**
36	1948	B	12,149	3,919	3,415	7,334	3,594	66%	0.49	0	0.571	0.000	0.281	0.281	**71.9%**
37	1949	D	15,564	4,212	6,928	11,140	4,871	62%	0.46	0	0.736	0.000	0.342	0.342	**65.8%**
38	1950	B	12,263	4,212	3,432	7,644	3,636	66%	0.49	0	0.585	0.000	0.287	0.287	**71.3%**
39	1951	A	66,631	4,212	7,595	11,807	23,970	23%	0.23	0	0.765	0.000	0.174	0.174	**82.6%**
40	1952	W	51,962	4,212	7,107	11,319	18,484	23%	0.23	0	0.744	0.000	0.172	0.172	**82.8%**
41	1953	W	42,334	4,212	3,741	7,953	14,883	24%	0.24	0	0.598	0.000	0.141	0.141	**85.9%**
42	1954	A	14,914	4,212	6,879	11,091	4,628	63%	0.47	0	0.734	0.000	0.344	0.344	**65.6%**
43	1955	D	25,517	4,212	6,928	11,140	8,593	25%	0.25	0	0.736	0.000	0.184	0.184	**81.6%**
44	1956	W	32,933	4,212	7,595	11,807	11,367	24%	0.24	0	0.765	0.000	0.185	0.185	**81.5%**
45	1957	A	14,149	4,212	7,026	11,238	4,342	64%	0.47	0	0.741	0.000	0.351	0.351	**64.9%**
46	1958	W	23,745	4,212	6,928	11,140	7,931	57%	0.43	0	0.736	0.000	0.315	0.315	**68.5%**
47	1959	B	14,621	4,212	5,725	9,937	4,518	63%	0.47	0	0.684	0.000	0.322	0.322	**67.8%**
48	1960	D	11,856	4,212	2,797	7,009	3,484	66%	0.49	0	0.557	0.000	0.276	0.276	**72.4%**
49	1961	D	19,711	4,212	6,912	11,124	6,422	59%	0.44	0	0.736	0.000	0.325	0.325	**67.5%**
50	1962	B	18,004	4,212	6,912	11,124	5,783	60%	0.45	0	0.736	0.000	0.331	0.331	**66.9%**
51	1963	W	28,054	4,212	6,928	11,140	9,542	25%	0.25	0	0.736	0.000	0.181	0.181	**81.9%**
52	1964	D	14,849	4,212	6,993	11,205	4,604	63%	0.47	0	0.739	0.000	0.347	0.347	**65.3%**
53	1965	W	27,371	4,212	7,465	11,677	9,287	25%	0.25	0	0.760	0.000	0.188	0.188	**81.2%**
54	1966	B	16,995	4,212	7,514	11,726	5,406	61%	0.46	0	0.762	0.000	0.347	0.347	**65.3%**
55	1967	W	39,699	4,212	7,123	11,335	13,897	24%	0.24	0	0.745	0.000	0.176	0.176	**82.4%**
56	1968	B	16,686	4,212	3,741	7,953	5,291	61%	0.46	0	0.598	0.000	0.273	0.273	**72.7%**
57	1969	W	27,144	4,212	6,977	11,189	9,202	25%	0.25	0	0.738	0.000	0.183	0.183	**81.7%**
58	1970	W	50,156	4,212	3,480	7,692	17,808	23%	0.23	0	0.587	0.000	0.136	0.136	**86.4%**
59	1971	W	57,101	4,212	7,042	11,254	20,406	23%	0.23	0	0.741	0.000	0.170	0.170	**83.0%**
60	1972	B	22,053	4,212	6,944	11,156	7,298	58%	0.43	0	0.737	0.000	0.320	0.320	**68.0%**
61	1973	A	26,753	4,212	6,928	11,140	9,056	25%	0.25	0	0.736	0.000	0.183	0.183	**81.7%**
62	1974	W	61,590	4,212	7,172	11,384	22,085	23%	0.23	0	0.747	0.000	0.171	0.171	**82.9%**
63	1975	W	17,613	4,212	7,091	11,303	5,637	61%	0.45	0	0.743	0.000	0.336	0.336	**66.4%**
64	1976	C	16,768	4,212	6,993	11,205	5,321	61%	0.46	0	0.739	0.000	0.338	0.338	**66.2%**
65	1977	C	9,205	1,870	3,188	5,058	2,493	71%	0.53	0	0.472	0.000	0.250	0.250	**75.0%**
66	1978	A	12,295	2,732	6,928	9,660	3,648	66%	0.49	0	0.672	0.000	0.330	0.330	**67.0%**
67	1979	B	12,751	4,212	5,546	9,758	3,819	65%	0.49	0	0.676	0.000	0.329	0.329	**67.1%**
68	1980	A	21,842	4,212	6,993	11,205	7,219	58%	0.43	0	0.739	0.000	0.321	0.321	**67.9%**
69	1981	D	15,613	4,212	5,042	9,254	4,889	62%	0.46	0	0.655	0.000	0.304	0.304	**69.6%**
70	1982	W	68,599	4,212	7,026	11,238	24,706	23%	0.23	0	0.741	0.000	0.168	0.168	**83.2%**
71	1983	W	55,410	4,212	7,595	11,807	19,773	23%	0.23	0	0.765	0.000	0.176	0.176	**82.4%**
72	1984	W	82,944	4,212	3,106	7,318	30,071	22%	0.22	0	0.570	0.000	0.128	0.128	**87.2%**
73	1985	D	23,875	4,212	6,961	11,173	7,979	57%	0.43	0	0.738	0.000	0.316	0.316	**68.4%**
74	1986	W	16,166	4,212	6,944	11,156	5,096	62%	0.46	0	0.737	0.000	0.339	0.339	**66.1%**
75	1987	D	12,864	4,212	5,172	9,384	3,861	65%	0.48	0	0.660	0.000	0.320	0.320	**68.0%**
76	1988	C	16,345	4,212	6,912	11,124	5,163	62%	0.46	0	0.736	0.000	0.338	0.338	**66.2%**
77	1989	D	10,083	3,188	2,830	6,018	2,821	69%	0.52	0	0.514	0.000	0.266	0.266	**73.4%**
78	1990	C	16,117	4,212	6,912	11,124	5,078	62%	0.46	0	0.736	0.000	0.339	0.339	**66.1%**
79	1991	C	10,360	2,781	2,797	5,578	2,925	69%	0.51	0	0.495	0.000	0.254	0.254	**74.6%**
80	1992	C	8,164	2,505	1,935	4,440	2,103	74%	0.55	0	0.446	0.000	0.245	0.245	**75.5%**

JANUARY

Year	Sac River Flows (Q)	CVP (R)	SWP (S)	CVP+SWP exports (T)	Calculated Steamboat & Sutter Slough Q (U)	percent (V)	xchannel closed (W)	m1 (X)	m2 (Y)	m3 (Z)	m23 (AA)	m123 (AB)	**Calculated Survival s123** (AC)
1922	17,499	4,212	7,579	11,791	5,595	61%	0.27	0	0.765	0.000	0.203	0.203	**79.7%**
1923	32,283	4,212	3,643	7,855	11,124	24%	0.24	0	0.594	0.000	0.144	0.144	**85.6%**
1924	18,036	4,212	6,310	10,522	5,795	60%	0.26	0	0.710	0.000	0.187	0.187	**81.3%**
1925	10,213	1,610	1,561	3,171	2,870	69%	0.30	0	0.391	0.000	0.116	0.116	**88.4%**
1926	18,085	4,212	6,635	10,847	5,814	60%	0.26	0	0.724	0.000	0.191	0.191	**80.9%**
1927	30,608	4,212	7,286	11,498	10,497	24%	0.24	0	0.752	0.000	0.183	0.183	**81.7%**
1928	25,208	4,212	3,643	7,855	8,478	25%	0.25	0	0.594	0.000	0.148	0.148	**85.2%**
1929	15,776	4,212	4,489	8,701	4,950	62%	0.27	0	0.631	0.000	0.170	0.170	**83.0%**
1930	21,077	4,212	7,156	11,368	6,933	58%	0.26	0	0.746	0.000	0.192	0.192	**80.8%**
1931	13,775	4,212	2,716	6,928	4,202	64%	0.28	0	0.554	0.000	0.154	0.154	**84.6%**
1932	17,256	4,212	7,823	12,035	5,504	61%	0.27	0	0.775	0.000	0.206	0.206	**79.4%**
1933	13,905	4,212	3,789	8,001	4,250	64%	0.28	0	0.600	0.000	0.166	0.166	**83.4%**
1934	16,101	3,936	5,757	9,693	5,072	62%	0.27	0	0.674	0.000	0.181	0.181	**81.9%**
1935	25,469	4,212	7,660	11,872	8,575	25%	0.25	0	0.768	0.000	0.192	0.192	**80.8%**
1936	32,966	4,212	7,449	11,661	11,379	24%	0.24	0	0.759	0.000	0.183	0.183	**81.7%**
1937	15,223	4,212	5,692	9,904	4,743	63%	0.27	0	0.683	0.000	0.186	0.186	**81.4%**
1938	31,437	4,212	6,896	11,108	10,807	24%	0.24	0	0.735	0.000	0.178	0.178	**82.2%**
1939	18,410	4,212	3,269	7,481	5,935	60%	0.26	0	0.578	0.000	0.152	0.152	**84.8%**
1940	23,696	4,212	8,018	12,230	7,912	57%	0.25	0	0.784	0.000	0.198	0.198	**80.2%**
1941	73,885	4,212	8,181	12,393	26,683	23%	0.23	0	0.791	0.000	0.179	0.179	**82.1%**
1942	63,265	4,212	3,269	7,481	22,711	23%	0.23	0	0.578	0.000	0.132	0.132	**86.8%**
1943	58,060	4,212	3,334	7,546	20,764	23%	0.23	0	0.580	0.000	0.133	0.133	**86.7%**
1944	17,678	4,212	5,318	9,530	5,662	60%	0.26	0	0.666	0.000	0.176	0.176	**82.4%**
1945	13,856	4,212	7,253	11,465	4,232	64%	0.28	0	0.750	0.000	0.208	0.208	**79.2%**
1946	43,228	4,212	5,725	9,937	15,217	23%	0.23	0	0.684	0.000	0.161	0.161	**83.9%**
1947	14,474	4,212	7,416	11,628	4,463	63%	0.28	0	0.758	0.000	0.208	0.208	**79.2%**
1948	16,312	2,797	5,497	8,294	5,151	62%	0.27	0	0.613	0.000	0.165	0.165	**83.5%**
1949	15,906	4,212	7,140	11,352	4,999	62%	0.27	0	0.746	0.000	0.201	0.201	**79.9%**
1950	22,183	4,212	7,188	11,400	7,346	58%	0.25	0	0.748	0.000	0.190	0.190	**81.0%**
1951	62,208	4,212	8,067	12,279	22,316	23%	0.23	0	0.786	0.000	0.179	0.179	**82.1%**
1952	67,347	4,212	8,506	12,718	24,238	23%	0.23	0	0.805	0.000	0.183	0.183	**81.7%**
1953	64,078	4,212	3,334	7,546	23,015	23%	0.23	0	0.580	0.000	0.132	0.132	**86.8%**
1954	33,421	4,212	3,871	8,083	11,549	24%	0.24	0	0.604	0.000	0.146	0.146	**85.4%**
1955	22,004	4,212	7,188	11,400	7,279	58%	0.26	0	0.748	0.000	0.191	0.191	**80.9%**
1956	84,716	4,212	8,506	12,718	30,734	22%	0.22	0	0.805	0.000	0.180	0.180	**82.0%**
1957	18,638	4,212	7,367	11,579	6,021	60%	0.26	0	0.755	0.000	0.198	0.198	**80.2%**
1958	43,179	4,212	7,221	11,433	15,199	23%	0.23	0	0.749	0.000	0.176	0.176	**82.4%**
1959	35,162	4,212	3,350	7,562	12,201	24%	0.24	0	0.581	0.000	0.139	0.139	**86.1%**
1960	15,776	4,212	4,342	8,554	4,950	62%	0.27	0	0.624	0.000	0.169	0.169	**83.1%**
1961	15,255	4,212	7,140	11,352	4,755	62%	0.27	0	0.746	0.000	0.203	0.203	**79.7%**
1962	13,710	4,212	7,123	11,335	4,178	64%	0.28	0	0.745	0.000	0.207	0.207	**79.3%**
1963	18,313	4,212	7,253	11,465	5,899	60%	0.26	0	0.750	0.000	0.197	0.197	**80.3%**
1964	27,046	4,212	6,554	10,766	9,165	25%	0.25	0	0.720	0.000	0.178	0.178	**82.2%**
1965	81,236	4,212	8,506	12,718	29,432	22%	0.22	0	0.805	0.000	0.181	0.181	**81.9%**
1966	29,632	4,212	7,530	11,742	10,132	24%	0.24	0	0.762	0.000	0.187	0.187	**81.3%**
1967	36,837	4,212	7,676	11,888	12,827	24%	0.24	0	0.769	0.000	0.183	0.183	**81.7%**
1968	30,640	4,212	3,334	7,546	10,509	24%	0.24	0	0.580	0.000	0.141	0.141	**85.9%**
1969	71,868	4,212	8,506	12,718	25,929	23%	0.23	0	0.805	0.000	0.182	0.182	**81.8%**
1970	92,669	4,212	3,334	7,546	33,708	22%	0.22	0	0.580	0.000	0.129	0.129	**87.1%**
1971	47,538	4,212	7,465	11,677	16,829	23%	0.23	0	0.760	0.000	0.177	0.177	**82.3%**
1972	20,394	4,212	7,172	11,384	6,677	59%	0.26	0	0.747	0.000	0.193	0.193	**80.7%**
1973	48,400	4,212	7,563	11,775	17,152	23%	0.23	0	0.764	0.000	0.178	0.178	**82.2%**
1974	78,422	4,212	8,343	12,555	28,380	22%	0.22	0	0.798	0.000	0.179	0.179	**82.1%**
1975	18,670	4,212	5,757	9,969	6,033	60%	0.26	0	0.686	0.000	0.180	0.180	**82.0%**
1976	16,768	4,212	7,286	11,498	5,321	61%	0.27	0	0.752	0.000	0.201	0.201	**79.9%**
1977	10,701	797	1,334	2,131	3,052	68%	0.29	0	0.345	0.000	0.102	0.102	**89.8%**
1978	47,668	4,212	7,774	11,986	16,878	23%	0.23	0	0.773	0.000	0.180	0.180	**82.0%**
1979	27,241	4,212	3,269	7,481	9,238	25%	0.25	0	0.578	0.000	0.143	0.143	**85.7%**
1980	69,884	4,212	5,351	9,563	25,187	23%	0.23	0	0.668	0.000	0.151	0.151	**84.9%**
1981	28,185	4,212	3,350	7,562	9,591	25%	0.25	0	0.581	0.000	0.143	0.143	**85.7%**
1982	51,165	4,212	8,506	12,718	18,186	23%	0.23	0	0.805	0.000	0.186	0.186	**81.4%**
1983	59,150	4,212	5,920	10,132	21,172	23%	0.23	0	0.693	0.000	0.159	0.159	**84.1%**
1984	47,359	1,626	2,879	4,505	16,762	23%	0.23	0	0.448	0.000	0.104	0.104	**89.6%**
1985	17,646	4,212	3,871	8,083	5,650	61%	0.26	0	0.604	0.000	0.160	0.160	**84.0%**
1986	21,712	4,212	7,351	11,563	7,170	58%	0.26	0	0.755	0.000	0.193	0.193	**80.7%**
1987	16,735	2,179	6,440	8,619	5,309	61%	0.27	0	0.627	0.000	0.168	0.168	**83.2%**
1988	26,022	4,212	7,123	11,335	8,782	25%	0.25	0	0.745	0.000	0.185	0.185	**81.5%**
1989	12,994	2,342	2,407	4,749	3,910	65%	0.28	0	0.459	0.000	0.129	0.129	**87.1%**
1990	22,395	2,765	7,123	9,888	7,426	58%	0.25	0	0.682	0.000	0.173	0.173	**82.7%**
1991	10,653	976	992	1,968	3,034	68%	0.29	0	0.338	0.000	0.100	0.100	**90.0%**
1992	12,149	2,440	1,334	3,774	3,594	66%	0.29	0	0.417	0.000	0.119	0.119	**88.1%**

FEBRUARY

Year	Sac River Flow (AE)	CVP (AF)	SWP (AG)	CVP + SWP Exports (AH)	Calculated Sutter & Steamboat Slough Q (AI)	Percent (AJ)	X-Channel Closed (AK)	m1 (AL)	m2 (AM)	m3 (AN)	m23 (AO)	m123 (AP)	**Calculated Survival s123** (AQ)
1922	35,436	4,249	7,220	11,469	12,303	24%	0.24	0	0.805	0.000	0.193	0.193	**80.7%**
1923	19,050	4,285	4,375	8,660	6,175	58%	0.26	0	0.683	0.000	0.178	0.178	**82.2%**
1924	16,655	4,085	6,989	11,074	5,279	60%	0.27	0	0.787	0.000	0.211	0.211	**78.9%**
1925	45,105	4,231	7,581	11,812	15,919	23%	0.23	0	0.819	0.000	0.192	0.192	**80.8%**
1926	35,274	4,231	7,635	11,866	12,242	24%	0.24	0	0.822	0.000	0.197	0.197	**80.3%**
1927	88,337	3,277	8,499	11,776	32,088	22%	0.22	0	0.818	0.000	0.183	0.183	**81.7%**
1928	25,469	4,103	4,225	8,328	8,575	25%	0.25	0	0.668	0.000	0.167	0.167	**83.3%**
1929	18,780	4,249	7,220	11,469	6,074	60%	0.26	0	0.805	0.000	0.211	0.211	**78.9%**
1930	17,592	4,249	7,238	11,487	5,629	62%	0.26	0	0.805	0.000	0.213	0.213	**78.7%**
1931	12,640	3,781	7,202	10,983	3,777	66%	0.28	0	0.783	0.000	0.222	0.222	**77.8%**
1932	15,403	4,103	8,206	12,309	4,811	64%	0.27	0	0.841	0.000	0.228	0.228	**77.2%**
1933	13,324	4,231	7,364	11,595	4,033	64%	0.28	0	0.810	0.000	0.227	0.227	**77.3%**
1934	13,018	4,231	7,508	11,739	3,919	66%	0.28	0	0.816	0.000	0.230	0.230	**77.0%**
1935	13,000	1,386	3,673	5,059	3,912	67%	0.28	0	0.526	0.000	0.148	0.148	**85.2%**
1936	53,442	4,103	7,528	11,631	19,037	23%	0.23	0	0.812	0.000	0.187	0.187	**81.3%**
1937	32,033	4,231	8,355	12,586	11,030	24%	0.24	0	0.853	0.000	0.207	0.207	**79.3%**
1938	82,359	4,285	3,943	8,228	29,852	22%	0.22	0	0.664	0.000	0.149	0.149	**85.1%**
1939	19,032	4,249	3,961	8,210	6,168	59%	0.26	0	0.663	0.000	0.173	0.173	**82.7%**
1940	47,722	4,103	8,206	12,309	16,898	23%	0.23	0	0.841	0.000	0.196	0.196	**80.4%**
1941	75,031	4,285	5,780	10,065	27,112	23%	0.23	0	0.744	0.000	0.168	0.168	**83.2%**
1942	78,344	4,285	3,961	8,246	28,351	22%	0.23	0	0.665	0.000	0.150	0.150	**85.0%**
1943	52,253	4,285	4,015	8,300	18,593	23%	0.23	0	0.667	0.000	0.154	0.154	**84.6%**
1944	27,451	4,103	3,859	7,962	9,317	24%	0.25	0	0.652	0.000	0.161	0.161	**83.9%**
1945	39,451	4,231	4,411	8,642	13,805	23%	0.24	0	0.682	0.000	0.162	0.162	**83.8%**
1946	23,588	4,285	4,411	8,696	7,872	57%	0.25	0	0.684	0.000	0.173	0.173	**82.7%**
1947	20,563	4,249	6,752	11,001	6,741	58%	0.26	0	0.784	0.000	0.202	0.202	**79.8%**
1948	11,109	4,085	5,946	10,031	3,205	64%	0.29	0	0.742	0.000	0.217	0.217	**78.3%**
1949	16,133	4,249	7,220	11,469	5,084	61%	0.27	0	0.805	0.000	0.217	0.217	**78.3%**
1950	36,372	4,249	7,544	11,793	12,653	24%	0.24	0	0.819	0.000	0.196	0.196	**80.4%**
1951	60,572	4,285	4,682	8,967	21,704	23%	0.23	0	0.696	0.000	0.159	0.159	**84.1%**
1952	62,499	4,138	4,624	8,762	22,425	23%	0.23	0	0.687	0.000	0.157	0.157	**84.3%**
1953	28,341	4,285	4,051	8,336	9,650	25%	0.25	0	0.669	0.000	0.164	0.164	**83.6%**
1954	57,151	4,285	4,646	8,931	20,424	23%	0.23	0	0.694	0.000	0.159	0.159	**84.1%**
1955	16,295	4,267	7,238	11,505	5,144	61%	0.27	0	0.806	0.000	0.217	0.217	**78.3%**
1956	61,543	4,138	4,520	8,658	22,067	23%	0.23	0	0.683	0.000	0.156	0.156	**84.4%**
1957	33,149	4,249	4,808	9,057	11,448	24%	0.24	0	0.700	0.000	0.169	0.169	**83.1%**
1958	65,740	4,267	5,060	9,327	23,637	23%	0.23	0	0.712	0.000	0.162	0.162	**83.8%**
1959	50,075	4,267	4,069	8,336	17,778	23%	0.23	0	0.669	0.000	0.155	0.155	**84.5%**
1960	27,051	4,085	7,058	11,143	9,167	25%	0.25	0	0.790	0.000	0.196	0.196	**80.4%**
1961	33,347	2,647	7,184	9,831	11,522	24%	0.24	0	0.733	0.000	0.177	0.177	**82.3%**
1962	46,707	4,249	6,914	11,163	16,518	23%	0.23	0	0.791	0.000	0.185	0.185	**81.5%**
1963	54,846	4,285	8,409	12,694	19,562	23%	0.23	0	0.858	0.000	0.197	0.197	**80.3%**
1964	17,246	4,120	4,520	8,640	5,500	61%	0.27	0	0.682	0.000	0.181	0.181	**81.9%**
1965	33,329	4,267	7,941	12,208	11,515	24%	0.24	0	0.837	0.000	0.202	0.202	**79.8%**
1966	26,775	4,285	4,411	8,696	9,064	25%	0.25	0	0.684	0.000	0.170	0.170	**83.0%**
1967	43,106	4,285	4,610	8,895	15,172	24%	0.23	0	0.693	0.000	0.163	0.163	**83.7%**
1968	54,520	4,138	3,912	8,050	19,440	23%	0.23	0	0.656	0.000	0.151	0.151	**84.9%**
1969	67,486	4,285	3,169	7,454	24,290	23%	0.23	0	0.630	0.000	0.143	0.143	**85.7%**
1970	57,565	3,799	4,051	7,850	20,579	23%	0.23	0	0.647	0.000	0.149	0.149	**85.1%**
1971	28,521	4,285	4,682	8,967	9,717	24%	0.25	0	0.696	0.000	0.171	0.171	**82.9%**
1972	24,217	4,120	4,955	9,075	8,107	57%	0.25	0	0.701	0.000	0.176	0.176	**82.4%**
1973	70,961	4,267	5,402	9,669	25,589	23%	0.23	0	0.726	0.000	0.164	0.164	**83.6%**
1974	41,918	4,267	4,411	8,678	14,727	24%	0.24	0	0.683	0.000	0.161	0.161	**83.9%**
1975	58,807	4,249	4,682	8,931	21,044	23%	0.23	0	0.694	0.000	0.159	0.159	**84.1%**
1976	19,523	4,103	4,433	8,536	6,352	59%	0.26	0	0.677	0.000	0.176	0.176	**82.4%**
1977	7,256	3,133	2,665	5,798	1,764	68%	0.33	0	0.558	0.000	0.182	0.182	**81.8%**
1978	51,371	4,267	8,139	12,406	18,263	23%	0.23	0	0.845	0.000	0.196	0.196	**80.4%**
1979	42,044	4,249	3,961	8,210	14,774	24%	0.24	0	0.663	0.000	0.156	0.156	**84.4%**
1980	69,453	4,103	3,668	7,771	25,025	23%	0.23	0	0.644	0.000	0.146	0.146	**85.4%**
1981	29,674	4,267	4,069	8,336	10,148	24%	0.24	0	0.669	0.000	0.164	0.164	**83.6%**
1982	65,650	4,285	5,132	9,417	23,603	23%	0.23	0	0.715	0.000	0.163	0.163	**83.7%**
1983	82,917	4,285	2,827	7,112	30,061	22%	0.22	0	0.615	0.000	0.138	0.138	**86.2%**
1984	36,004	1,565	3,720	5,285	12,515	24%	0.24	0	0.536	0.000	0.128	0.128	**87.2%**
1985	22,381	4,249	4,646	8,895	7,420	58%	0.25	0	0.693	0.000	0.176	0.176	**82.4%**
1986	99,825	4,249	8,499	12,748	36,385	22%	0.22	0	0.860	0.000	0.191	0.191	**80.9%**
1987	23,030	1,494	4,357	5,851	7,663	57%	0.25	0	0.561	0.000	0.142	0.142	**85.8%**
1988	11,248	4,103	6,102	10,205	3,257	62%	0.29	0	0.750	0.000	0.218	0.218	**78.2%**
1989	9,093	4,231	4,123	8,354	2,451	67%	0.31	0	0.669	0.000	0.205	0.205	**79.5%**
1990	17,754	1,531	7,184	8,715	5,690	61%	0.26	0	0.685	0.000	0.181	0.181	**81.9%**
1991	8,211	3,961	2,971	6,932	2,121	67%	0.32	0	0.608	0.000	0.192	0.192	**80.8%**
1992	31,415	4,085	7,215	11,300	10,799	24%	0.24	0	0.797	0.000	0.194	0.194	**80.6%**

MARCH

Year	Sac River Flow (AS)	CVP (AT)	SWP (AU)	CVP + SWP exports (AV)	Calculated Sutter & Steamboat Slough Q (AW)	percent (AX)	X-Channel Closed (AY)	m1 (AZ)	m2 (BA)	m3 (BB)	m23 (BC)	m123 (BD)	**Calculated Survival s123** (BE)
1922	31,551	3,887	4,147	8,034	10,850	24%	0.24	0	0.745	0.144	0.290	0.290	**71.0%**
1923	17,337	4,228	4,424	8,652	5,534	27%	0.27	0	0.772	0.144	0.311	0.311	**68.9%**
1924	8,603	4,228	3,058	7,286	2,268	31%	0.31	0	0.713	0.144	0.321	0.321	**67.9%**
1925	18,557	4,228	5,855	10,083	5,990	26%	0.26	0	0.834	0.144	0.325	0.325	**67.5%**
1926	16,019	4,228	6,977	11,205	5,041	27%	0.27	0	0.883	0.144	0.343	0.343	**65.7%**
1927	43,863	3,464	4,147	7,611	15,455	23%	0.23	0	0.727	0.144	0.281	0.281	**71.9%**
1928	86,229	4,228	4,424	8,652	31,300	22%	0.22	0	0.772	0.144	0.285	0.285	**71.5%**
1929	14,670	3,220	4,359	7,579	4,537	27%	0.27	0	0.726	0.144	0.304	0.304	**69.6%**
1930	30,852	4,228	4,716	8,944	10,589	24%	0.24	0	0.785	0.144	0.300	0.300	**70.0%**
1931	9,319	1,984	5,725	7,709	2,535	30%	0.30	0	0.731	0.144	0.323	0.323	**67.7%**
1932	10,116	4,228	4,391	8,619	2,833	30%	0.30	0	0.771	0.144	0.331	0.331	**66.9%**
1933	10,994	3,919	7,026	10,945	3,162	29%	0.29	0	0.872	0.144	0.357	0.357	**64.3%**
1934	12,214	4,228	6,635	10,863	3,618	29%	0.29	0	0.868	0.144	0.351	0.351	**64.9%**
1935	24,916	4,228	7,270	11,498	8,369	25%	0.25	0	0.896	0.144	0.332	0.332	**66.8%**
1936	34,202	4,228	4,163	8,391	11,842	24%	0.24	0	0.761	0.144	0.293	0.293	**70.7%**
1937	37,260	4,228	4,001	8,229	12,985	24%	0.24	0	0.754	0.144	0.289	0.289	**71.1%**
1938	78,634	3,627	3,968	7,595	28,459	22%	0.22	0	0.726	0.144	0.275	0.275	**72.5%**
1939	16,394	3,610	4,001	7,611	5,181	27%	0.27	0	0.727	0.144	0.301	0.301	**69.9%**
1940	63,606	4,228	5,643	9,871	22,839	23%	0.23	0	0.825	0.144	0.299	0.299	**70.1%**
1941	58,581	4,228	3,838	8,066	20,959	23%	0.23	0	0.747	0.144	0.282	0.282	**71.8%**
1942	27,095	4,228	4,001	8,229	9,184	25%	0.25	0	0.754	0.144	0.295	0.295	**70.5%**
1943	64,598	4,228	4,050	8,278	23,210	23%	0.23	0	0.756	0.144	0.283	0.283	**71.7%**
1944	25,094	4,228	4,017	8,245	8,435	25%	0.25	0	0.754	0.144	0.297	0.297	**70.3%**
1945	27,030	3,350	4,147	7,497	9,159	25%	0.25	0	0.722	0.144	0.287	0.287	**71.3%**
1946	23,533	4,228	4,440	8,668	7,851	25%	0.25	0	0.773	0.144	0.303	0.303	**69.7%**
1947	21,874	4,228	4,180	8,408	7,231	26%	0.26	0	0.762	0.144	0.302	0.302	**69.8%**
1948	16,735	3,188	4,050	7,238	5,309	27%	0.27	0	0.711	0.144	0.296	0.296	**70.4%**
1949	41,813	4,228	5,090	9,318	14,688	24%	0.24	0	0.801	0.144	0.299	0.299	**70.1%**
1950	23,615	4,228	4,456	8,684	7,882	25%	0.25	0	0.774	0.144	0.303	0.303	**69.7%**
1951	29,323	4,228	4,700	8,928	10,017	24%	0.24	0	0.784	0.144	0.301	0.301	**69.9%**
1952	57,524	4,228	3,952	8,180	20,564	23%	0.23	0	0.752	0.144	0.284	0.284	**71.6%**
1953	24,899	4,228	4,115	8,343	8,362	25%	0.25	0	0.759	0.144	0.298	0.298	**70.2%**
1954	49,538	4,228	4,684	8,912	17,577	23%	0.23	0	0.783	0.144	0.293	0.293	**70.7%**
1955	15,158	4,228	4,245	8,473	4,719	27%	0.27	0	0.764	0.144	0.313	0.313	**68.7%**
1956	36,674	3,578	4,700	8,278	12,766	24%	0.24	0	0.756	0.144	0.290	0.290	**71.0%**
1957	44,383	4,228	4,586	8,814	15,649	23%	0.23	0	0.779	0.144	0.293	0.293	**70.7%**
1958	93,612	4,228	4,082	8,310	34,061	22%	0.22	0	0.757	0.144	0.281	0.281	**71.9%**
1959	21,760	4,228	4,115	8,343	7,188	26%	0.26	0	0.759	0.144	0.301	0.301	**69.9%**
1960	21,809	3,610	7,010	10,620	7,207	26%	0.26	0	0.858	0.144	0.326	0.326	**67.4%**
1961	21,338	2,879	5,269	8,148	7,030	26%	0.26	0	0.750	0.144	0.300	0.300	**70.0%**
1962	27,014	4,228	4,342	8,570	9,153	25%	0.25	0	0.769	0.144	0.299	0.299	**70.1%**
1963	32,641	4,228	4,456	8,684	11,258	24%	0.24	0	0.774	0.144	0.296	0.296	**70.4%**
1964	16,345	4,228	4,700	8,928	5,163	27%	0.27	0	0.784	0.144	0.316	0.316	**68.4%**
1965	21,386	3,610	4,472	8,082	7,048	26%	0.26	0	0.747	0.144	0.299	0.299	**70.1%**
1966	28,689	4,228	4,440	8,668	9,780	25%	0.25	0	0.773	0.144	0.299	0.299	**70.1%**
1967	54,483	4,228	3,301	7,529	19,427	23%	0.23	0	0.723	0.144	0.278	0.278	**72.2%**
1968	36,788	3,627	4,115	7,742	12,809	24%	0.24	0	0.733	0.144	0.285	0.285	**71.5%**
1969	45,326	3,480	3,253	6,733	16,002	23%	0.23	0	0.689	0.144	0.272	0.272	**72.8%**
1970	35,812	3,220	4,115	7,335	12,444	24%	0.24	0	0.715	0.144	0.281	0.281	**71.9%**
1971	51,506	4,228	4,700	8,928	18,313	23%	0.23	0	0.784	0.144	0.292	0.292	**70.8%**
1972	32,933	4,228	4,570	8,798	11,367	24%	0.24	0	0.778	0.144	0.297	0.297	**70.3%**
1973	47,554	4,228	4,472	8,700	16,835	23%	0.23	0	0.774	0.144	0.291	0.291	**70.9%**
1974	100,199	4,228	4,440	8,668	36,524	22%	0.22	0	0.773	0.144	0.284	0.284	**71.6%**
1975	75,999	4,228	4,700	8,928	27,474	23%	0.23	0	0.784	0.144	0.288	0.288	**71.2%**
1976	18,361	4,228	4,424	8,652	5,917	26%	0.26	0	0.772	0.144	0.309	0.309	**69.1%**
1977	6,863	1,984	1,724	3,708	1,617	33%	0.33	0	0.558	0.144	0.281	0.281	**71.9%**
1978	46,465	4,228	3,887	8,115	16,428	23%	0.23	0	0.749	0.144	0.285	0.285	**71.5%**
1979	32,592	4,228	4,001	8,229	11,239	24%	0.24	0	0.754	0.144	0.292	0.292	**70.8%**
1980	36,479	4,228	3,350	7,578	12,693	24%	0.24	0	0.726	0.144	0.283	0.283	**71.7%**
1981	32,494	4,228	4,115	8,343	11,203	24%	0.24	0	0.759	0.144	0.293	0.293	**70.7%**
1982	69,087	4,228	4,668	8,896	24,889	23%	0.23	0	0.783	0.144	0.289	0.289	**71.1%**
1983	81,935	2,049	2,635	4,684	29,694	22%	0.22	0	0.600	0.144	0.247	0.247	**75.3%**
1984	36,495	3,415	4,001	7,416	12,699	24%	0.24	0	0.718	0.144	0.281	0.281	**71.9%**
1985	21,809	4,228	4,684	8,912	7,207	26%	0.26	0	0.783	0.144	0.307	0.307	**69.3%**
1986	72,535	2,098	4,147	6,245	26,178	23%	0.23	0	0.668	0.144	0.263	0.263	**73.7%**
1987	29,876	2,586	4,277	6,863	10,224	24%	0.24	0	0.694	0.144	0.279	0.279	**72.1%**
1988	7,075	2,683	2,667	5,350	1,696	33%	0.33	0	0.629	0.144	0.304	0.304	**69.6%**
1989	46,611	4,228	6,961	11,189	16,483	23%	0.23	0	0.882	0.144	0.316	0.316	**68.4%**
1990	15,483	2,602	4,001	6,603	4,841	27%	0.27	0	0.683	0.144	0.290	0.290	**71.0%**
1991	30,429	4,228	7,091	11,319	10,430	24%	0.24	0	0.888	0.144	0.326	0.326	**67.4%**
1992	20,102	3,887	7,026	10,913	6,568	26%	0.26	0	0.870	0.144	0.332	0.332	**66.8%**

Formulas: Sacramento River Spring Run Young of Year Smolt Survival Model

```
C10 ='Study 467 Flow Data'!C7
D10 ='Study 467 Flow Data'!M7
E10 ='Study 467 Flow Data'!W7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.45*(0.133*C10+829)/(C10-G10))+(0.55*H10)
J10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
K10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*F10)
L10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!D7
R10 ='Study 467 Flow Data'!N7
S10 ='Study 467 Flow Data'!X7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10)),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
Y10 =(-0.5916024)+(0.017968*$T$3)+(0.0000434*T10)
Z10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!E7
AF10 ='Study 467 Flow Data'!O7
AG10 ='Study 467 Flow Data'!Y7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
AM10 =(-0.5916024)+(0.017968*$BC$2)+(0.0000434*AH10)
AN10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

AS10 ='Study 467 Flow Data'!F7
AT10 ='Study 467 Flow Data'!P7
AU10 ='Study 467 Flow Data'!Z7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$G$2,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BA10 =IF(((-0.5916024)+(0.017968*$BC$3)+(0.0000434*AV10))>1,1,((-0.5916024)+(0.017968*$BC$3)+(0.00004
BB10 =(0.0319584*$BC$3)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =(AZ10+BC10-(AZ10*BC10))
BE10 =1-BD10
```

Study 467 Sacramento River Spring Run YOY Smolt Survival Model (continued)

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15
Sacramento River temperatures based on limited historical data from USBR

APRIL

Row	Sac River Flows	CVP	SWP	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	observed temp	m1	m2	m3	m23	m123	Calculated Survival s123
10	22,822	4,386	5,159	9,545	7,585	25%	0.25	58.5	0.002	0.874	0.256	0.413	0.414	58.6%
11	24,418	4,605	5,495	10,100	8,182	25%	0.25	58.3	0.000	0.894	0.250	0.412	0.412	58.8%
12	7,630	403	168	571	1,904	32%	0.32	61.5	0.128	0.538	0.352	0.412	0.487	51.3%
13	22,906	4,605	6,621	11,226	7,617	25%	0.25	59.1	0.027	0.958	0.275	0.448	0.463	53.7%
14	18,268	4,470	6,268	10,738	5,882	26%	0.26	61.6	0.133	0.981	0.355	0.520	0.584	41.6%
15	48,215	4,605	5,159	9,764	17,082	23%	0.23	56.8	0.000	0.853	0.202	0.353	0.353	64.7%
16	29,208	4,588	5,495	10,083	9,974	25%	0.25	58.7	0.011	0.901	0.262	0.419	0.425	57.5%
17	7,075	2,101	3,294	5,395	1,696	33%	0.33	56.3	0.000	0.654	0.186	0.340	0.340	66.0%
18	13,713	4,218	5,126	9,344	4,179	28%	0.28	59.6	0.048	0.885	0.291	0.456	0.483	51.7%
19	13,377	2,840	1,428	4,268	4,053	28%	0.28	62.8	0.183	0.722	0.393	0.485	0.580	42.0%
20	10,890	319	218	537	3,123	29%	0.29	58.9	0.019	0.490	0.269	0.334	0.346	65.4%
21	10,083	891	874	1,765	2,821	30%	0.30	60.1	0.069	0.565	0.307	0.384	0.427	57.3%
22	8,067	269	420	689	2,067	32%	0.32	63.6	0.217	0.581	0.419	0.470	0.585	41.5%
23	23,696	4,521	6,621	11,142	7,912	25%	0.25	58.9	0.019	0.950	0.269	0.441	0.451	54.9%
24	22,032	4,605	5,176	9,781	7,290	26%	0.26	59.7	0.053	0.906	0.294	0.450	0.479	52.1%
25	22,503	4,605	4,974	9,579	7,466	25%	0.25	58.8	0.015	0.881	0.266	0.422	0.430	57.0%
26	47,173	3,344	4,369	7,713	16,693	23%	0.23	56.3	0.000	0.755	0.186	0.318	0.318	68.2%
27	10,571	4,235	3,748	7,983	3,004	30%	0.30	63.3	0.204	0.892	0.409	0.552	0.643	35.7%
28	41,980	4,605	5,680	10,285	14,751	24%	0.24	57.4	0.000	0.886	0.221	0.378	0.378	62.2%
29	42,367	4,605	4,706	9,311	14,895	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	64.7%
30	43,308	4,605	5,042	9,647	15,247	23%	0.23	56.5	0.000	0.842	0.192	0.345	0.345	65.5%
31	29,410	4,605	5,058	9,663	10,049	24%	0.24	58.8	0.015	0.884	0.266	0.417	0.426	57.4%
32	10,806	4,538	5,042	9,580	3,091	29%	0.29	58.4	0.000	0.874	0.253	0.435	0.435	56.5%
33	12,167	4,605	5,159	9,764	3,600	29%	0.29	60.6	0.090	0.921	0.323	0.494	0.540	46.0%
34	13,159	4,605	5,495	10,100	3,971	28%	0.28	60.7	0.095	0.937	0.326	0.498	0.545	45.5%
35	13,310	4,554	5,579	10,133	4,028	28%	0.28	62.5	0.170	0.971	0.384	0.548	0.625	37.5%
36	22,990	4,470	6,621	11,091	7,648	25%	0.25	56.6	0.000	0.907	0.195	0.376	0.376	62.4%
37	13,461	4,605	5,210	9,815	4,084	28%	0.28	61.7	0.137	0.943	0.358	0.522	0.587	41.3%
38	19,276	4,605	5,462	10,067	6,259	26%	0.26	61.3	0.120	0.947	0.346	0.502	0.562	43.8%
39	15,495	4,605	4,487	9,092	4,845	27%	0.27	59.9	0.061	0.879	0.301	0.458	0.491	50.9%
40	56,652	4,605	4,168	8,773	20,238	23%	0.23	55.5	0.000	0.786	0.160	0.304	0.304	69.6%
41	16,621	4,605	5,159	9,764	5,266	27%	0.27	58.8	0.015	0.889	0.266	0.432	0.441	55.9%
42	39,863	4,605	5,781	10,386	13,959	24%	0.24	58.4	0.000	0.908	0.253	0.408	0.408	59.2%
43	12,722	4,605	4,403	9,008	3,808	28%	0.28	56.4	0.000	0.813	0.189	0.365	0.365	63.5%
44	20,436	4,605	5,781	10,386	6,693	26%	0.26	59.7	0.053	0.932	0.294	0.459	0.487	51.3%
45	13,596	4,605	5,579	10,184	4,135	28%	0.28	60.5	0.086	0.937	0.320	0.492	0.536	46.4%
46	52,282	4,605	5,058	9,663	18,603	23%	0.23	57.4	0.000	0.859	0.221	0.368	0.368	63.2%
47	11,680	4,605	3,865	8,470	3,418	29%	0.29	63	0.191	0.908	0.400	0.546	0.633	36.7%
48	9,730	4,151	2,706	6,857	2,689	30%	0.30	59.5	0.044	0.775	0.288	0.435	0.460	54.0%
49	11,781	4,235	3,697	7,932	3,456	29%	0.29	60.1	0.069	0.833	0.307	0.458	0.496	50.4%
50	12,403	4,605	5,882	10,487	3,689	28%	0.28	61.8	0.141	0.974	0.362	0.536	0.601	39.9%
51	69,457	4,605	5,512	10,117	25,027	23%	0.23	53.7	0.000	0.812	0.103	0.263	0.263	73.7%
52	13,697	4,521	4,487	9,008	4,173	28%	0.28	59.3	0.036	0.865	0.282	0.444	0.464	53.6%
53	45,173	4,521	5,411	9,932	15,945	23%	0.23	56.9	0.000	0.862	0.205	0.359	0.359	64.1%
54	12,806	4,588	5,378	9,966	3,839	28%	0.28	61.9	0.145	0.953	0.365	0.531	0.599	40.1%
55	39,930	3,781	4,941	8,722	13,984	24%	0.24	53.8	0.000	0.754	0.106	0.259	0.259	74.1%
56	11,293	4,605	3,865	8,470	3,274	29%	0.29	61.5	0.128	0.881	0.352	0.506	0.569	43.1%
57	44,787	3,328	4,168	7,496	15,800	23%	0.23	56.4	0.000	0.747	0.189	0.320	0.320	68.0%
58	15,108	4,605	3,865	8,470	4,700	27%	0.27	58.8	0.015	0.833	0.266	0.420	0.429	57.1%
59	20,755	4,605	5,781	10,386	6,812	26%	0.26	58.7	0.011	0.914	0.262	0.430	0.436	56.4%
60	12,890	4,605	5,042	9,647	3,871	28%	0.28	58.5	0.002	0.878	0.256	0.432	0.433	56.7%
61	19,511	4,605	5,512	10,117	6,347	26%	0.26	61.3	0.120	0.949	0.346	0.502	0.562	43.8%
62	33,208	4,605	5,495	10,100	11,470	24%	0.24	56.8	0.000	0.867	0.202	0.362	0.362	63.8%
63	25,763	4,605	5,781	10,386	8,685	25%	0.25	56.8	0.000	0.880	0.202	0.371	0.371	62.9%
64	9,428	2,807	4,806	7,613	2,576	30%	0.30	58.9	0.019	0.797	0.269	0.429	0.440	56.0%
65	16,990	2,941	6,067	9,008	5,404	27%	0.27	64.3	0.246	0.955	0.441	0.578	0.682	31.8%
66	38,703	4,605	4,067	8,672	13,525	24%	0.24	56.9	0.000	0.807	0.205	0.348	0.348	65.2%
67	17,696	4,605	5,042	9,647	5,668	26%	0.26	59.8	0.057	0.902	0.298	0.457	0.488	51.2%
68	19,814	4,605	3,949	8,554	6,460	26%	0.26	57.1	0.000	0.806	0.211	0.366	0.366	63.4%
69	16,990	4,605	5,159	9,764	5,404	27%	0.27	61.5	0.128	0.937	0.352	0.508	0.571	42.9%
70	75,843	3,412	5,563	8,975	27,415	23%	0.23	54.1	0.000	0.770	0.115	0.263	0.263	73.7%
71	68,298	3,311	3,647	6,958	24,593	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	73.0%
72	16,301	4,605	5,042	9,647	5,147	27%	0.27	59.7	0.053	0.900	0.294	0.457	0.486	51.4%
73	13,327	4,554	5,781	10,335	4,034	28%	0.28	60.8	0.099	0.949	0.330	0.503	0.552	44.8%
74	20,772	2,538	5,176	7,714	6,819	26%	0.26	60.4	0.082	0.828	0.317	0.448	0.494	50.6%
75	8,789	1,176	3,916	5,092	2,337	31%	0.31	65.7	0.305	0.810	0.486	0.586	0.713	28.7%
76	10,016	605	1,462	2,067	2,796	30%	0.30	59.9	0.061	0.574	0.301	0.383	0.420	58.0%
77	24,133	4,453	6,621	11,074	8,076	25%	0.25	61.4	0.124	0.992	0.349	0.511	0.571	42.9%
78	8,420	3,445	3,176	6,621	2,199	31%	0.31	61.6	0.133	0.803	0.355	0.495	0.562	43.8%
79	16,033	4,369	6,621	10,990	5,046	27%	0.27	60.8	0.099	0.978	0.330	0.504	0.553	44.7%
80	11,730	3,815	6,084	9,899	3,437	29%	0.29	61.2	0.116	0.938	0.342	0.514	0.570	43.0%

MAY

Row	Sac River Flows	CVP	SWP	CVP + SWP & Sutter Exports	Calculated Steamboat Slough Q	Percent	X-channel Closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123
10	46,530	4,386	2,992	7,378	16,452	23%	0.23	61.2	0.116	0.828	0.342	0.456	0.519	48.1%
11	15,434	4,605	2,992	7,597	4,822	62%	0.46	62.4	0.166	0.859	0.381	0.603	0.669	33.1%
12	8,392	403	1,870	2,273	2,189	73%	0.54	69.2	0.452	0.750	0.598	0.681	0.825	17.5%
13	14,816	4,605	2,992	7,597	4,591	63%	0.47	63.2	0.200	0.874	0.406	0.626	0.700	30.0%
14	10,441	4,470	2,992	7,462	2,955	69%	0.51	65.7	0.305	0.913	0.486	0.704	0.795	20.5%
15	26,786	4,605	2,992	7,597	9,068	25%	0.25	62.6	0.175	0.863	0.387	0.505	0.591	40.9%
16	12,881	4,588	2,992	7,580	3,867	65%	0.48	66.6	0.343	0.934	0.515	0.718	0.815	18.5%
17	8,733	2,101	2,000	4,101	2,316	72%	0.54	66.1	0.322	0.774	0.499	0.647	0.761	23.9%
18	13,417	4,218	2,992	7,210	4,068	64%	0.48	63.1	0.196	0.855	0.403	0.620	0.694	30.6%
19	8,164	2,840	2,000	4,840	2,103	74%	0.55	70.5	0.507	0.885	0.640	0.774	0.889	11.1%
20	10,718	319	2,992	3,311	3,059	68%	0.51	65.5	0.297	0.729	0.480	0.606	0.723	27.7%
21	7,839	891	2,017	2,908	1,982	75%	0.56	63.7	0.221	0.679	0.422	0.565	0.661	33.9%
22	9,091	269	2,000	2,269	2,450	72%	0.53	68.3	0.414	0.734	0.569	0.657	0.799	20.1%
23	18,134	4,521	2,992	7,513	5,832	60%	0.45	64	0.234	0.884	0.432	0.635	0.720	28.0%
24	15,092	4,605	2,992	7,597	4,694	63%	0.47	64.9	0.271	0.904	0.461	0.668	0.758	24.2%
25	15,044	4,605	2,992	7,597	4,676	63%	0.47	64.5	0.255	0.897	0.448	0.658	0.745	25.5%
26	57,426	3,344	2,992	6,336	20,527	23%	0.23	62.5	0.170	0.806	0.384	0.481	0.569	43.1%
27	8,002	4,235	2,000	6,235	2,043	74%	0.55	68	0.402	0.901	0.560	0.748	0.849	15.1%
28	15,808	4,605	2,992	7,597	4,962	62%	0.46	65.6	0.301	0.917	0.483	0.684	0.779	22.1%
29	39,488	4,605	2,992	7,597	13,819	24%	0.24	61.6	0.133	0.845	0.355	0.471	0.541	45.9%
30	36,040	4,605	2,992	7,597	12,529	24%	0.24	60.1	0.069	0.818	0.307	0.429	0.469	53.1%
31	20,134	4,605	2,992	7,597	6,580	59%	0.44	65.4	0.292	0.913	0.477	0.669	0.766	23.4%
32	15,857	4,538	2,000	6,538	4,981	62%	0.46	65.9	0.313	0.876	0.493	0.670	0.773	22.7%
33	13,905	4,605	2,862	7,467	4,250	64%	0.48	63.1	0.196	0.866	0.403	0.624	0.697	30.3%
34	15,759	4,605	2,586	7,191	4,944	62%	0.46	63.9	0.229	0.869	0.429	0.632	0.717	28.3%
35	14,962	4,554	2,000	6,554	4,646	63%	0.47	68.7	0.431	0.927	0.582	0.744	0.854	14.6%
36	31,014	4,470	2,992	7,462	10,649	24%	0.24	62.3	0.162	0.852	0.378	0.493	0.575	42.5%
37	13,856	4,605	2,992	7,597	4,232	64%	0.48	65.2	0.284	0.910	0.470	0.680	0.771	22.9%
38	15,694	4,605	2,992	7,597	4,920	62%	0.46	64.3	0.246	0.893	0.441	0.651	0.737	26.3%
39	19,028	4,605	2,992	7,597	6,166	60%	0.45	64.4	0.250	0.895	0.445	0.645	0.734	26.6%
40	59,557	4,605	2,992	7,597	21,324	23%	0.23	61.7	0.137	0.847	0.358	0.470	0.543	45.7%
41	26,558	4,605	2,992	7,597	8,983	25%	0.25	60.9	0.103	0.832	0.333	0.457	0.513	48.7%
42	16,394	4,605	2,830	7,435	5,181	61%	0.46	65.9	0.313	0.915	0.493	0.687	0.785	21.5%
43	14,279	4,605	2,000	6,605	4,390	63%	0.47	66.9	0.356	0.897	0.525	0.701	0.807	19.3%
44	39,000	4,605	2,992	7,597	13,636	24%	0.24	61.4	0.124	0.841	0.349	0.466	0.532	46.8%
45	20,590	4,605	2,992	7,597	6,751	59%	0.44	64	0.234	0.888	0.432	0.632	0.718	28.2%
46	43,488	4,605	2,992	7,597	15,315	23%	0.23	62.9	0.187	0.868	0.397	0.507	0.600	40.0%
47	14,995	4,605	2,000	6,605	4,658	63%	0.47	65.9	0.313	0.879	0.493	0.673	0.776	22.4%
48	15,987	4,151	2,000	6,151	5,029	62%	0.46	65.9	0.313	0.859	0.493	0.662	0.768	23.2%
49	13,629	4,235	2,000	6,235	4,147	64%	0.48	64.3	0.246	0.834	0.441	0.629	0.721	27.9%
50	16,280	4,605	2,000	6,605	5,139	62%	0.46	64.8	0.267	0.859	0.457	0.642	0.738	26.2%
51	29,095	4,605	2,992	7,597	9,932	25%	0.25	62.5	0.170	0.861	0.384	0.501	0.586	41.4%
52	16,800	4,521	2,000	6,521	5,333	61%	0.46	65.2	0.284	0.863	0.470	0.650	0.749	25.1%
53	19,581	4,521	2,992	7,513	6,373	59%	0.44	63.6	0.217	0.877	0.419	0.622	0.704	29.6%
54	14,052	4,588	2,000	6,588	4,305	64%	0.47	67.3	0.372	0.904	0.537	0.711	0.819	18.1%
55	44,790	3,781	2,992	6,773	15,801	23%	0.23	62.1	0.154	0.818	0.371	0.476	0.556	44.4%
56	14,426	4,605	2,000	6,605	4,445	63%	0.47	66.1	0.322	0.883	0.499	0.680	0.783	21.7%
57	45,538	3,328	2,992	6,320	16,081	23%	0.23	63.2	0.200	0.818	0.406	0.503	0.602	39.8%
58	12,149	4,605	2,992	7,597	3,594	66%	0.49	68.6	0.427	0.971	0.579	0.772	0.869	13.1%
59	30,266	4,605	2,992	7,597	10,369	24%	0.24	61	0.107	0.834	0.336	0.458	0.516	48.4%
60	14,540	4,605	2,000	6,605	4,488	63%	0.47	67.3	0.372	0.904	0.537	0.710	0.818	18.2%
61	15,743	4,605	2,992	7,597	4,938	62%	0.46	66.9	0.356	0.940	0.525	0.717	0.818	18.2%
62	26,949	4,605	2,992	7,597	9,129	25%	0.25	63.4	0.208	0.877	0.413	0.528	0.626	37.4%
63	28,542	4,605	2,992	7,597	9,725	25%	0.25	63.8	0.225	0.884	0.425	0.538	0.642	35.8%
64	9,059	2,807	2,000	4,807	2,438	72%	0.53	69.6	0.469	0.868	0.611	0.748	0.866	13.4%
65	6,993	2,941	1,496	4,437	1,665	78%	0.58	64	0.234	0.751	0.432	0.616	0.705	29.5%
66	21,061	4,605	2,992	7,597	6,927	58%	0.44	63	0.191	0.870	0.400	0.605	0.681	31.9%
67	13,564	4,605	2,992	7,597	4,123	64%	0.48	63.8	0.225	0.884	0.425	0.645	0.725	27.5%
68	14,783	4,605	2,992	7,597	4,579	63%	0.47	63.6	0.217	0.881	0.419	0.636	0.715	28.5%
69	9,953	4,605	2,505	7,110	2,772	70%	0.52	66.7	0.347	0.915	0.518	0.724	0.820	18.0%
70	38,431	3,412	2,992	6,404	13,423	24%	0.24	61.1	0.112	0.784	0.339	0.445	0.507	49.3%
71	54,515	3,311	2,992	6,303	19,439	23%	0.23	60.1	0.069	0.762	0.307	0.412	0.453	54.7%
72	14,897	4,605	2,992	7,597	4,621	63%	0.47	66.5	0.339	0.933	0.512	0.709	0.808	19.2%
73	13,450	4,554	2,000	6,554	4,080	64%	0.48	65.8	0.309	0.875	0.489	0.674	0.775	22.5%
74	13,125	2,538	2,992	5,530	3,959	65%	0.48	66.2	0.326	0.838	0.502	0.664	0.774	22.6%
75	8,912	1,176	2,000	3,176	2,383	72%	0.53	70.5	0.507	0.813	0.640	0.732	0.868	13.2%
76	8,701	605	2,000	2,605	2,304	73%	0.54	65.8	0.309	0.704	0.489	0.605	0.727	27.3%
77	11,384	4,453	2,992	7,445	3,308	67%	0.50	64.7	0.263	0.894	0.454	0.674	0.760	24.0%
78	9,189	3,445	2,358	5,803	2,487	71%	0.53	66.4	0.335	0.853	0.509	0.691	0.795	20.5%
79	8,685	4,369	2,212	6,581	2,298	73%	0.54	65.7	0.305	0.875	0.486	0.695	0.788	21.2%
80	8,050	3,815	1,480	5,295	2,061	74%	0.55	66	0.318	0.824	0.496	0.677	0.779	22.1%

JUNE

Row	Sac River Flow	CVP	SWP	CVP + SWP & Sutter exports	Caculated Steamboat Slough Q	percent	X-channel closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123	Weighted Total Survival
10	34,720	3,008	3,008	6,016	12,035	24%	0.24	65.9	0.313	0.854	0.493	0.579	0.711	28.9%	63.42%
11	14,957	3,008	2,000	5,008	4,644	63%	0.47	65.3	0.288	0.799	0.473	0.626	0.734	26.6%	61.09%
12	9,327	1,697	2,000	3,697	2,538	71%	0.53	70.6	0.511	0.837	0.643	0.746	0.876	12.4%	54.44%
13	16,671	3,008	2,000	5,008	5,285	61%	0.46	68.3	0.414	0.853	0.569	0.699	0.824	17.6%	58.07%
14	13,528	2,991	2,000	4,991	4,109	64%	0.48	71.2	0.536	0.904	0.662	0.778	0.897	10.3%	52.03%
15	19,007	3,008	2,000	5,008	6,159	60%	0.45	68.1	0.406	0.849	0.563	0.690	0.816	18.4%	63.58%
16	12,520	3,008	2,000	5,008	3,732	66%	0.49	69.7	0.473	0.878	0.614	0.743	0.865	13.5%	58.25%
17	9,478	2,470	2,000	4,470	2,595	71%	0.53	70.1	0.490	0.862	0.627	0.750	0.873	12.7%	59.77%
18	12,890	3,008	2,000	5,008	3,871	65%	0.48	69.6	0.469	0.876	0.611	0.739	0.862	13.8%	57.27%
19	9,041	1,412	2,000	3,412	2,431	72%	0.53	70.7	0.515	0.827	0.646	0.742	0.875	12.5%	51.15%
20	12,470	3,008	2,151	5,159	3,714	66%	0.49	69.5	0.465	0.881	0.608	0.741	0.862	13.8%	58.99%
21	16,167	2,991	2,000	4,991	5,096	62%	0.46	71.5	0.549	0.910	0.672	0.781	0.901	9.9%	58.65%
22	10,184	2,554	2,000	4,554	2,859	69%	0.52	69.8	0.478	0.860	0.617	0.742	0.865	13.5%	57.59%
23	10,621	3,008	2,000	5,008	3,022	68%	0.51	70.7	0.515	0.896	0.646	0.773	0.890	11.0%	51.22%
24	15,310	3,008	2,000	5,008	4,776	62%	0.47	71	0.528	0.901	0.656	0.770	0.891	10.9%	57.72%
25	15,142	3,008	2,000	5,008	4,713	63%	0.47	69.2	0.452	0.869	0.598	0.725	0.849	15.1%	57.13%
26	14,402	3,008	2,000	5,008	4,436	63%	0.47	69.7	0.473	0.878	0.614	0.739	0.862	13.8%	58.20%
27	35,510	3,008	3,008	6,016	12,331	24%	0.24	67.7	0.389	0.886	0.550	0.631	0.774	22.6%	66.03%
28	10,067	3,008	2,000	5,008	2,815	69%	0.52	71	0.528	0.901	0.656	0.783	0.897	10.3%	51.49%
29	20,805	3,008	3,008	6,016	6,831	59%	0.44	69	0.444	0.909	0.592	0.731	0.850	15.0%	64.55%
30	27,124	3,008	3,008	6,016	9,194	25%	0.25	67.8	0.393	0.888	0.553	0.636	0.779	22.1%	66.68%
31	16,285	823	1,647	2,470	5,141	62%	0.46	66.6	0.343	0.712	0.515	0.606	0.741	25.9%	60.39%
32	10,083	3,008	2,000	5,008	2,821	69%	0.52	67.8	0.393	0.844	0.553	0.703	0.820	18.0%	58.56%
33	14,806	3,008	2,000	5,008	4,587	63%	0.47	70.6	0.511	0.894	0.643	0.761	0.883	11.7%	56.79%
34	16,520	3,008	2,000	5,008	5,228	61%	0.46	68.1	0.406	0.849	0.563	0.694	0.818	18.2%	56.61%
35	11,529	3,008	2,000	5,008	3,362	67%	0.50	70	0.486	0.884	0.624	0.753	0.873	12.7%	51.11%
36	22,301	3,008	3,008	6,016	7,391	58%	0.43	69	0.444	0.909	0.592	0.729	0.849	15.1%	62.24%
37	12,201	3,008	2,000	5,008	3,613	66%	0.49	70.9	0.524	0.900	0.652	0.774	0.892	10.8%	53.15%
38	16,638	3,008	2,756	5,764	5,273	61%	0.46	68.9	0.440	0.897	0.588	0.729	0.848	15.2%	54.99%
39	12,487	3,008	3,008	6,016	3,720	66%	0.49	70.3	0.499	0.933	0.633	0.779	0.889	11.1%	57.38%
40	38,972	3,008	3,008	6,016	13,626	24%	0.24	65	0.276	0.837	0.464	0.552	0.676	32.4%	67.11%
41	25,881	3,008	3,008	6,016	8,729	25%	0.25	66.2	0.326	0.859	0.502	0.591	0.724	27.6%	63.63%
42	17,091	3,008	2,000	5,008	5,442	61%	0.45	68.7	0.431	0.860	0.582	0.709	0.834	16.6%	59.28%
43	11,327	3,008	2,000	5,008	3,286	67%	0.50	70.1	0.490	0.885	0.627	0.756	0.876	12.4%	58.04%
44	22,301	3,008	3,008	6,016	7,391	58%	0.43	68.7	0.431	0.904	0.582	0.721	0.841	15.9%	61.37%
45	15,394	3,008	1,933	4,941	4,807	62%	0.47	72	0.570	0.917	0.688	0.794	0.911	8.9%	56.12%
46	33,930	3,008	3,008	6,016	11,740	24%	0.24	67.7	0.389	0.886	0.550	0.631	0.775	22.5%	63.79%
47	11,361	3,008	2,000	5,008	3,299	67%	0.50	72.1	0.574	0.921	0.691	0.806	0.917	8.3%	53.11%
48	12,839	3,008	2,000	5,008	3,852	65%	0.49	72.7	0.600	0.932	0.710	0.818	0.927	7.3%	55.98%
49	13,159	3,008	2,000	5,008	3,971	65%	0.48	73.2	0.621	0.941	0.726	0.830	0.935	6.5%	56.59%
50	16,755	3,008	2,000	5,008	5,316	61%	0.46	70.4	0.503	0.891	0.636	0.753	0.877	12.3%	53.95%
51	18,604	3,008	2,000	5,008	6,008	60%	0.45	69	0.444	0.866	0.592	0.714	0.841	15.9%	65.13%
52	10,873	3,008	2,000	5,008	3,117	68%	0.51	69.5	0.465	0.875	0.608	0.743	0.862	13.8%	57.04%
53	17,377	3,008	1,260	4,268	5,549	61%	0.45	67.1	0.364	0.799	0.531	0.653	0.779	22.1%	61.25%
54	12,907	3,008	2,000	5,008	3,877	65%	0.48	70.4	0.503	0.891	0.636	0.760	0.880	12.0%	53.05%
55	39,342	3,008	3,008	6,016	13,764	24%	0.24	66.5	0.339	0.864	0.512	0.595	0.732	26.8%	67.68%
56	12,503	3,008	2,000	5,008	3,726	66%	0.49	72	0.570	0.919	0.688	0.801	0.914	8.6%	55.18%
57	24,133	3,008	3,008	6,016	8,076	57%	0.43	68.3	0.414	0.897	0.569	0.709	0.830	17.0%	65.26%
58	13,545	3,008	2,000	5,008	4,116	64%	0.48	70.7	0.515	0.896	0.646	0.766	0.886	11.4%	57.87%
59	23,629	3,008	3,008	6,016	7,887	57%	0.43	68.1	0.406	0.893	0.563	0.704	0.824	17.6%	62.75%
60	12,520	3,008	2,000	5,008	3,732	66%	0.49	70.7	0.515	0.896	0.646	0.768	0.888	11.2%	57.08%
61	18,100	2,017	2,000	4,017	5,819	60%	0.45	70.1	0.490	0.842	0.627	0.724	0.859	14.1%	54.66%
62	21,629	3,008	3,008	6,016	7,139	58%	0.43	69.7	0.473	0.922	0.614	0.748	0.867	13.3%	62.92%
63	24,788	3,008	3,008	6,016	8,321	57%	0.43	69.1	0.448	0.911	0.595	0.729	0.851	14.9%	62.31%
64	9,898	2,454	2,000	4,454	2,752	70%	0.52	71.8	0.562	0.892	0.681	0.790	0.908	9.2%	55.58%
65	10,151	101	370	471	2,846	69%	0.52	73.9	0.650	0.757	0.748	0.753	0.913	8.7%	53.43%
66	13,965	3,008	1,092	4,100	4,273	64%	0.48	70	0.486	0.844	0.624	0.728	0.860	14.0%	61.66%
67	10,352	3,008	2,840	5,848	2,922	69%	0.51	69.2	0.452	0.906	0.598	0.756	0.866	13.4%	58.12%
68	14,755	3,008	2,118	5,126	4,568	63%	0.47	66.9	0.356	0.833	0.525	0.669	0.787	21.3%	62.28%
69	13,898	3,008	2,000	5,008	4,248	64%	0.48	71.9	0.566	0.918	0.684	0.795	0.911	8.9%	54.08%
70	24,418	3,008	3,008	6,016	8,182	57%	0.43	66	0.318	0.855	0.496	0.649	0.761	23.9%	67.85%
71	55,576	3,008	3,008	6,016	19,835	23%	0.23	63.8	0.225	0.812	0.419	0.509	0.616	38.4%	71.32%
72	11,730	3,008	2,403	5,411	3,437	67%	0.50	68.4	0.419	0.872	0.572	0.721	0.838	16.2%	58.26%
73	12,234	3,008	2,000	5,008	3,626	66%	0.49	69.4	0.461	0.873	0.604	0.736	0.858	14.2%	54.91%
74	12,419	3,008	3,008	6,016	3,695	66%	0.49	71.6	0.553	0.956	0.675	0.812	0.916	8.4%	56.77%
75	10,554	3,008	2,000	5,008	2,997	69%	0.51	73.2	0.621	0.941	0.726	0.836	0.938	6.2%	50.19%
76	10,386	3,008	2,000	5,008	2,934	69%	0.51	69.4	0.461	0.873	0.604	0.742	0.861	13.9%	58.17%
77	13,092	2,773	2,000	4,773	3,946	65%	0.48	68.6	0.427	0.848	0.579	0.709	0.833	16.7%	54.33%
78	10,369	2,756	2,000	4,756	2,928	69%	0.51	68.5	0.423	0.846	0.576	0.714	0.835	16.5%	54.79%
79	9,058	3,008	1,109	4,117	2,438	72%	0.53	69.4	0.461	0.834	0.604	0.727	0.853	14.7%	54.36%
80	10,268	2,756	1,966	4,722	2,890	69%	0.51	69	0.444	0.853	0.592	0.726	0.848	15.2%	53.79%
81														Average	58.44%

BG10 ='Study 467 Flow Data'!G7
BH10 ='Study 467 Flow Data'!Q7
BI10 ='Study 467 Flow Data'!AA7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$G$2,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10
BO10 =IF((-2.45925+(0.0420748*BN10))<0,0,(-2.45925+(0.0420748*BN10)))
BP10 =IF(((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10))>1,1,((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10
BQ10 =-1.613493+(0.0319584*BN10)
BR10 =(BP10*BM10)+(BQ10*(1-BM10))
BS10 =BO10+BR10-(BO10*BR10)
BT10 =1-BS10

BV10 ='Study 467 Flow Data'!H7
BW10 ='Study 467 Flow Data'!R7
BX10 ='Study 467 Flow Data'!AB7
BY10 =(BW10+BX10)
BZ10 =0.374*BV10-950
CA10 =IF(BV10>$K$4,(0.133*BV10+829)/(BV10-BZ10),(0.293*BV10+2090)/(BV10-BZ10))
CB10 =(0.45*(0.133*BV10+829)/(BV10-BZ10))+(0.55*CA10)
CC10
CD10 =IF((-2.45925+(0.0420748*CC10))<0,0,(-2.45925+(0.0420748*CC10)))
CE10 =IF(((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10))>1,1,((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10)))
CF10 =-1.613493+(0.0319584*CC10)
CG10 =(CE10*CB10)+(CF10*(1-CB10))
CH10 =CD10+CG10-(CD10*CG10)
CI10 =1-CH10

CK10 ='Study 467 Flow Data'!I7
CL10 ='Study 467 Flow Data'!S7
CM10 ='Study 467 Flow Data'!AC7
CN10 =(CL10+CM10)
CO10 =0.374*CK10-950
CP10 =IF(CK10>$K$4,(0.133*CK10+829)/(CK10-CO10),(0.293*CK10+2090)/(CK10-CO10))
CQ10 =(0.45*(0.133*CK10+829)/(CK10-CO10))+(0.55*CP10)
CR10
CS10 =IF((-2.45925+(0.0420748*CR10))<0,0,(-2.45925+(0.0420748*CR10)))
CT10 =IF(((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10))>1,1,((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10)))
CU10 =-1.613493+(0.0319584*CR10)
CV10 =(CT10*CQ10)+(CU10*(1-CQ10))
CW10 =CS10+CV10-(CS10*CV10)
CX10 =1-CW10
CZ10 =(0.01*O10)+(0.06*AC10)+(0.17*AQ10)+(0.28*BE10)+(0.25*BT10)+(0.16*CI10)+(0.07*CX10)

Study 469 Sacramento River Spring Run YOY Smolt Survival Model

Modified m2 by changing the slope to 0.0000434

Cross Channel closed for 45 consecutive days, Dec 18-Jan 31

Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

December Sacramento River Temp: 47 degrees F

January Sacramento River Temp: 47 degrees F

Cross Channel Closed Over 25000 cfs

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

February Water Temp 50 F

March Water Temp 55 F

DECEMBER

Row	Year	Water Year Type	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
10	1922	A	17,143	4,207	7,100	11,307	5,461	61%	0.45	0	0.744	0.000	0.338	0.338	**66.2%**
11	1923	B	34,539	4,207	4,507	8,714	11,968	24%	0.24	0	0.631	0.000	0.152	0.152	**84.8%**
12	1924	C	13,874	3,926	6,429	10,355	4,239	64%	0.48	0	0.702	0.000	0.334	0.334	**66.6%**
13	1925	D	11,248	4,207	4,850	9,057	3,257	67%	0.50	0	0.646	0.000	0.324	0.324	**67.6%**
14	1926	D	11,552	4,207	3,821	8,028	3,370	67%	0.50	0	0.601	0.000	0.300	0.300	**70.0%**
15	1927	W	14,304	4,207	6,995	11,202	4,400	63%	0.47	0	0.739	0.000	0.350	0.350	**65.0%**
16	1928	A	16,574	4,207	5,966	10,173	5,249	61%	0.46	0	0.694	0.000	0.318	0.318	**68.2%**
17	1929	C	13,711	4,207	6,187	10,394	4,178	64%	0.48	0	0.704	0.000	0.336	0.336	**66.4%**
18	1930	D	14,442	4,207	6,300	10,507	4,451	63%	0.47	0	0.709	0.000	0.335	0.335	**66.5%**
19	1931	C	9,337	2,194	2,984	5,178	2,542	71%	0.53	0	0.478	0.000	0.252	0.252	**74.8%**
20	1932	D	14,650	4,207	7,194	11,401	4,529	63%	0.47	0	0.748	0.000	0.352	0.352	**64.8%**
21	1933	C	8,188	2,019	2,505	4,524	2,112	74%	0.55	0	0.449	0.000	0.246	0.246	**75.4%**
22	1934	C	12,474	4,167	5,543	9,710	3,715	66%	0.49	0	0.674	0.000	0.329	0.329	**67.1%**
23	1935	B	8,503	3,216	3,393	6,609	2,230	73%	0.54	0	0.540	0.000	0.293	0.293	**70.7%**
24	1936	B	10,875	4,207	3,284	7,491	3,117	68%	0.51	0	0.578	0.000	0.293	0.293	**70.7%**
25	1937	B	12,704	4,207	5,742	9,949	3,801	65%	0.49	0	0.685	0.000	0.333	0.333	**66.7%**
26	1938	W	48,016	4,207	7,531	11,738	17,008	23%	0.23	0	0.762	0.000	0.177	0.177	**82.3%**
27	1939	D	18,684	4,207	3,735	7,942	6,038	60%	0.45	0	0.598	0.000	0.267	0.267	**73.3%**
28	1940	A	7,841	1,432	2,675	4,107	1,983	75%	0.56	0	0.431	0.000	0.240	0.240	**76.0%**
29	1941	W	35,978	4,207	7,337	11,544	12,506	24%	0.24	0	0.754	0.000	0.180	0.180	**82.0%**
30	1942	W	65,619	4,207	3,608	7,815	23,592	23%	0.23	0	0.592	0.000	0.135	0.135	**86.5%**
31	1943	W	28,806	4,207	3,779	7,986	9,823	25%	0.25	0	0.599	0.000	0.147	0.147	**85.3%**
32	1944	D	13,774	4,207	6,423	10,630	4,201	64%	0.48	0	0.714	0.000	0.341	0.341	**65.9%**
33	1945	B	15,826	4,207	6,967	11,174	4,969	62%	0.46	0	0.738	0.000	0.341	0.341	**65.9%**
34	1946	B	54,845	4,207	7,592	11,799	19,562	23%	0.23	0	0.765	0.000	0.176	0.176	**82.4%**
35	1947	D	18,132	4,207	7,136	11,343	5,831	60%	0.45	0	0.745	0.000	0.335	0.335	**66.5%**
36	1948	B	9,393	2,285	3,103	5,388	2,563	71%	0.53	0	0.487	0.000	0.256	0.256	**74.4%**
37	1949	D	15,563	4,207	6,898	11,105	4,871	62%	0.46	0	0.735	0.000	0.341	0.341	**65.9%**
38	1950	B	11,442	4,207	3,441	7,648	3,329	67%	0.50	0	0.585	0.000	0.292	0.292	**70.8%**
39	1951	A	68,100	4,207	7,592	11,799	24,519	23%	0.23	0	0.765	0.000	0.174	0.174	**82.6%**
40	1952	W	46,745	4,207	7,104	11,311	16,533	23%	0.23	0	0.744	0.000	0.173	0.173	**82.7%**
41	1953	W	42,331	4,207	3,742	7,949	14,882	24%	0.24	0	0.598	0.000	0.141	0.141	**85.9%**
42	1954	A	14,919	4,207	3,897	8,104	4,630	63%	0.47	0	0.605	0.000	0.283	0.283	**71.7%**
43	1955	D	26,020	4,207	6,908	11,115	8,781	25%	0.25	0	0.735	0.000	0.183	0.183	**81.7%**
44	1956	W	25,321	4,207	7,592	11,799	8,520	25%	0.25	0	0.765	0.000	0.191	0.191	**80.9%**
45	1957	A	14,143	4,207	5,806	10,013	4,339	64%	0.47	0	0.687	0.000	0.326	0.326	**67.4%**
46	1958	W	23,752	4,207	6,924	11,131	7,933	57%	0.43	0	0.736	0.000	0.315	0.315	**68.5%**
47	1959	B	14,627	4,207	3,852	8,059	4,520	63%	0.47	0	0.603	0.000	0.284	0.284	**71.6%**
48	1960	D	11,068	4,207	2,791	6,998	3,189	68%	0.50	0	0.557	0.000	0.280	0.280	**72.0%**
49	1961	D	18,328	4,207	6,890	11,097	5,905	60%	0.45	0	0.735	0.000	0.329	0.329	**67.1%**
50	1962	B	16,701	4,207	6,876	11,083	5,296	61%	0.46	0	0.734	0.000	0.335	0.335	**66.5%**
51	1963	W	27,555	4,207	6,893	11,100	9,356	25%	0.25	0	0.735	0.000	0.181	0.181	**81.9%**
52	1964	D	14,847	4,207	6,053	10,260	4,603	63%	0.47	0	0.698	0.000	0.327	0.327	**67.3%**
53	1965	W	28,023	4,207	7,331	11,538	9,531	25%	0.25	0	0.754	0.000	0.186	0.186	**81.4%**
54	1966	B	16,997	4,207	5,888	10,095	5,407	61%	0.46	0	0.691	0.000	0.315	0.315	**68.5%**
55	1967	W	39,750	4,207	7,123	11,330	13,917	24%	0.24	0	0.745	0.000	0.176	0.176	**82.4%**
56	1968	B	16,692	4,207	3,735	7,942	5,293	61%	0.46	0	0.598	0.000	0.273	0.273	**72.7%**
57	1969	W	24,986	4,207	6,971	11,178	8,395	57%	0.42	0	0.738	0.000	0.313	0.313	**68.7%**
58	1970	W	50,159	4,207	3,481	7,688	17,809	23%	0.23	0	0.587	0.000	0.136	0.136	**86.4%**
59	1971	W	54,139	4,207	7,042	11,249	19,298	23%	0.23	0	0.741	0.000	0.171	0.171	**82.9%**
60	1972	B	20,009	4,207	6,191	10,398	6,533	59%	0.44	0	0.704	0.000	0.311	0.311	**68.9%**
61	1973	A	26,198	4,207	6,904	11,111	8,848	25%	0.25	0	0.735	0.000	0.183	0.183	**81.7%**
62	1974	W	61,593	4,207	7,142	11,349	22,086	23%	0.23	0	0.745	0.000	0.170	0.170	**83.0%**
63	1975	W	17,619	4,207	4,248	8,455	5,640	61%	0.45	0	0.620	0.000	0.280	0.280	**72.0%**
64	1976	C	16,774	4,207	4,652	8,859	5,323	61%	0.46	0	0.637	0.000	0.291	0.291	**70.9%**
65	1977	C	8,133	1,705	3,032	4,737	2,092	74%	0.55	0	0.458	0.000	0.252	0.252	**74.8%**
66	1978	A	12,285	4,136	5,531	9,667	3,645	66%	0.49	0	0.672	0.000	0.330	0.330	**67.0%**
67	1979	B	12,756	4,207	3,685	7,892	3,821	65%	0.49	0	0.595	0.000	0.289	0.289	**71.1%**
68	1980	A	20,832	4,207	6,985	11,192	6,841	59%	0.44	0	0.739	0.000	0.323	0.323	**67.7%**
69	1981	D	15,611	4,207	4,112	8,319	4,889	62%	0.46	0	0.614	0.000	0.285	0.285	**71.5%**
70	1982	W	68,599	4,207	7,011	11,218	24,706	23%	0.23	0	0.740	0.000	0.168	0.168	**83.2%**
71	1983	W	55,416	4,207	4,428	8,635	19,776	23%	0.23	0	0.628	0.000	0.144	0.144	**85.6%**
72	1984	W	82,951	2,994	3,104	6,098	30,074	22%	0.22	0	0.518	0.000	0.116	0.116	**88.4%**
73	1985	D	23,880	4,207	6,620	10,827	7,981	57%	0.43	0	0.723	0.000	0.309	0.309	**69.1%**
74	1986	W	15,722	4,207	6,942	11,149	4,930	62%	0.46	0	0.737	0.000	0.341	0.341	**65.9%**
75	1987	D	13,789	4,207	6,093	10,300	4,207	64%	0.48	0	0.700	0.000	0.334	0.334	**66.6%**
76	1988	C	15,842	4,207	6,875	11,082	4,975	62%	0.46	0	0.734	0.000	0.339	0.339	**66.1%**
77	1989	D	8,849	2,484	3,268	5,752	2,360	72%	0.54	0	0.503	0.000	0.269	0.269	**73.1%**
78	1990	C	14,638	4,207	6,203	10,410	4,525	63%	0.47	0	0.705	0.000	0.331	0.331	**66.9%**
79	1991	C	8,786	1,658	3,196	4,854	2,336	72%	0.54	0	0.464	0.000	0.249	0.249	**75.1%**
80	1992	C	7,464	2,963	1,609	4,572	1,842	76%	0.56	0	0.451	0.000	0.255	0.255	**74.5%**

JANUARY

Year	Sac River Flows	CVP	SWP	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	17,504	4,207	7,576	11,783	5,596	61%	0.27	0	0.764	0.000	0.203	0.203	**79.7%**
1923	32,280	4,207	3,637	7,844	11,123	24%	0.24	0	0.593	0.000	0.144	0.144	**85.6%**
1924	14,620	4,207	6,649	10,856	4,518	63%	0.27	0	0.724	0.000	0.199	0.199	**80.1%**
1925	10,206	3,550	3,151	6,701	2,867	69%	0.30	0	0.544	0.000	0.162	0.162	**83.8%**
1926	19,769	4,207	7,087	11,294	6,444	59%	0.26	0	0.743	0.000	0.193	0.193	**80.7%**
1927	29,551	4,207	7,264	11,471	10,102	24%	0.24	0	0.751	0.000	0.184	0.184	**81.6%**
1928	26,083	4,207	3,638	7,845	8,805	25%	0.25	0	0.593	0.000	0.148	0.148	**85.2%**
1929	15,516	4,207	7,084	11,291	4,853	62%	0.27	0	0.743	0.000	0.202	0.202	**79.8%**
1930	20,771	4,207	7,092	11,299	6,818	59%	0.26	0	0.743	0.000	0.191	0.191	**80.9%**
1931	11,965	4,207	4,896	9,103	3,525	66%	0.29	0	0.648	0.000	0.186	0.186	**81.4%**
1932	17,253	4,207	7,827	12,034	5,503	61%	0.27	0	0.775	0.000	0.206	0.206	**79.4%**
1933	12,102	4,207	5,416	9,623	3,576	66%	0.29	0	0.671	0.000	0.192	0.192	**80.8%**
1934	16,103	4,207	7,093	11,300	5,073	62%	0.27	0	0.743	0.000	0.200	0.200	**80.0%**
1935	25,471	4,207	7,666	11,873	8,576	25%	0.25	0	0.768	0.000	0.192	0.192	**80.8%**
1936	32,450	4,207	7,452	11,659	11,186	24%	0.24	0	0.759	0.000	0.184	0.184	**81.6%**
1937	16,217	4,207	7,581	11,788	5,115	62%	0.27	0	0.764	0.000	0.206	0.206	**79.4%**
1938	31,443	4,207	3,940	8,147	10,810	24%	0.24	0	0.606	0.000	0.147	0.147	**85.3%**
1939	18,407	4,207	3,239	7,446	5,934	60%	0.26	0	0.576	0.000	0.151	0.151	**84.9%**
1940	23,448	4,207	8,017	12,224	7,820	57%	0.25	0	0.783	0.000	0.198	0.198	**80.2%**
1941	72,303	4,207	8,141	12,348	26,091	23%	0.23	0	0.789	0.000	0.178	0.178	**82.2%**
1942	63,260	4,207	3,239	7,446	22,709	23%	0.23	0	0.576	0.000	0.131	0.131	**86.9%**
1943	58,056	4,207	3,303	7,510	20,763	23%	0.23	0	0.579	0.000	0.133	0.133	**86.7%**
1944	17,677	4,207	3,262	7,469	5,661	60%	0.26	0	0.577	0.000	0.153	0.153	**84.7%**
1945	12,555	4,207	5,060	9,267	3,746	65%	0.28	0	0.655	0.000	0.186	0.186	**81.4%**
1946	43,229	4,207	3,637	7,844	15,218	23%	0.23	0	0.593	0.000	0.139	0.139	**86.1%**
1947	15,221	4,207	6,687	10,894	4,743	63%	0.27	0	0.726	0.000	0.198	0.198	**80.2%**
1948	14,897	4,207	6,517	10,724	4,621	63%	0.27	0	0.718	0.000	0.196	0.196	**80.4%**
1949	14,928	4,207	6,818	11,025	4,633	63%	0.27	0	0.731	0.000	0.200	0.200	**80.0%**
1950	20,934	4,207	7,176	11,383	6,879	59%	0.26	0	0.747	0.000	0.192	0.192	**80.8%**
1951	62,213	4,207	7,179	11,386	22,318	23%	0.23	0	0.747	0.000	0.170	0.170	**83.0%**
1952	67,352	4,207	6,855	11,062	24,240	23%	0.23	0	0.733	0.000	0.166	0.166	**83.4%**
1953	64,078	4,207	3,333	7,540	23,015	23%	0.23	0	0.580	0.000	0.132	0.132	**86.8%**
1954	33,414	4,207	3,843	8,050	11,547	24%	0.24	0	0.602	0.000	0.145	0.145	**85.5%**
1955	22,257	4,207	6,019	10,226	7,374	58%	0.25	0	0.697	0.000	0.177	0.177	**82.3%**
1956	83,709	4,207	8,024	12,231	30,357	22%	0.22	0	0.784	0.000	0.176	0.176	**82.4%**
1957	18,639	4,207	3,891	8,098	6,021	60%	0.26	0	0.604	0.000	0.158	0.158	**84.2%**
1958	36,464	4,207	3,379	7,586	12,688	24%	0.24	0	0.582	0.000	0.139	0.139	**86.1%**
1959	35,167	4,207	3,333	7,540	12,202	24%	0.24	0	0.580	0.000	0.139	0.139	**86.1%**
1960	14,522	4,207	6,411	10,618	4,481	63%	0.27	0	0.714	0.000	0.196	0.196	**80.4%**
1961	15,008	4,207	7,073	11,280	4,663	63%	0.27	0	0.742	0.000	0.203	0.203	**79.7%**
1962	12,652	4,207	3,914	8,121	3,782	65%	0.28	0	0.605	0.000	0.171	0.171	**82.9%**
1963	18,049	4,207	7,246	11,453	5,800	60%	0.26	0	0.750	0.000	0.198	0.198	**80.2%**
1964	25,539	4,207	3,872	8,079	8,602	25%	0.25	0	0.604	0.000	0.151	0.151	**84.9%**
1965	81,240	4,207	8,500	12,707	29,434	22%	0.22	0	0.804	0.000	0.181	0.181	**81.9%**
1966	29,635	4,207	3,657	7,864	10,133	24%	0.24	0	0.594	0.000	0.145	0.145	**85.5%**
1967	34,626	4,207	7,671	11,878	12,000	24%	0.24	0	0.768	0.000	0.185	0.185	**81.5%**
1968	30,635	4,207	3,333	7,540	10,507	24%	0.24	0	0.580	0.000	0.141	0.141	**85.9%**
1969	68,505	4,207	5,290	9,497	24,671	23%	0.23	0	0.665	0.000	0.151	0.151	**84.9%**
1970	92,665	4,159	3,333	7,492	33,707	22%	0.22	0	0.578	0.000	0.129	0.129	**87.1%**
1971	46,894	4,207	5,469	9,676	16,588	23%	0.23	0	0.673	0.000	0.157	0.157	**84.3%**
1972	20,395	4,207	3,891	8,098	6,678	59%	0.26	0	0.604	0.000	0.156	0.156	**84.4%**
1973	49,390	4,207	6,474	10,681	17,522	23%	0.23	0	0.716	0.000	0.166	0.166	**83.4%**
1974	78,417	4,207	3,637	7,844	28,378	22%	0.22	0	0.593	0.000	0.133	0.133	**86.7%**
1975	18,672	4,207	3,848	8,055	6,033	60%	0.26	0	0.602	0.000	0.158	0.158	**84.2%**
1976	16,769	4,207	3,793	8,000	5,322	61%	0.27	0	0.600	0.000	0.160	0.160	**84.0%**
1977	7,656	2,106	2,440	4,546	1,913	75%	0.32	0	0.450	0.000	0.145	0.145	**85.5%**
1978	43,061	2,526	7,767	10,293	15,155	23%	0.23	0	0.700	0.000	0.164	0.164	**83.6%**
1979	27,242	4,207	3,262	7,469	9,239	25%	0.25	0	0.577	0.000	0.143	0.143	**85.7%**
1980	63,624	4,207	3,159	7,366	22,845	23%	0.23	0	0.573	0.000	0.130	0.130	**87.0%**
1981	28,603	4,207	3,356	7,563	9,748	25%	0.25	0	0.581	0.000	0.143	0.143	**85.7%**
1982	51,172	4,207	7,643	11,850	18,188	23%	0.23	0	0.767	0.000	0.178	0.178	**82.2%**
1983	59,148	4,207	2,648	6,855	21,171	23%	0.23	0	0.550	0.000	0.126	0.126	**87.4%**
1984	47,354	1,331	2,881	4,212	16,760	23%	0.23	0	0.436	0.000	0.101	0.101	**89.9%**
1985	16,799	4,207	3,872	8,079	5,333	61%	0.27	0	0.604	0.000	0.161	0.161	**83.9%**
1986	21,503	4,207	7,330	11,537	7,092	58%	0.26	0	0.754	0.000	0.193	0.193	**80.7%**
1987	16,734	1,225	6,371	7,596	5,309	61%	0.27	0	0.583	0.000	0.156	0.156	**84.4%**
1988	25,530	4,207	7,058	11,265	8,598	25%	0.25	0	0.742	0.000	0.185	0.185	**81.5%**
1989	11,998	4,198	4,527	8,725	3,537	66%	0.29	0	0.632	0.000	0.181	0.181	**81.9%**
1990	21,584	2,538	7,059	9,597	7,122	58%	0.26	0	0.669	0.000	0.171	0.171	**82.9%**
1991	6,851	1,697	1,708	3,405	1,612	78%	0.33	0	0.401	0.000	0.133	0.133	**86.7%**
1992	12,140	4,207	4,780	8,987	3,590	66%	0.29	0	0.643	0.000	0.184	0.184	**81.6%**

FEBRUARY

Year	Sac River Flow	CVP	SWP	CVP + SWP Exports	Calculated Steamboat Sutter & Slough Q	Percent	X-Channel Closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	34,403	4,249	6,358	10,607	11,917	24%	0.24	0	0.767	0.000	0.184	0.184	**81.6%**
1923	24,325	4,282	2,380	6,662	8,148	58%	0.25	0	0.596	0.000	0.150	0.150	**85.0%**
1924	17,501	4,220	4,783	9,003	5,595	60%	0.27	0	0.698	0.000	0.185	0.185	**81.5%**
1925	44,698	4,221	7,583	11,804	15,767	23%	0.23	0	0.819	0.000	0.192	0.192	**80.8%**
1926	36,717	4,231	7,504	11,735	12,782	24%	0.24	0	0.816	0.000	0.195	0.195	**80.5%**
1927	87,642	3,026	8,469	11,495	31,828	22%	0.22	0	0.806	0.000	0.180	0.180	**82.0%**
1928	28,340	4,255	4,377	8,632	9,649	25%	0.25	0	0.681	0.000	0.168	0.168	**83.2%**
1929	18,537	4,233	3,741	7,974	5,983	60%	0.26	0	0.653	0.000	0.171	0.171	**82.9%**
1930	15,675	2,781	4,004	6,785	4,912	62%	0.27	0	0.601	0.000	0.163	0.163	**83.7%**
1931	11,083	3,335	1,891	5,226	3,195	66%	0.29	0	0.534	0.000	0.156	0.156	**84.4%**
1932	14,488	4,242	5,888	10,130	4,469	64%	0.28	0	0.746	0.000	0.205	0.205	**79.5%**
1933	11,976	3,836	2,699	6,535	3,529	64%	0.29	0	0.590	0.000	0.169	0.169	**83.1%**
1934	12,740	1,240	4,546	5,786	3,815	66%	0.28	0	0.558	0.000	0.158	0.158	**84.2%**
1935	12,448	1,157	3,943	5,100	3,706	67%	0.28	0	0.528	0.000	0.150	0.150	**85.0%**
1936	50,696	4,250	8,500	12,750	18,010	23%	0.23	0	0.860	0.000	0.199	0.199	**80.1%**
1937	33,459	4,232	5,028	9,260	11,564	24%	0.24	0	0.709	0.000	0.171	0.171	**82.9%**
1938	82,366	4,269	3,939	8,208	29,855	22%	0.22	0	0.663	0.000	0.149	0.149	**85.1%**
1939	19,024	2,606	3,955	6,561	6,165	59%	0.26	0	0.592	0.000	0.155	0.155	**84.5%**
1940	44,171	4,240	8,500	12,740	15,570	23%	0.23	0	0.860	0.000	0.202	0.202	**79.8%**
1941	75,037	4,294	6,873	11,167	27,114	23%	0.23	0	0.791	0.000	0.179	0.179	**82.1%**
1942	78,349	4,281	3,955	8,236	28,353	22%	0.23	0	0.664	0.000	0.149	0.149	**85.1%**
1943	52,259	4,275	4,005	8,280	18,595	23%	0.23	0	0.666	0.000	0.154	0.154	**84.6%**
1944	31,007	4,241	3,958	8,199	10,647	24%	0.24	0	0.663	0.000	0.161	0.161	**83.9%**
1945	40,622	4,241	3,999	8,240	14,243	23%	0.23	0	0.664	0.000	0.157	0.157	**84.3%**
1946	24,371	4,276	3,978	8,254	8,165	57%	0.25	0	0.665	0.000	0.167	0.167	**83.3%**
1947	21,569	4,244	4,003	8,247	7,117	58%	0.26	0	0.665	0.000	0.170	0.170	**83.0%**
1948	16,122	4,235	1,822	6,057	5,080	64%	0.27	0	0.570	0.000	0.153	0.153	**84.7%**
1949	16,272	4,242	4,179	8,421	5,136	61%	0.27	0	0.672	0.000	0.181	0.181	**81.9%**
1950	35,170	4,246	7,531	11,777	12,204	24%	0.24	0	0.818	0.000	0.196	0.196	**80.4%**
1951	60,566	4,281	4,675	8,956	21,702	23%	0.23	0	0.695	0.000	0.159	0.159	**84.1%**
1952	64,731	4,293	3,909	8,202	23,259	23%	0.23	0	0.663	0.000	0.151	0.151	**84.9%**
1953	28,344	4,281	4,060	8,341	9,651	25%	0.25	0	0.669	0.000	0.165	0.165	**83.5%**
1954	57,158	4,268	4,636	8,904	20,427	23%	0.23	0	0.693	0.000	0.159	0.159	**84.1%**
1955	16,298	4,256	3,893	8,149	5,145	61%	0.27	0	0.660	0.000	0.177	0.177	**82.3%**
1956	63,748	4,283	4,675	8,958	22,892	23%	0.23	0	0.696	0.000	0.158	0.158	**84.2%**
1957	33,144	4,247	4,638	8,885	11,446	24%	0.24	0	0.692	0.000	0.167	0.167	**83.3%**
1958	62,959	4,254	4,045	8,299	22,597	23%	0.23	0	0.667	0.000	0.152	0.152	**84.8%**
1959	50,082	4,256	4,060	8,316	17,781	23%	0.23	0	0.668	0.000	0.155	0.155	**84.5%**
1960	27,163	4,231	7,296	11,527	9,209	25%	0.25	0	0.807	0.000	0.200	0.200	**80.0%**
1961	32,844	4,248	7,109	11,357	11,334	24%	0.24	0	0.800	0.000	0.193	0.193	**80.7%**
1962	45,216	4,239	8,500	12,739	15,961	23%	0.23	0	0.860	0.000	0.201	0.201	**79.9%**
1963	58,694	4,281	8,257	12,538	21,002	23%	0.23	0	0.851	0.000	0.195	0.195	**80.5%**
1964	19,698	4,275	3,632	7,907	6,417	61%	0.26	0	0.650	0.000	0.169	0.169	**83.1%**
1965	33,326	4,255	5,768	10,023	11,514	24%	0.24	0	0.742	0.000	0.179	0.179	**82.1%**
1966	26,777	4,281	4,377	8,658	9,065	25%	0.25	0	0.683	0.000	0.169	0.169	**83.1%**
1967	43,101	4,287	3,201	7,488	15,170	24%	0.23	0	0.632	0.000	0.148	0.148	**85.2%**
1968	56,470	2,787	4,060	6,847	20,170	23%	0.23	0	0.604	0.000	0.139	0.139	**86.1%**
1969	67,482	4,293	3,171	7,464	24,288	23%	0.23	0	0.631	0.000	0.143	0.143	**85.7%**
1970	57,565	1,212	4,060	5,272	20,579	23%	0.23	0	0.536	0.000	0.123	0.123	**87.7%**
1971	29,208	4,293	4,291	8,584	9,974	24%	0.25	0	0.679	0.000	0.166	0.166	**83.4%**
1972	25,083	4,258	4,638	8,896	8,431	57%	0.25	0	0.693	0.000	0.173	0.173	**82.7%**
1973	70,967	4,268	4,423	8,691	25,592	23%	0.23	0	0.684	0.000	0.155	0.155	**84.5%**
1974	41,926	4,263	4,377	8,640	14,730	24%	0.24	0	0.682	0.000	0.161	0.161	**83.9%**
1975	58,811	4,247	4,636	8,883	21,045	23%	0.23	0	0.692	0.000	0.159	0.159	**84.1%**
1976	20,229	4,237	4,244	8,481	6,616	59%	0.26	0	0.675	0.000	0.174	0.174	**82.6%**
1977	12,195	659	1,422	2,081	3,611	68%	0.29	0	0.397	0.000	0.113	0.113	**88.7%**
1978	49,884	1,705	7,341	9,046	17,707	23%	0.23	0	0.699	0.000	0.162	0.162	**83.8%**
1979	42,046	4,244	3,958	8,202	14,775	24%	0.24	0	0.663	0.000	0.156	0.156	**84.4%**
1980	71,932	4,250	3,768	8,018	25,953	23%	0.23	0	0.655	0.000	0.148	0.148	**85.2%**
1981	29,672	2,832	4,062	6,894	10,147	24%	0.24	0	0.606	0.000	0.148	0.148	**85.2%**
1982	65,645	4,282	4,620	8,902	23,601	23%	0.23	0	0.693	0.000	0.158	0.158	**84.2%**
1983	82,910	3,419	2,793	6,212	30,058	22%	0.22	0	0.576	0.000	0.129	0.129	**87.1%**
1984	37,282	1,495	3,847	5,342	12,993	24%	0.24	0	0.539	0.000	0.128	0.128	**87.2%**
1985	20,137	4,253	4,638	8,891	6,581	58%	0.26	0	0.693	0.000	0.179	0.179	**82.1%**
1986	95,483	4,245	7,363	11,608	34,761	22%	0.22	0	0.811	0.000	0.181	0.181	**81.9%**
1987	23,028	1,268	4,220	5,488	7,662	57%	0.25	0	0.545	0.000	0.138	0.138	**86.2%**
1988	17,684	4,124	2,630	6,754	5,664	62%	0.26	0	0.600	0.000	0.159	0.159	**84.1%**
1989	11,877	963	1,773	2,736	3,492	67%	0.29	0	0.426	0.000	0.122	0.122	**87.8%**
1990	16,946	1,239	6,562	7,801	5,388	61%	0.27	0	0.645	0.000	0.172	0.172	**82.8%**
1991	10,999	398	835	1,233	3,164	67%	0.29	0	0.360	0.000	0.105	0.105	**89.5%**
1992	32,538	1,033	7,457	8,490	11,219	24%	0.24	0	0.675	0.000	0.163	0.163	**83.7%**

MARCH

Year	Sac River Flow	CVP	SWP	CVP + SWP exports	Calculated Steamboat Sutter & Slough Q	percent	X-Channel Closed	m1	Calculated Mortality m2	m3	m23	m123	Calculated Survival s123
1922	31,554	3,783	4,143	7,926	10,851	24%	0.24	0	0.741	0.144	0.289	0.289	**71.1%**
1923	17,173	4,225	3,364	7,589	5,473	27%	0.27	0	0.726	0.144	0.299	0.299	**70.1%**
1924	12,116	1,494	1,679	3,173	3,581	29%	0.29	0	0.534	0.144	0.256	0.256	**74.4%**
1925	18,563	3,771	4,108	7,879	5,993	26%	0.26	0	0.739	0.144	0.300	0.300	**70.0%**
1926	18,944	4,225	3,499	7,724	6,135	26%	0.26	0	0.732	0.144	0.298	0.298	**70.2%**
1927	43,865	3,241	4,154	7,395	15,456	23%	0.23	0	0.718	0.144	0.279	0.279	**72.1%**
1928	86,223	4,225	4,424	8,649	31,297	22%	0.22	0	0.772	0.144	0.285	0.285	**71.5%**
1929	16,934	4,059	2,773	6,832	5,383	27%	0.27	0	0.693	0.144	0.291	0.291	**70.9%**
1930	30,090	2,934	4,065	6,999	10,304	24%	0.24	0	0.700	0.144	0.280	0.280	**72.0%**
1931	8,762	1,692	1,645	3,337	2,327	31%	0.31	0	0.541	0.144	0.267	0.267	**73.3%**
1932	12,082	2,474	2,740	5,214	3,569	29%	0.29	0	0.623	0.144	0.281	0.281	**71.9%**
1933	10,393	294	4,336	4,630	2,937	30%	0.30	0	0.598	0.144	0.279	0.279	**72.1%**
1934	14,785	2,228	2,291	4,519	4,580	27%	0.27	0	0.593	0.144	0.267	0.267	**73.3%**
1935	24,918	4,225	6,982	11,207	8,369	25%	0.25	0	0.883	0.144	0.329	0.329	**67.1%**
1936	33,448	4,225	7,036	11,261	11,560	24%	0.24	0	0.885	0.144	0.323	0.323	**67.7%**
1937	38,456	4,104	4,002	8,106	13,433	24%	0.24	0	0.748	0.144	0.288	0.288	**71.2%**
1938	78,637	4,225	3,966	8,191	28,460	22%	0.22	0	0.752	0.144	0.281	0.281	**71.9%**
1939	16,390	2,678	3,988	6,666	5,180	27%	0.27	0	0.686	0.144	0.290	0.290	**71.0%**
1940	59,094	4,225	4,650	8,875	21,151	23%	0.23	0	0.782	0.144	0.290	0.290	**71.0%**
1941	58,575	4,225	3,846	8,071	20,957	23%	0.23	0	0.747	0.144	0.282	0.282	**71.8%**
1942	27,099	4,225	4,007	8,232	9,185	25%	0.25	0	0.754	0.144	0.295	0.295	**70.5%**
1943	64,601	4,225	4,056	8,281	23,211	23%	0.23	0	0.756	0.144	0.283	0.283	**71.7%**
1944	25,100	4,225	4,007	8,232	8,437	25%	0.25	0	0.754	0.144	0.297	0.297	**70.3%**
1945	27,033	4,225	4,134	8,359	9,160	25%	0.25	0	0.759	0.144	0.297	0.297	**70.3%**
1946	23,649	4,225	4,424	8,649	7,895	25%	0.25	0	0.772	0.144	0.303	0.303	**69.7%**
1947	22,506	4,225	3,974	8,199	7,467	25%	0.25	0	0.752	0.144	0.299	0.299	**70.1%**
1948	19,234	4,225	3,440	7,665	6,244	26%	0.26	0	0.729	0.144	0.297	0.297	**70.3%**
1949	41,715	3,779	7,115	10,894	14,651	24%	0.24	0	0.869	0.144	0.315	0.315	**68.5%**
1950	22,654	4,225	4,624	8,849	7,523	25%	0.25	0	0.781	0.144	0.306	0.306	**69.4%**
1951	29,827	4,225	4,699	8,924	10,205	24%	0.24	0	0.784	0.144	0.301	0.301	**69.9%**
1952	57,518	4,225	3,934	8,159	20,562	23%	0.23	0	0.751	0.144	0.283	0.283	**71.7%**
1953	24,893	3,438	4,111	7,549	8,360	25%	0.25	0	0.724	0.144	0.289	0.289	**71.1%**
1954	49,536	4,225	4,685	8,910	17,576	23%	0.23	0	0.783	0.144	0.293	0.293	**70.7%**
1955	17,670	4,225	3,031	7,256	5,659	26%	0.26	0	0.712	0.144	0.294	0.294	**70.6%**
1956	36,676	2,483	4,699	7,182	12,767	24%	0.24	0	0.708	0.144	0.279	0.279	**72.1%**
1957	44,377	4,225	4,384	8,609	15,647	23%	0.23	0	0.770	0.144	0.291	0.291	**70.9%**
1958	93,616	4,225	4,071	8,296	34,062	22%	0.22	0	0.757	0.144	0.281	0.281	**71.9%**
1959	23,365	4,225	3,044	7,269	7,789	25%	0.25	0	0.712	0.144	0.288	0.288	**71.2%**
1960	22,599	3,471	4,027	7,498	7,502	25%	0.25	0	0.722	0.144	0.291	0.291	**70.9%**
1961	20,944	3,499	4,557	8,056	6,883	26%	0.26	0	0.746	0.144	0.299	0.299	**70.1%**
1962	27,660	4,225	3,491	7,716	9,395	25%	0.25	0	0.732	0.144	0.289	0.289	**71.1%**
1963	32,645	4,225	4,586	8,811	11,259	24%	0.24	0	0.779	0.144	0.298	0.298	**70.2%**
1964	17,198	3,650	3,349	6,999	5,482	27%	0.27	0	0.700	0.144	0.292	0.292	**70.8%**
1965	21,381	4,225	4,289	8,514	7,046	26%	0.26	0	0.766	0.144	0.304	0.304	**69.6%**
1966	28,683	4,225	4,424	8,649	9,777	25%	0.25	0	0.772	0.144	0.298	0.298	**70.2%**
1967	54,488	4,225	3,283	7,508	19,429	23%	0.23	0	0.722	0.144	0.277	0.277	**72.3%**
1968	36,789	2,989	4,111	7,100	12,809	24%	0.24	0	0.705	0.144	0.278	0.278	**72.2%**
1969	45,319	3,650	3,251	6,901	15,999	23%	0.23	0	0.696	0.144	0.273	0.273	**72.7%**
1970	35,819	3,107	4,111	7,218	12,446	24%	0.24	0	0.710	0.144	0.280	0.280	**72.0%**
1971	50,896	4,225	4,699	8,924	18,085	23%	0.23	0	0.784	0.144	0.292	0.292	**70.8%**
1972	32,930	3,739	4,359	8,098	11,366	24%	0.24	0	0.748	0.144	0.290	0.290	**71.0%**
1973	47,552	4,225	4,452	8,677	16,834	23%	0.23	0	0.773	0.144	0.291	0.291	**70.9%**
1974	34,827	4,225	4,424	8,649	12,075	24%	0.24	0	0.772	0.144	0.295	0.295	**70.5%**
1975	75,998	4,225	4,685	8,910	27,473	23%	0.23	0	0.783	0.144	0.288	0.288	**71.2%**
1976	20,062	4,225	3,628	7,853	6,553	26%	0.26	0	0.737	0.144	0.298	0.298	**70.2%**
1977	7,538	789	1,253	2,042	1,869	32%	0.32	0	0.485	0.144	0.254	0.254	**74.6%**
1978	46,209	2,118	3,905	6,023	16,332	23%	0.23	0	0.658	0.144	0.264	0.264	**73.6%**
1979	32,593	4,225	4,007	8,232	11,240	24%	0.24	0	0.754	0.144	0.292	0.292	**70.8%**
1980	36,480	3,755	3,344	7,099	12,694	24%	0.24	0	0.705	0.144	0.278	0.278	**72.2%**
1981	32,501	2,988	4,111	7,099	11,205	24%	0.24	0	0.705	0.144	0.280	0.280	**72.0%**
1982	69,087	4,225	4,644	8,869	24,889	23%	0.23	0	0.782	0.144	0.289	0.289	**71.1%**
1983	81,934	2,042	2,628	4,670	29,693	22%	0.22	0	0.599	0.144	0.246	0.246	**75.4%**
1984	36,503	3,208	4,007	7,215	12,702	24%	0.24	0	0.710	0.144	0.279	0.279	**72.1%**
1985	21,803	4,225	4,622	8,847	7,204	26%	0.26	0	0.781	0.144	0.307	0.307	**69.3%**
1986	72,539	4,225	4,181	8,406	26,180	23%	0.23	0	0.761	0.144	0.284	0.284	**71.6%**
1987	29,552	2,343	4,135	6,478	10,102	24%	0.24	0	0.678	0.144	0.275	0.275	**72.5%**
1988	11,012	2,015	1,755	3,770	3,168	29%	0.29	0	0.560	0.144	0.266	0.266	**73.4%**
1989	42,478	4,225	6,956	11,181	14,937	24%	0.24	0	0.882	0.144	0.318	0.318	**68.2%**
1990	14,838	2,232	3,629	5,861	4,599	27%	0.27	0	0.651	0.144	0.283	0.283	**71.7%**
1991	29,675	4,225	7,078	11,303	10,148	24%	0.24	0	0.887	0.144	0.326	0.326	**67.4%**
1992	20,106	2,013	6,225	8,238	6,570	26%	0.26	0	0.754	0.144	0.302	0.302	**69.8%**

Formulas: Sacramento River Spring Run Young of Year Smolt Survival Model

C10 ='Study 467 Flow Data'!C7
D10 ='Study 467 Flow Data'!M7
E10 ='Study 467 Flow Data'!W7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.45*(0.133*C10+829)/(C10-G10))+(0.55*H10)
J10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
K10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*F10)
L10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!D7
R10 ='Study 467 Flow Data'!N7
S10 ='Study 467 Flow Data'!X7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*T10)
Z10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!E7
AF10 ='Study 467 Flow Data'!O7
AG10 ='Study 467 Flow Data'!Y7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
AM10 =(-0.5916024)+(0.017968*$BC$2)+(0.0000434*AH10)
AN10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

AS10 ='Study 467 Flow Data'!F7
AT10 ='Study 467 Flow Data'!P7
AU10 ='Study 467 Flow Data'!Z7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$G$2,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BA10 =IF(((-0.5916024)+(0.017968*$BC$3)+(0.0000434*AV10))>1,1,((-0.5916024)+(0.017968*$BC$3)+(0.00043
BB10 =-1.613493+(0.0319584*$BC$3)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =(AZ10+BC10-(AZ10*BC10))
BE10 =1-BD10

Study 469 Sacramento River Spring Run YOY Smolt Survival Model (continued)

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ
6	APRIL				Calculated										MAY				Calculated										JUNE				Calculated											
7	Sac				Sutter &									Calculated	Sac				Steamboat			USBR						Calculated	Sac				Steamboat			USBR						Calculated		
8	River		CVP + SWP		Steamboat		X-Channel	observed			Calculated Mortality			Survival	River		CVP + SWP & Sutter				X-channel	observed		Calculated Mortality				Survival	River		CVP + SWP & Sutter				X-channel	observed		Calculated Mortality				Survival		Weighted
9	Flows	CVP	SWP	exports	Slough Q	Percent	Closed	temp	m1	m2	m3	m23	m123	s123	Flows	CVP	SWP	Exports	Slough Q	Percent	Closed	temp f	m1	m2	m3	m23	m123	s123	Flow	CVP	SWP	exports	Slough Q	percent	closed	temp f	m1	m2	m3	m23	m123	s123		Total Survival
10	22,816	4,189	4,189	8,378	7,583	25%	0.25	58.5	0.002	0.823	0.256	0.400	0.401	**59.9%**	46,533	4,189	4,348	8,537	16,453	23%	0.23	61.2	0.116	0.879	0.342	0.467	0.529	**47.1%**	34,719	4,600	6,672	11,272	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**		**63.58%**
11	22,724	3,963	3,963	7,926	7,549	25%	0.25	58.3	0.000	0.800	0.250	0.389	0.389	**61.1%**	14,217	3,963	3,121	7,084	4,367	64%	0.47	62.4	0.166	0.837	0.381	0.597	0.664	**33.6%**	18,142	4,224	3,390	7,614	5,835	60%	0.45	65.3	0.288	0.912	0.473	0.671	0.766	**23.4%**		**62.36%**
12	8,072	1,395	1,395	2,790	2,069	32%	0.32	61.5	0.128	0.635	0.352	0.442	0.513	**48.7%**	8,353	1,395	377	1,772	2,174	73%	0.55	69.2	0.452	0.729	0.598	0.669	0.819	**18.1%**	10,222	504	495	999	2,873	69%	0.51	70.6	0.511	0.720	0.643	0.683	0.845	**15.5%**		**56.32%**
13	22,651	3,475	3,475	6,950	7,521	25%	0.25	59.1	0.027	0.772	0.275	0.401	0.418	**58.2%**	12,068	3,475	2,527	6,002	3,563	66%	0.49	63.2	0.200	0.804	0.406	0.602	0.682	**31.8%**	16,259	3,472	2,845	6,317	5,131	62%	0.46	68.3	0.414	0.910	0.569	0.726	0.839	**16.1%**		**59.81%**
14	21,513	3,336	3,336	6,672	7,096	26%	0.26	61.6	0.133	0.805	0.355	0.470	0.540	**46.0%**	13,594	3,336	2,440	5,776	4,134	64%	0.48	65.7	0.305	0.840	0.486	0.655	0.760	**24.0%**	15,230	3,583	2,494	6,077	4,746	62%	0.47	71.2	0.536	0.951	0.662	0.797	0.906	**9.4%**		**54.87%**
15	48,222	4,042	4,042	8,084	17,085	23%	0.23	56.8	0.000	0.780	0.202	0.336	0.336	**66.4%**	26,781	4,042	4,161	8,203	9,066	25%	0.25	62.6	0.175	0.889	0.387	0.512	0.597	**40.3%**	18,893	4,600	3,745	8,345	6,116	60%	0.45	68.1	0.406	0.994	0.563	0.755	0.855	**14.5%**		**63.74%**
16	29,212	3,681	3,681	7,362	9,975	25%	0.25	58.7	0.011	0.783	0.262	0.390	0.396	**60.4%**	20,657	3,681	3,389	7,070	6,776	59%	0.44	66.6	0.343	0.912	0.515	0.689	0.796	**20.4%**	13,766	3,016	2,669	5,685	4,198	64%	0.48	69.7	0.473	0.907	0.614	0.754	0.870	**13.0%**		**59.24%**
17	8,536	646	1,827	2,473	2,242	31%	0.31	56.3	0.000	0.527	0.186	0.292	0.292	**70.8%**	9,842	646	117	763	2,731	70%	0.52	66.1	0.322	0.629	0.499	0.567	0.706	**29.4%**	10,987	3,025	96	3,121	3,159	68%	0.50	70.1	0.490	0.803	0.627	0.716	0.855	**14.5%**		**62.81%**
18	12,640	1,956	1,956	3,912	3,777	28%	0.28	59.6	0.048	0.649	0.291	0.393	0.422	**57.8%**	12,030	1,956	1,774	3,730	3,549	66%	0.49	63.1	0.196	0.704	0.403	0.551	0.639	**36.1%**	18,122	4,274	2,680	6,954	5,828	60%	0.45	69.6	0.469	0.961	0.611	0.768	0.877	**12.3%**		**60.99%**
19	9,199	1,484	1,484	2,968	2,490	31%	0.31	62.8	0.183	0.666	0.393	0.477	0.573	**42.7%**	10,085	1,484	1,372	2,856	2,822	69%	0.52	70.5	0.507	0.799	0.640	0.722	0.863	**13.7%**	12,717	2,149	1,394	3,543	3,806	65%	0.49	70.7	0.515	0.833	0.646	0.737	0.872	**12.8%**		**54.27%**
20	13,081	2,482	2,891	5,373	3,942	28%	0.28	58.9	0.019	0.700	0.269	0.390	0.402	**59.8%**	12,015	2,482	2,417	4,899	3,544	66%	0.49	65.5	0.297	0.798	0.480	0.637	0.744	**25.6%**	19,291	3,607	4,047	7,654	6,265	59%	0.44	69.5	0.465	0.989	0.608	0.777	0.881	**11.9%**		**58.93%**
21	12,734	2,062	2,062	4,124	3,813	28%	0.28	60.1	0.069	0.667	0.307	0.409	0.450	**55.0%**	7,967	2,062	1,069	3,131	2,030	75%	0.55	63.7	0.221	0.689	0.422	0.570	0.665	**33.5%**	11,108	1,939	273	2,212	3,204	68%	0.50	69.8	0.478	0.759	0.617	0.688	0.837	**16.3%**		**60.17%**
22	12,849	1,789	1,789	3,578	3,856	28%	0.28	63.6	0.217	0.706	0.419	0.500	0.608	**39.2%**	8,879	1,789	1,018	2,807	2,371	72%	0.54	68.3	0.414	0.757	0.569	0.670	0.807	**19.3%**	14,515	4,023	1,325	5,348	4,479	63%	0.47	70.7	0.515	0.911	0.646	0.771	0.889	**11.1%**		**53.97%**
23	24,199	4,317	4,317	8,634	8,100	25%	0.25	58.9	0.019	0.841	0.269	0.413	0.424	**57.6%**	28,890	4,317	2,730	7,047	9,855	25%	0.25	64	0.234	0.864	0.432	0.538	0.646	**35.4%**	17,873	4,090	3,736	7,826	5,735	60%	0.45	71	0.528	1.000	0.656	0.811	0.911	**8.9%**		**59.48%**
24	21,281	4,185	4,185	8,370	7,009	26%	0.26	59.7	0.053	0.844	0.294	0.435	0.465	**53.5%**	14,094	4,185	3,157	7,342	4,321	64%	0.47	64.9	0.271	0.893	0.461	0.666	0.757	**24.3%**	19,053	4,600	3,356	7,956	6,176	60%	0.45	69.2	0.452	0.997	0.598	0.776	0.877	**12.3%**		**56.30%**
25	23,507	3,030	4,975	8,005	7,842	25%	0.25	58.8	0.015	0.812	0.266	0.404	0.412	**58.8%**	16,191	3,030	4,061	7,091	5,105	62%	0.46	64.5	0.255	0.875	0.448	0.644	0.735	**26.5%**	18,142	3,032	4,622	7,654	5,835	60%	0.45	69.7	0.473	0.993	0.614	0.784	0.886	**11.4%**		**59.20%**
26	47,172	4,034	4,377	8,411	16,692	23%	0.23	56.3	0.000	0.785	0.186	0.325	0.325	**67.5%**	57,429	4,034	5,445	9,479	20,528	23%	0.23	62.5	0.170	0.943	0.384	0.512	0.595	**40.5%**	35,517	4,600	6,672	11,272	12,333	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**		**65.35%**
27	12,230	2,073	2,073	4,146	3,624	29%	0.29	63.3	0.204	0.726	0.409	0.500	0.602	**39.8%**	8,576	2,073	1,738	3,811	2,257	73%	0.54	68	0.402	0.796	0.560	0.687	0.813	**18.7%**	18,580	4,310	3,082	7,392	5,999	60%	0.45	71	0.528	1.000	0.656	0.810	0.910	**9.0%**		**53.66%**
28	41,731	4,139	4,139	8,278	14,657	24%	0.24	57.4	0.000	0.799	0.221	0.357	0.357	**64.3%**	18,267	4,139	3,273	7,412	5,882	60%	0.45	65.6	0.301	0.909	0.483	0.674	0.772	**22.8%**	15,339	4,080	3,097	7,177	4,787	62%	0.47	71.5	0.549	1.000	0.672	0.824	0.921	**7.9%**		**59.29%**
29	42,372	4,600	4,708	9,308	14,897	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**	39,485	4,600	5,119	9,719	13,817	24%	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**	20,808	4,600	6,298	10,898	6,832	59%	0.44	69	0.444	1.000	0.592	0.770	0.872	**12.8%**		**63.91%**
30	43,308	4,459	4,459	8,918	15,247	23%	0.23	56.5	0.000	0.811	0.192	0.337	0.337	**66.3%**	36,037	4,459	4,348	8,807	12,528	24%	0.24	60.1	0.069	0.870	0.307	0.442	0.481	**51.9%**	27,117	4,600	6,672	11,272	9,192	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**		**66.58%**
31	29,406	4,600	4,858	9,458	10,048	24%	0.24	58.8	0.015	0.875	0.266	0.415	0.424	**57.6%**	21,072	4,600	4,171	8,771	6,931	58%	0.44	65.4	0.292	0.964	0.477	0.690	0.780	**22.0%**	16,854	4,600	3,142	7,742	5,353	61%	0.46	66.6	0.343	0.941	0.515	0.709	0.809	**19.1%**		**59.76%**
32	9,823	2,122	2,122	4,244	2,724	30%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	**63.0%**	8,907	2,122	1,870	3,992	2,381	72%	0.53	65.9	0.313	0.766	0.493	0.639	0.752	**24.8%**	18,211	4,165	3,178	7,343	5,861	60%	0.45	67.8	0.393	0.945	0.553	0.729	0.836	**16.4%**		**60.57%**
33	11,753	3,129	3,129	6,258	3,446	29%	0.29	60.6	0.090	0.769	0.323	0.452	0.501	**49.9%**	13,218	3,129	2,620	5,749	3,994	65%	0.48	63.1	0.196	0.792	0.403	0.590	0.670	**33.0%**	16,669	3,384	3,790	7,174	5,284	61%	0.46	70.6	0.511	0.988	0.643	0.801	0.903	**9.7%**		**58.00%**
34	12,226	2,980	2,980	5,960	3,623	29%	0.29	60.7	0.095	0.758	0.326	0.449	0.502	**49.8%**	13,701	2,980	2,637	5,617	4,174	64%	0.48	63.9	0.229	0.800	0.429	0.606	0.696	**30.4%**	16,283	3,368	3,600	6,968	5,140	62%	0.46	68.1	0.406	0.934	0.563	0.734	0.842	**15.8%**		**58.10%**
35	13,800	2,455	2,455	4,910	4,211	28%	0.28	62.5	0.170	0.744	0.384	0.484	0.572	**42.8%**	8,857	2,455	1,735	4,190	2,363	72%	0.54	68.7	0.431	0.825	0.582	0.712	0.836	**16.4%**	18,825	4,307	2,950	7,257	6,091	60%	0.45	70	0.486	0.981	0.624	0.783	0.889	**11.1%**		**53.32%**
36	23,043	3,410	3,410	6,820	7,668	25%	0.25	56.6	0.000	0.721	0.195	0.329	0.329	**67.1%**	28,843	3,410	3,838	7,248	9,837	25%	0.25	62.3	0.162	0.842	0.378	0.492	0.574	**42.6%**	23,258	4,600	4,527	9,127	7,748	57%	0.43	69	0.444	1.000	0.592	0.767	0.870	**13.0%**		**64.16%**
37	13,210	2,544	2,544	5,088	3,991	28%	0.28	61.7	0.137	0.738	0.358	0.465	0.538	**46.2%**	14,912	2,544	2,380	4,924	4,627	63%	0.47	65.2	0.284	0.794	0.470	0.622	0.729	**27.1%**	17,091	3,639	3,154	6,793	5,442	61%	0.45	70.9	0.524	0.977	0.652	0.800	0.905	**9.5%**		**55.11%**
38	19,276	3,125	3,125	6,250	6,259	26%	0.26	61.3	0.120	0.781	0.346	0.459	0.524	**47.6%**	13,818	3,125	2,636	5,761	4,218	64%	0.48	64.3	0.246	0.814	0.441	0.619	0.713	**28.7%**	20,291	4,600	3,531	8,131	6,639	59%	0.44	68.9	0.440	0.999	0.588	0.769	0.871	**12.9%**		**56.06%**
39	14,778	3,185	3,185	6,370	4,577	27%	0.27	59.9	0.061	0.761	0.301	0.427	0.462	**53.8%**	18,827	3,185	3,564	6,749	6,091	60%	0.45	64.4	0.250	0.858	0.445	0.629	0.722	**27.8%**	17,641	4,600	2,825	7,425	5,648	61%	0.45	70.3	0.499	0.994	0.633	0.796	0.898	**10.2%**		**58.30%**
40	56,648	4,600	4,166	8,766	20,236	23%	0.23	55.5	0.000	0.786	0.160	0.304	0.304	**69.6%**	59,563	4,600	5,270	9,870	21,327	23%	0.23	61.7	0.137	0.945	0.358	0.493	0.562	**43.8%**	38,968	4,600	6,672	11,272	13,624	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**		**66.81%**
41	16,177	2,825	2,825	5,650	5,100	27%	0.27	58.8	0.015	0.710	0.266	0.385	0.394	**60.6%**	26,868	2,825	3,838	6,663	9,099	25%	0.25	60.9	0.103	0.792	0.333	0.447	0.504	**49.6%**	25,885	4,600	5,781	10,381	8,731	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**		**65.01%**
42	39,868	3,681	3,681	7,362	13,961	24%	0.24	58.4	0.000	0.777	0.253	0.377	0.377	**62.3%**	25,396	3,681	4,439	8,120	8,548	25%	0.25	65.9	0.313	0.945	0.493	0.606	0.729	**27.1%**	14,239	3,285	2,742	6,027	4,375	63%	0.47	68.7	0.431	0.904	0.582	0.735	0.849	**15.1%**		**60.91%**
43	9,473	1,836	1,836	3,672	2,593	30%	0.30	56.4	0.000	0.581	0.189	0.308	0.308	**69.2%**	11,273	1,836	1,977	3,813	3,266	67%	0.50	66.9	0.356	0.776	0.525	0.651	0.775	**22.5%**	18,101	4,054	3,022	7,076	5,820	60%	0.45	70.1	0.490	0.975	0.627	0.783	0.890	**11.0%**		**61.17%**
44	20,437	3,991	3,991	7,982	6,693	26%	0.26	59.7	0.053	0.828	0.294	0.432	0.462	**53.8%**	39,005	3,991	4,367	8,358	13,638	24%	0.24	61.4	0.124	0.874	0.349	0.473	0.539	**46.1%**	22,306	4,600	6,672	11,272	7,392	58%	0.43	68.7	0.431	1.000	0.582	0.763	0.865	**13.5%**		**62.03%**
45	21,193	3,219	3,219	6,438	6,976	26%	0.26	60.5	0.086	0.775	0.320	0.437	0.485	**51.5%**	16,822	3,219	2,982	6,201	5,341	61%	0.46	64	0.234	0.827	0.432	0.612	0.703	**29.7%**	19,113	4,499	3,464	7,963	6,198	60%	0.44	72	0.570	1.000	0.688	0.827	0.925	**7.5%**		**57.88%**
46	52,284	4,600	5,062	9,662	18,604	23%	0.23	57.4	0.000	0.859	0.221	0.368	0.368	**63.2%**	43,486	4,600	6,083	10,683	15,314	23%	0.23	62.9	0.187	1.000	0.397	0.538	0.625	**37.5%**	33,938	4,600	6,672	11,272	11,743	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**		**63.66%**
47	10,494	1,894	1,894	3,788	2,975	30%	0.30	63	0.191	0.705	0.400	0.490	0.588	**41.2%**	9,424	1,894	1,844	3,738	2,575	71%	0.53	65.9	0.313	0.755	0.493	0.631	0.746	**25.4%**	17,916	4,193	2,990	7,183	5,751	60%	0.45	72.1	0.574	1.000	0.691	0.830	0.928	**7.2%**		**55.06%**
48	13,548	300	3,731	4,031	4,117	28%	0.28	59.5	0.044	0.652	0.288	0.390	0.417	**58.3%**	10,915	300	1,678	1,978	3,132	68%	0.51	65.9	0.313	0.678	0.493	0.586	0.716	**28.4%**	18,219	4,360	2,695	7,055	5,864	60%	0.45	72.7	0.600	1.000	0.710	0.840	0.936	**6.4%**		**58.57%**
49	12,785	301	3,240	3,541	3,832	28%	0.28	60.1	0.069	0.642	0.307	0.402	0.443	**55.7%**	9,232	301	1,500	1,801	2,503	71%	0.53	64.3	0.246	0.642	0.441	0.548	0.659	**34.1%**	19,790	4,546	3,004	7,550	6,451	59%	0.44	73.2	0.621	1.000	0.726	0.847	0.942	**5.8%**		**58.58%**
50	15,418	2,793	2,793	5,586	4,816	27%	0.27	61.8	0.141	0.761	0.362	0.470	0.545	**45.5%**	14,739	2,793	2,662	5,455	4,562	63%	0.47	64.8	0.267	0.809	0.457	0.623	0.724	**27.6%**	17,152	3,943	2,879	6,822	5,465	61%	0.45	70.4	0.503	0.969	0.636	0.788	0.894	**10.6%**		**55.66%**
51	69,458	4,042	4,042	8,084	25,027	23%	0.23	53.7	0.000	0.724	0.103	0.243	0.243	**75.7%**	29,094	4,042	4,161	8,203	9,931	25%	0.25	62.5	0.170	0.887	0.384	0.507	0.591	**40.9%**	19,560	4,600	4,020	8,620	6,365	59%	0.44	69	0.444	1.000	0.592	0.773	0.874	**12.6%**		**65.32%**
52	8,953	1,756	1,756	3,512	2,398	31%	0.31	59.3	0.036	0.626	0.282	0.388	0.410	**59.0%**	10,299	1,756	1,873	3,629	2,902	69%	0.51	65.2	0.284	0.737	0.470	0.607	0.719	**28.1%**	18,019	4,168	2,847	7,015	5,789	60%	0.45	69.5	0.465	0.962	0.608	0.767	0.875	**12.5%**		**59.85%**
53	45,179	4,270	4,270	8,540	15,947	23%	0.23	56.9	0.000	0.801	0.205	0.344	0.344	**65.6%**	24,460	4,270	4,755	9,025	8,198	57%	0.43	63.6	0.217	0.943	0.419	0.642	0.720	**28.0%**	18,160	4,600	3,711	8,311	5,842	60%	0.45	67.1	0.364	0.975	0.531	0.730	0.829	**17.1%**		**61.26%**
54	12,803	2,488	2,488	4,976	3,838	28%	0.28	61.9	0.145	0.737	0.365	0.470	0.547	**45.3%**	14,928	2,488	2,386	4,874	4,633	63%	0.47	67.3	0.372	0.829	0.537	0.674	0.795	**20.5%**	15,565	3,624	2,614	6,238	4,871	62%	0.46	70.4	0.503	0.944	0.636	0.779	0.890	**11.0%**		**54.96%**
55	39,925	4,600	4,949	9,549	13,982	24%	0.24	53.8	0.000	0.790	0.106	0.268	0.268	**73.2%**	44,790	4,600	5,445	10,045	15,801	23%	0.23	62.1	0.154	0.960	0.371	0.509	0.584	**41.6%**	39,345	4,600	6,672	11,272	13,765	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**		**67.11%**
56	15,621	2,624	2,624	5,248	4,892	27%	0.27	61.5	0.128	0.741	0.352	0.457	0.527	**47.3%**	9,379	2,624	1,827	4,451	2,558	71%	0.53	66.1	0.322	0.789	0.499	0.652	0.764	**23.6%**	17,390	4,219	2,811	7,030	5,554	61%	0.45	72	0.570	1.000	0.688	0.829	0.927	**7.3%**		**56.85%**
57	44,787	3,340	4,166	7,506	15,800	23%	0.23	56.4	0.000	0.748	0.189	0.320	0.320	**68.0%**	45,533	3,340	5,026	8,366	16,079	23%	0.23	63.2	0.200	0.907	0.406	0.523	0.619	**38.1%**	24,130	4,600	6,643	11,243	8,075	57%	0.43	68.3	0.414	1.000	0.569	0.753	0.855	**14.5%**		**64.82%**
58	16,604	3,300	3,300	6,600	5,260	27%	0.27	58.8	0.015	0.751	0.266	0.396	0.405	**59.5%**	12,155	3,300	2,958	6,258	3,596	66%	0.49	68.6	0.427	0.913	0.579	0.743	0.853	**14.7%**	15,514	4,183	2,621	6,804	4,852	62%	0.46	70.7	0.515	0.974	0.646	0.798	0.902	**9.8%**		**59.10%**
59	21,954	3,298	3,298	6,596	7,261	26%	0.26	58.7	0.011	0.749	0.262	0.387	0.393	**60.7%**	29,401	3,298	3,838	7,136	10,046	24%	0.24	61	0.107	0.814	0.336	0.453	0.512	**48.8%**	23,634	4,600	5,034	9,634	7,889	57%	0.43	68.1	0.406	1.000	0.563	0.750	0.852	**14.8%**		**63.89%**
60	12,452	2,349	2,349	4,698	3,707	28%	0.28	58.5	0.002	0.663	0.256	0.372	0.373	**62.7%**	10,802	2,349	1,942	4,291	3,090	68%	0.51	67.3	0.372	0.804	0.537	0.672	0.794	**20.6%**	17,121	4,098	2,708	6,806	5,453	61%	0.45	70.7	0.515	0.974	0.646	0.795	0.901	**9.9%**		**59.34%**
61	19,512	3,721	3,721	7,442	6,347	26%	0.26	61.3	0.120	0.833	0.346	0.472	0.536	**46.4%**	15,751	3,721	3,255	6,976	4,941	62%	0.46	66.9	0.356	0.913	0.525	0.704	0.810	**19.0%**	19,428	2,459	5,585	8,044	6,316	59%	0.44	70.1	0.490	1.000	0.627	0.792	0.894	**10.6%**		**55.45%**
62	33,208	4,600	4,720	9,320	11,470	24%	0.24	56.8	0.000	0.833	0.202	0.354	0.354	**64.6%**	26,945	4,600	4,348	8,948	9,127	25%	0.25	63.4	0.208	0.936	0.413	0.542	0.638	**36.2%**	21,622	4,600	4,929	9,529	7,137	58%	0.43	69.7	0.473	1.000	0.614	0.782	0.885	**11.5%**		**62.79%**
63	25,763	4,383	4,383	8,766	8,685	25%	0.25	56.8	0.000	0.809	0.202	0.353	0.353	**64.7%**	28,542	4,383	4,348	8,731	9,725	25%	0.25	63.8	0.225	0.934	0.425	0.550	0.652	**34.8%**	24,787	4,600	6,672	11,272	8,320	57%	0.43	69.1	0.448	1.000	0.595	0.767	0.871	**12.9%**		**62.65%**
64	9,434	635	2,367	3,002	2,578	30%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**	10,074	635	1,568	2,203	2,818	69%	0.52	69.6	0.469	0.755	0.611	0.685	0.833	**16.7%**	19,366	4,450	2,946	7,396	6,293	59%	0.44	71.8	0.562	1.000	0.681	0.823	0.922	**7.8%**		**58.15%**
65	9,148	1,044	1,952	2,996	2,471	31%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	**36.3%**	6,994	1,044	441	1,485	1,666	78%	0.58	64	0.234	0.623	0.432	0.542	0.649	**35.1%**	9,579	42	380	422	2,633	70%	0.52	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**		**57.13%**
66	38,698	3,444	4,074	7,518	13,523	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**	21,056	3,444	4,103	7,547	6,925	58%	0.44	63	0.191	0.868	0.400	0.604	0.680	**32.0%**	16,475	4,600	3,904	8,504	5,212	61%	0.46	70	0.486	1.000	0.624	0.796	0.895	**10.5%**		**62.98%**
67	17,702	3,426	3,426	6,852	5,671	26%	0.26	59.8	0.057	0.780	0.298	0.425	0.458	**54.2%**	12,566	3,426	3,000	6,426	3,750	65%	0.49	63.8	0.225	0.834	0.425	0.625	0.709	**29.1%**	19,425	2,828	5,221	8,049	6,315	59%	0.44	69.2	0.452	1.000	0.598	0.776	0.878	**12.2%**		**59.10%**
68	19,818	2,994	3,952	6,946	6,462	26%	0.26	57.1	0.000	0.736	0.211	0.347	0.347	**65.3%**	14,777	2,994	3,886	6,880	4,577	63%	0.47	63.6	0.217	0.850	0.419	0.621	0.703	**29.7%**	16,268	4,600	4,070	8,670	5,134	62%	0.46	66.9	0.356	0.987	0.525	0.737	0.831	**16.9%**		**62.84%**
69	16,998	2,725	2,725	5,450	5,407	27%	0.27	61.5	0.128	0.750	0.352	0.458	0.528	**47.2%**	8,752	2,725	1,752	4,477	2,323	72%	0.54	66.7	0.347	0.801	0.518	0.670	0.785	**21.5%**	18,074	4,296	2,892	7,188	5,810	60%	0.45	71.9	0.566	1.000	0.684	0.826	0.925	**7.5%**		**56.29%**
70	75,838	3,604	5,569	9,173	27,413	23%	0.23	54.1	0.000	0.779	0.115	0.265	0.265	**73.5%**	38,429	3,604	6,684	10,288	13,422	24%	0.24	61.1	0.112	0.953	0.339	0.485	0.542	**45.8%**	24,415	4,600	6,672	11,272	8,181	57%	0.43	66	0.318	1.000	0.496	0.711	0.803	**19.7%**		**67.09%**
71	68,301	3,314	3,649	6,963	24,595	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**	54,514	3,314	3,590	6,904	19,438	23%	0.23	60.1	0.069	0.788	0.307	0.418	0.458	**54.2%**	55,568	4,600	4,685	9,285	19,832	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**		**71.43%**
72	17,869	3,422	3,422	6,844	5,733	26%	0.26	59.7	0.053	0.778	0.294	0.422	0.453	**54.7%**	13,412	3,422	3,066	6,488	4,066	64%	0.48	66.5	0.339	0.885	0.512	0.691	0.796	**20.4%**	18,436	4,397	3,354	7,751	5,945	60%	0.45	68.4	0.419	0.974	0.572	0.752	0.856	**14.4%**		**59.24%**
73	13,328	2,125	2,125	4,250	4,035	28%	0.28	60.8	0.099	0.685	0.330	0.429	0.486	**51.4%**	13,144	2,125	2,121	4,246	3,966	65%	0.48	65.8	0.309	0.775	0.489	0.627	0.742	**25.8%**	16,635	3,903	2,619	6,522	5,271	61%	0.46	69.4	0.461	0.938	0.604	0.757	0.869	**13.1%**		**56.98%**
74	20,778	2,338	5,215	7,553	6,821	26%	0.26	60.4	0.082	0.821	0.317	0.447	0.492	**50.8%**	13,127	2,338	5,465	7,803	3,959	65%	0.48	66.2	0.326	0.937	0.502	0.712	0.806	**19.4%**	12,785	3,973	3,843	7,816	3,832	65%	0.49	71.6	0.553	1.000	0.675	0.833	0.925	**7.5%**		**55.82%**
75	12,368	323	3,171	3,494	3,676	28%	0.28	65.7	0.305	0.741	0.486	0.559	0.693	**30.7%**	8,452	323	1,419	1,742	2,211	73%	0.54	70.5	0.507	0.751	0.640	0.700	0.852	**14.8%**	20,311	4,600	3,140	7,740	6,646	59%	0.44	73.2	0.621	1.000	0.726	0.846	0.942	**5.8%**		**51.13%**
76	8,620	1,425	1,425	2,850	2,274	31%	0.31	59.9	0.061	0.608	0.301	0.397	0.433	**56.7%**	9,766	1,425	1,533	2,958	2,702	70%	0.52	65.8	0.309	0.719	0.489	0.609	0.730	**27.0%**	14,853	4,479	1,305	5,784	4,605	63%	0.47	69.4	0.461	0.906	0.604	0.746	0.863	**13.7%**		**59.85%**
77	23,637	2,825	2,825	5,650	7,890	25%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	**48.0%**	14,331	2,825	1,968	4,793	4,410	63%	0.47	64.7	0.263	0.779	0.454	0.608	0.711	**28.9%**	16,869	4,065	2,490	6,555	5,359	61%	0.46	68.6	0.427	0.925	0.579	0.737	0.849	**15.1%**		**57.36%**
78	12,441	1,767	1,767	3,534	3,703	28%	0.28	61.6	0.133	0.669	0.355	0.444	0.518	**48.2%**	7,684	1,767	1,372	3,139	1,924	75%	0.56	66.4	0.335	0.738	0.509	0.637	0.758	**24.2%**	19,632	4,531	2,908	7,439	6,392	59%	0.44	68.5	0.423	0.962	0.576	0.747	0.854	**14.6%**		**56.74%**
79	15,284	2,079	2,170	4,249	4,766	27%	0.27	60.8	0.099	0.685	0.330	0.426	0.483	**51.7%**	8,690	2,079	1,422	3,501	2,300	73%	0.54	65.7	0.305	0.741	0.486	0.623	0.738	**26.2%**	10,619	1,907	1,209	3,116	3,022	68%	0.51	69.4	0.461	0.791	0.604	0.699	0.838	**16.2%**		**58.28%**
80	12,474	1,866	1,866	3,732	3,715	28%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	**49.9%**	8,983	1,866	1,005	2,871	2,410	72%	0.53	66	0.318	0.719	0.496	0.615	0.737	**26.3%**	14,033	3,831	1,326	5,157	4,298	64%	0.47	69	0.444	0.872	0.592	0.725	0.847	**15.3%**		**57.17%**
81																																											**Average:**	**59.78%**

85	BG10 ='Study 467 Flow Data'!G7	BV10 ='Study 467 Flow Data'!H7	CK10 ='Study 467 Flow Data'!I7
86	BH10 ='Study 467 Flow Data'!Q7	BW10 ='Study 467 Flow Data'!R7	CL10 ='Study 467 Flow Data'!S7
87	BI10 ='Study 467 Flow Data'!AA7	BX10 ='Study 467 Flow Data'!AB7	CM10 ='Study 467 Flow Data'!AC7
88	BJ10 =(BH10+BI10)	BY10 =(BW10+BX10)	CN10 =(CL10+CM10)
89	BK10 =0.374*BG10-950	BZ10 =0.374*BV10-950	CO10 =0.374*CK10-950
90	BL10 =IF(BG10>$G$2,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))	CA10 =IF(BV10>$K$4,(0.133*BV10+829)/(BV10-BZ10),(0.293*BV10+2090)/(BV10-BZ10))	CP10 =IF(CK10>$K$4,(0.133*CK10+829)/(CK10-CO10),(0.293*CK10+2090)/(CK10-CO10))
91	BM10 =(0.133*BG10+829)/(BG10-BK10)	CB10 =(0.45*(0.133*BV10+829)/(BV10-BZ10))+(0.55*CA10)	CQ10 =(0.45*(0.133*CK10+829)/(CK10-CO10))+(0.55*CP10)
92	BN10	CC10	CR10
93	BO10 =IF((-2.45925+(0.0420748*BN10))<0,0,(-2.45925+(0.0420748*BN10)))	CD10 =IF((-2.45925+(0.0420748*CC10))<0,0,(-2.45925+(0.0420748*CC10)))	CS10 =IF((-2.45925+(0.0420748*CR10))<0,0,(-2.45925+(0.0420748*CR10)))
94	BP10 =IF(((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10))>1,1,((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10)	CE10 =IF(((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10))>1,1,((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10)))	CT10 =IF(((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10))>1,1,((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10)))
95	BQ10 =-1.613493+(0.0319584*BN10)	CF10 =-1.613493+(0.0319584*CC10)	CU10 =-1.613493+(0.0319584*CR10)
96	BR10 =(BP10*BM10)+(BQ10*(1-BM10))	CG10 =(CE10*CB10)+(CF10*(1-CB10))	CV10 =(CT10*CQ10)+(CU10*(1-CQ10))
97	BS10 =BO10+BR10-(BO10*BR10)	CH10 =CD10+CG10-(CD10*CG10)	CW10 =CS10+CV10-(CS10*CV10)
98	BT10 =1-BS10	CI10 =1-CH10	CX10 =1-CW10
99			CZ10 =(0.01*O10)+(0.06*AC10)+(0.17*AQ10)+(0.28*BE10)+(0.25*BT10)+(0.16*CI10)+(0.07*CX10)

Study 501 Sacramento River Spring Run YOY Smolt Survival Model

Modified m2 by changing the slope to 0.0000434

Cross Channel closed for 45 consecutive days, Dec 18-Jan 31

Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

December Sacramento River Temp: 47 degrees F

January Sacramento River Temp: 47 degrees F

Cross Channel Closed Over 25000 cfs

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

February Water Temp 50 F

March Water Temp 55 F

DECEMBER

Year	Water Year Type	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	A	17,143	4,207	7,100	11,307	5,461	61%	0.45	0	0.744	0.000	0.338	0.338	**66.2%**
1923	B	34,539	4,207	4,844	9,051	11,968	24%	0.24	0	0.646	0.000	0.155	0.155	**84.5%**
1924	C	13,868	3,434	6,922	10,356	4,237	64%	0.48	0	0.702	0.000	0.335	0.335	**66.5%**
1925	D	11,248	4,207	4,848	9,055	3,257	67%	0.50	0	0.646	0.000	0.324	0.324	**67.6%**
1926	D	11,366	4,207	3,073	7,280	3,301	67%	0.50	0	0.569	0.000	0.285	0.285	**71.5%**
1927	W	14,304	4,207	6,995	11,202	4,400	63%	0.47	0	0.739	0.000	0.350	0.350	**65.0%**
1928	A	16,574	4,207	6,899	11,106	5,249	61%	0.46	0	0.735	0.000	0.336	0.336	**66.4%**
1929	C	13,711	4,207	6,190	10,397	4,178	64%	0.48	0	0.704	0.000	0.336	0.336	**66.4%**
1930	D	14,442	4,207	6,300	10,507	4,451	63%	0.47	0	0.709	0.000	0.335	0.335	**66.5%**
1931	C	9,310	2,194	2,958	5,152	2,532	71%	0.53	0	0.476	0.000	0.252	0.252	**74.8%**
1932	D	14,650	4,207	7,194	11,401	4,529	63%	0.47	0	0.748	0.000	0.352	0.352	**64.8%**
1933	C	8,632	2,464	2,503	4,967	2,278	73%	0.54	0	0.468	0.000	0.253	0.253	**74.7%**
1934	C	12,474	4,166	5,542	9,708	3,715	66%	0.49	0	0.674	0.000	0.329	0.329	**67.1%**
1935	B	8,503	3,216	3,394	6,610	2,230	73%	0.54	0	0.540	0.000	0.293	0.293	**70.7%**
1936	B	10,625	4,207	3,038	7,245	3,024	68%	0.51	0	0.567	0.000	0.289	0.289	**71.1%**
1937	B	12,454	4,207	5,583	9,790	3,708	66%	0.49	0	0.678	0.000	0.331	0.331	**66.9%**
1938	W	45,730	4,207	7,531	11,738	16,153	23%	0.23	0	0.762	0.000	0.178	0.178	**82.2%**
1939	D	18,684	4,207	3,735	7,942	6,038	60%	0.45	0	0.598	0.000	0.267	0.267	**73.3%**
1940	A	7,841	1,432	2,676	4,108	1,983	75%	0.56	0	0.431	0.000	0.240	0.240	**76.0%**
1941	W	36,071	4,207	7,338	11,545	12,541	24%	0.24	0	0.754	0.000	0.180	0.180	**82.0%**
1942	W	65,619	4,207	3,608	7,815	23,592	23%	0.23	0	0.592	0.000	0.135	0.135	**86.5%**
1943	W	28,806	4,207	3,779	7,986	9,823	25%	0.25	0	0.599	0.000	0.147	0.147	**85.3%**
1944	D	13,774	4,207	6,423	10,630	4,201	64%	0.48	0	0.714	0.000	0.341	0.341	**65.9%**
1945	B	15,826	4,207	6,967	11,174	4,969	62%	0.46	0	0.738	0.000	0.341	0.341	**65.9%**
1946	B	54,779	4,207	7,592	11,799	19,537	23%	0.23	0	0.765	0.000	0.176	0.176	**82.4%**
1947	D	18,132	4,207	7,137	11,344	5,831	60%	0.45	0	0.745	0.000	0.335	0.335	**66.5%**
1948	B	9,637	2,471	3,162	5,633	2,654	70%	0.52	0	0.497	0.000	0.260	0.260	**74.0%**
1949	D	15,563	4,207	6,898	11,105	4,871	62%	0.46	0	0.735	0.000	0.341	0.341	**65.9%**
1950	B	11,113	4,207	3,114	7,321	3,206	68%	0.50	0	0.571	0.000	0.287	0.287	**71.3%**
1951	A	68,100	4,207	7,592	11,799	24,519	23%	0.23	0	0.765	0.000	0.174	0.174	**82.6%**
1952	W	45,652	4,207	7,105	11,312	16,124	23%	0.23	0	0.744	0.000	0.174	0.174	**82.6%**
1953	W	42,331	4,207	3,742	7,949	14,882	24%	0.24	0	0.598	0.000	0.141	0.141	**85.9%**
1954	A	14,919	4,207	3,897	8,104	4,630	63%	0.47	0	0.605	0.000	0.283	0.283	**71.7%**
1955	D	26,020	4,207	6,909	11,116	8,781	25%	0.25	0	0.735	0.000	0.183	0.183	**81.7%**
1956	W	23,950	4,207	7,592	11,799	8,007	57%	0.43	0	0.765	0.000	0.327	0.327	**67.3%**
1957	A	14,143	4,207	5,806	10,013	4,339	64%	0.47	0	0.687	0.000	0.326	0.326	**67.4%**
1958	W	23,752	4,207	6,925	11,132	7,933	57%	0.43	0	0.736	0.000	0.315	0.315	**68.5%**
1959	B	14,627	4,207	3,852	8,059	4,520	63%	0.47	0	0.603	0.000	0.284	0.284	**71.6%**
1960	D	10,612	3,755	2,791	6,546	3,019	68%	0.51	0	0.537	0.000	0.274	0.274	**72.6%**
1961	D	17,500	4,207	6,891	11,098	5,595	61%	0.45	0	0.735	0.000	0.333	0.333	**66.7%**
1962	B	16,951	4,207	6,877	11,084	5,390	61%	0.46	0	0.734	0.000	0.334	0.334	**66.6%**
1963	W	27,555	4,207	6,895	11,102	9,356	25%	0.25	0	0.735	0.000	0.181	0.181	**81.9%**
1964	D	14,847	4,207	6,045	10,252	4,603	63%	0.47	0	0.698	0.000	0.327	0.327	**67.3%**
1965	W	28,471	4,207	7,355	11,562	9,698	25%	0.25	0	0.755	0.000	0.186	0.186	**81.4%**
1966	B	16,997	4,207	6,295	10,502	5,407	61%	0.46	0	0.709	0.000	0.323	0.323	**67.7%**
1967	W	37,937	4,207	7,125	11,332	13,238	24%	0.24	0	0.745	0.000	0.177	0.177	**82.3%**
1968	B	16,692	4,207	3,735	7,942	5,293	61%	0.46	0	0.598	0.000	0.273	0.273	**72.7%**
1969	W	24,093	4,207	6,971	11,178	8,061	57%	0.43	0	0.738	0.000	0.315	0.315	**68.5%**
1970	W	50,159	4,207	3,481	7,688	17,809	23%	0.23	0	0.587	0.000	0.136	0.136	**86.4%**
1971	W	53,440	4,207	7,042	11,249	19,037	23%	0.23	0	0.741	0.000	0.171	0.171	**82.9%**
1972	B	19,987	4,207	6,195	10,402	6,525	59%	0.44	0	0.704	0.000	0.311	0.311	**68.9%**
1973	A	26,198	4,207	6,904	11,111	8,848	25%	0.25	0	0.735	0.000	0.183	0.183	**81.7%**
1974	W	61,593	4,207	7,143	11,350	22,086	23%	0.23	0	0.745	0.000	0.170	0.170	**83.0%**
1975	W	17,619	4,207	4,248	8,455	5,640	61%	0.45	0	0.620	0.000	0.280	0.280	**72.0%**
1976	C	16,774	4,207	4,652	8,859	5,323	61%	0.46	0	0.637	0.000	0.291	0.291	**70.9%**
1977	C	8,171	1,720	3,079	4,799	2,106	74%	0.55	0	0.461	0.000	0.253	0.253	**74.7%**
1978	A	12,285	4,138	5,530	9,668	3,645	66%	0.49	0	0.672	0.000	0.330	0.330	**67.0%**
1979	B	13,285	4,207	4,094	8,301	4,019	65%	0.48	0	0.613	0.000	0.295	0.295	**70.5%**
1980	A	20,832	4,207	6,987	11,194	6,841	59%	0.44	0	0.739	0.000	0.323	0.323	**67.7%**
1981	D	15,611	4,207	4,109	8,316	4,889	62%	0.46	0	0.614	0.000	0.285	0.285	**71.5%**
1982	W	68,599	4,207	7,011	11,218	24,706	23%	0.23	0	0.740	0.000	0.168	0.168	**83.2%**
1983	W	55,416	4,207	4,428	8,635	19,776	23%	0.23	0	0.628	0.000	0.144	0.144	**85.6%**
1984	W	82,951	2,994	3,104	6,098	30,074	22%	0.22	0	0.518	0.000	0.116	0.116	**88.4%**
1985	D	23,880	4,207	6,967	11,174	7,981	57%	0.43	0	0.738	0.000	0.316	0.316	**68.4%**
1986	W	15,472	4,207	6,942	11,149	4,837	62%	0.46	0	0.737	0.000	0.342	0.342	**65.8%**
1987	D	13,788	4,207	6,093	10,300	4,207	64%	0.48	0	0.700	0.000	0.334	0.334	**66.6%**
1988	C	15,842	4,207	6,875	11,082	4,975	62%	0.46	0	0.734	0.000	0.339	0.339	**66.1%**
1989	D	8,852	2,840	3,560	6,400	2,361	72%	0.54	0	0.531	0.000	0.284	0.284	**71.6%**
1990	C	14,633	4,207	6,199	10,406	4,523	63%	0.47	0	0.705	0.000	0.331	0.331	**66.9%**
1991	C	8,805	1,698	3,185	4,883	2,343	72%	0.54	0	0.465	0.000	0.249	0.249	**75.1%**
1992	C	7,465	2,964	1,608	4,572	1,842	76%	0.56	0	0.451	0.000	0.255	0.255	**74.5%**

JANUARY

Year	Sac River Flows	CVP	SWP	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	17,504	4,207	7,576	11,783	5,596	61%	0.27	0	0.764	0.000	0.203	0.203	**79.7%**
1923	32,280	4,207	3,637	7,844	11,123	24%	0.24	0	0.593	0.000	0.144	0.144	**85.6%**
1924	14,370	4,207	6,489	10,696	4,424	63%	0.28	0	0.717	0.000	0.198	0.198	**80.2%**
1925	10,209	3,551	3,151	6,702	2,868	69%	0.30	0	0.544	0.000	0.162	0.162	**83.8%**
1926	19,269	4,207	7,087	11,294	6,257	59%	0.26	0	0.743	0.000	0.194	0.194	**80.6%**
1927	29,594	4,207	7,264	11,471	10,118	24%	0.24	0	0.751	0.000	0.184	0.184	**81.6%**
1928	25,777	4,207	3,637	7,844	8,691	25%	0.25	0	0.593	0.000	0.148	0.148	**85.2%**
1929	15,516	4,207	7,085	11,292	4,853	62%	0.27	0	0.743	0.000	0.202	0.202	**79.8%**
1930	20,771	4,207	7,092	11,299	6,818	59%	0.26	0	0.743	0.000	0.191	0.191	**80.9%**
1931	11,965	4,207	4,897	9,104	3,525	66%	0.29	0	0.648	0.000	0.186	0.186	**81.4%**
1932	17,253	4,207	7,827	12,034	5,503	61%	0.27	0	0.775	0.000	0.206	0.206	**79.4%**
1933	12,602	4,207	5,741	9,948	3,763	65%	0.28	0	0.685	0.000	0.194	0.194	**80.6%**
1934	16,103	4,207	7,093	11,300	5,073	62%	0.27	0	0.743	0.000	0.200	0.200	**80.0%**
1935	25,471	4,207	7,666	11,873	8,576	25%	0.25	0	0.768	0.000	0.192	0.192	**80.8%**
1936	30,207	4,207	7,453	11,660	10,347	24%	0.24	0	0.759	0.000	0.185	0.185	**81.5%**
1937	15,967	4,207	7,581	11,788	5,022	62%	0.27	0	0.764	0.000	0.206	0.206	**79.4%**
1938	31,443	4,207	4,693	8,900	10,810	24%	0.24	0	0.639	0.000	0.155	0.155	**84.5%**
1939	18,407	4,207	3,239	7,446	5,934	60%	0.26	0	0.576	0.000	0.151	0.151	**84.9%**
1940	23,448	4,207	8,017	12,224	7,820	57%	0.25	0	0.783	0.000	0.198	0.198	**80.2%**
1941	72,496	4,207	8,141	12,348	26,164	23%	0.23	0	0.789	0.000	0.178	0.178	**82.2%**
1942	63,260	4,207	3,239	7,446	22,709	23%	0.23	0	0.576	0.000	0.131	0.131	**86.9%**
1943	58,056	4,207	3,303	7,510	20,763	23%	0.23	0	0.579	0.000	0.133	0.133	**86.7%**
1944	17,677	4,207	3,262	7,469	5,661	60%	0.26	0	0.577	0.000	0.153	0.153	**84.7%**
1945	13,516	4,207	4,919	9,126	4,105	64%	0.28	0	0.649	0.000	0.181	0.181	**81.9%**
1946	43,229	4,207	3,637	7,844	15,218	23%	0.23	0	0.593	0.000	0.139	0.139	**86.1%**
1947	15,221	4,207	6,676	10,883	4,743	63%	0.27	0	0.725	0.000	0.197	0.197	**80.3%**
1948	14,897	4,207	6,517	10,724	4,621	63%	0.27	0	0.718	0.000	0.196	0.196	**80.4%**
1949	14,928	4,207	6,819	11,026	4,633	63%	0.27	0	0.731	0.000	0.200	0.200	**80.0%**
1950	20,434	4,207	7,176	11,383	6,692	59%	0.26	0	0.747	0.000	0.193	0.193	**80.7%**
1951	62,213	4,207	7,031	11,238	22,318	23%	0.23	0	0.741	0.000	0.169	0.169	**83.1%**
1952	67,352	4,207	7,072	11,279	24,240	23%	0.23	0	0.742	0.000	0.169	0.169	**83.1%**
1953	64,078	4,207	3,333	7,540	23,015	23%	0.23	0	0.580	0.000	0.132	0.132	**86.8%**
1954	33,414	4,207	3,833	8,040	11,547	24%	0.24	0	0.602	0.000	0.145	0.145	**85.5%**
1955	22,257	4,207	6,499	10,706	7,374	58%	0.25	0	0.718	0.000	0.183	0.183	**81.7%**
1956	84,015	4,207	7,970	12,177	30,472	22%	0.22	0	0.781	0.000	0.175	0.175	**82.5%**
1957	18,639	4,207	3,891	8,098	6,021	60%	0.26	0	0.604	0.000	0.158	0.158	**84.2%**
1958	36,464	4,207	3,453	7,660	12,688	24%	0.24	0	0.585	0.000	0.140	0.140	**86.0%**
1959	35,167	4,207	3,333	7,540	12,202	24%	0.24	0	0.580	0.000	0.139	0.139	**86.1%**
1960	14,522	4,207	6,411	10,618	4,481	63%	0.27	0	0.714	0.000	0.196	0.196	**80.4%**
1961	14,258	4,207	6,589	10,796	4,382	63%	0.28	0	0.721	0.000	0.199	0.199	**80.1%**
1962	12,902	4,207	4,165	8,372	3,875	65%	0.28	0	0.616	0.000	0.174	0.174	**82.6%**
1963	17,805	4,207	7,247	11,454	5,709	60%	0.26	0	0.750	0.000	0.198	0.198	**80.2%**
1964	25,556	4,207	3,872	8,079	8,608	25%	0.25	0	0.604	0.000	0.151	0.151	**84.9%**
1965	81,240	4,207	8,500	12,707	29,434	22%	0.22	0	0.804	0.000	0.181	0.181	**81.9%**
1966	29,635	4,207	3,657	7,864	10,133	24%	0.24	0	0.594	0.000	0.145	0.145	**85.5%**
1967	34,241	4,207	7,672	11,879	11,856	24%	0.24	0	0.768	0.000	0.185	0.185	**81.5%**
1968	30,635	4,207	3,333	7,540	10,507	24%	0.24	0	0.580	0.000	0.141	0.141	**85.9%**
1969	67,985	4,207	6,308	10,515	24,476	23%	0.23	0	0.709	0.000	0.161	0.161	**83.9%**
1970	92,665	4,157	3,333	7,490	33,707	22%	0.22	0	0.578	0.000	0.129	0.129	**87.1%**
1971	46,895	4,207	5,713	9,920	16,589	23%	0.23	0	0.683	0.000	0.159	0.159	**84.1%**
1972	20,395	4,207	3,891	8,098	6,678	59%	0.26	0	0.604	0.000	0.156	0.156	**84.4%**
1973	49,382	4,207	6,932	11,139	17,519	23%	0.23	0	0.736	0.000	0.171	0.171	**82.9%**
1974	78,417	4,207	3,637	7,844	28,378	22%	0.22	0	0.593	0.000	0.133	0.133	**86.7%**
1975	18,672	4,207	3,848	8,055	6,033	60%	0.26	0	0.602	0.000	0.158	0.158	**84.2%**
1976	16,769	4,207	3,789	7,996	5,322	61%	0.27	0	0.600	0.000	0.160	0.160	**84.0%**
1977	7,657	2,106	2,440	4,546	1,914	75%	0.32	0	0.450	0.000	0.145	0.145	**85.5%**
1978	43,062	3,055	7,767	10,822	15,155	23%	0.23	0	0.723	0.000	0.170	0.170	**83.0%**
1979	27,242	4,207	3,262	7,469	9,239	25%	0.25	0	0.577	0.000	0.143	0.143	**85.7%**
1980	63,162	4,207	3,159	7,366	22,673	23%	0.23	0	0.573	0.000	0.131	0.131	**86.9%**
1981	28,602	4,207	3,356	7,563	9,747	25%	0.25	0	0.581	0.000	0.143	0.143	**85.7%**
1982	51,172	4,207	7,647	11,854	18,188	23%	0.23	0	0.767	0.000	0.178	0.178	**82.2%**
1983	59,148	4,207	2,648	6,855	21,171	23%	0.23	0	0.550	0.000	0.126	0.126	**87.4%**
1984	47,354	1,331	2,881	4,212	16,760	23%	0.23	0	0.436	0.000	0.101	0.101	**89.9%**
1985	16,799	4,207	3,872	8,079	5,333	61%	0.27	0	0.604	0.000	0.161	0.161	**83.9%**
1986	21,253	4,207	7,331	11,538	6,999	58%	0.26	0	0.754	0.000	0.193	0.193	**80.7%**
1987	16,734	1,771	6,484	8,255	5,309	61%	0.27	0	0.611	0.000	0.163	0.163	**83.7%**
1988	25,530	4,207	7,058	11,265	8,598	25%	0.25	0	0.742	0.000	0.185	0.185	**81.5%**
1989	12,003	4,051	4,649	8,700	3,539	66%	0.29	0	0.630	0.000	0.181	0.181	**81.9%**
1990	21,584	2,556	7,059	9,615	7,122	58%	0.26	0	0.670	0.000	0.171	0.171	**82.9%**
1991	6,851	1,697	1,708	3,405	1,612	78%	0.33	0	0.401	0.000	0.133	0.133	**86.7%**
1992	12,140	3,832	5,155	8,987	3,590	66%	0.29	0	0.643	0.000	0.184	0.184	**81.6%**

FEBRUARY

Year	Sac River Flow	CVP	SWP	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	34,253	4,250	6,373	10,623	11,861	24%	0.24	0	0.768	0.000	0.185	0.185	**81.5%**
1923	22,521	2,471	2,380	4,851	7,473	58%	0.25	0	0.517	0.000	0.131	0.131	**86.9%**
1924	17,501	4,218	4,642	8,860	5,595	60%	0.27	0	0.691	0.000	0.183	0.183	**81.7%**
1925	44,695	4,220	7,583	11,803	15,766	23%	0.23	0	0.819	0.000	0.192	0.192	**80.8%**
1926	36,467	4,231	7,510	11,741	12,689	24%	0.24	0	0.816	0.000	0.195	0.195	**80.5%**
1927	86,145	3,059	8,470	11,529	31,268	22%	0.22	0	0.807	0.000	0.181	0.181	**81.9%**
1928	28,340	4,259	4,377	8,636	9,649	25%	0.25	0	0.682	0.000	0.168	0.168	**83.2%**
1929	18,537	4,104	3,759	7,863	5,983	60%	0.26	0	0.648	0.000	0.170	0.170	**83.0%**
1930	15,675	2,789	3,997	6,786	4,912	62%	0.27	0	0.601	0.000	0.163	0.163	**83.7%**
1931	11,083	3,334	1,889	5,223	3,195	66%	0.29	0	0.533	0.000	0.156	0.156	**84.4%**
1932	14,487	4,242	5,888	10,130	4,468	64%	0.28	0	0.746	0.000	0.205	0.205	**79.5%**
1933	13,116	4,217	2,831	7,048	3,955	64%	0.28	0	0.613	0.000	0.172	0.172	**82.8%**
1934	12,740	1,231	4,555	5,786	3,815	66%	0.28	0	0.558	0.000	0.158	0.158	**84.2%**
1935	11,977	686	3,943	4,629	3,529	67%	0.29	0	0.508	0.000	0.146	0.146	**85.4%**
1936	49,186	4,250	8,500	12,750	17,446	23%	0.23	0	0.860	0.000	0.200	0.200	**80.0%**
1937	32,775	4,232	5,420	9,652	11,308	24%	0.24	0	0.726	0.000	0.175	0.175	**82.5%**
1938	82,366	4,110	3,939	8,049	29,855	22%	0.22	0	0.656	0.000	0.147	0.147	**85.3%**
1939	19,024	2,604	3,955	6,559	6,165	59%	0.26	0	0.591	0.000	0.155	0.155	**84.5%**
1940	43,497	4,241	8,500	12,741	15,318	23%	0.23	0	0.860	0.000	0.202	0.202	**79.8%**
1941	75,037	4,293	6,891	11,184	27,114	23%	0.23	0	0.792	0.000	0.179	0.179	**82.1%**
1942	78,349	4,281	3,955	8,236	28,353	22%	0.23	0	0.664	0.000	0.149	0.149	**85.1%**
1943	52,259	4,280	4,005	8,285	18,595	23%	0.23	0	0.666	0.000	0.154	0.154	**84.6%**
1944	31,830	4,245	3,958	8,203	10,954	24%	0.24	0	0.663	0.000	0.161	0.161	**83.9%**
1945	39,754	4,242	4,081	8,323	13,918	23%	0.24	0	0.668	0.000	0.158	0.158	**84.2%**
1946	24,540	4,277	3,841	8,118	8,228	57%	0.25	0	0.659	0.000	0.165	0.165	**83.5%**
1947	21,569	4,244	3,972	8,216	7,117	58%	0.26	0	0.663	0.000	0.170	0.170	**83.0%**
1948	16,037	4,233	1,741	5,974	5,048	64%	0.27	0	0.566	0.000	0.153	0.153	**84.7%**
1949	16,132	3,786	4,576	8,362	5,083	61%	0.27	0	0.670	0.000	0.180	0.180	**82.0%**
1950	34,005	4,247	7,531	11,778	11,768	24%	0.24	0	0.818	0.000	0.197	0.197	**80.3%**
1951	60,566	4,280	4,675	8,955	21,702	23%	0.23	0	0.695	0.000	0.159	0.159	**84.1%**
1952	64,731	4,293	3,909	8,202	23,259	23%	0.23	0	0.663	0.000	0.151	0.151	**84.9%**
1953	28,344	4,281	4,060	8,341	9,651	25%	0.25	0	0.669	0.000	0.165	0.165	**83.5%**
1954	57,158	4,273	4,636	8,909	20,427	23%	0.23	0	0.693	0.000	0.159	0.159	**84.1%**
1955	16,298	4,259	3,155	7,414	5,145	61%	0.27	0	0.629	0.000	0.169	0.169	**83.1%**
1956	63,748	4,283	4,675	8,958	22,892	23%	0.23	0	0.696	0.000	0.158	0.158	**84.2%**
1957	33,144	4,249	4,638	8,887	11,446	24%	0.24	0	0.692	0.000	0.167	0.167	**83.3%**
1958	62,490	4,255	4,045	8,300	22,421	23%	0.23	0	0.667	0.000	0.152	0.152	**84.8%**
1959	50,082	4,261	4,060	8,321	17,781	23%	0.23	0	0.668	0.000	0.155	0.155	**84.5%**
1960	27,024	4,231	7,296	11,527	9,157	25%	0.25	0	0.807	0.000	0.200	0.200	**80.0%**
1961	30,815	4,188	7,109	11,297	10,575	24%	0.24	0	0.797	0.000	0.194	0.194	**80.6%**
1962	42,179	4,240	8,500	12,740	14,825	23%	0.24	0	0.860	0.000	0.202	0.202	**79.8%**
1963	57,821	4,278	8,262	12,540	20,675	23%	0.23	0	0.851	0.000	0.195	0.195	**80.5%**
1964	19,699	4,275	3,632	7,907	6,417	61%	0.26	0	0.650	0.000	0.169	0.169	**83.1%**
1965	33,076	4,257	5,922	10,179	11,420	24%	0.24	0	0.749	0.000	0.181	0.181	**81.9%**
1966	26,777	4,282	4,377	8,659	9,065	25%	0.25	0	0.683	0.000	0.169	0.169	**83.1%**
1967	43,101	4,293	3,201	7,494	15,170	24%	0.23	0	0.632	0.000	0.148	0.148	**85.2%**
1968	56,470	1,989	4,060	6,049	20,170	23%	0.23	0	0.569	0.000	0.131	0.131	**86.9%**
1969	67,482	3,837	3,171	7,008	24,288	23%	0.23	0	0.611	0.000	0.139	0.139	**86.1%**
1970	57,565	1,188	4,060	5,248	20,579	23%	0.23	0	0.535	0.000	0.123	0.123	**87.7%**
1971	28,275	3,255	4,205	7,460	9,625	24%	0.25	0	0.631	0.000	0.155	0.155	**84.5%**
1972	25,083	4,260	4,622	8,882	8,431	57%	0.25	0	0.692	0.000	0.173	0.173	**82.7%**
1973	70,967	4,268	4,425	8,693	25,592	23%	0.23	0	0.684	0.000	0.155	0.155	**84.5%**
1974	41,926	4,266	4,377	8,643	14,730	24%	0.24	0	0.682	0.000	0.161	0.161	**83.9%**
1975	58,811	4,252	4,636	8,888	21,045	23%	0.23	0	0.693	0.000	0.159	0.159	**84.1%**
1976	20,229	4,239	4,288	8,527	6,616	59%	0.26	0	0.677	0.000	0.175	0.175	**82.5%**
1977	12,276	686	1,429	2,115	3,641	68%	0.29	0	0.399	0.000	0.114	0.114	**88.6%**
1978	50,197	1,705	6,872	8,577	17,824	23%	0.23	0	0.679	0.000	0.157	0.157	**84.3%**
1979	41,848	4,248	3,958	8,206	14,701	24%	0.24	0	0.663	0.000	0.156	0.156	**84.4%**
1980	71,932	4,252	3,768	8,020	25,953	23%	0.23	0	0.655	0.000	0.148	0.148	**85.2%**
1981	29,672	2,425	4,062	6,487	10,147	24%	0.24	0	0.588	0.000	0.144	0.144	**85.6%**
1982	65,645	4,118	4,620	8,738	23,601	23%	0.23	0	0.686	0.000	0.156	0.156	**84.4%**
1983	82,910	3,422	2,793	6,215	30,058	22%	0.22	0	0.577	0.000	0.129	0.129	**87.1%**
1984	37,282	1,483	3,847	5,330	12,993	24%	0.24	0	0.538	0.000	0.128	0.128	**87.2%**
1985	20,136	4,256	4,638	8,894	6,581	58%	0.26	0	0.693	0.000	0.179	0.179	**82.1%**
1986	95,411	4,245	7,470	11,715	34,734	22%	0.22	0	0.815	0.000	0.182	0.182	**81.8%**
1987	23,028	1,296	4,244	5,540	7,662	57%	0.25	0	0.547	0.000	0.139	0.139	**86.1%**
1988	16,277	3,507	2,568	6,075	5,138	62%	0.27	0	0.570	0.000	0.153	0.153	**84.7%**
1989	13,134	963	1,798	2,761	3,962	67%	0.28	0	0.427	0.000	0.120	0.120	**88.0%**
1990	16,946	1,269	6,533	7,802	5,388	61%	0.27	0	0.645	0.000	0.172	0.172	**82.8%**
1991	11,038	407	846	1,253	3,178	67%	0.29	0	0.361	0.000	0.106	0.106	**89.4%**
1992	32,538	649	7,457	8,106	11,219	24%	0.24	0	0.659	0.000	0.159	0.159	**84.1%**

MARCH

Year	Sac River Flow	CVP	SWP	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	31,554	3,590	4,142	7,732	10,851	24%	0.24	0	0.732	0.144	0.287	0.287	**71.3%**
1923	17,559	4,225	3,500	7,725	5,617	26%	0.26	0	0.732	0.144	0.300	0.300	**70.0%**
1924	12,110	1,437	1,730	3,167	3,579	29%	0.29	0	0.534	0.144	0.256	0.256	**74.4%**
1925	18,563	3,833	4,047	7,880	5,993	26%	0.26	0	0.739	0.144	0.300	0.300	**70.0%**
1926	18,819	4,225	3,455	7,680	6,088	26%	0.26	0	0.730	0.144	0.298	0.298	**70.2%**
1927	43,865	3,370	4,153	7,523	15,456	23%	0.23	0	0.723	0.144	0.280	0.280	**72.0%**
1928	86,223	4,225	4,424	8,649	31,297	22%	0.22	0	0.772	0.144	0.285	0.285	**71.5%**
1929	14,413	1,984	2,783	4,767	4,440	28%	0.28	0	0.604	0.144	0.271	0.271	**72.9%**
1930	30,090	2,925	4,328	7,253	10,304	24%	0.24	0	0.711	0.144	0.283	0.283	**71.7%**
1931	8,767	1,669	1,672	3,341	2,329	31%	0.31	0	0.542	0.144	0.267	0.267	**73.3%**
1932	10,538	935	2,737	3,672	2,991	30%	0.30	0	0.556	0.144	0.266	0.266	**73.4%**
1933	9,943	317	4,155	4,472	2,769	30%	0.30	0	0.591	0.144	0.278	0.278	**72.2%**
1934	14,232	2,223	1,743	3,966	4,373	28%	0.28	0	0.569	0.144	0.261	0.261	**73.9%**
1935	24,918	4,225	6,982	11,207	8,369	25%	0.25	0	0.883	0.144	0.329	0.329	**67.1%**
1936	33,198	4,225	7,238	11,463	11,466	24%	0.24	0	0.894	0.144	0.325	0.325	**67.5%**
1937	37,439	2,569	4,009	6,578	13,052	24%	0.24	0	0.682	0.144	0.272	0.272	**72.8%**
1938	78,637	2,061	3,966	6,027	28,460	22%	0.22	0	0.658	0.144	0.260	0.260	**74.0%**
1939	16,390	2,727	3,989	6,716	5,180	27%	0.27	0	0.688	0.144	0.290	0.290	**71.0%**
1940	59,083	4,225	4,649	8,874	21,147	23%	0.23	0	0.782	0.144	0.290	0.290	**71.0%**
1941	58,573	4,225	3,846	8,071	20,956	23%	0.23	0	0.747	0.144	0.282	0.282	**71.8%**
1942	27,099	4,223	4,007	8,230	9,185	25%	0.25	0	0.754	0.144	0.295	0.295	**70.5%**
1943	64,601	2,910	4,056	6,966	23,211	23%	0.23	0	0.699	0.144	0.270	0.270	**73.0%**
1944	25,100	3,509	4,007	7,516	8,437	25%	0.25	0	0.723	0.144	0.289	0.289	**71.1%**
1945	27,033	4,225	4,150	8,375	9,160	25%	0.25	0	0.760	0.144	0.297	0.297	**70.3%**
1946	23,608	4,225	4,424	8,649	7,879	25%	0.25	0	0.772	0.144	0.303	0.303	**69.7%**
1947	22,506	4,225	3,926	8,151	7,467	25%	0.25	0	0.750	0.144	0.298	0.298	**70.2%**
1948	19,235	4,225	3,439	7,664	6,244	26%	0.26	0	0.729	0.144	0.297	0.297	**70.3%**
1949	41,807	2,613	7,116	9,729	14,686	24%	0.24	0	0.819	0.144	0.303	0.303	**69.7%**
1950	22,404	4,225	4,615	8,840	7,429	25%	0.25	0	0.780	0.144	0.306	0.306	**69.4%**
1951	29,827	4,225	4,699	8,924	10,205	24%	0.24	0	0.784	0.144	0.301	0.301	**69.9%**
1952	57,518	4,225	3,934	8,159	20,562	23%	0.23	0	0.751	0.144	0.283	0.283	**71.7%**
1953	24,893	3,355	4,111	7,466	8,360	25%	0.25	0	0.721	0.144	0.289	0.289	**71.1%**
1954	49,536	4,225	4,685	8,910	17,576	23%	0.23	0	0.783	0.144	0.293	0.293	**70.7%**
1955	17,945	4,225	2,934	7,159	5,761	26%	0.26	0	0.707	0.144	0.293	0.293	**70.7%**
1956	36,676	2,395	4,699	7,094	12,767	24%	0.24	0	0.705	0.144	0.278	0.278	**72.2%**
1957	44,377	4,225	4,410	8,635	15,647	23%	0.23	0	0.771	0.144	0.291	0.291	**70.9%**
1958	93,616	4,225	4,071	8,296	34,062	22%	0.22	0	0.757	0.144	0.281	0.281	**71.9%**
1959	22,915	3,781	3,049	6,830	7,620	25%	0.25	0	0.693	0.144	0.283	0.283	**71.7%**
1960	21,898	2,637	4,002	6,639	7,240	26%	0.26	0	0.685	0.144	0.282	0.282	**71.8%**
1961	20,744	2,762	5,223	7,985	6,808	26%	0.26	0	0.743	0.144	0.298	0.298	**70.2%**
1962	26,934	3,498	3,490	6,988	9,123	25%	0.25	0	0.700	0.144	0.282	0.282	**71.8%**
1963	32,645	4,225	4,799	9,024	11,259	24%	0.24	0	0.788	0.144	0.300	0.300	**70.0%**
1964	16,340	3,173	3,336	6,509	5,161	27%	0.27	0	0.679	0.144	0.288	0.288	**71.2%**
1965	22,601	4,225	4,340	8,565	7,503	25%	0.25	0	0.768	0.144	0.303	0.303	**69.7%**
1966	28,683	4,225	4,424	8,649	9,777	25%	0.25	0	0.772	0.144	0.298	0.298	**70.2%**
1967	54,488	4,225	3,283	7,508	19,429	23%	0.23	0	0.722	0.144	0.277	0.277	**72.3%**
1968	36,789	3,023	4,111	7,134	12,809	24%	0.24	0	0.706	0.144	0.278	0.278	**72.2%**
1969	45,319	2,055	3,251	5,306	15,999	23%	0.23	0	0.627	0.144	0.257	0.257	**74.3%**
1970	35,819	3,077	4,111	7,188	12,446	24%	0.24	0	0.709	0.144	0.279	0.279	**72.1%**
1971	51,739	4,225	4,699	8,924	18,400	23%	0.23	0	0.784	0.144	0.292	0.292	**70.8%**
1972	32,930	4,143	4,390	8,533	11,366	24%	0.24	0	0.767	0.144	0.295	0.295	**70.5%**
1973	47,552	4,225	4,454	8,679	16,834	23%	0.23	0	0.773	0.144	0.291	0.291	**70.9%**
1974	34,705	4,225	4,424	8,649	12,030	24%	0.24	0	0.772	0.144	0.295	0.295	**70.5%**
1975	75,998	4,225	4,685	8,910	27,473	23%	0.23	0	0.783	0.144	0.288	0.288	**71.2%**
1976	20,060	4,225	3,629	7,854	6,552	26%	0.26	0	0.738	0.144	0.298	0.298	**70.2%**
1977	7,533	825	1,217	2,042	1,867	32%	0.32	0	0.485	0.144	0.254	0.254	**74.6%**
1978	45,401	2,118	3,905	6,023	16,030	23%	0.23	0	0.658	0.144	0.264	0.264	**73.6%**
1979	32,593	3,854	4,007	7,861	11,240	24%	0.24	0	0.738	0.144	0.288	0.288	**71.2%**
1980	36,480	3,149	3,344	6,493	12,694	24%	0.24	0	0.678	0.144	0.272	0.272	**72.8%**
1981	32,501	3,022	4,111	7,133	11,205	24%	0.24	0	0.706	0.144	0.280	0.280	**72.0%**
1982	69,087	2,940	4,644	7,584	24,889	23%	0.23	0	0.726	0.144	0.276	0.276	**72.4%**
1983	81,934	2,042	2,628	4,670	29,693	22%	0.22	0	0.599	0.144	0.246	0.246	**75.4%**
1984	36,503	3,305	4,007	7,312	12,702	24%	0.24	0	0.714	0.144	0.280	0.280	**72.0%**
1985	21,803	4,225	4,623	8,848	7,204	26%	0.26	0	0.781	0.144	0.307	0.307	**69.3%**
1986	72,539	4,209	4,180	8,389	26,180	23%	0.23	0	0.761	0.144	0.284	0.284	**71.6%**
1987	29,576	2,382	4,146	6,528	10,111	24%	0.24	0	0.680	0.144	0.275	0.275	**72.5%**
1988	11,061	2,080	1,722	3,802	3,187	29%	0.29	0	0.562	0.144	0.266	0.266	**73.4%**
1989	41,581	4,225	6,682	10,907	14,601	24%	0.24	0	0.870	0.144	0.315	0.315	**68.5%**
1990	14,838	2,275	3,586	5,861	4,599	27%	0.27	0	0.651	0.144	0.283	0.283	**71.7%**
1991	29,675	4,225	7,078	11,303	10,148	24%	0.24	0	0.887	0.144	0.326	0.326	**67.4%**
1992	20,106	2,023	6,215	8,238	6,570	26%	0.26	0	0.754	0.144	0.302	0.302	**69.8%**

Formulas: Sacramento River Spring Run Young of Year Smolt Survival Model

```
C10 ='Study 467 Flow Data'!C7
D10 ='Study 467 Flow Data'!M7
E10 ='Study 467 Flow Data'!W7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.45*(0.133*C10+829)/(C10-G10))+(0.55*H10)
J10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
K10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*F10)
L10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10
```

```
Q10 ='Study 467 Flow Data'!D7
R10 ='Study 467 Flow Data'!N7
S10 ='Study 467 Flow Data'!X7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
Y10 =(-0.5916024)+(0.017968*$T$3)+(0.0000434*T10)
Z10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10
```

```
AE10 ='Study 467 Flow Data'!E7
AF10 ='Study 467 Flow Data'!O7
AG10 ='Study 467 Flow Data'!Y7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
AM10 =(-0.5916024)+(0.017968*$BC$2)+(0.0000434*AH10)
AN10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
```

```
AS10 ='Study 467 Flow Data'!F7
AT10 ='Study 467 Flow Data'!P7
AU10 ='Study 467 Flow Data'!Z7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$K$4,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BA10 =IF(((-0.5916024)+(0.017968*$BC$3)+(0.0000434*AV10))>1,1,((-0.5916024)+(0.017968*$BC$3)+(0.00004
BB10 =-1.613493+(0.0319584*$BC$3)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =(AZ10+BC10-(AZ10*BC10))
BE10 =1-BD10
```

Study 501 Sacramento River Spring Run YOY Smolt Survival Model (continued)

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15
Sacramento River temperatures based on limited historical data from USBR

APRIL

Row	Sac River Flows	CVP	SWP	CVP + SWP exports	Calculated Sutter & Slough Q	Percent	X-Channel Closed	observed temp	m1	m2	m3	m23	m123	Calculated Survival s123
10	22,816	4,189	4,189	8,378	7,583	25%	0.25	58.5	0.002	0.823	0.256	0.400	0.401	**59.9%**
11	22,855	3,973	3,973	7,946	7,598	25%	0.25	58.3	0.000	0.801	0.250	0.389	0.389	**61.1%**
12	8,068	1,395	1,395	2,790	2,067	32%	0.32	61.5	0.128	0.635	0.352	0.442	0.513	**48.7%**
13	22,651	3,475	3,475	6,950	7,521	25%	0.25	59.1	0.027	0.772	0.275	0.401	0.418	**58.2%**
14	20,890	3,285	3,285	6,570	6,863	26%	0.26	61.6	0.133	0.800	0.355	0.470	0.540	**46.0%**
15	48,222	4,042	4,042	8,084	17,085	23%	0.23	56.8	0.000	0.780	0.202	0.336	0.336	**66.4%**
16	29,212	3,681	3,681	7,362	9,975	25%	0.25	58.7	0.011	0.783	0.262	0.390	0.396	**60.4%**
17	9,029	1,476	1,476	2,952	2,427	31%	0.31	56.3	0.000	0.548	0.186	0.297	0.297	**70.3%**
18	12,640	1,956	1,956	3,912	3,777	28%	0.28	59.6	0.048	0.649	0.291	0.393	0.422	**57.8%**
19	9,200	1,484	1,484	2,968	2,491	31%	0.31	62.8	0.183	0.666	0.393	0.477	0.573	**42.7%**
20	13,080	2,482	2,893	5,375	3,942	28%	0.28	58.9	0.019	0.700	0.269	0.390	0.402	**59.8%**
21	12,736	2,884	1,239	4,123	3,813	28%	0.28	60.1	0.069	0.667	0.307	0.409	0.450	**55.0%**
22	12,848	1,789	1,789	3,578	3,855	28%	0.28	63.6	0.217	0.706	0.419	0.500	0.608	**39.2%**
23	24,635	4,318	4,318	8,636	8,263	25%	0.25	58.9	0.019	0.842	0.269	0.412	0.424	**57.6%**
24	21,031	4,166	4,166	8,332	6,916	26%	0.26	59.7	0.053	0.843	0.294	0.435	0.465	**53.5%**
25	23,257	2,978	4,985	7,963	7,748	25%	0.25	58.8	0.015	0.811	0.266	0.403	0.412	**58.8%**
26	47,172	3,348	4,377	7,725	16,692	23%	0.23	56.3	0.000	0.755	0.186	0.318	0.318	**68.2%**
27	12,231	2,073	2,073	4,146	3,624	29%	0.29	63.3	0.204	0.726	0.409	0.500	0.602	**39.8%**
28	41,731	4,141	4,141	8,282	14,657	24%	0.24	57.4	0.000	0.799	0.221	0.357	0.357	**64.3%**
29	42,372	4,600	4,708	9,308	14,897	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
30	43,308	4,459	4,459	8,918	15,247	23%	0.23	56.5	0.000	0.811	0.192	0.337	0.337	**66.3%**
31	29,406	4,076	5,062	9,138	10,048	24%	0.24	58.8	0.015	0.862	0.266	0.412	0.420	**58.0%**
32	9,823	2,124	2,124	4,248	2,724	30%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	**63.0%**
33	11,753	3,132	3,132	6,264	3,446	29%	0.29	60.6	0.090	0.769	0.323	0.452	0.501	**49.9%**
34	12,226	2,980	2,980	5,960	3,623	29%	0.29	60.7	0.095	0.758	0.326	0.449	0.502	**49.8%**
35	13,800	2,455	2,455	4,910	4,211	28%	0.28	62.5	0.170	0.744	0.384	0.484	0.572	**42.8%**
36	23,043	3,411	3,411	6,822	7,668	25%	0.25	56.6	0.000	0.721	0.195	0.329	0.329	**67.1%**
37	13,210	2,544	2,544	5,088	3,991	28%	0.28	61.7	0.137	0.738	0.358	0.465	0.538	**46.2%**
38	19,026	3,104	3,104	6,208	6,166	26%	0.26	61.3	0.120	0.779	0.346	0.459	0.524	**47.6%**
39	14,837	3,190	3,190	6,380	4,599	27%	0.27	59.9	0.061	0.762	0.301	0.427	0.462	**53.8%**
40	56,648	3,680	4,166	7,846	20,236	23%	0.23	55.5	0.000	0.746	0.160	0.295	0.295	**70.5%**
41	16,177	2,825	2,825	5,650	5,100	27%	0.27	58.8	0.015	0.710	0.266	0.385	0.394	**60.6%**
42	39,868	3,681	3,681	7,362	13,961	24%	0.24	58.4	0.000	0.777	0.253	0.377	0.377	**62.3%**
43	9,473	1,836	1,836	3,672	2,593	30%	0.30	56.4	0.000	0.581	0.189	0.308	0.308	**69.2%**
44	20,437	3,991	3,991	7,982	6,693	26%	0.26	59.7	0.053	0.828	0.294	0.432	0.462	**53.8%**
45	21,241	3,223	3,223	6,446	6,994	26%	0.26	60.5	0.086	0.775	0.320	0.437	0.485	**51.5%**
46	52,284	4,454	5,062	9,516	18,604	23%	0.23	57.4	0.000	0.853	0.221	0.367	0.367	**63.3%**
47	10,494	1,894	1,894	3,788	2,975	30%	0.30	63	0.191	0.705	0.400	0.490	0.588	**41.2%**
48	13,518	319	3,706	4,025	4,106	28%	0.28	59.5	0.044	0.652	0.288	0.390	0.417	**58.3%**
49	12,794	1,771	1,771	3,542	3,835	28%	0.28	60.1	0.069	0.642	0.307	0.402	0.443	**55.7%**
50	15,427	2,798	2,798	5,596	4,820	27%	0.27	61.8	0.141	0.762	0.362	0.470	0.545	**45.5%**
51	69,458	4,042	4,042	8,084	25,027	23%	0.23	53.7	0.000	0.724	0.103	0.243	0.243	**75.7%**
52	8,953	1,756	1,756	3,512	2,398	31%	0.31	59.3	0.036	0.626	0.282	0.388	0.410	**59.0%**
53	44,152	4,112	4,427	8,539	15,563	23%	0.23	56.9	0.000	0.801	0.205	0.345	0.345	**65.5%**
54	12,803	2,488	2,488	4,976	3,838	28%	0.28	61.9	0.145	0.737	0.365	0.470	0.547	**45.3%**
55	39,925	3,958	4,949	8,907	13,982	24%	0.24	53.8	0.000	0.762	0.106	0.261	0.261	**73.9%**
56	15,608	2,623	2,623	5,246	4,887	27%	0.27	61.5	0.128	0.741	0.352	0.457	0.527	**47.3%**
57	44,787	3,338	4,166	7,504	15,800	23%	0.23	56.4	0.000	0.747	0.189	0.320	0.320	**68.0%**
58	16,601	3,299	3,299	6,598	5,259	27%	0.27	58.8	0.015	0.751	0.266	0.396	0.405	**59.5%**
59	21,907	3,294	3,294	6,588	7,243	26%	0.26	58.7	0.011	0.749	0.262	0.387	0.393	**60.7%**
60	12,452	2,349	2,349	4,698	3,707	28%	0.28	58.5	0.002	0.663	0.256	0.372	0.373	**62.7%**
61	19,512	3,722	3,722	7,444	6,347	26%	0.26	61.3	0.120	0.833	0.346	0.472	0.536	**46.4%**
62	33,208	4,600	4,720	9,320	11,470	24%	0.24	56.8	0.000	0.833	0.202	0.354	0.354	**64.6%**
63	25,763	4,384	4,384	8,768	8,685	25%	0.25	56.8	0.000	0.810	0.202	0.353	0.353	**64.7%**
64	9,434	632	2,369	3,001	2,578	30%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
65	9,145	1,093	1,903	2,996	2,470	31%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	**36.3%**
66	38,698	3,443	4,074	7,517	13,523	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
67	17,702	3,426	3,426	6,852	5,671	26%	0.26	59.8	0.057	0.780	0.298	0.425	0.458	**54.2%**
68	19,818	2,950	3,952	6,902	6,462	26%	0.26	57.1	0.000	0.734	0.211	0.347	0.347	**65.3%**
69	16,998	2,725	2,725	5,450	5,407	27%	0.27	61.5	0.128	0.750	0.352	0.458	0.528	**47.2%**
70	75,838	3,375	5,569	8,944	27,413	23%	0.23	54.1	0.000	0.769	0.115	0.263	0.263	**73.7%**
71	68,301	3,314	3,649	6,963	24,595	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
72	17,880	3,423	3,423	6,846	5,737	26%	0.26	59.7	0.053	0.778	0.294	0.422	0.453	**54.7%**
73	13,328	2,125	2,125	4,250	4,035	28%	0.28	60.8	0.099	0.685	0.330	0.429	0.486	**51.4%**
74	20,528	2,296	5,214	7,510	6,727	26%	0.26	60.4	0.082	0.820	0.317	0.446	0.492	**50.8%**
75	12,400	322	3,177	3,499	3,688	28%	0.28	65.7	0.305	0.741	0.486	0.559	0.693	**30.7%**
76	8,630	1,426	1,426	2,852	2,278	31%	0.31	59.9	0.061	0.608	0.301	0.397	0.433	**56.7%**
77	23,637	2,825	2,825	5,650	7,890	25%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	**48.0%**
78	12,441	1,767	1,767	3,534	3,703	28%	0.28	61.6	0.133	0.669	0.355	0.444	0.518	**48.2%**
79	15,284	2,079	2,169	4,248	4,766	27%	0.27	60.8	0.099	0.685	0.330	0.426	0.483	**51.7%**
80	12,473	1,866	1,866	3,732	3,715	28%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	**49.9%**

MAY

Row	Sac River Flows	CVP	SWP	CVP + SWP & Sutter Exports	Calculated Steamboat Slough Q	Percent	X-channel Closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123
10	46,457	4,189	4,348	8,537	16,425	23%	0.23	61.2	0.116	0.879	0.342	0.467	0.529	**47.1%**
11	14,357	3,973	3,134	7,107	4,420	63%	0.47	62.4	0.166	0.838	0.381	0.597	0.664	**33.6%**
12	8,568	1,395	417	1,812	2,254	73%	0.54	69.2	0.452	0.730	0.598	0.670	0.819	**18.1%**
13	12,068	3,475	2,527	6,002	3,563	66%	0.49	63.2	0.200	0.804	0.406	0.602	0.682	**31.8%**
14	13,708	3,285	2,451	5,736	4,177	64%	0.48	65.7	0.305	0.838	0.486	0.654	0.760	**24.0%**
15	26,781	4,042	4,161	8,203	9,066	25%	0.25	62.6	0.175	0.889	0.387	0.512	0.597	**40.3%**
16	20,682	3,681	3,388	7,069	6,785	59%	0.44	66.6	0.343	0.912	0.515	0.689	0.796	**20.4%**
17	9,698	1,476	118	1,594	2,677	70%	0.52	66.1	0.322	0.665	0.499	0.586	0.719	**28.1%**
18	12,030	1,956	1,774	3,730	3,549	66%	0.49	63.1	0.196	0.704	0.403	0.551	0.639	**36.1%**
19	10,086	1,484	1,489	2,973	2,822	69%	0.52	70.5	0.507	0.804	0.640	0.725	0.864	**13.6%**
20	12,016	2,482	2,418	4,900	3,544	66%	0.49	65.5	0.297	0.798	0.480	0.637	0.744	**25.6%**
21	7,455	2,884	1,079	3,963	1,838	76%	0.56	63.7	0.221	0.725	0.422	0.593	0.683	**31.7%**
22	8,879	1,789	898	2,687	2,371	72%	0.54	68.3	0.414	0.752	0.569	0.667	0.805	**19.5%**
23	28,616	4,318	2,463	6,781	9,752	25%	0.25	64	0.234	0.853	0.432	0.535	0.644	**35.6%**
24	14,094	4,166	3,157	7,323	4,321	64%	0.47	64.9	0.271	0.892	0.461	0.665	0.756	**24.4%**
25	16,203	2,978	4,074	7,052	5,110	62%	0.46	64.5	0.255	0.873	0.448	0.644	0.734	**26.6%**
26	57,429	3,348	5,445	8,793	20,528	23%	0.23	62.5	0.170	0.913	0.384	0.505	0.590	**41.0%**
27	8,577	2,073	1,738	3,811	2,258	73%	0.54	68	0.402	0.796	0.560	0.687	0.813	**18.7%**
28	18,285	4,141	3,249	7,390	5,889	60%	0.45	65.6	0.301	0.908	0.483	0.674	0.772	**22.8%**
29	39,485	4,600	5,119	9,719	13,817	24%	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**
30	36,037	4,459	4,348	8,807	12,528	24%	0.24	60.1	0.069	0.870	0.307	0.442	0.481	**51.9%**
31	20,336	4,076	4,180	8,256	6,656	59%	0.44	65.4	0.292	0.942	0.477	0.681	0.774	**22.6%**
32	8,907	2,124	1,870	3,994	2,381	72%	0.53	65.9	0.313	0.766	0.493	0.639	0.752	**24.8%**
33	12,623	3,132	2,566	5,698	3,771	65%	0.49	63.1	0.196	0.789	0.403	0.591	0.671	**32.9%**
34	13,701	2,980	2,637	5,617	4,174	64%	0.48	63.9	0.229	0.800	0.429	0.606	0.696	**30.4%**
35	8,862	2,455	1,736	4,191	2,364	72%	0.54	68.7	0.431	0.825	0.582	0.712	0.836	**16.4%**
36	27,770	3,411	3,838	7,249	9,436	25%	0.25	62.3	0.162	0.842	0.378	0.492	0.574	**42.6%**
37	14,912	2,544	2,380	4,924	4,627	63%	0.47	65.2	0.284	0.794	0.470	0.622	0.729	**27.1%**
38	13,720	3,104	2,627	5,731	4,181	64%	0.48	64.3	0.246	0.812	0.441	0.619	0.712	**28.8%**
39	18,796	3,190	3,561	6,751	6,080	60%	0.45	64.4	0.250	0.859	0.445	0.629	0.722	**27.8%**
40	59,563	3,680	5,270	8,950	21,327	23%	0.23	61.7	0.137	0.905	0.358	0.484	0.554	**44.6%**
41	26,868	2,825	3,838	6,663	9,099	25%	0.25	60.9	0.103	0.792	0.333	0.447	0.504	**49.6%**
42	25,412	3,681	4,438	8,119	8,554	25%	0.25	65.9	0.313	0.945	0.493	0.605	0.729	**27.1%**
43	11,273	1,836	1,977	3,813	3,266	67%	0.50	66.9	0.356	0.776	0.525	0.651	0.775	**22.5%**
44	39,005	3,991	4,394	8,385	13,638	24%	0.24	61.4	0.124	0.876	0.349	0.474	0.539	**46.1%**
45	16,803	3,223	2,981	6,204	5,334	61%	0.46	64	0.234	0.828	0.432	0.613	0.703	**29.7%**
46	43,486	4,454	6,083	10,537	15,314	23%	0.23	62.9	0.187	0.996	0.397	0.537	0.624	**37.6%**
47	9,424	1,894	1,844	3,738	2,575	71%	0.53	65.9	0.313	0.755	0.493	0.631	0.746	**25.4%**
48	10,915	319	1,678	1,997	3,132	68%	0.51	65.9	0.313	0.679	0.493	0.587	0.716	**28.4%**
49	8,702	1,771	1,453	3,224	2,305	73%	0.54	64.3	0.246	0.704	0.441	0.583	0.685	**31.5%**
50	14,760	2,798	2,664	5,462	4,570	63%	0.47	64.8	0.267	0.810	0.457	0.623	0.724	**27.6%**
51	29,094	4,042	4,161	8,203	9,931	25%	0.25	62.5	0.170	0.887	0.384	0.507	0.591	**40.9%**
52	11,043	1,756	1,940	3,696	3,180	68%	0.50	65.2	0.284	0.740	0.470	0.606	0.718	**28.2%**
53	24,751	4,112	4,856	8,968	8,307	57%	0.43	63.6	0.217	0.940	0.419	0.641	0.719	**28.1%**
54	14,928	2,488	2,386	4,874	4,633	63%	0.47	67.3	0.372	0.829	0.537	0.674	0.795	**20.5%**
55	44,790	3,958	5,445	9,403	15,801	23%	0.23	62.1	0.154	0.932	0.371	0.502	0.579	**42.1%**
56	9,379	2,623	1,827	4,450	2,558	71%	0.53	66.1	0.322	0.789	0.499	0.652	0.764	**23.6%**
57	45,533	3,338	5,026	8,364	16,079	23%	0.23	63.2	0.200	0.907	0.406	0.523	0.619	**38.1%**
58	12,155	3,299	2,958	6,257	3,596	66%	0.49	68.6	0.427	0.913	0.579	0.743	0.853	**14.7%**
59	29,495	3,294	3,838	7,132	10,081	24%	0.24	61	0.107	0.814	0.336	0.453	0.512	**48.8%**
60	10,806	2,349	1,942	4,291	3,091	68%	0.51	67.3	0.372	0.804	0.537	0.672	0.794	**20.6%**
61	15,751	3,722	3,255	6,977	4,941	62%	0.46	66.9	0.356	0.913	0.525	0.704	0.810	**19.0%**
62	26,945	4,600	4,348	8,948	9,127	25%	0.25	63.4	0.208	0.936	0.413	0.542	0.638	**36.2%**
63	28,542	4,384	4,348	8,732	9,725	25%	0.25	63.8	0.225	0.934	0.425	0.550	0.652	**34.8%**
64	10,086	632	1,570	2,202	2,822	69%	0.52	69.6	0.469	0.755	0.611	0.685	0.833	**16.7%**
65	6,994	1,093	442	1,535	1,666	78%	0.58	64	0.234	0.625	0.432	0.543	0.650	**35.0%**
66	21,056	3,443	4,103	7,546	6,925	58%	0.44	63	0.191	0.868	0.400	0.604	0.680	**32.0%**
67	12,566	3,426	3,000	6,426	3,750	65%	0.49	63.8	0.225	0.834	0.425	0.625	0.709	**29.1%**
68	14,777	2,950	3,943	6,893	4,577	63%	0.47	63.6	0.217	0.850	0.419	0.622	0.704	**29.6%**
69	8,752	2,725	1,752	4,477	2,323	72%	0.54	66.7	0.347	0.801	0.518	0.670	0.785	**21.5%**
70	38,429	3,375	6,684	10,059	13,422	24%	0.24	61.1	0.112	0.943	0.339	0.483	0.540	**46.0%**
71	54,514	3,314	3,590	6,904	19,438	23%	0.23	60.1	0.069	0.788	0.307	0.418	0.458	**54.2%**
72	13,407	3,423	3,066	6,489	4,064	64%	0.48	66.5	0.339	0.885	0.512	0.691	0.796	**20.4%**
73	13,145	2,125	2,121	4,246	3,966	65%	0.48	65.8	0.309	0.775	0.489	0.627	0.742	**25.8%**
74	13,127	2,296	5,368	7,664	3,959	65%	0.48	66.2	0.326	0.930	0.502	0.709	0.804	**19.6%**
75	8,453	322	1,419	1,741	2,211	73%	0.54	70.5	0.507	0.751	0.640	0.700	0.852	**14.8%**
76	9,777	1,426	1,487	2,913	2,707	70%	0.52	65.8	0.309	0.717	0.489	0.608	0.729	**27.1%**
77	14,311	2,825	1,966	4,791	4,402	63%	0.47	64.7	0.263	0.779	0.454	0.608	0.711	**28.9%**
78	7,683	1,767	1,372	3,139	1,923	75%	0.56	66.4	0.335	0.738	0.509	0.637	0.758	**24.2%**
79	8,690	2,079	1,421	3,500	2,300	73%	0.54	65.7	0.305	0.741	0.486	0.623	0.738	**26.2%**
80	8,982	1,866	944	2,810	2,409	72%	0.53	66	0.318	0.716	0.496	0.613	0.736	**26.4%**

JUNE

Row	Sac River Flow	CVP	SWP	CVP + SWP & Sutter exports	Caculated Steamboat Slough Q	percent	X-channel closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123	Weighted Total Survival
10	34,719	4,600	6,672	11,272	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**63.63%**
11	18,141	4,227	3,389	7,616	5,835	60%	0.45	65.3	0.288	0.912	0.473	0.671	0.766	**23.4%**	**62.63%**
12	10,428	684	516	1,200	2,950	69%	0.51	70.6	0.511	0.729	0.643	0.687	0.847	**15.3%**	**56.34%**
13	16,078	3,463	2,677	6,140	5,063	62%	0.46	68.3	0.414	0.902	0.569	0.723	0.838	**16.2%**	**59.82%**
14	15,231	3,585	2,493	6,078	4,746	62%	0.47	71.2	0.536	0.952	0.662	0.797	0.906	**9.4%**	**54.91%**
15	18,893	4,600	3,745	8,345	6,116	60%	0.45	68.1	0.406	0.994	0.563	0.755	0.855	**14.5%**	**63.70%**
16	13,778	3,023	2,669	5,692	4,203	64%	0.48	69.7	0.473	0.908	0.614	0.754	0.871	**12.9%**	**59.22%**
17	10,902	2,942	97	3,039	3,127	68%	0.51	70.1	0.490	0.800	0.627	0.714	0.854	**14.6%**	**63.07%**
18	18,118	4,273	2,680	6,953	5,826	60%	0.45	69.6	0.469	0.961	0.611	0.768	0.877	**12.3%**	**60.92%**
19	13,071	2,381	1,514	3,895	3,939	65%	0.48	70.7	0.515	0.848	0.646	0.743	0.876	**12.4%**	**54.23%**
20	19,360	3,602	4,122	7,724	6,291	59%	0.44	69.5	0.465	0.992	0.608	0.778	0.881	**11.9%**	**59.35%**
21	10,390	1,398	92	1,490	2,936	69%	0.51	69.8	0.478	0.727	0.617	0.674	0.829	**17.1%**	**59.88%**
22	14,250	3,898	1,185	5,083	4,380	63%	0.47	70.7	0.515	0.899	0.646	0.766	0.887	**11.3%**	**54.17%**
23	17,593	4,108	3,448	7,556	5,630	61%	0.45	71	0.528	1.000	0.656	0.811	0.911	**8.9%**	**59.60%**
24	19,055	4,600	3,356	7,956	6,177	60%	0.45	69.2	0.452	0.997	0.598	0.776	0.877	**12.3%**	**56.23%**
25	18,158	3,026	4,632	7,658	5,841	60%	0.45	69.7	0.473	0.993	0.614	0.784	0.886	**11.4%**	**59.56%**
26	35,517	4,600	6,672	11,272	12,333	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**66.18%**
27	18,577	4,310	3,083	7,393	5,998	60%	0.45	71	0.528	1.000	0.656	0.810	0.910	**9.0%**	**53.65%**
28	15,339	4,079	3,097	7,176	4,787	62%	0.47	71.5	0.549	1.000	0.672	0.824	0.921	**7.9%**	**59.29%**
29	20,808	4,600	6,297	10,897	6,832	59%	0.44	69	0.444	1.000	0.592	0.770	0.872	**12.8%**	**63.91%**
30	27,117	4,600	6,672	11,272	9,192	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**66.58%**
31	16,854	4,600	3,142	7,742	5,353	61%	0.46	66.6	0.343	0.941	0.515	0.709	0.809	**19.1%**	**60.31%**
32	18,223	4,171	3,177	7,348	5,865	60%	0.45	67.8	0.393	0.946	0.553	0.729	0.836	**16.4%**	**60.79%**
33	16,672	3,376	3,803	7,179	5,285	61%	0.46	70.6	0.511	0.989	0.643	0.801	0.903	**9.7%**	**57.99%**
34	16,283	3,371	3,597	6,968	5,140	62%	0.46	68.1	0.406	0.934	0.563	0.734	0.842	**15.8%**	**58.13%**
35	18,832	4,311	2,951	7,262	6,093	60%	0.45	70	0.486	0.981	0.624	0.783	0.889	**11.1%**	**53.34%**
36	22,883	4,600	4,396	8,996	7,608	58%	0.43	69	0.444	1.000	0.592	0.768	0.871	**12.9%**	**64.16%**
37	17,089	3,640	3,153	6,793	5,441	61%	0.45	70.9	0.524	0.977	0.652	0.800	0.905	**9.5%**	**55.46%**
38	20,282	4,600	3,529	8,129	6,635	59%	0.44	68.9	0.440	0.999	0.588	0.769	0.871	**12.9%**	**56.05%**
39	17,641	4,600	2,825	7,425	5,648	61%	0.45	70.3	0.499	0.994	0.633	0.796	0.898	**10.2%**	**58.31%**
40	38,968	4,600	6,672	11,272	13,624	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**67.15%**
41	25,885	4,600	5,781	10,381	8,731	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**65.04%**
42	14,229	3,285	2,742	6,027	4,372	63%	0.47	68.7	0.431	0.904	0.582	0.735	0.849	**15.1%**	**60.91%**
43	18,110	4,054	3,022	7,076	5,823	60%	0.45	70.1	0.490	0.975	0.627	0.783	0.890	**11.0%**	**61.33%**
44	22,306	4,600	6,672	11,272	7,392	58%	0.43	68.7	0.431	1.000	0.582	0.763	0.865	**13.5%**	**61.92%**
45	19,107	4,495	3,466	7,961	6,196	60%	0.44	72	0.570	1.000	0.688	0.827	0.925	**7.5%**	**57.87%**
46	33,938	4,600	6,672	11,272	11,743	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**63.70%**
47	17,914	4,195	2,991	7,186	5,750	60%	0.45	72.1	0.574	1.000	0.691	0.830	0.928	**7.2%**	**55.19%**
48	18,213	4,359	2,696	7,055	5,862	60%	0.45	72.7	0.600	1.000	0.710	0.840	0.936	**6.4%**	**58.82%**
49	20,160	4,600	3,080	7,680	6,590	59%	0.44	73.2	0.621	1.000	0.726	0.847	0.942	**5.8%**	**58.18%**
50	17,162	3,947	2,879	6,826	5,469	61%	0.45	70.4	0.503	0.970	0.636	0.788	0.895	**10.5%**	**55.83%**
51	19,569	4,600	4,023	8,623	6,369	59%	0.44	69	0.444	1.000	0.592	0.773	0.874	**12.6%**	**65.25%**
52	17,627	4,098	2,776	6,874	5,642	61%	0.45	69.5	0.465	0.956	0.608	0.765	0.874	**12.6%**	**59.99%**
53	18,160	4,600	3,711	8,311	5,842	60%	0.45	67.1	0.364	0.975	0.531	0.730	0.829	**17.1%**	**61.27%**
54	15,590	3,638	2,614	6,252	4,881	62%	0.46	70.4	0.503	0.945	0.636	0.779	0.890	**11.0%**	**54.95%**
55	39,345	4,600	6,672	11,272	13,765	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**67.36%**
56	17,387	4,218	2,812	7,030	5,553	61%	0.45	72	0.570	1.000	0.688	0.829	0.927	**7.3%**	**56.98%**
57	24,130	4,600	6,643	11,243	8,075	57%	0.43	68.3	0.414	1.000	0.569	0.753	0.855	**14.5%**	**65.28%**
58	15,514	4,183	2,621	6,804	4,852	62%	0.46	70.7	0.515	0.974	0.646	0.798	0.902	**9.8%**	**59.11%**
59	23,634	4,600	5,034	9,634	7,889	57%	0.43	68.1	0.406	1.000	0.563	0.750	0.852	**14.8%**	**64.08%**
60	17,121	4,098	2,709	6,807	5,453	61%	0.45	70.7	0.515	0.974	0.646	0.795	0.901	**9.9%**	**59.21%**
61	19,427	2,455	5,592	8,047	6,316	59%	0.44	70.1	0.490	1.000	0.627	0.792	0.894	**10.6%**	**55.42%**
62	21,622	4,600	4,929	9,529	7,137	58%	0.43	69.7	0.473	1.000	0.614	0.782	0.885	**11.5%**	**62.79%**
63	24,787	4,600	6,672	11,272	8,320	57%	0.43	69.1	0.448	1.000	0.595	0.767	0.871	**12.9%**	**62.65%**
64	19,414	4,470	2,947	7,417	6,311	59%	0.44	71.8	0.562	1.000	0.681	0.823	0.922	**7.8%**	**58.14%**
65	9,572	42	381	423	2,630	71%	0.52	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**	**57.10%**
66	16,476	4,600	3,904	8,504	5,212	61%	0.46	70	0.486	1.000	0.624	0.796	0.895	**10.5%**	**63.02%**
67	19,425	2,843	5,206	8,049	6,315	59%	0.44	69.2	0.452	1.000	0.598	0.776	0.878	**12.2%**	**59.20%**
68	16,270	4,600	4,069	8,669	5,135	62%	0.46	66.9	0.356	0.987	0.525	0.737	0.830	**17.0%**	**63.02%**
69	18,070	4,295	2,892	7,187	5,808	60%	0.45	71.9	0.566	1.000	0.684	0.826	0.925	**7.5%**	**56.35%**
70	24,415	4,600	6,672	11,272	8,181	57%	0.43	66	0.318	1.000	0.496	0.711	0.803	**19.7%**	**67.56%**
71	55,568	4,600	4,685	9,285	19,832	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**71.43%**
72	18,436	4,397	3,354	7,751	5,945	60%	0.45	68.4	0.419	0.974	0.572	0.752	0.856	**14.4%**	**59.21%**
73	16,649	3,910	2,620	6,530	5,277	61%	0.46	69.4	0.461	0.939	0.604	0.757	0.869	**13.1%**	**56.98%**
74	13,270	4,143	3,843	7,986	4,013	65%	0.48	71.6	0.553	1.000	0.675	0.831	0.925	**7.5%**	**55.84%**
75	20,310	4,600	3,140	7,740	6,646	59%	0.44	73.2	0.621	1.000	0.726	0.846	0.942	**5.8%**	**51.06%**
76	14,550	4,461	1,076	5,537	4,492	63%	0.47	69.4	0.461	0.896	0.604	0.742	0.861	**13.9%**	**59.96%**
77	16,872	4,067	2,490	6,557	5,360	61%	0.46	68.6	0.427	0.926	0.579	0.737	0.849	**15.1%**	**57.45%**
78	19,658	4,542	2,908	7,450	6,402	59%	0.44	68.5	0.423	0.963	0.576	0.747	0.854	**14.6%**	**56.73%**
79	10,572	1,772	1,294	3,066	3,004	69%	0.51	69.4	0.461	0.788	0.604	0.698	0.837	**16.3%**	**58.28%**
80	13,938	3,817	1,247	5,064	4,263	64%	0.48	69	0.444	0.868	0.592	0.723	0.846	**15.4%**	**57.26%**
														Average	**59.86%**

BG10 ='Study 467 Flow Data'!G7
BH10 ='Study 467 Flow Data'!Q7
BI10 ='Study 467 Flow Data'!AA7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$G$2,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10
BO10 =IF((-2.45925+(0.0420748*BN10))<0,0,(-2.45925+(0.0420748*BN10)))
BP10 =IF(((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10))>1,1,((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10)
BQ10 =-1.613493+(0.0319584*BN10)
BR10 =(BP10*BM10)+(BQ10*(1-BM10))
BS10 =BO10+BR10-(BO10*BR10)
BT10 =1-BS10

BV10 ='Study 467 Flow Data'!H7
BW10 ='Study 467 Flow Data'!R7
BX10 ='Study 467 Flow Data'!AB7
BY10 =(BW10+BX10)
BZ10 =0.374*BV10-950
CA10 =IF(BV10>$K$4,(0.133*BV10+829)/(BV10-BZ10),(0.293*BV10+2090)/(BV10-BZ10))
CB10 =(0.45*(0.133*BV10+829)/(BV10-BZ10))+(0.55*CA10)
CC10
CD10 =IF((-2.45925+(0.0420748*CC10))<0,0,(-2.45925+(0.0420748*CC10)))
CE10 =IF(((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10))>1,1,((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10)))
CF10 =-1.613493+(0.0319584*CC10)
CG10 =(CE10*CB10)+(CF10*(1-CB10))
CH10 =CD10+CG10-(CD10*CG10)
CI10 =1-CH10

CK10 ='Study 467 Flow Data'!I7
CL10 ='Study 467 Flow Data'!S7
CM10 ='Study 467 Flow Data'!AC7
CN10 =(CL10+CM10)
CO10 =0.374*CK10-950
CP10 =IF(CK10>$K$4,(0.133*CK10+829)/(CK10-CO10),(0.293*CK10+2090)/(CK10-CO10))
CQ10 =(0.45*(0.133*CK10+829)/(CK10-CO10))+(0.55*CP10)
CR10
CS10 =IF((-2.45925+(0.0420748*CR10))<0,0,(-2.45925+(0.0420748*CR10)))
CT10 =IF(((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10))>1,1,((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10)))
CU10 =-1.613493+(0.0319584*CR10)
CV10 =(CT10*CQ10)+(CU10*(1-CQ10))
CW10 =CS10+CV10-(CS10*CV10)
CX10 =1-CW10
CZ10 =(0.01*O10)+(0.06*AC10)+(0.17*AQ10)+(0.28*BE10)+(0.25*BT10)+(0.16*CI10)+(0.07*CX10)

Study 501A Sacramento River Spring Run YOY Smolt Survival Model

Modified m2 by changing the slope to 0.0000434
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

Cross Channel Closed Over 25000 cfs
Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

February Water Temp 50 F
March Water Temp 55 F

DECEMBER

Year	Water Year Type	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	A	17,143	4,207	7,100	11,307	5,461	61%	0.45	0	0.744	0.000	0.338	0.338	**66.2%**
1923	B	34,539	4,207	5,063	9,270	11,968	24%	0.24	0	0.655	0.000	0.157	0.157	**84.3%**
1924	C	13,864	3,686	6,669	10,355	4,235	64%	0.48	0	0.702	0.000	0.335	0.335	**66.5%**
1925	D	11,248	4,207	4,848	9,055	3,257	67%	0.50	0	0.646	0.000	0.324	0.324	**67.6%**
1926	D	12,631	4,207	2,488	6,695	3,774	65%	0.49	0	0.543	0.000	0.265	0.265	**73.5%**
1927	W	14,304	4,207	6,995	11,202	4,400	63%	0.47	0	0.739	0.000	0.350	0.350	**65.0%**
1928	A	16,574	4,207	7,071	11,278	5,249	61%	0.46	0	0.742	0.000	0.340	0.340	**66.0%**
1929	C	13,461	4,207	6,029	10,236	4,084	64%	0.48	0	0.697	0.000	0.334	0.334	**66.6%**
1930	D	14,442	4,207	6,300	10,507	4,451	63%	0.47	0	0.709	0.000	0.335	0.335	**66.5%**
1931	C	9,328	2,194	2,976	5,170	2,539	71%	0.53	0	0.477	0.000	0.252	0.252	**74.8%**
1932	D	14,650	4,207	7,194	11,401	4,529	63%	0.47	0	0.748	0.000	0.352	0.352	**64.8%**
1933	C	8,189	2,019	2,506	4,525	2,113	74%	0.55	0	0.449	0.000	0.246	0.246	**75.4%**
1934	C	12,474	4,166	5,542	9,708	3,715	66%	0.49	0	0.674	0.000	0.329	0.329	**67.1%**
1935	B	8,503	3,215	3,393	6,608	2,230	73%	0.54	0	0.540	0.000	0.293	0.293	**70.7%**
1936	B	10,625	4,207	3,038	7,245	3,024	68%	0.51	0	0.567	0.000	0.289	0.289	**71.1%**
1937	B	12,309	4,207	5,378	9,585	3,654	66%	0.49	0	0.669	0.000	0.328	0.328	**67.2%**
1938	W	42,450	4,207	7,531	11,738	14,926	24%	0.24	0	0.762	0.000	0.179	0.179	**82.1%**
1939	D	18,684	4,207	3,735	7,942	6,038	60%	0.45	0	0.598	0.000	0.267	0.267	**73.3%**
1940	A	7,841	1,432	2,676	4,108	1,983	75%	0.56	0	0.431	0.000	0.240	0.240	**76.0%**
1941	W	34,942	4,207	7,338	11,545	12,118	24%	0.24	0	0.754	0.000	0.181	0.181	**81.9%**
1942	W	65,619	4,207	3,608	7,815	23,592	23%	0.23	0	0.592	0.000	0.135	0.135	**86.5%**
1943	W	28,806	4,207	3,779	7,986	9,823	25%	0.25	0	0.599	0.000	0.147	0.147	**85.3%**
1944	D	13,774	4,207	6,424	10,631	4,201	64%	0.48	0	0.714	0.000	0.341	0.341	**65.9%**
1945	B	15,826	4,207	6,967	11,174	4,969	62%	0.46	0	0.738	0.000	0.341	0.341	**65.9%**
1946	B	53,556	4,207	7,592	11,799	19,080	23%	0.23	0	0.765	0.000	0.176	0.176	**82.4%**
1947	D	18,132	4,207	7,124	11,331	5,831	60%	0.45	0	0.745	0.000	0.335	0.335	**66.5%**
1948	B	9,844	2,705	3,142	5,847	2,732	70%	0.52	0	0.507	0.000	0.263	0.263	**73.7%**
1949	D	15,563	4,207	6,898	11,105	4,871	62%	0.46	0	0.735	0.000	0.341	0.341	**65.9%**
1950	B	11,700	4,207	3,056	7,263	3,426	67%	0.50	0	0.568	0.000	0.282	0.282	**71.8%**
1951	A	68,100	4,207	7,592	11,799	24,519	23%	0.23	0	0.765	0.000	0.174	0.174	**82.6%**
1952	W	45,618	4,207	7,106	11,313	16,111	23%	0.23	0	0.744	0.000	0.174	0.174	**82.6%**
1953	W	42,331	4,207	3,742	7,949	14,882	24%	0.24	0	0.598	0.000	0.141	0.141	**85.9%**
1954	A	14,919	4,207	3,897	8,104	4,630	63%	0.47	0	0.605	0.000	0.283	0.283	**71.7%**
1955	D	26,020	4,207	6,909	11,116	8,781	25%	0.25	0	0.735	0.000	0.183	0.183	**81.7%**
1956	W	26,142	4,207	7,592	11,799	8,827	25%	0.25	0	0.765	0.000	0.190	0.190	**81.0%**
1957	A	14,143	4,207	5,892	10,099	4,339	64%	0.47	0	0.691	0.000	0.328	0.328	**67.2%**
1958	W	23,752	4,207	6,926	11,133	7,933	57%	0.43	0	0.736	0.000	0.315	0.315	**68.5%**
1959	B	14,627	4,207	3,852	8,059	4,520	63%	0.47	0	0.603	0.000	0.284	0.284	**71.6%**
1960	D	10,422	3,568	2,791	6,359	2,948	69%	0.51	0	0.529	0.000	0.271	0.271	**72.9%**
1961	D	17,250	4,207	6,891	11,098	5,502	61%	0.45	0	0.735	0.000	0.334	0.334	**66.6%**
1962	B	16,951	4,207	6,877	11,084	5,390	61%	0.46	0	0.734	0.000	0.334	0.334	**66.6%**
1963	W	27,555	4,207	6,895	11,102	9,356	25%	0.25	0	0.735	0.000	0.181	0.181	**81.9%**
1964	D	14,847	4,207	5,833	10,040	4,603	63%	0.47	0	0.689	0.000	0.323	0.323	**67.7%**
1965	W	29,335	4,207	7,355	11,562	10,021	24%	0.24	0	0.755	0.000	0.185	0.185	**81.5%**
1966	B	16,997	4,207	6,485	10,692	5,407	61%	0.46	0	0.717	0.000	0.327	0.327	**67.3%**
1967	W	35,155	4,207	7,125	11,332	12,198	24%	0.24	0	0.745	0.000	0.179	0.179	**82.1%**
1968	B	16,692	3,365	3,735	7,100	5,293	61%	0.46	0	0.561	0.000	0.256	0.256	**74.4%**
1969	W	24,093	4,207	6,971	11,178	8,061	57%	0.43	0	0.738	0.000	0.315	0.315	**68.5%**
1970	W	50,159	4,207	3,481	7,688	17,809	23%	0.23	0	0.587	0.000	0.136	0.136	**86.4%**
1971	W	53,503	4,207	7,042	11,249	19,060	23%	0.23	0	0.741	0.000	0.171	0.171	**82.9%**
1972	B	20,347	4,207	6,933	11,140	6,660	59%	0.44	0	0.736	0.000	0.324	0.324	**67.6%**
1973	A	26,198	4,207	6,904	11,111	8,848	25%	0.25	0	0.735	0.000	0.183	0.183	**81.7%**
1974	W	61,593	4,207	7,144	11,351	22,086	23%	0.23	0	0.746	0.000	0.170	0.170	**83.0%**
1975	W	17,619	4,207	4,302	8,509	5,640	61%	0.45	0	0.622	0.000	0.281	0.281	**71.9%**
1976	C	16,774	4,207	5,394	9,601	5,323	61%	0.46	0	0.670	0.000	0.306	0.306	**69.4%**
1977	C	8,158	1,736	3,079	4,815	2,101	74%	0.55	0	0.462	0.000	0.254	0.254	**74.6%**
1978	A	12,285	4,139	5,529	9,668	3,645	66%	0.49	0	0.672	0.000	0.330	0.330	**67.0%**
1979	B	14,021	4,207	4,075	8,282	4,294	64%	0.48	0	0.612	0.000	0.291	0.291	**70.9%**
1980	A	20,332	4,207	6,987	11,194	6,654	59%	0.44	0	0.739	0.000	0.325	0.325	**67.5%**
1981	D	15,611	4,207	4,093	8,300	4,889	62%	0.46	0	0.613	0.000	0.284	0.284	**71.6%**
1982	W	68,133	4,207	7,011	11,218	24,532	23%	0.23	0	0.740	0.000	0.168	0.168	**83.2%**
1983	W	55,416	4,207	4,428	8,635	19,776	23%	0.23	0	0.628	0.000	0.144	0.144	**85.6%**
1984	W	82,951	2,994	3,104	6,098	30,074	22%	0.22	0	0.518	0.000	0.116	0.116	**88.4%**
1985	D	23,880	4,207	6,887	11,094	7,981	57%	0.43	0	0.734	0.000	0.314	0.314	**68.6%**
1986	W	15,472	4,207	6,943	11,150	4,837	62%	0.46	0	0.737	0.000	0.342	0.342	**65.8%**
1987	D	13,788	4,207	6,094	10,301	4,207	64%	0.48	0	0.700	0.000	0.334	0.334	**66.6%**
1988	C	15,842	4,207	6,875	11,082	4,975	62%	0.46	0	0.734	0.000	0.339	0.339	**66.1%**
1989	D	8,852	2,840	3,560	6,400	2,361	72%	0.54	0	0.531	0.000	0.284	0.284	**71.6%**
1990	C	14,632	4,207	6,198	10,405	4,522	63%	0.47	0	0.704	0.000	0.331	0.331	**66.9%**
1991	C	8,800	1,692	3,183	4,875	2,341	72%	0.54	0	0.464	0.000	0.249	0.249	**75.1%**
1992	C	7,465	2,964	1,608	4,572	1,842	76%	0.56	0	0.451	0.000	0.255	0.255	**74.5%**

JANUARY

Year	Sac River Flows	CVP	SWP	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	17,504	4,207	7,576	11,783	5,596	61%	0.27	0	0.764	0.000	0.203	0.203	**79.7%**
1923	32,280	4,207	3,637	7,844	11,123	24%	0.24	0	0.593	0.000	0.144	0.144	**85.6%**
1924	14,370	4,207	6,490	10,697	4,424	63%	0.28	0	0.717	0.000	0.198	0.198	**80.2%**
1925	10,209	3,551	3,151	6,702	2,868	69%	0.30	0	0.544	0.000	0.162	0.162	**83.8%**
1926	17,769	4,207	7,087	11,294	5,696	60%	0.26	0	0.743	0.000	0.196	0.196	**80.4%**
1927	29,780	4,207	7,264	11,471	10,188	24%	0.24	0	0.751	0.000	0.184	0.184	**81.6%**
1928	25,207	4,207	3,637	7,844	8,477	25%	0.25	0	0.593	0.000	0.148	0.148	**85.2%**
1929	15,016	4,207	6,799	11,006	4,666	63%	0.27	0	0.731	0.000	0.199	0.199	**80.1%**
1930	20,771	4,207	7,092	11,299	6,818	59%	0.26	0	0.743	0.000	0.191	0.191	**80.9%**
1931	11,965	4,207	4,897	9,104	3,525	66%	0.29	0	0.648	0.000	0.186	0.186	**81.4%**
1932	17,253	4,207	7,827	12,034	5,503	61%	0.27	0	0.775	0.000	0.206	0.206	**79.4%**
1933	12,102	4,207	5,416	9,623	3,576	66%	0.29	0	0.671	0.000	0.192	0.192	**80.8%**
1934	16,103	4,207	7,093	11,300	5,073	62%	0.27	0	0.743	0.000	0.200	0.200	**80.0%**
1935	25,471	4,207	7,666	11,873	8,576	25%	0.25	0	0.768	0.000	0.192	0.192	**80.8%**
1936	31,259	4,207	7,453	11,660	10,741	24%	0.24	0	0.759	0.000	0.184	0.184	**81.6%**
1937	15,467	4,207	7,581	11,788	4,835	62%	0.27	0	0.764	0.000	0.208	0.208	**79.2%**
1938	31,443	4,207	4,495	8,702	10,810	24%	0.24	0	0.631	0.000	0.153	0.153	**84.7%**
1939	18,407	1,576	3,239	4,815	5,934	60%	0.26	0	0.462	0.000	0.121	0.121	**87.9%**
1940	23,448	4,207	8,017	12,224	7,820	57%	0.25	0	0.783	0.000	0.198	0.198	**80.2%**
1941	71,845	4,207	8,141	12,348	25,920	23%	0.23	0	0.789	0.000	0.178	0.178	**82.2%**
1942	63,260	4,207	3,239	7,446	22,709	23%	0.23	0	0.576	0.000	0.131	0.131	**86.9%**
1943	58,056	4,207	3,304	7,511	20,763	23%	0.23	0	0.579	0.000	0.133	0.133	**86.7%**
1944	17,677	4,207	3,262	7,469	5,661	60%	0.26	0	0.577	0.000	0.153	0.153	**84.7%**
1945	13,621	4,207	4,919	9,126	4,144	64%	0.28	0	0.649	0.000	0.181	0.181	**81.9%**
1946	43,229	4,207	3,637	7,844	15,218	23%	0.23	0	0.593	0.000	0.139	0.139	**86.1%**
1947	14,971	4,207	7,187	11,394	4,649	63%	0.27	0	0.747	0.000	0.204	0.204	**79.6%**
1948	14,649	4,207	6,357	10,564	4,529	63%	0.27	0	0.711	0.000	0.195	0.195	**80.5%**
1949	14,928	4,207	6,818	11,025	4,633	63%	0.27	0	0.731	0.000	0.200	0.200	**80.0%**
1950	19,934	4,207	7,176	11,383	6,505	59%	0.26	0	0.747	0.000	0.194	0.194	**80.6%**
1951	62,213	4,207	8,500	12,707	22,318	23%	0.23	0	0.804	0.000	0.184	0.184	**81.6%**
1952	67,352	4,207	8,369	12,576	24,240	23%	0.23	0	0.799	0.000	0.181	0.181	**81.9%**
1953	64,078	1,561	3,333	4,894	23,015	23%	0.23	0	0.465	0.000	0.106	0.106	**89.4%**
1954	33,414	4,207	3,833	8,040	11,547	24%	0.24	0	0.602	0.000	0.145	0.145	**85.5%**
1955	22,257	4,207	7,194	11,401	7,374	58%	0.25	0	0.748	0.000	0.190	0.190	**81.0%**
1956	83,983	4,207	8,064	12,271	30,460	22%	0.22	0	0.785	0.000	0.176	0.176	**82.4%**
1957	18,639	4,207	3,891	8,098	6,021	60%	0.26	0	0.604	0.000	0.158	0.158	**84.2%**
1958	36,214	4,207	3,950	8,157	12,594	24%	0.24	0	0.607	0.000	0.145	0.145	**85.5%**
1959	35,167	1,580	3,333	4,913	12,202	24%	0.24	0	0.466	0.000	0.112	0.112	**88.8%**
1960	14,522	4,207	6,411	10,618	4,481	63%	0.27	0	0.714	0.000	0.196	0.196	**80.4%**
1961	14,008	4,207	6,426	10,633	4,289	64%	0.28	0	0.714	0.000	0.198	0.198	**80.2%**
1962	12,902	4,207	4,165	8,372	3,875	65%	0.28	0	0.616	0.000	0.174	0.174	**82.6%**
1963	17,805	4,207	7,247	11,454	5,709	60%	0.26	0	0.750	0.000	0.198	0.198	**80.2%**
1964	24,193	4,207	3,847	8,054	8,098	57%	0.25	0	0.602	0.000	0.151	0.151	**84.9%**
1965	81,240	4,207	8,500	12,707	29,434	22%	0.22	0	0.804	0.000	0.181	0.181	**81.9%**
1966	29,635	4,207	3,657	7,864	10,133	24%	0.24	0	0.594	0.000	0.145	0.145	**85.5%**
1967	33,973	4,207	7,673	11,880	11,756	24%	0.24	0	0.768	0.000	0.185	0.185	**81.5%**
1968	30,635	1,562	3,333	4,895	10,507	24%	0.24	0	0.465	0.000	0.113	0.113	**88.7%**
1969	67,423	4,207	6,847	11,054	24,266	23%	0.23	0	0.733	0.000	0.166	0.166	**83.4%**
1970	92,665	1,356	3,333	4,689	33,707	22%	0.22	0	0.456	0.000	0.102	0.102	**89.8%**
1971	45,772	4,207	4,933	9,140	16,169	23%	0.23	0	0.650	0.000	0.152	0.152	**84.8%**
1972	20,395	4,207	3,891	8,098	6,678	59%	0.26	0	0.604	0.000	0.156	0.156	**84.4%**
1973	49,326	4,207	7,457	11,664	17,498	23%	0.23	0	0.759	0.000	0.176	0.176	**82.4%**
1974	78,417	4,207	3,637	7,844	28,378	22%	0.22	0	0.593	0.000	0.133	0.133	**86.7%**
1975	18,672	4,207	3,850	8,057	6,033	60%	0.26	0	0.603	0.000	0.158	0.158	**84.2%**
1976	16,987	4,207	3,818	8,025	5,322	61%	0.27	0	0.601	0.000	0.161	0.161	**83.9%**
1977	7,906	2,356	2,440	4,796	2,007	75%	0.32	0	0.461	0.000	0.147	0.147	**85.3%**
1978	43,064	3,290	7,767	11,057	15,156	23%	0.23	0	0.733	0.000	0.172	0.172	**82.8%**
1979	27,242	4,207	3,262	7,469	9,239	25%	0.25	0	0.577	0.000	0.143	0.143	**85.7%**
1980	59,143	4,207	3,159	7,366	21,169	23%	0.23	0	0.573	0.000	0.131	0.131	**86.9%**
1981	27,778	2,381	3,356	5,737	9,439	25%	0.25	0	0.502	0.000	0.124	0.124	**87.6%**
1982	51,172	4,207	8,050	12,257	18,188	23%	0.23	0	0.785	0.000	0.182	0.182	**81.8%**
1983	59,148	2,875	2,648	5,523	21,171	23%	0.23	0	0.493	0.000	0.113	0.113	**88.7%**
1984	47,354	1,331	2,881	4,212	16,760	23%	0.23	0	0.436	0.000	0.101	0.101	**89.9%**
1985	16,549	4,207	3,872	8,079	5,239	61%	0.27	0	0.604	0.000	0.162	0.162	**83.8%**
1986	21,253	4,207	7,326	11,533	6,999	58%	0.26	0	0.753	0.000	0.193	0.193	**80.7%**
1987	16,734	1,774	6,500	8,274	5,309	61%	0.27	0	0.612	0.000	0.164	0.164	**83.6%**
1988	25,530	4,207	7,058	11,265	8,598	25%	0.25	0	0.742	0.000	0.185	0.185	**81.5%**
1989	12,003	4,051	4,649	8,700	3,539	66%	0.29	0	0.630	0.000	0.181	0.181	**81.9%**
1990	21,584	2,440	7,059	9,499	7,122	58%	0.26	0	0.665	0.000	0.170	0.170	**83.0%**
1991	6,851	1,697	1,707	3,404	1,612	78%	0.33	0	0.401	0.000	0.133	0.133	**86.7%**
1992	12,140	3,977	5,011	8,988	3,590	66%	0.29	0	0.643	0.000	0.184	0.184	**81.6%**

FEBRUARY

Year	Sac River Flow	CVP	SWP	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	34,253	4,250	6,373	10,623	11,861	24%	0.24	0	0.768	0.000	0.185	0.185	**81.5%**
1923	22,238	2,172	2,380	4,552	7,367	58%	0.25	0	0.504	0.000	0.128	0.128	**87.2%**
1924	17,251	4,218	4,671	8,889	5,502	60%	0.27	0	0.693	0.000	0.184	0.184	**81.6%**
1925	44,691	3,188	7,583	10,771	15,764	23%	0.23	0	0.774	0.000	0.181	0.181	**81.9%**
1926	34,967	4,228	7,507	11,735	12,128	24%	0.24	0	0.816	0.000	0.196	0.196	**80.4%**
1927	86,738	2,960	8,470	11,430	31,490	22%	0.22	0	0.803	0.000	0.180	0.180	**82.0%**
1928	27,680	2,137	4,377	6,514	9,402	25%	0.25	0	0.590	0.000	0.145	0.145	**85.5%**
1929	17,787	4,022	5,173	9,195	5,702	60%	0.26	0	0.706	0.000	0.187	0.187	**81.3%**
1930	15,675	2,782	4,004	6,786	4,912	62%	0.27	0	0.601	0.000	0.163	0.163	**83.7%**
1931	11,083	3,335	1,890	5,225	3,195	66%	0.29	0	0.534	0.000	0.156	0.156	**84.4%**
1932	14,487	4,242	5,884	10,126	4,468	64%	0.28	0	0.746	0.000	0.205	0.205	**79.5%**
1933	11,975	3,836	2,699	6,535	3,529	64%	0.29	0	0.590	0.000	0.169	0.169	**83.1%**
1934	12,740	1,230	4,555	5,785	3,815	66%	0.28	0	0.558	0.000	0.158	0.158	**84.2%**
1935	11,977	685	3,943	4,628	3,529	67%	0.29	0	0.508	0.000	0.146	0.146	**85.4%**
1936	47,463	4,249	8,500	12,749	16,801	23%	0.23	0	0.860	0.000	0.200	0.200	**80.0%**
1937	32,025	3,979	5,502	9,481	11,027	24%	0.24	0	0.718	0.000	0.174	0.174	**82.6%**
1938	82,366	1,227	3,939	5,166	29,855	22%	0.22	0	0.531	0.000	0.119	0.119	**88.1%**
1939	19,024	1,570	3,955	5,525	6,165	59%	0.26	0	0.547	0.000	0.143	0.143	**85.7%**
1940	43,629	4,240	8,500	12,740	15,367	23%	0.23	0	0.860	0.000	0.202	0.202	**79.8%**
1941	75,037	4,083	6,872	10,955	27,114	23%	0.23	0	0.782	0.000	0.176	0.176	**82.4%**
1942	78,349	1,677	3,955	5,632	28,353	22%	0.23	0	0.551	0.000	0.124	0.124	**87.6%**
1943	52,259	2,015	4,005	6,020	18,595	23%	0.23	0	0.568	0.000	0.131	0.131	**86.9%**
1944	31,089	1,430	3,994	5,424	10,677	24%	0.24	0	0.542	0.000	0.132	0.132	**86.8%**
1945	38,099	4,240	4,054	8,294	13,299	23%	0.24	0	0.667	0.000	0.159	0.159	**84.1%**
1946	23,843	2,568	3,215	5,783	7,967	57%	0.25	0	0.558	0.000	0.141	0.141	**85.9%**
1947	21,069	4,242	3,961	8,203	6,930	58%	0.26	0	0.663	0.000	0.170	0.170	**83.0%**
1948	16,018	4,229	1,726	5,955	5,041	64%	0.27	0	0.565	0.000	0.152	0.152	**84.8%**
1949	16,274	4,244	4,180	8,424	5,136	61%	0.27	0	0.672	0.000	0.181	0.181	**81.9%**
1950	32,496	4,246	7,531	11,777	11,204	24%	0.24	0	0.818	0.000	0.198	0.198	**80.2%**
1951	60,566	4,280	7,074	11,354	21,702	23%	0.23	0	0.800	0.000	0.183	0.183	**81.7%**
1952	64,731	4,293	3,909	8,202	23,259	23%	0.23	0	0.663	0.000	0.151	0.151	**84.9%**
1953	28,344	2,005	4,060	6,065	9,651	25%	0.25	0	0.570	0.000	0.140	0.140	**86.0%**
1954	57,158	1,973	4,636	6,609	20,427	23%	0.23	0	0.594	0.000	0.136	0.136	**86.4%**
1955	16,298	4,258	3,154	7,412	5,145	61%	0.27	0	0.628	0.000	0.169	0.169	**83.1%**
1956	63,748	4,282	4,675	8,957	22,892	23%	0.23	0	0.696	0.000	0.158	0.158	**84.2%**
1957	33,144	4,251	4,638	8,889	11,446	24%	0.24	0	0.693	0.000	0.167	0.167	**83.3%**
1958	62,990	3,735	4,045	7,780	22,608	23%	0.23	0	0.644	0.000	0.147	0.147	**85.3%**
1959	50,082	1,814	4,060	5,874	17,781	23%	0.23	0	0.562	0.000	0.130	0.130	**87.0%**
1960	27,024	4,230	7,296	11,526	9,157	25%	0.25	0	0.807	0.000	0.200	0.200	**80.0%**
1961	30,874	4,041	7,109	11,150	10,597	24%	0.24	0	0.791	0.000	0.192	0.192	**80.8%**
1962	41,753	4,240	8,500	12,740	14,666	23%	0.24	0	0.860	0.000	0.203	0.203	**79.7%**
1963	58,178	4,279	8,265	12,544	20,809	23%	0.23	0	0.851	0.000	0.195	0.195	**80.5%**
1964	17,842	1,976	4,638	6,614	5,723	61%	0.26	0	0.594	0.000	0.157	0.157	**84.3%**
1965	33,326	4,255	7,174	11,429	11,514	24%	0.24	0	0.803	0.000	0.194	0.194	**80.6%**
1966	26,777	2,054	4,377	6,431	9,065	25%	0.25	0	0.586	0.000	0.145	0.145	**85.5%**
1967	43,080	4,293	3,202	7,495	15,162	24%	0.23	0	0.632	0.000	0.148	0.148	**85.2%**
1968	56,470	1,981	4,060	6,041	20,170	23%	0.23	0	0.569	0.000	0.131	0.131	**86.9%**
1969	67,482	1,739	3,171	4,910	24,288	23%	0.23	0	0.520	0.000	0.118	0.118	**88.2%**
1970	57,565	1,188	4,060	5,248	20,579	23%	0.23	0	0.535	0.000	0.123	0.123	**87.7%**
1971	28,525	3,253	3,999	7,252	9,718	24%	0.25	0	0.622	0.000	0.153	0.153	**84.7%**
1972	25,083	4,260	4,622	8,882	8,431	57%	0.25	0	0.692	0.000	0.173	0.173	**82.7%**
1973	70,967	4,267	4,425	8,692	25,592	23%	0.23	0	0.684	0.000	0.155	0.155	**84.5%**
1974	41,926	3,930	4,377	8,307	14,730	24%	0.24	0	0.667	0.000	0.157	0.157	**84.3%**
1975	58,811	3,191	4,636	7,827	21,045	23%	0.23	0	0.646	0.000	0.148	0.148	**85.2%**
1976	20,229	4,241	4,290	8,531	6,616	59%	0.26	0	0.677	0.000	0.175	0.175	**82.5%**
1977	12,358	720	1,425	2,145	3,672	68%	0.28	0	0.400	0.000	0.114	0.114	**88.6%**
1978	51,351	1,740	6,951	8,691	18,255	23%	0.23	0	0.684	0.000	0.158	0.158	**84.2%**
1979	41,682	1,501	3,958	5,459	14,639	24%	0.24	0	0.544	0.000	0.128	0.128	**87.2%**
1980	71,932	911	3,768	4,679	25,953	23%	0.23	0	0.510	0.000	0.115	0.115	**88.5%**
1981	29,672	1,769	4,062	5,831	10,147	24%	0.24	0	0.560	0.000	0.137	0.137	**86.3%**
1982	65,645	3,641	4,620	8,261	23,601	23%	0.23	0	0.665	0.000	0.151	0.151	**84.9%**
1983	82,910	1,395	2,793	4,188	30,058	22%	0.22	0	0.489	0.000	0.110	0.110	**89.0%**
1984	37,282	1,483	3,847	5,330	12,993	24%	0.24	0	0.538	0.000	0.128	0.128	**87.2%**
1985	18,931	4,095	4,638	8,733	6,130	58%	0.26	0	0.686	0.000	0.179	0.179	**82.1%**
1986	95,999	4,243	8,500	12,743	34,954	22%	0.22	0	0.860	0.000	0.192	0.192	**80.8%**
1987	23,028	1,296	4,191	5,487	7,662	57%	0.25	0	0.545	0.000	0.138	0.138	**86.2%**
1988	16,624	3,843	2,541	6,384	5,267	62%	0.27	0	0.584	0.000	0.156	0.156	**84.4%**
1989	13,102	961	1,770	2,731	3,950	67%	0.28	0	0.425	0.000	0.120	0.120	**88.0%**
1990	16,946	1,265	6,537	7,802	5,388	61%	0.27	0	0.645	0.000	0.172	0.172	**82.8%**
1991	10,301	408	112	520	2,903	67%	0.30	0	0.329	0.000	0.098	0.098	**90.2%**
1992	32,538	645	7,457	8,102	11,219	24%	0.24	0	0.658	0.000	0.159	0.159	**84.1%**

MARCH

Year	Sac River Flow	CVP	SWP	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	31,554	2,826	4,142	6,968	10,851	24%	0.24	0	0.699	0.144	0.279	0.279	**72.1%**
1923	15,486	3,262	3,737	6,999	4,842	27%	0.27	0	0.700	0.144	0.295	0.295	**70.5%**
1924	12,013	1,455	1,613	3,068	3,543	29%	0.29	0	0.530	0.144	0.255	0.255	**74.5%**
1925	30,216	3,241	3,175	6,416	10,351	24%	0.24	0	0.675	0.144	0.274	0.274	**72.6%**
1926	15,519	2,747	3,778	6,525	4,854	27%	0.27	0	0.680	0.144	0.290	0.290	**71.0%**
1927	43,865	3,370	4,153	7,523	15,456	23%	0.23	0	0.723	0.144	0.280	0.280	**72.0%**
1928	86,223	3,137	4,424	7,561	31,297	22%	0.22	0	0.725	0.144	0.274	0.274	**72.6%**
1929	13,763	1,983	2,793	4,776	4,197	28%	0.28	0	0.604	0.144	0.272	0.272	**72.8%**
1930	30,090	2,979	4,625	7,604	10,304	24%	0.24	0	0.727	0.144	0.286	0.286	**71.4%**
1931	8,761	1,659	1,676	3,335	2,327	31%	0.31	0	0.541	0.144	0.267	0.267	**73.3%**
1932	10,540	935	2,739	3,674	2,992	30%	0.30	0	0.556	0.144	0.266	0.266	**73.4%**
1933	10,393	293	4,336	4,629	2,937	30%	0.30	0	0.598	0.144	0.279	0.279	**72.1%**
1934	14,236	2,213	1,757	3,970	4,374	28%	0.28	0	0.569	0.144	0.261	0.261	**73.9%**
1935	24,918	4,225	6,982	11,207	8,369	25%	0.25	0	0.883	0.144	0.329	0.329	**67.1%**
1936	33,198	4,225	7,360	11,585	11,466	24%	0.24	0	0.899	0.144	0.326	0.326	**67.4%**
1937	37,120	2,578	4,030	6,608	12,933	24%	0.24	0	0.683	0.144	0.273	0.273	**72.7%**
1938	78,637	2,058	3,966	6,024	28,460	22%	0.22	0	0.658	0.144	0.260	0.260	**74.0%**
1939	16,390	2,727	3,989	6,716	5,180	27%	0.27	0	0.688	0.144	0.290	0.290	**71.0%**
1940	59,413	4,225	4,648	8,873	21,270	23%	0.23	0	0.782	0.144	0.290	0.290	**71.0%**
1941	58,575	3,444	3,846	7,290	20,957	23%	0.23	0	0.713	0.144	0.275	0.275	**72.5%**
1942	27,099	3,432	4,007	7,439	9,185	25%	0.25	0	0.719	0.144	0.287	0.287	**71.3%**
1943	64,601	1,829	4,056	5,885	23,211	23%	0.23	0	0.652	0.144	0.260	0.260	**74.0%**
1944	25,100	2,990	4,007	6,997	8,437	25%	0.25	0	0.700	0.144	0.283	0.283	**71.7%**
1945	26,908	3,194	4,151	7,345	9,114	25%	0.25	0	0.715	0.144	0.286	0.286	**71.4%**
1946	23,778	3,349	4,424	7,773	7,943	25%	0.25	0	0.734	0.144	0.293	0.293	**70.7%**
1947	22,106	2,651	3,917	6,568	7,318	25%	0.25	0	0.682	0.144	0.281	0.281	**71.9%**
1948	19,112	4,225	3,396	7,621	6,198	26%	0.26	0	0.727	0.144	0.296	0.296	**70.4%**
1949	41,714	2,849	6,950	9,799	14,651	24%	0.24	0	0.822	0.144	0.304	0.304	**69.6%**
1950	22,154	3,413	4,385	7,798	7,336	25%	0.25	0	0.735	0.144	0.295	0.295	**70.5%**
1951	29,827	3,294	4,719	8,013	10,205	24%	0.24	0	0.744	0.144	0.291	0.291	**70.9%**
1952	57,518	3,213	3,934	7,147	20,562	23%	0.23	0	0.707	0.144	0.273	0.273	**72.7%**
1953	24,893	3,164	4,111	7,275	8,360	25%	0.25	0	0.712	0.144	0.286	0.286	**71.4%**
1954	49,536	3,189	4,685	7,874	17,576	23%	0.23	0	0.738	0.144	0.282	0.282	**71.8%**
1955	17,945	4,225	2,934	7,159	5,761	26%	0.26	0	0.707	0.144	0.293	0.293	**70.7%**
1956	36,676	2,075	4,699	6,774	12,767	24%	0.24	0	0.691	0.144	0.275	0.275	**72.5%**
1957	44,377	3,200	4,410	7,610	15,647	23%	0.23	0	0.727	0.144	0.281	0.281	**71.9%**
1958	93,616	3,460	4,071	7,531	34,062	22%	0.22	0	0.723	0.144	0.273	0.273	**72.7%**
1959	22,084	3,022	3,108	6,130	7,309	25%	0.25	0	0.663	0.144	0.276	0.276	**72.4%**
1960	21,493	2,623	4,231	6,854	7,088	26%	0.26	0	0.694	0.144	0.285	0.285	**71.5%**
1961	20,744	2,762	5,223	7,985	6,808	26%	0.26	0	0.743	0.144	0.298	0.298	**70.2%**
1962	26,513	3,496	4,356	7,852	8,966	25%	0.25	0	0.737	0.144	0.291	0.291	**70.9%**
1963	32,645	4,225	4,883	9,108	11,259	24%	0.24	0	0.792	0.144	0.301	0.301	**69.9%**
1964	15,800	2,980	3,340	6,320	4,959	27%	0.27	0	0.671	0.144	0.287	0.287	**71.3%**
1965	22,919	4,225	4,340	8,565	7,622	25%	0.25	0	0.768	0.144	0.302	0.302	**69.8%**
1966	28,683	3,265	4,424	7,689	9,777	25%	0.25	0	0.730	0.144	0.288	0.288	**71.2%**
1967	54,488	3,214	3,285	6,499	19,429	23%	0.23	0	0.679	0.144	0.267	0.267	**73.3%**
1968	36,789	3,023	4,111	7,134	12,809	24%	0.24	0	0.706	0.144	0.278	0.278	**72.2%**
1969	45,319	2,055	3,251	5,306	15,999	23%	0.23	0	0.627	0.144	0.257	0.257	**74.3%**
1970	35,819	3,077	4,111	7,188	12,446	24%	0.24	0	0.709	0.144	0.279	0.279	**72.1%**
1971	51,513	3,518	4,699	8,217	18,316	23%	0.23	0	0.753	0.144	0.285	0.285	**71.5%**
1972	32,930	3,034	4,390	7,424	11,366	24%	0.24	0	0.719	0.144	0.283	0.283	**71.7%**
1973	47,552	3,368	4,455	7,823	16,834	23%	0.23	0	0.736	0.144	0.282	0.282	**71.8%**
1974	34,713	3,444	4,424	7,868	12,033	24%	0.24	0	0.738	0.144	0.287	0.287	**71.3%**
1975	75,998	3,454	4,685	8,139	27,473	23%	0.23	0	0.750	0.144	0.281	0.281	**71.9%**
1976	18,356	2,090	4,253	6,343	5,915	26%	0.26	0	0.672	0.144	0.283	0.283	**71.7%**
1977	7,542	850	1,205	2,055	1,871	32%	0.32	0	0.486	0.144	0.255	0.255	**74.5%**
1978	45,479	2,116	3,905	6,021	16,059	23%	0.23	0	0.658	0.144	0.264	0.264	**73.6%**
1979	32,494	3,183	4,007	7,190	11,203	24%	0.24	0	0.709	0.144	0.281	0.281	**71.9%**
1980	36,480	1,826	3,344	5,170	12,694	24%	0.24	0	0.621	0.144	0.258	0.258	**74.2%**
1981	32,501	3,022	4,111	7,133	11,205	24%	0.24	0	0.706	0.144	0.280	0.280	**72.0%**
1982	69,087	2,940	4,644	7,584	24,889	23%	0.23	0	0.726	0.144	0.276	0.276	**72.4%**
1983	81,934	2,042	2,628	4,670	29,693	22%	0.22	0	0.599	0.144	0.246	0.246	**75.4%**
1984	36,503	3,305	4,007	7,312	12,702	24%	0.24	0	0.714	0.144	0.280	0.280	**72.0%**
1985	22,167	3,023	4,685	7,708	7,340	25%	0.25	0	0.731	0.144	0.294	0.294	**70.6%**
1986	72,539	4,225	4,184	8,409	26,180	23%	0.23	0	0.762	0.144	0.284	0.284	**71.6%**
1987	27,918	2,382	4,089	6,471	9,491	25%	0.25	0	0.677	0.144	0.276	0.276	**72.4%**
1988	11,051	2,076	1,717	3,793	3,183	29%	0.29	0	0.561	0.144	0.266	0.266	**73.4%**
1989	42,096	4,225	6,711	10,936	14,794	24%	0.24	0	0.871	0.144	0.315	0.315	**68.5%**
1990	14,838	2,269	3,592	5,861	4,599	27%	0.27	0	0.651	0.144	0.283	0.283	**71.7%**
1991	29,675	4,225	7,078	11,303	10,148	24%	0.24	0	0.887	0.144	0.326	0.326	**67.4%**
1992	20,106	2,019	6,219	8,238	6,570	26%	0.26	0	0.754	0.144	0.302	0.302	**69.8%**

Formulas: Sacramento River Spring Run Young of Year Smolt Survival Model

C10 ='Study 467 Flow Data'!C7
D10 ='Study 467 Flow Data'!M7
E10 ='Study 467 Flow Data'!W7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.45*(0.133*C10+829)/(C10-G10))+(0.55*H10)
J10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
K10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*F10)
L10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!D7
R10 ='Study 467 Flow Data'!N7
S10 ='Study 467 Flow Data'!X7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*T10)
Z10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!E7
AF10 ='Study 467 Flow Data'!O7
AG10 ='Study 467 Flow Data'!Y7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
AM10 =(-0.5916024)+(0.017968*$BC$2)+(0.0000434*AH10)
AN10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

AS10 ='Study 467 Flow Data'!F7
AT10 ='Study 467 Flow Data'!P7
AU10 ='Study 467 Flow Data'!Z7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$G$2,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BA10 =IF(((-0.5916024)+(0.017968*$BC$3)+(0.0000434*AV10))>1,1,((-0.5916024)+(0.017968*$BC$3)+(0.00004…
BB10 =-1.613493+(0.0319584*$BC$3)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =(AZ10+BC10-(AZ10*BC10))
BE10 =1-BD10

BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA

1 Study 501A Sacramento River Spring Run YOY Smolt Survival Model (continued)

3 Cross Channel closed over 25,000 cfs

4 Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

5 Sacramento River temperatures based on limited historical data from USBR

APRIL

Row	Sac River Flows	CVP	SWP	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	observed temp	m1	m2	m3	m23	m123	Calculated Survival s123
10	22,816	3,363	3,363	6,726	7,583	25%	0.25	58.5	0.002	0.751	0.256	0.382	0.383	**61.7%**
11	23,682	3,329	3,329	6,658	7,907	25%	0.25	58.3	0.000	0.745	0.250	0.375	0.375	**62.5%**
12	7,771	1,240	1,240	2,480	1,956	32%	0.32	61.5	0.128	0.621	0.352	0.438	0.510	**49.0%**
13	20,329	2,753	2,753	5,506	6,653	26%	0.26	59.1	0.027	0.709	0.275	0.387	0.404	**59.6%**
14	17,495	2,519	2,519	5,038	5,593	27%	0.27	61.6	0.133	0.734	0.355	0.456	0.528	**47.2%**
15	48,222	3,330	3,330	6,660	17,085	23%	0.23	56.8	0.000	0.718	0.202	0.322	0.322	**67.8%**
16	29,212	3,150	3,150	6,300	9,975	25%	0.25	58.7	0.011	0.737	0.262	0.379	0.385	**61.5%**
17	8,767	1,318	1,318	2,636	2,329	31%	0.31	56.3	0.000	0.534	0.186	0.294	0.294	**70.6%**
18	12,640	1,711	1,711	3,422	3,777	28%	0.28	59.6	0.048	0.628	0.291	0.387	0.416	**58.4%**
19	8,888	1,328	1,328	2,656	2,374	31%	0.31	62.8	0.183	0.652	0.393	0.473	0.570	**43.0%**
20	11,748	1,977	1,977	3,954	3,444	29%	0.29	58.9	0.019	0.638	0.269	0.375	0.387	**61.3%**
21	11,902	1,743	1,548	3,291	3,501	29%	0.29	60.1	0.069	0.631	0.307	0.400	0.442	**55.8%**
22	12,536	1,633	1,633	3,266	3,738	28%	0.28	63.6	0.217	0.693	0.419	0.497	0.606	**39.4%**
23	24,635	3,468	3,468	6,936	8,263	25%	0.25	58.9	0.019	0.768	0.269	0.394	0.405	**59.5%**
24	21,031	3,311	3,311	6,622	6,916	26%	0.26	59.7	0.053	0.768	0.294	0.416	0.447	**55.3%**
25	23,007	2,991	4,363	7,354	7,655	25%	0.25	58.8	0.015	0.784	0.266	0.397	0.406	**59.4%**
26	47,172	3,342	4,377	7,719	16,692	23%	0.23	56.3	0.000	0.755	0.186	0.318	0.318	**68.2%**
27	11,336	1,628	1,628	3,256	3,290	29%	0.29	63.3	0.204	0.687	0.409	0.490	0.594	**40.6%**
28	41,731	3,379	3,379	6,758	14,657	24%	0.24	57.4	0.000	0.733	0.221	0.342	0.342	**65.8%**
29	42,372	3,963	3,963	7,926	14,897	24%	0.24	56.9	0.000	0.775	0.205	0.339	0.339	**66.1%**
30	43,308	3,539	3,539	7,078	15,247	23%	0.23	56.5	0.000	0.731	0.192	0.319	0.319	**68.1%**
31	29,406	3,674	3,674	7,348	10,048	24%	0.24	58.8	0.015	0.784	0.266	0.393	0.401	**59.9%**
32	9,823	1,783	1,783	3,566	2,724	30%	0.30	58.4	0.000	0.612	0.253	0.361	0.361	**63.9%**
33	11,753	2,360	2,360	4,720	3,446	29%	0.29	60.6	0.090	0.702	0.323	0.432	0.484	**51.6%**
34	12,226	2,268	2,268	4,536	3,623	29%	0.29	60.7	0.095	0.696	0.326	0.432	0.486	**51.4%**
35	13,800	1,966	1,966	3,932	4,211	28%	0.28	62.5	0.170	0.702	0.384	0.472	0.562	**43.8%**
36	22,793	2,859	2,859	5,718	7,575	25%	0.25	56.6	0.000	0.674	0.195	0.317	0.317	**68.3%**
37	13,210	2,013	2,013	4,026	3,991	28%	0.28	61.7	0.137	0.692	0.358	0.452	0.527	**47.3%**
38	18,776	2,552	2,552	5,104	6,072	26%	0.26	61.3	0.120	0.731	0.346	0.447	0.513	**48.7%**
39	14,732	2,469	2,469	4,938	4,560	27%	0.27	59.9	0.061	0.699	0.301	0.410	0.446	**55.4%**
40	56,648	3,670	4,166	7,836	20,236	23%	0.23	55.5	0.000	0.746	0.160	0.295	0.295	**70.5%**
41	16,177	2,293	2,293	4,586	5,100	27%	0.27	58.8	0.015	0.664	0.266	0.373	0.382	**61.8%**
42	39,868	3,150	3,150	6,300	13,961	24%	0.24	58.4	0.000	0.731	0.253	0.366	0.366	**63.4%**
43	9,473	1,488	1,488	2,976	2,593	30%	0.30	56.4	0.000	0.551	0.189	0.299	0.299	**70.1%**
44	20,437	3,165	3,165	6,330	6,693	26%	0.26	59.7	0.053	0.756	0.294	0.414	0.444	**55.6%**
45	19,965	2,588	2,588	5,176	6,517	26%	0.26	60.5	0.086	0.720	0.320	0.424	0.473	**52.7%**
46	52,284	4,426	4,786	9,212	18,604	23%	0.23	57.4	0.000	0.840	0.221	0.364	0.364	**63.6%**
47	9,656	1,477	1,477	2,954	2,661	30%	0.30	63	0.191	0.669	0.400	0.481	0.580	**42.0%**
48	13,089	319	3,147	3,466	3,945	28%	0.28	59.5	0.044	0.628	0.288	0.384	0.411	**58.9%**
49	12,482	1,615	1,615	3,230	3,718	28%	0.28	60.1	0.069	0.628	0.307	0.398	0.440	**56.0%**
50	14,128	2,130	2,130	4,260	4,334	28%	0.28	61.8	0.141	0.704	0.362	0.456	0.533	**46.7%**
51	69,458	3,330	3,330	6,660	25,027	23%	0.23	53.7	0.000	0.662	0.103	0.229	0.229	**77.1%**
52	8,953	1,407	1,407	2,814	2,398	31%	0.31	59.3	0.036	0.596	0.282	0.379	0.401	**59.9%**
53	43,590	3,444	3,444	6,888	15,353	23%	0.23	56.9	0.000	0.730	0.205	0.328	0.328	**67.2%**
54	15,486	2,176	2,176	4,352	4,842	27%	0.27	61.9	0.145	0.709	0.365	0.458	0.537	**46.3%**
55	39,925	3,529	4,950	8,479	13,982	24%	0.24	53.8	0.000	0.743	0.106	0.257	0.257	**74.3%**
56	14,410	2,036	2,036	4,072	4,439	28%	0.28	61.5	0.128	0.690	0.352	0.445	0.516	**48.4%**
57	44,787	3,338	4,166	7,504	15,800	23%	0.23	56.4	0.000	0.747	0.189	0.320	0.320	**68.0%**
58	14,906	2,449	2,449	4,898	4,625	27%	0.27	58.8	0.015	0.677	0.266	0.378	0.387	**61.3%**
59	20,753	2,668	2,668	5,336	6,812	26%	0.26	58.7	0.011	0.695	0.262	0.374	0.380	**62.0%**
60	12,452	1,860	1,860	3,720	3,707	28%	0.28	58.5	0.002	0.621	0.256	0.360	0.361	**63.9%**
61	19,512	2,966	2,966	5,932	6,347	26%	0.26	61.3	0.120	0.767	0.346	0.455	0.521	**47.9%**
62	33,208	3,639	3,639	7,278	11,470	24%	0.24	56.8	0.000	0.745	0.202	0.333	0.333	**66.7%**
63	25,763	3,501	3,501	7,002	8,685	25%	0.25	56.8	0.000	0.733	0.202	0.334	0.334	**66.6%**
64	9,434	613	2,127	2,740	2,578	30%	0.30	58.9	0.019	0.586	0.269	0.365	0.377	**62.3%**
65	8,829	1,126	1,556	2,682	2,352	31%	0.31	64.3	0.246	0.680	0.441	0.515	0.635	**36.5%**
66	38,698	3,441	4,074	7,515	13,523	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
67	17,702	2,714	2,714	5,428	5,671	26%	0.26	59.8	0.057	0.718	0.298	0.409	0.443	**55.7%**
68	19,818	2,943	3,412	6,355	6,462	26%	0.26	57.1	0.000	0.710	0.211	0.341	0.341	**65.9%**
69	16,998	2,237	2,237	4,474	5,407	27%	0.27	61.5	0.128	0.708	0.352	0.447	0.518	**48.2%**
70	75,838	3,375	5,569	8,944	27,413	23%	0.23	54.1	0.000	0.769	0.115	0.263	0.263	**73.7%**
71	68,301	3,314	3,649	6,963	24,595	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
72	16,177	2,572	2,572	5,144	5,100	27%	0.27	59.7	0.053	0.704	0.294	0.405	0.436	**56.4%**
73	12,328	1,854	1,854	3,708	3,661	28%	0.28	60.8	0.099	0.662	0.330	0.424	0.481	**51.9%**
74	20,528	2,308	5,219	7,527	6,727	26%	0.26	60.4	0.082	0.820	0.317	0.447	0.492	**50.8%**
75	12,291	322	2,877	3,199	3,647	29%	0.29	65.7	0.305	0.728	0.486	0.555	0.691	**30.9%**
76	8,592	1,292	1,292	2,584	2,263	31%	0.31	59.9	0.061	0.597	0.301	0.393	0.430	**57.0%**
77	23,637	2,580	2,580	5,160	7,890	25%	0.25	61.4	0.124	0.736	0.349	0.446	0.515	**48.5%**
78	12,128	1,611	1,611	3,222	3,586	29%	0.29	61.6	0.133	0.655	0.355	0.441	0.515	**48.5%**
79	15,284	1,874	1,874	3,748	4,766	27%	0.27	60.8	0.099	0.664	0.330	0.420	0.478	**52.2%**
80	11,992	1,627	1,627	3,254	3,535	29%	0.29	61.2	0.116	0.649	0.342	0.430	0.496	**50.4%**

MAY

Row	Sac River Flows	CVP	SWP	Exports	CVP + SWP & Sutter Calculated Steamboat Slough Q	Percent	X-channel Closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123
10	46,457	3,363	3,630	6,993	16,425	23%	0.23	61.2	0.116	0.812	0.342	0.452	0.515	**48.5%**
11	14,350	3,329	2,509	5,838	4,417	63%	0.47	62.4	0.166	0.783	0.381	0.571	0.642	**35.8%**
12	8,602	1,240	362	1,602	2,267	73%	0.54	69.2	0.452	0.721	0.598	0.665	0.816	**18.4%**
13	10,964	2,753	1,964	4,717	3,151	68%	0.50	63.2	0.200	0.749	0.406	0.579	0.663	**33.7%**
14	13,343	2,519	1,990	4,509	4,040	64%	0.48	65.7	0.305	0.785	0.486	0.630	0.743	**25.7%**
15	26,781	3,330	3,536	6,866	9,066	25%	0.25	62.6	0.175	0.831	0.387	0.497	0.585	**41.5%**
16	19,358	3,150	2,607	5,757	6,290	59%	0.44	66.6	0.343	0.855	0.515	0.666	0.780	**22.0%**
17	9,743	1,318	119	1,437	2,694	70%	0.52	66.1	0.322	0.658	0.499	0.582	0.717	**28.3%**
18	11,748	1,711	1,639	3,350	3,444	67%	0.50	63.1	0.196	0.688	0.403	0.544	0.633	**36.7%**
19	9,798	1,328	1,460	2,788	2,714	70%	0.52	70.5	0.507	0.796	0.640	0.721	0.863	**13.7%**
20	10,870	1,977	1,845	3,822	3,115	68%	0.51	65.5	0.297	0.751	0.480	0.617	0.731	**26.9%**
21	7,719	1,743	1,340	3,083	1,937	75%	0.56	63.7	0.221	0.687	0.422	0.570	0.665	**33.5%**
22	8,592	1,633	910	2,543	2,263	73%	0.54	68.3	0.414	0.746	0.569	0.665	0.804	**19.6%**
23	28,854	3,468	2,706	6,174	9,841	25%	0.25	64	0.234	0.826	0.432	0.529	0.639	**36.1%**
24	18,332	3,311	3,708	7,019	5,906	60%	0.45	64.9	0.271	0.879	0.461	0.648	0.744	**25.6%**
25	16,055	2,991	3,926	6,917	5,055	62%	0.46	64.5	0.255	0.868	0.448	0.641	0.733	**26.7%**
26	57,429	3,342	5,445	8,787	20,528	23%	0.23	62.5	0.170	0.913	0.384	0.505	0.590	**41.0%**
27	7,914	1,628	1,393	3,021	2,010	75%	0.55	68	0.402	0.761	0.560	0.671	0.803	**19.7%**
28	17,747	3,379	2,901	6,280	5,687	60%	0.45	65.6	0.301	0.860	0.483	0.653	0.757	**24.3%**
29	39,485	3,963	4,071	8,034	13,817	24%	0.24	61.6	0.133	0.864	0.355	0.476	0.545	**45.5%**
30	36,037	3,539	3,630	7,169	12,528	24%	0.24	60.1	0.069	0.799	0.307	0.425	0.465	**53.5%**
31	20,129	3,674	3,337	7,011	6,578	59%	0.44	65.4	0.292	0.888	0.477	0.658	0.758	**24.2%**
32	8,907	1,783	1,515	3,298	2,381	72%	0.53	65.9	0.313	0.736	0.493	0.623	0.741	**25.9%**
33	11,958	2,360	2,310	4,670	3,522	66%	0.49	63.1	0.196	0.745	0.403	0.572	0.656	**34.4%**
34	12,557	2,268	2,065	4,333	3,746	65%	0.49	63.9	0.229	0.745	0.429	0.583	0.678	**32.2%**
35	8,840	1,966	1,449	3,415	2,356	72%	0.54	68.7	0.431	0.791	0.582	0.694	0.826	**17.4%**
36	25,715	2,859	3,246	6,105	8,667	25%	0.25	62.3	0.162	0.793	0.378	0.481	0.565	**43.5%**
37	14,040	2,013	1,946	3,959	4,301	64%	0.47	65.2	0.284	0.752	0.470	0.604	0.716	**28.4%**
38	13,720	2,552	2,164	4,716	4,181	64%	0.48	64.3	0.246	0.768	0.441	0.598	0.697	**30.3%**
39	18,870	2,469	2,943	5,412	6,107	60%	0.45	64.4	0.250	0.800	0.445	0.603	0.703	**29.7%**
40	59,563	3,670	5,270	8,940	21,327	23%	0.23	61.7	0.137	0.905	0.358	0.483	0.554	**44.6%**
41	26,868	2,293	3,375	5,668	9,099	25%	0.25	60.9	0.103	0.749	0.333	0.436	0.494	**50.6%**
42	24,040	3,150	3,265	6,415	8,041	57%	0.43	65.9	0.313	0.871	0.493	0.654	0.763	**23.7%**
43	10,273	1,488	1,602	3,090	2,892	69%	0.51	66.9	0.356	0.745	0.525	0.638	0.766	**23.4%**
44	39,005	3,165	3,653	6,818	13,638	24%	0.24	61.4	0.124	0.808	0.349	0.458	0.525	**47.5%**
45	17,276	2,588	2,560	5,148	5,511	61%	0.45	64	0.234	0.782	0.432	0.591	0.686	**31.4%**
46	43,486	4,426	4,505	8,931	15,314	23%	0.23	62.9	0.187	0.926	0.397	0.521	0.611	**38.9%**
47	9,424	1,477	1,559	3,036	2,575	71%	0.53	65.9	0.313	0.724	0.493	0.615	0.735	**26.5%**
48	10,915	319	1,588	1,907	3,132	68%	0.51	65.9	0.313	0.675	0.493	0.585	0.715	**28.5%**
49	8,780	1,615	1,364	2,979	2,334	72%	0.54	64.3	0.246	0.693	0.441	0.577	0.681	**31.9%**
50	13,695	2,130	2,105	4,235	4,172	64%	0.48	64.8	0.267	0.757	0.457	0.600	0.707	**29.3%**
51	29,094	3,330	3,536	6,866	9,931	25%	0.25	62.5	0.170	0.829	0.384	0.493	0.580	**42.0%**
52	11,043	1,407	1,655	3,062	3,180	68%	0.50	65.2	0.284	0.713	0.470	0.592	0.708	**29.2%**
53	24,009	3,444	4,267	7,711	8,029	57%	0.43	63.6	0.217	0.886	0.419	0.619	0.701	**29.9%**
54	13,669	2,176	1,917	4,093	4,162	64%	0.48	67.3	0.372	0.795	0.537	0.661	0.787	**21.3%**
55	44,790	3,529	5,445	8,974	15,801	23%	0.23	62.1	0.154	0.914	0.371	0.498	0.575	**42.5%**
56	9,379	2,036	1,542	3,578	2,558	71%	0.53	66.1	0.322	0.751	0.499	0.632	0.750	**25.0%**
57	45,533	3,338	5,026	8,364	16,079	23%	0.23	63.2	0.200	0.907	0.406	0.523	0.619	**38.1%**
58	12,155	2,449	2,334	4,783	3,596	66%	0.49	68.6	0.427	0.849	0.579	0.711	0.835	**16.5%**
59	30,262	2,668	3,375	6,043	10,368	24%	0.24	61	0.107	0.767	0.336	0.441	0.501	**49.9%**
60	10,533	1,860	1,633	3,493	2,989	69%	0.51	67.3	0.372	0.769	0.537	0.656	0.784	**21.6%**
61	15,751	2,966	2,631	5,597	4,941	62%	0.46	66.9	0.356	0.853	0.525	0.677	0.792	**20.8%**
62	26,945	3,639	3,630	7,269	9,127	25%	0.25	63.4	0.208	0.863	0.413	0.524	0.623	**37.7%**
63	28,542	3,501	3,630	7,131	9,725	25%	0.25	63.8	0.225	0.864	0.425	0.533	0.638	**36.2%**
64	9,835	613	1,457	2,070	2,728	70%	0.52	69.6	0.469	0.749	0.611	0.683	0.832	**16.8%**
65	7,024	1,126	472	1,598	1,677	78%	0.58	64	0.234	0.628	0.432	0.544	0.651	**34.9%**
66	21,056	3,441	4,103	7,544	6,925	58%	0.44	63	0.191	0.868	0.400	0.604	0.680	**32.0%**
67	12,566	2,714	2,375	5,089	3,750	65%	0.49	63.8	0.225	0.776	0.425	0.596	0.687	**31.3%**
68	14,777	2,943	2,935	5,878	4,577	63%	0.47	63.6	0.217	0.806	0.419	0.601	0.687	**31.3%**
69	8,752	2,237	1,467	3,704	2,323	72%	0.54	66.7	0.347	0.768	0.518	0.652	0.773	**22.7%**
70	38,429	3,375	5,471	8,846	13,422	24%	0.24	61.1	0.112	0.890	0.339	0.470	0.529	**47.1%**
71	54,514	3,314	3,590	6,904	19,438	23%	0.23	60.1	0.069	0.788	0.307	0.418	0.458	**54.2%**
72	14,993	2,572	2,584	5,156	4,657	63%	0.47	66.5	0.339	0.827	0.512	0.659	0.775	**22.5%**
73	12,438	1,854	1,772	3,626	3,702	66%	0.49	65.8	0.309	0.748	0.489	0.616	0.735	**26.5%**
74	13,127	2,308	3,416	5,724	3,959	65%	0.48	66.2	0.326	0.846	0.502	0.668	0.776	**22.4%**
75	8,234	322	1,310	1,632	2,130	74%	0.55	70.5	0.507	0.746	0.640	0.698	0.851	**14.9%**
76	9,469	1,292	1,417	2,709	2,591	71%	0.53	65.8	0.309	0.708	0.489	0.604	0.727	**27.3%**
77	13,979	2,580	1,844	4,424	4,278	64%	0.48	64.7	0.263	0.763	0.454	0.601	0.706	**29.4%**
78	7,418	1,611	1,240	2,851	1,824	76%	0.57	66.4	0.335	0.725	0.509	0.631	0.754	**24.6%**
79	8,690	1,874	1,356	3,230	2,300	73%	0.54	65.7	0.305	0.729	0.486	0.617	0.734	**26.6%**
80	8,690	1,627	884	2,511	2,300	73%	0.54	66	0.318	0.703	0.496	0.608	0.732	**26.8%**

JUNE

Row	Sac River Flow	CVP	SWP	CVP + SWP exports	Caculated Steamboat Slough Q	percent	X-channel closed	USBR observed temp f	m1	m2	m3	m23	m123	Calculated Survival s123	Weighted Total Survival
10	34,719	4,600	6,672	11,272	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**64.53%**
11	18,178	4,250	3,381	7,631	5,849	60%	0.45	65.3	0.288	0.913	0.473	0.671	0.766	**23.4%**	**63.53%**
12	10,477	778	474	1,252	2,968	69%	0.51	70.6	0.511	0.731	0.643	0.688	0.848	**15.2%**	**56.47%**
13	15,358	4,053	1,387	5,440	4,794	62%	0.47	68.3	0.414	0.872	0.569	0.710	0.830	**17.0%**	**61.43%**
14	16,593	4,060	2,494	6,554	5,256	61%	0.46	71.2	0.536	0.972	0.662	0.804	0.909	**9.1%**	**55.68%**
15	18,893	4,600	3,745	8,345	6,116	60%	0.45	68.1	0.406	0.994	0.563	0.755	0.855	**14.5%**	**64.27%**
16	14,895	3,415	2,669	6,084	4,621	63%	0.47	69.7	0.473	0.925	0.614	0.760	0.873	**12.7%**	**60.39%**
17	11,032	3,071	98	3,169	3,176	68%	0.50	70.1	0.490	0.805	0.627	0.717	0.856	**14.4%**	**62.88%**
18	18,493	4,411	2,674	7,085	5,966	60%	0.45	69.6	0.469	0.966	0.611	0.770	0.878	**12.2%**	**61.04%**
19	13,927	3,052	1,696	4,748	4,259	64%	0.48	70.7	0.515	0.885	0.646	0.760	0.884	**11.6%**	**54.27%**
20	20,294	4,188	3,862	8,050	6,640	59%	0.44	69.5	0.465	1.000	0.608	0.780	0.882	**11.8%**	**59.93%**
21	11,792	2,800	93	2,893	3,460	67%	0.50	69.8	0.478	0.788	0.617	0.702	0.844	**15.6%**	**60.33%**
22	14,573	4,204	1,201	5,405	4,500	63%	0.47	70.7	0.515	0.913	0.646	0.772	0.889	**11.1%**	**54.24%**
23	17,845	4,113	3,706	7,819	5,724	60%	0.45	71	0.528	1.000	0.656	0.811	0.911	**8.9%**	**60.13%**
24	17,321	4,600	3,201	7,801	5,528	61%	0.45	69.2	0.452	0.990	0.598	0.776	0.877	**12.3%**	**56.84%**
25	18,150	3,032	4,623	7,655	5,838	60%	0.45	69.7	0.473	0.993	0.614	0.784	0.886	**11.4%**	**59.76%**
26	35,517	4,600	6,672	11,272	12,333	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**66.67%**
27	19,390	4,600	3,077	7,677	6,302	59%	0.44	71	0.528	1.000	0.656	0.808	0.910	**9.0%**	**54.38%**
28	15,341	4,080	3,097	7,177	4,788	62%	0.47	71.5	0.549	1.000	0.672	0.824	0.921	**7.9%**	**59.92%**
29	20,808	4,600	6,297	10,897	6,832	59%	0.44	69	0.444	1.000	0.592	0.770	0.872	**12.8%**	**64.76%**
30	27,117	4,600	6,672	11,272	9,192	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**67.97%**
31	16,866	4,600	3,147	7,747	5,358	61%	0.46	66.6	0.343	0.941	0.515	0.709	0.809	**19.1%**	**61.72%**
32	19,122	4,535	3,129	7,664	6,202	60%	0.44	67.8	0.393	0.959	0.553	0.734	0.839	**16.1%**	**61.82%**
33	16,628	3,399	3,764	7,163	5,269	61%	0.46	70.6	0.511	0.988	0.643	0.801	0.903	**9.7%**	**58.98%**
34	17,635	3,960	3,481	7,441	5,645	61%	0.45	68.1	0.406	0.955	0.563	0.740	0.846	**15.4%**	**59.48%**
35	19,317	4,600	2,836	7,436	6,275	59%	0.44	70	0.486	0.989	0.624	0.786	0.890	**11.0%**	**54.17%**
36	22,883	4,600	4,396	8,996	7,608	58%	0.43	69	0.444	1.000	0.592	0.768	0.871	**12.9%**	**64.62%**
37	18,340	4,081	3,150	7,231	5,909	60%	0.45	70.9	0.524	0.996	0.652	0.807	0.908	**9.2%**	**55.89%**
38	20,260	4,600	3,522	8,122	6,627	59%	0.44	68.9	0.440	0.999	0.588	0.769	0.871	**12.9%**	**56.88%**
39	17,631	4,600	2,822	7,422	5,644	61%	0.45	70.3	0.499	0.994	0.633	0.796	0.898	**10.2%**	**58.80%**
40	38,968	4,600	6,672	11,272	13,624	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**67.36%**
41	25,885	4,600	5,781	10,381	8,731	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**66.13%**
42	14,224	3,285	2,742	6,027	4,370	64%	0.47	68.7	0.431	0.904	0.582	0.735	0.849	**15.1%**	**61.33%**
43	19,229	4,439	3,029	7,468	6,242	59%	0.44	70.1	0.490	0.992	0.627	0.789	0.892	**10.8%**	**61.62%**
44	22,306	4,600	6,672	11,272	7,392	58%	0.43	68.7	0.431	1.000	0.582	0.763	0.865	**13.5%**	**62.81%**
45	19,253	4,600	3,413	8,013	6,251	59%	0.44	72	0.570	1.000	0.688	0.826	0.925	**7.5%**	**58.73%**
46	33,938	4,600	6,672	11,272	11,743	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**64.25%**
47	18,447	4,485	2,889	7,374	5,949	60%	0.45	72.1	0.574	1.000	0.691	0.829	0.927	**7.3%**	**56.33%**
48	18,416	4,452	2,674	7,126	5,938	60%	0.45	72.7	0.600	1.000	0.710	0.840	0.936	**6.4%**	**58.91%**
49	20,035	4,600	3,037	7,637	6,543	59%	0.44	73.2	0.621	1.000	0.726	0.847	0.942	**5.8%**	**58.36%**
50	19,028	4,600	2,879	7,479	6,166	60%	0.45	70.4	0.503	0.998	0.636	0.797	0.899	**10.1%**	**56.09%**
51	19,523	4,600	4,007	8,607	6,352	59%	0.44	69	0.444	1.000	0.592	0.773	0.874	**12.6%**	**65.76%**
52	18,199	4,388	2,688	7,076	5,856	60%	0.45	69.5	0.465	0.964	0.608	0.768	0.876	**12.4%**	**60.60%**
53	18,160	4,600	3,711	8,311	5,842	60%	0.45	67.1	0.364	0.975	0.531	0.730	0.829	**17.1%**	**61.75%**
54	16,927	4,117	2,604	6,721	5,381	61%	0.46	70.4	0.503	0.965	0.636	0.786	0.894	**10.6%**	**55.99%**
55	39,345	4,600	6,672	11,272	13,765	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**67.81%**
56	17,942	4,508	2,716	7,224	5,760	60%	0.45	72	0.570	1.000	0.688	0.828	0.926	**7.4%**	**57.65%**
57	24,130	4,600	6,643	11,243	8,075	57%	0.43	68.3	0.414	1.000	0.569	0.753	0.855	**14.5%**	**65.60%**
58	15,595	4,227	2,605	6,832	4,883	62%	0.46	70.7	0.515	0.975	0.646	0.799	0.902	**9.8%**	**59.99%**
59	23,634	4,600	5,034	9,634	7,889	57%	0.43	68.1	0.406	1.000	0.563	0.750	0.852	**14.8%**	**64.85%**
60	17,803	4,412	2,636	7,048	5,708	60%	0.45	70.7	0.515	0.985	0.646	0.799	0.902	**9.8%**	**59.98%**
61	18,797	2,757	5,073	7,830	6,080	60%	0.45	70.1	0.490	1.000	0.627	0.793	0.895	**10.5%**	**56.29%**
62	21,622	4,600	4,929	9,529	7,137	58%	0.43	69.7	0.473	1.000	0.614	0.782	0.885	**11.5%**	**63.84%**
63	24,787	4,600	6,672	11,272	8,320	57%	0.43	69.1	0.448	1.000	0.595	0.767	0.871	**12.9%**	**63.73%**
64	19,477	4,496	2,947	7,443	6,334	59%	0.44	71.8	0.562	1.000	0.681	0.823	0.922	**7.8%**	**58.64%**
65	9,567	42	380	422	2,628	71%	0.52	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**	**57.13%**
66	16,475	4,600	3,904	8,504	5,212	61%	0.46	70	0.486	1.000	0.624	0.796	0.895	**10.5%**	**63.00%**
67	19,413	3,482	4,564	8,046	6,310	59%	0.44	69.2	0.452	1.000	0.598	0.776	0.878	**12.2%**	**60.61%**
68	16,270	4,600	4,069	8,669	5,135	62%	0.46	66.9	0.356	0.987	0.525	0.737	0.830	**17.0%**	**64.37%**
69	18,602	4,586	2,787	7,373	6,007	60%	0.45	71.9	0.566	1.000	0.684	0.826	0.924	**7.6%**	**57.02%**
70	24,415	4,600	6,672	11,272	8,181	57%	0.43	66	0.318	1.000	0.496	0.711	0.803	**19.7%**	**67.79%**
71	55,568	4,600	4,685	9,285	19,832	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**71.84%**
72	18,496	4,438	3,334	7,772	5,968	60%	0.45	68.4	0.419	0.975	0.572	0.753	0.856	**14.4%**	**59.96%**
73	17,645	4,269	2,612	6,881	5,649	61%	0.45	69.4	0.461	0.954	0.604	0.762	0.872	**12.8%**	**57.56%**
74	13,273	4,145	3,843	7,988	4,014	65%	0.48	71.6	0.553	1.000	0.675	0.831	0.925	**7.5%**	**56.10%**
75	20,303	4,600	3,137	7,737	6,643	59%	0.44	73.2	0.621	1.000	0.726	0.846	0.942	**5.8%**	**51.14%**
76	14,662	4,494	1,020	5,514	4,534	63%	0.47	69.4	0.461	0.895	0.604	0.741	0.860	**14.0%**	**60.04%**
77	17,231	4,191	2,489	6,680	5,494	61%	0.45	68.6	0.427	0.931	0.579	0.739	0.850	**15.0%**	**57.65%**
78	19,655	4,541	2,908	7,449	6,401	59%	0.44	68.5	0.423	0.962	0.576	0.747	0.854	**14.6%**	**56.88%**
79	10,927	2,109	1,344	3,453	3,137	68%	0.51	69.4	0.461	0.805	0.604	0.706	0.841	**15.9%**	**58.59%**
80	14,190	4,151	1,165	5,316	4,357	64%	0.47	69	0.444	0.879	0.592	0.728	0.849	**15.1%**	**57.42%**
81														**Average:**	**60.47%**

Row	April	May	June
85	BG10 ='Study 467 Flow Data'!G7	BV10 ='Study 467 Flow Data'!H7	CK10 ='Study 467 Flow Data'!I7
86	BH10 ='Study 467 Flow Data'!Q7	BW10 ='Study 467 Flow Data'!R7	CL10 ='Study 467 Flow Data'!S7
87	BI10 ='Study 467 Flow Data'!AA7	BX10 ='Study 467 Flow Data'!AB7	CM10 ='Study 467 Flow Data'!AC7
88	BJ10 =(BH10+BI10)	BY10 =(BW10+BX10)	CN10 =(CL10+CM10)
89	BK10 =0.374*BG10-950	BZ10 =0.374*BV10-950	CO10 =0.374*CK10-950
90	BL10 =IF(BG10>$G$2,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))	CA10 =IF(BV10>$K$4,(0.133*BV10+829)/(BV10-BZ10),(0.293*BV10+2090)/(BV10-BZ10))	CP10 =IF(CK10>$K$4,(0.133*CK10+829)/(CK10-CO10),(0.293*CK10+2090)/(CK10-CO10))
91	BM10 =(0.133*BG10+829)/(BG10-BK10)	CB10 =(0.45*(0.133*BV10+829)/(BV10-BZ10))+(0.55*CA10)	CQ10 =(0.45*(0.133*CK10+829)/(CK10-CO10))+(0.55*CP10)
92	BN10	CC10	CR10
93	BO10 =IF((-2.45925+(0.0420748*BN10))<0,0,(-2.45925+(0.0420748*BN10)))	CD10 =IF((-2.45925+(0.0420748*CC10))<0,0,(-2.45925+(0.0420748*CC10)))	CS10 =IF((-2.45925+(0.0420748*CR10))<0,0,(-2.45925+(0.0420748*CR10)))
94	BP10 =IF(((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10))>1,1,((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10	CE10 =IF(((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10))>1,1,((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10)))	CT10 =IF(((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10))>1,1,((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10)))
95	BQ10 =-1.613493+(0.0319584*BN10)	CF10 =-1.613493+(0.0319584*CC10)	CU10 =-1.613493+(0.0319584*CR10)
96	BR10 =(BP10*BM10)+(BQ10*(1-BM10))	CG10 =(CE10*CB10)+(CF10*(1-CB10))	CV10 =(CT10*CQ10)+(CU10*(1-CQ10))
97	BS10 =BO10+BR10-(BO10*BR10)	CH10 =CD10+CG10-(CD10*CG10)	CW10 =CS10+CV10-(CS10*CV10)
98	BT10 =1-BS10	CI10 =1-CH10	CX10 =1-CW10
99			CZ10 =(0.01*O10)+(0.06*AC10)+(0.17*AQ10)+(0.28*BE10)+(0.25*BT10)+(0.16*CI10)+(0.07*CX10)

Study 524 Sacramento River Spring Run YOY Smolt Survival Model

Modified m2 by changing the slope to 0.0000434

Cross Channel closed for 45 consecutive days, Dec 18-Jan 31

Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

December Sacramento River Temp: 47 degrees F

January Sacramento River Temp: 47 degrees F

Cross Channel Closed Over 25000 cfs

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

February Water Temp 50 F

March Water Temp 55 F

Row	Year	Water Year Type	DEC Sac River Flows	CVP	SWP	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123	JAN Sac River Flows	CVP	SWP	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
10	1922	A	17,143	4,207	7,100	11,307	5,461	61%	0.45	0	0.744	0.000	0.338	0.338	**66.2%**	17,504	4,207	7,576	11,783	5,596	61%	0.27	0	0.764	0.000	0.203	0.203	**79.7%**
11	1923	B	34,539	4,207	4,843	9,050	11,968	24%	0.24	0	0.646	0.000	0.155	0.155	**84.5%**	32,280	4,207	3,637	7,844	11,123	24%	0.24	0	0.593	0.000	0.144	0.144	**85.6%**
12	1924	C	13,865	3,685	6,670	10,355	4,236	64%	0.48	0	0.702	0.000	0.335	0.335	**66.5%**	14,620	4,207	6,652	10,859	4,518	63%	0.27	0	0.724	0.000	0.199	0.199	**80.1%**
13	1925	D	11,248	4,207	4,849	9,056	3,257	67%	0.50	0	0.646	0.000	0.324	0.324	**67.6%**	10,208	3,551	3,151	6,702	2,868	69%	0.30	0	0.544	0.000	0.162	0.162	**83.8%**
14	1926	D	12,614	4,207	2,490	6,697	3,768	65%	0.49	0	0.544	0.000	0.265	0.265	**73.5%**	18,269	4,207	7,087	11,294	5,883	60%	0.26	0	0.743	0.000	0.195	0.195	**80.5%**
15	1927	W	14,304	4,207	6,995	11,202	4,400	63%	0.47	0	0.739	0.000	0.350	0.350	**65.0%**	30,262	4,207	7,264	11,471	10,368	24%	0.24	0	0.751	0.000	0.183	0.183	**81.7%**
16	1928	A	16,574	4,207	7,072	11,279	5,249	61%	0.46	0	0.742	0.000	0.340	0.340	**66.0%**	25,816	4,207	3,637	7,844	8,705	25%	0.25	0	0.593	0.000	0.148	0.148	**85.2%**
17	1929	C	13,461	4,207	6,029	10,236	4,084	64%	0.48	0	0.697	0.000	0.334	0.334	**66.6%**	15,016	4,207	6,799	11,006	4,666	63%	0.27	0	0.731	0.000	0.199	0.199	**80.1%**
18	1930	D	14,442	4,207	6,300	10,507	4,451	63%	0.47	0	0.709	0.000	0.335	0.335	**66.5%**	20,771	4,207	7,092	11,299	6,818	59%	0.26	0	0.743	0.000	0.191	0.191	**80.9%**
19	1931	C	9,294	2,204	2,932	5,136	2,526	71%	0.53	0	0.476	0.000	0.251	0.251	**74.9%**	11,965	4,207	4,897	9,104	3,525	66%	0.29	0	0.648	0.000	0.186	0.186	**81.4%**
20	1932	D	14,650	4,207	7,194	11,401	4,529	63%	0.47	0	0.748	0.000	0.352	0.352	**64.8%**	17,253	4,207	7,827	12,034	5,503	61%	0.27	0	0.775	0.000	0.206	0.206	**79.4%**
21	1933	C	8,655	2,465	2,526	4,991	2,287	73%	0.54	0	0.470	0.000	0.253	0.253	**74.7%**	12,602	4,207	5,741	9,948	3,763	65%	0.28	0	0.685	0.000	0.194	0.194	**80.6%**
22	1934	C	12,474	4,166	5,542	9,708	3,715	66%	0.49	0	0.674	0.000	0.329	0.329	**67.1%**	16,103	4,207	7,093	11,300	5,073	62%	0.27	0	0.743	0.000	0.200	0.200	**80.0%**
23	1935	B	8,503	3,216	3,394	6,610	2,230	73%	0.54	0	0.540	0.000	0.293	0.293	**70.7%**	25,471	4,207	7,666	11,873	8,576	25%	0.25	0	0.768	0.000	0.192	0.192	**80.8%**
24	1936	B	9,877	3,540	2,965	6,505	2,744	70%	0.52	0	0.535	0.000	0.278	0.278	**72.2%**	31,440	4,207	7,454	11,661	10,809	24%	0.24	0	0.759	0.000	0.184	0.184	**81.6%**
25	1937	B	12,308	4,207	5,487	9,694	3,653	66%	0.49	0	0.674	0.000	0.330	0.330	**67.0%**	15,467	4,207	7,581	11,788	4,835	62%	0.27	0	0.764	0.000	0.208	0.208	**79.2%**
26	1938	W	45,569	4,207	7,531	11,738	16,093	23%	0.23	0	0.762	0.000	0.178	0.178	**82.2%**	31,443	4,207	4,463	8,670	10,810	24%	0.24	0	0.629	0.000	0.153	0.153	**84.7%**
27	1939	D	18,684	4,207	3,735	7,942	6,038	60%	0.45	0	0.598	0.000	0.267	0.267	**73.3%**	18,407	1,578	3,239	4,817	5,934	60%	0.26	0	0.462	0.000	0.121	0.121	**87.9%**
28	1940	A	7,841	1,432	2,677	4,109	1,983	75%	0.56	0	0.431	0.000	0.240	0.240	**76.0%**	23,448	4,207	8,017	12,224	7,820	57%	0.25	0	0.783	0.000	0.198	0.198	**80.2%**
29	1941	W	30,776	4,207	7,341	11,548	10,560	24%	0.24	0	0.754	0.000	0.184	0.184	**81.6%**	71,291	4,207	8,143	12,350	25,713	23%	0.23	0	0.789	0.000	0.178	0.178	**82.2%**
30	1942	W	65,619	4,207	3,608	7,815	23,592	23%	0.23	0	0.592	0.000	0.135	0.135	**86.5%**	63,260	3,882	3,239	7,121	22,709	23%	0.23	0	0.562	0.000	0.128	0.128	**87.2%**
31	1943	W	28,806	4,207	3,779	7,986	9,823	25%	0.25	0	0.599	0.000	0.147	0.147	**85.3%**	58,056	4,207	3,303	7,510	20,763	23%	0.23	0	0.579	0.000	0.133	0.133	**86.7%**
32	1944	D	13,774	4,207	6,423	10,630	4,201	64%	0.48	0	0.714	0.000	0.341	0.341	**65.9%**	17,677	4,207	3,262	7,469	5,661	60%	0.26	0	0.577	0.000	0.153	0.153	**84.7%**
33	1945	B	15,826	4,207	6,967	11,174	4,969	62%	0.46	0	0.738	0.000	0.341	0.341	**65.9%**	14,047	4,207	4,924	9,131	4,304	64%	0.28	0	0.649	0.000	0.180	0.180	**82.0%**
34	1946	B	54,727	4,207	7,592	11,799	19,518	23%	0.23	0	0.765	0.000	0.176	0.176	**82.4%**	43,229	4,207	3,637	7,844	15,218	23%	0.23	0	0.593	0.000	0.139	0.139	**86.1%**
35	1947	D	18,132	4,207	7,139	11,346	5,831	60%	0.45	0	0.745	0.000	0.335	0.335	**66.5%**	14,971	4,207	7,142	11,349	4,649	63%	0.27	0	0.745	0.000	0.204	0.204	**79.6%**
36	1948	B	9,828	2,698	3,133	5,831	2,726	70%	0.52	0	0.506	0.000	0.263	0.263	**73.7%**	14,649	4,207	6,357	10,564	4,529	63%	0.27	0	0.711	0.000	0.195	0.195	**80.5%**
37	1949	D	15,983	4,207	6,900	11,107	5,028	62%	0.46	0	0.735	0.000	0.339	0.339	**66.1%**	15,099	4,207	6,934	11,141	4,697	63%	0.27	0	0.736	0.000	0.201	0.201	**79.9%**
38	1950	B	11,008	4,207	3,010	7,217	3,167	68%	0.50	0	0.566	0.000	0.286	0.286	**71.4%**	20,184	4,207	7,176	11,383	6,599	59%	0.26	0	0.747	0.000	0.193	0.193	**80.7%**
39	1951	A	68,100	4,207	7,592	11,799	24,519	23%	0.23	0	0.765	0.000	0.174	0.174	**82.6%**	62,213	4,207	8,500	12,707	22,318	23%	0.23	0	0.804	0.000	0.184	0.184	**81.6%**
40	1952	W	45,581	4,207	7,105	11,312	16,097	23%	0.23	0	0.744	0.000	0.174	0.174	**82.6%**	67,352	4,207	7,103	11,310	24,240	23%	0.23	0	0.744	0.000	0.169	0.169	**83.1%**
41	1953	W	42,331	4,207	3,742	7,949	14,882	24%	0.24	0	0.598	0.000	0.141	0.141	**85.9%**	64,078	1,555	3,333	4,888	23,015	23%	0.23	0	0.465	0.000	0.106	0.106	**89.4%**
42	1954	A	14,919	4,207	3,897	8,104	4,630	63%	0.47	0	0.605	0.000	0.283	0.283	**71.7%**	33,414	4,207	3,850	8,057	11,547	24%	0.24	0	0.603	0.000	0.145	0.145	**85.5%**
43	1955	D	26,020	4,207	6,911	11,118	8,781	25%	0.25	0	0.735	0.000	0.183	0.183	**81.7%**	22,257	4,207	7,195	11,402	7,374	58%	0.25	0	0.748	0.000	0.190	0.190	**81.0%**
44	1956	W	23,548	4,207	7,592	11,799	7,857	57%	0.43	0	0.765	0.000	0.328	0.328	**67.2%**	83,368	4,207	7,949	12,156	30,230	22%	0.22	0	0.780	0.000	0.175	0.175	**82.5%**
45	1957	A	14,143	4,207	5,806	10,013	4,339	64%	0.47	0	0.687	0.000	0.326	0.326	**67.4%**	18,639	4,207	3,891	8,098	6,021	60%	0.26	0	0.604	0.000	0.158	0.158	**84.2%**
46	1958	W	23,752	4,207	6,926	11,133	7,933	57%	0.43	0	0.736	0.000	0.315	0.315	**68.5%**	36,334	4,207	3,418	7,625	12,639	24%	0.24	0	0.584	0.000	0.139	0.139	**86.1%**
47	1959	B	14,627	4,207	3,852	8,059	4,520	63%	0.47	0	0.603	0.000	0.284	0.284	**71.6%**	35,167	1,575	3,333	4,908	12,202	24%	0.24	0	0.466	0.000	0.112	0.112	**88.8%**
48	1960	D	10,428	3,574	2,791	6,365	2,950	69%	0.51	0	0.529	0.000	0.271	0.271	**72.9%**	14,522	4,207	6,411	10,618	4,481	63%	0.27	0	0.714	0.000	0.196	0.196	**80.4%**
49	1961	D	17,250	4,207	6,891	11,098	5,502	61%	0.45	0	0.735	0.000	0.334	0.334	**66.6%**	14,008	4,207	6,426	10,633	4,289	64%	0.28	0	0.714	0.000	0.198	0.198	**80.2%**
50	1962	B	16,951	4,207	6,877	11,084	5,390	61%	0.46	0	0.734	0.000	0.334	0.334	**66.6%**	15,469	4,207	4,164	8,371	4,835	62%	0.27	0	0.616	0.000	0.167	0.167	**83.3%**
51	1963	W	27,555	4,207	6,896	11,103	9,356	25%	0.25	0	0.735	0.000	0.181	0.181	**81.9%**	17,805	4,207	7,248	11,455	5,709	60%	0.26	0	0.750	0.000	0.198	0.198	**80.2%**
52	1964	D	14,847	4,207	6,987	11,194	4,603	63%	0.47	0	0.739	0.000	0.346	0.346	**65.4%**	25,567	4,207	3,872	8,079	8,612	25%	0.25	0	0.604	0.000	0.151	0.151	**84.9%**
53	1965	W	27,931	4,207	7,355	11,562	9,496	25%	0.25	0	0.755	0.000	0.186	0.186	**81.4%**	81,240	4,207	8,500	12,707	29,434	22%	0.22	0	0.804	0.000	0.181	0.181	**81.9%**
54	1966	B	16,997	4,207	6,366	10,573	5,407	61%	0.46	0	0.712	0.000	0.324	0.324	**67.6%**	29,635	4,207	3,657	7,864	10,133	24%	0.24	0	0.594	0.000	0.145	0.145	**85.5%**
55	1967	W	35,175	4,207	7,127	11,334	12,205	24%	0.24	0	0.745	0.000	0.179	0.179	**82.1%**	33,964	4,207	7,674	11,881	11,753	24%	0.24	0	0.769	0.000	0.185	0.185	**81.5%**
56	1968	B	16,692	3,357	3,735	7,092	5,293	61%	0.46	0	0.561	0.000	0.256	0.256	**74.4%**	30,635	1,559	3,333	4,892	10,507	24%	0.24	0	0.465	0.000	0.113	0.113	**88.7%**
57	1969	W	24,093	4,207	6,971	11,178	8,061	57%	0.43	0	0.738	0.000	0.315	0.315	**68.5%**	67,764	4,207	6,307	10,514	24,394	23%	0.23	0	0.709	0.000	0.161	0.161	**83.9%**
58	1970	W	50,159	4,207	3,481	7,688	17,809	23%	0.23	0	0.587	0.000	0.136	0.136	**86.4%**	92,665	1,357	3,333	4,690	33,707	22%	0.22	0	0.456	0.000	0.102	0.102	**89.8%**
59	1971	W	53,442	4,207	7,042	11,249	19,037	23%	0.23	0	0.741	0.000	0.171	0.171	**82.9%**	46,893	4,207	5,713	9,920	16,588	23%	0.23	0	0.683	0.000	0.159	0.159	**84.1%**
60	1972	B	20,058	4,207	6,207	10,414	6,552	59%	0.44	0	0.705	0.000	0.311	0.311	**68.9%**	20,395	4,207	3,891	8,098	6,678	59%	0.26	0	0.604	0.000	0.156	0.156	**84.4%**
61	1973	A	26,198	4,207	6,904	11,111	8,848	25%	0.25	0	0.735	0.000	0.183	0.183	**81.7%**	49,109	4,207	6,793	11,000	17,417	23%	0.23	0	0.730	0.000	0.170	0.170	**83.0%**
62	1974	W	61,593	4,207	7,144	11,351	22,086	23%	0.23	0	0.746	0.000	0.170	0.170	**83.0%**	78,417	4,207	3,691	7,898	28,378	22%	0.22	0	0.596	0.000	0.134	0.134	**86.6%**
63	1975	W	17,619	4,207	4,248	8,455	5,640	61%	0.45	0	0.620	0.000	0.280	0.280	**72.0%**	18,672	4,207	3,848	8,055	6,033	60%	0.26	0	0.602	0.000	0.158	0.158	**84.2%**
64	1976	C	16,774	4,207	4,845	9,052	5,323	61%	0.46	0	0.646	0.000	0.295	0.295	**70.5%**	16,769	4,207	3,832	8,039	5,322	61%	0.27	0	0.602	0.000	0.161	0.161	**83.9%**
65	1977	C	8,137	1,727	3,051	4,778	2,093	74%	0.55	0	0.460	0.000	0.253	0.253	**74.7%**	7,906	2,356	2,440	4,796	2,007	75%	0.32	0	0.461	0.000	0.147	0.147	**85.3%**
66	1978	A	12,285	4,139	5,530	9,669	3,645	66%	0.49	0	0.673	0.000	0.330	0.330	**67.0%**	43,063	3,421	7,767	11,188	15,156	23%	0.23	0	0.738	0.000	0.173	0.173	**82.7%**
67	1979	B	14,021	4,207	4,079	8,286	4,294	64%	0.48	0	0.613	0.000	0.291	0.291	**70.9%**	27,242	4,207	3,262	7,469	9,239	25%	0.25	0	0.577	0.000	0.143	0.143	**85.7%**
68	1980	A	20,832	4,207	6,987	11,194	6,841	59%	0.44	0	0.739	0.000	0.323	0.323	**67.7%**	60,630	4,207	3,159	7,366	21,726	23%	0.23	0	0.573	0.000	0.131	0.131	**86.9%**
69	1981	D	15,611	4,207	4,108	8,315	4,889	62%	0.46	0	0.614	0.000	0.285	0.285	**71.5%**	28,602	1,755	3,356	5,111	9,747	25%	0.25	0	0.475	0.000	0.117	0.117	**88.3%**
70	1982	W	68,599	4,207	7,011	11,218	24,706	23%	0.23	0	0.740	0.000	0.168	0.168	**83.2%**	51,172	4,207	7,647	11,854	18,188	23%	0.23	0	0.767	0.000	0.178	0.178	**82.2%**
71	1983	W	55,416	4,207	4,428	8,635	19,776	23%	0.23	0	0.628	0.000	0.144	0.144	**85.6%**	59,148	2,883	2,648	5,531	21,171	23%	0.23	0	0.493	0.000	0.113	0.113	**88.7%**
72	1984	W	82,951	2,994	3,104	6,098	30,074	22%	0.22	0	0.518	0.000	0.116	0.116	**88.4%**	47,354	1,331	2,881	4,212	16,760	23%	0.23	0	0.436	0.000	0.101	0.101	**89.9%**
73	1985	D	23,880	4,207	6,967	11,174	7,981	57%	0.43	0	0.738	0.000	0.316	0.316	**68.4%**	16,549	4,207	3,872	8,079	5,239	61%	0.27	0	0.604	0.000	0.162	0.162	**83.8%**
74	1986	W	15,722	4,207	6,943	11,150	4,930	62%	0.46	0	0.737	0.000	0.341	0.341	**65.9%**	21,503	4,207	7,331	11,538	7,092	58%	0.26	0	0.754	0.000	0.193	0.193	**80.7%**
75	1987	D	13,787	4,207	6,093	10,300	4,206	64%	0.48	0	0.700	0.000	0.334	0.334	**66.6%**	16,734	1,860	6,443	8,303	5,309	61%	0.27	0	0.613	0.000	0.164	0.164	**83.6%**
76	1988	C	15,842	4,207	6,875	11,082	4,975	62%	0.46	0	0.734	0.000	0.339	0.339	**66.1%**	25,530	4,207	7,058	11,265	8,598	25%	0.25	0	0.742	0.000	0.185	0.185	**81.5%**
77	1989	D	8,849	2,446	3,237	5,683	2,360	72%	0.54	0	0.500	0.000	0.268	0.268	**73.2%**	11,998	4,198	4,527	8,725	3,537	66%	0.29	0	0.632	0.000	0.181	0.181	**81.9%**
78	1990	C	14,642	4,207	6,205	10,412	4,526	63%	0.47	0	0.705	0.000	0.332	0.332	**66.8%**	21,334	2,487	7,059	9,546	7,029	58%	0.26	0	0.667	0.000	0.171	0.171	**82.9%**
79	1991	C	8,806	1,737	3,156	4,893	2,343	72%	0.54	0	0.465	0.000	0.250	0.250	**75.0%**	6,851	1,697	1,708	3,405	1,612	78%	0.33	0	0.401	0.000	0.133	0.133	**86.7%**
80	1992	C	7,465	2,964	1,609	4,573	1,842	76%	0.56	0	0.451	0.000	0.255	0.255	**74.5%**	12,140	4,027	4,960	8,987	3,590	66%	0.29	0	0.643	0.000	0.184	0.184	**81.6%**

Row	Year	Water Year Type	FEB Sac River Flow	CVP	SWP	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survival s123	MARCH Sac River Flow	CVP	SWP	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survival s123
10	1922	A	34,253	4,251	6,354	10,605	11,861	24%	0.24	0	0.767	0.000	0.184	0.184	**81.6%**	31,554	2,835	4,143	6,978	10,851	24%	0.24	0	0.699	0.144	0.279	0.279	**72.1%**
11	1923	B	22,223	2,164	2,380	4,544	7,361	58%	0.25	0	0.504	0.000	0.128	0.128	**87.2%**	15,486	3,224	3,775	6,999	4,842	27%	0.27	0	0.700	0.144	0.295	0.295	**70.5%**
12	1924	C	17,751	4,220	4,787	9,007	5,689	60%	0.26	0	0.698	0.000	0.185	0.185	**81.5%**	12,227	1,470	1,815	3,285	3,623	29%	0.29	0	0.539	0.144	0.257	0.257	**74.3%**
13	1925	D	44,692	3,325	7,583	10,908	15,765	23%	0.23	0	0.780	0.000	0.183	0.183	**81.7%**	31,741	3,246	4,697	7,943	10,921	24%	0.24	0	0.741	0.144	0.289	0.289	**71.1%**
14	1926	D	35,217	4,229	7,507	11,736	12,221	24%	0.24	0	0.816	0.000	0.196	0.196	**80.4%**	15,519	2,805	3,720	6,525	4,854	27%	0.27	0	0.680	0.144	0.290	0.290	**71.0%**
15	1927	W	86,484	3,054	6,778	9,832	31,395	22%	0.22	0	0.734	0.000	0.164	0.164	**83.6%**	43,865	3,462	4,150	7,612	15,456	23%	0.23	0	0.727	0.144	0.281	0.281	**71.9%**
16	1928	A	28,340	2,624	4,377	7,001	9,649	25%	0.25	0	0.611	0.000	0.150	0.150	**85.0%**	86,223	3,139	4,424	7,563	31,297	22%	0.22	0	0.725	0.144	0.274	0.274	**72.6%**
17	1929	C	17,787	3,802	4,472	8,274	5,702	60%	0.26	0	0.666	0.000	0.176	0.176	**82.4%**	13,763	2,030	2,760	4,790	4,197	28%	0.28	0	0.605	0.144	0.272	0.272	**72.8%**
18	1930	D	15,675	2,780	4,007	6,787	4,912	62%	0.27	0	0.601	0.000	0.163	0.163	**83.7%**	30,090	3,134	4,024	7,158	10,304	24%	0.24	0	0.707	0.144	0.282	0.282	**71.8%**
19	1931	C	11,083	3,334	1,890	5,224	3,195	66%	0.29	0	0.534	0.000	0.156	0.156	**84.4%**	8,961	1,874	1,662	3,536	2,401	31%	0.31	0	0.550	0.144	0.269	0.269	**73.1%**
20	1932	D	14,487	4,243	5,888	10,131	4,468	64%	0.28	0	0.746	0.000	0.205	0.205	**79.5%**	10,565	935	2,763	3,698	3,001	30%	0.30	0	0.557	0.144	0.266	0.266	**73.4%**
21	1933	C	13,117	4,217	2,831	7,048	3,956	64%	0.28	0	0.613	0.000	0.172	0.172	**82.8%**	9,943	317	4,155	4,472	2,769	30%	0.30	0	0.591	0.144	0.278	0.278	**72.2%**
22	1934	C	12,740	1,231	4,555	5,786	3,815	66%	0.28	0	0.558	0.000	0.158	0.158	**84.2%**	14,260	2,249	1,746	3,995	4,383	28%	0.28	0	0.570	0.144	0.262	0.262	**73.8%**
23	1935	B	11,977	685	3,943	4,628	3,529	67%	0.29	0	0.508	0.000	0.146	0.146	**85.4%**	24,918	4,225	6,982	11,207	8,369	25%	0.25	0	0.883	0.144	0.329	0.329	**67.1%**
24	1936	B	47,088	4,247	8,500	12,747	16,661	23%	0.23	0	0.860	0.000	0.200	0.200	**80.0%**	32,948	4,225	6,914	11,139	11,373	24%	0.24	0	0.880	0.144	0.322	0.322	**67.8%**
25	1937	B	32,025	3,757	5,701	9,458	11,027	24%	0.24	0	0.717	0.000	0.174	0.174	**82.6%**	36,459	2,566	4,014	6,580	12,686	24%	0.24	0	0.682	0.144	0.273	0.273	**72.7%**
26	1938	W	82,366	1,217	3,939	5,156	29,855	22%	0.22	0	0.531	0.000	0.119	0.119	**88.1%**	78,637	2,058	3,966	6,024	28,460	22%	0.22	0	0.658	0.144	0.260	0.260	**74.0%**
27	1939	D	19,024	1,577	3,955	5,532	6,165	59%	0.26	0	0.547	0.000	0.143	0.143	**85.7%**	16,390	2,736	3,964	6,700	5,180	27%	0.27	0	0.687	0.144	0.290	0.290	**71.0%**
28	1940	A	43,392	4,241	8,500	12,741	15,279	23%	0.23	0	0.860	0.000	0.202	0.202	**79.8%**	59,383	4,225	4,650	8,875	21,259	23%	0.23	0	0.782	0.144	0.290	0.290	**71.0%**
29	1941	W	75,037	4,293	7,015	11,308	27,114	23%	0.23	0	0.798	0.000	0.180	0.180	**82.0%**	58,573	4,225	3,846	8,071	20,956	23%	0.23	0	0.747	0.144	0.282	0.282	**71.8%**
30	1942	W	78,349	1,664	3,955	5,619	28,353	22%	0.23	0	0.551	0.000	0.124	0.124	**87.6%**	27,099	3,433	4,007	7,440	9,185	25%	0.25	0	0.720	0.144	0.287	0.287	**71.3%**
31	1943	W	52,259	2,002	4,005	6,007	18,595	23%	0.23	0	0.568	0.000	0.131	0.131	**86.9%**	64,601	1,823	4,056	5,879	23,211	23%	0.23	0	0.652	0.144	0.260	0.260	**74.0%**
32	1944	D	31,860	1,440	3,958	5,398	10,966	24%	0.24	0	0.541	0.000	0.131	0.131	**86.9%**	25,100	2,994	4,007	7,001	8,437	25%	0.25	0	0.700	0.144	0.283	0.283	**71.7%**
33	1945	B	39,099	4,242	4,043	8,285	13,673	23%	0.24	0	0.666	0.000	0.158	0.158	**84.2%**	27,033	3,198	4,151	7,349	9,160	25%	0.25	0	0.716	0.144	0.286	0.286	**71.4%**
34	1946	B	23,843	2,538	4,312	6,850	7,967	57%	0.25	0	0.604	0.000	0.152	0.152	**84.8%**	23,778	3,441	4,424	7,865	7,943	25%	0.25	0	0.738	0.144	0.294	0.294	**70.6%**
35	1947	D	21,069	4,244	3,974	8,218	6,930	58%	0.26	0	0.663	0.000	0.170	0.170	**83.0%**	22,106	2,660	3,921	6,581	7,318	25%	0.25	0	0.682	0.144	0.281	0.281	**71.9%**
36	1948	B	16,014	4,230	1,722	5,952	5,039	64%	0.27	0	0.565	0.000	0.152	0.152	**84.8%**	19,112	4,225	3,396	7,621	6,198	26%	0.26	0	0.727	0.144	0.296	0.296	**70.4%**
37	1949	D	16,240	4,242	4,164	8,406	5,124	61%	0.27	0	0.672	0.000	0.181	0.181	**81.9%**	42,033	4,225	7,115	11,340	14,770	24%	0.24	0	0.889	0.144	0.320	0.320	**68.0%**
38	1950	B	32,779	4,247	7,532	11,779	11,309	24%	0.24	0	0.818	0.000	0.198	0.198	**80.2%**	22,154	3,088	5,912	9,000	7,336	25%	0.25	0	0.787	0.144	0.308	0.308	**69.2%**
39	1951	A	60,566	4,280	7,442	11,722	21,702	23%	0.23	0	0.816	0.000	0.186	0.186	**81.4%**	29,827	3,240	4,719	7,959	10,205	24%	0.24	0	0.742	0.144	0.290	0.290	**71.0%**
40	1952	W	64,731	4,293	3,909	8,202	23,259	23%	0.23	0	0.663	0.000	0.151	0.151	**84.9%**	57,518	3,218	3,934	7,152	20,562	23%	0.23	0	0.707	0.144	0.273	0.273	**72.7%**
41	1953	W	28,344	2,000	4,060	6,060	9,651	25%	0.25	0	0.570	0.000	0.140	0.140	**86.0%**	24,893	3,161	4,111	7,272	8,360	25%	0.25	0	0.712	0.144	0.286	0.286	**71.4%**
42	1954	A	57,158	1,984	4,636	6,620	20,427	23%	0.23	0	0.594	0.000	0.136	0.136	**86.4%**	49,536	3,181	4,685	7,866	17,576	23%	0.23	0	0.738	0.144	0.282	0.282	**71.8%**
43	1955	D	16,940	4,258	3,797	8,055	5,386	61%	0.27	0	0.656	0.000	0.175	0.175	**82.5%**	17,946	4,225	2,934	7,159	5,762	26%	0.26	0	0.707	0.144	0.293	0.293	**70.7%**
44	1956	W	63,748	3,248	4,675	7,923	22,892	23%	0.23	0	0.651	0.000	0.148	0.148	**85.2%**	36,676	2,069	4,699	6,768	12,767	24%	0.24	0	0.690	0.144	0.275	0.275	**72.5%**
45	1957	A	33,144	2,210	4,638	6,848	11,446	24%	0.24	0	0.604	0.000	0.146	0.146	**85.4%**	44,377	3,178	4,406	7,584	15,647	23%	0.23	0	0.726	0.144	0.280	0.280	**72.0%**
46	1958	W	63,062	3,143	4,045	7,188	22,635	23%	0.23	0	0.619	0.000	0.141	0.141	**85.9%**	93,616	3,458	4,072	7,530	34,062	22%	0.22	0	0.723	0.144	0.273	0.273	**72.7%**
47	1959	B	50,082	1,817	4,060	5,877	17,781	23%	0.23	0	0.562	0.000	0.130	0.130	**87.0%**	22,081	3,022	3,110	6,132	7,308	25%	0.25	0	0.663	0.144	0.276	0.276	**72.4%**
48	1960	D	27,024	4,230	7,296	11,526	9,157	25%	0.25	0	0.807	0.000	0.200	0.200	**80.0%**	21,812	2,681	4,017	6,698	7,208	26%	0.26	0	0.687	0.144	0.283	0.283	**71.7%**
49	1961	D	31,432	4,060	7,109	11,169	10,806	24%	0.24	0	0.792	0.000	0.192	0.192	**80.8%**	20,744	2,761	5,225	7,986	6,808	26%	0.26	0	0.743	0.144	0.298	0.298	**70.2%**
50	1962	B	39,381	1,631	8,409	10,040	13,778	23%	0.24	0	0.743	0.000	0.176	0.176	**82.4%**	26,513	3,397	4,333	7,730	8,966	25%	0.25	0	0.732	0.144	0.290	0.290	**71.0%**
51	1963	W	58,676	4,277	8,273	12,550	20,995	23%	0.23	0	0.851	0.000	0.195	0.195	**80.5%**	32,645	4,225	4,996	9,221	11,259	24%	0.24	0	0.797	0.144	0.302	0.302	**69.8%**
52	1964	D	19,696	4,274	3,632	7,906	6,416	61%	0.26	0	0.650	0.000	0.169	0.169	**83.1%**	17,205	3,557	3,254	6,811	5,485	27%	0.27	0	0.692	0.144	0.290	0.290	**71.0%**
53	1965	W	33,076	4,257	5,807	10,064	11,420	24%	0.24	0	0.744	0.000	0.180	0.180	**82.0%**	21,133	3,307	4,312	7,619	6,954	26%	0.26	0	0.727	0.144	0.294	0.294	**70.6%**
54	1966	B	26,777	2,040	4,377	6,417	9,065	25%	0.25	0	0.585	0.000	0.145	0.145	**85.5%**	28,683	3,440	4,424	7,864	9,777	25%	0.25	0	0.738	0.144	0.290	0.290	**71.0%**
55	1967	W	42,148	4,290	3,202	7,492	14,813	24%	0.24	0	0.632	0.000	0.149	0.149	**85.1%**	54,488	3,213	3,285	6,498	19,429	23%	0.23	0	0.679	0.144	0.267	0.267	**73.3%**
56	1968	B	56,470	1,978	4,060	6,038	20,170	23%	0.23	0	0.569	0.000	0.131	0.131	**86.9%**	36,789	3,023	4,111	7,134	12,809	24%	0.24	0	0.706	0.144	0.278	0.278	**72.2%**
57	1969	W	67,482	1,409	3,171	4,580	24,288	23%	0.23	0	0.506	0.000	0.115	0.115	**88.5%**	45,319	2,055	3,251	5,306	15,999	23%	0.23	0	0.627	0.144	0.257	0.257	**74.3%**
58	1970	W	57,565	1,190	4,060	5,250	20,579	23%	0.23	0	0.535	0.000	0.123	0.123	**87.7%**	35,819	3,080	4,111	7,191	12,446	24%	0.24	0	0.709	0.144	0.279	0.279	**72.1%**
59	1971	W	28,338	3,168	4,081	7,249	9,648	24%	0.25	0	0.621	0.000	0.153	0.153	**84.7%**	51,682	3,436	4,699	8,135	18,379	23%	0.23	0	0.750	0.144	0.284	0.284	**71.6%**
60	1972	B	25,083	4,259	4,638	8,897	8,431	57%	0.25	0	0.693	0.000	0.173	0.173	**82.7%**	32,930	3,254	4,381	7,635	11,366	24%	0.24	0	0.728	0.144	0.285	0.285	**71.5%**
61	1973	A	70,967	4,269	4,425	8,694	25,592	23%	0.23	0	0.684	0.000	0.155	0.155	**84.5%**	47,552	3,476	4,454	7,930	16,834	23%	0.23	0	0.741	0.144	0.283	0.283	**71.7%**
62	1974	W	41,926	3,560	4,413	7,973	14,730	24%	0.24	0	0.653	0.000	0.154	0.154	**84.6%**	34,763	3,439	4,439	7,878	12,051	24%	0.24	0	0.739	0.144	0.287	0.287	**71.3%**
63	1975	W	58,811	1,652	4,636	6,288	21,045	23%	0.23	0	0.580	0.000	0.133	0.133	**86.7%**	75,998	3,452	4,685	8,137	27,473	23%	0.23	0	0.750	0.144	0.281	0.281	**71.9%**
64	1976	C	20,229	2,052	4,268	6,320	6,616	59%	0.26	0	0.581	0.000	0.150	0.150	**85.0%**	18,356	2,116	4,219	6,335	5,915	26%	0.26	0	0.672	0.144	0.283	0.283	**71.7%**
65	1977	C	12,318	705	1,435	2,140	3,657	68%	0.28	0	0.400	0.000	0.114	0.114	**88.6%**	7,579	856	1,235	2,091	1,885	32%	0.32	0	0.487	0.144	0.255	0.255	**74.5%**
66	1978	A	51,052	1,733	7,129	8,862	18,143	23%	0.23	0	0.691	0.000	0.160	0.160	**84.0%**	45,946	2,106	3,905	6,011	16,234	23%	0.23	0	0.658	0.144	0.264	0.264	**73.6%**
67	1979	B	41,682	1,506	3,958	5,464	14,639	24%	0.24	0	0.544	0.000	0.128	0.128	**87.2%**	32,494	3,177	4,007	7,184	11,203	24%	0.24	0	0.708	0.144	0.281	0.281	**71.9%**
68	1980	A	71,932	917	3,768	4,685	25,953	23%	0.23	0	0.510	0.000	0.115	0.115	**88.5%**	36,480	1,822	3,344	5,166	12,694	24%	0.24	0	0.621	0.144	0.258	0.258	**74.2%**
69	1981	D	29,672	1,773	4,062	5,835	10,147	24%	0.24	0	0.560	0.000	0.137	0.137	**86.3%**	32,501	3,022	4,111	7,133	11,205	24%	0.24	0	0.706	0.144	0.280	0.280	**72.0%**
70	1982	W	65,645	3,190	4,620	7,810	23,601	23%	0.23	0	0.646	0.000	0.147	0.147	**85.3%**	69,087	2,935	4,644	7,579	24,889	23%	0.23	0	0.726	0.144	0.276	0.276	**72.4%**
71	1983	W	82,910	1,395	2,793	4,188	30,058	22%	0.22	0	0.489	0.000	0.110	0.110	**89.0%**	81,934	2,042	2,628	4,670	29,693	22%	0.22	0	0.599	0.144	0.246	0.246	**75.4%**
72	1984	W	37,282	1,486	3,847	5,333	12,993	24%	0.24	0	0.538	0.000	0.128	0.128	**87.2%**	36,503	3,253	4,007	7,260	12,702	24%	0.24	0	0.712	0.144	0.280	0.280	**72.0%**
73	1985	D	20,092	2,095	4,638	6,733	6,564	58%	0.26	0	0.599	0.000	0.155	0.155	**84.5%**	22,303	3,023	4,685	7,708	7,391	25%	0.25	0	0.731	0.144	0.294	0.294	**70.6%**
74	1986	W	95,699	4,244	7,969	12,213	34,841	22%	0.22	0	0.837	0.000	0.186	0.186	**81.4%**	72,539	4,225	4,180	8,405	26,180	23%	0.23	0	0.761	0.144	0.284	0.284	**71.6%**
75	1987	D	23,028	1,308	4,212	5,520	7,662	57%	0.25	0	0.546	0.000	0.138	0.138	**86.2%**	29,533	2,391	4,114	6,505	10,095	24%	0.24	0	0.679	0.144	0.275	0.275	**72.5%**
76	1988	C	18,113	4,245	2,661	6,906	5,824	62%	0.26	0	0.607	0.000	0.160	0.160	**84.0%**	11,017	2,067	1,719	3,786	3,170	29%	0.29	0	0.561	0.144	0.266	0.266	**73.4%**
77	1989	D	11,772	943	1,809	2,752	3,453	67%	0.29	0	0.426	0.000	0.123	0.123	**87.7%**	42,433	4,225	6,871	11,096	14,920	24%	0.24	0	0.878	0.144	0.317	0.317	**68.3%**
78	1990	C	16,696	1,294	6,409	7,703	5,294	61%	0.27	0	0.641	0.000	0.171	0.171	**82.9%**	14,588	2,319	3,455	5,774	4,506	27%	0.27	0	0.647	0.144	0.282	0.282	**71.8%**
79	1991	C	10,324	410	110	520	2,911	67%	0.30	0	0.329	0.000	0.098	0.098	**90.2%**	29,675	4,225	7,078	11,303	10,148	24%	0.24	0	0.887	0.144	0.326	0.326	**67.4%**
80	1992	C	32,538	655	7,457	8,112	11,219	24%	0.24	0	0.659	0.000	0.159	0.159	**84.1%**	20,106	2,049	6,190	8,239	6,570	26%	0.26	0	0.754	0.144	0.302	0.302	**69.8%**

Formulas: Sacramento River Spring Run Young of Year Smolt Survival Model

C10 ='Study 467 Flow Data'!C7
D10 ='Study 467 Flow Data'!M7
E10 ='Study 467 Flow Data'!W7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.45*(0.133*C10+829)/(C10-G10))+(0.55*H10)
J10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
K10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*F10)
L10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!D7
R10 ='Study 467 Flow Data'!N7
S10 ='Study 467 Flow Data'!X7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
Y10 =(-0.5916024)+(0.017968*$T$3)+(0.0000434*T10)
Z10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!E7
AF10 ='Study 467 Flow Data'!O7
AG10 ='Study 467 Flow Data'!Y7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
AM10 =(-0.5916024)+(0.017968*$BC$2)+(0.0000434*AH10)
AN10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

AS10 ='Study 467 Flow Data'!F7
AT10 ='Study 467 Flow Data'!P7
AU10 ='Study 467 Flow Data'!Z7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$G$2,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BA10 =IF(((-0.5916024)+(0.017968*$BC$3)+(0.0000434*AV10))>1,1,((-0.5916024)+(0.017968*$BC$3)+(0.000043
BB10 =-1.613493+(0.0319584*$BC$3)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =(AZ10+BC10-(AZ10*BC10))
BE10 =1-BD10

Study 524 Sacramento River Spring Run YOY Smolt Survival Model (continued)

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

Row	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT
6	**APRIL**				Calculated									
7	Sac				Sutter &									Calculated
8	River			CVP + SWP	Steamboat		X-Channel	observed			Calculated Mortality			Survival
9	Flows	CVP	SWP	exports	Slough Q	Percent	Closed	temp	m1	m2	m3	m23	m123	s123
10	22,816	4,189	4,189	8,378	7,583	25%	0.25	58.5	0.002	0.823	0.256	0.400	0.401	**59.9%**
11	23,686	4,041	4,041	8,082	7,909	25%	0.25	58.3	0.000	0.807	0.250	0.390	0.390	**61.0%**
12	8,059	1,394	1,394	2,788	2,064	32%	0.32	61.5	0.128	0.634	0.352	0.442	0.513	**48.7%**
13	20,329	3,285	3,285	6,570	6,653	26%	0.26	59.1	0.027	0.755	0.275	0.399	0.416	**58.4%**
14	17,750	3,029	3,029	6,058	5,689	26%	0.26	61.6	0.133	0.778	0.355	0.467	0.538	**46.2%**
15	48,222	4,042	4,042	8,084	17,085	23%	0.23	56.8	0.000	0.780	0.202	0.336	0.336	**66.4%**
16	29,212	3,681	3,681	7,362	9,975	25%	0.25	58.7	0.011	0.783	0.262	0.390	0.396	**60.4%**
17	9,078	1,481	1,481	2,962	2,445	31%	0.31	56.3	0.000	0.549	0.186	0.297	0.297	**70.3%**
18	12,640	1,956	1,956	3,912	3,777	28%	0.28	59.6	0.048	0.649	0.291	0.393	0.422	**57.8%**
19	9,200	1,484	1,484	2,968	2,491	31%	0.31	62.8	0.183	0.666	0.393	0.477	0.573	**42.7%**
20	13,081	2,482	2,894	5,376	3,942	28%	0.28	58.9	0.019	0.700	0.269	0.390	0.402	**59.8%**
21	12,735	2,864	1,259	4,123	3,813	28%	0.28	60.1	0.069	0.667	0.307	0.409	0.450	**55.0%**
22	12,849	1,789	1,789	3,578	3,856	28%	0.28	63.6	0.217	0.706	0.419	0.500	0.608	**39.2%**
23	24,635	4,319	4,319	8,638	8,263	25%	0.25	58.9	0.019	0.842	0.269	0.412	0.424	**57.6%**
24	20,781	4,146	4,146	8,292	6,822	26%	0.26	59.7	0.053	0.841	0.294	0.435	0.465	**53.5%**
25	23,007	2,988	4,993	7,981	7,655	25%	0.25	58.8	0.015	0.811	0.266	0.404	0.413	**58.7%**
26	47,172	3,342	4,377	7,719	16,692	23%	0.23	56.3	0.000	0.755	0.186	0.318	0.318	**68.2%**
27	12,224	2,073	2,073	4,146	3,622	29%	0.29	63.3	0.204	0.726	0.409	0.500	0.602	**39.8%**
28	41,731	4,147	4,147	8,294	14,657	24%	0.24	57.4	0.000	0.800	0.221	0.357	0.357	**64.3%**
29	42,372	4,600	4,708	9,308	14,897	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
30	43,308	4,459	4,459	8,918	15,247	23%	0.23	56.5	0.000	0.811	0.192	0.337	0.337	**66.3%**
31	29,406	4,079	5,062	9,141	10,048	24%	0.24	58.8	0.015	0.862	0.266	0.412	0.420	**58.0%**
32	9,823	2,124	2,124	4,248	2,724	30%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	**63.0%**
33	11,753	3,131	3,131	6,262	3,446	29%	0.29	60.6	0.090	0.769	0.323	0.452	0.501	**49.9%**
34	12,226	2,980	2,980	5,960	3,623	29%	0.29	60.7	0.095	0.758	0.326	0.449	0.502	**49.8%**
35	13,800	2,455	2,455	4,910	4,211	28%	0.28	62.5	0.170	0.744	0.384	0.484	0.572	**42.8%**
36	22,793	3,390	3,390	6,780	7,575	25%	0.25	56.6	0.000	0.720	0.195	0.328	0.328	**67.2%**
37	13,210	2,544	2,544	5,088	3,991	28%	0.28	61.7	0.137	0.738	0.358	0.465	0.538	**46.2%**
38	18,776	3,084	3,084	6,168	6,072	26%	0.26	61.3	0.120	0.778	0.346	0.459	0.524	**47.6%**
39	14,732	3,181	3,181	6,362	4,560	27%	0.27	59.9	0.061	0.761	0.301	0.427	0.462	**53.8%**
40	56,648	3,674	4,166	7,840	20,236	23%	0.23	55.5	0.000	0.746	0.160	0.295	0.295	**70.5%**
41	16,177	2,825	2,825	5,650	5,100	27%	0.27	58.8	0.015	0.710	0.266	0.385	0.394	**60.6%**
42	39,868	3,681	3,681	7,362	13,961	24%	0.24	58.4	0.000	0.777	0.253	0.377	0.377	**62.3%**
43	9,473	1,836	1,836	3,672	2,593	30%	0.30	56.4	0.000	0.581	0.189	0.308	0.308	**69.2%**
44	20,437	3,991	3,991	7,982	6,693	26%	0.26	59.7	0.053	0.828	0.294	0.432	0.462	**53.8%**
45	21,137	3,215	3,215	6,430	6,955	26%	0.26	60.5	0.086	0.775	0.320	0.437	0.485	**51.5%**
46	52,284	4,425	5,063	9,488	18,604	23%	0.23	57.4	0.000	0.852	0.221	0.367	0.367	**63.3%**
47	10,490	1,893	1,893	3,786	2,973	30%	0.30	63	0.191	0.705	0.400	0.490	0.588	**41.2%**
48	13,553	318	3,713	4,031	4,119	28%	0.28	59.5	0.044	0.652	0.288	0.390	0.417	**58.3%**
49	12,791	1,771	1,771	3,542	3,834	28%	0.28	60.1	0.069	0.642	0.307	0.402	0.443	**55.7%**
50	15,462	2,804	2,804	5,608	4,833	27%	0.27	61.8	0.141	0.762	0.362	0.470	0.545	**45.5%**
51	69,458	4,047	4,047	8,094	25,027	23%	0.23	53.7	0.000	0.725	0.103	0.244	0.244	**75.6%**
52	8,953	1,756	1,756	3,512	2,398	31%	0.31	59.3	0.036	0.626	0.282	0.388	0.410	**59.0%**
53	45,668	4,270	4,270	8,540	16,130	23%	0.23	56.9	0.000	0.801	0.205	0.344	0.344	**65.6%**
54	16,760	2,811	2,811	5,622	5,318	27%	0.27	61.9	0.145	0.765	0.365	0.472	0.548	**45.2%**
55	39,925	3,521	4,950	8,471	13,982	24%	0.24	53.8	0.000	0.743	0.106	0.257	0.257	**74.3%**
56	15,578	2,621	2,621	5,242	4,876	27%	0.27	61.5	0.128	0.741	0.352	0.457	0.527	**47.3%**
57	44,787	3,338	4,166	7,504	15,800	23%	0.23	56.4	0.000	0.747	0.189	0.320	0.320	**68.0%**
58	16,608	3,300	3,300	6,600	5,261	27%	0.27	58.8	0.015	0.751	0.266	0.396	0.405	**59.5%**
59	21,756	3,282	3,282	6,564	7,187	26%	0.26	58.7	0.011	0.748	0.262	0.387	0.393	**60.7%**
60	12,452	2,349	2,349	4,698	3,707	28%	0.28	58.5	0.002	0.663	0.256	0.372	0.373	**62.7%**
61	19,512	3,726	3,726	7,452	6,347	26%	0.26	61.3	0.120	0.833	0.346	0.472	0.536	**46.4%**
62	33,208	4,600	4,720	9,320	11,470	24%	0.24	56.8	0.000	0.833	0.202	0.354	0.354	**64.6%**
63	25,763	4,384	4,384	8,768	8,685	25%	0.25	56.8	0.000	0.810	0.202	0.353	0.353	**64.7%**
64	9,434	627	2,374	3,001	2,578	30%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
65	9,144	1,135	1,861	2,996	2,470	31%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	**36.3%**
66	38,698	3,442	4,074	7,516	13,523	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
67	17,702	3,426	3,426	6,852	5,671	26%	0.26	59.8	0.057	0.780	0.298	0.425	0.458	**54.2%**
68	19,818	2,935	3,952	6,887	6,462	26%	0.26	57.1	0.000	0.733	0.211	0.347	0.347	**65.3%**
69	16,998	2,725	2,725	5,450	5,407	27%	0.27	61.5	0.128	0.750	0.352	0.458	0.528	**47.2%**
70	75,838	3,376	5,569	8,945	27,413	23%	0.23	54.1	0.000	0.769	0.115	0.263	0.263	**73.7%**
71	68,301	3,314	3,649	6,963	24,595	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
72	17,872	3,422	3,422	6,844	5,734	26%	0.26	59.7	0.053	0.778	0.294	0.422	0.453	**54.7%**
73	12,328	2,043	2,043	4,086	3,661	28%	0.28	60.8	0.099	0.678	0.330	0.429	0.485	**51.5%**
74	20,778	2,310	5,214	7,524	6,821	26%	0.26	60.4	0.082	0.820	0.317	0.446	0.492	**50.8%**
75	12,402	322	3,177	3,499	3,688	28%	0.28	65.7	0.305	0.741	0.486	0.559	0.693	**30.7%**
76	8,616	1,424	1,424	2,848	2,272	31%	0.31	59.9	0.061	0.608	0.301	0.397	0.433	**56.7%**
77	23,637	2,825	2,825	5,650	7,890	25%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	**48.0%**
78	12,444	228	3,307	3,535	3,704	28%	0.28	61.6	0.133	0.669	0.355	0.444	0.518	**48.2%**
79	15,284	2,081	2,168	4,249	4,766	27%	0.27	60.8	0.099	0.685	0.330	0.426	0.483	**51.7%**
80	12,470	1,867	1,867	3,734	3,714	28%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	**49.9%**

Row	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI
6	**MAY**				Calculated									
7	Sac				Steamboat			USBR						Calculated
8	River			CVP + SWP & Sutter			X-channel	observed		Calculated Mortality				Survival
9	Flows	CVP	SWP	Exports	Slough Q	Percent	Closed	temp f	m1	m2	m3	m23	m123	s123
10	46,457	4,189	4,348	8,537	16,425	23%	0.23	61.2	0.116	0.879	0.342	0.467	0.529	**47.1%**
11	14,353	4,041	3,133	7,174	4,418	63%	0.47	62.4	0.166	0.841	0.381	0.598	0.665	**33.5%**
12	8,843	1,394	698	2,092	2,357	72%	0.54	69.2	0.452	0.743	0.598	0.676	0.822	**17.8%**
13	10,964	3,285	2,427	5,712	3,151	68%	0.50	63.2	0.200	0.792	0.406	0.601	0.681	**31.9%**
14	14,552	3,029	2,527	5,556	4,492	63%	0.47	65.7	0.305	0.830	0.486	0.648	0.755	**24.5%**
15	26,781	4,042	4,161	8,203	9,066	25%	0.25	62.6	0.175	0.889	0.387	0.512	0.597	**40.3%**
16	20,653	3,681	3,383	7,064	6,774	59%	0.44	66.6	0.343	0.912	0.515	0.689	0.796	**20.4%**
17	9,912	1,481	116	1,597	2,757	70%	0.52	66.1	0.322	0.665	0.499	0.585	0.719	**28.1%**
18	12,029	1,956	1,775	3,731	3,549	66%	0.49	63.1	0.196	0.704	0.403	0.551	0.639	**36.1%**
19	10,086	1,484	1,431	2,915	2,822	69%	0.52	70.5	0.507	0.802	0.640	0.723	0.864	**13.6%**
20	12,017	2,482	2,418	4,900	3,544	66%	0.49	65.5	0.297	0.798	0.480	0.637	0.744	**25.6%**
21	7,561	2,864	1,080	3,944	1,878	76%	0.56	63.7	0.221	0.724	0.422	0.592	0.682	**31.8%**
22	8,878	1,789	959	2,748	2,370	72%	0.54	68.3	0.414	0.755	0.569	0.669	0.806	**19.4%**
23	28,573	4,319	2,431	6,750	9,736	25%	0.25	64	0.234	0.851	0.432	0.535	0.644	**35.6%**
24	14,094	4,146	3,157	7,303	4,321	64%	0.47	64.9	0.271	0.891	0.461	0.665	0.756	**24.4%**
25	16,218	2,988	4,083	7,071	5,116	62%	0.46	64.5	0.255	0.874	0.448	0.644	0.735	**26.5%**
26	57,429	3,342	5,445	8,787	20,528	23%	0.23	62.5	0.170	0.913	0.384	0.505	0.590	**41.0%**
27	8,570	2,073	1,737	3,810	2,255	73%	0.54	68	0.402	0.796	0.560	0.687	0.813	**18.7%**
28	18,311	4,147	3,267	7,414	5,898	60%	0.45	65.6	0.301	0.909	0.483	0.674	0.772	**22.8%**
29	39,485	4,600	5,119	9,719	13,817	24%	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**
30	36,037	4,459	4,348	8,807	12,528	24%	0.24	60.1	0.069	0.870	0.307	0.442	0.481	**51.9%**
31	20,308	4,079	4,180	8,259	6,645	59%	0.44	65.4	0.292	0.942	0.477	0.681	0.775	**22.5%**
32	8,907	2,124	1,870	3,994	2,381	72%	0.53	65.9	0.313	0.766	0.493	0.639	0.752	**24.8%**
33	12,335	3,131	2,540	5,671	3,663	66%	0.49	63.1	0.196	0.788	0.403	0.592	0.672	**32.8%**
34	13,701	2,980	2,637	5,617	4,174	64%	0.48	63.9	0.229	0.800	0.429	0.606	0.696	**30.4%**
35	8,856	2,455	1,735	4,190	2,362	72%	0.54	68.7	0.431	0.825	0.582	0.712	0.836	**16.4%**
36	26,604	3,390	3,790	7,180	9,000	25%	0.25	62.3	0.162	0.839	0.378	0.492	0.574	**42.6%**
37	14,910	2,544	2,380	4,924	4,626	63%	0.47	65.2	0.284	0.794	0.470	0.622	0.729	**27.1%**
38	14,365	3,084	2,686	5,770	4,423	63%	0.47	64.3	0.246	0.814	0.441	0.618	0.712	**28.8%**
39	18,870	3,181	3,568	6,749	6,107	60%	0.45	64.4	0.250	0.858	0.445	0.629	0.722	**27.8%**
40	59,563	3,674	5,270	8,944	21,327	23%	0.23	61.7	0.137	0.905	0.358	0.483	0.554	**44.6%**
41	26,868	2,825	3,838	6,663	9,099	25%	0.25	60.9	0.103	0.792	0.333	0.447	0.504	**49.6%**
42	25,380	3,681	4,433	8,114	8,542	25%	0.25	65.9	0.313	0.945	0.493	0.605	0.729	**27.1%**
43	10,273	1,836	1,887	3,723	2,892	69%	0.51	66.9	0.356	0.772	0.525	0.652	0.776	**22.4%**
44	39,005	3,991	4,394	8,385	13,638	24%	0.24	61.4	0.124	0.876	0.349	0.474	0.539	**46.1%**
45	16,845	3,215	2,984	6,199	5,350	61%	0.46	64	0.234	0.827	0.432	0.612	0.703	**29.7%**
46	43,486	4,425	6,083	10,508	15,314	23%	0.23	62.9	0.187	0.995	0.397	0.537	0.624	**37.6%**
47	9,424	1,893	1,844	3,737	2,575	71%	0.53	65.9	0.313	0.755	0.493	0.631	0.746	**25.4%**
48	10,915	318	1,678	1,996	3,132	68%	0.51	65.9	0.313	0.679	0.493	0.587	0.716	**28.4%**
49	8,699	1,771	1,453	3,224	2,303	73%	0.54	64.3	0.246	0.704	0.441	0.583	0.685	**31.5%**
50	14,817	2,804	2,669	5,473	4,592	63%	0.47	64.8	0.267	0.810	0.457	0.623	0.724	**27.6%**
51	29,094	4,047	4,161	8,208	9,931	25%	0.25	62.5	0.170	0.888	0.384	0.507	0.591	**40.9%**
52	10,360	1,756	1,878	3,634	2,925	69%	0.51	65.2	0.284	0.738	0.470	0.607	0.719	**28.1%**
53	24,427	4,270	4,801	9,071	8,186	57%	0.43	63.6	0.217	0.945	0.419	0.643	0.720	**28.0%**
54	14,542	2,811	2,351	5,162	4,489	63%	0.47	67.3	0.372	0.842	0.537	0.681	0.800	**20.0%**
55	44,790	3,521	5,445	8,966	15,801	23%	0.23	62.1	0.154	0.913	0.371	0.498	0.575	**42.5%**
56	9,379	2,621	1,827	4,448	2,558	71%	0.53	66.1	0.322	0.789	0.499	0.652	0.764	**23.6%**
57	45,533	3,338	5,026	8,364	16,079	23%	0.23	63.2	0.200	0.907	0.406	0.523	0.619	**38.1%**
58	12,155	3,300	2,958	6,258	3,596	66%	0.49	68.6	0.427	0.913	0.579	0.743	0.853	**14.7%**
59	29,603	3,282	3,838	7,120	10,122	24%	0.24	61	0.107	0.813	0.336	0.453	0.512	**48.8%**
60	10,809	2,349	1,943	4,292	3,093	68%	0.51	67.3	0.372	0.804	0.537	0.672	0.794	**20.6%**
61	15,751	3,726	3,255	6,981	4,941	62%	0.46	66.9	0.356	0.913	0.525	0.705	0.810	**19.0%**
62	26,945	4,600	4,348	8,948	9,127	25%	0.25	63.4	0.208	0.936	0.413	0.542	0.638	**36.2%**
63	28,542	4,384	4,348	8,732	9,725	25%	0.25	63.8	0.225	0.934	0.425	0.550	0.652	**34.8%**
64	10,091	627	1,570	2,197	2,824	69%	0.52	69.6	0.469	0.754	0.611	0.685	0.833	**16.7%**
65	7,005	1,135	452	1,587	1,670	78%	0.58	64	0.234	0.627	0.432	0.544	0.651	**34.9%**
66	21,056	3,442	4,103	7,545	6,925	58%	0.44	63	0.191	0.868	0.400	0.604	0.680	**32.0%**
67	12,566	3,426	3,000	6,426	3,750	65%	0.49	63.8	0.225	0.834	0.425	0.625	0.709	**29.1%**
68	14,777	2,935	3,964	6,899	4,577	63%	0.47	63.6	0.217	0.851	0.419	0.622	0.704	**29.6%**
69	8,752	2,725	1,752	4,477	2,323	72%	0.54	66.7	0.347	0.801	0.518	0.670	0.785	**21.5%**
70	38,429	3,376	6,684	10,060	13,422	24%	0.24	61.1	0.112	0.943	0.339	0.483	0.540	**46.0%**
71	54,514	3,314	3,590	6,904	19,438	23%	0.23	60.1	0.069	0.788	0.307	0.418	0.458	**54.2%**
72	13,411	3,422	3,066	6,488	4,066	64%	0.48	66.5	0.339	0.885	0.512	0.691	0.796	**20.4%**
73	13,155	2,043	2,122	4,165	3,970	65%	0.48	65.8	0.309	0.771	0.489	0.625	0.741	**25.9%**
74	13,127	2,310	5,352	7,662	3,959	65%	0.48	66.2	0.326	0.930	0.502	0.709	0.804	**19.6%**
75	8,452	322	1,419	1,741	2,211	73%	0.54	70.5	0.507	0.751	0.640	0.700	0.852	**14.8%**
76	9,761	1,424	1,533	2,957	2,701	70%	0.52	65.8	0.309	0.719	0.489	0.609	0.730	**27.0%**
77	14,340	2,825	1,968	4,793	4,413	63%	0.47	64.7	0.263	0.779	0.454	0.608	0.711	**28.9%**
78	7,702	228	1,372	1,600	1,931	75%	0.56	66.4	0.335	0.671	0.509	0.599	0.733	**26.7%**
79	8,690	2,081	1,422	3,503	2,300	73%	0.54	65.7	0.305	0.741	0.486	0.623	0.738	**26.2%**
80	8,982	1,867	859	2,726	2,409	72%	0.53	66	0.318	0.713	0.496	0.611	0.735	**26.5%**

Row	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ
6	**JUNE**				Caculated											
7	Sac				Steamboat			USBR						Calculated		
8	River			CVP + SWP & Sutter			X-channel	observed		Calculated Mortality				Survival		Weighted
9	Flow	CVP	SWP	exports	Slough Q	percent	closed	temp f	m1	m2	m3	m23	m123	s123		Total Survival
10	34,719	4,600	6,672	11,272	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**		**63.86%**
11	18,138	4,227	3,389	7,616	5,834	60%	0.45	65.3	0.288	0.912	0.473	0.671	0.766	**23.4%**		**62.78%**
12	10,720	676	817	1,493	3,059	68%	0.51	70.6	0.511	0.742	0.643	0.693	0.850	**15.0%**		**56.21%**
13	13,865	3,579	346	3,925	4,236	64%	0.48	68.3	0.414	0.806	0.569	0.682	0.814	**18.6%**		**60.52%**
14	15,019	3,509	2,495	6,004	4,667	63%	0.47	71.2	0.536	0.948	0.662	0.796	0.905	**9.5%**		**55.26%**
15	18,893	4,600	3,745	8,345	6,116	60%	0.45	68.1	0.406	0.994	0.563	0.755	0.855	**14.5%**		**63.96%**
16	13,775	3,022	2,669	5,691	4,202	64%	0.48	69.7	0.473	0.908	0.614	0.754	0.871	**12.9%**		**59.81%**
17	10,981	3,029	95	3,124	3,157	68%	0.50	70.1	0.490	0.804	0.627	0.716	0.855	**14.5%**		**62.94%**
18	18,112	4,273	2,680	6,953	5,824	60%	0.45	69.6	0.469	0.961	0.611	0.768	0.877	**12.3%**		**60.95%**
19	13,380	2,744	1,460	4,204	4,054	64%	0.48	70.7	0.515	0.861	0.646	0.749	0.879	**12.1%**		**54.17%**
20	19,361	3,601	4,124	7,725	6,291	59%	0.44	69.5	0.465	0.992	0.608	0.778	0.881	**11.9%**		**59.35%**
21	10,498	1,507	91	1,598	2,976	69%	0.51	69.8	0.478	0.732	0.617	0.676	0.831	**16.9%**		**59.89%**
22	14,390	3,960	1,266	5,226	4,432	63%	0.47	70.7	0.515	0.906	0.646	0.769	0.888	**11.2%**		**54.14%**
23	17,571	4,117	3,432	7,549	5,622	61%	0.45	71	0.528	1.000	0.656	0.811	0.911	**8.9%**		**59.60%**
24	19,056	4,600	3,357	7,957	6,177	60%	0.45	69.2	0.452	0.997	0.598	0.776	0.877	**12.3%**		**56.34%**
25	18,189	3,012	4,658	7,670	5,853	60%	0.45	69.7	0.473	0.994	0.614	0.785	0.887	**11.3%**		**59.56%**
26	35,517	4,600	6,672	11,272	12,333	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**		**66.68%**
27	18,577	4,310	3,082	7,392	5,998	60%	0.45	71	0.528	1.000	0.656	0.810	0.910	**9.0%**		**54.03%**
28	15,338	4,079	3,097	7,176	4,786	62%	0.47	71.5	0.549	1.000	0.672	0.824	0.921	**7.9%**		**59.28%**
29	20,808	4,600	6,297	10,897	6,832	59%	0.44	69	0.444	1.000	0.592	0.770	0.872	**12.8%**		**63.88%**
30	27,117	4,600	6,672	11,272	9,192	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**		**67.27%**
31	16,854	4,600	3,142	7,742	5,353	61%	0.46	66.6	0.343	0.941	0.515	0.709	0.809	**19.1%**		**60.99%**
32	18,219	4,171	3,177	7,348	5,864	60%	0.45	67.8	0.393	0.946	0.553	0.729	0.836	**16.4%**		**61.45%**
33	16,681	3,373	3,809	7,182	5,289	61%	0.46	70.6	0.511	0.989	0.643	0.801	0.903	**9.7%**		**58.30%**
34	16,282	3,357	3,610	6,967	5,139	62%	0.46	68.1	0.406	0.934	0.563	0.734	0.842	**15.8%**		**58.60%**
35	18,817	4,310	2,950	7,260	6,088	60%	0.45	70	0.486	0.981	0.624	0.783	0.889	**11.1%**		**53.77%**
36	22,883	4,600	4,396	8,996	7,608	58%	0.43	69	0.444	1.000	0.592	0.768	0.871	**12.9%**		**64.18%**
37	17,044	3,624	3,153	6,777	5,424	61%	0.46	70.9	0.524	0.976	0.652	0.800	0.905	**9.5%**		**54.99%**
38	20,276	4,600	3,528	8,128	6,633	59%	0.44	68.9	0.440	0.999	0.588	0.769	0.871	**12.9%**		**56.00%**
39	17,640	4,600	2,825	7,425	5,647	61%	0.45	70.3	0.499	0.994	0.633	0.796	0.898	**10.2%**		**58.04%**
40	38,968	4,600	6,672	11,272	13,624	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**		**67.44%**
41	25,885	4,600	5,781	10,381	8,731	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**		**65.67%**
42	14,217	3,285	2,742	6,027	4,367	64%	0.47	68.7	0.431	0.904	0.582	0.735	0.849	**15.1%**		**61.60%**
43	18,526	4,145	3,076	7,221	5,979	60%	0.45	70.1	0.490	0.981	0.627	0.786	0.891	**10.9%**		**61.15%**
44	22,306	4,600	6,672	11,272	7,392	58%	0.43	68.7	0.431	1.000	0.582	0.763	0.865	**13.5%**		**62.19%**
45	19,116	4,501	3,463	7,964	6,199	60%	0.44	72	0.570	1.000	0.688	0.827	0.925	**7.5%**		**58.54%**
46	33,938	4,600	6,672	11,272	11,743	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**		**64.11%**
47	17,909	4,194	2,992	7,186	5,748	60%	0.45	72.1	0.574	1.000	0.691	0.830	0.928	**7.2%**		**55.96%**
48	18,212	4,359	2,695	7,054	5,861	60%	0.45	72.7	0.600	1.000	0.710	0.840	0.936	**6.4%**		**58.80%**
49	20,158	4,600	3,080	7,680	6,589	59%	0.44	73.2	0.621	1.000	0.726	0.847	0.942	**5.8%**		**58.21%**
50	17,161	3,946	2,879	6,825	5,468	61%	0.45	70.4	0.503	0.970	0.636	0.788	0.895	**10.5%**		**56.08%**
51	19,570	4,600	4,023	8,623	6,369	59%	0.44	69	0.444	1.000	0.592	0.773	0.874	**12.6%**		**65.19%**
52	18,000	4,162	2,842	7,004	5,782	60%	0.45	69.5	0.465	0.961	0.608	0.767	0.875	**12.5%**		**59.89%**
53	18,160	4,600	3,711	8,311	5,842	60%	0.45	67.1	0.364	0.975	0.531	0.730	0.829	**17.1%**		**61.51%**
54	15,583	3,650	2,604	6,254	4,878	62%	0.46	70.4	0.503	0.945	0.636	0.779	0.890	**11.0%**		**55.48%**
55	39,345	4,600	6,672	11,272	13,765	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**		**67.81%**
56	17,389	4,218	2,812	7,030	5,553	61%	0.45	72	0.570	1.000	0.688	0.829	0.927	**7.3%**		**57.16%**
57	24,130	4,600	6,643	11,243	8,075	57%	0.43	68.3	0.414	1.000	0.569	0.753	0.855	**14.5%**		**65.69%**
58	15,514	4,183	2,621	6,804	4,852	62%	0.46	70.7	0.515	0.974	0.646	0.798	0.902	**9.8%**		**59.27%**
59	23,634	4,600	5,034	9,634	7,889	57%	0.43	68.1	0.406	1.000	0.563	0.750	0.852	**14.8%**		**64.34%**
60	17,110	4,096	2,708	6,804	5,449	61%	0.45	70.7	0.515	0.974	0.646	0.795	0.901	**9.9%**		**59.48%**
61	19,399	2,460	5,582	8,042	6,305	59%	0.44	70.1	0.490	1.000	0.627	0.792	0.894	**10.6%**		**55.64%**
62	21,622	4,600	4,929	9,529	7,137	58%	0.43	69.7	0.473	1.000	0.614	0.782	0.885	**11.5%**		**63.13%**
63	24,787	4,600	6,672	11,272	8,320	57%	0.43	69.1	0.448	1.000	0.595	0.767	0.871	**12.9%**		**63.30%**
64	19,440	4,484	2,946	7,430	6,321	59%	0.44	71.8	0.562	1.000	0.681	0.823	0.922	**7.8%**		**58.97%**
65	9,565	42	379	421	2,627	71%	0.52	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**		**57.06%**
66	16,475	4,600	3,904	8,504	5,212	61%	0.46	70	0.486	1.000	0.624	0.796	0.895	**10.5%**		**62.96%**
67	19,425	2,844	5,206	8,050	6,315	59%	0.44	69.2	0.452	1.000	0.598	0.776	0.878	**12.2%**		**59.88%**
68	16,270	4,600	4,069	8,669	5,135	62%	0.46	66.9	0.356	0.987	0.525	0.737	0.830	**17.0%**		**63.97%**
69	18,070	4,295	2,892	7,187	5,808	60%	0.45	71.9	0.566	1.000	0.684	0.826	0.925	**7.5%**		**56.62%**
70	24,415	4,600	6,672	11,272	8,181	57%	0.43	66	0.318	1.000	0.496	0.711	0.803	**19.7%**		**67.71%**
71	55,568	4,600	4,685	9,285	19,832	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**		**71.84%**
72	18,436	4,397	3,354	7,751	5,945	60%	0.45	68.4	0.419	0.974	0.572	0.752	0.856	**14.4%**		**59.23%**
73	16,659	3,910	2,626	6,536	5,280	61%	0.46	69.4	0.461	0.939	0.604	0.757	0.869	**13.1%**		**57.78%**
74	13,345	4,170	3,844	8,014	4,041	64%	0.48	71.6	0.553	1.000	0.675	0.831	0.925	**7.5%**		**55.76%**
75	20,310	4,600	3,140	7,740	6,646	59%	0.44	73.2	0.621	1.000	0.726	0.846	0.942	**5.8%**		**51.07%**
76	14,755	4,491	1,250	5,741	4,568	63%	0.47	69.4	0.461	0.905	0.604	0.745	0.863	**13.7%**		**59.83%**
77	16,870	4,064	2,491	6,555	5,359	61%	0.46	68.6	0.427	0.925	0.579	0.737	0.849	**15.1%**		**57.37%**
78	19,684	4,553	2,908	7,461	6,412	59%	0.44	68.5	0.423	0.963	0.576	0.747	0.854	**14.6%**		**57.16%**
79	10,807	1,931	1,373	3,304	3,092	68%	0.51	69.4	0.461	0.799	0.604	0.703	0.840	**16.0%**		**58.39%**
80	13,901	3,899	1,132	5,031	4,249	64%	0.48	69	0.444	0.867	0.592	0.722	0.846	**15.4%**		**57.28%**
81															**Average**	**60.10%**

Row	April formulas	May formulas	June formulas
85	BG10 ='Study 467 Flow Data'!G7	BV10 ='Study 467 Flow Data'!H7	CK10 ='Study 467 Flow Data'!I7
86	BH10 ='Study 467 Flow Data'!Q7	BW10 ='Study 467 Flow Data'!R7	CL10 ='Study 467 Flow Data'!S7
87	BI10 ='Study 467 Flow Data'!AA7	BX10 ='Study 467 Flow Data'!AB7	CM10 ='Study 467 Flow Data'!AC7
88	BJ10 =(BH10+BI10)	BY10 =(BW10+BX10)	CN10 =(CL10+CM10)
89	BK10 =0.374*BG10-950	BZ10 =0.374*BV10-950	CO10 =0.374*CK10-950
90	BL10 =IF(BG10>$G$2,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))	CA10 =IF(BV10>$K$4,(0.133*BV10+829)/(BV10-BZ10),(0.293*BV10+2090)/(BV10-BZ10))	CP10 =IF(CK10>$K$4,(0.133*CK10+829)/(CK10-CO10),(0.293*CK10+2090)/(CK10-CO10))
91	BM10 =(0.133*BG10+829)/(BG10-BK10)	CB10 =(0.45*(0.133*BV10+829)/(BV10-BZ10))+(0.55*CA10)	CQ10 =(0.45*(0.133*CK10+829)/(CK10-CO10))+(0.55*CP10)
92	BN10	CC10	CR10
93	BO10 =IF((-2.45925+(0.0420748*BN10))<0,0,(-2.45925+(0.0420748*BN10)))	CD10 =IF((-2.45925+(0.0420748*CC10))<0,0,(-2.45925+(0.0420748*CC10)))	CS10 =IF((-2.45925+(0.0420748*CR10))<0,0,(-2.45925+(0.0420748*CR10)))
94	BP10 =IF(((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10))>1,1,((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10)	CE10 =IF(((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10))>1,1,((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10)))	CT10 =IF(((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10))>1,1,((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10)))
95	BQ10 =-1.613493+(0.0319584*BN10)	CF10 =-1.613493+(0.0319584*CC10)	CU10 =-1.613493+(0.0319584*CR10)
96	BR10 =(BP10*BM10)+(BQ10*(1-BM10))	CG10 =(CE10*CB10)+(CF10*(1-CB10))	CV10 =(CT10*CQ10)+(CU10*(1-CQ10))
97	BS10 =BO10+BR10-(BO10*BR10)	CH10 =CD10+CG10-(CD10*CG10)	CW10 =CS10+CV10-(CS10*CV10)
98	BT10 =1-BS10	CI10 =1-CH10	CX10 =1-CW10
99			CZ10 =(0.01*O10)+(0.06*AC10)+(0.17*AQ10)+(0.28*BE10)+(0.25*BT10)+(0.16*CI10)+(0.07*CX10)

Study 525 Sacramento River Spring Run YOY Smolt Survival Model

Modified m2 by changing the slope to 0.0000434
Cross Channel closed for 45 consecutive days, Dec 18-Jan 31
Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

December Sacramento River Temp: 47 degrees F
January Sacramento River Temp: 47 degrees F

Cross Channel Closed Over 25000 cfs
Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

February Water Temp 50 F
March Water Temp 55 F

DECEMBER

Year	Water Year Type	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	A	17,143	4,207	7,131	11,338	5,461	61%	0.45	0	0.745	0.000	0.339	0.339	**66.1%**
1923	B	34,367	4,207	6,112	10,319	11,903	24%	0.24	0	0.701	0.000	0.168	0.168	**83.2%**
1924	C	13,768	3,739	6,617	10,356	4,199	64%	0.48	0	0.702	0.000	0.335	0.335	**66.5%**
1925	D	11,248	4,207	4,936	9,143	3,257	67%	0.50	0	0.650	0.000	0.326	0.326	**67.4%**
1926	D	12,616	4,207	2,566	6,773	3,768	65%	0.49	0	0.547	0.000	0.266	0.266	**73.4%**
1927	W	14,394	4,207	7,074	11,281	4,433	63%	0.47	0	0.742	0.000	0.351	0.351	**64.9%**
1928	A	16,574	4,207	6,784	10,991	5,249	61%	0.46	0	0.730	0.000	0.334	0.334	**66.6%**
1929	C	13,211	4,207	5,934	10,141	3,991	65%	0.48	0	0.693	0.000	0.334	0.334	**66.6%**
1930	D	14,442	4,207	6,336	10,543	4,451	63%	0.47	0	0.710	0.000	0.335	0.335	**66.5%**
1931	C	9,357	2,229	3,027	5,256	2,550	71%	0.53	0	0.481	0.000	0.254	0.254	**74.6%**
1932	D	14,650	4,207	7,219	11,426	4,529	63%	0.47	0	0.749	0.000	0.352	0.352	**64.8%**
1933	C	8,472	2,526	2,398	4,924	2,219	73%	0.54	0	0.467	0.000	0.253	0.253	**74.7%**
1934	C	12,474	4,207	5,580	9,787	3,715	66%	0.49	0	0.678	0.000	0.331	0.331	**66.9%**
1935	B	8,503	3,301	3,464	6,765	2,230	73%	0.54	0	0.546	0.000	0.296	0.296	**70.4%**
1936	B	13,278	4,207	5,857	10,064	4,016	65%	0.48	0	0.690	0.000	0.332	0.332	**66.8%**
1937	B	12,204	4,207	5,527	9,734	3,614	66%	0.49	0	0.675	0.000	0.332	0.332	**66.8%**
1938	W	47,150	4,207	7,565	11,772	16,684	23%	0.23	0	0.764	0.000	0.178	0.178	**82.2%**
1939	D	18,684	4,207	3,735	7,942	6,038	60%	0.45	0	0.598	0.000	0.267	0.267	**73.3%**
1940	A	7,841	1,507	2,737	4,244	1,983	75%	0.56	0	0.437	0.000	0.243	0.243	**75.7%**
1941	W	30,657	4,207	7,487	11,694	10,516	24%	0.24	0	0.760	0.000	0.185	0.185	**81.5%**
1942	W	65,619	4,207	3,608	7,815	23,592	23%	0.23	0	0.592	0.000	0.135	0.135	**86.5%**
1943	W	28,806	4,207	3,779	7,986	9,823	25%	0.25	0	0.599	0.000	0.147	0.147	**85.3%**
1944	D	13,774	4,207	6,571	10,778	4,201	64%	0.48	0	0.721	0.000	0.344	0.344	**65.6%**
1945	B	15,826	4,207	6,997	11,204	4,969	62%	0.46	0	0.739	0.000	0.342	0.342	**65.8%**
1946	B	54,515	4,207	7,592	11,799	19,439	23%	0.23	0	0.765	0.000	0.176	0.176	**82.4%**
1947	D	18,132	4,207	7,210	11,417	5,831	60%	0.45	0	0.748	0.000	0.336	0.336	**66.4%**
1948	B	9,535	2,609	3,044	5,653	2,616	71%	0.52	0	0.498	0.000	0.261	0.261	**73.9%**
1949	D	15,563	4,207	6,918	11,125	4,871	62%	0.46	0	0.736	0.000	0.341	0.341	**65.9%**
1950	B	11,488	4,207	3,088	7,295	3,347	67%	0.50	0	0.569	0.000	0.284	0.284	**71.6%**
1951	A	68,100	4,207	7,592	11,799	24,519	23%	0.23	0	0.765	0.000	0.174	0.174	**82.6%**
1952	W	42,853	4,207	7,149	11,356	15,077	24%	0.24	0	0.746	0.000	0.175	0.175	**82.5%**
1953	W	42,331	4,207	3,742	7,949	14,882	24%	0.24	0	0.598	0.000	0.141	0.141	**85.9%**
1954	A	14,919	4,207	5,845	10,052	4,630	63%	0.47	0	0.689	0.000	0.323	0.323	**67.7%**
1955	D	25,397	4,207	6,937	11,144	8,548	25%	0.25	0	0.737	0.000	0.184	0.184	**81.6%**
1956	W	25,596	4,207	7,592	11,799	8,623	25%	0.25	0	0.765	0.000	0.191	0.191	**80.9%**
1957	A	14,143	4,207	6,621	10,828	4,339	64%	0.47	0	0.723	0.000	0.343	0.343	**65.7%**
1958	W	23,752	4,207	6,953	11,160	7,933	57%	0.43	0	0.737	0.000	0.316	0.316	**68.4%**
1959	B	14,627	4,207	3,852	8,059	4,520	63%	0.47	0	0.603	0.000	0.284	0.284	**71.6%**
1960	D	9,432	2,665	2,791	5,456	2,578	71%	0.53	0	0.490	0.000	0.258	0.258	**74.2%**
1961	D	17,250	4,207	6,907	11,114	5,502	61%	0.45	0	0.735	0.000	0.334	0.334	**66.6%**
1962	B	16,701	4,207	6,893	11,100	5,296	61%	0.46	0	0.735	0.000	0.336	0.336	**66.4%**
1963	W	27,555	4,207	6,921	11,128	9,356	25%	0.25	0	0.736	0.000	0.182	0.182	**81.8%**
1964	D	14,847	4,207	7,007	11,214	4,603	63%	0.47	0	0.740	0.000	0.347	0.347	**65.3%**
1965	W	24,946	4,207	7,503	11,710	8,380	57%	0.42	0	0.761	0.000	0.323	0.323	**67.7%**
1966	B	16,997	4,207	7,412	11,619	5,407	61%	0.46	0	0.757	0.000	0.345	0.345	**65.5%**
1967	W	32,555	4,207	7,165	11,372	11,226	24%	0.24	0	0.746	0.000	0.181	0.181	**81.9%**
1968	B	16,692	3,360	3,735	7,095	5,293	61%	0.46	0	0.561	0.000	0.256	0.256	**74.4%**
1969	W	23,843	4,207	7,004	11,211	7,967	57%	0.43	0	0.739	0.000	0.316	0.316	**68.4%**
1970	W	50,159	4,207	3,481	7,688	17,809	23%	0.23	0	0.587	0.000	0.136	0.136	**86.4%**
1971	W	53,000	4,207	7,082	11,289	18,872	23%	0.23	0	0.743	0.000	0.171	0.171	**82.9%**
1972	B	18,336	4,207	7,109	11,316	5,908	60%	0.45	0	0.744	0.000	0.334	0.334	**66.6%**
1973	A	26,198	4,207	6,932	11,139	8,848	25%	0.25	0	0.736	0.000	0.183	0.183	**81.7%**
1974	W	61,593	4,207	7,396	11,603	22,086	23%	0.23	0	0.756	0.000	0.173	0.173	**82.7%**
1975	W	17,619	4,207	4,302	8,509	5,640	61%	0.45	0	0.622	0.000	0.281	0.281	**71.9%**
1976	C	16,774	4,207	6,147	10,354	5,323	61%	0.46	0	0.702	0.000	0.321	0.321	**67.9%**
1977	C	8,065	1,743	2,991	4,734	2,066	74%	0.55	0	0.458	0.000	0.253	0.253	**74.7%**
1978	A	12,285	4,207	5,559	9,766	3,645	66%	0.49	0	0.677	0.000	0.332	0.332	**66.8%**
1979	B	13,861	4,207	3,999	8,206	4,234	64%	0.48	0	0.609	0.000	0.290	0.290	**71.0%**
1980	A	20,332	4,207	7,016	11,223	6,654	59%	0.44	0	0.740	0.000	0.325	0.325	**67.5%**
1981	D	15,611	4,207	4,673	8,880	4,889	62%	0.46	0	0.638	0.000	0.296	0.296	**70.4%**
1982	W	67,631	4,207	7,043	11,250	24,344	23%	0.23	0	0.741	0.000	0.168	0.168	**83.2%**
1983	W	55,416	4,207	4,428	8,635	19,776	23%	0.23	0	0.628	0.000	0.144	0.144	**85.6%**
1984	W	82,951	2,994	3,104	6,098	30,074	22%	0.22	0	0.518	0.000	0.116	0.116	**88.4%**
1985	D	23,880	4,207	7,027	11,234	7,981	57%	0.43	0	0.740	0.000	0.317	0.317	**68.3%**
1986	W	15,224	4,207	6,972	11,179	4,744	63%	0.47	0	0.738	0.000	0.344	0.344	**65.6%**
1987	D	13,420	4,207	6,094	10,301	4,069	64%	0.48	0	0.700	0.000	0.336	0.336	**66.4%**
1988	C	15,842	4,207	6,886	11,093	4,975	62%	0.46	0	0.734	0.000	0.339	0.339	**66.1%**
1989	D	8,852	2,890	3,601	6,491	2,361	72%	0.54	0	0.535	0.000	0.287	0.287	**71.3%**
1990	C	14,536	4,207	6,198	10,405	4,486	63%	0.47	0	0.704	0.000	0.332	0.332	**66.8%**
1991	C	8,618	1,588	3,144	4,732	2,273	73%	0.54	0	0.458	0.000	0.248	0.248	**75.2%**
1992	C	7,455	2,996	1,636	4,632	1,838	76%	0.56	0	0.454	0.000	0.256	0.256	**74.4%**

JANUARY

Year	Water Year Type	Sac River Flows	CVP	SWP	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	A	17,504	4,207	7,641	11,848	5,596	61%	0.27	0	0.767	0.000	0.203	0.203	**79.7%**
1923	B	32,280	4,207	3,638	7,845	11,123	24%	0.24	0	0.593	0.000	0.144	0.144	**85.6%**
1924	C	14,370	4,207	6,552	10,759	4,424	63%	0.28	0	0.720	0.000	0.198	0.198	**80.2%**
1925	D	10,200	3,617	3,205	6,822	2,865	69%	0.30	0	0.549	0.000	0.164	0.164	**83.6%**
1926	D	18,269	4,207	7,179	11,386	5,883	60%	0.26	0	0.747	0.000	0.197	0.197	**80.3%**
1927	W	30,244	4,207	7,340	11,547	10,361	24%	0.24	0	0.754	0.000	0.184	0.184	**81.6%**
1928	A	25,207	4,207	3,637	7,844	8,477	25%	0.25	0	0.593	0.000	0.148	0.148	**85.2%**
1929	C	14,766	4,207	6,708	10,915	4,572	63%	0.27	0	0.727	0.000	0.199	0.199	**80.1%**
1930	D	20,771	4,207	7,123	11,330	6,818	59%	0.26	0	0.745	0.000	0.192	0.192	**80.8%**
1931	C	11,965	4,207	4,947	9,154	3,525	66%	0.29	0	0.650	0.000	0.186	0.186	**81.4%**
1932	D	17,253	4,207	7,898	12,105	5,503	61%	0.27	0	0.778	0.000	0.207	0.207	**79.3%**
1933	C	12,602	4,207	5,833	10,040	3,763	65%	0.28	0	0.689	0.000	0.195	0.195	**80.5%**
1934	C	16,103	4,207	7,192	11,399	5,073	62%	0.27	0	0.748	0.000	0.201	0.201	**79.9%**
1935	B	25,471	4,207	7,751	11,958	8,576	25%	0.25	0	0.772	0.000	0.193	0.193	**80.7%**
1936	B	30,625	4,207	7,536	11,743	10,504	24%	0.24	0	0.763	0.000	0.186	0.186	**81.4%**
1937	B	15,467	4,207	7,645	11,852	4,835	62%	0.27	0	0.767	0.000	0.208	0.208	**79.2%**
1938	W	31,443	4,207	3,738	7,945	10,810	24%	0.24	0	0.598	0.000	0.145	0.145	**85.5%**
1939	D	18,407	1,566	3,239	4,805	5,934	60%	0.26	0	0.461	0.000	0.121	0.121	**87.9%**
1940	A	23,448	4,207	8,108	12,315	7,820	57%	0.25	0	0.787	0.000	0.199	0.199	**80.1%**
1941	W	71,319	4,207	8,500	12,707	25,723	23%	0.23	0	0.804	0.000	0.182	0.182	**81.8%**
1942	W	63,260	4,048	3,239	7,287	22,709	23%	0.23	0	0.569	0.000	0.130	0.130	**87.0%**
1943	W	58,056	4,207	3,303	7,510	20,763	23%	0.23	0	0.579	0.000	0.133	0.133	**86.7%**
1944	D	17,677	4,207	3,262	7,469	5,661	60%	0.26	0	0.577	0.000	0.153	0.153	**84.7%**
1945	B	13,952	4,207	4,964	9,171	4,268	64%	0.28	0	0.651	0.000	0.180	0.180	**82.0%**
1946	B	43,229	4,207	3,728	7,935	15,218	23%	0.23	0	0.597	0.000	0.140	0.140	**86.0%**
1947	D	14,971	4,207	7,028	11,235	4,649	63%	0.27	0	0.740	0.000	0.202	0.202	**79.8%**
1948	B	14,649	4,207	6,387	10,594	4,529	63%	0.27	0	0.713	0.000	0.196	0.196	**80.4%**
1949	D	14,928	4,207	6,902	11,109	4,633	63%	0.27	0	0.735	0.000	0.201	0.201	**79.9%**
1950	B	19,684	4,207	7,249	11,456	6,412	59%	0.26	0	0.750	0.000	0.195	0.195	**80.5%**
1951	A	62,213	4,207	8,272	12,479	22,318	23%	0.23	0	0.794	0.000	0.181	0.181	**81.9%**
1952	W	67,041	4,207	8,317	12,524	24,123	23%	0.23	0	0.796	0.000	0.181	0.181	**81.9%**
1953	W	64,078	1,560	3,333	4,893	23,015	23%	0.23	0	0.465	0.000	0.106	0.106	**89.4%**
1954	A	33,414	4,207	3,838	8,045	11,547	24%	0.24	0	0.602	0.000	0.145	0.145	**85.5%**
1955	D	22,007	4,207	7,272	11,479	7,281	58%	0.26	0	0.751	0.000	0.192	0.192	**80.8%**
1956	W	84,032	4,207	8,162	12,369	30,478	22%	0.22	0	0.790	0.000	0.177	0.177	**82.3%**
1957	A	18,639	4,207	3,891	8,098	6,021	60%	0.26	0	0.604	0.000	0.158	0.158	**84.2%**
1958	W	36,384	4,207	4,097	8,304	12,658	24%	0.24	0	0.613	0.000	0.147	0.147	**85.3%**
1959	B	35,167	1,576	3,333	4,909	12,202	24%	0.24	0	0.466	0.000	0.112	0.112	**88.8%**
1960	D	13,522	4,207	5,818	10,025	4,107	64%	0.28	0	0.688	0.000	0.192	0.192	**80.8%**
1961	D	14,008	4,207	6,489	10,696	4,289	64%	0.28	0	0.717	0.000	0.199	0.199	**80.1%**
1962	B	15,396	4,207	3,984	8,191	4,808	62%	0.27	0	0.608	0.000	0.165	0.165	**83.5%**
1963	W	22,522	4,207	7,313	11,520	7,473	58%	0.25	0	0.753	0.000	0.191	0.191	**80.9%**
1964	D	24,193	4,207	3,832	8,039	8,098	57%	0.25	0	0.602	0.000	0.151	0.151	**84.9%**
1965	W	81,240	4,207	8,500	12,707	29,434	22%	0.22	0	0.804	0.000	0.181	0.181	**81.9%**
1966	B	29,635	4,207	3,657	7,864	10,133	24%	0.24	0	0.594	0.000	0.145	0.145	**85.5%**
1967	W	33,456	4,207	7,764	11,971	11,563	24%	0.24	0	0.772	0.000	0.186	0.186	**81.4%**
1968	B	30,635	1,563	3,333	4,896	10,507	24%	0.24	0	0.465	0.000	0.113	0.113	**88.7%**
1969	W	63,934	4,207	7,895	12,102	22,961	23%	0.23	0	0.778	0.000	0.177	0.177	**82.3%**
1970	W	92,665	1,356	3,333	4,689	33,707	22%	0.22	0	0.456	0.000	0.102	0.102	**89.8%**
1971	W	45,238	4,207	6,916	11,123	15,969	23%	0.23	0	0.736	0.000	0.172	0.172	**82.8%**
1972	B	20,395	4,207	3,891	8,098	6,678	59%	0.26	0	0.604	0.000	0.156	0.156	**84.4%**
1973	A	48,422	4,207	6,257	10,464	17,160	23%	0.23	0	0.707	0.000	0.164	0.164	**83.6%**
1974	W	78,417	4,207	3,953	8,160	28,378	22%	0.22	0	0.607	0.000	0.137	0.137	**86.3%**
1975	W	18,672	4,207	3,848	8,055	6,033	60%	0.26	0	0.602	0.000	0.158	0.158	**84.2%**
1976	C	16,769	4,207	3,813	8,020	5,322	61%	0.27	0	0.601	0.000	0.161	0.161	**83.9%**
1977	C	8,153	2,644	2,472	5,116	2,099	74%	0.32	0	0.475	0.000	0.150	0.150	**85.0%**
1978	A	44,423	1,538	7,857	9,395	15,664	23%	0.23	0	0.661	0.000	0.155	0.155	**84.5%**
1979	B	27,242	4,207	3,262	7,469	9,239	25%	0.25	0	0.577	0.000	0.143	0.143	**85.7%**
1980	A	59,992	4,207	3,159	7,366	21,487	23%	0.23	0	0.573	0.000	0.131	0.131	**86.9%**
1981	D	27,836	2,937	3,356	6,293	9,461	25%	0.25	0	0.526	0.000	0.130	0.130	**87.0%**
1982	W	51,172	4,207	8,500	12,707	18,188	23%	0.23	0	0.804	0.000	0.186	0.186	**81.4%**
1983	W	59,148	2,880	2,648	5,528	21,171	23%	0.23	0	0.493	0.000	0.113	0.113	**88.7%**
1984	W	47,354	1,331	2,881	4,212	16,760	23%	0.23	0	0.436	0.000	0.101	0.101	**89.9%**
1985	D	16,549	4,207	3,872	8,079	5,239	61%	0.27	0	0.604	0.000	0.162	0.162	**83.8%**
1986	W	21,006	4,207	7,388	11,595	6,906	58%	0.26	0	0.756	0.000	0.194	0.194	**80.6%**
1987	D	16,734	1,074	6,458	7,532	5,309	61%	0.27	0	0.580	0.000	0.155	0.155	**84.5%**
1988	C	25,530	4,207	7,069	11,276	8,598	25%	0.25	0	0.742	0.000	0.185	0.185	**81.5%**
1989	D	11,998	4,085	4,676	8,761	3,537	66%	0.29	0	0.633	0.000	0.181	0.181	**81.9%**
1990	C	21,334	2,731	7,087	9,818	7,029	58%	0.26	0	0.679	0.000	0.174	0.174	**82.6%**
1991	C	6,851	1,691	1,701	3,392	1,612	78%	0.33	0	0.400	0.000	0.133	0.133	**86.7%**
1992	C	11,890	4,207	4,660	8,867	3,497	66%	0.29	0	0.638	0.000	0.183	0.183	**81.7%**

FEBRUARY

Year	Water Year Type	Sac River Flow	CVP	SWP	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	A	34,312	4,246	6,167	10,413	11,883	24%	0.24	0	0.759	0.000	0.182	0.182	**81.8%**
1923	B	22,009	2,173	2,380	4,553	7,281	58%	0.26	0	0.504	0.000	0.129	0.129	**87.1%**
1924	C	17,251	4,217	4,718	8,935	5,502	60%	0.27	0	0.695	0.000	0.185	0.185	**81.5%**
1925	D	44,705	4,218	7,666	11,884	15,770	23%	0.23	0	0.823	0.000	0.193	0.193	**80.7%**
1926	D	35,217	4,227	7,715	11,942	12,221	24%	0.24	0	0.825	0.000	0.198	0.198	**80.2%**
1927	W	87,106	2,581	6,708	9,289	31,628	22%	0.22	0	0.710	0.000	0.159	0.159	**84.1%**
1928	A	26,479	3,867	4,377	8,244	8,953	25%	0.25	0	0.665	0.000	0.165	0.165	**83.5%**
1929	C	17,537	3,653	5,492	9,145	5,609	60%	0.27	0	0.704	0.000	0.187	0.187	**81.3%**
1930	D	15,675	2,864	3,978	6,842	4,912	62%	0.27	0	0.604	0.000	0.163	0.163	**83.7%**
1931	C	11,083	3,430	1,968	5,398	3,195	66%	0.29	0	0.541	0.000	0.158	0.158	**84.2%**
1932	D	14,488	4,240	6,200	10,440	4,469	64%	0.28	0	0.760	0.000	0.209	0.209	**79.1%**
1933	C	12,604	3,570	3,311	6,881	3,764	64%	0.28	0	0.605	0.000	0.172	0.172	**82.8%**
1934	C	12,740	1,735	4,367	6,102	3,815	66%	0.28	0	0.572	0.000	0.162	0.162	**83.8%**
1935	B	12,327	1,140	4,027	5,167	3,660	67%	0.28	0	0.531	0.000	0.151	0.151	**84.9%**
1936	B	48,897	4,245	8,500	12,745	17,337	23%	0.23	0	0.860	0.000	0.200	0.200	**80.0%**
1937	B	32,025	4,208	5,475	9,683	11,027	24%	0.24	0	0.727	0.000	0.176	0.176	**82.4%**
1938	W	82,366	1,207	3,939	5,146	29,855	22%	0.22	0	0.530	0.000	0.119	0.119	**88.1%**
1939	D	19,024	1,487	3,955	5,442	6,165	59%	0.26	0	0.543	0.000	0.142	0.142	**85.8%**
1940	A	40,143	4,237	8,500	12,737	14,063	23%	0.24	0	0.860	0.000	0.203	0.203	**79.7%**
1941	W	75,037	4,293	6,438	10,731	27,114	23%	0.23	0	0.773	0.000	0.174	0.174	**82.6%**
1942	W	78,349	1,664	3,955	5,619	28,353	22%	0.23	0	0.551	0.000	0.124	0.124	**87.6%**
1943	W	52,259	1,991	4,005	5,996	18,595	23%	0.23	0	0.567	0.000	0.131	0.131	**86.9%**
1944	D	29,302	1,315	3,958	5,273	10,009	24%	0.24	0	0.536	0.000	0.131	0.131	**86.9%**
1945	B	38,149	4,238	4,003	8,241	13,318	23%	0.24	0	0.664	0.000	0.158	0.158	**84.2%**
1946	B	23,843	2,521	4,413	6,934	7,967	57%	0.25	0	0.608	0.000	0.153	0.153	**84.7%**
1947	D	21,069	4,238	3,965	8,203	6,930	58%	0.26	0	0.663	0.000	0.170	0.170	**83.0%**
1948	B	16,591	4,224	1,819	6,043	5,255	64%	0.27	0	0.569	0.000	0.152	0.152	**84.8%**
1949	D	16,191	4,240	4,213	8,453	5,105	61%	0.27	0	0.674	0.000	0.181	0.181	**81.9%**
1950	B	31,352	4,241	7,606	11,847	10,776	24%	0.24	0	0.821	0.000	0.199	0.199	**80.1%**
1951	A	60,566	4,280	4,675	8,955	21,702	23%	0.23	0	0.695	0.000	0.159	0.159	**84.1%**
1952	W	64,731	4,293	3,909	8,202	23,259	23%	0.23	0	0.663	0.000	0.151	0.151	**84.9%**
1953	W	28,344	1,994	4,060	6,054	9,651	25%	0.25	0	0.570	0.000	0.140	0.140	**86.0%**
1954	A	57,158	2,147	4,638	6,785	20,427	23%	0.23	0	0.601	0.000	0.138	0.138	**86.2%**
1955	D	16,724	4,254	3,678	7,932	5,305	61%	0.27	0	0.651	0.000	0.174	0.174	**82.6%**
1956	W	63,748	4,281	4,675	8,956	22,892	23%	0.23	0	0.695	0.000	0.158	0.158	**84.2%**
1957	A	33,144	2,579	4,638	7,217	11,446	24%	0.24	0	0.620	0.000	0.150	0.150	**85.0%**
1958	W	61,170	3,690	4,045	7,735	21,928	23%	0.23	0	0.642	0.000	0.147	0.147	**85.3%**
1959	B	50,082	1,781	4,060	5,841	17,781	23%	0.23	0	0.560	0.000	0.130	0.130	**87.0%**
1960	D	26,024	4,226	7,357	11,583	8,783	25%	0.25	0	0.809	0.000	0.201	0.201	**79.9%**
1961	D	30,450	3,722	7,136	10,858	10,438	24%	0.24	0	0.778	0.000	0.190	0.190	**81.0%**
1962	B	38,521	1,456	8,500	9,956	13,457	23%	0.24	0	0.739	0.000	0.175	0.175	**82.5%**
1963	W	58,694	4,278	8,500	12,778	21,002	23%	0.23	0	0.861	0.000	0.197	0.197	**80.3%**
1964	D	19,616	4,271	3,650	7,921	6,386	61%	0.26	0	0.651	0.000	0.169	0.169	**83.1%**
1965	W	33,076	4,253	5,409	9,662	11,420	24%	0.24	0	0.726	0.000	0.175	0.175	**82.5%**
1966	B	26,777	2,041	4,377	6,418	9,065	25%	0.25	0	0.585	0.000	0.145	0.145	**85.5%**
1967	W	41,066	4,293	3,201	7,494	14,409	24%	0.24	0	0.632	0.000	0.149	0.149	**85.1%**
1968	B	56,470	1,971	4,060	6,031	20,170	23%	0.23	0	0.569	0.000	0.131	0.131	**86.9%**
1969	W	67,482	2,855	3,171	6,026	24,288	23%	0.23	0	0.568	0.000	0.129	0.129	**87.1%**
1970	W	57,565	1,174	4,060	5,234	20,579	23%	0.23	0	0.534	0.000	0.122	0.122	**87.8%**
1971	W	29,019	4,223	4,386	8,609	9,903	24%	0.25	0	0.680	0.000	0.167	0.167	**83.3%**
1972	B	25,083	4,255	4,593	8,848	8,431	57%	0.25	0	0.691	0.000	0.173	0.173	**82.7%**
1973	A	70,967	4,268	4,423	8,691	25,592	23%	0.23	0	0.684	0.000	0.155	0.155	**84.5%**
1974	W	41,926	3,305	4,413	7,718	14,730	24%	0.24	0	0.642	0.000	0.151	0.151	**84.9%**
1975	W	58,811	2,375	4,636	7,011	21,045	23%	0.23	0	0.611	0.000	0.140	0.140	**86.0%**
1976	C	20,229	4,238	4,211	8,449	6,616	59%	0.26	0	0.673	0.000	0.174	0.174	**82.6%**
1977	C	12,176	750	1,400	2,150	3,604	68%	0.29	0	0.400	0.000	0.114	0.114	**88.6%**
1978	A	51,370	1,720	5,548	7,268	18,262	23%	0.23	0	0.622	0.000	0.144	0.144	**85.6%**
1979	B	41,682	1,383	3,958	5,341	14,639	24%	0.24	0	0.539	0.000	0.127	0.127	**87.3%**
1980	A	71,932	852	3,804	4,656	25,953	23%	0.23	0	0.509	0.000	0.115	0.115	**88.5%**
1981	D	29,672	1,740	4,062	5,802	10,147	24%	0.24	0	0.559	0.000	0.137	0.137	**86.3%**
1982	W	65,645	4,148	4,620	8,768	23,601	23%	0.23	0	0.687	0.000	0.156	0.156	**84.4%**
1983	W	82,910	1,395	2,793	4,188	30,058	22%	0.22	0	0.489	0.000	0.110	0.110	**89.0%**
1984	W	37,282	1,458	3,847	5,305	12,993	24%	0.24	0	0.537	0.000	0.128	0.128	**87.2%**
1985	D	18,931	3,128	4,568	7,696	6,130	58%	0.26	0	0.641	0.000	0.168	0.168	**83.2%**
1986	W	95,068	4,240	8,021	12,261	34,605	22%	0.22	0	0.839	0.000	0.187	0.187	**81.3%**
1987	D	23,028	1,228	4,210	5,438	7,662	57%	0.25	0	0.543	0.000	0.137	0.137	**86.3%**
1988	C	17,484	4,241	2,455	6,696	5,589	62%	0.27	0	0.597	0.000	0.158	0.158	**84.2%**
1989	D	13,024	932	1,831	2,763	3,921	67%	0.28	0	0.427	0.000	0.120	0.120	**88.0%**
1990	C	16,696	1,201	6,551	7,752	5,294	61%	0.27	0	0.643	0.000	0.172	0.172	**82.8%**
1991	C	11,161	312	957	1,269	3,224	67%	0.29	0	0.362	0.000	0.105	0.105	**89.5%**
1992	C	32,038	1,425	7,535	8,960	11,032	24%	0.24	0	0.696	0.000	0.169	0.169	**83.1%**

MARCH

Year	Water Year Type	Sac River Flow	CVP	SWP	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	A	31,554	2,831	4,143	6,974	10,851	24%	0.24	0	0.699	0.144	0.279	0.279	**72.1%**
1923	B	15,486	3,216	3,517	6,733	4,842	27%	0.27	0	0.689	0.144	0.292	0.292	**70.8%**
1924	C	11,871	1,432	1,589	3,021	3,490	29%	0.29	0	0.528	0.144	0.254	0.254	**74.6%**
1925	D	30,225	4,191	2,343	6,534	10,354	24%	0.24	0	0.680	0.144	0.275	0.275	**72.5%**
1926	D	15,519	2,578	3,803	6,381	4,854	27%	0.27	0	0.674	0.144	0.288	0.288	**71.2%**
1927	W	43,865	3,467	4,149	7,616	15,456	23%	0.23	0	0.727	0.144	0.281	0.281	**71.9%**
1928	A	86,223	3,119	4,424	7,543	31,297	22%	0.22	0	0.724	0.144	0.274	0.274	**72.6%**
1929	C	13,513	1,858	2,858	4,716	4,104	28%	0.28	0	0.601	0.144	0.272	0.272	**72.8%**
1930	D	30,090	2,683	4,905	7,588	10,304	24%	0.24	0	0.726	0.144	0.286	0.286	**71.4%**
1931	C	8,643	1,672	1,638	3,310	2,282	31%	0.31	0	0.540	0.144	0.267	0.267	**73.3%**
1932	D	11,670	2,369	2,610	4,979	3,415	29%	0.29	0	0.613	0.144	0.279	0.279	**72.1%**
1933	C	9,943	1,507	3,003	4,510	2,769	30%	0.30	0	0.592	0.144	0.279	0.279	**72.1%**
1934	C	14,559	2,151	2,204	4,355	4,495	27%	0.27	0	0.586	0.144	0.266	0.266	**73.4%**
1935	B	24,918	4,225	7,042	11,267	8,369	25%	0.25	0	0.886	0.144	0.330	0.330	**67.0%**
1936	B	33,448	4,225	4,533	8,758	11,560	24%	0.24	0	0.777	0.144	0.297	0.297	**70.3%**
1937	B	36,058	2,338	4,012	6,350	12,536	24%	0.24	0	0.672	0.144	0.270	0.270	**73.0%**
1938	W	78,637	2,059	3,966	6,025	28,460	22%	0.22	0	0.658	0.144	0.260	0.260	**74.0%**
1939	D	16,390	2,630	3,991	6,621	5,180	27%	0.27	0	0.684	0.144	0.289	0.289	**71.1%**
1940	A	58,948	4,225	4,591	8,816	21,097	23%	0.23	0	0.779	0.144	0.290	0.290	**71.0%**
1941	W	58,575	4,225	3,846	8,071	20,957	23%	0.23	0	0.747	0.144	0.282	0.282	**71.8%**
1942	W	27,099	3,433	4,007	7,440	9,185	25%	0.25	0	0.720	0.144	0.287	0.287	**71.3%**
1943	W	64,601	1,816	4,056	5,872	23,211	23%	0.23	0	0.651	0.144	0.260	0.260	**74.0%**
1944	D	25,100	2,955	4,007	6,962	8,437	25%	0.25	0	0.699	0.144	0.283	0.283	**71.7%**
1945	B	26,228	3,154	4,134	7,288	8,859	25%	0.25	0	0.713	0.144	0.286	0.286	**71.4%**
1946	B	23,778	3,443	4,439	7,882	7,943	25%	0.25	0	0.739	0.144	0.294	0.294	**70.6%**
1947	D	22,106	2,383	3,966	6,349	7,318	25%	0.25	0	0.672	0.144	0.279	0.279	**72.1%**
1948	B	19,058	4,225	3,415	7,640	6,178	26%	0.26	0	0.728	0.144	0.297	0.297	**70.3%**
1949	D	41,766	3,315	7,133	10,448	14,670	24%	0.24	0	0.850	0.144	0.311	0.311	**68.9%**
1950	B	21,904	3,191	5,758	8,949	7,242	26%	0.26	0	0.785	0.144	0.308	0.308	**69.2%**
1951	A	29,827	3,244	4,699	7,943	10,205	24%	0.24	0	0.741	0.144	0.290	0.290	**71.0%**
1952	W	57,518	3,205	3,934	7,139	20,562	23%	0.23	0	0.706	0.144	0.273	0.273	**72.7%**
1953	W	24,893	3,152	4,111	7,263	8,360	25%	0.25	0	0.712	0.144	0.286	0.286	**71.4%**
1954	A	49,536	3,174	4,685	7,859	17,576	23%	0.23	0	0.738	0.144	0.282	0.282	**71.8%**
1955	D	17,888	4,225	2,954	7,179	5,740	26%	0.26	0	0.708	0.144	0.293	0.293	**70.7%**
1956	W	36,676	2,083	4,700	6,783	12,767	24%	0.24	0	0.691	0.144	0.275	0.275	**72.5%**
1957	A	44,377	3,176	4,339	7,515	15,647	23%	0.23	0	0.723	0.144	0.280	0.280	**72.0%**
1958	W	93,616	3,463	4,072	7,535	34,062	22%	0.22	0	0.724	0.144	0.273	0.273	**72.7%**
1959	B	22,092	3,023	3,102	6,125	7,312	25%	0.25	0	0.662	0.144	0.276	0.276	**72.4%**
1960	D	21,126	3,216	4,042	7,258	6,951	26%	0.26	0	0.712	0.144	0.290	0.290	**71.0%**
1961	D	20,744	2,771	5,248	8,019	6,808	26%	0.26	0	0.745	0.144	0.299	0.299	**70.1%**
1962	B	26,263	3,331	7,451	10,782	8,872	25%	0.25	0	0.865	0.144	0.323	0.323	**67.7%**
1963	W	32,645	4,225	4,714	8,939	11,259	24%	0.24	0	0.785	0.144	0.299	0.299	**70.1%**
1964	D	17,999	4,000	3,280	7,280	5,782	26%	0.26	0	0.713	0.144	0.294	0.294	**70.6%**
1965	W	21,133	2,910	4,250	7,160	6,954	26%	0.26	0	0.707	0.144	0.289	0.289	**71.1%**
1966	B	28,683	3,267	4,424	7,691	9,777	25%	0.25	0	0.730	0.144	0.288	0.288	**71.2%**
1967	W	54,488	3,203	3,283	6,486	19,429	23%	0.23	0	0.678	0.144	0.267	0.267	**73.3%**
1968	B	36,789	3,024	4,111	7,135	12,809	24%	0.24	0	0.706	0.144	0.278	0.278	**72.2%**
1969	W	45,319	2,055	3,251	5,306	15,999	23%	0.23	0	0.627	0.144	0.257	0.257	**74.3%**
1970	W	35,819	3,050	4,111	7,161	12,446	24%	0.24	0	0.707	0.144	0.279	0.279	**72.1%**
1971	W	51,067	3,265	4,699	7,964	18,149	23%	0.23	0	0.742	0.144	0.283	0.283	**71.7%**
1972	B	32,930	3,032	4,315	7,347	11,366	24%	0.24	0	0.715	0.144	0.282	0.282	**71.8%**
1973	A	47,552	3,461	4,451	7,912	16,834	23%	0.23	0	0.740	0.144	0.283	0.283	**71.7%**
1974	W	34,651	3,441	4,439	7,880	12,009	24%	0.24	0	0.739	0.144	0.287	0.287	**71.3%**
1975	W	75,998	3,459	4,685	8,144	27,473	23%	0.23	0	0.750	0.144	0.281	0.281	**71.9%**
1976	C	18,356	1,984	4,154	6,138	5,915	26%	0.26	0	0.663	0.144	0.281	0.281	**71.9%**
1977	C	7,338	666	1,258	1,924	1,794	33%	0.33	0	0.480	0.144	0.254	0.254	**74.6%**
1978	A	44,443	2,117	3,905	6,022	15,672	23%	0.23	0	0.658	0.144	0.265	0.265	**73.5%**
1979	B	32,548	3,176	4,007	7,183	11,223	24%	0.24	0	0.708	0.144	0.281	0.281	**71.9%**
1980	A	36,480	1,816	3,344	5,160	12,694	24%	0.24	0	0.621	0.144	0.258	0.258	**74.2%**
1981	D	32,501	3,023	4,111	7,134	11,205	24%	0.24	0	0.706	0.144	0.280	0.280	**72.0%**
1982	W	69,087	2,926	4,644	7,570	24,889	23%	0.23	0	0.725	0.144	0.276	0.276	**72.4%**
1983	W	81,934	2,042	2,628	4,670	29,693	22%	0.22	0	0.599	0.144	0.246	0.246	**75.4%**
1984	W	36,503	3,277	4,007	7,284	12,702	24%	0.24	0	0.713	0.144	0.280	0.280	**72.0%**
1985	D	21,228	3,025	4,682	7,707	6,989	26%	0.26	0	0.731	0.144	0.295	0.295	**70.5%**
1986	W	72,539	4,225	4,187	8,412	26,180	23%	0.23	0	0.762	0.144	0.284	0.284	**71.6%**
1987	D	29,769	2,220	4,133	6,353	10,184	24%	0.24	0	0.672	0.144	0.273	0.273	**72.7%**
1988	C	10,883	1,951	1,780	3,731	3,120	29%	0.29	0	0.559	0.144	0.266	0.266	**73.4%**
1989	D	41,238	4,225	6,971	11,196	14,473	24%	0.24	0	0.883	0.144	0.318	0.318	**68.2%**
1990	C	14,588	2,141	3,664	5,805	4,506	27%	0.27	0	0.649	0.144	0.283	0.283	**71.7%**
1991	C	29,675	4,225	7,093	11,318	10,148	24%	0.24	0	0.888	0.144	0.326	0.326	**67.4%**
1992	C	19,706	1,984	6,147	8,131	6,420	26%	0.26	0	0.750	0.144	0.301	0.301	**69.9%**

Formulas: Sacramento River Spring Run Young of Year Smolt Survival Model

C10 ='Study 467 Flow Data'!C7
D10 ='Study 467 Flow Data'!M7
E10 ='Study 467 Flow Data'!W7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.45*(0.133*C10+829)/(C10-G10))+(0.55*H10)
J10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
K10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*F10)
L10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!D7
R10 ='Study 467 Flow Data'!N7
S10 ='Study 467 Flow Data'!X7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*T10)
Z10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!E7
AF10 ='Study 467 Flow Data'!O7
AG10 ='Study 467 Flow Data'!Y7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$G$2,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
AM10 =(-0.5916024)+(0.017968*$BC$2)+(0.0000434*AH10)
AN10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

AS10 ='Study 467 Flow Data'!F7
AT10 ='Study 467 Flow Data'!P7
AU10 ='Study 467 Flow Data'!Z7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$G$2,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BA10 =IF(((-0.5916024)+(0.017968*$BC$3)+(0.0000434*AV10))>1,1,((-0.5916024)+(0.017968*$BC$3)+(0.00004
BB10 =-1.613493+(0.0319584*$BC$3)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =(AZ10+BC10-(AZ10*BC10))
BE10 =1-BD10

Study 525 Sacramento River Spring Run YOY Smolt Survival Model (continued)

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

Row	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT
6	**APRIL**				Calculated									
7	Sac				Sutter &									Calculated
8	River		CVP + SWP		Steamboat		X-Channel	observed		Calculated Mortality				Survival
9	Flows	CVP	SWP	exports	Slough Q	Percent	Closed	temp	m1	m2	m3	m23	m123	s123
10	22,816	4,415	5,160	9,575	7,583	25%	0.25	58.5	0.002	0.875	0.256	0.413	0.414	**58.6%**
11	23,727	4,600	5,528	10,128	7,924	25%	0.25	58.3	0.000	0.895	0.250	0.413	0.413	**58.7%**
12	9,630	1,927	2,272	4,199	2,652	30%	0.30	61.5	0.128	0.696	0.352	0.456	0.526	**47.4%**
13	20,329	4,600	4,861	9,461	6,653	26%	0.26	59.1	0.027	0.881	0.275	0.432	0.447	**55.3%**
14	17,226	3,267	5,133	8,400	5,493	27%	0.27	61.6	0.133	0.880	0.355	0.495	0.562	**43.8%**
15	48,222	4,600	5,167	9,767	17,085	23%	0.23	56.8	0.000	0.853	0.202	0.353	0.353	**64.7%**
16	29,212	4,600	5,501	10,101	9,975	25%	0.25	58.7	0.011	0.902	0.262	0.419	0.425	**57.5%**
17	10,833	2,651	1,939	4,590	3,102	29%	0.29	56.3	0.000	0.619	0.186	0.313	0.313	**68.7%**
18	14,420	3,055	3,055	6,110	4,443	28%	0.28	59.6	0.048	0.744	0.291	0.416	0.444	**55.6%**
19	11,143	2,336	2,353	4,689	3,217	29%	0.29	62.8	0.183	0.740	0.393	0.495	0.587	**41.3%**
20	14,065	3,420	3,472	6,892	4,310	28%	0.28	58.9	0.019	0.766	0.269	0.406	0.418	**58.2%**
21	15,322	2,650	3,789	6,439	4,780	27%	0.27	60.1	0.069	0.768	0.307	0.432	0.472	**52.8%**
22	15,234	3,090	2,756	5,846	4,748	27%	0.27	63.6	0.217	0.805	0.419	0.524	0.627	**37.3%**
23	24,313	4,477	5,936	10,413	8,143	25%	0.25	58.9	0.019	0.919	0.269	0.432	0.443	**55.7%**
24	21,281	4,600	5,225	9,825	7,009	26%	0.26	59.7	0.053	0.907	0.294	0.452	0.480	**52.0%**
25	22,882	2,965	4,991	7,956	7,608	25%	0.25	58.8	0.015	0.810	0.266	0.404	0.413	**58.7%**
26	47,172	3,344	4,377	7,721	16,692	23%	0.23	56.3	0.000	0.755	0.186	0.318	0.318	**68.2%**
27	14,482	3,171	3,171	6,342	4,466	28%	0.28	63.3	0.204	0.821	0.409	0.523	0.620	**38.0%**
28	41,731	4,600	5,751	10,351	14,657	24%	0.24	57.4	0.000	0.889	0.221	0.378	0.378	**62.2%**
29	42,372	4,600	4,708	9,308	14,897	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
30	43,308	4,600	5,046	9,646	15,247	23%	0.23	56.5	0.000	0.842	0.192	0.345	0.345	**65.5%**
31	29,406	4,067	5,062	9,129	10,048	24%	0.24	58.8	0.015	0.861	0.266	0.411	0.420	**58.0%**
32	10,469	2,706	2,706	5,412	2,965	30%	0.30	58.4	0.000	0.693	0.253	0.383	0.383	**61.7%**
33	12,493	3,544	3,544	7,088	3,722	28%	0.28	60.6	0.090	0.805	0.323	0.460	0.509	**49.1%**
34	12,226	3,134	3,134	6,268	3,623	29%	0.29	60.7	0.095	0.771	0.326	0.453	0.505	**49.5%**
35	15,447	1,940	3,741	5,681	4,827	27%	0.27	62.5	0.170	0.778	0.384	0.491	0.578	**42.2%**
36	22,793	4,370	5,510	9,880	7,575	25%	0.25	56.6	0.000	0.854	0.195	0.362	0.362	**63.8%**
37	13,210	2,419	3,727	6,146	3,991	28%	0.28	61.7	0.137	0.784	0.358	0.478	0.549	**45.1%**
38	18,526	4,178	4,178	8,356	5,979	26%	0.26	61.3	0.120	0.872	0.346	0.484	0.546	**45.4%**
39	17,998	4,064	4,064	8,128	5,781	26%	0.26	59.9	0.061	0.837	0.301	0.442	0.476	**52.4%**
40	56,648	3,672	4,166	7,838	20,236	23%	0.23	55.5	0.000	0.746	0.160	0.295	0.295	**70.5%**
41	16,177	3,588	3,588	7,176	5,100	27%	0.27	58.8	0.015	0.776	0.266	0.403	0.412	**58.8%**
42	39,868	4,600	5,785	10,385	13,961	24%	0.24	58.4	0.000	0.908	0.253	0.408	0.408	**59.2%**
43	9,473	2,265	2,265	4,530	2,593	30%	0.30	56.4	0.000	0.618	0.189	0.319	0.319	**68.1%**
44	20,437	4,600	4,602	9,202	6,693	26%	0.26	59.7	0.053	0.880	0.294	0.446	0.475	**52.5%**
45	24,575	4,600	3,951	8,551	8,241	25%	0.25	60.5	0.086	0.867	0.320	0.457	0.504	**49.6%**
46	52,284	4,425	5,063	9,488	18,604	23%	0.23	57.4	0.000	0.852	0.221	0.367	0.367	**63.3%**
47	12,688	2,754	2,754	5,508	3,795	28%	0.28	63	0.191	0.779	0.400	0.507	0.602	**39.8%**
48	14,206	388	3,873	4,261	4,363	28%	0.28	59.5	0.044	0.662	0.288	0.391	0.418	**58.2%**
49	15,683	3,135	3,135	6,270	4,915	27%	0.27	60.1	0.069	0.760	0.307	0.430	0.469	**53.1%**
50	11,656	3,926	2,015	5,941	3,409	29%	0.29	61.8	0.141	0.777	0.362	0.481	0.554	**44.6%**
51	69,458	4,600	5,512	10,112	25,027	23%	0.23	53.7	0.000	0.812	0.103	0.263	0.263	**73.7%**
52	9,158	2,134	2,134	4,268	2,475	31%	0.31	59.3	0.036	0.659	0.282	0.397	0.419	**58.1%**
53	45,668	4,288	5,109	9,397	16,130	23%	0.23	56.9	0.000	0.839	0.205	0.353	0.353	**64.7%**
54	20,589	4,290	4,201	8,491	6,750	26%	0.26	61.9	0.145	0.889	0.365	0.500	0.573	**42.7%**
55	39,925	3,530	4,949	8,479	13,982	24%	0.24	53.8	0.000	0.743	0.106	0.257	0.257	**74.3%**
56	19,590	4,146	3,860	8,006	6,377	26%	0.26	61.5	0.128	0.861	0.352	0.484	0.550	**45.0%**
57	44,787	3,338	4,166	7,504	15,800	23%	0.23	56.4	0.000	0.747	0.189	0.320	0.320	**68.0%**
58	19,667	4,600	3,860	8,460	6,405	26%	0.26	58.8	0.015	0.832	0.266	0.413	0.421	**57.9%**
59	25,808	4,600	4,485	9,085	8,702	25%	0.25	58.7	0.011	0.857	0.262	0.411	0.417	**58.3%**
60	14,399	3,047	3,047	6,094	4,435	28%	0.28	58.5	0.002	0.724	0.256	0.385	0.386	**61.4%**
61	19,512	4,600	4,969	9,569	6,347	26%	0.26	61.3	0.120	0.925	0.346	0.496	0.557	**44.3%**
62	33,208	4,600	5,501	10,101	11,470	24%	0.24	56.8	0.000	0.867	0.202	0.362	0.362	**63.8%**
63	25,763	4,600	5,785	10,385	8,685	25%	0.25	56.8	0.000	0.880	0.202	0.371	0.371	**62.9%**
64	10,965	2,332	2,332	4,664	3,151	29%	0.29	58.9	0.019	0.669	0.269	0.386	0.398	**60.2%**
65	11,258	879	3,887	4,766	3,260	29%	0.29	64.3	0.246	0.771	0.441	0.537	0.651	**34.9%**
66	38,698	3,443	4,074	7,517	13,523	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
67	18,581	4,600	3,747	8,347	5,999	26%	0.26	59.8	0.057	0.845	0.298	0.441	0.473	**52.7%**
68	19,818	2,925	3,952	6,877	6,462	26%	0.26	57.1	0.000	0.733	0.211	0.347	0.347	**65.3%**
69	20,356	4,484	3,860	8,344	6,663	26%	0.26	61.5	0.128	0.876	0.352	0.487	0.553	**44.7%**
70	75,838	3,378	5,569	8,947	27,413	23%	0.23	54.1	0.000	0.769	0.115	0.263	0.263	**73.7%**
71	68,301	3,314	3,649	6,963	24,595	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
72	21,199	4,600	3,747	8,347	6,978	26%	0.26	59.7	0.053	0.843	0.294	0.435	0.465	**53.5%**
73	12,328	2,760	2,760	5,520	3,661	28%	0.28	60.8	0.099	0.740	0.330	0.447	0.501	**49.9%**
74	20,278	2,153	5,224	7,377	6,634	26%	0.26	60.4	0.082	0.814	0.317	0.445	0.491	**50.9%**
75	14,852	3,016	3,016	6,032	4,605	27%	0.27	65.7	0.305	0.851	0.486	0.586	0.712	**28.8%**
76	10,316	2,181	2,181	4,362	2,908	30%	0.30	59.9	0.061	0.674	0.301	0.412	0.448	**55.2%**
77	23,637	4,428	4,755	9,183	7,890	25%	0.25	61.4	0.124	0.910	0.349	0.490	0.554	**44.6%**
78	15,315	3,077	3,173	6,250	4,778	27%	0.27	61.6	0.133	0.786	0.355	0.472	0.542	**45.8%**
79	16,777	2,049	4,757	6,806	5,325	27%	0.27	60.8	0.099	0.796	0.330	0.454	0.508	**49.2%**
80	14,719	3,161	2,791	5,952	4,555	27%	0.27	61.2	0.116	0.766	0.342	0.459	0.521	**47.9%**

Row	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI
6	**MAY**				Calculated									
7	Sac				Steamboat			USBR						Calculated
8	River		CVP + SWP		& Sutter		X-channel	observed		Calculated Mortality				Survival
9	Flows	CVP	SWP	Exports	Slough Q	Percent	Closed	temp f	m1	m2	m3	m23	m123	s123
10	46,457	4,415	2,276	6,691	16,425	23%	0.23	61.2	0.116	0.798	0.342	0.449	0.513	**48.7%**
11	14,437	4,600	1,904	6,504	4,449	63%	0.47	62.4	0.166	0.812	0.381	0.584	0.653	**34.7%**
12	8,389	1,927	253	2,180	2,187	73%	0.54	69.2	0.452	0.746	0.598	0.679	0.824	**17.6%**
13	10,964	4,600	1,527	6,127	3,151	68%	0.50	63.2	0.200	0.810	0.406	0.610	0.688	**31.2%**
14	13,350	3,267	1,188	4,455	4,043	64%	0.48	65.7	0.305	0.782	0.486	0.628	0.742	**25.8%**
15	26,781	4,600	1,877	6,477	9,066	25%	0.25	62.6	0.175	0.814	0.387	0.493	0.582	**41.8%**
16	18,309	4,600	1,471	6,071	5,898	60%	0.45	66.6	0.343	0.869	0.515	0.674	0.786	**21.4%**
17	8,720	2,651	124	2,775	2,311	72%	0.54	66.1	0.322	0.717	0.499	0.616	0.740	**26.0%**
18	11,250	3,055	836	3,891	3,258	67%	0.50	63.1	0.196	0.711	0.403	0.558	0.644	**35.6%**
19	8,867	2,336	754	3,090	2,366	72%	0.54	70.5	0.507	0.809	0.640	0.730	0.867	**13.3%**
20	10,928	3,420	1,666	5,086	3,137	68%	0.51	65.5	0.297	0.806	0.480	0.645	0.750	**25.0%**
21	7,397	2,650	843	3,493	1,816	76%	0.57	63.7	0.221	0.705	0.422	0.582	0.674	**32.6%**
22	7,841	3,090	768	3,858	1,983	75%	0.56	68.3	0.414	0.803	0.569	0.699	0.824	**17.6%**
23	28,197	4,477	2,539	7,016	9,596	25%	0.25	64	0.234	0.863	0.432	0.538	0.646	**35.4%**
24	14,094	4,600	2,365	6,965	4,321	64%	0.47	64.9	0.271	0.877	0.461	0.658	0.751	**24.9%**
25	15,994	2,965	4,079	7,044	5,032	62%	0.46	64.5	0.255	0.873	0.448	0.644	0.735	**26.5%**
26	57,429	3,344	5,445	8,789	20,528	23%	0.23	62.5	0.170	0.913	0.384	0.505	0.590	**41.0%**
27	8,147	3,171	1,140	4,311	2,097	74%	0.55	68	0.402	0.817	0.560	0.701	0.821	**17.9%**
28	17,689	4,600	2,265	6,865	5,666	60%	0.45	65.6	0.301	0.885	0.483	0.665	0.766	**23.4%**
29	39,485	4,600	4,745	9,345	13,817	24%	0.24	61.6	0.133	0.921	0.355	0.489	0.557	**44.3%**
30	36,037	4,600	2,776	7,376	12,528	24%	0.24	60.1	0.069	0.808	0.307	0.427	0.467	**53.3%**
31	20,129	4,067	2,971	7,038	6,578	59%	0.44	65.4	0.292	0.889	0.477	0.658	0.758	**24.2%**
32	9,094	2,706	1,501	4,207	2,451	72%	0.53	65.9	0.313	0.775	0.493	0.643	0.755	**24.5%**
33	10,937	3,544	2,034	5,578	3,140	68%	0.51	63.1	0.196	0.784	0.403	0.596	0.675	**32.5%**
34	12,619	3,134	1,815	4,949	3,770	65%	0.49	63.9	0.229	0.771	0.429	0.596	0.688	**31.2%**
35	8,840	1,940	1,080	3,020	2,356	72%	0.54	68.7	0.431	0.774	0.582	0.685	0.821	**17.9%**
36	23,578	4,370	1,578	5,948	7,868	57%	0.43	62.3	0.162	0.786	0.378	0.553	0.625	**37.5%**
37	13,136	2,419	1,405	3,824	3,963	65%	0.48	65.2	0.284	0.746	0.470	0.603	0.716	**28.4%**
38	15,416	4,178	1,339	5,517	4,816	62%	0.47	64.3	0.246	0.803	0.441	0.610	0.706	**29.4%**
39	17,200	4,064	1,695	5,759	5,483	61%	0.45	64.4	0.250	0.815	0.445	0.613	0.710	**29.0%**
40	59,563	3,672	5,270	8,942	21,327	23%	0.23	61.7	0.137	0.905	0.358	0.483	0.554	**44.6%**
41	26,868	3,588	1,344	4,932	9,099	25%	0.25	60.9	0.103	0.717	0.333	0.428	0.487	**51.3%**
42	22,660	4,600	1,453	6,053	7,525	58%	0.43	65.9	0.313	0.855	0.493	0.649	0.759	**24.1%**
43	10,273	2,265	1,147	3,412	2,892	69%	0.51	66.9	0.356	0.759	0.525	0.645	0.771	**22.9%**
44	39,005	4,600	2,946	7,546	13,638	24%	0.24	61.4	0.124	0.839	0.349	0.465	0.531	**46.9%**
45	15,246	4,600	1,413	6,013	4,752	62%	0.47	64	0.234	0.819	0.432	0.612	0.703	**29.7%**
46	43,486	4,425	6,083	10,508	15,314	23%	0.23	62.9	0.187	0.995	0.397	0.537	0.624	**37.6%**
47	9,424	2,754	1,049	3,803	2,575	71%	0.53	65.9	0.313	0.758	0.493	0.632	0.747	**25.3%**
48	10,915	388	907	1,295	3,132	68%	0.51	65.9	0.313	0.649	0.493	0.571	0.706	**29.4%**
49	7,989	3,135	795	3,930	2,038	74%	0.55	64.3	0.246	0.734	0.441	0.603	0.701	**29.9%**
50	13,432	3,926	1,419	5,345	4,074	64%	0.48	64.8	0.267	0.805	0.457	0.624	0.725	**27.5%**
51	29,094	4,600	2,272	6,872	9,931	25%	0.25	62.5	0.170	0.830	0.384	0.493	0.580	**42.0%**
52	11,381	2,134	1,085	3,219	3,306	67%	0.50	65.2	0.284	0.720	0.470	0.595	0.710	**29.0%**
53	22,891	4,288	2,037	6,325	7,611	58%	0.43	63.6	0.217	0.826	0.419	0.594	0.682	**31.8%**
54	12,791	4,290	1,296	5,586	3,834	65%	0.49	67.3	0.372	0.860	0.537	0.694	0.808	**19.2%**
55	44,790	3,530	5,445	8,975	15,801	23%	0.23	62.1	0.154	0.914	0.371	0.498	0.575	**42.5%**
56	9,379	4,146	1,086	5,232	2,558	71%	0.53	66.1	0.322	0.823	0.499	0.670	0.776	**22.4%**
57	45,533	3,338	5,026	8,364	16,079	23%	0.23	63.2	0.200	0.907	0.406	0.523	0.619	**38.1%**
58	12,155	4,600	1,789	6,389	3,596	66%	0.49	68.6	0.427	0.918	0.579	0.746	0.854	**14.6%**
59	25,978	4,600	1,341	5,941	8,766	25%	0.25	61	0.107	0.762	0.336	0.442	0.502	**49.8%**
60	9,624	3,047	998	4,045	2,649	70%	0.52	67.3	0.372	0.793	0.537	0.671	0.794	**20.6%**
61	15,751	4,600	2,648	7,248	4,941	62%	0.46	66.9	0.356	0.925	0.525	0.710	0.813	**18.7%**
62	26,945	4,600	2,599	7,199	9,127	25%	0.25	63.4	0.208	0.860	0.413	0.523	0.623	**37.7%**
63	28,542	4,600	2,208	6,808	9,725	25%	0.25	63.8	0.225	0.850	0.425	0.530	0.636	**36.4%**
64	8,905	2,332	810	3,142	2,380	72%	0.53	69.6	0.469	0.795	0.611	0.710	0.846	**15.4%**
65	7,005	879	352	1,231	1,670	78%	0.58	64	0.234	0.612	0.432	0.535	0.644	**35.6%**
66	21,056	3,443	4,103	7,546	6,925	58%	0.44	63	0.191	0.868	0.400	0.604	0.680	**32.0%**
67	12,417	4,600	2,220	6,820	3,694	66%	0.49	63.8	0.225	0.851	0.425	0.633	0.716	**28.4%**
68	14,777	2,925	3,193	6,118	4,577	63%	0.47	63.6	0.217	0.817	0.419	0.606	0.691	**30.9%**
69	8,752	4,484	1,078	5,562	2,323	72%	0.54	66.7	0.347	0.848	0.518	0.696	0.801	**19.9%**
70	38,429	3,378	6,684	10,062	13,422	24%	0.24	61.1	0.112	0.943	0.339	0.483	0.540	**46.0%**
71	54,514	3,314	3,590	6,904	19,438	23%	0.23	60.1	0.069	0.788	0.307	0.418	0.458	**54.2%**
72	12,085	4,600	1,660	6,260	3,570	66%	0.49	66.5	0.339	0.875	0.512	0.691	0.795	**20.5%**
73	12,001	2,760	1,116	3,876	3,538	66%	0.49	65.8	0.309	0.759	0.489	0.622	0.739	**26.1%**
74	13,127	2,153	5,282	7,435	3,959	65%	0.48	66.2	0.326	0.921	0.502	0.704	0.801	**19.9%**
75	7,484	3,016	848	3,864	1,849	76%	0.56	70.5	0.507	0.843	0.640	0.754	0.879	**12.1%**
76	8,572	2,181	795	2,976	2,256	73%	0.54	65.8	0.309	0.720	0.489	0.613	0.733	**26.7%**
77	13,057	4,428	816	5,244	3,933	65%	0.48	64.7	0.263	0.799	0.454	0.621	0.720	**28.0%**
78	6,896	3,077	759	3,836	1,629	78%	0.58	66.4	0.335	0.768	0.509	0.659	0.773	**22.7%**
79	8,690	2,049	914	2,963	2,300	73%	0.54	65.7	0.305	0.717	0.486	0.611	0.730	**27.0%**
80	7,972	3,161	848	4,009	2,032	75%	0.55	66	0.318	0.768	0.496	0.646	0.759	**24.1%**

Row	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ
6	**JUNE**				Caculated											
7	Sac				Steamboat			USBR						Calculated		
8	River			CVP + SWP	& Sutter		X-channel	observed		Calculated Mortality				Survival		Weighted
9	Flow	CVP	SWP	exports	Slough Q	percent	closed	temp f	m1	m2	m3	m23	m123	s123		Total Survival
10	34,719	4,600	6,672	11,272	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**		**63.82%**
11	18,250	4,148	3,387	7,535	5,876	60%	0.45	65.3	0.288	0.909	0.473	0.669	0.764	**23.6%**		**62.49%**
12	9,883	327	329	656	2,746	70%	0.52	70.6	0.511	0.705	0.643	0.675	0.841	**15.9%**		**56.00%**
13	16,226	4,512	1,784	6,296	5,119	62%	0.46	68.3	0.414	0.909	0.569	0.725	0.839	**16.1%**		**59.65%**
14	18,074	4,539	2,512	7,051	5,810	60%	0.45	71.2	0.536	0.994	0.662	0.811	0.912	**8.8%**		**54.84%**
15	19,495	4,600	3,534	8,134	6,341	59%	0.44	68.1	0.406	0.985	0.563	0.750	0.852	**14.8%**		**63.88%**
16	18,272	4,594	2,671	7,265	5,884	60%	0.45	69.7	0.473	0.976	0.614	0.777	0.882	**11.8%**		**58.92%**
17	10,417	2,434	104	2,538	2,946	69%	0.51	70.1	0.490	0.778	0.627	0.704	0.849	**15.1%**		**62.09%**
18	18,963	4,600	2,647	7,247	6,142	60%	0.45	69.6	0.469	0.973	0.611	0.772	0.879	**12.1%**		**60.15%**
19	12,329	1,530	1,622	3,152	3,661	66%	0.49	70.7	0.515	0.816	0.646	0.729	0.869	**13.1%**		**53.82%**
20	18,716	4,394	2,816	7,210	6,050	60%	0.45	69.5	0.465	0.970	0.608	0.770	0.877	**12.3%**		**58.45%**
21	10,376	1,056	97	1,153	2,931	69%	0.51	69.8	0.478	0.713	0.617	0.666	0.826	**17.4%**		**59.49%**
22	15,002	4,513	995	5,508	4,661	63%	0.47	70.7	0.515	0.918	0.646	0.773	0.890	**11.0%**		**53.19%**
23	17,600	4,170	3,507	7,677	5,632	61%	0.45	71	0.528	1.000	0.656	0.811	0.911	**8.9%**		**58.96%**
24	17,907	4,534	3,321	7,855	5,747	60%	0.45	69.2	0.452	0.993	0.598	0.776	0.877	**12.3%**		**56.68%**
25	17,654	2,564	4,730	7,294	5,653	61%	0.45	69.7	0.473	0.977	0.614	0.778	0.883	**11.7%**		**59.60%**
26	35,517	4,600	6,672	11,272	12,333	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**		**66.72%**
27	19,805	4,600	3,045	7,645	6,457	59%	0.44	71	0.528	1.000	0.656	0.808	0.909	**9.1%**		**53.49%**
28	16,002	3,718	3,099	6,817	5,035	62%	0.46	71.5	0.549	0.989	0.672	0.818	0.918	**8.2%**		**58.87%**
29	20,808	4,600	6,171	10,771	6,832	59%	0.44	69	0.444	1.000	0.592	0.770	0.872	**12.8%**		**64.01%**
30	27,117	4,600	6,672	11,272	9,192	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**		**67.29%**
31	17,688	4,600	3,036	7,636	5,665	60%	0.45	66.6	0.343	0.936	0.515	0.705	0.806	**19.4%**		**61.28%**
32	19,707	4,555	3,137	7,692	6,420	59%	0.44	67.8	0.393	0.960	0.553	0.733	0.838	**16.2%**		**61.07%**
33	17,088	3,594	3,594	7,188	5,441	61%	0.45	70.6	0.511	0.989	0.643	0.800	0.902	**9.8%**		**58.06%**
34	18,778	4,204	3,486	7,690	6,073	60%	0.45	68.1	0.406	0.966	0.563	0.743	0.847	**15.3%**		**58.57%**
35	19,303	4,600	2,830	7,430	6,269	59%	0.44	70	0.486	0.989	0.624	0.786	0.890	**11.0%**		**53.95%**
36	23,014	4,600	4,350	8,950	7,657	58%	0.43	69	0.444	1.000	0.592	0.767	0.871	**12.9%**		**62.51%**
37	19,857	4,600	3,158	7,758	6,477	59%	0.44	70.9	0.524	1.000	0.652	0.806	0.908	**9.2%**		**55.14%**
38	20,266	4,600	3,520	8,120	6,629	59%	0.44	68.9	0.440	0.999	0.588	0.769	0.871	**12.9%**		**55.51%**
39	18,150	4,600	2,799	7,399	5,838	60%	0.45	70.3	0.499	0.993	0.633	0.795	0.897	**10.3%**		**58.36%**
40	38,968	4,600	6,672	11,272	13,624	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**		**67.37%**
41	25,885	4,600	5,440	10,040	8,731	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**		**65.50%**
42	18,486	4,600	2,743	7,343	5,964	60%	0.45	68.7	0.431	0.961	0.582	0.752	0.859	**14.1%**		**60.21%**
43	19,699	4,600	3,025	7,625	6,417	59%	0.44	70.1	0.490	0.999	0.627	0.791	0.894	**10.6%**		**60.92%**
44	22,306	4,600	6,672	11,272	7,392	58%	0.43	68.7	0.431	1.000	0.582	0.763	0.865	**13.5%**		**61.93%**
45	20,287	4,600	3,455	8,055	6,637	59%	0.44	72	0.570	1.000	0.688	0.825	0.925	**7.5%**		**58.01%**
46	33,938	4,600	6,672	11,272	11,743	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**		**63.97%**
47	19,106	4,600	2,829	7,429	6,196	60%	0.44	72.1	0.574	1.000	0.691	0.828	0.927	**7.3%**		**55.61%**
48	18,754	4,600	2,643	7,243	6,064	60%	0.45	72.7	0.600	1.000	0.710	0.839	0.936	**6.4%**		**58.75%**
49	20,010	4,600	3,029	7,629	6,534	59%	0.44	73.2	0.621	1.000	0.726	0.847	0.942	**5.8%**		**57.34%**
50	19,142	4,600	2,894	7,494	6,209	60%	0.44	70.4	0.503	0.999	0.636	0.797	0.899	**10.1%**		**54.89%**
51	20,125	4,600	3,988	8,588	6,577	59%	0.44	69	0.444	1.000	0.592	0.772	0.873	**12.7%**		**64.97%**
52	18,710	4,600	2,599	7,199	6,048	60%	0.45	69.5	0.465	0.970	0.608	0.769	0.877	**12.3%**		**59.67%**
53	18,638	4,600	3,544	8,144	6,021	60%	0.45	67.1	0.364	0.968	0.531	0.726	0.826	**17.4%**		**62.01%**
54	18,306	4,600	2,604	7,204	5,896	60%	0.45	70.4	0.503	0.986	0.636	0.793	0.897	**10.3%**		**54.73%**
55	39,345	4,600	6,672	11,272	13,765	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**		**67.79%**
56	18,560	4,600	2,665	7,265	5,991	60%	0.45	72	0.570	1.000	0.688	0.827	0.926	**7.4%**		**56.39%**
57	24,130	4,600	6,643	11,243	8,075	57%	0.43	68.3	0.414	1.000	0.569	0.753	0.855	**14.5%**		**65.35%**
58	16,310	4,266	2,615	6,881	5,150	62%	0.46	70.7	0.515	0.977	0.646	0.798	0.902	**9.8%**		**58.84%**
59	23,634	4,600	4,693	9,293	7,889	57%	0.43	68.1	0.406	1.000	0.563	0.750	0.852	**14.8%**		**63.63%**
60	18,623	4,600	2,719	7,319	6,015	60%	0.45	70.7	0.515	0.996	0.646	0.803	0.904	**9.6%**		**59.21%**
61	18,911	2,378	5,531	7,909	6,123	60%	0.45	70.1	0.490	1.000	0.627	0.793	0.895	**10.5%**		**55.09%**
62	21,788	4,600	4,542	9,142	7,199	58%	0.43	69.7	0.473	1.000	0.614	0.782	0.885	**11.5%**		**63.19%**
63	24,787	4,600	6,672	11,272	8,320	57%	0.43	69.1	0.448	1.000	0.595	0.767	0.871	**12.9%**		**62.99%**
64	18,932	4,302	2,946	7,248	6,131	60%	0.45	71.8	0.562	1.000	0.681	0.823	0.923	**7.7%**		**57.97%**
65	9,601	42	379	421	2,641	70%	0.52	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**		**56.83%**
66	16,356	4,600	3,899	8,499	5,167	62%	0.46	70	0.486	1.000	0.624	0.796	0.895	**10.5%**		**63.33%**
67	19,870	3,655	4,394	8,049	6,481	59%	0.44	69.2	0.452	1.000	0.598	0.776	0.877	**12.3%**		**59.42%**
68	16,451	4,600	4,006	8,606	5,203	61%	0.46	66.9	0.356	0.984	0.525	0.735	0.829	**17.1%**		**64.18%**
69	19,159	4,600	2,793	7,393	6,215	60%	0.44	71.9	0.566	1.000	0.684	0.825	0.924	**7.6%**		**55.64%**
70	24,415	4,600	6,672	11,272	8,181	57%	0.43	66	0.318	1.000	0.496	0.711	0.803	**19.7%**		**67.50%**
71	55,568	4,600	4,685	9,285	19,832	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**		**71.84%**
72	19,004	4,398	3,358	7,756	6,157	60%	0.45	68.4	0.419	0.974	0.572	0.751	0.855	**14.5%**		**58.92%**
73	18,655	4,600	2,635	7,235	6,027	60%	0.45	69.4	0.461	0.969	0.604	0.768	0.875	**12.5%**		**57.13%**
74	12,641	3,853	3,773	7,626	3,778	65%	0.49	71.6	0.553	1.000	0.675	0.833	0.925	**7.5%**		**55.81%**
75	20,313	4,600	3,141	7,741	6,647	59%	0.44	73.2	0.621	1.000	0.726	0.846	0.942	**5.8%**		**50.28%**
76	14,786	4,462	998	5,460	4,580	63%	0.47	69.4	0.461	0.892	0.604	0.740	0.860	**14.0%**		**59.47%**
77	18,261	4,554	2,490	7,044	5,880	60%	0.45	68.6	0.427	0.947	0.579	0.744	0.853	**14.7%**		**56.33%**
78	19,580	4,509	2,908	7,417	6,373	59%	0.44	68.5	0.423	0.961	0.576	0.746	0.854	**14.6%**		**55.88%**
79	11,340	2,848	1,067	3,915	3,291	67%	0.50	69.4	0.461	0.825	0.604	0.715	0.846	**15.4%**		**57.73%**
80	14,238	3,678	1,673	5,351	4,375	63%	0.47	69	0.444	0.880	0.592	0.728	0.849	**15.1%**		**56.23%**
81															**Average**	**59.71%**

```
BG10 ='Study 467 Flow Data'!G7
BH10 ='Study 467 Flow Data'!Q7
BI10 ='Study 467 Flow Data'!AA7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$G$2,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10
BO10 =IF((-2.45925+(0.0420748*BN10))<0,0,(-2.45925+(0.0420748*BN10)))
BP10 =IF(((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10))>1,1,((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10)
BQ10 =-1.613493+(0.0319584*BN10)
BR10 =(BP10*BM10)+(BQ10*(1-BM10))
BS10 =BO10+BR10-(BO10*BR10)
BT10 =1-BS10
```

```
BV10 ='Study 467 Flow Data'!H7
BW10 ='Study 467 Flow Data'!R7
BX10 ='Study 467 Flow Data'!AB7
BY10 =(BW10+BX10)
BZ10 =0.374*BV10-950
CA10 =IF(BV10>$K$4,(0.133*BV10+829)/(BV10-BZ10),(0.293*BV10+2090)/(BV10-BZ10))
CB10 =(0.45*(0.133*BV10+829)/(BV10-BZ10))+(0.55*CA10)
CC10
CD10 =IF((-2.45925+(0.0420748*CC10))<0,0,(-2.45925+(0.0420748*CC10)))
CE10 =IF(((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10))>1,1,((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10)))
CF10 =-1.613493+(0.0319584*CC10)
CG10 =(CE10*CB10)+(CF10*(1-CB10))
CH10 =CD10+CG10-(CD10*CG10)
CI10 =1-CH10
```

```
CK10 ='Study 467 Flow Data'!I7
CL10 ='Study 467 Flow Data'!S7
CM10 ='Study 467 Flow Data'!AC7
CN10 =(CL10+CM10)
CO10 =0.374*CK10-950
CP10 =IF(CK10>$K$4,(0.133*CK10+829)/(CK10-CO10),(0.293*CK10+2090)/(CK10-CO10))
CQ10 =(0.45*(0.133*CK10+829)/(CK10-CO10))+(0.55*CP10)
CR10
CS10 =IF((-2.45925+(0.0420748*CR10))<0,0,(-2.45925+(0.0420748*CR10)))
CT10 =IF(((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10))>1,1,((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10)))
CU10 =-1.613493+(0.0319584*CR10)
CV10 =(CT10*CQ10)+(CU10*(1-CQ10))
CW10 =CS10+CV10-(CS10*CV10)
CX10 =1-CW10
CZ10 =(0.01*O10)+(0.06*AC10)+(0.17*AQ10)+(0.28*BE10)+(0.25*BT10)+(0.16*CI10)+(0.07*CX10)
```

Study 526 Sacramento River Spring Run YOY Smolt Survival Model

Modified m2 by changing the slope to 0.0000434

Cross Channel closed for 45 consecutive days, Dec 18-Jan 31

Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

December Sacramento River Temp: 47 degrees F

January Sacramento River Temp: 47 degrees F

Cross Channel Closed Over 25000 cfs

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

February Water Temp 50 F

March Water Temp 55 F

DECEMBER

Year	Water Year Type	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	A	17,143	4,207	9,735	13,942	5,461	61%	0.45	0	0.858	0.000	0.390	0.390	**61.0%**
1923	B	34,539	4,207	3,897	8,104	11,968	24%	0.24	0	0.605	0.000	0.145	0.145	**85.5%**
1924	C	13,865	3,685	6,670	10,355	4,236	64%	0.48	0	0.702	0.000	0.335	0.335	**66.5%**
1925	D	11,248	4,207	4,849	9,056	3,257	67%	0.50	0	0.646	0.000	0.324	0.324	**67.6%**
1926	D	12,596	4,207	2,822	7,029	3,761	65%	0.49	0	0.558	0.000	0.272	0.272	**72.8%**
1927	W	14,342	2,946	9,142	12,088	4,414	63%	0.47	0	0.778	0.000	0.367	0.367	**63.3%**
1928	A	16,574	4,207	3,902	8,109	5,249	61%	0.46	0	0.605	0.000	0.277	0.277	**72.3%**
1929	C	13,461	4,207	6,029	10,236	4,084	64%	0.48	0	0.697	0.000	0.334	0.334	**66.6%**
1930	D	14,442	4,207	6,300	10,507	4,451	63%	0.47	0	0.709	0.000	0.335	0.335	**66.5%**
1931	C	9,276	2,194	2,925	5,119	2,519	71%	0.53	0	0.475	0.000	0.251	0.251	**74.9%**
1932	D	14,650	4,207	8,677	12,884	4,529	63%	0.47	0	0.812	0.000	0.382	0.382	**61.8%**
1933	C	8,582	2,465	2,457	4,922	2,260	73%	0.54	0	0.467	0.000	0.252	0.252	**74.8%**
1934	C	12,474	4,166	5,542	9,708	3,715	66%	0.49	0	0.674	0.000	0.329	0.329	**67.1%**
1935	B	8,503	3,216	3,390	6,606	2,230	73%	0.54	0	0.540	0.000	0.293	0.293	**70.7%**
1936	B	10,125	3,790	2,964	6,754	2,837	69%	0.52	0	0.546	0.000	0.282	0.282	**71.8%**
1937	B	12,454	4,207	5,584	9,791	3,708	66%	0.49	0	0.678	0.000	0.331	0.331	**66.9%**
1938	W	45,721	4,207	6,823	11,030	16,150	23%	0.23	0	0.732	0.000	0.171	0.171	**82.9%**
1939	D	18,684	3,348	3,735	7,083	6,038	60%	0.45	0	0.560	0.000	0.250	0.250	**75.0%**
1940	A	7,841	1,432	2,676	4,108	1,983	75%	0.56	0	0.431	0.000	0.240	0.240	**76.0%**
1941	W	30,791	4,207	10,300	14,507	10,566	24%	0.24	0	0.882	0.000	0.215	0.215	**78.5%**
1942	W	65,619	3,476	3,608	7,084	23,592	23%	0.23	0	0.560	0.000	0.127	0.127	**87.3%**
1943	W	28,806	4,207	3,779	7,986	9,823	25%	0.25	0	0.599	0.000	0.147	0.147	**85.3%**
1944	D	13,774	4,207	6,423	10,630	4,201	64%	0.48	0	0.714	0.000	0.341	0.341	**65.9%**
1945	B	15,826	4,207	7,898	12,105	4,969	62%	0.46	0	0.778	0.000	0.360	0.360	**64.0%**
1946	B	54,672	4,207	6,537	10,744	19,497	23%	0.23	0	0.719	0.000	0.166	0.166	**83.4%**
1947	D	18,132	4,207	9,906	14,113	5,831	60%	0.45	0	0.865	0.000	0.389	0.389	**61.1%**
1948	B	9,901	2,535	3,357	5,892	2,753	70%	0.52	0	0.509	0.000	0.264	0.264	**73.6%**
1949	D	15,563	4,207	7,216	11,423	4,871	62%	0.46	0	0.749	0.000	0.347	0.347	**65.3%**
1950	B	10,825	4,207	2,829	7,036	3,099	68%	0.51	0	0.558	0.000	0.283	0.283	**71.7%**
1951	A	68,100	4,207	9,967	14,174	24,519	23%	0.23	0	0.868	0.000	0.197	0.197	**80.3%**
1952	W	43,335	4,207	10,300	14,507	15,257	23%	0.23	0	0.882	0.000	0.207	0.207	**79.3%**
1953	W	42,331	3,327	3,742	7,069	14,882	24%	0.24	0	0.560	0.000	0.132	0.132	**86.8%**
1954	A	14,919	4,207	3,897	8,104	4,630	63%	0.47	0	0.605	0.000	0.283	0.283	**71.7%**
1955	D	25,520	4,207	10,300	14,507	8,594	25%	0.25	0	0.882	0.000	0.220	0.220	**78.0%**
1956	W	25,954	4,207	10,300	14,507	8,757	25%	0.25	0	0.882	0.000	0.220	0.220	**78.0%**
1957	A	14,143	4,207	4,541	8,748	4,339	64%	0.47	0	0.633	0.000	0.300	0.300	**70.0%**
1958	W	23,752	4,207	4,516	8,723	7,933	57%	0.43	0	0.631	0.000	0.270	0.270	**73.0%**
1959	B	14,627	3,368	3,852	7,220	4,520	63%	0.47	0	0.566	0.000	0.266	0.266	**73.4%**
1960	D	10,418	3,563	2,791	6,354	2,946	69%	0.51	0	0.529	0.000	0.271	0.271	**72.9%**
1961	D	18,000	4,207	8,636	12,843	5,782	60%	0.45	0	0.810	0.000	0.365	0.365	**63.5%**
1962	B	16,256	4,207	7,415	11,622	5,130	62%	0.46	0	0.757	0.000	0.348	0.348	**65.2%**
1963	W	27,555	4,207	10,300	14,507	9,356	25%	0.25	0	0.882	0.000	0.218	0.218	**78.2%**
1964	D	14,847	4,207	4,302	8,509	4,603	63%	0.47	0	0.622	0.000	0.292	0.292	**70.8%**
1965	W	28,466	4,207	10,300	14,507	9,696	25%	0.25	0	0.882	0.000	0.217	0.217	**78.3%**
1966	B	16,994	4,207	4,715	8,922	5,406	61%	0.46	0	0.640	0.000	0.292	0.292	**70.8%**
1967	W	32,878	4,207	10,300	14,507	11,346	24%	0.24	0	0.882	0.000	0.213	0.213	**78.7%**
1968	B	16,692	3,340	3,735	7,075	5,293	61%	0.46	0	0.560	0.000	0.256	0.256	**74.4%**
1969	W	24,093	4,207	10,300	14,507	8,061	57%	0.43	0	0.882	0.000	0.377	0.377	**62.3%**
1970	W	50,159	3,343	3,481	6,824	17,809	23%	0.23	0	0.549	0.000	0.127	0.127	**87.3%**
1971	W	53,335	4,207	6,794	11,001	18,997	23%	0.23	0	0.730	0.000	0.169	0.169	**83.1%**
1972	B	21,044	4,207	5,707	9,914	6,920	58%	0.44	0	0.683	0.000	0.299	0.299	**70.1%**
1973	A	26,198	4,207	8,229	12,436	8,848	25%	0.25	0	0.793	0.000	0.197	0.197	**80.3%**
1974	W	61,593	4,207	5,462	9,669	22,086	23%	0.23	0	0.673	0.000	0.154	0.154	**84.6%**
1975	W	17,619	3,344	4,248	7,592	5,640	61%	0.45	0	0.582	0.000	0.263	0.263	**73.7%**
1976	C	16,774	4,207	4,542	8,749	5,323	61%	0.46	0	0.633	0.000	0.289	0.289	**71.1%**
1977	C	8,315	1,741	3,234	4,975	2,160	74%	0.55	0	0.469	0.000	0.256	0.256	**74.4%**
1978	A	12,285	3,450	6,219	9,669	3,645	66%	0.49	0	0.673	0.000	0.330	0.330	**67.0%**
1979	B	13,792	4,207	3,678	7,885	4,208	64%	0.48	0	0.595	0.000	0.284	0.284	**71.6%**
1980	A	20,832	4,207	6,999	11,206	6,841	59%	0.44	0	0.739	0.000	0.324	0.324	**67.6%**
1981	D	15,611	4,207	3,624	7,831	4,889	62%	0.46	0	0.593	0.000	0.275	0.275	**72.5%**
1982	W	68,518	4,207	8,839	13,046	24,676	23%	0.23	0	0.819	0.000	0.186	0.186	**81.4%**
1983	W	55,416	3,066	4,318	7,384	19,776	23%	0.23	0	0.573	0.000	0.132	0.132	**86.8%**
1984	W	82,951	2,994	3,104	6,098	30,074	22%	0.22	0	0.518	0.000	0.116	0.116	**88.4%**
1985	D	23,880	4,207	3,779	7,986	7,981	57%	0.43	0	0.599	0.000	0.256	0.256	**74.4%**
1986	W	15,472	4,207	7,716	11,923	4,837	62%	0.46	0	0.770	0.000	0.358	0.358	**64.2%**
1987	D	13,783	4,207	6,093	10,300	4,205	64%	0.48	0	0.700	0.000	0.334	0.334	**66.6%**
1988	C	15,842	4,207	7,679	11,886	4,975	62%	0.46	0	0.769	0.000	0.355	0.355	**64.5%**
1989	D	8,849	2,467	3,253	5,720	2,360	72%	0.54	0	0.501	0.000	0.269	0.269	**73.1%**
1990	C	12,785	4,207	4,339	8,546	3,832	65%	0.49	0	0.624	0.000	0.303	0.303	**69.7%**
1991	C	8,487	1,784	2,953	4,737	2,224	73%	0.54	0	0.458	0.000	0.249	0.249	**75.1%**
1992	C	7,466	2,964	1,609	4,573	1,842	76%	0.56	0	0.451	0.000	0.255	0.255	**74.5%**

JANUARY

Year	Sac River Flows	CVP	SWP	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	17,504	4,207	9,307	13,514	5,596	61%	0.27	0	0.839	0.000	0.223	0.223	**77.7%**
1923	32,280	1,365	3,614	4,979	11,123	24%	0.24	0	0.469	0.000	0.114	0.114	**88.6%**
1924	14,620	4,207	6,652	10,859	4,518	63%	0.27	0	0.724	0.000	0.199	0.199	**80.1%**
1925	10,209	3,551	3,152	6,703	2,868	69%	0.30	0	0.544	0.000	0.162	0.162	**83.8%**
1926	19,019	4,207	9,501	13,708	6,163	60%	0.26	0	0.848	0.000	0.221	0.221	**77.9%**
1927	30,312	4,207	7,676	11,883	10,387	24%	0.24	0	0.769	0.000	0.187	0.187	**81.3%**
1928	25,913	3,663	3,622	7,285	8,741	25%	0.25	0	0.569	0.000	0.142	0.142	**85.8%**
1929	15,266	4,207	6,962	11,169	4,759	62%	0.27	0	0.738	0.000	0.201	0.201	**79.9%**
1930	20,771	4,207	9,645	13,852	6,818	59%	0.26	0	0.854	0.000	0.220	0.220	**78.0%**
1931	11,965	4,207	4,897	9,104	3,525	66%	0.29	0	0.648	0.000	0.186	0.186	**81.4%**
1932	17,253	4,207	10,229	14,436	5,503	61%	0.27	0	0.879	0.000	0.234	0.234	**76.6%**
1933	12,602	4,207	5,742	9,949	3,763	65%	0.28	0	0.685	0.000	0.194	0.194	**80.6%**
1934	16,103	4,207	8,272	12,479	5,073	62%	0.27	0	0.794	0.000	0.214	0.214	**78.6%**
1935	25,471	4,207	10,245	14,452	8,576	25%	0.25	0	0.880	0.000	0.220	0.220	**78.0%**
1936	31,753	4,207	10,253	14,460	10,926	24%	0.24	0	0.880	0.000	0.214	0.214	**78.6%**
1937	15,717	4,207	8,382	12,589	4,928	62%	0.27	0	0.799	0.000	0.216	0.216	**78.4%**
1938	31,443	3,442	3,233	6,675	10,810	24%	0.24	0	0.543	0.000	0.132	0.132	**86.8%**
1939	18,407	1,562	3,239	4,801	5,934	60%	0.26	0	0.461	0.000	0.121	0.121	**87.9%**
1940	23,448	4,207	10,232	14,439	7,820	57%	0.25	0	0.880	0.000	0.222	0.222	**77.8%**
1941	73,830	4,207	10,300	14,507	26,662	23%	0.23	0	0.882	0.000	0.199	0.199	**80.1%**
1942	63,260	1,331	3,239	4,570	22,709	23%	0.23	0	0.451	0.000	0.103	0.103	**89.7%**
1943	58,056	1,337	3,303	4,640	20,763	23%	0.23	0	0.454	0.000	0.104	0.104	**89.6%**
1944	17,677	4,207	3,262	7,469	5,661	60%	0.26	0	0.577	0.000	0.153	0.153	**84.7%**
1945	14,052	4,207	4,922	9,129	4,305	64%	0.28	0	0.649	0.000	0.180	0.180	**82.0%**
1946	43,229	4,207	3,637	7,844	15,218	23%	0.23	0	0.593	0.000	0.139	0.139	**86.1%**
1947	14,971	4,207	4,377	8,584	4,649	63%	0.27	0	0.625	0.000	0.171	0.171	**82.9%**
1948	14,649	3,894	6,670	10,564	4,529	63%	0.27	0	0.711	0.000	0.195	0.195	**80.5%**
1949	14,678	4,207	6,661	10,868	4,540	63%	0.27	0	0.725	0.000	0.199	0.199	**80.1%**
1950	20,184	4,207	10,247	14,454	6,599	59%	0.26	0	0.880	0.000	0.228	0.228	**77.2%**
1951	62,213	4,207	3,904	8,111	22,318	23%	0.23	0	0.605	0.000	0.138	0.138	**86.2%**
1952	67,352	4,207	3,272	7,479	24,240	23%	0.23	0	0.577	0.000	0.131	0.131	**86.9%**
1953	64,078	1,553	3,333	4,886	23,015	23%	0.23	0	0.465	0.000	0.106	0.106	**89.4%**
1954	33,414	3,375	3,792	7,167	11,547	24%	0.24	0	0.564	0.000	0.136	0.136	**86.4%**
1955	22,007	4,207	3,274	7,481	7,281	58%	0.26	0	0.578	0.000	0.147	0.147	**85.3%**
1956	84,719	4,207	5,320	9,527	30,735	22%	0.22	0	0.666	0.000	0.149	0.149	**85.1%**
1957	18,639	4,207	3,842	8,049	6,021	60%	0.26	0	0.602	0.000	0.158	0.158	**84.2%**
1958	36,219	2,534	3,230	5,764	12,596	24%	0.24	0	0.503	0.000	0.120	0.120	**88.0%**
1959	35,167	1,570	3,333	4,903	12,202	24%	0.24	0	0.466	0.000	0.112	0.112	**88.8%**
1960	13,772	4,207	5,924	10,131	4,201	64%	0.28	0	0.693	0.000	0.193	0.193	**80.7%**
1961	14,758	4,207	6,914	11,121	4,569	63%	0.27	0	0.736	0.000	0.202	0.202	**79.8%**
1962	15,094	4,207	3,415	7,622	4,695	63%	0.27	0	0.584	0.000	0.159	0.159	**84.1%**
1963	18,194	4,207	3,681	7,888	5,855	60%	0.26	0	0.595	0.000	0.157	0.157	**84.3%**
1964	26,403	4,207	3,838	8,045	8,925	25%	0.25	0	0.602	0.000	0.150	0.150	**85.0%**
1965	81,240	4,207	6,946	11,153	29,434	22%	0.22	0	0.737	0.000	0.165	0.165	**83.5%**
1966	29,635	2,263	3,563	5,826	10,133	24%	0.24	0	0.506	0.000	0.124	0.124	**87.6%**
1967	33,553	4,207	3,964	8,171	11,599	24%	0.24	0	0.608	0.000	0.146	0.146	**85.4%**
1968	30,635	1,558	3,333	4,891	10,507	24%	0.24	0	0.465	0.000	0.113	0.113	**88.7%**
1969	67,731	4,207	3,253	7,460	24,381	23%	0.23	0	0.577	0.000	0.131	0.131	**86.9%**
1970	92,665	1,342	3,333	4,675	33,707	22%	0.22	0	0.456	0.000	0.102	0.102	**89.8%**
1971	46,793	3,268	3,850	7,118	16,551	23%	0.23	0	0.562	0.000	0.131	0.131	**86.9%**
1972	20,395	4,207	3,851	8,058	6,678	59%	0.26	0	0.603	0.000	0.156	0.156	**84.4%**
1973	47,499	4,207	3,172	7,379	16,815	23%	0.23	0	0.573	0.000	0.133	0.133	**86.7%**
1974	78,417	3,677	3,633	7,310	28,378	22%	0.22	0	0.570	0.000	0.128	0.128	**87.2%**
1975	18,672	1,557	3,848	5,405	6,033	60%	0.26	0	0.487	0.000	0.128	0.128	**87.2%**
1976	16,769	1,571	3,774	5,345	5,322	61%	0.27	0	0.485	0.000	0.130	0.130	**87.0%**
1977	7,906	2,356	2,442	4,798	2,007	75%	0.32	0	0.461	0.000	0.147	0.147	**85.3%**
1978	43,250	4,025	8,801	12,826	15,226	23%	0.23	0	0.810	0.000	0.190	0.190	**81.0%**
1979	27,242	4,207	3,262	7,469	9,239	25%	0.25	0	0.577	0.000	0.143	0.143	**85.7%**
1980	60,771	4,207	3,159	7,366	21,778	23%	0.23	0	0.573	0.000	0.131	0.131	**86.9%**
1981	28,602	1,398	3,333	4,731	9,747	25%	0.25	0	0.458	0.000	0.113	0.113	**88.7%**
1982	51,172	4,207	3,820	8,027	18,188	23%	0.23	0	0.601	0.000	0.139	0.139	**86.1%**
1983	59,148	1,358	2,648	4,006	21,171	23%	0.23	0	0.427	0.000	0.098	0.098	**90.2%**
1984	47,354	1,331	2,881	4,212	16,760	23%	0.23	0	0.436	0.000	0.101	0.101	**89.9%**
1985	16,549	1,639	3,850	5,489	5,239	61%	0.27	0	0.491	0.000	0.132	0.132	**86.8%**
1986	21,253	4,207	9,891	14,098	6,999	58%	0.26	0	0.865	0.000	0.222	0.222	**77.8%**
1987	16,734	2,892	6,154	9,046	5,309	61%	0.27	0	0.645	0.000	0.173	0.173	**82.7%**
1988	25,530	4,207	10,252	14,459	8,598	25%	0.25	0	0.880	0.000	0.220	0.220	**78.0%**
1989	11,998	4,198	4,527	8,725	3,537	66%	0.29	0	0.632	0.000	0.181	0.181	**81.9%**
1990	21,584	1,704	10,252	11,956	7,122	58%	0.26	0	0.772	0.000	0.197	0.197	**80.3%**
1991	6,851	1,697	1,707	3,404	1,612	78%	0.33	0	0.401	0.000	0.133	0.133	**86.7%**
1992	11,890	4,199	4,626	8,825	3,497	66%	0.29	0	0.636	0.000	0.183	0.183	**81.7%**

FEBRUARY

Year	Sac River Flow	CVP	SWP	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	35,290	4,251	4,099	8,350	12,248	24%	0.24	0	0.669	0.000	0.160	0.160	**84.0%**
1923	22,200	2,172	2,377	4,549	7,353	58%	0.25	0	0.504	0.000	0.128	0.128	**87.2%**
1924	17,751	4,219	4,896	9,115	5,689	60%	0.26	0	0.702	0.000	0.186	0.186	**81.4%**
1925	44,692	3,220	10,269	13,489	15,765	23%	0.23	0	0.892	0.000	0.209	0.209	**79.1%**
1926	36,217	4,231	10,299	14,530	12,595	24%	0.24	0	0.937	0.000	0.224	0.224	**77.6%**
1927	87,579	2,193	4,107	6,300	31,805	22%	0.22	0	0.580	0.000	0.130	0.130	**87.0%**
1928	28,340	1,827	4,374	6,201	9,649	25%	0.25	0	0.576	0.000	0.142	0.142	**85.8%**
1929	18,287	3,822	4,899	8,721	5,889	60%	0.26	0	0.685	0.000	0.180	0.180	**82.0%**
1930	15,675	2,708	3,891	6,599	4,912	62%	0.27	0	0.593	0.000	0.161	0.161	**83.9%**
1931	11,083	3,334	1,890	5,224	3,195	66%	0.29	0	0.534	0.000	0.156	0.156	**84.4%**
1932	14,487	4,242	4,870	9,112	4,468	64%	0.28	0	0.702	0.000	0.193	0.193	**80.7%**
1933	13,115	4,217	2,831	7,048	3,955	64%	0.28	0	0.613	0.000	0.172	0.172	**82.8%**
1934	12,740	1,231	4,555	5,786	3,815	66%	0.28	0	0.558	0.000	0.158	0.158	**84.2%**
1935	11,977	685	3,939	4,624	3,529	67%	0.29	0	0.507	0.000	0.145	0.145	**85.5%**
1936	49,118	4,247	10,299	14,546	17,420	23%	0.23	0	0.938	0.000	0.218	0.218	**78.2%**
1937	32,275	3,917	5,711	9,628	11,121	24%	0.24	0	0.725	0.000	0.175	0.175	**82.5%**
1938	82,366	1,219	3,900	5,119	29,855	22%	0.22	0	0.529	0.000	0.119	0.119	**88.1%**
1939	19,024	1,562	3,955	5,517	6,165	59%	0.26	0	0.546	0.000	0.143	0.143	**85.7%**
1940	43,658	4,241	6,458	10,699	15,378	23%	0.23	0	0.771	0.000	0.181	0.181	**81.9%**
1941	75,037	4,293	3,792	8,085	27,114	23%	0.23	0	0.658	0.000	0.148	0.148	**85.2%**
1942	78,349	1,664	3,955	5,619	28,353	22%	0.23	0	0.551	0.000	0.124	0.124	**87.6%**
1943	52,259	1,997	4,005	6,002	18,595	23%	0.23	0	0.567	0.000	0.131	0.131	**86.9%**
1944	31,866	1,443	3,958	5,401	10,968	24%	0.24	0	0.541	0.000	0.131	0.131	**86.9%**
1945	38,798	4,241	3,941	8,182	13,560	23%	0.24	0	0.662	0.000	0.157	0.157	**84.3%**
1946	23,843	1,996	4,377	6,373	7,967	57%	0.25	0	0.583	0.000	0.147	0.147	**85.3%**
1947	21,069	2,615	3,845	6,460	6,930	58%	0.26	0	0.587	0.000	0.151	0.151	**84.9%**
1948	15,928	4,227	1,639	5,866	5,007	64%	0.27	0	0.561	0.000	0.152	0.152	**84.8%**
1949	16,021	4,241	4,066	8,307	5,042	61%	0.27	0	0.667	0.000	0.180	0.180	**82.0%**
1950	33,536	4,249	9,500	13,749	11,592	24%	0.24	0	0.904	0.000	0.218	0.218	**78.2%**
1951	60,566	2,000	4,636	6,636	21,702	23%	0.23	0	0.595	0.000	0.136	0.136	**86.4%**
1952	64,731	1,408	3,873	5,281	23,259	23%	0.23	0	0.536	0.000	0.122	0.122	**87.8%**
1953	28,344	2,000	4,060	6,060	9,651	25%	0.25	0	0.570	0.000	0.140	0.140	**86.0%**
1954	57,158	1,981	4,600	6,581	20,427	23%	0.23	0	0.592	0.000	0.136	0.136	**86.4%**
1955	16,298	1,838	3,745	5,583	5,145	61%	0.27	0	0.549	0.000	0.148	0.148	**85.2%**
1956	63,748	1,410	4,638	6,048	22,892	23%	0.23	0	0.569	0.000	0.130	0.130	**87.0%**
1957	33,144	1,589	4,624	6,213	11,446	24%	0.24	0	0.576	0.000	0.139	0.139	**86.1%**
1958	63,593	1,750	4,005	5,755	22,834	23%	0.23	0	0.557	0.000	0.127	0.127	**87.3%**
1959	50,082	1,815	4,060	5,875	17,781	23%	0.23	0	0.562	0.000	0.130	0.130	**87.0%**
1960	26,653	4,231	8,200	12,431	9,018	25%	0.25	0	0.846	0.000	0.210	0.210	**79.0%**
1961	31,754	4,037	8,760	12,797	10,926	24%	0.24	0	0.862	0.000	0.209	0.209	**79.1%**
1962	38,281	1,165	8,813	9,978	13,367	23%	0.24	0	0.740	0.000	0.176	0.176	**82.4%**
1963	58,694	4,281	4,413	8,694	21,002	23%	0.23	0	0.684	0.000	0.157	0.157	**84.3%**
1964	17,861	1,984	4,636	6,620	5,730	61%	0.26	0	0.594	0.000	0.157	0.157	**84.3%**
1965	33,326	3,903	4,640	8,543	11,514	24%	0.24	0	0.678	0.000	0.163	0.163	**83.7%**
1966	26,777	2,028	4,374	6,402	9,065	25%	0.25	0	0.585	0.000	0.145	0.145	**85.5%**
1967	40,617	1,400	3,166	4,566	14,241	24%	0.24	0	0.505	0.000	0.119	0.119	**88.1%**
1968	56,470	1,982	4,060	6,042	20,170	23%	0.23	0	0.569	0.000	0.131	0.131	**86.9%**
1969	67,482	1,415	3,135	4,550	24,288	23%	0.23	0	0.504	0.000	0.114	0.114	**88.6%**
1970	57,565	1,202	4,060	5,262	20,579	23%	0.23	0	0.535	0.000	0.123	0.123	**87.7%**
1971	28,275	2,179	4,636	6,815	9,625	24%	0.25	0	0.603	0.000	0.148	0.148	**85.2%**
1972	25,083	1,825	4,554	6,379	8,431	57%	0.25	0	0.584	0.000	0.146	0.146	**85.4%**
1973	70,967	1,919	4,393	6,312	25,592	23%	0.23	0	0.581	0.000	0.131	0.131	**86.9%**
1974	41,926	1,928	4,374	6,302	14,730	24%	0.24	0	0.580	0.000	0.137	0.137	**86.3%**
1975	58,811	1,627	4,572	6,199	21,045	23%	0.23	0	0.576	0.000	0.132	0.132	**86.8%**
1976	20,229	1,319	4,430	5,749	6,616	59%	0.26	0	0.556	0.000	0.144	0.144	**85.6%**
1977	12,190	704	1,257	1,961	3,609	68%	0.29	0	0.392	0.000	0.112	0.112	**88.8%**
1978	51,370	1,752	3,781	5,533	18,262	23%	0.23	0	0.547	0.000	0.127	0.127	**87.3%**
1979	41,682	1,523	3,955	5,478	14,639	24%	0.24	0	0.545	0.000	0.128	0.128	**87.2%**
1980	71,932	903	3,768	4,671	25,953	23%	0.23	0	0.510	0.000	0.115	0.115	**88.5%**
1981	29,672	1,773	4,060	5,833	10,147	24%	0.24	0	0.560	0.000	0.137	0.137	**86.3%**
1982	65,645	1,273	4,581	5,854	23,601	23%	0.23	0	0.561	0.000	0.128	0.128	**87.2%**
1983	82,910	1,395	2,793	4,188	30,058	22%	0.22	0	0.489	0.000	0.110	0.110	**89.0%**
1984	37,282	1,491	3,847	5,338	12,993	24%	0.24	0	0.538	0.000	0.128	0.128	**87.2%**
1985	19,884	1,771	4,588	6,359	6,487	58%	0.26	0	0.583	0.000	0.151	0.151	**84.9%**
1986	90,600	4,244	3,876	8,120	32,934	22%	0.22	0	0.659	0.000	0.147	0.147	**85.3%**
1987	23,028	1,276	4,277	5,553	7,662	57%	0.25	0	0.548	0.000	0.139	0.139	**86.1%**
1988	16,332	4,244	1,884	6,128	5,158	62%	0.27	0	0.573	0.000	0.154	0.154	**84.6%**
1989	11,719	959	1,706	2,665	3,433	67%	0.29	0	0.422	0.000	0.122	0.122	**87.8%**
1990	16,946	1,315	6,488	7,803	5,388	61%	0.27	0	0.645	0.000	0.172	0.172	**82.8%**
1991	11,450	414	885	1,299	3,332	67%	0.29	0	0.363	0.000	0.105	0.105	**89.5%**
1992	32,038	653	10,265	10,918	11,032	24%	0.24	0	0.781	0.000	0.189	0.189	**81.1%**

MARCH

Year	Sac River Flow	CVP	SWP	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	31,554	2,823	4,126	6,949	10,851	24%	0.24	0	0.698	0.144	0.279	0.279	**72.1%**
1923	15,486	3,225	3,505	6,730	4,842	27%	0.27	0	0.689	0.144	0.292	0.292	**70.8%**
1924	12,240	1,460	1,836	3,296	3,628	29%	0.29	0	0.540	0.144	0.257	0.257	**74.3%**
1925	18,563	3,260	4,619	7,879	5,993	26%	0.26	0	0.739	0.144	0.300	0.300	**70.0%**
1926	16,369	2,914	3,909	6,823	5,172	27%	0.27	0	0.693	0.144	0.291	0.291	**70.9%**
1927	43,865	3,459	4,136	7,595	15,456	23%	0.23	0	0.726	0.144	0.281	0.281	**71.9%**
1928	86,223	3,154	4,424	7,578	31,297	22%	0.22	0	0.726	0.144	0.274	0.274	**72.6%**
1929	14,163	1,978	2,752	4,730	4,347	28%	0.28	0	0.602	0.144	0.271	0.271	**72.9%**
1930	30,090	2,657	3,791	6,448	10,304	24%	0.24	0	0.676	0.144	0.274	0.274	**72.6%**
1931	9,226	1,683	2,118	3,801	2,501	31%	0.31	0	0.562	0.144	0.272	0.272	**72.8%**
1932	10,116	936	2,318	3,254	2,833	30%	0.30	0	0.538	0.144	0.262	0.262	**73.8%**
1933	9,943	26	4,446	4,472	2,769	30%	0.30	0	0.591	0.144	0.278	0.278	**72.2%**
1934	14,511	2,227	2,015	4,242	4,477	27%	0.27	0	0.581	0.144	0.264	0.264	**73.6%**
1935	24,918	4,225	6,982	11,207	8,369	25%	0.25	0	0.883	0.144	0.329	0.329	**67.1%**
1936	33,198	4,225	4,432	8,657	11,466	24%	0.24	0	0.772	0.144	0.296	0.296	**70.4%**
1937	37,908	2,572	4,017	6,589	13,228	24%	0.24	0	0.683	0.144	0.272	0.272	**72.8%**
1938	78,637	2,058	3,952	6,010	28,460	22%	0.22	0	0.657	0.144	0.260	0.260	**74.0%**
1939	16,390	2,708	3,980	6,688	5,180	27%	0.27	0	0.687	0.144	0.290	0.290	**71.0%**
1940	59,187	4,225	4,647	8,872	21,186	23%	0.23	0	0.782	0.144	0.290	0.290	**71.0%**
1941	58,505	3,441	3,815	7,256	20,931	23%	0.23	0	0.712	0.144	0.274	0.274	**72.6%**
1942	27,099	3,433	4,007	7,440	9,185	25%	0.25	0	0.720	0.144	0.287	0.287	**71.3%**
1943	64,601	1,824	4,056	5,880	23,211	23%	0.23	0	0.652	0.144	0.260	0.260	**74.0%**
1944	25,100	2,998	4,007	7,005	8,437	25%	0.25	0	0.701	0.144	0.283	0.283	**71.7%**
1945	27,033	3,201	4,135	7,336	9,160	25%	0.25	0	0.715	0.144	0.286	0.286	**71.4%**
1946	23,778	3,442	4,424	7,866	7,943	25%	0.25	0	0.738	0.144	0.294	0.294	**70.6%**
1947	22,106	2,500	3,743	6,243	7,318	25%	0.25	0	0.668	0.144	0.278	0.278	**72.2%**
1948	19,112	4,225	3,396	7,621	6,198	26%	0.26	0	0.727	0.144	0.296	0.296	**70.4%**
1949	41,105	4,225	7,295	11,520	14,423	24%	0.24	0	0.897	0.144	0.322	0.322	**67.8%**
1950	22,154	3,175	5,825	9,000	7,336	25%	0.25	0	0.787	0.144	0.308	0.308	**69.2%**
1951	29,827	3,236	4,685	7,921	10,205	24%	0.24	0	0.740	0.144	0.290	0.290	**71.0%**
1952	57,518	3,205	3,919	7,124	20,562	23%	0.23	0	0.706	0.144	0.273	0.273	**72.7%**
1953	24,893	3,167	4,111	7,278	8,360	25%	0.25	0	0.713	0.144	0.287	0.287	**71.3%**
1954	49,536	3,182	4,635	7,817	17,576	23%	0.23	0	0.736	0.144	0.282	0.282	**71.8%**
1955	14,509	3,023	2,935	5,958	4,476	27%	0.27	0	0.655	0.144	0.285	0.285	**71.5%**
1956	36,676	2,056	4,685	6,741	12,767	24%	0.24	0	0.689	0.144	0.274	0.274	**72.6%**
1957	44,377	3,183	4,497	7,680	15,647	23%	0.23	0	0.730	0.144	0.281	0.281	**71.9%**
1958	93,616	3,456	4,056	7,512	34,062	22%	0.22	0	0.723	0.144	0.273	0.273	**72.7%**
1959	21,906	3,022	3,253	6,275	7,243	26%	0.26	0	0.669	0.144	0.278	0.278	**72.2%**
1960	22,349	2,598	3,903	6,501	7,409	25%	0.25	0	0.679	0.144	0.280	0.280	**72.0%**
1961	20,944	2,763	3,808	6,571	6,883	26%	0.26	0	0.682	0.144	0.282	0.282	**71.8%**
1962	26,263	3,422	4,143	7,565	8,872	25%	0.25	0	0.725	0.144	0.289	0.289	**71.1%**
1963	32,645	3,396	4,455	7,851	11,259	24%	0.24	0	0.737	0.144	0.288	0.288	**71.2%**
1964	16,340	2,988	3,521	6,509	5,161	27%	0.27	0	0.679	0.144	0.288	0.288	**71.2%**
1965	21,381	2,934	4,452	7,386	7,046	26%	0.26	0	0.717	0.144	0.291	0.291	**70.9%**
1966	28,683	3,440	4,424	7,864	9,777	25%	0.25	0	0.738	0.144	0.290	0.290	**71.0%**
1967	54,488	3,196	3,270	6,466	19,429	23%	0.23	0	0.677	0.144	0.267	0.267	**73.3%**
1968	36,789	3,023	4,111	7,134	12,809	24%	0.24	0	0.706	0.144	0.278	0.278	**72.2%**
1969	45,319	2,055	3,236	5,291	15,999	23%	0.23	0	0.626	0.144	0.257	0.257	**74.3%**
1970	35,819	3,094	4,111	7,205	12,446	24%	0.24	0	0.709	0.144	0.279	0.279	**72.1%**
1971	51,739	3,436	4,685	8,121	18,400	23%	0.23	0	0.749	0.144	0.284	0.284	**71.6%**
1972	32,930	3,023	4,490	7,513	11,366	24%	0.24	0	0.723	0.144	0.284	0.284	**71.6%**
1973	47,552	3,453	4,445	7,898	16,834	23%	0.23	0	0.739	0.144	0.283	0.283	**71.7%**
1974	34,545	3,437	4,424	7,861	11,970	24%	0.24	0	0.738	0.144	0.287	0.287	**71.3%**
1975	75,998	3,452	4,644	8,096	27,473	23%	0.23	0	0.748	0.144	0.280	0.280	**72.0%**
1976	18,356	2,072	4,440	6,512	5,915	26%	0.26	0	0.679	0.144	0.285	0.285	**71.5%**
1977	7,350	858	1,009	1,867	1,799	33%	0.33	0	0.478	0.144	0.253	0.253	**74.7%**
1978	43,971	2,115	3,900	6,015	15,495	23%	0.23	0	0.658	0.144	0.265	0.265	**73.5%**
1979	32,571	3,184	4,007	7,191	11,232	24%	0.24	0	0.709	0.144	0.281	0.281	**71.9%**
1980	36,480	1,827	3,344	5,171	12,694	24%	0.24	0	0.621	0.144	0.258	0.258	**74.2%**
1981	32,501	3,022	4,111	7,133	11,205	24%	0.24	0	0.706	0.144	0.280	0.280	**72.0%**
1982	69,087	2,937	4,629	7,566	24,889	23%	0.23	0	0.725	0.144	0.276	0.276	**72.4%**
1983	81,934	2,042	2,628	4,670	29,693	22%	0.22	0	0.599	0.144	0.246	0.246	**75.4%**
1984	36,503	3,266	4,007	7,273	12,702	24%	0.24	0	0.712	0.144	0.280	0.280	**72.0%**
1985	22,303	3,023	4,636	7,659	7,391	25%	0.25	0	0.729	0.144	0.293	0.293	**70.7%**
1986	74,704	1,564	4,165	5,729	26,989	23%	0.23	0	0.645	0.144	0.257	0.257	**74.3%**
1987	29,199	2,383	4,134	6,517	9,970	25%	0.25	0	0.679	0.144	0.275	0.275	**72.5%**
1988	11,132	2,052	1,793	3,845	3,213	29%	0.29	0	0.564	0.144	0.267	0.267	**73.3%**
1989	42,577	4,225	6,975	11,200	14,974	24%	0.24	0	0.883	0.144	0.318	0.318	**68.2%**
1990	14,838	2,370	3,493	5,863	4,599	27%	0.27	0	0.651	0.144	0.283	0.283	**71.7%**
1991	29,675	4,225	7,739	11,964	10,148	24%	0.24	0	0.916	0.144	0.333	0.333	**66.7%**
1992	19,706	2,047	6,051	8,098	6,420	26%	0.26	0	0.748	0.144	0.301	0.301	**69.9%**

Formulas: Sacramento River Spring Run Young of Year Smolt Survival Model

```
C10 ='Study 467 Flow Data'!C7
D10 ='Study 467 Flow Data'!M7
E10 ='Study 467 Flow Data'!W7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.45*(0.133*C10+829)/(C10-G10))+(0.55*H10)
J10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
K10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*F10)
L10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10
```

```
Q10 ='Study 467 Flow Data'!D7
R10 ='Study 467 Flow Data'!N7
S10 ='Study 467 Flow Data'!X7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*T10)
Z10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10
```

```
AE10 ='Study 467 Flow Data'!E7
AF10 ='Study 467 Flow Data'!O7
AG10 ='Study 467 Flow Data'!Y7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
AM10 =(-0.5916024)+(0.017968*$BC$2)+(0.0000434*AH10)
AN10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10
```

```
AS10 ='Study 467 Flow Data'!F7
AT10 ='Study 467 Flow Data'!P7
AU10 ='Study 467 Flow Data'!Z7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$G$2,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BA10 =IF(((-0.5916024)+(0.017968*$BC$3)+(0.0000434*AV10))>1,1,((-0.5916024)+(0.017968*$BC$3)+(0.00004
BB10 =-1.613493+(0.0319584*$BC$3)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =(AZ10+BC10-(AZ10*BC10))
BE10 =1-BD10
```

Study 526 Sacramento River Spring Run YOY Smolt Survival Model (continued)

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15
Sacramento River temperatures based on limited historical data from USBR

APRIL

Row	BG Sac River Flows	BH CVP	BI SWP	BJ CVP + SWP exports	BK Calculated Sutter & Steamboat Slough Q	BL Percent	BM X-Channel Closed	BN observed temp	BO m1	BP m2	BQ m3	BR m23	BS m123	BT Calculated Survival s123
10	22,816	4,189	4,189	8,378	7,583	25%	0.25	58.5	0.002	0.823	0.256	0.400	0.401	**59.9%**
11	23,688	4,041	4,041	8,082	7,909	25%	0.25	58.3	0.000	0.807	0.250	0.390	0.390	**61.0%**
12	8,067	1,395	1,395	2,790	2,067	32%	0.32	61.5	0.128	0.635	0.352	0.442	0.513	**48.7%**
13	22,651	3,475	3,475	6,950	7,521	25%	0.25	59.1	0.027	0.772	0.275	0.401	0.418	**58.2%**
14	19,982	3,211	3,211	6,422	6,523	26%	0.26	61.6	0.133	0.794	0.355	0.469	0.539	**46.1%**
15	48,222	4,600	5,171	9,771	17,085	23%	0.23	56.8	0.000	0.853	0.202	0.353	0.353	**64.7%**
16	29,212	3,969	3,969	7,938	9,975	25%	0.25	58.7	0.011	0.808	0.262	0.396	0.402	**59.8%**
17	9,056	1,478	1,478	2,956	2,437	31%	0.31	56.3	0.000	0.548	0.186	0.297	0.297	**70.3%**
18	12,640	1,956	1,956	3,912	3,777	28%	0.28	59.6	0.048	0.649	0.291	0.393	0.422	**57.8%**
19	9,202	1,485	1,485	2,970	2,492	31%	0.31	62.8	0.183	0.666	0.393	0.477	0.573	**42.7%**
20	13,023	2,024	3,294	5,318	3,921	28%	0.28	58.9	0.019	0.698	0.269	0.389	0.401	**59.9%**
21	12,736	2,987	1,136	4,123	3,813	28%	0.28	60.1	0.069	0.667	0.307	0.419	0.450	**55.0%**
22	12,856	1,790	1,790	3,580	3,858	28%	0.28	63.6	0.217	0.707	0.419	0.500	0.608	**39.2%**
23	24,634	4,479	5,324	9,803	8,263	25%	0.25	58.9	0.019	0.892	0.269	0.425	0.436	**56.4%**
24	21,031	4,167	4,167	8,334	6,916	26%	0.26	59.7	0.053	0.843	0.294	0.435	0.465	**53.5%**
25	23,257	2,988	4,997	7,985	7,748	25%	0.25	58.8	0.015	0.811	0.266	0.404	0.412	**58.8%**
26	47,172	3,342	4,377	7,719	16,692	23%	0.23	56.3	0.000	0.755	0.186	0.318	0.318	**68.2%**
27	12,224	2,072	2,072	4,144	3,622	29%	0.29	63.3	0.204	0.726	0.409	0.500	0.602	**39.8%**
28	41,731	4,600	5,410	10,010	14,657	24%	0.24	57.4	0.000	0.874	0.221	0.375	0.375	**62.5%**
29	42,372	4,600	4,708	9,308	14,897	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
30	43,308	4,600	5,046	9,646	15,247	23%	0.23	56.5	0.000	0.842	0.192	0.345	0.345	**65.5%**
31	29,406	4,081	5,062	9,143	10,048	24%	0.24	58.8	0.015	0.862	0.266	0.412	0.420	**58.0%**
32	9,823	2,124	2,124	4,248	2,724	30%	0.30	58.4	0.000	0.642	0.253	0.370	0.370	**63.0%**
33	11,753	3,131	3,131	6,262	3,446	29%	0.29	60.6	0.090	0.769	0.323	0.452	0.501	**49.9%**
34	12,226	2,980	2,980	5,960	3,623	29%	0.29	60.7	0.095	0.758	0.326	0.449	0.502	**49.8%**
35	13,800	2,455	2,455	4,910	4,211	28%	0.28	62.5	0.170	0.744	0.384	0.484	0.572	**42.8%**
36	22,793	3,390	3,390	6,780	7,575	25%	0.25	56.6	0.000	0.720	0.195	0.328	0.328	**67.2%**
37	13,210	2,544	2,544	5,088	3,991	28%	0.28	61.7	0.137	0.738	0.358	0.465	0.538	**46.2%**
38	19,263	3,124	3,124	6,248	6,254	26%	0.26	61.3	0.120	0.781	0.346	0.459	0.524	**47.6%**
39	14,732	3,181	3,181	6,362	4,560	27%	0.27	59.9	0.061	0.761	0.301	0.427	0.462	**53.8%**
40	56,648	3,673	4,166	7,839	20,236	23%	0.23	55.5	0.000	0.746	0.160	0.295	0.295	**70.5%**
41	16,177	2,825	2,825	5,650	5,100	27%	0.27	58.8	0.015	0.710	0.266	0.385	0.394	**60.6%**
42	39,868	4,540	4,540	9,080	13,961	24%	0.24	58.4	0.000	0.852	0.253	0.395	0.395	**60.5%**
43	9,473	1,836	1,836	3,672	2,593	30%	0.30	56.4	0.000	0.581	0.189	0.308	0.308	**69.2%**
44	20,437	3,991	3,991	7,982	6,693	26%	0.26	59.7	0.053	0.828	0.294	0.432	0.462	**53.8%**
45	20,958	3,200	3,200	6,400	6,888	26%	0.26	60.5	0.086	0.773	0.320	0.436	0.485	**51.5%**
46	52,284	4,420	5,062	9,482	18,604	23%	0.23	57.4	0.000	0.851	0.221	0.367	0.367	**63.3%**
47	10,480	1,892	1,892	3,784	2,970	30%	0.30	63	0.191	0.705	0.400	0.490	0.588	**41.2%**
48	13,493	321	3,701	4,022	4,096	28%	0.28	59.5	0.044	0.652	0.288	0.390	0.417	**58.3%**
49	12,784	1,770	1,770	3,540	3,831	28%	0.28	60.1	0.069	0.642	0.307	0.402	0.443	**55.7%**
50	11,656	2,493	2,493	4,986	3,409	29%	0.29	61.8	0.141	0.735	0.362	0.469	0.544	**45.6%**
51	69,458	4,600	5,211	9,811	25,027	23%	0.23	53.7	0.000	0.799	0.103	0.260	0.260	**74.0%**
52	8,953	1,756	1,756	3,512	2,398	31%	0.31	59.3	0.036	0.626	0.282	0.388	0.410	**59.0%**
53	45,179	4,334	5,463	9,797	15,947	23%	0.23	56.9	0.000	0.856	0.205	0.357	0.357	**64.3%**
54	16,758	2,811	2,811	5,622	5,317	27%	0.27	61.9	0.145	0.765	0.365	0.472	0.548	**45.2%**
55	39,925	3,518	4,949	8,467	13,982	24%	0.24	53.8	0.000	0.743	0.106	0.257	0.257	**74.3%**
56	15,565	2,620	2,620	5,240	4,871	27%	0.27	61.5	0.128	0.741	0.352	0.457	0.527	**47.3%**
57	44,787	3,338	4,166	7,504	15,800	23%	0.23	56.4	0.000	0.747	0.189	0.320	0.320	**68.0%**
58	16,591	3,299	3,299	6,598	5,255	27%	0.27	58.8	0.015	0.751	0.266	0.396	0.405	**59.5%**
59	21,693	3,277	3,277	6,554	7,163	26%	0.26	58.7	0.011	0.748	0.262	0.386	0.393	**60.7%**
60	12,452	2,349	2,349	4,698	3,707	28%	0.28	58.5	0.002	0.663	0.256	0.372	0.373	**62.7%**
61	19,512	3,726	3,726	7,452	6,347	26%	0.26	61.3	0.120	0.833	0.346	0.472	0.536	**46.4%**
62	33,208	4,600	5,501	10,101	11,470	24%	0.24	56.8	0.000	0.867	0.202	0.362	0.362	**63.8%**
63	25,763	4,600	4,693	9,293	8,685	25%	0.25	56.8	0.000	0.832	0.202	0.359	0.359	**64.1%**
64	9,434	641	2,361	3,002	2,578	30%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
65	9,136	1,137	1,857	2,994	2,467	31%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	**36.3%**
66	38,125	3,440	4,079	7,519	13,309	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
67	17,702	3,426	3,426	6,852	5,671	26%	0.26	59.8	0.057	0.780	0.298	0.425	0.458	**54.2%**
68	19,818	2,942	3,952	6,894	6,462	26%	0.26	57.1	0.000	0.734	0.211	0.347	0.347	**65.3%**
69	16,998	2,725	2,725	5,450	5,407	27%	0.27	61.5	0.128	0.750	0.352	0.458	0.528	**47.2%**
70	75,838	3,374	5,569	8,943	27,413	23%	0.23	54.1	0.000	0.769	0.115	0.263	0.263	**73.7%**
71	68,301	3,314	3,649	6,963	24,595	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
72	17,874	3,423	3,423	6,846	5,735	26%	0.26	59.7	0.053	0.778	0.294	0.422	0.453	**54.7%**
73	12,328	2,043	2,043	4,086	3,661	28%	0.28	60.8	0.099	0.678	0.330	0.429	0.485	**51.5%**
74	20,528	2,461	5,204	7,665	6,727	26%	0.26	60.4	0.082	0.826	0.317	0.448	0.493	**50.7%**
75	12,490	322	3,192	3,514	3,721	28%	0.28	65.7	0.305	0.741	0.486	0.559	0.693	**30.7%**
76	8,644	1,427	1,427	2,854	2,283	31%	0.31	59.9	0.061	0.609	0.301	0.397	0.433	**56.7%**
77	23,637	2,825	2,825	5,650	7,890	25%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	**48.0%**
78	12,444	236	3,298	3,534	3,704	28%	0.28	61.6	0.133	0.669	0.355	0.444	0.518	**48.2%**
79	15,284	2,043	2,206	4,249	4,766	27%	0.27	60.8	0.099	0.685	0.330	0.426	0.483	**51.7%**
80	12,482	1,869	1,869	3,738	3,718	28%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	**49.9%**

MAY

Row	BV Sac River Flows	BW CVP	BX SWP	BY CVP + SWP Exports	BZ Calculated Steamboat & Sutter Slough Q	CA Percent	CB X-channel Closed	CC USBR observed temp f	CD m1	CE m2	CF m3	CG m23	CH m123	CI Calculated Survival s123
10	46,458	4,189	5,963	10,152	16,425	23%	0.23	61.2	0.116	0.949	0.342	0.484	0.544	**45.6%**
11	14,367	4,041	3,135	7,176	4,423	63%	0.47	62.4	0.166	0.841	0.381	0.598	0.665	**33.5%**
12	8,476	1,395	693	2,088	2,220	73%	0.54	69.2	0.452	0.742	0.598	0.676	0.823	**17.7%**
13	12,068	3,475	2,527	6,002	3,563	66%	0.49	63.2	0.200	0.804	0.406	0.602	0.682	**31.8%**
14	14,139	3,211	2,489	5,700	4,338	64%	0.47	65.7	0.305	0.836	0.486	0.652	0.758	**24.2%**
15	26,781	4,600	4,274	8,874	9,066	25%	0.25	62.6	0.175	0.918	0.387	0.519	0.603	**39.7%**
16	20,721	3,969	3,395	7,364	6,800	59%	0.44	66.6	0.343	0.925	0.515	0.695	0.799	**20.1%**
17	9,700	1,478	115	1,593	2,678	70%	0.52	66.1	0.322	0.665	0.499	0.586	0.719	**28.1%**
18	12,028	1,956	1,774	3,730	3,548	66%	0.49	63.1	0.196	0.704	0.403	0.551	0.639	**36.1%**
19	10,089	1,485	1,596	3,081	2,823	69%	0.52	70.5	0.507	0.809	0.640	0.727	0.865	**13.5%**
20	12,015	2,024	2,417	4,441	3,544	66%	0.49	65.5	0.297	0.778	0.480	0.627	0.738	**26.2%**
21	7,681	2,987	1,079	4,066	1,923	75%	0.56	63.7	0.221	0.729	0.422	0.594	0.684	**31.6%**
22	8,896	1,790	1,440	3,230	2,377	72%	0.54	68.3	0.414	0.776	0.569	0.680	0.813	**18.7%**
23	28,824	4,479	2,679	7,158	9,830	25%	0.25	64	0.234	0.869	0.432	0.539	0.647	**35.3%**
24	14,094	4,167	3,157	7,324	4,321	64%	0.47	64.9	0.271	0.892	0.461	0.665	0.756	**24.4%**
25	16,219	2,988	4,089	7,077	5,116	62%	0.46	64.5	0.255	0.874	0.448	0.644	0.735	**26.5%**
26	57,429	3,342	5,445	8,787	20,528	23%	0.23	60.5	0.170	0.913	0.384	0.505	0.590	**41.0%**
27	8,568	2,072	1,737	3,809	2,254	73%	0.54	68	0.402	0.796	0.560	0.687	0.813	**18.7%**
28	18,425	4,600	3,249	7,849	5,941	60%	0.45	65.6	0.301	0.928	0.483	0.682	0.778	**22.2%**
29	39,485	4,600	5,119	9,719	13,817	24%	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**
30	36,037	4,600	5,963	10,563	12,528	24%	0.24	60.1	0.069	0.947	0.307	0.460	0.498	**50.2%**
31	20,303	4,081	4,180	8,261	6,643	59%	0.44	65.4	0.292	0.942	0.477	0.681	0.775	**22.5%**
32	8,907	2,124	1,870	3,994	2,381	72%	0.53	65.9	0.313	0.766	0.493	0.639	0.752	**24.8%**
33	11,927	3,131	2,503	5,634	3,511	66%	0.49	63.1	0.196	0.787	0.403	0.593	0.672	**32.8%**
34	13,701	2,980	2,637	5,617	4,174	64%	0.48	63.9	0.229	0.800	0.429	0.606	0.696	**30.4%**
35	8,855	2,455	1,735	4,190	2,362	72%	0.54	68.7	0.431	0.825	0.582	0.712	0.836	**16.4%**
36	24,032	3,390	3,557	6,947	8,038	57%	0.43	62.3	0.162	0.829	0.378	0.571	0.640	**36.0%**
37	14,907	2,544	2,004	4,548	4,625	63%	0.47	65.2	0.284	0.777	0.470	0.614	0.724	**27.6%**
38	15,648	3,124	2,801	5,925	4,902	62%	0.46	64.3	0.246	0.821	0.441	0.617	0.712	**28.8%**
39	18,870	3,181	3,568	6,749	6,107	60%	0.45	64.4	0.250	0.858	0.445	0.629	0.722	**27.8%**
40	59,563	3,673	5,270	8,943	21,327	23%	0.23	61.7	0.137	0.905	0.358	0.483	0.554	**44.6%**
41	26,868	2,825	3,853	6,678	9,099	25%	0.25	60.9	0.103	0.792	0.333	0.447	0.504	**49.6%**
42	25,691	4,540	4,487	9,027	8,658	25%	0.25	65.9	0.313	0.984	0.493	0.615	0.736	**26.4%**
43	11,273	1,836	1,977	3,813	3,266	67%	0.50	66.9	0.356	0.776	0.525	0.651	0.775	**22.5%**
44	39,005	3,991	6,054	10,045	13,638	24%	0.24	61.4	0.124	0.948	0.349	0.491	0.554	**44.6%**
45	16,918	3,200	2,991	6,191	5,377	61%	0.46	64	0.234	0.827	0.432	0.612	0.703	**29.7%**
46	43,486	4,420	6,083	10,503	15,314	23%	0.23	62.9	0.187	0.994	0.397	0.537	0.624	**37.6%**
47	9,424	1,892	1,844	3,736	2,575	71%	0.53	65.9	0.313	0.755	0.493	0.631	0.746	**25.4%**
48	10,915	321	1,678	1,999	3,132	68%	0.51	65.9	0.313	0.679	0.493	0.587	0.716	**28.4%**
49	8,684	1,770	1,451	3,221	2,298	73%	0.54	64.3	0.246	0.704	0.441	0.583	0.685	**31.5%**
50	15,314	2,493	2,428	4,921	4,777	62%	0.47	64.8	0.267	0.786	0.457	0.611	0.715	**28.5%**
51	29,094	4,600	4,724	9,324	9,931	25%	0.25	62.5	0.170	0.936	0.384	0.519	0.601	**39.9%**
52	11,043	1,756	1,940	3,696	3,180	68%	0.50	65.2	0.284	0.740	0.470	0.606	0.718	**28.2%**
53	24,929	4,334	5,184	9,518	8,373	57%	0.42	63.6	0.217	0.964	0.419	0.651	0.726	**27.4%**
54	14,539	2,811	2,351	5,162	4,488	63%	0.47	67.3	0.372	0.842	0.537	0.681	0.800	**20.0%**
55	44,790	3,518	5,445	8,963	15,801	23%	0.23	62.1	0.154	0.913	0.371	0.498	0.575	**42.5%**
56	9,379	2,620	1,827	4,447	2,558	71%	0.53	66.1	0.322	0.789	0.499	0.652	0.764	**23.6%**
57	45,533	3,338	5,026	8,364	16,079	23%	0.23	62.3	0.162	0.907	0.406	0.523	0.619	**38.1%**
58	12,155	3,299	2,958	6,257	3,596	66%	0.49	68.6	0.427	0.913	0.579	0.743	0.853	**14.7%**
59	29,649	3,277	4,112	7,389	10,139	24%	0.24	61	0.107	0.825	0.336	0.456	0.514	**48.6%**
60	10,802	2,349	1,942	4,291	3,090	68%	0.51	67.3	0.372	0.804	0.537	0.672	0.794	**20.6%**
61	15,751	3,726	3,255	6,981	4,941	62%	0.46	66.9	0.356	0.913	0.525	0.705	0.810	**19.0%**
62	26,945	4,600	4,615	9,215	9,127	25%	0.25	63.4	0.208	0.947	0.413	0.545	0.640	**36.0%**
63	28,542	4,600	4,936	9,536	9,725	25%	0.25	63.8	0.225	0.969	0.425	0.559	0.658	**34.2%**
64	10,056	641	1,567	2,208	2,811	70%	0.52	69.6	0.469	0.755	0.611	0.685	0.833	**16.7%**
65	6,994	1,137	447	1,584	1,666	78%	0.58	64	0.234	0.627	0.432	0.544	0.651	**34.9%**
66	21,056	3,440	4,109	7,549	6,925	58%	0.44	63	0.191	0.868	0.400	0.604	0.680	**32.0%**
67	12,566	3,426	3,000	6,426	3,750	65%	0.49	63.8	0.225	0.834	0.425	0.625	0.709	**29.1%**
68	14,777	2,942	3,954	6,896	4,577	63%	0.47	63.6	0.217	0.850	0.419	0.622	0.704	**29.6%**
69	8,752	2,725	1,752	4,477	2,323	72%	0.54	66.7	0.347	0.801	0.518	0.670	0.785	**21.5%**
70	38,429	3,374	6,845	10,219	13,422	24%	0.24	61.1	0.112	0.950	0.339	0.484	0.542	**45.8%**
71	54,514	3,314	3,590	6,904	19,438	23%	0.23	60.1	0.069	0.788	0.307	0.418	0.458	**54.2%**
72	13,410	3,423	3,066	6,489	4,065	64%	0.48	66.5	0.339	0.885	0.512	0.691	0.796	**20.4%**
73	13,150	2,043	2,122	4,165	3,968	65%	0.48	65.8	0.309	0.771	0.489	0.625	0.741	**25.9%**
74	13,127	2,461	5,168	7,629	3,959	65%	0.48	66.2	0.326	0.929	0.502	0.708	0.803	**19.7%**
75	8,459	322	1,420	1,742	2,214	73%	0.54	70.5	0.507	0.751	0.640	0.700	0.852	**14.8%**
76	9,794	1,427	1,056	2,483	2,713	70%	0.52	65.8	0.309	0.698	0.489	0.598	0.722	**27.8%**
77	14,455	2,825	1,979	4,804	4,456	63%	0.47	64.7	0.263	0.779	0.454	0.608	0.711	**28.9%**
78	7,699	236	1,372	1,608	1,929	75%	0.56	66.4	0.335	0.671	0.509	0.599	0.733	**26.7%**
79	8,690	2,043	1,419	3,462	2,300	73%	0.54	65.7	0.305	0.739	0.486	0.622	0.738	**26.2%**
80	9,001	1,869	1,316	3,185	2,416	72%	0.53	66	0.318	0.733	0.496	0.622	0.742	**25.8%**

JUNE

Row	CK Sac River Flow	CL CVP	CM SWP	CN CVP + SWP exports	CO Caculated Steamboat & Sutter Slough Q	CP percent	CQ X-channel closed	CR USBR observed temp f	CS m1	CT m2	CU m3	CV m23	CW m123	CX Calculated Survival s123	CZ Weighted Total Survival
10	34,719	4,600	8,157	12,757	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**63.87%**
11	18,140	4,228	3,389	7,617	5,834	60%	0.45	65.3	0.288	0.912	0.473	0.671	0.766	**23.4%**	**63.06%**
12	10,367	302	835	1,137	2,927	69%	0.51	70.6	0.511	0.726	0.643	0.686	0.846	**15.4%**	**56.20%**
13	16,225	3,470	2,815	6,285	5,118	62%	0.46	68.3	0.414	0.908	0.569	0.725	0.839	**16.1%**	**59.52%**
14	15,132	3,548	2,497	6,045	4,709	63%	0.47	71.2	0.536	0.950	0.662	0.796	0.906	**9.4%**	**54.48%**
15	18,893	4,600	3,745	8,345	6,116	60%	0.45	68.1	0.406	0.994	0.563	0.755	0.855	**14.5%**	**63.98%**
16	13,778	3,023	2,669	5,692	4,203	64%	0.48	69.7	0.473	0.908	0.614	0.754	0.871	**12.9%**	**59.84%**
17	10,876	2,918	94	3,012	3,118	68%	0.51	70.1	0.490	0.799	0.627	0.714	0.854	**14.6%**	**62.90%**
18	18,117	4,274	2,680	6,954	5,826	60%	0.45	69.6	0.469	0.961	0.611	0.768	0.877	**12.3%**	**61.02%**
19	13,508	2,639	1,692	4,331	4,102	64%	0.48	70.7	0.515	0.867	0.646	0.752	0.880	**12.0%**	**54.06%**
20	19,354	3,603	4,119	7,722	6,288	59%	0.44	69.5	0.465	0.992	0.608	0.778	0.881	**11.9%**	**59.61%**
21	10,624	1,631	93	1,724	3,023	68%	0.51	69.8	0.478	0.737	0.617	0.678	0.832	**16.8%**	**59.86%**
22	15,849	4,451	1,676	6,127	4,978	62%	0.46	70.7	0.515	0.945	0.646	0.784	0.895	**10.5%**	**53.83%**
23	17,713	4,110	3,572	7,682	5,675	60%	0.45	71	0.528	1.000	0.656	0.811	0.911	**8.9%**	**59.07%**
24	19,056	4,600	3,356	7,956	6,177	60%	0.45	69.2	0.452	0.997	0.598	0.776	0.877	**12.3%**	**56.59%**
25	17,531	2,456	4,571	7,027	5,607	61%	0.45	69.7	0.473	0.966	0.614	0.773	0.881	**11.9%**	**59.53%**
26	35,517	4,600	7,269	11,869	12,333	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**66.82%**
27	18,580	4,311	3,082	7,393	5,999	60%	0.45	71	0.528	1.000	0.656	0.810	0.910	**9.0%**	**54.06%**
28	15,336	4,077	3,098	7,175	4,786	62%	0.47	71.5	0.549	1.000	0.672	0.824	0.921	**7.9%**	**58.96%**
29	20,808	4,600	6,297	10,897	6,832	59%	0.44	69	0.444	1.000	0.592	0.770	0.872	**12.8%**	**64.49%**
30	27,117	4,600	7,776	12,376	9,192	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**66.97%**
31	16,854	4,600	3,142	7,742	5,353	61%	0.46	66.6	0.343	0.941	0.515	0.709	0.809	**19.1%**	**61.16%**
32	18,219	4,171	3,177	7,348	5,864	60%	0.45	67.8	0.393	0.946	0.553	0.729	0.836	**16.4%**	**61.45%**
33	16,693	3,368	3,817	7,185	5,293	61%	0.46	70.6	0.511	0.989	0.643	0.801	0.903	**9.7%**	**58.29%**
34	16,281	3,357	3,610	6,967	5,139	62%	0.46	68.1	0.406	0.934	0.563	0.734	0.842	**15.8%**	**58.69%**
35	18,833	4,312	2,952	7,264	6,094	60%	0.45	70	0.486	0.981	0.624	0.783	0.889	**11.1%**	**54.35%**
36	22,883	4,600	4,396	8,996	7,608	58%	0.43	69	0.444	1.000	0.592	0.768	0.871	**12.9%**	**63.14%**
37	15,078	3,243	2,433	5,676	4,689	63%	0.47	70.9	0.524	0.929	0.652	0.781	0.896	**10.4%**	**55.09%**
38	20,268	4,600	3,526	8,126	6,630	59%	0.44	68.9	0.440	0.999	0.588	0.769	0.871	**12.9%**	**55.45%**
39	17,640	4,600	2,825	7,425	5,647	61%	0.45	70.3	0.499	0.994	0.633	0.796	0.898	**10.2%**	**59.16%**
40	38,968	4,600	6,896	11,496	13,624	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**68.13%**
41	25,885	4,600	5,781	10,381	8,731	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**65.67%**
42	14,215	3,284	2,743	6,027	4,366	64%	0.47	68.7	0.431	0.904	0.582	0.735	0.849	**15.1%**	**61.12%**
43	18,124	4,058	3,026	7,084	5,828	60%	0.45	70.1	0.490	0.975	0.627	0.784	0.890	**11.0%**	**62.09%**
44	22,306	4,600	6,809	11,409	7,392	58%	0.43	68.7	0.431	1.000	0.582	0.763	0.865	**13.5%**	**62.53%**
45	19,128	4,507	3,462	7,969	6,204	60%	0.44	72	0.570	1.000	0.688	0.827	0.925	**7.5%**	**58.66%**
46	33,938	4,600	7,447	12,047	11,743	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**64.52%**
47	17,912	4,194	2,993	7,187	5,749	60%	0.45	72.1	0.574	1.000	0.691	0.830	0.928	**7.2%**	**55.93%**
48	18,216	4,359	2,697	7,056	5,863	60%	0.45	72.7	0.600	1.000	0.710	0.840	0.936	**6.4%**	**58.73%**
49	20,151	4,600	3,078	7,678	6,586	59%	0.44	73.2	0.621	1.000	0.726	0.847	0.942	**5.8%**	**58.32%**
50	17,106	3,918	2,887	6,805	5,448	61%	0.45	70.4	0.503	0.969	0.636	0.788	0.894	**10.6%**	**56.33%**
51	19,600	4,600	4,034	8,634	6,380	59%	0.44	69	0.444	1.000	0.592	0.772	0.873	**12.7%**	**65.88%**
52	17,616	4,097	2,775	6,872	5,638	61%	0.45	69.5	0.465	0.955	0.608	0.765	0.874	**12.6%**	**60.23%**
53	18,160	4,600	3,711	8,311	5,842	60%	0.45	67.1	0.364	0.975	0.531	0.730	0.829	**17.1%**	**61.51%**
54	15,584	3,650	2,604	6,254	4,878	62%	0.46	70.4	0.503	0.945	0.636	0.779	0.890	**11.0%**	**55.65%**
55	39,345	4,600	7,269	11,869	13,765	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**68.51%**
56	17,389	4,218	2,812	7,030	5,553	61%	0.45	72	0.570	1.000	0.688	0.829	0.927	**7.3%**	**57.16%**
57	24,130	4,600	6,643	11,243	8,075	57%	0.43	68.3	0.414	1.000	0.569	0.753	0.855	**14.5%**	**65.82%**
58	15,515	4,183	2,621	6,804	4,853	62%	0.46	70.7	0.515	0.974	0.646	0.798	0.902	**9.8%**	**59.28%**
59	23,634	4,600	5,034	9,634	7,889	57%	0.43	68.1	0.406	1.000	0.563	0.750	0.852	**14.8%**	**64.56%**
60	17,116	4,097	2,710	6,807	5,451	61%	0.45	70.7	0.515	0.974	0.646	0.795	0.901	**9.9%**	**59.99%**
61	19,398	2,461	5,581	8,042	6,305	59%	0.44	70.1	0.490	1.000	0.627	0.792	0.894	**10.6%**	**56.24%**
62	21,622	4,600	4,929	9,529	7,137	58%	0.43	69.7	0.473	1.000	0.614	0.782	0.885	**11.5%**	**63.23%**
63	24,787	4,600	7,018	11,618	8,320	57%	0.43	69.1	0.448	1.000	0.595	0.767	0.871	**12.9%**	**63.28%**
64	19,464	4,488	2,949	7,437	6,330	59%	0.44	71.8	0.562	1.000	0.681	0.823	0.922	**7.8%**	**59.22%**
65	9,565	42	384	426	2,627	71%	0.52	73.9	0.650	0.755	0.748	0.752	0.913	**8.7%**	**57.15%**
66	16,299	4,600	3,842	8,442	5,146	62%	0.46	70	0.486	1.000	0.624	0.797	0.895	**10.5%**	**63.41%**
67	19,425	2,844	5,206	8,050	6,315	59%	0.44	69.2	0.452	1.000	0.598	0.776	0.878	**12.2%**	**59.88%**
68	16,270	4,600	4,069	8,669	5,135	62%	0.46	66.9	0.356	0.987	0.525	0.737	0.830	**17.0%**	**63.97%**
69	18,070	4,295	2,892	7,187	5,808	60%	0.45	71.9	0.566	1.000	0.684	0.826	0.925	**7.5%**	**56.66%**
70	24,415	4,600	8,023	12,623	8,181	57%	0.43	66	0.318	1.000	0.496	0.711	0.803	**19.7%**	**68.23%**
71	55,568	4,600	4,685	9,285	19,832	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**71.95%**
72	18,437	4,397	3,354	7,751	5,945	60%	0.45	68.4	0.419	0.974	0.572	0.752	0.856	**14.4%**	**59.22%**
73	16,652	3,911	2,624	6,535	5,278	61%	0.46	69.4	0.461	0.939	0.604	0.757	0.869	**13.1%**	**58.10%**
74	14,215	4,476	3,845	8,321	4,366	64%	0.47	71.6	0.553	1.000	0.675	0.829	0.924	**7.6%**	**56.95%**
75	20,311	4,600	3,140	7,740	6,646	59%	0.44	73.2	0.621	1.000	0.726	0.846	0.942	**5.8%**	**51.00%**
76	13,660	4,019	624	4,643	4,159	64%	0.48	69.4	0.461	0.857	0.604	0.725	0.852	**14.8%**	**59.89%**
77	16,894	4,072	2,491	6,563	5,368	61%	0.46	68.6	0.427	0.926	0.579	0.737	0.849	**15.1%**	**57.36%**
78	19,713	4,566	2,907	7,473	6,423	59%	0.44	68.5	0.423	0.964	0.576	0.747	0.854	**14.6%**	**57.00%**
79	10,780	2,102	1,172	3,274	3,082	68%	0.51	69.4	0.461	0.797	0.604	0.702	0.839	**16.1%**	**58.09%**
80	15,595	4,365	1,740	6,105	4,883	62%	0.46	69	0.444	0.913	0.592	0.741	0.856	**14.4%**	**56.62%**
81														**Average**	**60.19%**

Row	April	May	June
85	BG10 ='Study 467 Flow Data'!G7	BV10 ='Study 467 Flow Data'!H7	CK10 ='Study 467 Flow Data'!I7
86	BH10 ='Study 467 Flow Data'!Q7	BW10 ='Study 467 Flow Data'!R7	CL10 ='Study 467 Flow Data'!S7
87	BI10 ='Study 467 Flow Data'!AA7	BX10 ='Study 467 Flow Data'!AB7	CM10 ='Study 467 Flow Data'!AC7
88	BJ10 =(BH10+BI10)	BY10 =(BW10+BX10)	CN10 =(CL10+CM10)
89	BK10 =0.374*BG10-950	BZ10 =0.374*BV10-950	CO10 =0.374*CK10-950
90	BL10 =IF(BG10>$G$2,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))	CA10 =IF(BV10>$K$4,(0.133*BV10+829)/(BV10-BZ10),(0.293*BV10+2090)/(BV10-BZ10))	CP10 =IF(CK10>$K$4,(0.133*CK10+829)/(CK10-CO10),(0.293*CK10+2090)/(CK10-CO10))
91	BM10 =(0.133*BG10+829)/(BG10-BK10)	CB10 =(0.45*(0.133*BV10+829)/(BV10-BZ10))+(0.55*CA10)	CQ10 =(0.45*(0.133*CK10+829)/(CK10-CO10))+(0.55*CP10)
92	BN10	CC10	CR10
93	BO10 =IF((-2.45925+(0.0420748*BN10))<0,0,(-2.45925+(0.0420748*BN10)))	CD10 =IF((-2.45925+(0.0420748*CC10))<0,0,(-2.45925+(0.0420748*CC10)))	CS10 =IF((-2.45925+(0.0420748*CR10))<0,0,(-2.45925+(0.0420748*CR10)))
94	BP10 =IF(((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10))>1,1,((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10)))	CE10 =IF(((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10))>1,1,((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10)))	CT10 =IF(((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10))>1,1,((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10)))
95	BQ10 =-1.613493+(0.0319584*BN10)	CF10 =-1.613493+(0.0319584*CC10)	CU10 =-1.613493+(0.0319584*CR10)
96	BR10 =(BP10*BM10)+(BQ10*(1-BM10))	CG10 =(CE10*CB10)+(CF10*(1-CB10))	CV10 =(CT10*CQ10)+(CU10*(1-CQ10))
97	BS10 =BO10+BR10-(BO10*BR10)	CH10 =CD10+CG10-(CD10*CG10)	CW10 =CS10+CV10-(CS10*CV10)
98	BT10 =1-BS10	CI10 =1-CH10	CX10 =1-CW10
99			CZ10 =(0.01*O10)+(0.06*AC10)+(0.17*AQ10)+(0.28*BE10)+(0.25*BT10)+(0.16*CI10)+(0.07*CX10)

Study 526A Sacramento River Spring Run YOY Smolt Survival Model

Modified m2 by changing the slope to 0.0000434

Cross Channel closed for 45 consecutive days, Dec 18-Jan 31

Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

December Sacramento River Temp: 47 degrees F

January Sacramento River Temp: 47 degrees F

Cross Channel Closed Over 25000 cfs

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

February Water Temp 50 F

March Water Temp 55 F

DECEMBER

Year	Water Year Type	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	A	17,208	4,207	9,778	13,985	5,486	61%	0.45	0	0.860	0.000	0.391	0.391	**60.9%**
1923	B	34,350	4,207	3,897	8,104	11,897	24%	0.24	0	0.605	0.000	0.145	0.145	**85.5%**
1924	C	13,877	3,747	6,618	10,365	4,240	64%	0.48	0	0.703	0.000	0.335	0.335	**66.5%**
1925	D	11,302	4,207	4,882	9,089	3,277	67%	0.50	0	0.647	0.000	0.324	0.324	**67.6%**
1926	D	12,986	4,207	2,884	7,091	3,907	65%	0.48	0	0.561	0.000	0.271	0.271	**72.9%**
1927	W	14,370	2,770	9,336	12,106	4,424	63%	0.47	0	0.778	0.000	0.368	0.368	**63.2%**
1928	A	16,447	4,207	5,062	9,269	5,201	61%	0.46	0	0.655	0.000	0.300	0.300	**70.0%**
1929	C	13,526	4,207	6,072	10,279	4,109	64%	0.48	0	0.699	0.000	0.335	0.335	**66.5%**
1930	D	14,496	4,207	6,335	10,542	4,472	63%	0.47	0	0.710	0.000	0.335	0.335	**66.5%**
1931	C	9,333	2,228	2,927	5,155	2,541	71%	0.53	0	0.477	0.000	0.252	0.252	**74.8%**
1932	D	14,673	4,207	8,691	12,898	4,538	63%	0.47	0	0.813	0.000	0.382	0.382	**61.8%**
1933	C	8,635	2,513	2,457	4,970	2,279	73%	0.54	0	0.469	0.000	0.253	0.253	**74.7%**
1934	C	12,528	4,207	5,535	9,742	3,735	66%	0.49	0	0.676	0.000	0.330	0.330	**67.0%**
1935	B	8,556	3,263	3,390	6,653	2,250	73%	0.54	0	0.542	0.000	0.293	0.293	**70.7%**
1936	B	9,547	3,253	2,964	6,217	2,621	71%	0.52	0	0.523	0.000	0.274	0.274	**72.6%**
1937	B	12,519	4,207	5,625	9,832	3,732	66%	0.49	0	0.680	0.000	0.332	0.332	**66.8%**
1938	W	45,937	4,207	6,474	10,681	16,230	23%	0.23	0	0.716	0.000	0.167	0.167	**83.3%**
1939	D	18,749	4,207	3,735	7,942	6,062	60%	0.45	0	0.598	0.000	0.267	0.267	**73.3%**
1940	A	7,841	1,427	2,676	4,103	1,983	75%	0.56	0	0.431	0.000	0.239	0.239	**76.1%**
1941	W	29,348	4,207	10,300	14,507	10,026	24%	0.24	0	0.882	0.000	0.216	0.216	**78.4%**
1942	W	65,430	4,207	3,608	7,815	23,521	23%	0.23	0	0.592	0.000	0.135	0.135	**86.5%**
1943	W	28,806	4,207	3,779	7,986	9,823	25%	0.25	0	0.599	0.000	0.147	0.147	**85.3%**
1944	D	13,839	4,207	6,467	10,674	4,226	64%	0.48	0	0.716	0.000	0.341	0.341	**65.9%**
1945	B	15,893	4,207	7,941	12,148	4,994	62%	0.46	0	0.780	0.000	0.360	0.360	**64.0%**
1946	B	54,704	4,207	6,741	10,948	19,509	23%	0.23	0	0.728	0.000	0.168	0.168	**83.2%**
1947	D	17,697	4,207	9,629	13,836	5,669	60%	0.45	0	0.853	0.000	0.385	0.385	**61.5%**
1948	B	9,978	2,616	3,357	5,973	2,782	70%	0.52	0	0.512	0.000	0.265	0.265	**73.5%**
1949	D	15,628	4,207	7,259	11,466	4,895	62%	0.46	0	0.751	0.000	0.348	0.348	**65.2%**
1950	B	10,794	4,207	2,822	7,029	3,087	68%	0.51	0	0.558	0.000	0.283	0.283	**71.7%**
1951	A	68,100	4,207	9,886	14,093	24,519	23%	0.23	0	0.865	0.000	0.196	0.196	**80.4%**
1952	W	42,890	4,207	10,300	14,507	15,091	24%	0.24	0	0.882	0.000	0.207	0.207	**79.3%**
1953	W	42,142	4,207	3,742	7,949	14,811	24%	0.24	0	0.598	0.000	0.141	0.141	**85.9%**
1954	A	14,984	4,207	3,897	8,104	4,654	63%	0.47	0	0.605	0.000	0.283	0.283	**71.7%**
1955	D	24,919	4,207	10,300	14,507	8,370	57%	0.42	0	0.882	0.000	0.375	0.375	**62.5%**
1956	W	25,003	4,207	10,300	14,507	8,401	25%	0.25	0	0.882	0.000	0.221	0.221	**77.9%**
1957	A	14,208	4,207	4,541	8,748	4,364	64%	0.47	0	0.633	0.000	0.300	0.300	**70.0%**
1958	W	23,817	4,207	4,516	8,723	7,958	57%	0.43	0	0.631	0.000	0.270	0.270	**73.0%**
1959	B	14,692	4,207	3,852	8,059	4,545	63%	0.47	0	0.603	0.000	0.283	0.283	**71.7%**
1960	D	10,409	3,576	2,791	6,367	2,943	69%	0.51	0	0.529	0.000	0.271	0.271	**72.9%**
1961	D	16,565	4,207	7,708	11,915	5,245	61%	0.46	0	0.770	0.000	0.353	0.353	**64.7%**
1962	B	15,823	4,207	7,138	11,345	4,968	62%	0.46	0	0.745	0.000	0.345	0.345	**65.5%**
1963	W	27,555	4,207	10,156	14,363	9,356	25%	0.25	0	0.876	0.000	0.216	0.216	**78.4%**
1964	D	14,912	4,207	4,302	8,509	4,627	63%	0.47	0	0.622	0.000	0.291	0.291	**70.9%**
1965	W	28,407	4,207	10,300	14,507	9,674	25%	0.25	0	0.882	0.000	0.217	0.217	**78.3%**
1966	B	17,062	4,207	4,944	9,151	5,431	61%	0.46	0	0.650	0.000	0.296	0.296	**70.4%**
1967	W	32,472	4,207	10,300	14,507	11,195	24%	0.24	0	0.882	0.000	0.214	0.214	**78.6%**
1968	B	16,757	4,207	3,735	7,942	5,317	61%	0.46	0	0.598	0.000	0.273	0.273	**72.7%**
1969	W	23,408	4,207	10,300	14,507	7,805	57%	0.43	0	0.882	0.000	0.379	0.379	**62.1%**
1970	W	49,970	4,207	3,481	7,688	17,739	23%	0.23	0	0.587	0.000	0.136	0.136	**86.4%**
1971	W	52,804	4,207	6,999	11,206	18,799	23%	0.23	0	0.739	0.000	0.171	0.171	**82.9%**
1972	B	20,536	4,207	6,988	11,195	6,730	59%	0.44	0	0.739	0.000	0.324	0.324	**67.6%**
1973	A	25,763	4,207	8,710	12,917	8,685	25%	0.25	0	0.813	0.000	0.203	0.203	**79.7%**
1974	W	61,593	4,207	5,257	9,464	22,086	23%	0.23	0	0.664	0.000	0.152	0.152	**84.8%**
1975	W	17,684	4,207	4,248	8,455	5,664	60%	0.45	0	0.620	0.000	0.280	0.280	**72.0%**
1976	C	16,839	4,207	4,542	8,749	5,348	61%	0.46	0	0.633	0.000	0.289	0.289	**71.1%**
1977	C	8,319	1,860	3,234	5,094	2,161	74%	0.55	0	0.474	0.000	0.259	0.259	**74.1%**
1978	A	12,308	3,470	6,214	9,684	3,653	66%	0.49	0	0.673	0.000	0.330	0.330	**67.0%**
1979	B	13,708	4,207	3,679	7,886	4,177	64%	0.48	0	0.595	0.000	0.284	0.284	**71.6%**
1980	A	20,397	4,207	7,180	11,387	6,678	59%	0.44	0	0.747	0.000	0.328	0.328	**67.2%**
1981	D	15,676	4,207	3,624	7,831	4,913	62%	0.46	0	0.593	0.000	0.275	0.275	**72.5%**
1982	W	68,450	4,207	8,840	13,047	24,650	23%	0.23	0	0.819	0.000	0.186	0.186	**81.4%**
1983	W	55,416	4,207	4,318	8,525	19,776	23%	0.23	0	0.623	0.000	0.143	0.143	**85.7%**
1984	W	82,951	4,162	3,104	7,266	30,074	22%	0.22	0	0.568	0.000	0.127	0.127	**87.3%**
1985	D	23,880	4,207	3,779	7,986	7,981	57%	0.43	0	0.599	0.000	0.256	0.256	**74.4%**
1986	W	15,291	4,207	7,603	11,810	4,769	62%	0.47	0	0.765	0.000	0.357	0.357	**64.3%**
1987	D	13,796	4,207	6,102	10,309	4,210	64%	0.48	0	0.700	0.000	0.334	0.334	**66.6%**
1988	C	15,909	4,207	7,723	11,930	5,000	62%	0.46	0	0.771	0.000	0.356	0.356	**64.4%**
1989	D	8,916	2,875	3,536	6,411	2,385	72%	0.53	0	0.531	0.000	0.284	0.284	**71.6%**
1990	C	14,647	4,207	4,787	8,994	4,528	63%	0.47	0	0.643	0.000	0.303	0.303	**69.7%**
1991	C	7,187	1,828	1,911	3,739	1,738	77%	0.57	0	0.415	0.000	0.237	0.237	**76.3%**
1992	C	7,571	3,064	1,607	4,671	1,882	76%	0.56	0	0.456	0.000	0.256	0.256	**74.4%**

JANUARY

Year	Sac River Flows	CVP	SWP	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	17,566	4,207	9,020	13,227	5,620	61%	0.26	0	0.827	0.000	0.219	0.219	**78.1%**
1923	32,280	4,207	3,614	7,821	11,123	24%	0.24	0	0.592	0.000	0.143	0.143	**85.7%**
1924	14,681	4,207	6,693	10,900	4,541	63%	0.27	0	0.726	0.000	0.199	0.199	**80.1%**
1925	10,260	3,599	3,152	6,751	2,887	69%	0.30	0	0.546	0.000	0.162	0.162	**83.8%**
1926	18,831	4,207	9,379	13,586	6,093	60%	0.26	0	0.843	0.000	0.220	0.220	**78.0%**
1927	29,902	4,207	7,968	12,175	10,233	24%	0.24	0	0.781	0.000	0.191	0.191	**80.9%**
1928	26,188	4,207	3,637	7,844	8,844	25%	0.25	0	0.593	0.000	0.148	0.148	**85.2%**
1929	15,078	4,207	6,840	11,047	4,689	63%	0.27	0	0.732	0.000	0.200	0.200	**80.0%**
1930	20,821	4,207	9,662	13,869	6,837	59%	0.26	0	0.855	0.000	0.220	0.220	**78.0%**
1931	12,027	4,207	4,937	9,144	3,548	66%	0.29	0	0.650	0.000	0.186	0.186	**81.4%**
1932	17,276	4,207	10,244	14,451	5,511	61%	0.27	0	0.880	0.000	0.234	0.234	**76.6%**
1933	12,653	4,207	5,774	9,981	3,782	65%	0.28	0	0.686	0.000	0.194	0.194	**80.6%**
1934	16,154	4,207	8,304	12,511	5,092	62%	0.27	0	0.796	0.000	0.214	0.214	**78.6%**
1935	25,521	4,207	10,245	14,452	8,595	25%	0.25	0	0.880	0.000	0.220	0.220	**78.0%**
1936	32,137	4,207	10,253	14,460	11,069	24%	0.24	0	0.880	0.000	0.213	0.213	**78.7%**
1937	15,779	4,207	8,422	12,629	4,951	62%	0.27	0	0.801	0.000	0.217	0.217	**78.3%**
1938	31,443	4,207	3,233	7,440	10,810	24%	0.24	0	0.576	0.000	0.140	0.140	**86.0%**
1939	18,469	4,207	3,239	7,446	5,957	60%	0.26	0	0.576	0.000	0.151	0.151	**84.9%**
1940	23,510	4,207	10,232	14,439	7,843	57%	0.25	0	0.880	0.000	0.222	0.222	**77.8%**
1941	72,901	4,207	10,300	14,507	26,315	23%	0.23	0	0.882	0.000	0.199	0.199	**80.1%**
1942	63,260	4,207	3,239	7,446	22,709	23%	0.23	0	0.576	0.000	0.131	0.131	**86.9%**
1943	58,056	4,207	3,303	7,510	20,763	23%	0.23	0	0.579	0.000	0.133	0.133	**86.7%**
1944	17,739	4,207	3,262	7,469	5,684	60%	0.26	0	0.577	0.000	0.153	0.153	**84.7%**
1945	14,141	4,207	4,921	9,128	4,339	64%	0.28	0	0.649	0.000	0.179	0.179	**82.1%**
1946	43,229	4,207	3,637	7,844	15,218	23%	0.23	0	0.593	0.000	0.139	0.139	**86.1%**
1947	14,783	4,207	4,832	9,039	4,579	63%	0.27	0	0.645	0.000	0.177	0.177	**82.3%**
1948	14,711	3,953	6,652	10,605	4,552	63%	0.27	0	0.713	0.000	0.196	0.196	**80.4%**
1949	14,740	4,207	6,701	10,908	4,563	63%	0.27	0	0.726	0.000	0.199	0.199	**80.1%**
1950	19,995	4,207	10,247	14,454	6,528	59%	0.26	0	0.880	0.000	0.228	0.228	**77.2%**
1951	62,213	4,207	3,909	8,116	22,318	23%	0.23	0	0.605	0.000	0.138	0.138	**86.2%**
1952	67,352	4,207	3,272	7,479	24,240	23%	0.23	0	0.577	0.000	0.131	0.131	**86.9%**
1953	64,078	4,207	3,333	7,540	23,015	23%	0.23	0	0.580	0.000	0.132	0.132	**86.8%**
1954	33,476	4,207	3,792	7,999	11,570	24%	0.24	0	0.600	0.000	0.145	0.145	**85.5%**
1955	21,819	4,207	3,915	8,122	7,210	58%	0.26	0	0.605	0.000	0.155	0.155	**84.5%**
1956	84,719	4,207	5,309	9,516	30,735	22%	0.22	0	0.666	0.000	0.149	0.149	**85.1%**
1957	18,701	4,207	3,842	8,049	6,044	60%	0.26	0	0.602	0.000	0.158	0.158	**84.2%**
1958	36,275	4,207	3,218	7,425	12,617	24%	0.24	0	0.575	0.000	0.137	0.137	**86.3%**
1959	35,228	4,207	3,333	7,540	12,225	24%	0.24	0	0.580	0.000	0.139	0.139	**86.1%**
1960	13,334	4,207	5,641	9,848	4,037	65%	0.28	0	0.680	0.000	0.190	0.190	**81.0%**
1961	13,570	4,207	6,144	10,351	4,131	64%	0.28	0	0.702	0.000	0.196	0.196	**80.4%**
1962	15,471	4,207	2,976	7,183	4,836	62%	0.27	0	0.565	0.000	0.153	0.153	**84.7%**
1963	18,176	4,207	3,681	7,888	5,848	60%	0.26	0	0.595	0.000	0.157	0.157	**84.3%**
1964	26,401	4,207	3,842	8,049	8,924	25%	0.25	0	0.602	0.000	0.150	0.150	**85.0%**
1965	81,240	4,207	6,892	11,099	29,434	22%	0.22	0	0.735	0.000	0.165	0.165	**83.5%**
1966	29,539	4,207	3,563	7,770	10,098	24%	0.24	0	0.590	0.000	0.144	0.144	**85.6%**
1967	32,904	4,207	3,901	8,108	11,356	24%	0.24	0	0.605	0.000	0.146	0.146	**85.4%**
1968	30,538	4,207	3,333	7,540	10,471	24%	0.24	0	0.580	0.000	0.141	0.141	**85.9%**
1969	66,806	4,207	4,081	8,288	24,035	23%	0.23	0	0.613	0.000	0.139	0.139	**86.1%**
1970	92,665	4,207	3,333	7,540	33,707	22%	0.22	0	0.580	0.000	0.129	0.129	**87.1%**
1971	46,797	4,207	3,850	8,057	16,552	23%	0.23	0	0.603	0.000	0.141	0.141	**85.9%**
1972	20,457	4,207	3,871	8,078	6,701	59%	0.26	0	0.603	0.000	0.156	0.156	**84.4%**
1973	47,927	4,207	3,172	7,379	16,975	23%	0.23	0	0.573	0.000	0.133	0.133	**86.7%**
1974	78,417	4,207	3,633	7,840	28,378	22%	0.22	0	0.593	0.000	0.133	0.133	**86.7%**
1975	18,734	4,207	3,848	8,055	6,057	60%	0.26	0	0.602	0.000	0.158	0.158	**84.2%**
1976	16,831	4,207	3,774	7,981	5,345	61%	0.27	0	0.599	0.000	0.160	0.160	**84.0%**
1977	7,925	2,397	2,444	4,841	2,014	75%	0.32	0	0.463	0.000	0.147	0.147	**85.3%**
1978	43,266	3,695	8,644	12,339	15,231	23%	0.23	0	0.788	0.000	0.185	0.185	**81.5%**
1979	27,304	4,207	3,262	7,469	9,262	25%	0.25	0	0.577	0.000	0.143	0.143	**85.7%**
1980	61,290	4,207	3,159	7,366	21,972	23%	0.23	0	0.573	0.000	0.131	0.131	**86.9%**
1981	28,694	4,207	3,333	7,540	9,782	25%	0.25	0	0.580	0.000	0.142	0.142	**85.8%**
1982	51,172	4,207	3,820	8,027	18,188	23%	0.23	0	0.601	0.000	0.139	0.139	**86.1%**
1983	59,148	4,207	2,648	6,855	21,171	23%	0.23	0	0.550	0.000	0.126	0.126	**87.4%**
1984	47,354	1,487	2,881	4,368	16,760	23%	0.23	0	0.442	0.000	0.103	0.103	**89.7%**
1985	16,610	4,207	3,850	8,057	5,262	61%	0.27	0	0.603	0.000	0.161	0.161	**83.9%**
1986	20,850	4,207	10,121	14,328	6,848	59%	0.26	0	0.875	0.000	0.225	0.225	**77.5%**
1987	16,795	2,780	6,581	9,361	5,331	61%	0.27	0	0.659	0.000	0.176	0.176	**82.4%**
1988	25,591	4,207	10,252	14,459	8,621	25%	0.25	0	0.880	0.000	0.220	0.220	**78.0%**
1989	12,060	4,207	4,558	8,765	3,560	66%	0.29	0	0.633	0.000	0.181	0.181	**81.9%**
1990	19,146	4,207	9,418	13,625	6,211	60%	0.26	0	0.844	0.000	0.220	0.220	**78.0%**
1991	6,957	1,760	1,682	3,442	1,652	78%	0.33	0	0.402	0.000	0.133	0.133	**86.7%**
1992	12,238	3,889	5,162	9,051	3,627	66%	0.29	0	0.646	0.000	0.184	0.184	**81.6%**

FEBRUARY

Year	Sac River Flow	CVP	SWP	CVP + SWP Exports	Calculated Sutter & Steamboat Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	34,838	4,152	4,099	8,251	12,079	24%	0.24	0	0.665	0.000	0.160	0.160	**84.0%**
1923	22,252	2,166	2,377	4,543	7,372	58%	0.25	0	0.504	0.000	0.128	0.128	**87.2%**
1924	17,817	4,218	4,926	9,144	5,714	60%	0.26	0	0.704	0.000	0.186	0.186	**81.4%**
1925	44,467	2,114	10,269	12,383	15,681	23%	0.23	0	0.844	0.000	0.198	0.198	**80.2%**
1926	35,783	4,230	10,299	14,529	12,433	24%	0.24	0	0.937	0.000	0.224	0.224	**77.6%**
1927	87,861	4,278	4,107	8,385	31,910	22%	0.22	0	0.671	0.000	0.150	0.150	**85.0%**
1928	28,407	1,822	4,377	6,199	9,674	25%	0.25	0	0.576	0.000	0.142	0.142	**85.8%**
1929	17,853	3,349	4,904	8,253	5,727	60%	0.26	0	0.665	0.000	0.176	0.176	**82.4%**
1930	15,731	2,731	3,891	6,622	4,933	62%	0.27	0	0.594	0.000	0.161	0.161	**83.9%**
1931	11,150	3,425	1,909	5,334	3,220	66%	0.29	0	0.538	0.000	0.157	0.157	**84.3%**
1932	14,442	4,241	5,015	9,256	4,451	64%	0.28	0	0.709	0.000	0.195	0.195	**80.5%**
1933	13,229	4,217	2,882	7,099	3,998	64%	0.28	0	0.615	0.000	0.172	0.172	**82.8%**
1934	12,796	1,280	4,525	5,805	3,836	66%	0.28	0	0.559	0.000	0.158	0.158	**84.2%**
1935	12,033	733	3,938	4,671	3,550	67%	0.29	0	0.510	0.000	0.146	0.146	**85.4%**
1936	49,713	4,243	10,299	14,542	17,643	23%	0.23	0	0.938	0.000	0.218	0.218	**78.2%**
1937	32,342	3,631	5,436	9,067	11,146	24%	0.24	0	0.700	0.000	0.170	0.170	**83.0%**
1938	82,366	1,226	3,900	5,126	29,855	22%	0.22	0	0.529	0.000	0.119	0.119	**88.1%**
1939	19,090	1,562	3,955	5,517	6,190	59%	0.26	0	0.546	0.000	0.143	0.143	**85.7%**
1940	43,518	4,239	6,518	10,757	15,326	23%	0.23	0	0.774	0.000	0.182	0.182	**81.8%**
1941	75,037	4,289	3,792	8,081	27,114	23%	0.23	0	0.658	0.000	0.148	0.148	**85.2%**
1942	78,349	1,666	3,955	5,621	28,353	22%	0.23	0	0.551	0.000	0.124	0.124	**87.6%**
1943	52,259	1,996	4,005	6,001	18,595	23%	0.23	0	0.567	0.000	0.131	0.131	**86.9%**
1944	32,384	1,423	3,958	5,381	11,162	24%	0.24	0	0.540	0.000	0.131	0.131	**86.9%**
1945	38,492	4,120	3,941	8,061	13,446	23%	0.24	0	0.657	0.000	0.156	0.156	**84.4%**
1946	23,843	2,006	4,377	6,383	7,967	57%	0.25	0	0.584	0.000	0.147	0.147	**85.3%**
1947	21,136	4,196	3,845	8,041	6,955	58%	0.26	0	0.656	0.000	0.168	0.168	**83.2%**
1948	15,931	4,226	1,639	5,865	5,008	64%	0.27	0	0.561	0.000	0.151	0.151	**84.9%**
1949	16,052	4,239	4,080	8,319	5,053	61%	0.27	0	0.668	0.000	0.180	0.180	**82.0%**
1950	32,663	4,245	9,195	13,440	11,266	24%	0.24	0	0.890	0.000	0.215	0.215	**78.5%**
1951	60,566	1,997	4,636	6,633	21,702	23%	0.23	0	0.595	0.000	0.136	0.136	**86.4%**
1952	64,731	1,514	3,873	5,387	23,259	23%	0.23	0	0.541	0.000	0.123	0.123	**87.7%**
1953	28,344	2,004	4,060	6,064	9,651	25%	0.25	0	0.570	0.000	0.140	0.140	**86.0%**
1954	56,808	1,979	4,600	6,579	20,296	23%	0.23	0	0.592	0.000	0.136	0.136	**86.4%**
1955	15,864	1,814	3,745	5,559	4,983	61%	0.27	0	0.548	0.000	0.148	0.148	**85.2%**
1956	63,748	1,401	4,638	6,039	22,892	23%	0.23	0	0.569	0.000	0.130	0.130	**87.0%**
1957	32,794	1,565	4,624	6,189	11,315	24%	0.24	0	0.575	0.000	0.139	0.139	**86.1%**
1958	63,024	1,737	4,005	5,742	22,621	23%	0.23	0	0.556	0.000	0.127	0.127	**87.3%**
1959	50,072	1,807	4,060	5,867	17,777	23%	0.23	0	0.561	0.000	0.130	0.130	**87.0%**
1960	25,840	4,222	8,493	12,715	8,714	25%	0.25	0	0.859	0.000	0.214	0.214	**78.6%**
1961	28,695	3,246	10,299	13,545	9,782	24%	0.25	0	0.895	0.000	0.220	0.220	**78.0%**
1962	34,763	3,323	9,966	13,289	12,051	23%	0.24	0	0.884	0.000	0.212	0.212	**78.8%**
1963	58,694	4,275	4,413	8,688	21,002	23%	0.23	0	0.684	0.000	0.157	0.157	**84.3%**
1964	17,927	1,979	4,636	6,615	5,755	61%	0.26	0	0.594	0.000	0.157	0.157	**84.3%**
1965	33,076	4,147	4,640	8,787	11,420	24%	0.24	0	0.688	0.000	0.166	0.166	**83.4%**
1966	26,844	2,025	4,374	6,399	9,090	25%	0.25	0	0.585	0.000	0.145	0.145	**85.5%**
1967	40,608	1,514	3,166	4,680	14,237	24%	0.24	0	0.510	0.000	0.120	0.120	**88.0%**
1968	56,470	1,980	4,060	6,040	20,170	23%	0.23	0	0.569	0.000	0.131	0.131	**86.9%**
1969	67,482	1,513	3,135	4,648	24,288	23%	0.23	0	0.509	0.000	0.115	0.115	**88.5%**
1970	57,565	1,215	4,060	5,275	20,579	23%	0.23	0	0.536	0.000	0.123	0.123	**87.7%**
1971	28,275	2,299	4,636	6,935	9,625	24%	0.25	0	0.608	0.000	0.150	0.150	**85.0%**
1972	25,015	1,822	4,554	6,376	8,406	57%	0.25	0	0.584	0.000	0.146	0.146	**85.4%**
1973	70,967	1,904	4,393	6,297	25,592	23%	0.23	0	0.580	0.000	0.131	0.131	**86.9%**
1974	41,926	1,927	4,374	6,301	14,730	24%	0.24	0	0.580	0.000	0.137	0.137	**86.3%**
1975	58,461	1,630	4,572	6,202	20,914	23%	0.23	0	0.576	0.000	0.132	0.132	**86.8%**
1976	20,296	1,322	4,430	5,752	6,641	59%	0.26	0	0.556	0.000	0.144	0.144	**85.6%**
1977	12,185	722	1,246	1,968	3,607	68%	0.29	0	0.392	0.000	0.112	0.112	**88.8%**
1978	51,370	1,745	3,768	5,513	18,262	23%	0.23	0	0.546	0.000	0.126	0.126	**87.4%**
1979	41,749	1,494	3,955	5,449	14,664	24%	0.24	0	0.543	0.000	0.128	0.128	**87.2%**
1980	71,932	908	3,768	4,676	25,953	23%	0.23	0	0.510	0.000	0.115	0.115	**88.5%**
1981	29,739	1,764	4,060	5,824	10,172	24%	0.24	0	0.560	0.000	0.137	0.137	**86.3%**
1982	65,645	1,271	4,581	5,852	23,601	23%	0.23	0	0.561	0.000	0.128	0.128	**87.2%**
1983	82,910	1,500	2,793	4,293	30,058	22%	0.22	0	0.493	0.000	0.111	0.111	**88.9%**
1984	37,282	1,485	3,847	5,332	12,993	24%	0.24	0	0.538	0.000	0.128	0.128	**87.2%**
1985	19,906	1,769	4,590	6,359	6,495	58%	0.26	0	0.583	0.000	0.151	0.151	**84.9%**
1986	91,390	4,240	3,893	8,133	33,230	22%	0.22	0	0.660	0.000	0.147	0.147	**85.3%**
1987	23,094	1,269	4,302	5,571	7,687	57%	0.25	0	0.549	0.000	0.139	0.139	**86.1%**
1988	16,341	4,241	1,888	6,129	5,162	62%	0.27	0	0.573	0.000	0.154	0.154	**84.6%**
1989	12,754	958	1,726	2,684	3,820	67%	0.28	0	0.423	0.000	0.120	0.120	**88.0%**
1990	15,611	4,235	2,657	6,892	4,889	61%	0.27	0	0.606	0.000	0.164	0.164	**83.6%**
1991	12,353	432	905	1,337	3,670	67%	0.28	0	0.365	0.000	0.104	0.104	**89.6%**
1992	32,637	638	10,268	10,906	11,256	24%	0.24	0	0.780	0.000	0.189	0.189	**81.1%**

MARCH

Year	Sac River Flow	CVP	SWP	CVP + SWP exports	Calculated Sutter & Steamboat Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	**Calculated Survival s123**
1922	31,632	3,006	4,126	7,132	10,880	24%	0.24	0	0.706	0.144	0.281	0.281	**71.9%**
1923	15,564	3,231	3,795	7,026	4,871	27%	0.27	0	0.702	0.144	0.295	0.295	**70.5%**
1924	12,237	1,437	1,852	3,289	3,627	29%	0.29	0	0.539	0.144	0.257	0.257	**74.3%**
1925	18,642	3,268	4,639	7,907	6,022	26%	0.26	0	0.740	0.144	0.300	0.300	**70.0%**
1926	16,097	2,930	3,798	6,728	5,070	27%	0.27	0	0.689	0.144	0.291	0.291	**70.9%**
1927	43,865	4,116	4,136	8,252	15,456	23%	0.23	0	0.755	0.144	0.287	0.287	**71.3%**
1928	86,069	3,167	4,424	7,591	31,240	22%	0.22	0	0.726	0.144	0.274	0.274	**72.6%**
1929	13,827	1,966	2,752	4,718	4,221	28%	0.28	0	0.601	0.144	0.271	0.271	**72.9%**
1930	30,156	2,656	3,791	6,447	10,328	24%	0.24	0	0.676	0.144	0.274	0.274	**72.6%**
1931	9,237	1,668	2,137	3,805	2,505	31%	0.31	0	0.562	0.144	0.272	0.272	**72.8%**
1932	10,180	992	2,317	3,309	2,857	30%	0.30	0	0.540	0.144	0.262	0.262	**73.8%**
1933	10,007	26	4,468	4,494	2,793	30%	0.30	0	0.592	0.144	0.278	0.278	**72.2%**
1934	14,504	2,200	2,027	4,227	4,474	27%	0.27	0	0.580	0.144	0.264	0.264	**73.6%**
1935	24,996	4,225	7,008	11,233	8,399	25%	0.25	0	0.884	0.144	0.329	0.329	**67.1%**
1936	32,948	4,225	4,438	8,663	11,373	24%	0.24	0	0.773	0.144	0.296	0.296	**70.4%**
1937	37,954	2,601	4,016	6,617	13,245	24%	0.24	0	0.684	0.144	0.273	0.273	**72.7%**
1938	78,637	2,243	3,952	6,195	28,460	22%	0.22	0	0.666	0.144	0.261	0.261	**73.9%**
1939	16,468	2,706	3,980	6,686	5,209	27%	0.27	0	0.687	0.144	0.290	0.290	**71.0%**
1940	59,353	4,225	4,646	8,871	21,248	23%	0.23	0	0.782	0.144	0.290	0.290	**71.0%**
1941	58,569	3,604	3,815	7,419	20,955	23%	0.23	0	0.719	0.144	0.276	0.276	**72.4%**
1942	27,177	3,613	4,007	7,620	9,214	25%	0.25	0	0.727	0.144	0.288	0.288	**71.2%**
1943	64,601	1,851	4,056	5,907	23,211	23%	0.23	0	0.653	0.144	0.260	0.260	**74.0%**
1944	25,179	2,991	4,007	6,998	8,467	25%	0.25	0	0.700	0.144	0.283	0.283	**71.7%**
1945	27,111	3,211	4,135	7,346	9,190	25%	0.25	0	0.715	0.144	0.286	0.286	**71.4%**
1946	23,778	3,628	4,424	8,052	7,943	25%	0.25	0	0.746	0.144	0.296	0.296	**70.4%**
1947	22,184	2,496	3,743	6,239	7,347	25%	0.25	0	0.667	0.144	0.277	0.277	**72.3%**
1948	19,151	4,225	3,409	7,634	6,212	26%	0.26	0	0.728	0.144	0.297	0.297	**70.3%**
1949	41,392	4,225	6,922	11,147	14,531	24%	0.24	0	0.880	0.144	0.318	0.318	**68.2%**
1950	22,192	3,119	5,893	9,012	7,350	25%	0.25	0	0.788	0.144	0.308	0.308	**69.2%**
1951	29,827	3,253	4,685	7,938	10,205	24%	0.24	0	0.741	0.144	0.290	0.290	**71.0%**
1952	57,518	3,385	3,919	7,304	20,562	23%	0.23	0	0.714	0.144	0.275	0.275	**72.5%**
1953	24,971	3,181	4,111	7,292	8,389	25%	0.25	0	0.713	0.144	0.287	0.287	**71.3%**
1954	49,536	3,196	4,635	7,831	17,576	23%	0.23	0	0.737	0.144	0.282	0.282	**71.8%**
1955	14,629	3,069	2,931	6,000	4,521	27%	0.27	0	0.657	0.144	0.285	0.285	**71.5%**
1956	36,754	2,240	4,685	6,925	12,796	24%	0.24	0	0.697	0.144	0.276	0.276	**72.4%**
1957	44,377	3,192	4,497	7,689	15,647	23%	0.23	0	0.730	0.144	0.282	0.282	**71.8%**
1958	93,616	3,644	4,056	7,700	34,062	22%	0.22	0	0.731	0.144	0.275	0.275	**72.5%**
1959	22,671	3,522	3,039	6,561	7,529	25%	0.25	0	0.681	0.144	0.281	0.281	**71.9%**
1960	20,297	3,324	3,903	7,227	6,641	26%	0.26	0	0.710	0.144	0.290	0.290	**71.0%**
1961	20,226	2,912	3,834	6,746	6,615	26%	0.26	0	0.689	0.144	0.285	0.285	**71.5%**
1962	25,841	3,372	4,153	7,525	8,715	25%	0.25	0	0.723	0.144	0.288	0.288	**71.2%**
1963	32,723	3,420	4,455	7,875	11,288	24%	0.24	0	0.738	0.144	0.288	0.288	**71.2%**
1964	16,418	2,997	3,539	6,536	5,190	27%	0.27	0	0.680	0.144	0.288	0.288	**71.2%**
1965	21,211	2,957	4,452	7,409	6,983	26%	0.26	0	0.718	0.144	0.291	0.291	**70.9%**
1966	28,761	3,627	4,424	8,051	9,807	25%	0.25	0	0.746	0.144	0.292	0.292	**70.8%**
1967	54,488	3,210	3,270	6,480	19,429	23%	0.23	0	0.678	0.144	0.267	0.267	**73.3%**
1968	36,789	3,183	4,111	7,294	12,809	24%	0.24	0	0.713	0.144	0.280	0.280	**72.0%**
1969	45,397	2,230	3,236	5,466	16,028	23%	0.23	0	0.634	0.144	0.259	0.259	**74.1%**
1970	35,897	3,107	4,111	7,218	12,475	24%	0.24	0	0.710	0.144	0.280	0.280	**72.0%**
1971	51,739	3,616	4,685	8,301	18,400	23%	0.23	0	0.757	0.144	0.286	0.286	**71.4%**
1972	32,930	3,183	4,490	7,673	11,366	24%	0.24	0	0.730	0.144	0.286	0.286	**71.4%**
1973	47,552	3,552	4,445	7,997	16,834	23%	0.23	0	0.744	0.144	0.284	0.284	**71.6%**
1974	34,465	3,524	4,424	7,948	11,940	24%	0.24	0	0.742	0.144	0.288	0.288	**71.2%**
1975	75,998	3,633	4,644	8,277	27,473	23%	0.23	0	0.756	0.144	0.282	0.282	**71.8%**
1976	18,389	2,059	4,440	6,499	5,927	26%	0.26	0	0.679	0.144	0.285	0.285	**71.5%**
1977	7,358	872	999	1,871	1,802	33%	0.33	0	0.478	0.144	0.253	0.253	**74.7%**
1978	43,971	2,168	3,901	6,069	15,495	23%	0.23	0	0.660	0.144	0.265	0.265	**73.5%**
1979	31,992	3,190	4,007	7,197	11,015	24%	0.24	0	0.709	0.144	0.281	0.281	**71.9%**
1980	36,480	1,853	3,344	5,197	12,694	24%	0.24	0	0.622	0.144	0.258	0.258	**74.2%**
1981	32,579	3,186	4,111	7,297	11,235	24%	0.24	0	0.713	0.144	0.282	0.282	**71.8%**
1982	69,087	2,948	4,629	7,577	24,889	23%	0.23	0	0.725	0.144	0.276	0.276	**72.4%**
1983	81,934	2,216	2,628	4,844	29,693	22%	0.22	0	0.607	0.144	0.248	0.248	**75.2%**
1984	36,581	3,278	4,007	7,285	12,731	24%	0.24	0	0.713	0.144	0.280	0.280	**72.0%**
1985	21,481	3,166	4,636	7,802	7,084	26%	0.26	0	0.735	0.144	0.296	0.296	**70.4%**
1986	72,974	1,585	4,164	5,749	26,342	23%	0.23	0	0.646	0.144	0.258	0.258	**74.2%**
1987	29,660	2,369	4,169	6,538	10,143	24%	0.24	0	0.680	0.144	0.275	0.275	**72.5%**
1988	11,108	2,018	1,798	3,816	3,204	29%	0.29	0	0.562	0.144	0.266	0.266	**73.4%**
1989	41,167	4,225	6,920	11,145	14,446	24%	0.24	0	0.880	0.144	0.318	0.318	**68.2%**
1990	13,978	2,853	2,704	5,557	4,278	28%	0.28	0	0.638	0.144	0.281	0.281	**71.9%**
1991	29,739	4,225	7,762	11,987	10,172	24%	0.24	0	0.917	0.144	0.333	0.333	**66.7%**
1992	20,217	2,003	5,719	7,722	6,611	26%	0.26	0	0.732	0.144	0.296	0.296	**70.4%**

Formulas: Sacramento River Spring Run Young of Year Smolt Survival Model

```
C10 ='Study 467 Flow Data'!C7
D10 ='Study 467 Flow Data'!M7
E10 ='Study 467 Flow Data'!W7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.45*(0.133*C10+829)/(C10-G10))+(0.55*H10)
J10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
K10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*F10)
L10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!D7
R10 ='Study 467 Flow Data'!N7
S10 ='Study 467 Flow Data'!X7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
Y10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*T10)
Z10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!E7
AF10 ='Study 467 Flow Data'!O7
AG10 ='Study 467 Flow Data'!Y7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
AM10 =(-0.5916024)+(0.017968*$BC$2)+(0.0000434*AH10)
AN10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

AS10 ='Study 467 Flow Data'!F7
AT10 ='Study 467 Flow Data'!P7
AU10 ='Study 467 Flow Data'!Z7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$G$2,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BA10 =IF(((-0.5916024)+(0.017968*$BC$3)+(0.0000434*AV10))>1,1,((-0.5916024)+(0.017968*$BC$3)+(0.00004
BB10 =-1.613493+(0.0319584*$BC$3)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =(AZ10+BC10-(AZ10*BC10))
BE10 =1-BD10
```

Study 526A Sacramento River Spring Run YOY Smolt Survival Model (continued)

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

APRIL

Row	Sac River Flows (BG)	CVP (BH)	SWP (BI)	CVP + SWP exports (BJ)	Calculated Sutter & Steamboat Slough Q (BK)	Percent (BL)	X-Channel Closed (BM)	observed temp (BN)	m1 (BO)	m2 (BP)	Calculated Mortality m3 (BQ)	m23 (BR)	m123 (BS)	Calculated Survival s123 (BT)
10	22,927	4,198	4,198	8,396	7,625	25%	0.25	58.5	0.002	0.824	0.256	0.400	0.401	**59.9%**
11	23,597	4,034	4,034	8,068	7,875	25%	0.25	58.3	0.000	0.806	0.250	0.390	0.390	**61.0%**
12	7,857	1,377	1,377	2,754	1,989	32%	0.32	61.5	0.128	0.633	0.352	0.442	0.513	**48.7%**
13	22,570	3,468	3,468	6,936	7,491	25%	0.25	59.1	0.027	0.771	0.275	0.401	0.418	**58.2%**
14	20,254	3,233	3,233	6,466	6,625	26%	0.26	61.6	0.133	0.796	0.355	0.469	0.539	**46.1%**
15	48,222	4,600	5,171	9,771	17,085	23%	0.23	56.8	0.000	0.853	0.202	0.353	0.353	**64.7%**
16	29,212	3,969	3,969	7,938	9,975	25%	0.25	58.7	0.011	0.808	0.262	0.396	0.402	**59.8%**
17	8,866	1,461	1,461	2,922	2,366	31%	0.31	56.3	0.000	0.547	0.186	0.297	0.297	**70.3%**
18	12,751	1,965	1,965	3,930	3,819	28%	0.28	59.6	0.048	0.650	0.291	0.393	0.422	**57.8%**
19	8,996	1,468	1,468	2,936	2,415	31%	0.31	62.8	0.183	0.664	0.393	0.477	0.573	**42.7%**
20	13,087	2,105	3,268	5,373	3,945	28%	0.28	58.9	0.019	0.700	0.269	0.390	0.402	**59.8%**
21	12,582	2,962	1,136	4,098	3,756	28%	0.28	60.1	0.069	0.666	0.307	0.409	0.450	**55.0%**
22	12,864	1,791	1,791	3,582	3,861	28%	0.28	63.6	0.217	0.707	0.419	0.500	0.609	**39.1%**
23	24,080	4,461	5,319	9,780	8,056	25%	0.25	58.9	0.019	0.891	0.269	0.425	0.436	**56.4%**
24	20,781	4,144	4,144	8,288	6,822	26%	0.26	59.7	0.053	0.841	0.294	0.435	0.465	**53.5%**
25	23,257	2,982	4,996	7,978	7,748	25%	0.25	58.8	0.015	0.811	0.266	0.404	0.412	**58.8%**
26	47,172	3,592	4,377	7,969	16,692	23%	0.23	56.3	0.000	0.766	0.186	0.321	0.321	**67.9%**
27	12,103	2,061	2,061	4,122	3,577	29%	0.29	63.3	0.204	0.725	0.409	0.500	0.602	**39.8%**
28	41,731	4,600	5,408	10,008	14,657	24%	0.24	57.4	0.000	0.874	0.221	0.375	0.375	**62.5%**
29	42,372	4,600	4,708	9,308	14,897	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
30	43,228	4,600	5,046	9,646	15,217	23%	0.23	56.5	0.000	0.842	0.192	0.345	0.345	**65.5%**
31	29,406	4,056	5,062	9,118	10,048	24%	0.24	58.8	0.015	0.861	0.266	0.411	0.420	**58.0%**
32	9,062	2,061	2,061	4,122	2,439	31%	0.31	58.4	0.000	0.637	0.253	0.371	0.371	**62.9%**
33	11,726	3,127	3,127	6,254	3,436	29%	0.29	60.6	0.090	0.769	0.323	0.452	0.501	**49.9%**
34	12,226	2,980	2,980	5,960	3,623	29%	0.29	60.7	0.095	0.758	0.326	0.449	0.502	**49.8%**
35	13,911	2,464	2,464	4,928	4,253	28%	0.28	62.5	0.170	0.745	0.384	0.484	0.572	**42.8%**
36	22,904	3,399	3,399	6,798	7,616	25%	0.25	56.6	0.000	0.720	0.195	0.328	0.328	**67.2%**
37	13,321	2,553	2,553	5,106	4,032	28%	0.28	61.7	0.137	0.739	0.358	0.465	0.538	**46.2%**
38	19,531	3,146	3,146	6,292	6,355	26%	0.26	61.3	0.120	0.783	0.346	0.459	0.524	**47.6%**
39	14,732	3,181	3,181	6,362	4,560	27%	0.27	59.9	0.061	0.761	0.301	0.427	0.462	**53.8%**
40	56,648	3,915	4,166	8,081	20,236	23%	0.23	55.5	0.000	0.756	0.160	0.297	0.297	**70.3%**
41	16,288	2,834	2,834	5,668	5,142	27%	0.27	58.8	0.015	0.711	0.266	0.385	0.394	**60.6%**
42	39,868	4,540	4,540	9,080	13,961	24%	0.24	58.4	0.000	0.852	0.253	0.395	0.395	**60.5%**
43	9,584	1,845	1,845	3,690	2,634	30%	0.30	56.4	0.000	0.582	0.189	0.308	0.308	**69.2%**
44	20,548	4,000	4,000	8,000	6,735	26%	0.26	59.7	0.053	0.828	0.294	0.432	0.462	**53.8%**
45	20,975	3,202	3,202	6,404	6,895	26%	0.26	60.5	0.086	0.773	0.320	0.437	0.485	**51.5%**
46	52,284	4,600	5,062	9,662	18,604	23%	0.23	57.4	0.000	0.859	0.221	0.368	0.368	**63.2%**
47	10,366	1,883	1,883	3,766	2,927	30%	0.30	63	0.191	0.704	0.400	0.490	0.588	**41.2%**
48	13,690	397	3,551	3,948	4,170	28%	0.28	59.5	0.044	0.649	0.288	0.388	0.415	**58.5%**
49	12,673	1,761	1,761	3,522	3,790	28%	0.28	60.1	0.069	0.641	0.307	0.402	0.443	**55.7%**
50	11,179	2,455	2,455	4,910	3,231	29%	0.29	61.8	0.141	0.732	0.362	0.469	0.544	**45.6%**
51	69,377	4,600	5,212	9,812	24,997	23%	0.23	53.7	0.000	0.799	0.103	0.260	0.260	**74.0%**
52	9,064	1,765	1,765	3,530	2,440	31%	0.31	59.3	0.036	0.627	0.282	0.388	0.410	**59.0%**
53	45,587	4,333	5,463	9,796	16,100	23%	0.23	56.9	0.000	0.856	0.205	0.357	0.357	**64.3%**
54	16,635	2,801	2,801	5,602	5,271	27%	0.27	61.9	0.145	0.764	0.365	0.472	0.548	**45.2%**
55	39,925	3,765	4,949	8,714	13,982	24%	0.24	53.8	0.000	0.753	0.106	0.259	0.259	**74.1%**
56	15,518	2,616	2,616	5,232	4,854	27%	0.27	61.5	0.128	0.740	0.352	0.457	0.527	**47.3%**
57	44,707	3,571	4,166	7,737	15,770	23%	0.23	56.4	0.000	0.758	0.189	0.322	0.322	**67.8%**
58	16,480	3,289	3,289	6,578	5,214	27%	0.27	58.8	0.015	0.750	0.266	0.396	0.405	**59.5%**
59	21,629	3,272	3,272	6,544	7,139	26%	0.26	58.7	0.011	0.747	0.262	0.386	0.393	**60.7%**
60	12,562	2,358	2,358	4,716	3,748	28%	0.28	58.5	0.002	0.664	0.256	0.372	0.373	**62.7%**
61	19,512	3,725	3,725	7,450	6,347	26%	0.26	61.3	0.120	0.833	0.346	0.472	0.536	**46.4%**
62	33,122	4,600	5,501	10,101	11,438	24%	0.24	56.8	0.000	0.867	0.202	0.362	0.362	**63.8%**
63	25,874	4,600	4,712	9,312	8,727	25%	0.25	56.8	0.000	0.833	0.202	0.359	0.359	**64.1%**
64	9,481	849	2,160	3,009	2,596	30%	0.30	58.9	0.019	0.597	0.269	0.369	0.381	**61.9%**
65	9,145	1,156	1,839	2,995	2,470	31%	0.31	64.3	0.246	0.694	0.441	0.519	0.637	**36.3%**
66	37,948	3,707	4,081	7,788	13,243	24%	0.24	56.9	0.000	0.769	0.205	0.339	0.339	**66.1%**
67	17,813	3,435	3,435	6,870	5,712	26%	0.26	59.8	0.057	0.781	0.298	0.425	0.458	**54.2%**
68	19,818	2,932	3,952	6,884	6,462	26%	0.26	57.1	0.000	0.733	0.211	0.347	0.347	**65.3%**
69	17,108	2,735	2,735	5,470	5,448	27%	0.27	61.5	0.128	0.751	0.352	0.458	0.528	**47.2%**
70	75,838	3,626	5,569	9,195	27,413	23%	0.23	54.1	0.000	0.780	0.115	0.265	0.265	**73.5%**
71	68,301	3,546	3,649	7,195	24,595	23%	0.23	55	0.000	0.709	0.144	0.272	0.272	**72.8%**
72	17,743	3,412	3,412	6,824	5,686	26%	0.26	59.7	0.053	0.777	0.294	0.422	0.453	**54.7%**
73	13,439	2,434	2,434	4,868	4,076	28%	0.28	60.8	0.099	0.712	0.330	0.436	0.492	**50.8%**
74	20,389	2,449	5,203	7,652	6,675	26%	0.26	60.4	0.082	0.826	0.317	0.448	0.493	**50.7%**
75	12,309	308	3,176	3,484	3,654	28%	0.28	65.7	0.305	0.740	0.486	0.559	0.693	**30.7%**
76	8,702	1,431	1,431	2,862	2,305	31%	0.31	59.9	0.061	0.609	0.301	0.396	0.433	**56.7%**
77	23,637	2,825	2,825	5,650	7,890	25%	0.25	61.4	0.124	0.757	0.349	0.452	0.520	**48.0%**
78	12,244	373	3,128	3,501	3,629	29%	0.29	61.6	0.133	0.667	0.355	0.444	0.518	**48.2%**
79	15,374	2,132	2,132	4,264	4,800	27%	0.27	60.8	0.099	0.686	0.330	0.426	0.483	**51.7%**
80	12,491	1,866	1,866	3,732	3,722	28%	0.28	61.2	0.116	0.670	0.342	0.435	0.501	**49.9%**

MAY

Row	Sac River Flows (BV)	CVP (BW)	SWP (BX)	CVP + SWP Exports (BY)	Calculated Steamboat & Sutter Slough Q (BZ)	Percent (CA)	X-channel Closed (CB)	USBR observed temp f (CC)	m1 (CD)	m2 (CE)	Calculated Mortality m3 (CF)	m23 (CG)	m123 (CH)	Calculated Survival s123 (CI)
10	46,218	4,198	5,963	10,161	16,336	23%	0.23	61.2	0.116	0.949	0.342	0.484	0.544	**45.6%**
11	14,346	4,034	3,133	7,167	4,415	63%	0.47	62.4	0.166	0.841	0.381	0.598	0.665	**33.5%**
12	8,526	1,377	773	2,150	2,239	73%	0.54	69.2	0.452	0.745	0.598	0.678	0.823	**17.7%**
13	12,068	3,468	2,527	5,995	3,563	66%	0.49	63.2	0.200	0.804	0.406	0.602	0.682	**31.8%**
14	14,109	3,233	2,487	5,720	4,327	64%	0.47	65.7	0.305	0.837	0.486	0.653	0.759	**24.1%**
15	26,781	4,600	4,274	8,874	9,066	25%	0.25	62.6	0.175	0.918	0.387	0.519	0.603	**39.7%**
16	20,730	3,969	3,396	7,365	6,803	59%	0.44	66.6	0.343	0.925	0.515	0.695	0.799	**20.1%**
17	9,681	1,461	115	1,576	2,671	70%	0.52	66.1	0.322	0.664	0.499	0.585	0.719	**28.1%**
18	12,033	1,965	1,774	3,739	3,550	66%	0.49	63.1	0.196	0.704	0.403	0.552	0.639	**36.1%**
19	10,100	1,468	1,605	3,073	2,827	69%	0.52	70.5	0.507	0.809	0.640	0.727	0.865	**13.5%**
20	12,024	2,105	2,418	4,523	3,547	66%	0.49	65.5	0.297	0.782	0.480	0.629	0.739	**26.1%**
21	7,556	2,962	1,080	4,042	1,876	76%	0.56	63.7	0.221	0.728	0.422	0.594	0.684	**31.6%**
22	8,907	1,791	1,489	3,280	2,381	72%	0.53	68.3	0.414	0.778	0.569	0.681	0.813	**18.7%**
23	28,817	4,461	2,661	7,122	9,828	25%	0.25	64	0.234	0.867	0.432	0.539	0.646	**35.4%**
24	14,238	4,144	3,170	7,314	4,375	63%	0.47	64.9	0.271	0.892	0.461	0.665	0.756	**24.4%**
25	16,211	2,982	4,087	7,069	5,113	62%	0.46	64.5	0.255	0.874	0.448	0.644	0.735	**26.5%**
26	57,429	3,592	5,445	9,037	20,528	23%	0.23	62.5	0.170	0.924	0.384	0.508	0.592	**40.8%**
27	8,584	2,061	1,739	3,800	2,260	73%	0.54	68	0.402	0.795	0.560	0.687	0.813	**18.7%**
28	18,419	4,600	3,244	7,844	5,939	60%	0.45	65.6	0.301	0.928	0.483	0.682	0.778	**22.2%**
29	39,485	4,600	5,119	9,719	13,817	24%	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**
30	36,037	4,600	5,963	10,563	12,528	24%	0.24	60.1	0.069	0.947	0.307	0.460	0.498	**50.2%**
31	20,274	4,056	4,184	8,240	6,632	59%	0.44	65.4	0.292	0.941	0.477	0.681	0.774	**22.6%**
32	10,052	2,061	1,973	4,034	2,809	70%	0.52	65.9	0.313	0.768	0.493	0.635	0.749	**25.1%**
33	11,674	3,127	2,480	5,607	3,416	67%	0.50	63.1	0.196	0.786	0.403	0.593	0.673	**32.7%**
34	13,709	2,980	2,638	5,618	4,177	64%	0.48	63.9	0.229	0.800	0.429	0.606	0.696	**30.4%**
35	8,985	2,464	1,747	4,211	2,410	72%	0.53	68.7	0.431	0.826	0.582	0.712	0.836	**16.4%**
36	23,972	3,399	3,552	6,951	8,016	57%	0.43	62.3	0.162	0.829	0.378	0.571	0.640	**36.0%**
37	14,914	2,553	2,109	4,662	4,628	63%	0.47	65.2	0.284	0.782	0.470	0.616	0.725	**27.5%**
38	15,648	3,146	2,801	5,947	4,902	62%	0.46	64.3	0.246	0.822	0.441	0.618	0.712	**28.8%**
39	18,870	3,181	3,568	6,749	6,107	60%	0.45	64.4	0.250	0.858	0.445	0.629	0.722	**27.8%**
40	59,563	3,915	5,270	9,185	21,327	23%	0.23	61.7	0.137	0.916	0.358	0.486	0.556	**44.4%**
41	27,013	2,834	3,866	6,700	9,153	25%	0.25	60.9	0.103	0.793	0.333	0.447	0.504	**49.6%**
42	25,700	4,540	4,489	9,029	8,662	25%	0.25	65.9	0.313	0.984	0.493	0.615	0.736	**26.4%**
43	11,417	1,845	1,990	3,835	3,320	67%	0.50	66.9	0.356	0.777	0.525	0.651	0.775	**22.5%**
44	38,837	4,000	6,056	10,056	13,575	24%	0.24	61.4	0.124	0.948	0.349	0.491	0.554	**44.6%**
45	17,165	3,202	3,013	6,215	5,470	61%	0.45	64	0.234	0.829	0.432	0.612	0.703	**29.7%**
46	43,486	4,600	6,083	10,683	15,314	23%	0.23	62.9	0.187	1.000	0.397	0.538	0.625	**37.5%**
47	9,319	1,883	1,834	3,717	2,535	71%	0.53	65.9	0.313	0.754	0.493	0.631	0.746	**25.4%**
48	11,060	397	1,693	2,090	3,186	68%	0.50	65.9	0.313	0.683	0.493	0.589	0.718	**28.2%**
49	8,720	1,761	1,455	3,216	2,311	72%	0.54	64.3	0.246	0.703	0.441	0.582	0.685	**31.5%**
50	15,322	2,455	2,429	4,884	4,780	62%	0.47	64.8	0.267	0.785	0.457	0.610	0.714	**28.6%**
51	29,094	4,600	4,724	9,324	9,931	25%	0.25	62.5	0.170	0.936	0.384	0.519	0.601	**39.9%**
52	11,187	1,765	1,953	3,718	3,234	67%	0.50	65.2	0.284	0.741	0.470	0.606	0.718	**28.2%**
53	24,892	4,333	5,184	9,517	8,360	57%	0.42	63.6	0.217	0.964	0.419	0.651	0.726	**27.4%**
54	14,555	2,801	2,352	5,153	4,494	63%	0.47	67.3	0.372	0.841	0.537	0.680	0.799	**20.1%**
55	44,790	3,765	5,445	9,210	15,801	23%	0.23	62.1	0.154	0.924	0.371	0.501	0.577	**42.3%**
56	9,524	2,616	1,840	4,456	2,612	71%	0.52	66.1	0.322	0.789	0.499	0.651	0.764	**23.6%**
57	45,533	3,571	5,026	8,597	16,079	23%	0.23	63.2	0.200	0.917	0.406	0.526	0.620	**38.0%**
58	12,300	3,289	2,971	6,260	3,650	66%	0.49	68.6	0.427	0.913	0.579	0.743	0.852	**14.8%**
59	29,874	3,272	4,132	7,404	10,223	24%	0.24	61	0.107	0.826	0.336	0.456	0.514	**48.6%**
60	10,807	2,358	1,942	4,300	3,092	68%	0.51	67.3	0.372	0.804	0.537	0.673	0.795	**20.5%**
61	15,751	3,725	3,255	6,980	4,941	62%	0.46	66.9	0.356	0.913	0.525	0.705	0.810	**19.0%**
62	26,945	4,600	4,615	9,215	9,127	25%	0.25	63.4	0.208	0.947	0.413	0.545	0.640	**36.0%**
63	28,435	4,600	4,917	9,517	9,685	25%	0.25	63.8	0.225	0.968	0.425	0.559	0.658	**34.2%**
64	9,918	849	1,554	2,403	2,759	70%	0.52	69.6	0.469	0.763	0.611	0.690	0.835	**16.5%**
65	7,056	1,156	447	1,603	1,689	77%	0.57	64	0.234	0.628	0.432	0.544	0.651	**34.9%**
66	21,056	3,707	4,110	7,817	6,925	58%	0.44	63	0.191	0.880	0.400	0.610	0.684	**31.6%**
67	12,459	3,435	2,990	6,425	3,710	66%	0.49	63.8	0.225	0.834	0.425	0.625	0.709	**29.1%**
68	14,921	2,932	4,001	6,933	4,630	63%	0.47	63.6	0.217	0.852	0.419	0.622	0.704	**29.6%**
69	8,897	2,735	1,765	4,500	2,377	72%	0.54	66.7	0.347	0.802	0.518	0.670	0.785	**21.5%**
70	38,429	3,626	6,845	10,471	13,422	24%	0.24	61.1	0.112	0.961	0.339	0.487	0.544	**45.6%**
71	54,514	3,546	3,590	7,136	19,438	23%	0.23	60.1	0.069	0.798	0.307	0.420	0.461	**53.9%**
72	13,720	3,412	3,094	6,506	4,181	64%	0.48	66.5	0.339	0.886	0.512	0.690	0.795	**20.5%**
73	13,139	2,434	2,121	4,555	3,964	65%	0.48	65.8	0.309	0.789	0.489	0.634	0.747	**25.3%**
74	13,272	2,449	5,214	7,663	4,014	65%	0.48	66.2	0.326	0.930	0.502	0.708	0.803	**19.7%**
75	8,467	308	1,420	1,728	2,217	73%	0.54	70.5	0.507	0.750	0.640	0.700	0.852	**14.8%**
76	9,741	1,431	1,072	2,503	2,693	70%	0.52	65.8	0.309	0.699	0.489	0.599	0.723	**27.7%**
77	14,358	2,825	1,974	4,799	4,420	63%	0.47	64.7	0.263	0.779	0.454	0.608	0.711	**28.9%**
78	7,778	373	1,378	1,751	1,959	75%	0.56	66.4	0.335	0.677	0.509	0.603	0.736	**26.4%**
79	8,807	2,132	1,421	3,553	2,344	72%	0.54	65.7	0.305	0.743	0.486	0.624	0.739	**26.1%**
80	9,001	1,866	1,505	3,371	2,416	72%	0.53	66	0.318	0.741	0.496	0.626	0.745	**25.5%**

JUNE

Row	Sac River Flow (CK)	CVP (CL)	SWP (CM)	CVP + SWP exports (CN)	Caculated Steamboat & Sutter Slough Q (CO)	percent (CP)	X-channel closed (CQ)	USBR observed temp f (CR)	m1 (CS)	m2 (CT)	Calculated Mortality m3 (CU)	m23 (CV)	m123 (CW)	Calculated Survival s123 (CX)	Weighted Total Survival (CZ)
10	34,719	4,600	8,157	12,757	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**	**63.85%**
11	18,383	4,270	3,431	7,701	5,925	60%	0.45	65.3	0.288	0.916	0.473	0.672	0.766	**23.4%**	**62.79%**
12	10,414	261	915	1,176	2,945	69%	0.51	70.6	0.511	0.728	0.643	0.686	0.847	**15.3%**	**56.18%**
13	16,480	3,495	2,833	6,328	5,214	61%	0.46	68.3	0.414	0.910	0.569	0.726	0.839	**16.1%**	**59.70%**
14	15,307	3,551	2,553	6,104	4,775	62%	0.47	71.2	0.536	0.953	0.662	0.797	0.906	**9.4%**	**54.48%**
15	18,991	4,600	3,779	8,379	6,153	60%	0.45	68.1	0.406	0.996	0.563	0.756	0.855	**14.5%**	**63.43%**
16	13,897	3,024	2,710	5,734	4,247	64%	0.48	69.7	0.473	0.910	0.614	0.755	0.871	**12.9%**	**59.78%**
17	10,840	2,870	94	2,964	3,104	68%	0.51	70.1	0.490	0.797	0.627	0.713	0.854	**14.6%**	**62.98%**
18	18,278	4,274	2,734	7,008	5,886	60%	0.45	69.6	0.469	0.963	0.611	0.769	0.877	**12.3%**	**61.02%**
19	13,484	2,481	1,815	4,296	4,093	64%	0.48	70.7	0.515	0.865	0.646	0.751	0.879	**12.1%**	**54.04%**
20	19,675	3,599	4,234	7,833	6,408	59%	0.44	69.5	0.465	0.997	0.608	0.780	0.882	**11.8%**	**59.52%**
21	10,485	1,495	93	1,588	2,971	69%	0.51	69.8	0.478	0.731	0.617	0.676	0.831	**16.9%**	**59.85%**
22	16,145	4,504	1,724	6,228	5,088	62%	0.46	70.7	0.515	0.949	0.646	0.785	0.896	**10.4%**	**53.81%**
23	17,902	4,095	3,561	7,656	5,745	60%	0.45	71	0.528	1.000	0.656	0.811	0.911	**8.9%**	**59.06%**
24	19,216	4,600	3,413	8,013	6,237	59%	0.44	69.2	0.452	1.000	0.598	0.777	0.878	**12.2%**	**56.60%**
25	17,724	2,467	4,568	7,035	5,679	60%	0.45	69.7	0.473	0.966	0.614	0.773	0.880	**12.0%**	**59.63%**
26	35,517	4,600	7,269	11,869	12,333	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**66.63%**
27	18,585	4,310	3,083	7,393	6,001	60%	0.45	71	0.528	1.000	0.656	0.810	0.910	**9.0%**	**53.87%**
28	15,462	4,066	3,154	7,220	4,833	62%	0.46	71.5	0.549	1.000	0.672	0.824	0.921	**7.9%**	**58.96%**
29	21,005	4,600	6,367	10,967	6,906	58%	0.44	69	0.444	1.000	0.592	0.770	0.872	**12.8%**	**64.45%**
30	27,117	4,600	7,777	12,377	9,192	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**	**66.74%**
31	16,964	4,600	3,181	7,781	5,395	61%	0.46	66.6	0.343	0.943	0.515	0.710	0.809	**19.1%**	**60.99%**
32	17,912	4,065	3,174	7,239	5,749	60%	0.45	67.8	0.393	0.941	0.553	0.728	0.835	**16.5%**	**61.49%**
33	16,939	3,410	3,859	7,269	5,385	61%	0.46	70.6	0.511	0.992	0.643	0.802	0.903	**9.7%**	**58.30%**
34	16,518	3,352	3,698	7,050	5,228	61%	0.46	68.1	0.406	0.938	0.563	0.735	0.842	**15.8%**	**58.63%**
35	18,814	4,301	2,955	7,256	6,086	60%	0.45	70	0.486	0.981	0.624	0.783	0.889	**11.1%**	**54.02%**
36	22,981	4,600	4,430	9,030	7,645	58%	0.43	69	0.444	1.000	0.592	0.767	0.871	**12.9%**	**63.13%**
37	15,423	3,356	2,508	5,864	4,818	62%	0.46	70.9	0.524	0.937	0.652	0.785	0.897	**10.3%**	**55.16%**
38	20,434	4,600	3,582	8,182	6,692	59%	0.44	68.9	0.440	1.000	0.588	0.769	0.871	**12.9%**	**55.47%**
39	17,738	4,600	2,859	7,459	5,684	60%	0.45	70.3	0.499	0.995	0.633	0.797	0.898	**10.2%**	**59.15%**
40	38,968	4,600	6,896	11,496	13,624	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**	**67.97%**
41	26,082	4,600	5,850	10,450	8,805	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**	**65.50%**
42	14,462	3,331	2,783	6,114	4,459	63%	0.47	68.7	0.431	0.908	0.582	0.736	0.850	**15.0%**	**61.06%**
43	18,189	4,045	3,062	7,107	5,853	60%	0.45	70.1	0.490	0.976	0.627	0.784	0.890	**11.0%**	**61.88%**
44	22,288	4,600	6,804	11,404	7,386	58%	0.43	68.7	0.431	1.000	0.582	0.763	0.865	**13.5%**	**62.48%**
45	17,681	3,824	3,493	7,317	5,663	60%	0.45	72	0.570	1.000	0.688	0.829	0.926	**7.4%**	**58.65%**
46	33,938	4,600	7,447	12,047	11,743	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**	**64.30%**
47	17,984	4,191	3,031	7,222	5,776	60%	0.45	72.1	0.574	1.000	0.691	0.830	0.928	**7.2%**	**55.68%**
48	18,114	4,342	2,680	7,022	5,825	60%	0.45	72.7	0.600	1.000	0.710	0.840	0.936	**6.4%**	**58.40%**
49	20,190	4,592	3,110	7,702	6,601	59%	0.44	73.2	0.621	1.000	0.726	0.847	0.942	**5.8%**	**58.11%**
50	17,232	3,907	2,943	6,850	5,495	61%	0.45	70.4	0.503	0.971	0.636	0.788	0.895	**10.5%**	**55.76%**
51	19,705	4,600	4,070	8,670	6,420	59%	0.44	69	0.444	1.000	0.592	0.772	0.873	**12.7%**	**65.87%**
52	17,595	4,083	2,780	6,863	5,631	61%	0.45	69.5	0.465	0.955	0.608	0.765	0.874	**12.6%**	**60.23%**
53	18,258	4,600	3,746	8,346	5,878	60%	0.45	67.1	0.364	0.976	0.531	0.731	0.829	**17.1%**	**61.46%**
54	15,685	3,644	2,647	6,291	4,916	62%	0.46	70.4	0.503	0.946	0.636	0.780	0.891	**10.9%**	**55.47%**
55	39,345	4,600	7,269	11,869	13,765	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**	**68.39%**
56	17,331	4,202	2,810	7,012	5,532	61%	0.45	72	0.570	1.000	0.688	0.829	0.927	**7.3%**	**56.94%**
57	24,130	4,600	6,643	11,243	8,075	57%	0.43	68.3	0.414	1.000	0.569	0.753	0.855	**14.5%**	**65.61%**
58	15,754	4,226	2,662	6,888	4,942	62%	0.46	70.7	0.515	0.978	0.646	0.799	0.903	**9.7%**	**59.10%**
59	23,831	4,600	5,103	9,703	7,963	57%	0.43	68.1	0.406	1.000	0.563	0.750	0.851	**14.9%**	**64.43%**
60	17,152	4,094	2,728	6,822	5,465	61%	0.45	70.7	0.515	0.975	0.646	0.795	0.901	**9.9%**	**59.91%**
61	19,679	2,475	5,665	8,140	6,410	59%	0.44	70.1	0.490	1.000	0.627	0.792	0.894	**10.6%**	**56.22%**
62	21,819	4,600	4,998	9,598	7,210	58%	0.43	69.7	0.473	1.000	0.614	0.782	0.885	**11.5%**	**63.17%**
63	24,787	4,600	7,019	11,619	8,320	57%	0.43	69.1	0.448	1.000	0.595	0.767	0.871	**12.9%**	**63.03%**
64	19,439	4,476	2,951	7,427	6,320	59%	0.44	71.8	0.562	1.000	0.681	0.823	0.922	**7.8%**	**59.00%**
65	9,547	42	361	403	2,621	71%	0.52	73.9	0.650	0.754	0.748	0.751	0.913	**8.7%**	**57.14%**
66	16,219	4,600	3,816	8,416	5,116	62%	0.46	70	0.486	1.000	0.624	0.797	0.896	**10.4%**	**63.29%**
67	19,736	2,854	5,305	8,159	6,431	59%	0.44	69.2	0.452	1.000	0.598	0.776	0.877	**12.3%**	**59.87%**
68	16,371	4,600	4,103	8,703	5,173	61%	0.46	66.9	0.356	0.988	0.525	0.737	0.831	**16.9%**	**63.95%**
69	18,021	4,278	2,895	7,173	5,790	60%	0.45	71.9	0.566	1.000	0.684	0.826	0.925	**7.5%**	**56.43%**
70	24,415	4,600	8,038	12,638	8,181	57%	0.43	66	0.318	1.000	0.496	0.711	0.803	**19.7%**	**68.13%**
71	55,568	4,600	4,685	9,285	19,832	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**	**71.61%**
72	18,662	4,433	3,396	7,829	6,030	60%	0.45	68.4	0.419	0.977	0.572	0.753	0.857	**14.3%**	**59.20%**
73	16,737	3,912	2,654	6,566	5,310	61%	0.46	69.4	0.461	0.940	0.604	0.758	0.869	**13.1%**	**57.59%**
74	14,240	4,449	3,878	8,327	4,376	63%	0.47	71.6	0.553	1.000	0.675	0.829	0.923	**7.7%**	**56.92%**
75	20,396	4,600	3,170	7,770	6,678	59%	0.44	73.2	0.621	1.000	0.726	0.846	0.942	**5.8%**	**50.99%**
76	13,720	4,046	640	4,686	4,181	64%	0.48	69.4	0.461	0.859	0.604	0.726	0.852	**14.8%**	**59.89%**
77	16,690	3,977	2,547	6,524	5,292	61%	0.46	68.6	0.427	0.924	0.579	0.737	0.849	**15.1%**	**57.38%**
78	17,220	4,487	2,101	6,588	5,490	61%	0.45	68.5	0.423	0.925	0.576	0.734	0.847	**15.3%**	**57.07%**
79	10,509	1,574	1,433	3,007	2,980	69%	0.51	69.4	0.461	0.786	0.604	0.697	0.837	**16.3%**	**58.12%**
80	16,542	4,253	2,179	6,432	5,237	61%	0.46	69	0.444	0.927	0.592	0.745	0.858	**14.2%**	**56.69%**
81														**Average**	**60.09%**

BG10 ='Study 467 Flow Data'!G7
BH10 ='Study 467 Flow Data'!Q7
BI10 ='Study 467 Flow Data'!AA7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$G$2,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10
BO10 =IF((-2.45925+(0.0420748*BN10))<0,0,(-2.45925+(0.0420748*BN10)))
BP10 =IF(((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10))>1,1,((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ1
BQ10 =-1.613493+(0.0319584*BN10)
BR10 =(BP10*BM10)+(BQ10*(1-BM10))
BS10 =BO10+BR10-(BO10*BR10)
BT10 =1-BS10

BV10 ='Study 467 Flow Data'!H7
BW10 ='Study 467 Flow Data'!R7
BX10 ='Study 467 Flow Data'!AB7
BY10 =(BW10+BX10)
BZ10 =0.374*BV10-950
CA10 =IF(BV10>$K$4,(0.133*BV10+829)/(BV10-BZ10),(0.293*BV10+2090)/(BV10-BZ10))
CB10 =(0.45*(0.133*BV10+829)/(BV10-BZ10))+(0.55*CA10)
CC10
CD10 =IF((-2.45925+(0.0420748*CC10))<0,0,(-2.45925+(0.0420748*CC10)))
CE10 =IF(((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10))>1,1,((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10)))
CF10 =-1.613493+(0.0319584*CC10)
CG10 =(CE10*CB10)+(CF10*(1-CB10))
CH10 =CD10+CG10-(CD10*CG10)
CI10 =1-CH10

CK10 ='Study 467 Flow Data'!I7
CL10 ='Study 467 Flow Data'!S7
CM10 ='Study 467 Flow Data'!AC7
CN10 =(CL10+CM10)
CO10 =0.374*CK10-950
CP10 =IF(CK10>$K$4,(0.133*CK10+829)/(CK10-CO10),(0.293*CK10+2090)/(CK10-CO10))
CQ10 =(0.45*(0.133*CK10+829)/(CK10-CO10))+(0.55*CP10)
CR10
CS10 =IF((-2.45925+(0.0420748*CR10))<0,0,(-2.45925+(0.0420748*CR10)))
CT10 =IF(((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10))>1,1,((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10)))
CU10 =-1.613493+(0.0319584*CR10)
CV10 =(CT10*CQ10)+(CU10*(1-CQ10))
CW10 =CS10+CV10-(CS10*CV10)
CX10 =1-CW10
CZ10 =(0.01*O10)+(0.06*AC10)+(0.17*AQ10)+(0.28*BE10)+(0.25*BT10)+(0.16*CI10)+(0.07*CX10)

Study 634 Sacramento River Spring Run YOY Smolt Survival Model

Modified m2 by changing the slope to 0.0000434

Cross Channel closed for 45 consecutive days, Dec 18-Jan 31

Cross Channel Closed when Sacramento River flow exceeds 25,000 cfs

December Sacramento River Temp: 47 degrees F

January Sacramento River Temp: 47 degrees F

Cross Channel Closed Over 25000 cfs

Cross Channel Closed Feb to Apr when DOI greater than 12,000 cfs

February Water Temp 50 F

March Water Temp 55 F

DECEMBER

Year	Water Year Type	Sac River Flows	CVP	SWP	SWP+CVP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	A	17,143	4,207	7,115	11,322	5,461	61%	0.45	0	0.744	0.000	0.338	0.338	**66.2%**
1923	B	34,069	4,207	5,427	9,634	11,792	24%	0.24	0	0.671	0.000	0.161	0.161	**83.9%**
1924	C	13,681	3,785	6,570	10,355	4,167	64%	0.48	0	0.702	0.000	0.336	0.336	**66.4%**
1925	D	11,248	4,207	4,906	9,113	3,257	67%	0.50	0	0.648	0.000	0.325	0.325	**67.5%**
1926	D	12,688	4,207	2,718	6,925	3,795	65%	0.49	0	0.553	0.000	0.269	0.269	**73.1%**
1927	W	14,304	4,207	7,009	11,216	4,400	63%	0.47	0	0.740	0.000	0.350	0.350	**65.0%**
1928	A	16,574	4,207	6,464	10,671	5,249	61%	0.46	0	0.716	0.000	0.328	0.328	**67.2%**
1929	C	13,461	4,207	6,124	10,331	4,084	64%	0.48	0	0.701	0.000	0.336	0.336	**66.4%**
1930	D	14,442	4,207	6,331	10,538	4,451	63%	0.47	0	0.710	0.000	0.335	0.335	**66.5%**
1931	C	9,339	2,224	3,004	5,228	2,543	71%	0.53	0	0.480	0.000	0.253	0.253	**74.7%**
1932	D	14,650	4,207	7,207	11,414	4,529	63%	0.47	0	0.748	0.000	0.352	0.352	**64.8%**
1933	C	8,130	2,064	2,485	4,549	2,091	74%	0.55	0	0.450	0.000	0.247	0.247	**75.3%**
1934	C	12,474	4,207	5,551	9,758	3,715	66%	0.49	0	0.676	0.000	0.330	0.330	**67.0%**
1935	B	8,503	3,258	3,428	6,686	2,230	73%	0.54	0	0.543	0.000	0.294	0.294	**70.6%**
1936	B	11,625	4,207	4,100	8,307	3,398	67%	0.50	0	0.613	0.000	0.305	0.305	**69.5%**
1937	B	12,218	4,207	5,468	9,675	3,620	66%	0.49	0	0.673	0.000	0.330	0.330	**67.0%**
1938	W	43,461	4,207	7,553	11,760	15,304	23%	0.23	0	0.763	0.000	0.179	0.179	**82.1%**
1939	D	18,684	4,207	3,735	7,942	6,038	60%	0.45	0	0.598	0.000	0.267	0.267	**73.3%**
1940	A	7,841	1,524	2,752	4,276	1,983	75%	0.56	0	0.438	0.000	0.244	0.244	**75.6%**
1941	W	37,244	4,207	7,371	11,578	12,979	24%	0.24	0	0.755	0.000	0.180	0.180	**82.0%**
1942	W	65,619	4,207	3,608	7,815	23,592	23%	0.23	0	0.592	0.000	0.135	0.135	**86.5%**
1943	W	28,806	4,207	3,779	7,986	9,823	25%	0.25	0	0.599	0.000	0.147	0.147	**85.3%**
1944	D	13,774	4,207	6,678	10,885	4,201	64%	0.48	0	0.725	0.000	0.346	0.346	**65.4%**
1945	B	15,826	4,207	6,999	11,206	4,969	62%	0.46	0	0.739	0.000	0.342	0.342	**65.8%**
1946	B	52,999	4,207	7,592	11,799	18,872	23%	0.23	0	0.765	0.000	0.177	0.177	**82.3%**
1947	D	18,132	4,207	7,111	11,318	5,831	60%	0.45	0	0.744	0.000	0.335	0.335	**66.5%**
1948	B	9,379	2,440	3,099	5,539	2,558	71%	0.53	0	0.493	0.000	0.260	0.260	**74.0%**
1949	D	15,563	4,207	6,915	11,122	4,871	62%	0.46	0	0.736	0.000	0.341	0.341	**65.9%**
1950	B	11,679	4,207	3,059	7,266	3,418	67%	0.50	0	0.568	0.000	0.282	0.282	**71.8%**
1951	A	68,100	4,207	7,592	11,799	24,519	23%	0.23	0	0.765	0.000	0.174	0.174	**82.6%**
1952	W	45,041	4,207	7,139	11,346	15,895	23%	0.23	0	0.745	0.000	0.174	0.174	**82.6%**
1953	W	42,331	4,207	3,742	7,949	14,882	24%	0.24	0	0.598	0.000	0.141	0.141	**85.9%**
1954	A	14,919	4,207	3,897	8,104	4,630	63%	0.47	0	0.605	0.000	0.283	0.283	**71.7%**
1955	D	26,020	4,207	6,941	11,148	8,781	25%	0.25	0	0.737	0.000	0.183	0.183	**81.7%**
1956	W	25,204	4,207	7,592	11,799	8,476	25%	0.25	0	0.765	0.000	0.191	0.191	**80.9%**
1957	A	14,143	4,207	6,004	10,211	4,339	64%	0.47	0	0.696	0.000	0.330	0.330	**67.0%**
1958	W	23,752	4,207	6,960	11,167	7,933	57%	0.43	0	0.738	0.000	0.316	0.316	**68.4%**
1959	B	14,627	4,207	3,852	8,059	4,520	63%	0.47	0	0.603	0.000	0.284	0.284	**71.6%**
1960	D	10,482	3,789	2,791	6,580	2,970	69%	0.51	0	0.538	0.000	0.275	0.275	**72.5%**
1961	D	18,000	4,207	6,906	11,113	5,782	60%	0.45	0	0.735	0.000	0.331	0.331	**66.9%**
1962	B	16,256	4,207	6,888	11,095	5,130	62%	0.46	0	0.734	0.000	0.338	0.338	**66.2%**
1963	W	27,555	4,207	6,908	11,115	9,356	25%	0.25	0	0.735	0.000	0.182	0.182	**81.8%**
1964	D	14,847	4,207	5,461	9,668	4,603	63%	0.47	0	0.672	0.000	0.315	0.315	**68.5%**
1965	W	28,871	4,207	7,365	11,572	9,848	25%	0.25	0	0.755	0.000	0.185	0.185	**81.5%**
1966	B	16,997	4,207	6,969	11,176	5,407	61%	0.46	0	0.738	0.000	0.336	0.336	**66.4%**
1967	W	36,255	4,207	7,151	11,358	12,609	24%	0.24	0	0.746	0.000	0.178	0.178	**82.2%**
1968	B	16,692	3,360	3,735	7,095	5,293	61%	0.46	0	0.561	0.000	0.256	0.256	**74.4%**
1969	W	24,593	4,207	7,001	11,208	8,248	57%	0.43	0	0.739	0.000	0.315	0.315	**68.5%**
1970	W	50,159	4,207	3,481	7,688	17,809	23%	0.23	0	0.587	0.000	0.136	0.136	**86.4%**
1971	W	53,904	4,207	7,258	11,465	19,210	23%	0.23	0	0.750	0.000	0.173	0.173	**82.7%**
1972	B	19,914	4,207	6,969	11,176	6,498	59%	0.44	0	0.738	0.000	0.326	0.326	**67.4%**
1973	A	26,198	4,207	6,933	11,140	8,848	25%	0.25	0	0.736	0.000	0.183	0.183	**81.7%**
1974	W	61,593	4,207	7,176	11,383	22,086	23%	0.23	0	0.747	0.000	0.171	0.171	**82.9%**
1975	W	17,619	4,207	4,302	8,509	5,640	61%	0.45	0	0.622	0.000	0.281	0.281	**71.9%**
1976	C	16,774	4,207	5,619	9,826	5,323	61%	0.46	0	0.679	0.000	0.310	0.310	**69.0%**
1977	C	8,034	1,812	3,016	4,828	2,055	74%	0.55	0	0.462	0.000	0.255	0.255	**74.5%**
1978	A	12,285	4,207	5,516	9,723	3,645	66%	0.49	0	0.675	0.000	0.331	0.331	**66.9%**
1979	B	13,859	4,207	3,694	7,901	4,233	64%	0.48	0	0.596	0.000	0.284	0.284	**71.6%**
1980	A	20,332	4,207	7,018	11,225	6,654	59%	0.44	0	0.740	0.000	0.326	0.326	**67.4%**
1981	D	15,611	4,207	4,092	8,299	4,889	62%	0.46	0	0.613	0.000	0.284	0.284	**71.6%**
1982	W	68,137	4,207	6,972	11,179	24,533	23%	0.23	0	0.738	0.000	0.167	0.167	**83.3%**
1983	W	55,416	4,207	4,428	8,635	19,776	23%	0.23	0	0.628	0.000	0.144	0.144	**85.6%**
1984	W	82,951	2,994	3,104	6,098	30,074	22%	0.22	0	0.518	0.000	0.116	0.116	**88.4%**
1985	D	23,880	4,207	6,126	10,333	7,981	57%	0.43	0	0.701	0.000	0.300	0.300	**70.0%**
1986	W	15,722	4,207	6,974	11,181	4,930	62%	0.46	0	0.738	0.000	0.342	0.342	**65.8%**
1987	D	13,429	4,207	6,099	10,306	4,072	64%	0.48	0	0.700	0.000	0.336	0.336	**66.4%**
1988	C	15,842	4,207	6,898	11,105	4,975	62%	0.46	0	0.735	0.000	0.340	0.340	**66.0%**
1989	D	9,294	3,249	3,528	6,777	2,526	71%	0.53	0	0.547	0.000	0.289	0.289	**71.1%**
1990	C	14,594	4,207	6,202	10,409	4,508	63%	0.47	0	0.705	0.000	0.332	0.332	**66.8%**
1991	C	8,669	1,644	3,115	4,759	2,292	73%	0.54	0	0.459	0.000	0.248	0.248	**75.2%**
1992	C	7,455	2,980	1,623	4,603	1,838	76%	0.56	0	0.453	0.000	0.255	0.255	**74.5%**

JANUARY

Year	Sac River Flows	CVP	SWP	CVP+SWP exports	Calculated Steamboat & Sutter Slough Q	percent	xchannel closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	17,504	4,207	7,594	11,801	5,596	61%	0.27	0	0.765	0.000	0.203	0.203	**79.7%**
1923	32,280	4,207	3,638	7,845	11,123	24%	0.24	0	0.593	0.000	0.144	0.144	**85.6%**
1924	14,620	4,207	6,773	10,980	4,518	63%	0.27	0	0.729	0.000	0.200	0.200	**80.0%**
1925	10,200	3,567	3,164	6,731	2,865	69%	0.30	0	0.545	0.000	0.162	0.162	**83.8%**
1926	18,519	4,207	7,134	11,341	5,976	60%	0.26	0	0.745	0.000	0.196	0.196	**80.4%**
1927	29,956	4,207	7,277	11,484	10,254	24%	0.24	0	0.751	0.000	0.184	0.184	**81.6%**
1928	25,207	4,207	3,637	7,844	8,477	25%	0.25	0	0.593	0.000	0.148	0.148	**85.2%**
1929	15,016	4,207	6,894	11,101	4,666	63%	0.27	0	0.735	0.000	0.201	0.201	**79.9%**
1930	20,771	4,207	7,102	11,309	6,818	59%	0.26	0	0.744	0.000	0.191	0.191	**80.9%**
1931	11,965	4,207	4,877	9,084	3,525	66%	0.29	0	0.647	0.000	0.186	0.186	**81.4%**
1932	17,253	4,207	7,832	12,039	5,503	61%	0.27	0	0.775	0.000	0.206	0.206	**79.4%**
1933	12,102	4,207	5,434	9,641	3,576	66%	0.29	0	0.671	0.000	0.192	0.192	**80.8%**
1934	16,103	4,207	7,098	11,305	5,073	62%	0.27	0	0.744	0.000	0.200	0.200	**80.0%**
1935	25,471	4,207	7,671	11,878	8,576	25%	0.25	0	0.768	0.000	0.192	0.192	**80.8%**
1936	32,125	4,207	7,456	11,663	11,065	24%	0.24	0	0.759	0.000	0.184	0.184	**81.6%**
1937	15,717	4,207	7,597	11,804	4,928	62%	0.27	0	0.765	0.000	0.207	0.207	**79.3%**
1938	31,443	4,207	3,760	7,967	10,810	24%	0.24	0	0.599	0.000	0.145	0.145	**85.5%**
1939	18,407	1,567	3,239	4,806	5,934	60%	0.26	0	0.461	0.000	0.121	0.121	**87.9%**
1940	23,448	4,207	8,067	12,274	7,820	57%	0.25	0	0.786	0.000	0.198	0.198	**80.2%**
1941	72,229	4,207	8,207	12,414	26,064	23%	0.23	0	0.792	0.000	0.179	0.179	**82.1%**
1942	63,260	4,120	3,239	7,359	22,709	23%	0.23	0	0.572	0.000	0.130	0.130	**87.0%**
1943	58,056	4,207	3,304	7,511	20,763	23%	0.23	0	0.579	0.000	0.133	0.133	**86.7%**
1944	17,677	4,207	3,262	7,469	5,661	60%	0.26	0	0.577	0.000	0.153	0.153	**84.7%**
1945	14,027	4,207	4,933	9,140	4,296	64%	0.28	0	0.650	0.000	0.180	0.180	**82.0%**
1946	43,229	4,207	3,637	7,844	15,218	23%	0.23	0	0.593	0.000	0.139	0.139	**86.1%**
1947	14,971	4,207	7,359	11,566	4,649	63%	0.27	0	0.755	0.000	0.206	0.206	**79.4%**
1948	14,649	4,207	6,415	10,622	4,529	63%	0.27	0	0.714	0.000	0.196	0.196	**80.4%**
1949	14,928	4,207	6,874	11,081	4,633	63%	0.27	0	0.734	0.000	0.201	0.201	**79.9%**
1950	19,934	4,207	7,191	11,398	6,505	59%	0.26	0	0.748	0.000	0.194	0.194	**80.6%**
1951	62,213	4,207	6,851	11,058	22,318	23%	0.23	0	0.733	0.000	0.167	0.167	**83.3%**
1952	67,352	4,207	8,296	12,503	24,240	23%	0.23	0	0.796	0.000	0.181	0.181	**81.9%**
1953	64,078	1,565	3,333	4,898	23,015	23%	0.23	0	0.465	0.000	0.106	0.106	**89.4%**
1954	33,414	4,207	3,850	8,057	11,547	24%	0.24	0	0.603	0.000	0.145	0.145	**85.5%**
1955	22,257	4,207	7,258	11,465	7,374	58%	0.25	0	0.750	0.000	0.191	0.191	**80.9%**
1956	83,596	4,207	8,085	12,292	30,315	22%	0.22	0	0.786	0.000	0.176	0.176	**82.4%**
1957	18,639	4,207	3,891	8,098	6,021	60%	0.26	0	0.604	0.000	0.158	0.158	**84.2%**
1958	36,257	4,207	3,317	7,524	12,610	24%	0.24	0	0.579	0.000	0.138	0.138	**86.2%**
1959	35,167	1,586	3,333	4,919	12,202	24%	0.24	0	0.466	0.000	0.112	0.112	**88.8%**
1960	14,772	4,207	6,679	10,886	4,575	63%	0.27	0	0.725	0.000	0.199	0.199	**80.1%**
1961	14,758	4,207	6,943	11,150	4,569	63%	0.27	0	0.737	0.000	0.202	0.202	**79.8%**
1962	15,046	4,207	3,387	7,594	4,677	63%	0.27	0	0.582	0.000	0.159	0.159	**84.1%**
1963	17,986	4,207	7,256	11,463	5,777	60%	0.26	0	0.750	0.000	0.198	0.198	**80.2%**
1964	24,193	3,925	3,851	7,776	8,098	57%	0.25	0	0.590	0.000	0.148	0.148	**85.2%**
1965	81,240	4,207	8,500	12,707	29,434	22%	0.22	0	0.804	0.000	0.181	0.181	**81.9%**
1966	29,635	4,207	3,657	7,864	10,133	24%	0.24	0	0.594	0.000	0.145	0.145	**85.5%**
1967	34,592	4,207	7,700	11,907	11,987	24%	0.24	0	0.770	0.000	0.185	0.185	**81.5%**
1968	30,635	1,565	3,333	4,898	10,507	24%	0.24	0	0.465	0.000	0.113	0.113	**88.7%**
1969	68,303	4,207	5,687	9,894	24,595	23%	0.23	0	0.682	0.000	0.155	0.155	**84.5%**
1970	92,665	1,352	3,333	4,685	33,707	22%	0.22	0	0.456	0.000	0.102	0.102	**89.8%**
1971	45,855	4,207	4,749	8,956	16,200	23%	0.23	0	0.642	0.000	0.150	0.150	**85.0%**
1972	20,395	4,207	3,891	8,098	6,678	59%	0.26	0	0.604	0.000	0.156	0.156	**84.4%**
1973	49,956	4,207	7,266	11,473	17,734	23%	0.23	0	0.751	0.000	0.174	0.174	**82.6%**
1974	78,417	4,207	3,637	7,844	28,378	22%	0.22	0	0.593	0.000	0.133	0.133	**86.7%**
1975	18,672	4,207	3,848	8,055	6,033	60%	0.26	0	0.602	0.000	0.158	0.158	**84.2%**
1976	16,769	4,207	3,827	8,034	5,322	61%	0.27	0	0.602	0.000	0.161	0.161	**83.9%**
1977	8,314	2,844	2,499	5,343	2,159	74%	0.31	0	0.485	0.000	0.152	0.152	**84.8%**
1978	44,206	3,114	7,768	10,882	15,583	23%	0.23	0	0.725	0.000	0.170	0.170	**83.0%**
1979	27,242	4,207	3,262	7,469	9,239	25%	0.25	0	0.577	0.000	0.143	0.143	**85.7%**
1980	58,894	4,207	3,159	7,366	21,076	23%	0.23	0	0.573	0.000	0.131	0.131	**86.9%**
1981	28,711	2,273	3,356	5,629	9,788	25%	0.25	0	0.497	0.000	0.122	0.122	**87.8%**
1982	51,172	4,207	7,337	11,544	18,188	23%	0.23	0	0.754	0.000	0.175	0.175	**82.5%**
1983	59,148	2,925	2,648	5,573	21,171	23%	0.23	0	0.495	0.000	0.113	0.113	**88.7%**
1984	47,354	1,331	2,881	4,212	16,760	23%	0.23	0	0.436	0.000	0.101	0.101	**89.9%**
1985	16,799	4,207	3,872	8,079	5,333	61%	0.27	0	0.604	0.000	0.161	0.161	**83.9%**
1986	21,544	4,207	7,237	11,444	7,107	58%	0.26	0	0.750	0.000	0.192	0.192	**80.8%**
1987	16,734	1,328	5,648	6,976	5,309	61%	0.27	0	0.556	0.000	0.149	0.149	**85.1%**
1988	25,530	4,207	7,092	11,299	8,598	25%	0.25	0	0.743	0.000	0.185	0.185	**81.5%**
1989	12,498	4,207	4,849	9,056	3,724	66%	0.28	0	0.646	0.000	0.183	0.183	**81.7%**
1990	21,334	2,756	7,051	9,807	7,029	58%	0.26	0	0.679	0.000	0.174	0.174	**82.6%**
1991	6,851	1,648	1,668	3,316	1,612	78%	0.33	0	0.397	0.000	0.132	0.132	**86.8%**
1992	12,140	4,039	4,928	8,967	3,590	66%	0.29	0	0.642	0.000	0.184	0.184	**81.6%**

FEBRUARY

Year	Sac River Flow	CVP	SWP	CVP + SWP Exports	Calculated Steamboat Sutter & Slough Q	Percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	34,421	4,249	6,300	10,549	11,923	24%	0.24	0	0.765	0.000	0.184	0.184	**81.6%**
1923	22,087	2,189	2,380	4,569	7,311	58%	0.25	0	0.505	0.000	0.129	0.129	**87.1%**
1924	17,751	4,219	4,457	8,676	5,689	60%	0.26	0	0.683	0.000	0.181	0.181	**81.9%**
1925	44,705	3,834	7,584	11,418	15,770	23%	0.23	0	0.802	0.000	0.188	0.188	**81.2%**
1926	35,467	4,229	7,298	11,527	12,315	24%	0.24	0	0.807	0.000	0.193	0.193	**80.7%**
1927	86,633	2,960	8,272	11,232	31,451	22%	0.22	0	0.794	0.000	0.178	0.178	**82.2%**
1928	26,504	1,832	4,377	6,209	8,962	25%	0.25	0	0.576	0.000	0.143	0.143	**85.7%**
1929	17,787	4,232	4,826	9,058	5,702	60%	0.26	0	0.700	0.000	0.185	0.185	**81.5%**
1930	15,675	2,808	3,992	6,800	4,912	62%	0.27	0	0.602	0.000	0.163	0.163	**83.7%**
1931	11,083	3,248	1,819	5,067	3,195	66%	0.29	0	0.527	0.000	0.154	0.154	**84.6%**
1932	14,486	4,240	5,643	9,883	4,468	64%	0.28	0	0.736	0.000	0.202	0.202	**79.8%**
1933	11,527	3,715	2,600	6,315	3,361	64%	0.29	0	0.581	0.000	0.168	0.168	**83.2%**
1934	12,740	1,361	4,510	5,871	3,815	66%	0.28	0	0.562	0.000	0.159	0.159	**84.1%**
1935	12,407	1,125	3,952	5,077	3,690	67%	0.28	0	0.527	0.000	0.150	0.150	**85.0%**
1936	50,212	3,309	8,500	11,809	17,829	23%	0.23	0	0.819	0.000	0.190	0.190	**81.0%**
1937	32,525	4,231	5,166	9,397	11,214	24%	0.24	0	0.715	0.000	0.173	0.173	**82.7%**
1938	82,366	1,245	3,939	5,184	29,855	22%	0.22	0	0.532	0.000	0.119	0.119	**88.1%**
1939	19,024	1,527	3,955	5,482	6,165	59%	0.26	0	0.545	0.000	0.142	0.142	**85.8%**
1940	44,197	4,240	8,465	12,705	15,580	23%	0.23	0	0.858	0.000	0.201	0.201	**79.9%**
1941	75,037	3,571	6,665	10,236	27,114	23%	0.23	0	0.751	0.000	0.169	0.169	**83.1%**
1942	78,349	1,708	3,955	5,663	28,353	22%	0.23	0	0.553	0.000	0.124	0.124	**87.6%**
1943	52,259	2,019	4,005	6,024	18,595	23%	0.23	0	0.568	0.000	0.131	0.131	**86.9%**
1944	31,317	1,391	3,958	5,349	10,763	24%	0.24	0	0.539	0.000	0.131	0.131	**86.9%**
1945	38,590	4,239	3,999	8,238	13,483	23%	0.24	0	0.664	0.000	0.158	0.158	**84.2%**
1946	23,843	2,329	3,702	6,031	7,967	57%	0.25	0	0.569	0.000	0.143	0.143	**85.7%**
1947	21,069	4,242	4,007	8,249	6,930	58%	0.26	0	0.665	0.000	0.171	0.171	**82.9%**
1948	16,544	4,232	1,789	6,021	5,237	64%	0.27	0	0.568	0.000	0.152	0.152	**84.8%**
1949	16,132	3,214	5,188	8,402	5,083	61%	0.27	0	0.671	0.000	0.181	0.181	**81.9%**
1950	32,762	4,246	7,539	11,785	11,303	24%	0.24	0	0.818	0.000	0.198	0.198	**80.2%**
1951	60,566	3,528	4,675	8,203	21,702	23%	0.23	0	0.663	0.000	0.152	0.152	**84.8%**
1952	64,731	4,293	3,909	8,202	23,259	23%	0.23	0	0.663	0.000	0.151	0.151	**84.9%**
1953	28,344	2,015	4,060	6,075	9,651	25%	0.25	0	0.570	0.000	0.140	0.140	**86.0%**
1954	57,158	1,998	4,636	6,634	20,427	23%	0.23	0	0.595	0.000	0.137	0.137	**86.3%**
1955	17,047	4,255	3,352	7,607	5,426	61%	0.27	0	0.637	0.000	0.170	0.170	**83.0%**
1956	63,748	3,466	4,675	8,141	22,892	23%	0.23	0	0.660	0.000	0.150	0.150	**85.0%**
1957	33,144	4,248	4,638	8,886	11,446	24%	0.24	0	0.692	0.000	0.167	0.167	**83.3%**
1958	62,798	2,860	4,040	6,900	22,536	23%	0.23	0	0.606	0.000	0.138	0.138	**86.2%**
1959	50,082	1,809	4,060	5,869	17,781	23%	0.23	0	0.562	0.000	0.130	0.130	**87.0%**
1960	27,274	3,754	7,357	11,111	9,250	25%	0.25	0	0.789	0.000	0.195	0.195	**80.5%**
1961	32,704	4,247	7,116	11,363	11,281	24%	0.24	0	0.800	0.000	0.193	0.193	**80.7%**
1962	38,011	1,135	8,500	9,635	13,266	23%	0.24	0	0.725	0.000	0.172	0.172	**82.8%**
1963	58,694	4,281	7,779	12,060	21,002	23%	0.23	0	0.830	0.000	0.190	0.190	**81.0%**
1964	17,842	1,996	4,638	6,634	5,723	61%	0.26	0	0.595	0.000	0.157	0.157	**84.3%**
1965	33,326	4,254	6,683	10,937	11,514	24%	0.24	0	0.781	0.000	0.188	0.188	**81.2%**
1966	26,777	2,094	4,377	6,471	9,065	25%	0.25	0	0.588	0.000	0.146	0.146	**85.4%**
1967	43,101	4,293	3,201	7,494	15,170	24%	0.23	0	0.632	0.000	0.148	0.148	**85.2%**
1968	56,470	1,995	4,060	6,055	20,170	23%	0.23	0	0.570	0.000	0.131	0.131	**86.9%**
1969	67,482	1,414	3,171	4,585	24,288	23%	0.23	0	0.506	0.000	0.115	0.115	**88.5%**
1970	57,565	1,213	4,060	5,273	20,579	23%	0.23	0	0.536	0.000	0.123	0.123	**87.7%**
1971	28,525	3,192	4,675	7,867	9,718	24%	0.25	0	0.648	0.000	0.159	0.159	**84.1%**
1972	25,083	3,931	4,638	8,569	8,431	57%	0.25	0	0.679	0.000	0.170	0.170	**83.0%**
1973	70,967	4,268	4,423	8,691	25,592	23%	0.23	0	0.684	0.000	0.155	0.155	**84.5%**
1974	41,926	2,117	4,377	6,494	14,730	24%	0.24	0	0.589	0.000	0.139	0.139	**86.1%**
1975	58,811	2,172	4,636	6,808	21,045	23%	0.23	0	0.602	0.000	0.138	0.138	**86.2%**
1976	20,229	4,239	4,237	8,476	6,616	59%	0.26	0	0.675	0.000	0.174	0.174	**82.6%**
1977	12,279	771	1,416	2,187	3,642	68%	0.29	0	0.402	0.000	0.115	0.115	**88.5%**
1978	51,370	1,761	7,938	9,699	18,262	23%	0.23	0	0.728	0.000	0.168	0.168	**83.2%**
1979	41,682	1,471	3,958	5,429	14,639	24%	0.24	0	0.542	0.000	0.128	0.128	**87.2%**
1980	71,932	874	3,768	4,642	25,953	23%	0.23	0	0.508	0.000	0.115	0.115	**88.5%**
1981	29,672	1,771	4,062	5,833	10,147	24%	0.24	0	0.560	0.000	0.137	0.137	**86.3%**
1982	65,645	2,278	4,620	6,898	23,601	23%	0.23	0	0.606	0.000	0.138	0.138	**86.2%**
1983	82,910	1,395	2,793	4,188	30,058	22%	0.22	0	0.489	0.000	0.110	0.110	**89.0%**
1984	37,282	1,495	3,847	5,342	12,993	24%	0.24	0	0.539	0.000	0.128	0.128	**87.2%**
1985	18,976	2,353	4,636	6,989	6,147	58%	0.26	0	0.610	0.000	0.159	0.159	**84.1%**
1986	96,755	4,245	7,568	11,813	35,236	22%	0.22	0	0.819	0.000	0.182	0.182	**81.8%**
1987	23,028	1,260	4,219	5,479	7,662	57%	0.25	0	0.545	0.000	0.138	0.138	**86.2%**
1988	18,164	4,245	2,700	6,945	5,843	62%	0.26	0	0.608	0.000	0.160	0.160	**84.0%**
1989	12,455	955	1,790	2,745	3,708	67%	0.28	0	0.426	0.000	0.121	0.121	**87.9%**
1990	16,696	1,220	6,469	7,689	5,294	61%	0.27	0	0.641	0.000	0.171	0.171	**82.9%**
1991	10,443	396	111	507	2,956	67%	0.30	0	0.329	0.000	0.097	0.097	**90.3%**
1992	32,538	622	7,455	8,077	11,219	24%	0.24	0	0.657	0.000	0.159	0.159	**84.1%**

MARCH

Year	Sac River Flow	CVP	SWP	CVP + SWP exports	Calculated Steamboat Sutter & Slough Q	percent	X-Channel Closed	m1	m2	m3	m23	m123	Calculated Survival s123
1922	31,554	2,834	4,143	6,977	10,851	24%	0.24	0	0.699	0.144	0.279	0.279	**72.1%**
1923	15,486	3,164	3,575	6,739	4,842	27%	0.27	0	0.689	0.144	0.292	0.292	**70.8%**
1924	11,956	1,484	1,575	3,059	3,522	29%	0.29	0	0.529	0.144	0.255	0.255	**74.5%**
1925	29,791	3,267	2,866	6,133	10,192	24%	0.24	0	0.663	0.144	0.271	0.271	**72.9%**
1926	15,769	2,771	3,674	6,445	4,948	27%	0.27	0	0.676	0.144	0.288	0.288	**71.2%**
1927	43,865	3,178	4,154	7,332	15,456	23%	0.23	0	0.715	0.144	0.278	0.278	**72.2%**
1928	86,223	3,171	4,424	7,595	31,297	22%	0.22	0	0.726	0.144	0.275	0.275	**72.5%**
1929	13,763	2,089	2,784	4,873	4,197	28%	0.28	0	0.608	0.144	0.273	0.273	**72.7%**
1930	30,470	3,045	4,618	7,663	10,446	24%	0.24	0	0.729	0.144	0.287	0.287	**71.3%**
1931	9,210	1,880	1,921	3,801	2,495	31%	0.31	0	0.562	0.144	0.272	0.272	**72.8%**
1932	10,502	950	2,714	3,664	2,978	30%	0.30	0	0.556	0.144	0.266	0.266	**73.4%**
1933	10,393	233	4,403	4,636	2,937	30%	0.30	0	0.598	0.144	0.279	0.279	**72.1%**
1934	14,161	2,143	1,765	3,908	4,346	28%	0.28	0	0.566	0.144	0.261	0.261	**73.9%**
1935	24,918	4,225	6,987	11,212	8,369	25%	0.25	0	0.883	0.144	0.329	0.329	**67.1%**
1936	33,698	3,202	6,378	9,580	11,653	24%	0.24	0	0.812	0.144	0.305	0.305	**69.5%**
1937	37,003	2,527	4,031	6,558	12,889	24%	0.24	0	0.681	0.144	0.272	0.272	**72.8%**
1938	78,637	2,056	3,966	6,022	28,460	22%	0.22	0	0.658	0.144	0.260	0.260	**74.0%**
1939	16,390	2,663	3,985	6,648	5,180	27%	0.27	0	0.685	0.144	0.289	0.289	**71.1%**
1940	59,588	4,225	4,648	8,873	21,336	23%	0.23	0	0.782	0.144	0.290	0.290	**71.0%**
1941	58,575	3,447	3,846	7,293	20,957	23%	0.23	0	0.713	0.144	0.275	0.275	**72.5%**
1942	27,099	3,430	4,007	7,437	9,185	25%	0.25	0	0.719	0.144	0.287	0.287	**71.3%**
1943	64,601	1,843	4,056	5,899	23,211	23%	0.23	0	0.653	0.144	0.260	0.260	**74.0%**
1944	25,100	3,000	4,007	7,007	8,437	25%	0.25	0	0.701	0.144	0.283	0.283	**71.7%**
1945	27,033	3,214	4,149	7,363	9,160	25%	0.25	0	0.716	0.144	0.286	0.286	**71.4%**
1946	23,778	3,164	4,424	7,588	7,943	25%	0.25	0	0.726	0.144	0.291	0.291	**70.9%**
1947	22,106	2,585	3,984	6,569	7,318	25%	0.25	0	0.682	0.144	0.281	0.281	**71.9%**
1948	19,067	4,225	3,411	7,636	6,181	26%	0.26	0	0.728	0.144	0.297	0.297	**70.3%**
1949	41,807	2,545	6,972	9,517	14,686	24%	0.24	0	0.810	0.144	0.301	0.301	**69.9%**
1950	22,154	3,330	4,493	7,823	7,336	25%	0.25	0	0.736	0.144	0.295	0.295	**70.5%**
1951	29,827	3,166	4,699	7,865	10,205	24%	0.24	0	0.738	0.144	0.289	0.289	**71.1%**
1952	57,518	3,221	3,934	7,155	20,562	23%	0.23	0	0.707	0.144	0.273	0.273	**72.7%**
1953	24,893	3,163	4,111	7,274	8,360	25%	0.25	0	0.712	0.144	0.286	0.286	**71.4%**
1954	49,536	3,164	4,685	7,849	17,576	23%	0.23	0	0.737	0.144	0.282	0.282	**71.8%**
1955	17,899	4,225	2,950	7,175	5,744	26%	0.26	0	0.708	0.144	0.293	0.293	**70.7%**
1956	36,676	2,069	4,699	6,768	12,767	24%	0.24	0	0.690	0.144	0.275	0.275	**72.5%**
1957	44,377	3,189	4,381	7,570	15,647	23%	0.23	0	0.725	0.144	0.280	0.280	**72.0%**
1958	93,616	3,461	4,057	7,518	34,062	22%	0.22	0	0.723	0.144	0.273	0.273	**72.7%**
1959	21,838	2,869	3,184	6,053	7,217	26%	0.26	0	0.659	0.144	0.276	0.276	**72.4%**
1960	21,550	2,523	4,064	6,587	7,110	26%	0.26	0	0.683	0.144	0.282	0.282	**71.8%**
1961	20,944	2,928	4,070	6,998	6,883	26%	0.26	0	0.700	0.144	0.287	0.287	**71.3%**
1962	26,263	3,219	4,340	7,559	8,872	25%	0.25	0	0.725	0.144	0.288	0.288	**71.2%**
1963	32,645	4,225	5,184	9,409	11,259	24%	0.24	0	0.805	0.144	0.304	0.304	**69.6%**
1964	15,544	2,869	3,374	6,243	4,863	27%	0.27	0	0.668	0.144	0.286	0.286	**71.4%**
1965	21,381	3,811	4,277	8,088	7,046	26%	0.26	0	0.748	0.144	0.299	0.299	**70.1%**
1966	28,683	3,163	4,424	7,587	9,777	25%	0.25	0	0.726	0.144	0.287	0.287	**71.3%**
1967	54,488	3,232	3,283	6,515	19,429	23%	0.23	0	0.679	0.144	0.267	0.267	**73.3%**
1968	36,789	2,870	4,111	6,981	12,809	24%	0.24	0	0.700	0.144	0.277	0.277	**72.3%**
1969	45,319	2,060	3,251	5,311	15,999	23%	0.23	0	0.627	0.144	0.257	0.257	**74.3%**
1970	35,819	3,109	4,111	7,220	12,446	24%	0.24	0	0.710	0.144	0.280	0.280	**72.0%**
1971	51,513	3,164	4,699	7,863	18,316	23%	0.23	0	0.738	0.144	0.282	0.282	**71.8%**
1972	32,930	2,870	4,355	7,225	11,366	24%	0.24	0	0.710	0.144	0.281	0.281	**71.9%**
1973	47,552	3,191	4,452	7,643	16,834	23%	0.23	0	0.728	0.144	0.280	0.280	**72.0%**
1974	34,721	3,447	4,424	7,871	12,036	24%	0.24	0	0.738	0.144	0.287	0.287	**71.3%**
1975	75,998	3,455	4,685	8,140	27,473	23%	0.23	0	0.750	0.144	0.281	0.281	**71.9%**
1976	18,356	2,026	4,179	6,205	5,915	26%	0.26	0	0.666	0.144	0.281	0.281	**71.9%**
1977	7,656	910	1,286	2,196	1,913	32%	0.32	0	0.492	0.144	0.256	0.256	**74.4%**
1978	46,722	2,115	3,905	6,020	16,524	23%	0.23	0	0.658	0.144	0.264	0.264	**73.6%**
1979	32,549	3,177	4,007	7,184	11,223	24%	0.24	0	0.708	0.144	0.281	0.281	**71.9%**
1980	36,480	1,847	3,344	5,191	12,694	24%	0.24	0	0.622	0.144	0.258	0.258	**74.2%**
1981	32,501	2,869	4,111	6,980	11,205	24%	0.24	0	0.700	0.144	0.279	0.279	**72.1%**
1982	69,087	2,963	4,644	7,607	24,889	23%	0.23	0	0.727	0.144	0.276	0.276	**72.4%**
1983	81,934	2,042	2,628	4,670	29,693	22%	0.22	0	0.599	0.144	0.246	0.246	**75.4%**
1984	36,503	3,148	4,007	7,155	12,702	24%	0.24	0	0.707	0.144	0.279	0.279	**72.1%**
1985	20,833	2,870	4,685	7,555	6,842	26%	0.26	0	0.725	0.144	0.294	0.294	**70.6%**
1986	72,539	3,981	4,180	8,161	26,180	23%	0.23	0	0.751	0.144	0.281	0.281	**71.9%**
1987	30,017	2,343	4,136	6,479	10,276	24%	0.24	0	0.678	0.144	0.275	0.275	**72.5%**
1988	11,108	2,052	1,860	3,912	3,204	29%	0.29	0	0.566	0.144	0.267	0.267	**73.3%**
1989	41,509	4,225	6,961	11,186	14,574	24%	0.24	0	0.882	0.144	0.318	0.318	**68.2%**
1990	14,588	2,217	3,562	5,779	4,506	27%	0.27	0	0.647	0.144	0.282	0.282	**71.8%**
1991	29,675	4,225	7,081	11,306	10,148	24%	0.24	0	0.887	0.144	0.326	0.326	**67.4%**
1992	20,106	1,965	6,277	8,242	6,570	26%	0.26	0	0.754	0.144	0.302	0.302	**69.8%**

Formulas: Sacramento River Spring Run Young of Year Smolt Survival Model

```
C10 ='Study 467 Flow Data'!C7
D10 ='Study 467 Flow Data'!M7
E10 ='Study 467 Flow Data'!W7
F10 =(D10+E10)
G10 =0.374*C10-950
H10 =IF(C10>$K$4,(0.133*C10+829)/(C10-G10),(0.293*C10+2090)/(C10-G10))
I10 =(0.45*(0.133*C10+829)/(C10-G10))+(0.55*H10)
J10 =IF(-2.45925+(0.0420748*$T$2)>0,-2.45925+(0.0420748*$T$2),0)
K10 =(-0.5916024)+(0.017968*$T$2)+(0.0000434*F10)
L10 =IF(-1.613493+(0.0319584*$T$2)>0,-1.613493+(0.0319584*$T$2),0)
M10 =(K10*H10)+(L10*(1-H10))
N10 =J10+M10-(J10*M10)
O10 =1-N10

Q10 ='Study 467 Flow Data'!D7
R10 ='Study 467 Flow Data'!N7
S10 ='Study 467 Flow Data'!X7
T10 =(R10+S10)
U10 =0.374*Q10-950
V10 =IF(Q10>$K$4,(0.133*Q10+829)/(Q10-U10),(0.293*Q10+2090)/(Q10-U10))
W10 =(0.45*(0.133*Q10+829)/(Q10-U10))+(0.55*V10)
X10 =IF(-2.45925+(0.0420748*$T$3)>0,-2.45925+(0.0420748*$T$3),0)
Y10 =(-0.5916024)+(0.017968*$T$3)+(0.0000434*T10)
Z10 =IF(-1.613493+(0.0319584*$T$3)>0,-1.613493+(0.0319584*$T$3),0)
AA10 =(Y10*W10)+(Z10*(1-W10))
AB10 =X10+AA10-(X10*AA10)
AC10 =1-AB10

AE10 ='Study 467 Flow Data'!E7
AF10 ='Study 467 Flow Data'!O7
AG10 ='Study 467 Flow Data'!Y7
AH10 =(AF10+AG10)
AI10 =0.374*AE10-950
AJ10 =IF(AE10>$K$4,(0.133*AE10+829)/(AE10-AI10),(0.293*AE10+2090)/(AE10-AI10))
AK10 =(0.133*AE10+829)/(AE10-AI10)
AL10 =IF(-2.45925+(0.0420748*$BC$2)>0,-2.45925+(0.0420748*$BC$2),0)
AM10 =(-0.5916024)+(0.017968*$BC$2)+(0.0000434*AH10)
AN10 =IF(-1.613493+(0.0319584*$BC$2)>0,-1.613493+(0.0319584*$BC$2),0)
AO10 =(AM10*AK10)+(AN10*(1-AK10))
AP10 =AL10+AO10-(AL10*AO10)
AQ10 =1-AP10

AS10 ='Study 467 Flow Data'!F7
AT10 ='Study 467 Flow Data'!P7
AU10 ='Study 467 Flow Data'!Z7
AV10 =(AT10+AU10)
AW10 =0.374*AS10-950
AX10 =IF(AS10>$G$2,(0.133*AS10+829)/(AS10-AW10),(0.293*AS10+2090)/(AS10-AW10))
AY10 =(0.133*AS10+829)/(AS10-AW10)
AZ10 =IF(-2.45925+(0.0420748*$BC$3)>0,-2.45925+(0.0420748*$BC$3),0)
BA10 =IF(((-0.5916024)+(0.017968*$BC$3)+(0.0000434*AV10))>1,1,((-0.5916024)+(0.017968*$BC$3)+(0.00004
BB10 =-1.613493+(0.0319584*$BC$3)
BC10 =(BA10*AY10)+(BB10*(1-AY10))
BD10 =(AZ10+BC10-(AZ10*BC10))
BE10 =1-BD10
```

Study 634 Sacramento River Spring Run YOY Smolt Survival Model (continued)

Cross Channel closed over 25,000 cfs

Cross Channel Closed Apr to May 20, 14 d May 21-Jun 15

Sacramento River temperatures based on limited historical data from USBR

Row	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT
6	APRIL				Calculated									
7	Sac				Sutter &									Calculated
8	River		CVP + SWP		Steamboat		X-Channel	observed			Calculated Mortality			Survival
9	Flows	CVP	SWP	exports	Slough Q	Percent	Closed	temp	m1	m2	m3	m23	m123	s123
10	22,816	2,965	2,965	5,930	7,583	25%	0.25	58.5	0.002	0.717	0.256	0.373	0.374	**62.6%**
11	23,703	3,358	3,358	6,716	7,915	25%	0.25	58.3	0.000	0.747	0.250	0.375	0.375	**62.5%**
12	7,322	1,238	1,238	2,476	1,788	33%	0.33	61.5	0.128	0.621	0.352	0.440	0.511	**48.9%**
13	20,329	3,047	3,047	6,094	6,653	26%	0.26	59.1	0.027	0.735	0.275	0.394	0.411	**58.9%**
14	18,258	2,733	2,733	5,466	5,878	26%	0.26	61.6	0.133	0.752	0.355	0.460	0.531	**46.9%**
15	48,222	3,018	3,018	6,036	17,085	23%	0.23	56.8	0.000	0.691	0.202	0.316	0.316	**68.4%**
16	29,212	3,218	3,218	6,436	9,975	25%	0.25	58.7	0.011	0.742	0.262	0.380	0.387	**61.3%**
17	8,219	1,317	1,317	2,634	2,124	32%	0.32	56.3	0.000	0.534	0.186	0.296	0.296	**70.4%**
18	12,640	1,728	1,728	3,456	3,777	28%	0.28	59.6	0.048	0.629	0.291	0.387	0.417	**58.3%**
19	9,155	1,328	1,328	2,656	2,474	31%	0.31	62.8	0.183	0.652	0.393	0.473	0.569	**43.1%**
20	11,281	1,982	1,982	3,964	3,269	29%	0.29	58.9	0.019	0.639	0.269	0.376	0.388	**61.2%**
21	12,090	1,738	1,553	3,291	3,572	29%	0.29	60.1	0.069	0.631	0.307	0.400	0.442	**55.8%**
22	12,152	1,633	1,633	3,266	3,595	29%	0.29	63.6	0.217	0.693	0.419	0.497	0.606	**39.4%**
23	24,245	3,418	3,418	6,836	8,118	25%	0.25	58.9	0.019	0.763	0.269	0.393	0.405	**59.5%**
24	21,531	2,899	2,899	5,798	7,103	26%	0.26	59.7	0.053	0.733	0.294	0.407	0.438	**56.2%**
25	23,007	3,041	5,003	8,044	7,655	25%	0.25	58.8	0.015	0.814	0.266	0.405	0.413	**58.7%**
26	47,172	3,339	4,377	7,716	16,692	23%	0.23	56.3	0.000	0.755	0.186	0.318	0.318	**68.2%**
27	10,698	1,909	1,909	3,818	3,051	29%	0.29	63.3	0.204	0.711	0.409	0.498	0.601	**39.9%**
28	41,731	3,418	3,418	6,836	14,657	24%	0.24	57.4	0.000	0.736	0.221	0.342	0.342	**65.8%**
29	42,372	4,600	4,708	9,308	14,897	24%	0.24	56.9	0.000	0.835	0.205	0.353	0.353	**64.7%**
30	43,308	3,418	3,418	6,836	15,247	23%	0.23	56.5	0.000	0.720	0.192	0.316	0.316	**68.4%**
31	29,406	4,117	5,062	9,179	10,048	24%	0.24	58.8	0.015	0.863	0.266	0.412	0.421	**57.9%**
32	9,823	2,185	2,185	4,370	2,724	30%	0.30	58.4	0.000	0.647	0.253	0.372	0.372	**62.8%**
33	11,753	2,073	2,073	4,146	3,446	29%	0.29	60.6	0.090	0.677	0.323	0.425	0.477	**52.3%**
34	12,226	2,410	2,410	4,820	3,623	29%	0.29	60.7	0.095	0.708	0.326	0.435	0.489	**51.1%**
35	13,800	1,868	1,868	3,736	4,211	28%	0.28	62.5	0.170	0.694	0.384	0.470	0.560	**44.0%**
36	22,793	2,756	2,756	5,512	7,575	25%	0.25	56.6	0.000	0.665	0.195	0.314	0.314	**68.6%**
37	13,210	1,862	1,862	3,724	3,991	28%	0.28	61.7	0.137	0.679	0.358	0.448	0.524	**47.6%**
38	18,776	2,447	2,447	4,894	6,072	26%	0.26	61.3	0.120	0.722	0.346	0.444	0.511	**48.9%**
39	14,732	2,194	2,194	4,388	4,560	27%	0.27	59.9	0.061	0.675	0.301	0.403	0.440	**56.0%**
40	56,648	3,681	4,166	7,847	20,236	23%	0.23	55.5	0.000	0.746	0.160	0.295	0.295	**70.5%**
41	16,177	2,425	2,425	4,850	5,100	27%	0.27	58.8	0.015	0.675	0.266	0.376	0.385	**61.5%**
42	39,868	3,018	3,018	6,036	13,961	24%	0.24	58.4	0.000	0.720	0.253	0.363	0.363	**63.7%**
43	9,473	1,487	1,487	2,974	2,593	30%	0.30	56.4	0.000	0.551	0.189	0.299	0.299	**70.1%**
44	20,437	2,721	2,721	5,442	6,693	26%	0.26	59.7	0.053	0.717	0.294	0.404	0.435	**56.5%**
45	19,655	2,664	2,664	5,328	6,401	26%	0.26	60.5	0.086	0.727	0.320	0.426	0.475	**52.5%**
46	52,284	4,421	5,062	9,483	18,604	23%	0.23	57.4	0.000	0.851	0.221	0.367	0.367	**63.3%**
47	8,822	1,716	1,716	3,432	2,349	31%	0.31	63	0.191	0.689	0.400	0.489	0.587	**41.3%**
48	12,667	323	3,154	3,477	3,787	28%	0.28	59.5	0.044	0.628	0.288	0.384	0.412	**58.8%**
49	12,647	1,614	1,614	3,228	3,780	28%	0.28	60.1	0.069	0.628	0.307	0.398	0.440	**56.0%**
50	13,553	2,172	2,172	4,344	4,119	28%	0.28	61.8	0.141	0.707	0.362	0.458	0.534	**46.6%**
51	69,458	3,418	3,418	6,836	25,027	23%	0.23	53.7	0.000	0.670	0.103	0.231	0.231	**76.9%**
52	8,953	1,397	1,397	2,794	2,398	31%	0.31	59.3	0.036	0.595	0.282	0.378	0.400	**60.0%**
53	45,179	3,418	3,418	6,836	15,947	23%	0.23	56.9	0.000	0.727	0.205	0.327	0.327	**67.3%**
54	14,922	2,047	2,047	4,094	4,631	27%	0.27	61.9	0.145	0.698	0.365	0.456	0.535	**46.5%**
55	39,925	3,534	4,949	8,483	13,982	24%	0.24	53.8	0.000	0.743	0.106	0.257	0.257	**74.3%**
56	14,216	2,171	2,171	4,342	4,367	28%	0.28	61.5	0.128	0.702	0.352	0.449	0.519	**48.1%**
57	44,787	3,347	4,159	7,506	15,800	23%	0.23	56.4	0.000	0.748	0.189	0.320	0.320	**68.0%**
58	13,811	2,073	2,073	4,146	4,215	28%	0.28	58.8	0.015	0.645	0.266	0.371	0.380	**62.0%**
59	20,753	2,794	2,794	5,588	6,812	26%	0.26	58.7	0.011	0.706	0.262	0.377	0.383	**61.7%**
60	12,452	1,718	1,718	3,436	3,707	28%	0.28	58.5	0.002	0.609	0.256	0.356	0.358	**64.2%**
61	19,512	3,110	3,110	6,220	6,347	26%	0.26	61.3	0.120	0.780	0.346	0.458	0.523	**47.7%**
62	33,208	4,600	4,738	9,338	11,470	24%	0.24	56.8	0.000	0.834	0.202	0.354	0.354	**64.6%**
63	25,763	3,418	3,418	6,836	8,685	25%	0.25	56.8	0.000	0.726	0.202	0.332	0.332	**66.8%**
64	9,434	813	2,046	2,859	2,578	30%	0.30	58.9	0.019	0.591	0.269	0.367	0.379	**62.1%**
65	9,122	1,208	1,476	2,684	2,462	31%	0.31	64.3	0.246	0.680	0.441	0.515	0.634	**36.6%**
66	38,698	3,439	4,074	7,513	13,523	24%	0.24	56.9	0.000	0.757	0.205	0.336	0.336	**66.4%**
67	17,702	2,889	2,889	5,778	5,671	26%	0.26	59.8	0.057	0.734	0.298	0.413	0.446	**55.4%**
68	19,818	2,691	2,691	5,382	6,462	26%	0.26	57.1	0.000	0.668	0.211	0.330	0.330	**67.0%**
69	16,998	2,420	2,420	4,840	5,407	27%	0.27	61.5	0.128	0.723	0.352	0.451	0.521	**47.9%**
70	75,838	3,381	5,569	8,950	27,413	23%	0.23	54.1	0.000	0.769	0.115	0.263	0.263	**73.7%**
71	68,301	3,314	3,649	6,963	24,595	23%	0.23	55	0.000	0.699	0.144	0.270	0.270	**73.0%**
72	16,021	2,264	2,264	4,528	5,042	27%	0.27	59.7	0.053	0.678	0.294	0.398	0.429	**57.1%**
73	13,328	1,877	1,877	3,754	4,035	28%	0.28	60.8	0.099	0.664	0.330	0.423	0.480	**52.0%**
74	20,778	2,204	5,214	7,418	6,821	26%	0.26	60.4	0.082	0.816	0.317	0.445	0.491	**50.9%**
75	10,971	323	2,814	3,137	3,153	29%	0.29	65.7	0.305	0.725	0.486	0.556	0.692	**30.8%**
76	9,091	1,373	1,373	2,746	2,450	31%	0.31	59.9	0.061	0.604	0.301	0.394	0.431	**56.9%**
77	23,637	2,558	2,558	5,116	7,890	25%	0.25	61.4	0.124	0.734	0.349	0.446	0.515	**48.5%**
78	12,293	1,611	1,611	3,222	3,648	29%	0.29	61.6	0.133	0.655	0.355	0.441	0.515	**48.5%**
79	15,284	1,874	1,874	3,748	4,766	27%	0.27	60.8	0.099	0.664	0.330	0.420	0.478	**52.2%**
80	12,002	1,626	1,626	3,252	3,539	29%	0.29	61.2	0.116	0.649	0.342	0.430	0.496	**50.4%**

Row	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI
6	MAY				Calculated									
7	Sac				Steamboat			USBR						Calculated
8	River			CVP + SWP & Sutter			X-channel	observed		Calculated Mortality				Survival
9	Flows	CVP	SWP	Exports	Slough Q	Percent	Closed	temp f	m1	m2	m3	m23	m123	s123
10	46,457	2,965	3,275	6,240	16,425	23%	0.23	61.2	0.116	0.779	0.342	0.444	0.509	**49.1%**
11	14,418	3,358	2,618	5,976	4,442	63%	0.47	62.4	0.166	0.789	0.381	0.573	0.644	**35.6%**
12	8,046	1,238	297	1,535	2,059	74%	0.55	69.2	0.452	0.718	0.598	0.664	0.816	**18.4%**
13	11,007	3,047	2,186	5,233	3,167	68%	0.50	63.2	0.200	0.771	0.406	0.590	0.672	**32.8%**
14	13,257	2,733	1,825	4,558	4,008	65%	0.48	65.7	0.305	0.787	0.486	0.631	0.743	**25.7%**
15	26,781	3,018	3,275	6,293	9,066	25%	0.25	62.6	0.175	0.806	0.387	0.491	0.580	**42.0%**
16	19,205	3,218	2,701	5,919	6,233	59%	0.44	66.6	0.343	0.862	0.515	0.669	0.783	**21.7%**
17	9,269	1,317	118	1,435	2,517	71%	0.53	66.1	0.322	0.658	0.499	0.583	0.717	**28.3%**
18	11,436	1,728	1,646	3,374	3,327	67%	0.50	63.1	0.196	0.689	0.403	0.546	0.635	**36.5%**
19	10,274	1,328	1,460	2,788	2,892	69%	0.51	70.5	0.507	0.796	0.640	0.720	0.862	**13.8%**
20	10,831	1,982	1,946	3,928	3,101	68%	0.51	65.5	0.297	0.756	0.480	0.620	0.732	**26.8%**
21	8,017	1,738	946	2,684	2,048	74%	0.55	63.7	0.221	0.669	0.422	0.559	0.656	**34.4%**
22	8,500	1,633	932	2,565	2,229	73%	0.54	68.3	0.414	0.747	0.569	0.666	0.804	**19.6%**
23	28,784	3,418	2,856	6,274	9,815	25%	0.25	64	0.234	0.831	0.432	0.530	0.640	**36.0%**
24	17,635	2,899	3,059	5,958	5,645	61%	0.45	64.9	0.271	0.833	0.461	0.629	0.730	**27.0%**
25	15,726	3,041	3,940	6,981	4,932	62%	0.46	64.5	0.255	0.870	0.448	0.643	0.734	**26.6%**
26	57,429	3,339	5,351	8,690	20,528	23%	0.23	62.5	0.170	0.909	0.384	0.504	0.589	**41.1%**
27	7,956	1,909	1,635	3,544	2,026	75%	0.55	68	0.402	0.784	0.560	0.684	0.811	**18.9%**
28	17,819	3,418	3,033	6,451	5,714	60%	0.45	65.6	0.301	0.867	0.483	0.656	0.760	**24.0%**
29	39,485	4,600	5,119	9,719	13,817	24%	0.24	61.6	0.133	0.937	0.355	0.493	0.560	**44.0%**
30	36,037	3,418	3,637	7,055	12,528	24%	0.24	60.1	0.069	0.794	0.307	0.424	0.464	**53.6%**
31	20,129	4,117	3,368	7,485	6,578	59%	0.44	65.4	0.292	0.908	0.477	0.667	0.764	**23.6%**
32	8,907	2,185	1,784	3,969	2,381	72%	0.53	65.9	0.313	0.765	0.493	0.638	0.752	**24.8%**
33	12,012	2,073	2,180	4,253	3,542	66%	0.49	63.1	0.196	0.727	0.403	0.563	0.648	**35.2%**
34	12,428	2,410	2,382	4,792	3,698	66%	0.49	63.9	0.229	0.765	0.429	0.593	0.686	**31.4%**
35	8,840	1,868	1,501	3,369	2,356	72%	0.54	68.7	0.431	0.789	0.582	0.693	0.825	**17.5%**
36	28,404	2,756	3,275	6,031	9,673	25%	0.25	62.3	0.162	0.790	0.378	0.479	0.563	**43.7%**
37	13,671	1,862	1,946	3,808	4,163	64%	0.48	65.2	0.284	0.745	0.470	0.602	0.715	**28.5%**
38	13,720	2,447	2,025	4,472	4,181	64%	0.48	64.3	0.246	0.758	0.441	0.593	0.693	**30.7%**
39	18,870	2,194	2,791	4,985	6,107	60%	0.45	64.4	0.250	0.782	0.445	0.595	0.696	**30.4%**
40	59,563	3,681	5,270	8,951	21,327	23%	0.23	61.7	0.137	0.905	0.358	0.484	0.554	**44.6%**
41	26,868	2,425	3,456	5,881	9,099	25%	0.25	60.9	0.103	0.758	0.333	0.438	0.496	**50.4%**
42	23,710	3,018	3,010	6,028	7,918	57%	0.43	65.9	0.313	0.854	0.493	0.647	0.758	**24.2%**
43	10,273	1,487	1,693	3,180	2,892	69%	0.51	66.9	0.356	0.748	0.525	0.640	0.768	**23.2%**
44	39,005	2,721	3,275	5,996	13,638	24%	0.24	61.4	0.124	0.772	0.349	0.449	0.517	**48.3%**
45	17,408	2,664	2,696	5,360	5,561	61%	0.45	64	0.234	0.791	0.432	0.595	0.689	**31.1%**
46	43,486	4,421	6,083	10,504	15,314	23%	0.23	62.9	0.187	0.994	0.397	0.537	0.624	**37.6%**
47	9,424	1,716	1,578	3,294	2,575	71%	0.53	65.9	0.313	0.735	0.493	0.620	0.739	**26.1%**
48	11,130	323	1,678	2,001	3,213	68%	0.50	65.9	0.313	0.679	0.493	0.587	0.716	**28.4%**
49	8,807	1,614	1,370	2,984	2,344	72%	0.54	64.3	0.246	0.693	0.441	0.577	0.681	**31.9%**
50	13,949	2,172	2,196	4,368	4,267	64%	0.48	64.8	0.267	0.762	0.457	0.602	0.709	**29.1%**
51	29,094	3,418	3,637	7,055	9,931	25%	0.25	62.5	0.170	0.838	0.384	0.495	0.581	**41.9%**
52	11,043	1,397	1,638	3,035	3,180	68%	0.50	65.2	0.284	0.712	0.470	0.592	0.708	**29.2%**
53	24,030	3,418	4,269	7,687	8,037	57%	0.43	63.6	0.217	0.885	0.419	0.618	0.701	**29.9%**
54	13,341	2,047	1,952	3,999	4,040	64%	0.48	67.3	0.372	0.791	0.537	0.659	0.786	**21.4%**
55	44,790	3,534	5,445	8,979	15,801	23%	0.23	62.1	0.154	0.914	0.371	0.498	0.575	**42.5%**
56	9,379	2,171	1,585	3,756	2,558	71%	0.53	66.1	0.322	0.759	0.499	0.636	0.753	**24.7%**
57	45,533	3,347	5,017	8,364	16,079	23%	0.23	63.2	0.200	0.907	0.406	0.523	0.619	**38.1%**
58	12,155	2,073	2,040	4,113	3,596	66%	0.49	68.6	0.427	0.820	0.579	0.697	0.827	**17.3%**
59	30,262	2,794	3,456	6,250	10,368	24%	0.24	61	0.107	0.776	0.336	0.443	0.503	**49.7%**
60	10,533	1,718	1,645	3,363	2,989	69%	0.51	67.3	0.372	0.764	0.537	0.653	0.782	**21.8%**
61	15,751	3,110	2,862	5,972	4,941	62%	0.46	66.9	0.356	0.870	0.525	0.684	0.797	**20.3%**
62	26,945	4,600	3,275	7,875	9,127	25%	0.25	63.4	0.208	0.889	0.413	0.531	0.628	**37.2%**
63	28,542	3,418	3,637	7,055	9,725	25%	0.25	63.8	0.225	0.861	0.425	0.532	0.638	**36.2%**
64	8,934	813	1,433	2,246	2,391	72%	0.53	69.6	0.469	0.756	0.611	0.689	0.835	**16.5%**
65	7,224	1,208	601	1,809	1,752	77%	0.57	64	0.234	0.637	0.432	0.549	0.654	**34.6%**
66	21,056	3,439	4,103	7,542	6,925	58%	0.44	63	0.191	0.868	0.400	0.604	0.680	**32.0%**
67	12,566	2,889	2,515	5,404	3,750	65%	0.49	63.8	0.225	0.789	0.425	0.603	0.692	**30.8%**
68	14,777	2,691	3,989	6,680	4,577	63%	0.47	63.6	0.217	0.841	0.419	0.617	0.700	**30.0%**
69	8,752	2,420	1,717	4,137	2,323	72%	0.54	66.7	0.347	0.786	0.518	0.662	0.780	**22.0%**
70	38,429	3,381	6,679	10,060	13,422	24%	0.24	61.1	0.112	0.943	0.339	0.483	0.540	**46.0%**
71	54,514	3,314	3,590	6,904	19,438	23%	0.23	60.1	0.069	0.788	0.307	0.418	0.458	**54.2%**
72	15,107	2,264	2,456	4,720	4,700	63%	0.47	66.5	0.339	0.808	0.512	0.650	0.769	**23.1%**
73	11,420	1,877	1,770	3,647	3,321	67%	0.50	65.8	0.309	0.749	0.489	0.619	0.737	**26.3%**
74	13,127	2,204	5,701	7,905	3,959	65%	0.48	66.2	0.326	0.941	0.502	0.714	0.807	**19.3%**
75	7,370	323	1,309	1,632	1,806	76%	0.57	70.5	0.507	0.746	0.640	0.700	0.852	**14.8%**
76	8,833	1,373	1,389	2,762	2,354	72%	0.54	65.8	0.309	0.711	0.489	0.608	0.729	**27.1%**
77	14,133	2,558	1,851	4,409	4,336	64%	0.47	64.7	0.263	0.762	0.454	0.600	0.705	**29.5%**
78	7,791	1,611	1,241	2,852	1,964	75%	0.56	66.4	0.335	0.725	0.509	0.629	0.753	**24.7%**
79	8,690	1,874	1,239	3,113	2,300	73%	0.54	65.7	0.305	0.724	0.486	0.614	0.732	**26.8%**
80	8,933	1,626	1,015	2,641	2,391	72%	0.53	66	0.318	0.709	0.496	0.610	0.734	**26.6%**

Row	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ
6	JUNE				Calculated											
7	Sac				Steamboat			USBR						Calculated		
8	River			CVP + SWP & Sutter			X-channel	observed		Calculated Mortality				Survival		Weighted
9	Flow	CVP	SWP	exports	Slough Q	percent	closed	temp f	m1	m2	m3	m23	m123	s123		Total Survival
10	34,719	4,600	6,672	11,272	12,035	24%	0.24	65.9	0.313	1.000	0.493	0.614	0.735	**26.5%**		**64.87%**
11	15,884	3,405	3,382	6,787	4,991	62%	0.46	65.3	0.288	0.876	0.473	0.660	0.758	**24.2%**		**63.62%**
12	10,096	561	388	949	2,826	69%	0.52	70.6	0.511	0.718	0.643	0.682	0.844	**15.6%**		**56.50%**
13	15,166	3,825	1,569	5,394	4,722	63%	0.47	68.3	0.414	0.870	0.569	0.709	0.830	**17.0%**		**61.09%**
14	17,055	4,230	2,494	6,724	5,429	61%	0.46	71.2	0.536	0.980	0.662	0.806	0.910	**9.0%**		**55.65%**
15	19,503	4,600	3,531	8,131	6,344	59%	0.44	68.1	0.406	0.985	0.563	0.750	0.851	**14.9%**		**64.61%**
16	14,470	3,318	2,668	5,986	4,462	63%	0.47	69.7	0.473	0.921	0.614	0.759	0.873	**12.7%**		**60.37%**
17	10,790	2,876	97	2,973	3,085	68%	0.51	70.1	0.490	0.797	0.627	0.713	0.854	**14.6%**		**62.82%**
18	18,431	4,404	2,669	7,073	5,943	60%	0.45	69.6	0.469	0.966	0.611	0.770	0.878	**12.2%**		**61.00%**
19	14,110	2,882	2,047	4,929	4,327	64%	0.47	70.7	0.515	0.893	0.646	0.763	0.885	**11.5%**		**54.19%**
20	20,235	4,087	3,861	7,948	6,618	59%	0.44	69.5	0.465	1.000	0.608	0.780	0.882	**11.8%**		**59.92%**
21	11,246	1,927	92	2,019	3,256	67%	0.50	69.8	0.478	0.750	0.617	0.684	0.835	**16.5%**		**60.56%**
22	14,639	4,231	1,230	5,461	4,525	63%	0.47	70.7	0.515	0.916	0.646	0.773	0.890	**11.0%**		**54.21%**
23	18,402	4,086	3,910	7,996	5,932	60%	0.45	71	0.528	1.000	0.656	0.810	0.910	**9.0%**		**60.07%**
24	17,887	4,386	3,173	7,559	5,740	60%	0.45	69.2	0.452	0.980	0.598	0.770	0.874	**12.6%**		**58.08%**
25	17,724	2,575	4,801	7,376	5,679	60%	0.45	69.7	0.473	0.981	0.614	0.780	0.884	**11.6%**		**59.60%**
26	35,517	4,600	6,672	11,272	12,333	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**		**66.73%**
27	18,919	4,415	2,987	7,402	6,126	60%	0.45	71	0.528	1.000	0.656	0.809	0.910	**9.0%**		**54.12%**
28	13,923	3,035	3,158	6,193	4,257	64%	0.48	71.5	0.549	0.962	0.672	0.810	0.914	**8.6%**		**59.91%**
29	20,808	4,600	6,487	11,087	6,832	59%	0.44	69	0.444	1.000	0.592	0.770	0.872	**12.8%**		**64.28%**
30	27,117	4,600	6,672	11,272	9,192	25%	0.25	67.8	0.393	1.000	0.553	0.664	0.796	**20.4%**		**68.05%**
31	16,774	4,600	3,179	7,779	5,323	61%	0.46	66.6	0.343	0.943	0.515	0.710	0.810	**19.0%**		**61.13%**
32	18,532	4,260	3,096	7,356	5,981	60%	0.45	67.8	0.393	0.946	0.553	0.729	0.836	**16.4%**		**61.41%**
33	16,702	3,438	3,715	7,153	5,297	61%	0.46	70.6	0.511	0.987	0.643	0.800	0.902	**9.8%**		**59.28%**
34	16,802	3,642	3,481	7,123	5,334	61%	0.46	68.1	0.406	0.941	0.563	0.736	0.843	**15.7%**		**59.31%**
35	18,815	4,550	2,765	7,315	6,087	60%	0.45	70	0.486	0.984	0.624	0.784	0.889	**11.1%**		**54.21%**
36	22,951	4,600	4,372	8,972	7,634	58%	0.43	69	0.444	1.000	0.592	0.767	0.871	**12.9%**		**64.70%**
37	18,262	4,081	3,150	7,231	5,880	60%	0.45	70.9	0.524	0.996	0.652	0.807	0.908	**9.2%**		**56.07%**
38	20,145	4,600	3,523	8,123	6,584	59%	0.44	68.9	0.440	0.999	0.588	0.769	0.871	**12.9%**		**56.98%**
39	17,859	4,600	2,783	7,383	5,729	60%	0.45	70.3	0.499	0.992	0.633	0.795	0.897	**10.3%**		**59.73%**
40	38,968	4,600	6,672	11,272	13,624	24%	0.24	65	0.276	1.000	0.464	0.591	0.704	**29.6%**		**67.36%**
41	25,885	4,600	5,574	10,174	8,731	25%	0.25	66.2	0.326	1.000	0.502	0.626	0.748	**25.2%**		**66.02%**
42	13,754	3,019	2,742	5,761	4,194	64%	0.48	68.7	0.431	0.893	0.582	0.730	0.847	**15.3%**		**61.50%**
43	18,887	4,350	3,034	7,384	6,114	60%	0.45	70.1	0.490	0.988	0.627	0.788	0.892	**10.8%**		**61.58%**
44	22,306	4,600	6,672	11,272	7,392	58%	0.43	68.7	0.431	1.000	0.582	0.763	0.865	**13.5%**		**63.30%**
45	18,766	4,227	3,410	7,637	6,068	60%	0.45	72	0.570	1.000	0.688	0.827	0.926	**7.4%**		**58.64%**
46	33,938	4,600	6,672	11,272	11,743	24%	0.24	67.7	0.389	1.000	0.550	0.658	0.791	**20.9%**		**64.17%**
47	18,574	4,469	2,839	7,308	5,997	60%	0.45	72.1	0.574	1.000	0.691	0.829	0.927	**7.3%**		**56.11%**
48	18,002	4,359	2,655	7,014	5,783	60%	0.45	72.7	0.600	1.000	0.710	0.840	0.936	**6.4%**		**59.02%**
49	20,144	4,600	3,077	7,677	6,584	59%	0.44	73.2	0.621	1.000	0.726	0.847	0.942	**5.8%**		**58.64%**
50	18,153	4,280	2,879	7,159	5,839	60%	0.45	70.4	0.503	0.984	0.636	0.793	0.897	**10.3%**		**56.72%**
51	20,212	4,600	4,005	8,605	6,609	59%	0.44	69	0.444	1.000	0.592	0.771	0.873	**12.7%**		**65.70%**
52	18,388	4,407	2,706	7,113	5,927	60%	0.45	69.5	0.465	0.966	0.608	0.768	0.876	**12.4%**		**60.64%**
53	18,700	4,600	3,522	8,122	6,044	60%	0.45	67.1	0.364	0.967	0.531	0.726	0.825	**17.5%**		**61.99%**
54	16,667	4,082	2,604	6,686	5,283	61%	0.46	70.4	0.503	0.964	0.636	0.786	0.894	**10.6%**		**56.07%**
55	39,345	4,600	6,672	11,272	13,765	24%	0.24	66.5	0.339	1.000	0.512	0.627	0.754	**24.6%**		**67.80%**
56	17,931	4,467	2,645	7,112	5,756	60%	0.45	72	0.570	1.000	0.688	0.828	0.926	**7.4%**		**57.57%**
57	24,130	4,600	6,643	11,243	8,075	57%	0.43	68.3	0.414	1.000	0.569	0.753	0.855	**14.5%**		**65.73%**
58	14,497	3,992	2,605	6,597	4,472	63%	0.47	70.7	0.515	0.965	0.646	0.796	0.901	**9.9%**		**60.29%**
59	23,634	4,600	4,819	9,419	7,889	57%	0.43	68.1	0.406	1.000	0.563	0.750	0.852	**14.8%**		**64.75%**
60	17,656	4,401	2,634	7,035	5,653	61%	0.45	70.7	0.515	0.984	0.646	0.799	0.902	**9.8%**		**60.21%**
61	17,940	2,501	5,222	7,723	5,760	60%	0.45	70.1	0.490	1.000	0.627	0.795	0.895	**10.5%**		**56.20%**
62	21,622	4,600	4,958	9,558	7,137	58%	0.43	69.7	0.473	1.000	0.614	0.782	0.885	**11.5%**		**63.53%**
63	24,787	4,600	6,672	11,272	8,320	57%	0.43	69.1	0.448	1.000	0.595	0.767	0.871	**12.9%**		**63.95%**
64	19,270	4,479	2,946	7,425	6,257	59%	0.44	71.8	0.562	1.000	0.681	0.823	0.922	**7.8%**		**58.60%**
65	9,679	42	531	573	2,670	70%	0.52	73.9	0.650	0.761	0.748	0.755	0.914	**8.6%**		**57.00%**
66	16,295	4,600	3,894	8,494	5,144	62%	0.46	70	0.486	1.000	0.624	0.797	0.895	**10.5%**		**62.85%**
67	19,870	3,340	4,706	8,046	6,481	59%	0.44	69.2	0.452	1.000	0.598	0.776	0.877	**12.3%**		**60.45%**
68	15,790	4,600	4,237	8,837	4,955	62%	0.46	66.9	0.356	0.994	0.525	0.742	0.834	**16.6%**		**64.42%**
69	18,045	4,332	2,735	7,067	5,799	60%	0.45	71.9	0.566	1.000	0.684	0.826	0.925	**7.5%**		**56.87%**
70	24,415	4,600	6,672	11,272	8,181	57%	0.43	66	0.318	1.000	0.496	0.711	0.803	**19.7%**		**67.88%**
71	55,568	4,600	4,685	9,285	19,832	23%	0.23	63.6	0.217	0.954	0.419	0.542	0.641	**35.9%**		**71.84%**
72	16,298	3,822	3,340	7,162	5,145	62%	0.46	68.4	0.419	0.948	0.572	0.745	0.852	**14.8%**		**60.29%**
73	17,412	4,274	2,597	6,871	5,562	61%	0.45	69.4	0.461	0.954	0.604	0.763	0.872	**12.8%**		**57.90%**
74	12,413	3,960	4,061	8,021	3,692	66%	0.49	71.6	0.553	1.000	0.675	0.834	0.926	**7.4%**		**55.87%**
75	20,169	4,600	3,154	7,754	6,593	59%	0.44	73.2	0.621	1.000	0.726	0.847	0.942	**5.8%**		**51.23%**
76	16,586	4,488	1,925	6,413	5,253	61%	0.46	69.4	0.461	0.934	0.604	0.755	0.868	**13.2%**		**59.82%**
77	17,163	4,188	2,490	6,678	5,469	61%	0.45	68.6	0.427	0.931	0.579	0.739	0.850	**15.0%**		**57.54%**
78	19,624	4,528	2,908	7,436	6,389	59%	0.44	68.5	0.423	0.962	0.576	0.747	0.854	**14.6%**		**56.91%**
79	10,600	1,875	1,242	3,117	3,014	68%	0.51	69.4	0.461	0.791	0.604	0.699	0.838	**16.2%**		**58.66%**
80	14,041	3,820	1,340	5,160	4,301	64%	0.47	69	0.444	0.872	0.592	0.725	0.847	**15.3%**		**57.41%**
81															**Average:**	**60.51%**

BG10 ='Study 467 Flow Data'!G7
BH10 ='Study 467 Flow Data'!Q7
BI10 ='Study 467 Flow Data'!AA7
BJ10 =(BH10+BI10)
BK10 =0.374*BG10-950
BL10 =IF(BG10>$G$2,(0.133*BG10+829)/(BG10-BK10),(0.293*BG10+2090)/(BG10-BK10))
BM10 =(0.133*BG10+829)/(BG10-BK10)
BN10
BO10 =IF((-2.45925+(0.0420748*BN10))<0,0,(-2.45925+(0.0420748*BN10)))
BP10 =IF(((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10))>1,1,((-0.5916024)+(0.017968*BN10)+(0.0000434*BJ10)
BQ10 =-1.613493+(0.0319584*BN10)
BR10 =(BP10*BM10)+(BQ10*(1-BM10))
BS10 =BO10+BR10-(BO10*BR10)
BT10 =1-BS10

BV10 ='Study 467 Flow Data'!H7
BW10 ='Study 467 Flow Data'!R7
BX10 ='Study 467 Flow Data'!AB7
BY10 =(BW10+BX10)
BZ10 =0.374*BV10-950
CA10 =IF(BV10>$K$4,(0.133*BV10+829)/(BV10-BZ10),(0.293*BV10+2090)/(BV10-BZ10))
CB10 =(0.45*(0.133*BV10+829)/(BV10-BZ10))+(0.55*CA10)
CC10
CD10 =IF((-2.45925+(0.0420748*CC10))<0,0,(-2.45925+(0.0420748*CC10)))
CE10 =IF(((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10))>1,1,((-0.5916024)+(0.017968*CC10)+(0.0000434*BY10)))
CF10 =-1.613493+(0.0319584*CC10)
CG10 =(CE10*CB10)+(CF10*(1-CB10))
CH10 =CD10+CG10-(CD10*CG10)
CI10 =1-CH10

CK10 ='Study 467 Flow Data'!I7
CL10 ='Study 467 Flow Data'!S7
CM10 ='Study 467 Flow Data'!AC7
CN10 =(CL10+CM10)
CO10 =0.374*CK10-950
CP10 =IF(CK10>$K$4,(0.133*CK10+829)/(CK10-CO10),(0.293*CK10+2090)/(CK10-CO10))
CQ10 =(0.45*(0.133*CK10+829)/(CK10-CO10))+(0.55*CP10)
CR10
CS10 =IF((-2.45925+(0.0420748*CR10))<0,0,(-2.45925+(0.0420748*CR10)))
CT10 =IF(((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10))>1,1,((-0.5916024)+(0.017968*CR10)+(0.0000434*CN10)))
CU10 =-1.613493+(0.0319584*CR10)
CV10 =(CT10*CQ10)+(CU10*(1-CQ10))
CW10 =CS10+CV10-(CS10*CV10)
CX10 =1-CW10
CZ10 =(0.01*O10)+(0.06*AC10)+(0.17*AQ10)+(0.28*BE10)+(0.25*BT10)+(0.16*CI10)+(0.07*CX10)

Study 467 San Joaquin River Fall Run Salmon Smolt Survival Model WITH BARRIER

Barrier at head of Old River from Apr 15 to May 15

Old River Barrier Open above	7500.00	cfs at Vernalis
Consumptive Depletion for April	1053.00	cfs
Consumptive Depletion for May	1053.00	cfs

Year	Water Year Type	APRIL Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	m2	Calculated Mortality m34	m3	m4	m234	Calculated Survival s234	MAY Vernalis Flows	CVP+SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt	m2	Calculated Mortality m34	m3	m4	m234	Calculated Survival s234	Weighted (April + June) total survival
1922	A	5,697	9,546	1.685	3,571	2,126	0.63	0.37	60.2	0.947	0.755	0.623	0.349	0.826	**17.4%**	4,180	5,985	1.443	2,485	1,695	0.59	0.41	66.6	0.960	0.863	0.700	0.542	0.902	**9.8%**	**13.2%**
1923	B	4,487	10,100	2.267	2,735	1,752	0.61	0.39	59.7	0.958	0.793	0.682	0.348	0.857	**14.3%**	3,399	5,985	1.777	1,983	1,416	0.58	0.42	66.0	0.968	0.870	0.736	0.507	0.911	**8.9%**	**11.3%**
1924	C	1,697	571	0.343	1,125	572	0.66	0.34	60.6	0.993	0.796	0.796	0.000	0.863	**13.7%**	1,236	4,017	3.335	656	580	0.53	0.47	63.9	0.993	0.878	0.830	0.284	0.932	**6.8%**	**9.9%**
1925	D	3,596	11,226	3.149	2,099	1,498	0.58	0.42	63.4	0.966	0.897	0.727	0.622	0.926	**7.4%**	2,667	5,985	2.271	1,512	1,155	0.57	0.43	67.3	0.976	0.904	0.769	0.583	0.935	**6.5%**	**6.9%**
1926	D	3,092	10,739	3.509	1,772	1,321	0.57	0.43	63.4	0.971	0.900	0.751	0.597	0.930	**7.0%**	2,098	5,985	2.896	1,146	952	0.55	0.45	67.3	0.982	0.915	0.795	0.583	0.945	**5.5%**	**6.2%**
1927	W	4,941	9,764	1.989	3,053	1,888	0.62	0.38	57.1	0.954	0.721	0.660	0.179	0.810	**19.0%**	3,318	5,985	1.821	1,931	1,387	0.58	0.42	64.2	0.969	0.844	0.739	0.402	0.896	**10.4%**	**14.3%**
1928	A	4,470	10,083	2.272	2,724	1,746	0.61	0.39	60.2	0.958	0.802	0.683	0.377	0.863	**13.7%**	2,342	5,985	2.590	1,303	1,039	0.56	0.44	66.6	0.979	0.901	0.784	0.542	0.936	**6.4%**	**9.7%**
1929	C	2,033	5,395	2.695	1,211	822	0.60	0.40	60.6	0.986	0.824	0.790	0.161	0.889	**11.1%**	1,513	4,375	2.954	822	691	0.54	0.46	63.9	0.990	0.873	0.818	0.302	0.926	**7.4%**	**9.0%**
1930	D	2,168	9,344	4.374	1,186	981	0.55	0.45	63.4	0.981	0.902	0.792	0.526	0.938	**6.2%**	1,545	5,985	3.955	791	754	0.51	0.49	67.3	0.988	0.925	0.820	0.583	0.956	**4.4%**	**5.2%**
1931	C	1,597	4,269	2.728	948	648	0.59	0.41	60.6	0.991	0.829	0.809	0.104	0.895	**10.5%**	1,220	4,326	3.641	635	584	0.52	0.48	63.9	0.993	0.882	0.831	0.300	0.935	**6.5%**	**8.3%**
1932	D	4,521	538	0.120	3,039	1,482	0.67	0.33	63.4	0.966	0.687	0.661	0.077	0.778	**22.2%**	2,765	5,985	2.190	1,575	1,190	0.57	0.43	67.3	0.975	0.902	0.765	0.583	0.933	**6.7%**	**13.7%**
1933	C	2,302	1,765	0.777	1,500	802	0.65	0.35	60.6	0.986	0.770	0.770	0.000	0.845	**15.5%**	1,756	4,472	2.593	976	781	0.56	0.44	63.9	0.987	0.866	0.807	0.307	0.920	**8.0%**	**11.4%**
1934	C	1,832	689	0.383	1,213	619	0.66	0.34	60.6	0.992	0.790	0.790	0.000	0.858	**14.2%**	1,252	4,977	4.077	635	617	0.51	0.49	63.9	0.992	0.887	0.831	0.333	0.939	**6.1%**	**9.7%**
1935	B	7,243	11,142	1.545	4,572	2,671	0.63	0.37	59.7	0.930	0.732	0.552	0.402	0.805	**19.5%**	6,066	5,985	0.992	3,698	2,368	0.61	0.39	66.0	0.939	0.810	0.614	0.507	0.860	**14.0%**	**16.5%**
1936	B	6,420	9,781	1.531	4,054	2,366	0.63	0.37	59.7	0.939	0.725	0.589	0.332	0.804	**19.6%**	4,359	5,985	1.383	2,600	1,759	0.60	0.40	66.0	0.958	0.848	0.692	0.507	0.892	**10.8%**	**14.7%**
1937	B	7,932	9,579	1.212	1,873	6,059	0.24	0.76	59.7	0.829	0.826	0.743	0.322	0.828	**17.2%**	8,132	5,985	0.739	2,160	5,971	0.27	0.73	66.0	0.831	0.863	0.723	0.507	0.840	**16.0%**	**16.5%**
1938	W	18,049	7,714	0.428	5,163	12,886	0.29	0.71	57.1	0.624	0.546	0.510	0.075	0.602	**39.8%**	24,265	5,985	0.247	7,221	17,044	0.30	0.70	64.2	0.499	0.619	0.364	0.402	0.535	**46.5%**	**43.5%**
1939	D	2,891	7,983	2.792	1,716	1,175	0.59	0.41	63.4	0.975	0.867	0.755	0.457	0.911	**8.9%**	1,952	4,993	2.600	1,084	867	0.56	0.44	67.3	0.984	0.906	0.799	0.532	0.941	**5.9%**	**7.3%**
1940	A	6,470	10,285	1.597	4,073	2,397	0.63	0.37	60.2	0.939	0.747	0.587	0.387	0.818	**18.2%**	4,635	5,985	1.300	2,778	1,857	0.60	0.40	66.6	0.955	0.853	0.679	0.542	0.894	**10.6%**	**14.0%**
1941	W	10,083	9,310	0.926	2,565	7,519	0.25	0.75	57.1	0.785	0.742	0.694	0.156	0.774	**22.6%**	9,579	5,985	0.627	2,614	6,965	0.27	0.73	64.2	0.802	0.815	0.691	0.402	0.805	**19.5%**	**20.9%**
1942	W	6,907	9,646	1.403	4,388	2,519	0.64	0.36	57.1	0.935	0.640	0.565	0.173	0.748	**25.2%**	5,741	5,985	1.048	3,489	2,252	0.61	0.39	64.2	0.943	0.778	0.629	0.402	0.843	**15.7%**	**20.0%**
1943	W	7,915	9,663	1.226	1,863	6,053	0.24	0.76	57.1	0.829	0.789	0.744	0.174	0.819	**18.1%**	6,164	5,985	0.976	3,761	2,403	0.61	0.39	64.2	0.938	0.766	0.609	0.402	0.833	**16.7%**	**17.3%**
1944	D	3,428	9,579	2.820	2,033	1,395	0.59	0.41	63.4	0.969	0.876	0.732	0.538	0.914	**8.6%**	2,570	4,993	1.967	1,482	1,088	0.58	0.42	67.3	0.978	0.893	0.771	0.532	0.929	**7.1%**	**7.8%**
1945	B	6,537	9,764	1.501	4,134	2,403	0.63	0.37	59.7	0.938	0.721	0.583	0.331	0.801	**19.9%**	4,180	5,855	1.411	2,489	1,690	0.60	0.40	66.0	0.960	0.850	0.700	0.500	0.894	**10.6%**	**14.8%**
1946	B	4,924	10,100	2.064	3,031	1,893	0.62	0.38	59.7	0.954	0.779	0.661	0.348	0.846	**15.4%**	3,708	5,562	1.513	2,195	1,513	0.59	0.41	66.0	0.965	0.856	0.720	0.485	0.901	**9.9%**	**12.4%**
1947	D	2,252	10,134	4.564	1,220	1,032	0.54	0.46	63.4	0.979	0.909	0.790	0.567	0.941	**5.9%**	1,675	4,993	3.038	907	769	0.54	0.46	67.3	0.987	0.912	0.812	0.532	0.947	**5.3%**	**5.6%**
1948	B	3,647	11,092	3.068	2,137	1,510	0.59	0.41	59.7	0.965	0.834	0.725	0.399	0.889	**11.1%**	2,879	5,985	2.102	1,648	1,230	0.57	0.43	66.0	0.974	0.881	0.759	0.507	0.921	**7.9%**	**9.4%**
1949	D	2,975	9,814	3.335	1,719	1,256	0.58	0.42	63.4	0.973	0.889	0.754	0.550	0.925	**7.5%**	2,212	5,985	2.745	1,219	992	0.55	0.45	67.3	0.981	0.912	0.790	0.583	0.943	**5.7%**	**6.5%**
1950	B	3,042	10,067	3.344	1,757	1,285	0.58	0.42	59.7	0.972	0.838	0.752	0.347	0.894	**10.6%**	2,212	5,985	2.745	1,219	992	0.55	0.45	66.0	0.981	0.896	0.790	0.507	0.934	**6.6%**	**8.4%**
1951	A	3,563	9,092	2.575	2,139	1,424	0.60	0.40	60.2	0.968	0.814	0.724	0.326	0.876	**12.4%**	2,862	5,985	2.114	1,638	1,225	0.57	0.43	66.6	0.974	0.890	0.760	0.542	0.926	**7.4%**	**9.7%**
1952	W	10,823	8,773	0.813	2,830	7,992	0.26	0.74	57.1	0.771	0.717	0.675	0.129	0.757	**24.3%**	15,467	5,985	0.388	4,461	11,005	0.29	0.71	64.2	0.680	0.737	0.560	0.402	0.697	**30.3%**	**27.6%**
1953	W	2,857	9,764	3.456	1,641	1,216	0.57	0.43	57.1	0.974	0.803	0.760	0.179	0.876	**12.4%**	2,277	5,985	2.666	1,261	1,016	0.55	0.45	64.2	0.980	0.872	0.787	0.402	0.920	**8.0%**	**10.0%**
1954	A	3,949	10,386	2.651	2,363	1,587	0.60	0.40	60.2	0.963	0.823	0.709	0.392	0.879	**12.1%**	2,505	5,822	2.354	1,413	1,092	0.56	0.44	66.6	0.978	0.896	0.776	0.534	0.931	**6.9%**	**9.2%**
1955	D	2,286	9,008	3.996	1,276	1,010	0.56	0.44	63.4	0.980	0.895	0.786	0.509	0.933	**6.7%**	1,984	4,993	2.557	1,105	879	0.56	0.44	67.3	0.984	0.905	0.798	0.532	0.940	**6.0%**	**6.3%**
1956	W	4,790	10,386	2.183	2,932	1,858	0.61	0.39	57.1	0.955	0.738	0.668	0.211	0.822	**17.8%**	6,131	5,985	0.981	3,740	2,391	0.61	0.39	64.2	0.939	0.767	0.611	0.402	0.834	**16.6%**	**17.1%**
1957	A	2,706	10,184	3.808	1,526	1,180	0.56	0.44	60.2	0.975	0.857	0.768	0.382	0.908	**9.2%**	2,423	5,985	2.502	1,355	1,068	0.56	0.44	66.6	0.978	0.899	0.780	0.542	0.934	**6.6%**	**7.7%**
1958	W	14,907	9,663	0.650	4,056	10,851	0.27	0.73	57.1	0.685	0.660	0.588	0.174	0.678	**32.2%**	13,190	5,985	0.455	3,747	9,443	0.28	0.72	64.2	0.727	0.767	0.610	0.402	0.738	**26.2%**	**28.9%**
1959	B	2,218	8,470	3.873	1,246	972	0.56	0.44	59.7	0.981	0.844	0.788	0.265	0.904	**9.6%**	1,594	4,993	3.196	854	740	0.54	0.46	66.0	0.988	0.900	0.816	0.456	0.941	**5.9%**	**7.6%**
1960	D	2,269	6,857	3.065	1,328	941	0.59	0.41	63.4	0.982	0.869	0.782	0.399	0.916	**8.4%**	1,643	4,993	3.099	886	757	0.54	0.46	67.3	0.988	0.913	0.813	0.532	0.947	**5.3%**	**6.7%**
1961	D	1,697	7,932	4.762	909	788	0.54	0.46	63.4	0.987	0.897	0.812	0.454	0.939	**6.1%**	1,269	4,993	4.036	645	624	0.51	0.49	67.3	0.992	0.921	0.831	0.532	0.956	**4.4%**	**5.2%**
1962	B	4,218	10,487	2.505	2,542	1,676	0.60	0.40	59.7	0.960	0.808	0.696	0.368	0.868	**13.2%**	2,440	4,993	2.074	1,398	1,041	0.57	0.43	66.0	0.979	0.879	0.777	0.456	0.922	**7.8%**	**10.2%**
1963	W	5,361	10,117	1.898	3,327	2,034	0.62	0.38	57.1	0.949	0.711	0.640	0.197	0.802	**19.8%**	4,163	5,985	1.448	2,475	1,689	0.59	0.41	64.2	0.960	0.821	0.701	0.402	0.877	**12.3%**	**15.7%**
1964	D	2,168	9,008	4.216	1,196	972	0.55	0.45	63.4	0.981	0.898	0.791	0.509	0.935	**6.5%**	1,708	4,993	2.979	927	780	0.54	0.46	67.3	0.987	0.911	0.810	0.532	0.946	**5.4%**	**5.9%**
1965	W	6,958	9,932	1.434	4,414	2,544	0.63	0.37	57.1	0.934	0.645	0.563	0.188	0.751	**24.9%**	4,326	5,985	1.394	2,579	1,747	0.60	0.40	64.2	0.958	0.816	0.693	0.402	0.874	**12.6%**	**18.2%**
1966	B	2,454	9,966	4.115	1,362	1,092	0.55	0.45	59.7	0.978	0.855	0.780	0.342	0.910	**9.0%**	1,870	4,993	2.715	1,032	838	0.55	0.45	66.0	0.985	0.893	0.803	0.456	0.934	**6.6%**	**7.7%**
1967	W	13,613	8,722	0.642	3,709	9,904	0.27	0.73	57.1	0.713	0.662	0.613	0.126	0.699	**30.1%**	16,003	5,985	0.375	4,630	11,373	0.29	0.71	64.2	0.669	0.729	0.548	0.402	0.687	**31.3%**	**30.8%**
1968	B	2,370	8,470	3.623	1,349	1,021	0.57	0.43	59.7	0.980	0.839	0.781	0.265	0.900	**10.0%**	1,740	4,993	2.922	948	792	0.54	0.46	66.0	0.987	0.896	0.809	0.456	0.937	**6.3%**	**8.0%**
1969	W	20,923	7,495	0.359	6,079	14,844	0.29	0.71	57.1	0.565	0.480	0.445	0.063	0.540	**46.0%**	26,217	5,985	0.229	7,834	18,383	0.30	0.70	66.4	0.459	0.681	0.320	0.530	0.525	**47.5%**	**46.8%**
1970	W	4,017	8,470	2.126	2,464	1,552	0.61	0.39	57.1	0.964	0.735	0.701	0.113	0.824	**17.6%**	3,074	5,985	1.967	1,774	1,300	0.58	0.42	61.2	0.971	0.807	0.750	0.226	0.876	**12.4%**	**14.7%**
1971	W	2,891	10,386	3.633	1,645	1,245	0.57	0.43	57.1	0.973	0.810	0.760	0.211	0.880	**12.0%**	2,358	5,985	2.572	1,314	1,045	0.56	0.44	64.2	0.979	0.870	0.783	0.402	0.918	**8.2%**	**9.9%**
1972	B	1,983	9,646	4.943	1,052	931	0.53	0.47	58.9	0.983	0.857	0.802	0.278	0.916	**8.4%**	1,464	4,993	3.486	771	693	0.53	0.47	66.0	0.990	0.903	0.822	0.456	0.944	**5.6%**	**6.9%**
1973	A	6,571	10,117	1.547	4,147	2,424	0.63	0.37	59.2	0.938	0.716	0.582	0.320	0.798	**20.2%**	5,448	5,985	1.105	3,301	2,147	0.61	0.39	66.3	0.946	0.830	0.642	0.525	0.876	**12.4%**	**15.9%**
1974	W	7,647	10,100	1.326	1,751	5,895	0.23	0.77	56.9	0.834	0.798	0.752	0.185	0.825	**17.5%**	5,416	5,985	1.112	3,280	2,136	0.61	0.39	66.1	0.946	0.826	0.643	0.513	0.874	**12.6%**	**14.8%**
1975	W	6,621	10,386	1.576	4,173	2,449	0.63	0.37	53.7	0.937	0.585	0.580	0.012	0.715	**28.5%**	4,651	5,985	1.296	2,788	1,863	0.60	0.40	61.5	0.955	0.757	0.678	0.244	0.836	**16.4%**	**21.8%**
1976	C	1,882	7,613	4.114	1,044	838	0.55	0.45	57.8	0.985	0.824	0.802	0.110	0.896	**10.4%**	1,366	4,359	3.266	728	638	0.53	0.47	65.8	0.991	0.897	0.825	0.412	0.941	**5.9%**	**7.9%**
1977	C	1,529	9,008	6.014	764	766	0.50	0.50	62.0	0.987	0.898	0.822	0.427	0.943	**5.7%**	1,269	3,887	3.142	681	588	0.54	0.46	62.3	0.993	0.860	0.828	0.184	0.921	**7.9%**	**6.9%**
1978	A	14,957	8,672	0.581	4,134	10,823	0.28	0.72	61.4	0.686	0.739	0.583	0.375	0.701	**29.9%**	10,864	5,985	0.553	3,018	7,846	0.28	0.72	66.9	0.775	0.851	0.662	0.560	0.796	**20.4%**	**24.7%**
1979	B	5,327	9,646	1.822	3,318	2,009	0.62	0.38	60.5	0.950	0.774	0.641	0.372	0.841	**15.9%**	4,082	5,985	1.478	2,422	1,660	0.59	0.41	66.0	0.961	0.854	0.704	0.507	0.898	**10.2%**	**12.8%**
1980	A	6,722	8,554	1.279	4,295	2,427	0.64	0.36	60.1	0.938	0.697	0.571	0.293	0.784	**21.6%**	6,635	5,985	0.906	4,064	2,571	0.61	0.39	66.6	0.933	0.811	0.588	0.542	0.859	**14.1%**	**17.5%**
1981	D	2,807	9,764	3.519	1,607	1,200	0.57	0.43	64.6	0.974	0.909	0.762	0.618	0.937	**6.3%**	1,822	5,497	3.071	984	837	0.54	0.46	68.7	0.985	0.930	0.806	0.640	0.956	**4.4%**	**5.3%**
1982	W	27,023	8,974	0.332	7,900	19,123	0.29	0.71	52.8	0.437	0.315	0.315	0.000	0.401	**59.9%**	15,158	5,985	0.396	4,364	10,793	0.29	0.71	65.1	0.687	0.763	0.566	0.454	0.709	**29.1%**	**43.0%**
1983	W	20,738	6,958	0.336	6,054	14,684	0.29	0.71	57.2	0.570	0.470	0.446	0.042	0.541	**45.9%**	19,077	5,985	0.314	5,594	13,483	0.29	0.71	61.3	0.606	0.600	0.479	0.232	0.604	**39.6%**	**42.4%**
1984	W	3,680	9,646	2.644	2,202	1,478	0.60	0.40	60.7	0.966	0.827	0.720	0.384	0.883	**11.7%**	2,846	5,985	2.126	1,627	1,219	0.57	0.43	66.0	0.974	0.882	0.761	0.507	0.921	**7.9%**	**9.6%**
1985	D	2,470	10,335	4.238	1,362	1,108	0.55	0.45	62.5	0.977	0.895	0.780	0.524	0.932	**6.8%**	1,805	4,993	2.815	990	815	0.55	0.45	65.1	0.986	0.884	0.806	0.404	0.930	**7.0%**	**6.9%**
1986	W	9,798	7,714	0.790	2,575	7,223	0.26	0.74	61.3	0.794	0.792	0.694	0.320	0.793	**20.7%**	8,067	5,985	0.745	2,140	5,927	0.27	0.73	65.8	0.833	0.861	0.724	0.495	0.840	**16.0%**	**18.1%**
1987	D	2,033	5,092	2.544	1,220	813	0.60	0.40	62.3	0.986	0.841	0.790	0.245	0.899	**10.1%**	1,447	4,993	3.526	760	687	0.53	0.47	68.6	0.990	0.930	0.822	0.609	0.959	**4.1%**	**6.8%**
1988	C	1,798	2,067	1.170	1,150	648	0.64	0.36	62.1	0.991	0.811	0.795	0.079	0.876	**12.4%**	1,334	4,977	3.822	687	646	0.52	0.48	63.7	0.991	0.883	0.828	0.321	0.935	**6.5%**	**9.1%**
1989	D	2,067	11,075	5.441	1,067	1,000	0.52	0.48	64.1	0.980	0.931	0.801	0.655	0.955	**4.5%**	1,496	5,985	4.086	759	737	0.51	0.49	66.7	0.988	0.920	0.822	0.548	0.954	**4.6%**	**4.6%**
1990	C	1,765	6,621	3.821	993	771	0.56	0.44	60.6	0.987	0.849	0.806	0.224	0.910	**9.0%**	1,285	5,009	3.997	655	630	0.51	0.49	63.9	0.992	0.887	0.830	0.334	0.938	**6.2%**	**7.5%**
1991	C	2,454	10,991	4.538	1,332	1,122	0.54	0.46	60.6	0.977	0.879	0.782	0.446	0.924	**7.6%**	1,659	5,204	3.198	889	770	0.54	0.46	63.9	0.987	0.878	0.813	0.344	0.928	**7.2%**	**7.4%**
1992	C	2,269	9,898	4.425	1,238	1,030	0.55	0.45	60.6	0.980	0.871	0.788	0.391	0.920	**8.0%**	1,480	4,131	2.852	809	671	0.55	0.45	63.9	0.990	0.871	0.819	0.290	0.925	**7.5%**	**7.7%**
																													Average:	**13.60%**

Calculations- San Joaquin River Fall

Run Smolt Survival Model WITH BARRIER:

C8 ='Study 467 Flow Data'!AB7
D8 ='Study 467 Flow Data'!G7 (HIDDEN)
E8 ='Study 467 Flow Data'!Q7 (HIDDEN)
F8 =D8+E8
G8 =F8/(C8-0.03*$R$2)
H8 =IF(C8<$R$1,(0.47*(0.3137*C8-0.0156*$R$2-0.0625*F8)+0.53*C8),(0.3137*C8-0.0156*$R$2-0.0625*F8))
I8 =C8-H8
J8 =H8/C8
K8 =I8/C8
M8 =(1.01045-0.00003*I8)
N8 =(O8+P8)-(O8*P8)
O8 =IF((0.87634-0.000071*H8)<0,0,(0.87634-0.000071*H8))
P8 =IF((-3.65867+0.058492*L8+0.000051*F8)<0,0,(-3.65867+0.058492*L8+0.000051*F8))
Q8 =((K8*M8)+(J8*N8))
R8 =(1-Q8)

T8 ='Study 467 Flow Data'!AC7
U8 ='Study 467 Flow Data'!H7 (HIDDEN)
V8 ='Study 467 Flow Data'!R7 (HIDDEN)
W8 =U8+V8
X8 =W8/(T8-0.03*$R$3)
Y8 =IF(T8<$R$1,(0.52*(0.3137*T8-0.0156*$R$3-0.0625*W8)+0.48*T8),(0.3137*T8-0.0156*$R$3-0.0625*W8))
Z8 =T8-Y8
AA8 =Y8/T8
AB8 =Z8/T8
AD8 =(1.01045-0.00003*Z8)
AE8 =(AF8+AG8)-(AF8*AG8)
AF8 =IF((0.87634-0.000071*Y8)<0,0,(0.87634-0.000071*Y8))
AG8 =IF((-3.65867+0.058492*AC8+0.000051*W8)<0,0,(-3.65867+0.058492*AC8+0.000051*W8))
AH8 =((AB8*AD8)+(AA8*AE8))
AI8 =(1-AH8)
AK8 =0.45*G94+0.55*AI8

	A	B	C	F	G	H	I	J	K	L	M	N	O	P	Q	R	T	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK
1	Study 468 San Joaquin River Fall Run Salmon Smolt Survival Model WITH BARRIER											Old River Barrier Open above				7500.00 cfs at Vernalis															
2	Barrier at head of Old River from Apr 15 to May 15											Consumptive Depletion for April				1053.00 cfs															
3												Consumptive Depletion for May				1053.00 cfs															
4																															
5		Water	APRIL													Calculated	MAY													Calculated	Weighted
6		Year	Vernalis	CVP + SWP		Calculated				Temp @		Calculated Mortality				Survival	Vernalis	CVP+SWP		Calculated				Temp @		Calculated Mortality				Survival	(April + June)
7	Year	Type	Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	s234	Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt	m2	m34	m3	m4	m234	s234	total survival
8	1922	A	6,201	8,369	1.357	3,947	2,254	0.64	0.36	60.2	0.943	0.713	0.596	0.289	0.797	20.3%	5,936	8,685	1.471	3,527	2,409	0.59	0.41	66.6	0.938	0.880	0.626	0.680	0.904	9.6%	14.5%
9	1923	B	5,344	7,932	1.493	3,380	1,965	0.63	0.37	59.7	0.952	0.723	0.636	0.238	0.807	19.3%	5,156	6,245	1.219	3,104	2,051	0.60	0.40	66.0	0.949	0.835	0.656	0.520	0.880	12.0%	15.3%
10	1924	C	1,983	2,790	1.430	1,254	729	0.63	0.37	60.6	0.989	0.793	0.787	0.028	0.865	13.5%	1,870	781	0.425	1,169	701	0.62	0.38	63.9	0.989	0.818	0.793	0.119	0.882	11.8%	12.5%
11	1925	D	3,983	6,958	1.761	2,486	1,497	0.62	0.38	63.4	0.966	0.821	0.700	0.405	0.875	12.5%	3,822	5,042	1.330	2,286	1,536	0.60	0.40	67.3	0.964	0.867	0.714	0.535	0.906	9.4%	10.8%
12	1926	D	3,664	6,655	1.832	2,279	1,385	0.62	0.38	63.4	0.969	0.826	0.715	0.389	0.880	12.0%	3,545	4,879	1.389	2,113	1,432	0.60	0.40	67.3	0.967	0.870	0.726	0.527	0.910	9.0%	10.4%
13	1927	W	5,344	8,100	1.525	3,375	1,969	0.63	0.37	57.1	0.951	0.671	0.637	0.094	0.774	22.6%	5,156	8,327	1.625	3,036	2,119	0.59	0.41	64.2	0.947	0.838	0.661	0.521	0.882	11.8%	16.6%
14	1928	A	4,470	7,630	1.719	2,796	1,674	0.63	0.37	60.2	0.960	0.759	0.678	0.252	0.834	16.6%	3,822	6,375	1.682	2,242	1,580	0.59	0.41	66.6	0.963	0.876	0.717	0.562	0.912	8.8%	12.3%
15	1929	C	2,017	2,353	1.185	1,289	727	0.64	0.36	60.6	0.989	0.786	0.785	0.006	0.859	14.1%	1,870	3,058	1.663	1,095	775	0.59	0.41	63.9	0.987	0.846	0.799	0.235	0.904	9.6%	11.6%
16	1930	D	2,420	3,899	1.632	1,517	903	0.63	0.37	63.4	0.983	0.826	0.769	0.249	0.885	11.5%	1,870	3,513	1.911	1,080	790	0.58	0.42	67.3	0.987	0.891	0.800	0.457	0.932	6.8%	8.9%
17	1931	C	1,983	2,958	1.516	1,249	734	0.63	0.37	60.6	0.988	0.795	0.788	0.037	0.867	13.3%	1,870	2,797	1.521	1,103	767	0.59	0.41	63.9	0.987	0.843	0.798	0.222	0.902	9.8%	11.4%
18	1932	D	4,504	5,378	1.202	2,885	1,618	0.64	0.36	63.4	0.962	0.778	0.671	0.324	0.844	15.6%	3,871	4,847	1.262	2,323	1,547	0.60	0.40	67.3	0.964	0.863	0.711	0.525	0.903	9.7%	12.3%
19	1933	C	2,807	4,134	1.490	1,772	1,034	0.63	0.37	60.6	0.979	0.775	0.751	0.097	0.850	15.0%	2,683	2,700	1.018	1,630	1,054	0.61	0.39	63.9	0.979	0.813	0.761	0.217	0.878	12.2%	13.5%
20	1934	C	1,983	3,563	1.826	1,231	752	0.62	0.38	60.6	0.988	0.803	0.789	0.068	0.873	12.7%	1,870	2,944	1.601	1,099	772	0.59	0.41	63.9	0.987	0.845	0.798	0.229	0.903	9.7%	11.0%
21	1935	B	7,226	9,092	1.264	4,621	2,606	0.64	0.36	59.7	0.932	0.682	0.548	0.297	0.773	22.7%	6,050	5,465	0.908	3,705	2,345	0.61	0.39	66.0	0.940	0.799	0.613	0.480	0.854	14.6%	18.3%
22	1936	B	6,403	8,369	1.314	4,084	2,319	0.64	0.36	59.7	0.941	0.694	0.586	0.260	0.783	21.7%	5,156	6,310	1.232	3,102	2,054	0.60	0.40	66.0	0.949	0.836	0.656	0.524	0.881	11.9%	16.3%
23	1937	B	7,932	8,050	1.019	1,969	5,963	0.25	0.75	59.7	0.832	0.801	0.737	0.244	0.824	17.6%	8,132	6,733	0.831	2,114	6,018	0.26	0.74	66.0	0.830	0.876	0.726	0.545	0.842	15.8%	16.6%
24	1938	W	18,049	8,420	0.467	5,119	12,930	0.28	0.72	57.1	0.623	0.567	0.513	0.111	0.607	39.3%	23,972	9,449	0.395	6,913	17,059	0.29	0.71	64.2	0.499	0.741	0.386	0.578	0.569	43.1%	41.4%
25	1939	D	2,891	4,134	1.446	1,829	1,062	0.63	0.37	63.4	0.979	0.813	0.746	0.261	0.874	12.6%	2,683	3,480	1.312	1,604	1,079	0.60	0.40	67.3	0.978	0.871	0.762	0.455	0.914	8.6%	10.4%
26	1940	A	5,663	8,268	1.468	3,586	2,077	0.63	0.37	60.2	0.948	0.729	0.622	0.284	0.810	19.0%	5,156	6,278	1.225	3,103	2,052	0.60	0.40	66.6	0.949	0.848	0.656	0.557	0.888	11.2%	14.7%
27	1941	W	10,083	9,310	0.926	2,565	7,519	0.25	0.75	57.1	0.785	0.742	0.694	0.156	0.774	22.6%	9,579	9,726	1.019	2,381	7,198	0.25	0.75	64.2	0.794	0.881	0.707	0.593	0.816	18.4%	20.3%
28	1942	W	6,907	8,907	1.295	4,410	2,497	0.64	0.36	57.1	0.936	0.622	0.563	0.135	0.736	26.4%	5,936	8,685	1.471	3,527	2,409	0.59	0.41	64.2	0.938	0.828	0.626	0.539	0.873	12.7%	18.9%
29	1943	W	7,915	9,462	1.200	1,875	6,040	0.24	0.76	57.1	0.829	0.785	0.743	0.164	0.819	18.1%	6,180	8,327	1.354	3,695	2,485	0.60	0.40	64.2	0.936	0.815	0.614	0.521	0.864	13.6%	15.6%
30	1944	D	3,428	4,235	1.247	2,190	1,238	0.64	0.36	63.4	0.973	0.795	0.721	0.266	0.859	14.1%	2,976	3,741	1.270	1,784	1,192	0.60	0.40	67.3	0.975	0.867	0.750	0.469	0.910	9.0%	11.3%
31	1945	B	5,781	6,252	1.087	3,725	2,056	0.64	0.36	59.7	0.949	0.671	0.612	0.152	0.770	23.0%	3,871	5,237	1.364	2,311	1,560	0.60	0.40	66.0	0.964	0.847	0.712	0.469	0.894	10.6%	16.2%
32	1946	B	5,344	5,949	1.120	3,438	1,906	0.64	0.36	59.7	0.953	0.683	0.632	0.137	0.779	22.1%	3,871	5,269	1.373	2,310	1,561	0.60	0.40	66.0	0.964	0.848	0.712	0.471	0.894	10.6%	15.7%
33	1947	D	3,664	4,907	1.351	2,330	1,334	0.64	0.36	63.4	0.970	0.798	0.711	0.300	0.861	13.9%	2,683	3,480	1.312	1,604	1,079	0.60	0.40	67.3	0.978	0.871	0.762	0.455	0.914	8.6%	11.0%
34	1948	B	3,983	6,823	1.727	2,490	1,493	0.63	0.37	59.7	0.966	0.754	0.700	0.181	0.833	16.7%	3,822	7,676	2.025	2,200	1,622	0.58	0.42	66.0	0.962	0.886	0.720	0.593	0.918	8.2%	12.0%
35	1949	D	3,983	5,075	1.284	2,541	1,442	0.64	0.36	63.4	0.967	0.790	0.696	0.309	0.854	14.6%	2,976	4,749	1.613	1,751	1,225	0.59	0.41	67.3	0.974	0.881	0.752	0.520	0.919	8.1%	11.0%
36	1950	B	3,983	6,252	1.582	2,507	1,476	0.63	0.37	59.7	0.966	0.744	0.698	0.152	0.826	17.4%	3,822	5,269	1.390	2,278	1,544	0.60	0.40	66.0	0.964	0.849	0.715	0.471	0.895	10.5%	13.6%
37	1951	A	5,344	6,386	1.202	3,425	1,919	0.64	0.36	60.2	0.953	0.702	0.633	0.188	0.792	20.8%	5,156	7,123	1.390	3,076	2,080	0.60	0.40	66.6	0.948	0.863	0.658	0.600	0.897	10.3%	15.0%
38	1952	W	10,840	8,773	0.812	2,836	8,004	0.26	0.74	57.1	0.770	0.717	0.675	0.129	0.756	24.4%	15,450	9,709	0.630	4,223	11,227	0.27	0.73	64.2	0.674	0.827	0.576	0.592	0.716	28.4%	26.6%
39	1953	W	3,983	5,647	1.429	2,525	1,458	0.63	0.37	57.1	0.967	0.697	0.697	0.000	0.796	20.4%	3,822	7,676	2.025	2,200	1,622	0.58	0.42	64.2	0.962	0.857	0.720	0.488	0.901	9.9%	14.6%
40	1954	A	3,983	7,361	1.863	2,474	1,509	0.62	0.38	60.2	0.965	0.772	0.701	0.238	0.845	15.5%	3,822	7,432	1.961	2,208	1,614	0.58	0.42	66.6	0.962	0.892	0.720	0.616	0.922	7.8%	11.3%
41	1955	D	2,807	3,664	1.320	1,786	1,021	0.64	0.36	63.4	0.980	0.809	0.750	0.237	0.871	12.9%	2,683	3,968	1.496	1,588	1,095	0.59	0.41	67.3	0.978	0.877	0.764	0.480	0.918	8.2%	10.3%
42	1956	W	6,201	7,966	1.291	3,959	2,242	0.64	0.36	57.1	0.943	0.631	0.595	0.087	0.744	25.6%	5,936	8,685	1.471	3,527	2,409	0.59	0.41	64.2	0.938	0.828	0.626	0.539	0.873	12.7%	18.5%
43	1957	A	3,983	6,453	1.633	2,501	1,482	0.63	0.37	60.2	0.966	0.757	0.699	0.192	0.834	16.6%	3,822	5,952	1.570	2,256	1,566	0.59	0.41	66.6	0.963	0.870	0.716	0.540	0.908	9.2%	12.5%
44	1958	W	14,907	9,663	0.650	4,056	10,851	0.27	0.73	57.1	0.685	0.660	0.588	0.174	0.678	32.2%	13,173	10,685	0.813	3,448	9,725	0.26	0.74	64.2	0.719	0.868	0.632	0.641	0.758	24.2%	27.8%
45	1959	B	2,807	3,798	1.369	1,782	1,025	0.63	0.37	59.7	0.980	0.757	0.750	0.027	0.838	16.2%	2,683	3,676	1.386	1,598	1,086	0.60	0.40	66.0	0.978	0.855	0.763	0.389	0.905	9.5%	12.5%
46	1960	D	2,420	4,033	1.689	1,513	907	0.63	0.37	63.4	0.983	0.828	0.769	0.255	0.886	11.4%	1,870	3,350	1.822	1,085	785	0.58	0.42	67.3	0.987	0.889	0.799	0.449	0.930	7.0%	9.0%
47	1961	D	1,983	3,546	1.817	1,232	752	0.62	0.38	63.4	0.988	0.838	0.789	0.231	0.895	10.5%	1,870	2,992	1.627	1,097	773	0.59	0.41	67.3	0.987	0.885	0.798	0.430	0.927	7.3%	8.7%
48	1962	B	4,201	5,579	1.338	2,675	1,527	0.64	0.36	59.7	0.965	0.723	0.686	0.118	0.811	18.9%	3,822	5,334	1.407	2,276	1,546	0.60	0.40	66.0	0.964	0.850	0.715	0.474	0.896	10.4%	14.2%
49	1963	W	5,344	8,100	1.525	3,375	1,969	0.63	0.37	57.1	0.951	0.671	0.637	0.094	0.774	22.6%	5,156	8,327	1.625	3,036	2,119	0.59	0.41	64.2	0.947	0.838	0.661	0.521	0.882	11.8%	16.6%
50	1964	D	2,807	3,496	1.260	1,791	1,016	0.64	0.36	63.4	0.980	0.806	0.749	0.228	0.869	13.1%	2,683	3,741	1.411	1,596	1,088	0.59	0.41	67.3	0.978	0.874	0.763	0.469	0.916	8.4%	10.5%
51	1965	W	6,201	8,537	1.384	3,942	2,259	0.64	0.36	57.1	0.943	0.643	0.596	0.117	0.752	24.8%	5,936	7,725	1.308	3,558	2,378	0.60	0.40	64.2	0.939	0.808	0.624	0.490	0.861	13.9%	18.8%
52	1966	B	3,983	4,974	1.259	2,544	1,439	0.64	0.36	59.7	0.967	0.722	0.696	0.087	0.811	18.9%	2,976	4,781	1.624	1,750	1,226	0.59	0.41	66.0	0.974	0.863	0.752	0.446	0.908	9.2%	13.6%
53	1967	W	12,772	9,546	0.749	3,394	9,379	0.27	0.73	57.1	0.729	0.697	0.635	0.168	0.720	28.0%	15,483	10,051	0.650	4,212	11,270	0.27	0.73	64.2	0.672	0.835	0.577	0.609	0.717	28.3%	28.2%
54	1968	B	3,664	5,243	1.444	2,320	1,343	0.63	0.37	59.7	0.970	0.741	0.712	0.101	0.825	17.5%	2,683	3,643	1.374	1,599	1,085	0.60	0.40	66.0	0.978	0.855	0.763	0.388	0.905	9.5%	13.1%
55	1969	W	20,923	7,512	0.360	6,078	14,845	0.29	0.71	57.1	0.565	0.481	0.445	0.064	0.541	45.9%	26,038	9,010	0.346	7,588	18,449	0.29	0.71	66.4	0.457	0.791	0.338	0.685	0.554	44.6%	45.2%
56	1970	W	5,344	6,588	1.240	3,419	1,925	0.64	0.36	57.1	0.953	0.640	0.634	0.017	0.753	24.7%	5,156	5,920	1.155	3,115	2,041	0.60	0.40	61.2	0.949	0.732	0.655	0.223	0.818	18.2%	21.1%
57	1971	W	3,983	6,588	1.667	2,497	1,486	0.63	0.37	57.1	0.966	0.704	0.699	0.017	0.802	19.8%	3,822	7,676	2.025	2,200	1,622	0.58	0.42	64.2	0.962	0.857	0.720	0.488	0.901	9.9%	14.3%
58	1972	B	3,664	4,706	1.296	2,336	1,328	0.64	0.36	58.9	0.971	0.718	0.710	0.026	0.810	19.0%	2,683	3,871	1.460	1,591	1,092	0.59	0.41	66.0	0.978	0.858	0.763	0.399	0.907	9.3%	13.7%
59	1973	A	5,680	7,428	1.315	3,622	2,058	0.64	0.36	59.2	0.949	0.689	0.619	0.183	0.783	21.7%	5,156	6,505	1.270	3,096	2,060	0.60	0.40	66.3	0.949	0.846	0.657	0.551	0.887	11.3%	16.0%
60	1974	W	7,663	9,327	1.222	1,805	5,859	0.24	0.76	56.9	0.835	0.785	0.748	0.145	0.823	17.7%	5,936	8,685	1.471	3,527	2,409	0.59	0.41	66.1	0.938	0.869	0.626	0.651	0.897	10.3%	13.6%
61	1975	W	6,621	8,773	1.331	4,220	2,401	0.64	0.36	53.7	0.938	0.577	0.577	0.000	0.708	29.2%	5,936	8,685	1.471	3,527	2,409	0.59	0.41	61.5	0.938	0.769	0.626	0.382	0.837	16.3%	22.1%
62	1976	C	1,983	3,008	1.542	1,247	736	0.63	0.37	57.8	0.988	0.788	0.788	0.000	0.862	13.8%	1,870	3,123	1.698	1,093	777	0.58	0.42	65.8	0.987	0.869	0.799	0.349	0.918	8.2%	10.7%
63	1977	C	1,983	3,008	1.542	1,247	736	0.63	0.37	62.0	0.988	0.814	0.788	0.121	0.878	12.2%	1,870	732	0.398	1,171	700	0.63	0.37	62.3	0.989	0.798	0.793	0.023	0.870	13.0%	12.6%
64	1978	A	14,923	7,512	0.504	4,196	10,728	0.28	0.72	61.4	0.689	0.712	0.578	0.316	0.695	30.5%	10,831	8,197	0.759	2,869	7,962	0.26	0.74	66.9	0.772	0.893	0.673	0.672	0.804	19.6%	24.5%
65	1979	B	5,344	6,857	1.291	3,411	1,933	0.64	0.36	60.5	0.952	0.718	0.634	0.230	0.803	19.7%	5,156	5,985	1.168	3,113	2,043	0.60	0.40	66.0	0.949	0.830	0.655	0.507	0.877	12.3%	15.6%
66	1980	A	6,722	6,958	1.040	4,342	2,380	0.65	0.35	60.1	0.939	0.659	0.568	0.212	0.758	24.2%	6,619	7,465	1.133	4,006	2,613	0.61	0.39	66.6	0.932	0.844	0.592	0.618	0.879	12.1%	17.5%
67	1981	D	3,664	5,445	1.499	2,314	1,349	0.63	0.37	64.6	0.970	0.827	0.712	0.398	0.879	12.1%	2,683	3,513	1.325	1,603	1,080	0.60	0.40	68.7	0.978	0.890	0.763	0.539	0.926	7.4%	9.5%
68	1982	W	27,023	9,159	0.339	7,888	19,135	0.29	0.71	52.8	0.436	0.316	0.316	0.000	0.401	59.9%	15,158	10,701	0.707	4,070	11,088	0.27	0.73	65.1	0.678	0.874	0.587	0.695	0.731	26.9%	41.8%
69	1983	W	20,738	6,958	0.336	6,054	14,684	0.29	0.71	57.2	0.570	0.470	0.446	0.042	0.541	45.9%	19,077	7,546	0.396	5,496	13,581	0.29	0.71	61.3	0.603	0.646	0.486	0.312	0.615	38.5%	41.8%
70	1984	W	5,344	6,857	1.291	3,411	1,933	0.64	0.36	60.7	0.952	0.722	0.634	0.241	0.806	19.4%	5,156	6,148	1.200	3,107	2,048	0.60	0.40	66.0	0.949	0.833	0.656	0.515	0.879	12.1%	15.4%
71	1985	D	2,807	4,235	1.526	1,769	1,037	0.63	0.37	62.5	0.979	0.804	0.751	0.213	0.869	13.1%	2,683	4,228	1.595	1,580	1,104	0.59	0.41	65.1	0.977	0.850	0.764	0.365	0.902	9.8%	11.3%
72	1986	W	9,814	7,512	0.768	2,593	7,222	0.26	0.74	61.3	0.794	0.788	0.692	0.310	0.792	20.8%	8,067	8,132	1.012	2,006	6,061	0.25	0.75	65.8	0.829	0.895	0.734	0.605	0.845	15.5%	17.9%
73	1987	D	2,033	3,496	1.746	1,267	766	0.62	0.38	62.3	0.987	0.821	0.786	0.164	0.884	11.6%	1,870	2,830	1.539	1,102	768	0.59	0.41	68.6	0.987	0.899	0.798	0.498	0.935	6.5%	8.8%
74	1988	C	1,983	2,857	1.464	1,252	731	0.63	0.37	62.1	0.989	0.813	0.787	0.119	0.878	12.2%	1,870	3,058	1.663	1,095	775	0.59	0.41	63.7	0.987	0.844	0.799	0.223	0.903	9.7%	10.8%
75	1989	D	2,420	5,647	2.364	1,466	954	0.61	0.39	64.1	0.982	0.858	0.772	0.379	0.907	9.3%	1,870	3,936	2.141	1,066	804	0.57	0.43	66.7	0.986	0.889	0.801	0.443	0.931	6.9%	8.0%
76	1990	C	1,983	3,529	1.808	1,232	751	0.62	0.38	60.6	0.988	0.803	0.789	0.066	0.873	12.7%	1,870	2,700	1.468	1,107	764	0.59	0.41	63.9	0.988	0.842	0.798	0.217	0.901	9.9%	11.2%
77	1991	C	2,437	4,252	1.768	1,518	919	0.62	0.38	60.6	0.983	0.792	0.769	0.103	0.864	13.6%	1,870	2,862	1.557	1,101	769	0.59	0.41	63.9	0.987	0.844	0.798	0.225	0.903	9.7%	11.5%
78	1992	C	2,252	3,731	1.680	1,408	844	0.63	0.37	60.6	0.985	0.793	0.776	0.076	0.865	13.5%	1,870	2,927	1.592	1,099	771	0.59	0.41	63.9	0.987	0.844	0.798	0.228	0.903	9.7%	11.4%
79																														Average:	15.95%

80 Calculations- San Joaquin River Fall
81 Run Smolt Survival Model WITH BARRIER:

C8 ='Study 468 Flow Data'!AB7
D8 ='Study 468 Flow Data'!G7 (HIDDEN)
E8 ='Study 468 Flow Data'!Q7 (HIDDEN)
F8 =D8+E8
G8 =F8/(C8-0.03*$R$2)
H8 =IF(C8<$R$1,(0.47*(0.3137*C8-0.0156*$R$2-0.0625*F8)+0.53*C8),(0.3137*C8-0.0156*$R$2-0.0625*F8))
I8 =C8-H8
J8 =H8/C8
K8 =I8/C8
M8 =(1.01045-0.00003*I8)
N8 =(O8+P8)-(O8*P8)
O8 =IF((0.87634-0.000071*H8)<0,0,(0.87634-0.000071*H8))
P8 =IF((-3.65867+0.058492*L8+0.000051*F8)<0,0,(-3.65867+0.058492*L8+0.000051*F8))
Q8 =((K8*M8)+(J8*N8))
R8 =(1-Q8)

T8 ='Study 468 Flow Data'!AC7
U8 ='Study 468 Flow Data'!H7 (HIDDEN)
V8 ='Study 468 Flow Data'!R7 (HIDDEN)
W8 =U8+V8
X8 =W8/(T8-0.03*$R$3)
Y8 =IF(T8<$R$1,(0.52*(0.3137*T8-0.0156*$R$3-0.0625*W8)+0.48*T8),(0.3137*T8-0.0156*$R$3-0.0625*W8))
Z8 =T8-Y8
AA8 =Y8/T8
AB8 =Z8/T8
AD8 =(1.01045-0.00003*Z8)
AE8 =(AF8+AG8)-(AF8*AG8)
AF8 =IF((0.87634-0.000071*Y8)<0,0,(0.87634-0.000071*Y8))
AG8 =IF((-3.65867+0.058492*AC8+0.000051*W8)<0,0,(-3.65867+0.058492*AC8+0.000051*W8))
AH8 =((AB8*AD8)+(AA8*AE8))
AI8 =(1-AH8)
AK8 =0.45*G94+0.55*AI8

Study 506 San Joaquin River Fall Run Salmon Smolt Survival Model WITH BARRIER

Barrier at head of Old River from Apr 15 to May 15

Old River Barrier Open above ###### cfs at Vernalis
Consumptive Depletion for April ###### cfs
Consumptive Depletion for May ###### cfs

Row	Year (A)	Water Year Type (B)	APRIL Vernalis Flows (C)	CVP + SWP exports (F)	exp/v-cd (G)	Calculated Stockton Q (H)	UOldR Flow (I)	p3 Stkn (J)	p2 UOldR (K)	Temp @ Jersey Pt (L)	m2 (M)	Calculated Mortality m34 (N)	m3 (O)	m4 (P)	m234 (Q)	Calculated Survival s234 (R)
8	1922	A	6,201	8,369	1.357	3,947	2,254	0.64	0.36	60.2	0.943	0.713	0.596	0.289	0.797	**20.3%**
9	1923	B	5,344	7,932	1.493	3,380	1,965	0.63	0.37	59.7	0.952	0.723	0.636	0.238	0.807	**19.3%**
10	1924	C	2,202	2,924	1.348	1,398	804	0.63	0.37	60.6	0.986	0.785	0.777	0.035	0.858	**14.2%**
11	1925	D	3,983	6,958	1.761	2,486	1,497	0.62	0.38	63.4	0.966	0.821	0.700	0.405	0.875	**12.5%**
12	1926	D	3,664	6,689	1.842	2,278	1,386	0.62	0.38	63.4	0.969	0.826	0.715	0.391	0.880	**12.0%**
13	1927	W	5,344	8,100	1.525	3,375	1,969	0.63	0.37	57.1	0.951	0.671	0.637	0.094	0.774	**22.6%**
14	1928	A	3,983	7,361	1.863	2,474	1,509	0.62	0.38	60.2	0.965	0.772	0.701	0.238	0.845	**15.5%**
15	1929	C	2,017	2,706	1.363	1,279	738	0.63	0.37	60.6	0.988	0.791	0.786	0.024	0.863	**13.7%**
16	1930	D	2,420	3,899	1.632	1,517	903	0.63	0.37	63.4	0.983	0.826	0.769	0.249	0.885	**11.5%**
17	1931	C	2,118	3,059	1.466	1,337	781	0.63	0.37	60.6	0.987	0.791	0.781	0.042	0.863	**13.7%**
18	1932	D	4,521	5,378	1.198	2,897	1,624	0.64	0.36	63.4	0.962	0.777	0.671	0.324	0.844	**15.6%**
19	1933	C	2,807	4,134	1.490	1,772	1,034	0.63	0.37	60.6	0.979	0.775	0.751	0.097	0.850	**15.0%**
20	1934	C	1,983	3,563	1.826	1,231	752	0.62	0.38	60.6	0.988	0.803	0.789	0.068	0.873	**12.7%**
21	1935	B	6,739	8,840	1.318	4,298	2,441	0.64	0.36	59.7	0.937	0.693	0.571	0.284	0.781	**21.9%**
22	1936	B	6,403	8,403	1.319	4,083	2,320	0.64	0.36	59.7	0.941	0.695	0.586	0.262	0.784	**21.6%**
23	1937	B	7,932	8,218	1.040	1,958	5,974	0.25	0.75	59.7	0.831	0.804	0.737	0.252	0.824	**17.6%**
24	1938	W	18,049	8,420	0.467	5,119	12,930	0.28	0.72	57.1	0.623	0.567	0.513	0.111	0.607	**39.3%**
25	1939	D	2,891	4,134	1.446	1,829	1,062	0.63	0.37	63.4	0.979	0.813	0.746	0.261	0.874	**12.6%**
26	1940	A	6,252	8,571	1.378	3,976	2,276	0.64	0.36	60.2	0.942	0.716	0.594	0.300	0.798	**20.2%**
27	1941	W	10,083	9,310	0.926	2,565	7,519	0.25	0.75	57.1	0.785	0.742	0.694	0.156	0.774	**22.6%**
28	1942	W	6,907	8,907	1.295	4,410	2,497	0.64	0.36	57.1	0.936	0.622	0.563	0.135	0.736	**26.4%**
29	1943	W	7,915	9,462	1.200	1,875	6,040	0.24	0.76	57.1	0.829	0.785	0.743	0.164	0.819	**18.1%**
30	1944	D	3,428	4,235	1.247	2,190	1,238	0.64	0.36	63.4	0.973	0.795	0.721	0.266	0.859	**14.1%**
31	1945	B	6,336	6,689	1.061	4,088	2,248	0.65	0.35	59.7	0.943	0.658	0.586	0.174	0.759	**24.1%**
32	1946	B	5,344	5,949	1.120	3,438	1,906	0.64	0.36	59.7	0.953	0.683	0.632	0.137	0.779	**22.1%**
33	1947	D	3,664	4,941	1.360	2,329	1,335	0.64	0.36	63.4	0.970	0.798	0.711	0.302	0.861	**13.9%**
34	1948	B	3,983	6,857	1.735	2,489	1,494	0.62	0.38	59.7	0.966	0.755	0.700	0.183	0.834	**16.6%**
35	1949	D	3,983	5,075	1.284	2,541	1,442	0.64	0.36	63.4	0.967	0.790	0.696	0.309	0.854	**14.6%**
36	1950	B	3,983	6,285	1.591	2,506	1,477	0.63	0.37	59.7	0.966	0.745	0.698	0.154	0.827	**17.3%**
37	1951	A	5,344	6,353	1.196	3,426	1,918	0.64	0.36	60.2	0.953	0.702	0.633	0.187	0.792	**20.8%**
38	1952	W	10,840	8,773	0.812	2,836	8,004	0.26	0.74	57.1	0.770	0.717	0.675	0.129	0.756	**24.4%**
39	1953	W	3,983	5,647	1.429	2,525	1,458	0.63	0.37	57.1	0.967	0.697	0.697	0.000	0.796	**20.4%**
40	1954	A	3,983	7,361	1.863	2,474	1,509	0.62	0.38	60.2	0.965	0.772	0.701	0.238	0.845	**15.5%**
41	1955	D	2,807	3,664	1.320	1,786	1,021	0.64	0.36	63.4	0.980	0.809	0.750	0.237	0.871	**12.9%**
42	1956	W	6,235	7,999	1.290	3,981	2,254	0.64	0.36	57.1	0.943	0.630	0.594	0.089	0.743	**25.7%**
43	1957	A	3,983	6,420	1.625	2,502	1,481	0.63	0.37	60.2	0.966	0.756	0.699	0.190	0.834	**16.6%**
44	1958	W	14,772	9,663	0.656	4,014	10,758	0.27	0.73	57.1	0.688	0.662	0.591	0.174	0.681	**31.9%**
45	1959	B	2,807	3,798	1.369	1,782	1,025	0.63	0.37	59.7	0.980	0.757	0.750	0.027	0.838	**16.2%**
46	1960	D	2,420	4,033	1.689	1,513	907	0.63	0.37	63.4	0.983	0.828	0.769	0.255	0.886	**11.4%**
47	1961	D	1,983	3,546	1.817	1,232	752	0.62	0.38	63.4	0.988	0.838	0.789	0.231	0.895	**10.5%**
48	1962	B	4,201	5,579	1.338	2,675	1,527	0.64	0.36	59.7	0.965	0.723	0.686	0.118	0.811	**18.9%**
49	1963	W	5,344	8,100	1.525	3,375	1,969	0.63	0.37	57.1	0.951	0.671	0.637	0.094	0.774	**22.6%**
50	1964	D	2,807	3,496	1.260	1,791	1,016	0.64	0.36	63.4	0.980	0.806	0.749	0.228	0.869	**13.1%**
51	1965	W	6,201	8,537	1.384	3,942	2,259	0.64	0.36	57.1	0.943	0.643	0.596	0.117	0.752	**24.8%**
52	1966	B	3,983	4,974	1.259	2,544	1,439	0.64	0.36	59.7	0.967	0.722	0.696	0.087	0.811	**18.9%**
53	1967	W	13,881	9,546	0.689	3,742	10,140	0.27	0.73	57.1	0.706	0.676	0.611	0.168	0.698	**30.2%**
54	1968	B	3,664	5,243	1.444	2,320	1,343	0.63	0.37	59.7	0.970	0.741	0.712	0.101	0.825	**17.5%**
55	1969	W	20,923	7,512	0.360	6,078	14,845	0.29	0.71	57.1	0.565	0.481	0.445	0.064	0.541	**45.9%**
56	1970	W	5,344	6,588	1.240	3,419	1,925	0.64	0.36	57.1	0.953	0.640	0.634	0.017	0.753	**24.7%**
57	1971	W	3,983	6,621	1.676	2,496	1,487	0.63	0.37	57.1	0.966	0.705	0.699	0.019	0.802	**19.8%**
58	1972	B	3,664	4,739	1.305	2,335	1,329	0.64	0.36	58.9	0.971	0.719	0.711	0.028	0.810	**19.0%**
59	1973	A	5,680	7,495	1.327	3,620	2,060	0.64	0.36	59.2	0.949	0.690	0.619	0.186	0.784	**21.6%**
60	1974	W	7,663	9,327	1.222	1,805	5,859	0.24	0.76	56.9	0.835	0.785	0.748	0.145	0.823	**17.7%**
61	1975	W	6,621	8,773	1.331	4,220	2,401	0.64	0.36	53.7	0.938	0.577	0.577	0.000	0.708	**29.2%**
62	1976	C	1,983	3,008	1.542	1,247	736	0.63	0.37	57.8	0.988	0.788	0.788	0.000	0.862	**13.8%**
63	1977	C	1,983	2,991	1.533	1,248	735	0.63	0.37	62.0	0.988	0.813	0.788	0.120	0.878	**12.2%**
64	1978	A	14,923	7,512	0.504	4,196	10,728	0.28	0.72	61.4	0.689	0.712	0.578	0.316	0.695	**30.5%**
65	1979	B	5,344	6,857	1.291	3,411	1,933	0.64	0.36	60.5	0.952	0.718	0.634	0.230	0.803	**19.7%**
66	1980	A	6,722	6,941	1.037	4,342	2,380	0.65	0.35	60.1	0.939	0.659	0.568	0.211	0.758	**24.2%**
67	1981	D	3,664	5,445	1.499	2,314	1,349	0.63	0.37	64.6	0.970	0.827	0.712	0.398	0.879	**12.1%**
68	1982	W	27,040	9,159	0.339	7,894	19,147	0.29	0.71	52.8	0.436	0.316	0.316	0.000	0.401	**59.9%**
69	1983	W	20,738	6,958	0.336	6,054	14,684	0.29	0.71	57.2	0.570	0.470	0.446	0.042	0.541	**45.9%**
70	1984	W	5,344	6,857	1.291	3,411	1,933	0.64	0.36	60.7	0.952	0.722	0.634	0.241	0.806	**19.4%**
71	1985	D	3,664	4,874	1.342	2,331	1,333	0.64	0.36	62.5	0.970	0.782	0.711	0.246	0.850	**15.0%**
72	1986	W	9,814	7,546	0.771	2,591	7,224	0.26	0.74	61.3	0.794	0.788	0.692	0.312	0.792	**20.8%**
73	1987	D	2,033	3,496	1.746	1,267	766	0.62	0.38	62.3	0.987	0.821	0.786	0.164	0.884	**11.6%**
74	1988	C	1,983	2,924	1.498	1,250	733	0.63	0.37	62.1	0.988	0.814	0.788	0.123	0.878	**12.2%**
75	1989	D	2,420	5,647	2.364	1,466	954	0.61	0.39	64.1	0.982	0.858	0.772	0.379	0.907	**9.3%**
76	1990	C	1,983	3,546	1.817	1,232	752	0.62	0.38	60.6	0.988	0.803	0.789	0.067	0.873	**12.7%**
77	1991	C	2,437	4,252	1.768	1,518	919	0.62	0.38	60.6	0.983	0.792	0.769	0.103	0.864	**13.6%**
78	1992	C	2,252	3,731	1.680	1,408	844	0.63	0.37	60.6	0.985	0.793	0.776	0.076	0.865	**13.5%**

Row	Year	MAY Vernalis Flows (T)	CVP+SWP exports (W)	exp/v-cd (X)	Calculated Stockton Q (Y)	UOldR Flow (Z)	p3 Stkn (AA)	p2 UOldR (AB)	Temp @ Jersey Pt (AC)	m2 (AD)	Calculated Mortality m34 (AE)	m3 (AF)	m4 (AG)	m234 (AH)	Calculated Survival s234 (AI)	Weighted (April + June) total survival (AK)
8	1922	5,936	8,685	1.471	3,527	2,409	0.59	0.41	66.6	0.938	0.880	0.626	0.680	0.904	**9.6%**	**14.5%**
9	1923	5,156	6,245	1.219	3,104	2,051	0.60	0.40	66.0	0.949	0.835	0.656	0.520	0.880	**12.0%**	**15.3%**
10	1924	1,903	1,171	0.626	1,177	726	0.62	0.38	63.9	0.989	0.822	0.793	0.139	0.885	**11.5%**	**12.7%**
11	1925	3,822	5,042	1.330	2,286	1,536	0.60	0.40	67.3	0.964	0.867	0.714	0.535	0.906	**9.4%**	**10.8%**
12	1926	3,545	4,879	1.389	2,113	1,432	0.60	0.40	67.3	0.967	0.870	0.726	0.527	0.910	**9.0%**	**10.4%**
13	1927	5,156	8,327	1.625	3,036	2,119	0.59	0.41	64.2	0.947	0.838	0.661	0.521	0.882	**11.8%**	**16.6%**
14	1928	3,822	6,375	1.682	2,242	1,580	0.59	0.41	66.6	0.963	0.876	0.717	0.562	0.912	**8.8%**	**11.8%**
15	1929	1,870	3,106	1.689	1,093	777	0.58	0.42	63.9	0.987	0.846	0.799	0.237	0.905	**9.5%**	**11.4%**
16	1930	1,870	3,513	1.911	1,080	790	0.58	0.42	67.3	0.987	0.891	0.800	0.457	0.932	**6.8%**	**8.9%**
17	1931	2,017	3,220	1.622	1,184	833	0.59	0.41	63.9	0.985	0.843	0.792	0.243	0.902	**9.8%**	**11.6%**
18	1932	3,871	4,847	1.262	2,323	1,547	0.60	0.40	67.3	0.964	0.863	0.711	0.525	0.903	**9.7%**	**12.4%**
19	1933	2,683	3,155	1.190	1,615	1,069	0.60	0.40	63.9	0.978	0.819	0.762	0.240	0.882	**11.8%**	**13.2%**
20	1934	1,870	2,944	1.601	1,099	772	0.59	0.41	63.9	0.987	0.845	0.798	0.229	0.903	**9.7%**	**11.0%**
21	1935	6,050	5,627	0.935	3,699	2,351	0.61	0.39	66.0	0.940	0.803	0.614	0.489	0.856	**14.4%**	**17.8%**
22	1936	5,156	6,310	1.232	3,102	2,054	0.60	0.40	66.0	0.949	0.836	0.656	0.524	0.881	**11.9%**	**16.3%**
23	1937	8,132	6,961	0.859	2,099	6,032	0.26	0.74	66.0	0.829	0.879	0.727	0.557	0.842	**15.8%**	**16.6%**
24	1938	24,265	9,449	0.390	7,005	17,260	0.29	0.71	64.2	0.493	0.738	0.379	0.578	0.564	**43.6%**	**41.7%**
25	1939	3,058	3,708	1.225	1,837	1,220	0.60	0.40	67.3	0.974	0.865	0.746	0.467	0.908	**9.2%**	**10.7%**
26	1940	5,156	6,196	1.209	3,106	2,050	0.60	0.40	66.6	0.949	0.846	0.656	0.553	0.887	**11.3%**	**15.3%**
27	1941	9,579	9,726	1.019	2,381	7,198	0.25	0.75	64.2	0.794	0.881	0.707	0.593	0.816	**18.4%**	**20.3%**
28	1942	5,936	8,685	1.471	3,527	2,409	0.59	0.41	64.2	0.938	0.828	0.626	0.539	0.873	**12.7%**	**18.9%**
29	1943	6,180	8,327	1.354	3,695	2,485	0.60	0.40	64.2	0.936	0.815	0.614	0.521	0.864	**13.6%**	**15.6%**
30	1944	2,976	3,741	1.270	1,784	1,192	0.60	0.40	67.3	0.975	0.867	0.750	0.469	0.910	**9.0%**	**11.3%**
31	1945	4,033	5,237	1.309	2,415	1,618	0.60	0.40	66.0	0.962	0.843	0.705	0.469	0.891	**10.9%**	**16.8%**
32	1946	3,871	5,269	1.373	2,310	1,561	0.60	0.40	66.0	0.964	0.848	0.712	0.471	0.894	**10.6%**	**15.7%**
33	1947	2,683	3,545	1.337	1,602	1,081	0.60	0.40	67.3	0.978	0.871	0.763	0.459	0.914	**8.6%**	**11.0%**
34	1948	3,822	7,676	2.025	2,200	1,622	0.58	0.42	66.0	0.962	0.886	0.720	0.593	0.918	**8.2%**	**12.0%**
35	1949	2,976	4,749	1.613	1,751	1,225	0.59	0.41	67.3	0.974	0.881	0.752	0.520	0.919	**8.1%**	**11.0%**
36	1950	3,822	5,269	1.390	2,278	1,544	0.60	0.40	66.0	0.964	0.849	0.715	0.471	0.895	**10.5%**	**13.5%**
37	1951	5,156	7,123	1.390	3,076	2,080	0.60	0.40	66.6	0.948	0.863	0.658	0.600	0.897	**10.3%**	**15.0%**
38	1952	15,450	9,563	0.620	4,233	11,218	0.27	0.73	64.2	0.674	0.824	0.576	0.584	0.715	**28.5%**	**26.6%**
39	1953	3,822	7,676	2.025	2,200	1,622	0.58	0.42	64.2	0.962	0.857	0.720	0.488	0.901	**9.9%**	**14.6%**
40	1954	3,822	7,432	1.961	2,208	1,614	0.58	0.42	66.6	0.962	0.892	0.720	0.616	0.922	**7.8%**	**11.3%**
41	1955	2,683	3,968	1.496	1,588	1,095	0.59	0.41	67.3	0.978	0.877	0.764	0.480	0.918	**8.2%**	**10.3%**
42	1956	5,936	8,685	1.471	3,527	2,409	0.59	0.41	64.2	0.938	0.828	0.626	0.539	0.873	**12.7%**	**18.6%**
43	1957	3,822	5,985	1.579	2,255	1,567	0.59	0.41	66.6	0.963	0.870	0.716	0.542	0.908	**9.2%**	**12.5%**
44	1958	13,173	10,685	0.813	3,448	9,725	0.26	0.74	64.2	0.719	0.868	0.632	0.641	0.758	**24.2%**	**27.7%**
45	1959	2,683	3,676	1.386	1,598	1,086	0.60	0.40	66.0	0.978	0.855	0.763	0.389	0.905	**9.5%**	**12.5%**
46	1960	1,870	3,350	1.822	1,085	785	0.58	0.42	67.3	0.987	0.889	0.799	0.449	0.930	**7.0%**	**9.0%**
47	1961	1,870	2,992	1.627	1,097	773	0.59	0.41	67.3	0.987	0.885	0.798	0.430	0.927	**7.3%**	**8.7%**
48	1962	3,822	5,334	1.407	2,276	1,546	0.60	0.40	66.0	0.964	0.850	0.715	0.474	0.896	**10.4%**	**14.2%**
49	1963	5,156	8,327	1.625	3,036	2,119	0.59	0.41	64.2	0.947	0.838	0.661	0.521	0.882	**11.8%**	**16.6%**
50	1964	2,683	3,871	1.460	1,591	1,092	0.59	0.41	67.3	0.978	0.876	0.763	0.475	0.917	**8.3%**	**10.4%**
51	1965	5,936	7,937	1.344	3,551	2,385	0.60	0.40	64.2	0.939	0.813	0.624	0.501	0.863	**13.7%**	**18.7%**
52	1966	2,976	4,781	1.624	1,750	1,226	0.59	0.41	66.0	0.974	0.863	0.752	0.446	0.908	**9.2%**	**13.6%**
53	1967	16,003	10,051	0.629	4,376	11,628	0.27	0.73	64.2	0.662	0.830	0.566	0.609	0.708	**29.2%**	**29.7%**
54	1968	2,683	3,643	1.374	1,599	1,085	0.60	0.40	66.0	0.978	0.855	0.763	0.388	0.905	**9.5%**	**13.1%**
55	1969	26,217	9,010	0.344	7,645	18,572	0.29	0.71	66.4	0.453	0.790	0.334	0.685	0.551	**44.9%**	**45.3%**
56	1970	5,156	5,920	1.155	3,115	2,041	0.60	0.40	61.2	0.949	0.732	0.655	0.223	0.818	**18.2%**	**21.1%**
57	1971	3,822	7,676	2.025	2,200	1,622	0.58	0.42	64.2	0.962	0.857	0.720	0.488	0.901	**9.9%**	**14.3%**
58	1972	2,683	3,903	1.472	1,590	1,093	0.59	0.41	66.0	0.978	0.858	0.763	0.401	0.907	**9.3%**	**13.7%**
59	1973	5,156	6,570	1.282	3,094	2,062	0.60	0.40	66.3	0.949	0.847	0.657	0.554	0.888	**11.2%**	**15.9%**
60	1974	5,936	8,685	1.471	3,527	2,409	0.59	0.41	66.1	0.938	0.869	0.626	0.651	0.897	**10.3%**	**13.6%**
61	1975	5,936	8,685	1.471	3,527	2,409	0.59	0.41	61.5	0.938	0.769	0.626	0.382	0.837	**16.3%**	**22.1%**
62	1976	2,065	3,253	1.599	1,214	851	0.59	0.41	65.8	0.985	0.865	0.790	0.356	0.914	**8.6%**	**10.9%**
63	1977	1,870	732	0.398	1,171	700	0.63	0.37	62.3	0.989	0.798	0.793	0.023	0.870	**13.0%**	**12.7%**
64	1978	10,831	8,197	0.759	2,869	7,962	0.26	0.74	66.9	0.772	0.893	0.673	0.672	0.804	**19.6%**	**24.5%**
65	1979	5,156	5,985	1.168	3,113	2,043	0.60	0.40	66.0	0.949	0.830	0.655	0.507	0.877	**12.3%**	**15.6%**
66	1980	6,619	7,481	1.136	4,005	2,614	0.61	0.39	66.6	0.932	0.844	0.592	0.618	0.879	**12.1%**	**17.5%**
67	1981	2,683	3,513	1.325	1,603	1,080	0.60	0.40	68.7	0.978	0.890	0.763	0.539	0.926	**7.4%**	**9.5%**
68	1982	15,158	10,701	0.707	4,070	11,088	0.27	0.73	65.1	0.678	0.874	0.587	0.695	0.731	**26.9%**	**41.8%**
69	1983	19,077	7,546	0.396	5,496	13,581	0.29	0.71	61.3	0.603	0.646	0.486	0.312	0.615	**38.5%**	**41.8%**
70	1984	5,156	6,148	1.200	3,107	2,048	0.60	0.40	66.0	0.949	0.833	0.656	0.515	0.879	**12.1%**	**15.4%**
71	1985	3,139	4,521	1.455	1,863	1,276	0.59	0.41	65.1	0.972	0.841	0.744	0.380	0.894	**10.6%**	**12.5%**
72	1986	8,067	8,132	1.012	2,006	6,061	0.25	0.75	65.8	0.829	0.895	0.734	0.605	0.845	**15.5%**	**17.9%**
73	1987	2,131	2,992	1.426	1,264	866	0.59	0.41	68.6	0.984	0.895	0.787	0.506	0.931	**6.9%**	**9.0%**
74	1988	1,870	3,025	1.645	1,096	774	0.59	0.41	63.7	0.987	0.843	0.799	0.222	0.903	**9.7%**	**10.8%**
75	1989	1,870	3,936	2.141	1,066	804	0.57	0.43	66.7	0.986	0.889	0.801	0.443	0.931	**6.9%**	**8.0%**
76	1990	1,870	2,700	1.468	1,107	764	0.59	0.41	63.9	0.988	0.842	0.798	0.217	0.901	**9.9%**	**11.1%**
77	1991	1,870	2,862	1.557	1,101	769	0.59	0.41	63.9	0.987	0.844	0.798	0.225	0.903	**9.7%**	**11.5%**
78	1992	3,269	3,757	1.160	1,972	1,297	0.60	0.40	63.9	0.972	0.808	0.736	0.271	0.873	**12.7%**	**13.1%**
79															**Average:**	**#####**

Calculations- San Joaquin River Fall Run Smolt Survival Model WITH BAF

C8 ='Study 506 Flow Data'!AB7
D8 ='Study 506 Flow Data'!G7 (HIDDEN)
E8 ='Study 506 Flow Data'!Q7 (HIDDEN)
F8 =D8+E8
G8 =F8/(C8-0.03*$R$2)
H8 =IF(C8<$R$1,(0.47*(0.3137*C8-0.0156*$R$2-0.0625*F8)+0.53*C8),(0.3137*C8-0.0156*$R$2-0.0625
I8 =C8-H8
J8 =H8/C8
K8 =I8/C8
M8 =(1.01045-0.00003*I8)
N8 =(O8+P8)-(O8*P8)
O8 =IF((0.87634-0.000071*H8)<0,0,(0.87634-0.000071*H8))
P8 =IF((-3.65867+0.058492*L8+0.000051*F8)<0,0,(-3.65867+0.058492*L8+0.000051*F8))
Q8 =((K8*M8)+(J8*N8))
R8 =(1-Q8)

T8 ='Study 506 Flow Data'!AC7
U8 ='Study 506 Flow Data'!H7 (HIDDEN)
V8 ='Study 506 Flow Data'!R7 (HIDDEN)
W8 =U8+V8
X8 =W8/(T8-0.03*$R$3)
Y8 =IF(T8<$R$1,(0.52*(0.3137*T8-0.0156*$R$3-0.0625*W8)+0.48*T8),(0.3137*T8-0.0156*$R$3-0.0625*W8))
Z8 =T8-Y8
AA8 =Y8/T8
AB8 =Z8/T8
AD8 =(1.01045-0.00003*Z8)
AE8 =(AF8+AG8)-(AF8*AG8)
AF8 =IF((0.87634-0.000071*Y8)<0,0,(0.87634-0.000071*Y8))
AG8 =IF((-3.65867+0.058492*AC8+0.000051*W8)<0,0,(-3.65867+0.058492*AC8+0.000051*W8))
AH8 =((AB8*AD8)+(AA8*AE8))
AI8 =(1-AH8)
AK8 =0.45*G94+0.55*AI8

Study 507 San Joaquin River Fall Run Salmon Smolt Survival Model WITH BARRIER

Barrier at head of Old River from Apr 15 to May 15

Old River Barrier Open above	7500.00	cfs at Vernalis
Consumptive Depletion for April	1053.00	cfs
Consumptive Depletion for May	1053.00	cfs

APRIL

Year	Water Year Type	Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	m2	m34 (Calculated Mortality)	m3	m4	m234	Calculated Survival s234
1922	A	6,201	8,369	1.357	3,947	2,254	0.64	0.36	60.2	0.943	0.713	0.596	0.289	0.797	20.3%
1923	B	5,344	7,932	1.493	3,380	1,965	0.63	0.37	59.7	0.952	0.723	0.636	0.238	0.807	19.3%
1924	C	2,050	2,823	1.399	1,298	752	0.63	0.37	60.6	0.988	0.791	0.784	0.030	0.863	13.7%
1925	D	3,983	6,958	1.761	2,486	1,497	0.62	0.38	63.4	0.966	0.821	0.700	0.405	0.875	12.5%
1926	D	3,664	6,621	1.823	2,280	1,384	0.62	0.38	63.4	0.969	0.825	0.714	0.387	0.879	12.1%
1927	W	5,344	8,100	1.525	3,375	1,969	0.63	0.37	57.1	0.951	0.671	0.637	0.094	0.774	22.6%
1928	A	3,983	7,361	1.863	2,474	1,509	0.62	0.38	60.2	0.965	0.772	0.701	0.238	0.845	15.5%
1929	C	2,017	2,706	1.363	1,279	738	0.63	0.37	60.6	0.988	0.791	0.786	0.024	0.863	13.7%
1930	D	2,420	3,899	1.632	1,517	903	0.63	0.37	63.4	0.983	0.826	0.769	0.249	0.885	11.5%
1931	C	2,118	3,059	1.466	1,337	781	0.63	0.37	60.6	0.987	0.791	0.781	0.042	0.863	13.7%
1932	D	4,521	5,378	1.198	2,897	1,624	0.64	0.36	63.4	0.962	0.777	0.671	0.324	0.844	15.6%
1933	C	2,807	4,134	1.490	1,772	1,034	0.63	0.37	60.6	0.979	0.775	0.751	0.097	0.850	15.0%
1934	C	1,983	3,563	1.826	1,231	752	0.62	0.38	60.6	0.988	0.803	0.789	0.068	0.873	12.7%
1935	B	7,277	9,125	1.260	4,654	2,623	0.64	0.36	59.7	0.932	0.682	0.546	0.299	0.772	22.8%
1936	B	6,403	8,403	1.319	4,083	2,320	0.64	0.36	59.7	0.941	0.695	0.586	0.262	0.784	21.6%
1937	B	7,932	8,235	1.042	1,957	5,975	0.25	0.75	59.7	0.831	0.804	0.737	0.253	0.824	17.6%
1938	W	18,049	8,420	0.467	5,119	12,930	0.28	0.72	57.1	0.623	0.567	0.513	0.111	0.607	39.3%
1939	D	2,891	4,134	1.446	1,829	1,062	0.63	0.37	63.4	0.979	0.813	0.746	0.261	0.874	12.6%
1940	A	5,832	8,336	1.437	3,698	2,134	0.63	0.37	60.2	0.946	0.725	0.614	0.288	0.806	19.4%
1941	W	10,083	9,310	0.926	2,565	7,519	0.25	0.75	57.1	0.785	0.742	0.694	0.156	0.774	22.6%
1942	W	6,907	8,907	1.295	4,410	2,497	0.64	0.36	57.1	0.936	0.622	0.563	0.135	0.736	26.4%
1943	W	7,915	9,462	1.200	1,875	6,040	0.24	0.76	57.1	0.829	0.785	0.743	0.164	0.819	18.1%
1944	D	3,428	4,235	1.247	2,190	1,238	0.64	0.36	63.4	0.973	0.795	0.721	0.266	0.859	14.1%
1945	B	6,168	6,588	1.074	3,977	2,191	0.64	0.36	59.7	0.945	0.663	0.594	0.169	0.763	23.7%
1946	B	5,344	5,949	1.120	3,438	1,906	0.64	0.36	59.7	0.953	0.683	0.632	0.137	0.779	22.1%
1947	D	3,664	4,941	1.360	2,329	1,335	0.64	0.36	63.4	0.970	0.798	0.711	0.302	0.861	13.9%
1948	B	3,983	6,857	1.735	2,489	1,494	0.62	0.38	59.7	0.966	0.755	0.700	0.183	0.834	16.6%
1949	D	3,983	5,075	1.284	2,541	1,442	0.64	0.36	63.4	0.967	0.790	0.696	0.309	0.854	14.6%
1950	B	3,983	6,285	1.591	2,506	1,477	0.63	0.37	59.7	0.966	0.745	0.698	0.154	0.827	17.3%
1951	A	5,344	6,386	1.202	3,425	1,919	0.64	0.36	60.2	0.953	0.702	0.633	0.188	0.792	20.8%
1952	W	10,840	8,773	0.812	2,836	8,004	0.26	0.74	57.1	0.770	0.717	0.675	0.129	0.756	24.4%
1953	W	3,983	5,647	1.429	2,525	1,458	0.63	0.37	57.1	0.967	0.697	0.697	0.000	0.796	20.4%
1954	A	3,983	7,361	1.863	2,474	1,509	0.62	0.38	60.2	0.965	0.772	0.701	0.238	0.845	15.5%
1955	D	2,807	3,664	1.320	1,786	1,021	0.64	0.36	63.4	0.980	0.809	0.750	0.237	0.871	12.9%
1956	W	6,201	7,966	1.291	3,959	2,242	0.64	0.36	57.1	0.943	0.631	0.595	0.087	0.744	25.6%
1957	A	3,983	6,420	1.625	2,502	1,481	0.63	0.37	60.2	0.966	0.756	0.699	0.190	0.834	16.6%
1958	W	14,923	9,663	0.649	4,061	10,862	0.27	0.73	57.1	0.685	0.660	0.588	0.174	0.678	32.2%
1959	B	2,807	3,798	1.369	1,782	1,025	0.63	0.37	59.7	0.980	0.757	0.750	0.027	0.838	16.2%
1960	D	2,420	4,033	1.689	1,513	907	0.63	0.37	63.4	0.983	0.828	0.769	0.255	0.886	11.4%
1961	D	1,983	3,546	1.817	1,232	752	0.62	0.38	63.4	0.988	0.838	0.789	0.231	0.895	10.5%
1962	B	4,201	5,579	1.338	2,675	1,527	0.64	0.36	59.7	0.965	0.723	0.686	0.118	0.811	18.9%
1963	W	5,344	8,100	1.525	3,375	1,969	0.63	0.37	57.1	0.951	0.671	0.637	0.094	0.774	22.6%
1964	D	2,807	3,496	1.260	1,791	1,016	0.64	0.36	63.4	0.980	0.806	0.749	0.228	0.869	13.1%
1965	W	6,201	8,537	1.384	3,942	2,259	0.64	0.36	57.1	0.943	0.643	0.596	0.117	0.752	24.8%
1966	B	3,983	4,974	1.259	2,544	1,439	0.64	0.36	59.7	0.967	0.722	0.696	0.087	0.811	18.9%
1967	W	13,680	9,546	0.699	3,678	10,001	0.27	0.73	57.1	0.710	0.680	0.615	0.168	0.702	29.8%
1968	B	3,664	5,243	1.444	2,320	1,343	0.63	0.37	59.7	0.970	0.741	0.712	0.101	0.825	17.5%
1969	W	20,923	7,512	0.360	6,078	14,845	0.29	0.71	57.1	0.565	0.481	0.445	0.064	0.541	45.9%
1970	W	5,344	6,588	1.240	3,419	1,925	0.64	0.36	57.1	0.953	0.640	0.634	0.017	0.753	24.7%
1971	W	3,983	6,621	1.676	2,496	1,487	0.63	0.37	57.1	0.966	0.705	0.699	0.019	0.802	19.8%
1972	B	3,664	4,739	1.305	2,335	1,329	0.64	0.36	58.9	0.971	0.719	0.711	0.028	0.810	19.0%
1973	A	5,680	7,495	1.327	3,620	2,060	0.64	0.36	59.2	0.949	0.690	0.619	0.186	0.784	21.6%
1974	W	7,663	9,327	1.222	1,805	5,859	0.24	0.76	56.9	0.835	0.785	0.748	0.145	0.823	17.7%
1975	W	6,621	8,773	1.331	4,220	2,401	0.64	0.36	53.7	0.938	0.577	0.577	0.000	0.708	29.2%
1976	C	1,983	3,008	1.542	1,247	736	0.63	0.37	57.8	0.988	0.788	0.788	0.000	0.862	13.8%
1977	C	1,983	2,991	1.533	1,248	735	0.63	0.37	62.0	0.988	0.813	0.788	0.120	0.878	12.2%
1978	A	14,923	7,512	0.504	4,196	10,728	0.28	0.72	61.4	0.689	0.712	0.578	0.316	0.695	30.5%
1979	B	5,344	6,857	1.291	3,411	1,933	0.64	0.36	60.5	0.952	0.718	0.634	0.230	0.803	19.7%
1980	A	6,722	6,941	1.037	4,342	2,380	0.65	0.35	60.1	0.939	0.659	0.568	0.211	0.758	24.2%
1981	D	3,664	5,445	1.499	2,314	1,349	0.63	0.37	64.6	0.970	0.827	0.712	0.398	0.879	12.1%
1982	W	27,040	9,159	0.339	7,894	19,147	0.29	0.71	52.8	0.436	0.316	0.316	0.000	0.401	59.9%
1983	W	20,738	6,958	0.336	6,054	14,684	0.29	0.71	57.2	0.570	0.470	0.446	0.042	0.541	45.9%
1984	W	5,344	6,857	1.291	3,411	1,933	0.64	0.36	60.7	0.952	0.722	0.634	0.241	0.806	19.4%
1985	D	3,664	4,874	1.342	2,331	1,333	0.64	0.36	62.5	0.970	0.782	0.711	0.246	0.850	15.0%
1986	W	9,814	7,546	0.771	2,591	7,224	0.26	0.74	61.3	0.794	0.788	0.692	0.312	0.792	20.8%
1987	D	2,033	3,496	1.746	1,267	766	0.62	0.38	62.3	0.987	0.821	0.786	0.164	0.884	11.6%
1988	C	1,983	2,857	1.464	1,252	731	0.63	0.37	62.1	0.989	0.813	0.787	0.119	0.878	12.2%
1989	D	2,420	5,647	2.364	1,466	954	0.61	0.39	64.1	0.982	0.858	0.772	0.379	0.907	9.3%
1990	C	1,983	3,529	1.808	1,232	751	0.62	0.38	60.6	0.988	0.803	0.789	0.066	0.873	12.7%
1991	C	2,437	4,252	1.768	1,518	919	0.62	0.38	60.6	0.983	0.792	0.769	0.103	0.864	13.6%
1992	C	2,252	3,731	1.680	1,408	844	0.63	0.37	60.6	0.985	0.793	0.776	0.076	0.865	13.5%

MAY

Year	Vernalis Flows	CVP+SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt	m2	m34 (Calculated Mortality)	m3	m4	m234	Calculated Survival s234	Weighted (April + June) total survival
1922	5,936	8,685	1.471	3,527	2,409	0.59	0.41	66.6	0.938	0.880	0.626	0.680	0.904	9.6%	14.5%
1923	5,156	6,245	1.219	3,104	2,051	0.60	0.40	66.0	0.949	0.835	0.656	0.520	0.880	12.0%	15.3%
1924	1,903	1,301	0.695	1,173	730	0.62	0.38	63.9	0.989	0.823	0.793	0.145	0.887	11.3%	12.4%
1925	3,822	5,042	1.330	2,286	1,536	0.60	0.40	67.3	0.964	0.867	0.714	0.535	0.906	9.4%	10.8%
1926	3,545	4,879	1.389	2,113	1,432	0.60	0.40	67.3	0.967	0.870	0.726	0.527	0.910	9.0%	10.4%
1927	5,156	8,327	1.625	3,036	2,119	0.59	0.41	64.2	0.947	0.838	0.661	0.521	0.882	11.8%	16.6%
1928	3,822	6,375	1.682	2,242	1,580	0.59	0.41	66.6	0.963	0.876	0.717	0.562	0.912	8.8%	11.8%
1929	1,870	3,106	1.689	1,093	777	0.58	0.42	63.9	0.987	0.846	0.799	0.237	0.905	9.5%	11.4%
1930	1,870	3,513	1.911	1,080	790	0.58	0.42	67.3	0.987	0.891	0.800	0.457	0.932	6.8%	8.9%
1931	1,870	3,123	1.698	1,093	777	0.58	0.42	63.9	0.987	0.847	0.799	0.238	0.905	9.5%	11.4%
1932	3,871	4,847	1.262	2,323	1,547	0.60	0.40	67.3	0.964	0.863	0.711	0.525	0.903	9.7%	12.4%
1933	2,683	3,155	1.190	1,615	1,069	0.60	0.40	63.9	0.978	0.819	0.762	0.240	0.882	11.8%	13.2%
1934	1,870	2,944	1.601	1,099	772	0.59	0.41	63.9	0.987	0.845	0.798	0.229	0.903	9.7%	11.0%
1935	6,050	5,611	0.932	3,700	2,350	0.61	0.39	66.0	0.940	0.802	0.614	0.488	0.856	14.4%	18.2%
1936	5,156	6,310	1.232	3,102	2,054	0.60	0.40	66.0	0.949	0.836	0.656	0.524	0.881	11.9%	16.3%
1937	8,132	6,749	0.833	2,113	6,019	0.26	0.74	66.0	0.830	0.876	0.726	0.546	0.842	15.8%	16.6%
1938	23,972	9,449	0.395	6,913	17,059	0.29	0.71	64.2	0.499	0.741	0.386	0.578	0.569	43.1%	41.4%
1939	2,683	3,480	1.312	1,604	1,079	0.60	0.40	67.3	0.978	0.871	0.762	0.455	0.914	8.6%	10.4%
1940	5,156	6,196	1.209	3,106	2,050	0.60	0.40	66.6	0.949	0.846	0.656	0.553	0.887	11.3%	14.9%
1941	9,579	9,726	1.019	2,381	7,198	0.25	0.75	64.2	0.794	0.881	0.707	0.593	0.816	18.4%	20.3%
1942	5,936	8,685	1.471	3,527	2,409	0.59	0.41	64.2	0.938	0.828	0.626	0.539	0.873	12.7%	18.9%
1943	6,180	8,327	1.354	3,695	2,485	0.60	0.40	64.2	0.936	0.815	0.614	0.521	0.864	13.6%	15.6%
1944	2,976	3,741	1.270	1,784	1,192	0.60	0.40	67.3	0.975	0.867	0.750	0.469	0.910	9.0%	11.3%
1945	3,936	5,172	1.325	2,355	1,581	0.60	0.40	66.0	0.963	0.845	0.709	0.466	0.892	10.8%	16.6%
1946	3,871	5,269	1.373	2,310	1,561	0.60	0.40	66.0	0.964	0.848	0.712	0.471	0.894	10.6%	15.7%
1947	2,683	3,545	1.337	1,602	1,081	0.60	0.40	67.3	0.978	0.871	0.763	0.459	0.914	8.6%	11.0%
1948	3,822	7,676	2.025	2,200	1,622	0.58	0.42	66.0	0.962	0.886	0.720	0.593	0.918	8.2%	12.0%
1949	2,976	4,749	1.613	1,751	1,225	0.59	0.41	67.3	0.974	0.881	0.752	0.520	0.919	8.1%	11.0%
1950	3,822	5,269	1.390	2,278	1,544	0.60	0.40	66.0	0.964	0.849	0.715	0.471	0.895	10.5%	13.5%
1951	5,156	7,123	1.390	3,076	2,080	0.60	0.40	66.6	0.948	0.863	0.658	0.600	0.897	10.3%	15.0%
1952	15,450	9,563	0.620	4,233	11,218	0.27	0.73	64.2	0.674	0.824	0.576	0.584	0.715	28.5%	26.6%
1953	3,822	7,676	2.025	2,200	1,622	0.58	0.42	64.2	0.962	0.857	0.720	0.488	0.901	9.9%	14.6%
1954	3,822	7,432	1.961	2,208	1,614	0.58	0.42	66.6	0.962	0.892	0.720	0.616	0.922	7.8%	11.3%
1955	2,683	3,773	1.423	1,595	1,089	0.59	0.41	67.3	0.978	0.875	0.763	0.470	0.916	8.4%	10.4%
1956	6,034	8,750	1.458	3,588	2,446	0.59	0.41	64.2	0.937	0.827	0.622	0.543	0.872	12.8%	18.6%
1957	3,822	5,952	1.570	2,256	1,566	0.59	0.41	66.6	0.963	0.870	0.716	0.540	0.908	9.2%	12.5%
1958	13,173	10,685	0.813	3,448	9,725	0.26	0.74	64.2	0.719	0.868	0.632	0.641	0.758	24.2%	27.8%
1959	2,683	3,676	1.386	1,598	1,086	0.60	0.40	66.0	0.978	0.855	0.763	0.389	0.905	9.5%	12.5%
1960	1,870	3,350	1.822	1,085	785	0.58	0.42	67.3	0.987	0.889	0.799	0.449	0.930	7.0%	9.0%
1961	1,870	2,992	1.627	1,097	773	0.59	0.41	67.3	0.987	0.885	0.798	0.430	0.927	7.3%	8.7%
1962	3,822	5,334	1.407	2,276	1,546	0.60	0.40	66.0	0.964	0.850	0.715	0.474	0.896	10.4%	14.2%
1963	5,156	8,327	1.625	3,036	2,119	0.59	0.41	64.2	0.947	0.838	0.661	0.521	0.882	11.8%	16.6%
1964	2,683	3,871	1.460	1,591	1,092	0.59	0.41	67.3	0.978	0.876	0.763	0.475	0.917	8.3%	10.4%
1965	5,936	7,937	1.344	3,551	2,385	0.60	0.40	64.2	0.939	0.813	0.624	0.501	0.863	13.7%	18.7%
1966	2,976	4,781	1.624	1,750	1,226	0.59	0.41	66.0	0.974	0.863	0.752	0.446	0.908	9.2%	13.6%
1967	16,003	10,051	0.629	4,376	11,628	0.27	0.73	64.2	0.662	0.830	0.566	0.609	0.708	29.2%	29.5%
1968	2,683	3,643	1.374	1,599	1,085	0.60	0.40	66.0	0.978	0.855	0.763	0.388	0.905	9.5%	13.1%
1969	26,217	9,010	0.344	7,645	18,572	0.29	0.71	66.4	0.453	0.790	0.334	0.685	0.551	44.9%	45.3%
1970	5,156	5,920	1.155	3,115	2,041	0.60	0.40	61.2	0.949	0.732	0.655	0.223	0.818	18.2%	21.1%
1971	3,822	7,676	2.025	2,200	1,622	0.58	0.42	64.2	0.962	0.857	0.720	0.488	0.901	9.9%	14.3%
1972	2,683	3,903	1.472	1,590	1,093	0.59	0.41	66.0	0.978	0.858	0.763	0.401	0.907	9.3%	13.7%
1973	5,156	6,570	1.282	3,094	2,062	0.60	0.40	66.3	0.949	0.847	0.657	0.554	0.888	11.2%	15.9%
1974	5,936	8,685	1.471	3,527	2,409	0.59	0.41	66.1	0.938	0.869	0.626	0.651	0.897	10.3%	13.6%
1975	5,936	8,685	1.471	3,527	2,409	0.59	0.41	61.5	0.938	0.769	0.626	0.382	0.837	16.3%	22.1%
1976	2,065	3,253	1.599	1,214	851	0.59	0.41	65.8	0.985	0.865	0.790	0.356	0.914	8.6%	10.9%
1977	1,870	732	0.398	1,171	700	0.63	0.37	62.3	0.989	0.798	0.793	0.023	0.870	13.0%	12.7%
1978	10,831	8,197	0.759	2,869	7,962	0.26	0.74	66.9	0.772	0.893	0.673	0.672	0.804	19.6%	24.5%
1979	5,156	5,985	1.168	3,113	2,043	0.60	0.40	66.0	0.949	0.830	0.655	0.507	0.877	12.3%	15.6%
1980	6,619	7,481	1.136	4,005	2,614	0.61	0.39	66.6	0.932	0.844	0.592	0.618	0.879	12.1%	17.5%
1981	2,683	3,513	1.325	1,603	1,080	0.60	0.40	68.7	0.978	0.890	0.763	0.539	0.926	7.4%	9.5%
1982	15,158	10,701	0.707	4,070	11,088	0.27	0.73	65.1	0.678	0.874	0.587	0.695	0.731	26.9%	41.8%
1983	19,077	7,546	0.396	5,496	13,581	0.29	0.71	61.3	0.603	0.646	0.486	0.312	0.615	38.5%	41.8%
1984	5,156	6,148	1.200	3,107	2,048	0.60	0.40	66.0	0.949	0.833	0.656	0.515	0.879	12.1%	15.4%
1985	3,610	4,781	1.336	2,158	1,452	0.60	0.40	65.1	0.967	0.832	0.723	0.393	0.886	11.4%	13.0%
1986	8,067	8,132	1.012	2,006	6,061	0.25	0.75	65.8	0.829	0.895	0.734	0.605	0.845	15.5%	17.9%
1987	1,887	2,862	1.543	1,112	775	0.59	0.41	68.6	0.987	0.899	0.797	0.500	0.935	6.5%	8.8%
1988	1,870	3,058	1.663	1,095	775	0.59	0.41	63.7	0.987	0.844	0.799	0.223	0.903	9.7%	10.8%
1989	1,870	3,936	2.141	1,066	804	0.57	0.43	66.7	0.986	0.889	0.801	0.443	0.931	6.9%	8.0%
1990	1,870	2,700	1.468	1,107	764	0.59	0.41	63.9	0.988	0.842	0.798	0.217	0.901	9.9%	11.2%
1991	1,870	2,879	1.566	1,101	770	0.59	0.41	63.9	0.987	0.844	0.798	0.226	0.903	9.7%	11.5%
1992	2,862	3,529	1.247	1,718	1,145	0.60	0.40	63.9	0.976	0.818	0.754	0.259	0.881	11.9%	12.6%
														Average:	16.01%

Calculations- San Joaquin River Fall Run Smolt Survival Model WITH BARRIER:

C8 ='Study 507 Flow Data'!AB7
D8 ='Study 507 Flow Data'!G7 (HIDDEN)
E8 ='Study 507 Flow Data'!Q7 (HIDDEN)
F8 =D8+E8
G8 =F8/(C8-0.03*$R$2)
H8 =IF(C8<$R$1,(0.47*(0.3137*C8-0.0156*$R$2-0.0625*F8)+0.53*C8),(0.3137*C8-0.0156*$R$2-0.0625*F8))
I8 =C8-H8
J8 =H8/C8
K8 =I8/C8
M8 =(1.01045-0.00003*I8)
N8 =(O8+P8)-(O8*P8)
O8 =IF((0.87634-0.000071*H8)<0,0,(0.87634-0.000071*H8))
P8 =IF((-3.65867+0.058492*L8+0.000051*F8)<0,0,(-3.65867+0.058492*L8+0.000051*F8))
Q8 =((K8*M8)+(J8*N8))
R8 =(1-Q8)

T8 ='Study 507 Flow Data'!AC7
U8 ='Study 507 Flow Data'!H7 (HIDDEN)
V8 ='Study 507 Flow Data'!R7 (HIDDEN)
W8 =U8+V8
X8 =W8/(T8-0.03*$R$3)
Y8 =IF(T8<$R$1,(0.52*(0.3137*T8-0.0156*$R$3-0.0625*W8)+0.48*T8),(0.3137*T8-0.0156*$R$3-0.0625*W8))
Z8 =T8-Y8
AA8 =Y8/T8
AB8 =Z8/T8
AD8 =(1.01045-0.00003*Z8)
AE8 =(AF8+AG8)-(AF8*AG8)
AF8 =IF((0.87634-0.000071*Y8)<0,0,(0.87634-0.000071*Y8))
AG8 =IF((-3.65867+0.058492*AC8+0.000051*W8)<0,0,(-3.65867+0.058492*AC8+0.000051*W8))
AH8 =((AB8*AD8)+(AA8*AE8))
AI8 =(1-AH8)
AK8 =0.45*G94+0.55*AI8

Study 513 San Joaquin River Fall Run Salmon Smolt Survival Model WITH BARRIER

Barrier at head of Old River from Apr 15 to May 15

Old River Barrier Open above 7500.00 cfs at Vernalis
Consumptive Depletion for April 1053.00 cfs
Consumptive Depletion for May 1053.00 cfs

APRIL

Row	Year	Water Year Type	APRIL Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	m2	Calculated Mortality m34	m3	m4	m234	Calculated Survival s234
8	1922	A	9,209	9,865	1.075	2,256	6,953	0.24	0.76	60.2	0.802	0.820	0.716	0.366	0.806	19.4%
9	1923	B	7,361	9,277	1.266	4,706	2,655	0.64	0.36	59.7	0.931	0.682	0.542	0.306	0.772	22.8%
10	1924	C	3,630	3,966	1.102	2,335	1,295	0.64	0.36	60.6	0.972	0.736	0.711	0.088	0.820	18.0%
11	1925	D	6,319	8,420	1.339	4,026	2,293	0.64	0.36	63.4	0.942	0.787	0.591	0.479	0.843	15.7%
12	1926	D	5,680	8,184	1.449	3,600	2,080	0.63	0.37	63.4	0.948	0.798	0.621	0.467	0.853	14.7%
13	1927	W	7,999	9,613	1.206	1,892	6,107	0.24	0.76	57.1	0.827	0.786	0.742	0.171	0.818	18.2%
14	1928	A	6,336	8,722	1.384	4,028	2,308	0.64	0.36	60.2	0.941	0.716	0.590	0.307	0.798	20.2%
15	1929	C	4,000	3,496	0.881	2,599	1,401	0.65	0.35	60.6	0.968	0.712	0.692	0.064	0.802	19.8%
16	1930	D	4,403	5,529	1.265	2,813	1,590	0.64	0.36	63.4	0.963	0.784	0.677	0.332	0.848	15.2%
17	1931	C	3,546	4,101	1.167	2,274	1,272	0.64	0.36	60.6	0.972	0.742	0.715	0.095	0.825	17.5%
18	1932	D	7,613	6,789	0.896	1,947	5,666	0.26	0.74	63.4	0.840	0.842	0.738	0.396	0.841	15.9%
19	1933	C	4,739	5,512	1.171	3,041	1,698	0.64	0.36	60.6	0.960	0.717	0.660	0.167	0.804	19.6%
20	1934	C	4,252	5,193	1.230	2,720	1,532	0.64	0.36	60.6	0.964	0.731	0.683	0.151	0.815	18.5%
21	1935	B	8,957	10,117	1.133	2,161	6,796	0.24	0.76	59.7	0.807	0.820	0.723	0.349	0.810	19.0%
22	1936	B	9,730	9,865	1.017	2,419	7,311	0.25	0.75	59.7	0.791	0.804	0.705	0.336	0.794	20.6%
23	1937	B	12,167	9,394	0.774	3,213	8,954	0.26	0.74	59.7	0.742	0.758	0.648	0.312	0.746	25.4%
24	1938	W	19,864	9,075	0.458	5,648	14,216	0.28	0.72	57.1	0.584	0.551	0.475	0.144	0.575	42.5%
25	1939	D	5,428	5,865	1.087	3,497	1,931	0.64	0.36	63.4	0.953	0.758	0.628	0.349	0.827	17.3%
26	1940	A	9,361	10,335	1.108	2,274	7,087	0.24	0.76	60.2	0.798	0.826	0.715	0.390	0.805	19.5%
27	1941	W	13,982	9,411	0.675	3,782	10,201	0.27	0.73	57.1	0.704	0.671	0.608	0.161	0.695	30.5%
28	1942	W	9,865	9,747	0.991	2,469	7,396	0.25	0.75	57.1	0.789	0.754	0.701	0.178	0.780	22.0%
29	1943	W	11,092	9,764	0.883	2,853	8,239	0.26	0.74	57.1	0.763	0.732	0.674	0.179	0.755	24.5%
30	1944	D	6,134	6,319	1.035	3,962	2,172	0.65	0.35	63.4	0.945	0.746	0.595	0.372	0.816	18.4%
31	1945	B	9,361	8,722	0.935	2,375	6,986	0.25	0.75	59.7	0.801	0.789	0.708	0.278	0.798	20.2%
32	1946	B	7,663	7,815	1.024	1,899	5,764	0.25	0.75	59.7	0.838	0.801	0.742	0.232	0.829	17.1%
33	1947	D	4,958	6,117	1.242	3,171	1,787	0.64	0.36	63.4	0.957	0.777	0.651	0.362	0.842	15.8%
34	1948	B	6,201	8,655	1.403	3,939	2,262	0.64	0.36	59.7	0.943	0.707	0.597	0.275	0.793	20.7%
35	1949	D	5,899	5,378	0.917	3,830	2,068	0.65	0.35	63.4	0.948	0.733	0.604	0.324	0.808	19.2%
36	1950	B	5,731	7,865	1.380	3,643	2,087	0.64	0.36	59.7	0.948	0.707	0.618	0.234	0.795	20.5%
37	1951	A	7,411	7,966	1.079	4,779	2,632	0.64	0.36	60.2	0.931	0.661	0.537	0.269	0.757	24.3%
38	1952	W	14,033	8,873	0.634	3,831	10,202	0.27	0.73	57.1	0.704	0.657	0.604	0.134	0.692	30.8%
39	1953	W	5,596	7,042	1.265	3,577	2,020	0.64	0.36	57.1	0.950	0.638	0.622	0.040	0.750	25.0%
40	1954	A	5,966	8,520	1.436	3,784	2,182	0.63	0.37	60.2	0.945	0.724	0.608	0.297	0.805	19.5%
41	1955	D	4,874	5,512	1.138	3,132	1,742	0.64	0.36	63.4	0.958	0.768	0.654	0.331	0.836	16.4%
42	1956	W	9,209	10,151	1.106	2,238	6,971	0.24	0.76	57.1	0.801	0.774	0.717	0.199	0.795	20.5%
43	1957	A	5,395	7,378	1.376	3,430	1,965	0.64	0.36	60.2	0.952	0.720	0.633	0.239	0.805	19.5%
44	1958	W	16,722	9,764	0.585	4,619	12,103	0.28	0.72	57.1	0.647	0.629	0.548	0.179	0.642	35.8%
45	1959	B	4,941	5,714	1.164	3,172	1,769	0.64	0.36	59.7	0.957	0.695	0.651	0.125	0.789	21.1%
46	1960	D	4,588	5,210	1.143	2,947	1,641	0.64	0.36	63.4	0.961	0.772	0.667	0.315	0.840	16.0%
47	1961	D	4,084	4,874	1.203	2,616	1,468	0.64	0.36	63.4	0.966	0.783	0.691	0.298	0.849	15.1%
48	1962	B	7,092	7,529	1.066	4,575	2,516	0.65	0.35	59.7	0.935	0.649	0.551	0.217	0.750	25.0%
49	1963	W	8,117	9,680	1.197	1,925	6,192	0.24	0.76	57.1	0.825	0.785	0.740	0.175	0.815	18.5%
50	1964	D	4,840	5,193	1.080	3,119	1,721	0.64	0.36	63.4	0.959	0.763	0.655	0.315	0.833	16.7%
51	1965	W	9,529	9,999	1.053	2,348	7,181	0.25	0.75	57.1	0.795	0.765	0.710	0.191	0.788	21.2%
52	1966	B	5,361	6,588	1.236	3,430	1,930	0.64	0.36	59.7	0.953	0.695	0.633	0.169	0.788	21.2%
53	1967	W	15,461	9,646	0.625	4,231	11,230	0.27	0.73	57.1	0.674	0.649	0.576	0.173	0.667	33.3%
54	1968	B	5,025	6,201	1.242	3,214	1,811	0.64	0.36	59.7	0.956	0.701	0.648	0.150	0.793	20.7%
55	1969	W	21,125	7,630	0.362	6,133	14,991	0.29	0.71	57.1	0.561	0.480	0.441	0.070	0.537	46.3%
56	1970	W	7,546	8,083	1.076	1,845	5,700	0.24	0.76	57.1	0.839	0.769	0.745	0.093	0.822	17.8%
57	1971	W	5,596	7,798	1.401	3,554	2,042	0.64	0.36	57.1	0.949	0.654	0.624	0.079	0.761	23.9%
58	1972	B	4,689	6,991	1.501	2,963	1,725	0.63	0.37	58.9	0.959	0.714	0.666	0.143	0.804	19.6%
59	1973	A	9,630	10,218	1.065	2,366	7,264	0.25	0.75	59.2	0.793	0.803	0.708	0.325	0.795	20.5%
60	1974	W	10,571	10,201	0.968	2,662	7,909	0.25	0.75	56.9	0.773	0.747	0.687	0.190	0.767	23.3%
61	1975	W	9,865	10,487	1.066	2,423	7,442	0.25	0.75	53.7	0.787	0.709	0.704	0.017	0.768	23.2%
62	1976	C	3,865	4,588	1.197	2,476	1,389	0.64	0.36	57.8	0.969	0.701	0.701	0.000	0.797	20.3%
63	1977	C	3,277	3,916	1.207	2,097	1,180	0.64	0.36	62.0	0.975	0.773	0.727	0.168	0.846	15.4%
64	1978	A	17,293	7,613	0.441	4,933	12,360	0.29	0.71	61.4	0.640	0.678	0.526	0.321	0.651	34.9%
65	1979	B	8,554	9,310	1.092	2,085	6,469	0.24	0.76	60.5	0.816	0.825	0.728	0.355	0.818	18.2%
66	1980	A	10,756	8,285	0.773	2,840	7,916	0.26	0.74	60.1	0.773	0.766	0.675	0.279	0.771	22.9%
67	1981	D	5,210	6,756	1.305	3,323	1,887	0.64	0.36	64.6	0.954	0.807	0.640	0.464	0.860	14.0%
68	1982	W	27,376	9,915	0.363	7,952	19,424	0.29	0.71	52.8	0.428	0.312	0.312	0.000	0.394	60.6%
69	1983	W	21,864	7,075	0.324	6,400	15,464	0.29	0.71	57.2	0.547	0.450	0.422	0.048	0.518	48.2%
70	1984	W	7,563	8,420	1.118	1,830	5,733	0.24	0.76	60.7	0.838	0.828	0.746	0.321	0.836	16.4%
71	1985	D	5,092	6,117	1.209	3,262	1,830	0.64	0.36	62.5	0.956	0.755	0.645	0.309	0.827	17.3%
72	1986	W	12,739	7,815	0.615	3,491	9,247	0.27	0.73	61.3	0.733	0.749	0.628	0.325	0.738	26.2%
73	1987	D	4,386	4,319	0.992	2,837	1,549	0.65	0.35	62.3	0.964	0.742	0.675	0.206	0.820	18.0%
74	1988	C	4,033	4,638	1.159	2,588	1,445	0.64	0.36	62.1	0.967	0.757	0.693	0.210	0.832	16.8%
75	1989	D	4,302	6,773	1.586	2,708	1,594	0.63	0.37	64.1	0.963	0.822	0.684	0.436	0.874	12.6%
76	1990	C	4,000	4,689	1.182	2,564	1,436	0.64	0.36	60.6	0.967	0.733	0.694	0.125	0.817	18.3%
77	1991	C	4,521	6,201	1.381	2,873	1,648	0.64	0.36	60.6	0.961	0.739	0.672	0.202	0.820	18.0%
78	1992	C	4,622	5,344	1.164	2,966	1,655	0.64	0.36	60.6	0.961	0.719	0.666	0.158	0.805	19.5%

MAY

Row	Year	MAY Vernalis Flows	CVP+SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt	m2	Calculated Mortality m34	m3	m4	m234	Calculated Survival s234	Weighted (April + June) total survival
8	1922	8,896	10,165	1.147	2,139	6,757	0.24	0.76	66.6	0.808	0.933	0.724	0.755	0.838	16.2%	17.6%
9	1923	6,522	7,563	1.165	3,940	2,582	0.60	0.40	66.0	0.933	0.834	0.597	0.587	0.873	12.7%	17.2%
10	1924	3,269	4,310	1.331	1,954	1,315	0.60	0.40	63.9	0.971	0.816	0.738	0.299	0.878	12.2%	14.8%
11	1925	5,643	6,684	1.191	3,404	2,240	0.60	0.40	67.3	0.943	0.861	0.635	0.619	0.893	10.7%	12.9%
12	1926	4,895	5,839	1.200	2,950	1,945	0.60	0.40	67.3	0.952	0.859	0.667	0.576	0.896	10.4%	12.4%
13	1927	6,538	9,189	1.412	3,898	2,640	0.60	0.40	64.2	0.931	0.826	0.600	0.565	0.868	13.2%	15.4%
14	1928	5,481	7,481	1.373	3,273	2,208	0.60	0.40	66.6	0.944	0.864	0.644	0.618	0.896	10.4%	14.8%
15	1929	3,643	4,326	1.198	2,194	1,449	0.60	0.40	63.9	0.967	0.804	0.721	0.300	0.869	13.1%	16.1%
16	1930	3,968	5,221	1.326	2,374	1,594	0.60	0.40	67.3	0.963	0.867	0.708	0.544	0.905	9.5%	12.0%
17	1931	3,301	4,180	1.278	1,979	1,323	0.60	0.40	63.9	0.971	0.813	0.736	0.292	0.876	12.4%	14.7%
18	1932	5,920	6,701	1.138	3,581	2,339	0.60	0.40	67.3	0.940	0.856	0.622	0.620	0.889	11.1%	13.2%
19	1933	4,342	4,700	1.090	2,631	1,711	0.61	0.39	63.9	0.959	0.788	0.690	0.319	0.856	14.4%	16.8%
20	1934	3,822	4,440	1.171	2,305	1,517	0.60	0.40	63.9	0.965	0.800	0.713	0.305	0.866	13.4%	15.7%
21	1935	7,839	8,587	1.100	1,906	5,933	0.24	0.76	66.0	0.832	0.907	0.741	0.640	0.851	14.9%	16.8%
22	1936	6,977	8,018	1.154	4,218	2,759	0.60	0.40	66.0	0.928	0.835	0.577	0.611	0.872	12.8%	16.3%
23	1937	11,612	9,384	0.810	3,040	8,572	0.26	0.74	66.0	0.753	0.891	0.661	0.680	0.789	21.1%	23.0%
24	1938	25,192	10,083	0.401	7,256	17,936	0.29	0.71	64.2	0.472	0.751	0.361	0.611	0.553	44.7%	43.7%
25	1939	4,749	5,090	1.079	2,880	1,869	0.61	0.39	67.3	0.954	0.848	0.672	0.537	0.890	11.0%	13.8%
26	1940	7,123	5,952	0.839	4,379	2,744	0.61	0.39	66.6	0.928	0.800	0.565	0.540	0.850	15.0%	17.1%
27	1941	12,393	9,937	0.804	3,250	9,143	0.26	0.74	64.2	0.736	0.859	0.646	0.603	0.768	23.2%	26.4%
28	1942	8,343	10,083	1.213	1,971	6,373	0.24	0.76	64.2	0.819	0.897	0.736	0.611	0.838	16.2%	18.8%
29	1943	10,327	10,409	1.011	2,573	7,755	0.25	0.75	64.2	0.778	0.886	0.694	0.627	0.805	19.5%	21.8%
30	1944	5,481	5,839	1.071	3,327	2,154	0.61	0.39	67.3	0.946	0.847	0.640	0.576	0.886	11.4%	14.5%
31	1945	7,367	7,920	1.080	4,472	2,895	0.61	0.39	66.0	0.924	0.826	0.559	0.606	0.864	13.6%	16.6%
32	1946	6,749	7,205	1.072	4,098	2,651	0.61	0.39	66.0	0.931	0.821	0.585	0.569	0.864	13.6%	15.2%
33	1947	4,489	5,188	1.164	2,710	1,779	0.60	0.40	67.3	0.957	0.855	0.684	0.542	0.896	10.4%	12.8%
34	1948	5,839	8,864	1.526	3,458	2,380	0.59	0.41	66.0	0.939	0.872	0.631	0.654	0.899	10.1%	14.8%
35	1949	5,367	6,099	1.143	3,245	2,122	0.60	0.40	67.3	0.947	0.854	0.646	0.589	0.891	10.9%	14.6%
36	1950	5,123	6,847	1.345	3,064	2,059	0.60	0.40	66.0	0.949	0.847	0.659	0.551	0.888	11.2%	15.4%
37	1951	6,001	7,855	1.316	3,596	2,406	0.60	0.40	66.6	0.938	0.863	0.621	0.638	0.893	10.7%	16.8%
38	1952	16,263	10,083	0.621	4,455	11,808	0.27	0.73	64.2	0.656	0.829	0.560	0.611	0.703	29.7%	30.2%
39	1953	5,204	8,538	1.651	3,061	2,143	0.59	0.41	64.2	0.946	0.840	0.659	0.532	0.884	11.6%	17.6%
40	1954	5,448	8,506	1.570	3,219	2,229	0.59	0.41	66.6	0.944	0.884	0.648	0.671	0.908	9.2%	13.8%
41	1955	4,733	5,627	1.197	2,852	1,880	0.60	0.40	67.3	0.954	0.858	0.674	0.565	0.896	10.4%	13.1%
42	1956	11,417	11,466	1.007	2,848	8,568	0.25	0.75	64.2	0.753	0.896	0.674	0.681	0.789	21.1%	20.8%
43	1957	5,302	7,628	1.447	3,153	2,149	0.59	0.41	66.6	0.946	0.870	0.652	0.626	0.901	9.9%	14.2%
44	1958	14,897	10,897	0.733	3,976	10,921	0.27	0.73	64.2	0.683	0.859	0.594	0.652	0.730	27.0%	31.0%
45	1959	4,375	5,318	1.224	2,632	1,743	0.60	0.40	66.0	0.958	0.836	0.689	0.473	0.885	11.5%	15.8%
46	1960	4,163	5,806	1.405	2,480	1,683	0.60	0.40	67.3	0.960	0.872	0.700	0.574	0.908	9.2%	12.3%
47	1961	3,822	4,668	1.231	2,298	1,524	0.60	0.40	67.3	0.965	0.861	0.713	0.516	0.902	9.8%	12.2%
48	1962	5,465	6,473	1.191	3,295	2,169	0.60	0.40	66.0	0.945	0.833	0.642	0.532	0.877	12.3%	18.0%
49	1963	7,205	9,530	1.329	4,315	2,889	0.60	0.40	64.2	0.924	0.820	0.570	0.583	0.862	13.8%	15.9%
50	1964	4,538	5,546	1.231	2,729	1,808	0.60	0.40	67.3	0.956	0.861	0.683	0.561	0.899	10.1%	13.1%
51	1965	7,953	8,977	1.133	1,917	6,036	0.24	0.76	64.2	0.829	0.884	0.740	0.554	0.843	15.7%	18.2%
52	1966	4,977	6,099	1.233	2,994	1,983	0.60	0.40	66.0	0.951	0.836	0.664	0.513	0.882	11.8%	16.0%
53	1967	16,621	10,262	0.619	4,556	12,065	0.27	0.73	64.2	0.649	0.830	0.553	0.620	0.698	30.2%	31.6%
54	1968	4,538	5,351	1.187	2,736	1,802	0.60	0.40	66.0	0.956	0.833	0.682	0.475	0.882	11.8%	15.8%
55	1969	28,087	9,221	0.329	8,218	19,869	0.29	0.71	66.4	0.414	0.785	0.293	0.695	0.523	47.7%	47.1%
56	1970	6,245	7,172	1.154	3,775	2,470	0.60	0.40	61.2	0.936	0.721	0.608	0.287	0.806	19.4%	18.7%
57	1971	5,269	8,587	1.639	3,101	2,168	0.59	0.41	64.2	0.945	0.840	0.656	0.534	0.883	11.7%	17.2%
58	1972	4,310	5,351	1.251	2,589	1,721	0.60	0.40	66.0	0.959	0.838	0.692	0.475	0.887	11.3%	15.1%
59	1973	7,449	8,506	1.147	4,505	2,943	0.60	0.40	66.3	0.922	0.846	0.556	0.653	0.876	12.4%	16.0%
60	1974	8,490	10,148	1.200	2,012	6,477	0.24	0.76	66.1	0.816	0.927	0.733	0.725	0.842	15.8%	19.2%
61	1975	8,278	10,051	1.219	1,952	6,326	0.24	0.76	61.5	0.821	0.856	0.738	0.451	0.829	17.1%	19.8%
62	1976	3,513	4,326	1.243	2,110	1,403	0.60	0.40	65.8	0.968	0.839	0.727	0.411	0.891	10.9%	15.2%
63	1977	3,090	2,228	0.729	1,906	1,184	0.62	0.38	62.3	0.975	0.767	0.741	0.099	0.846	15.4%	15.4%
64	1978	14,556	8,392	0.578	4,025	10,531	0.28	0.72	66.9	0.695	0.870	0.591	0.682	0.743	25.7%	29.9%
65	1979	6,928	7,530	1.092	4,202	2,726	0.61	0.39	66.0	0.929	0.825	0.578	0.586	0.866	13.4%	15.5%
66	1980	11,449	9,823	0.860	2,961	8,488	0.26	0.74	66.6	0.756	0.912	0.666	0.738	0.796	20.4%	21.5%
67	1981	4,619	5,156	1.124	2,794	1,824	0.60	0.40	68.7	0.956	0.878	0.678	0.623	0.909	9.1%	11.3%
68	1982	17,028	10,913	0.642	4,643	12,385	0.27	0.73	65.1	0.639	0.867	0.547	0.706	0.701	29.9%	43.7%
69	1983	18,638	7,758	0.417	5,345	13,292	0.29	0.71	61.3	0.612	0.659	0.497	0.323	0.625	37.5%	42.3%
70	1984	6,034	7,335	1.222	3,634	2,400	0.60	0.40	66.0	0.938	0.838	0.618	0.576	0.878	12.2%	14.1%
71	1985	4,586	5,578	1.225	2,760	1,827	0.60	0.40	65.1	0.956	0.819	0.680	0.434	0.873	12.7%	14.8%
72	1986	10,734	9,530	0.890	2,755	7,979	0.26	0.74	65.8	0.771	0.897	0.681	0.676	0.803	19.7%	22.6%
73	1987	4,001	4,554	1.147	2,416	1,584	0.60	0.40	68.6	0.963	0.878	0.705	0.586	0.912	8.8%	13.0%
74	1988	3,789	4,505	1.199	2,282	1,507	0.60	0.40	63.7	0.965	0.799	0.714	0.297	0.865	13.5%	15.0%
75	1989	3,936	6,489	1.662	2,312	1,624	0.59	0.41	66.7	0.962	0.877	0.712	0.574	0.912	8.8%	10.5%
76	1990	3,708	4,163	1.132	2,241	1,467	0.60	0.40	63.9	0.966	0.800	0.717	0.291	0.866	13.4%	15.6%
77	1991	3,919	4,651	1.196	2,361	1,558	0.60	0.40	63.9	0.964	0.801	0.709	0.316	0.866	13.4%	15.5%
78	1992	4,017	4,586	1.151	2,426	1,591	0.60	0.40	63.9	0.963	0.797	0.704	0.313	0.862	13.8%	16.3%
79															Average:	18.41%

Calculations- San Joaquin River Fall Run Smolt Survival Model WITH BARRIER:

- C8 ='Study 513 Flow Data'!AB7
- D8 ='Study 513 Flow Data'!G7 (HIDDEN)
- E8 ='Study 513 Flow Data'!Q7 (HIDDEN)
- F8 =D8+E8
- G8 =F8/(C8-0.03*$R$2)
- H8 =IF(C8<$R$1,(0.47*(0.3137*C8-0.0156*$R$2-0.0625*F8)+0.53*C8),(0.3137*C8-0.0156*$R$2-0.0625*F8))
- I8 =C8-H8
- J8 =H8/C8
- K8 =I8/C8
- M8 =(1.01045-0.00003*I8)
- N8 =(O8+P8)-(O8*P8)
- O8 =IF((0.87634-0.000071*H8)<0,0,(0.87634-0.000071*H8))
- P8 =IF((-3.65867+0.058492*L8+0.000051*F8)<0,0,(-3.65867+0.058492*L8+0.000051*F8))
- Q8 =((K8*M8)+(J8*N8))
- R8 =(1-Q8)

- T8 ='Study 513 Flow Data'!AC7
- U8 ='Study 513 Flow Data'!H7 (HIDDEN)
- V8 ='Study 513 Flow Data'!R7 (HIDDEN)
- W8 =U8+V8
- X8 =W8/(T8-0.03*$R$3)
- Y8 =IF(T8<$R$1,(0.52*(0.3137*T8-0.0156*$R$3-0.0625*W8)+0.48*T8),(0.3137*T8-0.0156*$R$3-0.0625*W8))
- Z8 =T8-Y8
- AA8 =Y8/T8
- AB8 =Z8/T8
- AD8 =(1.01045-0.00003*Z8)
- AE8 =(AF8+AG8)-(AF8*AG8)
- AF8 =IF((0.87634-0.000071*Y8)<0,0,(0.87634-0.000071*Y8))
- AG8 =IF((-3.65867+0.058492*AC8+0.000051*W8)<0,0,(-3.65867+0.058492*AC8+0.000051*W8))
- AH8 =((AB8*AD8)+(AA8*AE8))
- AI8 =(1-AH8)
- AK8 =0.45*G94+0.55*AI8

Study 485 San Joaquin River Fall Run Salmon Smolt Survival Model WITH BARRIER
Barrier at head of Old River from Apr 15 to May 15

Old River Barrier Open above 7500.00 cfs at Vernalis
Consumptive Depletion for April 1053.00 cfs
Consumptive Depletion for May 1053.00 cfs

	A	B	C	F	G	H	I	J	K	L	M	N	O	P	Q	R
5		Water	**APRIL**													**Calculated**
6		Year	Vernalis	CVP + SWP		Calculated				Temp @		Calculated Mortality				**Survival**
7	Year	Type	Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	**s234**
8	1922	A	6,184	8,369	1.360	3,936	2,248	0.64	0.36	60.2	0.943	0.714	0.597	0.289	0.797	**20.3%**
9	1923	B	5,327	7,966	1.504	3,367	1,960	0.63	0.37	59.7	0.952	0.724	0.637	0.240	0.808	**19.2%**
10	1924	C	1,983	2,790	1.430	1,254	729	0.63	0.37	60.6	0.989	0.793	0.787	0.028	0.865	**13.5%**
11	1925	D	3,966	6,924	1.760	2,476	1,490	0.62	0.38	63.4	0.966	0.821	0.701	0.403	0.876	**12.4%**
12	1926	D	3,664	6,420	1.768	2,286	1,378	0.62	0.38	63.4	0.969	0.822	0.714	0.377	0.877	**12.3%**
13	1927	W	5,327	8,067	1.523	3,364	1,963	0.63	0.37	57.1	0.952	0.671	0.637	0.093	0.774	**22.6%**
14	1928	A	4,487	7,630	1.712	2,808	1,679	0.63	0.37	60.2	0.960	0.758	0.677	0.252	0.834	**16.6%**
15	1929	C	2,000	2,958	1.503	1,260	740	0.63	0.37	60.6	0.988	0.795	0.787	0.037	0.866	**13.4%**
16	1930	D	2,403	3,899	1.644	1,506	897	0.63	0.37	63.4	0.984	0.827	0.769	0.249	0.885	**11.5%**
17	1931	C	1,983	2,958	1.516	1,249	734	0.63	0.37	60.6	0.988	0.795	0.788	0.037	0.867	**13.3%**
18	1932	D	4,504	5,378	1.202	2,885	1,618	0.64	0.36	63.4	0.962	0.778	0.671	0.324	0.844	**15.6%**
19	1933	C	2,790	4,117	1.493	1,761	1,029	0.63	0.37	60.6	0.980	0.775	0.751	0.096	0.851	**14.9%**
20	1934	C	1,966	3,563	1.842	1,220	747	0.62	0.38	60.6	0.988	0.804	0.790	0.068	0.874	**12.6%**
21	1935	B	7,226	9,075	1.261	4,621	2,605	0.64	0.36	59.7	0.932	0.682	0.548	0.296	0.772	**22.8%**
22	1936	B	6,420	8,369	1.310	4,095	2,324	0.64	0.36	59.7	0.941	0.693	0.586	0.260	0.783	**21.7%**
23	1937	B	7,932	7,966	1.008	1,974	5,958	0.25	0.75	59.7	0.832	0.799	0.736	0.240	0.824	**17.6%**
24	1938	W	18,049	7,714	0.428	5,163	12,886	0.29	0.71	57.1	0.624	0.546	0.510	0.075	0.602	**39.8%**
25	1939	D	2,891	4,134	1.446	1,829	1,062	0.63	0.37	63.4	0.979	0.813	0.746	0.261	0.874	**12.6%**
26	1940	A	6,151	8,504	1.390	3,909	2,242	0.64	0.36	60.2	0.943	0.718	0.599	0.296	0.800	**20.0%**
27	1941	W	10,083	9,310	0.926	2,565	7,519	0.25	0.75	57.1	0.785	0.742	0.694	0.156	0.774	**22.6%**
28	1942	W	6,907	8,907	1.295	4,410	2,497	0.64	0.36	57.1	0.936	0.622	0.563	0.135	0.736	**26.4%**
29	1943	W	7,915	9,125	1.157	1,896	6,019	0.24	0.76	57.1	0.830	0.780	0.742	0.147	0.818	**18.2%**
30	1944	D	3,445	4,235	1.241	2,202	1,243	0.64	0.36	63.4	0.973	0.794	0.720	0.266	0.859	**14.1%**
31	1945	B	6,016	6,420	1.073	3,879	2,137	0.64	0.36	59.7	0.946	0.665	0.601	0.161	0.765	**23.5%**
32	1946	B	5,344	5,949	1.120	3,438	1,906	0.64	0.36	59.7	0.953	0.683	0.632	0.137	0.779	**22.1%**
33	1947	D	3,664	4,941	1.360	2,329	1,335	0.64	0.36	63.4	0.970	0.798	0.711	0.302	0.861	**13.9%**
34	1948	B	3,983	6,789	1.718	2,491	1,492	0.63	0.37	59.7	0.966	0.753	0.699	0.180	0.833	**16.7%**
35	1949	D	3,983	5,075	1.284	2,541	1,442	0.64	0.36	63.4	0.967	0.790	0.696	0.309	0.854	**14.6%**
36	1950	B	3,983	6,184	1.565	2,509	1,474	0.63	0.37	59.7	0.966	0.743	0.698	0.149	0.826	**17.4%**
37	1951	A	5,327	6,353	1.200	3,415	1,913	0.64	0.36	60.2	0.953	0.702	0.634	0.187	0.792	**20.8%**
38	1952	W	10,840	7,848	0.726	2,893	7,946	0.27	0.73	57.1	0.772	0.698	0.671	0.081	0.752	**24.8%**
39	1953	W	3,983	5,647	1.429	2,525	1,458	0.63	0.37	57.1	0.967	0.697	0.697	0.000	0.796	**20.4%**
40	1954	A	3,966	7,361	1.871	2,463	1,503	0.62	0.38	60.2	0.965	0.773	0.701	0.238	0.846	**15.4%**
41	1955	D	2,790	3,664	1.328	1,775	1,015	0.64	0.36	63.4	0.980	0.809	0.750	0.237	0.871	**12.9%**
42	1956	W	6,184	7,966	1.295	3,948	2,237	0.64	0.36	57.1	0.943	0.631	0.596	0.087	0.744	**25.6%**
43	1957	A	3,983	6,453	1.633	2,501	1,482	0.63	0.37	60.2	0.966	0.757	0.699	0.192	0.834	**16.6%**
44	1958	W	14,907	9,478	0.637	4,067	10,839	0.27	0.73	57.1	0.685	0.655	0.588	0.165	0.677	**32.3%**
45	1959	B	2,790	3,764	1.365	1,772	1,018	0.64	0.36	59.7	0.980	0.757	0.751	0.025	0.838	**16.2%**
46	1960	D	2,420	4,050	1.696	1,513	907	0.63	0.37	63.4	0.983	0.828	0.769	0.256	0.886	**11.4%**
47	1961	D	1,983	3,529	1.808	1,232	751	0.62	0.38	63.4	0.988	0.837	0.789	0.230	0.894	**10.6%**
48	1962	B	4,201	4,840	1.161	2,696	1,505	0.64	0.36	59.7	0.965	0.710	0.685	0.080	0.802	**19.8%**
49	1963	W	5,361	8,100	1.520	3,386	1,975	0.63	0.37	57.1	0.951	0.670	0.636	0.094	0.774	**22.6%**
50	1964	D	2,790	3,496	1.267	1,779	1,010	0.64	0.36	63.4	0.980	0.807	0.750	0.228	0.870	**13.0%**
51	1965	W	6,958	8,957	1.293	4,442	2,515	0.64	0.36	57.1	0.935	0.622	0.561	0.138	0.735	**26.5%**
52	1966	B	3,966	5,613	1.427	2,514	1,452	0.63	0.37	59.7	0.967	0.734	0.698	0.120	0.819	**18.1%**
53	1967	W	13,613	8,487	0.625	3,723	9,889	0.27	0.73	57.1	0.714	0.656	0.612	0.114	0.698	**30.2%**
54	1968	B	3,647	5,243	1.450	2,309	1,338	0.63	0.37	59.7	0.970	0.741	0.712	0.101	0.825	**17.5%**
55	1969	W	20,923	7,512	0.360	6,078	14,845	0.29	0.71	57.1	0.565	0.481	0.445	0.064	0.541	**45.9%**
56	1970	W	5,327	6,588	1.244	3,408	1,920	0.64	0.36	57.1	0.953	0.641	0.634	0.017	0.753	**24.7%**
57	1971	W	3,983	6,554	1.659	2,498	1,485	0.63	0.37	57.1	0.966	0.704	0.699	0.015	0.801	**19.9%**
58	1972	B	3,664	4,739	1.305	2,335	1,329	0.64	0.36	58.9	0.971	0.719	0.711	0.028	0.810	**19.0%**
59	1973	A	6,571	8,100	1.239	4,206	2,365	0.64	0.36	59.2	0.939	0.669	0.578	0.217	0.767	**23.3%**
60	1974	W	7,663	9,327	1.222	1,805	5,859	0.24	0.76	56.9	0.835	0.785	0.748	0.145	0.823	**17.7%**
61	1975	W	6,621	8,773	1.331	4,220	2,401	0.64	0.36	53.7	0.938	0.577	0.577	0.000	0.708	**29.2%**
62	1976	C	1,983	3,008	1.542	1,247	736	0.63	0.37	57.8	0.988	0.788	0.788	0.000	0.862	**13.8%**
63	1977	C	1,983	2,991	1.533	1,248	735	0.63	0.37	62.0	0.988	0.813	0.788	0.120	0.878	**12.2%**
64	1978	A	14,923	7,512	0.504	4,196	10,728	0.28	0.72	61.4	0.689	0.712	0.578	0.316	0.695	**30.5%**
65	1979	B	5,663	7,092	1.259	3,621	2,043	0.64	0.36	60.5	0.949	0.711	0.619	0.242	0.797	**20.3%**
66	1980	A	6,739	6,873	1.025	4,356	2,383	0.65	0.35	60.1	0.939	0.657	0.567	0.207	0.757	**24.3%**
67	1981	D	3,664	5,445	1.499	2,314	1,349	0.63	0.37	64.6	0.970	0.827	0.712	0.398	0.879	**12.1%**
68	1982	W	27,023	8,941	0.331	7,902	19,121	0.29	0.71	52.8	0.437	0.315	0.315	0.000	0.401	**59.9%**
69	1983	W	20,738	6,958	0.336	6,054	14,684	0.29	0.71	57.2	0.570	0.470	0.446	0.042	0.541	**45.9%**
70	1984	W	5,344	6,857	1.291	3,411	1,933	0.64	0.36	60.7	0.952	0.722	0.634	0.241	0.806	**19.4%**
71	1985	D	2,790	4,101	1.487	1,762	1,028	0.63	0.37	62.5	0.980	0.803	0.751	0.206	0.868	**13.2%**
72	1986	W	9,814	9,680	0.989	2,457	7,357	0.25	0.75	61.3	0.790	0.827	0.702	0.421	0.799	**20.1%**
73	1987	D	2,033	3,479	1.738	1,268	766	0.62	0.38	62.3	0.987	0.821	0.786	0.163	0.884	**11.6%**
74	1988	C	1,983	2,857	1.464	1,252	731	0.63	0.37	62.1	0.989	0.813	0.787	0.119	0.878	**12.2%**
75	1989	D	2,420	5,647	2.364	1,466	954	0.61	0.39	64.1	0.982	0.858	0.772	0.379	0.907	**9.3%**
76	1990	C	1,983	3,529	1.808	1,232	751	0.62	0.38	60.6	0.988	0.803	0.789	0.066	0.873	**12.7%**
77	1991	C	2,437	4,252	1.768	1,518	919	0.62	0.38	60.6	0.983	0.792	0.769	0.103	0.864	**13.6%**
78	1992	C	2,252	3,731	1.680	1,408	844	0.63	0.37	60.6	0.985	0.793	0.776	0.076	0.865	**13.5%**

	A	T	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK
5		**MAY**													**Calculated**	**Weighted**
6		Vernalis	CVP+SWP		Calculated				Temp @		Calculated Mortality				**Survival**	**(April + June)**
7	Year	Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt	m2	m34	m3	m4	m234	**s234**	**total survival**
8	1922	5,920	8,685	1.475	3,516	2,403	0.59	0.41	66.6	0.938	0.880	0.627	0.680	0.904	**9.6%**	**14.4%**
9	1923	5,156	6,245	1.219	3,104	2,051	0.60	0.40	66.0	0.949	0.835	0.656	0.520	0.880	**12.0%**	**15.2%**
10	1924	1,854	2,667	1.464	1,097	757	0.59	0.41	63.9	0.988	0.842	0.798	0.215	0.901	**9.9%**	**11.5%**
11	1925	3,806	5,107	1.353	2,273	1,533	0.60	0.40	67.3	0.964	0.868	0.715	0.538	0.907	**9.3%**	**10.7%**
12	1926	3,529	4,944	1.414	2,100	1,429	0.60	0.40	67.3	0.968	0.872	0.727	0.530	0.911	**8.9%**	**10.4%**
13	1927	5,156	8,327	1.625	3,036	2,119	0.59	0.41	64.2	0.947	0.838	0.661	0.521	0.882	**11.8%**	**16.6%**
14	1928	3,822	6,375	1.682	2,242	1,580	0.59	0.41	66.6	0.963	0.876	0.717	0.562	0.912	**8.8%**	**12.3%**
15	1929	1,887	2,862	1.543	1,112	775	0.59	0.41	63.9	0.987	0.843	0.797	0.225	0.902	**9.8%**	**11.4%**
16	1930	1,870	3,480	1.893	1,081	789	0.58	0.42	67.3	0.987	0.891	0.800	0.455	0.931	**6.9%**	**8.9%**
17	1931	1,854	3,123	1.713	1,082	772	0.58	0.42	63.9	0.987	0.847	0.799	0.238	0.906	**9.4%**	**11.2%**
18	1932	3,871	4,847	1.262	2,323	1,547	0.60	0.40	67.3	0.964	0.863	0.711	0.525	0.903	**9.7%**	**12.3%**
19	1933	2,667	3,367	1.277	1,597	1,070	0.60	0.40	63.9	0.978	0.822	0.763	0.251	0.885	**11.5%**	**13.1%**
20	1934	1,854	2,944	1.615	1,088	766	0.59	0.41	63.9	0.987	0.845	0.799	0.229	0.904	**9.6%**	**11.0%**
21	1935	6,066	5,465	0.906	3,715	2,351	0.61	0.39	66.0	0.940	0.799	0.613	0.480	0.853	**14.7%**	**18.3%**
22	1936	5,156	6,375	1.244	3,100	2,056	0.60	0.40	66.0	0.949	0.837	0.656	0.527	0.882	**11.8%**	**16.3%**
23	1937	8,132	6,977	0.861	2,098	6,033	0.26	0.74	66.0	0.829	0.879	0.727	0.558	0.842	**15.8%**	**16.6%**
24	1938	24,265	9,433	0.389	7,006	17,259	0.29	0.71	64.2	0.493	0.738	0.379	0.578	0.563	**43.7%**	**41.9%**
25	1939	2,667	3,480	1.321	1,594	1,074	0.60	0.40	67.3	0.978	0.871	0.763	0.455	0.914	**8.6%**	**10.4%**
26	1940	5,156	6,944	1.355	3,081	2,074	0.60	0.40	66.6	0.948	0.860	0.658	0.591	0.895	**10.5%**	**14.8%**
27	1941	9,579	9,726	1.019	2,381	7,198	0.25	0.75	64.2	0.794	0.881	0.707	0.593	0.816	**18.4%**	**20.3%**
28	1942	5,936	8,685	1.471	3,527	2,409	0.59	0.41	64.2	0.938	0.828	0.626	0.539	0.873	**12.7%**	**18.9%**
29	1943	6,180	7,660	1.246	3,717	2,463	0.60	0.40	64.2	0.937	0.801	0.612	0.487	0.855	**14.5%**	**16.2%**
30	1944	2,960	3,741	1.277	1,774	1,186	0.60	0.40	67.3	0.975	0.867	0.750	0.469	0.910	**9.0%**	**11.3%**
31	1945	3,871	4,944	1.288	2,320	1,551	0.60	0.40	66.0	0.964	0.843	0.712	0.454	0.891	**10.9%**	**16.6%**
32	1946	3,854	5,269	1.378	2,299	1,555	0.60	0.40	66.0	0.964	0.848	0.713	0.471	0.895	**10.5%**	**15.7%**
33	1947	2,683	3,545	1.337	1,602	1,081	0.60	0.40	67.3	0.978	0.871	0.763	0.459	0.914	**8.6%**	**11.0%**
34	1948	3,822	7,091	1.871	2,219	1,603	0.58	0.42	66.0	0.962	0.877	0.719	0.563	0.913	**8.7%**	**12.3%**
35	1949	2,960	4,749	1.622	1,741	1,219	0.59	0.41	67.3	0.974	0.881	0.753	0.520	0.919	**8.1%**	**11.0%**
36	1950	3,822	5,302	1.399	2,277	1,545	0.60	0.40	66.0	0.964	0.849	0.715	0.472	0.896	**10.4%**	**13.6%**
37	1951	5,156	7,188	1.403	3,073	2,082	0.60	0.40	66.6	0.948	0.864	0.658	0.604	0.898	**10.2%**	**14.9%**
38	1952	15,450	9,221	0.598	4,254	11,196	0.28	0.72	64.2	0.675	0.816	0.574	0.567	0.713	**28.7%**	**26.9%**
39	1953	3,822	7,676	2.025	2,200	1,622	0.58	0.42	64.2	0.962	0.857	0.720	0.488	0.901	**9.9%**	**14.6%**
40	1954	3,822	7,416	1.957	2,208	1,614	0.58	0.42	66.6	0.962	0.892	0.720	0.615	0.922	**7.8%**	**11.3%**
41	1955	2,667	3,773	1.432	1,584	1,083	0.59	0.41	67.3	0.978	0.875	0.764	0.470	0.917	**8.3%**	**10.4%**
42	1956	6,131	8,782	1.440	3,649	2,482	0.60	0.40	64.2	0.936	0.826	0.617	0.544	0.870	**13.0%**	**18.6%**
43	1957	3,822	5,952	1.570	2,256	1,566	0.59	0.41	66.6	0.963	0.870	0.716	0.540	0.908	**9.2%**	**12.5%**
44	1958	13,190	10,636	0.808	3,456	9,733	0.26	0.74	64.2	0.718	0.867	0.631	0.639	0.757	**24.3%**	**27.9%**
45	1959	2,667	3,676	1.395	1,587	1,080	0.60	0.40	66.0	0.978	0.856	0.764	0.389	0.905	**9.5%**	**12.5%**
46	1960	1,919	3,383	1.792	1,116	803	0.58	0.42	67.3	0.986	0.888	0.797	0.450	0.929	**7.1%**	**9.0%**
47	1961	1,870	2,895	1.574	1,100	770	0.59	0.41	67.3	0.987	0.884	0.798	0.425	0.927	**7.3%**	**8.8%**
48	1962	2,960	4,847	1.655	1,738	1,222	0.59	0.41	66.0	0.974	0.864	0.753	0.449	0.909	**9.1%**	**13.9%**
49	1963	5,156	8,327	1.625	3,036	2,119	0.59	0.41	64.2	0.947	0.838	0.661	0.521	0.882	**11.8%**	**16.6%**
50	1964	2,667	3,708	1.407	1,586	1,081	0.59	0.41	67.3	0.978	0.874	0.764	0.467	0.916	**8.4%**	**10.5%**
51	1965	5,936	8,685	1.471	3,527	2,409	0.59	0.41	64.2	0.938	0.828	0.626	0.539	0.873	**12.7%**	**18.9%**
52	1966	2,960	4,684	1.599	1,743	1,217	0.59	0.41	66.0	0.974	0.862	0.753	0.441	0.908	**9.2%**	**13.2%**
53	1967	16,003	9,433	0.591	4,414	11,589	0.28	0.72	64.2	0.663	0.815	0.563	0.578	0.705	**29.5%**	**29.8%**
54	1968	2,667	3,643	1.382	1,588	1,079	0.60	0.40	66.0	0.978	0.855	0.764	0.388	0.905	**9.5%**	**13.1%**
55	1969	26,217	9,010	0.344	7,645	18,572	0.29	0.71	66.4	0.453	0.790	0.334	0.685	0.551	**44.9%**	**45.3%**
56	1970	5,156	5,920	1.155	3,115	2,041	0.60	0.40	61.2	0.949	0.732	0.655	0.223	0.818	**18.2%**	**21.1%**
57	1971	3,822	7,676	2.025	2,200	1,622	0.58	0.42	64.2	0.962	0.857	0.720	0.488	0.901	**9.9%**	**14.4%**
58	1972	2,683	3,903	1.472	1,590	1,093	0.59	0.41	66.0	0.978	0.858	0.763	0.401	0.907	**9.3%**	**13.7%**
59	1973	5,465	6,766	1.245	3,286	2,179	0.60	0.40	66.3	0.945	0.845	0.643	0.564	0.885	**11.5%**	**16.8%**
60	1974	5,920	8,685	1.475	3,516	2,403	0.59	0.41	66.1	0.938	0.870	0.627	0.651	0.897	**10.3%**	**13.6%**
61	1975	5,936	8,685	1.471	3,527	2,409	0.59	0.41	61.5	0.938	0.769	0.626	0.382	0.837	**16.3%**	**22.1%**
62	1976	1,870	3,155	1.716	1,092	779	0.58	0.42	65.8	0.987	0.869	0.799	0.351	0.918	**8.2%**	**10.7%**
63	1977	1,854	1,203	0.660	1,145	709	0.62	0.38	62.3	0.989	0.805	0.795	0.047	0.875	**12.5%**	**12.3%**
64	1978	10,831	8,213	0.760	2,868	7,963	0.26	0.74	66.9	0.772	0.893	0.673	0.673	0.804	**19.6%**	**24.5%**
65	1979	5,139	5,985	1.172	3,102	2,037	0.60	0.40	66.0	0.949	0.830	0.656	0.507	0.878	**12.2%**	**15.9%**
66	1980	6,619	7,481	1.136	4,005	2,614	0.61	0.39	66.6	0.932	0.844	0.592	0.618	0.879	**12.1%**	**17.6%**
67	1981	2,683	3,513	1.325	1,603	1,080	0.60	0.40	68.7	0.978	0.890	0.763	0.539	0.926	**7.4%**	**9.5%**
68	1982	15,158	10,701	0.707	4,070	11,088	0.27	0.73	65.1	0.678	0.874	0.587	0.695	0.731	**26.9%**	**41.8%**
69	1983	19,077	7,546	0.396	5,496	13,581	0.29	0.71	61.3	0.603	0.646	0.486	0.312	0.615	**38.5%**	**41.8%**
70	1984	5,156	6,115	1.193	3,108	2,047	0.60	0.40	66.0	0.949	0.833	0.656	0.514	0.879	**12.1%**	**15.4%**
71	1985	2,683	4,228	1.595	1,580	1,104	0.59	0.41	65.1	0.977	0.850	0.764	0.365	0.902	**9.8%**	**11.3%**
72	1986	8,083	8,132	1.010	2,011	6,072	0.25	0.75	65.8	0.828	0.895	0.734	0.605	0.845	**15.5%**	**17.6%**
73	1987	1,854	2,830	1.553	1,092	762	0.59	0.41	68.6	0.988	0.899	0.799	0.498	0.935	**6.5%**	**8.8%**
74	1988	1,870	3,074	1.672	1,094	776	0.59	0.41	63.7	0.987	0.844	0.799	0.224	0.903	**9.7%**	**10.8%**
75	1989	1,870	3,936	2.141	1,066	804	0.57	0.43	66.7	0.986	0.889	0.801	0.443	0.931	**6.9%**	**8.0%**
76	1990	1,870	2,700	1.468	1,107	764	0.59	0.41	63.9	0.988	0.842	0.798	0.217	0.901	**9.9%**	**11.2%**
77	1991	1,919	2,911	1.542	1,131	788	0.59	0.41	63.9	0.987	0.842	0.796	0.227	0.902	**9.8%**	**11.5%**
78	1992	1,870	2,944	1.601	1,099	772	0.59	0.41	63.9	0.987	0.845	0.798	0.229	0.903	**9.7%**	**11.4%**
79															**Average:**	**15.98%**

Calculations- San Joaquin River Fall
Run Smolt Survival Model WITH BARRIER:

```
C8 ='Study 485 Flow Data'!AB7
D8 ='Study 485 Flow Data'!G7     (HIDDEN)
E8 ='Study 485 Flow Data'!Q7     (HIDDEN)
F8 =D8+E8
G8 =F8/(C8-0.03*$R$2)
H8 =IF(C8<$R$1,(0.47*(0.3137*C8-0.0156*$R$2-0.0625*F8)+0.53*C8),(0.3137*C8-0.0156*$R$2-0.0625*F8))
I8 =C8-H8
J8 =H8/C8
K8 =I8/C8
M8 =(1.01045-0.00003*I8)
N8 =(O8+P8)-(O8*P8)
O8 =IF((0.87634-0.000071*H8)<0,0,(0.87634-0.000071*H8))
P8 =IF((-3.65867+0.058492*L8+0.000051*F8)<0,0,(-3.65867+0.058492*L8+0.000051*F8))
Q8 =((K8*M8)+(J8*N8))
R8 =(1-Q8)
```

```
T8 ='Study 485 Flow Data'!AC7
U8 ='Study 485 Flow Data'!H7     (HIDDEN)
V8 ='Study 485 Flow Data'!R7     (HIDDEN)
W8 =U8+V8
X8 =W8/(T8-0.03*$R$3)
Y8 =IF(T8<$R$1,(0.52*(0.3137*T8-0.0156*$R$3-0.0625*W8)+0.48*T8),(0.3137*T8-0.0156*$R$3-0.0625*W8))
Z8 =T8-Y8
AA8 =Y8/T8
AB8 =Z8/T8
AD8 =(1.01045-0.00003*Z8)
AE8 =(AF8+AG8)-(AF8*AG8)
AF8 =IF((0.87634-0.000071*Y8)<0,0,(0.87634-0.000071*Y8))
AG8 =IF((-3.65867+0.058492*AC8+0.000051*W8)<0,0,(-3.65867+0.058492*AC8+0.000051*W8))
AH8 =((AB8*AD8)+(AA8*AE8))
AI8 =(1-AH8)
AK8 =0.45*G94+0.55*AI8
```

Study 519A San Joaquin River Fall Run Salmon Smolt Survival Model WITH BARRIER

Barrier at head of Old River from Apr 15 to May 15

Old River Barrier Open above 7500.00 cfs at Vernalis
Consumptive Depletion for April 1053.00 cfs
Consumptive Depletion for May 1053.00 cfs

Row	A: Year	B: Water Year Type	C: APRIL Vernalis Flows	F: CVP + SWP exports	G: exp/v-cd	H: Calculated Stockton Q	I: UOldR Flow	J: p3 Stkn	K: p2 UOldR	L: Temp @ Jersey Pt.	M: m2	N: Calculated Mortality m34	O: m3	P: m4	Q: m234	R: Calculated Survival s234
8	1922	A	5,949	9,680	1.636	3,738	2,211	0.63	0.37	60.2	0.944	0.750	0.611	0.356	0.822	**17.8%**
9	1923	B	4,739	10,335	2.195	2,899	1,840	0.61	0.39	59.7	0.955	0.789	0.670	0.360	0.854	**14.6%**
10	1924	C	1,849	4,369	2.405	1,116	732	0.60	0.40	60.6	0.988	0.819	0.797	0.109	0.886	**11.4%**
11	1925	D	3,832	9,579	2.521	2,307	1,525	0.60	0.40	63.4	0.965	0.867	0.713	0.538	0.906	**9.4%**
12	1926	D	3,193	8,705	2.754	1,900	1,293	0.59	0.41	63.4	0.972	0.869	0.741	0.494	0.911	**8.9%**
13	1927	W	5,243	9,865	1.893	3,255	1,989	0.62	0.38	57.1	0.951	0.711	0.645	0.184	0.802	**19.8%**
14	1928	A	4,823	10,184	2.125	2,961	1,863	0.61	0.39	60.2	0.955	0.794	0.666	0.382	0.856	**14.4%**
15	1929	C	1,916	3,529	1.873	1,186	729	0.62	0.38	60.6	0.989	0.806	0.792	0.066	0.875	**12.5%**
16	1930	D	2,033	6,285	3.140	1,185	848	0.58	0.42	63.4	0.985	0.869	0.792	0.370	0.917	**8.3%**
17	1931	C	1,765	4,857	2.803	1,045	720	0.59	0.41	60.6	0.989	0.829	0.802	0.134	0.894	**10.6%**
18	1932	D	4,958	7,058	1.433	3,143	1,814	0.63	0.37	63.4	0.956	0.795	0.653	0.410	0.854	**14.6%**
19	1933	C	2,538	6,605	2.635	1,517	1,020	0.60	0.40	60.6	0.980	0.820	0.769	0.223	0.884	**11.6%**
20	1934	C	1,865	6,067	3.308	1,078	788	0.58	0.42	60.6	0.987	0.839	0.800	0.195	0.901	**9.9%**
21	1935	B	7,445	10,537	1.421	4,726	2,719	0.63	0.37	59.7	0.929	0.711	0.541	0.371	0.791	**20.9%**
22	1936	B	7,176	9,932	1.390	4,562	2,614	0.64	0.36	59.7	0.932	0.705	0.552	0.340	0.787	**21.3%**
23	1937	B	8,134	8,067	0.996	2,031	6,103	0.25	0.75	59.7	0.827	0.798	0.732	0.245	0.820	**18.0%**
24	1938	W	17,259	8,386	0.487	4,874	12,386	0.28	0.72	57.1	0.639	0.581	0.530	0.109	0.623	**37.7%**
25	1939	D	3,075	6,453	2.120	1,886	1,189	0.61	0.39	63.4	0.975	0.840	0.742	0.379	0.892	**10.8%**
26	1940	A	5,882	10,453	1.787	3,670	2,212	0.62	0.38	60.2	0.944	0.768	0.616	0.396	0.834	**16.6%**
27	1941	W	9,293	9,411	1.016	2,311	6,983	0.25	0.75	57.1	0.801	0.759	0.712	0.161	0.790	**21.0%**
28	1942	W	6,100	9,747	1.606	3,839	2,262	0.63	0.37	57.1	0.943	0.674	0.604	0.178	0.774	**22.6%**
29	1943	W	7,126	9,764	1.376	4,533	2,593	0.64	0.36	57.1	0.933	0.634	0.555	0.179	0.743	**25.7%**
30	1944	D	3,714	5,596	1.520	2,344	1,370	0.63	0.37	63.4	0.969	0.807	0.710	0.335	0.867	**13.3%**
31	1945	B	5,983	7,210	1.211	3,833	2,149	0.64	0.36	59.7	0.946	0.684	0.604	0.201	0.778	**22.2%**
32	1946	B	4,336	6,369	1.480	2,742	1,593	0.63	0.37	59.7	0.963	0.732	0.682	0.158	0.817	**18.3%**
33	1947	D	2,554	5,748	2.278	1,554	1,001	0.61	0.39	63.4	0.980	0.846	0.766	0.343	0.899	**10.1%**
34	1948	B	3,731	9,983	2.699	2,226	1,504	0.60	0.40	59.7	0.965	0.815	0.718	0.342	0.875	**12.5%**
35	1949	D	3,412	6,252	1.850	2,120	1,292	0.62	0.38	63.4	0.972	0.827	0.726	0.369	0.882	**11.8%**
36	1950	B	3,378	8,638	2.581	2,027	1,351	0.60	0.40	59.7	0.970	0.806	0.732	0.274	0.871	**12.9%**
37	1951	A	3,933	8,268	2.120	2,413	1,519	0.61	0.39	60.2	0.965	0.789	0.705	0.284	0.857	**14.3%**
38	1952	W	10,050	8,873	0.886	2,582	7,468	0.26	0.74	57.1	0.786	0.734	0.693	0.134	0.773	**22.7%**
39	1953	W	3,075	7,260	2.385	1,862	1,213	0.61	0.39	57.1	0.974	0.757	0.744	0.051	0.843	**15.7%**
40	1954	A	4,302	10,453	2.448	2,600	1,703	0.60	0.40	60.2	0.959	0.814	0.692	0.396	0.871	**12.9%**
41	1955	D	2,437	4,638	1.928	1,507	930	0.62	0.38	63.4	0.983	0.835	0.769	0.286	0.892	**10.8%**
42	1956	W	4,000	9,310	2.346	2,428	1,571	0.61	0.39	57.1	0.963	0.750	0.704	0.156	0.834	**16.6%**
43	1957	A	2,924	8,621	2.980	1,720	1,204	0.59	0.41	60.2	0.974	0.829	0.754	0.302	0.889	**11.1%**
44	1958	W	14,117	9,764	0.693	3,802	10,315	0.27	0.73	57.1	0.701	0.677	0.606	0.179	0.695	**30.5%**
45	1959	B	2,554	5,613	2.225	1,558	997	0.61	0.39	59.7	0.981	0.794	0.766	0.120	0.867	**13.3%**
46	1960	D	2,168	4,353	2.037	1,333	835	0.61	0.39	63.4	0.985	0.841	0.782	0.272	0.897	**10.3%**
47	1961	D	1,815	4,185	2.346	1,099	716	0.61	0.39	63.4	0.989	0.851	0.798	0.263	0.906	**9.4%**
48	1962	B	4,437	8,134	1.846	2,759	1,678	0.62	0.38	59.7	0.960	0.760	0.680	0.248	0.836	**16.4%**
49	1963	W	5,579	10,218	1.842	3,472	2,108	0.62	0.38	57.1	0.947	0.705	0.630	0.202	0.796	**20.4%**
50	1964	D	2,470	4,369	1.792	1,537	933	0.62	0.38	63.4	0.982	0.831	0.767	0.273	0.888	**11.2%**
51	1965	W	6,168	9,747	1.589	3,884	2,283	0.63	0.37	57.1	0.942	0.672	0.601	0.178	0.772	**22.8%**
52	1966	B	3,008	5,932	1.993	1,856	1,152	0.62	0.38	59.7	0.976	0.779	0.745	0.136	0.855	**14.5%**
53	1967	W	12,823	9,646	0.754	3,403	9,420	0.27	0.73	57.1	0.728	0.698	0.635	0.173	0.720	**28.0%**
54	1968	B	2,638	8,134	3.120	1,541	1,098	0.58	0.42	59.7	0.978	0.825	0.767	0.248	0.888	**11.2%**
55	1969	W	20,133	7,613	0.379	5,824	14,310	0.29	0.71	57.1	0.581	0.500	0.463	0.069	0.558	**44.2%**
56	1970	W	4,319	8,571	1.999	2,666	1,653	0.62	0.38	57.1	0.961	0.724	0.687	0.118	0.815	**18.5%**
57	1971	W	2,941	9,193	3.160	1,715	1,226	0.58	0.42	57.1	0.974	0.791	0.755	0.150	0.867	**13.3%**
58	1972	B	2,336	6,201	2.691	1,393	943	0.60	0.40	58.9	0.982	0.800	0.777	0.103	0.874	**12.6%**
59	1973	A	5,916	9,663	1.642	3,716	2,200	0.63	0.37	59.2	0.944	0.728	0.613	0.297	0.808	**19.2%**
60	1974	W	6,873	10,201	1.491	4,349	2,524	0.63	0.37	56.9	0.935	0.650	0.568	0.190	0.754	**24.6%**
61	1975	W	5,832	10,487	1.808	3,635	2,197	0.62	0.38	53.7	0.945	0.625	0.618	0.017	0.745	**25.5%**
62	1976	C	1,899	4,201	2.250	1,155	744	0.61	0.39	57.8	0.988	0.794	0.794	0.000	0.870	**13.0%**
63	1977	C	1,647	4,941	3.059	963	684	0.58	0.42	62.0	0.990	0.850	0.808	0.220	0.908	**9.2%**
64	1978	A	15,175	7,613	0.503	4,268	10,907	0.28	0.72	61.4	0.683	0.710	0.573	0.321	0.691	**30.9%**
65	1979	B	5,512	8,420	1.536	3,479	2,033	0.63	0.37	60.5	0.949	0.744	0.629	0.309	0.820	**18.0%**
66	1980	A	5,932	7,008	1.188	3,805	2,127	0.64	0.36	60.1	0.947	0.690	0.606	0.214	0.782	**21.8%**
67	1981	D	2,991	8,403	2.839	1,772	1,219	0.59	0.41	64.6	0.974	0.887	0.751	0.548	0.923	**7.7%**
68	1982	W	27,141	9,226	0.340	7,921	19,220	0.29	0.71	52.8	0.434	0.314	0.314	0.000	0.399	**60.1%**
69	1983	W	19,948	7,075	0.355	5,799	14,149	0.29	0.71	57.2	0.586	0.490	0.465	0.048	0.558	**44.2%**
70	1984	W	3,933	8,453	2.167	2,408	1,525	0.61	0.39	60.7	0.965	0.801	0.705	0.323	0.864	**13.6%**
71	1985	D	2,706	5,983	2.237	1,649	1,056	0.61	0.39	62.5	0.979	0.832	0.759	0.302	0.889	**11.1%**
72	1986	W	9,025	7,495	0.833	2,346	6,678	0.26	0.74	61.3	0.810	0.799	0.710	0.309	0.807	**19.3%**
73	1987	D	2,017	6,134	3.090	1,178	838	0.58	0.42	62.3	0.985	0.855	0.793	0.298	0.909	**9.1%**
74	1988	C	1,815	4,470	2.507	1,091	724	0.60	0.40	62.1	0.989	0.839	0.799	0.202	0.899	**10.1%**
75	1989	D	1,966	9,293	4.804	1,051	915	0.53	0.47	64.1	0.983	0.914	0.802	0.565	0.946	**5.4%**
76	1990	C	1,832	6,420	3.566	1,045	787	0.57	0.43	60.6	0.987	0.844	0.802	0.213	0.906	**9.4%**
77	1991	C	2,353	6,974	3.005	1,381	972	0.59	0.41	60.6	0.981	0.832	0.778	0.242	0.894	**10.6%**
78	1992	C	2,235	6,151	2.791	1,326	909	0.59	0.41	60.6	0.983	0.826	0.782	0.200	0.890	**11.0%**

Row	A: Year	T: MAY Vernalis Flows	W: CVP+SWP exports	X: exp/v-cd	Y: Calculated Stockton Q	Z: UOldR Flow	AA: p3 Stkn	AB: p2 UOldR	AC: Temp @ Jersey Pt	AD: m2	AE: Calculated Mortality m34	AF: m3	AG: m4	AH: m234	AI: Calculated Survival s234	AK: Weighted (April + June) total survival
8	1922	4,554	4,765	1.054	2,765	1,789	0.61	0.39	66.6	0.957	0.834	0.680	0.480	0.882	**11.8%**	**14.5%**
9	1923	3,789	4,017	1.069	2,298	1,491	0.61	0.39	66.0	0.966	0.830	0.713	0.407	0.883	**11.7%**	**13.0%**
10	1924	1,545	781	0.516	960	585	0.62	0.38	63.9	0.993	0.831	0.808	0.119	0.892	**10.8%**	**11.0%**
11	1925	3,058	3,269	1.080	1,852	1,206	0.61	0.39	67.3	0.974	0.858	0.745	0.445	0.904	**9.6%**	**9.5%**
12	1926	2,374	2,586	1.104	1,434	940	0.60	0.40	67.3	0.982	0.867	0.774	0.410	0.913	**8.7%**	**8.8%**
13	1927	3,741	3,952	1.066	2,269	1,472	0.61	0.39	64.2	0.966	0.800	0.715	0.298	0.866	**13.4%**	**16.3%**
14	1928	2,927	3,139	1.084	1,772	1,155	0.61	0.39	66.6	0.976	0.850	0.751	0.397	0.899	**10.1%**	**12.0%**
15	1929	1,643	1,870	1.161	987	656	0.60	0.40	63.9	0.991	0.840	0.806	0.174	0.900	**10.0%**	**11.1%**
16	1930	1,675	1,870	1.138	1,008	667	0.60	0.40	67.3	0.990	0.878	0.805	0.373	0.923	**7.7%**	**8.0%**
17	1931	1,513	1,740	1.175	908	605	0.60	0.40	63.9	0.992	0.843	0.812	0.168	0.903	**9.7%**	**10.1%**
18	1932	3,334	3,578	1.083	2,019	1,315	0.61	0.39	67.3	0.971	0.856	0.733	0.460	0.901	**9.9%**	**12.0%**
19	1933	2,163	2,163	1.015	1,312	851	0.61	0.39	63.9	0.985	0.824	0.783	0.189	0.887	**11.3%**	**11.4%**
20	1934	1,545	1,773	1.171	927	618	0.60	0.40	63.9	0.992	0.843	0.810	0.169	0.902	**9.8%**	**9.8%**
21	1935	6,424	5,741	0.898	3,936	2,488	0.61	0.39	66.0	0.936	0.796	0.597	0.495	0.850	**15.0%**	**17.7%**
22	1936	4,716	4,928	1.052	2,865	1,852	0.61	0.39	66.0	0.955	0.821	0.673	0.453	0.874	**12.6%**	**16.5%**
23	1937	8,506	7,237	0.854	2,200	6,306	0.26	0.74	66.0	0.821	0.880	0.720	0.571	0.836	**16.4%**	**17.1%**
24	1938	23,777	9,660	0.407	6,839	16,938	0.29	0.71	64.2	0.502	0.750	0.391	0.589	0.573	**42.7%**	**40.4%**
25	1939	2,277	2,488	1.108	1,375	902	0.60	0.40	67.3	0.983	0.868	0.779	0.405	0.914	**8.6%**	**9.6%**
26	1940	4,505	4,733	1.058	2,735	1,770	0.61	0.39	66.6	0.957	0.834	0.682	0.478	0.883	**11.7%**	**13.9%**
27	1941	9,351	9,563	1.026	2,319	7,032	0.25	0.75	64.2	0.799	0.880	0.712	0.584	0.819	**18.1%**	**19.4%**
28	1942	5,546	5,774	1.047	3,370	2,175	0.61	0.39	64.2	0.945	0.779	0.637	0.391	0.844	**15.6%**	**18.7%**
29	1943	5,952	6,164	1.041	3,619	2,333	0.61	0.39	64.2	0.940	0.776	0.619	0.411	0.840	**16.0%**	**20.4%**
30	1944	2,992	3,204	1.082	1,812	1,181	0.61	0.39	67.3	0.975	0.859	0.748	0.441	0.905	**9.5%**	**11.2%**
31	1945	4,066	4,277	1.060	2,467	1,599	0.61	0.39	66.0	0.962	0.827	0.701	0.420	0.880	**12.0%**	**16.6%**
32	1946	3,578	3,789	1.069	2,169	1,409	0.61	0.39	66.0	0.968	0.832	0.722	0.395	0.886	**11.4%**	**14.5%**
33	1947	2,147	2,358	1.115	1,295	851	0.60	0.40	67.3	0.985	0.870	0.784	0.398	0.916	**8.4%**	**9.2%**
34	1948	3,155	3,367	1.078	1,911	1,244	0.61	0.39	66.0	0.973	0.838	0.741	0.373	0.891	**10.9%**	**11.6%**
35	1949	2,814	3,009	1.082	1,703	1,110	0.61	0.39	67.3	0.977	0.861	0.755	0.431	0.907	**9.3%**	**10.5%**
36	1950	2,683	2,911	1.098	1,623	1,061	0.60	0.40	66.0	0.979	0.845	0.761	0.350	0.898	**10.2%**	**11.4%**
37	1951	3,383	3,594	1.073	2,050	1,333	0.61	0.39	66.6	0.970	0.844	0.731	0.420	0.894	**10.6%**	**12.3%**
38	1952	16,361	10,083	0.617	4,486	11,875	0.27	0.73	64.2	0.654	0.828	0.558	0.611	0.702	**29.8%**	**26.6%**
39	1953	2,700	2,911	1.091	1,633	1,067	0.60	0.40	64.2	0.978	0.819	0.760	0.245	0.882	**11.8%**	**13.6%**
40	1954	2,879	3,106	1.091	1,742	1,137	0.61	0.39	66.6	0.976	0.850	0.753	0.395	0.900	**10.0%**	**11.3%**
41	1955	2,293	2,505	1.107	1,385	908	0.60	0.40	67.3	0.983	0.868	0.778	0.406	0.914	**8.6%**	**9.6%**
42	1956	5,887	6,099	1.042	3,580	2,308	0.61	0.39	64.2	0.941	0.776	0.622	0.408	0.841	**15.9%**	**16.2%**
43	1957	2,814	3,025	1.087	1,703	1,111	0.61	0.39	66.6	0.977	0.851	0.755	0.391	0.901	**9.9%**	**10.5%**
44	1958	14,361	10,897	0.760	3,807	10,553	0.27	0.73	64.2	0.694	0.863	0.606	0.652	0.739	**26.1%**	**28.1%**
45	1959	2,082	2,293	1.119	1,256	826	0.60	0.40	66.0	0.986	0.855	0.787	0.319	0.907	**9.3%**	**11.1%**
46	1960	1,805	2,033	1.146	1,086	719	0.60	0.40	67.3	0.989	0.876	0.799	0.382	0.921	**7.9%**	**9.0%**
47	1961	1,594	1,805	1.156	958	636	0.60	0.40	67.3	0.991	0.879	0.808	0.370	0.924	**7.6%**	**8.4%**
48	1962	2,830	3,041	1.087	1,713	1,117	0.61	0.39	66.0	0.977	0.842	0.755	0.357	0.895	**10.5%**	**13.2%**
49	1963	4,521	4,733	1.054	2,745	1,776	0.61	0.39	64.2	0.957	0.789	0.681	0.338	0.855	**14.5%**	**17.1%**
50	1964	2,163	2,391	1.122	1,305	858	0.60	0.40	67.3	0.985	0.870	0.784	0.400	0.916	**8.4%**	**9.7%**
51	1965	4,082	4,277	1.056	2,478	1,604	0.61	0.39	64.2	0.962	0.795	0.700	0.315	0.861	**13.9%**	**17.9%**
52	1966	2,586	2,797	1.095	1,564	1,022	0.60	0.40	66.0	0.980	0.846	0.765	0.344	0.899	**10.1%**	**12.1%**
53	1967	15,759	10,262	0.652	4,286	11,473	0.27	0.73	64.2	0.666	0.837	0.572	0.620	0.713	**28.7%**	**28.4%**
54	1968	2,163	2,391	1.122	1,305	858	0.60	0.40	66.0	0.985	0.854	0.784	0.324	0.906	**9.4%**	**10.2%**
55	1969	27,388	9,221	0.337	7,999	19,389	0.29	0.71	66.4	0.429	0.789	0.308	0.695	0.534	**46.6%**	**45.5%**
56	1970	3,578	3,789	1.069	2,169	1,409	0.61	0.39	61.2	0.968	0.754	0.722	0.114	0.838	**16.2%**	**17.2%**
57	1971	2,683	2,879	1.086	1,624	1,060	0.61	0.39	64.2	0.979	0.819	0.761	0.243	0.882	**11.8%**	**12.4%**
58	1972	1,984	2,196	1.124	1,196	788	0.60	0.40	66.0	0.987	0.857	0.791	0.314	0.908	**9.2%**	**10.7%**
59	1973	5,286	5,481	1.043	3,213	2,073	0.61	0.39	66.3	0.948	0.824	0.648	0.499	0.873	**12.7%**	**15.6%**
60	1974	5,204	5,416	1.047	3,162	2,042	0.61	0.39	66.1	0.949	0.820	0.652	0.484	0.871	**12.9%**	**18.2%**
61	1975	4,407	4,635	1.059	2,675	1,732	0.61	0.39	61.5	0.958	0.741	0.686	0.175	0.827	**17.3%**	**21.0%**
62	1976	1,610	1,854	1.175	967	643	0.60	0.40	65.8	0.991	0.862	0.808	0.285	0.914	**8.6%**	**10.6%**
63	1977	1,513	618	0.417	944	568	0.62	0.38	62.3	0.993	0.813	0.809	0.017	0.881	**11.9%**	**10.7%**
64	1978	11,189	8,424	0.755	2,967	8,222	0.27	0.73	66.9	0.764	0.894	0.666	0.684	0.798	**20.2%**	**25.0%**
65	1979	4,424	4,635	1.055	2,686	1,738	0.61	0.39	66.0	0.958	0.823	0.686	0.438	0.876	**12.4%**	**14.9%**
66	1980	6,392	6,587	1.036	3,888	2,504	0.61	0.39	66.6	0.935	0.829	0.600	0.573	0.871	**12.9%**	**16.9%**
67	1981	2,147	2,358	1.115	1,295	851	0.60	0.40	68.7	0.985	0.888	0.784	0.480	0.926	**7.4%**	**7.5%**
68	1982	14,995	10,929	0.730	4,004	10,990	0.27	0.73	65.1	0.681	0.880	0.592	0.707	0.734	**26.6%**	**41.7%**
69	1983	18,849	7,758	0.412	5,412	13,438	0.29	0.71	61.3	0.607	0.656	0.492	0.323	0.621	**37.9%**	**40.7%**
70	1984	3,318	3,529	1.074	2,010	1,307	0.61	0.39	66.0	0.971	0.835	0.734	0.382	0.889	**11.1%**	**12.2%**
71	1985	2,212	2,423	1.111	1,335	877	0.60	0.40	65.1	0.984	0.841	0.782	0.273	0.898	**10.2%**	**10.6%**
72	1986	7,872	8,099	1.033	1,947	5,925	0.25	0.75	65.8	0.833	0.896	0.738	0.603	0.848	**15.2%**	**17.0%**
73	1987	1,691	1,903	1.146	1,017	674	0.60	0.40	68.6	0.990	0.892	0.804	0.451	0.931	**6.9%**	**7.9%**
74	1988	1,594	1,805	1.156	958	636	0.60	0.40	63.7	0.991	0.839	0.808	0.159	0.900	**10.0%**	**10.1%**
75	1989	1,626	1,838	1.152	978	649	0.60	0.40	66.7	0.991	0.872	0.807	0.336	0.919	**8.1%**	**6.9%**
76	1990	1,513	1,756	1.186	907	605	0.60	0.40	63.9	0.992	0.844	0.812	0.169	0.903	**9.7%**	**9.6%**
77	1991	1,822	2,065	1.154	1,096	726	0.60	0.40	63.9	0.989	0.836	0.799	0.184	0.897	**10.3%**	**10.5%**
78	1992	1,691	1,919	1.156	1,017	675	0.60	0.40	63.9	0.990	0.839	0.804	0.177	0.899	**10.1%**	**10.5%**
79															**Average:**	**15.15%**

Calculations- San Joaquin River Fall Run Smolt Survival Model WITH BARRIER:

C8 ='Study 519A Flow Data'!AB7
D8 ='Study 519A Flow Data'!G7 (HIDDEN)
E8 ='Study 519A Flow Data'!Q7 (HIDDEN)
F8 =D8+E8
G8 =F8/(C8-0.03*$R$2)
H8 =IF(C8<$R$1,(0.47*(0.3137*C8-0.0156*$R$2-0.0625*F8)+0.53*C8),(0.3137*C8-0.0156*$R$2-0.0625*F8))
I8 =C8-H8
J8 =H8/C8
K8 =I8/C8
M8 =(1.01045-0.00003*I8)
N8 =(O8+P8)-(O8*P8)
O8 =IF((0.87634-0.000071*H8)<0,0,(0.87634-0.000071*H8))
P8 =IF((-3.65867+0.058492*L8+0.000051*F8)<0,0,(-3.65867+0.058492*L8+0.000051*F8))
Q8 =((K8*M8)+(J8*N8))
R8 =(1-Q8)

T8 ='Study 519A Flow Data'!AC7
U8 ='Study 519A Flow Data'!H7 (HIDDEN)
V8 ='Study 519A Flow Data'!R7 (HIDDEN)
W8 =U8+V8
X8 =W8/(T8-0.03*$R$3)
Y8 =IF(T8<$R$1,(0.52*(0.3137*T8-0.0156*$R$3-0.0625*W8)+0.48*T8),(0.3137*T8-0.0156*$R$3-0.0625*W8))
Z8 =T8-Y8
AA8 =Y8/T8
AB8 =Z8/T8
AD8 =(1.01045-0.00003*Z8)
AE8 =(AF8+AG8)-(AF8*AG8)
AF8 =IF((0.87634-0.000071*Y8)<0,0,(0.87634-0.000071*Y8))
AG8 =IF((-3.65867+0.058492*AC8+0.000051*W8)<0,0,(-3.65867+0.058492*AC8+0.000051*W8))
AH8 =((AB8*AD8)+(AA8*AE8))
AI8 =(1-AH8)
AK8 =0.45*G94+0.55*AI8

Study 622a San Joaquin River Fall Run Salmon Smolt Survival Model WITH BARRIER — Old River Barrier Open above ###### cfs at Vernalis

Barrier at head of Old River from Apr 15 to May 15 — Consumptive Depletion for April ###### cfs

Consumptive Depletion for May ###### cfs

APRIL

Row	Year (A)	Water Year Type (B)	Vernalis Flows (C)	CVP + SWP exports (F)	exp/v-cd (G)	Calculated Stockton Q (H)	OldR Flow (I)	p3 Stkn (J)	p2 UOldR (K)	Temp @ Jersey Pt (L)	m2 (M)	m34 (N)	m3 (O)	m4 (P)	m234 (Q)	Calculated Survival s234 (R)
8	1922	A	6,567	6,038	0.924	4,264	2,303	0.65	0.35	60.2	0.941	0.646	0.574	0.170	0.750	**25.0%**
9	1923	B	6,100	6,824	1.124	3,924	2,176	0.64	0.36	59.7	0.945	0.671	0.598	0.181	0.769	**23.1%**
10	1924	C	2,392	2,650	1.122	1,535	857	0.64	0.36	60.6	0.985	0.772	0.767	0.021	0.848	**15.2%**
11	1925	D	4,679	6,202	1.335	2,979	1,699	0.64	0.36	63.4	0.959	0.787	0.665	0.366	0.850	**15.0%**
12	1926	D	3,725	5,574	1.509	2,352	1,373	0.63	0.37	63.4	0.969	0.806	0.709	0.334	0.866	**13.4%**
13	1927	W	5,972	6,144	1.034	3,858	2,115	0.65	0.35	57.1	0.947	0.602	0.602	0.000	0.724	**27.6%**
14	1928	A	5,043	6,544	1.306	3,216	1,827	0.64	0.36	60.2	0.956	0.717	0.648	0.196	0.804	**19.6%**
15	1929	C	2,549	2,808	1.115	1,637	912	0.64	0.36	60.6	0.983	0.767	0.760	0.029	0.844	**15.6%**
16	1930	D	2,627	3,564	1.373	1,667	960	0.63	0.37	63.4	0.982	0.814	0.758	0.231	0.875	**12.5%**
17	1931	C	1,726	2,830	1.670	1,078	648	0.62	0.38	60.6	0.991	0.806	0.800	0.030	0.875	**12.5%**
18	1932	D	5,059	4,138	0.823	3,298	1,761	0.65	0.35	63.4	0.958	0.735	0.642	0.261	0.813	**18.7%**
19	1933	C	2,656	3,464	1.320	1,690	966	0.64	0.36	60.6	0.981	0.772	0.756	0.063	0.848	**15.2%**
20	1934	C	2,436	3,439	1.430	1,542	895	0.63	0.37	60.6	0.984	0.781	0.767	0.061	0.856	**14.4%**
21	1935	B	6,370	6,944	1.096	4,104	2,266	0.64	0.36	59.7	0.942	0.663	0.585	0.187	0.762	**23.8%**
22	1936	B	6,602	5,906	0.899	4,291	2,311	0.65	0.35	59.7	0.941	0.629	0.572	0.135	0.738	**26.2%**
23	1937	B	8,391	8,151	0.975	2,106	6,285	0.25	0.75	59.7	0.822	0.795	0.727	0.249	0.815	**18.5%**
24	1938	W	18,079	8,383	0.464	5,131	12,948	0.28	0.72	57.1	0.622	0.565	0.512	0.109	0.606	**39.4%**
25	1939	D	4,399	3,925	0.899	2,857	1,542	0.65	0.35	63.4	0.964	0.755	0.673	0.250	0.828	**17.2%**
26	1940	A	6,754	6,944	1.033	4,364	2,390	0.65	0.35	60.2	0.939	0.660	0.566	0.217	0.759	**24.1%**
27	1941	W	10,108	9,415	0.934	2,566	7,542	0.25	0.75	57.1	0.784	0.744	0.694	0.161	0.774	**22.6%**
28	1942	W	6,956	6,944	1.003	4,501	2,455	0.65	0.35	57.1	0.937	0.572	0.557	0.035	0.701	**29.9%**
29	1943	W	7,938	9,583	1.212	1,875	6,063	0.24	0.76	57.1	0.829	0.787	0.743	0.170	0.819	**18.1%**
30	1944	D	5,530	4,478	0.814	3,607	1,923	0.65	0.35	63.4	0.953	0.726	0.620	0.278	0.805	**19.5%**
31	1945	B	6,800	4,254	0.629	4,474	2,326	0.66	0.34	59.7	0.941	0.581	0.559	0.050	0.704	**29.6%**
32	1946	B	5,603	4,928	0.884	3,643	1,960	0.65	0.35	59.7	0.952	0.650	0.618	0.085	0.756	**24.4%**
33	1947	D	3,475	3,844	1.116	2,234	1,242	0.64	0.36	63.4	0.973	0.787	0.718	0.246	0.854	**14.6%**
34	1948	B	4,112	5,620	1.377	2,613	1,499	0.64	0.36	59.7	0.965	0.728	0.691	0.120	0.815	**18.5%**
35	1949	D	3,662	3,832	1.055	2,361	1,302	0.64	0.36	63.4	0.971	0.780	0.709	0.245	0.848	**15.2%**
36	1950	B	3,738	5,002	1.350	2,378	1,360	0.64	0.36	59.7	0.970	0.733	0.708	0.088	0.819	**18.1%**
37	1951	A	5,571	4,496	0.812	3,634	1,937	0.65	0.35	60.2	0.952	0.653	0.618	0.092	0.757	**24.3%**
38	1952	W	10,861	8,873	0.819	2,836	8,025	0.26	0.74	57.1	0.770	0.718	0.675	0.134	0.756	**24.4%**
39	1953	W	4,507	4,958	1.108	2,900	1,607	0.64	0.36	57.1	0.962	0.670	0.670	0.000	0.775	**22.5%**
40	1954	A	4,616	6,144	1.340	2,939	1,677	0.64	0.36	60.2	0.960	0.726	0.668	0.176	0.811	**18.9%**
41	1955	D	2,803	3,082	1.112	1,801	1,002	0.64	0.36	63.4	0.980	0.801	0.748	0.207	0.865	**13.5%**
42	1956	W	5,613	5,550	0.994	3,632	1,981	0.65	0.35	57.1	0.951	0.618	0.618	0.000	0.736	**26.4%**
43	1957	A	4,546	5,436	1.204	2,912	1,634	0.64	0.36	60.2	0.961	0.716	0.670	0.140	0.804	**19.6%**
44	1958	W	14,930	9,626	0.646	4,065	10,865	0.27	0.73	57.1	0.685	0.659	0.588	0.172	0.677	**32.3%**
45	1959	B	4,285	3,540	0.832	2,791	1,494	0.65	0.35	59.7	0.966	0.683	0.678	0.014	0.781	**21.9%**
46	1960	D	2,652	3,584	1.368	1,684	968	0.63	0.37	63.4	0.981	0.813	0.757	0.233	0.875	**12.5%**
47	1961	D	1,798	3,336	1.889	1,112	686	0.62	0.38	63.4	0.990	0.842	0.797	0.220	0.898	**10.2%**
48	1962	B	4,886	4,452	0.917	3,171	1,714	0.65	0.35	59.7	0.959	0.672	0.651	0.060	0.773	**22.7%**
49	1963	W	6,129	6,944	1.139	3,941	2,189	0.64	0.36	57.1	0.945	0.611	0.597	0.035	0.730	**27.0%**
50	1964	D	2,638	2,902	1.113	1,694	944	0.64	0.36	63.4	0.982	0.804	0.756	0.198	0.868	**13.2%**
51	1965	W	6,873	6,944	1.015	4,444	2,429	0.65	0.35	57.1	0.938	0.576	0.561	0.035	0.704	**29.6%**
52	1966	B	4,220	4,202	1.003	2,728	1,492	0.65	0.35	59.7	0.966	0.698	0.683	0.048	0.793	**20.7%**
53	1967	W	13,637	9,137	0.672	3,690	9,947	0.27	0.73	57.1	0.712	0.671	0.614	0.147	0.701	**29.9%**
54	1968	B	4,267	4,450	1.051	2,752	1,515	0.64	0.36	59.7	0.965	0.700	0.681	0.060	0.794	**20.6%**
55	1969	W	20,949	7,613	0.364	6,079	14,870	0.29	0.71	57.1	0.564	0.483	0.445	0.069	0.541	**45.9%**
56	1970	W	5,781	4,254	0.740	3,784	1,997	0.65	0.35	57.1	0.951	0.608	0.608	0.000	0.726	**27.4%**
57	1971	W	4,483	5,696	1.280	2,862	1,621	0.64	0.36	57.1	0.962	0.673	0.673	0.000	0.778	**22.2%**
58	1972	B	2,861	3,544	1.253	1,826	1,035	0.64	0.36	58.9	0.979	0.747	0.747	0.000	0.831	**16.9%**
59	1973	A	6,742	6,328	0.943	4,374	2,368	0.65	0.35	59.2	0.939	0.621	0.566	0.127	0.733	**26.7%**
60	1974	W	7,679	9,445	1.235	1,802	5,877	0.23	0.77	56.9	0.834	0.786	0.748	0.151	0.823	**17.7%**
61	1975	W	6,758	6,944	1.032	4,367	2,392	0.65	0.35	53.7	0.939	0.566	0.566	0.000	0.698	**30.2%**
62	1976	C	2,597	3,032	1.182	1,663	934	0.64	0.36	57.8	0.982	0.758	0.758	0.000	0.839	**16.1%**
63	1977	C	1,665	2,857	1.749	1,036	629	0.62	0.38	62.0	0.992	0.825	0.803	0.114	0.888	**11.2%**
64	1978	A	15,543	7,621	0.491	4,383	11,160	0.28	0.72	61.4	0.676	0.705	0.565	0.321	0.684	**31.6%**
65	1979	B	6,421	5,886	0.921	4,169	2,252	0.65	0.35	60.5	0.943	0.656	0.580	0.180	0.757	**24.3%**
66	1980	A	6,885	5,490	0.801	4,495	2,390	0.65	0.35	60.1	0.939	0.618	0.557	0.137	0.729	**27.1%**
67	1981	D	4,374	4,948	1.140	2,810	1,564	0.64	0.36	64.6	0.964	0.797	0.677	0.372	0.857	**14.3%**
68	1982	W	27,053	9,509	0.352	7,876	19,177	0.29	0.71	52.8	0.435	0.317	0.317	0.000	0.401	**59.9%**
69	1983	W	20,853	7,071	0.340	6,083	14,770	0.29	0.71	57.2	0.567	0.471	0.444	0.048	0.539	**46.1%**
70	1984	W	5,323	4,636	0.876	3,462	1,861	0.65	0.35	60.7	0.955	0.678	0.631	0.128	0.775	**22.5%**
71	1985	D	3,816	3,862	1.021	2,464	1,352	0.65	0.35	62.5	0.970	0.759	0.701	0.194	0.834	**16.6%**
72	1986	W	9,836	7,531	0.768	2,598	7,238	0.26	0.74	61.3	0.793	0.788	0.692	0.311	0.792	**20.8%**
73	1987	D	2,779	3,245	1.181	1,780	999	0.64	0.36	62.3	0.980	0.788	0.750	0.151	0.857	**14.3%**
74	1988	C	2,429	2,854	1.191	1,554	875	0.64	0.36	62.1	0.984	0.794	0.766	0.119	0.862	**13.8%**
75	1989	D	2,112	5,224	2.511	1,270	842	0.60	0.40	64.1	0.985	0.863	0.786	0.357	0.911	**8.9%**
76	1990	C	1,829	3,395	1.889	1,132	697	0.62	0.38	60.6	0.990	0.808	0.796	0.059	0.877	**12.3%**
77	1991	C	2,436	3,921	1.631	1,527	909	0.63	0.37	60.6	0.983	0.788	0.768	0.086	0.861	**13.9%**
78	1992	C	2,245	3,426	1.548	1,412	833	0.63	0.37	60.6	0.985	0.790	0.776	0.061	0.862	**13.8%**

MAY

Row	Year	Vernalis Flows (T)	CVP+SWP exports (W)	exp/v-cd (X)	Calculated Stockton Q (Y)	OldR Flow (Z)	p3 Stkn (AA)	p2 UOldR (AB)	Temp @ Jersey Pt (AC)	m2 (AD)	m34 (AE)	m3 (AF)	m4 (AG)	m234 (AH)	Calculated Survival s234 (AI)	Weighted (April + June) total survival (AK)
8	1922	6,048	6,763	1.124	3,661	2,387	0.61	0.39	66.6	0.939	0.840	0.616	0.582	0.879	**12.1%**	**17.9%**
9	1923	5,409	5,450	1.013	3,293	2,116	0.61	0.39	66.0	0.947	0.814	0.643	0.480	0.866	**13.4%**	**17.8%**
10	1924	2,145	1,335	0.632	1,328	817	0.62	0.38	63.9	0.986	0.814	0.782	0.147	0.880	**12.0%**	**13.4%**
11	1925	4,193	4,586	1.102	2,539	1,654	0.61	0.39	67.3	0.961	0.852	0.696	0.512	0.895	**10.5%**	**12.5%**
12	1926	3,232	3,864	1.207	1,944	1,287	0.60	0.40	67.3	0.972	0.863	0.738	0.475	0.906	**9.4%**	**11.2%**
13	1927	5,142	6,763	1.323	3,079	2,064	0.60	0.40	64.2	0.949	0.809	0.658	0.441	0.865	**13.5%**	**19.8%**
14	1928	3,987	5,616	1.420	2,373	1,614	0.60	0.40	66.6	0.962	0.861	0.708	0.523	0.902	**9.8%**	**14.2%**
15	1929	2,322	3,154	1.377	1,382	940	0.60	0.40	63.9	0.982	0.831	0.778	0.240	0.892	**10.8%**	**12.9%**
16	1930	2,347	3,505	1.514	1,387	960	0.59	0.41	67.3	0.982	0.879	0.778	0.457	0.921	**7.9%**	**10.0%**
17	1931	1,515	3,153	2.126	863	652	0.57	0.43	63.9	0.991	0.859	0.815	0.240	0.916	**8.4%**	**10.2%**
18	1932	4,193	4,125	0.991	2,554	1,639	0.61	0.39	67.3	0.961	0.844	0.695	0.488	0.890	**11.0%**	**14.5%**
19	1933	2,428	2,913	1.215	1,459	970	0.60	0.40	63.9	0.981	0.824	0.773	0.228	0.887	**11.3%**	**13.0%**
20	1934	2,150	2,956	1.395	1,278	872	0.59	0.41	63.9	0.984	0.835	0.786	0.230	0.895	**10.5%**	**12.3%**
21	1935	6,144	5,926	0.970	3,750	2,394	0.61	0.39	66.0	0.939	0.807	0.610	0.504	0.858	**14.2%**	**18.5%**
22	1936	5,155	5,396	1.053	3,131	2,024	0.61	0.39	66.0	0.950	0.819	0.654	0.477	0.870	**13.0%**	**18.9%**
23	1937	8,752	7,262	0.833	2,275	6,477	0.26	0.74	66.0	0.816	0.878	0.715	0.572	0.832	**16.8%**	**17.5%**
24	1938	24,609	9,543	0.388	7,107	17,502	0.29	0.71	64.2	0.485	0.738	0.372	0.583	0.558	**44.2%**	**42.0%**
25	1939	3,756	3,484	0.936	2,294	1,462	0.61	0.39	67.3	0.967	0.844	0.713	0.456	0.892	**10.8%**	**13.7%**
26	1940	5,472	6,238	1.147	3,308	2,164	0.60	0.40	66.6	0.946	0.840	0.641	0.555	0.882	**11.8%**	**17.3%**
27	1941	10,213	9,931	0.975	2,567	7,646	0.25	0.75	64.2	0.781	0.879	0.694	0.603	0.806	**19.4%**	**20.9%**
28	1942	6,345	7,488	1.186	3,829	2,516	0.60	0.40	64.2	0.935	0.794	0.605	0.478	0.850	**15.0%**	**21.7%**
29	1943	6,811	6,949	1.025	4,146	2,665	0.61	0.39	64.2	0.930	0.770	0.582	0.451	0.833	**16.7%**	**17.3%**
30	1944	4,099	3,781	0.930	2,505	1,594	0.61	0.39	67.3	0.963	0.840	0.698	0.471	0.888	**11.2%**	**14.9%**
31	1945	5,699	4,573	0.807	3,508	2,191	0.62	0.38	66.0	0.945	0.789	0.627	0.435	0.849	**15.1%**	**21.6%**
32	1946	4,867	4,977	1.029	2,960	1,907	0.61	0.39	66.0	0.953	0.818	0.666	0.456	0.871	**12.9%**	**18.1%**
33	1947	3,197	3,216	1.016	1,943	1,254	0.61	0.39	67.3	0.973	0.854	0.738	0.442	0.901	**9.9%**	**12.1%**
34	1948	3,755	6,763	1.816	2,187	1,568	0.58	0.42	66.0	0.963	0.874	0.721	0.547	0.911	**8.9%**	**13.2%**
35	1949	3,312	4,105	1.251	1,988	1,324	0.60	0.40	67.3	0.971	0.864	0.735	0.487	0.907	**9.3%**	**12.0%**
36	1950	3,332	4,264	1.292	1,996	1,336	0.60	0.40	66.0	0.970	0.846	0.735	0.419	0.896	**10.4%**	**13.9%**
37	1951	4,449	5,796	1.312	2,664	1,785	0.60	0.40	66.6	0.957	0.854	0.687	0.532	0.895	**10.5%**	**16.7%**
38	1952	16,086	9,536	0.594	4,434	11,652	0.28	0.72	64.2	0.661	0.817	0.562	0.583	0.704	**29.6%**	**27.2%**
39	1953	4,073	7,126	1.763	2,379	1,694	0.58	0.42	64.2	0.960	0.842	0.707	0.460	0.891	**10.9%**	**16.1%**
40	1954	3,909	6,213	1.602	2,304	1,605	0.59	0.41	66.6	0.962	0.872	0.713	0.554	0.909	**9.1%**	**13.5%**
41	1955	2,693	3,600	1.353	1,606	1,087	0.60	0.40	67.3	0.978	0.872	0.762	0.461	0.915	**8.5%**	**10.8%**
42	1956	6,652	6,763	1.021	4,050	2,602	0.61	0.39	64.2	0.932	0.770	0.589	0.441	0.834	**16.6%**	**21.0%**
43	1957	4,261	5,606	1.326	2,550	1,711	0.60	0.40	66.6	0.959	0.855	0.695	0.523	0.897	**10.3%**	**14.5%**
44	1958	13,808	10,883	0.790	3,635	10,173	0.26	0.74	64.2	0.705	0.867	0.618	0.652	0.748	**25.2%**	**28.4%**
45	1959	3,065	3,370	1.111	1,853	1,212	0.60	0.40	66.0	0.974	0.840	0.745	0.374	0.893	**10.7%**	**15.7%**
46	1960	2,388	3,569	1.514	1,411	977	0.59	0.41	67.3	0.981	0.879	0.776	0.460	0.921	**7.9%**	**10.0%**
47	1961	1,594	2,954	1.891	921	673	0.58	0.42	67.3	0.990	0.892	0.811	0.428	0.933	**6.7%**	**8.2%**
48	1962	3,826	4,606	1.214	2,303	1,524	0.60	0.40	66.0	0.965	0.838	0.713	0.437	0.889	**11.1%**	**16.3%**
49	1963	5,541	7,488	1.359	3,311	2,229	0.60	0.40	64.2	0.944	0.813	0.641	0.478	0.865	**13.5%**	**19.5%**
50	1964	2,455	3,490	1.440	1,457	998	0.59	0.41	67.3	0.981	0.876	0.773	0.456	0.919	**8.1%**	**10.4%**
51	1965	5,774	7,474	1.301	3,462	2,312	0.60	0.40	64.2	0.941	0.807	0.631	0.478	0.861	**13.9%**	**21.0%**
52	1966	3,234	4,117	1.286	1,937	1,296	0.60	0.40	66.0	0.972	0.846	0.739	0.412	0.897	**10.3%**	**15.0%**
53	1967	16,631	9,679	0.583	4,596	12,035	0.28	0.72	64.2	0.649	0.816	0.550	0.590	0.695	**30.5%**	**30.2%**
54	1968	3,333	3,383	1.025	2,025	1,308	0.61	0.39	66.0	0.971	0.833	0.733	0.374	0.887	**11.3%**	**15.5%**
55	1969	26,568	9,218	0.347	7,742	18,826	0.29	0.71	66.4	0.446	0.795	0.327	0.695	0.547	**45.3%**	**45.6%**
56	1970	4,814	4,293	0.898	2,948	1,866	0.61	0.39	61.2	0.954	0.714	0.667	0.140	0.807	**19.3%**	**22.9%**
57	1971	3,977	7,126	1.806	2,317	1,659	0.58	0.42	64.2	0.961	0.844	0.712	0.460	0.893	**10.7%**	**15.9%**
58	1972	2,666	3,504	1.330	1,592	1,074	0.60	0.40	66.0	0.978	0.853	0.763	0.381	0.904	**9.6%**	**12.9%**
59	1973	6,030	5,937	0.990	3,677	2,353	0.61	0.39	66.3	0.940	0.816	0.615	0.522	0.864	**13.6%**	**19.5%**
60	1974	6,068	6,763	1.120	3,674	2,394	0.61	0.39	66.1	0.939	0.828	0.615	0.553	0.872	**12.8%**	**15.0%**
61	1975	5,959	7,488	1.263	3,580	2,378	0.60	0.40	61.5	0.939	0.743	0.622	0.320	0.821	**17.9%**	**23.4%**
62	1976	2,363	3,099	1.329	1,410	953	0.60	0.40	65.8	0.982	0.854	0.776	0.348	0.906	**9.4%**	**12.4%**
63	1977	1,557	873	0.572	964	593	0.62	0.38	62.3	0.993	0.814	0.808	0.030	0.882	**11.8%**	**11.5%**
64	1978	11,607	8,414	0.727	3,099	8,508	0.27	0.73	66.9	0.755	0.891	0.656	0.684	0.792	**20.8%**	**25.7%**
65	1979	5,421	5,243	0.973	3,307	2,113	0.61	0.39	66.0	0.947	0.810	0.642	0.469	0.863	**13.7%**	**18.5%**
66	1980	7,127	8,042	1.133	4,314	2,813	0.61	0.39	66.6	0.926	0.848	0.570	0.647	0.879	**12.1%**	**18.8%**
67	1981	3,602	3,647	1.021	2,190	1,413	0.61	0.39	68.7	0.968	0.873	0.721	0.546	0.910	**9.0%**	**11.4%**
68	1982	17,520	10,919	0.624	4,797	12,723	0.27	0.73	65.1	0.629	0.864	0.536	0.706	0.693	**30.7%**	**43.8%**
69	1983	22,049	7,752	0.352	6,416	15,633	0.29	0.71	61.3	0.541	0.607	0.421	0.322	0.561	**43.9%**	**44.9%**
70	1984	4,525	5,126	1.141	2,735	1,790	0.60	0.40	66.0	0.957	0.829	0.682	0.463	0.880	**12.0%**	**16.8%**
71	1985	3,529	3,754	1.073	2,139	1,390	0.61	0.39	65.1	0.969	0.818	0.724	0.341	0.878	**12.2%**	**14.2%**
72	1986	8,707	8,565	0.987	2,180	6,527	0.25	0.75	65.8	0.815	0.896	0.722	0.627	0.835	**16.5%**	**18.4%**
73	1987	2,558	2,832	1.121	1,545	1,013	0.60	0.40	68.6	0.980	0.883	0.767	0.498	0.921	**7.9%**	**10.8%**
74	1988	2,216	2,991	1.369	1,319	897	0.60	0.40	63.7	0.984	0.830	0.783	0.220	0.892	**10.8%**	**12.1%**
75	1989	1,767	3,916	2.257	1,001	766	0.57	0.43	66.7	0.987	0.891	0.805	0.442	0.933	**6.7%**	**7.7%**
76	1990	1,593	2,715	1.739	928	665	0.58	0.42	63.9	0.990	0.852	0.810	0.217	0.910	**9.0%**	**10.5%**
77	1991	1,872	2,925	1.589	1,100	772	0.59	0.41	63.9	0.987	0.844	0.798	0.228	0.903	**9.7%**	**11.6%**
78	1992	1,752	2,950	1.715	1,022	730	0.58	0.42	63.9	0.989	0.849	0.804	0.229	0.907	**9.3%**	**11.3%**
79															**Average:**	**#####**

Calculations- San Joaquin River Fall Run Smolt Survival Model WITH BARRIER

```
C8 ='Study 622a Flow Data'!AA7
D8 ='Study 622a Flow Data'!G (HIDDEN)
E8 ='Study 622a Flow Data'!Q (HIDDEN)
F8 =D8+E8
G8 =F8/(C8-0.03*$R$2)
H8 =IF(C8<$R$1,(0.47*(0.3137*C8-0.0156*$R$2-0.0625*F8)+0.53*C8),(0.3137*C8-0.0156*$R$2-0.0625
I8 =C8-H8
J8 =H8/C8
K8 =I8/C8
M8 =(1.01045-0.00003*I8)
N8 =(O8+P8)-(O8*P8)
O8 =IF((0.87634-0.000071*H8)<0,0,(0.87634-0.000071*H8))
P8 =IF((-3.65867+0.058492*L8+0.000051*F8)<0,0,(-3.65867+0.058492*L8+0.000051*F8))
Q8 =((K8*M8)+(J8*N8))
R8 =(1-Q8)
```

```
T8 ='Study 622a Flow Data'!AB7
U8 ='Study 622a Flow Data'!H (HIDDEN)
V8 ='Study 622a Flow Data'!R (HIDDEN)
W8 =U8+V8
X8 =W8/(T8-0.03*$R$3)
Y8 =IF(T8<$R$1,(0.52*(0.3137*T8-0.0156*$R$3-0.0625*W8)+0.48*T8),(0.3137*T8-0.0156*$R$3-0.0625*W8))
Z8 =T8-Y8
AA8 =Y8/T8
AB8 =Z8/T8
AD8 =(1.01045-0.00003*Z8)
AE8 =(AF8+AG8)-(AF8*AG8)
AF8 =IF((0.87634-0.000071*Y8)<0,0,(0.87634-0.000071*Y8))
AG8 =IF((-3.65867+0.058492*AC8+0.000051*W8)<0,0,(-3.65867+0.058492*AC8+0.000051*W8))
AH8 =((AB8*AD8)+(AA8*AE8))
AI8 =(1-AH8)
AK8 =0.45*G94+0.55*AI8
```

	A	B	C	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	U	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AL
1	Study 467 San Joaquin River Fall Run Salmon Smolt Survival Model WITHOUT BARRIER AT HEAD OF OLD RIVER																															
2				Consumptive Depletion for April		1053.00		cfs			San Joaquin River temperatures based on limited historical data from USBR																					
3				Consumptive Depletion for May		1053.00		cfs																								
4	APRIL	Water															Calculated	MAY													Calculated	
5		Year	Vernalis	CVP + SWI	Exports/	Calculated Stockton Q					Temp @		Calculated Mortality				Survivability	Vernalis	CVP + SWP	Exports/	Calculated				Temp @	Calculated Mortality					Survivability	Weighted
6	Year	Type	Flows	exports	vernalis-.03cd			UOldR Flov	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	s234	Flows	exports	Vernalis-.03cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	s234	total survival
7	1922	A	5,697	9,546	1.685	1,437	1,437	4,260	0.25	0.75	60.2	0.883	0.853	0.774	0.349	0.875	12.5%	4,180	5,985	1.443	1,148	3032	0.27	0.73	66.6	0.920	0.906	0.795	0.542	0.916	8.4%	10.2%
8	1923	B	4,487	10,100	2.267	877	877	3,610	0.20	0.80	59.7	0.902	0.879	0.814	0.348	0.898	10.2%	3,399	5,985	1.777	821	2578	0.24	0.76	66.0	0.933	0.910	0.818	0.507	0.928	7.2%	8.6%
9	1924	C	1,697	571	0.343	635	635	1,062	0.37	0.63	60.6	0.979	0.831	0.831	0.000	0.923	7.7%	1,236	4,017	3.335	120	1116	0.10	0.90	63.9	0.977	0.905	0.868	0.284	0.970	3.0%	5.1%
10	1925	D	3,596	11,226	3.149	410	410	3,186	0.11	0.89	63.4	0.915	0.942	0.847	0.622	0.918	8.2%	2,667	5,985	2.271	515	2152	0.19	0.81	67.3	0.946	0.933	0.840	0.583	0.943	5.7%	6.8%
11	1926	D	3,092	10,739	3.509	282	282	2,810	0.09	0.91	63.4	0.926	0.942	0.856	0.597	0.928	7.2%	2,098	5,985	2.896	277	1821	0.13	0.87	67.3	0.956	0.940	0.857	0.583	0.954	4.6%	5.8%
12	1927	W	4,941	9,764	1.989	1,100	1,100	3,841	0.22	0.78	57.1	0.895	0.834	0.798	0.179	0.882	11.8%	3,318	5,985	1.821	787	2530	0.24	0.76	64.2	0.935	0.893	0.820	0.402	0.925	7.5%	9.5%
13	1928	A	4,470	10,083	2.272	872	872	3,599	0.19	0.81	60.2	0.902	0.884	0.814	0.377	0.899	10.1%	2,342	5,985	2.590	379	1963	0.16	0.84	66.6	0.952	0.931	0.849	0.542	0.948	5.2%	7.4%
14	1929	C	2,033	5,395	2.695	307	307	1,726	0.15	0.85	60.6	0.959	0.878	0.855	0.161	0.946	5.4%	1,513	4,375	2.954	188	1324	0.12	0.88	63.9	0.971	0.904	0.863	0.302	0.962	3.8%	4.5%
15	1930	D	2,168	9,344	4.374	80	80	2,088	0.04	0.96	63.4	0.948	0.939	0.871	0.526	0.947	5.3%	1,545	5,985	3.955	94	1451	0.06	0.94	67.3	0.967	0.946	0.870	0.583	0.966	3.4%	4.3%
16	1931	C	1,597	4,269	2.728	234	234	1,363	0.15	0.85	60.6	0.970	0.874	0.860	0.104	0.956	4.4%	1,220	4,326	3.641	96	1124	0.08	0.92	63.9	0.977	0.909	0.870	0.300	0.971	2.9%	3.6%
17	1932	D	4,521	538	0.120	1,820	1,820	2,701	0.40	0.60	63.4	0.929	0.767	0.747	0.077	0.864	13.6%	2,765	5,985	2.190	556	2209	0.20	0.80	67.3	0.944	0.932	0.837	0.583	0.942	5.8%	9.3%
18	1933	C	2,302	1,765	0.777	772	772	1,530	0.34	0.66	60.6	0.965	0.822	0.822	0.000	0.917	8.3%	1,756	4,472	2.593	281	1475	0.16	0.84	63.9	0.966	0.900	0.856	0.307	0.956	4.4%	6.2%
19	1934	C	1,832	689	0.383	680	680	1,152	0.37	0.63	60.6	0.976	0.828	0.828	0.000	0.921	7.9%	1,252	4,977	4.077	65	1187	0.05	0.95	63.9	0.975	0.914	0.872	0.333	0.972	2.8%	5.1%
20	1935	B	7,243	11,142	1.545	1,929	1,929	5,314	0.27	0.73	59.7	0.851	0.844	0.739	0.402	0.849	15.1%	6,066	5,985	0.992	1,937	4129	0.32	0.68	66.0	0.887	0.871	0.739	0.507	0.882	11.8%	13.3%
21	1936	B	6,420	9,781	1.531	1,717	1,717	4,703	0.27	0.73	59.7	0.869	0.836	0.754	0.332	0.860	14.0%	4,359	5,985	1.383	1,223	3136	0.28	0.72	66.0	0.916	0.896	0.790	0.507	0.911	8.9%	11.2%
22	1937	B	7,932	9,579	1.212	2,369	2,369	5,563	0.30	0.70	59.7	0.844	0.802	0.708	0.322	0.831	16.9%	8,132	5,985	0.739	2,802	5330	0.34	0.66	66.0	0.851	0.841	0.677	0.507	0.847	15.3%	16.0%
23	1938	W	18,049	7,714	0.428	6,783	6,783	11,266	0.38	0.62	57.1	0.672	0.440	0.395	0.075	0.585	41.5%	24,265	5,985	0.247	9,552	14713	0.39	0.61	64.2	0.569	0.520	0.198	0.402	0.550	45.0%	43.4%
24	1939	D	2,891	7,983	2.792	415	415	2,476	0.14	0.86	63.4	0.936	0.917	0.847	0.457	0.933	6.7%	1,952	4,993	2.600	312	1639	0.16	0.84	67.3	0.961	0.932	0.854	0.532	0.957	4.3%	5.4%
25	1940	A	6,470	10,285	1.597	1,689	1,689	4,781	0.26	0.74	60.2	0.867	0.851	0.756	0.387	0.863	13.7%	4,635	5,985	1.300	1,339	3296	0.29	0.71	66.6	0.912	0.900	0.781	0.542	0.908	9.2%	11.2%
26	1941	W	10,083	9,310	0.926	3,295	3,295	6,788	0.33	0.67	57.1	0.807	0.698	0.642	0.156	0.771	22.9%	9,579	5,985	0.627	3,407	6172	0.36	0.64	64.2	0.825	0.781	0.634	0.402	0.810	19.0%	20.8%
27	1942	W	6,907	9,646	1.403	1,934	1,934	4,973	0.28	0.72	57.1	0.861	0.784	0.739	0.173	0.840	16.0%	5,741	5,985	1.048	1,801	3940	0.31	0.69	64.2	0.892	0.850	0.748	0.402	0.879	12.1%	13.9%
28	1943	W	7,915	9,663	1.226	2,354	2,354	5,561	0.30	0.70	57.1	0.844	0.760	0.709	0.174	0.819	18.1%	6,164	5,985	0.976	1,978	4186	0.32	0.68	64.2	0.885	0.842	0.736	0.402	0.871	12.9%	15.2%
29	1944	D	3,428	9,579	2.820	485	485	2,944	0.14	0.86	63.4	0.922	0.927	0.842	0.538	0.923	7.7%	2,570	4,993	1.967	571	1999	0.22	0.78	67.3	0.950	0.923	0.836	0.532	0.944	5.6%	6.5%
30	1945	B	6,537	9,764	1.501	1,768	1,768	4,770	0.27	0.73	59.7	0.867	0.833	0.751	0.331	0.858	14.2%	4,180	5,855	1.411	1,161	3019	0.28	0.72	66.0	0.920	0.897	0.794	0.500	0.914	8.6%	11.1%
31	1946	B	4,924	10,100	2.064	1,060	1,060	3,864	0.22	0.78	59.7	0.895	0.870	0.801	0.348	0.889	11.1%	3,708	5,562	1.513	992	2716	0.27	0.73	66.0	0.929	0.900	0.806	0.485	0.921	7.9%	9.3%
32	1947	D	2,252	10,134	4.564	57	57	2,195	0.03	0.97	63.4	0.945	0.945	0.872	0.567	0.945	5.5%	1,675	4,993	3.038	197	1478	0.12	0.88	67.3	0.966	0.936	0.862	0.532	0.963	3.7%	4.6%
33	1948	B	3,647	11,092	3.068	434	434	3,212	0.12	0.88	59.7	0.914	0.907	0.846	0.399	0.913	8.7%	2,879	5,985	2.102	604	2275	0.21	0.79	66.0	0.942	0.918	0.833	0.507	0.937	6.3%	7.4%
34	1949	D	2,975	9,814	3.335	303	303	2,671	0.10	0.90	63.4	0.930	0.935	0.855	0.550	0.931	6.9%	2,212	5,985	2.745	325	1887	0.15	0.85	67.3	0.954	0.939	0.853	0.583	0.952	4.8%	5.8%
35	1950	B	3,042	10,067	3.344	309	309	2,733	0.10	0.90	59.7	0.928	0.905	0.854	0.347	0.926	7.4%	2,212	5,985	2.745	325	1887	0.15	0.85	66.0	0.954	0.928	0.853	0.507	0.950	5.0%	6.1%
36	1951	A	3,563	9,092	2.575	588	588	2,975	0.17	0.83	60.2	0.921	0.889	0.835	0.326	0.916	8.4%	2,862	5,985	2.114	597	2265	0.21	0.79	66.6	0.942	0.924	0.834	0.542	0.939	6.1%	7.2%
37	1952	W	10,823	8,773	0.813	3,657	3,657	7,166	0.34	0.66	57.1	0.795	0.666	0.617	0.129	0.752	24.8%	15,467	5,985	0.388	5,870	9596	0.38	0.62	64.2	0.723	0.677	0.460	0.402	0.705	29.5%	27.4%
38	1953	W	2,857	9,764	3.456	270	270	2,587	0.09	0.91	57.1	0.933	0.883	0.857	0.179	0.928	7.2%	2,277	5,985	2.666	352	1925	0.15	0.85	64.2	0.953	0.911	0.851	0.402	0.946	5.4%	6.2%
39	1954	A	3,949	10,386	2.651	624	624	3,325	0.16	0.84	60.2	0.911	0.898	0.832	0.392	0.909	9.1%	2,505	5,822	2.354	463	2042	0.18	0.82	66.6	0.949	0.927	0.843	0.534	0.945	5.5%	7.1%
40	1955	D	2,286	9,008	3.996	138	138	2,148	0.06	0.94	63.4	0.946	0.935	0.867	0.509	0.945	5.5%	1,984	4,993	2.557	326	1658	0.16	0.84	67.3	0.961	0.931	0.853	0.532	0.956	4.4%	4.9%
41	1956	W	4,790	10,386	2.183	976	976	3,814	0.20	0.80	57.1	0.896	0.848	0.807	0.211	0.886	11.4%	6,131	5,985	0.981	1,965	4167	0.32	0.68	64.2	0.885	0.843	0.737	0.402	0.872	12.8%	12.2%
42	1957	A	2,706	10,184	3.808	196	196	2,510	0.07	0.93	60.2	0.935	0.915	0.862	0.382	0.934	6.6%	2,423	5,985	2.502	413	2010	0.17	0.83	66.6	0.950	0.930	0.847	0.542	0.947	5.3%	5.9%
43	1958	W	14,907	9,663	0.650	5,279	5,279	9,628	0.35	0.65	57.1	0.722	0.588	0.502	0.174	0.674	32.6%	13,190	5,985	0.455	4,918	8272	0.37	0.63	64.2	0.762	0.717	0.527	0.402	0.745	25.5%	28.7%
44	1959	B	2,218	8,470	3.873	150	150	2,068	0.07	0.93	59.7	0.948	0.901	0.866	0.265	0.945	5.5%	1,594	4,993	3.196	171	1422	0.11	0.89	66.0	0.968	0.926	0.864	0.456	0.963	3.7%	4.5%
45	1960	D	2,269	6,857	3.065	267	267	2,002	0.12	0.88	63.4	0.950	0.914	0.857	0.399	0.946	5.4%	1,643	4,993	3.099	187	1456	0.11	0.89	67.3	0.967	0.936	0.863	0.532	0.963	3.7%	4.4%
46	1961	D	1,697	7,932	4.762	20	20	1,677	0.01	0.99	63.4	0.960	0.932	0.875	0.454	0.960	4.0%	1,269	4,993	4.036	69	1199	0.05	0.95	67.3	0.974	0.940	0.871	0.532	0.973	2.7%	3.3%
47	1962	B	4,218	10,487	2.505	727	727	3,491	0.17	0.83	59.7	0.906	0.889	0.825	0.368	0.903	9.7%	2,440	4,993	2.074	516	1923	0.21	0.79	66.0	0.953	0.913	0.840	0.456	0.944	5.6%	7.4%
48	1963	W	5,361	10,117	1.898	1,241	1,241	4,120	0.23	0.77	57.1	0.887	0.830	0.788	0.197	0.874	12.6%	4,163	5,985	1.448	1,141	3022	0.27	0.73	64.2	0.920	0.878	0.795	0.402	0.908	9.2%	10.7%
49	1964	D	2,168	9,008	4.216	101	101	2,067	0.05	0.95	63.4	0.948	0.936	0.869	0.509	0.948	5.2%	1,708	4,993	2.979	210	1498	0.12	0.88	67.3	0.966	0.935	0.861	0.532	0.962	3.8%	4.4%
50	1965	W	6,958	9,932	1.434	1,927	1,927	5,030	0.28	0.72	57.1	0.860	0.788	0.740	0.188	0.840	16.0%	4,326	5,985	1.394	1,209	3117	0.28	0.72	64.2	0.917	0.875	0.790	0.402	0.905	9.5%	12.4%
51	1966	B	2,454	9,966	4.115	130	130	2,323	0.05	0.95	59.7	0.941	0.912	0.867	0.342	0.939	6.1%	1,870	4,993	2.715	278	1592	0.15	0.85	66.0	0.963	0.922	0.857	0.456	0.957	4.3%	5.1%
52	1967	W	13,613	8,722	0.642	4,829	4,829	8,784	0.35	0.65	57.1	0.747	0.592	0.533	0.126	0.692	30.8%	16,003	5,985	0.375	6,095	9908	0.38	0.62	64.2	0.713	0.667	0.444	0.402	0.696	30.4%	30.6%
53	1968	B	2,370	8,470	3.623	198	198	2,172	0.08	0.92	59.7	0.945	0.899	0.862	0.265	0.941	5.9%	1,740	4,993	2.922	224	1516	0.13	0.87	66.0	0.965	0.924	0.860	0.456	0.960	4.0%	4.9%
54	1969	W	20,923	7,495	0.359	8,007	8,007	12,916	0.38	0.62	57.1	0.623	0.352	0.308	0.063	0.519	48.1%	26,217	5,985	0.229	10,368	15848	0.40	0.60	66.4	0.535	0.596	0.140	0.530	0.559	44.1%	45.9%
55	1970	W	4,017	8,470	2.126	838	838	3,178	0.21	0.79	57.1	0.915	0.838	0.817	0.113	0.899	10.1%	3,074	5,985	1.967	685	2388	0.22	0.78	61.2	0.939	0.867	0.828	0.226	0.923	7.7%	8.8%
56	1971	W	2,891	10,386	3.633	241	241	2,649	0.08	0.92	57.1	0.931	0.889	0.859	0.211	0.927	7.3%	2,358	5,985	2.572	386	1972	0.16	0.84	64.2	0.951	0.910	0.849	0.402	0.944	5.6%	6.3%
57	1972	B	1,983	9,646	4.943	3	3	1,980	0.00	1.00	58.9	0.951	0.911	0.876	0.278	0.951	4.9%	1,464	4,993	3.486	131	1333	0.09	0.91	66.0	0.970	0.928	0.867	0.456	0.967	3.3%	4.0%
58	1973	A	6,571	10,117	1.547	1,747	1,747	4,824	0.27	0.73	59.2	0.866	0.832	0.752	0.320	0.857	14.3%	5,448	5,985	1.105	1,679	3769	0.31	0.69	66.3	0.897	0.885	0.757	0.525	0.893	10.7%	12.3%
59	1974	W	7,647	10,100	1.326	2,199	2,199	5,448	0.29	0.71	56.9	0.847	0.772	0.720	0.185	0.825	17.5%	5,416	5,985	1.112	1,665	3751	0.31	0.69	66.1	0.898	0.882	0.758	0.513	0.893	10.7%	13.7%
60	1975	W	6,621	10,386	1.576	1,742	1,742	4,879	0.26	0.74	53.7	0.864	0.756	0.753	0.012	0.836	16.4%	4,651	5,985	1.296	1,345	3306	0.29	0.71	61.5	0.911	0.834	0.781	0.244	0.889	11.1%	13.5%
61	1976	C	1,882	7,613	4.114	98	98	1,784	0.05	0.95	57.8	0.957	0.884	0.869	0.110	0.953	4.7%	1,366	4,359	3.266	140	1226	0.10	0.90	65.8	0.974	0.922	0.866	0.412	0.968	3.2%	3.9%
62	1977	C	1,529	9,008	6.014	(100)	0	1,529	0.00	1.00	62.0	0.965	0.929	0.876	0.427	0.965	3.5%	1,269	3,887	3.142	139	1130	0.11	0.89	62.3	0.977	0.891	0.867	0.184	0.967	3.3%	3.4%
63	1978	A	14,957	8,672	0.581	5,396	5,396	9,561	0.36	0.64	61.4	0.724	0.683	0.493	0.375	0.709	29.1%	10,864	5,985	0.553	3,945	6919	0.36	0.64	66.9	0.803	0.822	0.596	0.560	0.810	19.0%	23.5%
64	1979	B	5,327	9,646	1.822	1,273	1,273	4,055	0.24	0.76	60.5	0.889	0.866	0.786	0.372	0.883	11.7%	4,082	5,985	1.478	1,107	2975	0.27	0.73	66.0	0.921	0.900	0.798	0.507	0.916	8.4%	9.9%
65	1980	A	6,722	8,554	1.279	1,962	1,962	4,760	0.29	0.71	60.1	0.868	0.814	0.737	0.293	0.852	14.8%	6,635	5,985	0.906	2,176	4460	0.33	0.67	66.6	0.877	0.873	0.722	0.542	0.875	12.5%	13.5%
66	1981	D	2,807	9,764	3.519	254	254	2,553	0.09	0.91	64.6	0.934	0.946	0.858	0.618	0.935	6.5%	1,822	5,497	3.071	211	1610	0.12	0.88	68.7	0.962	0.950	0.861	0.640	0.961	3.9%	5.1%
67	1982	W	27,023	8,974	0.332	10,416	10,416	16,608	0.39	0.61	52.8	0.512	0.137	0.137	0.000	0.368	63.2%	15,158	5,985	0.396	5,741	9416	0.38	0.62	65.1	0.728	0.710	0.469	0.454	0.721	27.9%	43.8%
68	1983	W	20,738	6,958	0.336	7,982	7,982	12,756	0.38	0.62	57.2	0.628	0.339	0.310	0.042	0.516	48.4%	19,077	5,985	0.314	7,381	11696	0.39	0.61	61.3	0.660	0.503	0.352	0.232	0.599	40.1%	43.8%
69	1984	W	3,680	9,646	2.644	584	584	3,097	0.16	0.84	60.7	0.918	0.898	0.835	0.384	0.914	8.6%	2,846	5,985	2.126	590	2256	0.21	0.79	66.0	0.943	0.918	0.834	0.507	0.938	6.2%	7.3%
70	1985	D	2,470	10,335	4.238	113	113	2,358	0.05	0.95	62.5	0.940	0.937	0.868	0.524	0.940	6.0%	1,805	4,993	2.815	251	1554	0.14	0.86	65.1	0.964	0.916	0.859	0.404	0.957	4.3%	5.1%
71	1986	W	9,798	7,714	0.790	3,331	3,331	6,467	0.34	0.66	61.3	0.816	0.755	0.640	0.320	0.796	20.4%	8,067	5,985	0.745	2,774	5292	0.34	0.66	65.8	0.852	0.838	0.679	0.495	0.847	15.3%	17.6%
72	1987	D	2,033	5,092	2.544	337	337	1,697	0.17	0.83	62.3	0.960	0.889	0.852	0.245	0.948	5.2%	1,447	4,993	3.526	126	1322	0.09	0.91	68.6	0.971	0.948	0.867	0.609	0.969	3.1%	4.1%
73	1988	C	1,798	2,067	1.170	532	532	1,266	0.30	0.70	62.1	0.972	0.851	0.839	0.079	0.937	6.3%	1,334	4,977	3.822	91	1243	0.07	0.93	63.7	0.973	0.912	0.870	0.321	0.969	3.1%	4.6%
74	1989	D	2,067	11,075	5.441	(60)	0	2,067	0.00	1.00	64.1	0.948	0.957	0.876	0.655	0.948	5.2%	1,496	5,985	4.086	79	1417	0.05	0.95	66.7	0.968	0.942	0.871	0.548	0.967	3.3%	4.2%
75	1990	C	1,765	6,621	3.821	123	123	1,641	0.07	0.93	60.6	0.961	0.897	0.868	0.224	0.957	4.3%	1,285	5,009	3.997	74	1211	0.06	0.94	63.9	0.974	0.914	0.871	0.334	0.971	2.9%	3.6%
76	1991	C	2,454	10,991	4.538	66	66	2,387	0.03	0.97	60.6	0.939	0.929	0.872	0.446	0.939	6.1%	1,659	5,204	3.198	179	1480	0.11	0.89	63.9	0.966	0.911	0.864	0.344	0.960	4.0%	5.0%
77	1992	C	2,269	9,898	4.425	77	77	2,192	0.03	0.97	60.6	0.945	0.921	0.871	0.391	0.944	5.6%	1,480	4,131	2.852	199	1281	0.13	0.87	63.9	0.972	0.902	0.862	0.290	0.963	3.7%	4.6%

78 Formulas: San Joaquin River Fall Run Salmon Smolt Survival Model WITHOUT BARRIER

Row	April formulas		May formulas	
79	C7 ='Study 467 Flow Data'!AB7		T7 ='Study 467 Flow Data'!AC7	**Average: 11.02%**
80	D7 ='Study 467 Flow Data'!G7	(HIDDEN)	U7 ='Study 467 Flow Data'!H7	(HIDDEN)
81	E7 ='Study 467 Flow Data'!Q7	(HIDDEN)	V7 ='Study 467 Flow Data'!R7	(HIDDEN)
82	F7 =D7+E7		W7 =U7+V7	
83	G7 =F7/(C7-0.03*$H$2)		X7 =W7/(T7-0.03*$H$3)	
84	H7 =IF(G7<3,(0.4184*C7-0.0186*$H$2-0.0971*F7),(0.3137*C7-0.0156*$H$2-0.0625*F7))		Y7 =IF((0.3137*T7-0.0156*$H$3-0.0625*W7)<0,0,(0.3137*T7-0.0156*$H$3-0.0625*W7))	
85	I7 =IF(H7<0,0,H7)			
86	I7 =C7-H7		Z7 =T7-Y7	
87	J7 =H7/C7		AA7 =Y7/T7	
88	K7 =I7/C7		AB7 =Z7/T7	
89	M7 =(1.01045-0.00003*I7)		AD7 =(1.01045-0.00003*Z7)	
90	N7 =(O7+P7)-(O7*P7)		AE7 =(AF7+AG7)-(AF7*AG7)	
91	O7 =(0.87634-0.000071*H7)		AF7 =(0.87634-0.000071*Y7)	
92	P7 =IF((-3.65867+0.058492*L7+0.000051*F7)<0,0,(-3.65867+0.058492*L7+0.000051*F7))		AG7 =IF((-3.65867+0.058492*AC7+0.000051*W7)<0,0,(-3.65867+0.058492*AC7+0.000051*W7))	
93	Q7 =((K7*M7)+(J7*N7))		AH7 =((AB7*AD7)+(AA7*AE7))	
94	R7 =(1-Q7)		AI7 =(1-AH7)	
95	Note: Calculated San Joaquin River flows at Stockton = 0.3137*(Vernalis flow) - 0.0156*(Consumptive Depletion) - 0.0625*(CVP/SWP Exports)		AK7 =0.45*R7+0.55*AI7	

Study 468 San Joaquin River Fall Run Salmon Smolt Survival Model WITHOUT BARRIER AT HEAD OF OLD RIVER

Consumptive Depletion for April 1053.00 cfs
Consumptive Depletion for May 1053.00 cfs

San Joaquin River temperatures based on limited historical data from USBR

APRIL

Year	Water Year Type	Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	m2	m34 (Calculated Mortality)	m3	m4	m234	Calculated Survivability s234
1922	A	6,201	8,369	1.357	1,406	4,795	0.23	0.77	60.2	0.867	0.841	0.777	0.289	0.861	**13.9%**
1923	B	5,344	7,932	1.493	1,164	4,180	0.22	0.78	59.7	0.885	0.843	0.794	0.238	0.876	**12.4%**
1924	C	1,983	2,790	1.430	431	1,552	0.22	0.78	60.6	0.964	0.850	0.846	0.028	0.939	**6.1%**
1925	D	3,983	6,958	1.761	798	3,185	0.20	0.80	63.4	0.915	0.893	0.820	0.405	0.910	**9.0%**
1926	D	3,664	6,655	1.832	717	2,947	0.20	0.80	63.4	0.922	0.893	0.825	0.389	0.916	**8.4%**
1927	W	5,344	8,100	1.525	1,154	4,190	0.22	0.78	57.1	0.885	0.814	0.794	0.094	0.869	**13.1%**
1928	A	4,470	7,630	1.719	909	3,561	0.20	0.80	60.2	0.904	0.859	0.812	0.252	0.895	**10.5%**
1929	C	2,017	2,353	1.185	469	1,548	0.23	0.77	60.6	0.964	0.844	0.843	0.006	0.936	**6.4%**
1930	D	2,420	3,899	1.632	499	1,921	0.21	0.79	63.4	0.953	0.880	0.841	0.249	0.938	**6.2%**
1931	C	1,983	2,958	1.516	421	1,562	0.21	0.79	60.6	0.964	0.852	0.846	0.037	0.940	**6.0%**
1932	D	4,504	5,378	1.202	1,060	3,444	0.24	0.76	63.4	0.907	0.866	0.801	0.324	0.897	**10.3%**
1933	C	2,807	4,134	1.490	606	2,201	0.22	0.78	60.6	0.944	0.849	0.833	0.097	0.924	**7.6%**
1934	C	1,983	3,563	1.826	383	1,600	0.19	0.81	60.6	0.962	0.859	0.849	0.068	0.943	**5.7%**
1935	B	7,226	9,092	1.264	1,682	5,544	0.23	0.77	59.7	0.844	0.829	0.757	0.297	0.841	**15.9%**
1936	B	6,403	8,369	1.314	1,469	4,934	0.23	0.77	59.7	0.862	0.831	0.772	0.260	0.855	**14.5%**
1937	B	7,932	8,050	1.019	1,969	5,963	0.25	0.75	59.7	0.832	0.801	0.737	0.244	0.824	**17.6%**
1938	W	18,049	8,420	0.467	5,119	12,930	0.28	0.72	57.1	0.623	0.567	0.513	0.111	0.607	**39.3%**
1939	D	2,891	4,134	1.446	632	2,259	0.22	0.78	63.4	0.943	0.875	0.831	0.261	0.928	**7.2%**
1940	A	5,663	8,268	1.468	1,243	4,420	0.22	0.78	60.2	0.878	0.848	0.788	0.284	0.871	**12.9%**
1941	W	10,083	9,310	0.926	2,565	7,519	0.25	0.75	57.1	0.785	0.742	0.694	0.156	0.774	**22.6%**
1942	W	6,907	8,907	1.295	1,594	5,313	0.23	0.77	57.1	0.851	0.795	0.763	0.135	0.838	**16.2%**
1943	W	7,915	9,462	1.200	1,875	6,040	0.24	0.76	57.1	0.829	0.785	0.743	0.164	0.819	**18.1%**
1944	D	3,428	4,235	1.247	794	2,634	0.23	0.77	63.4	0.931	0.868	0.820	0.266	0.917	**8.3%**
1945	B	5,781	6,252	1.087	1,406	4,375	0.24	0.76	59.7	0.879	0.810	0.776	0.152	0.862	**13.8%**
1946	B	5,344	5,949	1.120	1,288	4,056	0.24	0.76	59.7	0.889	0.814	0.785	0.137	0.871	**12.9%**
1947	D	3,664	4,907	1.351	826	2,837	0.23	0.77	63.4	0.925	0.872	0.818	0.300	0.913	**8.7%**
1948	B	3,983	6,823	1.727	807	3,176	0.20	0.80	59.7	0.915	0.852	0.819	0.181	0.902	**9.8%**
1949	D	3,983	5,075	1.284	916	3,067	0.23	0.77	63.4	0.918	0.870	0.811	0.309	0.907	**9.3%**
1950	B	3,983	6,252	1.582	842	3,141	0.21	0.79	59.7	0.916	0.844	0.817	0.152	0.901	**9.9%**
1951	A	5,344	6,386	1.202	1,261	4,083	0.24	0.76	60.2	0.888	0.827	0.787	0.188	0.874	**12.6%**
1952	W	10,840	8,773	0.812	2,836	8,004	0.26	0.74	57.1	0.770	0.717	0.675	0.129	0.756	**24.4%**
1953	W	3,983	5,647	1.429	880	3,103	0.22	0.78	57.1	0.917	0.814	0.814	0.000	0.894	**10.6%**
1954	A	3,983	7,361	1.863	773	3,210	0.19	0.81	60.2	0.914	0.864	0.821	0.238	0.904	**9.6%**
1955	D	2,807	3,664	1.320	635	2,172	0.23	0.77	63.4	0.945	0.871	0.831	0.237	0.929	**7.1%**
1956	W	6,201	7,966	1.291	1,431	4,770	0.23	0.77	57.1	0.867	0.794	0.775	0.087	0.851	**14.9%**
1957	A	3,983	6,453	1.633	830	3,153	0.21	0.79	60.2	0.916	0.852	0.817	0.192	0.903	**9.7%**
1958	W	14,907	9,663	0.650	4,056	10,851	0.27	0.73	57.1	0.685	0.660	0.588	0.174	0.678	**32.2%**
1959	B	2,807	3,798	1.369	627	2,180	0.22	0.78	59.7	0.945	0.836	0.832	0.027	0.921	**7.9%**
1960	D	2,420	4,033	1.689	491	1,929	0.20	0.80	63.4	0.953	0.882	0.842	0.255	0.938	**6.2%**
1961	D	1,983	3,546	1.817	384	1,599	0.19	0.81	63.4	0.962	0.884	0.849	0.231	0.947	**5.3%**
1962	B	4,201	5,579	1.338	953	3,249	0.23	0.77	59.7	0.913	0.831	0.809	0.118	0.894	**10.6%**
1963	W	5,344	8,100	1.525	1,154	4,190	0.22	0.78	57.1	0.885	0.814	0.794	0.094	0.869	**13.1%**
1964	D	2,807	3,496	1.260	646	2,161	0.23	0.77	63.4	0.946	0.869	0.831	0.228	0.928	**7.2%**
1965	W	6,201	8,537	1.384	1,395	4,806	0.23	0.77	57.1	0.866	0.803	0.777	0.117	0.852	**14.8%**
1966	B	3,983	4,974	1.259	922	3,061	0.23	0.77	59.7	0.919	0.827	0.811	0.087	0.897	**10.3%**
1967	W	12,772	9,546	0.749	3,394	9,379	0.27	0.73	57.1	0.729	0.697	0.635	0.168	0.720	**28.0%**
1968	B	3,664	5,243	1.444	805	2,858	0.22	0.78	59.7	0.925	0.837	0.819	0.101	0.906	**9.4%**
1969	W	20,923	7,512	0.360	6,078	14,845	0.29	0.71	57.1	0.565	0.481	0.445	0.064	0.541	**45.9%**
1970	W	5,344	6,588	1.240	1,248	4,096	0.23	0.77	57.1	0.888	0.791	0.788	0.017	0.865	**13.5%**
1971	W	3,983	6,588	1.667	821	3,162	0.21	0.79	57.1	0.916	0.821	0.818	0.017	0.896	**10.4%**
1972	B	3,664	4,706	1.296	839	2,825	0.23	0.77	58.9	0.926	0.822	0.817	0.026	0.902	**9.8%**
1973	A	5,680	7,428	1.315	1,301	4,379	0.23	0.77	59.2	0.879	0.823	0.784	0.183	0.866	**13.4%**
1974	W	7,663	9,327	1.222	1,805	5,859	0.24	0.76	56.9	0.835	0.785	0.748	0.145	0.823	**17.7%**
1975	W	6,621	8,773	1.331	1,512	5,109	0.23	0.77	53.7	0.857	0.769	0.769	0.000	0.837	**16.3%**
1976	C	1,983	3,008	1.542	418	1,565	0.21	0.79	57.8	0.963	0.847	0.847	0.000	0.939	**6.1%**
1977	C	1,983	3,008	1.542	418	1,565	0.21	0.79	62.0	0.963	0.865	0.847	0.121	0.943	**5.7%**
1978	A	14,923	7,512	0.504	4,196	10,728	0.28	0.72	61.4	0.689	0.712	0.578	0.316	0.695	**30.5%**
1979	B	5,344	6,857	1.291	1,231	4,113	0.23	0.77	60.5	0.887	0.837	0.789	0.230	0.876	**12.4%**
1980	A	6,722	6,958	1.040	1,657	5,065	0.25	0.75	60.1	0.859	0.810	0.759	0.212	0.846	**15.4%**
1981	D	3,664	5,445	1.499	793	2,871	0.22	0.78	64.6	0.924	0.892	0.820	0.398	0.917	**8.3%**
1982	W	27,023	9,159	0.339	7,888	19,135	0.29	0.71	52.8	0.436	0.316	0.316	0.000	0.401	**59.9%**
1983	W	20,738	6,958	0.336	6,054	14,684	0.29	0.71	57.2	0.570	0.470	0.446	0.042	0.541	**45.9%**
1984	W	5,344	6,857	1.291	1,231	4,113	0.23	0.77	60.7	0.887	0.840	0.789	0.241	0.876	**12.4%**
1985	D	2,807	4,235	1.526	599	2,207	0.21	0.79	62.5	0.944	0.869	0.834	0.213	0.928	**7.2%**
1986	W	9,814	7,512	0.768	2,593	7,222	0.26	0.74	61.3	0.794	0.788	0.692	0.310	0.792	**20.8%**
1987	D	2,033	3,496	1.746	403	1,630	0.20	0.80	62.3	0.962	0.873	0.848	0.164	0.944	**5.6%**
1988	C	1,983	2,857	1.464	427	1,556	0.22	0.78	62.1	0.964	0.864	0.846	0.119	0.942	**5.8%**
1989	D	2,420	5,647	2.364	390	2,030	0.16	0.84	64.1	0.950	0.906	0.849	0.379	0.943	**5.7%**
1990	C	1,983	3,529	1.808	385	1,598	0.19	0.81	60.6	0.963	0.859	0.849	0.066	0.942	**5.8%**
1991	C	2,437	4,252	1.768	482	1,955	0.20	0.80	60.6	0.952	0.858	0.842	0.103	0.933	**6.7%**
1992	C	2,252	3,731	1.680	457	1,795	0.20	0.80	60.6	0.957	0.856	0.844	0.076	0.936	**6.4%**

MAY

Year	Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	m2	m34 (Calculated Mortality)	m3	m4	m234	Calculated Survivability s234	Weighted total survival
1922	5,936	8,685	1.471	1,303	4633	0.22	0.78	66.6	0.871	0.931	0.784	0.680	0.884	**11.6%**	**12.6%**
1923	5,156	6,245	1.219	1,211	3945	0.23	0.77	66.0	0.892	0.899	0.790	0.520	0.894	**10.6%**	**11.4%**
1924	1,870	781	0.425	521	1349	0.28	0.72	63.9	0.970	0.858	0.839	0.119	0.939	**6.1%**	**6.1%**
1925	3,822	5,042	1.330	867	2955	0.23	0.77	67.3	0.922	0.914	0.815	0.535	0.920	**8.0%**	**8.4%**
1926	3,545	4,879	1.389	791	2755	0.22	0.78	67.3	0.928	0.915	0.820	0.527	0.925	**7.5%**	**7.9%**
1927	5,156	8,327	1.625	1,080	4075	0.21	0.79	64.2	0.888	0.904	0.800	0.521	0.892	**10.8%**	**11.8%**
1928	3,822	6,375	1.682	784	3038	0.21	0.79	66.6	0.919	0.921	0.821	0.562	0.920	**8.0%**	**9.2%**
1929	1,870	3,058	1.663	379	1491	0.20	0.80	63.9	0.966	0.885	0.849	0.235	0.949	**5.1%**	**5.7%**
1930	1,870	3,513	1.911	351	1520	0.19	0.81	67.3	0.965	0.919	0.851	0.457	0.956	**4.4%**	**5.2%**
1931	1,870	2,797	1.521	395	1475	0.21	0.79	63.9	0.966	0.882	0.848	0.222	0.948	**5.2%**	**5.5%**
1932	3,871	4,847	1.262	895	2976	0.23	0.77	67.3	0.921	0.911	0.813	0.525	0.919	**8.1%**	**9.1%**
1933	2,683	2,700	1.018	657	2027	0.24	0.76	63.9	0.950	0.867	0.830	0.217	0.929	**7.1%**	**7.3%**
1934	1,870	2,944	1.601	386	1484	0.21	0.79	63.9	0.966	0.884	0.849	0.229	0.949	**5.1%**	**5.4%**
1935	6,050	5,465	0.908	1,540	4510	0.25	0.75	66.0	0.875	0.879	0.767	0.480	0.876	**12.4%**	**14.0%**
1936	5,156	6,310	1.232	1,206	3949	0.23	0.77	66.0	0.892	0.900	0.791	0.524	0.894	**10.6%**	**12.3%**
1937	8,132	6,733	0.831	2,114	6018	0.26	0.74	66.0	0.830	0.876	0.726	0.545	0.842	**15.8%**	**16.6%**
1938	23,972	9,449	0.395	6,913	17059	0.29	0.71	64.2	0.499	0.741	0.386	0.578	0.569	**43.1%**	**41.4%**
1939	2,683	3,480	1.312	608	2076	0.23	0.77	67.3	0.948	0.909	0.833	0.455	0.939	**6.1%**	**6.6%**
1940	5,156	6,278	1.225	1,209	3947	0.23	0.77	66.6	0.892	0.907	0.791	0.557	0.896	**10.4%**	**11.5%**
1941	9,579	9,726	1.019	2,381	7198	0.25	0.75	64.2	0.794	0.881	0.707	0.593	0.816	**18.4%**	**20.3%**
1942	5,936	8,685	1.471	1,303	4633	0.22	0.78	64.2	0.871	0.900	0.784	0.539	0.878	**12.2%**	**14.0%**
1943	6,180	8,327	1.354	1,402	4778	0.23	0.77	64.2	0.867	0.893	0.777	0.521	0.873	**12.7%**	**15.1%**
1944	2,976	3,741	1.270	683	2293	0.23	0.77	67.3	0.942	0.909	0.828	0.469	0.934	**6.6%**	**7.4%**
1945	3,871	5,237	1.364	871	3000	0.22	0.78	66.0	0.920	0.901	0.815	0.469	0.916	**8.4%**	**10.8%**
1946	3,871	5,269	1.373	868	3002	0.22	0.78	66.0	0.920	0.902	0.815	0.471	0.916	**8.4%**	**10.4%**
1947	2,683	3,480	1.312	608	2076	0.23	0.77	67.3	0.948	0.909	0.833	0.455	0.939	**6.1%**	**7.2%**
1948	3,822	7,676	2.025	703	3119	0.18	0.82	66.0	0.917	0.929	0.826	0.593	0.919	**8.1%**	**8.8%**
1949	2,976	4,749	1.613	620	2356	0.21	0.79	67.3	0.940	0.920	0.832	0.520	0.936	**6.4%**	**7.7%**
1950	3,822	5,269	1.390	853	2969	0.22	0.78	66.0	0.921	0.902	0.816	0.471	0.917	**8.3%**	**9.0%**
1951	5,156	7,123	1.390	1,156	4000	0.22	0.78	66.6	0.890	0.918	0.794	0.600	0.897	**10.3%**	**11.4%**
1952	15,450	9,709	0.630	4,223	11227	0.27	0.73	64.2	0.674	0.827	0.576	0.592	0.716	**28.4%**	**26.6%**
1953	3,822	7,676	2.025	703	3119	0.18	0.82	64.2	0.917	0.911	0.826	0.488	0.916	**8.4%**	**9.4%**
1954	3,822	7,432	1.961	718	3104	0.19	0.81	66.6	0.917	0.933	0.825	0.616	0.920	**8.0%**	**8.7%**
1955	2,683	3,968	1.496	577	2106	0.22	0.78	67.3	0.947	0.914	0.835	0.480	0.940	**6.0%**	**6.5%**
1956	5,936	8,685	1.471	1,303	4633	0.22	0.78	64.2	0.871	0.900	0.784	0.539	0.878	**12.2%**	**13.4%**
1957	3,822	5,952	1.570	810	3011	0.21	0.79	66.6	0.920	0.917	0.819	0.540	0.919	**8.1%**	**8.8%**
1958	13,173	10,685	0.813	3,448	9725	0.26	0.74	64.2	0.719	0.868	0.632	0.641	0.758	**24.2%**	**27.8%**
1959	2,683	3,676	1.386	596	2088	0.22	0.78	66.0	0.948	0.899	0.834	0.389	0.937	**6.3%**	**7.0%**
1960	1,870	3,350	1.822	361	1509	0.19	0.81	67.3	0.965	0.918	0.851	0.449	0.956	**4.4%**	**5.2%**
1961	1,870	2,992	1.627	383	1487	0.20	0.80	67.3	0.966	0.914	0.849	0.430	0.955	**4.5%**	**4.8%**
1962	3,822	5,334	1.407	849	2973	0.22	0.78	66.0	0.921	0.903	0.816	0.474	0.917	**8.3%**	**9.3%**
1963	5,156	8,327	1.625	1,080	4075	0.21	0.79	64.2	0.888	0.904	0.800	0.521	0.892	**10.8%**	**11.8%**
1964	2,683	3,741	1.411	592	2092	0.22	0.78	67.3	0.948	0.912	0.834	0.469	0.940	**6.0%**	**6.5%**
1965	5,936	7,725	1.308	1,363	4573	0.23	0.77	64.2	0.873	0.888	0.780	0.490	0.877	**12.3%**	**13.4%**
1966	2,976	4,781	1.624	618	2358	0.21	0.79	66.0	0.940	0.907	0.832	0.446	0.933	**6.7%**	**8.3%**
1967	15,483	10,051	0.650	4,212	11270	0.27	0.73	64.2	0.672	0.835	0.577	0.609	0.717	**28.3%**	**28.2%**
1968	2,683	3,643	1.374	598	2086	0.22	0.78	66.0	0.948	0.898	0.834	0.388	0.937	**6.3%**	**7.7%**
1969	26,038	9,010	0.346	7,588	18449	0.29	0.71	66.4	0.457	0.791	0.338	0.685	0.554	**44.6%**	**45.2%**
1970	5,156	5,920	1.155	1,231	3925	0.24	0.76	61.2	0.893	0.836	0.789	0.223	0.879	**12.1%**	**12.7%**
1971	3,822	7,676	2.025	703	3119	0.18	0.82	64.2	0.917	0.911	0.826	0.488	0.916	**8.4%**	**9.3%**
1972	2,683	3,871	1.460	583	2100	0.22	0.78	66.0	0.947	0.901	0.835	0.399	0.937	**6.3%**	**7.9%**
1973	5,156	6,505	1.270	1,194	3961	0.23	0.77	66.3	0.892	0.906	0.792	0.551	0.895	**10.5%**	**11.8%**
1974	5,936	8,685	1.471	1,303	4633	0.22	0.78	66.1	0.871	0.924	0.784	0.651	0.883	**11.7%**	**14.4%**
1975	5,936	8,685	1.471	1,303	4633	0.22	0.78	61.5	0.871	0.866	0.784	0.382	0.870	**13.0%**	**14.5%**
1976	1,870	3,123	1.698	375	1495	0.20	0.80	65.8	0.966	0.902	0.850	0.349	0.953	**4.7%**	**5.3%**
1977	1,870	732	0.398	525	1346	0.28	0.72	62.3	0.970	0.843	0.839	0.023	0.934	**6.6%**	**6.2%**
1978	10,831	8,197	0.759	2,869	7962	0.26	0.74	66.9	0.772	0.893	0.673	0.672	0.804	**19.6%**	**24.5%**
1979	5,156	5,985	1.168	1,227	3929	0.24	0.76	66.0	0.893	0.896	0.789	0.507	0.893	**10.7%**	**11.5%**
1980	6,619	7,465	1.133	1,593	5026	0.24	0.76	66.6	0.860	0.909	0.763	0.618	0.872	**12.8%**	**14.0%**
1981	2,683	3,513	1.325	606	2078	0.23	0.77	68.7	0.948	0.923	0.833	0.539	0.942	**5.8%**	**6.9%**
1982	15,158	10,701	0.707	4,070	11088	0.27	0.73	65.1	0.678	0.874	0.587	0.695	0.731	**26.9%**	**41.8%**
1983	19,077	7,546	0.396	5,496	13581	0.29	0.71	61.3	0.603	0.646	0.486	0.312	0.615	**38.5%**	**41.8%**
1984	5,156	6,148	1.200	1,217	3939	0.24	0.76	66.0	0.892	0.898	0.790	0.515	0.894	**10.6%**	**11.4%**
1985	2,683	4,228	1.595	561	2122	0.21	0.79	65.1	0.947	0.896	0.837	0.365	0.936	**6.4%**	**6.7%**
1986	8,067	8,132	1.012	2,006	6061	0.25	0.75	65.8	0.829	0.895	0.734	0.605	0.845	**15.5%**	**17.9%**
1987	1,870	2,830	1.539	393	1477	0.21	0.79	68.6	0.966	0.924	0.848	0.498	0.957	**4.3%**	**4.9%**
1988	1,870	3,058	1.663	379	1491	0.20	0.80	63.7	0.966	0.883	0.849	0.223	0.949	**5.1%**	**5.4%**
1989	1,870	3,936	2.141	324	1546	0.17	0.83	66.7	0.964	0.918	0.853	0.443	0.956	**4.4%**	**5.0%**
1990	1,870	2,700	1.468	402	1469	0.21	0.79	63.9	0.966	0.881	0.848	0.217	0.948	**5.2%**	**5.5%**
1991	1,870	2,862	1.557	391	1479	0.21	0.79	63.9	0.966	0.883	0.849	0.225	0.949	**5.1%**	**5.8%**
1992	1,870	2,927	1.592	387	1483	0.21	0.79	63.9	0.966	0.883	0.849	0.228	0.949	**5.1%**	**5.7%**

Average: 12.25%

Formulas: San Joaquin River Fall Run Smolt Survival Model WITHOUT BARRIER

C7 ='Study 468 Flow Data'!AB7
D7 ='Study 468 Flow Data'!G7 (HIDDEN)
E7 ='Study 468 Flow Data'!Q7 (HIDDEN)
F7 =D7+E7
G7 =F7/(C7-0.03*$H$2)
H7 =IF((0.3137*C7-0.0156*$H$2-0.0625*F7)<0,0,(0.3137*C7-0.0156*$H$2-0.0625*F7))
I7 =C7-H7
J7 =H7/C7
K7 =I7/C7
M7 =(1.01045-0.00003*I7)
N7 =(O7+P7)-(O7*P7)
O7 =(0.87634-0.000071*H7)
P7 =IF((-3.65867+0.058492*L7+0.000051*F7)<0,0,(-3.65867+0.058492*L7+0.000051*F7))
Q7 =((K7*M7)+(J7*N7))
R7 =(1-Q7)

T7 ='Study 468 Flow Data'!AC7
U7 ='Study 468 Flow Data'!H7 (HIDDEN)
V7 ='Study 468 Flow Data'!R7 (HIDDEN)
W7 =U7+V7
X7 =W7/(T7-0.03*$H$3)
Y7 =IF((0.3137*T7-0.0156*$H$3-0.0625*W7)<0,0,(0.3137*T7-0.0156*$H$3-0.0625*W7))
Z7 =T7-Y7
AA7 =Y7/T7
AB7 =Z7/T7
AD7 =(1.01045-0.00003*Z7)
AE7 =(AF7+AG7)-(AF7*AG7)
AF7 =(0.87634-0.000071*Y7)
AG7 =IF((-3.65867+0.058492*AC7+0.000051*W7)<0,0,(-3.65867+0.058492*AC7+0.000051*W7))
AH7 =((AB7*AD7)+(AA7*AE7))
AI7 =(1-AH7)
AK7 =0.45*R7+0.55*AI7

Note: Calculated San Joaquin River flows at Stockton = 0.3137*(Vernalis flow) - 0.0156*(Consumptive Depletion) - 0.0625*(CVP/SWP Exports)

Study 506 San Joaquin River Fall Run Salmon Smolt Survival Model WITHOUT BARRIER AT HEAD OF OLD RIVER

Consumptive Depletion for April 1053.00 cfs
Consumptive Depletion for May 1053.00 cfs

San Joaquin River temperatures based on limited historical data from USBR

Row	APRIL Year	Water Year Type	Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	Calculated Mortality m2	m34	m3	m4	m234	Calculated Survivability s234	MAY Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	Calculated Mortality m2	m34	m3	m4	m234	Calculated Survivability s234	Weighted total survival
7	1922	A	6,201	8,369	1.357	1,406	4,795	0.23	0.77	60.2	0.867	0.841	0.777	0.289	0.861	**13.9%**	5,936	8,685	1.471	1,303	4633	0.22	0.78	66.6	0.871	0.931	0.784	0.680	0.884	**11.6%**	**12.6%**
8	1923	B	5,344	7,932	1.493	1,164	4,180	0.22	0.78	59.7	0.885	0.843	0.794	0.238	0.876	**12.4%**	5,156	6,245	1.219	1,211	3945	0.23	0.77	66.0	0.892	0.899	0.790	0.520	0.894	**10.6%**	**11.4%**
9	1924	C	2,202	2,924	1.348	491	1,710	0.22	0.78	60.6	0.959	0.847	0.841	0.035	0.934	**6.6%**	1,903	1,171	0.626	507	1396	0.27	0.73	63.9	0.969	0.862	0.840	0.139	0.940	**6.0%**	**6.2%**
10	1925	D	3,983	6,958	1.761	798	3,185	0.20	0.80	63.4	0.915	0.893	0.820	0.405	0.910	**9.0%**	3,822	5,042	1.330	867	2955	0.23	0.77	67.3	0.922	0.914	0.815	0.535	0.920	**8.0%**	**8.4%**
11	1926	D	3,664	6,689	1.842	715	2,949	0.20	0.80	63.4	0.922	0.894	0.826	0.391	0.916	**8.4%**	3,545	4,879	1.389	791	2755	0.22	0.78	67.3	0.928	0.915	0.820	0.527	0.925	**7.5%**	**7.9%**
12	1927	W	5,344	8,100	1.525	1,154	4,190	0.22	0.78	57.1	0.885	0.814	0.794	0.094	0.869	**13.1%**	5,156	8,327	1.625	1,080	4075	0.21	0.79	64.2	0.888	0.904	0.800	0.521	0.892	**10.8%**	**11.8%**
13	1928	A	3,983	7,361	1.863	773	3,210	0.19	0.81	60.2	0.914	0.864	0.821	0.238	0.904	**9.6%**	3,822	6,375	1.682	784	3038	0.21	0.79	66.6	0.919	0.921	0.821	0.562	0.920	**8.0%**	**8.7%**
14	1929	C	2,017	2,706	1.363	447	1,570	0.22	0.78	60.6	0.963	0.848	0.845	0.024	0.938	**6.2%**	1,870	3,106	1.689	376	1494	0.20	0.80	63.9	0.966	0.885	0.850	0.237	0.949	**5.1%**	**5.6%**
15	1930	D	2,420	3,899	1.632	499	1,921	0.21	0.79	63.4	0.953	0.880	0.841	0.249	0.938	**6.2%**	1,870	3,513	1.911	351	1520	0.19	0.81	67.3	0.965	0.919	0.851	0.457	0.956	**4.4%**	**5.2%**
16	1931	C	2,118	3,059	1.466	457	1,661	0.22	0.78	60.6	0.961	0.850	0.844	0.042	0.937	**6.3%**	2,017	3,220	1.622	415	1602	0.21	0.79	63.9	0.962	0.884	0.847	0.243	0.946	**5.4%**	**5.8%**
17	1932	D	4,521	5,378	1.198	1,066	3,455	0.24	0.76	63.4	0.907	0.865	0.801	0.324	0.897	**10.3%**	3,871	4,847	1.262	895	2976	0.23	0.77	67.3	0.921	0.911	0.813	0.525	0.919	**8.1%**	**9.1%**
18	1933	C	2,807	4,134	1.490	606	2,201	0.22	0.78	60.6	0.944	0.849	0.833	0.097	0.924	**7.6%**	2,683	3,155	1.190	628	2055	0.23	0.77	63.9	0.949	0.872	0.832	0.240	0.931	**6.9%**	**7.2%**
19	1934	C	1,983	3,563	1.826	383	1,600	0.19	0.81	60.6	0.962	0.859	0.849	0.068	0.943	**5.7%**	1,870	2,944	1.601	386	1484	0.21	0.79	63.9	0.966	0.884	0.849	0.229	0.949	**5.1%**	**5.4%**
20	1935	B	6,739	8,840	1.318	1,545	5,194	0.23	0.77	59.7	0.855	0.833	0.767	0.284	0.850	**15.0%**	6,050	5,627	0.935	1,530	4520	0.25	0.75	66.0	0.875	0.881	0.768	0.489	0.876	**12.4%**	**13.6%**
21	1936	B	6,403	8,403	1.319	1,467	4,936	0.23	0.77	59.7	0.862	0.832	0.772	0.262	0.855	**14.5%**	5,156	6,310	1.232	1,206	3949	0.23	0.77	66.0	0.892	0.900	0.791	0.524	0.894	**10.6%**	**12.3%**
22	1937	B	7,932	8,218	1.040	1,958	5,974	0.25	0.75	59.7	0.831	0.804	0.737	0.252	0.824	**17.6%**	8,132	6,961	0.859	2,099	6032	0.26	0.74	66.0	0.829	0.879	0.727	0.557	0.842	**15.8%**	**16.6%**
23	1938	W	18,049	8,420	0.467	5,119	12,930	0.28	0.72	57.1	0.623	0.567	0.513	0.111	0.607	**39.3%**	24,265	9,449	0.390	7,005	17260	0.29	0.71	64.2	0.493	0.738	0.379	0.578	0.564	**43.6%**	**41.7%**
24	1939	D	2,891	4,134	1.446	632	2,259	0.22	0.78	63.4	0.943	0.875	0.831	0.261	0.928	**7.2%**	3,058	3,708	1.225	711	2347	0.23	0.77	67.3	0.940	0.907	0.826	0.467	0.932	**6.8%**	**7.0%**
25	1940	A	6,252	8,571	1.378	1,409	4,843	0.23	0.77	60.2	0.865	0.843	0.776	0.300	0.860	**14.0%**	5,156	6,196	1.209	1,214	3942	0.24	0.76	66.6	0.892	0.906	0.790	0.553	0.895	**10.5%**	**12.0%**
26	1941	W	10,083	9,310	0.926	2,565	7,519	0.25	0.75	57.1	0.785	0.742	0.694	0.156	0.774	**22.6%**	9,579	9,726	1.019	2,381	7198	0.25	0.75	64.2	0.794	0.881	0.707	0.593	0.816	**18.4%**	**20.3%**
27	1942	W	6,907	8,907	1.295	1,594	5,313	0.23	0.77	57.1	0.851	0.795	0.763	0.135	0.838	**16.2%**	5,936	8,685	1.471	1,303	4633	0.22	0.78	64.2	0.871	0.900	0.784	0.539	0.878	**12.2%**	**14.0%**
28	1943	W	7,915	9,462	1.200	1,875	6,040	0.24	0.76	57.1	0.829	0.785	0.743	0.164	0.819	**18.1%**	6,180	8,327	1.354	1,402	4778	0.23	0.77	64.2	0.867	0.893	0.777	0.521	0.873	**12.7%**	**15.1%**
29	1944	D	3,428	4,235	1.247	794	2,634	0.23	0.77	63.4	0.931	0.868	0.820	0.266	0.917	**8.3%**	2,976	3,741	1.270	683	2293	0.23	0.77	67.3	0.942	0.909	0.828	0.469	0.934	**6.6%**	**7.4%**
30	1945	B	6,336	6,689	1.061	1,553	4,783	0.25	0.75	59.7	0.867	0.807	0.766	0.174	0.852	**14.8%**	4,033	5,237	1.309	922	3112	0.23	0.77	66.0	0.917	0.900	0.811	0.469	0.913	**8.7%**	**11.4%**
31	1946	B	5,344	5,949	1.120	1,288	4,056	0.24	0.76	59.7	0.889	0.814	0.785	0.137	0.871	**12.9%**	3,871	5,269	1.373	868	3002	0.22	0.78	66.0	0.920	0.902	0.815	0.471	0.916	**8.4%**	**10.4%**
32	1947	D	3,664	4,941	1.360	824	2,840	0.22	0.78	63.4	0.925	0.873	0.818	0.302	0.913	**8.7%**	2,683	3,545	1.337	604	2080	0.23	0.77	67.3	0.948	0.910	0.833	0.459	0.939	**6.1%**	**7.2%**
33	1948	B	3,983	6,857	1.735	804	3,178	0.20	0.80	59.7	0.915	0.852	0.819	0.183	0.902	**9.8%**	3,822	7,676	2.025	703	3119	0.18	0.82	66.0	0.917	0.929	0.826	0.593	0.919	**8.1%**	**8.8%**
34	1949	D	3,983	5,075	1.284	916	3,067	0.23	0.77	63.4	0.918	0.870	0.811	0.309	0.907	**9.3%**	2,976	4,749	1.613	620	2356	0.21	0.79	67.3	0.940	0.920	0.832	0.520	0.936	**6.4%**	**7.7%**
35	1950	B	3,983	6,285	1.591	840	3,143	0.21	0.79	59.7	0.916	0.845	0.817	0.154	0.901	**9.9%**	3,822	5,269	1.390	853	2969	0.22	0.78	66.0	0.921	0.902	0.816	0.471	0.917	**8.3%**	**9.0%**
36	1951	A	5,344	6,353	1.196	1,263	4,081	0.24	0.76	60.2	0.888	0.826	0.787	0.187	0.873	**12.7%**	5,156	7,123	1.390	1,156	4000	0.22	0.78	66.6	0.890	0.918	0.794	0.600	0.897	**10.3%**	**11.4%**
37	1952	W	10,840	8,773	0.812	2,836	8,004	0.26	0.74	57.1	0.770	0.717	0.675	0.129	0.756	**24.4%**	15,450	9,563	0.620	4,233	11218	0.27	0.73	64.2	0.674	0.824	0.576	0.584	0.715	**28.5%**	**26.6%**
38	1953	W	3,983	5,647	1.429	880	3,103	0.22	0.78	57.1	0.917	0.814	0.814	0.000	0.894	**10.6%**	3,822	7,676	2.025	703	3119	0.18	0.82	64.2	0.917	0.911	0.826	0.488	0.916	**8.4%**	**9.4%**
39	1954	A	3,983	7,361	1.863	773	3,210	0.19	0.81	60.2	0.914	0.864	0.821	0.238	0.904	**9.6%**	3,822	7,432	1.961	718	3104	0.19	0.81	66.6	0.917	0.933	0.825	0.616	0.920	**8.0%**	**8.7%**
40	1955	D	2,807	3,664	1.320	635	2,172	0.23	0.77	63.4	0.945	0.871	0.831	0.237	0.929	**7.1%**	2,683	3,968	1.496	577	2106	0.22	0.78	67.3	0.947	0.914	0.835	0.480	0.940	**6.0%**	**6.5%**
41	1956	W	6,235	7,999	1.290	1,439	4,795	0.23	0.77	57.1	0.867	0.794	0.774	0.089	0.850	**15.0%**	5,936	8,685	1.471	1,303	4633	0.22	0.78	64.2	0.871	0.900	0.784	0.539	0.878	**12.2%**	**13.5%**
42	1957	A	3,983	6,420	1.625	832	3,151	0.21	0.79	60.2	0.916	0.852	0.817	0.190	0.903	**9.7%**	3,822	5,985	1.579	808	3013	0.21	0.79	66.6	0.920	0.917	0.819	0.542	0.919	**8.1%**	**8.8%**
43	1958	W	14,772	9,663	0.656	4,014	10,758	0.27	0.73	57.1	0.688	0.662	0.591	0.174	0.681	**31.9%**	13,173	10,685	0.813	3,448	9725	0.26	0.74	64.2	0.719	0.868	0.632	0.641	0.758	**24.2%**	**27.7%**
44	1959	B	2,807	3,798	1.369	627	2,180	0.22	0.78	59.7	0.945	0.836	0.832	0.027	0.921	**7.9%**	2,683	3,676	1.386	596	2088	0.22	0.78	66.0	0.948	0.899	0.834	0.389	0.937	**6.3%**	**7.0%**
45	1960	D	2,420	4,033	1.689	491	1,929	0.20	0.80	63.4	0.953	0.882	0.842	0.255	0.938	**6.2%**	1,870	3,350	1.822	361	1509	0.19	0.81	67.3	0.965	0.918	0.851	0.449	0.956	**4.4%**	**5.2%**
46	1961	D	1,983	3,546	1.817	384	1,599	0.19	0.81	63.4	0.962	0.884	0.849	0.231	0.947	**5.3%**	1,870	2,992	1.627	383	1487	0.20	0.80	67.3	0.966	0.914	0.849	0.430	0.955	**4.5%**	**4.8%**
47	1962	B	4,201	5,579	1.338	953	3,249	0.23	0.77	59.7	0.913	0.831	0.809	0.118	0.894	**10.6%**	3,822	5,334	1.407	849	2973	0.22	0.78	66.0	0.921	0.903	0.816	0.474	0.917	**8.3%**	**9.3%**
48	1963	W	5,344	8,100	1.525	1,154	4,190	0.22	0.78	57.1	0.885	0.814	0.794	0.094	0.869	**13.1%**	5,156	8,327	1.625	1,080	4075	0.21	0.79	64.2	0.888	0.904	0.800	0.521	0.892	**10.8%**	**11.8%**
49	1964	D	2,807	3,496	1.260	646	2,161	0.23	0.77	63.4	0.946	0.869	0.831	0.228	0.928	**7.2%**	2,683	3,871	1.460	583	2100	0.22	0.78	67.3	0.947	0.913	0.835	0.475	0.940	**6.0%**	**6.5%**
50	1965	W	6,201	8,537	1.384	1,395	4,806	0.23	0.77	57.1	0.866	0.803	0.777	0.117	0.852	**14.8%**	5,936	7,937	1.344	1,350	4586	0.23	0.77	64.2	0.873	0.891	0.781	0.501	0.877	**12.3%**	**13.4%**
51	1966	B	3,983	4,974	1.259	922	3,061	0.23	0.77	59.7	0.919	0.827	0.811	0.087	0.897	**10.3%**	2,976	4,781	1.624	618	2358	0.21	0.79	66.0	0.940	0.907	0.832	0.446	0.933	**6.7%**	**8.3%**
52	1967	W	13,881	9,546	0.689	3,742	10,140	0.27	0.73	57.1	0.706	0.676	0.611	0.168	0.698	**30.2%**	16,003	10,051	0.629	4,376	11628	0.27	0.73	64.2	0.662	0.830	0.566	0.609	0.708	**29.2%**	**29.7%**
53	1968	B	3,664	5,243	1.444	805	2,858	0.22	0.78	59.7	0.925	0.837	0.819	0.101	0.906	**9.4%**	2,683	3,643	1.374	598	2086	0.22	0.78	66.0	0.948	0.898	0.834	0.388	0.937	**6.3%**	**7.7%**
54	1969	W	20,923	7,512	0.360	6,078	14,845	0.29	0.71	57.1	0.565	0.481	0.445	0.064	0.541	**45.9%**	26,217	9,010	0.344	7,645	18572	0.29	0.71	66.4	0.453	0.790	0.334	0.685	0.551	**44.9%**	**45.3%**
55	1970	W	5,344	6,588	1.240	1,248	4,096	0.23	0.77	57.1	0.888	0.791	0.788	0.017	0.865	**13.5%**	5,156	5,920	1.155	1,231	3925	0.24	0.76	61.2	0.893	0.836	0.789	0.223	0.879	**12.1%**	**12.7%**
56	1971	W	3,983	6,621	1.676	819	3,164	0.21	0.79	57.1	0.916	0.822	0.818	0.019	0.896	**10.4%**	3,822	7,676	2.025	703	3119	0.18	0.82	64.2	0.917	0.911	0.826	0.488	0.916	**8.4%**	**9.3%**
57	1972	B	3,664	4,739	1.305	837	2,827	0.23	0.77	58.9	0.926	0.822	0.817	0.028	0.902	**9.8%**	2,683	3,903	1.472	581	2102	0.22	0.78	66.0	0.947	0.901	0.835	0.401	0.937	**6.3%**	**7.9%**
58	1973	A	5,680	7,495	1.327	1,297	4,383	0.23	0.77	59.2	0.879	0.824	0.784	0.186	0.867	**13.3%**	5,156	6,570	1.282	1,190	3965	0.23	0.77	66.3	0.891	0.907	0.792	0.554	0.895	**10.5%**	**11.8%**
59	1974	W	7,663	9,327	1.222	1,805	5,859	0.24	0.76	56.9	0.835	0.785	0.748	0.145	0.823	**17.7%**	5,936	8,685	1.471	1,303	4633	0.22	0.78	66.1	0.871	0.924	0.784	0.651	0.883	**11.7%**	**14.4%**
60	1975	W	6,621	8,773	1.331	1,512	5,109	0.23	0.77	53.7	0.857	0.769	0.769	0.000	0.837	**16.3%**	5,936	8,685	1.471	1,303	4633	0.22	0.78	61.5	0.871	0.866	0.784	0.382	0.870	**13.0%**	**14.5%**
61	1976	C	1,983	3,008	1.542	418	1,565	0.21	0.79	57.8	0.963	0.847	0.847	0.000	0.939	**6.1%**	2,065	3,253	1.599	428	1637	0.21	0.79	65.8	0.961	0.901	0.846	0.356	0.949	**5.1%**	**5.6%**
62	1977	C	1,983	2,991	1.533	419	1,564	0.21	0.79	62.0	0.964	0.865	0.847	0.120	0.943	**5.7%**	1,870	732	0.398	525	1346	0.28	0.72	62.3	0.970	0.843	0.839	0.023	0.934	**6.6%**	**6.2%**
63	1978	A	14,923	7,512	0.504	4,196	10,728	0.28	0.72	61.4	0.689	0.712	0.578	0.316	0.695	**30.5%**	10,831	8,197	0.759	2,869	7962	0.26	0.74	66.9	0.772	0.893	0.673	0.672	0.804	**19.6%**	**24.5%**
64	1979	B	5,344	6,857	1.291	1,231	4,113	0.23	0.77	60.5	0.887	0.837	0.789	0.230	0.876	**12.4%**	5,156	5,985	1.168	1,227	3929	0.24	0.76	66.0	0.893	0.896	0.789	0.507	0.893	**10.7%**	**11.5%**
65	1980	A	6,722	6,941	1.037	1,659	5,064	0.25	0.75	60.1	0.859	0.809	0.759	0.211	0.846	**15.4%**	6,619	7,481	1.136	1,592	5027	0.24	0.76	66.6	0.860	0.910	0.763	0.618	0.872	**12.8%**	**14.0%**
66	1981	D	3,664	5,445	1.499	793	2,871	0.22	0.78	64.6	0.924	0.892	0.820	0.398	0.917	**8.3%**	2,683	3,513	1.325	606	2078	0.23	0.77	68.7	0.948	0.923	0.833	0.539	0.942	**5.8%**	**6.9%**
67	1982	W	27,040	9,159	0.339	7,894	19,147	0.29	0.71	52.8	0.436	0.316	0.316	0.000	0.401	**59.9%**	15,158	10,701	0.707	4,070	11088	0.27	0.73	65.1	0.678	0.874	0.587	0.695	0.731	**26.9%**	**41.8%**
68	1983	W	20,738	6,958	0.336	6,054	14,684	0.29	0.71	57.2	0.570	0.470	0.446	0.042	0.541	**45.9%**	19,077	7,546	0.396	5,496	13581	0.29	0.71	61.3	0.603	0.646	0.486	0.312	0.615	**38.5%**	**41.8%**
69	1984	W	5,344	6,857	1.291	1,231	4,113	0.23	0.77	60.7	0.887	0.840	0.789	0.241	0.876	**12.4%**	5,156	6,148	1.200	1,217	3939	0.24	0.76	66.0	0.892	0.898	0.790	0.515	0.894	**10.6%**	**11.4%**
70	1985	D	3,664	4,874	1.342	828	2,835	0.23	0.77	62.5	0.925	0.862	0.818	0.246	0.911	**8.9%**	3,139	4,521	1.455	686	2453	0.22	0.78	65.1	0.937	0.893	0.828	0.380	0.927	**7.3%**	**8.0%**
71	1986	W	9,814	7,546	0.771	2,591	7,224	0.26	0.74	61.3	0.794	0.788	0.692	0.312	0.792	**20.8%**	8,067	8,132	1.012	2,006	6061	0.25	0.75	65.8	0.829	0.895	0.734	0.605	0.845	**15.5%**	**17.9%**
72	1987	D	2,033	3,496	1.746	403	1,630	0.20	0.80	62.3	0.962	0.873	0.848	0.164	0.944	**5.6%**	2,131	2,992	1.426	465	1666	0.22	0.78	68.6	0.960	0.923	0.843	0.506	0.952	**4.8%**	**5.2%**
73	1988	C	1,983	2,924	1.498	423	1,560	0.21	0.79	62.1	0.964	0.865	0.846	0.123	0.943	**5.7%**	1,870	3,025	1.645	381	1489	0.20	0.80	63.7	0.966	0.883	0.849	0.222	0.949	**5.1%**	**5.4%**
74	1989	D	2,420	5,647	2.364	390	2,030	0.16	0.84	64.1	0.950	0.906	0.849	0.379	0.943	**5.7%**	1,870	3,936	2.141	324	1546	0.17	0.83	66.7	0.964	0.918	0.853	0.443	0.956	**4.4%**	**5.0%**
75	1990	C	1,983	3,546	1.817	384	1,599	0.19	0.81	60.6	0.962	0.859	0.849	0.067	0.942	**5.8%**	1,870	2,700	1.468	402	1469	0.21	0.79	63.9	0.966	0.881	0.848	0.217	0.948	**5.2%**	**5.4%**
76	1991	C	2,437	4,252	1.768	482	1,955	0.20	0.80	60.6	0.952	0.858	0.842	0.103	0.933	**6.7%**	1,870	2,862	1.557	391	1479	0.21	0.79	63.9	0.966	0.883	0.849	0.225	0.949	**5.1%**	**5.8%**
77	1992	C	2,252	3,731	1.680	457	1,795	0.20	0.80	60.6	0.957	0.856	0.844	0.076	0.936	**6.4%**	3,269	3,757	1.160	774	2495	0.24	0.76	63.9	0.936	0.870	0.821	0.271	0.920	**8.0%**	**7.3%**

Formulas: San Joaquin River Fall Run Smolt Survival Model WITHOUT BARRIER

Average: 12.34%

```
C7 ='Study 506 Flow Data'!AB7
D7 ='Study 506 Flow Data'!G7      (HIDDEN)
E7 ='Study 506 Flow Data'!Q7      (HIDDEN)
F7 =D7+E7
G7 =F7/(C7-0.03*$H$2)
H7 =IF((0.3137*C7-0.0156*$H$2-0.0625*F7)<0,0,(0.3137*C7-0.0156*$H$2-0.0625*F7))
I7 =C7-H7
J7 =H7/C7
K7 =I7/C7
M7 =(1.01045-0.00003*I7)
N7 =(O7+P7)-(O7*P7)
O7 =(0.87634-0.000071*H7)
P7 =IF((-3.65867+0.058492*L7+0.000051*F7)<0,0,(-3.65867+0.058492*L7+0.000051*F7))
Q7 =((K7*M7)+(J7*N7))
R7 =(1-Q7)

T7 ='Study 506 Flow Data'!AC7
U7 ='Study 506 Flow Data'!H7      (HIDDEN)
V7 ='Study 506 Flow Data'!R7      (HIDDEN)
W7 =U7+V7
X7 =W7/(T7-0.03*$H$3)
Y7 =IF((0.3137*T7-0.0156*$H$3-0.0625*W7)<0,0,(0.3137*T7-0.0156*$H$3-0.0625*W7))
Z7 =T7-Y7
AA7 =Y7/T7
AB7 =Z7/T7
AD7 =(1.01045-0.00003*Z7)
AE7 =(AF7+AG7)-(AF7*AG7)
AF7 =(0.87634-0.000071*Y7)
AG7 =IF((-3.65867+0.058492*AC7+0.000051*W7)<0,0,(-3.65867+0.058492*AC7+0.000051*W7))
AH7 =((AB7*AD7)+(AA7*AE7))
AI7 =(1-AH7)
AK7 =0.45*R7+0.55*AI7
```

Note: Calculated San Joaquin River flows at Stockton = 0.3137*(Vernalis flow) - 0.0156*(Consumptive Depletion) - 0.0625*(CVP/SWP Exports)

Study 507 San Joaquin River Fall Run Salmon Smolt Survival Model WITHOUT BARRIER AT HEAD OF OLD RIVER

Consumptive Depletion for April 1053.00 cfs

Consumptive Depletion for May 1053.00 cfs

San Joaquin River temperatures based on limited historical data from USBR

Row	APRIL Year	Water Year Type	Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	m2	Calculated Mortality m34	m3	m4	m234	Calculated Survivability s234	MAY Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	Calculated Mortality m2	m34	m3	m4	m234	Calculated Survivability s234	Weighted total survival
7	1922	A	6,201	8,369	1.357	1,406	4,795	0.23	0.77	60.2	0.867	0.841	0.777	0.289	0.861	13.9%	5,936	8,685	1.471	1,303	4633	0.22	0.78	66.6	0.871	0.931	0.784	0.680	0.884	11.6%	12.6%
8	1923	B	5,344	7,932	1.493	1,164	4,180	0.22	0.78	59.7	0.885	0.843	0.794	0.238	0.876	12.4%	5,156	6,245	1.219	1,211	3945	0.23	0.77	66.0	0.892	0.899	0.790	0.520	0.894	10.6%	11.4%
9	1924	C	2,050	2,823	1.399	450	1,600	0.22	0.78	60.6	0.962	0.849	0.844	0.030	0.938	6.2%	1,903	1,301	0.695	499	1404	0.26	0.74	63.9	0.968	0.864	0.841	0.145	0.941	5.9%	6.1%
10	1925	D	3,983	6,958	1.761	798	3,185	0.20	0.80	63.4	0.915	0.893	0.820	0.405	0.910	9.0%	3,822	5,042	1.330	867	2955	0.23	0.77	67.3	0.922	0.914	0.815	0.535	0.920	8.0%	8.4%
11	1926	D	3,664	6,621	1.823	719	2,945	0.20	0.80	63.4	0.922	0.893	0.825	0.387	0.916	8.4%	3,545	4,879	1.389	791	2755	0.22	0.78	67.3	0.928	0.915	0.820	0.527	0.925	7.5%	7.9%
12	1927	W	5,344	8,100	1.525	1,154	4,190	0.22	0.78	57.1	0.885	0.814	0.794	0.094	0.869	13.1%	5,156	8,327	1.625	1,080	4075	0.21	0.79	64.2	0.888	0.904	0.800	0.521	0.892	10.8%	11.8%
13	1928	A	3,983	7,361	1.863	773	3,210	0.19	0.81	60.2	0.914	0.864	0.821	0.238	0.904	9.6%	3,822	6,375	1.682	784	3038	0.21	0.79	66.6	0.919	0.921	0.821	0.562	0.920	8.0%	8.7%
14	1929	C	2,017	2,706	1.363	447	1,570	0.22	0.78	60.6	0.963	0.848	0.845	0.024	0.938	6.2%	1,870	3,106	1.689	376	1494	0.20	0.80	63.9	0.966	0.885	0.850	0.237	0.949	5.1%	5.6%
15	1930	D	2,420	3,899	1.632	499	1,921	0.21	0.79	63.4	0.953	0.880	0.841	0.249	0.938	6.2%	1,870	3,513	1.911	351	1520	0.19	0.81	67.3	0.965	0.919	0.851	0.457	0.956	4.4%	5.2%
16	1931	C	2,118	3,059	1.466	457	1,661	0.22	0.78	60.6	0.961	0.850	0.844	0.042	0.937	6.3%	1,870	3,123	1.698	375	1495	0.20	0.80	63.9	0.966	0.886	0.850	0.238	0.950	5.0%	5.6%
17	1932	D	4,521	5,378	1.198	1,066	3,455	0.24	0.76	63.4	0.907	0.865	0.801	0.324	0.897	10.3%	3,871	4,847	1.262	895	2976	0.23	0.77	67.3	0.921	0.911	0.813	0.525	0.919	8.1%	9.1%
18	1933	C	2,807	4,134	1.490	606	2,201	0.22	0.78	60.6	0.944	0.849	0.833	0.097	0.924	7.6%	2,683	3,155	1.190	628	2055	0.23	0.77	63.9	0.949	0.872	0.832	0.240	0.931	6.9%	7.2%
19	1934	C	1,983	3,563	1.826	383	1,600	0.19	0.81	60.6	0.962	0.859	0.849	0.068	0.943	5.7%	1,870	2,944	1.601	386	1484	0.21	0.79	63.9	0.966	0.884	0.849	0.229	0.949	5.1%	5.4%
20	1935	B	7,277	9,125	1.260	1,696	5,581	0.23	0.77	59.7	0.843	0.829	0.756	0.299	0.840	16.0%	6,050	5,611	0.932	1,531	4519	0.25	0.75	66.0	0.875	0.881	0.768	0.488	0.876	12.4%	14.0%
21	1936	B	6,403	8,403	1.319	1,467	4,936	0.23	0.77	59.7	0.862	0.832	0.772	0.262	0.855	14.5%	5,156	6,310	1.232	1,206	3949	0.23	0.77	66.0	0.892	0.900	0.791	0.524	0.894	10.6%	12.3%
22	1937	B	7,932	8,235	1.042	1,957	5,975	0.25	0.75	59.7	0.831	0.804	0.737	0.253	0.824	17.6%	8,132	6,749	0.833	2,113	6019	0.26	0.74	66.0	0.830	0.876	0.726	0.546	0.842	15.8%	16.6%
23	1938	W	18,049	8,420	0.467	5,119	12,930	0.28	0.72	57.1	0.623	0.567	0.513	0.111	0.607	39.3%	23,972	9,449	0.395	6,913	17059	0.29	0.71	64.2	0.499	0.741	0.386	0.578	0.569	43.1%	41.4%
24	1939	D	2,891	4,134	1.446	632	2,259	0.22	0.78	63.4	0.943	0.875	0.831	0.261	0.928	7.2%	2,683	3,480	1.312	608	2076	0.23	0.77	67.3	0.948	0.909	0.833	0.455	0.939	6.1%	6.6%
25	1940	A	5,832	8,336	1.437	1,292	4,540	0.22	0.78	60.2	0.874	0.847	0.785	0.288	0.868	13.2%	5,156	6,196	1.209	1,214	3942	0.24	0.76	66.6	0.892	0.906	0.790	0.553	0.895	10.5%	11.7%
26	1941	W	10,083	9,310	0.926	2,565	7,519	0.25	0.75	57.1	0.785	0.742	0.694	0.156	0.774	22.6%	9,579	9,726	1.019	2,381	7198	0.25	0.75	64.2	0.794	0.881	0.707	0.593	0.816	18.4%	20.3%
27	1942	W	6,907	8,907	1.295	1,594	5,313	0.23	0.77	57.1	0.851	0.795	0.763	0.135	0.838	16.2%	5,936	8,685	1.471	1,303	4633	0.22	0.78	64.2	0.871	0.900	0.784	0.539	0.878	12.2%	14.0%
28	1943	W	7,915	9,462	1.200	1,875	6,040	0.24	0.76	57.1	0.829	0.785	0.743	0.164	0.819	18.1%	6,180	8,327	1.354	1,402	4778	0.23	0.77	64.2	0.867	0.893	0.777	0.521	0.873	12.7%	15.1%
29	1944	D	3,428	4,235	1.247	794	2,634	0.23	0.77	63.4	0.931	0.868	0.820	0.266	0.917	8.3%	2,976	3,741	1.270	683	2293	0.23	0.77	67.3	0.942	0.909	0.828	0.469	0.934	6.6%	7.4%
30	1945	B	6,168	6,588	1.074	1,507	4,661	0.24	0.76	59.7	0.871	0.808	0.769	0.169	0.855	14.5%	3,936	5,172	1.325	895	3041	0.23	0.77	66.0	0.919	0.900	0.813	0.466	0.915	8.5%	11.2%
31	1946	B	5,344	5,949	1.120	1,288	4,056	0.24	0.76	59.7	0.889	0.814	0.785	0.137	0.871	12.9%	3,871	5,269	1.373	868	3002	0.22	0.78	66.0	0.920	0.902	0.815	0.471	0.916	8.4%	10.4%
32	1947	D	3,664	4,941	1.360	824	2,840	0.22	0.78	63.4	0.925	0.873	0.818	0.302	0.913	8.7%	2,683	3,545	1.337	604	2080	0.23	0.77	67.3	0.948	0.910	0.833	0.459	0.939	6.1%	7.2%
33	1948	B	3,983	6,857	1.735	804	3,178	0.20	0.80	59.7	0.915	0.852	0.819	0.183	0.902	9.8%	3,822	7,676	2.025	703	3119	0.18	0.82	66.0	0.917	0.929	0.826	0.593	0.919	8.1%	8.8%
34	1949	D	3,983	5,075	1.284	916	3,067	0.23	0.77	63.4	0.918	0.870	0.811	0.309	0.907	9.3%	2,976	4,749	1.613	620	2356	0.21	0.79	67.3	0.940	0.920	0.832	0.520	0.936	6.4%	7.7%
35	1950	B	3,983	6,285	1.591	840	3,143	0.21	0.79	59.7	0.916	0.845	0.817	0.154	0.901	9.9%	3,822	5,269	1.390	853	2969	0.22	0.78	66.0	0.921	0.902	0.816	0.471	0.917	8.3%	9.0%
36	1951	A	5,344	6,386	1.202	1,261	4,083	0.24	0.76	60.2	0.888	0.827	0.787	0.188	0.874	12.6%	5,156	7,123	1.390	1,156	4000	0.22	0.78	66.6	0.890	0.918	0.794	0.600	0.897	10.3%	11.4%
37	1952	W	10,840	8,773	0.812	2,836	8,004	0.26	0.74	57.1	0.770	0.717	0.675	0.129	0.756	24.4%	15,450	9,563	0.620	4,233	11218	0.27	0.73	64.2	0.674	0.824	0.576	0.584	0.715	28.5%	26.6%
38	1953	W	3,983	5,647	1.429	880	3,103	0.22	0.78	57.1	0.917	0.814	0.814	0.000	0.894	10.6%	3,822	7,676	2.025	703	3119	0.18	0.82	64.2	0.917	0.911	0.826	0.488	0.916	8.4%	9.4%
39	1954	A	3,983	7,361	1.863	773	3,210	0.19	0.81	60.2	0.914	0.864	0.821	0.238	0.904	9.6%	3,822	7,432	1.961	718	3104	0.19	0.81	66.6	0.917	0.933	0.825	0.616	0.920	8.0%	8.7%
40	1955	D	2,807	3,664	1.320	635	2,172	0.23	0.77	63.4	0.945	0.871	0.831	0.237	0.929	7.1%	2,683	3,773	1.423	590	2094	0.22	0.78	67.3	0.948	0.912	0.834	0.470	0.940	6.0%	6.5%
41	1956	W	6,201	7,966	1.291	1,431	4,770	0.23	0.77	57.1	0.867	0.794	0.775	0.087	0.851	14.9%	6,034	8,750	1.458	1,329	4704	0.22	0.78	64.2	0.869	0.900	0.782	0.543	0.876	12.4%	13.5%
42	1957	A	3,983	6,420	1.625	832	3,151	0.21	0.79	60.2	0.916	0.852	0.817	0.190	0.903	9.7%	3,822	5,952	1.570	810	3011	0.21	0.79	66.6	0.920	0.917	0.819	0.540	0.919	8.1%	8.8%
43	1958	W	14,923	9,663	0.649	4,061	10,862	0.27	0.73	57.1	0.685	0.660	0.588	0.174	0.678	32.2%	13,173	10,685	0.813	3,448	9725	0.26	0.74	64.2	0.719	0.868	0.632	0.641	0.758	24.2%	27.8%
44	1959	B	2,807	3,798	1.369	627	2,180	0.22	0.78	59.7	0.945	0.836	0.832	0.027	0.921	7.9%	2,683	3,676	1.386	596	2088	0.22	0.78	66.0	0.948	0.899	0.834	0.389	0.937	6.3%	7.0%
45	1960	D	2,420	4,033	1.689	491	1,929	0.20	0.80	63.4	0.953	0.882	0.842	0.255	0.938	6.2%	1,870	3,350	1.822	361	1509	0.19	0.81	67.3	0.965	0.918	0.851	0.449	0.956	4.4%	5.2%
46	1961	D	1,983	3,546	1.817	384	1,599	0.19	0.81	63.4	0.962	0.884	0.849	0.231	0.947	5.3%	1,870	2,992	1.627	383	1487	0.20	0.80	67.3	0.966	0.914	0.849	0.430	0.955	4.5%	4.8%
47	1962	B	4,201	5,579	1.338	953	3,249	0.23	0.77	59.7	0.913	0.831	0.809	0.118	0.894	10.6%	3,822	5,334	1.407	849	2973	0.22	0.78	66.0	0.921	0.903	0.816	0.474	0.917	8.3%	9.3%
48	1963	W	5,344	8,100	1.525	1,154	4,190	0.22	0.78	57.1	0.885	0.814	0.794	0.094	0.869	13.1%	5,156	8,327	1.625	1,080	4075	0.21	0.79	64.2	0.888	0.904	0.800	0.521	0.892	10.8%	11.8%
49	1964	D	2,807	3,496	1.260	646	2,161	0.23	0.77	63.4	0.946	0.869	0.831	0.228	0.928	7.2%	2,683	3,871	1.460	583	2100	0.22	0.78	67.3	0.947	0.913	0.835	0.475	0.940	6.0%	6.5%
50	1965	W	6,201	8,537	1.384	1,395	4,806	0.23	0.77	57.1	0.866	0.803	0.777	0.117	0.852	14.8%	5,936	7,937	1.344	1,350	4586	0.23	0.77	64.2	0.873	0.891	0.781	0.501	0.877	12.3%	13.4%
51	1966	B	3,983	4,974	1.259	922	3,061	0.23	0.77	59.7	0.919	0.827	0.811	0.087	0.897	10.3%	2,976	4,781	1.624	618	2358	0.21	0.79	66.0	0.940	0.907	0.832	0.446	0.933	6.7%	8.3%
52	1967	W	13,680	9,546	0.699	3,678	10,001	0.27	0.73	57.1	0.710	0.680	0.615	0.168	0.702	29.8%	16,003	10,051	0.629	4,376	11628	0.27	0.73	64.2	0.662	0.830	0.566	0.609	0.708	29.2%	29.5%
53	1968	B	3,664	5,243	1.444	805	2,858	0.22	0.78	59.7	0.925	0.837	0.819	0.101	0.906	9.4%	2,683	3,643	1.374	598	2086	0.22	0.78	66.0	0.948	0.898	0.834	0.388	0.937	6.3%	7.7%
54	1969	W	20,923	7,512	0.360	6,078	14,845	0.29	0.71	57.1	0.565	0.481	0.445	0.064	0.541	45.9%	26,217	9,010	0.344	7,645	18572	0.29	0.71	66.4	0.453	0.790	0.334	0.685	0.551	44.9%	45.3%
55	1970	W	5,344	6,588	1.240	1,248	4,096	0.23	0.77	57.1	0.888	0.791	0.788	0.017	0.865	13.5%	5,156	5,920	1.155	1,231	3925	0.24	0.76	61.2	0.893	0.836	0.789	0.223	0.879	12.1%	12.7%
56	1971	W	3,983	6,621	1.676	819	3,164	0.21	0.79	57.1	0.916	0.822	0.818	0.019	0.896	10.4%	3,822	7,676	2.025	703	3119	0.18	0.82	64.2	0.917	0.911	0.826	0.488	0.916	8.4%	9.3%
57	1972	B	3,664	4,739	1.305	837	2,827	0.23	0.77	58.9	0.926	0.822	0.817	0.028	0.902	9.8%	2,683	3,903	1.472	581	2102	0.22	0.78	66.0	0.947	0.901	0.835	0.401	0.937	6.3%	7.9%
58	1973	A	5,680	7,495	1.327	1,297	4,383	0.23	0.77	59.2	0.879	0.824	0.784	0.186	0.867	13.3%	5,156	6,570	1.282	1,190	3965	0.23	0.77	66.3	0.891	0.907	0.792	0.554	0.895	10.5%	11.8%
59	1974	W	7,663	9,327	1.222	1,805	5,859	0.24	0.76	56.9	0.835	0.785	0.748	0.145	0.823	17.7%	5,936	8,685	1.471	1,303	4633	0.22	0.78	66.1	0.871	0.924	0.784	0.651	0.883	11.7%	14.4%
60	1975	W	6,621	8,773	1.331	1,512	5,109	0.23	0.77	53.7	0.857	0.769	0.769	0.000	0.837	16.3%	5,936	8,685	1.471	1,303	4633	0.22	0.78	61.5	0.871	0.866	0.784	0.382	0.870	13.0%	14.5%
61	1976	C	1,983	3,008	1.542	418	1,565	0.21	0.79	57.8	0.963	0.847	0.847	0.000	0.939	6.1%	2,065	3,253	1.599	428	1637	0.21	0.79	65.8	0.961	0.901	0.846	0.356	0.949	5.1%	5.6%
62	1977	C	1,983	2,991	1.533	419	1,564	0.21	0.79	62.0	0.964	0.865	0.847	0.120	0.943	5.7%	1,870	732	0.398	525	1346	0.28	0.72	62.3	0.970	0.843	0.839	0.023	0.934	6.6%	6.2%
63	1978	A	14,923	7,512	0.504	4,196	10,728	0.28	0.72	61.4	0.689	0.712	0.578	0.316	0.695	30.5%	10,831	8,197	0.759	2,869	7962	0.26	0.74	66.9	0.772	0.893	0.673	0.672	0.804	19.6%	24.5%
64	1979	B	5,344	6,857	1.291	1,231	4,113	0.23	0.77	60.5	0.887	0.837	0.789	0.230	0.876	12.4%	5,156	5,985	1.168	1,227	3929	0.24	0.76	66.0	0.893	0.896	0.789	0.507	0.893	10.7%	11.5%
65	1980	A	6,722	6,941	1.037	1,659	5,064	0.25	0.75	60.1	0.859	0.809	0.759	0.211	0.846	15.4%	6,619	7,481	1.136	1,592	5027	0.24	0.76	66.6	0.860	0.910	0.763	0.618	0.872	12.8%	14.0%
66	1981	D	3,664	5,445	1.499	793	2,871	0.22	0.78	64.6	0.924	0.892	0.820	0.398	0.917	8.3%	2,683	3,513	1.325	606	2078	0.23	0.77	68.7	0.948	0.923	0.833	0.539	0.942	5.8%	6.9%
67	1982	W	27,040	9,159	0.339	7,894	19,147	0.29	0.71	52.8	0.436	0.316	0.316	0.000	0.401	59.9%	15,158	10,701	0.707	4,070	11088	0.27	0.73	65.1	0.678	0.874	0.587	0.695	0.731	26.9%	41.8%
68	1983	W	20,738	6,958	0.336	6,054	14,684	0.29	0.71	57.2	0.570	0.470	0.446	0.042	0.541	45.9%	19,077	7,546	0.396	5,496	13581	0.29	0.71	61.3	0.603	0.646	0.486	0.312	0.615	38.5%	41.8%
69	1984	W	5,344	6,857	1.291	1,231	4,113	0.23	0.77	60.7	0.887	0.840	0.789	0.241	0.876	12.4%	5,156	6,148	1.200	1,217	3939	0.24	0.76	66.0	0.892	0.898	0.790	0.515	0.894	10.6%	11.4%
70	1985	D	3,664	4,874	1.342	828	2,835	0.23	0.77	62.5	0.925	0.862	0.818	0.246	0.911	8.9%	3,610	4,781	1.336	817	2793	0.23	0.77	65.1	0.927	0.890	0.818	0.393	0.918	8.2%	8.5%
71	1986	W	9,814	7,546	0.771	2,591	7,224	0.26	0.74	61.3	0.794	0.788	0.692	0.312	0.792	20.8%	8,067	8,132	1.012	2,006	6061	0.25	0.75	65.8	0.829	0.895	0.734	0.605	0.845	15.5%	17.9%
72	1987	D	2,033	3,496	1.746	403	1,630	0.20	0.80	62.3	0.962	0.873	0.848	0.164	0.944	5.6%	1,887	2,862	1.543	396	1490	0.21	0.79	68.6	0.966	0.924	0.848	0.500	0.957	4.3%	4.9%
73	1988	C	1,983	2,857	1.464	427	1,556	0.22	0.78	62.1	0.964	0.864	0.846	0.119	0.942	5.8%	1,870	3,058	1.663	379	1491	0.20	0.80	63.7	0.966	0.883	0.849	0.223	0.949	5.1%	5.4%
74	1989	D	2,420	5,647	2.364	390	2,030	0.16	0.84	64.1	0.950	0.906	0.849	0.379	0.943	5.7%	1,870	3,936	2.141	324	1546	0.17	0.83	66.7	0.964	0.918	0.853	0.443	0.956	4.4%	5.0%
75	1990	C	1,983	3,529	1.808	385	1,598	0.19	0.81	60.6	0.963	0.859	0.849	0.066	0.942	5.8%	1,870	2,700	1.468	402	1469	0.21	0.79	63.9	0.966	0.881	0.848	0.217	0.948	5.2%	5.5%
76	1991	C	2,437	4,252	1.768	482	1,955	0.20	0.80	60.6	0.952	0.858	0.842	0.103	0.933	6.7%	1,870	2,879	1.566	390	1480	0.21	0.79	63.9	0.966	0.883	0.849	0.226	0.949	5.1%	5.8%
77	1992	C	2,252	3,731	1.680	457	1,795	0.20	0.80	60.6	0.957	0.856	0.844	0.076	0.936	6.4%	2,862	3,529	1.247	661	2201	0.23	0.77	63.9	0.944	0.874	0.829	0.259	0.928	7.2%	6.8%

Formulas: San Joaquin River Fall Run Smolt Survival Model WITHOUT BARRIER

April	(hidden)	May	(hidden)
C7 ='Study 507 Flow Data'!AB7		T7 ='Study 507 Flow Data'!AC7	
D7 ='Study 507 Flow Data'!G7	(HIDDEN)	U7 ='Study 507 Flow Data'!H7	(HIDDEN)
E7 ='Study 507 Flow Data'!Q7	(HIDDEN)	V7 ='Study 507 Flow Data'!R7	(HIDDEN)
F7 =D7+E7		W7 =U7+V7	
G7 =F7/(C7-0.03*$H$2)		X7 =W7/(T7-0.03*$H$3)	
H7 =IF((0.3137*C7-0.0156*$H$2-0.0625*F7)<0,0,(0.3137*C7-0.0156*$H$2-0.0625*F7))		Y7 =IF((0.3137*T7-0.0156*$H$3-0.0625*W7)<0,0,(0.3137*T7-0.0156*$H$3-0.0625*W7))	
I7 =C7-H7		Z7 =T7-Y7	
J7 =H7/C7		AA7 =Y7/T7	
K7 =I7/C7		AB7 =Z7/T7	
M7 =(1.01045-0.00003*I7)		AD7 =(1.01045-0.00003*Z7)	
N7 =(O7+P7)-(O7*P7)		AE7 =(AF7+AG7)-(AF7*AG7)	
O7 =(0.87634-0.000071*H7)		AF7 =(0.87634-0.000071*Y7)	
P7 =IF((-3.65867+0.058492*L7+0.000051*F7)<0,0,(-3.65867+0.058492*L7+0.000051*F7))		AG7 =IF((-3.65867+0.058492*AC7+0.000051*W7)<0,0,(-3.65867+0.058492*AC7+0.000051*W7))	
Q7 =((K7*M7)+(J7*N7))		AH7 =((AB7*AD7)+(AA7*AE7))	
R7 =(1-Q7)		AI7 =(1-AH7)	
		AK7 =0.45*R7+0.55*AI7	

Average: 12.32%

Note: Calculated San Joaquin River flows at Stockton = 0.3137*(Vernalis flow) - 0.0156*(Consumptive Depletion) - 0.0625*(CVP/SWP Exports)

	A	B	C	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK
1	Study 513 San Joaquin River Fall Run Salmon Smolt Survival Model WITHOUT BARRIER AT HEAD OF OLD RIVER																																
2			Consumptive Depletion for April			1053.00 cfs			San Joaquin River temperatures based on limited historical data from USBR																								
3			Consumptive Depletion for May			1053.00 cfs																											
4	APRIL	Water														Calculated		MAY													Calculated		
5		Year	Vernalis	CVP + SWP		Calculated				Temp @		Calculated Mortality				Survivability		Vernalis	CVP + SWP		Calculated				Temp @	Calculated Mortality					Survivability		Weighted
6	Year	Type	Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	s234		Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	s234		total survival
7	1922	A	9,209	9,865	1.075	2,256	6,953	0.24	0.76	60.2	0.802	0.820	0.716	0.366	0.806	19.4%		8,896	10,165	1.147	2,139	6757	0.24	0.76	66.6	0.808	0.933	0.724	0.755	0.838	16.2%		17.6%
8	1923	B	7,361	9,277	1.266	1,713	5,648	0.23	0.77	59.7	0.841	0.830	0.755	0.306	0.838	16.2%		6,522	7,563	1.165	1,557	4965	0.24	0.76	66.0	0.862	0.903	0.766	0.587	0.872	12.8%		14.3%
9	1924	C	3,630	3,966	1.102	874	2,756	0.24	0.76	60.6	0.928	0.831	0.814	0.088	0.904	9.6%		3,269	4,310	1.331	740	2529	0.23	0.77	63.9	0.935	0.876	0.824	0.299	0.921	7.9%		8.6%
10	1925	D	6,319	8,420	1.339	1,440	4,879	0.23	0.77	63.4	0.864	0.882	0.774	0.479	0.868	13.2%		5,643	6,684	1.191	1,336	4307	0.24	0.76	67.3	0.881	0.917	0.781	0.619	0.890	11.0%		12.0%
11	1926	D	5,680	8,184	1.449	1,254	4,426	0.22	0.78	63.4	0.878	0.887	0.787	0.467	0.880	12.0%		4,895	5,839	1.200	1,154	3741	0.24	0.76	67.3	0.898	0.913	0.794	0.576	0.902	9.8%		10.8%
12	1927	W	7,999	9,613	1.206	1,892	6,107	0.24	0.76	57.1	0.827	0.786	0.742	0.171	0.818	18.2%		6,538	9,189	1.412	1,460	5078	0.22	0.78	64.2	0.858	0.901	0.773	0.565	0.868	13.2%		15.5%
13	1928	A	6,336	8,722	1.384	1,426	4,910	0.23	0.77	60.2	0.863	0.844	0.775	0.307	0.859	14.1%		5,481	7,481	1.373	1,235	4245	0.23	0.77	66.6	0.883	0.919	0.789	0.618	0.891	10.9%		12.3%
14	1929	C	4,000	3,496	0.881	1,020	2,980	0.25	0.75	60.6	0.921	0.817	0.804	0.064	0.894	10.6%		3,643	4,326	1.198	856	2787	0.23	0.77	63.9	0.927	0.871	0.816	0.300	0.914	8.6%		9.5%
15	1930	D	4,403	5,529	1.265	1,019	3,384	0.23	0.77	63.4	0.909	0.869	0.804	0.332	0.900	10.0%		3,968	5,221	1.326	902	3066	0.23	0.77	67.3	0.918	0.914	0.812	0.544	0.918	8.2%		9.0%
16	1931	C	3,546	4,101	1.167	840	2,706	0.24	0.76	60.6	0.929	0.834	0.817	0.095	0.907	9.3%		3,301	4,180	1.278	758	2543	0.23	0.77	63.9	0.934	0.874	0.823	0.292	0.920	8.0%		8.6%
17	1932	D	7,613	6,789	0.896	1,947	5,666	0.26	0.74	63.4	0.840	0.842	0.738	0.396	0.841	15.9%		5,920	6,701	1.138	1,422	4498	0.24	0.76	67.3	0.876	0.915	0.775	0.620	0.885	11.5%		13.5%
18	1933	C	4,739	5,512	1.171	1,126	3,613	0.24	0.76	60.6	0.902	0.830	0.796	0.167	0.885	11.5%		4,342	4,700	1.090	1,052	3290	0.24	0.76	63.9	0.912	0.865	0.802	0.319	0.900	10.0%		10.7%
19	1934	C	4,252	5,193	1.230	993	3,259	0.23	0.77	60.6	0.913	0.835	0.806	0.151	0.895	10.5%		3,822	4,440	1.171	905	2917	0.24	0.76	63.9	0.923	0.869	0.812	0.305	0.910	9.0%		9.7%
20	1935	B	8,957	10,117	1.133	2,161	6,796	0.24	0.76	59.7	0.807	0.820	0.723	0.349	0.810	19.0%		7,839	8,587	1.100	1,906	5933	0.24	0.76	66.0	0.832	0.907	0.741	0.640	0.851	14.9%		16.8%
21	1936	B	9,730	9,865	1.017	2,419	7,311	0.25	0.75	59.7	0.791	0.804	0.705	0.336	0.794	20.6%		6,977	8,018	1.154	1,671	5306	0.24	0.76	66.0	0.851	0.906	0.758	0.611	0.864	13.6%		16.7%
22	1937	B	12,167	9,394	0.774	3,213	8,954	0.26	0.74	59.7	0.742	0.758	0.648	0.312	0.746	25.4%		11,612	9,384	0.810	3,040	8572	0.26	0.74	66.0	0.753	0.891	0.661	0.680	0.789	21.1%		23.0%
23	1938	W	19,864	9,075	0.458	5,648	14,216	0.28	0.72	57.1	0.584	0.551	0.475	0.144	0.575	42.5%		25,192	10,083	0.401	7,256	17936	0.29	0.71	64.2	0.472	0.751	0.361	0.611	0.553	44.7%		43.7%
24	1939	D	5,428	5,865	1.087	1,320	4,108	0.24	0.76	63.4	0.887	0.858	0.783	0.349	0.880	12.0%		4,749	5,090	1.079	1,155	3594	0.24	0.76	67.3	0.903	0.905	0.794	0.537	0.903	9.7%		10.7%
25	1940	A	9,361	10,335	1.108	2,274	7,087	0.24	0.76	60.2	0.798	0.826	0.715	0.390	0.805	19.5%		7,123	5,952	0.839	1,846	5277	0.26	0.74	66.6	0.852	0.883	0.745	0.540	0.860	14.0%		16.5%
26	1941	W	13,982	9,411	0.675	3,782	10,201	0.27	0.73	57.1	0.704	0.671	0.608	0.161	0.695	30.5%		12,393	9,937	0.804	3,250	9143	0.26	0.74	64.2	0.736	0.859	0.646	0.603	0.768	23.2%		26.4%
27	1942	W	9,865	9,747	0.991	2,469	7,396	0.25	0.75	57.1	0.789	0.754	0.701	0.178	0.780	22.0%		8,343	10,083	1.213	1,971	6373	0.24	0.76	64.2	0.819	0.897	0.736	0.611	0.838	16.2%		18.8%
28	1943	W	11,092	9,764	0.883	2,853	8,239	0.26	0.74	57.1	0.763	0.732	0.674	0.179	0.755	24.5%		10,327	10,409	1.011	2,573	7755	0.25	0.75	64.2	0.778	0.886	0.694	0.627	0.805	19.5%		21.8%
29	1944	D	6,134	6,319	1.035	1,513	4,621	0.25	0.75	63.4	0.872	0.855	0.769	0.372	0.868	13.2%		5,481	5,839	1.071	1,338	4143	0.24	0.76	67.3	0.886	0.907	0.781	0.576	0.891	10.9%		11.9%
30	1945	B	9,361	8,722	0.935	2,375	6,986	0.25	0.75	59.7	0.801	0.789	0.708	0.278	0.798	20.2%		7,367	7,920	1.080	1,800	5568	0.24	0.76	66.0	0.843	0.901	0.749	0.606	0.857	14.3%		16.9%
31	1946	B	7,663	7,815	1.024	1,899	5,764	0.25	0.75	59.7	0.838	0.801	0.742	0.232	0.829	17.1%		6,749	7,205	1.072	1,651	5099	0.24	0.76	66.0	0.857	0.896	0.759	0.569	0.867	13.3%		15.0%
32	1947	D	4,958	6,117	1.242	1,156	3,801	0.23	0.77	63.4	0.896	0.869	0.794	0.362	0.890	11.0%		4,489	5,188	1.164	1,067	3421	0.24	0.76	67.3	0.908	0.909	0.801	0.542	0.908	9.2%		10.0%
33	1948	B	6,201	8,655	1.403	1,388	4,813	0.22	0.78	59.7	0.866	0.839	0.778	0.275	0.860	14.0%		5,839	8,864	1.526	1,261	4577	0.22	0.78	66.0	0.873	0.926	0.787	0.654	0.885	11.5%		12.6%
34	1949	D	5,899	5,378	0.917	1,498	4,401	0.25	0.75	63.4	0.878	0.845	0.770	0.324	0.870	13.0%		5,367	6,099	1.143	1,286	4081	0.24	0.76	67.3	0.888	0.912	0.785	0.589	0.894	10.6%		11.7%
35	1950	B	5,731	7,865	1.380	1,290	4,441	0.23	0.77	59.7	0.877	0.835	0.785	0.234	0.868	13.2%		5,123	6,847	1.345	1,163	3960	0.23	0.77	66.0	0.892	0.907	0.794	0.551	0.895	10.5%		11.7%
36	1951	A	7,411	7,966	1.079	1,811	5,601	0.24	0.76	60.2	0.842	0.816	0.748	0.269	0.836	16.4%		6,001	7,855	1.316	1,375	4626	0.23	0.77	66.6	0.872	0.920	0.779	0.638	0.883	11.7%		13.8%
37	1952	W	14,033	8,873	0.634	3,831	10,202	0.27	0.73	57.1	0.704	0.657	0.604	0.134	0.692	30.8%		16,263	10,083	0.621	4,455	11808	0.27	0.73	64.2	0.656	0.829	0.560	0.611	0.703	29.7%		30.2%
38	1953	W	5,596	7,042	1.265	1,299	4,297	0.23	0.77	57.1	0.882	0.793	0.784	0.040	0.861	13.9%		5,204	8,538	1.651	1,083	4122	0.21	0.79	64.2	0.887	0.906	0.799	0.532	0.891	10.9%		12.3%
39	1954	A	5,966	8,520	1.436	1,323	4,643	0.22	0.78	60.2	0.871	0.847	0.782	0.297	0.866	13.4%		5,448	8,506	1.570	1,161	4287	0.21	0.79	66.6	0.882	0.932	0.794	0.671	0.893	10.7%		11.9%
40	1955	D	4,874	5,512	1.138	1,168	3,706	0.24	0.76	63.4	0.899	0.862	0.793	0.331	0.890	11.0%		4,733	5,627	1.197	1,117	3616	0.24	0.76	67.3	0.902	0.912	0.797	0.565	0.904	9.6%		10.2%
41	1956	W	9,209	10,151	1.106	2,238	6,971	0.24	0.76	57.1	0.801	0.774	0.717	0.199	0.795	20.5%		11,417	11,466	1.007	2,848	8568	0.25	0.75	64.2	0.753	0.896	0.674	0.681	0.789	21.1%		20.8%
42	1957	A	5,395	7,378	1.376	1,215	4,180	0.23	0.77	60.2	0.885	0.840	0.790	0.239	0.875	12.5%		5,302	7,628	1.447	1,170	4132	0.22	0.78	66.6	0.886	0.923	0.793	0.626	0.894	10.6%		11.4%
43	1958	W	16,722	9,764	0.585	4,619	12,103	0.28	0.72	57.1	0.647	0.629	0.548	0.179	0.642	35.8%		14,897	10,897	0.733	3,976	10921	0.27	0.73	64.2	0.683	0.859	0.594	0.652	0.730	27.0%		31.0%
44	1959	B	4,941	5,714	1.164	1,176	3,764	0.24	0.76	59.7	0.898	0.819	0.793	0.125	0.879	12.1%		4,375	5,318	1.224	1,024	3351	0.23	0.77	66.0	0.910	0.897	0.804	0.473	0.907	9.3%		10.6%
45	1960	D	4,588	5,210	1.143	1,097	3,491	0.24	0.76	63.4	0.906	0.862	0.798	0.315	0.895	10.5%		4,163	5,806	1.405	927	3237	0.22	0.78	67.3	0.913	0.919	0.811	0.574	0.915	8.5%		9.4%
46	1961	D	4,084	4,874	1.203	960	3,124	0.24	0.76	63.4	0.917	0.865	0.808	0.298	0.905	9.5%		3,822	4,668	1.231	891	2931	0.23	0.77	67.3	0.923	0.910	0.813	0.516	0.919	8.1%		8.7%
47	1962	B	7,092	7,529	1.066	1,738	5,354	0.25	0.75	59.7	0.850	0.807	0.753	0.217	0.839	16.1%		5,465	6,473	1.191	1,293	4171	0.24	0.76	66.0	0.885	0.899	0.785	0.532	0.889	11.1%		13.4%
48	1963	W	8,117	9,680	1.197	1,925	6,192	0.24	0.76	57.1	0.825	0.785	0.740	0.175	0.815	18.5%		7,205	9,530	1.329	1,648	5557	0.23	0.77	64.2	0.844	0.900	0.759	0.583	0.857	14.3%		16.2%
49	1964	D	4,840	5,193	1.080	1,177	3,663	0.24	0.76	63.4	0.901	0.858	0.793	0.315	0.890	11.0%		4,538	5,546	1.231	1,060	3477	0.23	0.77	67.3	0.906	0.913	0.801	0.561	0.908	9.2%		10.0%
50	1965	W	9,529	9,999	1.053	2,348	7,181	0.25	0.75	57.1	0.795	0.765	0.710	0.191	0.788	21.2%		7,953	8,977	1.133	1,917	6036	0.24	0.76	64.2	0.829	0.884	0.740	0.554	0.843	15.7%		18.2%
51	1966	B	5,361	6,588	1.236	1,254	4,107	0.23	0.77	59.7	0.887	0.823	0.787	0.169	0.872	12.8%		4,977	6,099	1.233	1,164	3813	0.23	0.77	66.0	0.896	0.900	0.794	0.513	0.897	10.3%		11.4%
52	1967	W	15,461	9,646	0.625	4,231	11,230	0.27	0.73	57.1	0.674	0.649	0.576	0.173	0.667	33.3%		16,621	10,262	0.619	4,556	12065	0.27	0.73	64.2	0.649	0.830	0.553	0.620	0.698	30.2%		31.6%
53	1968	B	5,025	6,201	1.242	1,172	3,853	0.23	0.77	59.7	0.895	0.824	0.793	0.150	0.878	12.2%		4,538	5,351	1.187	1,073	3465	0.24	0.76	66.0	0.907	0.895	0.800	0.475	0.904	9.6%		10.8%
54	1969	W	21,125	7,630	0.362	6,133	14,991	0.29	0.71	57.1	0.561	0.480	0.441	0.070	0.537	46.3%		28,087	9,221	0.329	8,218	19869	0.29	0.71	66.4	0.414	0.785	0.293	0.695	0.523	47.7%		47.1%
55	1970	W	7,546	8,083	1.076	1,845	5,700	0.24	0.76	57.1	0.839	0.769	0.745	0.093	0.822	17.8%		6,245	7,172	1.154	1,494	4751	0.24	0.76	61.2	0.868	0.836	0.770	0.287	0.860	14.0%		15.7%
56	1971	W	5,596	7,798	1.401	1,252	4,344	0.22	0.78	57.1	0.880	0.804	0.787	0.079	0.863	13.7%		5,269	8,587	1.639	1,100	4169	0.21	0.79	64.2	0.885	0.906	0.798	0.534	0.890	11.0%		12.2%
57	1972	B	4,689	6,991	1.501	1,017	3,671	0.22	0.78	58.9	0.900	0.832	0.804	0.143	0.886	11.4%		4,310	5,351	1.251	1,001	3309	0.23	0.77	66.0	0.911	0.898	0.805	0.475	0.908	9.2%		10.2%
58	1973	A	9,630	10,218	1.065	2,366	7,264	0.25	0.75	59.2	0.793	0.803	0.708	0.325	0.795	20.5%		7,449	8,506	1.147	1,789	5660	0.24	0.76	66.3	0.841	0.913	0.749	0.653	0.858	14.2%		17.0%
59	1974	W	10,571	10,201	0.968	2,662	7,909	0.25	0.75	56.9	0.773	0.747	0.687	0.190	0.767	23.3%		8,490	10,148	1.200	2,012	6477	0.24	0.76	66.1	0.816	0.927	0.733	0.725	0.842	15.8%		19.2%
60	1975	W	9,865	10,487	1.066	2,423	7,442	0.25	0.75	53.7	0.787	0.709	0.704	0.017	0.768	23.2%		8,278	10,051	1.219	1,952	6326	0.24	0.76	61.5	0.821	0.856	0.738	0.451	0.829	17.1%		19.8%
61	1976	C	3,865	4,588	1.197	909	2,956	0.24	0.76	57.8	0.922	0.812	0.812	0.000	0.896	10.4%		3,513	4,326	1.243	815	2698	0.23	0.77	65.8	0.930	0.893	0.818	0.411	0.921	7.9%		9.0%
62	1977	C	3,277	3,916	1.207	767	2,510	0.23	0.77	62.0	0.935	0.852	0.822	0.168	0.916	8.4%		3,090	2,228	0.729	814	2276	0.26	0.74	62.3	0.942	0.837	0.819	0.099	0.914	8.6%		8.5%
63	1978	A	17,293	7,613	0.441	4,933	12,360	0.29	0.71	61.4	0.640	0.678	0.526	0.321	0.651	34.9%		14,556	8,392	0.578	4,025	10531	0.28	0.72	66.9	0.695	0.870	0.591	0.682	0.743	25.7%		29.9%
64	1979	B	8,554	9,310	1.092	2,085	6,469	0.24	0.76	60.5	0.816	0.825	0.728	0.355	0.818	18.2%		6,928	7,530	1.092	1,686	5242	0.24	0.76	66.0	0.853	0.899	0.757	0.586	0.864	13.6%		15.6%
65	1980	A	10,756	8,285	0.773	2,840	7,916	0.26	0.74	60.1	0.773	0.766	0.675	0.279	0.771	22.9%		11,449	9,823	0.860	2,961	8488	0.26	0.74	66.6	0.756	0.912	0.666	0.738	0.796	20.4%		21.5%
66	1981	D	5,210	6,756	1.305	1,196	4,014	0.23	0.77	64.6	0.890	0.888	0.791	0.464	0.890	11.0%		4,619	5,156	1.124	1,110	3509	0.24	0.76	68.7	0.905	0.924	0.798	0.623	0.910	9.0%		9.9%
67	1982	W	27,376	9,915	0.363	7,952	19,424	0.29	0.71	52.8	0.428	0.312	0.312	0.000	0.394	60.6%		17,028	10,913	0.642	4,643	12385	0.27	0.73	65.1	0.639	0.867	0.547	0.706	0.701	29.9%		43.7%
68	1983	W	21,864	7,075	0.324	6,400	15,464	0.29	0.71	57.2	0.547	0.450	0.422	0.048	0.518	48.2%		18,638	7,758	0.417	5,345	13292	0.29	0.71	61.3	0.612	0.659	0.497	0.323	0.625	37.5%		42.3%
69	1984	W	7,563	8,420	1.118	1,830	5,733	0.24	0.76	60.7	0.838	0.828	0.746	0.321	0.836	16.4%		6,034	7,335	1.222	1,418	4616	0.24	0.76	66.0	0.872	0.905	0.776	0.576	0.880	12.0%		14.0%
70	1985	D	5,092	6,117	1.209	1,199	3,893	0.24	0.76	62.5	0.894	0.856	0.791	0.309	0.885	11.5%		4,586	5,578	1.225	1,074	3513	0.23	0.77	65.1	0.905	0.887	0.800	0.434	0.901	9.9%		10.6%
71	1986	W	12,739	7,815	0.615	3,491	9,247	0.27	0.73	61.3	0.733	0.749	0.628	0.325	0.738	26.2%		10,734	9,530	0.890	2,755	7979	0.26	0.74	65.8	0.771	0.897	0.681	0.676	0.803	19.7%		22.6%
72	1987	D	4,386	4,319	0.992	1,090	3,297	0.25	0.75	62.3	0.912	0.840	0.799	0.206	0.894	10.6%		4,001	4,554	1.147	954	3047	0.24	0.76	68.6	0.919	0.921	0.809	0.586	0.919	8.1%		9.2%
73	1988	C	4,033	4,638	1.159	959	3,074	0.24	0.76	62.1	0.918	0.849	0.808	0.210	0.902	9.8%		3,789	4,505	1.199	891	2899	0.24	0.76	63.7	0.923	0.869	0.813	0.297	0.911	8.9%		9.3%
74	1989	D	4,302	6,773	1.586	910	3,392	0.21	0.79	64.1	0.909	0.894	0.812	0.436	0.906	9.4%		3,936	6,489	1.662	813	3123	0.21	0.79	66.7	0.917	0.923	0.819	0.574	0.918	8.2%		8.8%
75	1990	C	4,000	4,689	1.182	945	3,054	0.24	0.76	60.6	0.919	0.833	0.809	0.125	0.899	10.1%		3,708	4,163	1.132	887	2821	0.24	0.76	63.9	0.926	0.868	0.813	0.291	0.912	8.8%		9.4%
76	1991	C	4,521	6,201	1.381	1,014	3,507	0.22	0.78	60.6	0.905	0.844	0.804	0.202	0.891	10.9%		3,919	4,651	1.196	922	2997	0.24	0.76	63.9	0.921	0.871	0.811	0.316	0.909	9.1%		9.9%
77	1992	C	4,622	5,344	1.164	1,099	3,522	0.24	0.76	60.6	0.905	0.830	0.798	0.158	0.887	11.3%		4,017	4,586	1.151	957	3060	0.24	0.76	63.9	0.919	0.868	0.808	0.313	0.907	9.3%		10.2%

78 Formulas: San Joaquin River Fall Run Smolt Survival Model WITHOUT BARRIER

Row	April formulas		May formulas	
79	C7 ='Study 513 Flow Data'!AB7		T7 ='Study 513 Flow Data'!AC7	Average: 16.12%
80	D7 ='Study 513 Flow Data'!G7	(HIDDEN)	U7 ='Study 513 Flow Data'!H7	(HIDDEN)
81	E7 ='Study 513 Flow Data'!Q7	(HIDDEN)	V7 ='Study 513 Flow Data'!R7	(HIDDEN)
82	F7 =D7+E7		W7 =U7+V7	
83	G7 =F7/(C7-0.03*$H$2)		X7 =W7/(T7-0.03*$H$3)	
84	H7 =IF((0.3137*C7-0.0156*$H$2-0.0625*F7)<0,0,(0.3137*C7-0.0156*$H$2-0.0625*F7))		Y7 =IF((0.3137*T7-0.0156*$H$3-0.0625*W7)<0,0,(0.3137*T7-0.0156*$H$3-0.0625*W7))	
85	I7 =C7-H7		Z7 =T7-Y7	
86	J7 =H7/C7		AA7 =Y7/T7	
87	K7 =I7/C7		AB7 =Z7/T7	
88	M7 =(1.01045-0.00003*I7)		AD7 =(1.01045-0.00003*Z7)	
89	N7 =(O7+P7)-(O7*P7)		AE7 =(AF7+AG7)-(AF7*AG7)	
90	O7 =(0.87634-0.000071*H7)		AF7 =(0.87634-0.000071*Y7)	
91	P7 =IF((-3.65867+0.058492*L7+0.000051*F7)<0,0,(-3.65867+0.058492*L7+0.000051*F7))		AG7 =IF((-3.65867+0.058492*AC7+0.000051*W7)<0,0,(-3.65867+0.058492*AC7+0.000051*W7))	
92	Q7 =((K7*M7)+(J7*N7))		AH7 =((AB7*AD7)+(AA7*AE7))	
93	R7 =(1-Q7)		AI7 =(1-AH7)	
94	Note: Calculated San Joaquin River flows at Stockton = 0.3137*(Vernalis flow) - 0.0156*(Consumptive Depletion) - 0.0625*(CVP/SWP Exports)		AK7 =0.45*R7+0.55*AI7	

	A	B	C	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Study 485 San Joaquin River Fall Run Salmon Smolt Survival Model WITHOUT BARRIER AT HEAD OF OLD RIVER															
2			Consumptive Depletion for April		1053.00 cfs				San Joaquin River temperatures based on limited historical data from USBR							
3			Consumptive Depletion for May		1053.00 cfs											
4	**APRIL**	Water														**Calculated**
5		Year	Vernalis	CVP + SWP		Calculated				Temp @		Calculated Mortality				**Survivability**
6	Year	Type	Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	**s234**
7	1922	A	6,184	8,369	1.360	1,401	4,784	0.23	0.77	60.2	0.867	0.841	0.777	0.289	0.861	**13.9%**
8	1923	B	5,327	7,966	1.504	1,157	4,170	0.22	0.78	59.7	0.885	0.844	0.794	0.240	0.876	**12.4%**
9	1924	C	1,983	2,790	1.430	431	1,552	0.22	0.78	60.6	0.964	0.850	0.846	0.028	0.939	**6.1%**
10	1925	D	3,966	6,924	1.760	795	3,171	0.20	0.80	63.4	0.915	0.892	0.820	0.403	0.911	**8.9%**
11	1926	D	3,664	6,420	1.768	732	2,932	0.20	0.80	63.4	0.922	0.891	0.824	0.377	0.916	**8.4%**
12	1927	W	5,327	8,067	1.523	1,151	4,177	0.22	0.78	57.1	0.885	0.814	0.795	0.093	0.870	**13.0%**
13	1928	A	4,487	7,630	1.712	914	3,573	0.20	0.80	60.2	0.903	0.859	0.811	0.252	0.894	**10.6%**
14	1929	C	2,000	2,958	1.503	426	1,574	0.21	0.79	60.6	0.963	0.852	0.846	0.037	0.939	**6.1%**
15	1930	D	2,403	3,899	1.644	494	1,909	0.21	0.79	63.4	0.953	0.881	0.841	0.249	0.938	**6.2%**
16	1931	C	1,983	2,958	1.516	421	1,562	0.21	0.79	60.6	0.964	0.852	0.846	0.037	0.940	**6.0%**
17	1932	D	4,504	5,378	1.202	1,060	3,444	0.24	0.76	63.4	0.907	0.866	0.801	0.324	0.897	**10.3%**
18	1933	C	2,790	4,117	1.493	601	2,188	0.22	0.78	60.6	0.945	0.850	0.834	0.096	0.924	**7.6%**
19	1934	C	1,966	3,563	1.842	378	1,589	0.19	0.81	60.6	0.963	0.860	0.850	0.068	0.943	**5.7%**
20	1935	B	7,226	9,075	1.261	1,683	5,543	0.23	0.77	59.7	0.844	0.829	0.757	0.296	0.841	**15.9%**
21	1936	B	6,420	8,369	1.310	1,474	4,945	0.23	0.77	59.7	0.862	0.831	0.772	0.260	0.855	**14.5%**
22	1937	B	7,932	7,966	1.008	1,974	5,958	0.25	0.75	59.7	0.832	0.799	0.736	0.240	0.824	**17.6%**
23	1938	W	18,049	7,714	0.428	5,163	12,886	0.29	0.71	57.1	0.624	0.546	0.510	0.075	0.602	**39.8%**
24	1939	D	2,891	4,134	1.446	632	2,259	0.22	0.78	63.4	0.943	0.875	0.831	0.261	0.928	**7.2%**
25	1940	A	6,151	8,504	1.390	1,382	4,769	0.22	0.78	60.2	0.867	0.844	0.778	0.296	0.862	**13.8%**
26	1941	W	10,083	9,310	0.926	2,565	7,519	0.25	0.75	57.1	0.785	0.742	0.694	0.156	0.774	**22.6%**
27	1942	W	6,907	8,907	1.295	1,594	5,313	0.23	0.77	57.1	0.851	0.795	0.763	0.135	0.838	**16.2%**
28	1943	W	7,915	9,125	1.157	1,896	6,019	0.24	0.76	57.1	0.830	0.780	0.742	0.147	0.818	**18.2%**
29	1944	D	3,445	4,235	1.241	800	2,646	0.23	0.77	63.4	0.931	0.868	0.820	0.266	0.916	**8.4%**
30	1945	B	6,016	6,420	1.073	1,470	4,547	0.24	0.76	59.7	0.874	0.809	0.772	0.161	0.858	**14.2%**
31	1946	B	5,344	5,949	1.120	1,288	4,056	0.24	0.76	59.7	0.889	0.814	0.785	0.137	0.871	**12.9%**
32	1947	D	3,664	4,941	1.360	824	2,840	0.22	0.78	63.4	0.925	0.873	0.818	0.302	0.913	**8.7%**
33	1948	B	3,983	6,789	1.718	809	3,174	0.20	0.80	59.7	0.915	0.851	0.819	0.180	0.902	**9.8%**
34	1949	D	3,983	5,075	1.284	916	3,067	0.23	0.77	63.4	0.918	0.870	0.811	0.309	0.907	**9.3%**
35	1950	B	3,983	6,184	1.565	846	3,136	0.21	0.79	59.7	0.916	0.844	0.816	0.149	0.901	**9.9%**
36	1951	A	5,327	6,353	1.200	1,258	4,070	0.24	0.76	60.2	0.888	0.827	0.787	0.187	0.874	**12.6%**
37	1952	W	10,840	7,848	0.726	2,893	7,946	0.27	0.73	57.1	0.772	0.698	0.671	0.081	0.752	**24.8%**
38	1953	W	3,983	5,647	1.429	880	3,103	0.22	0.78	57.1	0.917	0.814	0.814	0.000	0.894	**10.6%**
39	1954	A	3,966	7,361	1.871	768	3,198	0.19	0.81	60.2	0.914	0.864	0.822	0.238	0.905	**9.5%**
40	1955	D	2,790	3,664	1.328	630	2,160	0.23	0.77	63.4	0.946	0.871	0.832	0.237	0.929	**7.1%**
41	1956	W	6,184	7,966	1.295	1,426	4,759	0.23	0.77	57.1	0.868	0.795	0.775	0.087	0.851	**14.9%**
42	1957	A	3,983	6,453	1.633	830	3,153	0.21	0.79	60.2	0.916	0.852	0.817	0.192	0.903	**9.7%**
43	1958	W	14,907	9,478	0.637	4,067	10,839	0.27	0.73	57.1	0.685	0.655	0.588	0.165	0.677	**32.3%**
44	1959	B	2,790	3,764	1.365	623	2,166	0.22	0.78	59.7	0.945	0.836	0.832	0.025	0.921	**7.9%**
45	1960	D	2,420	4,050	1.696	490	1,930	0.20	0.80	63.4	0.953	0.882	0.842	0.256	0.938	**6.2%**
46	1961	D	1,983	3,529	1.808	385	1,598	0.19	0.81	63.4	0.963	0.884	0.849	0.230	0.947	**5.3%**
47	1962	B	4,201	4,840	1.161	999	3,202	0.24	0.76	59.7	0.914	0.821	0.805	0.080	0.892	**10.8%**
48	1963	W	5,361	8,100	1.520	1,159	4,202	0.22	0.78	57.1	0.884	0.813	0.794	0.094	0.869	**13.1%**
49	1964	D	2,790	3,496	1.267	640	2,149	0.23	0.77	63.4	0.946	0.869	0.831	0.228	0.928	**7.2%**
50	1965	W	6,958	8,957	1.293	1,606	5,351	0.23	0.77	57.1	0.850	0.795	0.762	0.138	0.837	**16.3%**
51	1966	B	3,966	5,613	1.427	877	3,089	0.22	0.78	59.7	0.918	0.836	0.814	0.120	0.900	**10.0%**
52	1967	W	13,613	8,487	0.625	3,723	9,889	0.27	0.73	57.1	0.714	0.656	0.612	0.114	0.698	**30.2%**
53	1968	B	3,647	5,243	1.450	800	2,847	0.22	0.78	59.7	0.925	0.838	0.820	0.101	0.906	**9.4%**
54	1969	W	20,923	7,512	0.360	6,078	14,845	0.29	0.71	57.1	0.565	0.481	0.445	0.064	0.541	**45.9%**
55	1970	W	5,327	6,588	1.244	1,243	4,084	0.23	0.77	57.1	0.888	0.792	0.788	0.017	0.865	**13.5%**
56	1971	W	3,983	6,554	1.659	823	3,160	0.21	0.79	57.1	0.916	0.821	0.818	0.015	0.896	**10.4%**
57	1972	B	3,664	4,739	1.305	837	2,827	0.23	0.77	58.9	0.926	0.822	0.817	0.028	0.902	**9.8%**
58	1973	A	6,571	8,100	1.239	1,539	5,032	0.23	0.77	59.2	0.859	0.818	0.767	0.217	0.850	**15.0%**
59	1974	W	7,663	9,327	1.222	1,805	5,859	0.24	0.76	56.9	0.835	0.785	0.748	0.145	0.823	**17.7%**
60	1975	W	6,621	8,773	1.331	1,512	5,109	0.23	0.77	53.7	0.857	0.769	0.769	0.000	0.837	**16.3%**
61	1976	C	1,983	3,008	1.542	418	1,565	0.21	0.79	57.8	0.963	0.847	0.847	0.000	0.939	**6.1%**
62	1977	C	1,983	2,991	1.533	419	1,564	0.21	0.79	62.0	0.964	0.865	0.847	0.120	0.943	**5.7%**
63	1978	A	14,923	7,512	0.504	4,196	10,728	0.28	0.72	61.4	0.689	0.712	0.578	0.316	0.695	**30.5%**
64	1979	B	5,663	7,092	1.259	1,317	4,347	0.23	0.77	60.5	0.880	0.835	0.783	0.242	0.870	**13.0%**
65	1980	A	6,739	6,873	1.025	1,668	5,071	0.25	0.75	60.1	0.858	0.808	0.758	0.207	0.846	**15.4%**
66	1981	D	3,664	5,445	1.499	793	2,871	0.22	0.78	64.6	0.924	0.892	0.820	0.398	0.917	**8.3%**
67	1982	W	27,023	8,941	0.331	7,902	19,121	0.29	0.71	52.8	0.437	0.315	0.315	0.000	0.401	**59.9%**
68	1983	W	20,738	6,958	0.336	6,054	14,684	0.29	0.71	57.2	0.570	0.470	0.446	0.042	0.541	**45.9%**
69	1984	W	5,344	6,857	1.291	1,231	4,113	0.23	0.77	60.7	0.887	0.840	0.789	0.241	0.876	**12.4%**
70	1985	D	2,790	4,101	1.487	602	2,187	0.22	0.78	62.5	0.945	0.868	0.834	0.206	0.928	**7.2%**
71	1986	W	9,814	9,680	0.989	2,457	7,357	0.25	0.75	61.3	0.790	0.827	0.702	0.421	0.799	**20.1%**
72	1987	D	2,033	3,479	1.738	404	1,629	0.20	0.80	62.3	0.962	0.872	0.848	0.163	0.944	**5.6%**
73	1988	C	1,983	2,857	1.464	427	1,556	0.22	0.78	62.1	0.964	0.864	0.846	0.119	0.942	**5.8%**
74	1989	D	2,420	5,647	2.364	390	2,030	0.16	0.84	64.1	0.950	0.906	0.849	0.379	0.943	**5.7%**
75	1990	C	1,983	3,529	1.808	385	1,598	0.19	0.81	60.6	0.963	0.859	0.849	0.066	0.942	**5.8%**
76	1991	C	2,437	4,252	1.768	482	1,955	0.20	0.80	60.6	0.952	0.858	0.842	0.103	0.933	**6.7%**
77	1992	C	2,252	3,731	1.680	457	1,795	0.20	0.80	60.6	0.957	0.856	0.844	0.076	0.936	**6.4%**

	S	T	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK
4		**MAY**													**Calculated**		
5		Vernalis	CVP + SWP		Calculated				Temp @	Calculated Mortality					**Survivability**		**Weighted**
6		Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	**s234**		**total survival**
7		5,920	8,685	1.475	1,298	4622	0.22	0.78	66.6	0.872	0.931	0.784	0.680	0.885	**11.5%**		**12.6%**
8		5,156	6,245	1.219	1,211	3945	0.23	0.77	66.0	0.892	0.899	0.790	0.520	0.894	**10.6%**		**11.4%**
9		1,854	2,667	1.464	398	1456	0.21	0.79	63.9	0.967	0.881	0.848	0.215	0.948	**5.2%**		**5.6%**
10		3,806	5,107	1.353	858	2947	0.23	0.77	67.3	0.922	0.915	0.815	0.538	0.920	**8.0%**		**8.4%**
11		3,529	4,944	1.414	782	2747	0.22	0.78	67.3	0.928	0.916	0.821	0.530	0.925	**7.5%**		**7.9%**
12		5,156	8,327	1.625	1,080	4075	0.21	0.79	64.2	0.888	0.904	0.800	0.521	0.892	**10.8%**		**11.8%**
13		3,822	6,375	1.682	784	3038	0.21	0.79	66.6	0.919	0.921	0.821	0.562	0.920	**8.0%**		**9.2%**
14		1,887	2,862	1.543	396	1490	0.21	0.79	63.9	0.966	0.882	0.848	0.225	0.948	**5.2%**		**5.6%**
15		1,870	3,480	1.893	353	1518	0.19	0.81	67.3	0.965	0.919	0.851	0.455	0.956	**4.4%**		**5.2%**
16		1,854	3,123	1.713	370	1484	0.20	0.80	63.9	0.966	0.886	0.850	0.238	0.950	**5.0%**		**5.5%**
17		3,871	4,847	1.262	895	2976	0.23	0.77	67.3	0.921	0.911	0.813	0.525	0.919	**8.1%**		**9.1%**
18		2,667	3,367	1.277	610	2057	0.23	0.77	63.9	0.949	0.875	0.833	0.251	0.932	**6.8%**		**7.2%**
19		1,854	2,944	1.615	381	1473	0.21	0.79	63.9	0.966	0.884	0.849	0.229	0.949	**5.1%**		**5.4%**
20		6,066	5,465	0.906	1,545	4521	0.25	0.75	66.0	0.875	0.879	0.767	0.480	0.876	**12.4%**		**14.0%**
21		5,156	6,375	1.244	1,202	3953	0.23	0.77	66.0	0.892	0.901	0.791	0.527	0.894	**10.6%**		**12.4%**
22		8,132	6,977	0.861	2,098	6033	0.26	0.74	66.0	0.829	0.879	0.727	0.558	0.842	**15.8%**		**16.6%**
23		24,265	9,433	0.389	7,006	17259	0.29	0.71	64.2	0.493	0.738	0.379	0.578	0.563	**43.7%**		**41.9%**
24		2,667	3,480	1.321	603	2064	0.23	0.77	67.3	0.949	0.909	0.834	0.455	0.940	**6.0%**		**6.6%**
25		5,156	6,944	1.355	1,167	3989	0.23	0.77	66.6	0.891	0.916	0.793	0.591	0.896	**10.4%**		**11.9%**
26		9,579	9,726	1.019	2,381	7198	0.25	0.75	64.2	0.794	0.881	0.707	0.593	0.816	**18.4%**		**20.3%**
27		5,936	8,685	1.471	1,303	4633	0.22	0.78	64.2	0.871	0.900	0.784	0.539	0.878	**12.2%**		**14.0%**
28		6,180	7,660	1.246	1,444	4737	0.23	0.77	64.2	0.868	0.884	0.774	0.487	0.872	**12.8%**		**15.2%**
29		2,960	3,741	1.277	678	2282	0.23	0.77	67.3	0.942	0.909	0.828	0.469	0.934	**6.6%**		**7.4%**
30		3,871	4,944	1.288	889	2982	0.23	0.77	66.0	0.921	0.898	0.813	0.454	0.916	**8.4%**		**11.0%**
31		3,854	5,269	1.378	863	2991	0.22	0.78	66.0	0.921	0.902	0.815	0.471	0.917	**8.3%**		**10.4%**
32		2,683	3,545	1.337	604	2080	0.23	0.77	67.3	0.948	0.910	0.833	0.459	0.939	**6.1%**		**7.2%**
33		3,822	7,091	1.871	739	3083	0.19	0.81	66.0	0.918	0.923	0.824	0.563	0.919	**8.1%**		**8.9%**
34		2,960	4,749	1.622	615	2345	0.21	0.79	67.3	0.940	0.920	0.833	0.520	0.936	**6.4%**		**7.7%**
35		3,822	5,302	1.399	851	2971	0.22	0.78	66.0	0.921	0.903	0.816	0.472	0.917	**8.3%**		**9.0%**
36		5,156	7,188	1.403	1,152	4004	0.22	0.78	66.6	0.890	0.919	0.795	0.604	0.897	**10.3%**		**11.4%**
37		15,450	9,221	0.598	4,254	11196	0.28	0.72	64.2	0.675	0.816	0.574	0.567	0.713	**28.7%**		**26.9%**
38		3,822	7,676	2.025	703	3119	0.18	0.82	64.2	0.917	0.911	0.826	0.488	0.916	**8.4%**		**9.4%**
39		3,822	7,416	1.957	719	3103	0.19	0.81	66.6	0.917	0.933	0.825	0.615	0.920	**8.0%**		**8.7%**
40		2,667	3,773	1.432	584	2083	0.22	0.78	67.3	0.948	0.913	0.835	0.470	0.940	**6.0%**		**6.5%**
41		6,131	8,782	1.440	1,358	4773	0.22	0.78	64.2	0.867	0.900	0.780	0.544	0.874	**12.6%**		**13.6%**
42		3,822	5,952	1.570	810	3011	0.21	0.79	66.6	0.920	0.917	0.819	0.540	0.919	**8.1%**		**8.8%**
43		13,190	10,636	0.808	3,456	9733	0.26	0.74	64.2	0.718	0.867	0.631	0.639	0.757	**24.3%**		**27.9%**
44		2,667	3,676	1.395	591	2077	0.22	0.78	66.0	0.948	0.899	0.834	0.389	0.937	**6.3%**		**7.0%**
45		1,919	3,383	1.792	374	1545	0.19	0.81	67.3	0.964	0.917	0.850	0.450	0.955	**4.5%**		**5.3%**
46		1,870	2,895	1.574	389	1481	0.21	0.79	67.3	0.966	0.913	0.849	0.425	0.955	**4.5%**		**4.9%**
47		2,960	4,847	1.655	609	2351	0.21	0.79	66.0	0.940	0.908	0.833	0.449	0.933	**6.7%**		**8.5%**
48		5,156	8,327	1.625	1,080	4075	0.21	0.79	64.2	0.888	0.904	0.800	0.521	0.892	**10.8%**		**11.9%**
49		2,667	3,708	1.407	589	2079	0.22	0.78	67.3	0.948	0.912	0.835	0.467	0.940	**6.0%**		**6.5%**
50		5,936	8,685	1.471	1,303	4633	0.22	0.78	64.2	0.871	0.900	0.784	0.539	0.878	**12.2%**		**14.0%**
51		2,960	4,684	1.599	619	2341	0.21	0.79	66.0	0.940	0.906	0.832	0.441	0.933	**6.7%**		**8.2%**
52		16,003	9,433	0.591	4,414	11589	0.28	0.72	64.2	0.663	0.815	0.563	0.578	0.705	**29.5%**		**29.8%**
53		2,667	3,643	1.382	593	2075	0.22	0.78	66.0	0.948	0.899	0.834	0.388	0.937	**6.3%**		**7.7%**
54		26,217	9,010	0.344	7,645	18572	0.29	0.71	66.4	0.453	0.790	0.334	0.685	0.551	**44.9%**		**45.3%**
55		5,156	5,920	1.155	1,231	3925	0.24	0.76	61.2	0.893	0.836	0.789	0.223	0.879	**12.1%**		**12.7%**
56		3,822	7,676	2.025	703	3119	0.18	0.82	64.2	0.917	0.911	0.826	0.488	0.916	**8.4%**		**9.3%**
57		2,683	3,903	1.472	581	2102	0.22	0.78	66.0	0.947	0.901	0.835	0.401	0.937	**6.3%**		**7.9%**
58		5,465	6,766	1.245	1,275	4190	0.23	0.77	66.3	0.885	0.907	0.786	0.564	0.890	**11.0%**		**12.8%**
59		5,920	8,685	1.475	1,298	4622	0.22	0.78	66.1	0.872	0.925	0.784	0.651	0.883	**11.7%**		**14.4%**
60		5,936	8,685	1.471	1,303	4633	0.22	0.78	61.5	0.871	0.866	0.784	0.382	0.870	**13.0%**		**14.5%**
61		1,870	3,155	1.716	373	1497	0.20	0.80	65.8	0.966	0.903	0.850	0.351	0.953	**4.7%**		**5.3%**
62		1,854	1,203	0.660	490	1364	0.26	0.74	62.3	0.970	0.849	0.842	0.047	0.938	**6.2%**		**6.0%**
63		10,831	8,213	0.760	2,868	7963	0.26	0.74	66.9	0.772	0.893	0.673	0.673	0.804	**19.6%**		**24.5%**
64		5,139	5,985	1.172	1,222	3918	0.24	0.76	66.0	0.893	0.896	0.790	0.507	0.894	**10.6%**		**11.7%**
65		6,619	7,481	1.136	1,592	5027	0.24	0.76	66.6	0.860	0.910	0.763	0.618	0.872	**12.8%**		**14.0%**
66		2,683	3,513	1.325	606	2078	0.23	0.77	68.7	0.948	0.923	0.833	0.539	0.942	**5.8%**		**6.9%**
67		15,158	10,701	0.707	4,070	11088	0.27	0.73	65.1	0.678	0.874	0.587	0.695	0.731	**26.9%**		**41.8%**
68		19,077	7,546	0.396	5,496	13581	0.29	0.71	61.3	0.603	0.646	0.486	0.312	0.615	**38.5%**		**41.8%**
69		5,156	6,115	1.193	1,219	3937	0.24	0.76	66.0	0.892	0.898	0.790	0.514	0.894	**10.6%**		**11.4%**
70		2,683	4,228	1.595	561	2122	0.21	0.79	65.1	0.947	0.896	0.837	0.365	0.936	**6.4%**		**6.7%**
71		8,083	8,132	1.010	2,011	6072	0.25	0.75	65.8	0.828	0.895	0.734	0.605	0.845	**15.5%**		**17.6%**
72		1,854	2,830	1.553	388	1466	0.21	0.79	68.6	0.966	0.924	0.849	0.498	0.958	**4.2%**		**4.9%**
73		1,870	3,074	1.672	378	1492	0.20	0.80	63.7	0.966	0.883	0.849	0.224	0.949	**5.1%**		**5.4%**
74		1,870	3,936	2.141	324	1546	0.17	0.83	66.7	0.964	0.918	0.853	0.443	0.956	**4.4%**		**5.0%**
75		1,870	2,700	1.468	402	1469	0.21	0.79	63.9	0.966	0.881	0.848	0.217	0.948	**5.2%**		**5.5%**
76		1,919	2,911	1.542	404	1515	0.21	0.79	63.9	0.965	0.882	0.848	0.227	0.948	**5.2%**		**5.9%**
77		1,870	2,944	1.601	386	1484	0.21	0.79	63.9	0.966	0.884	0.849	0.229	0.949	**5.1%**		**5.7%**

78 Formulas: San Joaquin River Fall Run Smolt Survival Model WITHOUT BARRIER

79 C7 ='Study 485 Flow Data'!AB7 — T7 ='Study 467 Flow Data'!AC7 — **Average: 12.29%**

80 D7 ='Study 485 Flow Data'!G7 (HIDDEN) — U7 ='Study 467 Flow Data'!H7 (HIDDEN)

81 E7 ='Study 485 Flow Data'!Q7 (HIDDEN) — V7 ='Study 467 Flow Data'!R7 (HIDDEN)

82 F7 =D7+E7 — W7 =U7+V7

83 G7 =F7/(C7-0.03*$H$2) — X7 =W7/(T7-0.03*$H$3)

84 H7 =IF((0.3137*C7-0.0156*$H$2-0.0625*F7)<0,0,(0.3137*C7-0.0156*$H$2-0.0625*F7)) — Y7 =IF((0.3137*T7-0.0156*$H$3-0.0625*W7)<0,0,(0.3137*T7-0.0156*$H$3-0.0625*W7))

85 I7 =C7-H7 — Z7 =T7-Y7

86 J7 =H7/C7 — AA7 =Y7/T7

87 K7 =I7/C7 — AB7 =Z7/T7

88 M7 =(1.01045-0.00003*I7) — AD7 =(1.01045-0.00003*Z7)

89 N7 =(O7+P7)-(O7*P7) — AE7 =(AF7+AG7)-(AF7*AG7)

90 O7 =(0.87634-0.000071*H7) — AF7 =(0.87634-0.000071*Y7)

91 P7 =IF((-3.65867+0.058492*L7+0.000051*F7)<0,0,(-3.65867+0.058492*L7+0.000051*F7)) — AG7 =IF((-3.65867+0.058492*AC7+0.000051*W7)<0,0,(-3.65867+0.058492*AC7+0.000051*W7))

92 Q7 =((K7*M7)+(J7*N7)) — AH7 =((AB7*AD7)+(AA7*AE7))

93 R7 =(1-Q7) — AI7 =(1-AH7)

94 Note: Calculated San Joaquin River flows at Stockton = 0.3137*(Vernalis flow) - 0.0156*(Consumptive Depletion) - 0.0625*(CVP/SWP Exports) — AK7 =0.45*R7+0.55*AI7

Study 519A San Joaquin River Fall Run Salmon Smolt Survival Model WITHOUT BARRIER AT HEAD OF OLD RIVER

Consumptive Depletion for April 1053.00 cfs
Consumptive Depletion for May 1053.00 cfs

San Joaquin River temperatures based on limited historical data from USBR

APRIL

Year	Water Year Type	Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	JOldR Flov	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	Calculated Mortality m2	m34	m3	m4	m234	**Calculated Survivability s234**
1922	A	5,949	9,680	1.636	1,245	4,704	0.21	0.79	60.2	0.869	0.863	0.788	0.356	0.868	**13.2%**
1923	B	4,739	10,335	2.195	824	3,915	0.17	0.83	59.7	0.893	0.883	0.818	0.360	0.891	**10.9%**
1924	C	1,849	4,369	2.405	290	1,558	0.16	0.84	60.6	0.964	0.871	0.856	0.109	0.949	**5.1%**
1925	D	3,832	9,579	2.521	587	3,245	0.15	0.85	63.4	0.913	0.924	0.835	0.538	0.915	**8.5%**
1926	D	3,193	8,705	2.754	441	2,752	0.14	0.86	63.4	0.928	0.922	0.845	0.494	0.927	**7.3%**
1927	W	5,243	9,865	1.893	1,012	4,231	0.19	0.81	57.1	0.884	0.841	0.804	0.184	0.875	**12.5%**
1928	A	4,823	10,184	2.125	860	3,963	0.18	0.82	60.2	0.892	0.886	0.815	0.382	0.891	**10.9%**
1929	C	1,916	3,529	1.873	364	1,552	0.19	0.81	60.6	0.964	0.860	0.850	0.066	0.944	**5.6%**
1930	D	2,033	6,285	3.140	229	1,805	0.11	0.89	63.4	0.956	0.912	0.860	0.370	0.951	**4.9%**
1931	C	1,765	4,857	2.803	234	1,531	0.13	0.87	60.6	0.965	0.878	0.860	0.134	0.953	**4.7%**
1932	D	4,958	7,058	1.433	1,098	3,860	0.22	0.78	63.4	0.895	0.881	0.798	0.410	0.892	**10.8%**
1933	C	2,538	6,605	2.635	367	2,171	0.14	0.86	60.6	0.945	0.884	0.850	0.223	0.936	**6.4%**
1934	C	1,865	6,067	3.308	190	1,676	0.10	0.90	60.6	0.960	0.890	0.863	0.195	0.953	**4.7%**
1935	B	7,445	10,537	1.421	1,660	5,784	0.22	0.78	59.7	0.837	0.848	0.758	0.371	0.839	**16.1%**
1936	B	7,176	9,932	1.390	1,614	5,562	0.22	0.78	59.7	0.844	0.843	0.762	0.340	0.843	**15.7%**
1937	B	8,134	8,067	0.996	2,031	6,103	0.25	0.75	59.7	0.827	0.798	0.732	0.245	0.820	**18.0%**
1938	W	17,259	8,386	0.487	4,874	12,386	0.28	0.72	57.1	0.639	0.581	0.530	0.109	0.623	**37.7%**
1939	D	3,075	6,453	2.120	545	2,530	0.18	0.82	63.4	0.935	0.899	0.838	0.379	0.928	**7.2%**
1940	A	5,882	10,453	1.787	1,175	4,707	0.20	0.80	60.2	0.869	0.875	0.793	0.396	0.870	**13.0%**
1941	W	9,293	9,411	1.016	2,311	6,983	0.25	0.75	57.1	0.801	0.759	0.712	0.161	0.790	**21.0%**
1942	W	6,100	9,747	1.606	1,288	4,812	0.21	0.79	57.1	0.866	0.823	0.785	0.178	0.857	**14.3%**
1943	W	7,126	9,764	1.376	1,609	5,517	0.23	0.77	57.1	0.845	0.805	0.762	0.179	0.836	**16.4%**
1944	D	3,714	5,596	1.520	799	2,915	0.22	0.78	63.4	0.923	0.880	0.820	0.335	0.914	**8.6%**
1945	B	5,983	7,210	1.211	1,410	4,573	0.24	0.76	59.7	0.873	0.821	0.776	0.201	0.861	**13.9%**
1946	B	4,336	6,369	1.480	946	3,390	0.22	0.78	59.7	0.909	0.839	0.809	0.158	0.894	**10.6%**
1947	D	2,554	5,748	2.278	426	2,129	0.17	0.83	63.4	0.947	0.899	0.846	0.343	0.939	**6.1%**
1948	B	3,731	9,983	2.699	530	3,201	0.14	0.86	59.7	0.914	0.894	0.839	0.342	0.912	**8.8%**
1949	D	3,412	6,252	1.850	663	2,748	0.19	0.81	63.4	0.928	0.892	0.829	0.369	0.921	**7.9%**
1950	B	3,378	8,638	2.581	503	2,875	0.15	0.85	59.7	0.924	0.884	0.841	0.274	0.918	**8.2%**
1951	A	3,933	8,268	2.120	700	3,232	0.18	0.82	60.2	0.913	0.876	0.827	0.284	0.907	**9.3%**
1952	W	10,050	8,873	0.886	2,582	7,468	0.26	0.74	57.1	0.786	0.734	0.693	0.134	0.773	**22.7%**
1953	W	3,075	7,260	2.385	495	2,581	0.16	0.84	57.1	0.933	0.849	0.841	0.051	0.920	**8.0%**
1954	A	4,302	10,453	2.448	680	3,622	0.16	0.84	60.2	0.902	0.896	0.828	0.396	0.901	**9.9%**
1955	D	2,437	4,638	1.928	458	1,979	0.19	0.81	63.4	0.951	0.889	0.844	0.286	0.939	**6.1%**
1956	W	4,000	9,310	2.346	656	3,343	0.16	0.84	57.1	0.910	0.856	0.830	0.156	0.901	**9.9%**
1957	A	2,924	8,621	2.980	362	2,562	0.12	0.88	60.2	0.934	0.896	0.851	0.302	0.929	**7.1%**
1958	W	14,117	9,764	0.693	3,802	10,315	0.27	0.73	57.1	0.701	0.677	0.606	0.179	0.695	**30.5%**
1959	B	2,554	5,613	2.225	434	2,120	0.17	0.83	59.7	0.947	0.864	0.846	0.120	0.933	**6.7%**
1960	D	2,168	4,353	2.037	392	1,776	0.18	0.82	63.4	0.957	0.890	0.849	0.272	0.945	**5.5%**
1961	D	1,815	4,185	2.346	291	1,524	0.16	0.84	63.4	0.965	0.894	0.856	0.263	0.953	**4.7%**
1962	B	4,437	8,134	1.846	867	3,570	0.20	0.80	59.7	0.903	0.861	0.815	0.248	0.895	**10.5%**
1963	W	5,579	10,218	1.842	1,095	4,484	0.20	0.80	57.1	0.876	0.839	0.799	0.202	0.869	**13.1%**
1964	D	2,470	4,369	1.792	485	1,985	0.20	0.80	63.4	0.951	0.885	0.842	0.273	0.938	**6.2%**
1965	W	6,168	9,747	1.589	1,309	4,858	0.21	0.79	57.1	0.865	0.822	0.783	0.178	0.856	**14.4%**
1966	B	3,008	5,932	1.993	556	2,452	0.18	0.82	59.7	0.937	0.859	0.837	0.136	0.922	**7.8%**
1967	W	12,823	9,646	0.754	3,403	9,420	0.27	0.73	57.1	0.728	0.698	0.635	0.173	0.720	**28.0%**
1968	B	2,638	8,134	3.120	303	2,336	0.11	0.89	59.7	0.940	0.891	0.855	0.248	0.935	**6.5%**
1969	W	20,133	7,613	0.379	5,824	14,310	0.29	0.71	57.1	0.581	0.500	0.463	0.069	0.558	**44.2%**
1970	W	4,319	8,571	1.999	803	3,516	0.19	0.81	57.1	0.905	0.841	0.819	0.118	0.893	**10.7%**
1971	W	2,941	9,193	3.160	332	2,609	0.11	0.89	57.1	0.932	0.875	0.853	0.150	0.926	**7.4%**
1972	B	2,336	6,201	2.691	329	2,007	0.14	0.86	58.9	0.950	0.868	0.853	0.103	0.939	**6.1%**
1973	A	5,916	9,663	1.642	1,235	4,680	0.21	0.79	59.2	0.870	0.851	0.789	0.297	0.866	**13.4%**
1974	W	6,873	10,201	1.491	1,502	5,371	0.22	0.78	56.9	0.849	0.813	0.770	0.190	0.841	**15.9%**
1975	W	5,832	10,487	1.808	1,158	4,674	0.20	0.80	53.7	0.870	0.798	0.794	0.017	0.856	**14.4%**
1976	C	1,899	4,201	2.250	317	1,582	0.17	0.83	57.8	0.963	0.854	0.854	0.000	0.945	**5.5%**
1977	C	1,647	4,941	3.059	191	1,456	0.12	0.88	62.0	0.967	0.893	0.863	0.220	0.958	**4.2%**
1978	A	15,175	7,613	0.503	4,268	10,907	0.28	0.72	61.4	0.683	0.710	0.573	0.321	0.691	**30.9%**
1979	B	5,512	8,420	1.536	1,187	4,326	0.22	0.78	60.5	0.881	0.856	0.792	0.309	0.875	**12.5%**
1980	A	5,932	7,008	1.188	1,407	4,526	0.24	0.76	60.1	0.875	0.824	0.776	0.214	0.863	**13.7%**
1981	D	2,991	8,403	2.839	397	2,595	0.13	0.87	64.6	0.933	0.931	0.848	0.548	0.932	**6.8%**
1982	W	27,141	9,226	0.340	7,921	19,220	0.29	0.71	52.8	0.434	0.314	0.314	0.000	0.399	**60.1%**
1983	W	19,948	7,075	0.355	5,799	14,149	0.29	0.71	57.2	0.586	0.490	0.465	0.048	0.558	**44.2%**
1984	W	3,933	8,453	2.167	689	3,244	0.18	0.82	60.7	0.913	0.883	0.827	0.323	0.908	**9.2%**
1985	D	2,706	5,983	2.237	458	2,247	0.17	0.83	62.5	0.943	0.891	0.844	0.302	0.934	**6.6%**
1986	W	9,025	7,495	0.833	2,346	6,678	0.26	0.74	61.3	0.810	0.799	0.710	0.309	0.807	**19.3%**
1987	D	2,017	6,134	3.090	233	1,784	0.12	0.88	62.3	0.957	0.902	0.860	0.298	0.951	**4.9%**
1988	C	1,815	4,470	2.507	274	1,541	0.15	0.85	62.1	0.964	0.886	0.857	0.202	0.952	**4.8%**
1989	D	1,966	9,293	4.804	20	1,947	0.01	0.99	64.1	0.952	0.946	0.875	0.565	0.952	**4.8%**
1990	C	1,832	6,420	3.566	157	1,675	0.09	0.91	60.6	0.960	0.894	0.865	0.213	0.955	**4.5%**
1991	C	2,353	6,974	3.005	286	2,067	0.12	0.88	60.6	0.948	0.891	0.856	0.242	0.941	**5.9%**
1992	C	2,235	6,151	2.791	300	1,935	0.13	0.87	60.6	0.952	0.884	0.855	0.200	0.943	**5.7%**

MAY

Year	Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	Calculated Mortality m2	m34	m3	m4	m234	**Calculated Survivability s234**	**Weighted total survival**
1922	4,554	4,765	1.054	1,114	3439	0.24	0.76	66.6	0.907	0.895	0.797	0.480	0.904	**9.6%**	**11.2%**
1923	3,789	4,017	1.069	921	2868	0.24	0.76	66.0	0.924	0.888	0.811	0.407	0.916	**8.4%**	**9.5%**
1924	1,545	781	0.516	419	1126	0.27	0.73	63.9	0.977	0.865	0.847	0.119	0.946	**5.4%**	**5.2%**
1925	3,058	3,269	1.080	738	2319	0.24	0.76	67.3	0.941	0.902	0.824	0.445	0.932	**6.8%**	**7.6%**
1926	2,374	2,586	1.104	567	1808	0.24	0.76	67.3	0.956	0.903	0.836	0.410	0.944	**5.6%**	**6.4%**
1927	3,741	3,952	1.066	910	2831	0.24	0.76	64.2	0.926	0.868	0.812	0.298	0.911	**8.9%**	**10.5%**
1928	2,927	3,139	1.084	706	2222	0.24	0.76	66.6	0.944	0.895	0.826	0.397	0.932	**6.8%**	**8.7%**
1929	1,643	1,870	1.161	382	1261	0.23	0.77	63.9	0.973	0.876	0.849	0.174	0.950	**5.0%**	**5.3%**
1930	1,675	1,870	1.138	392	1283	0.23	0.77	67.3	0.972	0.905	0.848	0.373	0.956	**4.4%**	**4.6%**
1931	1,513	1,740	1.175	349	1163	0.23	0.77	63.9	0.976	0.876	0.852	0.168	0.953	**4.7%**	**4.7%**
1932	3,334	3,578	1.083	806	2528	0.24	0.76	67.3	0.935	0.902	0.819	0.460	0.927	**7.3%**	**8.9%**
1933	2,163	2,163	1.015	527	1636	0.24	0.76	63.9	0.961	0.869	0.839	0.189	0.939	**6.1%**	**6.2%**
1934	1,545	1,773	1.171	357	1188	0.23	0.77	63.9	0.975	0.876	0.851	0.169	0.952	**4.8%**	**4.8%**
1935	6,424	5,741	0.898	1,640	4784	0.26	0.74	66.0	0.867	0.879	0.760	0.495	0.870	**13.0%**	**14.4%**
1936	4,716	4,928	1.052	1,155	3561	0.24	0.76	66.0	0.904	0.888	0.794	0.453	0.900	**10.0%**	**12.6%**
1937	8,506	7,237	0.854	2,200	6306	0.26	0.74	66.0	0.821	0.880	0.720	0.571	0.836	**16.4%**	**17.1%**
1938	23,777	9,660	0.407	6,839	16938	0.29	0.71	64.2	0.502	0.750	0.391	0.589	0.573	**42.7%**	**40.4%**
1939	2,277	2,488	1.108	542	1735	0.24	0.76	67.3	0.958	0.903	0.838	0.405	0.945	**5.5%**	**6.2%**
1940	4,505	4,733	1.058	1,101	3404	0.24	0.76	66.6	0.908	0.895	0.798	0.478	0.905	**9.5%**	**11.1%**
1941	9,351	9,563	1.026	2,319	7032	0.25	0.75	64.2	0.799	0.880	0.712	0.584	0.819	**18.1%**	**19.4%**
1942	5,546	5,774	1.047	1,362	4183	0.25	0.75	64.2	0.885	0.866	0.780	0.391	0.880	**12.0%**	**13.0%**
1943	5,952	6,164	1.041	1,466	4487	0.25	0.75	64.2	0.876	0.866	0.772	0.411	0.873	**12.7%**	**14.3%**
1944	2,992	3,204	1.082	722	2270	0.24	0.76	67.3	0.942	0.902	0.825	0.441	0.933	**6.7%**	**7.6%**
1945	4,066	4,277	1.060	992	3074	0.24	0.76	66.0	0.918	0.887	0.806	0.420	0.911	**8.9%**	**11.2%**
1946	3,578	3,789	1.069	869	2709	0.24	0.76	66.0	0.929	0.888	0.815	0.395	0.919	**8.1%**	**9.2%**
1947	2,147	2,358	1.115	510	1637	0.24	0.76	67.3	0.961	0.904	0.840	0.398	0.948	**5.2%**	**5.6%**
1948	3,155	3,367	1.078	763	2392	0.24	0.76	66.0	0.939	0.889	0.822	0.373	0.927	**7.3%**	**8.0%**
1949	2,814	3,009	1.082	678	2135	0.24	0.76	67.3	0.946	0.902	0.828	0.431	0.936	**6.4%**	**7.1%**
1950	2,683	2,911	1.098	643	2040	0.24	0.76	66.0	0.949	0.890	0.831	0.350	0.935	**6.5%**	**7.3%**
1951	3,383	3,594	1.073	820	2563	0.24	0.76	66.6	0.934	0.895	0.818	0.420	0.924	**7.6%**	**8.4%**
1952	16,361	10,083	0.617	4,486	11875	0.27	0.73	64.2	0.654	0.828	0.558	0.611	0.702	**29.8%**	**26.6%**
1953	2,700	2,911	1.091	649	2051	0.24	0.76	64.2	0.949	0.872	0.830	0.245	0.930	**7.0%**	**7.4%**
1954	2,879	3,106	1.091	692	2186	0.24	0.76	66.6	0.945	0.895	0.827	0.395	0.933	**6.7%**	**8.1%**
1955	2,293	2,505	1.107	546	1747	0.24	0.76	67.3	0.958	0.903	0.838	0.406	0.945	**5.5%**	**5.8%**
1956	5,887	6,099	1.042	1,449	4438	0.25	0.75	64.2	0.877	0.866	0.773	0.408	0.874	**12.6%**	**11.3%**
1957	2,814	3,025	1.087	677	2136	0.24	0.76	66.6	0.946	0.895	0.828	0.391	0.934	**6.6%**	**6.8%**
1958	14,361	10,897	0.760	3,807	10553	0.27	0.73	64.2	0.694	0.863	0.606	0.652	0.739	**26.1%**	**28.1%**
1959	2,082	2,293	1.119	493	1588	0.24	0.76	66.0	0.963	0.892	0.841	0.319	0.946	**5.4%**	**6.0%**
1960	1,805	2,033	1.146	423	1382	0.23	0.77	67.3	0.969	0.905	0.846	0.382	0.954	**4.6%**	**5.0%**
1961	1,594	1,805	1.156	371	1223	0.23	0.77	67.3	0.974	0.905	0.850	0.370	0.958	**4.2%**	**4.4%**
1962	2,830	3,041	1.087	681	2149	0.24	0.76	66.0	0.946	0.889	0.828	0.357	0.932	**6.8%**	**8.4%**
1963	4,521	4,733	1.054	1,106	3415	0.24	0.76	64.2	0.908	0.866	0.798	0.338	0.898	**10.2%**	**11.5%**
1964	2,163	2,391	1.122	513	1650	0.24	0.76	67.3	0.961	0.904	0.840	0.400	0.947	**5.3%**	**5.7%**
1965	4,082	4,277	1.056	997	3085	0.24	0.76	64.2	0.918	0.867	0.806	0.315	0.905	**9.5%**	**11.7%**
1966	2,586	2,797	1.095	620	1966	0.24	0.76	66.0	0.951	0.890	0.832	0.344	0.937	**6.3%**	**7.0%**
1967	15,759	10,262	0.652	4,286	11473	0.27	0.73	64.2	0.666	0.837	0.572	0.620	0.713	**28.7%**	**28.4%**
1968	2,163	2,391	1.122	513	1650	0.24	0.76	66.0	0.961	0.892	0.840	0.324	0.945	**5.5%**	**6.0%**
1969	27,388	9,221	0.337	7,999	19389	0.29	0.71	66.4	0.429	0.789	0.308	0.695	0.534	**46.6%**	**45.5%**
1970	3,578	3,789	1.069	869	2709	0.24	0.76	61.2	0.929	0.836	0.815	0.114	0.907	**9.3%**	**10.0%**
1971	2,683	2,879	1.086	645	2038	0.24	0.76	64.2	0.949	0.872	0.831	0.243	0.931	**6.9%**	**7.2%**
1972	1,984	2,196	1.124	469	1515	0.24	0.76	66.0	0.965	0.892	0.843	0.314	0.948	**5.2%**	**5.6%**
1973	5,286	5,481	1.043	1,299	3986	0.25	0.75	66.3	0.891	0.892	0.784	0.499	0.891	**10.9%**	**12.0%**
1974	5,204	5,416	1.047	1,278	3927	0.25	0.75	66.1	0.893	0.889	0.786	0.484	0.892	**10.8%**	**13.1%**
1975	4,407	4,635	1.059	1,076	3331	0.24	0.76	61.5	0.911	0.835	0.800	0.175	0.892	**10.8%**	**12.4%**
1976	1,610	1,854	1.175	373	1237	0.23	0.77	65.8	0.973	0.893	0.850	0.285	0.955	**4.5%**	**5.0%**
1977	1,513	618	0.417	419	1093	0.28	0.72	62.3	0.978	0.849	0.847	0.017	0.942	**5.8%**	**5.1%**
1978	11,189	8,424	0.755	2,967	8222	0.27	0.73	66.9	0.764	0.894	0.666	0.684	0.798	**20.2%**	**25.0%**
1979	4,424	4,635	1.055	1,082	3342	0.24	0.76	66.0	0.910	0.887	0.800	0.438	0.905	**9.5%**	**10.9%**
1980	6,392	6,587	1.036	1,577	4815	0.25	0.75	66.6	0.866	0.899	0.764	0.573	0.874	**12.6%**	**13.1%**
1981	2,147	2,358	1.115	510	1637	0.24	0.76	68.7	0.961	0.917	0.840	0.480	0.951	**4.9%**	**5.7%**
1982	14,995	10,929	0.730	4,004	10990	0.27	0.73	65.1	0.681	0.880	0.592	0.707	0.734	**26.6%**	**41.7%**
1983	18,849	7,758	0.412	5,412	13438	0.29	0.71	61.3	0.607	0.656	0.492	0.323	0.621	**37.9%**	**40.7%**
1984	3,318	3,529	1.074	804	2514	0.24	0.76	66.0	0.935	0.888	0.819	0.382	0.924	**7.6%**	**8.3%**
1985	2,212	2,423	1.111	526	1686	0.24	0.76	65.1	0.960	0.883	0.839	0.273	0.942	**5.8%**	**6.2%**
1986	7,872	8,099	1.033	1,947	5925	0.25	0.75	65.8	0.833	0.896	0.738	0.603	0.848	**15.2%**	**17.0%**
1987	1,691	1,903	1.146	395	1296	0.23	0.77	68.6	0.972	0.917	0.848	0.451	0.959	**4.1%**	**4.5%**
1988	1,594	1,805	1.156	371	1223	0.23	0.77	63.7	0.974	0.874	0.850	0.159	0.951	**4.9%**	**4.9%**
1989	1,626	1,838	1.152	379	1247	0.23	0.77	66.7	0.973	0.900	0.849	0.336	0.956	**4.4%**	**4.6%**
1990	1,513	1,756	1.186	348	1164	0.23	0.77	63.9	0.976	0.877	0.852	0.169	0.953	**4.7%**	**4.6%**
1991	1,822	2,065	1.154	426	1396	0.23	0.77	63.9	0.969	0.874	0.846	0.184	0.947	**5.3%**	**5.6%**
1992	1,691	1,919	1.156	394	1297	0.23	0.77	63.9	0.972	0.875	0.848	0.177	0.949	**5.1%**	**5.4%**

Formulas: San Joaquin River Fall Run Smolt Survival Model WITHOUT BARRIER

C7 ='Study 519A Flow Data'!AB7
D7 ='Study 519A Flow Data'!G7 (HIDDEN)
E7 ='Study 519A Flow Data'!Q7 (HIDDEN)
F7 =D7+E7
G7 =F7/(C7-0.03*$H$2)
H7 =IF((0.3137*C7-0.0156*$H$2-0.0625*F7)<0,0,(0.3137*C7-0.0156*$H$2-0.0625*F7))
I7 =C7-H7
J7 =H7/C7
K7 =I7/C7
M7 =(1.01045-0.00003*I7)
N7 =(O7+P7)-(O7*P7)
O7 =(0.87634-0.000071*H7)
P7 =IF((-3.65867+0.058492*L7+0.000051*F7)<0,0,(-3.65867+0.058492*L7+0.000051*F7))
Q7 =((K7*M7)+(J7*N7))
R7 =(1-Q7)

T7 ='Study 519A Flow Data'!AC7
U7 ='Study 519A Flow Data'!H7 (HIDDEN)
V7 ='Study 519A Flow Data'!R7 (HIDDEN)
W7 =U7+V7
X7 =W7/(T7-0.03*$H$3)
Y7 =IF((0.3137*T7-0.0156*$H$3-0.0625*W7)<0,0,(0.3137*T7-0.0156*$H$3-0.0625*W7))
Z7 =T7-Y7
AA7 =Y7/T7
AB7 =Z7/T7
AD7 =(1.01045-0.00003*Z7)
AE7 =(AF7+AG7)-(AF7*AG7)
AF7 =(0.87634-0.000071*Y7)
AG7 =IF((-3.65867+0.058492*AC7+0.000051*W7)<0,0,(-3.65867+0.058492*AC7+0.000051*W7))
AH7 =((AB7*AD7)+(AA7*AE7))
AI7 =(1-AH7)
AK7 =0.45*R7+0.55*AI7

Average: 11.39%

Note: Calculated San Joaquin River flows at Stockton = 0.3137*(Vernalis flow) - 0.0156*(Consumptive Depletion) - 0.0625*(CVP/SWP Exports)

Study 622a San Joaquin River Fall Run Salmon Smolt Survival Model WITHOUT BARRIER AT HEAD OF OLD RIVER

Consumptive Depletion for April 1053.00 cfs

Consumptive Depletion for May 1053.00 cfs

San Joaquin River temperatures based on limited historical data from USBR

A	B	C	F	G	H	I	J	K	L	M	N	O	P	Q	R	T	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK
APRIL	Water														Calculated	**MAY**													Calculated	
	Year	Vernalis	CVP + SWP		Calculated				Temp @		Calculated Mortality				Survivability	Vernalis	CVP + SWP		Calculated				Temp @	Calculated Mortality					Survivability	Weighted
Year	Type	Flows	exports	exp/v-cd	Stockton Q	JOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	s234	Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	s234	total survival
1922	A	6,567	6,038	0.924	1,666	4,901	0.25	0.75	60.2	0.863	0.799	0.758	0.170	0.847	15.3%	6,048	6,763	1.124	1,458	4590	0.24	0.76	66.6	0.873	0.905	0.773	0.582	0.881	11.9%	13.4%
1923	B	6,100	6,824	1.124	1,471	4,630	0.24	0.76	59.7	0.872	0.813	0.772	0.181	0.858	14.2%	5,409	5,450	1.013	1,340	4069	0.25	0.75	66.0	0.888	0.886	0.781	0.480	0.888	11.2%	12.6%
1924	C	2,392	2,650	1.122	568	1,824	0.24	0.76	60.6	0.956	0.839	0.836	0.021	0.928	7.2%	2,145	1,335	0.632	573	1572	0.27	0.73	63.9	0.963	0.860	0.836	0.147	0.936	6.4%	6.8%
1925	D	4,679	6,202	1.335	1,064	3,615	0.23	0.77	63.4	0.902	0.874	0.801	0.366	0.896	10.4%	4,193	4,586	1.102	1,012	3181	0.24	0.76	67.3	0.915	0.905	0.804	0.512	0.912	8.8%	9.5%
1926	D	3,725	5,574	1.509	804	2,921	0.22	0.78	63.4	0.923	0.880	0.819	0.334	0.914	8.6%	3,232	3,864	1.207	756	2476	0.23	0.77	67.3	0.936	0.907	0.823	0.475	0.929	7.1%	7.8%
1927	W	5,972	6,144	1.034	1,473	4,499	0.25	0.75	57.1	0.875	0.772	0.772	0.000	0.850	15.0%	5,142	6,763	1.323	1,174	3968	0.23	0.77	64.2	0.891	0.884	0.793	0.441	0.890	11.0%	12.8%
1928	A	5,043	6,544	1.306	1,156	3,886	0.23	0.77	60.2	0.894	0.835	0.794	0.196	0.880	12.0%	3,987	5,616	1.420	883	3104	0.22	0.78	66.6	0.917	0.911	0.814	0.523	0.916	8.4%	10.0%
1929	C	2,549	2,808	1.115	608	1,941	0.24	0.76	60.6	0.952	0.838	0.833	0.029	0.925	7.5%	2,322	3,154	1.377	515	1807	0.22	0.78	63.9	0.956	0.878	0.840	0.240	0.939	6.1%	6.7%
1930	D	2,627	3,564	1.373	585	2,042	0.22	0.78	63.4	0.949	0.873	0.835	0.231	0.932	6.8%	2,347	3,505	1.514	501	1846	0.21	0.79	67.3	0.955	0.913	0.841	0.457	0.946	5.4%	6.0%
1931	C	1,726	2,830	1.670	348	1,378	0.20	0.80	60.6	0.969	0.856	0.852	0.030	0.946	5.4%	1,515	3,153	2.126	262	1253	0.17	0.83	63.9	0.973	0.892	0.858	0.240	0.959	4.1%	4.7%
1932	D	5,059	4,138	0.823	1,312	3,747	0.26	0.74	63.4	0.898	0.840	0.783	0.261	0.883	11.7%	4,193	4,125	0.991	1,041	3152	0.25	0.75	67.3	0.916	0.899	0.802	0.488	0.912	8.8%	10.1%
1933	C	2,656	3,464	1.320	600	2,056	0.23	0.77	60.6	0.949	0.844	0.834	0.063	0.925	7.5%	2,428	2,913	1.215	563	1865	0.23	0.77	63.9	0.954	0.874	0.836	0.228	0.936	6.4%	6.9%
1934	C	2,436	3,439	1.430	533	1,903	0.22	0.78	60.6	0.953	0.848	0.839	0.061	0.930	7.0%	2,150	2,956	1.395	473	1677	0.22	0.78	63.9	0.960	0.879	0.843	0.230	0.942	5.8%	6.3%
1935	B	6,370	6,944	1.096	1,548	4,822	0.24	0.76	59.7	0.866	0.810	0.766	0.187	0.852	14.8%	6,144	5,926	0.970	1,541	4603	0.25	0.75	66.0	0.872	0.884	0.767	0.504	0.875	12.5%	13.5%
1936	B	6,602	5,906	0.899	1,686	4,917	0.26	0.74	59.7	0.863	0.789	0.757	0.135	0.844	15.6%	5,155	5,396	1.053	1,263	3891	0.25	0.75	66.0	0.894	0.888	0.787	0.477	0.892	10.8%	12.9%
1937	B	8,391	8,151	0.975	2,106	6,285	0.25	0.75	59.7	0.822	0.795	0.727	0.249	0.815	18.5%	8,752	7,262	0.833	2,275	6477	0.26	0.74	66.0	0.816	0.878	0.715	0.572	0.832	16.8%	17.5%
1938	W	18,079	8,383	0.464	5,131	12,948	0.28	0.72	57.1	0.622	0.565	0.512	0.109	0.606	39.4%	24,609	9,543	0.388	7,107	17502	0.29	0.71	64.2	0.485	0.738	0.372	0.583	0.558	44.2%	42.0%
1939	D	4,399	3,925	0.899	1,118	3,281	0.25	0.75	63.4	0.912	0.848	0.797	0.250	0.896	10.4%	3,756	3,484	0.936	944	2812	0.25	0.75	67.3	0.926	0.896	0.809	0.456	0.919	8.1%	9.2%
1940	A	6,754	6,944	1.033	1,668	5,086	0.25	0.75	60.2	0.858	0.810	0.758	0.217	0.846	15.4%	5,472	6,238	1.147	1,310	4162	0.24	0.76	66.6	0.886	0.904	0.783	0.555	0.890	11.0%	13.0%
1941	W	10,108	9,415	0.934	2,566	7,542	0.25	0.75	57.1	0.784	0.744	0.694	0.161	0.774	22.6%	10,213	9,931	0.975	2,567	7646	0.25	0.75	64.2	0.781	0.879	0.694	0.603	0.806	19.4%	20.9%
1942	W	6,956	6,944	1.003	1,732	5,224	0.25	0.75	57.1	0.854	0.762	0.753	0.035	0.831	16.9%	6,345	7,488	1.186	1,506	4839	0.24	0.76	64.2	0.865	0.880	0.769	0.478	0.869	13.1%	14.8%
1943	W	7,938	9,583	1.212	1,875	6,063	0.24	0.76	57.1	0.829	0.787	0.743	0.170	0.819	18.1%	6,811	6,949	1.025	1,686	5125	0.25	0.75	64.2	0.857	0.866	0.757	0.451	0.859	14.1%	15.9%
1944	D	5,530	4,478	0.814	1,438	4,092	0.26	0.74	63.4	0.888	0.837	0.774	0.278	0.875	12.5%	4,099	3,781	0.930	1,033	3066	0.25	0.75	67.3	0.918	0.896	0.803	0.471	0.913	8.7%	10.4%
1945	B	6,800	4,254	0.629	1,851	4,949	0.27	0.73	59.7	0.862	0.758	0.745	0.050	0.834	16.6%	5,699	4,573	0.807	1,486	4214	0.26	0.74	66.0	0.884	0.871	0.771	0.435	0.881	11.9%	14.1%
1946	B	5,603	4,928	0.884	1,433	4,170	0.26	0.74	59.7	0.885	0.794	0.775	0.085	0.862	13.8%	4,867	4,977	1.029	1,199	3668	0.25	0.75	66.0	0.900	0.886	0.791	0.456	0.897	10.3%	11.9%
1947	D	3,475	3,844	1.116	834	2,642	0.24	0.76	63.4	0.931	0.862	0.817	0.246	0.915	8.5%	3,197	3,216	1.016	786	2412	0.25	0.75	67.3	0.938	0.900	0.821	0.442	0.929	7.1%	7.8%
1948	B	4,112	5,620	1.377	922	3,190	0.22	0.78	59.7	0.915	0.834	0.811	0.120	0.897	10.3%	3,755	6,763	1.816	739	3016	0.20	0.80	66.0	0.920	0.920	0.824	0.547	0.920	8.0%	9.1%
1949	D	3,662	3,832	1.055	893	2,769	0.24	0.76	63.4	0.927	0.859	0.813	0.245	0.911	8.9%	3,312	4,105	1.251	766	2546	0.23	0.77	67.3	0.934	0.909	0.822	0.487	0.928	7.2%	8.0%
1950	B	3,738	5,002	1.350	844	2,894	0.23	0.77	59.7	0.924	0.833	0.816	0.088	0.903	9.7%	3,332	4,264	1.292	762	2570	0.23	0.77	66.0	0.933	0.897	0.822	0.419	0.925	7.5%	8.5%
1951	A	5,571	4,496	0.812	1,450	4,121	0.26	0.74	60.2	0.887	0.794	0.773	0.092	0.863	13.7%	4,449	5,796	1.312	1,017	3432	0.23	0.77	66.6	0.907	0.908	0.804	0.532	0.908	9.2%	11.3%
1952	W	10,861	8,873	0.819	2,836	8,025	0.26	0.74	57.1	0.770	0.718	0.675	0.134	0.756	24.4%	16,086	9,536	0.594	4,434	11652	0.28	0.72	64.2	0.661	0.817	0.562	0.583	0.704	29.6%	27.2%
1953	W	4,507	4,958	1.108	1,087	3,419	0.24	0.76	57.1	0.908	0.799	0.799	0.000	0.882	11.8%	4,073	7,126	1.763	816	3257	0.20	0.80	64.2	0.913	0.902	0.818	0.460	0.911	8.9%	10.2%
1954	A	4,616	6,144	1.340	1,048	3,568	0.23	0.77	60.2	0.903	0.837	0.802	0.176	0.888	11.2%	3,909	6,213	1.602	822	3087	0.21	0.79	66.6	0.918	0.919	0.818	0.554	0.918	8.2%	9.5%
1955	D	2,803	3,082	1.112	670	2,133	0.24	0.76	63.4	0.946	0.864	0.829	0.207	0.927	7.3%	2,693	3,600	1.353	603	2090	0.22	0.78	67.3	0.948	0.910	0.834	0.461	0.939	6.1%	6.6%
1956	W	5,613	5,550	0.994	1,398	4,216	0.25	0.75	57.1	0.884	0.777	0.777	0.000	0.857	14.3%	6,652	6,763	1.021	1,648	5005	0.25	0.75	64.2	0.860	0.866	0.759	0.441	0.862	13.8%	14.0%
1957	A	4,546	5,436	1.204	1,070	3,476	0.24	0.76	60.2	0.906	0.828	0.800	0.140	0.888	11.2%	4,261	5,606	1.326	970	3291	0.23	0.77	66.6	0.912	0.908	0.807	0.523	0.911	8.9%	9.9%
1958	W	14,930	9,626	0.646	4,065	10,865	0.27	0.73	57.1	0.685	0.659	0.588	0.172	0.677	32.3%	13,808	10,883	0.790	3,635	10173	0.26	0.74	64.2	0.705	0.867	0.618	0.652	0.748	25.2%	28.4%
1959	B	4,285	3,540	0.832	1,107	3,179	0.26	0.74	59.7	0.915	0.801	0.798	0.014	0.886	11.4%	3,065	3,370	1.111	734	2330	0.24	0.76	66.0	0.941	0.890	0.824	0.374	0.928	7.2%	9.1%
1960	D	2,652	3,584	1.368	592	2,061	0.22	0.78	63.4	0.949	0.873	0.834	0.233	0.932	6.8%	2,388	3,569	1.514	510	1879	0.21	0.79	67.3	0.954	0.914	0.840	0.460	0.945	5.5%	6.1%
1961	D	1,798	3,336	1.889	339	1,459	0.19	0.81	63.4	0.967	0.885	0.852	0.220	0.951	4.9%	1,594	2,954	1.891	299	1295	0.19	0.81	67.3	0.972	0.917	0.855	0.428	0.961	3.9%	4.3%
1962	B	4,886	4,452	0.917	1,238	3,648	0.25	0.75	59.7	0.901	0.801	0.788	0.060	0.876	12.4%	3,826	4,606	1.214	896	2930	0.23	0.77	66.0	0.923	0.895	0.813	0.437	0.916	8.4%	10.2%
1963	W	6,129	6,944	1.139	1,472	4,657	0.24	0.76	57.1	0.871	0.780	0.772	0.035	0.849	15.1%	5,541	7,488	1.359	1,254	4287	0.23	0.77	64.2	0.882	0.889	0.787	0.478	0.883	11.7%	13.2%
1964	D	2,638	2,902	1.113	630	2,008	0.24	0.76	63.4	0.950	0.865	0.832	0.198	0.930	7.0%	2,455	3,490	1.440	535	1919	0.22	0.78	67.3	0.953	0.912	0.838	0.456	0.944	5.6%	6.2%
1965	W	6,873	6,944	1.015	1,706	5,167	0.25	0.75	57.1	0.855	0.764	0.755	0.035	0.833	16.7%	5,774	7,474	1.301	1,328	4446	0.23	0.77	64.2	0.877	0.886	0.782	0.478	0.879	12.1%	14.2%
1966	B	4,220	4,202	1.003	1,045	3,175	0.25	0.75	59.7	0.915	0.812	0.802	0.048	0.890	11.0%	3,234	4,117	1.286	741	2493	0.23	0.77	66.0	0.936	0.896	0.824	0.412	0.927	7.3%	9.0%
1967	W	13,637	9,137	0.672	3,690	9,947	0.27	0.73	57.1	0.712	0.671	0.614	0.147	0.701	29.9%	16,631	9,679	0.583	4,596	12035	0.28	0.72	64.2	0.649	0.816	0.550	0.590	0.695	30.5%	30.2%
1968	B	4,267	4,450	1.051	1,044	3,223	0.24	0.76	59.7	0.914	0.814	0.802	0.060	0.889	11.1%	3,333	3,383	1.025	818	2515	0.25	0.75	66.0	0.935	0.886	0.818	0.374	0.923	7.7%	9.2%
1969	W	20,949	7,613	0.364	6,079	14,870	0.29	0.71	57.1	0.564	0.483	0.445	0.069	0.541	45.9%	26,568	9,218	0.347	7,742	18826	0.29	0.71	66.4	0.446	0.795	0.327	0.695	0.547	45.3%	45.6%
1970	W	5,781	4,254	0.740	1,531	4,250	0.26	0.74	57.1	0.883	0.768	0.768	0.000	0.852	14.8%	4,814	4,293	0.898	1,225	3588	0.25	0.75	61.2	0.903	0.819	0.789	0.140	0.881	11.9%	13.2%
1971	W	4,483	5,696	1.280	1,034	3,449	0.23	0.77	57.1	0.907	0.803	0.803	0.000	0.883	11.7%	3,977	7,126	1.806	786	3191	0.20	0.80	64.2	0.915	0.903	0.821	0.460	0.912	8.8%	10.1%
1972	B	2,861	3,544	1.253	660	2,201	0.23	0.77	58.9	0.944	0.830	0.830	0.000	0.918	8.2%	2,666	3,504	1.330	601	2065	0.23	0.77	66.0	0.948	0.897	0.834	0.381	0.937	6.3%	7.2%
1973	A	6,742	6,328	0.943	1,703	5,039	0.25	0.75	59.2	0.859	0.786	0.755	0.127	0.841	15.9%	6,030	5,937	0.990	1,504	4526	0.25	0.75	66.3	0.875	0.890	0.770	0.522	0.878	12.2%	13.8%
1974	W	7,679	9,445	1.235	1,802	5,877	0.23	0.77	56.9	0.834	0.786	0.748	0.151	0.823	17.7%	6,068	6,763	1.120	1,464	4604	0.24	0.76	66.1	0.872	0.898	0.772	0.553	0.879	12.1%	14.6%
1975	W	6,758	6,944	1.032	1,670	5,089	0.25	0.75	53.7	0.858	0.758	0.758	0.000	0.833	16.7%	5,959	7,488	1.263	1,385	4574	0.23	0.77	61.5	0.873	0.849	0.778	0.320	0.868	13.2%	14.8%
1976	C	2,597	3,032	1.182	609	1,988	0.23	0.77	57.8	0.951	0.833	0.833	0.000	0.923	7.7%	2,363	3,099	1.329	531	1832	0.22	0.78	65.8	0.955	0.895	0.839	0.348	0.942	5.8%	6.7%
1977	C	1,665	2,857	1.749	327	1,338	0.20	0.80	62.0	0.970	0.870	0.853	0.114	0.951	4.9%	1,557	873	0.572	417	1140	0.27	0.73	62.3	0.976	0.851	0.847	0.030	0.943	5.7%	5.4%
1978	A	15,543	7,621	0.491	4,383	11,160	0.28	0.72	61.4	0.676	0.705	0.565	0.321	0.684	31.6%	11,607	8,414	0.727	3,099	8508	0.27	0.73	66.9	0.755	0.891	0.656	0.684	0.792	20.8%	25.7%
1979	B	6,421	5,886	0.921	1,630	4,791	0.25	0.75	60.5	0.867	0.804	0.761	0.180	0.851	14.9%	5,421	5,243	0.973	1,356	4064	0.25	0.75	66.0	0.889	0.883	0.780	0.469	0.887	11.3%	12.9%
1980	A	6,885	5,490	0.801	1,800	5,085	0.26	0.74	60.1	0.858	0.783	0.749	0.137	0.838	16.2%	7,127	8,042	1.133	1,717	5410	0.24	0.76	66.6	0.848	0.913	0.754	0.647	0.864	13.6%	14.8%
1981	D	4,374	4,948	1.140	1,046	3,327	0.24	0.76	64.6	0.911	0.876	0.802	0.372	0.902	9.8%	3,602	3,647	1.021	886	2717	0.25	0.75	68.7	0.929	0.915	0.813	0.546	0.926	7.4%	8.5%
1982	W	27,053	9,509	0.352	7,876	19,177	0.29	0.71	52.8	0.435	0.317	0.317	0.000	0.401	59.9%	17,520	10,919	0.624	4,797	12723	0.27	0.73	65.1	0.629	0.864	0.536	0.706	0.693	30.7%	43.8%
1983	W	20,853	7,071	0.340	6,083	14,770	0.29	0.71	57.2	0.567	0.471	0.444	0.048	0.539	46.1%	22,049	7,752	0.352	6,416	15633	0.29	0.71	61.3	0.541	0.607	0.421	0.322	0.561	43.9%	44.9%
1984	W	5,323	4,636	0.876	1,364	3,959	0.26	0.74	60.7	0.892	0.808	0.780	0.128	0.870	13.0%	4,525	5,126	1.141	1,083	3443	0.24	0.76	66.0	0.907	0.892	0.799	0.463	0.904	9.6%	11.1%
1985	D	3,816	3,862	1.021	939	2,876	0.25	0.75	62.5	0.924	0.847	0.810	0.194	0.905	9.5%	3,529	3,754	1.073	856	2673	0.24	0.76	65.1	0.930	0.878	0.816	0.341	0.918	8.2%	8.8%
1986	W	9,836	7,531	0.768	2,598	7,238	0.26	0.74	61.3	0.793	0.788	0.692	0.311	0.792	20.8%	8,707	8,565	0.987	2,180	6527	0.25	0.75	65.8	0.815	0.896	0.722	0.627	0.835	16.5%	18.4%
1987	D	2,779	3,245	1.181	653	2,126	0.23	0.77	62.3	0.947	0.856	0.830	0.151	0.925	7.5%	2,558	2,832	1.121	609	1949	0.24	0.76	68.6	0.952	0.916	0.833	0.498	0.943	5.7%	6.5%
1988	C	2,429	2,854	1.191	567	1,862	0.23	0.77	62.1	0.955	0.856	0.836	0.119	0.931	6.9%	2,216	2,991	1.369	492	1724	0.22	0.78	63.7	0.959	0.876	0.841	0.220	0.940	6.0%	6.4%
1989	D	2,112	5,224	2.511	320	1,792	0.15	0.85	64.1	0.957	0.906	0.854	0.357	0.949	5.1%	1,767	3,916	2.257	293	1474	0.17	0.83	66.7	0.966	0.919	0.856	0.442	0.958	4.2%	4.6%
1990	C	1,829	3,395	1.889	345	1,484	0.19	0.81	60.6	0.966	0.861	0.852	0.059	0.946	5.4%	1,593	2,715	1.739	314	1279	0.20	0.80	63.9	0.972	0.886	0.854	0.217	0.955	4.5%	4.9%
1991	C	2,436	3,921	1.631	503	1,933	0.21	0.79	60.6	0.952	0.854	0.841	0.086	0.932	6.8%	1,872	2,925	1.589	388	1484	0.21	0.79	63.9	0.966	0.883	0.849	0.228	0.949	5.1%	5.9%
1992	C	2,245	3,426	1.548	474	1,771	0.21	0.79	60.6	0.957	0.852	0.843	0.061	0.935	6.5%	1,752	2,950	1.715	349	1403	0.20	0.80	63.9	0.968	0.886	0.852	0.229	0.952	4.8%	5.6%

Formulas: San Joaquin River Fall Run Smolt Survival Model WITHOUT BARRIER

C7 ='Study 622a Flow Data'!AA7
D7 ='Study 622a Flow Data'!G7 (HIDDEN)
E7 ='Study 622a Flow Data'!Q7 (HIDDEN)
F7 =D7+E7
G7 =F7/(C7-0.03*$H$2)
H7 =IF((0.3137*C7-0.0156*$H$2-0.0625*F7)<0,0,(0.3137*C7-0.0156*$H$2-0.0625*F7))
I7 =C7-H7
J7 =H7/C7
K7 =I7/C7
M7 =(1.01045-0.00003*I7)
N7 =(O7+P7)-(O7*P7)
O7 =(0.87634-0.000071*H7)
P7 =IF((-3.65867+0.058492*L7+0.000051*F7)<0,0,(-3.65867+0.058492*L7+0.000051*F7))
Q7 =((K7*M7)+(J7*N7))
R7 =(1-Q7)

T7 ='Study 622a Flow Data'!AB7
U7 ='Study 622a Flow Data'!H7 (HIDDEN)
V7 ='Study 622a Flow Data'!R7 (HIDDEN)
W7 =U7+V7
X7 =W7/(T7-0.03*$H$3)
Y7 =IF((0.3137*T7-0.0156*$H$3-0.0625*W7)<0,0,(0.3137*T7-0.0156*$H$3-0.0625*W7))
Z7 =T7-Y7
AA7 =Y7/T7
AB7 =Z7/T7
AD7 =(1.01045-0.00003*Z7)
AE7 =(AF7+AG7)-(AF7*AG7)
AF7 =(0.87634-0.000071*Y7)
AG7 =IF((-3.65867+0.058492*AC7+0.000051*W7)<0,0,(-3.65867+0.058492*AC7+0.000051*W7))
AH7 =((AB7*AD7)+(AA7*AE7))
AI7 =(1-AH7)
AK7 =0.45*R7+0.55*AI7

Average: 13.04%

Note: Calculated San Joaquin River flows at Stockton = 0.3137*(Vernalis flow) - 0.0156*(Consumptive Depletion) - 0.0625*(CVP/SWP Exports)

Study 492 San Joaquin River Fall Run Salmon Smolt Survival Model WITH BARRIER — Old River Barrier Open above 7500.00 cfs at Vernalis

Barrier at head of Old River from Apr 15 to May 15 — Consumptive Depletion for April 1053.00 cfs

Consumptive Depletion for May 1053.00 cfs

Row	A	B	C	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
5		Water	**APRIL**													**Calculated**		**MAY**													**Calculated**		**Weighted**	
6		Year	Vernalis	CVP + SWP		Calculated				Temp @		Calculated Mortality				**Survival**		Vernalis	CVP+SWP		Calculated				Temp @		Calculated Mortality				**Survival**		**(April + June)**	
7	Year	Type	Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	**s234**		Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt	m2	m34	m3	m4	m234	**s234**		**total survival**	
8	1922	A	6,201	8,487	1.376	3,944	2,257	0.64	0.36	60.2	0.943	0.716	0.596	0.295	0.798	**20.2%**		5,936	10,783	1.826	3,459	2,477	0.58	0.42	66.6	0.936	0.921	0.631	0.787	0.927	**7.3%**		**13.1%**	
9	1923	B	5,344	8,201	1.544	3,372	1,972	0.63	0.37	59.7	0.951	0.728	0.637	0.252	0.811	**18.9%**		5,156	6,505	1.270	3,096	2,060	0.60	0.40	66.0	0.949	0.840	0.657	0.534	0.883	**11.7%**		**14.9%**	
10	1924	C	1,983	2,756	1.412	1,255	728	0.63	0.37	60.6	0.989	0.793	0.787	0.027	0.865	**13.5%**		1,870	1,317	0.716	1,151	719	0.62	0.38	63.9	0.989	0.825	0.795	0.146	0.888	**11.2%**		**12.3%**	
11	1925	D	3,983	7,042	1.782	2,484	1,499	0.62	0.38	63.4	0.965	0.823	0.700	0.409	0.876	**12.4%**		3,822	5,269	1.390	2,278	1,544	0.60	0.40	67.3	0.964	0.871	0.715	0.547	0.908	**9.2%**		**10.6%**	
12	1926	D	3,664	6,184	1.703	2,292	1,371	0.63	0.37	63.4	0.969	0.818	0.714	0.365	0.875	**12.5%**		3,545	5,253	1.495	2,101	1,445	0.59	0.41	67.3	0.967	0.876	0.727	0.546	0.913	**8.7%**		**10.4%**	
13	1927	W	5,344	9,814	1.847	3,324	2,020	0.62	0.38	57.1	0.950	0.706	0.640	0.182	0.798	**20.2%**		5,156	8,766	1.711	3,022	2,133	0.59	0.41	64.2	0.946	0.846	0.662	0.544	0.887	**11.3%**		**15.3%**	
14	1928	A	3,983	7,932	2.007	2,457	1,525	0.62	0.38	60.2	0.965	0.781	0.702	0.267	0.852	**14.8%**		3,822	6,652	1.755	2,233	1,589	0.58	0.42	66.6	0.963	0.880	0.718	0.576	0.915	**8.5%**		**11.4%**	
15	1929	C	2,017	2,924	1.473	1,273	744	0.63	0.37	60.6	0.988	0.793	0.786	0.035	0.865	**13.5%**		1,887	3,171	1.710	1,102	785	0.58	0.42	63.9	0.987	0.847	0.798	0.241	0.905	**9.5%**		**11.3%**	
16	1930	D	2,420	4,050	1.696	1,513	907	0.63	0.37	63.4	0.983	0.828	0.769	0.256	0.886	**11.4%**		1,935	3,838	2.016	1,111	824	0.57	0.43	67.3	0.986	0.893	0.797	0.474	0.933	**6.7%**		**8.8%**	
17	1931	C	1,983	2,924	1.498	1,250	733	0.63	0.37	60.6	0.988	0.795	0.788	0.035	0.867	**13.3%**		1,984	2,911	1.491	1,173	811	0.59	0.41	63.9	0.986	0.840	0.793	0.227	0.900	**10.0%**		**11.5%**	
18	1932	D	4,504	5,563	1.244	2,880	1,624	0.64	0.36	63.4	0.962	0.781	0.672	0.333	0.846	**15.4%**		3,871	5,172	1.347	2,313	1,558	0.60	0.40	67.3	0.964	0.868	0.712	0.542	0.907	**9.3%**		**12.1%**	
19	1933	C	2,807	4,151	1.496	1,772	1,035	0.63	0.37	60.6	0.979	0.775	0.751	0.098	0.850	**15.0%**		2,683	2,765	1.043	1,627	1,056	0.61	0.39	63.9	0.979	0.813	0.761	0.220	0.878	**12.2%**		**13.4%**	
20	1934	C	1,983	3,764	1.929	1,225	758	0.62	0.38	60.6	0.988	0.806	0.789	0.078	0.875	**12.5%**		1,984	3,269	1.674	1,161	823	0.59	0.41	63.9	0.986	0.845	0.794	0.246	0.903	**9.7%**		**10.9%**	
21	1935	B	6,386	10,453	1.645	4,011	2,375	0.63	0.37	59.7	0.939	0.741	0.592	0.366	0.815	**18.5%**		6,066	7,855	1.302	3,638	2,429	0.60	0.40	66.0	0.938	0.848	0.618	0.602	0.884	**11.6%**		**14.7%**	
22	1936	B	6,403	8,302	1.303	4,086	2,317	0.64	0.36	59.7	0.941	0.692	0.586	0.257	0.782	**21.8%**		5,156	6,554	1.279	3,094	2,061	0.60	0.40	66.0	0.949	0.841	0.657	0.536	0.884	**11.6%**		**16.2%**	
23	1937	B	7,949	9,125	1.153	1,907	6,042	0.24	0.76	59.7	0.829	0.818	0.741	0.299	0.827	**17.3%**		8,148	4,781	0.589	2,241	5,907	0.28	0.72	66.0	0.833	0.843	0.717	0.446	0.836	**16.4%**		**16.8%**	
24	1938	W	18,049	10,319	0.573	5,001	13,048	0.28	0.72	57.1	0.619	0.621	0.521	0.207	0.619	**38.1%**		23,972	11,580	0.484	6,780	17,192	0.28	0.72	64.2	0.495	0.811	0.395	0.687	0.584	**41.6%**		**40.0%**	
25	1939	D	2,891	4,134	1.446	1,829	1,062	0.63	0.37	63.4	0.979	0.813	0.746	0.261	0.874	**12.6%**		2,683	4,098	1.545	1,584	1,099	0.59	0.41	67.3	0.977	0.879	0.764	0.487	0.919	**8.1%**		**10.1%**	
26	1940	A	5,748	10,033	1.755	3,591	2,156	0.62	0.38	60.2	0.946	0.763	0.621	0.374	0.832	**16.8%**		5,156	7,595	1.482	3,060	2,095	0.59	0.41	66.6	0.948	0.872	0.659	0.624	0.903	**9.7%**		**12.9%**	
27	1941	W	10,083	12,268	1.220	2,380	7,703	0.24	0.76	57.1	0.779	0.797	0.707	0.307	0.784	**21.6%**		9,579	11,954	1.252	2,241	7,338	0.23	0.77	64.2	0.790	0.917	0.717	0.706	0.820	**18.0%**		**19.6%**	
28	1942	W	6,907	10,638	1.547	4,359	2,548	0.63	0.37	57.1	0.934	0.664	0.567	0.224	0.763	**23.7%**		5,936	10,783	1.826	3,459	2,477	0.58	0.42	64.2	0.936	0.869	0.631	0.646	0.897	**10.3%**		**16.3%**	
29	1943	W	7,915	10,705	1.358	1,798	6,118	0.23	0.77	57.1	0.827	0.806	0.749	0.227	0.822	**17.8%**		6,180	8,636	1.405	3,685	2,495	0.60	0.40	64.2	0.936	0.822	0.615	0.537	0.868	**13.2%**		**15.3%**	
30	1944	D	3,428	4,235	1.247	2,190	1,238	0.64	0.36	63.4	0.973	0.795	0.721	0.266	0.859	**14.1%**		2,976	4,277	1.453	1,767	1,210	0.59	0.41	67.3	0.974	0.874	0.751	0.496	0.915	**8.5%**		**11.0%**	
31	1945	B	5,899	6,386	1.088	3,801	2,098	0.64	0.36	59.7	0.948	0.669	0.606	0.159	0.768	**23.2%**		3,871	5,172	1.347	2,313	1,558	0.60	0.40	66.0	0.964	0.846	0.712	0.466	0.893	**10.7%**		**16.3%**	
32	1946	B	5,344	5,916	1.114	3,439	1,905	0.64	0.36	59.7	0.953	0.682	0.632	0.135	0.779	**22.1%**		3,871	5,513	1.436	2,302	1,569	0.59	0.41	66.0	0.963	0.852	0.713	0.483	0.897	**10.3%**		**15.6%**	
33	1947	D	2,807	4,302	1.550	1,767	1,039	0.63	0.37	63.4	0.979	0.818	0.751	0.269	0.878	**12.2%**		2,683	3,887	1.466	1,591	1,093	0.59	0.41	67.3	0.978	0.876	0.763	0.476	0.917	**8.3%**		**10.0%**	
34	1948	B	3,983	6,789	1.718	2,491	1,492	0.63	0.37	59.7	0.966	0.753	0.699	0.180	0.833	**16.7%**		3,822	7,839	2.068	2,195	1,627	0.57	0.43	66.0	0.962	0.889	0.721	0.602	0.920	**8.0%**		**11.9%**	
35	1949	D	3,983	5,109	1.293	2,540	1,443	0.64	0.36	63.4	0.967	0.790	0.696	0.310	0.854	**14.6%**		2,976	4,993	1.696	1,743	1,233	0.59	0.41	67.3	0.973	0.884	0.753	0.532	0.921	**7.9%**		**10.9%**	
36	1950	B	3,983	6,184	1.565	2,509	1,474	0.63	0.37	59.7	0.966	0.743	0.698	0.149	0.826	**17.4%**		3,822	5,481	1.446	2,271	1,551	0.59	0.41	66.0	0.964	0.852	0.715	0.481	0.898	**10.2%**		**13.5%**	
37	1951	A	5,344	6,353	1.196	3,426	1,918	0.64	0.36	60.2	0.953	0.702	0.633	0.187	0.792	**20.8%**		5,156	7,351	1.435	3,068	2,087	0.60	0.40	66.6	0.948	0.867	0.658	0.612	0.900	**10.0%**		**14.9%**	
38	1952	W	10,840	10,520	0.973	2,726	8,113	0.25	0.75	57.1	0.767	0.752	0.683	0.218	0.763	**23.7%**		15,450	11,498	0.746	4,112	11,339	0.27	0.73	64.2	0.670	0.868	0.584	0.683	0.723	**27.7%**		**25.9%**	
39	1953	W	3,983	5,680	1.438	2,524	1,459	0.63	0.37	57.1	0.967	0.697	0.697	0.000	0.796	**20.4%**		3,822	7,855	2.072	2,194	1,628	0.57	0.43	64.2	0.962	0.859	0.721	0.497	0.903	**9.7%**		**14.5%**	
40	1954	A	3,983	9,075	2.297	2,424	1,559	0.61	0.39	60.2	0.964	0.800	0.704	0.325	0.864	**13.6%**		3,822	7,741	2.042	2,198	1,624	0.58	0.42	66.6	0.962	0.897	0.720	0.632	0.924	**7.6%**		**10.3%**	
41	1955	D	2,807	3,865	1.393	1,780	1,027	0.63	0.37	63.4	0.980	0.812	0.750	0.247	0.873	**12.7%**		2,683	4,196	1.582	1,581	1,103	0.59	0.41	67.3	0.977	0.880	0.764	0.492	0.920	**8.0%**		**10.1%**	
42	1956	W	6,201	7,999	1.297	3,958	2,243	0.64	0.36	57.1	0.943	0.631	0.595	0.089	0.744	**25.6%**		6,131	10,864	1.781	3,582	2,550	0.58	0.42	64.2	0.934	0.868	0.622	0.651	0.895	**10.5%**		**17.3%**	
43	1957	A	3,983	6,420	1.625	2,502	1,481	0.63	0.37	60.2	0.966	0.756	0.699	0.190	0.834	**16.6%**		3,822	6,213	1.639	2,248	1,574	0.59	0.41	66.6	0.963	0.874	0.717	0.554	0.911	**8.9%**		**12.4%**	
44	1958	W	14,907	11,579	0.778	3,936	10,970	0.26	0.74	57.1	0.681	0.706	0.597	0.272	0.688	**31.2%**		13,173	12,230	0.931	3,352	9,822	0.25	0.75	64.2	0.716	0.899	0.638	0.720	0.762	**23.8%**		**27.1%**	
45	1959	B	2,807	3,764	1.357	1,783	1,024	0.64	0.36	59.7	0.980	0.756	0.750	0.025	0.838	**16.2%**		2,683	4,277	1.613	1,578	1,105	0.59	0.41	66.0	0.977	0.863	0.764	0.420	0.910	**9.0%**		**12.2%**	
46	1960	D	2,269	3,949	1.765	1,413	856	0.62	0.38	63.4	0.985	0.832	0.776	0.251	0.890	**11.0%**		1,903	3,643	1.947	1,097	806	0.58	0.42	67.3	0.986	0.892	0.798	0.464	0.932	**6.8%**		**8.7%**	
47	1961	D	1,983	3,529	1.808	1,232	751	0.62	0.38	63.4	0.988	0.837	0.789	0.230	0.894	**10.6%**		1,903	3,480	1.860	1,102	801	0.58	0.42	67.3	0.986	0.890	0.798	0.455	0.931	**6.9%**		**8.6%**	
48	1962	B	4,201	4,941	1.185	2,693	1,508	0.64	0.36	59.7	0.965	0.712	0.685	0.085	0.803	**19.7%**		2,976	5,090	1.729	1,740	1,236	0.58	0.42	66.0	0.973	0.867	0.753	0.461	0.911	**8.9%**		**13.8%**	
49	1963	W	5,361	9,814	1.842	3,336	2,025	0.62	0.38	57.1	0.950	0.705	0.640	0.182	0.797	**20.3%**		5,156	9,530	1.860	2,997	2,158	0.58	0.42	64.2	0.946	0.860	0.664	0.583	0.896	**10.4%**		**14.9%**	
50	1964	D	2,807	3,563	1.284	1,789	1,018	0.64	0.36	63.4	0.980	0.807	0.749	0.231	0.870	**13.0%**		2,683	4,603	1.736	1,568	1,116	0.58	0.42	67.3	0.977	0.885	0.765	0.513	0.924	**7.6%**		**10.1%**	
51	1965	W	6,201	10,268	1.664	3,892	2,310	0.63	0.37	57.1	0.941	0.682	0.600	0.205	0.779	**22.1%**		5,936	7,969	1.350	3,550	2,386	0.60	0.40	64.2	0.939	0.813	0.624	0.503	0.864	**13.6%**		**17.5%**	
52	1966	B	3,983	5,008	1.267	2,543	1,440	0.64	0.36	59.7	0.967	0.723	0.696	0.089	0.811	**18.9%**		2,976	5,009	1.701	1,743	1,233	0.59	0.41	66.0	0.973	0.866	0.753	0.457	0.910	**9.0%**		**13.4%**	
53	1967	W	13,613	10,722	0.789	3,584	10,029	0.26	0.74	57.1	0.710	0.708	0.622	0.228	0.709	**29.1%**		16,003	11,661	0.730	4,275	11,728	0.27	0.73	64.2	0.659	0.868	0.573	0.691	0.715	**28.5%**		**28.8%**	
54	1968	B	3,664	5,277	1.453	2,319	1,344	0.63	0.37	59.7	0.970	0.741	0.712	0.102	0.825	**17.5%**		2,683	3,903	1.472	1,590	1,093	0.59	0.41	66.0	0.978	0.858	0.763	0.401	0.907	**9.3%**		**13.0%**	
55	1969	W	20,923	10,302	0.493	5,903	15,020	0.28	0.72	57.1	0.560	0.569	0.457	0.207	0.563	**43.7%**		26,217	11,384	0.435	7,496	18,720	0.29	0.71	66.4	0.449	0.873	0.344	0.806	0.570	**43.0%**		**43.3%**	
56	1970	W	5,344	6,621	1.246	3,418	1,926	0.64	0.36	57.1	0.953	0.641	0.634	0.019	0.753	**24.7%**		5,156	6,164	1.203	3,107	2,049	0.60	0.40	61.2	0.949	0.737	0.656	0.235	0.821	**17.9%**		**21.0%**	
57	1971	W	3,983	6,756	1.710	2,492	1,491	0.63	0.37	57.1	0.966	0.707	0.699	0.026	0.804	**19.6%**		3,822	8,181	2.158	2,184	1,638	0.57	0.43	64.2	0.961	0.864	0.721	0.514	0.906	**9.4%**		**14.0%**	
58	1972	B	3,664	4,706	1.296	2,336	1,328	0.64	0.36	58.9	0.971	0.718	0.710	0.026	0.810	**19.0%**		2,683	4,245	1.601	1,579	1,104	0.59	0.41	66.0	0.977	0.863	0.764	0.418	0.910	**9.0%**		**13.5%**	
59	1973	A	5,697	7,462	1.317	3,633	2,065	0.64	0.36	59.2	0.949	0.689	0.618	0.185	0.783	**21.7%**		5,156	6,733	1.314	3,088	2,067	0.60	0.40	66.3	0.948	0.850	0.657	0.563	0.889	**11.1%**		**15.8%**	
60	1974	W	7,663	11,041	1.447	1,697	5,966	0.22	0.78	56.9	0.831	0.813	0.756	0.233	0.827	**17.3%**		5,936	9,433	1.598	3,503	2,434	0.59	0.41	66.1	0.937	0.884	0.628	0.689	0.906	**9.4%**		**12.9%**	
61	1975	W	6,621	9,310	1.413	4,204	2,417	0.63	0.37	53.7	0.938	0.578	0.578	0.000	0.709	**29.1%**		5,936	9,726	1.647	3,493	2,443	0.59	0.41	61.5	0.937	0.790	0.628	0.435	0.850	**15.0%**		**21.3%**	
62	1976	C	1,983	3,008	1.542	1,247	736	0.63	0.37	57.8	0.988	0.788	0.788	0.000	0.862	**13.8%**		1,870	3,269	1.778	1,088	782	0.58	0.42	65.8	0.987	0.871	0.799	0.357	0.919	**8.1%**		**10.6%**	
63	1977	C	1,983	3,176	1.628	1,242	741	0.63	0.37	62.0	0.988	0.816	0.788	0.130	0.880	**12.0%**		1,870	2,082	1.132	1,127	744	0.60	0.40	62.3	0.988	0.815	0.796	0.092	0.884	**11.6%**		**11.8%**	
64	1978	A	14,940	10,823	0.726	3,994	10,946	0.27	0.73	61.4	0.682	0.790	0.593	0.485	0.711	**28.9%**		10,831	11,059	1.024	2,690	8,141	0.25	0.75	66.9	0.766	0.943	0.685	0.818	0.810	**19.0%**		**23.5%**	
65	1979	B	5,428	6,924	1.283	3,466	1,962	0.64	0.36	60.5	0.952	0.716	0.630	0.233	0.801	**19.9%**		5,156	6,196	1.209	3,106	2,050	0.60	0.40	66.0	0.949	0.834	0.656	0.518	0.880	**12.0%**		**15.5%**	
66	1980	A	6,739	8,151	1.215	4,318	2,421	0.64	0.36	60.1	0.938	0.687	0.570	0.272	0.777	**22.3%**		6,619	7,709	1.170	3,998	2,621	0.60	0.40	66.6	0.932	0.849	0.592	0.630	0.882	**11.8%**		**16.5%**	
67	1981	D	3,664	5,479	1.508	2,313	1,350	0.63	0.37	64.6	0.970	0.827	0.712	0.399	0.880	**12.0%**		2,683	3,757	1.417	1,595	1,088	0.59	0.41	68.7	0.978	0.894	0.763	0.551	0.928	**7.2%**		**9.4%**	
68	1982	W	27,023	10,604	0.393	7,798	19,225	0.29	0.71	52.8	0.434	0.323	0.323	0.000	0.402	**59.8%**		15,158	11,937	0.789	3,992	11,165	0.26	0.74	65.1	0.675	0.901	0.593	0.758	0.735	**26.5%**		**41.5%**	
69	1983	W	20,738	9,764	0.472	5,879	14,859	0.28	0.72	57.2	0.565	0.559	0.459	0.185	0.563	**43.7%**		19,077	9,969	0.523	5,345	13,732	0.28	0.72	61.3	0.598	0.716	0.497	0.435	0.631	**36.9%**		**39.9%**	
70	1984	W	5,344	6,890	1.297	3,410	1,934	0.64	0.36	60.7	0.952	0.723	0.634	0.243	0.806	**19.4%**		5,156	6,375	1.244	3,100	2,056	0.60	0.40	66.0	0.949	0.837	0.656	0.527	0.882	**11.8%**		**15.2%**	
71	1985	D	2,807	4,269	1.538	1,768	1,038	0.63	0.37	62.5	0.979	0.804	0.751	0.215	0.869	**13.1%**		2,683	4,554	1.717	1,569	1,114	0.58	0.42	65.1	0.977	0.855	0.765	0.381	0.905	**9.5%**		**11.1%**	
72	1986	W	9,814	9,058	0.926	2,496	7,318	0.25	0.75	61.3	0.791	0.816	0.699	0.389	0.797	**20.3%**		8,083	8,376	1.040	1,996	6,087	0.25	0.75	65.8	0.828	0.898	0.735	0.617	0.845	**15.5%**		**17.6%**	
73	1987	D	2,033	3,580	1.788	1,265	769	0.62	0.38	62.3	0.987	0.822	0.787	0.168	0.885	**11.5%**		1,870	3,399	1.849	1,084	786	0.58	0.42	68.6	0.987	0.905	0.799	0.527	0.940	**6.0%**		**8.5%**	
74	1988	C	1,983	2,857	1.464	1,252	731	0.63	0.37	62.1	0.989	0.813	0.787	0.119	0.878	**12.2%**		1,870	3,285	1.787	1,088	783	0.58	0.42	63.7	0.987	0.846	0.799	0.235	0.905	**9.5%**		**10.7%**	
75	1989	D	2,420	5,764	2.413	1,462	958	0.60	0.40	64.1	0.982	0.860	0.773	0.385	0.908	**9.2%**		1,903	4,180	2.234	1,079	823	0.57	0.43	66.7	0.986	0.891	0.800	0.456	0.932	**6.8%**		**7.9%**	
76	1990	C	1,983	3,496	1.791	1,233	750	0.62	0.38	60.6	0.988	0.802	0.789	0.064	0.873	**12.7%**		1,935	2,992	1.572	1,139	796	0.59	0.41	63.9	0.987	0.843	0.795	0.232	0.902	**9.8%**		**11.1%**	
77	1991	C	2,437	4,453	1.852	1,512	925	0.62	0.38	60.6	0.983	0.795	0.769	0.113	0.866	**13.4%**		1,984	3,204	1.641	1,163	821	0.59	0.41	63.9	0.986	0.844	0.794	0.242	0.903	**9.7%**		**11.4%**	
78	1992	C	2,252	3,916	1.764	1,403	849	0.62	0.38	60.6	0.985	0.796	0.777	0.086	0.867	**13.3%**		1,984	3,253	1.666	1,162	822	0.59	0.41	63.9	0.986	0.844	0.794	0.245	0.903	**9.7%**		**11.3%**	
79																															**Average:**		**15.44%**	

Row	Label	April formulas	May formulas
80	Calculations- San Joaquin River Fall		T8 ='Study 492 Flow Data'!AC7
81	Run Smolt Survival Model WITH BARRIER:	C8 ='Study 492 Flow Data'!AB7	U8 ='Study 492 Flow Data'!H7 (HIDDEN)
82		D8 ='Study 492 Flow Data'!G7 (HIDDEN)	V8 ='Study 492 Flow Data'!R7 (HIDDEN)
83		E8 ='Study 492 Flow Data'!Q7 (HIDDEN)	W8 =U8+V8
84		F8 =D8+E8	X8 =W8/(T8-0.03*$R$3)
85		G8 =F8/(C8-0.03*$R$2)	Y8 =IF(T8<$R$1,(0.52*(0.3137*T8-0.0156*$R$3-0.0625*W8)+0.48*T8),(0.3137*T8-0.0156*$R$3-0.0625*W8))
86		H8 =IF(C8<$R$1,(0.47*(0.3137*C8-0.0156*$R$2-0.0625*F8)+0.53*C8),(0.3137*C8-0.0156*$R$2-0.0625*F8))	Z8 =T8-Y8
87		I8 =C8-H8	AA8 =Y8/T8
88		J8 =H8/C8	AB8 =Z8/T8
89		K8 =I8/C8	AD8 =(1.01045-0.00003*Z8)
90		M8 =(1.01045-0.00003*I8)	AE8 =(AF8+AG8)-(AF8*AG8)
91		N8 =(O8+P8)-(O8*P8)	AF8 =IF((0.87634-0.000071*Y8)<0,0,(0.87634-0.000071*Y8))
92		O8 =IF((0.87634-0.000071*H8)<0,0,(0.87634-0.000071*H8))	AG8 =IF((-3.65867+0.058492*AC8+0.000051*W8)<0,0,(-3.65867+0.058492*AC8+0.000051*W8))
93		P8 =IF((-3.65867+0.058492*L8+0.000051*F8)<0,0,(-3.65867+0.058492*L8+0.000051*F8))	AH8 =((AB8*AD8)+(AA8*AE8))
94		Q8 =((K8*M8)+(J8*N8))	AI8 =(1-AH8)
95		R8 =(1-Q8)	AK8 =0.45*G94+0.55*AI8

Study 492 San Joaquin River Fall Run Salmon Smolt Survival Model WITHOUT BARRIER AT HEAD OF OLD RIVER

Consumptive Depletion for April 1053.00 cfs
Consumptive Depletion for May 1053.00 cfs

San Joaquin River temperatures based on limited historical data from USBR

APRIL

Year	Water Year Type	Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	Calculated Mortality m2	m34	m3	m4	m234	Calculated Survivability s234
1922	A	6,201	8,487	1.376	1,398	4,803	0.23	0.77	60.2	0.866	0.843	0.777	0.295	0.861	**13.9%**
1923	B	5,344	8,201	1.544	1,147	4,197	0.21	0.79	59.7	0.885	0.846	0.795	0.252	0.876	**12.4%**
1924	C	1,983	2,756	1.412	433	1,550	0.22	0.78	60.6	0.964	0.850	0.846	0.027	0.939	**6.1%**
1925	D	3,983	7,042	1.782	793	3,190	0.20	0.80	63.4	0.915	0.894	0.820	0.409	0.911	**8.9%**
1926	D	3,664	6,184	1.703	746	2,917	0.20	0.80	63.4	0.923	0.888	0.823	0.365	0.916	**8.4%**
1927	W	5,344	9,814	1.847	1,047	4,298	0.20	0.80	57.1	0.882	0.838	0.802	0.182	0.873	**12.7%**
1928	A	3,983	7,932	2.007	737	3,246	0.19	0.81	60.2	0.913	0.871	0.824	0.267	0.905	**9.5%**
1929	C	2,017	2,924	1.473	433	1,583	0.21	0.79	60.6	0.963	0.851	0.846	0.035	0.939	**6.1%**
1930	D	2,420	4,050	1.696	490	1,930	0.20	0.80	63.4	0.953	0.882	0.842	0.256	0.938	**6.2%**
1931	C	1,983	2,924	1.498	423	1,560	0.21	0.79	60.6	0.964	0.852	0.846	0.035	0.940	**6.0%**
1932	D	4,504	5,563	1.244	1,049	3,455	0.23	0.77	63.4	0.907	0.868	0.802	0.333	0.898	**10.2%**
1933	C	2,807	4,151	1.496	605	2,202	0.22	0.78	60.6	0.944	0.850	0.833	0.098	0.924	**7.6%**
1934	C	1,983	3,764	1.929	370	1,613	0.19	0.81	60.6	0.962	0.862	0.850	0.078	0.943	**5.7%**
1935	B	6,386	10,453	1.645	1,334	5,053	0.21	0.79	59.7	0.859	0.862	0.782	0.366	0.859	**14.1%**
1936	B	6,403	8,302	1.303	1,473	4,930	0.23	0.77	59.7	0.863	0.830	0.772	0.257	0.855	**14.5%**
1937	B	7,949	9,125	1.153	1,907	6,042	0.24	0.76	59.7	0.829	0.818	0.741	0.299	0.827	**17.3%**
1938	W	18,049	10,319	0.573	5,001	13,048	0.28	0.72	57.1	0.619	0.621	0.521	0.207	0.619	**38.1%**
1939	D	2,891	4,134	1.446	632	2,259	0.22	0.78	63.4	0.943	0.875	0.831	0.261	0.928	**7.2%**
1940	A	5,748	10,033	1.755	1,160	4,588	0.20	0.80	60.2	0.873	0.871	0.794	0.374	0.872	**12.8%**
1941	W	10,083	12,268	1.220	2,380	7,703	0.24	0.76	57.1	0.779	0.797	0.707	0.307	0.784	**21.6%**
1942	W	6,907	10,638	1.547	1,485	5,422	0.22	0.78	57.1	0.848	0.822	0.771	0.224	0.842	**15.8%**
1943	W	7,915	10,705	1.358	1,798	6,118	0.23	0.77	57.1	0.827	0.806	0.749	0.227	0.822	**17.8%**
1944	D	3,428	4,235	1.247	794	2,634	0.23	0.77	63.4	0.931	0.868	0.820	0.266	0.917	**8.3%**
1945	B	5,899	6,386	1.088	1,435	4,464	0.24	0.76	59.7	0.877	0.810	0.774	0.159	0.860	**14.0%**
1946	B	5,344	5,916	1.114	1,290	4,054	0.24	0.76	59.7	0.889	0.814	0.785	0.135	0.871	**12.9%**
1947	D	2,807	4,302	1.550	595	2,211	0.21	0.79	63.4	0.944	0.879	0.834	0.269	0.930	**7.0%**
1948	B	3,983	6,789	1.718	809	3,174	0.20	0.80	59.7	0.915	0.851	0.819	0.180	0.902	**9.8%**
1949	D	3,983	5,109	1.293	914	3,069	0.23	0.77	63.4	0.918	0.870	0.811	0.310	0.907	**9.3%**
1950	B	3,983	6,184	1.565	846	3,136	0.21	0.79	59.7	0.916	0.844	0.816	0.149	0.901	**9.9%**
1951	A	5,344	6,353	1.196	1,263	4,081	0.24	0.76	60.2	0.888	0.826	0.787	0.187	0.873	**12.7%**
1952	W	10,840	10,520	0.973	2,726	8,113	0.25	0.75	57.1	0.767	0.752	0.683	0.218	0.763	**23.7%**
1953	W	3,983	5,680	1.438	878	3,105	0.22	0.78	57.1	0.917	0.814	0.814	0.000	0.895	**10.5%**
1954	A	3,983	9,075	2.297	666	3,317	0.17	0.83	60.2	0.911	0.885	0.829	0.325	0.907	**9.3%**
1955	D	2,807	3,865	1.393	622	2,184	0.22	0.78	63.4	0.945	0.874	0.832	0.247	0.929	**7.1%**
1956	W	6,201	7,999	1.297	1,429	4,772	0.23	0.77	57.1	0.867	0.795	0.775	0.089	0.851	**14.9%**
1957	A	3,983	6,420	1.625	832	3,151	0.21	0.79	60.2	0.916	0.852	0.817	0.190	0.903	**9.7%**
1958	W	14,907	11,579	0.778	3,936	10,970	0.26	0.74	57.1	0.681	0.706	0.597	0.272	0.688	**31.2%**
1959	B	2,807	3,764	1.357	629	2,178	0.22	0.78	59.7	0.945	0.836	0.832	0.025	0.921	**7.9%**
1960	D	2,269	3,949	1.765	448	1,820	0.20	0.80	63.4	0.956	0.884	0.845	0.251	0.942	**5.8%**
1961	D	1,983	3,529	1.808	385	1,598	0.19	0.81	63.4	0.963	0.884	0.849	0.230	0.947	**5.3%**
1962	B	4,201	4,941	1.185	993	3,209	0.24	0.76	59.7	0.914	0.822	0.806	0.085	0.893	**10.7%**
1963	W	5,361	9,814	1.842	1,052	4,309	0.20	0.80	57.1	0.881	0.838	0.802	0.182	0.873	**12.7%**
1964	D	2,807	3,563	1.284	641	2,165	0.23	0.77	63.4	0.945	0.870	0.831	0.231	0.928	**7.2%**
1965	W	6,201	10,268	1.664	1,287	4,914	0.21	0.79	57.1	0.863	0.829	0.785	0.205	0.856	**14.4%**
1966	B	3,983	5,008	1.267	920	3,063	0.23	0.77	59.7	0.919	0.828	0.811	0.089	0.898	**10.2%**
1967	W	13,613	10,722	0.789	3,584	10,029	0.26	0.74	57.1	0.710	0.708	0.622	0.228	0.709	**29.1%**
1968	B	3,664	5,277	1.453	803	2,861	0.22	0.78	59.7	0.925	0.838	0.819	0.102	0.906	**9.4%**
1969	W	20,923	10,302	0.493	5,903	15,020	0.28	0.72	57.1	0.560	0.569	0.457	0.207	0.563	**43.7%**
1970	W	5,344	6,621	1.246	1,246	4,098	0.23	0.77	57.1	0.888	0.792	0.788	0.019	0.865	**13.5%**
1971	W	3,983	6,756	1.710	811	3,172	0.20	0.80	57.1	0.915	0.823	0.819	0.026	0.897	**10.3%**
1972	B	3,664	4,706	1.296	839	2,825	0.23	0.77	58.9	0.926	0.822	0.817	0.026	0.902	**9.8%**
1973	A	5,697	7,462	1.317	1,304	4,393	0.23	0.77	59.2	0.879	0.824	0.784	0.185	0.866	**13.4%**
1974	W	7,663	11,041	1.447	1,697	5,966	0.22	0.78	56.9	0.831	0.813	0.756	0.233	0.827	**17.3%**
1975	W	6,621	9,310	1.413	1,479	5,143	0.22	0.78	53.7	0.856	0.771	0.771	0.000	0.837	**16.3%**
1976	C	1,983	3,008	1.542	418	1,565	0.21	0.79	57.8	0.963	0.847	0.847	0.000	0.939	**6.1%**
1977	C	1,983	3,176	1.628	407	1,576	0.21	0.79	62.0	0.963	0.867	0.847	0.130	0.943	**5.7%**
1978	A	14,940	10,823	0.726	3,994	10,946	0.27	0.73	61.4	0.682	0.790	0.593	0.485	0.711	**28.9%**
1979	B	5,428	6,924	1.283	1,254	4,175	0.23	0.77	60.5	0.885	0.837	0.787	0.233	0.874	**12.6%**
1980	A	6,739	8,151	1.215	1,588	5,151	0.24	0.76	60.1	0.856	0.828	0.764	0.272	0.849	**15.1%**
1981	D	3,664	5,479	1.508	790	2,873	0.22	0.78	64.6	0.924	0.892	0.820	0.399	0.917	**8.3%**
1982	W	27,023	10,604	0.393	7,798	19,225	0.29	0.71	52.8	0.434	0.323	0.323	0.000	0.402	**59.8%**
1983	W	20,738	9,764	0.472	5,879	14,859	0.28	0.72	57.2	0.565	0.559	0.459	0.185	0.563	**43.7%**
1984	W	5,344	6,890	1.297	1,229	4,115	0.23	0.77	60.7	0.887	0.840	0.789	0.243	0.876	**12.4%**
1985	D	2,807	4,269	1.538	597	2,209	0.21	0.79	62.5	0.944	0.870	0.834	0.215	0.928	**7.2%**
1986	W	9,814	9,058	0.926	2,496	7,318	0.25	0.75	61.3	0.791	0.816	0.699	0.389	0.797	**20.3%**
1987	D	2,033	3,580	1.788	398	1,636	0.20	0.80	62.3	0.961	0.874	0.848	0.168	0.944	**5.6%**
1988	C	1,983	2,857	1.464	427	1,556	0.22	0.78	62.1	0.964	0.864	0.846	0.119	0.942	**5.8%**
1989	D	2,420	5,764	2.413	382	2,038	0.16	0.84	64.1	0.949	0.907	0.849	0.385	0.943	**5.7%**
1990	C	1,983	3,496	1.791	387	1,596	0.20	0.80	60.6	0.963	0.859	0.849	0.064	0.942	**5.8%**
1991	C	2,437	4,453	1.852	470	1,967	0.19	0.81	60.6	0.951	0.861	0.843	0.113	0.934	**6.6%**
1992	C	2,252	3,916	1.764	445	1,807	0.20	0.80	60.6	0.956	0.858	0.845	0.086	0.937	**6.3%**

MAY

Year	Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	Calculated Mortality m2	m34	m3	m4	m234	Calculated Survivability s234	Weighted total survival
1922	5,936	10,783	1.826	1,172	4764	0.20	0.80	66.6	0.868	0.956	0.793	0.787	0.885	**11.5%**	**12.6%**
1923	5,156	6,505	1.270	1,194	3961	0.23	0.77	66.0	0.892	0.903	0.792	0.534	0.894	**10.6%**	**11.4%**
1924	1,870	1,317	0.716	488	1382	0.26	0.74	63.9	0.969	0.865	0.842	0.146	0.942	**5.8%**	**5.9%**
1925	3,822	5,269	1.390	853	2969	0.22	0.78	67.3	0.921	0.916	0.816	0.547	0.920	**8.0%**	**8.4%**
1926	3,545	5,253	1.495	767	2778	0.22	0.78	67.3	0.927	0.919	0.822	0.546	0.925	**7.5%**	**7.9%**
1927	5,156	8,766	1.711	1,053	4103	0.20	0.80	64.2	0.887	0.909	0.802	0.544	0.892	**10.8%**	**11.7%**
1928	3,822	6,652	1.755	767	3055	0.20	0.80	66.6	0.919	0.925	0.822	0.576	0.920	**8.0%**	**8.7%**
1929	1,887	3,171	1.710	377	1509	0.20	0.80	63.9	0.965	0.886	0.850	0.241	0.949	**5.1%**	**5.5%**
1930	1,935	3,838	2.016	351	1585	0.18	0.82	67.3	0.963	0.922	0.851	0.474	0.955	**4.5%**	**5.2%**
1931	1,984	2,911	1.491	424	1560	0.21	0.79	63.9	0.964	0.881	0.846	0.227	0.946	**5.4%**	**5.7%**
1932	3,871	5,172	1.347	875	2996	0.23	0.77	67.3	0.921	0.915	0.814	0.542	0.919	**8.1%**	**9.0%**
1933	2,683	2,765	1.043	653	2031	0.24	0.76	63.9	0.950	0.867	0.830	0.220	0.930	**7.0%**	**7.3%**
1934	1,984	3,269	1.674	402	1582	0.20	0.80	63.9	0.963	0.885	0.848	0.246	0.947	**5.3%**	**5.5%**
1935	6,066	7,855	1.302	1,396	4671	0.23	0.77	66.0	0.870	0.911	0.777	0.602	0.880	**12.0%**	**12.9%**
1936	5,156	6,554	1.279	1,191	3964	0.23	0.77	66.0	0.892	0.903	0.792	0.536	0.894	**10.6%**	**12.3%**
1937	8,148	4,781	0.589	2,241	5907	0.28	0.72	66.0	0.833	0.843	0.717	0.446	0.836	**16.4%**	**16.8%**
1938	23,972	11,580	0.484	6,780	17192	0.28	0.72	64.2	0.495	0.811	0.395	0.687	0.584	**41.6%**	**40.0%**
1939	2,683	4,098	1.545	569	2114	0.21	0.79	67.3	0.947	0.916	0.836	0.487	0.940	**6.0%**	**6.5%**
1940	5,156	7,595	1.482	1,126	4029	0.22	0.78	66.6	0.890	0.923	0.796	0.624	0.897	**10.3%**	**11.4%**
1941	9,579	11,954	1.252	2,241	7338	0.23	0.77	64.2	0.790	0.917	0.717	0.706	0.820	**18.0%**	**19.6%**
1942	5,936	10,783	1.826	1,172	4764	0.20	0.80	64.2	0.868	0.927	0.793	0.646	0.879	**12.1%**	**13.7%**
1943	6,180	8,636	1.405	1,383	4798	0.22	0.78	64.2	0.867	0.897	0.778	0.537	0.873	**12.7%**	**15.0%**
1944	2,976	4,277	1.453	650	2326	0.22	0.78	67.3	0.941	0.914	0.830	0.496	0.935	**6.5%**	**7.3%**
1945	3,871	5,172	1.347	875	2996	0.23	0.77	66.0	0.921	0.901	0.814	0.466	0.916	**8.4%**	**10.9%**
1946	3,871	5,513	1.436	853	3017	0.22	0.78	66.0	0.920	0.905	0.816	0.483	0.917	**8.3%**	**10.4%**
1947	2,683	3,887	1.466	582	2101	0.22	0.78	67.3	0.947	0.914	0.835	0.476	0.940	**6.0%**	**6.4%**
1948	3,822	7,839	2.068	693	3129	0.18	0.82	66.0	0.917	0.931	0.827	0.602	0.919	**8.1%**	**8.8%**
1949	2,976	4,993	1.696	605	2371	0.20	0.80	67.3	0.939	0.922	0.833	0.532	0.936	**6.4%**	**7.7%**
1950	3,822	5,481	1.446	840	2982	0.22	0.78	66.0	0.921	0.905	0.817	0.481	0.917	**8.3%**	**9.0%**
1951	5,156	7,351	1.435	1,141	4014	0.22	0.78	66.6	0.890	0.921	0.795	0.612	0.897	**10.3%**	**11.4%**
1952	15,450	11,498	0.746	4,112	11339	0.27	0.73	64.2	0.670	0.868	0.584	0.683	0.723	**27.7%**	**25.9%**
1953	3,822	7,855	2.072	692	3130	0.18	0.82	64.2	0.917	0.913	0.827	0.497	0.916	**8.4%**	**9.4%**
1954	3,822	7,741	2.042	699	3123	0.18	0.82	66.6	0.917	0.936	0.827	0.632	0.920	**8.0%**	**8.6%**
1955	2,683	4,196	1.582	563	2120	0.21	0.79	67.3	0.947	0.917	0.836	0.492	0.941	**5.9%**	**6.5%**
1956	6,131	10,864	1.781	1,228	4903	0.20	0.80	64.2	0.863	0.926	0.789	0.651	0.876	**12.4%**	**13.5%**
1957	3,822	6,213	1.639	794	3028	0.21	0.79	66.6	0.920	0.920	0.820	0.554	0.920	**8.0%**	**8.8%**
1958	13,173	12,230	0.931	3,352	9822	0.25	0.75	64.2	0.716	0.899	0.638	0.720	0.762	**23.8%**	**27.1%**
1959	2,683	4,277	1.613	558	2125	0.21	0.79	66.0	0.947	0.905	0.837	0.420	0.938	**6.2%**	**7.0%**
1960	1,903	3,643	1.947	353	1550	0.19	0.81	67.3	0.964	0.920	0.851	0.464	0.956	**4.4%**	**5.1%**
1961	1,903	3,480	1.860	363	1540	0.19	0.81	67.3	0.964	0.919	0.851	0.455	0.956	**4.4%**	**4.8%**
1962	2,976	5,090	1.729	599	2377	0.20	0.80	66.0	0.939	0.910	0.834	0.461	0.933	**6.7%**	**8.5%**
1963	5,156	9,530	1.860	1,005	4150	0.19	0.81	64.2	0.886	0.919	0.805	0.583	0.892	**10.8%**	**11.7%**
1964	2,683	4,603	1.736	538	2146	0.20	0.80	67.3	0.946	0.921	0.838	0.513	0.941	**5.9%**	**6.5%**
1965	5,936	7,969	1.350	1,348	4588	0.23	0.77	64.2	0.873	0.891	0.781	0.503	0.877	**12.3%**	**13.3%**
1966	2,976	5,009	1.701	604	2372	0.20	0.80	66.0	0.939	0.910	0.833	0.457	0.933	**6.7%**	**8.3%**
1967	16,003	11,661	0.730	4,275	11728	0.27	0.73	64.2	0.659	0.868	0.573	0.691	0.715	**28.5%**	**28.8%**
1968	2,683	3,903	1.472	581	2102	0.22	0.78	66.0	0.947	0.901	0.835	0.401	0.937	**6.3%**	**7.7%**
1969	26,217	11,384	0.435	7,496	18720	0.29	0.71	66.4	0.449	0.873	0.344	0.806	0.570	**43.0%**	**43.3%**
1970	5,156	6,164	1.203	1,216	3940	0.24	0.76	61.2	0.892	0.839	0.790	0.235	0.880	**12.0%**	**12.7%**
1971	3,822	8,181	2.158	671	3151	0.18	0.82	64.2	0.916	0.917	0.829	0.514	0.916	**8.4%**	**9.3%**
1972	2,683	4,245	1.601	560	2123	0.21	0.79	66.0	0.947	0.905	0.837	0.418	0.938	**6.2%**	**7.8%**
1973	5,156	6,733	1.314	1,180	3975	0.23	0.77	66.3	0.891	0.909	0.793	0.563	0.895	**10.5%**	**11.8%**
1974	5,936	9,433	1.598	1,256	4680	0.21	0.79	66.1	0.870	0.934	0.787	0.689	0.884	**11.6%**	**14.2%**
1975	5,936	9,726	1.647	1,238	4698	0.21	0.79	61.5	0.870	0.880	0.788	0.435	0.872	**12.8%**	**14.4%**
1976	1,870	3,269	1.778	366	1504	0.20	0.80	65.8	0.965	0.904	0.850	0.357	0.953	**4.7%**	**5.3%**
1977	1,870	2,082	1.132	440	1430	0.24	0.76	62.3	0.968	0.859	0.845	0.092	0.942	**5.8%**	**5.7%**
1978	10,831	11,059	1.024	2,690	8141	0.25	0.75	66.9	0.766	0.943	0.685	0.818	0.810	**19.0%**	**23.5%**
1979	5,156	6,196	1.209	1,214	3942	0.24	0.76	66.0	0.892	0.899	0.790	0.518	0.894	**10.6%**	**11.5%**
1980	6,619	7,709	1.170	1,578	5041	0.24	0.76	66.6	0.859	0.913	0.764	0.630	0.872	**12.8%**	**13.8%**
1981	2,683	3,757	1.417	591	2093	0.22	0.78	68.7	0.948	0.926	0.834	0.551	0.943	**5.7%**	**6.9%**
1982	15,158	11,937	0.789	3,992	11165	0.26	0.74	65.1	0.675	0.901	0.593	0.758	0.735	**26.5%**	**41.5%**
1983	19,077	9,969	0.523	5,345	13732	0.28	0.72	61.3	0.598	0.716	0.497	0.435	0.631	**36.9%**	**39.9%**
1984	5,156	6,375	1.244	1,202	3953	0.23	0.77	66.0	0.892	0.901	0.791	0.527	0.894	**10.6%**	**11.4%**
1985	2,683	4,554	1.717	541	2143	0.20	0.80	65.1	0.946	0.900	0.838	0.381	0.937	**6.3%**	**6.7%**
1986	8,083	8,376	1.040	1,996	6087	0.25	0.75	65.8	0.828	0.898	0.735	0.617	0.845	**15.5%**	**17.6%**
1987	1,870	3,399	1.849	358	1512	0.19	0.81	68.6	0.965	0.930	0.851	0.527	0.958	**4.2%**	**4.8%**
1988	1,870	3,285	1.787	365	1505	0.20	0.80	63.7	0.965	0.886	0.850	0.235	0.950	**5.0%**	**5.4%**
1989	1,903	4,180	2.234	319	1584	0.17	0.83	66.7	0.963	0.920	0.854	0.456	0.956	**4.4%**	**5.0%**
1990	1,935	2,992	1.572	404	1532	0.21	0.79	63.9	0.964	0.883	0.848	0.232	0.947	**5.3%**	**5.5%**
1991	1,984	3,204	1.641	406	1578	0.20	0.80	63.9	0.963	0.884	0.848	0.242	0.947	**5.3%**	**5.9%**
1992	1,984	3,253	1.666	403	1581	0.20	0.80	63.9	0.963	0.885	0.848	0.245	0.947	**5.3%**	**5.7%**

Average: 12.06%

Formulas: San Joaquin River Fall Run Smolt Survival Model WITHOUT BARRIER

C7 ='Study 492 Flow Data'!AB7
D7 ='Study 492 Flow Data'!G7 (HIDDEN)
E7 ='Study 492 Flow Data'!Q7 (HIDDEN)
F7 =D7+E7
G7 =F7/(C7-0.03*$H$2)
H7 =IF((0.3137*C7-0.0156*$H$2-0.0625*F7)<0,0,(0.3137*C7-0.0156*$H$2-0.0625*F7))
I7 =C7-H7
J7 =H7/C7
K7 =I7/C7
M7 =(1.01045-0.00003*I7)
N7 =(O7+P7)-(O7*P7)
O7 =(0.87634-0.000071*H7)
P7 =IF((-3.65867+0.058492*L7+0.000051*F7)<0,0,(-3.65867+0.058492*L7+0.000051*F7))
Q7 =((K7*M7)+(J7*N7))
R7 =(1-Q7)

T7 ='Study 492 Flow Data'!AC7
U7 ='Study 492 Flow Data'!H7 (HIDDEN)
V7 ='Study 492 Flow Data'!R7 (HIDDEN)
W7 =U7+V7
X7 =W7/(T7-0.03*$H$3)
Y7 =IF((0.3137*T7-0.0156*$H$3-0.0625*W7)<0,0,(0.3137*T7-0.0156*$H$3-0.0625*W7))
Z7 =T7-Y7
AA7 =Y7/T7
AB7 =Z7/T7
AD7 =(1.01045-0.00003*Z7)
AE7 =(AF7+AG7)-(AF7*AG7)
AF7 =(0.87634-0.000071*Y7)
AG7 =IF((-3.65867+0.058492*AC7+0.000051*W7)<0,0,(-3.65867+0.058492*AC7+0.000051*W7))
AH7 =((AB7*AD7)+(AA7*AE7))
AI7 =(1-AH7)
AK7 =0.45*R7+0.55*AI7

Note: Calculated San Joaquin River flows at Stockton = 0.3137*(Vernalis flow) - 0.0156*(Consumptive Depletion) - 0.0625*(CVP/SWP Exports)

Study 469 San Joaquin River Fall Run Salmon Smolt Survival Model WITH BARRIER

Barrier at head of Old River from Apr 15 to May 15

Old River Barrier Open above 7500.00 cfs at Vernalis
Consumptive Depletion for April 1053.00 cfs
Consumptive Depletion for May 1053.00 cfs

Year	Water Year Type	APRIL Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	m2	Calculated Mortality m34	m3	m4	m234	Calculated Survival s234
1922	A	6,201	8,487	1.376	3,944	2,257	0.64	0.36	60.2	0.943	0.716	0.596	0.295	0.798	20.2%
1923	B	5,344	8,033	1.512	3,377	1,968	0.63	0.37	59.7	0.951	0.725	0.637	0.243	0.808	19.2%
1924	C	1,983	2,958	1.516	1,249	734	0.63	0.37	60.6	0.988	0.795	0.788	0.037	0.867	13.3%
1925	D	3,983	7,058	1.786	2,483	1,500	0.62	0.38	63.4	0.965	0.823	0.700	0.410	0.877	12.3%
1926	D	3,664	6,789	1.869	2,275	1,389	0.62	0.38	63.4	0.969	0.828	0.715	0.396	0.881	11.9%
1927	W	5,344	8,201	1.544	3,372	1,972	0.63	0.37	57.1	0.951	0.673	0.637	0.099	0.776	22.4%
1928	A	3,983	7,462	1.888	2,471	1,512	0.62	0.38	60.2	0.965	0.774	0.701	0.243	0.846	15.4%
1929	C	2,017	2,655	1.338	1,280	736	0.63	0.37	60.6	0.988	0.790	0.785	0.021	0.862	13.8%
1930	D	2,420	4,017	1.682	1,514	906	0.63	0.37	63.4	0.983	0.828	0.769	0.255	0.886	11.4%
1931	C	1,983	3,143	1.610	1,243	740	0.63	0.37	60.6	0.988	0.798	0.788	0.046	0.869	13.1%
1932	D	4,504	5,546	1.240	2,880	1,623	0.64	0.36	63.4	0.962	0.781	0.672	0.333	0.846	15.4%
1933	C	2,807	4,302	1.550	1,767	1,039	0.63	0.37	60.6	0.979	0.777	0.751	0.105	0.852	14.8%
1934	C	1,983	3,748	1.920	1,226	757	0.62	0.38	60.6	0.988	0.806	0.789	0.077	0.875	12.5%
1935	B	6,369	8,739	1.379	4,050	2,319	0.64	0.36	59.7	0.941	0.703	0.589	0.279	0.790	21.0%
1936	B	6,403	8,470	1.329	4,081	2,322	0.64	0.36	59.7	0.941	0.696	0.587	0.265	0.785	21.5%
1937	B	7,932	8,117	1.027	1,965	5,968	0.25	0.75	59.7	0.831	0.802	0.737	0.247	0.824	17.6%
1938	W	18,049	8,504	0.472	5,114	12,935	0.28	0.72	57.1	0.622	0.569	0.513	0.115	0.607	39.3%
1939	D	2,891	4,252	1.487	1,826	1,065	0.63	0.37	63.4	0.979	0.814	0.747	0.267	0.875	12.5%
1940	A	5,697	8,386	1.480	3,605	2,092	0.63	0.37	60.2	0.948	0.731	0.620	0.290	0.810	19.0%
1941	W	10,083	9,411	0.936	2,559	7,525	0.25	0.75	57.1	0.785	0.744	0.695	0.161	0.774	22.6%
1942	W	6,907	9,025	1.313	4,406	2,501	0.64	0.36	57.1	0.935	0.625	0.563	0.141	0.738	26.2%
1943	W	7,915	9,562	1.213	1,869	6,046	0.24	0.76	57.1	0.829	0.787	0.744	0.169	0.819	18.1%
1944	D	3,428	4,353	1.281	2,187	1,241	0.64	0.36	63.4	0.973	0.797	0.721	0.272	0.861	13.9%
1945	B	5,781	6,369	1.108	3,722	2,060	0.64	0.36	59.7	0.949	0.673	0.612	0.158	0.771	22.9%
1946	B	5,344	6,067	1.142	3,434	1,910	0.64	0.36	59.7	0.953	0.685	0.632	0.143	0.781	21.9%
1947	D	3,664	5,008	1.379	2,327	1,337	0.64	0.36	63.4	0.970	0.799	0.711	0.305	0.862	13.8%
1948	B	3,983	6,924	1.752	2,487	1,496	0.62	0.38	59.7	0.966	0.756	0.700	0.186	0.835	16.5%
1949	D	3,983	5,193	1.314	2,538	1,445	0.64	0.36	63.4	0.967	0.792	0.696	0.315	0.855	14.5%
1950	B	3,983	6,353	1.608	2,504	1,479	0.63	0.37	59.7	0.966	0.746	0.699	0.157	0.828	17.2%
1951	A	5,344	6,487	1.221	3,422	1,922	0.64	0.36	60.2	0.953	0.704	0.633	0.193	0.794	20.6%
1952	W	10,840	8,873	0.821	2,829	8,010	0.26	0.74	57.1	0.770	0.719	0.675	0.134	0.757	24.3%
1953	W	3,983	5,748	1.455	2,522	1,461	0.63	0.37	57.1	0.967	0.697	0.697	0.000	0.796	20.4%
1954	A	3,983	7,462	1.888	2,471	1,512	0.62	0.38	60.2	0.965	0.774	0.701	0.243	0.846	15.4%
1955	D	2,807	3,781	1.363	1,782	1,024	0.64	0.36	63.4	0.980	0.810	0.750	0.243	0.872	12.8%
1956	W	6,201	8,083	1.310	3,956	2,245	0.64	0.36	57.1	0.943	0.633	0.595	0.093	0.745	25.5%
1957	A	3,983	6,554	1.659	2,498	1,485	0.63	0.37	60.2	0.966	0.758	0.699	0.197	0.836	16.4%
1958	W	14,907	9,764	0.656	4,049	10,857	0.27	0.73	57.1	0.685	0.663	0.589	0.179	0.679	32.1%
1959	B	2,807	3,899	1.405	1,779	1,028	0.63	0.37	59.7	0.980	0.758	0.750	0.032	0.839	16.1%
1960	D	2,420	4,134	1.731	1,510	910	0.62	0.38	63.4	0.983	0.829	0.769	0.261	0.887	11.3%
1961	D	1,983	3,647	1.869	1,229	755	0.62	0.38	63.4	0.988	0.839	0.789	0.236	0.896	10.4%
1962	B	4,201	5,697	1.366	2,671	1,530	0.64	0.36	59.7	0.965	0.725	0.687	0.124	0.813	18.7%
1963	W	5,344	8,201	1.544	3,372	1,972	0.63	0.37	57.1	0.951	0.673	0.637	0.099	0.776	22.4%
1964	D	2,807	3,613	1.302	1,787	1,019	0.64	0.36	63.4	0.980	0.808	0.749	0.234	0.870	13.0%
1965	W	6,201	8,638	1.400	3,940	2,262	0.64	0.36	57.1	0.943	0.646	0.597	0.122	0.754	24.6%
1966	B	3,983	5,075	1.284	2,541	1,442	0.64	0.36	59.7	0.967	0.724	0.696	0.092	0.812	18.8%
1967	W	13,613	9,646	0.710	3,651	9,962	0.27	0.73	57.1	0.712	0.683	0.617	0.173	0.704	29.6%
1968	B	3,664	5,361	1.476	2,317	1,347	0.63	0.37	59.7	0.970	0.743	0.712	0.107	0.826	17.4%
1969	W	20,923	7,613	0.364	6,071	14,852	0.29	0.71	57.1	0.565	0.484	0.445	0.069	0.541	45.9%
1970	W	5,344	6,705	1.262	3,416	1,929	0.64	0.36	57.1	0.953	0.642	0.634	0.023	0.754	24.6%
1971	W	3,983	6,705	1.697	2,493	1,489	0.63	0.37	57.1	0.966	0.706	0.699	0.023	0.803	19.7%
1972	B	3,664	4,806	1.323	2,333	1,331	0.64	0.36	58.9	0.971	0.720	0.711	0.032	0.811	18.9%
1973	A	5,680	7,546	1.336	3,619	2,062	0.64	0.36	59.2	0.949	0.691	0.619	0.189	0.785	21.5%
1974	W	7,663	9,428	1.235	1,798	5,865	0.23	0.77	56.9	0.834	0.786	0.749	0.150	0.823	17.7%
1975	W	6,621	8,873	1.347	4,217	2,404	0.64	0.36	53.7	0.938	0.577	0.577	0.000	0.708	29.2%
1976	C	1,983	3,176	1.628	1,242	741	0.63	0.37	57.8	0.988	0.788	0.788	0.000	0.863	13.7%
1977	C	1,983	3,159	1.619	1,243	740	0.63	0.37	62.0	0.988	0.815	0.788	0.129	0.880	12.0%
1978	A	14,923	7,613	0.511	4,189	10,734	0.28	0.72	61.4	0.688	0.714	0.579	0.321	0.696	30.4%
1979	B	5,344	6,958	1.310	3,408	1,936	0.64	0.36	60.5	0.952	0.720	0.634	0.235	0.804	19.6%
1980	A	6,722	7,058	1.055	4,339	2,383	0.65	0.35	60.1	0.939	0.662	0.568	0.217	0.760	24.0%
1981	D	3,664	5,563	1.532	2,311	1,353	0.63	0.37	64.6	0.970	0.828	0.712	0.404	0.881	11.9%
1982	W	27,023	9,277	0.344	7,881	19,142	0.29	0.71	52.8	0.436	0.317	0.317	0.000	0.401	59.9%
1983	W	20,738	7,075	0.342	6,047	14,691	0.29	0.71	57.2	0.570	0.474	0.447	0.048	0.542	45.8%
1984	W	5,344	6,958	1.310	3,408	1,936	0.64	0.36	60.7	0.952	0.725	0.634	0.247	0.807	19.3%
1985	D	2,807	4,353	1.569	1,766	1,041	0.63	0.37	62.5	0.979	0.806	0.751	0.219	0.870	13.0%
1986	W	9,814	7,663	0.783	2,583	7,231	0.26	0.74	61.3	0.794	0.790	0.693	0.318	0.793	20.7%
1987	D	2,033	3,613	1.805	1,264	770	0.62	0.38	62.3	0.987	0.823	0.787	0.170	0.885	11.5%
1988	C	1,983	2,958	1.516	1,249	734	0.63	0.37	62.1	0.988	0.814	0.788	0.125	0.879	12.1%
1989	D	2,420	5,764	2.413	1,462	958	0.60	0.40	64.1	0.982	0.860	0.773	0.385	0.908	9.2%
1990	C	1,983	3,697	1.895	1,227	756	0.62	0.38	60.6	0.988	0.805	0.789	0.075	0.875	12.5%
1991	C	2,437	4,420	1.838	1,513	924	0.62	0.38	60.6	0.983	0.795	0.769	0.111	0.866	13.4%
1992	C	2,252	3,899	1.756	1,403	849	0.62	0.38	60.6	0.985	0.796	0.777	0.085	0.867	13.3%

Year	MAY Vernalis Flows	CVP+SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt	m2	Calculated Mortality m34	m3	m4	m234	Calculated Survival s234	Weighted (April + June) total survival
1922	5,936	8,896	1.507	3,520	2,416	0.59	0.41	66.6	0.938	0.884	0.626	0.691	0.906	9.4%	14.2%
1923	5,156	6,457	1.260	3,097	2,058	0.60	0.40	66.0	0.949	0.839	0.656	0.531	0.883	11.7%	15.1%
1924	1,870	1,073	0.584	1,159	711	0.62	0.38	63.9	0.989	0.822	0.794	0.134	0.885	11.5%	12.3%
1925	3,822	5,253	1.386	2,279	1,543	0.60	0.40	67.3	0.964	0.870	0.715	0.546	0.908	9.2%	10.6%
1926	3,545	5,090	1.449	2,106	1,439	0.59	0.41	67.3	0.967	0.874	0.727	0.537	0.912	8.8%	10.2%
1927	5,156	8,538	1.666	3,030	2,126	0.59	0.41	64.2	0.947	0.841	0.661	0.532	0.885	11.5%	16.4%
1928	3,822	6,587	1.738	2,235	1,587	0.58	0.42	66.6	0.963	0.879	0.718	0.573	0.914	8.6%	11.6%
1929	1,887	3,334	1.797	1,096	790	0.58	0.42	63.9	0.987	0.849	0.798	0.249	0.907	9.3%	11.3%
1930	1,952	3,757	1.957	1,124	827	0.58	0.42	67.3	0.986	0.892	0.797	0.469	0.932	6.8%	8.9%
1931	1,984	3,432	1.757	1,156	828	0.58	0.42	63.9	0.986	0.847	0.794	0.254	0.905	9.5%	11.1%
1932	3,871	5,074	1.322	2,316	1,555	0.60	0.40	67.3	0.964	0.867	0.712	0.537	0.906	9.4%	12.1%
1933	2,683	3,171	1.196	1,614	1,069	0.60	0.40	63.9	0.978	0.819	0.762	0.241	0.883	11.7%	13.1%
1934	1,984	3,253	1.666	1,162	822	0.59	0.41	63.9	0.986	0.844	0.794	0.245	0.903	9.7%	11.0%
1935	6,050	5,936	0.986	3,689	2,361	0.61	0.39	66.0	0.940	0.809	0.614	0.505	0.860	14.0%	17.2%
1936	5,156	6,522	1.273	3,095	2,060	0.60	0.40	66.0	0.949	0.840	0.657	0.534	0.883	11.7%	16.1%
1937	8,132	6,961	0.859	2,099	6,032	0.26	0.74	66.0	0.829	0.879	0.727	0.557	0.842	15.8%	16.6%
1938	23,972	9,660	0.404	6,900	17,072	0.29	0.71	64.2	0.498	0.748	0.386	0.589	0.570	43.0%	41.3%
1939	2,683	3,692	1.392	1,597	1,086	0.60	0.40	67.3	0.978	0.873	0.763	0.466	0.916	8.4%	10.3%
1940	5,156	6,473	1.263	3,097	2,059	0.60	0.40	66.6	0.949	0.851	0.656	0.567	0.890	11.0%	14.6%
1941	9,579	9,937	1.041	2,367	7,212	0.25	0.75	64.2	0.794	0.884	0.708	0.603	0.816	18.4%	20.3%
1942	5,936	8,896	1.507	3,520	2,416	0.59	0.41	64.2	0.938	0.832	0.626	0.550	0.875	12.5%	18.7%
1943	6,180	8,555	1.391	3,688	2,492	0.60	0.40	64.2	0.936	0.820	0.614	0.533	0.867	13.3%	15.5%
1944	2,976	3,952	1.342	1,777	1,199	0.60	0.40	67.3	0.974	0.870	0.750	0.479	0.912	8.8%	11.1%
1945	3,871	5,448	1.419	2,304	1,567	0.60	0.40	66.0	0.963	0.851	0.713	0.480	0.896	10.4%	16.0%
1946	3,871	5,481	1.428	2,303	1,568	0.59	0.41	66.0	0.963	0.851	0.713	0.481	0.897	10.3%	15.6%
1947	2,683	3,692	1.392	1,597	1,086	0.60	0.40	67.3	0.978	0.873	0.763	0.466	0.916	8.4%	10.9%
1948	3,822	7,888	2.081	2,193	1,629	0.57	0.43	66.0	0.962	0.889	0.721	0.604	0.920	8.0%	11.8%
1949	2,976	4,960	1.685	1,744	1,232	0.59	0.41	67.3	0.973	0.884	0.752	0.531	0.921	7.9%	10.9%
1950	3,822	5,481	1.446	2,271	1,551	0.59	0.41	66.0	0.964	0.852	0.715	0.481	0.898	10.2%	13.4%
1951	5,156	7,335	1.431	3,069	2,087	0.60	0.40	66.6	0.948	0.867	0.658	0.611	0.900	10.0%	14.8%
1952	15,450	9,921	0.643	4,210	11,240	0.27	0.73	64.2	0.673	0.832	0.577	0.602	0.717	28.3%	26.5%
1953	3,822	7,888	2.081	2,193	1,629	0.57	0.43	64.2	0.962	0.860	0.721	0.499	0.903	9.7%	14.5%
1954	3,822	7,644	2.017	2,201	1,621	0.58	0.42	66.6	0.962	0.896	0.720	0.627	0.924	7.6%	11.1%
1955	2,683	4,180	1.576	1,581	1,102	0.59	0.41	67.3	0.977	0.880	0.764	0.491	0.920	8.0%	10.2%
1956	6,017	8,961	1.497	3,570	2,447	0.59	0.41	64.2	0.937	0.832	0.623	0.554	0.874	12.6%	18.4%
1957	3,822	6,164	1.626	2,249	1,573	0.59	0.41	66.6	0.963	0.873	0.717	0.551	0.910	9.0%	12.3%
1958	13,173	10,897	0.829	3,435	9,738	0.26	0.74	64.2	0.718	0.872	0.632	0.652	0.758	24.2%	27.7%
1959	2,683	3,887	1.466	1,591	1,093	0.59	0.41	66.0	0.978	0.858	0.763	0.400	0.907	9.3%	12.4%
1960	1,870	3,562	1.937	1,079	792	0.58	0.42	67.3	0.987	0.892	0.800	0.459	0.932	6.8%	8.8%
1961	1,903	3,204	1.712	1,111	792	0.58	0.42	67.3	0.987	0.887	0.797	0.441	0.928	7.2%	8.6%
1962	3,822	5,546	1.463	2,269	1,553	0.59	0.41	66.0	0.964	0.853	0.715	0.485	0.898	10.2%	14.0%
1963	5,156	8,538	1.666	3,030	2,126	0.59	0.41	64.2	0.947	0.841	0.661	0.532	0.885	11.5%	16.4%
1964	2,683	3,952	1.490	1,589	1,095	0.59	0.41	67.3	0.978	0.877	0.764	0.479	0.918	8.2%	10.3%
1965	5,936	7,953	1.347	3,551	2,385	0.60	0.40	64.2	0.939	0.813	0.624	0.502	0.864	13.6%	18.6%
1966	2,976	4,993	1.696	1,743	1,233	0.59	0.41	66.0	0.973	0.866	0.753	0.456	0.910	9.0%	13.4%
1967	16,003	10,262	0.643	4,362	11,641	0.27	0.73	64.2	0.661	0.835	0.567	0.620	0.709	29.1%	29.3%
1968	2,683	3,854	1.453	1,592	1,091	0.59	0.41	66.0	0.978	0.858	0.763	0.398	0.906	9.4%	13.0%
1969	26,135	9,221	0.353	7,606	18,529	0.29	0.71	66.4	0.455	0.798	0.336	0.695	0.554	44.6%	45.1%
1970	5,156	6,131	1.197	3,108	2,048	0.60	0.40	61.2	0.949	0.736	0.656	0.234	0.821	17.9%	20.9%
1971	3,822	7,888	2.081	2,193	1,629	0.57	0.43	64.2	0.962	0.860	0.721	0.499	0.903	9.7%	14.2%
1972	2,683	4,098	1.545	1,584	1,099	0.59	0.41	66.0	0.977	0.861	0.764	0.411	0.909	9.1%	13.5%
1973	5,156	6,717	1.311	3,089	2,067	0.60	0.40	66.3	0.948	0.850	0.657	0.562	0.889	11.1%	15.8%
1974	5,936	8,896	1.507	3,520	2,416	0.59	0.41	66.1	0.938	0.873	0.626	0.661	0.900	10.0%	13.5%
1975	5,936	8,896	1.507	3,520	2,416	0.59	0.41	61.5	0.938	0.773	0.626	0.392	0.840	16.0%	21.9%
1976	1,870	3,367	1.831	1,085	785	0.58	0.42	65.8	0.987	0.872	0.799	0.362	0.920	8.0%	10.6%
1977	1,870	960	0.522	1,163	707	0.62	0.38	62.3	0.989	0.801	0.794	0.034	0.872	12.8%	12.4%
1978	10,831	8,408	0.779	2,856	7,976	0.26	0.74	66.9	0.771	0.897	0.674	0.683	0.804	19.6%	24.5%
1979	5,156	6,213	1.212	3,105	2,050	0.60	0.40	66.0	0.949	0.834	0.656	0.519	0.880	12.0%	15.4%
1980	6,619	7,693	1.168	3,998	2,621	0.60	0.40	66.6	0.932	0.849	0.592	0.629	0.882	11.8%	17.3%
1981	2,683	3,724	1.404	1,596	1,087	0.59	0.41	68.7	0.978	0.893	0.763	0.550	0.928	7.2%	9.4%
1982	15,158	10,913	0.721	4,056	11,101	0.27	0.73	65.1	0.677	0.879	0.588	0.706	0.731	26.9%	41.7%
1983	19,077	7,758	0.407	5,483	13,594	0.29	0.71	61.3	0.603	0.652	0.487	0.323	0.617	38.3%	41.7%
1984	5,156	6,359	1.241	3,100	2,055	0.60	0.40	66.0	0.949	0.837	0.656	0.526	0.882	11.8%	15.2%
1985	2,683	4,456	1.680	1,572	1,111	0.59	0.41	65.1	0.977	0.853	0.765	0.376	0.905	9.5%	11.1%
1986	8,067	8,343	1.038	1,993	6,074	0.25	0.75	65.8	0.828	0.898	0.735	0.616	0.845	15.5%	17.8%
1987	1,870	3,041	1.654	1,095	775	0.59	0.41	68.6	0.987	0.901	0.799	0.509	0.937	6.3%	8.6%
1988	1,870	3,269	1.778	1,088	782	0.58	0.42	63.7	0.987	0.846	0.799	0.234	0.905	9.5%	10.7%
1989	1,887	4,147	2.236	1,070	817	0.57	0.43	66.7	0.986	0.891	0.800	0.454	0.932	6.8%	7.9%
1990	1,952	2,976	1.550	1,150	802	0.59	0.41	63.9	0.986	0.842	0.795	0.231	0.901	9.9%	11.1%
1991	1,984	3,171	1.624	1,164	820	0.59	0.41	63.9	0.986	0.843	0.794	0.241	0.902	9.8%	11.4%
1992	1,984	3,236	1.658	1,162	822	0.59	0.41	63.9	0.986	0.844	0.794	0.244	0.903	9.7%	11.3%
															Average: 15.80%

Calculations- San Joaquin River Fall Run Smolt Survival Model WITH BARRIER:

C8 ='Study 469 Flow Data'!AB7
D8 ='Study 469 Flow Data'!G7 (HIDDEN)
E8 ='Study 469 Flow Data'!Q7 (HIDDEN)
F8 =D8+E8
G8 =F8/(C8-0.03*$R$2)
H8 =IF(C8<$R$1,(0.47*(0.3137*C8-0.0156*$R$2-0.0625*F8)+0.53*C8),(0.3137*C8-0.0156*$R$2-0.0625*F8))
I8 =C8-H8
J8 =H8/C8
K8 =I8/C8
M8 =(1.01045-0.00003*I8)
N8 =(O8+P8)-(O8*P8)
O8 =IF((0.87634-0.000071*H8)<0,0,(0.87634-0.000071*H8))
P8 =IF((-3.65867+0.058492*L8+0.000051*F8)<0,0,(-3.65867+0.058492*L8+0.000051*F8))
Q8 =((K8*M8)+(J8*N8))
R8 =(1-Q8)

T8 ='Study 469 Flow Data'!AC7
U8 ='Study 469 Flow Data'!H7 (HIDDEN)
V8 ='Study 469 Flow Data'!R7 (HIDDEN)
W8 =U8+V8
X8 =W8/(T8-0.03*$R$3)
Y8 =IF(T8<$R$1,(0.52*(0.3137*T8-0.0156*$R$3-0.0625*W8)+0.48*T8),(0.3137*T8-0.0156*$R$3-0.0625*W8))
Z8 =T8-Y8
AA8 =Y8/T8
AB8 =Z8/T8
AD8 =(1.01045-0.00003*Z8)
AE8 =(AF8+AG8)-(AF8*AG8)
AF8 =IF((0.87634-0.000071*Y8)<0,0,(0.87634-0.000071*Y8))
AG8 =IF((-3.65867+0.058492*AC8+0.000051*W8)<0,0,(-3.65867+0.058492*AC8+0.000051*W8))
AH8 =((AB8*AD8)+(AA8*AE8))
AI8 =(1-AH8)
AK8 =0.45*G94+0.55*AI8

Study 501 San Joaquin River Fall Run Salmon Smolt Survival Model WITH BARRIER

Barrier at head of Old River from Apr 15 to May 15

Old River Barrier Open above 7500.00 cfs at Vernalis
Consumptive Depletion for April 1053.00 cfs
Consumptive Depletion for May 1053.00 cfs

APRIL

A	B	C	F	G	H	I	J	K	L	M	N	O	P	Q	R
Year	Water Year Type	APRIL Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	m2	Calculated Mortality m34	m3	m4	m234	Calculated Survival s234
1922	A	6,193	8,486	1.377	3,938	2,255	0.64	0.36	60.2	0.943	0.716	0.597	0.295	0.798	20.2%
1923	B	5,340	8,054	1.517	3,373	1,967	0.63	0.37	59.7	0.951	0.725	0.637	0.244	0.809	19.1%
1924	C	1,990	2,963	1.513	1,253	737	0.63	0.37	60.6	0.988	0.795	0.787	0.037	0.867	13.3%
1925	D	3,987	7,057	1.784	2,486	1,501	0.62	0.38	63.4	0.965	0.823	0.700	0.410	0.876	12.4%
1926	D	3,667	6,678	1.837	2,280	1,387	0.62	0.38	63.4	0.969	0.826	0.714	0.390	0.880	12.0%
1927	W	5,340	8,192	1.543	3,369	1,971	0.63	0.37	57.1	0.951	0.673	0.637	0.099	0.776	22.4%
1928	A	3,987	7,470	1.889	2,474	1,513	0.62	0.38	60.2	0.965	0.774	0.701	0.244	0.846	15.4%
1929	C	2,013	3,125	1.577	1,264	749	0.63	0.37	60.6	0.988	0.796	0.787	0.045	0.868	13.2%
1930	D	2,420	4,020	1.683	1,514	906	0.63	0.37	63.4	0.983	0.828	0.769	0.255	0.886	11.4%
1931	C	1,990	3,141	1.604	1,248	742	0.63	0.37	60.6	0.988	0.798	0.788	0.046	0.869	13.1%
1932	D	4,509	5,548	1.239	2,884	1,625	0.64	0.36	63.4	0.962	0.781	0.672	0.333	0.846	15.4%
1933	C	2,807	4,296	1.548	1,768	1,039	0.63	0.37	60.6	0.979	0.777	0.751	0.105	0.852	14.8%
1934	C	1,990	3,751	1.915	1,230	760	0.62	0.38	60.6	0.988	0.805	0.789	0.077	0.875	12.5%
1935	B	6,374	8,743	1.378	4,053	2,321	0.64	0.36	59.7	0.941	0.703	0.589	0.279	0.790	21.0%
1936	B	6,416	8,440	1.322	4,091	2,325	0.64	0.36	59.7	0.941	0.695	0.586	0.264	0.784	21.6%
1937	B	7,941	8,070	1.020	1,970	5,971	0.25	0.75	59.7	0.831	0.801	0.736	0.245	0.824	17.6%
1938	W	18,051	7,832	0.435	5,157	12,894	0.29	0.71	57.1	0.624	0.550	0.510	0.081	0.603	39.7%
1939	D	2,896	4,254	1.485	1,829	1,067	0.63	0.37	63.4	0.978	0.814	0.746	0.267	0.875	12.5%
1940	A	5,711	8,390	1.477	3,615	2,096	0.63	0.37	60.2	0.948	0.730	0.620	0.290	0.810	19.0%
1941	W	10,085	9,869	0.982	2,530	7,555	0.25	0.75	57.1	0.784	0.753	0.697	0.185	0.776	22.4%
1942	W	6,902	9,025	1.314	4,403	2,499	0.64	0.36	57.1	0.935	0.625	0.564	0.141	0.738	26.2%
1943	W	7,915	9,246	1.173	1,889	6,026	0.24	0.76	57.1	0.830	0.782	0.742	0.153	0.818	18.2%
1944	D	3,440	4,355	1.278	2,195	1,245	0.64	0.36	63.4	0.973	0.796	0.721	0.272	0.860	14.0%
1945	B	5,783	6,371	1.108	3,723	2,060	0.64	0.36	59.7	0.949	0.673	0.612	0.158	0.771	22.9%
1946	B	5,340	6,068	1.143	3,432	1,908	0.64	0.36	59.7	0.953	0.685	0.633	0.143	0.781	21.9%
1947	D	3,667	5,018	1.380	2,329	1,338	0.64	0.36	63.4	0.970	0.799	0.711	0.306	0.862	13.8%
1948	B	3,987	6,929	1.752	2,490	1,497	0.62	0.38	59.7	0.966	0.756	0.700	0.187	0.834	16.6%
1949	D	3,987	5,196	1.314	2,541	1,446	0.64	0.36	63.4	0.967	0.792	0.696	0.315	0.855	14.5%
1950	B	3,987	6,316	1.597	2,508	1,479	0.63	0.37	59.7	0.966	0.745	0.698	0.155	0.827	17.3%
1951	A	5,340	6,487	1.222	3,419	1,921	0.64	0.36	60.2	0.953	0.704	0.634	0.193	0.794	20.6%
1952	W	10,838	7,954	0.736	2,886	7,952	0.27	0.73	57.1	0.772	0.700	0.671	0.087	0.753	24.7%
1953	W	3,987	5,757	1.455	2,524	1,463	0.63	0.37	57.1	0.967	0.697	0.697	0.000	0.796	20.4%
1954	A	3,987	7,470	1.889	2,474	1,513	0.62	0.38	60.2	0.965	0.774	0.701	0.244	0.846	15.4%
1955	D	2,807	3,780	1.362	1,783	1,024	0.64	0.36	63.4	0.980	0.810	0.750	0.243	0.872	12.8%
1956	W	6,193	8,089	1.313	3,950	2,243	0.64	0.36	57.1	0.943	0.634	0.596	0.094	0.746	25.4%
1957	A	3,987	6,554	1.657	2,501	1,486	0.63	0.37	60.2	0.966	0.758	0.699	0.197	0.836	16.4%
1958	W	14,907	9,623	0.647	4,058	10,849	0.27	0.73	57.1	0.685	0.659	0.588	0.172	0.678	32.2%
1959	B	2,807	3,895	1.403	1,779	1,028	0.63	0.37	59.7	0.980	0.758	0.750	0.032	0.839	16.1%
1960	D	2,420	4,133	1.730	1,510	910	0.62	0.38	63.4	0.983	0.829	0.769	0.261	0.887	11.3%
1961	D	1,990	3,650	1.864	1,233	757	0.62	0.38	63.4	0.988	0.839	0.789	0.236	0.895	10.5%
1962	B	4,211	5,704	1.365	2,677	1,534	0.64	0.36	59.7	0.964	0.725	0.686	0.124	0.812	18.8%
1963	W	5,340	8,192	1.543	3,369	1,971	0.63	0.37	57.1	0.951	0.673	0.637	0.099	0.776	22.4%
1964	D	2,807	3,619	1.304	1,788	1,019	0.64	0.36	63.4	0.980	0.808	0.749	0.234	0.871	12.9%
1965	W	6,193	8,647	1.403	3,934	2,259	0.64	0.36	57.1	0.943	0.646	0.597	0.122	0.754	24.6%
1966	B	3,987	5,083	1.285	2,544	1,443	0.64	0.36	59.7	0.967	0.724	0.696	0.093	0.812	18.8%
1967	W	13,614	9,014	0.664	3,691	9,923	0.27	0.73	57.1	0.713	0.669	0.614	0.141	0.701	29.9%
1968	B	3,667	5,354	1.473	2,319	1,348	0.63	0.37	59.7	0.970	0.742	0.712	0.106	0.826	17.4%
1969	W	20,926	7,611	0.364	6,072	14,854	0.29	0.71	57.1	0.565	0.484	0.445	0.069	0.541	45.9%
1970	W	5,340	6,706	1.263	3,413	1,927	0.64	0.36	57.1	0.953	0.643	0.634	0.023	0.754	24.6%
1971	W	3,987	6,696	1.693	2,497	1,490	0.63	0.37	57.1	0.966	0.706	0.699	0.023	0.803	19.7%
1972	B	3,667	4,806	1.322	2,335	1,332	0.64	0.36	58.9	0.970	0.720	0.711	0.032	0.811	18.9%
1973	A	5,686	7,552	1.336	3,622	2,064	0.64	0.36	59.2	0.949	0.691	0.619	0.189	0.785	21.5%
1974	W	7,656	9,427	1.236	1,796	5,860	0.23	0.77	56.9	0.835	0.787	0.749	0.150	0.823	17.7%
1975	W	6,622	8,876	1.347	4,218	2,404	0.64	0.36	53.7	0.938	0.577	0.577	0.000	0.708	29.2%
1976	C	1,990	3,174	1.621	1,247	743	0.63	0.37	57.8	0.988	0.788	0.788	0.000	0.863	13.7%
1977	C	1,990	3,169	1.618	1,247	743	0.63	0.37	62.0	0.988	0.815	0.788	0.129	0.880	12.0%
1978	A	14,930	7,625	0.512	4,191	10,739	0.28	0.72	61.4	0.688	0.714	0.579	0.322	0.696	30.4%
1979	B	5,340	6,960	1.311	3,405	1,935	0.64	0.36	60.5	0.952	0.720	0.635	0.235	0.804	19.6%
1980	A	6,732	7,009	1.046	4,347	2,385	0.65	0.35	60.1	0.939	0.660	0.568	0.214	0.759	24.1%
1981	D	3,667	5,558	1.529	2,313	1,354	0.63	0.37	64.6	0.970	0.828	0.712	0.403	0.881	11.9%
1982	W	27,030	9,052	0.335	7,897	19,133	0.29	0.71	52.8	0.436	0.316	0.316	0.000	0.401	59.9%
1983	W	20,740	7,071	0.341	6,048	14,692	0.29	0.71	57.2	0.570	0.473	0.447	0.048	0.542	45.8%
1984	W	5,340	6,954	1.310	3,406	1,934	0.64	0.36	60.7	0.952	0.725	0.635	0.246	0.807	19.3%
1985	D	2,807	4,358	1.570	1,766	1,041	0.63	0.37	62.5	0.979	0.806	0.751	0.219	0.870	13.0%
1986	W	9,807	7,617	0.779	2,584	7,223	0.26	0.74	61.3	0.794	0.790	0.693	0.315	0.793	20.7%
1987	D	2,029	3,607	1.806	1,261	768	0.62	0.38	62.3	0.987	0.823	0.787	0.169	0.885	11.5%
1988	C	1,990	2,959	1.511	1,253	737	0.63	0.37	62.1	0.988	0.814	0.787	0.125	0.878	12.2%
1989	D	2,420	5,758	2.411	1,463	957	0.60	0.40	64.1	0.982	0.860	0.772	0.384	0.908	9.2%
1990	C	1,990	3,707	1.893	1,231	759	0.62	0.38	60.6	0.988	0.805	0.789	0.075	0.874	12.6%
1991	C	2,440	4,422	1.836	1,515	925	0.62	0.38	60.6	0.983	0.795	0.769	0.111	0.866	13.4%
1992	C	2,252	3,905	1.759	1,403	849	0.62	0.38	60.6	0.985	0.796	0.777	0.085	0.867	13.3%

MAY

A	T	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK
Year	MAY Vernalis Flows	CVP+SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt	m2	Calculated Mortality m34	m3	m4	m234	Calculated Survival s234	Weighted (April + June) total survival
1922	5,936	8,909	1.509	3,519	2,417	0.59	0.41	66.6	0.938	0.885	0.626	0.691	0.906	9.4%	14.2%
1923	5,162	6,481	1.263	3,101	2,061	0.60	0.40	66.0	0.949	0.839	0.656	0.532	0.883	11.7%	15.0%
1924	1,871	1,298	0.706	1,153	718	0.62	0.38	63.9	0.989	0.824	0.795	0.145	0.888	11.2%	12.2%
1925	3,828	5,267	1.387	2,282	1,546	0.60	0.40	67.3	0.964	0.870	0.714	0.546	0.908	9.2%	10.6%
1926	3,538	5,115	1.459	2,101	1,437	0.59	0.41	67.3	0.967	0.874	0.727	0.539	0.912	8.8%	10.2%
1927	5,162	8,535	1.664	3,034	2,128	0.59	0.41	64.2	0.947	0.841	0.661	0.532	0.885	11.5%	16.4%
1928	3,828	6,593	1.737	2,239	1,589	0.58	0.42	66.6	0.963	0.879	0.717	0.573	0.914	8.6%	11.6%
1929	1,890	3,176	1.709	1,104	786	0.58	0.42	63.9	0.987	0.847	0.798	0.241	0.905	9.5%	11.2%
1930	1,955	3,761	1.955	1,127	828	0.58	0.42	67.3	0.986	0.892	0.796	0.470	0.932	6.8%	8.9%
1931	1,989	3,441	1.758	1,159	830	0.58	0.42	63.9	0.986	0.846	0.794	0.254	0.905	9.5%	11.2%
1932	3,872	5,068	1.320	2,317	1,555	0.60	0.40	67.3	0.964	0.866	0.712	0.536	0.906	9.4%	12.1%
1933	2,678	2,648	1.001	1,628	1,050	0.61	0.39	63.9	0.979	0.812	0.761	0.214	0.877	12.3%	13.4%
1934	1,987	3,245	1.659	1,164	823	0.59	0.41	63.9	0.986	0.844	0.794	0.244	0.903	9.7%	11.0%
1935	6,061	5,665	0.940	3,705	2,356	0.61	0.39	66.0	0.940	0.803	0.613	0.491	0.856	14.4%	17.4%
1936	5,162	6,527	1.272	3,099	2,063	0.60	0.40	66.0	0.949	0.840	0.656	0.535	0.883	11.7%	16.1%
1937	8,143	6,977	0.860	2,102	6,041	0.26	0.74	66.0	0.829	0.879	0.727	0.558	0.842	15.8%	16.6%
1938	23,970	9,646	0.403	6,900	17,070	0.29	0.71	64.2	0.498	0.747	0.386	0.588	0.570	43.0%	41.5%
1939	2,678	3,689	1.394	1,594	1,084	0.60	0.40	67.3	0.978	0.874	0.763	0.466	0.916	8.4%	10.3%
1940	5,162	6,452	1.258	3,102	2,060	0.60	0.40	66.6	0.949	0.851	0.656	0.566	0.890	11.0%	14.6%
1941	9,579	9,931	1.040	2,368	7,211	0.25	0.75	64.2	0.794	0.884	0.708	0.603	0.816	18.4%	20.2%
1942	5,936	8,909	1.509	3,519	2,417	0.59	0.41	64.2	0.938	0.832	0.626	0.551	0.875	12.5%	18.7%
1943	6,177	7,891	1.284	3,708	2,469	0.60	0.40	64.2	0.936	0.806	0.613	0.499	0.858	14.2%	16.0%
1944	2,968	3,953	1.346	1,772	1,196	0.60	0.40	67.3	0.975	0.870	0.751	0.479	0.912	8.8%	11.1%
1945	3,872	5,345	1.392	2,308	1,564	0.60	0.40	66.0	0.964	0.849	0.712	0.474	0.895	10.5%	16.0%
1946	3,872	5,487	1.429	2,303	1,569	0.59	0.41	66.0	0.963	0.851	0.713	0.482	0.897	10.3%	15.5%
1947	2,678	3,685	1.392	1,594	1,084	0.60	0.40	67.3	0.978	0.873	0.763	0.466	0.916	8.4%	10.9%
1948	3,828	7,889	2.078	2,197	1,631	0.57	0.43	66.0	0.962	0.889	0.720	0.604	0.920	8.0%	11.8%
1949	2,968	4,973	1.694	1,739	1,229	0.59	0.41	67.3	0.974	0.884	0.753	0.531	0.921	7.9%	10.8%
1950	3,828	5,467	1.440	2,276	1,552	0.59	0.41	66.0	0.964	0.852	0.715	0.481	0.897	10.3%	13.4%
1951	5,162	7,335	1.430	3,073	2,089	0.60	0.40	66.6	0.948	0.867	0.658	0.611	0.900	10.0%	14.8%
1952	15,453	9,444	0.612	4,241	11,212	0.27	0.73	64.2	0.674	0.821	0.575	0.578	0.714	28.6%	26.8%
1953	3,828	7,889	2.078	2,197	1,631	0.57	0.43	64.2	0.962	0.860	0.720	0.499	0.903	9.7%	14.5%
1954	3,828	7,642	2.013	2,205	1,623	0.58	0.42	66.6	0.962	0.895	0.720	0.627	0.924	7.6%	11.1%
1955	2,678	4,167	1.575	1,578	1,100	0.59	0.41	67.3	0.977	0.880	0.764	0.490	0.920	8.0%	10.2%
1956	6,126	9,001	1.477	3,639	2,487	0.59	0.41	64.2	0.936	0.830	0.618	0.556	0.873	12.7%	18.4%
1957	3,828	6,175	1.627	2,253	1,575	0.59	0.41	66.6	0.963	0.873	0.716	0.552	0.910	9.0%	12.3%
1958	13,173	10,851	0.826	3,438	9,735	0.26	0.74	64.2	0.718	0.871	0.632	0.650	0.758	24.2%	27.8%
1959	2,678	3,901	1.474	1,587	1,091	0.59	0.41	66.0	0.978	0.858	0.764	0.401	0.907	9.3%	12.4%
1960	1,872	3,570	1.940	1,079	793	0.58	0.42	67.3	0.987	0.892	0.800	0.460	0.932	6.8%	8.8%
1961	1,897	3,119	1.672	1,110	787	0.59	0.41	67.3	0.987	0.886	0.798	0.437	0.928	7.2%	8.7%
1962	3,828	5,541	1.460	2,273	1,555	0.59	0.41	66.0	0.964	0.853	0.715	0.484	0.898	10.2%	14.1%
1963	5,162	8,535	1.664	3,034	2,128	0.59	0.41	64.2	0.947	0.841	0.661	0.532	0.885	11.5%	16.4%
1964	2,678	4,093	1.547	1,581	1,097	0.59	0.41	67.3	0.978	0.879	0.764	0.487	0.919	8.1%	10.3%
1965	5,936	8,064	1.366	3,547	2,389	0.60	0.40	64.2	0.939	0.815	0.625	0.508	0.865	13.5%	18.5%
1966	2,968	4,985	1.698	1,738	1,230	0.59	0.41	66.0	0.974	0.866	0.753	0.456	0.910	9.0%	13.4%
1967	16,000	9,649	0.604	4,400	11,600	0.27	0.73	64.2	0.662	0.821	0.564	0.589	0.706	29.4%	29.6%
1968	2,678	3,867	1.461	1,588	1,090	0.59	0.41	66.0	0.978	0.858	0.764	0.399	0.907	9.3%	13.0%
1969	26,143	9,215	0.353	7,609	18,534	0.29	0.71	66.4	0.454	0.798	0.336	0.695	0.554	44.6%	45.2%
1970	5,162	6,129	1.195	3,112	2,050	0.60	0.40	61.2	0.949	0.736	0.655	0.234	0.821	17.9%	20.9%
1971	3,828	7,889	2.078	2,197	1,631	0.57	0.43	64.2	0.962	0.860	0.720	0.499	0.903	9.7%	14.2%
1972	2,678	4,097	1.548	1,581	1,097	0.59	0.41	66.0	0.978	0.861	0.764	0.411	0.909	9.1%	13.5%
1973	5,162	6,723	1.310	3,093	2,069	0.60	0.40	66.3	0.948	0.850	0.657	0.562	0.889	11.1%	15.8%
1974	5,936	8,909	1.509	3,519	2,417	0.59	0.41	66.1	0.938	0.874	0.626	0.662	0.900	10.0%	13.5%
1975	5,936	8,909	1.509	3,519	2,417	0.59	0.41	61.5	0.938	0.773	0.626	0.393	0.840	16.0%	21.9%
1976	1,871	3,372	1.833	1,085	786	0.58	0.42	65.8	0.987	0.872	0.799	0.362	0.920	8.0%	10.6%
1977	1,871	961	0.522	1,164	707	0.62	0.38	62.3	0.989	0.801	0.794	0.034	0.872	12.8%	12.4%
1978	10,832	8,418	0.779	2,855	7,977	0.26	0.74	66.9	0.771	0.897	0.674	0.684	0.804	19.6%	24.5%
1979	5,162	6,213	1.211	3,109	2,053	0.60	0.40	66.0	0.949	0.834	0.656	0.519	0.880	12.0%	15.4%
1980	6,622	7,685	1.166	4,000	2,622	0.60	0.40	66.6	0.932	0.849	0.592	0.629	0.882	11.8%	17.4%
1981	2,678	3,717	1.405	1,593	1,085	0.59	0.41	68.7	0.978	0.893	0.763	0.549	0.928	7.2%	9.4%
1982	15,159	10,917	0.722	4,057	11,102	0.27	0.73	65.1	0.677	0.879	0.588	0.706	0.731	26.9%	41.7%
1983	19,079	7,752	0.407	5,484	13,595	0.29	0.71	61.3	0.603	0.652	0.487	0.322	0.617	38.3%	41.7%
1984	5,162	6,345	1.237	3,105	2,057	0.60	0.40	66.0	0.949	0.837	0.656	0.525	0.881	11.9%	15.2%
1985	2,678	4,455	1.683	1,569	1,109	0.59	0.41	65.1	0.977	0.853	0.765	0.376	0.905	9.5%	11.1%
1986	8,069	8,340	1.038	1,994	6,075	0.25	0.75	65.8	0.828	0.898	0.735	0.615	0.845	15.5%	17.8%
1987	1,871	3,051	1.659	1,096	775	0.59	0.41	68.6	0.987	0.901	0.799	0.509	0.937	6.3%	8.6%
1988	1,871	3,281	1.784	1,088	783	0.58	0.42	63.7	0.987	0.846	0.799	0.235	0.905	9.5%	10.7%
1989	1,881	4,145	2.241	1,066	815	0.57	0.43	66.7	0.986	0.891	0.801	0.454	0.932	6.8%	7.9%
1990	1,948	2,977	1.553	1,148	800	0.59	0.41	63.9	0.986	0.842	0.795	0.231	0.901	9.9%	11.1%
1991	1,984	3,180	1.629	1,164	820	0.59	0.41	63.9	0.986	0.843	0.794	0.241	0.902	9.8%	11.4%
1992	1,991	3,239	1.653	1,167	824	0.59	0.41	63.9	0.986	0.844	0.794	0.244	0.903	9.7%	11.3%
														Average:	15.82%

Calculations- San Joaquin River Fall Run Smolt Survival Model WITH BARRIER:

C8 ='Study 468 Flow Data'!AB7
D8 ='Study 468 Flow Data'!G7 (HIDDEN)
E8 ='Study 468 Flow Data'!Q7 (HIDDEN)
F8 =D8+E8
G8 =F8/(C8-0.03*$R$2)
H8 =IF(C8<$R$1,(0.47*(0.3137*C8-0.0156*$R$2-0.0625*F8)+0.53*C8),(0.3137*C8-0.0156*$R$2-0.0625*F8))
I8 =C8-H8
J8 =H8/C8
K8 =I8/C8
M8 =(1.01045-0.00003*I8)
N8 =(O8+P8)-(O8*P8)
O8 =IF((0.87634-0.000071*H8)<0,0,(0.87634-0.000071*H8))
P8 =IF((-3.65867+0.058492*L8+0.000051*F8)<0,0,(-3.65867+0.058492*L8+0.000051*F8))
Q8 =((K8*M8)+(J8*N8))
R8 =(1-Q8)

T8 ='Study 468 Flow Data'!AC7
U8 ='Study 468 Flow Data'!H7 (HIDDEN)
V8 ='Study 468 Flow Data'!R7 (HIDDEN)
W8 =U8+V8
X8 =W8/(T8-0.03*$R$3)
Y8 =IF(T8<$R$1,(0.52*(0.3137*T8-0.0156*$R$3-0.0625*W8)+0.48*T8),(0.3137*T8-0.0156*$R$3-0.0625*W8))
Z8 =T8-Y8
AA8 =Y8/T8
AB8 =Z8/T8
AD8 =(1.01045-0.00003*Z8)
AE8 =(AF8+AG8)-(AF8*AG8)
AF8 =IF((0.87634-0.000071*Y8)<0,0,(0.87634-0.000071*Y8))
AG8 =IF((-3.65867+0.058492*AC8+0.000051*W8)<0,0,(-3.65867+0.058492*AC8+0.000051*W8))
AH8 =((AB8*AD8)+(AA8*AE8))
AI8 =(1-AH8)
AK8 =0.45*G94+0.55*AI8

Study 501a San Joaquin River Fall Run Salmon Smolt Survival Model WITH BARRIER

Barrier at head of Old River from Apr 15 to May 15

Old River Barrier Open above 7500.00 cfs at Vernalis
Consumptive Depletion for April 1053.00 cfs
Consumptive Depletion for May 1053.00 cfs

A	B	C	F	G	H	I	J	K	L	M	N	O	P	Q	R	T	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK
	Water	**APRIL**													**Calculated**	**MAY**													**Calculated**	**Weighted**
	Year	Vernalis	CVP + SWP		Calculated				Temp @		Calculated Mortality				**Survival**	Vernalis	CVP+SWP		Calculated				Temp @		Calculated Mortality				**Survival**	**(April + June)**
Year	Type	Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	**s234**	Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt	m2	m34	m3	m4	m234	**s234**	**total survival**
1922	A	6,193	6,904	1.121	3,985	2,208	0.64	0.36	60.2	0.944	0.681	0.593	0.215	0.775	**22.5%**	5,936	7,545	1.278	3,564	2,372	0.60	0.40	66.6	0.939	0.857	0.623	0.622	0.890	**11.0%**	**16.2%**
1923	B	5,340	6,834	1.287	3,409	1,931	0.64	0.36	59.7	0.953	0.701	0.634	0.182	0.792	**20.8%**	5,162	5,303	1.034	3,139	2,023	0.61	0.39	66.0	0.950	0.817	0.653	0.472	0.869	**13.1%**	**16.6%**
1924	C	1,990	2,682	1.369	1,262	728	0.63	0.37	60.6	0.989	0.792	0.787	0.023	0.864	**13.6%**	1,871	1,365	0.742	1,150	721	0.61	0.39	63.9	0.989	0.825	0.795	0.149	0.888	**11.2%**	**12.3%**
1925	D	3,987	5,650	1.428	2,527	1,460	0.63	0.37	63.4	0.967	0.799	0.697	0.338	0.861	**13.9%**	3,828	4,178	1.101	2,318	1,510	0.61	0.39	67.3	0.965	0.853	0.712	0.491	0.897	**10.3%**	**11.9%**
1926	D	3,667	5,196	1.429	2,324	1,343	0.63	0.37	63.4	0.970	0.802	0.711	0.315	0.864	**13.6%**	3,538	4,253	1.213	2,129	1,409	0.60	0.40	67.3	0.968	0.861	0.725	0.495	0.904	**9.6%**	**11.4%**
1927	W	5,340	6,838	1.288	3,409	1,931	0.64	0.36	57.1	0.953	0.645	0.634	0.030	0.756	**24.4%**	5,162	7,358	1.434	3,072	2,090	0.60	0.40	64.2	0.948	0.819	0.658	0.472	0.871	**12.9%**	**18.0%**
1928	A	3,987	6,476	1.637	2,503	1,484	0.63	0.37	60.2	0.966	0.757	0.699	0.193	0.835	**16.5%**	3,828	5,500	1.449	2,275	1,553	0.59	0.41	66.6	0.964	0.862	0.715	0.517	0.904	**9.6%**	**12.7%**
1929	C	2,013	2,832	1.429	1,273	740	0.63	0.37	60.6	0.988	0.792	0.786	0.030	0.864	**13.6%**	1,890	3,179	1.711	1,104	786	0.58	0.42	63.9	0.987	0.847	0.798	0.241	0.905	**9.5%**	**11.3%**
1930	D	2,420	3,577	1.498	1,527	893	0.63	0.37	63.4	0.984	0.822	0.768	0.232	0.882	**11.8%**	1,955	3,541	1.841	1,134	821	0.58	0.42	67.3	0.986	0.889	0.796	0.458	0.930	**7.0%**	**9.2%**
1931	C	1,990	2,853	1.457	1,257	733	0.63	0.37	60.6	0.988	0.794	0.787	0.031	0.866	**13.4%**	1,989	3,177	1.623	1,167	822	0.59	0.41	63.9	0.986	0.843	0.793	0.241	0.902	**9.8%**	**11.4%**
1932	D	4,509	4,182	0.934	2,924	1,585	0.65	0.35	63.4	0.963	0.756	0.669	0.263	0.829	**17.1%**	3,872	3,981	1.037	2,352	1,520	0.61	0.39	67.3	0.965	0.849	0.709	0.481	0.895	**10.5%**	**13.5%**
1933	C	2,807	3,486	1.256	1,791	1,016	0.64	0.36	60.6	0.980	0.765	0.749	0.064	0.843	**15.7%**	2,678	2,937	1.110	1,618	1,060	0.60	0.40	63.9	0.979	0.816	0.761	0.229	0.880	**12.0%**	**13.7%**
1934	C	1,990	3,474	1.774	1,238	752	0.62	0.38	60.6	0.988	0.802	0.788	0.063	0.872	**12.8%**	1,987	2,994	1.531	1,172	815	0.59	0.41	63.9	0.986	0.841	0.793	0.232	0.901	**9.9%**	**11.2%**
1935	B	6,375	7,117	1.122	4,102	2,273	0.64	0.36	59.7	0.942	0.667	0.585	0.196	0.765	**23.5%**	6,061	5,985	0.993	3,695	2,366	0.61	0.39	66.0	0.939	0.810	0.614	0.507	0.860	**14.0%**	**18.3%**
1936	B	6,414	6,801	1.066	4,138	2,276	0.65	0.35	59.7	0.942	0.658	0.583	0.180	0.759	**24.1%**	5,162	6,119	1.193	3,112	2,050	0.60	0.40	66.0	0.949	0.832	0.655	0.514	0.879	**12.1%**	**17.5%**
1937	B	7,941	7,533	0.952	2,004	5,937	0.25	0.75	59.7	0.832	0.792	0.734	0.217	0.822	**17.8%**	8,143	6,905	0.851	2,106	6,037	0.26	0.74	66.0	0.829	0.878	0.727	0.554	0.842	**15.8%**	**16.7%**
1938	W	18,051	7,897	0.438	5,153	12,898	0.29	0.71	57.1	0.623	0.552	0.511	0.084	0.603	**39.7%**	23,970	9,711	0.406	6,896	17,074	0.29	0.71	64.2	0.498	0.750	0.387	0.592	0.571	**42.9%**	**41.5%**
1939	D	2,896	3,433	1.199	1,853	1,043	0.64	0.36	63.4	0.979	0.802	0.745	0.225	0.866	**13.4%**	2,678	3,070	1.160	1,614	1,064	0.60	0.40	67.3	0.979	0.865	0.762	0.434	0.910	**9.0%**	**11.0%**
1940	A	5,708	6,941	1.223	3,655	2,053	0.64	0.36	60.2	0.949	0.700	0.617	0.217	0.789	**21.1%**	5,162	6,092	1.187	3,113	2,049	0.60	0.40	66.6	0.949	0.844	0.655	0.548	0.886	**11.4%**	**15.8%**
1941	W	10,085	8,102	0.806	2,641	7,444	0.26	0.74	57.1	0.787	0.718	0.689	0.094	0.769	**23.1%**	9,579	8,427	0.883	2,462	7,117	0.26	0.74	64.2	0.797	0.859	0.702	0.526	0.813	**18.7%**	**20.7%**
1942	W	6,902	7,254	1.056	4,455	2,447	0.65	0.35	57.1	0.937	0.583	0.560	0.051	0.708	**29.2%**	5,936	7,545	1.278	3,564	2,372	0.60	0.40	64.2	0.939	0.805	0.623	0.481	0.858	**14.2%**	**20.9%**
1943	W	7,916	7,524	0.954	1,997	5,919	0.25	0.75	57.1	0.833	0.752	0.735	0.065	0.812	**18.8%**	6,176	6,960	1.133	3,737	2,439	0.61	0.39	64.2	0.937	0.787	0.611	0.451	0.846	**15.4%**	**16.9%**
1944	D	3,987	3,742	0.946	2,583	1,404	0.65	0.35	63.4	0.968	0.767	0.693	0.241	0.838	**16.2%**	2,968	3,315	1.129	1,793	1,175	0.60	0.40	67.3	0.975	0.861	0.749	0.447	0.906	**9.4%**	**12.5%**
1945	B	5,781	4,898	0.852	3,765	2,016	0.65	0.35	59.7	0.950	0.642	0.609	0.083	0.749	**25.1%**	5,162	4,906	0.956	3,152	2,010	0.61	0.39	66.0	0.950	0.810	0.653	0.452	0.864	**13.6%**	**18.8%**
1946	B	5,340	4,714	0.888	3,471	1,869	0.65	0.35	59.7	0.954	0.657	0.630	0.074	0.761	**23.9%**	3,872	4,416	1.150	2,338	1,534	0.60	0.40	66.0	0.964	0.834	0.710	0.427	0.886	**11.4%**	**17.0%**
1947	D	3,667	4,093	1.126	2,356	1,311	0.64	0.36	63.4	0.971	0.784	0.709	0.258	0.851	**14.9%**	2,678	3,166	1.196	1,611	1,067	0.60	0.40	67.3	0.978	0.867	0.762	0.439	0.911	**8.9%**	**11.6%**
1948	B	3,987	5,869	1.484	2,521	1,466	0.63	0.37	59.7	0.966	0.737	0.697	0.133	0.822	**17.8%**	3,828	6,778	1.785	2,233	1,595	0.58	0.42	66.0	0.963	0.872	0.718	0.547	0.910	**9.0%**	**13.0%**
1949	D	3,987	4,183	1.058	2,570	1,417	0.64	0.36	63.4	0.968	0.774	0.694	0.263	0.843	**15.7%**	2,968	4,157	1.416	1,765	1,203	0.59	0.41	67.3	0.974	0.873	0.751	0.490	0.914	**8.6%**	**11.8%**
1950	B	3,987	5,266	1.331	2,539	1,448	0.64	0.36	59.7	0.967	0.727	0.696	0.102	0.814	**18.6%**	3,828	4,597	1.211	2,304	1,524	0.60	0.40	66.0	0.965	0.838	0.713	0.436	0.888	**11.2%**	**14.5%**
1951	A	5,340	5,115	0.964	3,460	1,880	0.65	0.35	60.2	0.954	0.676	0.631	0.123	0.774	**22.6%**	5,162	6,172	1.203	3,111	2,051	0.60	0.40	66.6	0.949	0.846	0.655	0.552	0.887	**11.3%**	**16.4%**
1952	W	10,838	8,013	0.742	2,883	7,955	0.27	0.73	57.1	0.772	0.701	0.672	0.090	0.753	**24.7%**	15,453	9,510	0.617	4,237	11,216	0.27	0.73	64.2	0.674	0.822	0.576	0.582	0.715	**28.5%**	**26.8%**
1953	W	3,987	4,764	1.204	2,553	1,434	0.64	0.36	57.1	0.967	0.695	0.695	0.000	0.793	**20.7%**	3,828	7,035	1.853	2,225	1,603	0.58	0.42	64.2	0.962	0.847	0.718	0.455	0.895	**10.5%**	**15.1%**
1954	A	3,987	6,476	1.637	2,503	1,484	0.63	0.37	60.2	0.966	0.757	0.699	0.193	0.835	**16.5%**	3,828	6,540	1.723	2,241	1,587	0.59	0.41	66.6	0.963	0.879	0.717	0.570	0.913	**8.7%**	**12.2%**
1955	D	2,807	3,129	1.127	1,802	1,005	0.64	0.36	63.4	0.980	0.801	0.748	0.209	0.865	**13.5%**	2,678	3,465	1.309	1,601	1,077	0.60	0.40	67.3	0.978	0.871	0.763	0.455	0.914	**8.6%**	**10.8%**
1956	W	6,193	6,507	1.056	3,997	2,196	0.65	0.35	57.1	0.945	0.598	0.593	0.013	0.721	**27.9%**	6,126	7,591	1.246	3,685	2,441	0.60	0.40	64.2	0.937	0.801	0.615	0.484	0.855	**14.5%**	**20.5%**
1957	A	3,987	5,341	1.350	2,536	1,451	0.64	0.36	60.2	0.967	0.737	0.696	0.135	0.821	**17.9%**	3,828	5,394	1.421	2,278	1,550	0.60	0.40	66.6	0.964	0.861	0.715	0.512	0.903	**9.7%**	**13.4%**
1958	W	14,907	9,389	0.631	4,073	10,834	0.27	0.73	57.1	0.685	0.653	0.587	0.160	0.677	**32.3%**	13,173	9,296	0.707	3,535	9,638	0.27	0.73	64.2	0.721	0.839	0.625	0.571	0.753	**24.7%**	**28.1%**
1959	B	2,807	3,130	1.128	1,802	1,005	0.64	0.36	59.7	0.980	0.748	0.748	0.000	0.831	**16.9%**	2,678	3,403	1.286	1,603	1,075	0.60	0.40	66.0	0.978	0.852	0.763	0.375	0.902	**9.8%**	**13.0%**
1960	D	2,420	3,626	1.518	1,525	895	0.63	0.37	63.4	0.984	0.822	0.768	0.235	0.882	**11.8%**	1,872	3,445	1.872	1,083	789	0.58	0.42	67.3	0.987	0.890	0.799	0.454	0.931	**6.9%**	**9.1%**
1961	D	1,990	3,391	1.732	1,241	749	0.62	0.38	63.4	0.988	0.835	0.788	0.223	0.893	**10.7%**	1,897	2,996	1.606	1,114	783	0.59	0.41	67.3	0.987	0.885	0.797	0.431	0.927	**7.3%**	**8.8%**
1962	B	4,211	4,444	1.063	2,714	1,497	0.64	0.36	59.7	0.966	0.703	0.684	0.060	0.796	**20.4%**	3,828	4,502	1.186	2,307	1,521	0.60	0.40	66.0	0.965	0.837	0.713	0.431	0.888	**11.2%**	**15.4%**
1963	W	5,340	6,838	1.288	3,409	1,931	0.64	0.36	57.1	0.953	0.645	0.634	0.030	0.756	**24.4%**	5,162	7,358	1.434	3,072	2,090	0.60	0.40	64.2	0.948	0.819	0.658	0.472	0.871	**12.9%**	**18.0%**
1964	D	2,807	2,991	1.078	1,806	1,001	0.64	0.36	63.4	0.980	0.799	0.748	0.202	0.864	**13.6%**	2,678	3,595	1.358	1,597	1,081	0.60	0.40	67.3	0.978	0.872	0.763	0.461	0.915	**8.5%**	**10.8%**
1965	W	6,193	7,049	1.144	3,981	2,212	0.64	0.36	57.1	0.944	0.610	0.594	0.041	0.730	**27.0%**	5,936	7,529	1.275	3,564	2,372	0.60	0.40	64.2	0.939	0.804	0.623	0.480	0.858	**14.2%**	**20.0%**
1966	B	3,987	4,528	1.145	2,560	1,427	0.64	0.36	59.7	0.968	0.714	0.695	0.064	0.805	**19.5%**	2,968	4,119	1.403	1,766	1,202	0.60	0.40	66.0	0.974	0.854	0.751	0.412	0.902	**9.8%**	**14.1%**
1967	W	13,614	8,655	0.637	3,713	9,901	0.27	0.73	57.1	0.713	0.660	0.613	0.123	0.699	**30.1%**	16,000	9,713	0.608	4,396	11,604	0.27	0.73	64.2	0.662	0.822	0.564	0.592	0.706	**29.4%**	**29.7%**
1968	B	3,667	4,250	1.169	2,352	1,315	0.64	0.36	59.7	0.971	0.724	0.709	0.050	0.813	**18.7%**	2,678	3,369	1.273	1,604	1,074	0.60	0.40	66.0	0.978	0.851	0.762	0.374	0.902	**9.8%**	**13.8%**
1969	W	20,926	7,680	0.368	6,068	14,858	0.29	0.71	57.1	0.565	0.486	0.446	0.073	0.542	**45.8%**	26,143	9,287	0.356	7,604	18,539	0.29	0.71	66.4	0.454	0.800	0.336	0.699	0.555	**44.5%**	**45.1%**
1970	W	5,340	5,075	0.956	3,461	1,879	0.65	0.35	57.1	0.954	0.631	0.631	0.000	0.744	**25.6%**	5,162	4,953	0.965	3,150	2,012	0.61	0.39	61.2	0.950	0.713	0.653	0.174	0.805	**19.5%**	**22.2%**
1971	W	3,987	5,514	1.394	2,531	1,456	0.63	0.37	57.1	0.967	0.697	0.697	0.000	0.795	**20.5%**	3,828	7,035	1.853	2,225	1,603	0.58	0.42	64.2	0.962	0.847	0.718	0.455	0.895	**10.5%**	**15.0%**
1972	B	3,667	3,886	1.069	2,362	1,305	0.64	0.36	58.9	0.971	0.709	0.709	0.000	0.802	**19.8%**	2,678	3,539	1.337	1,599	1,079	0.60	0.40	66.0	0.978	0.853	0.763	0.382	0.904	**9.6%**	**14.2%**
1973	A	5,693	6,109	1.079	3,669	2,024	0.64	0.36	59.2	0.950	0.660	0.616	0.116	0.763	**23.7%**	5,162	5,548	1.081	3,131	2,031	0.61	0.39	66.3	0.950	0.828	0.654	0.502	0.876	**12.4%**	**17.5%**
1974	W	7,656	7,455	0.978	1,919	5,737	0.25	0.75	56.9	0.838	0.753	0.740	0.050	0.817	**18.3%**	5,936	7,545	1.278	3,564	2,372	0.60	0.40	66.1	0.939	0.846	0.623	0.592	0.884	**11.6%**	**14.6%**
1975	W	6,622	7,179	1.089	4,267	2,355	0.64	0.36	53.7	0.940	0.573	0.573	0.000	0.704	**29.6%**	5,936	7,545	1.278	3,564	2,372	0.60	0.40	61.5	0.939	0.745	0.623	0.323	0.823	**17.7%**	**23.1%**
1976	C	1,990	2,965	1.514	1,253	737	0.63	0.37	57.8	0.988	0.787	0.787	0.000	0.862	**13.8%**	1,871	3,201	1.740	1,091	780	0.58	0.42	65.8	0.987	0.870	0.799	0.353	0.919	**8.1%**	**10.7%**
1977	C	1,990	2,871	1.466	1,256	734	0.63	0.37	62.0	0.988	0.811	0.787	0.114	0.877	**12.3%**	1,871	1,007	0.547	1,162	709	0.62	0.38	62.3	0.989	0.801	0.794	0.037	0.873	**12.7%**	**12.6%**
1978	A	14,930	7,693	0.516	4,186	10,744	0.28	0.72	61.4	0.688	0.716	0.579	0.325	0.696	**30.4%**	10,833	8,490	0.786	2,851	7,982	0.26	0.74	66.9	0.771	0.898	0.674	0.687	0.804	**19.6%**	**24.4%**
1979	B	5,340	5,606	1.056	3,445	1,895	0.65	0.35	60.5	0.954	0.693	0.632	0.166	0.785	**21.5%**	5,162	5,037	0.982	3,148	2,014	0.61	0.39	66.0	0.950	0.812	0.653	0.459	0.866	**13.4%**	**17.0%**
1980	A	6,734	6,531	0.974	4,362	2,372	0.65	0.35	60.1	0.939	0.649	0.567	0.190	0.751	**24.9%**	6,621	6,155	0.934	4,050	2,571	0.61	0.39	66.6	0.933	0.815	0.589	0.551	0.861	**13.9%**	**18.8%**
1981	D	3,667	4,650	1.279	2,340	1,327	0.64	0.36	64.6	0.971	0.814	0.710	0.357	0.870	**13.0%**	2,678	3,219	1.216	1,609	1,069	0.60	0.40	68.7	0.978	0.887	0.762	0.524	0.923	**7.7%**	**10.0%**
1982	W	27,030	9,122	0.338	7,893	19,137	0.29	0.71	52.8	0.436	0.316	0.316	0.000	0.401	**59.9%**	15,159	9,776	0.646	4,128	11,031	0.27	0.73	65.1	0.680	0.853	0.583	0.648	0.727	**27.3%**	**42.0%**
1983	W	20,740	7,141	0.345	6,043	14,697	0.29	0.71	57.2	0.570	0.476	0.447	0.051	0.542	**45.8%**	19,079	7,825	0.411	5,480	13,599	0.29	0.71	61.3	0.602	0.654	0.487	0.326	0.617	**38.3%**	**41.6%**
1984	W	5,340	5,321	1.002	3,453	1,887	0.65	0.35	60.7	0.954	0.691	0.631	0.163	0.784	**21.6%**	5,162	5,454	1.063	3,134	2,028	0.61	0.39	66.0	0.950	0.820	0.654	0.480	0.871	**12.9%**	**16.8%**
1985	D	3,667	3,885	1.069	2,362	1,305	0.64	0.36	62.5	0.971	0.765	0.709	0.195	0.839	**16.1%**	2,678	3,830	1.447	1,589	1,089	0.59	0.41	65.1	0.978	0.845	0.764	0.344	0.899	**10.1%**	**12.8%**
1986	W	9,806	7,708	0.789	2,578	7,228	0.26	0.74	61.3	0.794	0.791	0.693	0.320	0.793	**20.7%**	8,067	6,463	0.804	2,110	5,957	0.26	0.74	65.8	0.832	0.869	0.727	0.520	0.841	**15.9%**	**18.0%**
1987	D	2,029	3,357	1.681	1,268	761	0.63	0.37	62.3	0.988	0.820	0.786	0.157	0.883	**11.7%**	1,871	2,884	1.568	1,101	770	0.59	0.41	68.6	0.987	0.899	0.798	0.501	0.936	**6.4%**	**8.8%**
1988	C	1,990	2,714	1.386	1,261	729	0.63	0.37	62.1	0.989	0.811	0.787	0.112	0.876	**12.4%**	1,871	3,072	1.670	1,095	776	0.59	0.41	63.7	0.987	0.844	0.799	0.224	0.903	**9.7%**	**10.9%**
1989	D	2,420	5,331	2.232	1,475	945	0.61	0.39	64.1	0.982	0.854	0.772	0.363	0.904	**9.6%**	1,879	3,966	2.147	1,071	808	0.57	0.43	66.7	0.986	0.889	0.800	0.445	0.931	**6.9%**	**8.1%**
1990	C	1,990	3,438	1.756	1,239	751	0.62	0.38	60.6	0.988	0.801	0.788	0.061	0.872	**12.8%**	1,948	2,757	1.439	1,155	793	0.59	0.41	63.9	0.987	0.840	0.794	0.220	0.899	**10.1%**	**11.3%**
1991	C	2,440	3,942	1.637	1,529	911	0.63	0.37	60.6	0.983	0.788	0.768	0.087	0.861	**13.9%**	1,984	2,967	1.520	1,171	813	0.59	0.41	63.9	0.986	0.841	0.793	0.230	0.900	**10.0%**	**11.7%**
1992	C	2,252	3,453	1.555	1,416	836	0.63	0.37	60.6	0.985	0.790	0.776	0.062	0.862	**13.8%**	1,991	2,978	1.520	1,175	816	0.59	0.41	63.9	0.986	0.841	0.793	0.231	0.900	**10.0%**	**11.7%**
																													Average:	**16.66%**

Calculations- San Joaquin River Fall
Run Smolt Survival Model WITH BARRIER:

C8 ='Study 468 Flow Data'!AB7
D8 ='Study 468 Flow Data'!G7 (HIDDEN)
E8 ='Study 468 Flow Data'!Q7 (HIDDEN)
F8 =D8+E8
G8 =F8/(C8-0.03*$R$2)
H8 =IF(C8<$R$1,(0.47*(0.3137*C8-0.0156*$R$2-0.0625*F8)+0.53*C8),(0.3137*C8-0.0156*$R$2-0.0625*F8))
I8 =C8-H8
J8 =H8/C8
K8 =I8/C8
M8 =(1.01045-0.00003*I8)
N8 =(O8+P8)-(O8*P8)
O8 =IF((0.87634-0.000071*H8)<0,0,(0.87634-0.000071*H8))
P8 =IF((-3.65867+0.058492*L8+0.000051*F8)<0,0,(-3.65867+0.058492*L8+0.000051*F8))
Q8 =((K8*M8)+(J8*N8))
R8 =(1-Q8)

T8 ='Study 468 Flow Data'!AC7
U8 ='Study 468 Flow Data'!H7 (HIDDEN)
V8 ='Study 468 Flow Data'!R7 (HIDDEN)
W8 =U8+V8
X8 =W8/(T8-0.03*$R$3)
Y8 =IF(T8<$R$1,(0.52*(0.3137*T8-0.0156*$R$3-0.0625*W8)+0.48*T8),(0.3137*T8-0.0156*$R$3-0.0625*W8))
Z8 =T8-Y8
AA8 =Y8/T8
AB8 =Z8/T8
AD8 =(1.01045-0.00003*Z8)
AE8 =(AF8+AG8)-(AF8*AG8)
AF8 =IF((0.87634-0.000071*Y8)<0,0,(0.87634-0.000071*Y8))
AG8 =IF((-3.65867+0.058492*AC8+0.000051*W8)<0,0,(-3.65867+0.058492*AC8+0.000051*W8))
AH8 =((AB8*AD8)+(AA8*AE8))
AI8 =(1-AH8)
AK8 =0.45*G94+0.55*AI8

Study 524 San Joaquin River Fall Run Salmon Smolt Survival Model WITH BARRIER

Barrier at head of Old River from Apr 15 to May 15

Old River Barrier Open above 7500.00 cfs at Vernalis
Consumptive Depletion for April 1053.00 cfs
Consumptive Depletion for May 1053.00 cfs

	A	B	C	F	G	H	I	J	K	L	M	N	O	P	Q	R	T	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK
5		Water	**APRIL**													**Calculated**	**MAY**													**Calculated**	**Weighted**
6		Year	Vernalis	CVP + SWP		Calculated				Temp @		Calculated Mortality				**Survival**	Vernalis	CVP+SWP		Calculated				Temp @		Calculated Mortality				**Survival**	**(April + June)**
7	Year	Type	Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	**s234**	Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt	m2	m34	m3	m4	m234	**s234**	**total survival**
8	1922	A	6,193	8,555	1.388	3,936	2,257	0.64	0.36	60.2	0.943	0.717	0.597	0.299	0.799	**20.1%**	5,936	8,981	1.521	3,517	2,419	0.59	0.41	66.6	0.938	0.886	0.627	0.695	0.907	**9.3%**	**14.1%**
9	1923	B	5,340	8,259	1.556	3,367	1,973	0.63	0.37	59.7	0.951	0.730	0.637	0.255	0.811	**18.9%**	5,162	6,552	1.277	3,098	2,064	0.60	0.40	66.0	0.949	0.841	0.656	0.536	0.884	**11.6%**	**14.9%**
10	1924	C	1,990	2,994	1.529	1,252	738	0.63	0.37	60.6	0.988	0.796	0.787	0.039	0.867	**13.3%**	1,871	1,606	0.873	1,143	728	0.61	0.39	63.9	0.989	0.828	0.795	0.161	0.891	**10.9%**	**12.0%**
11	1925	D	3,987	6,711	1.697	2,496	1,491	0.63	0.37	63.4	0.966	0.817	0.699	0.392	0.873	**12.7%**	3,828	5,101	1.344	2,288	1,540	0.60	0.40	67.3	0.964	0.868	0.714	0.538	0.907	**9.3%**	**10.9%**
12	1926	D	3,667	6,216	1.710	2,294	1,373	0.63	0.37	63.4	0.969	0.819	0.713	0.367	0.875	**12.5%**	3,538	5,328	1.520	2,094	1,444	0.59	0.41	67.3	0.967	0.877	0.728	0.550	0.914	**8.6%**	**10.4%**
13	1927	W	5,340	8,262	1.556	3,367	1,973	0.63	0.37	57.1	0.951	0.674	0.637	0.103	0.777	**22.3%**	5,162	8,607	1.678	3,032	2,130	0.59	0.41	64.2	0.947	0.843	0.661	0.535	0.885	**11.5%**	**16.3%**
14	1928	A	3,987	7,540	1.906	2,472	1,515	0.62	0.38	60.2	0.965	0.775	0.701	0.247	0.847	**15.3%**	3,828	6,660	1.754	2,237	1,591	0.58	0.42	66.6	0.963	0.880	0.718	0.577	0.915	**8.5%**	**11.6%**
15	1929	C	2,016	3,158	1.591	1,265	751	0.63	0.37	60.6	0.988	0.797	0.787	0.047	0.868	**13.2%**	1,892	3,364	1.808	1,099	793	0.58	0.42	63.9	0.987	0.849	0.798	0.251	0.907	**9.3%**	**11.1%**
16	1930	D	2,420	4,068	1.703	1,512	908	0.62	0.38	63.4	0.983	0.828	0.769	0.257	0.886	**11.4%**	1,956	3,812	1.981	1,126	830	0.58	0.42	67.3	0.986	0.893	0.796	0.472	0.932	**6.8%**	**8.8%**
17	1931	C	1,990	3,165	1.616	1,247	743	0.63	0.37	60.6	0.988	0.798	0.788	0.047	0.869	**13.1%**	1,989	3,466	1.771	1,158	831	0.58	0.42	63.9	0.986	0.847	0.794	0.256	0.905	**9.5%**	**11.1%**
18	1932	D	4,511	5,605	1.251	2,884	1,627	0.64	0.36	63.4	0.962	0.782	0.672	0.336	0.847	**15.3%**	3,872	5,126	1.335	2,315	1,557	0.60	0.40	67.3	0.964	0.867	0.712	0.539	0.906	**9.4%**	**12.1%**
19	1933	C	2,807	4,318	1.556	1,767	1,040	0.63	0.37	60.6	0.979	0.777	0.751	0.106	0.852	**14.8%**	2,678	2,777	1.049	1,623	1,055	0.61	0.39	63.9	0.979	0.814	0.761	0.221	0.879	**12.1%**	**13.3%**
20	1934	C	1,990	3,786	1.933	1,229	761	0.62	0.38	60.6	0.988	0.806	0.789	0.079	0.875	**12.5%**	1,988	3,282	1.678	1,163	825	0.59	0.41	63.9	0.986	0.845	0.794	0.246	0.903	**9.7%**	**10.9%**
21	1935	B	6,376	8,815	1.389	4,053	2,323	0.64	0.36	59.7	0.941	0.705	0.589	0.283	0.791	**20.9%**	6,072	5,712	0.946	3,711	2,361	0.61	0.39	66.0	0.940	0.804	0.613	0.493	0.857	**14.3%**	**17.3%**
22	1936	B	6,415	8,471	1.327	4,089	2,326	0.64	0.36	59.7	0.941	0.696	0.586	0.265	0.785	**21.5%**	5,162	6,602	1.287	3,097	2,065	0.60	0.40	66.0	0.948	0.841	0.656	0.539	0.884	**11.6%**	**16.1%**
23	1937	B	7,940	8,160	1.032	1,964	5,976	0.25	0.75	59.7	0.831	0.803	0.737	0.249	0.824	**17.6%**	8,143	7,053	0.870	2,097	6,046	0.26	0.74	66.0	0.829	0.880	0.727	0.562	0.842	**15.8%**	**16.6%**
24	1938	W	18,051	7,897	0.438	5,153	12,898	0.29	0.71	57.1	0.623	0.552	0.511	0.084	0.603	**39.7%**	23,970	9,712	0.406	6,896	17,074	0.29	0.71	64.2	0.498	0.750	0.387	0.592	0.571	**42.9%**	**41.5%**
25	1939	D	2,896	4,320	1.508	1,827	1,069	0.63	0.37	63.4	0.978	0.815	0.747	0.270	0.875	**12.5%**	2,678	3,758	1.420	1,592	1,086	0.59	0.41	67.3	0.978	0.874	0.763	0.469	0.916	**8.4%**	**10.2%**
26	1940	A	5,733	8,476	1.487	3,627	2,106	0.63	0.37	60.2	0.947	0.731	0.619	0.295	0.811	**18.9%**	5,162	6,546	1.276	3,099	2,063	0.60	0.40	66.6	0.949	0.852	0.656	0.571	0.891	**10.9%**	**14.5%**
27	1941	W	10,084	9,938	0.989	2,526	7,558	0.25	0.75	57.1	0.784	0.754	0.697	0.188	0.776	**22.4%**	9,579	10,442	1.094	2,336	7,243	0.24	0.76	64.2	0.793	0.893	0.710	0.629	0.817	**18.3%**	**20.1%**
28	1942	W	6,902	9,094	1.324	4,401	2,501	0.64	0.36	57.1	0.935	0.627	0.564	0.145	0.739	**26.1%**	5,936	8,981	1.521	3,517	2,419	0.59	0.41	64.2	0.938	0.834	0.627	0.555	0.876	**12.4%**	**18.6%**
29	1943	W	7,915	9,319	1.182	1,884	6,031	0.24	0.76	57.1	0.830	0.783	0.743	0.156	0.818	**18.2%**	6,176	7,966	1.296	3,704	2,472	0.60	0.40	64.2	0.936	0.808	0.613	0.503	0.859	**14.1%**	**15.9%**
30	1944	D	3,441	4,425	1.298	2,193	1,248	0.64	0.36	63.4	0.973	0.798	0.721	0.275	0.861	**13.9%**	2,968	4,025	1.371	1,769	1,199	0.60	0.40	67.3	0.974	0.871	0.751	0.483	0.913	**8.7%**	**11.0%**
31	1945	B	5,781	6,440	1.120	3,719	2,062	0.64	0.36	59.7	0.949	0.675	0.612	0.162	0.773	**22.7%**	3,872	5,366	1.397	2,307	1,565	0.60	0.40	66.0	0.964	0.849	0.713	0.475	0.895	**10.5%**	**16.0%**
32	1946	B	5,340	6,138	1.156	3,429	1,911	0.64	0.36	59.7	0.953	0.687	0.633	0.146	0.782	**21.8%**	3,872	5,559	1.448	2,301	1,571	0.59	0.41	66.0	0.963	0.852	0.713	0.485	0.897	**10.3%**	**15.5%**
33	1947	D	3,667	5,071	1.395	2,327	1,340	0.63	0.37	63.4	0.970	0.800	0.711	0.308	0.862	**13.8%**	2,678	3,739	1.413	1,592	1,086	0.59	0.41	67.3	0.978	0.874	0.763	0.469	0.916	**8.4%**	**10.8%**
34	1948	B	3,987	6,934	1.753	2,490	1,497	0.62	0.38	59.7	0.966	0.756	0.700	0.187	0.835	**16.5%**	3,828	7,872	2.074	2,197	1,631	0.57	0.43	66.0	0.962	0.889	0.720	0.603	0.920	**8.0%**	**11.9%**
35	1949	D	3,987	5,246	1.326	2,539	1,448	0.64	0.36	63.4	0.967	0.792	0.696	0.317	0.856	**14.4%**	2,968	5,024	1.711	1,737	1,231	0.59	0.41	67.3	0.974	0.885	0.753	0.534	0.922	**7.8%**	**10.8%**
36	1950	B	3,987	6,334	1.601	2,507	1,480	0.63	0.37	59.7	0.966	0.745	0.698	0.156	0.827	**17.3%**	3,828	5,645	1.487	2,270	1,558	0.59	0.41	66.0	0.964	0.855	0.715	0.490	0.899	**10.1%**	**13.3%**
37	1951	A	5,340	6,539	1.232	3,418	1,922	0.64	0.36	60.2	0.953	0.705	0.634	0.196	0.795	**20.5%**	5,162	7,421	1.446	3,070	2,092	0.59	0.41	66.6	0.948	0.869	0.658	0.615	0.901	**9.9%**	**14.7%**
38	1952	W	10,838	8,016	0.742	2,882	7,956	0.27	0.73	57.1	0.772	0.701	0.672	0.090	0.753	**24.7%**	15,453	9,513	0.617	4,237	11,216	0.27	0.73	64.2	0.674	0.822	0.576	0.582	0.715	**28.5%**	**26.8%**
39	1953	W	3,987	5,826	1.473	2,522	1,465	0.63	0.37	57.1	0.967	0.697	0.697	0.000	0.796	**20.4%**	3,828	7,961	2.097	2,195	1,633	0.57	0.43	64.2	0.961	0.861	0.721	0.503	0.904	**9.6%**	**14.5%**
40	1954	A	3,987	7,540	1.906	2,472	1,515	0.62	0.38	60.2	0.965	0.775	0.701	0.247	0.847	**15.3%**	3,828	7,708	2.030	2,203	1,625	0.58	0.42	66.6	0.962	0.896	0.720	0.630	0.924	**7.6%**	**11.1%**
41	1955	D	2,807	3,825	1.378	1,781	1,026	0.63	0.37	63.4	0.980	0.811	0.750	0.245	0.873	**12.7%**	2,678	4,034	1.524	1,583	1,095	0.59	0.41	67.3	0.978	0.878	0.764	0.484	0.919	**8.1%**	**10.2%**
42	1956	W	6,193	8,158	1.324	3,948	2,245	0.64	0.36	57.1	0.943	0.635	0.596	0.097	0.747	**25.3%**	6,126	9,073	1.489	3,636	2,490	0.59	0.41	64.2	0.936	0.832	0.618	0.559	0.874	**12.6%**	**18.3%**
43	1957	A	3,987	6,595	1.667	2,500	1,487	0.63	0.37	60.2	0.966	0.759	0.699	0.199	0.836	**16.4%**	3,828	6,242	1.644	2,250	1,578	0.59	0.41	66.6	0.963	0.874	0.717	0.555	0.911	**8.9%**	**12.3%**
44	1958	W	14,907	9,665	0.650	4,056	10,851	0.27	0.73	57.1	0.685	0.660	0.588	0.174	0.678	**32.2%**	13,173	10,910	0.830	3,434	9,739	0.26	0.74	64.2	0.718	0.872	0.633	0.653	0.758	**24.2%**	**27.8%**
45	1959	B	2,807	3,963	1.428	1,777	1,030	0.63	0.37	59.7	0.980	0.759	0.750	0.035	0.840	**16.0%**	2,678	3,973	1.501	1,585	1,093	0.59	0.41	66.0	0.978	0.859	0.764	0.404	0.908	**9.2%**	**12.3%**
46	1960	D	2,420	4,191	1.755	1,509	911	0.62	0.38	63.4	0.983	0.830	0.769	0.263	0.888	**11.2%**	1,872	3,624	1.969	1,078	794	0.58	0.42	67.3	0.987	0.892	0.800	0.463	0.932	**6.8%**	**8.8%**
47	1961	D	1,990	3,700	1.889	1,232	758	0.62	0.38	63.4	0.988	0.839	0.789	0.238	0.896	**10.4%**	1,897	3,172	1.700	1,108	789	0.58	0.42	67.3	0.987	0.887	0.798	0.440	0.928	**7.2%**	**8.6%**
48	1962	B	4,219	5,791	1.383	2,680	1,539	0.64	0.36	59.7	0.964	0.726	0.686	0.129	0.813	**18.7%**	3,828	5,630	1.483	2,270	1,558	0.59	0.41	66.0	0.964	0.854	0.715	0.489	0.899	**10.1%**	**14.0%**
49	1963	W	5,358	8,272	1.553	3,379	1,979	0.63	0.37	57.1	0.951	0.674	0.636	0.103	0.776	**22.4%**	5,162	8,608	1.678	3,032	2,130	0.59	0.41	64.2	0.947	0.843	0.661	0.535	0.885	**11.5%**	**16.4%**
50	1964	D	2,807	3,688	1.329	1,786	1,021	0.64	0.36	63.4	0.980	0.809	0.750	0.238	0.871	**12.9%**	2,678	4,042	1.527	1,582	1,096	0.59	0.41	67.3	0.978	0.878	0.764	0.484	0.919	**8.1%**	**10.3%**
51	1965	W	6,193	8,699	1.412	3,932	2,261	0.63	0.37	57.1	0.943	0.647	0.597	0.125	0.755	**24.5%**	5,936	8,063	1.366	3,547	2,389	0.60	0.40	64.2	0.939	0.815	0.625	0.508	0.865	**13.5%**	**18.4%**
52	1966	B	3,987	5,799	1.466	2,523	1,464	0.63	0.37	59.7	0.967	0.736	0.697	0.129	0.821	**17.9%**	2,968	4,987	1.698	1,738	1,230	0.59	0.41	66.0	0.974	0.866	0.753	0.456	0.910	**9.0%**	**13.0%**
53	1967	W	13,614	8,648	0.637	3,714	9,900	0.27	0.73	57.1	0.713	0.660	0.613	0.122	0.699	**30.1%**	16,000	9,705	0.608	4,396	11,604	0.27	0.73	64.2	0.662	0.822	0.564	0.591	0.706	**29.4%**	**29.7%**
54	1968	B	3,667	5,418	1.490	2,317	1,350	0.63	0.37	59.7	0.970	0.743	0.712	0.110	0.827	**17.3%**	2,678	3,939	1.488	1,586	1,092	0.59	0.41	66.0	0.978	0.859	0.764	0.403	0.907	**9.3%**	**12.9%**
55	1969	W	20,926	7,680	0.368	6,068	14,858	0.29	0.71	57.1	0.565	0.486	0.446	0.073	0.542	**45.8%**	26,143	9,287	0.356	7,604	18,539	0.29	0.71	66.4	0.454	0.800	0.336	0.699	0.555	**44.5%**	**45.1%**
56	1970	W	5,340	6,776	1.276	3,411	1,929	0.64	0.36	57.1	0.953	0.644	0.634	0.027	0.755	**24.5%**	5,162	6,202	1.209	3,110	2,052	0.60	0.40	61.2	0.949	0.737	0.656	0.237	0.821	**17.9%**	**20.8%**
57	1971	W	3,987	6,741	1.704	2,495	1,492	0.63	0.37	57.1	0.966	0.707	0.699	0.025	0.804	**19.6%**	3,828	7,961	2.097	2,195	1,633	0.57	0.43	64.2	0.961	0.861	0.721	0.503	0.904	**9.6%**	**14.1%**
58	1972	B	3,667	4,863	1.338	2,334	1,333	0.64	0.36	58.9	0.970	0.721	0.711	0.035	0.811	**18.9%**	2,678	4,158	1.571	1,579	1,099	0.59	0.41	66.0	0.977	0.862	0.764	0.414	0.909	**9.1%**	**13.5%**
59	1973	A	5,697	7,630	1.347	3,628	2,069	0.64	0.36	59.2	0.948	0.692	0.619	0.193	0.785	**21.5%**	5,162	6,796	1.325	3,090	2,072	0.60	0.40	66.3	0.948	0.851	0.657	0.566	0.890	**11.0%**	**15.7%**
60	1974	W	7,655	9,496	1.246	1,791	5,864	0.23	0.77	56.9	0.835	0.788	0.749	0.154	0.824	**17.6%**	5,936	8,981	1.521	3,517	2,419	0.59	0.41	66.1	0.938	0.875	0.627	0.666	0.901	**9.9%**	**13.4%**
61	1975	W	6,622	8,945	1.357	4,216	2,406	0.64	0.36	53.7	0.938	0.577	0.577	0.000	0.708	**29.2%**	5,936	8,981	1.521	3,517	2,419	0.59	0.41	61.5	0.938	0.775	0.627	0.397	0.841	**15.9%**	**21.9%**
62	1976	C	1,990	3,225	1.647	1,246	744	0.63	0.37	57.8	0.988	0.788	0.788	0.000	0.863	**13.7%**	1,871	3,426	1.863	1,083	788	0.58	0.42	65.8	0.987	0.873	0.799	0.365	0.921	**7.9%**	**10.5%**
63	1977	C	1,990	3,184	1.626	1,247	743	0.63	0.37	62.0	0.988	0.815	0.788	0.130	0.880	**12.0%**	1,871	987	0.537	1,163	708	0.62	0.38	62.3	0.989	0.801	0.794	0.036	0.872	**12.8%**	**12.4%**
64	1978	A	14,930	7,695	0.516	4,186	10,744	0.28	0.72	61.4	0.688	0.716	0.579	0.325	0.696	**30.4%**	10,833	8,492	0.786	2,851	7,982	0.26	0.74	66.9	0.771	0.898	0.674	0.688	0.804	**19.6%**	**24.4%**
65	1979	B	5,340	7,029	1.324	3,403	1,937	0.64	0.36	60.5	0.952	0.722	0.635	0.239	0.805	**19.5%**	5,162	6,285	1.225	3,107	2,055	0.60	0.40	66.0	0.949	0.836	0.656	0.522	0.881	**11.9%**	**15.3%**
66	1980	A	6,735	7,063	1.054	4,347	2,388	0.65	0.35	60.1	0.939	0.661	0.568	0.217	0.760	**24.0%**	6,621	7,757	1.177	3,997	2,624	0.60	0.40	66.6	0.932	0.850	0.593	0.633	0.883	**11.7%**	**17.3%**
67	1981	D	3,667	5,628	1.548	2,311	1,356	0.63	0.37	64.6	0.970	0.829	0.712	0.407	0.881	**11.9%**	2,678	3,789	1.432	1,591	1,087	0.59	0.41	68.7	0.978	0.894	0.763	0.553	0.928	**7.2%**	**9.3%**
68	1982	W	27,030	9,123	0.338	7,893	19,137	0.29	0.71	52.8	0.436	0.316	0.316	0.000	0.401	**59.9%**	15,159	10,991	0.727	4,052	11,107	0.27	0.73	65.1	0.677	0.881	0.589	0.710	0.732	**26.8%**	**41.7%**
69	1983	W	20,740	7,141	0.345	6,043	14,697	0.29	0.71	57.2	0.570	0.476	0.447	0.051	0.542	**45.8%**	19,079	7,825	0.411	5,480	13,599	0.29	0.71	61.3	0.602	0.654	0.487	0.326	0.617	**38.3%**	**41.6%**
70	1984	W	5,340	7,022	1.323	3,404	1,936	0.64	0.36	60.7	0.952	0.726	0.635	0.250	0.808	**19.2%**	5,162	6,417	1.251	3,103	2,059	0.60	0.40	66.0	0.949	0.838	0.656	0.529	0.882	**11.8%**	**15.1%**
71	1985	D	2,807	4,264	1.536	1,769	1,038	0.63	0.37	62.5	0.979	0.804	0.751	0.215	0.869	**13.1%**	2,678	4,529	1.711	1,567	1,111	0.58	0.42	65.1	0.977	0.854	0.765	0.380	0.905	**9.5%**	**11.1%**
72	1986	W	9,806	7,705	0.788	2,578	7,228	0.26	0.74	61.3	0.794	0.791	0.693	0.320	0.793	**20.7%**	8,067	8,414	1.047	1,988	6,079	0.25	0.75	65.8	0.828	0.899	0.735	0.619	0.846	**15.4%**	**17.8%**
73	1987	D	2,028	3,656	1.831	1,259	769	0.62	0.38	62.3	0.987	0.824	0.787	0.172	0.886	**11.4%**	1,871	3,102	1.686	1,094	777	0.58	0.42	68.6	0.987	0.902	0.799	0.512	0.937	**6.3%**	**8.6%**
74	1988	C	1,990	2,980	1.522	1,253	737	0.63	0.37	62.1	0.988	0.814	0.787	0.126	0.879	**12.1%**	1,871	3,304	1.796	1,087	784	0.58	0.42	63.7	0.987	0.846	0.799	0.236	0.905	**9.5%**	**10.7%**
75	1989	D	2,420	5,825	2.439	1,461	959	0.60	0.40	64.1	0.982	0.861	0.773	0.388	0.909	**9.1%**	1,880	4,219	2.283	1,063	817	0.57	0.43	66.7	0.986	0.892	0.801	0.458	0.933	**6.7%**	**7.8%**
76	1990	C	1,990	3,750	1.915	1,230	760	0.62	0.38	60.6	0.988	0.805	0.789	0.077	0.875	**12.5%**	1,941	3,020	1.582	1,142	799	0.59	0.41	63.9	0.986	0.843	0.795	0.233	0.902	**9.8%**	**11.0%**
77	1991	C	2,440	4,443	1.845	1,515	925	0.62	0.38	60.6	0.983	0.795	0.769	0.113	0.866	**13.4%**	1,984	3,201	1.640	1,163	821	0.59	0.41	63.9	0.986	0.844	0.794	0.242	0.902	**9.8%**	**11.4%**
78	1992	C	2,254	3,933	1.770	1,404	850	0.62	0.38	60.6	0.985	0.796	0.777	0.087	0.867	**13.3%**	1,984	3,263	1.671	1,161	823	0.59	0.41	63.9	0.986	0.844	0.794	0.245	0.903	**9.7%**	**11.3%**
79																														**Average:**	**15.77%**

Calculations- San Joaquin River Fall
Run Smolt Survival Model WITH BARRIER:

C8 ='Study 468 Flow Data'!AB7
D8 ='Study 468 Flow Data'!G7 (HIDDEN)
E8 ='Study 468 Flow Data'!Q7 (HIDDEN)
F8 =D8+E8
G8 =F8/(C8-0.03*$R$2)
H8 =IF(C8<$R$1,(0.47*(0.3137*C8-0.0156*$R$2-0.0625*F8)+0.53*C8),(0.3137*C8-0.0156*$R$2-0.0625*F8))
I8 =C8-H8
J8 =H8/C8
K8 =I8/C8
M8 =(1.01045-0.00003*I8)
N8 =(O8+P8)-(O8*P8)
O8 =IF((0.87634-0.000071*H8)<0,0,(0.87634-0.000071*H8))
P8 =IF((-3.65867+0.058492*L8+0.000051*F8)<0,0,(-3.65867+0.058492*L8+0.000051*F8))
Q8 =((K8*M8)+(J8*N8))
R8 =(1-Q8)

T8 ='Study 468 Flow Data'!AC7
U8 ='Study 468 Flow Data'!H7 (HIDDEN)
V8 ='Study 468 Flow Data'!R7 (HIDDEN)
W8 =U8+V8
X8 =W8/(T8-0.03*$R$3)
Y8 =IF(T8<$R$1,(0.52*(0.3137*T8-0.0156*$R$3-0.0625*W8)+0.48*T8),(0.3137*T8-0.0156*$R$3-0.0625*W8))
Z8 =T8-Y8
AA8 =Y8/T8
AB8 =Z8/T8
AD8 =(1.01045-0.00003*Z8)
AE8 =(AF8+AG8)-(AF8*AG8)
AF8 =IF((0.87634-0.000071*Y8)<0,0,(0.87634-0.000071*Y8))
AG8 =IF((-3.65867+0.058492*AC8+0.000051*W8)<0,0,(-3.65867+0.058492*AC8+0.000051*W8))
AH8 =((AB8*AD8)+(AA8*AE8))
AI8 =(1-AH8)
AK8 =0.45*G94+0.55*AI8

Study 525 San Joaquin River Fall Run Salmon Smolt Survival Model WITH BARRIER

Barrier at head of Old River from Apr 15 to May 15

Old River Barrier Open above 7500.00 cfs at Vernalis
Consumptive Depletion for April 1053.00 cfs
Consumptive Depletion for May 1053.00 cfs

Year	Water Year Type	APRIL Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	m2	Calculated Mortality m34	m3	m4	m234	Calculated Survival s234
1922	A	5,942	9,751	1.650	3,731	2,211	0.63	0.37	60.2	0.944	0.751	0.611	0.360	0.823	**17.7%**
1923	B	4,751	10,439	2.212	2,904	1,847	0.61	0.39	59.7	0.955	0.791	0.670	0.366	0.855	**14.5%**
1924	C	1,847	4,401	2.424	1,114	733	0.60	0.40	60.6	0.988	0.820	0.797	0.110	0.887	**11.3%**
1925	D	3,812	9,603	2.540	2,293	1,519	0.60	0.40	63.4	0.965	0.868	0.714	0.539	0.907	**9.3%**
1926	D	3,203	8,565	2.701	1,911	1,292	0.60	0.40	63.4	0.972	0.867	0.741	0.487	0.909	**9.1%**
1927	W	5,246	10,432	2.001	3,240	2,006	0.62	0.38	57.1	0.950	0.722	0.646	0.213	0.809	**19.1%**
1928	A	4,828	10,311	2.150	2,960	1,868	0.61	0.39	60.2	0.954	0.796	0.666	0.388	0.857	**14.3%**
1929	C	1,909	4,789	2.551	1,145	764	0.60	0.40	60.6	0.988	0.822	0.795	0.130	0.888	**11.2%**
1930	D	2,043	6,266	3.115	1,192	851	0.58	0.42	63.4	0.985	0.869	0.792	0.369	0.917	**8.3%**
1931	C	1,768	4,887	2.814	1,046	722	0.59	0.41	60.6	0.989	0.829	0.802	0.135	0.894	**10.6%**
1932	D	4,961	7,115	1.443	3,144	1,817	0.63	0.37	63.4	0.956	0.796	0.653	0.413	0.855	**14.5%**
1933	C	2,537	6,635	2.648	1,516	1,021	0.60	0.40	60.6	0.980	0.821	0.769	0.224	0.885	**11.5%**
1934	C	1,868	6,052	3.296	1,080	788	0.58	0.42	60.6	0.987	0.839	0.800	0.195	0.901	**9.9%**
1935	B	7,470	11,277	1.516	4,721	2,749	0.63	0.37	59.7	0.928	0.729	0.541	0.408	0.802	**19.8%**
1936	B	7,230	10,004	1.390	4,596	2,634	0.64	0.36	59.7	0.931	0.705	0.550	0.344	0.787	**21.3%**
1937	B	8,137	8,135	1.004	2,028	6,109	0.25	0.75	59.7	0.827	0.799	0.732	0.248	0.820	**18.0%**
1938	W	17,260	7,899	0.458	4,904	12,356	0.28	0.72	57.1	0.640	0.568	0.528	0.084	0.619	**38.1%**
1939	D	3,067	6,519	2.148	1,878	1,189	0.61	0.39	63.4	0.975	0.841	0.743	0.382	0.893	**10.7%**
1940	A	5,896	11,087	1.891	3,661	2,235	0.62	0.38	60.2	0.943	0.781	0.616	0.428	0.842	**15.8%**
1941	W	9,293	9,938	1.073	2,278	7,015	0.25	0.75	57.1	0.800	0.768	0.715	0.188	0.792	**20.8%**
1942	W	6,111	10,259	1.687	3,831	2,280	0.63	0.37	57.1	0.942	0.685	0.604	0.204	0.781	**21.9%**
1943	W	7,123	9,306	1.312	4,544	2,579	0.64	0.36	57.1	0.933	0.623	0.554	0.156	0.735	**26.5%**
1944	D	3,715	5,588	1.517	2,345	1,370	0.63	0.37	63.4	0.969	0.807	0.710	0.335	0.867	**13.3%**
1945	B	5,985	7,266	1.220	3,833	2,152	0.64	0.36	59.7	0.946	0.685	0.604	0.204	0.779	**22.1%**
1946	B	4,345	6,444	1.494	2,746	1,599	0.63	0.37	59.7	0.962	0.733	0.681	0.162	0.817	**18.3%**
1947	D	2,559	5,839	2.310	1,554	1,005	0.61	0.39	63.4	0.980	0.847	0.766	0.348	0.900	**10.0%**
1948	B	3,720	10,031	2.720	2,218	1,502	0.60	0.40	59.7	0.965	0.816	0.719	0.345	0.876	**12.4%**
1949	D	3,410	6,305	1.866	2,117	1,293	0.62	0.38	63.4	0.972	0.828	0.726	0.371	0.882	**11.8%**
1950	B	3,364	8,521	2.557	2,021	1,343	0.60	0.40	59.7	0.970	0.804	0.733	0.268	0.871	**12.9%**
1951	A	3,940	8,305	2.125	2,417	1,523	0.61	0.39	60.2	0.965	0.789	0.705	0.286	0.857	**14.3%**
1952	W	10,046	8,015	0.800	2,634	7,412	0.26	0.74	57.1	0.788	0.717	0.689	0.090	0.770	**23.0%**
1953	W	3,147	7,352	2.360	1,908	1,239	0.61	0.39	57.1	0.973	0.755	0.741	0.056	0.841	**15.9%**
1954	A	4,407	10,780	2.464	2,661	1,746	0.60	0.40	60.2	0.958	0.816	0.687	0.412	0.872	**12.8%**
1955	D	2,430	4,685	1.953	1,501	929	0.62	0.38	63.4	0.983	0.836	0.770	0.289	0.892	**10.8%**
1956	W	3,995	9,378	2.366	2,423	1,572	0.61	0.39	57.1	0.963	0.751	0.704	0.160	0.835	**16.5%**
1957	A	2,941	8,815	3.030	1,726	1,215	0.59	0.41	60.2	0.974	0.831	0.754	0.312	0.890	**11.0%**
1958	W	14,115	9,666	0.686	3,807	10,308	0.27	0.73	57.1	0.701	0.675	0.606	0.174	0.694	**30.6%**
1959	B	2,563	5,686	2.246	1,562	1,001	0.61	0.39	59.7	0.980	0.794	0.765	0.123	0.867	**13.3%**
1960	D	2,167	4,419	2.069	1,330	837	0.61	0.39	63.4	0.985	0.842	0.782	0.275	0.897	**10.3%**
1961	D	1,825	6,427	3.584	1,040	785	0.57	0.43	63.4	0.987	0.877	0.803	0.377	0.924	**7.6%**
1962	B	4,446	6,125	1.388	2,824	1,622	0.64	0.36	59.7	0.962	0.723	0.676	0.146	0.810	**19.0%**
1963	W	5,599	11,399	2.047	3,450	2,149	0.62	0.38	57.1	0.946	0.728	0.631	0.263	0.812	**18.8%**
1964	D	2,464	4,443	1.827	1,531	933	0.62	0.38	63.4	0.982	0.832	0.768	0.276	0.889	**11.1%**
1965	W	6,168	9,554	1.557	3,890	2,278	0.63	0.37	57.1	0.942	0.668	0.600	0.168	0.769	**23.1%**
1966	B	3,014	8,668	2.906	1,779	1,235	0.59	0.41	59.7	0.973	0.819	0.750	0.275	0.882	**11.8%**
1967	W	12,822	8,656	0.677	3,465	9,357	0.27	0.73	57.1	0.730	0.676	0.630	0.123	0.715	**28.5%**
1968	B	2,645	8,183	3.131	1,544	1,101	0.58	0.42	59.7	0.977	0.825	0.767	0.251	0.889	**11.1%**
1969	W	20,135	7,680	0.382	5,820	14,315	0.29	0.71	57.1	0.581	0.502	0.463	0.073	0.558	**44.2%**
1970	W	4,327	8,670	2.018	2,669	1,658	0.62	0.38	57.1	0.961	0.725	0.687	0.123	0.816	**18.4%**
1971	W	2,935	9,463	3.259	1,703	1,232	0.58	0.42	57.1	0.973	0.796	0.755	0.164	0.870	**13.0%**
1972	B	2,339	6,255	2.711	1,393	946	0.60	0.40	58.9	0.982	0.801	0.777	0.106	0.874	**12.6%**
1973	A	5,937	9,746	1.650	3,728	2,209	0.63	0.37	59.2	0.944	0.729	0.612	0.301	0.809	**19.1%**
1974	W	6,864	10,429	1.526	4,336	2,528	0.63	0.37	56.9	0.935	0.655	0.568	0.201	0.758	**24.2%**
1975	W	5,830	11,032	1.903	3,618	2,212	0.62	0.38	53.7	0.944	0.637	0.619	0.045	0.753	**24.7%**
1976	C	1,907	4,886	2.605	1,141	766	0.60	0.40	57.8	0.987	0.795	0.795	0.000	0.873	**12.7%**
1977	C	1,653	4,955	3.056	967	686	0.58	0.42	62.0	0.990	0.850	0.808	0.221	0.908	**9.2%**
1978	A	15,169	7,695	0.508	4,261	10,908	0.28	0.72	61.4	0.683	0.712	0.574	0.325	0.691	**30.9%**
1979	B	5,518	8,624	1.572	3,477	2,041	0.63	0.37	60.5	0.949	0.748	0.629	0.320	0.822	**17.8%**
1980	A	5,943	7,054	1.193	3,811	2,132	0.64	0.36	60.1	0.946	0.691	0.606	0.216	0.783	**21.7%**
1981	D	2,996	8,521	2.874	1,772	1,224	0.59	0.41	64.6	0.974	0.889	0.751	0.554	0.924	**7.6%**
1982	W	27,142	9,124	0.337	7,928	19,214	0.29	0.71	52.8	0.434	0.313	0.313	0.000	0.399	**60.1%**
1983	W	19,948	7,141	0.359	5,795	14,153	0.29	0.71	57.2	0.586	0.492	0.465	0.051	0.559	**44.1%**
1984	W	3,925	8,775	2.254	2,393	1,532	0.61	0.39	60.7	0.965	0.806	0.706	0.339	0.868	**13.2%**
1985	D	2,722	5,697	2.118	1,669	1,053	0.61	0.39	62.5	0.979	0.827	0.758	0.288	0.886	**11.4%**
1986	W	9,017	7,558	0.841	2,340	6,677	0.26	0.74	61.3	0.810	0.801	0.710	0.312	0.808	**19.2%**
1987	D	2,011	6,187	3.126	1,173	838	0.58	0.42	62.3	0.985	0.855	0.793	0.301	0.910	**9.0%**
1988	C	1,808	4,493	2.529	1,085	723	0.60	0.40	62.1	0.989	0.840	0.799	0.203	0.899	**10.1%**
1989	D	1,961	9,353	4.848	1,046	915	0.53	0.47	64.1	0.983	0.914	0.802	0.568	0.946	**5.4%**
1990	C	1,834	6,466	3.587	1,045	789	0.57	0.43	60.6	0.987	0.845	0.802	0.216	0.906	**9.4%**
1991	C	2,349	6,999	3.020	1,378	971	0.59	0.41	60.6	0.981	0.832	0.779	0.243	0.894	**10.6%**
1992	C	2,230	6,155	2.800	1,322	908	0.59	0.41	60.6	0.983	0.826	0.782	0.200	0.890	**11.0%**

Year	MAY Vernalis Flows	CVP+SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt	m2	Calculated Mortality m34	m3	m4	m234	Calculated Survival s234	Weighted (April + June) total survival
1922	4,552	4,837	1.070	2,762	1,790	0.61	0.39	66.6	0.957	0.835	0.680	0.484	0.883	**11.7%**	**14.4%**
1923	3,809	4,094	1.084	2,308	1,501	0.61	0.39	66.0	0.965	0.831	0.712	0.411	0.884	**11.6%**	**12.9%**
1924	1,539	819	0.543	955	584	0.62	0.38	63.9	0.993	0.832	0.809	0.121	0.893	**10.7%**	**11.0%**
1925	3,055	3,303	1.092	1,849	1,206	0.61	0.39	67.3	0.974	0.859	0.745	0.446	0.904	**9.6%**	**9.5%**
1926	2,377	2,651	1.130	1,434	943	0.60	0.40	67.3	0.982	0.868	0.775	0.413	0.913	**8.7%**	**8.9%**
1927	3,755	4,040	1.085	2,275	1,480	0.61	0.39	64.2	0.966	0.801	0.715	0.303	0.866	**13.4%**	**16.0%**
1928	2,942	3,227	1.109	1,779	1,163	0.60	0.40	66.6	0.976	0.850	0.750	0.401	0.900	**10.0%**	**11.9%**
1929	1,637	1,897	1.182	983	654	0.60	0.40	63.9	0.991	0.841	0.807	0.176	0.901	**9.9%**	**10.5%**
1930	1,671	1,936	1.181	1,003	668	0.60	0.40	67.3	0.990	0.879	0.805	0.377	0.923	**7.7%**	**8.0%**
1931	1,507	1,765	1.196	903	604	0.60	0.40	63.9	0.992	0.844	0.812	0.169	0.903	**9.7%**	**10.1%**
1932	3,332	3,617	1.096	2,017	1,315	0.61	0.39	67.3	0.971	0.857	0.733	0.462	0.902	**9.8%**	**11.9%**
1933	2,169	2,104	0.984	1,318	851	0.61	0.39	63.9	0.985	0.823	0.783	0.186	0.887	**11.3%**	**11.4%**
1934	1,541	1,808	1.198	924	617	0.60	0.40	63.9	0.992	0.843	0.811	0.171	0.903	**9.7%**	**9.8%**
1935	6,444	5,825	0.908	3,946	2,498	0.61	0.39	66.0	0.936	0.798	0.596	0.499	0.851	**14.9%**	**17.1%**
1936	4,729	5,017	1.068	2,870	1,859	0.61	0.39	66.0	0.955	0.822	0.673	0.458	0.874	**12.6%**	**16.5%**
1937	8,503	7,318	0.864	2,194	6,309	0.26	0.74	66.0	0.821	0.881	0.721	0.575	0.837	**16.3%**	**17.1%**
1938	23,772	9,714	0.409	6,834	16,938	0.29	0.71	64.2	0.502	0.752	0.391	0.592	0.574	**42.6%**	**40.6%**
1939	2,280	2,564	1.140	1,374	906	0.60	0.40	67.3	0.983	0.869	0.779	0.409	0.914	**8.6%**	**9.5%**
1940	4,530	4,821	1.072	2,748	1,782	0.61	0.39	66.6	0.957	0.835	0.681	0.483	0.883	**11.7%**	**13.5%**
1941	9,344	9,629	1.034	2,313	7,031	0.25	0.75	64.2	0.800	0.881	0.712	0.588	0.820	**18.0%**	**19.3%**
1942	5,552	5,837	1.057	3,372	2,180	0.61	0.39	64.2	0.945	0.780	0.637	0.394	0.845	**15.5%**	**18.4%**
1943	5,943	6,229	1.054	3,611	2,332	0.61	0.39	64.2	0.940	0.777	0.620	0.414	0.841	**15.9%**	**20.6%**
1944	3,003	3,288	1.107	1,816	1,187	0.60	0.40	67.3	0.975	0.860	0.747	0.446	0.905	**9.5%**	**11.2%**
1945	4,068	4,354	1.079	2,466	1,602	0.61	0.39	66.0	0.962	0.828	0.701	0.424	0.881	**11.9%**	**16.5%**
1946	3,631	3,916	1.088	2,199	1,432	0.61	0.39	66.0	0.968	0.833	0.720	0.402	0.886	**11.4%**	**14.5%**
1947	2,159	2,425	1.140	1,301	858	0.60	0.40	67.3	0.985	0.871	0.784	0.402	0.916	**8.4%**	**9.1%**
1948	3,157	3,454	1.105	1,910	1,247	0.60	0.40	66.0	0.973	0.839	0.741	0.378	0.892	**10.8%**	**11.5%**
1949	2,810	3,076	1.107	1,699	1,111	0.60	0.40	67.3	0.977	0.862	0.756	0.435	0.907	**9.3%**	**10.4%**
1950	2,679	2,952	1.115	1,618	1,061	0.60	0.40	66.0	0.979	0.845	0.761	0.352	0.898	**10.2%**	**11.4%**
1951	3,390	3,675	1.094	2,052	1,338	0.61	0.39	66.6	0.970	0.845	0.731	0.424	0.894	**10.6%**	**12.2%**
1952	16,354	9,512	0.583	4,519	11,835	0.28	0.72	64.2	0.655	0.814	0.555	0.582	0.699	**30.1%**	**26.9%**
1953	2,688	2,973	1.119	1,624	1,064	0.60	0.40	64.2	0.979	0.820	0.761	0.248	0.883	**11.7%**	**13.6%**
1954	2,905	3,191	1.111	1,756	1,149	0.60	0.40	66.6	0.976	0.851	0.752	0.400	0.900	**10.0%**	**11.2%**
1955	2,294	2,556	1.130	1,384	910	0.60	0.40	67.3	0.983	0.869	0.778	0.408	0.914	**8.6%**	**9.6%**
1956	5,892	6,177	1.054	3,580	2,312	0.61	0.39	64.2	0.941	0.778	0.622	0.412	0.842	**15.8%**	**16.1%**
1957	2,825	3,096	1.108	1,708	1,117	0.60	0.40	66.6	0.977	0.852	0.755	0.395	0.901	**9.9%**	**10.4%**
1958	14,361	10,920	0.762	3,806	10,555	0.27	0.73	64.2	0.694	0.863	0.606	0.653	0.739	**26.1%**	**28.1%**
1959	2,097	2,383	1.154	1,263	834	0.60	0.40	66.0	0.985	0.856	0.787	0.323	0.907	**9.3%**	**11.1%**
1960	1,813	2,080	1.168	1,090	723	0.60	0.40	67.3	0.989	0.876	0.799	0.384	0.921	**7.9%**	**9.0%**
1961	1,590	1,856	1.191	954	636	0.60	0.40	67.3	0.991	0.880	0.809	0.372	0.925	**7.5%**	**7.6%**
1962	2,837	3,130	1.116	1,714	1,123	0.60	0.40	66.0	0.977	0.843	0.755	0.361	0.896	**10.4%**	**14.3%**
1963	4,545	4,830	1.070	2,757	1,788	0.61	0.39	64.2	0.957	0.790	0.681	0.343	0.856	**14.4%**	**16.4%**
1964	2,170	2,455	1.148	1,307	863	0.60	0.40	67.3	0.985	0.871	0.784	0.403	0.916	**8.4%**	**9.6%**
1965	4,075	4,339	1.073	2,471	1,604	0.61	0.39	64.2	0.962	0.796	0.701	0.318	0.861	**13.9%**	**18.0%**
1966	2,591	2,877	1.124	1,564	1,027	0.60	0.40	66.0	0.980	0.847	0.765	0.349	0.900	**10.0%**	**10.8%**
1967	15,766	9,715	0.617	4,322	11,444	0.27	0.73	64.2	0.667	0.824	0.569	0.592	0.710	**29.0%**	**28.8%**
1968	2,173	2,458	1.148	1,309	864	0.60	0.40	66.0	0.985	0.854	0.783	0.327	0.906	**9.4%**	**10.2%**
1969	27,384	9,287	0.340	7,993	19,391	0.29	0.71	66.4	0.429	0.792	0.309	0.699	0.535	**46.5%**	**45.5%**
1970	3,579	3,864	1.089	2,168	1,411	0.61	0.39	61.2	0.968	0.755	0.722	0.118	0.839	**16.1%**	**17.1%**
1971	2,681	2,967	1.120	1,619	1,062	0.60	0.40	64.2	0.979	0.821	0.761	0.248	0.883	**11.7%**	**12.3%**
1972	1,995	2,266	1.154	1,201	794	0.60	0.40	66.0	0.987	0.857	0.791	0.317	0.909	**9.1%**	**10.7%**
1973	5,297	5,582	1.060	3,217	2,080	0.61	0.39	66.3	0.948	0.825	0.648	0.504	0.874	**12.6%**	**15.6%**
1974	5,198	5,483	1.061	3,156	2,042	0.61	0.39	66.1	0.949	0.822	0.652	0.487	0.872	**12.8%**	**17.9%**
1975	4,417	4,701	1.072	2,679	1,738	0.61	0.39	61.5	0.958	0.742	0.686	0.178	0.827	**17.3%**	**20.6%**
1976	1,621	1,904	1.198	972	649	0.60	0.40	65.8	0.991	0.863	0.807	0.287	0.914	**8.6%**	**10.5%**
1977	1,514	631	0.426	945	569	0.62	0.38	62.3	0.993	0.813	0.809	0.018	0.881	**11.9%**	**10.7%**
1978	11,200	8,493	0.760	2,966	8,234	0.26	0.74	66.9	0.763	0.896	0.666	0.688	0.798	**20.2%**	**25.0%**
1979	4,440	4,725	1.072	2,693	1,747	0.61	0.39	66.0	0.958	0.825	0.685	0.443	0.877	**12.3%**	**14.8%**
1980	6,387	6,671	1.050	3,882	2,505	0.61	0.39	66.6	0.935	0.831	0.601	0.577	0.872	**12.8%**	**16.8%**
1981	2,156	2,441	1.149	1,299	857	0.60	0.40	68.7	0.985	0.889	0.784	0.484	0.927	**7.3%**	**7.5%**
1982	14,997	10,993	0.735	4,001	10,996	0.27	0.73	65.1	0.681	0.882	0.592	0.710	0.734	**26.6%**	**41.7%**
1983	18,845	7,825	0.416	5,406	13,439	0.29	0.71	61.3	0.607	0.658	0.493	0.326	0.622	**37.8%**	**40.7%**
1984	3,320	3,605	1.096	2,009	1,311	0.61	0.39	66.0	0.971	0.836	0.734	0.386	0.890	**11.0%**	**12.0%**
1985	2,232	2,517	1.144	1,345	887	0.60	0.40	65.1	0.984	0.842	0.781	0.278	0.898	**10.2%**	**10.7%**
1986	7,871	8,160	1.041	1,943	5,928	0.25	0.75	65.8	0.833	0.897	0.738	0.606	0.848	**15.2%**	**17.0%**
1987	1,697	1,960	1.177	1,019	678	0.60	0.40	68.6	0.990	0.893	0.804	0.454	0.932	**6.8%**	**7.8%**
1988	1,589	1,829	1.174	954	635	0.60	0.40	63.7	0.991	0.839	0.809	0.161	0.900	**10.0%**	**10.0%**
1989	1,633	1,910	1.193	980	653	0.60	0.40	66.7	0.991	0.873	0.807	0.340	0.920	**8.0%**	**6.8%**
1990	1,519	1,796	1.207	910	609	0.60	0.40	63.9	0.992	0.844	0.812	0.171	0.903	**9.7%**	**9.6%**
1991	1,828	2,082	1.159	1,099	729	0.60	0.40	63.9	0.989	0.836	0.798	0.185	0.897	**10.3%**	**10.5%**
1992	1,696	1,959	1.177	1,019	677	0.60	0.40	63.9	0.990	0.839	0.804	0.179	0.899	**10.1%**	**10.5%**
														Average:	**15.06%**

Calculations- San Joaquin River Fall Run Smolt Survival Model WITH BARRIER:

C8 ='Study 468 Flow Data'!AB7
D8 ='Study 468 Flow Data'!G7 (HIDDEN)
E8 ='Study 468 Flow Data'!Q7 (HIDDEN)
F8 =D8+E8
G8 =F8/(C8-0.03*$R$2)
H8 =IF(C8<$R$1,(0.47*(0.3137*C8-0.0156*$R$2-0.0625*F8)+0.53*C8),(0.3137*C8-0.0156*$R$2-0.0625*F8))
I8 =C8-H8
J8 =H8/C8
K8 =I8/C8
M8 =(1.01045-0.00003*I8)
N8 =(O8+P8)-(O8*P8)
O8 =IF((0.87634-0.000071*H8)<0,0,(0.87634-0.000071*H8))
P8 =IF((-3.65867+0.058492*L8+0.000051*F8)<0,0,(-3.65867+0.058492*L8+0.000051*F8))
Q8 =((K8*M8)+(J8*N8))
R8 =(1-Q8)

T8 ='Study 468 Flow Data'!AC7
U8 ='Study 468 Flow Data'!H7 (HIDDEN)
V8 ='Study 468 Flow Data'!R7 (HIDDEN)
W8 =U8+V8
X8 =W8/(T8-0.03*$R$3)
Y8 =IF(T8<$R$1,(0.52*(0.3137*T8-0.0156*$R$3-0.0625*W8)+0.48*T8),(0.3137*T8-0.0156*$R$3-0.0625*W8))
Z8 =T8-Y8
AA8 =Y8/T8
AB8 =Z8/T8
AD8 =(1.01045-0.00003*Z8)
AE8 =(AF8+AG8)-(AF8*AG8)
AF8 =IF((0.87634-0.000071*Y8)<0,0,(0.87634-0.000071*Y8))
AG8 =IF((-3.65867+0.058492*AC8+0.000051*W8)<0,0,(-3.65867+0.058492*AC8+0.000051*W8))
AH8 =((AB8*AD8)+(AA8*AE8))
AI8 =(1-AH8)
AK8 =0.45*G94+0.55*AI8

	A	B	C	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
1	Study 526 San Joaquin River Fall Run Salmon Smolt Survival Model WITH BARRIER											Old River Barrier Open above				7500.00	cfs at Vernalis																	
2	Barrier at head of Old River from Apr 15 to May 15											Consumptive Depletion for April				1053.00	cfs																	
3												Consumptive Depletion for May				1053.00	cfs																	
4																																		
5		Water	APRIL													Calculated		MAY													Calculated		Weighted	
6		Year	Vernalis	CVP + SWP		Calculated				Temp @		Calculated Mortality				Survival		Vernalis	CVP+SWP		Calculated				Temp @		Calculated Mortality				Survival		(April + June)	
7	Year	Type	Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	s234		Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt	m2	m34	m3	m4	m234	s234		total survival	
8	1922	A	6,193	8,555	1.388	3,936	2,257	0.64	0.36	60.2	0.943	0.717	0.597	0.299	0.799	20.1%		5,936	10,847	1.837	3,457	2,479	0.58	0.42	66.6	0.936	0.923	0.631	0.790	0.928	7.2%		13.0%	
9	1923	B	5,340	8,260	1.556	3,367	1,973	0.63	0.37	59.7	0.951	0.730	0.637	0.255	0.811	18.9%		5,162	6,555	1.278	3,098	2,064	0.60	0.40	66.0	0.949	0.841	0.656	0.536	0.884	11.6%		14.9%	
10	1924	C	1,990	2,996	1.530	1,252	738	0.63	0.37	60.6	0.988	0.796	0.787	0.039	0.867	13.3%		1,871	1,239	0.674	1,154	717	0.62	0.38	63.9	0.989	0.824	0.794	0.142	0.887	11.3%		12.2%	
11	1925	D	3,987	7,100	1.795	2,485	1,502	0.62	0.38	63.4	0.965	0.824	0.700	0.412	0.877	12.3%		3,828	5,312	1.399	2,281	1,547	0.60	0.40	67.3	0.964	0.871	0.714	0.549	0.909	9.1%		10.6%	
12	1926	D	3,667	6,584	1.811	2,283	1,384	0.62	0.38	63.4	0.969	0.824	0.714	0.386	0.879	12.1%		3,538	5,262	1.501	2,096	1,442	0.59	0.41	67.3	0.967	0.876	0.728	0.546	0.913	8.7%		10.2%	
13	1927	W	5,340	9,978	1.880	3,317	2,023	0.62	0.38	57.1	0.950	0.709	0.641	0.190	0.800	20.0%		5,162	8,833	1.722	3,024	2,138	0.59	0.41	64.2	0.946	0.847	0.662	0.547	0.888	11.2%		15.1%	
14	1928	A	3,987	8,116	2.052	2,455	1,532	0.62	0.38	60.2	0.964	0.784	0.702	0.276	0.854	14.6%		3,828	6,673	1.758	2,236	1,592	0.58	0.42	66.6	0.963	0.881	0.718	0.577	0.915	8.5%		11.3%	
15	1929	C	2,013	3,152	1.591	1,263	750	0.63	0.37	60.6	0.988	0.797	0.787	0.047	0.868	13.2%		1,890	3,174	1.708	1,104	786	0.58	0.42	63.9	0.987	0.847	0.798	0.241	0.905	9.5%		11.2%	
16	1930	D	2,420	4,068	1.703	1,512	908	0.62	0.38	63.4	0.983	0.828	0.769	0.257	0.886	11.4%		1,955	3,811	1.981	1,125	830	0.58	0.42	67.3	0.986	0.893	0.796	0.472	0.932	6.8%		8.8%	
17	1931	C	1,990	3,168	1.618	1,247	743	0.63	0.37	60.6	0.988	0.798	0.788	0.048	0.869	13.1%		1,989	3,469	1.772	1,158	831	0.58	0.42	63.9	0.986	0.847	0.794	0.256	0.905	9.5%		11.1%	
18	1932	D	4,513	5,544	1.237	2,887	1,626	0.64	0.36	63.4	0.962	0.781	0.671	0.332	0.846	15.4%		3,872	5,122	1.334	2,315	1,557	0.60	0.40	67.3	0.964	0.867	0.712	0.539	0.906	9.4%		12.1%	
19	1933	C	2,807	4,320	1.557	1,767	1,040	0.63	0.37	60.6	0.979	0.777	0.751	0.106	0.852	14.8%		2,678	2,897	1.095	1,620	1,058	0.60	0.40	63.9	0.979	0.815	0.761	0.227	0.880	12.0%		13.3%	
20	1934	C	1,990	3,792	1.936	1,229	761	0.62	0.38	60.6	0.988	0.806	0.789	0.079	0.875	12.5%		1,987	3,289	1.682	1,162	825	0.59	0.41	63.9	0.986	0.845	0.794	0.247	0.903	9.7%		10.9%	
21	1935	B	6,374	10,535	1.661	4,001	2,373	0.63	0.37	59.7	0.939	0.743	0.592	0.371	0.816	18.4%		6,073	5,961	0.987	3,703	2,370	0.61	0.39	66.0	0.939	0.809	0.613	0.506	0.860	14.0%		16.0%	
22	1936	B	6,418	8,514	1.333	4,090	2,328	0.64	0.36	59.7	0.941	0.697	0.586	0.268	0.785	21.5%		5,162	6,602	1.287	3,097	2,065	0.60	0.40	66.0	0.948	0.841	0.656	0.539	0.884	11.6%		16.0%	
23	1937	B	7,941	8,164	1.032	1,964	5,977	0.25	0.75	59.7	0.831	0.803	0.737	0.250	0.824	17.6%		8,143	7,064	0.871	2,097	6,046	0.26	0.74	66.0	0.829	0.881	0.727	0.562	0.842	15.8%		16.6%	
24	1938	W	18,051	7,896	0.438	5,153	12,898	0.29	0.71	57.1	0.624	0.552	0.511	0.084	0.603	39.7%		23,970	9,711	0.406	6,896	17,074	0.29	0.71	64.2	0.498	0.750	0.387	0.592	0.571	42.9%		41.5%	
25	1939	D	2,895	4,321	1.509	1,827	1,068	0.63	0.37	63.4	0.978	0.815	0.747	0.270	0.875	12.5%		2,678	3,758	1.420	1,592	1,086	0.59	0.41	67.3	0.978	0.874	0.763	0.469	0.916	8.4%		10.2%	
26	1940	A	5,731	10,191	1.788	3,575	2,156	0.62	0.38	60.2	0.946	0.767	0.622	0.382	0.834	16.6%		5,162	6,533	1.273	3,099	2,063	0.60	0.40	66.6	0.949	0.852	0.656	0.570	0.891	10.9%		13.5%	
27	1941	W	10,084	9,921	0.987	2,527	7,557	0.25	0.75	57.1	0.784	0.754	0.697	0.187	0.776	22.4%		9,579	10,442	1.094	2,336	7,243	0.24	0.76	64.2	0.793	0.893	0.710	0.629	0.817	18.3%		20.1%	
28	1942	W	6,902	10,259	1.493	4,367	2,535	0.63	0.37	57.1	0.934	0.655	0.566	0.204	0.758	24.2%		5,936	10,847	1.837	3,457	2,479	0.58	0.42	64.2	0.936	0.871	0.631	0.650	0.898	10.2%		16.5%	
29	1943	W	7,915	9,321	1.182	1,884	6,031	0.24	0.76	57.1	0.830	0.783	0.743	0.157	0.818	18.2%		6,176	7,967	1.297	3,704	2,472	0.60	0.40	64.2	0.936	0.808	0.613	0.503	0.859	14.1%		15.9%	
30	1944	D	3,441	4,425	1.298	2,193	1,248	0.64	0.36	63.4	0.973	0.798	0.721	0.275	0.861	13.9%		2,968	4,025	1.371	1,769	1,199	0.60	0.40	67.3	0.974	0.871	0.751	0.483	0.913	8.7%		11.0%	
31	1945	B	5,781	6,438	1.120	3,719	2,062	0.64	0.36	59.7	0.949	0.675	0.612	0.162	0.773	22.7%		3,872	5,292	1.378	2,310	1,562	0.60	0.40	66.0	0.964	0.848	0.712	0.472	0.895	10.5%		16.0%	
32	1946	B	5,340	6,138	1.156	3,429	1,911	0.64	0.36	59.7	0.953	0.687	0.633	0.146	0.782	21.8%		3,872	5,559	1.448	2,301	1,571	0.59	0.41	66.0	0.963	0.852	0.713	0.485	0.897	10.3%		15.5%	
33	1947	D	3,667	5,081	1.398	2,327	1,340	0.63	0.37	63.4	0.970	0.800	0.711	0.309	0.862	13.8%		2,678	3,749	1.417	1,592	1,086	0.59	0.41	67.3	0.978	0.874	0.763	0.469	0.916	8.4%		10.8%	
34	1948	B	3,987	6,929	1.752	2,490	1,497	0.62	0.38	59.7	0.966	0.756	0.700	0.187	0.834	16.6%		3,828	7,401	1.949	2,213	1,615	0.58	0.42	66.0	0.962	0.882	0.719	0.579	0.916	8.4%		12.1%	
35	1949	D	3,987	5,242	1.325	2,539	1,448	0.64	0.36	63.4	0.967	0.792	0.696	0.317	0.856	14.4%		2,968	5,020	1.710	1,737	1,231	0.59	0.41	67.3	0.974	0.885	0.753	0.534	0.922	7.8%		10.8%	
36	1950	B	3,987	6,425	1.624	2,504	1,483	0.63	0.37	59.7	0.966	0.747	0.699	0.161	0.828	17.2%		3,828	5,889	1.551	2,262	1,566	0.59	0.41	66.0	0.963	0.858	0.716	0.502	0.901	9.9%		13.1%	
37	1951	A	5,340	6,539	1.232	3,418	1,922	0.64	0.36	60.2	0.953	0.705	0.634	0.196	0.795	20.5%		5,162	7,421	1.446	3,070	2,092	0.59	0.41	66.6	0.948	0.869	0.658	0.615	0.901	9.9%		14.7%	
38	1952	W	10,838	8,015	0.742	2,883	7,955	0.27	0.73	57.1	0.772	0.701	0.672	0.090	0.753	24.7%		15,453	9,513	0.617	4,237	11,216	0.27	0.73	64.2	0.674	0.822	0.576	0.582	0.715	28.5%		26.8%	
39	1953	W	3,987	5,826	1.473	2,522	1,465	0.63	0.37	57.1	0.967	0.697	0.697	0.000	0.796	20.4%		3,828	7,991	2.105	2,194	1,634	0.57	0.43	64.2	0.961	0.861	0.721	0.504	0.904	9.6%		14.4%	
40	1954	A	3,987	9,256	2.340	2,421	1,566	0.61	0.39	60.2	0.963	0.803	0.704	0.335	0.866	13.4%		3,828	7,764	2.045	2,201	1,627	0.57	0.43	66.6	0.962	0.897	0.720	0.633	0.925	7.5%		10.2%	
41	1955	D	2,807	3,822	1.377	1,782	1,025	0.63	0.37	63.4	0.980	0.811	0.750	0.245	0.873	12.7%		2,678	4,210	1.591	1,577	1,101	0.59	0.41	67.3	0.977	0.880	0.764	0.493	0.920	8.0%		10.1%	
42	1956	W	6,193	8,158	1.324	3,948	2,245	0.64	0.36	57.1	0.943	0.635	0.596	0.097	0.747	25.3%		6,126	10,939	1.795	3,576	2,550	0.58	0.42	64.2	0.934	0.870	0.622	0.654	0.896	10.4%		17.1%	
43	1957	A	3,987	6,570	1.661	2,500	1,487	0.63	0.37	60.2	0.966	0.758	0.699	0.198	0.836	16.4%		3,828	6,259	1.649	2,250	1,578	0.59	0.41	66.6	0.963	0.874	0.717	0.556	0.911	8.9%		12.3%	
44	1958	W	14,907	9,660	0.649	4,056	10,851	0.27	0.73	57.1	0.685	0.660	0.588	0.174	0.678	32.2%		13,173	10,905	0.830	3,434	9,739	0.26	0.74	64.2	0.718	0.872	0.632	0.653	0.758	24.2%		27.8%	
45	1959	B	2,807	3,962	1.428	1,777	1,030	0.63	0.37	59.7	0.980	0.759	0.750	0.035	0.840	16.0%		2,678	3,973	1.501	1,585	1,093	0.59	0.41	66.0	0.978	0.859	0.764	0.404	0.908	9.2%		12.3%	
46	1960	D	2,420	4,184	1.752	1,509	911	0.62	0.38	63.4	0.983	0.830	0.769	0.263	0.888	11.2%		1,872	3,628	1.971	1,077	795	0.58	0.42	67.3	0.987	0.892	0.800	0.463	0.932	6.8%		8.8%	
47	1961	D	1,990	3,703	1.891	1,232	758	0.62	0.38	63.4	0.988	0.839	0.789	0.239	0.896	10.4%		1,897	3,172	1.700	1,108	789	0.58	0.42	67.3	0.987	0.887	0.798	0.440	0.928	7.2%		8.6%	
48	1962	B	4,219	5,163	1.233	2,699	1,520	0.64	0.36	59.7	0.965	0.715	0.685	0.097	0.805	19.5%		2,968	5,141	1.751	1,733	1,235	0.58	0.42	66.0	0.973	0.868	0.753	0.464	0.912	8.8%		13.6%	
49	1963	W	5,357	9,987	1.875	3,328	2,029	0.62	0.38	57.1	0.950	0.709	0.640	0.191	0.800	20.0%		5,162	9,608	1.873	2,999	2,163	0.58	0.42	64.2	0.946	0.861	0.663	0.587	0.896	10.4%		14.7%	
50	1964	D	2,807	3,684	1.327	1,786	1,021	0.64	0.36	63.4	0.980	0.809	0.750	0.238	0.871	12.9%		2,678	4,162	1.573	1,578	1,100	0.59	0.41	67.3	0.977	0.880	0.764	0.490	0.920	8.0%		10.2%	
51	1965	W	6,193	9,964	1.617	3,895	2,298	0.63	0.37	57.1	0.942	0.676	0.600	0.189	0.774	22.6%		5,936	8,454	1.432	3,534	2,402	0.60	0.40	64.2	0.938	0.823	0.625	0.528	0.870	13.0%		17.3%	
52	1966	B	3,987	5,799	1.466	2,523	1,464	0.63	0.37	59.7	0.967	0.736	0.697	0.129	0.821	17.9%		2,968	4,987	1.698	1,738	1,230	0.59	0.41	66.0	0.974	0.866	0.753	0.456	0.910	9.0%		13.0%	
53	1967	W	13,613	8,644	0.636	3,714	9,899	0.27	0.73	57.1	0.713	0.660	0.613	0.122	0.699	30.1%		16,001	9,702	0.608	4,397	11,604	0.27	0.73	64.2	0.662	0.822	0.564	0.591	0.706	29.4%		29.7%	
54	1968	B	3,667	5,416	1.490	2,317	1,350	0.63	0.37	59.7	0.970	0.743	0.712	0.110	0.827	17.3%		2,678	3,939	1.488	1,586	1,092	0.59	0.41	66.0	0.978	0.859	0.764	0.403	0.907	9.3%		12.9%	
55	1969	W	20,926	7,680	0.368	6,068	14,858	0.29	0.71	57.1	0.565	0.486	0.446	0.073	0.542	45.8%		26,143	9,287	0.356	7,604	18,539	0.29	0.71	64.2	0.454	0.800	0.336	0.699	0.555	44.5%		45.1%	
56	1970	W	5,340	6,774	1.276	3,411	1,929	0.64	0.36	57.1	0.953	0.644	0.634	0.027	0.755	24.5%		5,162	6,202	1.209	3,110	2,052	0.60	0.40	61.2	0.949	0.737	0.656	0.237	0.821	17.9%		20.8%	
57	1971	W	3,987	6,730	1.701	2,496	1,491	0.63	0.37	57.1	0.966	0.707	0.699	0.024	0.803	19.7%		3,828	8,509	2.241	2,177	1,651	0.57	0.43	64.2	0.961	0.869	0.722	0.530	0.909	9.1%		13.9%	
58	1972	B	3,667	4,867	1.339	2,333	1,334	0.64	0.36	58.9	0.970	0.721	0.711	0.035	0.812	18.8%		2,678	4,161	1.572	1,579	1,099	0.59	0.41	66.0	0.977	0.862	0.764	0.414	0.909	9.1%		13.5%	
59	1973	A	5,696	7,629	1.347	3,627	2,069	0.64	0.36	59.2	0.948	0.692	0.619	0.193	0.785	21.5%		5,162	6,796	1.325	3,090	2,072	0.60	0.40	66.3	0.948	0.851	0.657	0.566	0.890	11.0%		15.7%	
60	1974	W	7,655	10,429	1.368	1,733	5,922	0.23	0.77	56.9	0.833	0.803	0.753	0.201	0.826	17.4%		5,936	9,499	1.609	3,500	2,436	0.59	0.41	66.1	0.937	0.885	0.628	0.692	0.907	9.3%		13.0%	
61	1975	W	6,622	9,469	1.437	4,200	2,422	0.63	0.37	53.7	0.938	0.578	0.578	0.000	0.710	29.0%		5,936	9,820	1.663	3,490	2,446	0.59	0.41	61.5	0.937	0.792	0.629	0.439	0.852	14.8%		21.2%	
62	1976	C	1,990	3,234	1.651	1,245	745	0.63	0.37	57.8	0.988	0.788	0.788	0.000	0.863	13.7%		1,871	3,428	1.864	1,083	788	0.58	0.42	65.8	0.987	0.873	0.799	0.365	0.921	7.9%		10.5%	
63	1977	C	1,990	3,178	1.623	1,247	743	0.63	0.37	62.0	0.988	0.815	0.788	0.130	0.880	12.0%		1,871	977	0.531	1,163	708	0.62	0.38	62.3	0.989	0.801	0.794	0.035	0.872	12.8%		12.4%	
64	1978	A	14,931	7,698	0.517	4,186	10,745	0.28	0.72	61.4	0.688	0.716	0.579	0.325	0.696	30.4%		10,833	8,495	0.786	2,851	7,982	0.26	0.74	66.9	0.771	0.898	0.674	0.688	0.804	19.6%		24.4%	
65	1979	B	5,340	7,029	1.324	3,403	1,937	0.64	0.36	60.5	0.952	0.722	0.635	0.239	0.805	19.5%		5,162	6,285	1.225	3,107	2,055	0.60	0.40	66.0	0.949	0.836	0.656	0.522	0.881	11.9%		15.3%	
66	1980	A	6,734	7,071	1.055	4,346	2,388	0.65	0.35	60.1	0.939	0.662	0.568	0.217	0.760	24.0%		6,621	7,757	1.177	3,997	2,624	0.60	0.40	66.6	0.932	0.850	0.593	0.633	0.883	11.7%		17.3%	
67	1981	D	3,667	5,628	1.548	2,311	1,356	0.63	0.37	64.6	0.970	0.829	0.712	0.407	0.881	11.9%		2,678	3,789	1.432	1,591	1,087	0.59	0.41	68.7	0.978	0.894	0.763	0.553	0.928	7.2%		9.3%	
68	1982	W	27,030	9,120	0.338	7,893	19,137	0.29	0.71	52.8	0.436	0.316	0.316	0.000	0.401	59.9%		15,159	11,148	0.737	4,042	11,117	0.27	0.73	65.1	0.677	0.884	0.589	0.718	0.732	26.8%		41.7%	
69	1983	W	20,740	7,141	0.345	6,043	14,697	0.29	0.71	57.2	0.570	0.476	0.447	0.051	0.542	45.8%		19,079	7,825	0.411	5,480	13,599	0.29	0.71	61.3	0.602	0.654	0.487	0.326	0.617	38.3%		41.6%	
70	1984	W	5,340	7,022	1.323	3,404	1,936	0.64	0.36	60.7	0.952	0.726	0.635	0.250	0.808	19.2%		5,162	6,417	1.251	3,103	2,059	0.60	0.40	66.0	0.949	0.838	0.656	0.529	0.882	11.8%		15.1%	
71	1985	D	2,807	4,264	1.536	1,769	1,038	0.63	0.37	62.5	0.979	0.804	0.751	0.215	0.869	13.1%		2,678	4,529	1.711	1,567	1,111	0.58	0.42	65.1	0.977	0.854	0.765	0.380	0.905	9.5%		11.1%	
72	1986	W	9,796	7,845	0.803	2,566	7,230	0.26	0.74	61.3	0.794	0.794	0.694	0.327	0.794	20.6%		8,057	8,408	1.048	1,986	6,071	0.25	0.75	65.8	0.828	0.899	0.735	0.619	0.846	15.4%		17.8%	
73	1987	D	2,029	3,676	1.840	1,259	770	0.62	0.38	62.3	0.987	0.824	0.787	0.173	0.886	11.4%		1,871	3,110	1.691	1,094	777	0.58	0.42	68.6	0.987	0.902	0.799	0.512	0.937	6.3%		8.6%	
74	1988	C	1,990	2,986	1.525	1,253	737	0.63	0.37	62.1	0.988	0.814	0.787	0.126	0.879	12.1%		1,871	3,312	1.801	1,087	784	0.58	0.42	63.7	0.987	0.847	0.799	0.236	0.905	9.5%		10.7%	
75	1989	D	2,420	5,828	2.440	1,460	960	0.60	0.40	64.1	0.982	0.861	0.773	0.388	0.909	9.1%		1,880	4,243	2.295	1,063	817	0.57	0.43	66.7	0.986	0.892	0.801	0.459	0.933	6.7%		7.8%	
76	1990	C	1,990	3,750	1.915	1,230	760	0.62	0.38	60.6	0.988	0.805	0.789	0.077	0.875	12.5%		1,943	3,020	1.580	1,143	800	0.59	0.41	63.9	0.986	0.843	0.795	0.233	0.902	9.8%		11.0%	
77	1991	C	2,441	4,443	1.844	1,515	926	0.62	0.38	60.6	0.983	0.795	0.769	0.113	0.866	13.4%		1,985	3,203	1.640	1,164	821	0.59	0.41	63.9	0.986	0.844	0.794	0.242	0.902	9.8%		11.4%	
78	1992	C	2,257	3,943	1.772	1,405	852	0.62	0.38	60.6	0.985	0.796	0.777	0.087	0.867	13.3%		1,986	3,274	1.675	1,162	824	0.59	0.41	63.9	0.986	0.845	0.794	0.246	0.903	9.7%		11.3%	
79																															Average:		15.57%	

80 Calculations- San Joaquin River Fall
81 Run Smolt Survival Model WITH BARRIER:

	April		May	
81	C8 ='Study 468 Flow Data'!AB7		T8 ='Study 468 Flow Data'!AC7	
82	D8 ='Study 468 Flow Data'!G7	(HIDDEN)	U8 ='Study 468 Flow Data'!H7	(HIDDEN)
83	E8 ='Study 468 Flow Data'!Q7	(HIDDEN)	V8 ='Study 468 Flow Data'!R7	(HIDDEN)
84	F8 =D8+E8		W8 =U8+V8	
85	G8 =F8/(C8-0.03*$R$2)		X8 =W8/(T8-0.03*$R$3)	
86	H8 =IF(C8<$R$1,(0.47*(0.3137*C8-0.0156*$R$2-0.0625*F8)+0.53*C8),(0.3137*C8-0.0156*$R$2-0.0625*F8))		Y8 =IF(T8<$R$1,(0.52*(0.3137*T8-0.0156*$R$3-0.0625*W8)+0.48*T8),(0.3137*T8-0.0156*$R$3-0.0625*W8))	
87	I8 =C8-H8		Z8 =T8-Y8	
88	J8 =H8/C8		AA8 =Y8/T8	
89	K8 =I8/C8		AB8 =Z8/T8	
90	M8 =(1.01045-0.00003*I8)		AD8 =(1.01045-0.00003*Z8)	
91	N8 =(O8+P8)-(O8*P8)		AE8 =(AF8+AG8)-(AF8*AG8)	
92	O8 =IF((0.87634-0.000071*H8)<0,0,(0.87634-0.000071*H8))		AF8 =IF((0.87634-0.000071*Y8)<0,0,(0.87634-0.000071*Y8))	
93	P8 =IF((-3.65867+0.058492*L8+0.000051*F8)<0,0,(-3.65867+0.058492*L8+0.000051*F8))		AG8 =IF((-3.65867+0.058492*AC8+0.000051*W8)<0,0,(-3.65867+0.058492*AC8+0.000051*W8))	
94	Q8 =((K8*M8)+(J8*N8))		AH8 =((AB8*AD8)+(AA8*AE8))	
95	R8 =(1-Q8)		AI8 =(1-AH8)	
			AK8 =0.45*G94+0.55*AI8	

	A	B	C	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK
1	Study 526a San Joaquin River Fall Run Salmon Smolt Survival Model WITH BARRIER											Old River Barrier Open above 7500.00 cfs at Vernalis																				
2	Barrier at head of Old River from Apr 15 to May 15											Consumptive Depletion for April 1053.00 cfs																				
3												Consumptive Depletion for May 1053.00 cfs																				
4																																
5		Water	APRIL													Calculated		MAY													Calculated	Weighted
6		Year	Vernalis	CVP + SWP		Calculated				Temp @		Calculated Mortality				Survival		Vernalis	CVP+SWP		Calculated				Temp @		Calculated Mortality				Survival	(April + June)
7	Year	Type	Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	s234		Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt	m2	m34	m3	m4	m234	s234	total survival
8	1922	A	6,193	8,551	1.388	3,936	2,257	0.64	0.36	60.2	0.943	0.717	0.597	0.299	0.799	20.1%		5,936	10,854	1.838	3,456	2,480	0.58	0.42	66.6	0.936	0.923	0.631	0.790	0.928	7.2%	13.0%
9	1923	B	5,340	8,137	1.533	3,371	1,969	0.63	0.37	59.7	0.951	0.727	0.637	0.248	0.810	19.0%		5,162	6,557	1.278	3,098	2,064	0.60	0.40	66.0	0.949	0.841	0.656	0.536	0.884	11.6%	15.0%
10	1924	C	1,990	2,788	1.424	1,258	732	0.63	0.37	60.6	0.989	0.793	0.787	0.028	0.865	13.5%		1,871	1,289	0.701	1,153	718	0.62	0.38	63.9	0.989	0.824	0.794	0.145	0.887	11.3%	12.3%
11	1925	D	3,987	7,091	1.793	2,485	1,502	0.62	0.38	63.4	0.965	0.823	0.700	0.411	0.877	12.3%		3,828	5,318	1.401	2,281	1,547	0.60	0.40	67.3	0.964	0.871	0.714	0.549	0.909	9.1%	10.6%
12	1926	D	3,667	6,520	1.793	2,285	1,382	0.62	0.38	63.4	0.969	0.823	0.714	0.382	0.878	12.2%		3,538	5,263	1.501	2,096	1,442	0.59	0.41	67.3	0.967	0.876	0.728	0.546	0.913	8.7%	10.2%
13	1927	W	5,340	9,871	1.860	3,320	2,020	0.62	0.38	57.1	0.950	0.707	0.641	0.185	0.799	20.1%		5,162	8,839	1.723	3,024	2,138	0.59	0.41	64.2	0.946	0.847	0.662	0.547	0.888	11.2%	15.2%
14	1928	A	3,987	8,008	2.025	2,458	1,529	0.62	0.38	60.2	0.965	0.783	0.702	0.271	0.852	14.8%		3,828	6,681	1.760	2,236	1,592	0.58	0.42	66.6	0.963	0.881	0.718	0.578	0.915	8.5%	11.3%
15	1929	C	2,010	2,945	1.489	1,267	743	0.63	0.37	60.6	0.988	0.794	0.786	0.036	0.866	13.4%		1,888	3,136	1.689	1,104	784	0.58	0.42	63.9	0.987	0.846	0.798	0.239	0.905	9.5%	11.3%
16	1930	D	2,420	4,089	1.712	1,512	908	0.62	0.38	63.4	0.983	0.829	0.769	0.258	0.887	11.3%		1,953	3,818	1.987	1,123	830	0.58	0.42	67.3	0.986	0.893	0.797	0.473	0.932	6.8%	8.8%
17	1931	C	1,990	2,962	1.512	1,253	737	0.63	0.37	60.6	0.988	0.795	0.787	0.037	0.867	13.3%		1,988	3,479	1.778	1,157	831	0.58	0.42	63.9	0.986	0.847	0.794	0.256	0.905	9.5%	11.2%
18	1932	D	4,507	5,606	1.253	2,881	1,626	0.64	0.36	63.4	0.962	0.782	0.672	0.336	0.847	15.3%		3,872	5,132	1.336	2,315	1,557	0.60	0.40	67.3	0.964	0.867	0.712	0.540	0.906	9.4%	12.1%
19	1933	C	2,807	4,166	1.501	1,771	1,036	0.63	0.37	60.6	0.979	0.775	0.751	0.098	0.850	15.0%		2,678	2,775	1.049	1,624	1,054	0.61	0.39	63.9	0.979	0.814	0.761	0.220	0.879	12.1%	13.4%
20	1934	C	1,990	3,799	1.940	1,229	761	0.62	0.38	60.6	0.988	0.806	0.789	0.080	0.875	12.5%		1,985	3,297	1.688	1,161	824	0.58	0.42	63.9	0.986	0.845	0.794	0.247	0.903	9.7%	10.9%
21	1935	B	6,365	9,965	1.573	4,011	2,354	0.63	0.37	59.7	0.940	0.731	0.592	0.342	0.808	19.2%		6,068	5,951	0.986	3,701	2,367	0.61	0.39	66.0	0.939	0.809	0.614	0.505	0.860	14.0%	16.3%
22	1936	B	6,410	8,360	1.311	4,089	2,321	0.64	0.36	59.7	0.941	0.694	0.586	0.260	0.783	21.7%		5,162	6,635	1.293	3,096	2,066	0.60	0.40	66.0	0.948	0.842	0.657	0.540	0.885	11.5%	16.1%
23	1937	B	7,951	8,050	1.016	1,975	5,976	0.25	0.75	59.7	0.831	0.800	0.736	0.244	0.824	17.6%		8,154	7,071	0.871	2,100	6,054	0.26	0.74	66.0	0.829	0.881	0.727	0.562	0.842	15.8%	16.6%
24	1938	W	18,052	8,039	0.446	5,144	12,908	0.28	0.72	57.1	0.623	0.556	0.511	0.091	0.604	39.6%		23,971	10,009	0.418	6,878	17,093	0.29	0.71	64.2	0.498	0.759	0.388	0.607	0.573	42.7%	41.3%
25	1939	D	2,891	4,190	1.465	1,828	1,063	0.63	0.37	63.4	0.979	0.813	0.747	0.263	0.874	12.6%		2,678	3,768	1.424	1,591	1,087	0.59	0.41	67.3	0.978	0.875	0.763	0.470	0.916	8.4%	10.3%
26	1940	A	5,727	10,082	1.770	3,576	2,151	0.62	0.38	60.2	0.946	0.765	0.622	0.377	0.833	16.7%		5,162	6,534	1.274	3,099	2,063	0.60	0.40	66.6	0.949	0.852	0.656	0.570	0.891	10.9%	13.5%
27	1941	W	10,086	10,049	0.999	2,519	7,567	0.25	0.75	57.1	0.783	0.756	0.697	0.194	0.777	22.3%		9,580	10,010	1.048	2,363	7,217	0.25	0.75	64.2	0.794	0.885	0.709	0.607	0.817	18.3%	20.1%
28	1942	W	6,904	10,404	1.514	4,364	2,540	0.63	0.37	57.1	0.934	0.658	0.567	0.212	0.760	24.0%		5,936	10,854	1.838	3,456	2,480	0.58	0.42	64.2	0.936	0.871	0.631	0.650	0.898	10.2%	16.4%
29	1943	W	7,911	9,188	1.166	1,891	6,020	0.24	0.76	57.1	0.830	0.781	0.742	0.150	0.818	18.2%		6,189	7,967	1.294	3,713	2,476	0.60	0.40	64.2	0.936	0.807	0.613	0.503	0.859	14.1%	15.9%
30	1944	D	3,437	4,191	1.231	2,198	1,239	0.64	0.36	63.4	0.973	0.794	0.720	0.263	0.859	14.1%		2,968	4,239	1.444	1,762	1,206	0.59	0.41	67.3	0.974	0.874	0.751	0.494	0.915	8.5%	11.0%
31	1945	B	5,776	6,324	1.101	3,719	2,057	0.64	0.36	59.7	0.949	0.673	0.612	0.156	0.771	22.9%		3,872	5,253	1.368	2,311	1,561	0.60	0.40	66.0	0.964	0.847	0.712	0.470	0.894	10.6%	16.1%
32	1946	B	5,340	6,030	1.136	3,433	1,907	0.64	0.36	59.7	0.953	0.684	0.633	0.141	0.780	22.0%		3,872	5,567	1.450	2,301	1,571	0.59	0.41	66.0	0.963	0.852	0.713	0.486	0.897	10.3%	15.5%
33	1947	D	3,667	4,991	1.373	2,330	1,337	0.64	0.36	63.4	0.970	0.799	0.711	0.304	0.861	13.9%		2,678	3,779	1.428	1,591	1,087	0.59	0.41	67.3	0.978	0.875	0.763	0.471	0.917	8.3%	10.8%
34	1948	B	3,987	6,839	1.729	2,492	1,495	0.63	0.37	59.7	0.966	0.754	0.699	0.182	0.833	16.7%		3,828	7,397	1.948	2,213	1,615	0.58	0.42	66.0	0.962	0.882	0.719	0.579	0.916	8.4%	12.1%
35	1949	D	3,987	5,152	1.303	2,542	1,445	0.64	0.36	63.4	0.967	0.791	0.696	0.312	0.855	14.5%		2,968	5,028	1.712	1,737	1,231	0.59	0.41	67.3	0.974	0.885	0.753	0.534	0.922	7.8%	10.8%
36	1950	B	3,987	6,362	1.608	2,506	1,481	0.63	0.37	59.7	0.966	0.746	0.698	0.158	0.828	17.2%		3,828	5,896	1.553	2,262	1,566	0.59	0.41	66.0	0.963	0.859	0.716	0.502	0.901	9.9%	13.2%
37	1951	A	5,340	6,431	1.211	3,421	1,919	0.64	0.36	60.2	0.953	0.703	0.633	0.191	0.793	20.7%		5,162	7,427	1.448	3,070	2,092	0.59	0.41	66.6	0.948	0.869	0.658	0.616	0.901	9.9%	14.8%
38	1952	W	10,840	8,150	0.754	2,875	7,965	0.27	0.73	57.1	0.771	0.704	0.672	0.097	0.754	24.6%		15,455	9,801	0.635	4,219	11,236	0.27	0.73	64.2	0.673	0.829	0.577	0.596	0.716	28.4%	26.7%
39	1953	W	3,987	5,737	1.450	2,525	1,462	0.63	0.37	57.1	0.967	0.697	0.697	0.000	0.796	20.4%		3,828	7,915	2.085	2,196	1,632	0.57	0.43	64.2	0.961	0.860	0.720	0.500	0.903	9.7%	14.5%
40	1954	A	3,987	9,149	2.313	2,424	1,563	0.61	0.39	60.2	0.964	0.802	0.704	0.329	0.865	13.5%		3,828	7,773	2.047	2,201	1,627	0.57	0.43	66.6	0.962	0.897	0.720	0.633	0.925	7.5%	10.2%
41	1955	D	2,807	3,732	1.345	1,784	1,023	0.64	0.36	63.4	0.980	0.810	0.750	0.240	0.872	12.8%		2,678	4,243	1.603	1,576	1,102	0.59	0.41	67.3	0.977	0.881	0.764	0.494	0.921	7.9%	10.1%
42	1956	W	6,193	8,069	1.310	3,951	2,242	0.64	0.36	57.1	0.943	0.633	0.596	0.093	0.746	25.4%		6,128	10,947	1.796	3,577	2,551	0.58	0.42	64.2	0.934	0.870	0.622	0.655	0.896	10.4%	17.1%
43	1957	A	3,987	6,465	1.634	2,503	1,484	0.63	0.37	60.2	0.966	0.757	0.699	0.192	0.834	16.6%		3,828	6,311	1.662	2,248	1,580	0.59	0.41	66.6	0.963	0.875	0.717	0.559	0.911	8.9%	12.3%
44	1958	W	14,909	9,732	0.654	4,052	10,857	0.27	0.73	57.1	0.685	0.662	0.589	0.178	0.678	32.2%		13,175	10,974	0.835	3,431	9,744	0.26	0.74	64.2	0.718	0.874	0.633	0.656	0.759	24.1%	27.7%
45	1959	B	2,807	3,835	1.382	1,781	1,026	0.63	0.37	59.7	0.980	0.757	0.750	0.029	0.838	16.2%		2,678	3,961	1.497	1,585	1,093	0.59	0.41	66.0	0.978	0.859	0.764	0.404	0.908	9.2%	12.4%
46	1960	D	2,268	4,004	1.790	1,411	857	0.62	0.38	63.4	0.985	0.833	0.776	0.254	0.890	11.0%		1,875	3,663	1.987	1,078	797	0.58	0.42	67.3	0.987	0.893	0.800	0.465	0.933	6.7%	8.6%
47	1961	D	1,990	3,577	1.826	1,235	755	0.62	0.38	63.4	0.988	0.838	0.789	0.232	0.895	10.5%		1,898	3,187	1.708	1,109	789	0.58	0.42	67.3	0.987	0.887	0.798	0.440	0.928	7.2%	8.7%
48	1962	B	4,221	4,979	1.188	2,705	1,516	0.64	0.36	59.7	0.965	0.712	0.684	0.087	0.803	19.7%		2,968	5,150	1.754	1,733	1,235	0.58	0.42	66.0	0.973	0.868	0.753	0.464	0.912	8.8%	13.7%
49	1963	W	5,360	9,881	1.854	3,333	2,027	0.62	0.38	57.1	0.950	0.706	0.640	0.185	0.798	20.2%		5,162	9,615	1.874	2,999	2,163	0.58	0.42	64.2	0.946	0.861	0.663	0.587	0.896	10.4%	14.8%
50	1964	D	2,807	3,596	1.296	1,788	1,019	0.64	0.36	63.4	0.980	0.808	0.749	0.233	0.870	13.0%		2,678	4,195	1.585	1,577	1,101	0.59	0.41	67.3	0.977	0.880	0.764	0.492	0.920	8.0%	10.2%
51	1965	W	6,193	9,856	1.600	3,898	2,295	0.63	0.37	57.1	0.942	0.673	0.600	0.184	0.773	22.7%		5,936	8,460	1.433	3,534	2,402	0.60	0.40	64.2	0.938	0.823	0.625	0.528	0.870	13.0%	17.4%
52	1966	B	3,987	5,671	1.434	2,527	1,460	0.63	0.37	59.7	0.967	0.734	0.697	0.123	0.819	18.1%		2,968	4,997	1.702	1,738	1,230	0.59	0.41	66.0	0.974	0.866	0.753	0.457	0.910	9.0%	13.1%
53	1967	W	13,615	8,783	0.647	3,706	9,909	0.27	0.73	57.1	0.713	0.663	0.613	0.129	0.700	30.0%		16,002	9,994	0.626	4,379	11,623	0.27	0.73	64.2	0.662	0.829	0.565	0.606	0.707	29.3%	29.6%
54	1968	B	3,667	5,301	1.458	2,321	1,346	0.63	0.37	59.7	0.970	0.741	0.712	0.104	0.825	17.5%		2,678	3,971	1.501	1,585	1,093	0.59	0.41	66.0	0.978	0.859	0.764	0.404	0.908	9.2%	12.9%
55	1969	W	20,928	7,806	0.374	6,061	14,867	0.29	0.71	57.1	0.564	0.490	0.446	0.079	0.543	45.7%		26,154	9,565	0.366	7,590	18,564	0.29	0.71	66.4	0.454	0.810	0.337	0.713	0.557	44.3%	44.9%
56	1970	W	5,340	6,648	1.252	3,415	1,925	0.64	0.36	57.1	0.953	0.641	0.634	0.020	0.754	24.6%		5,162	6,235	1.215	3,109	2,053	0.60	0.40	61.2	0.949	0.738	0.656	0.239	0.822	17.8%	20.9%
57	1971	W	3,987	6,613	1.672	2,499	1,488	0.63	0.37	57.1	0.966	0.704	0.699	0.018	0.802	19.8%		3,828	8,555	2.253	2,175	1,653	0.57	0.43	64.2	0.961	0.870	0.722	0.533	0.909	9.1%	13.9%
58	1972	B	3,667	4,778	1.314	2,336	1,331	0.64	0.36	58.9	0.971	0.719	0.710	0.030	0.810	19.0%		2,678	4,169	1.575	1,578	1,100	0.59	0.41	66.0	0.977	0.862	0.764	0.414	0.909	9.1%	13.5%
59	1973	A	5,695	7,521	1.328	3,629	2,066	0.64	0.36	59.2	0.948	0.690	0.619	0.188	0.784	21.6%		5,162	6,803	1.326	3,090	2,072	0.60	0.40	66.3	0.948	0.851	0.657	0.566	0.890	11.0%	15.8%
60	1974	W	7,658	10,573	1.386	1,725	5,933	0.23	0.77	56.9	0.832	0.805	0.754	0.209	0.826	17.4%		5,936	9,506	1.610	3,500	2,436	0.59	0.41	66.1	0.937	0.886	0.628	0.692	0.907	9.3%	12.9%
61	1975	W	6,624	9,382	1.423	4,204	2,420	0.63	0.37	53.7	0.938	0.578	0.578	0.000	0.709	29.1%		5,936	9,808	1.661	3,490	2,446	0.59	0.41	61.5	0.937	0.792	0.629	0.439	0.851	14.9%	21.2%
62	1976	C	1,990	3,068	1.567	1,250	740	0.63	0.37	57.8	0.988	0.788	0.788	0.000	0.862	13.8%		1,871	3,315	1.802	1,087	784	0.58	0.42	65.8	0.987	0.871	0.799	0.359	0.920	8.0%	10.6%
63	1977	C	1,990	3,186	1.627	1,247	743	0.63	0.37	62.0	0.988	0.815	0.788	0.130	0.880	12.0%		1,871	1,038	0.564	1,161	710	0.62	0.38	62.3	0.989	0.802	0.794	0.038	0.873	12.7%	12.4%
64	1978	A	14,931	7,971	0.535	4,169	10,762	0.28	0.72	61.4	0.688	0.723	0.580	0.339	0.697	30.3%		10,834	8,814	0.816	2,831	8,003	0.26	0.74	66.9	0.770	0.904	0.675	0.704	0.805	19.5%	24.3%
65	1979	B	5,340	6,940	1.307	3,406	1,934	0.64	0.36	60.5	0.952	0.720	0.635	0.234	0.804	19.6%		5,162	6,272	1.223	3,107	2,055	0.60	0.40	66.0	0.949	0.835	0.656	0.522	0.880	12.0%	15.4%
66	1980	A	6,747	6,953	1.035	4,359	2,388	0.65	0.35	60.1	0.939	0.658	0.567	0.211	0.758	24.2%		6,627	7,794	1.182	4,000	2,627	0.60	0.40	66.6	0.932	0.851	0.592	0.634	0.883	11.7%	17.3%
67	1981	D	3,667	5,539	1.524	2,314	1,353	0.63	0.37	64.6	0.970	0.828	0.712	0.402	0.880	12.0%		2,678	3,823	1.445	1,589	1,089	0.59	0.41	68.7	0.978	0.895	0.763	0.555	0.928	7.2%	9.3%
68	1982	W	27,031	9,265	0.343	7,884	19,147	0.29	0.71	52.8	0.436	0.317	0.317	0.000	0.401	59.9%		15,160	11,449	0.757	4,024	11,136	0.27	0.73	65.1	0.676	0.891	0.591	0.733	0.733	26.7%	41.6%
69	1983	W	20,741	7,265	0.351	6,036	14,705	0.29	0.71	57.2	0.569	0.480	0.448	0.058	0.543	45.7%		19,081	8,101	0.425	5,463	13,618	0.29	0.71	61.3	0.602	0.662	0.488	0.340	0.619	38.1%	41.5%
70	1984	W	5,340	6,893	1.299	3,407	1,933	0.64	0.36	60.7	0.952	0.723	0.634	0.243	0.806	19.4%		5,162	6,479	1.263	3,101	2,061	0.60	0.40	66.0	0.949	0.839	0.656	0.532	0.883	11.7%	15.2%
71	1985	D	3,667	4,937	1.358	2,331	1,336	0.64	0.36	62.5	0.970	0.783	0.711	0.249	0.851	14.9%		2,678	4,533	1.713	1,566	1,112	0.58	0.42	65.1	0.977	0.854	0.765	0.380	0.905	9.5%	11.9%
72	1986	W	9,804	7,725	0.790	2,576	7,228	0.26	0.74	61.3	0.794	0.792	0.693	0.321	0.793	20.7%		8,065	8,445	1.051	1,986	6,079	0.25	0.75	65.8	0.828	0.900	0.735	0.621	0.846	15.4%	17.8%
73	1987	D	2,028	3,538	1.772	1,262	766	0.62	0.38	62.3	0.987	0.822	0.787	0.166	0.885	11.5%		1,871	3,117	1.695	1,093	778	0.58	0.42	68.6	0.987	0.902	0.799	0.513	0.937	6.3%	8.6%
74	1988	C	1,990	2,888	1.475	1,256	734	0.63	0.37	62.1	0.988	0.813	0.787	0.121	0.878	12.2%		1,871	3,309	1.799	1,087	784	0.58	0.42	63.7	0.987	0.847	0.799	0.236	0.905	9.5%	10.7%
75	1989	D	2,420	5,830	2.441	1,460	960	0.60	0.40	64.1	0.982	0.861	0.773	0.388	0.909	9.1%		1,893	4,240	2.278	1,071	822	0.57	0.43	66.7	0.986	0.892	0.800	0.459	0.933	6.7%	7.8%
76	1990	C	1,990	3,531	1.803	1,237	753	0.62	0.38	60.6	0.988	0.802	0.789	0.066	0.873	12.7%		1,941	3,028	1.586	1,141	800	0.59	0.41	63.9	0.986	0.843	0.795	0.233	0.902	9.8%	11.1%
77	1991	C	2,441	4,467	1.854	1,515	926	0.62	0.38	60.6	0.983	0.795	0.769	0.114	0.866	13.4%		1,985	3,233	1.655	1,163	822	0.59	0.41	63.9	0.986	0.844	0.794	0.244	0.903	9.7%	11.4%
78	1992	C	2,248	3,948	1.781	1,399	849	0.62	0.38	60.6	0.985	0.796	0.777	0.087	0.868	13.2%		1,989	3,287	1.679	1,164	825	0.59	0.41	63.9	0.986	0.845	0.794	0.247	0.903	9.7%	11.3%
79																															Average:	15.61%

80 Calculations- San Joaquin River Fall
81 Run Smolt Survival Model WITH BARRIER:

C8 ='Study 468 Flow Data'!AB7
D8 ='Study 468 Flow Data'!G7 (HIDDEN)
E8 ='Study 468 Flow Data'!Q7 (HIDDEN)
F8 =D8+E8
G8 =F8/(C8-0.03*$R$2)
H8 =IF(C8<$R$1,(0.47*(0.3137*C8-0.0156*$R$2-0.0625*F8)+0.53*C8),(0.3137*C8-0.0156*$R$2-0.0625*F8))
I8 =C8-H8
J8 =H8/C8
K8 =I8/C8
M8 =(1.01045-0.00003*I8)
N8 =(O8+P8)-(O8*P8)
O8 =IF((0.87634-0.000071*H8)<0,0,(0.87634-0.000071*H8))
P8 =IF((-3.65867+0.058492*L8+0.000051*F8)<0,0,(-3.65867+0.058492*L8+0.000051*F8))
Q8 =((K8*M8)+(J8*N8))
R8 =(1-Q8)

T8 ='Study 468 Flow Data'!AC7
U8 ='Study 468 Flow Data'!H7 (HIDDEN)
V8 ='Study 468 Flow Data'!R7 (HIDDEN)
W8 =U8+V8
X8 =W8/(T8-0.03*$R$3)
Y8 =IF(T8<$R$1,(0.52*(0.3137*T8-0.0156*$R$3-0.0625*W8)+0.48*T8),(0.3137*T8-0.0156*$R$3-0.0625*W8))
Z8 =T8-Y8
AA8 =Y8/T8
AB8 =Z8/T8
AD8 =(1.01045-0.00003*Z8)
AE8 =(AF8+AG8)-(AF8*AG8)
AF8 =IF((0.87634-0.000071*Y8)<0,0,(0.87634-0.000071*Y8))
AG8 =IF((-3.65867+0.058492*AC8+0.000051*W8)<0,0,(-3.65867+0.058492*AC8+0.000051*W8))
AH8 =((AB8*AD8)+(AA8*AE8))
AI8 =(1-AH8)
AK8 =0.45*G94+0.55*AI8

Study 634 San Joaquin River Fall Run Salmon Smolt Survival Model WITH BARRIER

Barrier at head of Old River from Apr 15 to May 15

Old River Barrier Open above 7500.00 cfs at Vernalis
Consumptive Depletion for April 1053.00 cfs
Consumptive Depletion for May 1053.00 cfs

APRIL

Row	Year	Water Year Type	Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	m2	m34 (Calculated Mortality)	m3	m4	m234	Calculated Survival s234
8	1922	A	6,567	6,038	0.924	4,264	2,303	0.65	0.35	60.2	0.941	0.646	0.574	0.170	0.750	25.0%
9	1923	B	6,119	6,824	1.121	3,937	2,182	0.64	0.36	59.7	0.945	0.670	0.597	0.181	0.768	23.2%
10	1924	C	2,390	2,650	1.123	1,534	857	0.64	0.36	60.6	0.985	0.772	0.767	0.021	0.848	15.2%
11	1925	D	4,686	6,202	1.333	2,984	1,701	0.64	0.36	63.4	0.959	0.787	0.664	0.366	0.850	15.0%
12	1926	D	3,720	5,574	1.511	2,348	1,371	0.63	0.37	63.4	0.969	0.807	0.710	0.334	0.867	13.3%
13	1927	W	5,976	6,144	1.034	3,860	2,116	0.65	0.35	57.1	0.947	0.602	0.602	0.000	0.724	27.6%
14	1928	A	5,054	6,544	1.303	3,224	1,830	0.64	0.36	60.2	0.956	0.717	0.647	0.196	0.803	19.7%
15	1929	C	2,547	2,808	1.116	1,635	912	0.64	0.36	60.6	0.983	0.767	0.760	0.029	0.845	15.5%
16	1930	D	2,626	3,564	1.374	1,667	960	0.63	0.37	63.4	0.982	0.814	0.758	0.231	0.875	12.5%
17	1931	C	1,725	2,830	1.671	1,078	647	0.62	0.38	60.6	0.991	0.806	0.800	0.030	0.875	12.5%
18	1932	D	5,059	4,138	0.823	3,298	1,761	0.65	0.35	63.4	0.958	0.735	0.642	0.261	0.813	18.7%
19	1933	C	2,655	3,464	1.320	1,689	966	0.64	0.36	60.6	0.981	0.772	0.756	0.063	0.848	15.2%
20	1934	C	2,435	3,439	1.431	1,541	894	0.63	0.37	60.6	0.984	0.781	0.767	0.061	0.856	14.4%
21	1935	B	6,372	6,944	1.095	4,105	2,267	0.64	0.36	59.7	0.942	0.663	0.585	0.187	0.762	23.8%
22	1936	B	6,605	5,906	0.898	4,293	2,312	0.65	0.35	59.7	0.941	0.629	0.572	0.135	0.738	26.2%
23	1937	B	8,394	8,151	0.975	2,107	6,287	0.25	0.75	59.7	0.822	0.795	0.727	0.249	0.815	18.5%
24	1938	W	18,074	7,824	0.434	5,164	12,910	0.29	0.71	57.1	0.623	0.549	0.510	0.080	0.602	39.8%
25	1939	D	4,399	3,925	0.899	2,857	1,542	0.65	0.35	63.4	0.964	0.755	0.673	0.250	0.828	17.2%
26	1940	A	6,757	6,944	1.032	4,366	2,391	0.65	0.35	60.2	0.939	0.660	0.566	0.217	0.759	24.1%
27	1941	W	10,108	9,415	0.934	2,566	7,542	0.25	0.75	57.1	0.784	0.744	0.694	0.161	0.774	22.6%
28	1942	W	6,960	6,944	1.002	4,503	2,457	0.65	0.35	57.1	0.937	0.572	0.557	0.035	0.701	29.9%
29	1943	W	7,939	9,287	1.174	1,894	6,045	0.24	0.76	57.1	0.829	0.782	0.742	0.155	0.818	18.2%
30	1944	D	5,537	4,478	0.813	3,612	1,925	0.65	0.35	63.4	0.953	0.726	0.620	0.278	0.805	19.5%
31	1945	B	6,808	4,254	0.628	4,479	2,329	0.66	0.34	59.7	0.941	0.581	0.558	0.050	0.704	29.6%
32	1946	B	5,617	4,928	0.882	3,653	1,964	0.65	0.35	59.7	0.952	0.649	0.617	0.085	0.755	24.5%
33	1947	D	3,476	3,844	1.116	2,234	1,242	0.64	0.36	63.4	0.973	0.787	0.718	0.246	0.854	14.6%
34	1948	B	4,114	5,620	1.377	2,614	1,500	0.64	0.36	59.7	0.965	0.728	0.691	0.120	0.814	18.6%
35	1949	D	3,666	3,832	1.054	2,363	1,303	0.64	0.36	63.4	0.971	0.780	0.709	0.245	0.848	15.2%
36	1950	B	3,751	5,002	1.345	2,386	1,365	0.64	0.36	59.7	0.970	0.733	0.707	0.088	0.819	18.1%
37	1951	A	5,577	4,496	0.811	3,638	1,939	0.65	0.35	60.2	0.952	0.653	0.618	0.092	0.757	24.3%
38	1952	W	10,860	7,954	0.735	2,893	7,967	0.27	0.73	57.1	0.771	0.700	0.671	0.087	0.752	24.8%
39	1953	W	4,510	4,958	1.107	2,902	1,608	0.64	0.36	57.1	0.962	0.670	0.670	0.000	0.774	22.6%
40	1954	A	4,626	6,144	1.337	2,946	1,680	0.64	0.36	60.2	0.960	0.726	0.667	0.176	0.811	18.9%
41	1955	D	2,800	3,082	1.113	1,799	1,001	0.64	0.36	63.4	0.980	0.801	0.749	0.207	0.865	13.5%
42	1956	W	5,613	5,550	0.994	3,632	1,981	0.65	0.35	57.1	0.951	0.618	0.618	0.000	0.736	26.4%
43	1957	A	4,565	5,436	1.199	2,925	1,640	0.64	0.36	60.2	0.961	0.715	0.669	0.140	0.803	19.7%
44	1958	W	14,929	9,590	0.644	4,067	10,862	0.27	0.73	57.1	0.685	0.658	0.588	0.170	0.677	32.3%
45	1959	B	4,283	3,540	0.833	2,790	1,493	0.65	0.35	59.7	0.966	0.683	0.678	0.014	0.781	21.9%
46	1960	D	2,656	3,584	1.366	1,686	970	0.63	0.37	63.4	0.981	0.813	0.757	0.233	0.875	12.5%
47	1961	D	1,799	3,336	1.888	1,113	686	0.62	0.38	63.4	0.990	0.842	0.797	0.220	0.898	10.2%
48	1962	B	4,898	4,452	0.915	3,179	1,718	0.65	0.35	59.7	0.959	0.672	0.651	0.060	0.772	22.8%
49	1963	W	6,131	6,944	1.138	3,942	2,189	0.64	0.36	57.1	0.945	0.611	0.596	0.035	0.730	27.0%
50	1964	D	2,637	2,902	1.114	1,693	944	0.64	0.36	63.4	0.982	0.804	0.756	0.198	0.868	13.2%
51	1965	W	6,879	6,944	1.014	4,448	2,431	0.65	0.35	57.1	0.938	0.576	0.561	0.035	0.704	29.6%
52	1966	B	4,239	4,202	0.999	2,741	1,499	0.65	0.35	59.7	0.965	0.697	0.682	0.048	0.792	20.8%
53	1967	W	13,636	8,591	0.631	3,724	9,912	0.27	0.73	57.1	0.713	0.658	0.612	0.119	0.698	30.2%
54	1968	B	4,262	4,450	1.052	2,749	1,513	0.64	0.36	59.7	0.965	0.700	0.681	0.060	0.794	20.6%
55	1969	W	20,948	7,613	0.364	6,079	14,869	0.29	0.71	57.1	0.564	0.483	0.445	0.069	0.541	45.9%
56	1970	W	5,784	4,254	0.740	3,786	1,998	0.65	0.35	57.1	0.950	0.608	0.608	0.000	0.726	27.4%
57	1971	W	4,500	5,696	1.275	2,873	1,627	0.64	0.36	57.1	0.962	0.672	0.672	0.000	0.777	22.3%
58	1972	B	2,857	3,544	1.254	1,824	1,033	0.64	0.36	58.9	0.979	0.747	0.747	0.000	0.831	16.9%
59	1973	A	6,756	6,328	0.941	4,383	2,373	0.65	0.35	59.2	0.939	0.620	0.565	0.127	0.732	26.8%
60	1974	W	7,678	9,445	1.235	1,802	5,876	0.23	0.77	56.9	0.834	0.786	0.748	0.151	0.823	17.7%
61	1975	W	6,769	6,944	1.031	4,374	2,395	0.65	0.35	53.7	0.939	0.566	0.566	0.000	0.698	30.2%
62	1976	C	2,610	3,032	1.176	1,671	939	0.64	0.36	57.8	0.982	0.758	0.758	0.000	0.838	16.2%
63	1977	C	1,672	2,857	1.742	1,041	631	0.62	0.38	62.0	0.992	0.825	0.802	0.114	0.888	11.2%
64	1978	A	15,546	7,620	0.491	4,384	11,162	0.28	0.72	61.4	0.676	0.705	0.565	0.321	0.684	31.6%
65	1979	B	6,439	5,886	0.919	4,182	2,258	0.65	0.35	60.5	0.943	0.655	0.579	0.180	0.756	24.4%
66	1980	A	6,889	5,490	0.801	4,498	2,391	0.65	0.35	60.1	0.939	0.618	0.557	0.137	0.729	27.1%
67	1981	D	4,369	4,948	1.141	2,807	1,562	0.64	0.36	64.6	0.964	0.797	0.677	0.372	0.857	14.3%
68	1982	W	27,053	9,058	0.335	7,904	19,149	0.29	0.71	52.8	0.436	0.315	0.315	0.000	0.401	59.9%
69	1983	W	20,853	7,071	0.340	6,083	14,770	0.29	0.71	57.2	0.567	0.471	0.444	0.048	0.539	46.1%
70	1984	W	5,326	4,636	0.876	3,464	1,862	0.65	0.35	60.7	0.955	0.678	0.630	0.128	0.775	22.5%
71	1985	D	3,824	3,862	1.018	2,469	1,355	0.65	0.35	62.5	0.970	0.759	0.701	0.194	0.834	16.6%
72	1986	W	9,835	7,526	0.768	2,598	7,237	0.26	0.74	61.3	0.793	0.788	0.692	0.311	0.792	20.8%
73	1987	D	2,779	3,245	1.181	1,780	999	0.64	0.36	62.3	0.980	0.788	0.750	0.151	0.857	14.3%
74	1988	C	2,429	2,854	1.191	1,554	875	0.64	0.36	62.1	0.984	0.794	0.766	0.119	0.862	13.8%
75	1989	D	2,112	5,224	2.511	1,270	842	0.60	0.40	64.1	0.985	0.863	0.786	0.357	0.911	8.9%
76	1990	C	1,830	3,395	1.888	1,132	698	0.62	0.38	60.6	0.990	0.808	0.796	0.059	0.877	12.3%
77	1991	C	2,436	3,921	1.631	1,527	909	0.63	0.37	60.6	0.983	0.788	0.768	0.086	0.861	13.9%
78	1992	C	2,243	3,426	1.549	1,411	832	0.63	0.37	60.6	0.985	0.790	0.776	0.061	0.862	13.8%

MAY

Row	Vernalis Flows	CVP+SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt	m2	m34 (Calculated Mortality)	m3	m4	m234	Calculated Survival s234	Weighted Survival (April + June) total survival
8	6,048	6,763	1.124	3,661	2,387	0.61	0.39	66.6	0.939	0.840	0.616	0.582	0.879	12.1%	17.9%
9	5,431	5,450	1.009	3,307	2,124	0.61	0.39	66.0	0.947	0.814	0.642	0.480	0.866	13.4%	17.8%
10	2,142	1,059	0.502	1,335	807	0.62	0.38	63.9	0.986	0.811	0.782	0.133	0.877	12.3%	13.6%
11	4,201	4,586	1.100	2,544	1,657	0.61	0.39	67.3	0.961	0.851	0.696	0.512	0.895	10.5%	12.6%
12	3,227	3,864	1.209	1,941	1,286	0.60	0.40	67.3	0.972	0.863	0.739	0.475	0.906	9.4%	11.2%
13	5,147	6,763	1.322	3,082	2,065	0.60	0.40	64.2	0.948	0.809	0.658	0.441	0.865	13.5%	19.8%
14	4,000	5,616	1.415	2,381	1,618	0.60	0.40	66.6	0.962	0.860	0.707	0.523	0.902	9.8%	14.3%
15	2,320	3,113	1.361	1,382	938	0.60	0.40	63.9	0.982	0.831	0.778	0.238	0.892	10.8%	12.9%
16	2,347	3,505	1.514	1,387	960	0.59	0.41	67.3	0.982	0.879	0.778	0.457	0.921	7.9%	9.9%
17	1,515	3,153	2.126	863	652	0.57	0.43	63.9	0.991	0.859	0.815	0.240	0.916	8.4%	10.2%
18	4,193	4,125	0.991	2,554	1,639	0.61	0.39	67.3	0.961	0.844	0.695	0.488	0.890	11.0%	14.5%
19	2,428	2,913	1.215	1,459	970	0.60	0.40	63.9	0.981	0.824	0.773	0.228	0.887	11.3%	13.0%
20	2,150	2,957	1.396	1,278	872	0.59	0.41	63.9	0.984	0.835	0.786	0.230	0.895	10.5%	12.3%
21	6,152	5,926	0.968	3,755	2,397	0.61	0.39	66.0	0.939	0.806	0.610	0.504	0.858	14.2%	18.5%
22	5,159	5,396	1.052	3,134	2,025	0.61	0.39	66.0	0.950	0.819	0.654	0.477	0.870	13.0%	18.9%
23	8,755	7,262	0.832	2,276	6,479	0.26	0.74	66.0	0.816	0.878	0.715	0.572	0.832	16.8%	17.6%
24	24,604	9,542	0.388	7,105	17,499	0.29	0.71	64.2	0.485	0.738	0.372	0.583	0.558	44.2%	42.2%
25	3,756	3,484	0.936	2,294	1,462	0.61	0.39	67.3	0.967	0.844	0.713	0.456	0.892	10.8%	13.7%
26	5,476	6,238	1.146	3,311	2,166	0.60	0.40	66.6	0.945	0.840	0.641	0.555	0.882	11.8%	17.3%
27	10,213	9,932	0.976	2,567	7,646	0.25	0.75	64.2	0.781	0.879	0.694	0.603	0.806	19.4%	20.9%
28	6,349	7,488	1.185	3,831	2,518	0.60	0.40	64.2	0.935	0.794	0.604	0.478	0.850	15.0%	21.7%
29	6,808	6,949	1.025	4,144	2,664	0.61	0.39	64.2	0.931	0.771	0.582	0.451	0.833	16.7%	17.4%
30	4,107	3,781	0.928	2,510	1,597	0.61	0.39	67.3	0.963	0.840	0.698	0.471	0.888	11.2%	15.0%
31	5,708	4,573	0.806	3,514	2,194	0.62	0.38	66.0	0.945	0.789	0.627	0.435	0.849	15.1%	21.6%
32	4,884	4,977	1.026	2,971	1,913	0.61	0.39	66.0	0.953	0.818	0.665	0.456	0.871	12.9%	18.1%
33	3,198	3,216	1.016	1,944	1,254	0.61	0.39	67.3	0.973	0.854	0.738	0.442	0.901	9.9%	12.1%
34	3,761	6,763	1.813	2,190	1,571	0.58	0.42	66.0	0.963	0.873	0.721	0.547	0.911	8.9%	13.2%
35	3,316	4,105	1.250	1,991	1,325	0.60	0.40	67.3	0.971	0.864	0.735	0.487	0.907	9.3%	12.0%
36	3,347	4,264	1.286	2,006	1,342	0.60	0.40	66.0	0.970	0.845	0.734	0.419	0.895	10.5%	13.9%
37	4,455	5,796	1.310	2,668	1,787	0.60	0.40	66.6	0.957	0.854	0.687	0.532	0.895	10.5%	16.7%
38	16,086	9,449	0.589	4,439	11,647	0.28	0.72	64.2	0.661	0.815	0.561	0.578	0.704	29.6%	27.5%
39	4,077	7,126	1.762	2,382	1,695	0.58	0.42	64.2	0.960	0.842	0.707	0.460	0.891	10.9%	16.2%
40	3,921	6,213	1.597	2,311	1,610	0.59	0.41	66.6	0.962	0.872	0.712	0.554	0.909	9.1%	13.5%
41	2,688	3,600	1.355	1,603	1,085	0.60	0.40	67.3	0.978	0.872	0.763	0.461	0.915	8.5%	10.8%
42	6,652	6,763	1.021	4,050	2,602	0.61	0.39	64.2	0.932	0.770	0.589	0.441	0.834	16.6%	21.0%
43	4,284	5,606	1.318	2,564	1,720	0.60	0.40	66.6	0.959	0.854	0.694	0.523	0.896	10.4%	14.6%
44	13,807	10,842	0.787	3,637	10,170	0.26	0.74	64.2	0.705	0.866	0.618	0.649	0.748	25.2%	28.4%
45	3,062	3,370	1.112	1,851	1,211	0.60	0.40	66.0	0.974	0.840	0.745	0.374	0.893	10.7%	15.7%
46	2,392	3,569	1.512	1,414	978	0.59	0.41	67.3	0.981	0.879	0.776	0.460	0.921	7.9%	10.0%
47	1,596	2,954	1.888	922	674	0.58	0.42	67.3	0.990	0.892	0.811	0.428	0.933	6.7%	8.2%
48	3,841	4,606	1.209	2,312	1,529	0.60	0.40	66.0	0.965	0.838	0.712	0.437	0.888	11.2%	16.4%
49	5,544	7,488	1.358	3,313	2,230	0.60	0.40	64.2	0.944	0.813	0.641	0.478	0.865	13.5%	19.6%
50	2,454	3,490	1.441	1,456	998	0.59	0.41	67.3	0.981	0.876	0.773	0.456	0.919	8.1%	10.4%
51	5,773	7,475	1.302	3,461	2,312	0.60	0.40	64.2	0.941	0.807	0.631	0.478	0.861	13.9%	21.0%
52	3,256	4,117	1.277	1,951	1,304	0.60	0.40	66.0	0.971	0.846	0.738	0.412	0.896	10.4%	15.1%
53	16,633	9,648	0.581	4,598	12,035	0.28	0.72	64.2	0.649	0.815	0.550	0.589	0.695	30.5%	30.4%
54	3,327	3,383	1.027	2,021	1,306	0.61	0.39	66.0	0.971	0.833	0.733	0.374	0.887	11.3%	15.5%
55	26,564	9,217	0.347	7,741	18,823	0.29	0.71	66.4	0.446	0.795	0.327	0.695	0.547	45.3%	45.6%
56	4,817	4,293	0.897	2,950	1,867	0.61	0.39	61.2	0.954	0.714	0.667	0.140	0.807	19.3%	22.9%
57	3,997	7,126	1.797	2,330	1,666	0.58	0.42	64.2	0.960	0.844	0.711	0.460	0.892	10.8%	16.0%
58	2,661	3,504	1.333	1,589	1,072	0.60	0.40	66.0	0.978	0.854	0.764	0.381	0.904	9.6%	12.9%
59	6,045	5,937	0.987	3,686	2,359	0.61	0.39	66.3	0.940	0.816	0.615	0.522	0.864	13.6%	19.5%
60	6,067	6,763	1.121	3,673	2,394	0.61	0.39	66.1	0.939	0.828	0.616	0.553	0.872	12.8%	15.0%
61	5,971	7,488	1.261	3,588	2,383	0.60	0.40	61.5	0.939	0.743	0.622	0.320	0.821	17.9%	23.4%
62	2,377	3,099	1.321	1,419	958	0.60	0.40	65.8	0.982	0.854	0.776	0.348	0.905	9.5%	12.5%
63	1,567	914	0.595	970	597	0.62	0.38	62.3	0.993	0.814	0.808	0.032	0.882	11.8%	11.5%
64	11,612	8,413	0.726	3,100	8,512	0.27	0.73	66.9	0.755	0.891	0.656	0.684	0.791	20.9%	25.7%
65	5,442	5,243	0.969	3,321	2,121	0.61	0.39	66.0	0.947	0.809	0.641	0.469	0.863	13.7%	18.5%
66	7,126	8,042	1.134	4,313	2,813	0.61	0.39	66.6	0.926	0.848	0.570	0.647	0.879	12.1%	18.9%
67	3,596	3,647	1.023	2,186	1,411	0.61	0.39	68.7	0.968	0.873	0.721	0.546	0.911	8.9%	11.4%
68	17,518	10,919	0.624	4,797	12,721	0.27	0.73	65.1	0.629	0.864	0.536	0.706	0.693	30.7%	43.9%
69	22,049	7,752	0.352	6,416	15,633	0.29	0.71	61.3	0.541	0.607	0.421	0.322	0.561	43.9%	44.9%
70	4,528	5,126	1.140	2,737	1,791	0.60	0.40	66.0	0.957	0.829	0.682	0.463	0.880	12.0%	16.8%
71	3,538	3,754	1.071	2,145	1,393	0.61	0.39	65.1	0.969	0.818	0.724	0.341	0.877	12.3%	14.2%
72	8,707	8,565	0.987	2,180	6,527	0.25	0.75	65.8	0.815	0.896	0.722	0.627	0.835	16.5%	18.4%
73	2,558	2,832	1.121	1,545	1,013	0.60	0.40	68.6	0.980	0.883	0.767	0.498	0.921	7.9%	10.8%
74	2,216	2,991	1.369	1,319	897	0.60	0.40	63.7	0.984	0.830	0.783	0.220	0.892	10.8%	12.1%
75	1,767	3,916	2.257	1,001	766	0.57	0.43	66.7	0.987	0.891	0.805	0.442	0.933	6.7%	7.7%
76	1,593	2,715	1.739	928	665	0.58	0.42	63.9	0.990	0.852	0.810	0.217	0.910	9.0%	10.5%
77	1,872	2,925	1.589	1,100	772	0.59	0.41	63.9	0.987	0.844	0.798	0.228	0.903	9.7%	11.6%
78	1,751	2,950	1.716	1,022	729	0.58	0.42	63.9	0.989	0.849	0.804	0.229	0.907	9.3%	11.3%
79														Average:	17.48%

Calculations- San Joaquin River Fall Run Smolt Survival Model WITH BARRIER:

C8 ='Study 634 Flow Data'!AA7
D8 ='Study 634 Flow Data'!G7 (HIDDEN)
E8 ='Study 634 Flow Data'!Q7 (HIDDEN)
F8 =D8+E8
G8 =F8/(C8-0.03*$R$2)
H8 =IF(C8<$R$1,(0.47*(0.3137*C8-0.0156*$R$2-0.0625*F8)+0.53*C8),(0.3137*C8-0.0156*$R$2-0.0625*F8))
I8 =C8-H8
J8 =H8/C8
K8 =I8/C8
M8 =(1.01045-0.00003*I8)
N8 =(O8+P8)-(O8*P8)
O8 =IF((0.87634-0.000071*H8)<0,0,(0.87634-0.000071*H8))
P8 =IF((-3.65867+0.058492*L8+0.000051*F8)<0,0,(-3.65867+0.058492*L8+0.000051*F8))
Q8 =((K8*M8)+(J8*N8))
R8 =(1-Q8)

T8 ='Study 634 Flow Data'!AB7
U8 ='Study 634 Flow Data'!H7 (HIDDEN)
V8 ='Study 634 Flow Data'!R7 (HIDDEN)
W8 =U8+V8
X8 =W8/(T8-0.03*$R$3)
Y8 =IF(T8<$R$1,(0.52*(0.3137*T8-0.0156*$R$3-0.0625*W8)+0.48*T8),(0.3137*T8-0.0156*$R$3-0.0625*W8))
Z8 =T8-Y8
AA8 =Y8/T8
AB8 =Z8/T8
AD8 =(1.01045-0.00003*Z8)
AE8 =(AF8+AG8)-(AF8*AG8)
AF8 =IF((0.87634-0.000071*Y8)<0,0,(0.87634-0.000071*Y8))
AG8 =IF((-3.65867+0.058492*AC8+0.000051*W8)<0,0,(-3.65867+0.058492*AC8+0.000051*W8))
AH8 =((AB8*AD8)+(AA8*AE8))
AI8 =(1-AH8)
AK8 =0.45*G94+0.55*AI8

Study 469 San Joaquin River Fall Run Salmon Smolt Survival Model WITHOUT BARRIER AT HEAD OF OLD RIVER

Consumptive Depletion for April 1053.00 cfs San Joaquin River temperatures based on limited historical data from USBR

Consumptive Depletion for May 1053.00 cfs

	A	B	C	F	G	H	I	J	K	L	M	N	O	P	Q	R	T	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK
4	**APRIL**	Water														**Calculated**	**MAY**													**Calculated**	
5		Year	Vernalis	CVP + SWP		Calculated				Temp @		Calculated Mortality				**Survivability**	Vernalis	CVP + SWP		Calculated				Temp @	Calculated Mortality					**Survivability**	**Weighted**
6	Year	Type	Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	**s234**	Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	**s234**	**total survival**
7	1922	A	6,201	8,487	1.376	1,398	4,803	0.23	0.77	60.2	0.866	0.843	0.777	0.295	0.861	**13.9%**	5,936	8,896	1.507	1,290	4646	0.22	0.78	66.6	0.871	0.933	0.785	0.691	0.885	**11.5%**	**12.6%**
8	1923	B	5,344	8,033	1.512	1,158	4,186	0.22	0.78	59.7	0.885	0.844	0.794	0.243	0.876	**12.4%**	5,156	6,457	1.260	1,197	3958	0.23	0.77	66.0	0.892	0.902	0.791	0.531	0.894	**10.6%**	**11.4%**
9	1924	C	1,983	2,958	1.516	421	1,562	0.21	0.79	60.6	0.964	0.852	0.846	0.037	0.940	**6.0%**	1,870	1,073	0.584	503	1367	0.27	0.73	63.9	0.969	0.862	0.841	0.134	0.941	**5.9%**	**6.0%**
10	1925	D	3,983	7,058	1.786	792	3,191	0.20	0.80	63.4	0.915	0.894	0.820	0.410	0.911	**8.9%**	3,822	5,253	1.386	854	2968	0.22	0.78	67.3	0.921	0.916	0.816	0.546	0.920	**8.0%**	**8.4%**
11	1926	D	3,664	6,789	1.869	709	2,955	0.19	0.81	63.4	0.922	0.895	0.826	0.396	0.917	**8.3%**	3,545	5,090	1.449	778	2768	0.22	0.78	67.3	0.927	0.917	0.821	0.537	0.925	**7.5%**	**7.9%**
12	1927	W	5,344	8,201	1.544	1,147	4,197	0.21	0.79	57.1	0.885	0.815	0.795	0.099	0.870	**13.0%**	5,156	8,538	1.666	1,067	4088	0.21	0.79	64.2	0.888	0.907	0.801	0.532	0.892	**10.8%**	**11.8%**
13	1928	A	3,983	7,462	1.888	767	3,216	0.19	0.81	60.2	0.914	0.865	0.822	0.243	0.905	**9.5%**	3,822	6,587	1.738	771	3051	0.20	0.80	66.6	0.919	0.924	0.822	0.573	0.920	**8.0%**	**8.7%**
14	1929	C	2,017	2,655	1.338	450	1,566	0.22	0.78	60.6	0.963	0.848	0.844	0.021	0.938	**6.2%**	1,887	3,334	1.797	367	1520	0.19	0.81	63.9	0.965	0.888	0.850	0.249	0.950	**5.0%**	**5.6%**
15	1930	D	2,420	4,017	1.682	492	1,928	0.20	0.80	63.4	0.953	0.882	0.841	0.255	0.938	**6.2%**	1,952	3,757	1.957	361	1591	0.18	0.82	67.3	0.963	0.921	0.851	0.469	0.955	**4.5%**	**5.3%**
16	1931	C	1,983	3,143	1.610	409	1,574	0.21	0.79	60.6	0.963	0.854	0.847	0.046	0.941	**5.9%**	1,984	3,432	1.757	392	1593	0.20	0.80	63.9	0.963	0.887	0.849	0.254	0.948	**5.2%**	**5.5%**
17	1932	D	4,504	5,546	1.240	1,050	3,454	0.23	0.77	63.4	0.907	0.868	0.802	0.333	0.898	**10.2%**	3,871	5,074	1.322	881	2990	0.23	0.77	67.3	0.921	0.914	0.814	0.537	0.919	**8.1%**	**9.0%**
18	1933	C	2,807	4,302	1.550	595	2,211	0.21	0.79	60.6	0.944	0.852	0.834	0.105	0.924	**7.6%**	2,683	3,171	1.196	627	2056	0.23	0.77	63.9	0.949	0.872	0.832	0.241	0.931	**6.9%**	**7.2%**
19	1934	C	1,983	3,748	1.920	371	1,612	0.19	0.81	60.6	0.962	0.862	0.850	0.077	0.943	**5.7%**	1,984	3,253	1.666	403	1581	0.20	0.80	63.9	0.963	0.885	0.848	0.245	0.947	**5.3%**	**5.5%**
20	1935	B	6,369	8,739	1.379	1,435	4,934	0.23	0.77	59.7	0.862	0.837	0.774	0.279	0.857	**14.3%**	6,050	5,936	0.986	1,510	4540	0.25	0.75	66.0	0.874	0.886	0.769	0.505	0.877	**12.3%**	**13.2%**
21	1936	B	6,403	8,470	1.329	1,463	4,940	0.23	0.77	59.7	0.862	0.833	0.772	0.265	0.856	**14.4%**	5,156	6,522	1.273	1,193	3962	0.23	0.77	66.0	0.892	0.903	0.792	0.534	0.894	**10.6%**	**12.3%**
22	1937	B	7,932	8,117	1.027	1,965	5,968	0.25	0.75	59.7	0.831	0.802	0.737	0.247	0.824	**17.6%**	8,132	6,961	0.859	2,099	6032	0.26	0.74	66.0	0.829	0.879	0.727	0.557	0.842	**15.8%**	**16.6%**
23	1938	W	18,049	8,504	0.472	5,114	12,935	0.28	0.72	57.1	0.622	0.569	0.513	0.115	0.607	**39.3%**	23,972	9,660	0.404	6,900	17072	0.29	0.71	64.2	0.498	0.748	0.386	0.589	0.570	**43.0%**	**41.3%**
24	1939	D	2,891	4,252	1.487	625	2,266	0.22	0.78	63.4	0.942	0.877	0.832	0.267	0.928	**7.2%**	2,683	3,692	1.392	595	2089	0.22	0.78	67.3	0.948	0.911	0.834	0.466	0.940	**6.0%**	**6.5%**
25	1940	A	5,697	8,386	1.480	1,247	4,450	0.22	0.78	60.2	0.877	0.849	0.788	0.290	0.871	**12.9%**	5,156	6,473	1.263	1,196	3959	0.23	0.77	66.6	0.892	0.910	0.791	0.567	0.896	**10.4%**	**11.5%**
26	1941	W	10,083	9,411	0.936	2,559	7,525	0.25	0.75	57.1	0.785	0.744	0.695	0.161	0.774	**22.6%**	9,579	9,937	1.041	2,367	7212	0.25	0.75	64.2	0.794	0.884	0.708	0.603	0.816	**18.4%**	**20.3%**
27	1942	W	6,907	9,025	1.313	1,586	5,321	0.23	0.77	57.1	0.851	0.797	0.764	0.141	0.838	**16.2%**	5,936	8,896	1.507	1,290	4646	0.22	0.78	64.2	0.871	0.903	0.785	0.550	0.878	**12.2%**	**14.0%**
28	1943	W	7,915	9,562	1.213	1,869	6,046	0.24	0.76	57.1	0.829	0.787	0.744	0.169	0.819	**18.1%**	6,180	8,555	1.391	1,388	4792	0.22	0.78	64.2	0.867	0.896	0.778	0.533	0.873	**12.7%**	**15.1%**
29	1944	D	3,428	4,353	1.281	787	2,641	0.23	0.77	63.4	0.931	0.869	0.820	0.272	0.917	**8.3%**	2,976	3,952	1.342	670	2306	0.23	0.77	67.3	0.941	0.911	0.829	0.479	0.934	**6.6%**	**7.3%**
30	1945	B	5,781	6,369	1.108	1,399	4,382	0.24	0.76	59.7	0.879	0.812	0.777	0.158	0.863	**13.7%**	3,871	5,448	1.419	857	3013	0.22	0.78	66.0	0.920	0.904	0.815	0.480	0.916	**8.4%**	**10.8%**
31	1946	B	5,344	6,067	1.142	1,281	4,063	0.24	0.76	59.7	0.889	0.816	0.785	0.143	0.871	**12.9%**	3,871	5,481	1.428	855	3015	0.22	0.78	66.0	0.920	0.904	0.816	0.481	0.917	**8.3%**	**10.4%**
32	1947	D	3,664	5,008	1.379	820	2,844	0.22	0.78	63.4	0.925	0.874	0.818	0.305	0.914	**8.6%**	2,683	3,692	1.392	595	2089	0.22	0.78	67.3	0.948	0.911	0.834	0.466	0.940	**6.0%**	**7.2%**
33	1948	B	3,983	6,924	1.752	800	3,183	0.20	0.80	59.7	0.915	0.853	0.820	0.186	0.903	**9.7%**	3,822	7,888	2.081	690	3132	0.18	0.82	66.0	0.916	0.932	0.827	0.604	0.919	**8.1%**	**8.8%**
34	1949	D	3,983	5,193	1.314	908	3,074	0.23	0.77	63.4	0.918	0.871	0.812	0.315	0.907	**9.3%**	2,976	4,960	1.685	607	2369	0.20	0.80	67.3	0.939	0.922	0.833	0.531	0.936	**6.4%**	**7.7%**
35	1950	B	3,983	6,353	1.608	836	3,147	0.21	0.79	59.7	0.916	0.846	0.817	0.157	0.901	**9.9%**	3,822	5,481	1.446	840	2982	0.22	0.78	66.0	0.921	0.905	0.817	0.481	0.917	**8.3%**	**9.0%**
36	1951	A	5,344	6,487	1.221	1,255	4,090	0.23	0.77	60.2	0.888	0.828	0.787	0.193	0.874	**12.6%**	5,156	7,335	1.431	1,142	4013	0.22	0.78	66.6	0.890	0.920	0.795	0.611	0.897	**10.3%**	**11.4%**
37	1952	W	10,840	8,873	0.821	2,829	8,010	0.26	0.74	57.1	0.770	0.719	0.675	0.134	0.757	**24.3%**	15,450	9,921	0.643	4,210	11240	0.27	0.73	64.2	0.673	0.832	0.577	0.602	0.717	**28.3%**	**26.5%**
38	1953	W	3,983	5,748	1.455	874	3,109	0.22	0.78	57.1	0.917	0.814	0.814	0.000	0.895	**10.5%**	3,822	7,888	2.081	690	3132	0.18	0.82	64.2	0.916	0.913	0.827	0.499	0.916	**8.4%**	**9.4%**
39	1954	A	3,983	7,462	1.888	767	3,216	0.19	0.81	60.2	0.914	0.865	0.822	0.243	0.905	**9.5%**	3,822	7,644	2.017	705	3117	0.18	0.82	66.6	0.917	0.935	0.826	0.627	0.920	**8.0%**	**8.7%**
40	1955	D	2,807	3,781	1.363	628	2,179	0.22	0.78	63.4	0.945	0.873	0.832	0.243	0.929	**7.1%**	2,683	4,180	1.576	564	2119	0.21	0.79	67.3	0.947	0.917	0.836	0.491	0.941	**5.9%**	**6.5%**
41	1956	W	6,201	8,083	1.310	1,424	4,778	0.23	0.77	57.1	0.867	0.796	0.775	0.093	0.851	**14.9%**	6,017	8,961	1.497	1,311	4706	0.22	0.78	64.2	0.869	0.903	0.783	0.554	0.877	**12.3%**	**13.5%**
42	1957	A	3,983	6,554	1.659	823	3,160	0.21	0.79	60.2	0.916	0.854	0.818	0.197	0.903	**9.7%**	3,822	6,164	1.626	797	3025	0.21	0.79	66.6	0.920	0.919	0.820	0.551	0.920	**8.0%**	**8.8%**
43	1958	W	14,907	9,764	0.656	4,049	10,857	0.27	0.73	57.1	0.685	0.663	0.589	0.179	0.679	**32.1%**	13,173	10,897	0.829	3,435	9738	0.26	0.74	64.2	0.718	0.872	0.632	0.652	0.758	**24.2%**	**27.7%**
44	1959	B	2,807	3,899	1.405	620	2,186	0.22	0.78	59.7	0.945	0.838	0.832	0.032	0.921	**7.9%**	2,683	3,887	1.466	582	2101	0.22	0.78	66.0	0.947	0.901	0.835	0.400	0.937	**6.3%**	**7.0%**
45	1960	D	2,420	4,134	1.731	484	1,936	0.20	0.80	63.4	0.952	0.883	0.842	0.261	0.939	**6.1%**	1,870	3,562	1.937	348	1523	0.19	0.81	67.3	0.965	0.920	0.852	0.459	0.956	**4.4%**	**5.2%**
46	1961	D	1,983	3,647	1.869	378	1,605	0.19	0.81	63.4	0.962	0.885	0.850	0.236	0.948	**5.2%**	1,903	3,204	1.712	380	1523	0.20	0.80	67.3	0.965	0.916	0.849	0.441	0.955	**4.5%**	**4.8%**
47	1962	B	4,201	5,697	1.366	945	3,256	0.23	0.77	59.7	0.913	0.833	0.809	0.124	0.895	**10.5%**	3,822	5,546	1.463	836	2986	0.22	0.78	66.0	0.921	0.906	0.817	0.485	0.918	**8.2%**	**9.3%**
48	1963	W	5,344	8,201	1.544	1,147	4,197	0.21	0.79	57.1	0.885	0.815	0.795	0.099	0.870	**13.0%**	5,156	8,538	1.666	1,067	4088	0.21	0.79	64.2	0.888	0.907	0.801	0.532	0.892	**10.8%**	**11.8%**
49	1964	D	2,807	3,613	1.302	638	2,168	0.23	0.77	63.4	0.945	0.871	0.831	0.234	0.928	**7.2%**	2,683	3,952	1.490	578	2105	0.22	0.78	67.3	0.947	0.914	0.835	0.479	0.940	**6.0%**	**6.5%**
50	1965	W	6,201	8,638	1.400	1,389	4,812	0.22	0.78	57.1	0.866	0.805	0.778	0.122	0.852	**14.8%**	5,936	7,953	1.347	1,349	4587	0.23	0.77	64.2	0.873	0.891	0.781	0.502	0.877	**12.3%**	**13.4%**
51	1966	B	3,983	5,075	1.284	916	3,067	0.23	0.77	59.7	0.918	0.829	0.811	0.092	0.898	**10.2%**	2,976	4,993	1.696	605	2371	0.20	0.80	66.0	0.939	0.909	0.833	0.456	0.933	**6.7%**	**8.3%**
52	1967	W	13,613	9,646	0.710	3,651	9,962	0.27	0.73	57.1	0.712	0.683	0.617	0.173	0.704	**29.6%**	16,003	10,262	0.643	4,362	11641	0.27	0.73	64.2	0.661	0.835	0.567	0.620	0.709	**29.1%**	**29.3%**
53	1968	B	3,664	5,361	1.476	798	2,866	0.22	0.78	59.7	0.924	0.839	0.820	0.107	0.906	**9.4%**	2,683	3,854	1.453	584	2099	0.22	0.78	66.0	0.947	0.901	0.835	0.398	0.937	**6.3%**	**7.7%**
54	1969	W	20,923	7,613	0.364	6,071	14,852	0.29	0.71	57.1	0.565	0.484	0.445	0.069	0.541	**45.9%**	26,135	9,221	0.353	7,606	18529	0.29	0.71	66.4	0.455	0.798	0.336	0.695	0.554	**44.6%**	**45.1%**
55	1970	W	5,344	6,705	1.262	1,241	4,103	0.23	0.77	57.1	0.887	0.793	0.788	0.023	0.865	**13.5%**	5,156	6,131	1.197	1,218	3938	0.24	0.76	61.2	0.892	0.839	0.790	0.234	0.880	**12.0%**	**12.7%**
56	1971	W	3,983	6,705	1.697	814	3,169	0.20	0.80	57.1	0.915	0.823	0.819	0.023	0.896	**10.4%**	3,822	7,888	2.081	690	3132	0.18	0.82	64.2	0.916	0.913	0.827	0.499	0.916	**8.4%**	**9.3%**
57	1972	B	3,664	4,806	1.323	832	2,831	0.23	0.77	58.9	0.926	0.823	0.817	0.032	0.902	**9.8%**	2,683	4,098	1.545	569	2114	0.21	0.79	66.0	0.947	0.903	0.836	0.411	0.938	**6.2%**	**7.8%**
58	1973	A	5,680	7,546	1.336	1,294	4,386	0.23	0.77	59.2	0.879	0.825	0.784	0.189	0.867	**13.3%**	5,156	6,717	1.311	1,181	3974	0.23	0.77	66.3	0.891	0.909	0.792	0.562	0.895	**10.5%**	**11.8%**
59	1974	W	7,663	9,428	1.235	1,798	5,865	0.23	0.77	56.9	0.834	0.786	0.749	0.150	0.823	**17.7%**	5,936	8,896	1.507	1,290	4646	0.22	0.78	66.1	0.871	0.927	0.785	0.661	0.883	**11.7%**	**14.4%**
60	1975	W	6,621	8,873	1.347	1,506	5,115	0.23	0.77	53.7	0.857	0.769	0.769	0.000	0.837	**16.3%**	5,936	8,896	1.507	1,290	4646	0.22	0.78	61.5	0.871	0.869	0.785	0.392	0.871	**12.9%**	**14.4%**
61	1976	C	1,983	3,176	1.628	407	1,576	0.21	0.79	57.8	0.963	0.847	0.847	0.000	0.939	**6.1%**	1,870	3,367	1.831	360	1510	0.19	0.81	65.8	0.965	0.905	0.851	0.362	0.954	**4.6%**	**5.3%**
62	1977	C	1,983	3,159	1.619	408	1,575	0.21	0.79	62.0	0.963	0.867	0.847	0.129	0.943	**5.7%**	1,870	960	0.522	510	1360	0.27	0.73	62.3	0.970	0.846	0.840	0.034	0.936	**6.4%**	**6.1%**
63	1978	A	14,923	7,613	0.511	4,189	10,734	0.28	0.72	61.4	0.688	0.714	0.579	0.321	0.696	**30.4%**	10,831	8,408	0.779	2,856	7976	0.26	0.74	66.9	0.771	0.897	0.674	0.683	0.804	**19.6%**	**24.5%**
64	1979	B	5,344	6,958	1.310	1,225	4,119	0.23	0.77	60.5	0.887	0.839	0.789	0.235	0.876	**12.4%**	5,156	6,213	1.212	1,213	3943	0.24	0.76	66.0	0.892	0.899	0.790	0.519	0.894	**10.6%**	**11.4%**
65	1980	A	6,722	7,058	1.055	1,651	5,071	0.25	0.75	60.1	0.858	0.811	0.759	0.217	0.847	**15.3%**	6,619	7,693	1.168	1,579	5040	0.24	0.76	66.6	0.859	0.913	0.764	0.629	0.872	**12.8%**	**13.9%**
66	1981	D	3,664	5,563	1.532	785	2,878	0.21	0.79	64.6	0.924	0.893	0.821	0.404	0.917	**8.3%**	2,683	3,724	1.404	593	2091	0.22	0.78	68.7	0.948	0.925	0.834	0.550	0.943	**5.7%**	**6.9%**
67	1982	W	27,023	9,277	0.344	7,881	19,142	0.29	0.71	52.8	0.436	0.317	0.317	0.000	0.401	**59.9%**	15,158	10,913	0.721	4,056	11101	0.27	0.73	65.1	0.677	0.879	0.588	0.706	0.731	**26.9%**	**41.7%**
68	1983	W	20,738	7,075	0.342	6,047	14,691	0.29	0.71	57.2	0.570	0.474	0.447	0.048	0.542	**45.8%**	19,077	7,758	0.407	5,483	13594	0.29	0.71	61.3	0.603	0.652	0.487	0.323	0.617	**38.3%**	**41.7%**
69	1984	W	5,344	6,958	1.310	1,225	4,119	0.23	0.77	60.7	0.887	0.841	0.789	0.247	0.876	**12.4%**	5,156	6,359	1.241	1,203	3952	0.23	0.77	66.0	0.892	0.901	0.791	0.526	0.894	**10.6%**	**11.4%**
70	1985	D	2,807	4,353	1.569	592	2,215	0.21	0.79	62.5	0.944	0.871	0.834	0.219	0.929	**7.1%**	2,683	4,456	1.680	547	2137	0.20	0.80	65.1	0.946	0.899	0.838	0.376	0.937	**6.3%**	**6.7%**
71	1986	W	9,814	7,663	0.783	2,583	7,231	0.26	0.74	61.3	0.794	0.790	0.693	0.318	0.793	**20.7%**	8,067	8,343	1.038	1,993	6074	0.25	0.75	65.8	0.828	0.898	0.735	0.616	0.845	**15.5%**	**17.8%**
72	1987	D	2,033	3,613	1.805	396	1,638	0.19	0.81	62.3	0.961	0.874	0.848	0.170	0.944	**5.6%**	1,870	3,041	1.654	380	1490	0.20	0.80	68.6	0.966	0.926	0.849	0.509	0.958	**4.2%**	**4.8%**
73	1988	C	1,983	2,958	1.516	421	1,562	0.21	0.79	62.1	0.964	0.866	0.846	0.125	0.943	**5.7%**	1,870	3,269	1.778	366	1504	0.20	0.80	63.7	0.965	0.885	0.850	0.234	0.950	**5.0%**	**5.3%**
74	1989	D	2,420	5,764	2.413	382	2,038	0.16	0.84	64.1	0.949	0.907	0.849	0.385	0.943	**5.7%**	1,887	4,147	2.236	316	1570	0.17	0.83	66.7	0.963	0.920	0.854	0.454	0.956	**4.4%**	**5.0%**
75	1990	C	1,983	3,697	1.895	375	1,608	0.19	0.81	60.6	0.962	0.861	0.850	0.075	0.943	**5.7%**	1,952	2,976	1.550	410	1542	0.21	0.79	63.9	0.964	0.882	0.847	0.231	0.947	**5.3%**	**5.5%**
76	1991	C	2,437	4,420	1.838	472	1,965	0.19	0.81	60.6	0.951	0.860	0.843	0.111	0.934	**6.6%**	1,984	3,171	1.624	408	1576	0.21	0.79	63.9	0.963	0.884	0.847	0.241	0.947	**5.3%**	**5.9%**
77	1992	C	2,252	3,899	1.756	446	1,806	0.20	0.80	60.6	0.956	0.858	0.845	0.085	0.937	**6.3%**	1,984	3,236	1.658	404	1580	0.20	0.80	63.9	0.963	0.885	0.848	0.244	0.947	**5.3%**	**5.8%**

78 Formulas: San Joaquin River Fall Run Smolt Survival Model WITHOUT BARRIER

	April	May	
79	C7 ='Study 469 Flow Data'!AB7	T7 ='Study 469 Flow Data'!AC7	**Average: 12.22%**
80	D7 ='Study 469 Flow Data'!G7 (HIDDEN)	U7 ='Study 469 Flow Data'!H7 (HIDDEN)	
81	E7 ='Study 469 Flow Data'!Q7 (HIDDEN)	V7 ='Study 469 Flow Data'!R7 (HIDDEN)	
82	F7 =D7+E7	W7 =U7+V7	
83	G7 =F7/(C7-0.03*$H$2)	X7 =W7/(T7-0.03*$H$3)	
84	H7 =IF((0.3137*C7-0.0156*$H$2-0.0625*F7)<0,0,(0.3137*C7-0.0156*$H$2-0.0625*F7))	Y7 =IF((0.3137*T7-0.0156*$H$3-0.0625*W7)<0,0,(0.3137*T7-0.0156*$H$3-0.0625*W7))	
85	I7 =C7-H7	Z7 =T7-Y7	
86	J7 =H7/C7	AA7 =Y7/T7	
87	K7 =I7/C7	AB7 =Z7/T7	
88	M7 =(1.01045-0.00003*I7)	AD7 =(1.01045-0.00003*Z7)	
89	N7 =(O7+P7)-(O7*P7)	AE7 =(AF7+AG7)-(AF7*AG7)	
90	O7 =(0.87634-0.000071*H7)	AF7 =(0.87634-0.000071*Y7)	
91	P7 =IF((-3.65867+0.058492*L7+0.000051*F7)<0,0,(-3.65867+0.058492*L7+0.000051*F7))	AG7 =IF((-3.65867+0.058492*AC7+0.000051*W7)<0,0,(-3.65867+0.058492*AC7+0.000051*W7))	
92	Q7 =((K7*M7)+(J7*N7))	AH7 =((AB7*AD7)+(AA7*AE7))	
93	R7 =(1-Q7)	AI7 =(1-AH7)	
94	Note: Calculated San Joaquin River flows at Stockton = 0.3137*(Vernalis flow) - 0.0156*(Consumptive Depletion) - 0.0625*(CVP/SWP Exports)	AK7 =0.45*R7+0.55*AI7	

Study 501 San Joaquin River Fall Run Salmon Smolt Survival Model WITHOUT BARRIER AT HEAD OF OLD RIVER

Consumptive Depletion for April 1053.00 cfs
Consumptive Depletion for May 1053.00 cfs

San Joaquin River temperatures based on limited historical data from USBR

APRIL

Year	Water Year Type	Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	Calculated Mortality m2	m34	m3	m4	m234	Calculated Survivability s234
1922	A	6,193	8,486	1.377	1,396	4,797	0.23	0.77	60.2	0.867	0.843	0.777	0.295	0.861	**13.9%**
1923	B	5,340	8,054	1.517	1,155	4,185	0.22	0.78	59.7	0.885	0.845	0.794	0.244	0.876	**12.4%**
1924	C	1,990	2,963	1.513	423	1,567	0.21	0.79	60.6	0.963	0.852	0.846	0.037	0.940	**6.0%**
1925	D	3,987	7,057	1.784	793	3,194	0.20	0.80	63.4	0.915	0.894	0.820	0.410	0.910	**9.0%**
1926	D	3,667	6,678	1.837	717	2,950	0.20	0.80	63.4	0.922	0.894	0.825	0.390	0.916	**8.4%**
1927	W	5,340	8,192	1.543	1,147	4,193	0.21	0.79	57.1	0.885	0.815	0.795	0.099	0.870	**13.0%**
1928	A	3,987	7,470	1.889	767	3,220	0.19	0.81	60.2	0.914	0.865	0.822	0.244	0.905	**9.5%**
1929	C	2,013	3,125	1.577	420	1,593	0.21	0.79	60.6	0.963	0.853	0.847	0.045	0.940	**6.0%**
1930	D	2,420	4,020	1.683	491	1,929	0.20	0.80	63.4	0.953	0.882	0.841	0.255	0.938	**6.2%**
1931	C	1,990	3,141	1.604	412	1,578	0.21	0.79	60.6	0.963	0.854	0.847	0.046	0.941	**5.9%**
1932	D	4,509	5,548	1.239	1,051	3,458	0.23	0.77	63.4	0.907	0.868	0.802	0.333	0.898	**10.2%**
1933	C	2,807	4,296	1.548	596	2,211	0.21	0.79	60.6	0.944	0.851	0.834	0.105	0.924	**7.6%**
1934	C	1,990	3,751	1.915	373	1,617	0.19	0.81	60.6	0.962	0.861	0.850	0.077	0.943	**5.7%**
1935	B	6,374	8,743	1.378	1,437	4,937	0.23	0.77	59.7	0.862	0.837	0.774	0.279	0.857	**14.3%**
1936	B	6,416	8,440	1.322	1,469	4,947	0.23	0.77	59.7	0.862	0.832	0.772	0.264	0.855	**14.5%**
1937	B	7,941	8,070	1.020	1,970	5,971	0.25	0.75	59.7	0.831	0.801	0.736	0.245	0.824	**17.6%**
1938	W	18,051	7,832	0.435	5,157	12,894	0.29	0.71	57.1	0.624	0.550	0.510	0.081	0.603	**39.7%**
1939	D	2,896	4,254	1.485	626	2,270	0.22	0.78	63.4	0.942	0.877	0.832	0.267	0.928	**7.2%**
1940	A	5,711	8,390	1.477	1,251	4,460	0.22	0.78	60.2	0.877	0.849	0.788	0.290	0.871	**12.9%**
1941	W	10,085	9,869	0.982	2,530	7,555	0.25	0.75	57.1	0.784	0.753	0.697	0.185	0.776	**22.4%**
1942	W	6,902	9,025	1.314	1,585	5,317	0.23	0.77	57.1	0.851	0.797	0.764	0.141	0.839	**16.1%**
1943	W	7,915	9,246	1.173	1,889	6,026	0.24	0.76	57.1	0.830	0.782	0.742	0.153	0.818	**18.2%**
1944	D	3,440	4,355	1.278	791	2,649	0.23	0.77	63.4	0.931	0.869	0.820	0.272	0.917	**8.3%**
1945	B	5,783	6,371	1.108	1,400	4,383	0.24	0.76	59.7	0.879	0.812	0.777	0.158	0.863	**13.7%**
1946	B	5,340	6,068	1.143	1,279	4,061	0.24	0.76	59.7	0.889	0.816	0.785	0.143	0.871	**12.9%**
1947	D	3,667	5,018	1.380	820	2,847	0.22	0.78	63.4	0.925	0.874	0.818	0.306	0.914	**8.6%**
1948	B	3,987	6,929	1.752	801	3,186	0.20	0.80	59.7	0.915	0.853	0.819	0.187	0.902	**9.8%**
1949	D	3,987	5,196	1.314	910	3,077	0.23	0.77	63.4	0.918	0.871	0.812	0.315	0.907	**9.3%**
1950	B	3,987	6,316	1.597	840	3,147	0.21	0.79	59.7	0.916	0.845	0.817	0.155	0.901	**9.9%**
1951	A	5,340	6,487	1.222	1,253	4,087	0.23	0.77	60.2	0.888	0.828	0.787	0.193	0.874	**12.6%**
1952	W	10,838	7,954	0.736	2,886	7,952	0.27	0.73	57.1	0.772	0.700	0.671	0.087	0.753	**24.7%**
1953	W	3,987	5,757	1.455	874	3,113	0.22	0.78	57.1	0.917	0.814	0.814	0.000	0.895	**10.5%**
1954	A	3,987	7,470	1.889	767	3,220	0.19	0.81	60.2	0.914	0.865	0.822	0.244	0.905	**9.5%**
1955	D	2,807	3,780	1.362	628	2,179	0.22	0.78	63.4	0.945	0.873	0.832	0.243	0.929	**7.1%**
1956	W	6,193	8,089	1.313	1,421	4,772	0.23	0.77	57.1	0.867	0.797	0.775	0.094	0.851	**14.9%**
1957	A	3,987	6,554	1.657	825	3,162	0.21	0.79	60.2	0.916	0.854	0.818	0.197	0.903	**9.7%**
1958	W	14,907	9,623	0.647	4,058	10,849	0.27	0.73	57.1	0.685	0.659	0.588	0.172	0.678	**32.2%**
1959	B	2,807	3,895	1.403	621	2,186	0.22	0.78	59.7	0.945	0.838	0.832	0.032	0.921	**7.9%**
1960	D	2,420	4,133	1.730	484	1,936	0.20	0.80	63.4	0.952	0.883	0.842	0.261	0.939	**6.1%**
1961	D	1,990	3,650	1.864	380	1,610	0.19	0.81	63.4	0.962	0.885	0.849	0.236	0.947	**5.3%**
1962	B	4,211	5,704	1.365	948	3,263	0.23	0.77	59.7	0.913	0.833	0.809	0.124	0.895	**10.5%**
1963	W	5,340	8,192	1.543	1,147	4,193	0.21	0.79	57.1	0.885	0.815	0.795	0.099	0.870	**13.0%**
1964	D	2,807	3,619	1.304	638	2,169	0.23	0.77	63.4	0.945	0.871	0.831	0.234	0.928	**7.2%**
1965	W	6,193	8,647	1.403	1,386	4,807	0.22	0.78	57.1	0.866	0.805	0.778	0.122	0.853	**14.7%**
1966	B	3,987	5,083	1.285	917	3,070	0.23	0.77	59.7	0.918	0.829	0.811	0.093	0.898	**10.2%**
1967	W	13,614	9,014	0.664	3,691	9,923	0.27	0.73	57.1	0.713	0.669	0.614	0.141	0.701	**29.9%**
1968	B	3,667	5,354	1.473	799	2,868	0.22	0.78	59.7	0.924	0.839	0.820	0.106	0.906	**9.4%**
1969	W	20,926	7,611	0.364	6,072	14,854	0.29	0.71	57.1	0.565	0.484	0.445	0.069	0.541	**45.9%**
1970	W	5,340	6,706	1.263	1,240	4,100	0.23	0.77	57.1	0.887	0.793	0.788	0.023	0.866	**13.4%**
1971	W	3,987	6,696	1.693	816	3,171	0.20	0.80	57.1	0.915	0.823	0.818	0.023	0.896	**10.4%**
1972	B	3,667	4,806	1.322	834	2,833	0.23	0.77	58.9	0.925	0.823	0.817	0.032	0.902	**9.8%**
1973	A	5,686	7,552	1.336	1,295	4,391	0.23	0.77	59.2	0.879	0.825	0.784	0.189	0.867	**13.3%**
1974	W	7,656	9,427	1.236	1,796	5,860	0.23	0.77	56.9	0.835	0.787	0.749	0.150	0.823	**17.7%**
1975	W	6,622	8,876	1.347	1,506	5,116	0.23	0.77	53.7	0.857	0.769	0.769	0.000	0.837	**16.3%**
1976	C	1,990	3,174	1.621	409	1,581	0.21	0.79	57.8	0.963	0.847	0.847	0.000	0.939	**6.1%**
1977	C	1,990	3,169	1.618	410	1,580	0.21	0.79	62.0	0.963	0.867	0.847	0.129	0.943	**5.7%**
1978	A	14,930	7,625	0.512	4,191	10,739	0.28	0.72	61.4	0.688	0.714	0.579	0.322	0.696	**30.4%**
1979	B	5,340	6,960	1.311	1,224	4,116	0.23	0.77	60.5	0.887	0.839	0.789	0.235	0.876	**12.4%**
1980	A	6,732	7,009	1.046	1,657	5,075	0.25	0.75	60.1	0.858	0.810	0.759	0.214	0.846	**15.4%**
1981	D	3,667	5,558	1.529	787	2,880	0.21	0.79	64.6	0.924	0.893	0.820	0.403	0.917	**8.3%**
1982	W	27,030	9,052	0.335	7,897	19,133	0.29	0.71	52.8	0.436	0.316	0.316	0.000	0.401	**59.9%**
1983	W	20,740	7,071	0.341	6,048	14,692	0.29	0.71	57.2	0.570	0.473	0.447	0.048	0.542	**45.8%**
1984	W	5,340	6,954	1.310	1,224	4,116	0.23	0.77	60.7	0.887	0.841	0.789	0.246	0.877	**12.3%**
1985	D	2,807	4,358	1.570	592	2,215	0.21	0.79	62.5	0.944	0.871	0.834	0.219	0.929	**7.1%**
1986	W	9,807	7,617	0.779	2,584	7,223	0.26	0.74	61.3	0.794	0.790	0.693	0.315	0.793	**20.7%**
1987	D	2,029	3,607	1.806	395	1,634	0.19	0.81	62.3	0.961	0.874	0.848	0.169	0.944	**5.6%**
1988	C	1,990	2,959	1.511	423	1,567	0.21	0.79	62.1	0.963	0.865	0.846	0.125	0.943	**5.7%**
1989	D	2,420	5,758	2.411	383	2,037	0.16	0.84	64.1	0.949	0.907	0.849	0.384	0.943	**5.7%**
1990	C	1,990	3,707	1.893	376	1,614	0.19	0.81	60.6	0.962	0.861	0.850	0.075	0.943	**5.7%**
1991	C	2,440	4,422	1.836	473	1,967	0.19	0.81	60.6	0.951	0.860	0.843	0.111	0.934	**6.6%**
1992	C	2,252	3,905	1.759	446	1,806	0.20	0.80	60.6	0.956	0.858	0.845	0.085	0.937	**6.3%**

MAY

Year	Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	Calculated Mortality m2	m34	m3	m4	m234	Calculated Survivability s234	Weighted total survival
1922	5,936	8,909	1.509	1,289	4647	0.22	0.78	66.6	0.871	0.934	0.785	0.691	0.885	**11.5%**	**12.6%**
1923	5,162	6,481	1.263	1,198	3964	0.23	0.77	66.0	0.892	0.902	0.791	0.532	0.894	**10.6%**	**11.4%**
1924	1,871	1,298	0.706	489	1382	0.26	0.74	63.9	0.969	0.865	0.842	0.145	0.942	**5.8%**	**5.9%**
1925	3,828	5,267	1.387	855	2973	0.22	0.78	67.3	0.921	0.916	0.816	0.546	0.920	**8.0%**	**8.4%**
1926	3,538	5,115	1.459	774	2764	0.22	0.78	67.3	0.928	0.918	0.821	0.539	0.925	**7.5%**	**7.9%**
1927	5,162	8,535	1.664	1,069	4093	0.21	0.79	64.2	0.888	0.907	0.800	0.532	0.892	**10.8%**	**11.8%**
1928	3,828	6,593	1.737	772	3056	0.20	0.80	66.6	0.919	0.924	0.822	0.573	0.920	**8.0%**	**8.7%**
1929	1,890	3,176	1.709	378	1512	0.20	0.80	63.9	0.965	0.886	0.850	0.241	0.949	**5.1%**	**5.5%**
1930	1,955	3,761	1.955	362	1593	0.19	0.81	67.3	0.963	0.921	0.851	0.470	0.955	**4.5%**	**5.3%**
1931	1,989	3,441	1.758	392	1597	0.20	0.80	63.9	0.963	0.887	0.848	0.254	0.948	**5.2%**	**5.6%**
1932	3,872	5,068	1.320	881	2991	0.23	0.77	67.3	0.921	0.914	0.814	0.536	0.919	**8.1%**	**9.1%**
1933	2,678	2,648	1.001	658	2020	0.25	0.75	63.9	0.950	0.866	0.830	0.214	0.929	**7.1%**	**7.3%**
1934	1,987	3,245	1.659	404	1583	0.20	0.80	63.9	0.963	0.885	0.848	0.244	0.947	**5.3%**	**5.5%**
1935	6,061	5,665	0.940	1,531	4530	0.25	0.75	66.0	0.875	0.882	0.768	0.491	0.876	**12.4%**	**13.2%**
1936	5,162	6,527	1.272	1,195	3967	0.23	0.77	66.0	0.891	0.903	0.791	0.535	0.894	**10.6%**	**12.3%**
1937	8,143	6,977	0.860	2,102	6041	0.26	0.74	66.0	0.829	0.879	0.727	0.558	0.842	**15.8%**	**16.6%**
1938	23,970	9,646	0.403	6,900	17070	0.29	0.71	64.2	0.498	0.747	0.386	0.588	0.570	**43.0%**	**41.5%**
1939	2,678	3,689	1.394	593	2085	0.22	0.78	67.3	0.948	0.911	0.834	0.466	0.940	**6.0%**	**6.5%**
1940	5,162	6,452	1.258	1,200	3962	0.23	0.77	66.6	0.892	0.909	0.791	0.566	0.896	**10.4%**	**11.6%**
1941	9,579	9,931	1.040	2,368	7211	0.25	0.75	64.2	0.794	0.884	0.708	0.603	0.816	**18.4%**	**20.2%**
1942	5,936	8,909	1.509	1,289	4647	0.22	0.78	64.2	0.871	0.903	0.785	0.551	0.878	**12.2%**	**14.0%**
1943	6,177	7,891	1.284	1,428	4749	0.23	0.77	64.2	0.868	0.887	0.775	0.499	0.872	**12.8%**	**15.2%**
1944	2,968	3,953	1.346	668	2300	0.22	0.78	67.3	0.941	0.911	0.829	0.479	0.935	**6.5%**	**7.3%**
1945	3,872	5,345	1.392	864	3008	0.22	0.78	66.0	0.920	0.903	0.815	0.474	0.916	**8.4%**	**10.8%**
1946	3,872	5,487	1.429	855	3017	0.22	0.78	66.0	0.920	0.904	0.816	0.482	0.917	**8.3%**	**10.4%**
1947	2,678	3,685	1.392	593	2085	0.22	0.78	67.3	0.948	0.911	0.834	0.466	0.940	**6.0%**	**7.2%**
1948	3,828	7,889	2.078	691	3137	0.18	0.82	66.0	0.916	0.932	0.827	0.604	0.919	**8.1%**	**8.8%**
1949	2,968	4,973	1.694	604	2364	0.20	0.80	67.3	0.940	0.922	0.833	0.531	0.936	**6.4%**	**7.7%**
1950	3,828	5,467	1.440	843	2985	0.22	0.78	66.0	0.921	0.905	0.817	0.481	0.917	**8.3%**	**9.0%**
1951	5,162	7,335	1.430	1,144	4018	0.22	0.78	66.6	0.890	0.920	0.795	0.611	0.897	**10.3%**	**11.4%**
1952	15,453	9,444	0.612	4,241	11212	0.27	0.73	64.2	0.674	0.821	0.575	0.578	0.714	**28.6%**	**26.8%**
1953	3,828	7,889	2.078	691	3137	0.18	0.82	64.2	0.916	0.913	0.827	0.499	0.916	**8.4%**	**9.4%**
1954	3,828	7,642	2.013	707	3121	0.18	0.82	66.6	0.917	0.935	0.826	0.627	0.920	**8.0%**	**8.7%**
1955	2,678	4,167	1.575	563	2115	0.21	0.79	67.3	0.947	0.917	0.836	0.490	0.941	**5.9%**	**6.5%**
1956	6,126	9,001	1.477	1,343	4783	0.22	0.78	64.2	0.867	0.903	0.781	0.556	0.875	**12.5%**	**13.6%**
1957	3,828	6,175	1.627	798	3030	0.21	0.79	66.6	0.920	0.919	0.820	0.552	0.919	**8.1%**	**8.8%**
1958	13,173	10,851	0.826	3,438	9735	0.26	0.74	64.2	0.718	0.871	0.632	0.650	0.758	**24.2%**	**27.8%**
1959	2,678	3,901	1.474	580	2098	0.22	0.78	66.0	0.948	0.901	0.835	0.401	0.937	**6.3%**	**7.0%**
1960	1,872	3,570	1.940	348	1524	0.19	0.81	67.3	0.965	0.920	0.852	0.460	0.956	**4.4%**	**5.2%**
1961	1,897	3,119	1.672	384	1513	0.20	0.80	67.3	0.965	0.915	0.849	0.437	0.955	**4.5%**	**4.8%**
1962	3,828	5,541	1.460	838	2990	0.22	0.78	66.0	0.921	0.906	0.817	0.484	0.917	**8.3%**	**9.3%**
1963	5,162	8,535	1.664	1,069	4093	0.21	0.79	64.2	0.888	0.907	0.800	0.532	0.892	**10.8%**	**11.8%**
1964	2,678	4,093	1.547	568	2110	0.21	0.79	67.3	0.947	0.916	0.836	0.487	0.941	**5.9%**	**6.5%**
1965	5,936	8,064	1.366	1,342	4594	0.23	0.77	64.2	0.873	0.892	0.781	0.508	0.877	**12.3%**	**13.4%**
1966	2,968	4,985	1.698	603	2365	0.20	0.80	66.0	0.940	0.909	0.834	0.456	0.933	**6.7%**	**8.3%**
1967	16,000	9,649	0.604	4,400	11600	0.27	0.73	64.2	0.662	0.821	0.564	0.589	0.706	**29.4%**	**29.6%**
1968	2,678	3,867	1.461	582	2096	0.22	0.78	66.0	0.948	0.901	0.835	0.399	0.937	**6.3%**	**7.7%**
1969	26,143	9,215	0.353	7,609	18534	0.29	0.71	66.4	0.454	0.798	0.336	0.695	0.554	**44.6%**	**45.2%**
1970	5,162	6,129	1.195	1,220	3942	0.24	0.76	61.2	0.892	0.839	0.790	0.234	0.880	**12.0%**	**12.7%**
1971	3,828	7,889	2.078	691	3137	0.18	0.82	64.2	0.916	0.913	0.827	0.499	0.916	**8.4%**	**9.3%**
1972	2,678	4,097	1.548	568	2110	0.21	0.79	66.0	0.947	0.903	0.836	0.411	0.938	**6.2%**	**7.8%**
1973	5,162	6,723	1.310	1,183	3979	0.23	0.77	66.3	0.891	0.909	0.792	0.562	0.895	**10.5%**	**11.8%**
1974	5,936	8,909	1.509	1,289	4647	0.22	0.78	66.1	0.871	0.927	0.785	0.662	0.883	**11.7%**	**14.4%**
1975	5,936	8,909	1.509	1,289	4647	0.22	0.78	61.5	0.871	0.869	0.785	0.393	0.871	**12.9%**	**14.4%**
1976	1,871	3,372	1.833	360	1511	0.19	0.81	65.8	0.965	0.905	0.851	0.362	0.954	**4.6%**	**5.3%**
1977	1,871	961	0.522	510	1361	0.27	0.73	62.3	0.970	0.846	0.840	0.034	0.936	**6.4%**	**6.1%**
1978	10,832	8,418	0.779	2,855	7977	0.26	0.74	66.9	0.771	0.897	0.674	0.684	0.804	**19.6%**	**24.5%**
1979	5,162	6,213	1.211	1,215	3947	0.24	0.76	66.0	0.892	0.899	0.790	0.519	0.894	**10.6%**	**11.4%**
1980	6,622	7,685	1.166	1,581	5041	0.24	0.76	66.6	0.859	0.912	0.764	0.629	0.872	**12.8%**	**14.0%**
1981	2,678	3,717	1.405	591	2087	0.22	0.78	68.7	0.948	0.925	0.834	0.549	0.943	**5.7%**	**6.9%**
1982	15,159	10,917	0.722	4,057	11102	0.27	0.73	65.1	0.677	0.879	0.588	0.706	0.731	**26.9%**	**41.7%**
1983	19,079	7,752	0.407	5,484	13595	0.29	0.71	61.3	0.603	0.652	0.487	0.322	0.617	**38.3%**	**41.7%**
1984	5,162	6,345	1.237	1,206	3956	0.23	0.77	66.0	0.892	0.901	0.791	0.525	0.894	**10.6%**	**11.4%**
1985	2,678	4,455	1.683	545	2133	0.20	0.80	65.1	0.946	0.899	0.838	0.376	0.937	**6.3%**	**6.7%**
1986	8,069	8,340	1.038	1,994	6075	0.25	0.75	65.8	0.828	0.898	0.735	0.615	0.845	**15.5%**	**17.8%**
1987	1,871	3,051	1.659	380	1491	0.20	0.80	68.6	0.966	0.926	0.849	0.509	0.958	**4.2%**	**4.8%**
1988	1,871	3,281	1.784	365	1506	0.20	0.80	63.7	0.965	0.885	0.850	0.235	0.950	**5.0%**	**5.3%**
1989	1,881	4,145	2.241	315	1566	0.17	0.83	66.7	0.963	0.920	0.854	0.454	0.956	**4.4%**	**5.0%**
1990	1,948	2,977	1.553	409	1539	0.21	0.79	63.9	0.964	0.883	0.847	0.231	0.947	**5.3%**	**5.5%**
1991	1,984	3,180	1.629	407	1577	0.21	0.79	63.9	0.963	0.884	0.847	0.241	0.947	**5.3%**	**5.9%**
1992	1,991	3,239	1.653	406	1585	0.20	0.80	63.9	0.963	0.885	0.848	0.244	0.947	**5.3%**	**5.8%**

Average: 12.24%

Formulas: San Joaquin River Fall Run Smolt Survival Model WITHOUT BARRIER

C7 ='Study 468 Flow Data'!AB7
D7 ='Study 468 Flow Data'!G7 (HIDDEN)
E7 ='Study 468 Flow Data'!Q7 (HIDDEN)
F7 =D7+E7
G7 =F7/(C7-0.03*$H$2)
H7 =IF((0.3137*C7-0.0156*$H$2-0.0625*F7)<0,0,(0.3137*C7-0.0156*$H$2-0.0625*F7))
I7 =C7-H7
J7 =H7/C7
K7 =I7/C7
M7 =(1.01045-0.00003*I7)
N7 =(O7+P7)-(O7*P7)
O7 =(0.87634-0.000071*H7)
P7 =IF((-3.65867+0.058492*L7+0.000051*F7)<0,0,(-3.65867+0.058492*L7+0.000051*F7))
Q7 =((K7*M7)+(J7*N7))
R7 =(1-Q7)

T7 ='Study 468 Flow Data'!AC7
U7 ='Study 468 Flow Data'!H7 (HIDDEN)
V7 ='Study 468 Flow Data'!R7 (HIDDEN)
W7 =U7+V7
X7 =W7/(T7-0.03*$H$3)
Y7 =IF((0.3137*T7-0.0156*$H$3-0.0625*W7)<0,0,(0.3137*T7-0.0156*$H$3-0.0625*W7))
Z7 =T7-Y7
AA7 =Y7/T7
AB7 =Z7/T7
AD7 =(1.01045-0.00003*Z7)
AE7 =(AF7+AG7)-(AF7*AG7)
AF7 =(0.87634-0.000071*Y7)
AG7 =IF((-3.65867+0.058492*AC7+0.000051*W7)<0,0,(-3.65867+0.058492*AC7+0.000051*W7))
AH7 =((AB7*AD7)+(AA7*AE7))
AI7 =(1-AH7)
AK7 =0.45*R7+0.55*AI7

Note: Calculated San Joaquin River flows at Stockton = 0.3137*(Vernalis flow) - 0.0156*(Consumptive Depletion) - 0.0625*(CVP/SWP Exports)

Study 501a San Joaquin River Fall Run Salmon Smolt Survival Model WITHOUT BARRIER AT HEAD OF OLD RIVER

Consumptive Depletion for April 1053.00 cfs
Consumptive Depletion for May 1053.00 cfs

San Joaquin River temperatures based on limited historical data from USBR

APRIL

Row	Year (A)	Water Year Type (B)	Vernalis Flows (C)	CVP + SWP exports (F)	exp/v-cd (G)	Calculated Stockton Q (H)	UOldR Flow (I)	p3 Stkn (J)	p2 UOldR (K)	Temp @ Jersey Pt. (L)	Calculated Mortality m2 (M)	m34 (N)	m3 (O)	m4 (P)	m234 (Q)	Calculated Survivability s234 (R)
7	1922	A	6,193	6,904	1.121	1,495	4,698	0.24	0.76	60.2	0.870	0.820	0.770	0.215	0.857	**14.3%**
8	1923	B	5,340	6,834	1.287	1,232	4,108	0.23	0.77	59.7	0.887	0.827	0.789	0.182	0.873	**12.7%**
9	1924	C	1,990	2,682	1.369	440	1,550	0.22	0.78	60.6	0.964	0.849	0.845	0.023	0.938	**6.2%**
10	1925	D	3,987	5,650	1.428	881	3,106	0.22	0.78	63.4	0.917	0.877	0.814	0.338	0.908	**9.2%**
11	1926	D	3,667	5,196	1.429	809	2,858	0.22	0.78	63.4	0.925	0.876	0.819	0.315	0.914	**8.6%**
12	1927	W	5,340	6,838	1.288	1,231	4,109	0.23	0.77	57.1	0.887	0.795	0.789	0.030	0.866	**13.4%**
13	1928	A	3,987	6,476	1.637	830	3,157	0.21	0.79	60.2	0.916	0.853	0.817	0.193	0.903	**9.7%**
14	1929	C	2,013	2,832	1.429	438	1,575	0.22	0.78	60.6	0.963	0.850	0.845	0.030	0.939	**6.1%**
15	1930	D	2,420	3,577	1.498	519	1,901	0.21	0.79	63.4	0.953	0.877	0.839	0.232	0.937	**6.3%**
16	1931	C	1,990	2,853	1.457	430	1,560	0.22	0.78	60.6	0.964	0.851	0.846	0.031	0.939	**6.1%**
17	1932	D	4,509	4,182	0.934	1,137	3,372	0.25	0.75	63.4	0.909	0.849	0.796	0.263	0.894	**10.6%**
18	1933	C	2,807	3,486	1.256	646	2,161	0.23	0.77	60.6	0.946	0.841	0.830	0.064	0.922	**7.8%**
19	1934	C	1,990	3,474	1.774	391	1,599	0.20	0.80	60.6	0.962	0.858	0.849	0.063	0.942	**5.8%**
20	1935	B	6,375	7,117	1.122	1,539	4,836	0.24	0.76	59.7	0.865	0.813	0.767	0.196	0.853	**14.7%**
21	1936	B	6,414	6,801	1.066	1,571	4,843	0.24	0.76	59.7	0.865	0.807	0.765	0.180	0.851	**14.9%**
22	1937	B	7,941	7,533	0.952	2,004	5,937	0.25	0.75	59.7	0.832	0.792	0.734	0.217	0.822	**17.8%**
23	1938	W	18,051	7,897	0.438	5,153	12,898	0.29	0.71	57.1	0.623	0.552	0.511	0.084	0.603	**39.7%**
24	1939	D	2,896	3,433	1.199	677	2,219	0.23	0.77	63.4	0.944	0.867	0.828	0.225	0.926	**7.4%**
25	1940	A	5,708	6,941	1.223	1,340	4,368	0.23	0.77	60.2	0.879	0.829	0.781	0.217	0.867	**13.3%**
26	1941	W	10,085	8,102	0.806	2,641	7,444	0.26	0.74	57.1	0.787	0.718	0.689	0.094	0.769	**23.1%**
27	1942	W	6,902	7,254	1.056	1,695	5,207	0.25	0.75	57.1	0.854	0.768	0.756	0.051	0.833	**16.7%**
28	1943	W	7,916	7,524	0.954	1,997	5,919	0.25	0.75	57.1	0.833	0.752	0.735	0.065	0.812	**18.8%**
29	1944	D	3,987	3,742	0.946	1,000	2,987	0.25	0.75	63.4	0.921	0.852	0.805	0.241	0.904	**9.6%**
30	1945	B	5,781	4,898	0.852	1,491	4,290	0.26	0.74	59.7	0.882	0.790	0.770	0.083	0.858	**14.2%**
31	1946	B	5,340	4,714	0.888	1,364	3,976	0.26	0.74	59.7	0.891	0.796	0.779	0.074	0.867	**13.3%**
32	1947	D	3,667	4,093	1.126	878	2,789	0.24	0.76	63.4	0.927	0.862	0.814	0.258	0.911	**8.9%**
33	1948	B	3,987	5,869	1.484	867	3,120	0.22	0.78	59.7	0.917	0.839	0.815	0.133	0.900	**10.0%**
34	1949	D	3,987	4,183	1.058	973	3,014	0.24	0.76	63.4	0.920	0.858	0.807	0.263	0.905	**9.5%**
35	1950	B	3,987	5,266	1.331	905	3,082	0.23	0.77	59.7	0.918	0.831	0.812	0.102	0.898	**10.2%**
36	1951	A	5,340	5,115	0.964	1,339	4,001	0.25	0.75	60.2	0.890	0.808	0.781	0.123	0.870	**13.0%**
37	1952	W	10,838	8,013	0.742	2,883	7,955	0.27	0.73	57.1	0.772	0.701	0.672	0.090	0.753	**24.7%**
38	1953	W	3,987	4,764	1.204	937	3,050	0.23	0.77	57.1	0.919	0.810	0.810	0.000	0.893	**10.7%**
39	1954	A	3,987	6,476	1.637	830	3,157	0.21	0.79	60.2	0.916	0.853	0.817	0.193	0.903	**9.7%**
40	1955	D	2,807	3,129	1.127	669	2,138	0.24	0.76	63.4	0.946	0.865	0.829	0.209	0.927	**7.3%**
41	1956	W	6,193	6,507	1.056	1,520	4,673	0.25	0.75	57.1	0.870	0.771	0.768	0.013	0.846	**15.4%**
42	1957	A	3,987	5,341	1.350	900	3,087	0.23	0.77	60.2	0.918	0.838	0.812	0.135	0.900	**10.0%**
43	1958	W	14,907	9,389	0.631	4,073	10,834	0.27	0.73	57.1	0.685	0.653	0.587	0.160	0.677	**32.3%**
44	1959	B	2,807	3,130	1.128	669	2,138	0.24	0.76	59.7	0.946	0.829	0.829	0.000	0.918	**8.2%**
45	1960	D	2,420	3,626	1.518	516	1,904	0.21	0.79	63.4	0.953	0.877	0.840	0.235	0.937	**6.3%**
46	1961	D	1,990	3,391	1.732	396	1,594	0.20	0.80	63.4	0.963	0.882	0.848	0.223	0.947	**5.3%**
47	1962	B	4,211	4,444	1.063	1,027	3,184	0.24	0.76	59.7	0.915	0.815	0.803	0.060	0.891	**10.9%**
48	1963	W	5,340	6,838	1.288	1,231	4,109	0.23	0.77	57.1	0.887	0.795	0.789	0.030	0.866	**13.4%**
49	1964	D	2,807	2,991	1.078	677	2,130	0.24	0.76	63.4	0.947	0.863	0.828	0.202	0.926	**7.4%**
50	1965	W	6,193	7,049	1.144	1,486	4,707	0.24	0.76	57.1	0.869	0.780	0.771	0.041	0.848	**15.2%**
51	1966	B	3,987	4,528	1.145	951	3,036	0.24	0.76	59.7	0.919	0.821	0.809	0.064	0.896	**10.4%**
52	1967	W	13,614	8,655	0.637	3,713	9,901	0.27	0.73	57.1	0.713	0.660	0.613	0.123	0.699	**30.1%**
53	1968	B	3,667	4,250	1.169	868	2,799	0.24	0.76	59.7	0.926	0.824	0.815	0.050	0.902	**9.8%**
54	1969	W	20,926	7,680	0.368	6,068	14,858	0.29	0.71	57.1	0.565	0.486	0.446	0.073	0.542	**45.8%**
55	1970	W	5,340	5,075	0.956	1,342	3,998	0.25	0.75	57.1	0.890	0.781	0.781	0.000	0.863	**13.7%**
56	1971	W	3,987	5,514	1.394	890	3,097	0.22	0.78	57.1	0.918	0.813	0.813	0.000	0.894	**10.6%**
57	1972	B	3,667	3,886	1.069	891	2,776	0.24	0.76	58.9	0.927	0.813	0.813	0.000	0.899	**10.1%**
58	1973	A	5,693	6,109	1.079	1,388	4,305	0.24	0.76	59.2	0.881	0.804	0.778	0.116	0.862	**13.8%**
59	1974	W	7,656	7,455	0.978	1,919	5,737	0.25	0.75	56.9	0.838	0.753	0.740	0.050	0.817	**18.3%**
60	1975	W	6,622	7,179	1.089	1,612	5,010	0.24	0.76	53.7	0.860	0.762	0.762	0.000	0.836	**16.4%**
61	1976	C	1,990	2,965	1.514	423	1,567	0.21	0.79	57.8	0.963	0.846	0.846	0.000	0.939	**6.1%**
62	1977	C	1,990	2,871	1.466	428	1,562	0.22	0.78	62.0	0.964	0.864	0.846	0.114	0.942	**5.8%**
63	1978	A	14,930	7,693	0.516	4,186	10,744	0.28	0.72	61.4	0.688	0.716	0.579	0.325	0.696	**30.4%**
64	1979	B	5,340	5,606	1.056	1,308	4,032	0.25	0.75	60.5	0.890	0.819	0.783	0.166	0.872	**12.8%**
65	1980	A	6,734	6,531	0.974	1,688	5,046	0.25	0.75	60.1	0.859	0.803	0.757	0.190	0.845	**15.5%**
66	1981	D	3,667	4,650	1.279	843	2,824	0.23	0.77	64.6	0.926	0.882	0.816	0.357	0.916	**8.4%**
67	1982	W	27,030	9,122	0.338	7,893	19,137	0.29	0.71	52.8	0.436	0.316	0.316	0.000	0.401	**59.9%**
68	1983	W	20,740	7,141	0.345	6,043	14,697	0.29	0.71	57.2	0.570	0.476	0.447	0.051	0.542	**45.8%**
69	1984	W	5,340	5,321	1.002	1,326	4,014	0.25	0.75	60.7	0.890	0.818	0.782	0.163	0.872	**12.8%**
70	1985	D	3,667	3,885	1.069	891	2,776	0.24	0.76	62.5	0.927	0.850	0.813	0.195	0.908	**9.2%**
71	1986	W	9,806	7,708	0.789	2,578	7,228	0.26	0.74	61.3	0.794	0.791	0.693	0.320	0.793	**20.7%**
72	1987	D	2,029	3,357	1.681	410	1,619	0.20	0.80	62.3	0.962	0.871	0.847	0.157	0.944	**5.6%**
73	1988	C	1,990	2,714	1.386	438	1,552	0.22	0.78	62.1	0.964	0.863	0.845	0.112	0.942	**5.8%**
74	1989	D	2,420	5,331	2.232	410	2,010	0.17	0.83	64.1	0.950	0.903	0.847	0.363	0.942	**5.8%**
75	1990	C	1,990	3,438	1.756	393	1,597	0.20	0.80	60.6	0.963	0.858	0.848	0.061	0.942	**5.8%**
76	1991	C	2,440	3,942	1.637	503	1,937	0.21	0.79	60.6	0.952	0.855	0.841	0.087	0.932	**6.8%**
77	1992	C	2,252	3,453	1.555	474	1,778	0.21	0.79	60.6	0.957	0.852	0.843	0.062	0.935	**6.5%**

MAY

Row	Year	Vernalis Flows (T)	CVP + SWP exports (W)	exp/v-cd (X)	Calculated Stockton Q (Y)	UOldR Flow (Z)	p3 Stkn (AA)	p2 UOldR (AB)	Temp @ Jersey Pt. (AC)	Calculated Mortality m2 (AD)	m34 (AE)	m3 (AF)	m4 (AG)	m234 (AH)	Calculated Survivability s234 (AI)	Weighted total survival (AK)
7	1922	5,936	7,545	1.278	1,374	4562	0.23	0.77	66.6	0.874	0.916	0.779	0.622	0.883	**11.7%**	**12.8%**
8	1923	5,162	5,303	1.034	1,271	3891	0.25	0.75	66.0	0.894	0.887	0.786	0.472	0.892	**10.8%**	**11.6%**
9	1924	1,871	1,365	0.742	485	1386	0.26	0.74	63.9	0.969	0.865	0.842	0.149	0.942	**5.8%**	**6.0%**
10	1925	3,828	4,178	1.101	923	2905	0.24	0.76	67.3	0.923	0.904	0.811	0.491	0.919	**8.1%**	**8.6%**
11	1926	3,538	4,253	1.213	828	2710	0.23	0.77	67.3	0.929	0.908	0.818	0.495	0.924	**7.6%**	**8.0%**
12	1927	5,162	7,358	1.434	1,143	4019	0.22	0.78	64.2	0.890	0.892	0.795	0.472	0.890	**11.0%**	**12.1%**
13	1928	3,828	5,500	1.449	841	2987	0.22	0.78	66.6	0.921	0.912	0.817	0.517	0.919	**8.1%**	**8.8%**
14	1929	1,890	3,179	1.711	378	1512	0.20	0.80	63.9	0.965	0.886	0.850	0.241	0.949	**5.1%**	**5.6%**
15	1930	1,955	3,541	1.841	376	1579	0.19	0.81	67.3	0.963	0.919	0.850	0.458	0.955	**4.5%**	**5.3%**
16	1931	1,989	3,177	1.623	409	1580	0.21	0.79	63.9	0.963	0.884	0.847	0.241	0.947	**5.3%**	**5.7%**
17	1932	3,872	3,981	1.037	949	2923	0.25	0.75	67.3	0.923	0.901	0.809	0.481	0.917	**8.3%**	**9.3%**
18	1933	2,678	2,937	1.110	640	2038	0.24	0.76	63.9	0.949	0.870	0.831	0.229	0.930	**7.0%**	**7.4%**
19	1934	1,987	2,994	1.531	420	1567	0.21	0.79	63.9	0.963	0.882	0.847	0.232	0.946	**5.4%**	**5.6%**
20	1935	6,061	5,985	0.993	1,511	4550	0.25	0.75	66.0	0.874	0.886	0.769	0.507	0.877	**12.3%**	**13.4%**
21	1936	5,162	6,119	1.193	1,220	3942	0.24	0.76	66.0	0.892	0.898	0.790	0.514	0.894	**10.6%**	**12.6%**
22	1937	8,143	6,905	0.851	2,106	6037	0.26	0.74	66.0	0.829	0.878	0.727	0.554	0.842	**15.8%**	**16.7%**
23	1938	23,970	9,711	0.406	6,896	17074	0.29	0.71	64.2	0.498	0.750	0.387	0.592	0.571	**42.9%**	**41.5%**
24	1939	2,678	3,070	1.160	632	2046	0.24	0.76	67.3	0.949	0.905	0.831	0.434	0.939	**6.1%**	**6.7%**
25	1940	5,162	6,092	1.187	1,222	3940	0.24	0.76	66.6	0.892	0.905	0.790	0.548	0.895	**10.5%**	**11.7%**
26	1941	9,579	8,427	0.883	2,462	7117	0.26	0.74	64.2	0.797	0.859	0.702	0.526	0.813	**18.7%**	**20.7%**
27	1942	5,936	7,545	1.278	1,374	4562	0.23	0.77	64.2	0.874	0.885	0.779	0.481	0.876	**12.4%**	**14.3%**
28	1943	6,176	6,960	1.133	1,486	4690	0.24	0.76	64.2	0.870	0.874	0.771	0.451	0.871	**12.9%**	**15.5%**
29	1944	2,968	3,315	1.129	707	2261	0.24	0.76	67.3	0.943	0.904	0.826	0.447	0.933	**6.7%**	**8.0%**
30	1945	5,162	4,906	0.956	1,296	3866	0.25	0.75	66.0	0.894	0.882	0.784	0.452	0.891	**10.9%**	**12.4%**
31	1946	3,872	4,416	1.150	922	2950	0.24	0.76	66.0	0.922	0.892	0.811	0.427	0.915	**8.5%**	**10.7%**
32	1947	2,678	3,166	1.196	626	2052	0.23	0.77	67.3	0.949	0.906	0.832	0.439	0.939	**6.1%**	**7.4%**
33	1948	3,828	6,778	1.785	761	3067	0.20	0.80	66.0	0.918	0.920	0.822	0.547	0.919	**8.1%**	**9.0%**
34	1949	2,968	4,157	1.416	655	2313	0.22	0.78	67.3	0.941	0.913	0.830	0.490	0.935	**6.5%**	**7.9%**
35	1950	3,828	4,597	1.211	897	2931	0.23	0.77	66.0	0.923	0.894	0.813	0.436	0.916	**8.4%**	**9.2%**
36	1951	5,162	6,172	1.203	1,217	3945	0.24	0.76	66.6	0.892	0.906	0.790	0.552	0.895	**10.5%**	**11.6%**
37	1952	15,453	9,510	0.617	4,237	11216	0.27	0.73	64.2	0.674	0.822	0.576	0.582	0.715	**28.5%**	**26.8%**
38	1953	3,828	7,035	1.853	745	3083	0.19	0.81	64.2	0.918	0.904	0.823	0.455	0.915	**8.5%**	**9.5%**
39	1954	3,828	6,540	1.723	776	3052	0.20	0.80	66.6	0.919	0.923	0.821	0.570	0.920	**8.0%**	**8.8%**
40	1955	2,678	3,465	1.309	607	2071	0.23	0.77	67.3	0.948	0.909	0.833	0.455	0.939	**6.1%**	**6.6%**
41	1956	6,126	7,591	1.246	1,431	4695	0.23	0.77	64.2	0.870	0.884	0.775	0.484	0.873	**12.7%**	**13.9%**
42	1957	3,828	5,394	1.421	847	2981	0.22	0.78	66.6	0.921	0.910	0.816	0.512	0.919	**8.1%**	**9.0%**
43	1958	13,173	9,296	0.707	3,535	9638	0.27	0.73	64.2	0.721	0.839	0.625	0.571	0.753	**24.7%**	**28.1%**
44	1959	2,678	3,403	1.286	611	2067	0.23	0.77	66.0	0.948	0.896	0.833	0.375	0.936	**6.4%**	**7.2%**
45	1960	1,872	3,445	1.872	356	1516	0.19	0.81	67.3	0.965	0.919	0.851	0.454	0.956	**4.4%**	**5.2%**
46	1961	1,897	2,996	1.606	391	1506	0.21	0.79	67.3	0.965	0.914	0.849	0.431	0.955	**4.5%**	**4.9%**
47	1962	3,828	4,502	1.186	903	2925	0.24	0.76	66.0	0.923	0.893	0.812	0.431	0.916	**8.4%**	**9.6%**
48	1963	5,162	7,358	1.434	1,143	4019	0.22	0.78	64.2	0.890	0.892	0.795	0.472	0.890	**11.0%**	**12.1%**
49	1964	2,678	3,595	1.358	599	2079	0.22	0.78	67.3	0.948	0.910	0.834	0.461	0.940	**6.0%**	**6.6%**
50	1965	5,936	7,529	1.275	1,375	4561	0.23	0.77	64.2	0.874	0.885	0.779	0.480	0.876	**12.4%**	**13.7%**
51	1966	2,968	4,119	1.403	657	2311	0.22	0.78	66.0	0.941	0.900	0.830	0.412	0.932	**6.8%**	**8.4%**
52	1967	16,000	9,713	0.608	4,396	11604	0.27	0.73	64.2	0.662	0.822	0.564	0.592	0.706	**29.4%**	**29.7%**
53	1968	2,678	3,369	1.273	613	2065	0.23	0.77	66.0	0.949	0.895	0.833	0.374	0.936	**6.4%**	**7.9%**
54	1969	26,143	9,287	0.356	7,604	18539	0.29	0.71	66.4	0.454	0.800	0.336	0.699	0.555	**44.5%**	**45.1%**
55	1970	5,162	4,953	0.965	1,293	3869	0.25	0.75	61.2	0.894	0.822	0.785	0.174	0.876	**12.4%**	**13.0%**
56	1971	3,828	7,035	1.853	745	3083	0.19	0.81	64.2	0.918	0.904	0.823	0.455	0.915	**8.5%**	**9.4%**
57	1972	2,678	3,539	1.337	602	2076	0.22	0.78	66.0	0.948	0.897	0.834	0.382	0.937	**6.3%**	**8.0%**
58	1973	5,162	5,548	1.081	1,256	3906	0.24	0.76	66.3	0.893	0.894	0.787	0.502	0.893	**10.7%**	**12.1%**
59	1974	5,936	7,545	1.278	1,374	4562	0.23	0.77	66.1	0.874	0.910	0.779	0.592	0.882	**11.8%**	**14.7%**
60	1975	5,936	7,545	1.278	1,374	4562	0.23	0.77	61.5	0.874	0.850	0.779	0.323	0.868	**13.2%**	**14.6%**
61	1976	1,871	3,201	1.740	370	1501	0.20	0.80	65.8	0.965	0.903	0.850	0.353	0.953	**4.7%**	**5.3%**
62	1977	1,871	1,007	0.547	508	1363	0.27	0.73	62.3	0.970	0.846	0.840	0.037	0.936	**6.4%**	**6.1%**
63	1978	10,833	8,490	0.786	2,851	7982	0.26	0.74	66.9	0.771	0.898	0.674	0.687	0.804	**19.6%**	**24.4%**
64	1979	5,162	5,037	0.982	1,288	3874	0.25	0.75	66.0	0.894	0.884	0.785	0.459	0.892	**10.8%**	**11.7%**
65	1980	6,621	6,155	0.934	1,676	4945	0.25	0.75	66.6	0.862	0.891	0.757	0.551	0.869	**13.1%**	**14.2%**
66	1981	2,678	3,219	1.216	622	2056	0.23	0.77	68.7	0.949	0.920	0.832	0.524	0.942	**5.8%**	**7.0%**
67	1982	15,159	9,776	0.646	4,128	11031	0.27	0.73	65.1	0.680	0.853	0.583	0.648	0.727	**27.3%**	**42.0%**
68	1983	19,079	7,825	0.411	5,480	13599	0.29	0.71	61.3	0.602	0.654	0.487	0.326	0.617	**38.3%**	**41.6%**
69	1984	5,162	5,454	1.063	1,262	3900	0.24	0.76	66.0	0.893	0.889	0.787	0.480	0.892	**10.8%**	**11.7%**
70	1985	2,678	3,830	1.447	584	2094	0.22	0.78	65.1	0.948	0.892	0.835	0.344	0.935	**6.5%**	**7.7%**
71	1986	8,067	6,463	0.804	2,110	5957	0.26	0.74	65.8	0.832	0.869	0.727	0.520	0.841	**15.9%**	**18.0%**
72	1987	1,871	2,884	1.568	390	1481	0.21	0.79	68.6	0.966	0.924	0.849	0.501	0.957	**4.3%**	**4.9%**
73	1988	1,871	3,072	1.670	379	1492	0.20	0.80	63.7	0.966	0.883	0.849	0.224	0.949	**5.1%**	**5.4%**
74	1989	1,879	3,966	2.147	325	1554	0.17	0.83	66.7	0.964	0.919	0.853	0.445	0.956	**4.4%**	**5.0%**
75	1990	1,948	2,757	1.439	422	1526	0.22	0.78	63.9	0.965	0.880	0.846	0.220	0.946	**5.4%**	**5.6%**
76	1991	1,984	2,967	1.520	421	1563	0.21	0.79	63.9	0.964	0.882	0.846	0.230	0.946	**5.4%**	**6.0%**
77	1992	1,991	2,978	1.520	422	1569	0.21	0.79	63.9	0.963	0.882	0.846	0.231	0.946	**5.4%**	**5.9%**

Average: 12.44%

78 Formulas: San Joaquin River Fall Run Smolt Survival Model WITHOUT BARRIER

79 C7 ='Study 468 Flow Data'!AB7 — T7 ='Study 468 Flow Data'!AC7
80 D7 ='Study 468 Flow Data'!G7 (HIDDEN) — U7 ='Study 468 Flow Data'!H7 (HIDDEN)
81 E7 ='Study 468 Flow Data'!Q7 (HIDDEN) — V7 ='Study 468 Flow Data'!R7 (HIDDEN)
82 F7 =D7+E7 — W7 =U7+V7
83 G7 =F7/(C7-0.03*$H$2) — X7 =W7/(T7-0.03*$H$3)
84 H7 =IF((0.3137*C7-0.0156*$H$2-0.0625*F7)<0,0,(0.3137*C7-0.0156*$H$2-0.0625*F7)) — Y7 =IF((0.3137*T7-0.0156*$H$3-0.0625*W7)<0,0,(0.3137*T7-0.0156*$H$3-0.0625*W7))
85 I7 =C7-H7 — Z7 =T7-Y7
86 J7 =H7/C7 — AA7 =Y7/T7
87 K7 =I7/C7 — AB7 =Z7/T7
88 M7 =(1.01045-0.00003*I7) — AD7 =(1.01045-0.00003*Z7)
89 N7 =(O7+P7)-(O7*P7) — AE7 =(AF7+AG7)-(AF7*AG7)
90 O7 =(0.87634-0.000071*H7) — AF7 =(0.87634-0.000071*Y7)
91 P7 =IF((-3.65867+0.058492*L7+0.000051*F7)<0,0,(-3.65867+0.058492*L7+0.000051*F7)) — AG7 =IF((-3.65867+0.058492*AC7+0.000051*W7)<0,0,(-3.65867+0.058492*AC7+0.000051*W7))
92 Q7 =((K7*M7)+(J7*N7)) — AH7 =((AB7*AD7)+(AA7*AE7))
93 R7 =(1-Q7) — AI7 =(1-AH7)
94 Note: Calculated San Joaquin River flows at Stockton = 0.3137*(Vernalis flow) - 0.0156*(Consumptive Depletion) - 0.0625*(CVP/SWP Exports) — AK7 =0.45*R7+0.55*AI7

Study 524 San Joaquin River Fall Run Salmon Smolt Survival Model WITHOUT BARRIER AT HEAD OF OLD RIVER

Consumptive Depletion for April 1053.00 cfs
Consumptive Depletion for May 1053.00 cfs

San Joaquin River temperatures based on limited historical data from USBR

APRIL

Year	Water Year Type	Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	JOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	m2	Calculated Mortality m34	m3	m4	m234	Calculated Survivability s234
1922	A	6,193	8,555	1.388	1,392	4,801	0.22	0.78	60.2	0.866	0.844	0.778	0.299	0.861	13.9%
1923	B	5,340	8,259	1.556	1,143	4,197	0.21	0.79	59.7	0.885	0.847	0.795	0.255	0.877	12.3%
1924	C	1,990	2,994	1.529	421	1,569	0.21	0.79	60.6	0.963	0.852	0.846	0.039	0.940	6.0%
1925	D	3,987	6,711	1.697	815	3,172	0.20	0.80	63.4	0.915	0.890	0.818	0.392	0.910	9.0%
1926	D	3,667	6,216	1.710	745	2,922	0.20	0.80	63.4	0.923	0.888	0.823	0.367	0.916	8.4%
1927	W	5,340	8,262	1.556	1,142	4,198	0.21	0.79	57.1	0.885	0.816	0.795	0.103	0.870	13.0%
1928	A	3,987	7,540	1.906	763	3,224	0.19	0.81	60.2	0.914	0.866	0.822	0.247	0.905	9.5%
1929	C	2,016	3,158	1.591	419	1,597	0.21	0.79	60.6	0.963	0.854	0.847	0.047	0.940	6.0%
1930	D	2,420	4,068	1.703	488	1,932	0.20	0.80	63.4	0.953	0.882	0.842	0.257	0.938	6.2%
1931	C	1,990	3,165	1.616	410	1,580	0.21	0.79	60.6	0.963	0.854	0.847	0.047	0.941	5.9%
1932	D	4,511	5,605	1.251	1,048	3,463	0.23	0.77	63.4	0.907	0.868	0.802	0.336	0.898	10.2%
1933	C	2,807	4,318	1.556	594	2,213	0.21	0.79	60.6	0.944	0.852	0.834	0.106	0.925	7.5%
1934	C	1,990	3,786	1.933	371	1,619	0.19	0.81	60.6	0.962	0.862	0.850	0.079	0.943	5.7%
1935	B	6,376	8,815	1.389	1,433	4,943	0.22	0.78	59.7	0.862	0.838	0.775	0.283	0.857	14.3%
1936	B	6,415	8,471	1.327	1,467	4,948	0.23	0.77	59.7	0.862	0.833	0.772	0.265	0.855	14.5%
1937	B	7,940	8,160	1.032	1,964	5,976	0.25	0.75	59.7	0.831	0.803	0.737	0.249	0.824	17.6%
1938	W	18,051	7,897	0.438	5,153	12,898	0.29	0.71	57.1	0.623	0.552	0.511	0.084	0.603	39.7%
1939	D	2,896	4,320	1.508	622	2,274	0.21	0.79	63.4	0.942	0.877	0.832	0.270	0.928	7.2%
1940	A	5,733	8,476	1.487	1,252	4,481	0.22	0.78	60.2	0.876	0.850	0.787	0.295	0.870	13.0%
1941	W	10,084	9,938	0.989	2,526	7,558	0.25	0.75	57.1	0.784	0.754	0.697	0.188	0.776	22.4%
1942	W	6,902	9,094	1.324	1,580	5,322	0.23	0.77	57.1	0.851	0.798	0.764	0.145	0.839	16.1%
1943	W	7,915	9,319	1.182	1,884	6,031	0.24	0.76	57.1	0.830	0.783	0.743	0.156	0.818	18.2%
1944	D	3,441	4,425	1.298	786	2,655	0.23	0.77	63.4	0.931	0.870	0.821	0.275	0.917	8.3%
1945	B	5,781	6,440	1.120	1,395	4,386	0.24	0.76	59.7	0.879	0.813	0.777	0.162	0.863	13.7%
1946	B	5,340	6,138	1.156	1,275	4,065	0.24	0.76	59.7	0.889	0.817	0.786	0.146	0.871	12.9%
1947	D	3,667	5,071	1.395	817	2,850	0.22	0.78	63.4	0.925	0.874	0.818	0.308	0.914	8.6%
1948	B	3,987	6,934	1.753	801	3,186	0.20	0.80	59.7	0.915	0.853	0.819	0.187	0.902	9.8%
1949	D	3,987	5,246	1.326	906	3,081	0.23	0.77	63.4	0.918	0.872	0.812	0.317	0.907	9.3%
1950	B	3,987	6,334	1.601	838	3,149	0.21	0.79	59.7	0.916	0.845	0.817	0.156	0.901	9.9%
1951	A	5,340	6,539	1.232	1,250	4,090	0.23	0.77	60.2	0.888	0.829	0.788	0.196	0.874	12.6%
1952	W	10,838	8,016	0.742	2,882	7,956	0.27	0.73	57.1	0.772	0.701	0.672	0.090	0.753	24.7%
1953	W	3,987	5,826	1.473	870	3,117	0.22	0.78	57.1	0.917	0.815	0.815	0.000	0.895	10.5%
1954	A	3,987	7,540	1.906	763	3,224	0.19	0.81	60.2	0.914	0.866	0.822	0.247	0.905	9.5%
1955	D	2,807	3,825	1.378	625	2,182	0.22	0.78	63.4	0.945	0.873	0.832	0.245	0.929	7.1%
1956	W	6,193	8,158	1.324	1,416	4,777	0.23	0.77	57.1	0.867	0.798	0.776	0.097	0.851	14.9%
1957	A	3,987	6,595	1.667	822	3,165	0.21	0.79	60.2	0.916	0.854	0.818	0.199	0.903	9.7%
1958	W	14,907	9,665	0.650	4,056	10,851	0.27	0.73	57.1	0.685	0.660	0.588	0.174	0.678	32.2%
1959	B	2,807	3,963	1.428	616	2,191	0.22	0.78	59.7	0.945	0.839	0.833	0.035	0.921	7.9%
1960	D	2,420	4,191	1.755	481	1,939	0.20	0.80	63.4	0.952	0.884	0.842	0.263	0.939	6.1%
1961	D	1,990	3,700	1.889	377	1,613	0.19	0.81	63.4	0.962	0.885	0.850	0.238	0.948	5.2%
1962	B	4,219	5,791	1.383	945	3,274	0.22	0.78	59.7	0.912	0.834	0.809	0.129	0.895	10.5%
1963	W	5,358	8,272	1.553	1,147	4,211	0.21	0.79	57.1	0.884	0.816	0.795	0.103	0.870	13.0%
1964	D	2,807	3,688	1.329	634	2,173	0.23	0.77	63.4	0.945	0.871	0.831	0.238	0.929	7.1%
1965	W	6,193	8,699	1.412	1,383	4,810	0.22	0.78	57.1	0.866	0.806	0.778	0.125	0.853	14.7%
1966	B	3,987	5,799	1.466	872	3,115	0.22	0.78	59.7	0.917	0.838	0.814	0.129	0.900	10.0%
1967	W	13,614	8,648	0.637	3,714	9,900	0.27	0.73	57.1	0.713	0.660	0.613	0.122	0.699	30.1%
1968	B	3,667	5,418	1.490	795	2,872	0.22	0.78	59.7	0.924	0.840	0.820	0.110	0.906	9.4%
1969	W	20,926	7,680	0.368	6,068	14,858	0.29	0.71	57.1	0.565	0.486	0.446	0.073	0.542	45.8%
1970	W	5,340	6,776	1.276	1,235	4,105	0.23	0.77	57.1	0.887	0.794	0.789	0.027	0.866	13.4%
1971	W	3,987	6,741	1.704	813	3,174	0.20	0.80	57.1	0.915	0.823	0.819	0.025	0.896	10.4%
1972	B	3,667	4,863	1.338	830	2,837	0.23	0.77	58.9	0.925	0.824	0.817	0.035	0.902	9.8%
1973	A	5,697	7,630	1.347	1,294	4,403	0.23	0.77	59.2	0.878	0.826	0.784	0.193	0.866	13.4%
1974	W	7,655	9,496	1.246	1,791	5,864	0.23	0.77	56.9	0.835	0.788	0.749	0.154	0.824	17.6%
1975	W	6,622	8,945	1.357	1,502	5,120	0.23	0.77	53.7	0.857	0.770	0.770	0.000	0.837	16.3%
1976	C	1,990	3,225	1.647	406	1,584	0.20	0.80	57.8	0.963	0.847	0.847	0.000	0.939	6.1%
1977	C	1,990	3,184	1.626	409	1,581	0.21	0.79	62.0	0.963	0.867	0.847	0.130	0.943	5.7%
1978	A	14,930	7,695	0.516	4,186	10,744	0.28	0.72	61.4	0.688	0.716	0.579	0.325	0.696	30.4%
1979	B	5,340	7,029	1.324	1,219	4,121	0.23	0.77	60.5	0.887	0.840	0.790	0.239	0.876	12.4%
1980	A	6,735	7,063	1.054	1,655	5,080	0.25	0.75	60.1	0.858	0.811	0.759	0.217	0.847	15.3%
1981	D	3,667	5,628	1.548	782	2,885	0.21	0.79	64.6	0.924	0.894	0.821	0.407	0.917	8.3%
1982	W	27,030	9,123	0.338	7,893	19,137	0.29	0.71	52.8	0.436	0.316	0.316	0.000	0.401	59.9%
1983	W	20,740	7,141	0.345	6,043	14,697	0.29	0.71	57.2	0.570	0.476	0.447	0.051	0.542	45.8%
1984	W	5,340	7,022	1.323	1,220	4,120	0.23	0.77	60.7	0.887	0.842	0.790	0.250	0.877	12.3%
1985	D	2,807	4,264	1.536	598	2,209	0.21	0.79	62.5	0.944	0.870	0.834	0.215	0.928	7.2%
1986	W	9,806	7,705	0.788	2,578	7,228	0.26	0.74	61.3	0.794	0.791	0.693	0.320	0.793	20.7%
1987	D	2,028	3,656	1.831	391	1,637	0.19	0.81	62.3	0.961	0.875	0.849	0.172	0.945	5.5%
1988	C	1,990	2,980	1.522	422	1,568	0.21	0.79	62.1	0.963	0.866	0.846	0.126	0.943	5.7%
1989	D	2,420	5,825	2.439	379	2,041	0.16	0.84	64.1	0.949	0.908	0.849	0.388	0.943	5.7%
1990	C	1,990	3,750	1.915	373	1,617	0.19	0.81	60.6	0.962	0.861	0.850	0.077	0.943	5.7%
1991	C	2,440	4,443	1.845	471	1,969	0.19	0.81	60.6	0.951	0.861	0.843	0.113	0.934	6.6%
1992	C	2,254	3,933	1.770	445	1,809	0.20	0.80	60.6	0.956	0.858	0.845	0.087	0.937	6.3%

MAY

Year	Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	m2	Calculated Mortality m34	m3	m4	m234	Calculated Survivability s234	Weighted total survival
1922	5,936	8,981	1.521	1,284	4652	0.22	0.78	66.6	0.871	0.934	0.785	0.695	0.885	11.5%	12.6%
1923	5,162	6,552	1.277	1,193	3969	0.23	0.77	66.0	0.891	0.903	0.792	0.536	0.894	10.6%	11.4%
1924	1,871	1,606	0.873	470	1401	0.25	0.75	63.9	0.968	0.868	0.843	0.161	0.943	5.7%	5.8%
1925	3,828	5,101	1.344	866	2962	0.23	0.77	67.3	0.922	0.914	0.815	0.538	0.920	8.0%	8.4%
1926	3,538	5,328	1.520	760	2778	0.21	0.79	67.3	0.927	0.920	0.822	0.550	0.926	7.4%	7.9%
1927	5,162	8,607	1.678	1,065	4097	0.21	0.79	64.2	0.888	0.907	0.801	0.535	0.892	10.8%	11.8%
1928	3,828	6,660	1.754	768	3060	0.20	0.80	66.6	0.919	0.925	0.822	0.577	0.920	8.0%	8.7%
1929	1,892	3,364	1.808	367	1525	0.19	0.81	63.9	0.965	0.888	0.850	0.251	0.950	5.0%	5.5%
1930	1,956	3,812	1.981	359	1597	0.18	0.82	67.3	0.963	0.921	0.851	0.472	0.955	4.5%	5.3%
1931	1,989	3,466	1.771	391	1598	0.20	0.80	63.9	0.963	0.887	0.849	0.256	0.948	5.2%	5.5%
1932	3,872	5,126	1.335	878	2994	0.23	0.77	67.3	0.921	0.914	0.814	0.539	0.919	8.1%	9.0%
1933	2,678	2,777	1.049	650	2028	0.24	0.76	63.9	0.950	0.868	0.830	0.221	0.930	7.0%	7.3%
1934	1,988	3,282	1.678	402	1586	0.20	0.80	63.9	0.963	0.885	0.848	0.246	0.947	5.3%	5.5%
1935	6,072	5,712	0.946	1,531	4541	0.25	0.75	66.0	0.874	0.882	0.768	0.493	0.876	12.4%	13.3%
1936	5,162	6,602	1.287	1,190	3972	0.23	0.77	66.0	0.891	0.904	0.792	0.539	0.894	10.6%	12.3%
1937	8,143	7,053	0.870	2,097	6046	0.26	0.74	66.0	0.829	0.880	0.727	0.562	0.842	15.8%	16.6%
1938	23,970	9,712	0.406	6,896	17074	0.29	0.71	64.2	0.498	0.750	0.387	0.592	0.571	42.9%	41.5%
1939	2,678	3,758	1.420	589	2089	0.22	0.78	67.3	0.948	0.912	0.835	0.469	0.940	6.0%	6.5%
1940	5,162	6,546	1.276	1,194	3968	0.23	0.77	66.6	0.891	0.911	0.792	0.571	0.896	10.4%	11.6%
1941	9,579	10,442	1.094	2,336	7243	0.24	0.76	64.2	0.793	0.893	0.710	0.629	0.817	18.3%	20.1%
1942	5,936	8,981	1.521	1,284	4652	0.22	0.78	64.2	0.871	0.904	0.785	0.555	0.878	12.2%	14.0%
1943	6,176	7,966	1.296	1,423	4753	0.23	0.77	64.2	0.868	0.888	0.775	0.503	0.873	12.7%	15.2%
1944	2,968	4,025	1.371	663	2305	0.22	0.78	67.3	0.941	0.912	0.829	0.483	0.935	6.5%	7.3%
1945	3,872	5,366	1.397	863	3009	0.22	0.78	66.0	0.920	0.903	0.815	0.475	0.916	8.4%	10.8%
1946	3,872	5,559	1.448	851	3021	0.22	0.78	66.0	0.920	0.905	0.816	0.485	0.917	8.3%	10.4%
1947	2,678	3,739	1.413	590	2088	0.22	0.78	67.3	0.948	0.912	0.834	0.469	0.940	6.0%	7.2%
1948	3,828	7,872	2.074	692	3136	0.18	0.82	66.0	0.916	0.931	0.827	0.603	0.919	8.1%	8.8%
1949	2,968	5,024	1.711	601	2367	0.20	0.80	67.3	0.939	0.923	0.834	0.534	0.936	6.4%	7.7%
1950	3,828	5,645	1.487	832	2996	0.22	0.78	66.0	0.921	0.907	0.817	0.490	0.918	8.2%	9.0%
1951	5,162	7,421	1.446	1,139	4023	0.22	0.78	66.6	0.890	0.921	0.795	0.615	0.897	10.3%	11.3%
1952	15,453	9,513	0.617	4,237	11216	0.27	0.73	64.2	0.674	0.822	0.576	0.582	0.715	28.5%	26.8%
1953	3,828	7,961	2.097	687	3141	0.18	0.82	64.2	0.916	0.914	0.828	0.503	0.916	8.4%	9.4%
1954	3,828	7,708	2.030	703	3125	0.18	0.82	66.6	0.917	0.936	0.826	0.630	0.920	8.0%	8.7%
1955	2,678	4,034	1.524	572	2106	0.21	0.79	67.3	0.947	0.915	0.836	0.484	0.940	6.0%	6.5%
1956	6,126	9,073	1.489	1,338	4788	0.22	0.78	64.2	0.867	0.904	0.781	0.559	0.875	12.5%	13.6%
1957	3,828	6,242	1.644	794	3034	0.21	0.79	66.6	0.919	0.920	0.820	0.555	0.920	8.0%	8.8%
1958	13,173	10,910	0.830	3,434	9739	0.26	0.74	64.2	0.718	0.872	0.633	0.653	0.758	24.2%	27.8%
1959	2,678	3,973	1.501	575	2103	0.21	0.79	66.0	0.947	0.902	0.835	0.404	0.938	6.2%	7.0%
1960	1,872	3,624	1.969	344	1528	0.18	0.82	67.3	0.965	0.920	0.852	0.463	0.956	4.4%	5.2%
1961	1,897	3,172	1.700	380	1517	0.20	0.80	67.3	0.965	0.916	0.849	0.440	0.955	4.5%	4.8%
1962	3,828	5,630	1.483	833	2995	0.22	0.78	66.0	0.921	0.907	0.817	0.489	0.918	8.2%	9.3%
1963	5,162	8,608	1.678	1,065	4097	0.21	0.79	64.2	0.888	0.907	0.801	0.536	0.892	10.8%	11.8%
1964	2,678	4,042	1.527	571	2107	0.21	0.79	67.3	0.947	0.915	0.836	0.484	0.940	6.0%	6.5%
1965	5,936	8,063	1.366	1,342	4594	0.23	0.77	64.2	0.873	0.892	0.781	0.508	0.877	12.3%	13.4%
1966	2,968	4,987	1.698	603	2365	0.20	0.80	66.0	0.939	0.909	0.834	0.456	0.933	6.7%	8.2%
1967	16,000	9,705	0.608	4,396	11604	0.27	0.73	64.2	0.662	0.822	0.564	0.591	0.706	29.4%	29.7%
1968	2,678	3,939	1.488	577	2101	0.22	0.78	66.0	0.947	0.902	0.835	0.403	0.938	6.2%	7.7%
1969	26,143	9,287	0.356	7,604	18539	0.29	0.71	66.4	0.454	0.800	0.336	0.699	0.555	44.5%	45.1%
1970	5,162	6,202	1.209	1,215	3947	0.24	0.76	61.2	0.892	0.840	0.790	0.237	0.880	12.0%	12.7%
1971	3,828	7,961	2.097	687	3141	0.18	0.82	64.2	0.916	0.914	0.828	0.503	0.916	8.4%	9.3%
1972	2,678	4,158	1.571	564	2114	0.21	0.79	66.0	0.947	0.904	0.836	0.414	0.938	6.2%	7.8%
1973	5,162	6,796	1.325	1,178	3984	0.23	0.77	66.3	0.891	0.910	0.793	0.566	0.895	10.5%	11.8%
1974	5,936	8,981	1.521	1,284	4652	0.22	0.78	66.1	0.871	0.928	0.785	0.666	0.883	11.7%	14.4%
1975	5,936	8,981	1.521	1,284	4652	0.22	0.78	61.5	0.871	0.870	0.785	0.397	0.871	12.9%	14.4%
1976	1,871	3,426	1.863	356	1515	0.19	0.81	65.8	0.965	0.905	0.851	0.365	0.954	4.6%	5.3%
1977	1,871	987	0.537	509	1362	0.27	0.73	62.3	0.970	0.846	0.840	0.036	0.936	6.4%	6.1%
1978	10,833	8,492	0.786	2,851	7982	0.26	0.74	66.9	0.771	0.898	0.674	0.688	0.804	19.6%	24.4%
1979	5,162	6,285	1.225	1,210	3952	0.23	0.77	66.0	0.892	0.900	0.790	0.522	0.894	10.6%	11.4%
1980	6,621	7,757	1.177	1,576	5045	0.24	0.76	66.6	0.859	0.913	0.764	0.633	0.872	12.8%	13.9%
1981	2,678	3,789	1.432	587	2091	0.22	0.78	68.7	0.948	0.926	0.835	0.553	0.943	5.7%	6.9%
1982	15,159	10,991	0.727	4,052	11107	0.27	0.73	65.1	0.677	0.881	0.589	0.710	0.732	26.8%	41.7%
1983	19,079	7,825	0.411	5,480	13599	0.29	0.71	61.3	0.602	0.654	0.487	0.326	0.617	38.3%	41.6%
1984	5,162	6,417	1.251	1,202	3960	0.23	0.77	66.0	0.892	0.902	0.791	0.529	0.894	10.6%	11.4%
1985	2,678	4,529	1.711	541	2137	0.20	0.80	65.1	0.946	0.900	0.838	0.380	0.937	6.3%	6.7%
1986	8,067	8,414	1.047	1,988	6079	0.25	0.75	65.8	0.828	0.899	0.735	0.619	0.846	15.4%	17.8%
1987	1,871	3,102	1.686	377	1494	0.20	0.80	68.6	0.966	0.927	0.850	0.512	0.958	4.2%	4.8%
1988	1,871	3,304	1.796	364	1507	0.19	0.81	63.7	0.965	0.886	0.850	0.236	0.950	5.0%	5.3%
1989	1,880	4,219	2.283	310	1570	0.16	0.84	66.7	0.963	0.921	0.854	0.458	0.956	4.4%	5.0%
1990	1,941	3,020	1.582	404	1537	0.21	0.79	63.9	0.964	0.883	0.848	0.233	0.947	5.3%	5.5%
1991	1,984	3,201	1.640	406	1578	0.20	0.80	63.9	0.963	0.884	0.848	0.242	0.947	5.3%	5.9%
1992	1,984	3,263	1.671	402	1582	0.20	0.80	63.9	0.963	0.885	0.848	0.245	0.947	5.3%	5.7%

Formulas: San Joaquin River Fall Run Smolt Survival Model WITHOUT BARRIER

C7 ='Study 468 Flow Data'!AB7
D7 ='Study 468 Flow Data'!G7 (HIDDEN)
E7 ='Study 468 Flow Data'!Q7 (HIDDEN)
F7 =D7+E7
G7 =F7/(C7-0.03*$H$2)
H7 =IF((0.3137*C7-0.0156*$H$2-0.0625*F7)<0,0,(0.3137*C7-0.0156*$H$2-0.0625*F7))
I7 =C7-H7
J7 =H7/C7
K7 =I7/C7
M7 =(1.01045-0.00003*I7)
N7 =(O7+P7)-(O7*P7)
O7 =(0.87634-0.000071*H7)
P7 =IF((-3.65867+0.058492*L7+0.000051*F7)<0,0,(-3.65867+0.058492*L7+0.000051*F7))
Q7 =((K7*M7)+(J7*N7))
R7 =(1-Q7)

T7 ='Study 468 Flow Data'!AC7
U7 ='Study 468 Flow Data'!H7 (HIDDEN)
V7 ='Study 468 Flow Data'!R7 (HIDDEN)
W7 =U7+V7
X7 =W7/(T7-0.03*$H$3)
Y7 =IF((0.3137*T7-0.0156*$H$3-0.0625*W7)<0,0,(0.3137*T7-0.0156*$H$3-0.0625*W7))
Z7 =T7-Y7
AA7 =Y7/T7
AB7 =Z7/T7
AD7 =(1.01045-0.00003*Z7)
AE7 =(AF7+AG7)-(AF7*AG7)
AF7 =(0.87634-0.000071*Y7)
AG7 =IF((-3.65867+0.058492*AC7+0.000051*W7)<0,0,(-3.65867+0.058492*AC7+0.000051*W7))
AH7 =((AB7*AD7)+(AA7*AE7))
AI7 =(1-AH7)
AK7 =0.45*R7+0.55*AI7

Average: 12.23%

Note: Calculated San Joaquin River flows at Stockton = 0.3137*(Vernalis flow) - 0.0156*(Consumptive Depletion) - 0.0625*(CVP/SWP Exports)

Study 525 San Joaquin River Fall Run Salmon Smolt Survival Model WITHOUT BARRIER AT HEAD OF OLD RIVER

Consumptive Depletion for April 1053.00 cfs

Consumptive Depletion for May 1053.00 cfs

San Joaquin River temperatures based on limited historical data from USBR

APRIL

Year	Water Year Type	Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	JOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	m2	m34 (Calculated Mortality)	m3	m4	m234	Calculated Survivability s234
1922	A	5,942	9,751	1.650	1,238	4,704	0.21	0.79	60.2	0.869	0.865	0.788	0.360	0.868	13.2%
1923	B	4,751	10,439	2.212	822	3,929	0.17	0.83	59.7	0.893	0.885	0.818	0.366	0.891	10.9%
1924	C	1,847	4,401	2.424	288	1,559	0.16	0.84	60.6	0.964	0.872	0.856	0.110	0.949	5.1%
1925	D	3,812	9,603	2.540	579	3,233	0.15	0.85	63.4	0.913	0.924	0.835	0.539	0.915	8.5%
1926	D	3,203	8,565	2.701	453	2,750	0.14	0.86	63.4	0.928	0.920	0.844	0.487	0.927	7.3%
1927	W	5,246	10,432	2.001	977	4,269	0.19	0.81	57.1	0.882	0.848	0.807	0.213	0.876	12.4%
1928	A	4,828	10,311	2.150	854	3,974	0.18	0.82	60.2	0.891	0.887	0.816	0.388	0.891	10.9%
1929	C	1,909	4,789	2.551	283	1,626	0.15	0.85	60.6	0.962	0.875	0.856	0.130	0.949	5.1%
1930	D	2,043	6,266	3.115	233	1,810	0.11	0.89	63.4	0.956	0.912	0.860	0.369	0.951	4.9%
1931	C	1,768	4,887	2.814	233	1,535	0.13	0.87	60.6	0.964	0.879	0.860	0.135	0.953	4.7%
1932	D	4,961	7,115	1.443	1,095	3,866	0.22	0.78	63.4	0.894	0.882	0.799	0.413	0.892	10.8%
1933	C	2,537	6,635	2.648	365	2,172	0.14	0.86	60.6	0.945	0.884	0.850	0.224	0.936	6.4%
1934	C	1,868	6,052	3.296	191	1,677	0.10	0.90	60.6	0.960	0.889	0.863	0.195	0.953	4.7%
1935	B	7,470	11,277	1.516	1,622	5,848	0.22	0.78	59.7	0.835	0.859	0.761	0.408	0.840	16.0%
1936	B	7,230	10,004	1.390	1,626	5,604	0.22	0.78	59.7	0.842	0.843	0.761	0.344	0.842	15.8%
1937	B	8,137	8,135	1.004	2,028	6,109	0.25	0.75	59.7	0.827	0.799	0.732	0.248	0.820	18.0%
1938	W	17,260	7,899	0.458	4,904	12,356	0.28	0.72	57.1	0.640	0.568	0.528	0.084	0.619	38.1%
1939	D	3,067	6,519	2.148	538	2,529	0.18	0.82	63.4	0.935	0.900	0.838	0.382	0.929	7.1%
1940	A	5,896	11,087	1.891	1,140	4,756	0.19	0.81	60.2	0.868	0.883	0.795	0.428	0.871	12.9%
1941	W	9,293	9,938	1.073	2,278	7,015	0.25	0.75	57.1	0.800	0.768	0.715	0.188	0.792	20.8%
1942	W	6,111	10,259	1.687	1,259	4,852	0.21	0.79	57.1	0.865	0.830	0.787	0.204	0.858	14.2%
1943	W	7,123	9,306	1.312	1,636	5,487	0.23	0.77	57.1	0.846	0.798	0.760	0.156	0.835	16.5%
1944	D	3,715	5,588	1.517	800	2,915	0.22	0.78	63.4	0.923	0.880	0.820	0.335	0.914	8.6%
1945	B	5,985	7,266	1.220	1,407	4,578	0.24	0.76	59.7	0.873	0.822	0.776	0.204	0.861	13.9%
1946	B	4,345	6,444	1.494	944	3,401	0.22	0.78	59.7	0.908	0.840	0.809	0.162	0.894	10.6%
1947	D	2,559	5,839	2.310	421	2,138	0.16	0.84	63.4	0.946	0.900	0.846	0.348	0.939	6.1%
1948	B	3,720	10,031	2.720	524	3,196	0.14	0.86	59.7	0.915	0.895	0.839	0.345	0.912	8.8%
1949	D	3,410	6,305	1.866	659	2,751	0.19	0.81	63.4	0.928	0.893	0.830	0.371	0.921	7.9%
1950	B	3,364	8,521	2.557	506	2,858	0.15	0.85	59.7	0.925	0.883	0.840	0.268	0.918	8.2%
1951	A	3,940	8,305	2.125	700	3,240	0.18	0.82	60.2	0.913	0.876	0.827	0.286	0.907	9.3%
1952	W	10,046	8,015	0.800	2,634	7,412	0.26	0.74	57.1	0.788	0.717	0.689	0.090	0.770	23.0%
1953	W	3,147	7,352	2.360	511	2,636	0.16	0.84	57.1	0.931	0.849	0.840	0.056	0.918	8.2%
1954	A	4,407	10,780	2.464	692	3,715	0.16	0.84	60.2	0.899	0.898	0.827	0.412	0.899	10.1%
1955	D	2,430	4,685	1.953	453	1,977	0.19	0.81	63.4	0.951	0.889	0.844	0.289	0.940	6.0%
1956	W	3,995	9,378	2.366	651	3,344	0.16	0.84	57.1	0.910	0.857	0.830	0.160	0.902	9.8%
1957	A	2,941	8,815	3.030	355	2,586	0.12	0.88	60.2	0.933	0.898	0.851	0.312	0.929	7.1%
1958	W	14,115	9,666	0.686	3,807	10,308	0.27	0.73	57.1	0.701	0.675	0.606	0.174	0.694	30.6%
1959	B	2,563	5,686	2.246	432	2,131	0.17	0.83	59.7	0.947	0.865	0.846	0.123	0.933	6.7%
1960	D	2,167	4,419	2.069	387	1,780	0.18	0.82	63.4	0.957	0.890	0.849	0.275	0.945	5.5%
1961	D	1,825	6,427	3.584	154	1,671	0.08	0.92	63.4	0.960	0.916	0.865	0.377	0.957	4.3%
1962	B	4,446	6,125	1.388	995	3,451	0.22	0.78	59.7	0.907	0.834	0.806	0.146	0.891	10.9%
1963	W	5,599	11,399	2.047	1,028	4,571	0.18	0.82	57.1	0.873	0.855	0.803	0.263	0.870	13.0%
1964	D	2,464	4,443	1.827	479	1,985	0.19	0.81	63.4	0.951	0.886	0.842	0.276	0.938	6.2%
1965	W	6,168	9,554	1.557	1,321	4,847	0.21	0.79	57.1	0.865	0.819	0.783	0.168	0.855	14.5%
1966	B	3,014	8,668	2.906	387	2,627	0.13	0.87	59.7	0.932	0.890	0.849	0.275	0.926	7.4%
1967	W	12,822	8,656	0.677	3,465	9,357	0.27	0.73	57.1	0.730	0.676	0.630	0.123	0.715	28.5%
1968	B	2,645	8,183	3.131	302	2,343	0.11	0.89	59.7	0.940	0.891	0.855	0.251	0.935	6.5%
1969	W	20,135	7,680	0.382	5,820	14,315	0.29	0.71	57.1	0.581	0.502	0.463	0.073	0.558	44.2%
1970	W	4,327	8,670	2.018	799	3,528	0.18	0.82	57.1	0.905	0.842	0.820	0.123	0.893	10.7%
1971	W	2,935	9,463	3.259	313	2,622	0.11	0.89	57.1	0.932	0.878	0.854	0.164	0.926	7.4%
1972	B	2,339	6,255	2.711	326	2,013	0.14	0.86	58.9	0.950	0.869	0.853	0.106	0.939	6.1%
1973	A	5,937	9,746	1.650	1,237	4,700	0.21	0.79	59.2	0.869	0.852	0.789	0.301	0.866	13.4%
1974	W	6,864	10,429	1.526	1,485	5,379	0.22	0.78	56.9	0.849	0.817	0.771	0.201	0.842	15.8%
1975	W	5,830	11,032	1.903	1,123	4,707	0.19	0.81	53.7	0.869	0.806	0.797	0.045	0.857	14.3%
1976	C	1,907	4,886	2.605	276	1,631	0.14	0.86	57.8	0.962	0.857	0.857	0.000	0.946	5.4%
1977	C	1,653	4,955	3.056	192	1,461	0.12	0.88	62.0	0.967	0.893	0.863	0.221	0.958	4.2%
1978	A	15,169	7,695	0.508	4,261	10,908	0.28	0.72	61.4	0.683	0.712	0.574	0.325	0.691	30.9%
1979	B	5,518	8,624	1.572	1,176	4,342	0.21	0.79	60.5	0.880	0.859	0.793	0.320	0.876	12.4%
1980	A	5,943	7,054	1.193	1,407	4,536	0.24	0.76	60.1	0.874	0.825	0.776	0.216	0.863	13.7%
1981	D	2,996	8,521	2.874	391	2,605	0.13	0.87	64.6	0.932	0.933	0.849	0.554	0.932	6.8%
1982	W	27,142	9,124	0.337	7,928	19,214	0.29	0.71	52.8	0.434	0.313	0.313	0.000	0.399	60.1%
1983	W	19,948	7,141	0.359	5,795	14,153	0.29	0.71	57.2	0.586	0.492	0.465	0.051	0.559	44.1%
1984	W	3,925	8,775	2.254	666	3,259	0.17	0.83	60.7	0.913	0.887	0.829	0.339	0.908	9.2%
1985	D	2,722	5,697	2.118	481	2,241	0.18	0.82	62.5	0.943	0.888	0.842	0.288	0.933	6.7%
1986	W	9,017	7,558	0.841	2,340	6,677	0.26	0.74	61.3	0.810	0.801	0.710	0.312	0.808	19.2%
1987	D	2,011	6,187	3.126	228	1,783	0.11	0.89	62.3	0.957	0.902	0.860	0.301	0.951	4.9%
1988	C	1,808	4,493	2.529	270	1,538	0.15	0.85	62.1	0.964	0.886	0.857	0.203	0.953	4.7%
1989	D	1,961	9,353	4.848	14	1,947	0.01	0.99	64.1	0.952	0.946	0.875	0.568	0.952	4.8%
1990	C	1,834	6,466	3.587	155	1,679	0.08	0.92	60.6	0.960	0.894	0.865	0.216	0.955	4.5%
1991	C	2,349	6,999	3.020	283	2,066	0.12	0.88	60.6	0.948	0.891	0.856	0.243	0.942	5.8%
1992	C	2,230	6,155	2.800	298	1,932	0.13	0.87	60.6	0.953	0.884	0.855	0.200	0.943	5.7%

MAY

Year	Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	m2	m34 (Calculated Mortality)	m3	m4	m234	Calculated Survivability s234	Weighted total survival
1922	4,552	4,837	1.070	1,109	3443	0.24	0.76	66.6	0.907	0.895	0.798	0.484	0.904	9.6%	11.2%
1923	3,809	4,094	1.084	923	2886	0.24	0.76	66.0	0.924	0.889	0.811	0.411	0.915	8.5%	9.6%
1924	1,539	819	0.543	415	1124	0.27	0.73	63.9	0.977	0.865	0.847	0.121	0.947	5.3%	5.2%
1925	3,055	3,303	1.092	735	2320	0.24	0.76	67.3	0.941	0.903	0.824	0.446	0.932	6.8%	7.6%
1926	2,377	2,651	1.130	564	1813	0.24	0.76	67.3	0.956	0.904	0.836	0.413	0.944	5.6%	6.4%
1927	3,755	4,040	1.085	909	2846	0.24	0.76	64.2	0.925	0.869	0.812	0.303	0.911	8.9%	10.5%
1928	2,942	3,227	1.109	705	2237	0.24	0.76	66.6	0.943	0.896	0.826	0.401	0.932	6.8%	8.7%
1929	1,637	1,897	1.182	379	1258	0.23	0.77	63.9	0.973	0.876	0.849	0.176	0.950	5.0%	5.0%
1930	1,671	1,936	1.181	387	1284	0.23	0.77	67.3	0.972	0.906	0.849	0.377	0.957	4.3%	4.6%
1931	1,507	1,765	1.196	346	1161	0.23	0.77	63.9	0.976	0.877	0.852	0.169	0.953	4.7%	4.7%
1932	3,332	3,617	1.096	803	2529	0.24	0.76	67.3	0.935	0.903	0.819	0.462	0.927	7.3%	8.9%
1933	2,169	2,104	0.984	532	1637	0.25	0.75	63.9	0.961	0.869	0.839	0.186	0.939	6.1%	6.2%
1934	1,541	1,808	1.198	354	1187	0.23	0.77	63.9	0.975	0.877	0.851	0.171	0.952	4.8%	4.7%
1935	6,444	5,825	0.908	1,641	4803	0.25	0.75	66.0	0.866	0.880	0.760	0.499	0.870	13.0%	14.4%
1936	4,729	5,017	1.068	1,153	3576	0.24	0.76	66.0	0.903	0.889	0.794	0.458	0.900	10.0%	12.6%
1937	8,503	7,318	0.864	2,194	6309	0.26	0.74	66.0	0.821	0.881	0.721	0.575	0.837	16.3%	17.1%
1938	23,772	9,714	0.409	6,834	16938	0.29	0.71	64.2	0.502	0.752	0.391	0.592	0.574	42.6%	40.6%
1939	2,280	2,564	1.140	539	1741	0.24	0.76	67.3	0.958	0.904	0.838	0.409	0.945	5.5%	6.2%
1940	4,530	4,821	1.072	1,103	3427	0.24	0.76	66.6	0.908	0.896	0.798	0.483	0.905	9.5%	11.1%
1941	9,344	9,629	1.034	2,313	7031	0.25	0.75	64.2	0.800	0.881	0.712	0.588	0.820	18.0%	19.3%
1942	5,552	5,837	1.057	1,360	4192	0.25	0.75	64.2	0.885	0.867	0.780	0.394	0.880	12.0%	13.0%
1943	5,943	6,229	1.054	1,459	4484	0.25	0.75	64.2	0.876	0.867	0.773	0.414	0.874	12.6%	14.4%
1944	3,003	3,288	1.107	720	2283	0.24	0.76	67.3	0.942	0.903	0.825	0.446	0.933	6.7%	7.6%
1945	4,068	4,354	1.079	988	3080	0.24	0.76	66.0	0.918	0.888	0.806	0.424	0.911	8.9%	11.2%
1946	3,631	3,916	1.088	878	2753	0.24	0.76	66.0	0.928	0.889	0.814	0.402	0.918	8.2%	9.3%
1947	2,159	2,425	1.140	509	1650	0.24	0.76	67.3	0.961	0.904	0.840	0.402	0.948	5.2%	5.6%
1948	3,157	3,454	1.105	758	2399	0.24	0.76	66.0	0.938	0.890	0.823	0.378	0.927	7.3%	8.0%
1949	2,810	3,076	1.107	673	2137	0.24	0.76	67.3	0.946	0.903	0.829	0.435	0.936	6.4%	7.1%
1950	2,679	2,952	1.115	639	2040	0.24	0.76	66.0	0.949	0.891	0.831	0.352	0.935	6.5%	7.2%
1951	3,390	3,675	1.094	817	2573	0.24	0.76	66.6	0.933	0.895	0.818	0.424	0.924	7.6%	8.4%
1952	16,354	9,512	0.583	4,519	11835	0.28	0.72	64.2	0.655	0.814	0.555	0.582	0.699	30.1%	26.9%
1953	2,688	2,973	1.119	641	2047	0.24	0.76	64.2	0.949	0.873	0.831	0.248	0.931	6.9%	7.5%
1954	2,905	3,191	1.111	695	2210	0.24	0.76	66.6	0.944	0.896	0.827	0.400	0.933	6.7%	8.3%
1955	2,294	2,556	1.130	543	1751	0.24	0.76	67.3	0.958	0.904	0.838	0.408	0.945	5.5%	5.7%
1956	5,892	6,177	1.054	1,446	4446	0.25	0.75	64.2	0.877	0.867	0.774	0.412	0.875	12.5%	11.3%
1957	2,825	3,096	1.108	676	2149	0.24	0.76	66.6	0.946	0.896	0.828	0.395	0.934	6.6%	6.8%
1958	14,361	10,920	0.762	3,806	10555	0.27	0.73	64.2	0.694	0.863	0.606	0.653	0.739	26.1%	28.1%
1959	2,097	2,383	1.154	492	1605	0.23	0.77	66.0	0.962	0.893	0.841	0.323	0.946	5.4%	6.0%
1960	1,813	2,080	1.168	422	1391	0.23	0.77	67.3	0.969	0.905	0.846	0.384	0.954	4.6%	5.0%
1961	1,590	1,856	1.191	366	1224	0.23	0.77	67.3	0.974	0.906	0.850	0.372	0.958	4.2%	4.3%
1962	2,837	3,130	1.116	678	2159	0.24	0.76	66.0	0.946	0.890	0.828	0.361	0.932	6.8%	8.6%
1963	4,545	4,830	1.070	1,107	3438	0.24	0.76	64.2	0.907	0.867	0.798	0.343	0.898	10.2%	11.5%
1964	2,170	2,455	1.148	511	1659	0.24	0.76	67.3	0.961	0.905	0.840	0.403	0.947	5.3%	5.7%
1965	4,075	4,339	1.073	991	3084	0.24	0.76	64.2	0.918	0.868	0.806	0.318	0.906	9.4%	11.7%
1966	2,591	2,877	1.124	617	1974	0.24	0.76	66.0	0.951	0.891	0.833	0.349	0.937	6.3%	6.8%
1967	15,766	9,715	0.617	4,322	11444	0.27	0.73	64.2	0.667	0.824	0.569	0.592	0.710	29.0%	28.8%
1968	2,173	2,458	1.148	512	1661	0.24	0.76	66.0	0.961	0.892	0.840	0.327	0.945	5.5%	6.0%
1969	27,384	9,287	0.340	7,993	19391	0.29	0.71	66.4	0.429	0.792	0.309	0.699	0.535	46.5%	45.5%
1970	3,579	3,864	1.089	865	2714	0.24	0.76	61.2	0.929	0.837	0.815	0.118	0.907	9.3%	9.9%
1971	2,681	2,967	1.120	639	2042	0.24	0.76	64.2	0.949	0.873	0.831	0.248	0.931	6.9%	7.1%
1972	1,995	2,266	1.154	468	1527	0.23	0.77	66.0	0.965	0.893	0.843	0.317	0.948	5.2%	5.6%
1973	5,297	5,582	1.060	1,296	4001	0.24	0.76	66.3	0.890	0.893	0.784	0.504	0.891	10.9%	12.0%
1974	5,198	5,483	1.061	1,271	3927	0.24	0.76	66.1	0.893	0.890	0.786	0.487	0.892	10.8%	13.0%
1975	4,417	4,701	1.072	1,075	3342	0.24	0.76	61.5	0.910	0.836	0.800	0.178	0.892	10.8%	12.4%
1976	1,621	1,904	1.198	373	1248	0.23	0.77	65.8	0.973	0.893	0.850	0.287	0.955	4.5%	4.9%
1977	1,514	631	0.426	419	1095	0.28	0.72	62.3	0.978	0.849	0.847	0.018	0.942	5.8%	5.1%
1978	11,200	8,493	0.760	2,966	8234	0.26	0.74	66.9	0.763	0.896	0.666	0.688	0.798	20.2%	25.0%
1979	4,440	4,725	1.072	1,081	3359	0.24	0.76	66.0	0.910	0.888	0.800	0.443	0.904	9.6%	10.8%
1980	6,387	6,671	1.050	1,570	4817	0.25	0.75	66.6	0.866	0.901	0.765	0.577	0.874	12.6%	13.1%
1981	2,156	2,441	1.149	507	1649	0.24	0.76	68.7	0.961	0.918	0.840	0.484	0.951	4.9%	5.8%
1982	14,997	10,993	0.735	4,001	10996	0.27	0.73	65.1	0.681	0.882	0.592	0.710	0.734	26.6%	41.7%
1983	18,845	7,825	0.416	5,406	13439	0.29	0.71	61.3	0.607	0.658	0.493	0.326	0.622	37.8%	40.7%
1984	3,320	3,605	1.096	800	2520	0.24	0.76	66.0	0.935	0.889	0.820	0.386	0.924	7.6%	8.3%
1985	2,232	2,517	1.144	526	1706	0.24	0.76	65.1	0.959	0.884	0.839	0.278	0.941	5.9%	6.2%
1986	7,871	8,160	1.041	1,943	5928	0.25	0.75	65.8	0.833	0.897	0.738	0.606	0.848	15.2%	17.0%
1987	1,697	1,960	1.177	393	1304	0.23	0.77	68.6	0.971	0.917	0.848	0.454	0.959	4.1%	4.5%
1988	1,589	1,829	1.174	368	1221	0.23	0.77	63.7	0.974	0.874	0.850	0.161	0.951	4.9%	4.8%
1989	1,633	1,910	1.193	376	1257	0.23	0.77	66.7	0.973	0.901	0.850	0.340	0.956	4.4%	4.6%
1990	1,519	1,796	1.207	348	1171	0.23	0.77	63.9	0.975	0.877	0.852	0.171	0.953	4.7%	4.6%
1991	1,828	2,082	1.159	427	1401	0.23	0.77	63.9	0.968	0.875	0.846	0.185	0.946	5.4%	5.6%
1992	1,696	1,959	1.177	393	1303	0.23	0.77	63.9	0.971	0.876	0.848	0.179	0.949	5.1%	5.3%

Average: 11.39%

Formulas: San Joaquin River Fall Run Smolt Survival Model WITHOUT BARRIER

C7 ='Study 468 Flow Data'!AB7
D7 ='Study 468 Flow Data'!G7 (HIDDEN)
E7 ='Study 468 Flow Data'!Q7 (HIDDEN)
F7 =D7+E7
G7 =F7/(C7-0.03*$H$2)
H7 =IF((0.3137*C7-0.0156*$H$2-0.0625*F7)<0,0,(0.3137*C7-0.0156*$H$2-0.0625*F7))
I7 =C7-H7
J7 =H7/C7
K7 =I7/C7
M7 =(1.01045-0.00003*I7)
N7 =(O7+P7)-(O7*P7)
O7 =(0.87634-0.000071*H7)
P7 =IF((-3.65867+0.058492*L7+0.000051*F7)<0,0,(-3.65867+0.058492*L7+0.000051*F7))
Q7 =((K7*M7)+(J7*N7))
R7 =(1-Q7)

T7 ='Study 468 Flow Data'!AC7
U7 ='Study 468 Flow Data'!H7 (HIDDEN)
V7 ='Study 468 Flow Data'!R7 (HIDDEN)
W7 =U7+V7
X7 =W7/(T7-0.03*$H$3)
Y7 =IF((0.3137*T7-0.0156*$H$3-0.0625*W7)<0,0,(0.3137*T7-0.0156*$H$3-0.0625*W7))
Z7 =T7-Y7
AA7 =Y7/T7
AB7 =Z7/T7
AD7 =(1.01045-0.00003*Z7)
AE7 =(AF7+AG7)-(AF7*AG7)
AF7 =(0.87634-0.000071*Y7)
AG7 =IF((-3.65867+0.058492*AC7+0.000051*W7)<0,0,(-3.65867+0.058492*AC7+0.000051*W7))
AH7 =((AB7*AD7)+(AA7*AE7))
AI7 =(1-AH7)
AK7 =0.45*R7+0.55*AI7

Note: Calculated San Joaquin River flows at Stockton = 0.3137*(Vernalis flow) - 0.0156*(Consumptive Depletion) - 0.0625*(CVP/SWP Exports)

Study 526 San Joaquin River Fall Run Salmon Smolt Survival Model WITHOUT BARRIER AT HEAD OF OLD RIVER

Consumptive Depletion for April 1053.00 cfs

Consumptive Depletion for May 1053.00 cfs

San Joaquin River temperatures based on limited historical data from USBR

APRIL

Row	Year (A)	Water Year Type (B)	Vernalis Flows (C)	CVP + SWP exports (F)	exp/v-cd (G)	Calculated Stockton Q (H)	JOldR Flow (I)	p3 Stkn (J)	p2 UOldR (K)	Temp @ Jersey Pt. (L)	m2 (M)	Calculated Mortality m34 (N)	m3 (O)	m4 (P)	m234 (Q)	Calculated Survivability s234 (R)
7	1922	A	6,193	8,555	1.388	1,392	4,801	0.22	0.78	60.2	0.866	0.844	0.778	0.299	0.861	13.9%
8	1923	B	5,340	8,260	1.556	1,142	4,198	0.21	0.79	59.7	0.885	0.847	0.795	0.255	0.877	12.3%
9	1924	C	1,990	2,996	1.530	421	1,569	0.21	0.79	60.6	0.963	0.852	0.846	0.039	0.940	6.0%
10	1925	D	3,987	7,100	1.795	791	3,196	0.20	0.80	63.4	0.915	0.894	0.820	0.412	0.911	8.9%
11	1926	D	3,667	6,584	1.811	722	2,945	0.20	0.80	63.4	0.922	0.892	0.825	0.386	0.916	8.4%
12	1927	W	5,340	9,978	1.880	1,035	4,305	0.19	0.81	57.1	0.881	0.840	0.803	0.190	0.873	12.7%
13	1928	A	3,987	8,116	2.052	727	3,260	0.18	0.82	60.2	0.913	0.873	0.825	0.276	0.905	9.5%
14	1929	C	2,013	3,152	1.591	418	1,595	0.21	0.79	60.6	0.963	0.854	0.847	0.047	0.940	6.0%
15	1930	D	2,420	4,068	1.703	488	1,932	0.20	0.80	63.4	0.953	0.882	0.842	0.257	0.938	6.2%
16	1931	C	1,990	3,168	1.618	410	1,580	0.21	0.79	60.6	0.963	0.854	0.847	0.048	0.941	5.9%
17	1932	D	4,513	5,544	1.237	1,053	3,460	0.23	0.77	63.4	0.907	0.868	0.802	0.332	0.898	10.2%
18	1933	C	2,807	4,320	1.557	594	2,213	0.21	0.79	60.6	0.944	0.852	0.834	0.106	0.925	7.5%
19	1934	C	1,990	3,792	1.936	371	1,619	0.19	0.81	60.6	0.962	0.862	0.850	0.079	0.943	5.7%
20	1935	B	6,374	10,535	1.661	1,325	5,049	0.21	0.79	59.7	0.859	0.863	0.782	0.371	0.860	14.0%
21	1936	B	6,418	8,514	1.333	1,465	4,953	0.23	0.77	59.7	0.862	0.833	0.772	0.268	0.855	14.5%
22	1937	B	7,941	8,164	1.032	1,964	5,977	0.25	0.75	59.7	0.831	0.803	0.737	0.250	0.824	17.6%
23	1938	W	18,051	7,896	0.438	5,153	12,898	0.29	0.71	57.1	0.624	0.552	0.511	0.084	0.603	39.7%
24	1939	D	2,895	4,321	1.509	622	2,273	0.21	0.79	63.4	0.942	0.878	0.832	0.270	0.928	7.2%
25	1940	A	5,731	10,191	1.788	1,144	4,587	0.20	0.80	60.2	0.873	0.873	0.795	0.382	0.873	12.7%
26	1941	W	10,084	9,921	0.987	2,527	7,557	0.25	0.75	57.1	0.784	0.754	0.697	0.187	0.776	22.4%
27	1942	W	6,902	10,259	1.493	1,508	5,394	0.22	0.78	57.1	0.849	0.816	0.769	0.204	0.842	15.8%
28	1943	W	7,915	9,321	1.182	1,884	6,031	0.24	0.76	57.1	0.830	0.783	0.743	0.157	0.818	18.2%
29	1944	D	3,441	4,425	1.298	786	2,655	0.23	0.77	63.4	0.931	0.870	0.821	0.275	0.917	8.3%
30	1945	B	5,781	6,438	1.120	1,395	4,386	0.24	0.76	59.7	0.879	0.813	0.777	0.162	0.863	13.7%
31	1946	B	5,340	6,138	1.156	1,275	4,065	0.24	0.76	59.7	0.889	0.817	0.786	0.146	0.871	12.9%
32	1947	D	3,667	5,081	1.398	816	2,851	0.22	0.78	63.4	0.925	0.874	0.818	0.309	0.914	8.6%
33	1948	B	3,987	6,929	1.752	801	3,186	0.20	0.80	59.7	0.915	0.853	0.819	0.187	0.902	9.8%
34	1949	D	3,987	5,242	1.325	907	3,080	0.23	0.77	63.4	0.918	0.872	0.812	0.317	0.907	9.3%
35	1950	B	3,987	6,425	1.624	833	3,154	0.21	0.79	59.7	0.916	0.847	0.817	0.161	0.901	9.9%
36	1951	A	5,340	6,539	1.232	1,250	4,090	0.23	0.77	60.2	0.888	0.829	0.788	0.196	0.874	12.6%
37	1952	W	10,838	8,015	0.742	2,883	7,955	0.27	0.73	57.1	0.772	0.701	0.672	0.090	0.753	24.7%
38	1953	W	3,987	5,826	1.473	870	3,117	0.22	0.78	57.1	0.917	0.815	0.815	0.000	0.895	10.5%
39	1954	A	3,987	9,256	2.340	656	3,331	0.16	0.84	60.2	0.911	0.887	0.830	0.335	0.907	9.3%
40	1955	D	2,807	3,822	1.377	625	2,182	0.22	0.78	63.4	0.945	0.873	0.832	0.245	0.929	7.1%
41	1956	W	6,193	8,158	1.324	1,416	4,777	0.23	0.77	57.1	0.867	0.798	0.776	0.097	0.851	14.9%
42	1957	A	3,987	6,570	1.661	824	3,163	0.21	0.79	60.2	0.916	0.854	0.818	0.198	0.903	9.7%
43	1958	W	14,907	9,660	0.649	4,056	10,851	0.27	0.73	57.1	0.685	0.660	0.588	0.174	0.678	32.2%
44	1959	B	2,807	3,962	1.428	617	2,190	0.22	0.78	59.7	0.945	0.838	0.833	0.035	0.921	7.9%
45	1960	D	2,420	4,184	1.752	481	1,939	0.20	0.80	63.4	0.952	0.884	0.842	0.263	0.939	6.1%
46	1961	D	1,990	3,703	1.891	376	1,614	0.19	0.81	63.4	0.962	0.885	0.850	0.239	0.948	5.2%
47	1962	B	4,219	5,163	1.233	984	3,235	0.23	0.77	59.7	0.913	0.825	0.806	0.097	0.893	10.7%
48	1963	W	5,357	9,987	1.875	1,040	4,317	0.19	0.81	57.1	0.881	0.840	0.803	0.191	0.873	12.7%
49	1964	D	2,807	3,684	1.327	634	2,173	0.23	0.77	63.4	0.945	0.871	0.831	0.238	0.929	7.1%
50	1965	W	6,193	9,964	1.617	1,304	4,889	0.21	0.79	57.1	0.864	0.825	0.784	0.189	0.856	14.4%
51	1966	B	3,987	5,799	1.466	872	3,115	0.22	0.78	59.7	0.917	0.838	0.814	0.129	0.900	10.0%
52	1967	W	13,613	8,644	0.636	3,714	9,899	0.27	0.73	57.1	0.713	0.660	0.613	0.122	0.699	30.1%
53	1968	B	3,667	5,416	1.490	795	2,872	0.22	0.78	59.7	0.924	0.840	0.820	0.110	0.906	9.4%
54	1969	W	20,926	7,680	0.368	6,068	14,858	0.29	0.71	57.1	0.565	0.486	0.446	0.073	0.542	45.8%
55	1970	W	5,340	6,774	1.276	1,235	4,105	0.23	0.77	57.1	0.887	0.794	0.789	0.027	0.866	13.4%
56	1971	W	3,987	6,730	1.701	814	3,173	0.20	0.80	57.1	0.915	0.823	0.819	0.024	0.896	10.4%
57	1972	B	3,667	4,867	1.339	830	2,837	0.23	0.77	58.9	0.925	0.824	0.817	0.035	0.902	9.8%
58	1973	A	5,696	7,629	1.347	1,294	4,402	0.23	0.77	59.2	0.878	0.826	0.784	0.193	0.867	13.3%
59	1974	W	7,655	10,429	1.368	1,733	5,922	0.23	0.77	56.9	0.833	0.803	0.753	0.201	0.826	17.4%
60	1975	W	6,622	9,469	1.437	1,469	5,153	0.22	0.78	53.7	0.856	0.772	0.772	0.000	0.837	16.3%
61	1976	C	1,990	3,234	1.651	406	1,584	0.20	0.80	57.8	0.963	0.848	0.848	0.000	0.939	6.1%
62	1977	C	1,990	3,178	1.623	409	1,581	0.21	0.79	62.0	0.963	0.867	0.847	0.130	0.943	5.7%
63	1978	A	14,931	7,698	0.517	4,186	10,745	0.28	0.72	61.4	0.688	0.716	0.579	0.325	0.696	30.4%
64	1979	B	5,340	7,029	1.324	1,219	4,121	0.23	0.77	60.5	0.887	0.840	0.790	0.239	0.876	12.4%
65	1980	A	6,734	7,071	1.055	1,654	5,080	0.25	0.75	60.1	0.858	0.811	0.759	0.217	0.847	15.3%
66	1981	D	3,667	5,628	1.548	782	2,885	0.21	0.79	64.6	0.924	0.894	0.821	0.407	0.917	8.3%
67	1982	W	27,030	9,120	0.338	7,893	19,137	0.29	0.71	52.8	0.436	0.316	0.316	0.000	0.401	59.9%
68	1983	W	20,740	7,141	0.345	6,043	14,697	0.29	0.71	57.2	0.570	0.476	0.447	0.051	0.542	45.8%
69	1984	W	5,340	7,022	1.323	1,220	4,120	0.23	0.77	60.7	0.887	0.842	0.790	0.250	0.877	12.3%
70	1985	D	2,807	4,264	1.536	598	2,209	0.21	0.79	62.5	0.944	0.870	0.834	0.215	0.928	7.2%
71	1986	W	9,796	7,845	0.803	2,566	7,230	0.26	0.74	61.3	0.794	0.794	0.694	0.327	0.794	20.6%
72	1987	D	2,029	3,676	1.840	390	1,639	0.19	0.81	62.3	0.961	0.875	0.849	0.173	0.945	5.5%
73	1988	C	1,990	2,986	1.525	421	1,569	0.21	0.79	62.1	0.963	0.866	0.846	0.126	0.943	5.7%
74	1989	D	2,420	5,828	2.440	378	2,042	0.16	0.84	64.1	0.949	0.908	0.849	0.388	0.943	5.7%
75	1990	C	1,990	3,750	1.915	373	1,617	0.19	0.81	60.6	0.962	0.861	0.850	0.077	0.943	5.7%
76	1991	C	2,441	4,443	1.844	472	1,969	0.19	0.81	60.6	0.951	0.861	0.843	0.113	0.934	6.6%
77	1992	C	2,257	3,943	1.772	445	1,812	0.20	0.80	60.6	0.956	0.858	0.845	0.087	0.937	6.3%

MAY

Row	Year	Vernalis Flows (T)	CVP + SWP exports (W)	exp/v-cd (X)	Calculated Stockton Q (Y)	UOldR Flow (Z)	p3 Stkn (AA)	p2 UOldR (AB)	Temp @ Jersey Pt. (AC)	m2 (AD)	Calculated Mortality m34 (AE)	m3 (AF)	m4 (AG)	m234 (AH)	Calculated Survivability s234 (AI)	Weighted total survival (AK)
7	1922	5,936	10,847	1.837	1,168	4768	0.20	0.80	66.6	0.867	0.957	0.793	0.790	0.885	11.5%	12.6%
8	1923	5,162	6,555	1.278	1,193	3969	0.23	0.77	66.0	0.891	0.903	0.792	0.536	0.894	10.6%	11.4%
9	1924	1,871	1,239	0.674	493	1378	0.26	0.74	63.9	0.969	0.864	0.841	0.142	0.941	5.9%	5.9%
10	1925	3,828	5,312	1.399	852	2976	0.22	0.78	67.3	0.921	0.917	0.816	0.549	0.920	8.0%	8.4%
11	1926	3,538	5,262	1.501	765	2773	0.22	0.78	67.3	0.927	0.919	0.822	0.546	0.926	7.4%	7.9%
12	1927	5,162	8,833	1.722	1,051	4111	0.20	0.80	64.2	0.887	0.910	0.802	0.547	0.892	10.8%	11.6%
13	1928	3,828	6,673	1.758	767	3061	0.20	0.80	66.6	0.919	0.925	0.822	0.577	0.920	8.0%	8.7%
14	1929	1,890	3,174	1.708	378	1512	0.20	0.80	63.9	0.965	0.886	0.849	0.241	0.949	5.1%	5.5%
15	1930	1,955	3,811	1.981	359	1596	0.18	0.82	67.3	0.963	0.921	0.851	0.472	0.955	4.5%	5.2%
16	1931	1,989	3,469	1.772	391	1598	0.20	0.80	63.9	0.963	0.887	0.849	0.256	0.948	5.2%	5.5%
17	1932	3,872	5,122	1.334	878	2994	0.23	0.77	67.3	0.921	0.914	0.814	0.539	0.919	8.1%	9.1%
18	1933	2,678	2,897	1.095	643	2035	0.24	0.76	63.9	0.949	0.869	0.831	0.227	0.930	7.0%	7.2%
19	1934	1,987	3,289	1.682	401	1586	0.20	0.80	63.9	0.963	0.885	0.848	0.247	0.947	5.3%	5.5%
20	1935	6,073	5,961	0.987	1,516	4557	0.25	0.75	66.0	0.874	0.886	0.769	0.506	0.877	12.3%	13.1%
21	1936	5,162	6,602	1.287	1,190	3972	0.23	0.77	66.0	0.891	0.904	0.792	0.539	0.894	10.6%	12.3%
22	1937	8,143	7,064	0.871	2,097	6046	0.26	0.74	66.0	0.829	0.881	0.727	0.562	0.842	15.8%	16.6%
23	1938	23,970	9,711	0.406	6,896	17074	0.29	0.71	64.2	0.498	0.750	0.387	0.592	0.571	42.9%	41.5%
24	1939	2,678	3,758	1.420	589	2089	0.22	0.78	67.3	0.948	0.912	0.835	0.469	0.940	6.0%	6.5%
25	1940	5,162	6,533	1.273	1,195	3967	0.23	0.77	66.6	0.891	0.910	0.792	0.570	0.896	10.4%	11.4%
26	1941	9,579	10,442	1.094	2,336	7243	0.24	0.76	64.2	0.793	0.893	0.710	0.629	0.817	18.3%	20.1%
27	1942	5,936	10,847	1.837	1,168	4768	0.20	0.80	64.2	0.867	0.928	0.793	0.650	0.879	12.1%	13.8%
28	1943	6,176	7,967	1.297	1,423	4753	0.23	0.77	64.2	0.868	0.888	0.775	0.503	0.873	12.7%	15.2%
29	1944	2,968	4,025	1.371	663	2305	0.22	0.78	67.3	0.941	0.912	0.829	0.483	0.935	6.5%	7.3%
30	1945	3,872	5,292	1.378	867	3005	0.22	0.78	66.0	0.920	0.902	0.815	0.472	0.916	8.4%	10.8%
31	1946	3,872	5,559	1.448	851	3021	0.22	0.78	66.0	0.920	0.905	0.816	0.485	0.917	8.3%	10.4%
32	1947	2,678	3,749	1.417	589	2089	0.22	0.78	67.3	0.948	0.912	0.834	0.469	0.940	6.0%	7.2%
33	1948	3,828	7,401	1.949	722	3106	0.19	0.81	66.0	0.917	0.926	0.825	0.579	0.919	8.1%	8.8%
34	1949	2,968	5,020	1.710	601	2367	0.20	0.80	67.3	0.939	0.922	0.834	0.534	0.936	6.4%	7.7%
35	1950	3,828	5,889	1.551	816	3012	0.21	0.79	66.0	0.920	0.910	0.818	0.502	0.918	8.2%	9.0%
36	1951	5,162	7,421	1.446	1,139	4023	0.22	0.78	66.6	0.890	0.921	0.795	0.615	0.897	10.3%	11.3%
37	1952	15,453	9,513	0.617	4,237	11216	0.27	0.73	64.2	0.674	0.822	0.576	0.582	0.715	28.5%	26.8%
38	1953	3,828	7,991	2.105	685	3143	0.18	0.82	64.2	0.916	0.915	0.828	0.504	0.916	8.4%	9.4%
39	1954	3,828	7,764	2.045	699	3129	0.18	0.82	66.6	0.917	0.936	0.827	0.633	0.920	8.0%	8.6%
40	1955	2,678	4,210	1.591	561	2117	0.21	0.79	67.3	0.947	0.917	0.837	0.493	0.941	5.9%	6.5%
41	1956	6,126	10,939	1.795	1,222	4904	0.20	0.80	64.2	0.863	0.927	0.790	0.654	0.876	12.4%	13.5%
42	1957	3,828	6,259	1.649	793	3035	0.21	0.79	66.6	0.919	0.920	0.820	0.556	0.920	8.0%	8.8%
43	1958	13,173	10,905	0.830	3,434	9739	0.26	0.74	64.2	0.718	0.872	0.632	0.653	0.758	24.2%	27.8%
44	1959	2,678	3,973	1.501	575	2103	0.21	0.79	66.0	0.947	0.902	0.835	0.404	0.938	6.2%	7.0%
45	1960	1,872	3,628	1.971	344	1528	0.18	0.82	67.3	0.965	0.920	0.852	0.463	0.956	4.4%	5.2%
46	1961	1,897	3,172	1.700	380	1517	0.20	0.80	67.3	0.965	0.916	0.849	0.440	0.955	4.5%	4.8%
47	1962	2,968	5,141	1.751	593	2375	0.20	0.80	66.0	0.939	0.911	0.834	0.464	0.934	6.6%	8.5%
48	1963	5,162	9,608	1.873	1,002	4160	0.19	0.81	64.2	0.886	0.919	0.805	0.587	0.892	10.8%	11.6%
49	1964	2,678	4,162	1.573	564	2114	0.21	0.79	67.3	0.947	0.917	0.836	0.490	0.941	5.9%	6.5%
50	1965	5,936	8,454	1.432	1,317	4619	0.22	0.78	64.2	0.872	0.897	0.783	0.528	0.878	12.2%	13.2%
51	1966	2,968	4,987	1.698	603	2365	0.20	0.80	66.0	0.939	0.909	0.834	0.456	0.933	6.7%	8.2%
52	1967	16,001	9,702	0.608	4,397	11604	0.27	0.73	64.2	0.662	0.822	0.564	0.591	0.706	29.4%	29.7%
53	1968	2,678	3,939	1.488	577	2101	0.22	0.78	66.0	0.947	0.902	0.835	0.403	0.938	6.2%	7.7%
54	1969	26,143	9,287	0.356	7,604	18539	0.29	0.71	66.4	0.454	0.800	0.336	0.699	0.555	44.5%	45.1%
55	1970	5,162	6,202	1.209	1,215	3947	0.24	0.76	61.2	0.892	0.840	0.790	0.237	0.880	12.0%	12.7%
56	1971	3,828	8,509	2.241	653	3175	0.17	0.83	64.2	0.915	0.920	0.830	0.530	0.916	8.4%	9.3%
57	1972	2,678	4,161	1.572	564	2114	0.21	0.79	66.0	0.947	0.904	0.836	0.414	0.938	6.2%	7.8%
58	1973	5,162	6,796	1.325	1,178	3984	0.23	0.77	66.3	0.891	0.910	0.793	0.566	0.895	10.5%	11.8%
59	1974	5,936	9,499	1.609	1,252	4684	0.21	0.79	66.1	0.870	0.935	0.787	0.692	0.884	11.6%	14.2%
60	1975	5,936	9,820	1.663	1,232	4704	0.21	0.79	61.5	0.869	0.882	0.789	0.439	0.872	12.8%	14.4%
61	1976	1,871	3,428	1.864	356	1515	0.19	0.81	65.8	0.965	0.905	0.851	0.365	0.954	4.6%	5.3%
62	1977	1,871	977	0.531	509	1362	0.27	0.73	62.3	0.970	0.846	0.840	0.035	0.936	6.4%	6.1%
63	1978	10,833	8,495	0.786	2,851	7982	0.26	0.74	66.9	0.771	0.898	0.674	0.688	0.804	19.6%	24.4%
64	1979	5,162	6,285	1.225	1,210	3952	0.23	0.77	66.0	0.892	0.900	0.790	0.522	0.894	10.6%	11.4%
65	1980	6,621	7,757	1.177	1,576	5045	0.24	0.76	66.6	0.859	0.913	0.764	0.633	0.872	12.8%	13.9%
66	1981	2,678	3,789	1.432	587	2091	0.22	0.78	68.7	0.948	0.926	0.835	0.553	0.943	5.7%	6.9%
67	1982	15,159	11,148	0.737	4,042	11117	0.27	0.73	65.1	0.677	0.884	0.589	0.718	0.732	26.8%	41.7%
68	1983	19,079	7,825	0.411	5,480	13599	0.29	0.71	61.3	0.602	0.654	0.487	0.326	0.617	38.3%	41.6%
69	1984	5,162	6,417	1.251	1,202	3960	0.23	0.77	66.0	0.892	0.902	0.791	0.529	0.894	10.6%	11.4%
70	1985	2,678	4,529	1.711	541	2137	0.20	0.80	65.1	0.946	0.900	0.838	0.380	0.937	6.3%	6.7%
71	1986	8,057	8,408	1.048	1,986	6071	0.25	0.75	65.8	0.828	0.899	0.735	0.619	0.846	15.4%	17.8%
72	1987	1,871	3,110	1.691	376	1495	0.20	0.80	68.6	0.966	0.927	0.850	0.512	0.958	4.2%	4.8%
73	1988	1,871	3,312	1.801	364	1507	0.19	0.81	63.7	0.965	0.886	0.851	0.236	0.950	5.0%	5.3%
74	1989	1,880	4,243	2.295	308	1572	0.16	0.84	66.7	0.963	0.921	0.854	0.459	0.956	4.4%	5.0%
75	1990	1,943	3,020	1.580	404	1539	0.21	0.79	63.9	0.964	0.883	0.848	0.233	0.947	5.3%	5.5%
76	1991	1,985	3,203	1.640	406	1579	0.20	0.80	63.9	0.963	0.884	0.848	0.242	0.947	5.3%	5.9%
77	1992	1,986	3,274	1.675	402	1584	0.20	0.80	63.9	0.963	0.885	0.848	0.246	0.947	5.3%	5.7%

Formulas: San Joaquin River Fall Run Smolt Survival Model WITHOUT BARRIER

C7 ='Study 468 Flow Data'!AB7
D7 ='Study 468 Flow Data'!G7 (HIDDEN)
E7 ='Study 468 Flow Data'!Q7 (HIDDEN)
F7 =D7+E7
G7 =F7/(C7-0.03*$H$2)
H7 =IF((0.3137*C7-0.0156*$H$2-0.0625*F7)<0,0,(0.3137*C7-0.0156*$H$2-0.0625*F7))
I7 =C7-H7
J7 =H7/C7
K7 =I7/C7
M7 =(1.01045-0.00003*I7)
N7 =(O7+P7)-(O7*P7)
O7 =(0.87634-0.000071*H7)
P7 =IF((-3.65867+0.058492*L7+0.000051*F7)<0,0,(-3.65867+0.058492*L7+0.000051*F7))
Q7 =((K7*M7)+(J7*N7))
R7 =(1-Q7)

T7 ='Study 468 Flow Data'!AC7
U7 ='Study 468 Flow Data'!H7 (HIDDEN)
V7 ='Study 468 Flow Data'!R7 (HIDDEN)
W7 =U7+V7
X7 =W7/(T7-0.03*$H$3)
Y7 =IF((0.3137*T7-0.0156*$H$3-0.0625*W7)<0,0,(0.3137*T7-0.0156*$H$3-0.0625*W7))
Z7 =T7-Y7
AA7 =Y7/T7
AB7 =Z7/T7
AD7 =(1.01045-0.00003*Z7)
AE7 =(AF7+AG7)-(AF7*AG7)
AF7 =(0.87634-0.000071*Y7)
AG7 =IF((-3.65867+0.058492*AC7+0.000051*W7)<0,0,(-3.65867+0.058492*AC7+0.000051*W7))
AH7 =((AB7*AD7)+(AA7*AE7))
AI7 =(1-AH7)
AK7 =0.45*R7+0.55*AI7

Average: 12.19%

Note: Calculated San Joaquin River flows at Stockton = 0.3137*(Vernalis flow) - 0.0156*(Consumptive Depletion) - 0.0625*(CVP/SWP Exports)

Study 526a San Joaquin River Fall Run Salmon Smolt Survival Model WITHOUT BARRIER AT HEAD OF OLD RIVER

Consumptive Depletion for April 1053.00 cfs
Consumptive Depletion for May 1053.00 cfs

San Joaquin River temperatures based on limited historical data from USBR

APRIL

Year	Water Year Type	Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	m2	m34	m3	m4	m234	Calculated Survivability s234
1922	A	6,193	8,551	1.388	1,392	4,801	0.22	0.78	60.2	0.866	0.844	0.778	0.299	0.861	13.9%
1923	B	5,340	8,137	1.533	1,150	4,190	0.22	0.78	59.7	0.885	0.846	0.795	0.248	0.876	12.4%
1924	C	1,990	2,788	1.424	434	1,556	0.22	0.78	60.6	0.964	0.850	0.846	0.028	0.939	6.1%
1925	D	3,987	7,091	1.793	791	3,196	0.20	0.80	63.4	0.915	0.894	0.820	0.411	0.911	8.9%
1926	D	3,667	6,520	1.793	726	2,941	0.20	0.80	63.4	0.922	0.892	0.825	0.382	0.916	8.4%
1927	W	5,340	9,871	1.860	1,042	4,298	0.20	0.80	57.1	0.882	0.839	0.802	0.185	0.873	12.7%
1928	A	3,987	8,008	2.025	734	3,253	0.18	0.82	60.2	0.913	0.872	0.824	0.271	0.905	9.5%
1929	C	2,010	2,945	1.489	430	1,580	0.21	0.79	60.6	0.963	0.851	0.846	0.036	0.939	6.1%
1930	D	2,420	4,089	1.712	487	1,933	0.20	0.80	63.4	0.952	0.883	0.842	0.258	0.938	6.2%
1931	C	1,990	2,962	1.512	423	1,567	0.21	0.79	60.6	0.963	0.852	0.846	0.037	0.940	6.0%
1932	D	4,507	5,606	1.253	1,047	3,460	0.23	0.77	63.4	0.907	0.868	0.802	0.336	0.898	10.2%
1933	C	2,807	4,166	1.501	604	2,203	0.22	0.78	60.6	0.944	0.850	0.833	0.098	0.924	7.6%
1934	C	1,990	3,799	1.940	370	1,620	0.19	0.81	60.6	0.962	0.862	0.850	0.080	0.943	5.7%
1935	B	6,365	9,965	1.573	1,357	5,008	0.21	0.79	59.7	0.860	0.855	0.780	0.342	0.859	14.1%
1936	B	6,410	8,360	1.311	1,472	4,938	0.23	0.77	59.7	0.862	0.831	0.772	0.260	0.855	14.5%
1937	B	7,951	8,050	1.016	1,975	5,976	0.25	0.75	59.7	0.831	0.800	0.736	0.244	0.824	17.6%
1938	W	18,052	8,039	0.446	5,144	12,908	0.28	0.72	57.1	0.623	0.556	0.511	0.091	0.604	39.6%
1939	D	2,891	4,190	1.465	629	2,262	0.22	0.78	63.4	0.943	0.876	0.832	0.263	0.928	7.2%
1940	A	5,727	10,082	1.770	1,150	4,577	0.20	0.80	60.2	0.873	0.872	0.795	0.377	0.873	12.7%
1941	W	10,086	10,049	0.999	2,519	7,567	0.25	0.75	57.1	0.783	0.756	0.697	0.194	0.777	22.3%
1942	W	6,904	10,404	1.514	1,499	5,405	0.22	0.78	57.1	0.848	0.819	0.770	0.212	0.842	15.8%
1943	W	7,911	9,188	1.166	1,891	6,020	0.24	0.76	57.1	0.830	0.781	0.742	0.150	0.818	18.2%
1944	D	3,437	4,191	1.231	800	2,637	0.23	0.77	63.4	0.931	0.867	0.820	0.263	0.916	8.4%
1945	B	5,776	6,324	1.101	1,400	4,376	0.24	0.76	59.7	0.879	0.812	0.777	0.156	0.863	13.7%
1946	B	5,340	6,030	1.136	1,282	4,058	0.24	0.76	59.7	0.889	0.816	0.785	0.141	0.871	12.9%
1947	D	3,667	4,991	1.373	822	2,845	0.22	0.78	63.4	0.925	0.873	0.818	0.304	0.914	8.6%
1948	B	3,987	6,839	1.729	807	3,180	0.20	0.80	59.7	0.915	0.852	0.819	0.182	0.902	9.8%
1949	D	3,987	5,152	1.303	912	3,075	0.23	0.77	63.4	0.918	0.870	0.812	0.312	0.907	9.3%
1950	B	3,987	6,362	1.608	837	3,150	0.21	0.79	59.7	0.916	0.846	0.817	0.158	0.901	9.9%
1951	A	5,340	6,431	1.211	1,257	4,083	0.24	0.76	60.2	0.888	0.828	0.787	0.191	0.874	12.6%
1952	W	10,840	8,150	0.754	2,875	7,965	0.27	0.73	57.1	0.771	0.704	0.672	0.097	0.754	24.6%
1953	W	3,987	5,737	1.450	876	3,111	0.22	0.78	57.1	0.917	0.814	0.814	0.000	0.894	10.6%
1954	A	3,987	9,149	2.313	662	3,325	0.17	0.83	60.2	0.911	0.885	0.829	0.329	0.907	9.3%
1955	D	2,807	3,732	1.345	631	2,176	0.22	0.78	63.4	0.945	0.872	0.832	0.240	0.929	7.1%
1956	W	6,193	8,069	1.310	1,422	4,771	0.23	0.77	57.1	0.867	0.796	0.775	0.093	0.851	14.9%
1957	A	3,987	6,465	1.634	830	3,157	0.21	0.79	60.2	0.916	0.853	0.817	0.192	0.903	9.7%
1958	W	14,909	9,732	0.654	4,052	10,857	0.27	0.73	57.1	0.685	0.662	0.589	0.178	0.678	32.2%
1959	B	2,807	3,835	1.382	624	2,183	0.22	0.78	59.7	0.945	0.837	0.832	0.029	0.921	7.9%
1960	D	2,268	4,004	1.790	445	1,823	0.20	0.80	63.4	0.956	0.884	0.845	0.254	0.942	5.8%
1961	D	1,990	3,577	1.826	384	1,606	0.19	0.81	63.4	0.962	0.884	0.849	0.232	0.947	5.3%
1962	B	4,221	4,979	1.188	997	3,224	0.24	0.76	59.7	0.914	0.823	0.806	0.087	0.892	10.8%
1963	W	5,360	9,881	1.854	1,047	4,313	0.20	0.80	57.1	0.881	0.839	0.802	0.185	0.873	12.7%
1964	D	2,807	3,596	1.296	639	2,168	0.23	0.77	63.4	0.945	0.870	0.831	0.233	0.928	7.2%
1965	W	6,193	9,856	1.600	1,310	4,883	0.21	0.79	57.1	0.864	0.823	0.783	0.184	0.855	14.5%
1966	B	3,987	5,671	1.434	880	3,107	0.22	0.78	59.7	0.917	0.837	0.814	0.123	0.899	10.1%
1967	W	13,615	8,783	0.647	3,706	9,909	0.27	0.73	57.1	0.713	0.663	0.613	0.129	0.700	30.0%
1968	B	3,667	5,301	1.458	803	2,864	0.22	0.78	59.7	0.925	0.838	0.819	0.104	0.906	9.4%
1969	W	20,928	7,806	0.374	6,061	14,867	0.29	0.71	57.1	0.564	0.490	0.446	0.079	0.543	45.7%
1970	W	5,340	6,648	1.252	1,243	4,097	0.23	0.77	57.1	0.888	0.792	0.788	0.020	0.865	13.5%
1971	W	3,987	6,613	1.672	821	3,166	0.21	0.79	57.1	0.915	0.821	0.818	0.018	0.896	10.4%
1972	B	3,667	4,778	1.314	835	2,832	0.23	0.77	58.9	0.925	0.823	0.817	0.030	0.902	9.8%
1973	A	5,695	7,521	1.328	1,300	4,395	0.23	0.77	59.2	0.879	0.825	0.784	0.188	0.866	13.4%
1974	W	7,658	10,573	1.386	1,725	5,933	0.23	0.77	56.9	0.832	0.805	0.754	0.209	0.826	17.4%
1975	W	6,624	9,382	1.423	1,475	5,149	0.22	0.78	53.7	0.856	0.772	0.772	0.000	0.837	16.3%
1976	C	1,990	3,068	1.567	416	1,574	0.21	0.79	57.8	0.963	0.847	0.847	0.000	0.939	6.1%
1977	C	1,990	3,186	1.627	409	1,581	0.21	0.79	62.0	0.963	0.867	0.847	0.130	0.943	5.7%
1978	A	14,931	7,971	0.535	4,169	10,762	0.28	0.72	61.4	0.688	0.723	0.580	0.339	0.697	30.3%
1979	B	5,340	6,940	1.307	1,225	4,115	0.23	0.77	60.5	0.887	0.839	0.789	0.234	0.876	12.4%
1980	A	6,747	6,953	1.035	1,666	5,081	0.25	0.75	60.1	0.858	0.809	0.758	0.211	0.846	15.4%
1981	D	3,667	5,539	1.524	788	2,879	0.21	0.79	64.6	0.924	0.893	0.820	0.402	0.917	8.3%
1982	W	27,031	9,265	0.343	7,884	19,147	0.29	0.71	52.8	0.436	0.317	0.317	0.000	0.401	59.9%
1983	W	20,741	7,265	0.351	6,036	14,705	0.29	0.71	57.2	0.569	0.480	0.448	0.058	0.543	45.7%
1984	W	5,340	6,893	1.299	1,228	4,112	0.23	0.77	60.7	0.887	0.840	0.789	0.243	0.876	12.4%
1985	D	3,667	4,937	1.358	825	2,842	0.23	0.77	62.5	0.925	0.863	0.818	0.249	0.911	8.9%
1986	W	9,804	7,725	0.790	2,576	7,228	0.26	0.74	61.3	0.794	0.792	0.693	0.321	0.793	20.7%
1987	D	2,028	3,538	1.772	399	1,629	0.20	0.80	62.3	0.962	0.873	0.848	0.166	0.944	5.6%
1988	C	1,990	2,888	1.475	427	1,563	0.21	0.79	62.1	0.964	0.865	0.846	0.121	0.942	5.8%
1989	D	2,420	5,830	2.441	378	2,042	0.16	0.84	64.1	0.949	0.908	0.849	0.388	0.943	5.7%
1990	C	1,990	3,531	1.803	387	1,603	0.19	0.81	60.6	0.962	0.859	0.849	0.066	0.942	5.8%
1991	C	2,441	4,467	1.854	470	1,971	0.19	0.81	60.6	0.951	0.861	0.843	0.114	0.934	6.6%
1992	C	2,248	3,948	1.781	442	1,806	0.20	0.80	60.6	0.956	0.858	0.845	0.087	0.937	6.3%

MAY

Year	Vernalis Flows	CVP + SWP exports	exp/v-cd	Calculated Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Temp @ Jersey Pt.	m2	m34	m3	m4	m234	Calculated Survivability s234	Weighted total survival
1922	5,936	10,854	1.838	1,167	4769	0.20	0.80	66.6	0.867	0.957	0.793	0.790	0.885	11.5%	12.6%
1923	5,162	6,557	1.278	1,193	3969	0.23	0.77	66.0	0.891	0.903	0.792	0.536	0.894	10.6%	11.4%
1924	1,871	1,289	0.701	490	1381	0.26	0.74	63.9	0.969	0.864	0.842	0.145	0.942	5.8%	6.0%
1925	3,828	5,318	1.401	852	2976	0.22	0.78	67.3	0.921	0.917	0.816	0.549	0.920	8.0%	8.4%
1926	3,538	5,263	1.501	765	2773	0.22	0.78	67.3	0.927	0.919	0.822	0.546	0.926	7.4%	7.9%
1927	5,162	8,839	1.723	1,050	4112	0.20	0.80	64.2	0.887	0.910	0.802	0.547	0.892	10.8%	11.7%
1928	3,828	6,681	1.760	767	3061	0.20	0.80	66.6	0.919	0.925	0.822	0.578	0.920	8.0%	8.7%
1929	1,888	3,136	1.689	380	1508	0.20	0.80	63.9	0.965	0.885	0.849	0.239	0.949	5.1%	5.5%
1930	1,953	3,818	1.987	358	1595	0.18	0.82	67.3	0.963	0.921	0.851	0.473	0.955	4.5%	5.2%
1931	1,988	3,479	1.778	390	1598	0.20	0.80	63.9	0.963	0.887	0.849	0.256	0.948	5.2%	5.6%
1932	3,872	5,132	1.336	877	2995	0.23	0.77	67.3	0.921	0.914	0.814	0.540	0.919	8.1%	9.0%
1933	2,678	2,775	1.049	650	2028	0.24	0.76	63.9	0.950	0.868	0.830	0.220	0.930	7.0%	7.3%
1934	1,985	3,297	1.688	400	1585	0.20	0.80	63.9	0.963	0.886	0.848	0.247	0.947	5.3%	5.5%
1935	6,068	5,951	0.986	1,515	4553	0.25	0.75	66.0	0.874	0.886	0.769	0.505	0.877	12.3%	13.1%
1936	5,162	6,635	1.293	1,188	3974	0.23	0.77	66.0	0.891	0.904	0.792	0.540	0.894	10.6%	12.3%
1937	8,154	7,071	0.871	2,100	6054	0.26	0.74	66.0	0.829	0.881	0.727	0.562	0.842	15.8%	16.6%
1938	23,971	10,009	0.418	6,878	17093	0.29	0.71	64.2	0.498	0.759	0.388	0.607	0.573	42.7%	41.3%
1939	2,678	3,768	1.424	588	2090	0.22	0.78	67.3	0.948	0.912	0.835	0.470	0.940	6.0%	6.5%
1940	5,162	6,534	1.274	1,195	3967	0.23	0.77	66.6	0.891	0.910	0.792	0.570	0.896	10.4%	11.4%
1941	9,580	10,010	1.048	2,363	7217	0.25	0.75	64.2	0.794	0.885	0.709	0.607	0.817	18.3%	20.1%
1942	5,936	10,854	1.838	1,167	4769	0.20	0.80	64.2	0.867	0.928	0.793	0.650	0.879	12.1%	13.8%
1943	6,189	7,967	1.294	1,427	4762	0.23	0.77	64.2	0.868	0.888	0.775	0.503	0.872	12.8%	15.2%
1944	2,968	4,239	1.444	650	2318	0.22	0.78	67.3	0.941	0.914	0.830	0.494	0.935	6.5%	7.3%
1945	3,872	5,253	1.368	870	3002	0.22	0.78	66.0	0.920	0.902	0.815	0.470	0.916	8.4%	10.8%
1946	3,872	5,567	1.450	850	3022	0.22	0.78	66.0	0.920	0.905	0.816	0.486	0.917	8.3%	10.4%
1947	2,678	3,779	1.428	587	2091	0.22	0.78	67.3	0.948	0.912	0.835	0.471	0.940	6.0%	7.2%
1948	3,828	7,397	1.948	722	3106	0.19	0.81	66.0	0.917	0.926	0.825	0.579	0.919	8.1%	8.9%
1949	2,968	5,028	1.712	600	2368	0.20	0.80	67.3	0.939	0.923	0.834	0.534	0.936	6.4%	7.7%
1950	3,828	5,896	1.553	816	3012	0.21	0.79	66.0	0.920	0.910	0.818	0.502	0.918	8.2%	9.0%
1951	5,162	7,427	1.448	1,139	4023	0.22	0.78	66.6	0.890	0.921	0.795	0.616	0.897	10.3%	11.4%
1952	15,455	9,801	0.635	4,219	11236	0.27	0.73	64.2	0.673	0.829	0.577	0.596	0.716	28.4%	26.7%
1953	3,828	7,915	2.085	690	3138	0.18	0.82	64.2	0.916	0.914	0.827	0.500	0.916	8.4%	9.4%
1954	3,828	7,773	2.047	699	3129	0.18	0.82	66.6	0.917	0.936	0.827	0.633	0.920	8.0%	8.6%
1955	2,678	4,243	1.603	558	2120	0.21	0.79	67.3	0.947	0.917	0.837	0.494	0.941	5.9%	6.5%
1956	6,128	10,947	1.796	1,222	4906	0.20	0.80	64.2	0.863	0.927	0.790	0.655	0.876	12.4%	13.5%
1957	3,828	6,311	1.662	790	3038	0.21	0.79	66.6	0.919	0.921	0.820	0.559	0.920	8.0%	8.8%
1958	13,175	10,974	0.835	3,431	9744	0.26	0.74	64.2	0.718	0.874	0.633	0.656	0.759	24.1%	27.7%
1959	2,678	3,961	1.497	576	2102	0.22	0.78	66.0	0.947	0.902	0.835	0.404	0.938	6.2%	7.0%
1960	1,875	3,663	1.987	343	1532	0.18	0.82	67.3	0.964	0.921	0.852	0.465	0.956	4.4%	5.0%
1961	1,898	3,187	1.708	380	1518	0.20	0.80	67.3	0.965	0.916	0.849	0.440	0.955	4.5%	4.8%
1962	2,968	5,150	1.754	593	2375	0.20	0.80	66.0	0.939	0.911	0.834	0.464	0.934	6.6%	8.5%
1963	5,162	9,615	1.874	1,002	4160	0.19	0.81	64.2	0.886	0.920	0.805	0.587	0.892	10.8%	11.7%
1964	2,678	4,195	1.585	561	2117	0.21	0.79	67.3	0.947	0.917	0.836	0.492	0.941	5.9%	6.5%
1965	5,936	8,460	1.433	1,317	4619	0.22	0.78	64.2	0.872	0.897	0.783	0.528	0.878	12.2%	13.2%
1966	2,968	4,997	1.702	602	2366	0.20	0.80	66.0	0.939	0.910	0.834	0.457	0.933	6.7%	8.2%
1967	16,002	9,994	0.626	4,379	11623	0.27	0.73	64.2	0.662	0.829	0.565	0.606	0.707	29.3%	29.6%
1968	2,678	3,971	1.501	575	2103	0.21	0.79	66.0	0.947	0.902	0.835	0.404	0.938	6.2%	7.7%
1969	26,154	9,565	0.366	7,590	18564	0.29	0.71	66.4	0.454	0.810	0.337	0.713	0.557	44.3%	44.9%
1970	5,162	6,235	1.215	1,213	3949	0.24	0.76	61.2	0.892	0.840	0.790	0.239	0.880	12.0%	12.7%
1971	3,828	8,555	2.253	650	3178	0.17	0.83	64.2	0.915	0.921	0.830	0.533	0.916	8.4%	9.3%
1972	2,678	4,169	1.575	563	2115	0.21	0.79	66.0	0.947	0.904	0.836	0.414	0.938	6.2%	7.8%
1973	5,162	6,803	1.326	1,178	3984	0.23	0.77	66.3	0.891	0.910	0.793	0.566	0.895	10.5%	11.8%
1974	5,936	9,506	1.610	1,252	4684	0.21	0.79	66.1	0.870	0.935	0.787	0.692	0.884	11.6%	14.2%
1975	5,936	9,808	1.661	1,233	4703	0.21	0.79	61.5	0.869	0.881	0.789	0.439	0.872	12.8%	14.4%
1976	1,871	3,315	1.802	363	1508	0.19	0.81	65.8	0.965	0.904	0.851	0.359	0.953	4.7%	5.3%
1977	1,871	1,038	0.564	506	1365	0.27	0.73	62.3	0.969	0.847	0.840	0.038	0.936	6.4%	6.1%
1978	10,834	8,814	0.816	2,831	8003	0.26	0.74	66.9	0.770	0.904	0.675	0.704	0.805	19.5%	24.3%
1979	5,162	6,272	1.223	1,211	3951	0.23	0.77	66.0	0.892	0.900	0.790	0.522	0.894	10.6%	11.4%
1980	6,627	7,794	1.182	1,575	5052	0.24	0.76	66.6	0.859	0.914	0.764	0.634	0.872	12.8%	14.0%
1981	2,678	3,823	1.445	585	2093	0.22	0.78	68.7	0.948	0.926	0.835	0.555	0.943	5.7%	6.9%
1982	15,160	11,449	0.757	4,024	11136	0.27	0.73	65.1	0.676	0.891	0.591	0.733	0.733	26.7%	41.6%
1983	19,081	8,101	0.425	5,463	13618	0.29	0.71	61.3	0.602	0.662	0.488	0.340	0.619	38.1%	41.5%
1984	5,162	6,479	1.263	1,198	3964	0.23	0.77	66.0	0.892	0.902	0.791	0.532	0.894	10.6%	11.4%
1985	2,678	4,533	1.713	540	2138	0.20	0.80	65.1	0.946	0.900	0.838	0.380	0.937	6.3%	7.5%
1986	8,065	8,445	1.051	1,986	6079	0.25	0.75	65.8	0.828	0.900	0.735	0.621	0.846	15.4%	17.8%
1987	1,871	3,117	1.695	376	1495	0.20	0.80	68.6	0.966	0.927	0.850	0.513	0.958	4.2%	4.8%
1988	1,871	3,309	1.799	364	1507	0.19	0.81	63.7	0.965	0.886	0.851	0.236	0.950	5.0%	5.4%
1989	1,893	4,240	2.278	312	1581	0.17	0.83	66.7	0.963	0.921	0.854	0.459	0.956	4.4%	5.0%
1990	1,941	3,028	1.586	403	1538	0.21	0.79	63.9	0.964	0.883	0.848	0.233	0.947	5.3%	5.5%
1991	1,985	3,233	1.655	404	1581	0.20	0.80	63.9	0.963	0.885	0.848	0.244	0.947	5.3%	5.9%
1992	1,989	3,287	1.679	402	1587	0.20	0.80	63.9	0.963	0.885	0.848	0.247	0.947	5.3%	5.7%

Average: 12.20%

Formulas: San Joaquin River Fall Run Smolt Survival Model WITHOUT BARRIER

C7 ='Study 468 Flow Data'!AB7
D7 ='Study 468 Flow Data'!G7 (HIDDEN)
E7 ='Study 468 Flow Data'!Q7 (HIDDEN)
F7 =D7+E7
G7 =F7/(C7-0.03*$H$2)
H7 =IF((0.3137*C7-0.0156*$H$2-0.0625*F7)<0,0,(0.3137*C7-0.0156*$H$2-0.0625*F7))
I7 =C7-H7
J7 =H7/C7
K7 =I7/C7
M7 =(1.01045-0.00003*I7)
N7 =(O7+P7)-(O7*P7)
O7 =(0.87634-0.000071*H7)
P7 =IF((-3.65867+0.058492*L7+0.000051*F7)<0,0,(-3.65867+0.058492*L7+0.000051*F7))
Q7 =((K7*M7)+(J7*N7))
R7 =(1-Q7)

T7 ='Study 468 Flow Data'!AC7
U7 ='Study 468 Flow Data'!H7 (HIDDEN)
V7 ='Study 468 Flow Data'!R7 (HIDDEN)
W7 =U7+V7
X7 =W7/(T7-0.03*$H$3)
Y7 =IF((0.3137*T7-0.0156*$H$3-0.0625*W7)<0,0,(0.3137*T7-0.0156*$H$3-0.0625*W7))
Z7 =T7-Y7
AA7 =Y7/T7
AB7 =Z7/T7
AD7 =(1.01045-0.00003*Z7)
AE7 =(AF7+AG7)-(AF7*AG7)
AF7 =(0.87634-0.000071*Y7)
AG7 =IF((-3.65867+0.058492*AC7+0.000051*W7)<0,0,(-3.65867+0.058492*AC7+0.000051*W7))
AH7 =((AB7*AD7)+(AA7*AE7))
AI7 =(1-AH7)
AK7 =0.45*R7+0.55*AI7

Note: Calculated San Joaquin River flows at Stockton = 0.3137*(Vernalis flow) - 0.0156*(Consumptive Depletion) - 0.0625*(CVP/SWP Exports)

Study 634 San Joaquin River Fall Run Salmon Smolt Survival Model WITHOUT BARRIER AT HEAD OF OLD RIVER

Consumptive Depletion for April 1053.00 cfs

Consumptive Depletion for May 1053.00 cfs

San Joaquin River temperatures based on limited historical data from USBR

	A	B	C	F	G	H	I	J	K	L	M	N	O	P	Q	R	T	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK
4	**APRIL**	Water														**Calculated**	**MAY**													**Calculated**	
5		Year	Vernalis	CVP + SWP		Calculated				Temp @		Calculated Mortality				**Survivability**	Vernalis	CVP + SWP		Calculated				Temp @	Calculated Mortality					**Survivability**	**Weighted**
6	Year	Type	Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	**s234**	Flows	exports	exp/v-cd	Stockton Q	UOldR Flow	p3 Stkn	p2 UOldR	Jersey Pt.	m2	m34	m3	m4	m234	**s234**	**total survival**
7	1922	A	6,567	6,038	0.924	1,666	4,901	0.25	0.75	60.2	0.863	0.799	0.758	0.170	0.847	**15.3%**	6,048	6,763	1.124	1,458	4590	0.24	0.76	66.6	0.873	0.905	0.773	0.582	0.881	**11.9%**	**13.4%**
8	1923	B	6,119	6,824	1.121	1,477	4,643	0.24	0.76	59.7	0.871	0.813	0.771	0.181	0.857	**14.3%**	5,431	5,450	1.009	1,347	4084	0.25	0.75	66.0	0.888	0.886	0.781	0.480	0.887	**11.3%**	**12.6%**
9	1924	C	2,390	2,650	1.123	568	1,823	0.24	0.76	60.6	0.956	0.839	0.836	0.021	0.928	**7.2%**	2,142	1,059	0.502	589	1553	0.28	0.72	63.9	0.964	0.857	0.834	0.133	0.934	**6.6%**	**6.8%**
10	1925	D	4,686	6,202	1.333	1,066	3,620	0.23	0.77	63.4	0.902	0.874	0.801	0.366	0.895	**10.5%**	4,201	4,586	1.100	1,015	3186	0.24	0.76	67.3	0.915	0.904	0.804	0.512	0.912	**8.8%**	**9.5%**
11	1926	D	3,720	5,574	1.511	802	2,918	0.22	0.78	63.4	0.923	0.880	0.819	0.334	0.914	**8.6%**	3,227	3,864	1.209	754	2472	0.23	0.77	67.3	0.936	0.907	0.823	0.475	0.929	**7.1%**	**7.8%**
12	1927	W	5,976	6,144	1.034	1,474	4,502	0.25	0.75	57.1	0.875	0.772	0.772	0.000	0.850	**15.0%**	5,147	6,763	1.322	1,176	3972	0.23	0.77	64.2	0.891	0.884	0.793	0.441	0.890	**11.0%**	**12.8%**
13	1928	A	5,054	6,544	1.303	1,160	3,894	0.23	0.77	60.2	0.894	0.834	0.794	0.196	0.880	**12.0%**	4,000	5,616	1.415	887	3112	0.22	0.78	66.6	0.917	0.911	0.813	0.523	0.916	**8.4%**	**10.0%**
14	1929	C	2,547	2,808	1.116	607	1,940	0.24	0.76	60.6	0.952	0.838	0.833	0.029	0.925	**7.5%**	2,320	3,113	1.361	517	1803	0.22	0.78	63.9	0.956	0.878	0.840	0.238	0.939	**6.1%**	**6.7%**
15	1930	D	2,626	3,564	1.374	585	2,042	0.22	0.78	63.4	0.949	0.873	0.835	0.231	0.932	**6.8%**	2,347	3,505	1.514	501	1846	0.21	0.79	67.3	0.955	0.913	0.841	0.457	0.946	**5.4%**	**6.0%**
16	1931	C	1,725	2,830	1.671	348	1,377	0.20	0.80	60.6	0.969	0.856	0.852	0.030	0.946	**5.4%**	1,515	3,153	2.126	262	1253	0.17	0.83	63.9	0.973	0.892	0.858	0.240	0.959	**4.1%**	**4.7%**
17	1932	D	5,059	4,138	0.823	1,312	3,747	0.26	0.74	63.4	0.898	0.840	0.783	0.261	0.883	**11.7%**	4,193	4,125	0.991	1,041	3152	0.25	0.75	67.3	0.916	0.899	0.802	0.488	0.912	**8.8%**	**10.1%**
18	1933	C	2,655	3,464	1.320	600	2,055	0.23	0.77	60.6	0.949	0.844	0.834	0.063	0.925	**7.5%**	2,428	2,913	1.215	563	1865	0.23	0.77	63.9	0.954	0.874	0.836	0.228	0.936	**6.4%**	**6.9%**
19	1934	C	2,435	3,439	1.431	533	1,903	0.22	0.78	60.6	0.953	0.848	0.839	0.061	0.930	**7.0%**	2,150	2,957	1.396	473	1677	0.22	0.78	63.9	0.960	0.879	0.843	0.230	0.942	**5.8%**	**6.3%**
20	1935	B	6,372	6,944	1.095	1,548	4,824	0.24	0.76	59.7	0.866	0.810	0.766	0.187	0.852	**14.8%**	6,152	5,926	0.968	1,543	4609	0.25	0.75	66.0	0.872	0.884	0.767	0.504	0.875	**12.5%**	**13.5%**
21	1936	B	6,605	5,906	0.898	1,687	4,919	0.26	0.74	59.7	0.863	0.789	0.757	0.135	0.844	**15.6%**	5,159	5,396	1.052	1,265	3894	0.25	0.75	66.0	0.894	0.888	0.787	0.477	0.892	**10.8%**	**12.9%**
22	1937	B	8,394	8,151	0.975	2,107	6,287	0.25	0.75	59.7	0.822	0.795	0.727	0.249	0.815	**18.5%**	8,755	7,262	0.832	2,276	6479	0.26	0.74	66.0	0.816	0.878	0.715	0.572	0.832	**16.8%**	**17.6%**
23	1938	W	18,074	7,824	0.434	5,164	12,910	0.29	0.71	57.1	0.623	0.549	0.510	0.080	0.602	**39.8%**	24,604	9,542	0.388	7,105	17499	0.29	0.71	64.2	0.485	0.738	0.372	0.583	0.558	**44.2%**	**42.2%**
24	1939	D	4,399	3,925	0.899	1,118	3,281	0.25	0.75	63.4	0.912	0.848	0.797	0.250	0.896	**10.4%**	3,756	3,484	0.936	944	2812	0.25	0.75	67.3	0.926	0.896	0.809	0.456	0.919	**8.1%**	**9.2%**
25	1940	A	6,757	6,944	1.032	1,669	5,088	0.25	0.75	60.2	0.858	0.810	0.758	0.217	0.846	**15.4%**	5,476	6,238	1.146	1,312	4165	0.24	0.76	66.6	0.886	0.904	0.783	0.555	0.890	**11.0%**	**13.0%**
26	1941	W	10,108	9,415	0.934	2,566	7,542	0.25	0.75	57.1	0.784	0.744	0.694	0.161	0.774	**22.6%**	10,213	9,932	0.976	2,567	7646	0.25	0.75	64.2	0.781	0.879	0.694	0.603	0.806	**19.4%**	**20.9%**
27	1942	W	6,960	6,944	1.002	1,733	5,227	0.25	0.75	57.1	0.854	0.762	0.753	0.035	0.831	**16.9%**	6,349	7,488	1.185	1,507	4842	0.24	0.76	64.2	0.865	0.880	0.769	0.478	0.869	**13.1%**	**14.8%**
28	1943	W	7,939	9,287	1.174	1,894	6,045	0.24	0.76	57.1	0.829	0.782	0.742	0.155	0.818	**18.2%**	6,808	6,949	1.025	1,685	5123	0.25	0.75	64.2	0.857	0.866	0.757	0.451	0.859	**14.1%**	**15.9%**
29	1944	D	5,537	4,478	0.813	1,441	4,096	0.26	0.74	63.4	0.888	0.837	0.774	0.278	0.874	**12.6%**	4,107	3,781	0.928	1,036	3072	0.25	0.75	67.3	0.918	0.896	0.803	0.471	0.913	**8.7%**	**10.5%**
30	1945	B	6,808	4,254	0.628	1,853	4,955	0.27	0.73	59.7	0.862	0.758	0.745	0.050	0.833	**16.7%**	5,708	4,573	0.806	1,488	4220	0.26	0.74	66.0	0.884	0.870	0.771	0.435	0.880	**12.0%**	**14.1%**
31	1946	B	5,617	4,928	0.882	1,438	4,180	0.26	0.74	59.7	0.885	0.793	0.774	0.085	0.862	**13.8%**	4,884	4,977	1.026	1,205	3679	0.25	0.75	66.0	0.900	0.886	0.791	0.456	0.897	**10.3%**	**11.9%**
32	1947	D	3,476	3,844	1.116	834	2,642	0.24	0.76	63.4	0.931	0.862	0.817	0.246	0.915	**8.5%**	3,198	3,216	1.016	786	2412	0.25	0.75	67.3	0.938	0.900	0.821	0.442	0.929	**7.1%**	**7.8%**
33	1948	B	4,114	5,620	1.377	923	3,191	0.22	0.78	59.7	0.915	0.834	0.811	0.120	0.896	**10.4%**	3,761	6,763	1.813	741	3020	0.20	0.80	66.0	0.920	0.920	0.824	0.547	0.920	**8.0%**	**9.1%**
34	1949	D	3,666	3,832	1.054	894	2,772	0.24	0.76	63.4	0.927	0.859	0.813	0.245	0.911	**8.9%**	3,316	4,105	1.250	767	2549	0.23	0.77	67.3	0.934	0.909	0.822	0.487	0.928	**7.2%**	**8.0%**
35	1950	B	3,751	5,002	1.345	848	2,903	0.23	0.77	59.7	0.923	0.832	0.816	0.088	0.903	**9.7%**	3,347	4,264	1.286	767	2580	0.23	0.77	66.0	0.933	0.897	0.822	0.419	0.925	**7.5%**	**8.5%**
36	1951	A	5,577	4,496	0.811	1,452	4,125	0.26	0.74	60.2	0.887	0.794	0.773	0.092	0.863	**13.7%**	4,455	5,796	1.310	1,019	3436	0.23	0.77	66.6	0.907	0.908	0.804	0.532	0.908	**9.2%**	**11.3%**
37	1952	W	10,860	7,954	0.735	2,893	7,967	0.27	0.73	57.1	0.771	0.700	0.671	0.087	0.752	**24.8%**	16,086	9,449	0.589	4,439	11647	0.28	0.72	64.2	0.661	0.815	0.561	0.578	0.704	**29.6%**	**27.5%**
38	1953	W	4,510	4,958	1.107	1,088	3,421	0.24	0.76	57.1	0.908	0.799	0.799	0.000	0.882	**11.8%**	4,077	7,126	1.762	817	3260	0.20	0.80	64.2	0.913	0.902	0.818	0.460	0.911	**8.9%**	**10.3%**
39	1954	A	4,626	6,144	1.337	1,051	3,575	0.23	0.77	60.2	0.903	0.837	0.802	0.176	0.888	**11.2%**	3,921	6,213	1.597	825	3096	0.21	0.79	66.6	0.918	0.919	0.818	0.554	0.918	**8.2%**	**9.6%**
40	1955	D	2,800	3,082	1.113	669	2,131	0.24	0.76	63.4	0.947	0.864	0.829	0.207	0.927	**7.3%**	2,688	3,600	1.355	602	2086	0.22	0.78	67.3	0.948	0.910	0.834	0.461	0.939	**6.1%**	**6.6%**
41	1956	W	5,613	5,550	0.994	1,398	4,216	0.25	0.75	57.1	0.884	0.777	0.777	0.000	0.857	**14.3%**	6,652	6,763	1.021	1,648	5005	0.25	0.75	64.2	0.860	0.866	0.759	0.441	0.862	**13.8%**	**14.0%**
42	1957	A	4,565	5,436	1.199	1,076	3,489	0.24	0.76	60.2	0.906	0.828	0.800	0.140	0.887	**11.3%**	4,284	5,606	1.318	977	3307	0.23	0.77	66.6	0.911	0.908	0.807	0.523	0.910	**9.0%**	**10.0%**
43	1958	W	14,929	9,590	0.644	4,067	10,862	0.27	0.73	57.1	0.685	0.658	0.588	0.170	0.677	**32.3%**	13,807	10,842	0.787	3,637	10170	0.26	0.74	64.2	0.705	0.866	0.618	0.649	0.748	**25.2%**	**28.4%**
44	1959	B	4,283	3,540	0.833	1,106	3,177	0.26	0.74	59.7	0.915	0.801	0.798	0.014	0.886	**11.4%**	3,062	3,370	1.112	733	2328	0.24	0.76	66.0	0.941	0.890	0.824	0.374	0.928	**7.2%**	**9.1%**
45	1960	D	2,656	3,584	1.366	593	2,063	0.22	0.78	63.4	0.949	0.873	0.834	0.233	0.932	**6.8%**	2,392	3,569	1.512	511	1881	0.21	0.79	67.3	0.954	0.914	0.840	0.460	0.945	**5.5%**	**6.1%**
46	1961	D	1,799	3,336	1.888	339	1,460	0.19	0.81	63.4	0.967	0.885	0.852	0.220	0.951	**4.9%**	1,596	2,954	1.888	300	1296	0.19	0.81	67.3	0.972	0.917	0.855	0.428	0.961	**3.9%**	**4.3%**
47	1962	B	4,898	4,452	0.915	1,242	3,656	0.25	0.75	59.7	0.901	0.801	0.788	0.060	0.875	**12.5%**	3,841	4,606	1.209	901	2941	0.23	0.77	66.0	0.922	0.894	0.812	0.437	0.916	**8.4%**	**10.2%**
48	1963	W	6,131	6,944	1.138	1,473	4,658	0.24	0.76	57.1	0.871	0.780	0.772	0.035	0.849	**15.1%**	5,544	7,488	1.358	1,255	4289	0.23	0.77	64.2	0.882	0.889	0.787	0.478	0.883	**11.7%**	**13.2%**
49	1964	D	2,637	2,902	1.114	629	2,008	0.24	0.76	63.4	0.950	0.865	0.832	0.198	0.930	**7.0%**	2,454	3,490	1.441	535	1918	0.22	0.78	67.3	0.953	0.912	0.838	0.456	0.944	**5.6%**	**6.2%**
50	1965	W	6,879	6,944	1.014	1,708	5,171	0.25	0.75	57.1	0.855	0.764	0.755	0.035	0.833	**16.7%**	5,773	7,475	1.302	1,327	4446	0.23	0.77	64.2	0.877	0.886	0.782	0.478	0.879	**12.1%**	**14.2%**
51	1966	B	4,239	4,202	0.999	1,051	3,188	0.25	0.75	59.7	0.915	0.811	0.802	0.048	0.889	**11.1%**	3,256	4,117	1.277	748	2508	0.23	0.77	66.0	0.935	0.896	0.823	0.412	0.926	**7.4%**	**9.0%**
52	1967	W	13,636	8,591	0.631	3,724	9,912	0.27	0.73	57.1	0.713	0.658	0.612	0.119	0.698	**30.2%**	16,633	9,648	0.581	4,598	12035	0.28	0.72	64.2	0.649	0.815	0.550	0.589	0.695	**30.5%**	**30.4%**
53	1968	B	4,262	4,450	1.052	1,042	3,220	0.24	0.76	59.7	0.914	0.814	0.802	0.060	0.889	**11.1%**	3,327	3,383	1.027	816	2511	0.25	0.75	66.0	0.935	0.886	0.818	0.374	0.923	**7.7%**	**9.2%**
54	1969	W	20,948	7,613	0.364	6,079	14,869	0.29	0.71	57.1	0.564	0.483	0.445	0.069	0.541	**45.9%**	26,564	9,217	0.347	7,741	18823	0.29	0.71	66.4	0.446	0.795	0.327	0.695	0.547	**45.3%**	**45.6%**
55	1970	W	5,784	4,254	0.740	1,532	4,252	0.26	0.74	57.1	0.883	0.768	0.768	0.000	0.852	**14.8%**	4,817	4,293	0.897	1,226	3590	0.25	0.75	61.2	0.903	0.819	0.789	0.140	0.881	**11.9%**	**13.2%**
56	1971	W	4,500	5,696	1.275	1,039	3,461	0.23	0.77	57.1	0.907	0.803	0.803	0.000	0.883	**11.7%**	3,997	7,126	1.797	792	3205	0.20	0.80	64.2	0.914	0.903	0.820	0.460	0.912	**8.8%**	**10.1%**
57	1972	B	2,857	3,544	1.254	658	2,199	0.23	0.77	58.9	0.944	0.830	0.830	0.000	0.918	**8.2%**	2,661	3,504	1.333	599	2062	0.23	0.77	66.0	0.949	0.897	0.834	0.381	0.937	**6.3%**	**7.2%**
58	1973	A	6,756	6,328	0.941	1,707	5,049	0.25	0.75	59.2	0.859	0.786	0.755	0.127	0.841	**15.9%**	6,045	5,937	0.987	1,509	4536	0.25	0.75	66.3	0.874	0.890	0.769	0.522	0.878	**12.2%**	**13.9%**
59	1974	W	7,678	9,445	1.235	1,802	5,876	0.23	0.77	56.9	0.834	0.786	0.748	0.151	0.823	**17.7%**	6,067	6,763	1.121	1,464	4603	0.24	0.76	66.1	0.872	0.898	0.772	0.553	0.879	**12.1%**	**14.6%**
60	1975	W	6,769	6,944	1.031	1,673	5,096	0.25	0.75	53.7	0.858	0.758	0.758	0.000	0.833	**16.7%**	5,971	7,488	1.261	1,389	4582	0.23	0.77	61.5	0.873	0.849	0.778	0.320	0.867	**13.3%**	**14.8%**
61	1976	C	2,610	3,032	1.176	613	1,997	0.23	0.77	57.8	0.951	0.833	0.833	0.000	0.923	**7.7%**	2,377	3,099	1.321	536	1841	0.23	0.77	65.8	0.955	0.895	0.838	0.348	0.942	**5.8%**	**6.7%**
62	1977	C	1,672	2,857	1.742	330	1,342	0.20	0.80	62.0	0.970	0.870	0.853	0.114	0.950	**5.0%**	1,567	914	0.595	418	1149	0.27	0.73	62.3	0.976	0.852	0.847	0.032	0.943	**5.7%**	**5.4%**
63	1978	A	15,546	7,620	0.491	4,384	11,162	0.28	0.72	61.4	0.676	0.705	0.565	0.321	0.684	**31.6%**	11,612	8,413	0.726	3,100	8512	0.27	0.73	66.9	0.755	0.891	0.656	0.684	0.791	**20.9%**	**25.7%**
64	1979	B	6,439	5,886	0.919	1,636	4,804	0.25	0.75	60.5	0.866	0.803	0.760	0.180	0.850	**15.0%**	5,442	5,243	0.969	1,363	4079	0.25	0.75	66.0	0.888	0.883	0.780	0.469	0.887	**11.3%**	**13.0%**
65	1980	A	6,889	5,490	0.801	1,802	5,087	0.26	0.74	60.1	0.858	0.783	0.748	0.137	0.838	**16.2%**	7,126	8,042	1.134	1,716	5410	0.24	0.76	66.6	0.848	0.913	0.754	0.647	0.864	**13.6%**	**14.8%**
66	1981	D	4,369	4,948	1.141	1,045	3,324	0.24	0.76	64.6	0.911	0.876	0.802	0.372	0.902	**9.8%**	3,596	3,647	1.023	884	2713	0.25	0.75	68.7	0.929	0.915	0.814	0.546	0.926	**7.4%**	**8.5%**
67	1982	W	27,053	9,058	0.335	7,904	19,149	0.29	0.71	52.8	0.436	0.315	0.315	0.000	0.401	**59.9%**	17,518	10,919	0.624	4,797	12721	0.27	0.73	65.1	0.629	0.864	0.536	0.706	0.693	**30.7%**	**43.9%**
68	1983	W	20,853	7,071	0.340	6,083	14,770	0.29	0.71	57.2	0.567	0.471	0.444	0.048	0.539	**46.1%**	22,049	7,752	0.352	6,416	15633	0.29	0.71	61.3	0.541	0.607	0.421	0.322	0.561	**43.9%**	**44.9%**
69	1984	W	5,326	4,636	0.876	1,365	3,961	0.26	0.74	60.7	0.892	0.808	0.779	0.128	0.870	**13.0%**	4,528	5,126	1.140	1,084	3445	0.24	0.76	66.0	0.907	0.892	0.799	0.463	0.904	**9.6%**	**11.1%**
70	1985	D	3,824	3,862	1.018	942	2,882	0.25	0.75	62.5	0.924	0.846	0.809	0.194	0.905	**9.5%**	3,538	3,754	1.071	859	2679	0.24	0.76	65.1	0.930	0.878	0.815	0.341	0.917	**8.3%**	**8.8%**
71	1986	W	9,835	7,526	0.768	2,598	7,237	0.26	0.74	61.3	0.793	0.788	0.692	0.311	0.792	**20.8%**	8,707	8,565	0.987	2,180	6527	0.25	0.75	65.8	0.815	0.896	0.722	0.627	0.835	**16.5%**	**18.4%**
72	1987	D	2,779	3,245	1.181	653	2,126	0.23	0.77	62.3	0.947	0.856	0.830	0.151	0.925	**7.5%**	2,558	2,832	1.121	609	1949	0.24	0.76	68.6	0.952	0.916	0.833	0.498	0.943	**5.7%**	**6.5%**
73	1988	C	2,429	2,854	1.191	567	1,862	0.23	0.77	62.1	0.955	0.856	0.836	0.119	0.931	**6.9%**	2,216	2,991	1.369	492	1724	0.22	0.78	63.7	0.959	0.876	0.841	0.220	0.940	**6.0%**	**6.4%**
74	1989	D	2,112	5,224	2.511	320	1,792	0.15	0.85	64.1	0.957	0.906	0.854	0.357	0.949	**5.1%**	1,767	3,916	2.257	293	1474	0.17	0.83	66.7	0.966	0.919	0.856	0.442	0.958	**4.2%**	**4.6%**
75	1990	C	1,830	3,395	1.888	345	1,485	0.19	0.81	60.6	0.966	0.861	0.852	0.059	0.946	**5.4%**	1,593	2,715	1.739	314	1279	0.20	0.80	63.9	0.972	0.886	0.854	0.217	0.955	**4.5%**	**4.9%**
76	1991	C	2,436	3,921	1.631	503	1,933	0.21	0.79	60.6	0.952	0.854	0.841	0.086	0.932	**6.8%**	1,872	2,925	1.589	388	1484	0.21	0.79	63.9	0.966	0.883	0.849	0.228	0.949	**5.1%**	**5.9%**
77	1992	C	2,243	3,426	1.549	473	1,770	0.21	0.79	60.6	0.957	0.852	0.843	0.061	0.935	**6.5%**	1,751	2,950	1.716	348	1403	0.20	0.80	63.9	0.968	0.886	0.852	0.229	0.952	**4.8%**	**5.6%**

Formulas: San Joaquin River Fall Run Smolt Survival Model WITHOUT BARRIER

C7 ='Study 634 Flow Data'!AA7
D7 ='Study 634 Flow Data'!G7 (HIDDEN)
E7 ='Study 634 Flow Data'!Q7 (HIDDEN)
F7 =D7+E7
G7 =F7/(C7-0.03*$H$2)
H7 =IF((0.3137*C7-0.0156*$H$2-0.0625*F7)<0,0,(0.3137*C7-0.0156*$H$2-0.0625*F7))
I7 =C7-H7
J7 =H7/C7
K7 =I7/C7
M7 =(1.01045-0.00003*I7)
N7 =(O7+P7)-(O7*P7)
O7 =(0.87634-0.000071*H7)
P7 =IF((-3.65867+0.058492*L7+0.000051*F7)<0,0,(-3.65867+0.058492*L7+0.000051*F7))
Q7 =((K7*M7)+(J7*N7))
R7 =(1-Q7)

T7 ='Study 634 Flow Data'!AB7
U7 ='Study 634 Flow Data'!H7 (HIDDEN)
V7 ='Study 634 Flow Data'!R7 (HIDDEN)
W7 =U7+V7
X7 =W7/(T7-0.03*$H$3)
Y7 =IF((0.3137*T7-0.0156*$H$3-0.0625*W7)<0,0,(0.3137*T7-0.0156*$H$3-0.0625*W7))
Z7 =T7-Y7
AA7 =Y7/T7
AB7 =Z7/T7
AD7 =(1.01045-0.00003*Z7)
AE7 =(AF7+AG7)-(AF7*AG7)
AF7 =(0.87634-0.000071*Y7)
AG7 =IF((-3.65867+0.058492*AC7+0.000051*W7)<0,0,(-3.65867+0.058492*AC7+0.000051*W7))
AH7 =((AB7*AD7)+(AA7*AE7))
AI7 =(1-AH7)
AK7 =0.45*R7+0.55*AI7

Average: 13.06%

Note: Calculated San Joaquin River flows at Stockton = 0.3137*(Vernalis flow) - 0.0156*(Consumptive Depletion) - 0.0625*(CVP/SWP Exports)

PREDICTED STRIPED BASS YOUNG-OF-THE-YEAR ABUNDANCE AT 38 MM. - FLOW ALTERNATIVES

	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6	ALT 7	ALT 8
WET								
A_J_OUT	32060.44	30671.51	30800.37	30777.65	32135.86	30878.71	30792.99	31301.75
LOG A_J_OUT	4.505969	4.486735	4.488556	4.488236	4.50699	4.489659	4.488452	4.495569
A_J_DIV	10080.33	11759.9	11778.02	11780.85	12383.07	11819.5	11493.74	11367.96
A_J_WEST	7685	5862.929	6030.988	6002.083	7319.512	6028.464	5813.821	6493.845
PREDICTED YOY	45.74487	31.83851	31.29497	31.325	22.59278	30.96156	34.95581	34.84026
ABOVE NORMAL								
A_J_OUT	17446.98	18052.5	18092.58	18128.73	19217.45	18246.4	18010.23	18541.93
LOG A_J_OUT	4.24172	4.256537	4.2575	4.258367	4.283696	4.261177	4.255519	4.268155
A_J_DIV	10117.05	10945.43	10899.15	10893.7	11441.7	11162.43	10867.9	10433.35
A_J_WEST	1871.825	1262.3	1541.55	1572.925	2928.75	1301.225	952.05	1820.05
PREDICTED YOY	39.71946	34.12844	33.85077	33.88936	26.19523	32.12475	35.80542	38.87065
BELOW NORMAL								
A_J_OUT	10176.61	11646.98	11664.27	11663.41	12527.14	11712.43	11574.84	12154.77
LOG A_J_OUT	4.007603	4.066213	4.066857	4.066826	4.097852	4.068647	4.063515	4.084747
A_J_DIV	10419.98	10399.48	10400.91	10400.88	10949.27	10635.38	10453.8	9984.107
A_J_WEST	26.25	-70.1786	159.8929	142.7857	1190.821	-83.875	-360.5	479.7857
PREDICTED YOY	21.43304	27.13025	26.46986	26.51963	20.26502	24.89211	27.20305	31.48526
DRY								
A_J_OUT	6107	8637.906	8667.078	8655.719	8851.156	8825.969	8626.031	8997.594
LOG A_J_OUT	3.785828	3.936408	3.937873	3.937303	3.947	3.945762	3.935811	3.954126
A_J_DIV	10056.47	9584.016	9675	9669.594	9888.359	9801.406	9604.359	9433.688
A_J_WEST	-1354.91	-1149.2	-876.844	-871.375	-179.266	-1157.86	-1335.11	-741.516
PREDICTED YOY	9.870801	27.56434	25.90012	25.89022	22.32153	26.11887	27.86374	29.47782
CRITICAL								
A_J_OUT	4163.375	6523.604	6524.083	6519.104	6695.354	6538.521	6515.813	6597.771
LOG A_J_OUT	3.619446	3.814488	3.814519	3.814188	3.825774	3.81548	3.813969	3.819397
A_J_DIV	8203.375	6658.896	6914.271	6920.125	7580.396	6923.604	6759.667	6689.833
A_J_WEST	-375.292	-4.10417	95.27083	49.375	275.1875	-93.8125	-143.771	120.0625
PREDICTED YOY	11.76064	44.22303	41.22117	41.27	34.62151	41.78454	43.53747	43.95119
ALL YEARS								
A_J_OUT	15587.45	16495.54	16547.88	16542.83	17320.14	16637.93	16506.97	16932.29
LOG A_J_OUT	4.192775	4.217366	4.218742	4.21861	4.238551	4.221099	4.217667	4.228716
A_J_DIV	9836.664	10072	10133.07	10132.9	10642.87	10255.27	10016.25	9781.579
A_J_WEST	2113.579	1593.5	1800.253	1786.61	2741.134	1627.182	1417.49	2066.64
PREDICTED YOY	37.6166	38.89062	37.7353	37.76694	31.22339	37.17946	40.04419	41.52271

SUMMARY - PREDICTED 38 MM INDEX

	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6	ALT 7	ALT 8
ALL YEARS	37.6166	38.89062	37.7353	37.76694	31.22339	37.17946	40.04419	41.52271
WET	45.74487	31.83851	31.29497	31.325	22.59278	30.96156	34.95581	34.84026
ABOVE NORMAL	39.71946	34.12844	33.85077	33.88936	26.19523	32.12475	35.80542	38.87065
BELOW NORMAL	21.43304	27.13025	26.46986	26.51963	20.26502	24.89211	27.20305	31.48526
DRY	9.870801	27.56434	25.90012	25.89022	22.32153	26.11887	27.86374	29.47782
CRITICAL	11.76064	44.22303	41.22117	41.27	34.62151	41.78454	43.53747	43.95119

A_J_OUT = Mean April through July net Delta Outflow
LOG A_J_OUT = Log10(Mean April through July net Delta Outflow)
A_J_DIV = Mean April through July total Delta exports (including CVP, SWP, Contra Costa Canal, and miscellaneous Delta diversions)
A_J_WEST = Mean April through July flow, San Joaquin River at Jersey Point (QWEST)
PREDICTED YOY = -222.869+(88.483*LOG A_J_OUT)+(-0.010578*A_J_DIV)+(-0.0030524*A_J_WEST)

PREDICTED STRIPED BASS YOUNG-OF-THE-YEAR ABUNDANCE AT 38 MM. - CUMULATIVE IMPACTS

	No Project	Bay-Delta Plan	Cumulative Impacts
WET			
A_J_OUT	32060.4	32060.4	29854.8
LOG A_J_OUT	4.5	4.5	4.5
A_J_DIV	10080.3	11762.3	12814.0
A_J_WEST	7685.1	5930.7	4948.5
PREDICTED YOY	45.7	33.3	22.4
ABOVE NORMAL			
A_J_OUT	17447.0	17447.0	17290.3
LOG A_J_OUT	4.2	4.2	4.2
A_J_DIV	10117.0	10938.1	11982.3
A_J_WEST	1871.8	1270.1	291.6
PREDICTED YOY	39.7	32.9	24.5
BELOW NORMAL			
A_J_OUT	10176.6	10176.6	11227.3
LOG A_J_OUT	4.0	4.0	4.1
A_J_DIV	10420.0	10399.1	11039.3
A_J_WEST	26.3	-88.9	-639.9
PREDICTED YOY	21.4	22.0	20.7
DRY			
A_J_OUT	6107.0	6107.0	8109.2
LOG A_J_OUT	3.8	3.8	3.9
A_J_DIV	10056.5	9592.8	9617.5
A_J_WEST	-1354.9	-1137.9	-1297.8
PREDICTED YOY	9.9	14.1	25.2
CRITICAL			
A_J_OUT	4163.4	4163.4	6360.0
LOG A_J_OUT	3.6	3.6	3.8
A_J_DIV	8203.4	6749.0	6768.8
A_J_WEST	-375.3	12.8	-40.4
PREDICTED YOY	11.8	26.0	42.2
ALL YEARS			
A_J_OUT	15587.5	15587.5	15932.9
LOG A_J_OUT	4.2	4.2	4.2
A_J_DIV	9836.7	10088.3	10665.4
A_J_WEST	2113.6	1615.7	1049.7
PREDICTED YOY	37.6	36.5	32.9

SUMMARY - PREDICTED 38 MM INDEX

	No Project	Bay-Delta Plan	Cumulative Impacts
ALL YEARS	37.6	36.5	32.9
WET	45.7	33.3	22.4
ABOVE NORMAL	39.7	32.9	24.5
BELOW NORMAL	21.4	22.0	20.7
DRY	9.9	14.1	25.2
CRITICAL	11.8	26.0	42.2

A_J_OUT = Mean April through July net Delta Outflow
LOG A_J_OUT = Log10(Mean April through July net Delta Outflow)
A_J_DIV = Mean April through July total Delta exports (including CVP, SWP, Contra Costa Canal, and miscellaneous Delta diversions)
A_J_WEST = Mean April through July flow - San Joaquin River at Jersey Point (QWEST)
PREDICTED YOY = -222.869+(88.483*LOG A_J_OUT)+(-0.010578*A_J_DIV)+(-0.0030524*A_J_WEST)

PREDICTED STRIPED BASS YOUNG-OF-THE-YEAR ABUNDANCE AT 38 MM. - JOINT POINT OF DIVERSION ALTERNATIVES

	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6	ALT 7	ALT 8	ALT 9
WET									
A_J_OUT	32060.44	32060.44	30766.36	31186	30752.5	30776.82	30412.18	30502.85	31300.37
LOG A_J_OUT	4.505969	4.505969	4.488076	4.493954	4.48788	4.488224	4.483048	4.48434	4.495549
A_J_DIV	10080.33	11762.32	11755.8	11376.94	11817.19	11529.94	12291.79	12305.15	11389.07
A_J_WEST	7685	5930.738	5951.393	6344.524	5902.179	5787.071	5467.714	5483.238	6481.262
PREDICTED YOY	45.74487	33.30788	31.73058	35.05819	31.21407	34.63434	27.09233	27.01792	34.6537
ABOVE NORMAL									
A_J_OUT	17446.98	17446.98	18048.7	18515.2	18046.53	17982	17721.23	17727.38	18545.28
LOG A_J_OUT	4.24172	4.24172	4.256446	4.267528	4.256394	4.254838	4.248494	4.248644	4.268233
A_J_DIV	10117.05	10938.13	10967.83	10572.58	10985.65	10961.75	11749.78	11838.05	10518.15
A_J_WEST	1871.825	1270.1	1251.475	1684.275	1240.975	884.9	791.0513	721.8462	1767.45
PREDICTED YOY	39.71946	32.87078	33.91645	37.75694	33.75532	34.95737	26.34675	25.63755	38.14113
BELOW NORMAL									
A_J_OUT	10176.61	10176.61	11600.52	12131.88	11638.89	11547.13	11542.45	8629.781	12204
LOG A_J_OUT	4.007603	4.007603	4.064477	4.083928	4.065912	4.062474	4.062298	3.936	4.086502
A_J_DIV	10419.98	10399.13	10533.66	10087	10570.14	10589.13	11245.41	10339.5	10086.45
A_J_WEST	26.25	-88.875	-184.25	325.9821	-204.5893	-454.6607	-709.5893	-1658.578	423.5536
PREDICTED YOY	21.43304	22.00507	25.90549	30.79388	25.70858	25.96692	19.7873	21.09148	30.72969
DRY									
A_J_OUT	6107	6107	8635.422	8855.438	8530.938	8567.172	8602.344	8629.781	8888.766
LOG A_J_OUT	3.785828	3.785828	3.936284	3.94721	3.930997	3.932837	3.934617	3.936	3.948841
A_J_DIV	10056.47	9592.75	9684.547	9413.188	9626.969	9650.375	10201.77	10339.5	9472.422
A_J_WEST	-1354.906	-1137.906	-1201.844	-891.5781	-1169.766	-1373.266	-1572.016	-1658.578	-782.3438
PREDICTED YOY	9.870801	14.11365	26.65055	29.54074	26.6939	27.23035	22.16184	21.09148	28.72509
CRITICAL									
A_J_OUT	4163.375	4163.375	6526	6553.854	6530.146	6515.063	6553.667	6546.958	6603.958
LOG A_J_OUT	3.619446	3.619446	3.814647	3.816497	3.814923	3.813919	3.816484	3.81604	3.819804
A_J_DIV	8203.375	6748.979	6748.521	6756.958	6873.917	6759.333	7024.167	6807.833	6671.75
A_J_WEST	-375.2917	12.79167	15.54167	33.16667	-73.64583	-147.9583	-171.8958	-19.60417	138.8542
PREDICTED YOY	11.76064	25.96065	43.22912	43.24974	42.19933	43.54936	41.04804	42.83221	44.12114
ALL YEARS									
A_J_OUT	15587.45	15587.45	16513.24	16852.44	16494.1	16480.12	16352.65	16383.53	16918.96
LOG A_J_OUT	4.192775	4.192775	4.217832	4.226663	4.217329	4.21696	4.213588	4.214407	4.228374
A_J_DIV	9836.664	10088.35	10136.39	9829.507	10171.48	10075.51	10692.87	10705.68	9824.411
A_J_WEST	2113.579	1615.743	1587.281	1928.414	1560.154	1373.486	1173.684	1173.729	2039.171
PREDICTED YOY	37.6166	36.47387	38.26974	41.25599	37.93675	39.48916	33.27024	33.20702	41.12321

SUMMARY - PREDICTED 38 MM INDEX

	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6	ALT 7	ALT 8	ALT 9
ALL YEARS	37.6166	36.47387	38.26974	41.25599	37.93675	39.48916	33.27024	33.20702	41.12321
WET	45.74487	33.30788	31.73058	35.05819	31.21407	34.63434	27.09233	27.01792	34.6537
ABOVE NORMAL	39.71946	32.87078	33.91645	37.75694	33.75532	34.95737	26.34675	25.63755	38.14113
BELOW NORMAL	21.43304	22.00507	25.90549	30.79388	25.70858	25.96692	19.7873	21.09148	30.72969
DRY	9.870801	14.11365	26.65055	29.54074	26.6939	27.23035	22.16184	21.09148	28.72509
CRITICAL	11.76064	25.96065	43.22912	43.24974	42.19933	43.54936	41.04804	42.83221	44.12114

A_J_OUT = Mean April through July net Delta Outflow
LOG A_J_OUT = Log10(Mean April through July net Delta Outflow)
A_J_DIV = Mean April through July total Delta exports (including CVP, SWP, Contra Costa Canal, and miscellaneous Delta diversions)
A_J_WEST = Mean April through July flow - San Joaquin River at Jersey Point (QWEST)
PREDICTED YOY = -222.869+(88.483*LOG A_J_OUT)+(-0.010578*A_J_DIV)+(-0.0030524*A_J_WEST)

Predicted Water Temperature
Sacramento River at Keswick, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	49.2	53.2	49.9	46.4	47.2	49.8	49.8	48.1	49.1	49.8	49.9	48.3

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	49.4	53.4	49.9	46.4	47.2	49.8	49.8	48.1	49.1	50.3	49.9	47.5
3	49.4	53.4	49.9	46.4	47.2	49.8	49.8	48.1	49.1	50.3	49.9	47.5
4	49.4	53.4	49.9	46.4	47.2	49.8	49.8	48.1	49.1	50.3	49.9	47.5
5	49.4	53.4	49.9	46.4	47.2	49.9	49.8	48.1	49.1	50.3	49.9	47.5
6	49.4	53.4	49.9	46.4	47.2	49.8	49.8	48.1	49.1	50.3	49.9	47.5
8	49.4	53.4	49.9	46.4	47.2	49.8	49.8	48.1	49.1	50.3	49.9	47.5

Predicted Water Temperature
Sacramento River at Keswick, Above Normal Year (1928)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	49.4	50.2	49.3	45.5	49.2	53.6	50.5	49.5	48.6	49.1	49.2	49.2

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	49.3	50.0	49.3	45.5	49.2	53.6	50.5	49.1	48.5	49.1	49.3	49.2
3	49.2	50.0	49.3	45.5	49.2	53.6	50.5	49.1	48.5	49.2	49.3	49.1
4	49.2	50.0	49.3	45.5	49.2	53.6	50.5	49.1	48.5	49.2	49.3	49.1
5	49.1	49.9	49.3	45.6	49.3	53.6	50.6	49.3	48.2	49.5	49.4	48.9
6	49.2	49.9	49.3	45.5	49.2	53.6	50.5	49.1	48.0	49.2	49.5	49.2
8	49.3	50.1	49.3	45.5	49.2	53.6	50.5	49.1	48.4	49.2	49.3	49.2

Predicted Water Temperature
Sacramento River at Keswick, Below Normal Year (1979)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	46.9	48.2	48.3	45.3	46.6	51.6	50.7	49.5	48.7	49.3	49.4	49.7

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	46.7	48.2	48.3	45.3	46.6	51.6	50.7	50.0	48.4	49.3	49.7	49.8
3	46.8	48.6	48.3	45.3	46.6	51.6	50.7	50.0	48.6	49.3	49.8	50.0
4	46.8	48.6	48.3	45.3	46.6	51.6	50.7	50.0	48.6	49.3	49.8	50.1
5	47.1	49.1	48.3	45.3	46.7	51.9	50.8	50.0	48.7	49.4	49.7	49.9
6	46.7	48.3	48.3	45.3	46.6	51.7	50.7	50.0	48.1	49.3	49.7	49.1
8	46.8	48.3	48.3	45.3	46.6	51.6	50.7	50.0	48.3	49.3	49.7	49.8

Predicted Water Temperature
Sacramento River at Keswick, Dry Year (1964)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	48.5	50.5	48.2	45.1	50.7	50.8	51.1	48.9	48.5	49.5	49.6	50.0

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	48.0	50.9	48.2	45.1	51.0	51.0	51.1	49.1	48.0	49.5	50.0	51.2
3	48.0	50.9	48.2	45.1	51.0	50.9	51.1	49.1	48.1	49.5	50.0	50.5
4	48.0	50.9	48.2	45.1	51.0	50.9	51.1	49.1	48.1	49.5	50.0	50.5
5	48.0	50.8	48.2	45.1	50.8	50.9	51.2	49.1	48.2	49.5	49.9	50.7
6	48.3	50.6	48.2	45.1	51.0	51.3	51.1	49.1	48.0	49.8	49.6	53.0
8	48.0	50.9	48.2	45.1	51.0	50.8	51.1	49.1	48.0	49.5	49.9	50.6

Predicted Water Temperature
Sacramento River at Keswick, Critical Year (1992)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	53.0	54.6	49.0	44.8	46.6	47.6	52.1	49.8	49.2	50.2	50.1	49.8

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	55.6	55.3	48.8	44.6	46.8	47.7	50.0	49.6	48.7	50.4	51.2	51.0
3	54.6	55.2	48.8	44.7	46.7	47.6	50.7	49.6	48.8	50.1	51.2	50.3
4	54.1	55.0	48.8	44.7	46.7	47.6	50.7	49.6	48.7	49.9	51.2	51.5
5	52.6	54.4	48.9	44.7	46.5	47.6	52.1	49.9	48.6	50.4	50.6	49.4
6	56.2	55.4	48.8	44.6	46.9	47.7	50.1	49.6	48.7	50.5	51.2	51.0
8	56.3	55.5	48.8	44.6	46.9	47.7	50.3	49.6	48.8	50.6	51.2	50.6

Predicted Water Temperature
Sacramento River at Ball's Ferry, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	50.1	53.1	49.0	46.1	47.4	50.7	52.9	50.7	53.3	53.2	53.1	51.6

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	50.3	53.2	49.0	46.1	47.4	50.7	52.9	50.7	53.3	54.0	53.1	50.3
3	50.3	53.2	49.0	46.1	47.4	50.7	52.9	50.7	53.3	54.0	53.1	50.3
4	50.3	53.2	49.0	46.1	47.4	50.7	52.9	50.7	53.3	54.0	53.1	50.3
5	50.3	53.2	49.0	46.1	47.4	50.7	52.9	50.7	53.3	54.0	53.1	50.3
6	50.3	53.2	49.0	46.1	47.4	50.7	52.9	50.7	53.3	54.0	53.1	50.3
8	50.3	53.2	49.0	46.1	47.4	50.7	52.9	50.7	53.3	54.0	53.1	50.3

Predicted Water Temperature
Sacramento River at Ball's Ferry, Above Normal Year (1928)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	51.6	50.5	47.8	45.0	49.0	53.5	53.8	53.4	51.8	52.0	52.5	53.2

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	51.5	50.3	47.8	45.0	49.0	53.5	53.8	52.4	51.6	52.1	52.6	53.1
3	51.5	50.3	47.8	45.0	49.0	53.5	53.8	52.4	51.7	52.3	52.7	53.0
4	51.5	50.3	47.8	45.0	49.0	53.5	53.8	52.4	51.7	52.3	52.7	53.0
5	51.4	50.2	47.8	45.0	49.0	53.4	53.8	52.9	51.1	53.1	53.0	52.9
6	51.5	50.3	47.8	45.0	49.0	53.5	53.8	52.4	50.7	52.3	52.9	53.0
8	51.5	50.4	47.8	45.0	49.0	53.5	53.8	52.6	51.4	52.3	52.7	53.2

Predicted Water Temperature
Sacramento River at Ball's Ferry, Below Normal Year (1979)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	49.1	48.5	47.4	44.9	47.2	52.3	52.7	53.8	51.9	52.5	52.4	54.3

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	49.0	48.5	47.4	44.9	47.2	52.3	52.7	54.7	51.3	52.5	53.1	54.5
3	49.0	48.8	47.4	44.9	47.2	52.3	52.7	54.7	51.7	52.5	53.2	54.9
4	49.0	48.8	47.4	44.9	47.2	52.3	52.7	54.7	51.7	52.5	53.2	54.9
5	49.3	49.3	47.4	44.9	47.2	52.3	52.7	54.7	51.9	52.8	53.1	54.6
6	49.0	48.6	47.5	44.9	47.2	52.4	52.7	54.7	50.7	52.5	53.1	53.4
8	49.0	48.6	47.4	44.9	47.2	52.3	52.7	54.7	51.1	52.5	53.1	54.5

Predicted Water Temperature
Sacramento River at Ball's Ferry, Dry Year (1964)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	50.6	50.6	47.3	44.7	50.7	51.4	52.5	51.8	52.0	52.9	52.9	54.1

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	49.8	51.0	47.2	44.7	50.9	51.5	52.6	52.3	51.1	52.9	53.5	55.6
3	49.8	51.0	47.2	44.7	50.9	51.4	52.6	52.3	51.2	52.9	53.5	54.8
4	49.8	51.0	47.2	44.7	50.9	51.4	52.6	52.3	51.2	52.9	53.5	54.8
5	49.8	50.9	47.3	44.7	50.7	51.4	52.6	52.3	51.5	53.0	53.5	55.3
6	50.3	50.7	47.2	44.7	50.9	51.7	52.6	52.3	50.9	53.4	52.8	56.2
8	49.8	51.0	47.2	44.7	50.9	51.4	52.6	52.3	50.9	52.9	53.3	54.1

Predicted Water Temperature
Sacramento River at Ball's Ferry, Critical Year (1992)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	55.3	53.6	47.5	44.2	48.0	50.2	55.2	53.9	52.9	54.0	53.7	54.4

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	57.2	54.2	47.4	44.1	48.1	50.3	53.5	53.6	52.0	54.4	55.7	54.7
3	56.5	54.1	47.4	44.2	48.0	50.2	54.1	53.6	52.2	53.8	55.7	54.2
4	56.2	53.9	47.4	44.2	48.0	50.2	53.9	53.6	52.1	53.4	55.7	55.2
5	55.0	53.5	47.5	44.2	47.9	50.2	55.2	54.2	51.8	54.3	54.6	53.3
6	57.7	54.2	47.4	44.1	48.1	50.3	53.7	53.6	52.0	54.5	55.7	54.7
8	57.8	54.3	47.4	44.1	48.1	50.3	54.0	53.6	52.2	54.6	55.7	54.4

Predicted Water Temperature
Sacramento River at Bend Bridge, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	50.8	52.9	48.5	45.9	47.6	51.1	54.2	52.7	55.9	55.2	55.0	53.5

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	51.0	53.0	48.5	45.9	47.6	51.1	54.2	52.7	55.9	56.3	55.0	52.0
3	51.0	53.0	48.5	45.9	47.6	51.1	54.2	52.7	55.9	56.3	55.0	52.0
4	51.0	53.0	48.5	45.9	47.6	51.1	54.2	52.7	55.9	56.3	55.0	52.0
5	51.0	53.0	48.5	45.9	47.6	51.1	54.2	52.7	55.9	56.3	55.0	52.0
6	51.0	53.0	48.5	45.9	47.6	51.1	54.2	52.7	55.9	56.3	55.0	52.0
8	51.0	53.0	48.5	45.9	47.6	51.1	54.2	52.7	55.9	56.2	55.0	52.1

Predicted Water Temperature
Sacramento River at Bend Bridge, Above Normal Year (1928)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	52.8	50.6	47.2	45.0	48.8	53.3	54.7	56.1	54.1	53.9	54.4	55.2

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	52.7	50.4	47.2	45.0	48.8	53.3	54.7	54.9	53.8	54.0	54.5	55.1
3	52.7	50.4	47.2	45.0	48.8	53.3	54.7	54.9	53.9	54.2	54.6	55.0
4	52.7	50.4	47.2	45.0	48.8	53.3	54.7	54.9	53.9	54.2	54.6	55.0
5	52.6	50.3	47.2	45.0	48.8	53.2	54.7	55.5	53.1	55.2	54.9	54.9
6	52.7	50.4	47.2	45.0	48.8	53.3	54.7	54.9	52.6	54.3	54.8	55.0
8	52.7	50.5	47.2	45.0	48.8	53.3	54.7	55.1	53.6	54.2	54.6	55.2

Predicted Water Temperature
Sacramento River at Bend Bridge, Below Normal Year (1979)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	50.5	48.7	46.9	44.9	47.5	52.6	54.1	56.7	54.3	54.7	54.5	56.9

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	50.4	48.7	46.9	44.9	47.5	52.6	54.1	57.7	53.6	54.7	55.3	57.2
3	50.5	49.0	46.9	44.9	47.5	52.6	54.1	57.7	54.1	54.7	55.5	57.6
4	50.5	49.0	46.9	44.9	47.5	52.6	54.1	57.7	54.2	54.7	55.5	57.6
5	50.7	49.4	46.9	44.9	47.5	52.6	54.1	57.7	54.4	55.0	55.2	57.3
6	50.4	48.8	47.1	44.9	47.5	52.6	54.1	57.7	52.8	54.7	55.3	56.0
8	50.5	48.8	46.9	44.9	47.5	52.6	54.1	57.7	53.3	54.6	55.3	57.2

Predicted Water Temperature
Sacramento River at Bend Bridge, Dry Year (1964)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	51.6	50.6	46.7	44.7	50.4	51.6	53.2	53.5	54.1	55.0	54.9	56.2

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	50.7	50.9	46.7	44.7	50.6	51.6	53.4	54.1	53.0	55.1	55.6	57.7
3	50.7	50.9	46.7	44.7	50.6	51.6	53.4	54.1	53.2	55.0	55.6	57.0
4	50.7	50.9	46.7	44.7	50.6	51.6	53.4	54.1	53.2	55.0	55.6	57.0
5	50.7	50.8	46.7	44.7	50.4	51.6	53.4	54.1	53.5	55.1	55.6	57.6
6	51.3	50.6	46.7	44.7	50.7	51.8	53.4	54.1	52.8	55.6	54.8	57.8
8	50.7	50.9	46.7	44.7	50.7	51.6	53.4	54.1	52.9	55.0	55.5	56.1

Predicted Water Temperature
Sacramento River at Bend Bridge, Critical Year (1992)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	56.7	53.1	46.9	44.2	48.3	51.4	56.5	56.6	55.5	56.3	56.0	56.9

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	58.2	53.5	46.8	44.1	48.4	51.4	55.2	56.2	54.3	56.8	58.3	56.9
3	57.7	53.4	46.8	44.1	48.4	51.4	55.7	56.3	54.6	56.1	58.3	56.4
4	57.4	53.3	46.8	44.1	48.4	51.4	55.5	56.2	54.4	55.6	58.3	57.2
5	56.5	53.0	46.9	44.1	48.3	51.4	56.5	57.0	54.0	56.7	57.0	55.7
6	58.6	53.5	46.8	44.1	48.4	51.4	55.4	56.2	54.4	56.9	58.3	56.9
8	58.7	53.6	46.8	44.1	48.4	51.4	55.7	56.2	54.5	57.1	58.3	56.6

Predicted Water Temperature
Sacramento River at Vina, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	52.0	52.6	47.8	45.4	47.3	51.4	55.0	55.3	60.4	59.6	59.1	57.5

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	52.2	52.7	47.8	45.4	47.3	51.4	55.0	55.3	60.4	60.9	59.1	55.6
3	52.2	52.7	47.8	45.4	47.3	51.4	55.0	55.3	60.4	60.9	59.1	55.6
4	52.2	52.7	47.8	45.4	47.3	51.4	55.0	55.3	60.4	60.9	59.1	55.6
5	52.2	52.7	47.8	45.4	47.3	51.4	55.0	55.3	60.4	60.9	59.1	55.6
6	52.2	52.7	47.8	45.4	47.3	51.4	55.0	55.3	60.4	60.9	59.1	55.6
8	52.2	52.7	47.8	45.4	47.3	51.4	55.0	55.3	60.4	60.9	59.1	55.7

Predicted Water Temperature
Sacramento River at Vina, Above Normal Year (1928)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	54.7	50.6	46.5	44.4	48.3	52.7	55.5	60.1	58.6	57.9	58.4	58.8

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	54.7	50.4	46.5	44.4	48.3	52.7	55.5	58.7	58.2	58.1	58.6	58.7
3	54.6	50.4	46.5	44.4	48.3	52.7	55.5	58.7	58.4	58.3	58.7	58.6
4	54.6	50.4	46.5	44.4	48.3	52.7	55.5	58.7	58.4	58.3	58.7	58.6
5	54.5	50.4	46.5	44.4	48.3	52.7	55.5	59.4	57.3	59.6	59.2	58.5
6	54.6	50.4	46.5	44.4	48.3	52.7	55.5	58.7	56.7	58.4	59.0	58.5
8	54.7	50.5	46.5	44.4	48.3	52.7	55.5	58.9	58.0	58.3	58.7	58.8

Predicted Water Temperature
Sacramento River at Vina, Below Normal Year (1979)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	53.4	49.0	45.9	44.7	47.4	52.5	55.6	60.5	59.7	60.6	60.1	62.1

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	53.3	49.0	45.9	44.7	47.4	52.5	55.6	61.4	58.7	60.5	61.2	62.3
3	53.4	49.2	45.9	44.7	47.4	52.5	55.6	61.4	59.5	60.5	61.4	62.8
4	53.4	49.2	45.9	44.7	47.4	52.5	55.6	61.4	59.6	60.5	61.4	62.8
5	53.6	49.5	45.9	44.7	47.4	52.6	55.6	61.4	59.8	61.0	61.1	62.4
6	53.3	49.0	46.2	44.7	47.4	52.6	55.6	61.4	57.6	60.5	61.2	61.1
8	53.4	49.0	45.9	44.7	47.4	52.5	55.6	61.4	58.4	60.4	61.1	62.3

Predicted Water Temperature
Sacramento River at Vina, Dry Year (1964)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	53.3	50.4	45.7	44.2	50.0	51.7	54.7	56.7	58.4	59.9	59.4	60.3

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	52.3	50.6	45.7	44.2	50.2	51.8	54.9	57.3	57.0	59.9	60.2	61.8
3	52.3	50.6	45.7	44.2	50.2	51.8	54.9	57.3	57.2	59.9	60.2	61.1
4	52.3	50.6	45.7	44.2	50.2	51.8	54.9	57.3	57.2	59.9	60.2	61.1
5	52.3	50.6	45.7	44.2	50.0	51.8	54.9	57.3	57.7	60.0	60.2	61.8
6	53.0	50.4	45.7	44.2	50.3	51.9	54.9	57.3	56.7	60.7	59.1	61.1
8	52.3	50.6	45.7	44.2	50.3	51.7	54.9	57.3	56.8	59.9	60.1	59.9

Predicted Water Temperature
Sacramento River at Vina, Critical Year (1992)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	59.5	52.9	46.2	43.6	48.2	51.8	57.6	61.1	60.3	61.5	61.2	62.0

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	60.4	53.1	46.1	43.6	48.2	51.9	56.8	60.7	58.9	62.2	64.1	61.4
3	60.1	53.1	46.1	43.6	48.2	51.8	57.1	60.8	59.3	61.3	64.1	61.1
4	59.9	53.0	46.1	43.6	48.2	51.8	57.0	60.7	59.0	60.6	64.1	61.6
5	59.3	52.8	46.1	43.6	48.1	51.8	57.6	61.5	58.6	62.0	62.5	60.5
6	60.7	53.2	46.1	43.6	48.2	51.9	57.0	60.7	59.0	62.3	64.1	61.4
8	60.7	53.2	46.1	43.6	48.2	51.9	57.2	60.7	59.1	62.5	64.1	61.2

Predicted Water Temperature
Feather River Downstream of the Afterbay, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	57.6	53.8	49.6	47.8	47.8	54.0	53.2	59.0	64.4	70.0	69.3	64.1

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	56.9	53.8	49.4	47.8	47.8	54.0	53.2	59.0	64.4	70.5	69.2	64.1
3	56.9	53.8	49.6	47.8	47.8	54.0	53.2	59.0	64.4	70.6	69.2	64.1
4	56.9	53.8	49.7	47.7	47.8	54.0	53.2	59.0	64.4	70.6	69.2	64.1
5	56.9	53.8	49.8	47.8	47.8	54.0	53.2	59.0	64.4	70.9	69.2	64.4
6	56.9	53.8	49.5	47.8	47.8	54.0	53.2	59.0	64.4	70.5	69.2	64.1
8	57.0	53.8	49.5	47.8	47.8	54.0	53.2	59.0	64.4	69.5	69.2	64.1

Predicted Water Temperature
Feather River Downstream of the Afterbay, Above Normal Year (1928)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	61.2	53.0	45.8	46.0	49.6	49.3	56.6	63.7	66.6	68.4	67.3	66.0

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	61.2	53.0	45.8	46.1	49.0	49.3	56.6	61.8	66.0	66.3	66.7	64.9
3	61.2	53.0	45.8	46.2	49.0	49.3	56.6	61.8	66.1	66.4	66.6	64.9
4	61.2	53.0	45.8	46.2	49.0	49.3	56.6	61.8	66.1	66.4	66.6	64.9
5	61.2	52.8	45.7	46.2	49.0	49.3	56.6	62.3	67.3	66.8	67.6	64.9
6	61.2	53.0	45.8	46.0	49.0	49.3	56.6	62.1	66.2	66.4	66.7	64.9
8	61.2	53.0	45.8	46.0	49.5	49.2	56.6	62.4	66.1	66.4	66.4	64.9

Predicted Water Temperature
Feather River Downstream of the Afterbay, Below Normal Year (1979)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	62.1	51.6	44.0	45.8	47.4	54.5	57.7	64.2	68.0	71.0	67.6	67.2

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	62.1	51.6	44.0	45.8	47.4	54.5	57.7	64.2	64.8	68.3	70.0	67.2
3	62.5	51.6	44.0	45.8	47.4	54.5	57.7	64.2	65.2	68.3	70.0	67.2
4	62.5	51.6	44.0	45.8	47.4	54.5	57.7	64.2	65.2	68.3	70.0	67.2
5	61.1	51.6	44.1	45.8	47.4	54.5	57.7	64.2	65.0	69.5	70.0	67.2
6	62.1	51.6	44.0	45.8	47.4	54.5	57.7	64.2	65.6	67.7	70.0	67.2
8	62.1	51.6	44.0	45.8	47.4	54.5	57.7	64.2	65.1	67.7	69.5	67.2

Predicted Water Temperature
Feather River Downstream of the Afterbay, Dry Year (1964)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	61.5	52.1	42.7	45.6	50.9	52.8	55.5	60.4	67.2	70.3	69.0	65.5

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	61.5	52.1	42.6	45.3	50.9	52.8	56.4	62.4	66.0	68.5	68.1	64.3
3	61.5	52.1	42.6	45.4	50.9	52.8	56.4	61.9	66.2	68.6	68.1	64.5
4	61.5	52.1	42.6	45.4	50.9	52.8	56.4	61.9	66.2	68.6	68.1	64.5
5	61.5	52.1	42.7	45.6	50.9	52.8	56.4	61.9	66.7	68.7	68.0	65.0
6	61.5	52.1	42.6	45.3	50.9	52.8	56.4	62.1	66.0	68.5	68.1	64.6
8	61.5	52.1	42.6	45.1	50.9	53.3	56.4	61.9	66.2	68.5	68.0	64.8

Predicted Water Temperature
Feather River Downstream of the Afterbay, Critical Year (1992)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	62.5	53.2	45.6	44.0	52.2	55.5	58.0	65.8	68.0	70.7	70.6	65.3

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	62.3	53.3	46.2	44.0	52.2	55.5	58.0	66.0	67.9	70.9	69.0	65.9
3	62.4	53.3	46.2	44.0	52.2	55.5	58.0	64.4	67.9	70.9	69.0	65.9
4	62.4	53.3	46.2	44.0	52.2	55.5	58.0	64.9	67.9	70.9	69.0	65.9
5	62.0	53.3	46.2	43.9	52.2	55.5	58.0	65.7	67.8	70.8	69.0	65.6
6	62.4	53.3	46.2	44.0	52.2	55.5	58.0	66.2	67.9	70.9	69.0	65.9
8	62.2	53.3	46.2	44.0	52.2	55.5	58.0	65.9	67.9	70.9	69.0	65.9

Predicted Water Temperature
Feather River at Honcut Creek, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.0	53.9	49.5	47.7	47.9	54.3	53.8	59.9	66.1	71.8	70.8	66.5

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	57.4	53.9	49.3	47.7	47.9	54.3	53.8	59.9	66.1	72.4	72.1	66.5
3	57.4	53.9	49.5	47.7	47.9	54.3	53.8	59.9	66.1	72.5	72.1	66.5
4	57.4	53.9	49.6	47.6	47.9	54.3	53.8	59.9	66.1	72.5	72.1	66.5
5	57.4	53.9	49.7	47.7	47.9	54.3	53.8	59.9	66.1	74.6	72.1	65.7
6	57.4	53.9	49.4	47.7	47.9	54.3	53.8	59.9	66.1	72.4	72.1	66.5
8	57.4	53.9	49.4	47.7	47.9	54.3	53.8	59.9	66.1	71.3	72.1	66.5

Predicted Water Temperature
Feather River at Honcut Creek, Above Normal Year (1928)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	61.4	52.9	45.4	45.9	49.8	49.7	58.4	66.5	68.2	69.7	68.5	67.2

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	61.4	52.9	45.4	46.0	49.2	49.7	58.4	63.1	67.6	67.5	67.8	66.8
3	61.4	52.9	45.4	46.0	49.2	49.7	58.4	63.1	67.7	67.6	67.8	66.8
4	61.4	52.9	45.4	46.0	49.2	49.7	58.4	63.1	67.7	67.6	67.8	66.8
5	61.4	52.8	45.3	46.1	49.2	49.7	58.4	63.6	69.0	68.0	68.8	66.8
6	61.4	52.9	45.4	45.9	49.2	49.7	58.4	63.4	67.7	67.6	67.9	66.8
8	61.4	52.9	45.4	45.9	49.7	49.6	58.4	63.8	67.7	67.6	67.5	66.8

Predicted Water Temperature
Feather River at Honcut Creek, Below Normal Year (1979)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	63.2	51.5	43.6	45.7	47.6	55.0	59.5	67.1	71.2	72.6	68.8	69.5

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	63.2	51.5	43.6	45.7	47.6	55.0	59.5	67.1	66.4	69.7	71.5	69.5
3	63.4	51.5	43.6	45.7	47.6	55.0	59.5	67.1	66.8	69.7	71.5	69.5
4	63.4	51.5	43.6	45.7	47.6	55.0	59.5	67.1	66.8	69.7	71.5	69.5
5	61.9	51.5	43.6	45.7	47.6	55.0	59.5	67.1	66.5	70.9	71.4	69.5
6	63.3	51.5	43.6	45.7	47.6	55.0	59.5	67.1	67.2	69.1	71.5	69.5
8	63.2	51.5	43.6	45.7	47.6	55.0	59.5	67.1	66.6	69.0	70.8	69.5

Predicted Water Temperature
Feather River at Honcut Creek, Dry Year (1964)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	61.9	52.0	42.2	45.4	51.2	53.2	56.7	61.5	69.5	71.7	70.3	66.4

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	61.9	52.0	42.2	45.2	51.2	53.2	58.8	64.3	67.4	69.9	69.4	65.2
3	61.9	52.0	42.2	45.2	51.2	53.2	58.8	64.2	67.6	70.0	69.4	65.4
4	61.9	52.0	42.2	45.2	51.2	53.2	58.8	64.2	67.6	70.0	69.4	65.4
5	61.9	52.0	42.2	45.4	51.2	53.2	58.8	64.2	68.2	70.1	69.3	65.9
6	61.9	52.0	42.2	45.2	51.2	53.2	58.8	64.2	67.4	69.9	69.4	65.5
8	61.9	52.0	42.2	45.0	51.2	53.7	58.8	64.2	67.6	69.9	69.3	65.7

Predicted Water Temperature
Feather River at Honcut Creek, Critical Year (1992)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	63.6	53.4	45.4	43.6	53.1	56.9	61.3	69.1	69.9	72.3	73.6	67.6

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	63.5	53.5	45.7	43.6	53.1	56.9	61.3	69.1	69.7	72.6	73.4	67.8
3	63.6	53.5	45.7	43.6	53.1	56.9	61.3	69.0	69.8	72.7	73.4	67.8
4	63.6	53.5	45.7	43.6	53.1	56.9	61.3	69.0	69.9	72.8	73.4	67.8
5	63.4	53.5	45.7	43.5	53.1	56.9	61.3	69.1	69.6	72.5	73.4	67.7
6	63.6	53.5	45.7	43.6	53.1	56.9	61.3	69.2	69.7	72.7	73.4	67.8
8	63.5	53.5	45.7	43.6	53.1	56.9	61.3	69.1	69.8	72.7	73.4	67.8

Predicted Water Temperature
Feather River at the Mouth, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	59.2	53.2	48.7	46.9	48.3	52.7	55.7	61.8	69.6	75.5	73.7	70.8

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	58.7	53.2	48.6	46.9	48.3	52.7	55.7	61.8	69.6	75.7	74.9	70.8
3	58.7	53.2	48.7	46.9	48.3	52.7	55.7	61.8	69.6	75.8	74.9	70.8
4	58.7	53.2	48.9	46.8	48.3	52.7	55.7	61.8	69.6	75.8	74.9	70.8
5	58.7	53.1	49.0	46.9	48.3	52.6	55.6	61.8	69.5	76.2	74.5	69.6
6	58.7	53.2	48.7	46.9	48.3	52.7	55.7	61.8	69.6	75.7	74.9	70.8
8	58.7	53.2	48.7	46.9	48.3	52.7	55.7	61.8	69.6	75.2	74.9	70.8

Predicted Water Temperature
Feather River at the Mouth, Above Normal Year (1928)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	60.6	51.7	44.1	45.8	50.1	51.6	57.4	67.6	71.5	72.7	71.3	69.0

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	60.6	51.7	44.1	45.8	49.6	51.6	57.4	66.0	71.1	71.0	70.8	69.2
3	60.6	51.7	44.1	45.8	49.6	51.6	57.4	66.0	71.2	71.0	70.8	69.2
4	60.6	51.7	44.1	45.8	49.6	51.6	57.4	66.0	71.2	71.0	70.8	69.2
5	60.6	51.9	43.9	45.8	49.6	51.6	57.4	66.2	71.2	71.3	71.4	69.1
6	60.6	51.7	44.1	45.8	49.6	51.6	57.4	66.1	71.2	71.1	70.8	69.2
8	60.6	51.7	44.1	45.8	50.0	51.6	57.4	66.3	71.2	71.0	70.5	69.2

Predicted Water Temperature
Feather River at the Mouth, Below Normal Year (1979)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	64.7	51.2	43.4	45.7	48.3	53.9	58.9	68.9	74.1	75.2	71.5	71.7

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	64.7	51.1	43.4	45.7	48.3	53.9	58.9	68.9	70.5	73.3	72.9	71.7
3	64.6	51.2	43.4	45.7	48.3	53.9	58.9	68.9	70.8	73.3	72.9	71.7
4	64.6	51.2	43.4	45.7	48.3	53.9	58.9	68.9	70.8	73.3	72.9	71.7
5	63.6	51.1	43.7	45.7	48.3	53.9	58.7	68.3	70.4	74.0	72.7	71.6
6	64.7	51.2	43.4	45.7	48.3	53.9	58.9	68.9	71.1	72.8	72.9	71.7
8	64.7	51.1	43.4	45.7	48.3	53.9	58.9	68.9	70.7	72.8	72.6	71.7

Predicted Water Temperature
Feather River at the Mouth, Dry Year (1964)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	61.9	50.8	42.2	45.4	50.4	53.6	59.4	64.5	71.4	74.6	73.0	68.1

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	61.9	50.8	42.2	45.4	50.4	53.6	61.2	66.6	70.2	73.4	72.4	67.4
3	61.9	50.8	42.2	45.4	50.4	53.6	61.2	66.7	70.3	73.4	72.4	67.6
4	61.9	50.8	42.2	45.4	50.4	53.6	61.2	66.7	70.3	73.4	72.4	67.6
5	61.9	51.0	42.3	45.4	50.3	53.5	60.6	66.1	70.2	73.4	72.3	67.8
6	61.9	50.8	42.2	45.4	50.4	53.6	61.2	66.7	70.2	73.4	72.4	67.7
8	61.9	50.8	42.2	45.4	50.4	53.8	61.2	66.7	70.3	73.4	72.4	67.8

Predicted Water Temperature
Feather River at the Mouth, Critical Year (1992)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	65.7	54.3	45.3	44.6	50.6	55.2	62.2	74.1	73.6	75.6	78.2	72.9

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	65.8	54.6	45.5	44.6	50.6	55.2	62.2	74.0	73.3	76.0	78.6	72.7
3	65.8	54.5	45.5	44.6	50.6	55.2	62.2	74.5	73.5	76.1	78.6	72.7
4	65.7	54.6	45.5	44.6	50.6	55.2	62.2	74.4	73.5	76.1	78.6	72.7
5	65.7	54.4	45.6	44.6	50.5	55.0	61.7	72.4	72.4	75.4	78.1	72.6
6	65.8	54.6	45.5	44.6	50.6	55.2	62.2	73.9	73.4	76.0	78.6	72.7
8	65.8	54.6	45.5	44.6	50.6	55.2	62.2	74.0	73.5	76.0	78.6	72.7

Predicted Water Temperature
American River at Nimbus, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	55.9	55.8	50.6	46.4	46.8	52.1	55.1	57.7	62.7	65.8	65.9	64.3

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	55.9	55.7	50.6	46.4	46.8	52.1	55.1	57.7	62.7	66.4	65.3	64.3
3	55.9	55.6	50.6	46.4	46.8	52.2	55.0	57.7	62.7	66.4	65.3	64.3
4	55.9	55.6	50.6	46.4	46.9	52.3	55.0	57.7	62.7	66.4	65.3	64.3
5	55.9	55.6	50.6	46.4	46.9	52.3	55.0	57.7	62.7	66.4	65.3	64.3
6	55.9	55.5	50.6	46.4	46.9	52.3	55.0	57.7	62.7	66.4	65.3	64.3
8	55.9	55.6	50.6	46.4	46.8	52.2	55.0	57.7	62.8	66.4	65.4	64.3

Predicted Water Temperature
American River at Nimbus, Above Normal Year (1928)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	56.5	55.2	49.8	47.5	48.9	53.7	55.4	62.8	66.3	65.8	66.5	67.6

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	56.5	55.0	49.8	47.5	48.9	53.7	55.4	62.6	66.2	66.4	66.5	66.9
3	56.5	55.0	49.8	47.5	48.9	53.7	55.3	62.6	66.3	66.3	67.1	66.9
4	56.5	55.0	49.8	47.5	48.9	53.7	55.3	62.6	66.3	66.3	67.1	66.9
5	56.5	55.0	49.8	47.5	48.9	53.7	55.3	62.7	65.7	67.0	67.2	66.9
6	56.9	54.8	49.8	47.4	48.9	53.7	55.3	62.6	65.4	66.1	67.0	65.5
8	56.5	55.0	49.8	47.5	48.9	53.7	55.3	62.6	66.1	66.5	66.8	67.3

Predicted Water Temperature
American River at Nimbus, Below Normal Year (1979)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.0	57.8	49.6	46.7	47.5	54.8	57.6	60.9	65.0	66.2	66.2	67.3

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	58.0	57.8	49.6	46.7	47.5	54.9	57.6	60.9	64.6	65.8	66.7	67.3
3	57.8	57.7	49.6	46.7	47.5	54.9	57.6	60.9	64.8	65.9	66.5	66.8
4	57.8	57.7	49.6	46.7	47.5	54.9	57.5	60.9	64.7	65.9	66.5	66.8
5	57.8	57.8	49.6	46.7	47.5	54.8	57.6	61.0	64.9	66.1	66.3	66.6
6	57.8	57.7	49.7	46.7	47.6	54.7	57.6	60.9	64.4	65.8	66.2	66.3
8	57.8	57.8	49.6	46.7	47.5	54.9	57.5	60.9	64.5	65.8	66.6	67.4

Predicted Water Temperature
American River at Nimbus, Dry Year (1964)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	56.5	55.7	47.5	45.1	47.6	51.0	56.3	61.7	65.9	66.2	65.3	67.6

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	56.5	55.6	47.5	45.1	47.8	51.3	55.6	62.2	63.8	65.9	65.8	65.9
3	56.5	55.5	47.5	45.2	47.7	51.2	55.6	61.8	63.6	65.9	65.8	66.0
4	56.5	55.4	47.5	45.2	47.7	51.2	55.7	61.8	63.6	65.9	65.8	66.0
5	56.5	55.6	47.5	45.1	47.6	51.0	56.2	61.7	64.1	66.3	65.7	65.0
6	56.5	55.6	47.5	45.2	47.8	51.5	56.0	61.0	63.8	64.0	68.2	65.8
8	56.5	55.5	47.5	45.2	47.7	51.3	55.6	61.8	63.6	65.6	66.2	65.7

Predicted Water Temperature
American River at Nimbus, Critical Year (1992)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	66.0	62.1	52.4	47.4	51.3	56.6	61.8	67.2	66.8	65.6	71.8	71.6

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	65.7	62.1	52.0	47.1	51.2	56.6	62.7	66.7	64.9	68.4	76.1	72.1
3	64.4	62.5	52.5	47.4	51.4	56.5	61.1	66.7	65.3	67.0	76.1	72.2
4	66.0	61.9	51.9	47.0	51.1	56.2	63.0	67.0	65.3	68.1	76.1	72.2
5	64.7	62.4	52.4	47.3	51.2	56.7	61.8	68.1	65.4	66.0	74.8	71.6
6	65.2	62.2	52.2	47.2	50.8	57.1	61.8	66.8	64.9	68.5	76.1	72.2
8	65.2	62.2	52.2	47.2	50.8	57.1	61.9	66.7	64.9	68.1	76.1	72.1

Predicted Water Temperature
American River at Watt Avenue, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	56.7	55.6	50.4	46.4	47.0	52.5	55.7	58.4	63.8	67.4	67.3	64.9

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	56.7	55.5	50.4	46.4	47.0	52.5	55.7	58.4	63.8	68.3	66.5	64.9
3	56.7	55.5	50.4	46.4	47.0	52.6	55.6	58.4	63.8	68.3	66.5	64.9
4	56.7	55.5	50.4	46.4	47.1	52.7	55.6	58.4	63.8	68.3	66.5	64.9
5	56.7	55.5	50.4	46.4	47.1	52.7	55.6	58.4	63.8	68.3	66.5	64.9
6	56.7	55.4	50.4	46.4	47.1	52.7	55.6	58.4	63.8	68.3	66.5	64.9
8	56.7	55.5	50.4	46.4	47.0	52.6	55.6	58.4	63.9	68.2	66.6	64.9

Predicted Water Temperature
American River at Watt Avenue, Above Normal Year (1928)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	57.6	55.0	49.2	47.3	49.5	53.9	56.0	64.3	67.7	67.0	67.7	68.6

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	57.6	54.9	49.2	47.3	49.5	53.9	56.0	63.8	67.5	67.6	68.0	68.0
3	57.6	54.9	49.2	47.3	49.5	53.9	55.9	63.8	67.6	67.5	68.6	68.0
4	57.6	54.9	49.2	47.3	49.5	53.9	55.9	63.8	67.6	67.5	68.6	68.0
5	57.6	54.9	49.2	47.3	49.5	53.9	55.9	64.0	66.9	68.5	68.7	68.0
6	58.1	54.7	49.2	47.2	49.5	53.9	55.9	63.8	66.5	67.4	68.5	66.5
8	57.6	54.9	49.2	47.3	49.5	53.9	55.9	63.9	67.4	67.7	68.3	68.4

Predicted Water Temperature
American River at Watt Avenue, Below Normal Year (1979)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.9	56.8	48.5	46.4	47.8	55.0	58.2	62.1	66.6	68.0	67.6	69.0

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	58.9	56.8	48.5	46.4	47.8	55.1	58.2	62.1	65.9	67.4	68.2	69.0
3	58.8	56.7	48.5	46.4	47.8	55.1	58.2	62.1	66.2	67.6	68.0	68.4
4	58.8	56.7	48.5	46.4	47.8	55.1	58.1	62.1	66.1	67.6	68.0	68.4
5	58.8	56.8	48.5	46.4	47.8	55.0	58.2	62.2	66.4	67.8	67.8	68.2
6	58.8	56.7	48.8	46.4	47.9	55.0	58.2	62.1	65.5	67.4	67.8	67.8
8	58.8	56.8	48.5	46.4	47.8	55.1	58.1	62.1	65.7	67.4	68.1	69.1

Predicted Water Temperature
American River at Watt Avenue, Dry Year (1964)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	57.4	55.3	46.6	45.0	48.0	51.7	58.0	62.6	67.3	68.1	66.7	68.7

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	57.4	55.2	46.6	45.0	48.1	51.9	57.5	63.5	64.9	67.3	67.4	66.7
3	57.4	55.1	46.6	45.1	48.0	51.9	57.5	62.7	64.8	67.5	67.5	66.7
4	57.4	55.1	46.6	45.1	48.0	51.9	57.6	62.7	64.8	67.5	67.5	66.7
5	57.4	55.2	46.6	45.0	48.0	51.7	57.9	62.6	65.4	68.0	67.4	65.7
6	57.4	55.2	46.6	45.1	48.1	52.0	57.8	62.7	64.8	65.5	70.1	66.9
8	57.4	55.1	46.6	45.1	48.0	52.0	57.5	62.7	64.7	67.2	67.7	66.9

Predicted Water Temperature
American River at Watt Avenue, Critical Year (1992)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	66.1	61.0	51.3	46.7	51.9	57.0	63.2	69.3	68.4	67.3	73.2	71.3

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	65.9	61.2	50.9	46.5	51.8	57.0	63.7	68.5	66.0	70.7	76.0	71.5
3	64.8	61.5	51.4	46.7	52.0	56.9	62.5	68.6	66.5	68.6	76.0	71.5
4	66.1	61.0	50.8	46.4	51.7	56.7	63.9	68.8	66.6	69.9	76.0	71.5
5	65.0	61.4	51.3	46.6	51.8	57.1	63.2	70.2	66.7	67.8	75.5	71.3
6	65.4	61.3	51.1	46.5	51.5	57.4	62.9	68.6	66.0	70.8	76.0	71.5
8	65.4	61.3	51.1	46.5	51.5	57.4	63.1	68.5	66.0	70.3	76.0	71.5

Predicted Water Temperature
American River at the Mouth, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	57.1	55.5	50.3	46.3	47.1	52.8	56.0	58.8	64.4	68.3	68.0	65.2

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	57.1	55.5	50.3	46.3	47.1	52.8	56.0	58.8	64.4	69.2	67.2	65.2
3	57.1	55.4	50.3	46.3	47.1	52.9	55.9	58.8	64.4	69.2	67.2	65.2
4	57.1	55.4	50.3	46.3	47.1	53.0	55.9	58.8	64.4	69.2	67.2	65.2
5	57.1	55.4	50.3	46.3	47.1	53.0	55.9	58.8	64.4	69.2	67.2	65.2
6	57.1	55.3	50.3	46.3	47.1	53.0	55.9	58.8	64.4	69.2	67.2	65.2
8	57.1	55.4	50.3	46.3	47.1	52.9	55.9	58.8	64.5	69.2	67.3	65.2

Predicted Water Temperature
American River at the Mouth, Above Normal Year (1928)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.2	54.9	48.9	47.2	49.8	54.0	56.3	65.0	68.4	67.7	68.4	69.1

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	58.2	54.8	48.9	47.2	49.8	54.0	56.3	64.5	68.2	68.2	68.7	68.5
3	58.2	54.8	48.9	47.2	49.8	54.0	56.2	64.5	68.4	68.2	69.3	68.6
4	58.2	54.8	48.9	47.2	49.8	54.0	56.2	64.5	68.4	68.2	69.3	68.6
5	58.2	54.8	48.9	47.2	49.8	54.0	56.2	64.8	67.6	69.3	69.4	68.6
6	58.8	54.6	48.9	47.1	49.8	54.0	56.2	64.5	67.1	68.1	69.4	67.1
8	58.2	54.8	48.9	47.2	49.8	54.0	56.2	64.5	68.1	68.3	69.1	68.9

Predicted Water Temperature
American River at the Mouth, Below Normal Year (1979)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	59.5	56.2	47.9	46.2	48.0	55.2	58.5	62.8	67.4	69.0	68.4	69.8

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	59.5	56.2	47.9	46.2	48.0	55.3	58.5	62.8	66.6	68.3	69.0	69.9
3	59.3	56.1	47.9	46.2	48.0	55.3	58.5	62.8	67.0	68.5	68.8	69.2
4	59.3	56.1	47.9	46.2	48.0	55.3	58.5	62.8	66.9	68.5	68.8	69.2
5	59.3	56.2	47.9	46.2	48.0	55.2	58.5	62.9	67.1	68.8	68.6	69.0
6	59.3	56.1	48.2	46.2	48.1	55.1	58.5	62.8	66.1	68.3	68.7	68.6
8	59.3	56.2	47.9	46.2	48.0	55.3	58.5	62.8	66.4	68.3	68.9	69.9

Predicted Water Temperature
American River at the Mouth, Dry Year (1964)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.0	55.1	46.1	45.0	48.2	52.1	58.9	63.2	68.0	69.1	67.5	69.1

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	58.0	55.0	46.1	45.0	48.3	52.3	58.5	64.1	65.5	68.1	68.3	67.1
3	58.0	54.9	46.1	45.0	48.2	52.2	58.5	63.2	65.5	68.4	68.4	67.1
4	58.0	54.9	46.1	45.0	48.2	52.2	58.5	63.2	65.5	68.4	68.4	67.1
5	58.0	55.0	46.1	45.0	48.2	52.1	58.8	63.2	66.1	68.9	68.3	66.0
6	58.0	55.0	46.1	45.0	48.3	52.3	58.7	63.5	65.3	66.3	71.1	67.5
8	58.0	54.9	46.1	45.0	48.2	52.3	58.5	63.2	65.3	68.0	68.6	67.5

Predicted Water Temperature
American River at the Mouth, Critical Year (1992)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	66.1	60.4	50.6	46.3	52.2	57.2	63.8	70.2	69.2	68.2	73.9	71.2

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	65.9	60.7	50.3	46.1	52.1	57.2	64.1	69.4	66.6	71.9	75.9	71.2
3	65.0	61.0	50.7	46.3	52.3	57.1	63.2	69.5	67.2	69.5	75.9	71.2
4	66.1	60.5	50.3	46.0	52.1	56.9	64.2	69.7	67.3	70.8	75.9	71.2
5	65.2	60.9	50.6	46.2	52.1	57.2	63.8	71.0	67.3	68.7	75.7	71.2
6	65.6	60.7	50.5	46.2	51.8	57.5	63.5	69.5	66.6	72.0	75.9	71.2
8	65.6	60.7	50.5	46.2	51.8	57.5	63.7	69.4	66.6	71.4	75.9	71.2

Predicted Water Temperature
Stanislaus River at Goodwin, Wet Year (1980)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.6	56.9	52.4	47.5	46.3	48.5	49.5	51.2	53.5	55.8	56.6	57.4

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	58.5	56.5	52.0	48.8	46.1	48.2	48.5	50.3	52.1	54.5	55.3	56.4
3	58.9	57.0	52.4	48.5	46.2	48.3	48.9	50.7	52.7	55.1	55.9	57.0
4	59.1	57.2	52.5	49.0	46.3	48.3	49.0	50.8	52.8	55.3	56.1	57.2
5	58.9	57.0	52.5	49.2	46.3	48.3	48.8	50.6	52.6	55.0	56.1	57.0
6	58.7	56.8	52.6	47.4	46.3	48.6	49.5	51.2	53.6	55.9	56.4	57.5
8	59.0	57.0	52.9	50.6	48.9	48.1	47.9	49.2	50.9	54.1	55.4	56.6

Predicted Water Temperature
Stanislaus River at Goodwin, Above Normal Year (1963)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.5	57.7	52.8	46.4	50.3	50.1	50.3	51.6	53.8	55.7	56.7	57.7

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	60.0	58.1	52.1	46.7	50.6	49.7	49.8	51.2	54.0	56.0	56.7	58.3
3	58.5	57.2	51.7	46.6	50.5	49.8	50.0	51.3	54.1	56.5	57.0	58.3
4	59.2	57.7	51.9	46.7	50.5	49.8	50.0	51.3	54.2	56.5	57.0	58.3
5	58.5	57.5	51.8	46.6	48.4	51.2	50.0	51.7	54.5	56.4	57.1	58.0
6	58.4	57.4	51.7	46.5	50.4	50.2	50.4	51.7	53.7	55.3	56.2	57.4
8	58.4	57.2	52.3	46.6	49.6	50.9	49.5	50.9	53.9	55.4	55.8	57.1

Predicted Water Temperature
Stanislaus River at Goodwin, Below Normal Year (1950)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	59.2	58.6	53.4	48.4	48.9	49.8	51.5	52.8	54.3	56.4	57.5	58.2

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	59.1	58.0	52.0	48.2	49.1	49.8	50.7	52.3	55.0	57.1	58.3	59.4
3	58.6	57.6	51.7	48.0	48.9	49.8	50.9	51.8	54.9	57.1	57.6	58.6
4	58.9	57.9	51.8	48.1	49.0	49.8	50.6	52.2	55.2	57.3	58.2	59.0
5	59.2	58.5	52.1	48.3	48.8	50.0	51.3	52.6	54.5	56.5	57.2	58.1
6	59.0	58.4	52.0	48.2	49.0	49.9	51.2	52.5	54.0	56.0	56.9	57.9
8	59.1	58.2	52.8	48.3	48.7	50.0	50.7	51.9	54.1	55.9	57.1	58.0

Predicted Water Temperature
Stanislaus River at Goodwin, Critical Year (1976)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.5	56.3	52.3	50.2	50.4	52.0	52.5	55.2	57.1	58.5	58.8	59.7

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	57.8	55.7	51.8	49.6	50.2	52.1	51.8	54.3	56.3	57.7	58.0	59.2
3	58.4	56.2	52.2	49.9	50.3	51.9	52.4	55.0	56.8	58.3	58.4	59.6
4	58.7	56.5	52.4	50.0	50.4	51.7	52.4	55.1	57.2	58.6	58.7	59.9
5	58.5	56.2	52.2	50.1	50.4	52.1	52.5	55.2	56.9	58.6	58.6	59.7
6	58.3	56.0	52.1	49.8	50.3	52.0	52.3	55.1	56.8	58.4	58.5	59.6
8	58.8	56.6	52.5	50.1	50.3	51.8	52.2	55.0	57.4	58.7	58.8	59.9

Predicted Water Temperature
Stanislaus River at Orange Blossom, Wet Year (1980)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	61.2	55.1	49.8	47.5	46.5	49.7	50.8	53.8	59.3	62.8	62.0	61.5

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	61.2	54.8	49.5	48.7	46.3	49.4	49.9	53.0	58.6	62.1	58.7	60.9
3	61.3	55.1	49.8	48.5	46.4	49.5	50.3	53.4	58.9	62.4	59.3	61.2
4	61.3	55.3	49.8	48.9	46.5	49.5	50.4	53.4	58.9	62.5	59.4	61.4
5	61.1	55.1	49.8	49.1	46.5	49.5	50.2	53.3	58.8	62.4	60.8	61.2
6	60.5	55.1	50.4	47.4	46.5	49.8	50.8	53.8	59.4	62.9	59.6	61.5
8	60.0	55.7	51.4	50.0	49.3	48.8	49.4	51.1	52.8	61.3	58.8	60.5

Predicted Water Temperature
Stanislaus River at Orange Blossom, Above Normal Year (1963)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.8	56.5	50.6	43.6	53.9	52.9	52.3	57.5	60.5	61.9	62.0	62.4

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	59.8	56.5	48.8	43.8	54.0	50.5	51.9	53.1	56.3	60.1	59.8	62.7
3	58.6	55.9	48.5	43.8	54.0	50.6	52.1	53.1	56.4	62.4	60.2	62.7
4	59.1	56.2	48.6	43.8	54.0	50.6	52.1	53.1	56.5	62.4	60.3	62.7
5	58.8	56.1	48.6	43.8	50.0	52.1	51.4	54.9	60.8	62.3	61.6	62.5
6	58.8	56.0	48.5	43.7	53.9	52.9	52.4	57.5	60.4	59.7	59.5	62.2
8	58.7	56.0	49.8	44.1	53.0	52.8	51.0	53.6	60.5	59.5	59.2	62.2

Predicted Water Temperature
Stanislaus River at Orange Blossom, Below Normal Year (1950)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	59.2	57.5	50.9	46.4	49.5	52.5	54.5	58.4	59.5	62.4	63.1	62.2

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	59.1	56.9	48.3	46.0	49.6	52.5	52.0	53.6	57.8	60.6	61.2	62.9
3	58.7	56.7	48.1	45.9	49.5	52.5	52.7	53.2	60.2	62.3	60.7	62.4
4	59.0	56.9	48.2	46.0	49.6	52.5	52.0	53.5	60.4	62.5	61.9	62.7
5	59.2	57.3	48.4	46.1	49.2	51.7	54.4	57.1	60.0	63.6	61.2	62.1
6	59.1	57.2	48.3	46.0	49.6	52.6	54.3	58.3	57.3	61.1	60.2	62.0
8	59.1	57.1	50.0	46.5	49.3	52.0	52.9	54.6	57.0	59.7	61.8	62.3

Predicted Water Temperature
Stanislaus River at Orange Blossom, Critical Year (1976)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.8	54.8	50.6	49.5	50.6	54.4	54.5	61.1	61.3	62.9	61.7	63.5

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	58.4	54.3	50.2	48.6	50.8	54.5	53.6	57.2	59.3	60.8	60.1	63.2
3	58.8	54.7	50.5	48.8	50.9	54.4	54.4	61.0	60.4	62.1	60.4	63.4
4	59.0	54.9	50.6	48.9	50.9	54.3	54.1	61.0	60.7	62.3	60.7	63.6
5	58.8	54.7	50.5	49.3	50.6	54.5	54.5	61.1	59.9	63.4	60.7	63.5
6	58.7	54.6	50.4	48.7	50.6	54.4	54.3	61.0	60.3	62.8	61.0	63.4
8	59.0	55.3	51.0	49.2	50.8	53.4	53.3	57.2	60.2	61.6	60.7	63.8

Predicted Water Temperature
Stanislaus River at the Mouth, Wet Year (1980)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	62.1	52.2	46.9	47.6	47.4	53.3	56.3	61.0	65.2	70.2	68.7	66.8

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	62.1	52.1	46.8	48.5	47.3	53.2	55.8	60.8	65.2	70.1	66.7	66.7
3	62.1	52.2	46.9	48.3	47.4	53.3	56.0	60.9	65.2	70.2	66.9	66.8
4	62.1	52.2	46.9	48.6	47.4	53.3	56.0	60.9	65.2	70.2	67.0	66.8
5	62.1	52.2	46.9	48.7	47.4	53.3	56.0	60.8	65.2	70.2	68.2	66.8
6	62.0	52.2	47.2	47.5	47.4	53.4	56.3	61.0	65.3	70.2	67.0	66.8
8	61.7	52.7	48.0	48.6	50.7	51.8	55.4	58.0	59.5	69.9	66.8	66.5

Predicted Water Temperature
Stanislaus River at the Mouth, Above Normal Year (1963)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.9	54.2	46.2	40.5	56.7	55.0	56.8	63.9	67.0	68.7	68.7	68.3

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	59.2	54.0	45.0	40.6	56.7	53.0	56.7	59.5	63.4	67.6	67.0	68.3
3	58.8	53.9	44.9	40.6	56.7	53.1	56.7	59.5	63.4	68.8	67.2	68.3
4	59.0	54.0	44.9	40.6	56.7	53.1	56.7	59.5	63.4	68.8	67.3	68.3
5	58.9	54.0	44.9	40.6	54.1	54.2	55.8	62.1	67.1	68.8	68.3	68.3
6	58.9	53.9	44.9	40.5	56.7	55.0	56.8	63.9	67.0	67.6	67.0	68.2
8	58.9	54.0	45.6	40.8	56.5	54.9	55.6	61.0	67.0	67.4	66.8	68.3

Predicted Water Temperature
Stanislaus River at the Mouth, Below Normal Year (1950)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	59.2	55.5	45.5	43.9	50.2	54.6	60.9	64.5	65.4	70.5	69.9	67.3

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	59.2	55.3	44.0	43.7	50.2	54.6	57.4	58.9	64.0	68.8	68.1	67.4
3	59.1	55.3	44.0	43.7	50.2	54.6	58.8	58.6	65.6	70.3	68.1	67.4
4	59.1	55.3	44.0	43.7	50.2	54.6	57.4	58.8	65.6	70.3	68.9	67.4
5	59.2	55.4	44.0	43.7	50.0	54.3	60.9	64.0	65.6	71.0	68.7	67.3
6	59.2	55.4	44.0	43.7	50.2	54.6	60.9	64.5	64.1	69.8	67.9	67.3
8	59.2	55.4	45.0	43.9	50.1	54.5	59.4	61.8	63.7	68.6	69.3	67.4

Predicted Water Temperature
Stanislaus River at the Mouth, Critical Year (1976)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	59.4	51.7	46.8	47.5	51.4	56.3	58.8	67.0	67.6	69.6	66.8	68.3

Flow Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	59.3	51.5	46.6	46.6	51.8	56.3	58.2	64.5	66.2	68.1	65.5	68.2
3	59.4	51.6	46.7	46.6	51.9	56.3	58.8	67.0	67.0	69.1	65.6	68.3
4	59.4	51.7	46.8	46.6	51.9	56.2	58.4	67.0	67.1	69.1	65.7	68.3
5	59.4	51.6	46.7	47.3	51.4	56.3	58.8	67.0	66.5	69.9	65.9	68.3
6	59.4	51.6	46.7	46.6	51.5	56.3	58.8	67.0	66.9	69.6	66.3	68.3
8	59.4	52.2	47.3	47.0	51.7	55.9	57.2	63.8	66.4	68.3	65.7	68.3

Predicted Water Temperature
Sacramento River at Keswick, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	49.2	53.2	49.9	46.4	47.2	49.8	49.8	48.1	49.1	49.8	49.9	48.3

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	49.4	53.4	49.9	46.4	47.2	49.8	49.8	48.1	49.1	50.3	49.9	47.5
4	49.3	53.3	49.9	46.4	47.2	49.8	49.8	48.1	49.1	50.3	49.5	48.1
5	49.4	53.4	49.9	46.4	47.2	49.8	49.8	48.1	49.1	50.3	49.8	47.7
8	49.3	53.3	49.9	46.4	47.2	49.8	49.8	48.1	49.1	50.3	49.6	47.8
9	49.3	53.3	49.9	46.4	47.2	49.8	49.8	48.1	49.1	50.3	49.5	48.1

Predicted Water Temperature
Sacramento River at Keswick, Above Normal Year (1928)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	49.4	50.2	49.3	45.5	49.2	53.6	50.5	49.5	48.6	49.1	49.2	49.2

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	49.3	50.0	49.3	45.5	49.2	53.6	50.5	49.1	48.5	49.1	49.3	49.1
4	49.7	50.7	49.3	45.5	49.2	53.6	50.5	49.1	48.3	49.2	49.3	48.9
5	49.7	50.7	49.3	45.5	49.2	53.6	50.5	49.1	48.5	49.2	49.3	48.9
8	50.0	50.8	49.3	45.5	49.2	53.6	50.5	49.1	48.5	49.1	49.1	49.3
9	49.6	50.5	49.3	45.5	49.2	53.6	50.5	49.1	48.4	49.2	49.3	48.8

Predicted Water Temperature
Sacramento River at Keswick, Below Normal Year (1979)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	46.9	48.2	48.3	45.3	46.6	51.6	50.7	49.5	48.7	49.3	49.4	49.7

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	46.7	48.2	48.3	45.3	46.6	51.6	50.7	50.0	48.4	49.3	49.7	49.8
4	46.7	47.8	48.3	45.3	46.6	51.7	50.7	50.0	48.3	49.3	49.2	50.2
5	46.7	47.7	48.3	45.3	46.6	51.7	50.7	50.0	48.4	49.2	49.2	50.6
8	46.7	47.6	48.3	45.3	46.6	51.7	50.7	50.0	48.4	49.1	49.5	50.6
9	46.7	47.9	48.3	45.3	46.6	51.7	50.7	50.0	48.3	49.3	49.1	50.6

Predicted Water Temperature
Sacramento River at Keswick, Dry Year (1964)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	48.5	50.5	48.2	45.1	50.7	50.8	51.1	48.9	48.5	49.5	49.6	50.0

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	48.0	50.9	48.2	45.1	51.0	51.0	51.1	49.1	48.1	49.5	50.0	51.1
4	48.1	50.7	48.2	45.1	50.6	50.8	51.1	49.1	48.0	49.5	50.0	50.1
5	48.7	50.5	48.2	45.1	51.0	51.0	51.1	49.1	48.1	49.5	50.0	50.8
8	48.7	50.5	48.2	45.1	50.6	50.8	51.1	49.1	48.1	49.4	49.8	50.1
9	48.0	50.9	48.2	45.1	50.6	50.8	51.1	49.1	48.0	49.5	50.0	50.3

Predicted Water Temperature
Sacramento River at Keswick, Critical Year (1992)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	53.0	54.6	49.0	44.8	46.6	47.6	52.1	49.8	49.2	50.2	50.1	49.8

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	55.8	55.4	48.8	44.6	46.9	47.7	50.2	49.6	48.8	50.6	51.2	50.5
4	56.3	55.5	48.8	44.6	47.0	47.7	50.0	49.6	48.7	50.5	51.2	51.3
5	56.1	55.4	48.8	44.6	46.9	47.7	49.8	49.6	48.8	49.6	51.2	54.7
8	55.7	55.4	48.8	44.6	46.9	47.7	50.1	49.6	48.5	50.2	51.2	52.7
9	56.2	55.5	48.8	44.6	46.9	47.7	50.0	49.6	48.8	50.5	51.2	50.9

Predicted Water Temperature
Sacramento River at Ball's Ferry, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	50.1	53.1	49.0	46.1	47.4	50.7	52.9	50.7	53.3	53.2	53.1	51.6

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	50.3	53.2	49.0	46.1	47.4	50.7	52.9	50.7	53.3	54.0	53.1	50.3
4	50.2	53.2	49.0	46.1	47.4	50.7	52.9	50.7	53.3	54.0	52.5	51.2
5	50.3	53.2	49.0	46.1	47.4	50.7	52.9	50.7	53.3	54.0	52.9	50.6
8	50.2	53.2	49.0	46.1	47.4	50.7	52.9	50.7	53.3	54.0	52.7	50.9
9	50.2	53.2	49.0	46.1	47.4	50.7	52.9	50.7	53.3	54.0	52.5	51.3

Predicted Water Temperature
Sacramento River at Ball's Ferry, Above Normal Year (1928)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	51.6	50.5	47.8	45.0	49.0	53.5	53.8	53.4	51.8	52.0	52.5	53.2

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	51.5	50.3	47.8	45.0	49.0	53.5	53.8	52.4	51.6	52.2	52.7	53.0
4	51.9	50.9	47.8	45.0	49.0	53.5	53.8	52.6	51.3	52.3	52.7	52.5
5	51.9	50.9	47.8	45.0	49.0	53.5	53.8	52.4	51.6	52.3	52.6	52.7
8	52.1	51.1	47.8	45.0	49.0	53.5	53.8	52.4	51.6	52.2	52.2	53.3
9	51.8	50.8	47.8	45.0	49.0	53.5	53.8	52.6	51.4	52.3	52.7	52.4

Predicted Water Temperature
Sacramento River at Ball's Ferry, Below Normal Year (1979)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	49.1	48.5	47.4	44.9	47.2	52.3	52.7	53.8	51.9	52.5	52.4	54.3

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	49.0	48.5	47.4	44.9	47.2	52.3	52.7	54.7	51.3	52.5	53.1	54.5
4	49.0	48.2	47.5	44.9	47.2	52.4	52.7	54.7	51.1	52.5	52.1	55.1
5	49.0	48.1	47.5	44.9	47.2	52.4	52.7	54.7	51.3	52.3	52.2	55.7
8	49.0	48.0	47.5	44.9	47.2	52.4	52.7	54.7	51.3	52.0	52.7	55.7
9	49.0	48.3	47.5	44.9	47.2	52.4	52.7	54.7	51.1	52.5	51.9	55.7

Predicted Water Temperature
Sacramento River at Ball's Ferry, Dry Year (1964)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	50.6	50.6	47.3	44.7	50.7	51.4	52.5	51.8	52.0	52.9	52.9	54.1

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	49.8	51.0	47.2	44.7	50.9	51.5	52.6	52.3	51.1	52.9	53.5	55.5
4	49.9	50.8	47.2	44.7	50.7	51.4	52.6	52.3	50.9	52.8	53.5	54.1
5	50.9	50.6	47.2	44.7	50.9	51.5	52.6	52.3	51.1	52.9	53.5	55.0
8	50.9	50.6	47.2	44.7	50.7	51.4	52.6	52.3	51.1	52.7	53.1	53.9
9	49.8	51.0	47.2	44.7	50.7	51.4	52.6	52.3	50.9	52.8	53.5	54.4

Predicted Water Temperature
Sacramento River at Ball's Ferry, Critical Year (1992)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	55.3	53.6	47.5	44.2	48.0	50.2	55.2	53.9	52.9	54.0	53.7	54.4

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	57.4	54.2	47.4	44.1	48.1	50.3	53.8	53.6	52.1	54.7	55.7	54.4
4	57.8	54.3	47.4	44.1	48.1	50.3	53.7	53.6	52.1	54.4	55.7	54.9
5	57.6	54.2	47.4	44.1	48.1	50.3	53.4	53.6	52.2	52.9	55.7	57.6
8	57.4	54.2	47.4	44.1	48.1	50.3	53.5	53.6	51.7	54.0	55.7	56.1
9	57.8	54.3	47.4	44.1	48.1	50.3	53.6	53.6	52.2	54.5	55.7	54.6

Predicted Water Temperature
Sacramento River at Bend Bridge, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	50.8	52.9	48.5	45.9	47.6	51.1	54.2	52.7	55.9	55.2	55.0	53.5

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	51.0	53.0	48.5	45.9	47.6	51.1	54.2	52.7	55.9	56.3	55.0	52.0
4	50.9	52.9	48.5	45.9	47.6	51.1	54.2	52.7	55.9	56.2	54.3	53.1
5	51.0	53.0	48.5	45.9	47.6	51.1	54.2	52.7	55.9	56.3	54.8	52.3
8	50.9	52.9	48.5	45.9	47.6	51.1	54.2	52.7	55.9	56.3	54.5	52.7
9	50.9	52.9	48.5	45.9	47.6	51.1	54.2	52.7	55.9	56.2	54.3	53.2

Predicted Water Temperature
Sacramento River at Bend Bridge, Above Normal Year (1928)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	52.8	50.6	47.2	45.0	48.8	53.3	54.7	56.1	54.1	53.9	54.4	55.2

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	52.7	50.4	47.2	45.0	48.8	53.3	54.7	54.9	53.8	54.1	54.6	55.0
4	53.0	50.9	47.2	45.0	48.8	53.3	54.7	55.1	53.4	54.2	54.6	54.4
5	53.0	50.9	47.2	45.0	48.8	53.3	54.7	54.9	53.8	54.2	54.5	54.7
8	53.2	51.1	47.2	45.0	48.8	53.3	54.7	54.9	53.9	54.1	54.0	55.3
9	52.9	50.8	47.2	45.0	48.8	53.3	54.7	55.1	53.6	54.2	54.6	54.3

Predicted Water Temperature
Sacramento River at Bend Bridge, Below Normal Year (1979)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	50.5	48.7	46.9	44.9	47.5	52.6	54.1	56.7	54.3	54.7	54.5	56.9

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	50.4	48.7	46.9	44.9	47.5	52.6	54.1	57.7	53.6	54.7	55.3	57.2
4	50.4	48.4	47.0	44.9	47.5	52.6	54.1	57.7	53.4	54.7	54.0	57.8
5	50.4	48.3	47.0	44.9	47.5	52.6	54.1	57.7	53.6	54.4	54.1	58.4
8	50.4	48.2	47.0	44.9	47.5	52.6	54.1	57.7	53.5	54.0	54.8	58.4
9	50.4	48.5	47.0	44.9	47.5	52.6	54.1	57.7	53.3	54.6	53.8	58.4

Predicted Water Temperature
Sacramento River at Bend Bridge, Dry Year (1964)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	51.6	50.6	46.7	44.7	50.4	51.6	53.2	53.5	54.1	55.0	54.9	56.2

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	50.7	50.9	46.7	44.7	50.6	51.6	53.4	54.1	53.1	55.1	55.6	57.7
4	50.8	50.7	46.7	44.7	50.4	51.6	53.4	54.1	52.9	54.9	55.6	56.3
5	51.9	50.6	46.7	44.7	50.6	51.6	53.4	54.1	53.1	55.1	55.6	57.1
8	51.9	50.6	46.7	44.7	50.4	51.6	53.4	54.1	53.1	54.8	55.2	56.0
9	50.7	50.9	46.7	44.7	50.4	51.6	53.4	54.1	52.8	54.9	55.6	56.5

Predicted Water Temperature
Sacramento River at Bend Bridge, Critical Year (1992)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	56.7	53.1	46.9	44.2	48.3	51.4	56.5	56.6	55.5	56.3	56.0	56.9

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	58.4	53.5	46.8	44.1	48.4	51.4	55.5	56.2	54.5	57.1	58.3	56.6
4	58.7	53.6	46.8	44.1	48.5	51.4	55.4	56.3	54.4	56.8	58.3	57.0
5	58.5	53.5	46.8	44.1	48.4	51.4	55.1	56.2	54.5	55.1	58.3	59.2
8	58.3	53.5	46.8	44.1	48.4	51.4	55.3	56.3	53.9	56.3	58.3	58.1
9	58.6	53.6	46.8	44.1	48.4	51.4	55.4	56.2	54.5	56.9	58.3	56.8

Predicted Water Temperature
Sacramento River at Vina, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	52.0	52.6	47.8	45.4	47.3	51.4	55.0	55.3	60.4	59.6	59.1	57.5

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	52.2	52.7	47.8	45.4	47.3	51.4	55.0	55.3	60.4	60.9	59.1	55.6
4	52.1	52.6	47.8	45.4	47.3	51.4	55.0	55.3	60.4	60.9	58.2	57.0
5	52.2	52.7	47.8	45.4	47.3	51.4	55.0	55.3	60.4	60.9	58.8	56.0
8	52.1	52.6	47.8	45.4	47.3	51.4	55.0	55.3	60.4	60.9	58.4	56.5
9	52.1	52.6	47.8	45.4	47.3	51.4	55.0	55.3	60.4	60.8	58.2	57.1

Predicted Water Temperature
Sacramento River at Vina, Above Normal Year (1928)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	54.7	50.6	46.5	44.4	48.3	52.7	55.5	60.1	58.6	57.9	58.4	58.8

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	54.7	50.4	46.5	44.4	48.3	52.7	55.5	58.7	58.3	58.2	58.7	58.6
4	54.9	50.8	46.5	44.4	48.3	52.7	55.5	58.9	57.8	58.3	58.7	57.9
5	54.9	50.8	46.5	44.4	48.3	52.7	55.5	58.7	58.3	58.3	58.6	58.2
8	55.0	50.9	46.5	44.4	48.3	52.7	55.5	58.7	58.3	58.2	57.8	58.9
9	54.8	50.7	46.5	44.4	48.3	52.7	55.5	58.9	58.0	58.3	58.7	57.8

Predicted Water Temperature
Sacramento River at Vina, Below Normal Year (1979)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	53.4	49.0	45.9	44.7	47.4	52.5	55.6	60.5	59.7	60.6	60.1	62.1

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	53.3	48.9	45.9	44.7	47.4	52.5	55.6	61.4	58.7	60.5	61.2	62.3
4	53.3	48.7	46.1	44.7	47.4	52.6	55.6	61.4	58.5	60.5	59.3	63.0
5	53.3	48.7	46.1	44.7	47.4	52.6	55.6	61.4	58.7	60.1	59.6	63.6
8	53.3	48.6	46.1	44.7	47.4	52.6	55.6	61.4	58.7	59.5	60.5	63.6
9	53.3	48.8	46.1	44.7	47.4	52.6	55.6	61.4	58.4	60.4	59.0	63.6

Predicted Water Temperature
Sacramento River at Vina, Dry Year (1964)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	53.3	50.4	45.7	44.2	50.0	51.7	54.7	56.7	58.4	59.9	59.4	60.3

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	52.3	50.6	45.7	44.2	50.2	51.8	54.9	57.3	57.1	59.9	60.2	61.7
4	52.4	50.5	45.7	44.2	50.0	51.7	54.9	57.3	56.8	59.7	60.2	60.3
5	53.6	50.4	45.7	44.2	50.2	51.8	54.9	57.3	57.1	59.9	60.2	61.2
8	53.6	50.4	45.7	44.2	50.0	51.7	54.9	57.3	57.1	59.6	59.7	60.0
9	52.3	50.6	45.7	44.2	50.0	51.7	54.9	57.3	56.7	59.7	60.2	60.6

Predicted Water Temperature
Sacramento River at Vina, Critical Year (1992)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	59.5	52.9	46.2	43.6	48.2	51.8	57.6	61.1	60.3	61.5	61.2	62.0

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	60.5	53.2	46.1	43.6	48.2	51.9	57.0	60.7	59.1	62.6	64.1	61.2
4	60.8	53.2	46.1	43.6	48.2	51.9	56.9	60.8	59.0	62.2	64.1	61.5
5	60.6	53.2	46.1	43.6	48.2	51.9	56.7	60.6	59.1	59.9	64.1	62.9
8	60.5	53.2	46.1	43.6	48.2	51.9	56.8	60.8	58.3	61.6	64.1	62.2
9	60.7	53.2	46.1	43.6	48.2	51.9	56.9	60.7	59.1	62.3	64.1	61.3

Predicted Water Temperature
Feather River Downstream of the Afterbay, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	57.6	53.8	49.6	47.8	47.8	54.0	53.2	59.0	64.4	70.0	69.3	64.1

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	56.9	53.8	49.5	47.8	47.8	54.0	53.2	59.0	64.4	70.5	69.2	64.1
4	56.9	53.8	49.5	47.8	47.8	54.0	53.2	59.0	64.4	69.7	69.2	64.1
5	56.9	53.8	49.4	47.8	47.8	54.0	53.2	59.0	64.4	70.5	69.2	64.1
8	56.9	53.8	49.6	47.8	47.8	54.0	53.2	59.0	64.4	70.8	69.2	64.1
9	57.0	53.8	49.5	47.8	47.8	54.0	53.2	59.0	64.4	69.5	69.2	64.1

Predicted Water Temperature
Feather River Downstream of the Afterbay, Above Normal Year (1928)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	61.2	53.0	45.8	46.0	49.6	49.3	56.6	63.7	66.6	68.4	67.3	66.0

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	61.2	53.0	45.8	46.1	49.0	49.3	56.6	61.8	66.1	66.4	66.6	64.9
4	61.2	53.0	45.8	46.0	49.2	49.3	56.6	62.4	66.1	66.4	66.3	64.9
5	61.2	53.0	45.8	46.1	49.0	49.3	56.6	61.8	66.1	66.4	66.6	64.9
8	61.2	53.0	45.8	46.1	49.0	49.3	56.6	61.8	66.0	65.2	69.7	64.9
9	61.2	53.0	45.8	46.0	49.5	49.2	56.6	62.4	66.1	66.4	66.4	64.9

Predicted Water Temperature
Feather River Downstream of the Afterbay, Below Normal Year (1979)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	62.1	51.6	44.0	45.8	47.4	54.5	57.7	64.2	68.0	71.0	67.6	67.2

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	62.1	51.6	44.0	45.8	47.4	54.5	57.7	64.2	64.8	68.3	70.0	67.2
4	62.1	51.6	44.0	45.8	47.4	54.5	57.7	64.2	65.3	67.7	69.2	67.2
5	62.1	51.6	44.0	45.8	47.4	54.5	57.7	64.2	64.9	68.3	70.0	67.2
8	62.1	51.6	44.0	45.7	47.4	54.5	57.7	64.2	64.8	68.3	70.0	67.2
9	62.1	51.6	44.0	45.8	47.4	54.5	57.7	64.2	65.1	67.7	69.5	67.2

Predicted Water Temperature
Feather River Downstream of the Afterbay, Dry Year (1964)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	61.5	52.1	42.7	45.6	50.9	52.8	55.5	60.4	67.2	70.3	69.0	65.5

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	61.5	52.1	42.6	45.3	50.9	52.8	56.4	62.4	66.0	68.5	68.1	64.3
4	61.5	52.1	42.6	45.1	50.9	53.2	56.4	61.9	66.3	68.5	68.1	65.0
5	61.5	52.1	42.6	45.3	50.9	52.8	56.4	62.4	66.0	68.5	68.1	64.3
8	61.5	52.1	42.6	45.5	50.9	52.8	56.4	61.9	66.1	66.8	68.0	66.1
9	61.5	52.1	42.6	45.1	50.9	53.3	56.4	61.9	66.2	68.5	68.0	64.5

Predicted Water Temperature
Feather River Downstream of the Afterbay, Critical Year (1992)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	62.5	53.2	45.6	44.0	52.2	55.5	58.0	65.8	68.0	70.7	70.6	65.3

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	62.4	53.3	46.2	44.0	52.2	55.5	58.0	65.8	67.9	70.9	69.0	65.9
4	62.4	53.3	46.2	44.0	52.2	55.5	58.0	65.4	68.0	70.9	69.0	65.9
5	62.4	53.3	46.3	44.0	52.2	55.5	58.0	65.2	68.0	70.9	69.0	65.9
8	62.5	53.3	46.2	43.9	52.2	55.5	58.0	66.6	67.4	70.6	69.0	65.8
9	62.2	53.3	46.2	44.0	52.2	55.5	58.0	66.0	67.9	70.9	69.0	65.9

Predicted Water Temperature
Feather River at Honcut Creek, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.0	53.9	49.5	47.7	47.9	54.3	53.8	59.9	66.1	71.8	70.8	66.5

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	57.4	53.9	49.4	47.7	47.9	54.3	53.8	59.9	66.1	72.4	72.1	66.5
4	57.4	53.9	49.4	47.7	47.9	54.3	53.8	59.9	66.1	71.5	72.1	66.5
5	57.4	53.9	49.3	47.7	47.9	54.3	53.8	59.9	66.1	72.4	72.1	66.5
8	57.4	53.9	49.5	47.7	47.9	54.3	53.8	59.9	66.1	72.8	72.1	66.5
9	57.4	53.9	49.4	47.7	47.9	54.3	53.8	59.9	66.1	71.3	72.1	66.5

Predicted Water Temperature
Feather River at Honcut Creek, Above Normal Year (1928)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	61.4	52.9	45.4	45.9	49.8	49.7	58.4	66.5	68.2	69.7	68.5	67.2

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	61.4	52.9	45.4	46.0	49.2	49.7	58.4	63.1	67.6	67.5	67.7	66.8
4	61.4	52.9	45.4	45.9	49.4	49.7	58.4	63.7	67.6	67.5	67.5	66.8
5	61.4	52.9	45.4	45.9	49.2	49.7	58.4	63.1	67.6	67.5	67.7	66.8
8	61.4	52.9	45.4	46.0	49.2	49.7	58.4	63.1	67.6	66.3	71.0	66.8
9	61.4	52.9	45.4	45.9	49.7	49.6	58.4	63.8	67.7	67.6	67.5	66.8

Predicted Water Temperature
Feather River at Honcut Creek, Below Normal Year (1979)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	63.2	51.5	43.6	45.7	47.6	55.0	59.5	67.1	71.2	72.6	68.8	69.5

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	63.2	51.5	43.6	45.7	47.6	55.0	59.5	67.1	66.4	69.7	71.5	69.5
4	63.2	51.5	43.6	45.7	47.6	55.0	59.5	67.1	66.8	69.1	70.4	69.5
5	63.2	51.5	43.6	45.7	47.6	55.0	59.5	67.1	66.4	69.6	71.5	69.5
8	63.2	51.5	43.6	45.6	47.6	55.0	59.5	67.1	66.3	69.7	71.5	69.5
9	63.2	51.5	43.6	45.7	47.6	55.0	59.5	67.1	66.6	69.0	70.8	69.5

Predicted Water Temperature
Feather River at Honcut Creek, Dry Year (1964)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	61.9	52.0	42.2	45.4	51.2	53.2	56.7	61.5	69.5	71.7	70.3	66.4

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	61.9	52.0	42.2	45.2	51.2	53.2	58.8	64.3	67.4	69.9	69.4	65.2
4	61.9	52.0	42.2	45.0	51.2	53.6	58.8	64.2	67.7	69.9	69.4	65.9
5	61.9	52.0	42.2	45.2	51.2	53.2	58.8	64.3	67.4	69.9	69.4	65.3
8	61.9	52.0	42.2	45.4	51.2	53.2	58.8	64.2	67.6	68.0	69.3	67.7
9	61.9	52.0	42.2	45.0	51.2	53.7	58.8	64.2	67.6	69.9	69.3	65.5

Predicted Water Temperature
Feather River at Honcut Creek, Critical Year (1992)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	63.6	53.4	45.4	43.6	53.1	56.9	61.3	69.1	69.9	72.3	73.6	67.6

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	63.5	53.5	45.8	43.6	53.1	56.9	61.3	69.1	69.8	72.7	73.4	67.8
4	63.5	53.5	45.7	43.6	53.1	56.9	61.3	69.1	69.9	72.8	73.4	67.8
5	63.5	53.5	45.8	43.6	53.1	56.9	61.3	69.1	69.9	72.8	73.4	67.8
8	63.6	53.5	45.7	43.6	53.1	56.9	61.3	69.1	69.1	72.2	73.4	67.8
9	63.5	53.5	45.7	43.6	53.1	56.9	61.3	69.1	69.8	72.7	73.4	67.8

Predicted Water Temperature
Feather River at the Mouth, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	59.2	53.2	48.7	46.9	48.3	52.7	55.7	61.8	69.6	75.5	73.7	70.8

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	58.7	53.2	48.7	46.9	48.3	52.7	55.7	61.8	69.6	75.7	74.9	70.8
4	58.7	53.2	48.7	46.9	48.3	52.7	55.7	61.8	69.6	75.3	74.9	70.8
5	58.7	53.2	48.6	46.9	48.3	52.7	55.7	61.8	69.6	75.7	74.9	70.8
8	58.7	53.2	48.7	46.9	48.3	52.7	55.7	61.8	69.6	75.9	74.9	70.8
9	58.7	53.2	48.7	46.9	48.3	52.7	55.7	61.8	69.6	75.2	74.9	70.8

Predicted Water Temperature
Feather River at the Mouth, Above Normal Year (1928)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	60.6	51.7	44.1	45.8	50.1	51.6	57.4	67.6	71.5	72.7	71.3	69.0

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	60.6	51.7	44.1	45.8	49.6	51.6	57.4	66.0	71.2	71.0	70.7	69.2
4	60.6	51.7	44.1	45.8	49.8	51.6	57.4	66.3	71.2	71.0	70.5	69.2
5	60.6	51.7	44.1	45.8	49.6	51.6	57.4	66.0	71.2	71.0	70.7	69.2
8	60.6	51.7	44.1	45.8	49.6	51.6	57.4	66.0	71.1	69.8	72.8	69.2
9	60.6	51.7	44.1	45.8	50.0	51.6	57.4	66.3	71.2	71.0	70.5	69.2

Predicted Water Temperature
Feather River at the Mouth, Below Normal Year (1979)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	64.7	51.2	43.4	45.7	48.3	53.9	58.9	68.9	74.1	75.2	71.5	71.7

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	64.7	51.1	43.4	45.7	48.3	53.9	58.9	68.9	70.5	73.3	72.9	71.7
4	64.7	51.1	43.4	45.7	48.3	53.9	58.9	68.9	70.8	72.8	72.4	71.7
5	64.7	51.1	43.4	45.7	48.3	53.9	58.9	68.9	70.5	73.3	72.9	71.7
8	64.7	51.1	43.4	45.7	48.3	53.9	58.9	68.9	70.5	73.3	72.9	71.7
9	64.7	51.1	43.4	45.7	48.3	53.9	58.9	68.9	70.7	72.8	72.6	71.7

Predicted Water Temperature
Feather River at the Mouth, Dry Year (1964)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	61.9	50.8	42.2	45.4	50.4	53.6	59.4	64.5	71.4	74.6	73.0	68.1

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	61.9	50.8	42.2	45.4	50.4	53.6	61.2	66.6	70.2	73.4	72.4	67.5
4	61.9	50.8	42.2	45.4	50.4	53.8	61.2	66.7	70.3	73.4	72.4	67.9
5	61.9	50.8	42.2	45.4	50.4	53.6	61.2	66.5	70.2	73.4	72.4	67.5
8	61.9	50.8	42.2	45.4	50.4	53.6	61.2	66.7	70.2	71.8	72.4	69.2
9	61.9	50.8	42.2	45.4	50.4	53.8	61.2	66.7	70.3	73.4	72.4	67.6

Predicted Water Temperature
Feather River at the Mouth, Critical Year (1992)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	65.7	54.3	45.3	44.6	50.6	55.2	62.2	74.1	73.6	75.6	78.2	72.9

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	65.8	54.6	45.5	44.6	50.6	55.2	62.2	74.1	73.5	76.1	78.6	72.7
4	65.8	54.6	45.5	44.6	50.6	55.2	62.2	74.2	73.6	76.2	78.6	72.7
5	65.8	54.6	45.5	44.6	50.6	55.2	62.2	74.3	73.6	76.2	78.6	72.7
8	65.7	54.5	45.5	44.6	50.6	55.2	62.2	73.4	72.9	75.5	78.6	72.8
9	65.8	54.6	45.5	44.6	50.6	55.2	62.2	74.0	73.4	76.0	78.6	72.7

Predicted Water Temperature
American River at Nimbus, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	55.9	55.8	50.6	46.4	46.8	52.1	55.1	57.7	62.7	65.8	65.9	64.3

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	55.9	55.6	50.6	46.4	46.9	52.3	55.0	57.7	62.7	66.4	65.3	64.3
4	55.9	55.6	50.6	46.4	46.9	52.3	54.9	57.7	62.7	66.4	65.1	64.6
5	55.9	55.5	50.6	46.4	46.9	52.3	54.9	57.7	62.7	66.4	65.3	64.4
8	56.4	56.0	50.6	46.5	47.2	52.5	55.2	57.7	62.8	67.4	65.8	65.2
9	55.9	55.6	50.6	46.4	46.8	52.2	54.9	57.7	62.7	66.4	65.1	64.6

Predicted Water Temperature
American River at Nimbus, Above Normal Year (1928)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	56.5	55.2	49.8	47.5	48.9	53.7	55.4	62.8	66.3	65.8	66.5	67.6

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	56.5	55.0	49.8	47.5	48.9	53.7	55.4	62.6	66.3	66.4	66.7	66.9
4	56.5	55.3	49.8	47.5	48.9	53.7	55.3	62.6	66.0	66.5	66.7	65.3
5	56.5	55.3	49.8	47.5	48.9	53.7	55.3	62.6	66.3	66.4	66.4	66.0
8	57.8	55.7	49.7	47.4	48.9	53.7	55.7	62.7	67.1	67.0	66.2	70.6
9	56.5	55.2	49.8	47.5	48.9	53.7	55.3	62.6	66.1	66.5	66.8	65.3

Predicted Water Temperature
American River at Nimbus, Below Normal Year (1979)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.0	57.8	49.6	46.7	47.5	54.8	57.6	60.9	65.0	66.2	66.2	67.3

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	58.0	57.7	49.6	46.7	47.5	54.9	57.6	60.9	64.6	65.8	66.7	67.3
4	58.0	57.8	49.7	46.7	47.6	54.8	57.5	60.9	64.5	65.8	65.4	68.0
5	58.0	57.8	49.7	46.7	47.6	54.7	57.5	60.9	64.6	65.6	65.6	68.7
8	58.6	58.9	49.5	46.7	47.7	54.1	58.0	61.1	65.0	65.6	66.9	69.8
9	58.0	57.8	49.7	46.7	47.6	54.8	57.5	60.9	64.5	65.8	65.3	68.7

Predicted Water Temperature
American River at Nimbus, Dry Year (1964)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	56.5	55.7	47.5	45.1	47.6	51.0	56.3	61.7	65.9	66.2	65.3	67.6

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	56.5	55.6	47.5	45.1	47.8	51.3	55.6	62.2	63.8	65.9	65.7	65.9
4	56.5	55.5	47.5	45.2	47.6	50.9	56.4	61.6	63.5	65.8	65.7	65.8
5	56.5	55.6	47.5	45.2	47.7	51.3	55.5	62.2	63.8	65.9	65.7	65.9
8	57.1	56.2	47.4	45.1	47.6	51.0	56.2	61.9	64.1	66.7	66.4	65.9
9	56.5	55.5	47.5	45.1	47.6	50.9	56.2	61.7	63.6	65.9	65.6	65.8

Predicted Water Temperature
American River at Nimbus, Critical Year (1992)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	66.0	62.1	52.4	47.4	51.3	56.6	61.8	67.2	66.8	65.6	71.8	71.6

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	65.1	62.3	52.2	47.2	50.8	57.1	61.7	66.7	65.0	68.1	76.1	72.0
4	66.5	61.9	51.9	47.0	51.0	56.0	63.4	66.9	64.8	69.2	76.2	72.3
5	66.1	62.0	52.0	47.1	51.2	56.4	62.7	66.6	64.9	69.0	76.2	72.3
8	67.5	61.9	51.9	47.0	50.9	55.6	63.7	69.3	64.9	73.6	76.3	68.0
9	66.3	62.0	51.9	47.1	51.2	56.3	63.2	66.8	64.9	68.7	76.0	72.0

Predicted Water Temperature
American River at Watt Avenue, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	56.7	55.6	50.4	46.4	47.0	52.5	55.7	58.4	63.8	67.4	67.3	64.9

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	56.7	55.5	50.4	46.4	47.1	52.7	55.6	58.4	63.8	68.3	66.5	64.9
4	56.7	55.5	50.4	46.4	47.1	52.7	55.5	58.4	63.8	68.2	66.2	65.3
5	56.7	55.4	50.4	46.4	47.1	52.7	55.5	58.4	63.8	68.3	66.5	65.0
8	57.1	55.8	50.4	46.5	47.3	52.9	55.8	58.4	63.9	69.2	66.9	65.8
9	56.7	55.5	50.4	46.4	47.0	52.6	55.5	58.4	63.8	68.2	66.2	65.3

Predicted Water Temperature
American River at Watt Avenue, Above Normal Year (1928)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	57.6	55.0	49.2	47.3	49.5	53.9	56.0	64.3	67.7	67.0	67.7	68.6

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	57.6	54.9	49.2	47.3	49.5	53.9	56.0	63.8	67.6	67.6	68.2	68.0
4	57.6	55.1	49.2	47.3	49.5	53.9	55.9	63.9	67.3	67.7	68.2	66.3
5	57.6	55.1	49.2	47.3	49.5	53.9	55.9	63.8	67.6	67.6	67.9	67.1
8	58.7	55.5	49.1	47.2	49.5	53.9	56.3	63.9	68.2	68.1	67.4	70.3
9	57.6	55.0	49.2	47.3	49.5	53.9	55.9	63.9	67.4	67.7	68.3	66.3

Predicted Water Temperature
American River at Watt Avenue, Below Normal Year (1979)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.9	56.8	48.5	46.4	47.8	55.0	58.2	62.1	66.6	68.0	67.6	69.0

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	58.9	56.7	48.5	46.4	47.8	55.1	58.2	62.1	65.9	67.4	68.2	69.0
4	58.9	56.8	48.8	46.4	47.9	55.1	58.1	62.1	65.7	67.4	66.6	69.7
5	58.9	56.8	48.8	46.4	47.9	55.0	58.1	62.1	65.9	67.2	66.9	70.4
8	59.5	57.8	48.5	46.4	48.0	54.5	58.5	62.4	66.2	67.0	68.2	71.0
9	58.9	56.8	48.7	46.4	47.9	55.0	58.1	62.1	65.7	67.4	66.5	70.4

Predicted Water Temperature
American River at Watt Avenue, Dry Year (1964)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	57.4	55.3	46.6	45.0	48.0	51.7	58.0	62.6	67.3	68.1	66.7	68.7

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	57.4	55.2	46.6	45.0	48.1	51.9	57.5	63.5	64.9	67.3	67.4	66.7
4	57.4	55.1	46.6	45.1	48.0	51.7	58.1	62.6	64.7	67.4	67.4	66.6
5	57.4	55.2	46.6	45.1	48.0	51.9	57.4	63.5	64.9	67.3	67.4	66.7
8	57.9	55.8	46.5	45.0	48.0	51.7	57.9	62.8	65.3	68.2	67.8	67.1
9	57.4	55.1	46.6	45.0	48.0	51.7	57.9	62.6	64.7	67.5	67.2	66.6

Predicted Water Temperature
American River at Watt Avenue, Critical Year (1992)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	66.1	61.0	51.3	46.7	51.9	57.0	63.2	69.3	68.4	67.3	73.2	71.3

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	65.4	61.4	51.1	46.5	51.5	57.4	62.9	68.5	66.2	70.3	76.0	71.4
4	66.5	61.0	50.8	46.4	51.6	56.5	64.2	68.7	65.9	71.4	76.0	71.5
5	66.2	61.1	50.9	46.5	51.8	56.8	63.7	68.4	66.0	71.4	76.0	71.5
8	67.3	61.0	50.8	46.4	51.6	56.2	64.2	70.6	66.0	74.7	76.0	70.0
9	66.3	61.1	50.8	46.5	51.8	56.8	64.1	68.6	66.0	70.9	75.9	71.4

Predicted Water Temperature
American River at the Mouth, Wet Year (1942)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	57.1	55.5	50.3	46.3	47.1	52.8	56.0	58.8	64.4	68.3	68.0	65.2

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	57.1	55.4	50.3	46.3	47.1	53.0	55.9	58.8	64.4	69.2	67.2	65.2
4	57.1	55.4	50.3	46.3	47.1	53.0	55.8	58.8	64.4	69.2	66.8	65.6
5	57.1	55.3	50.3	46.3	47.1	53.0	55.8	58.8	64.4	69.2	67.1	65.4
8	57.5	55.7	50.3	46.4	47.4	53.1	56.1	58.8	64.5	70.1	67.5	66.1
9	57.1	55.4	50.3	46.3	47.1	52.9	55.8	58.8	64.4	69.2	66.8	65.6

Predicted Water Temperature
American River at the Mouth, Above Normal Year (1928)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.2	54.9	48.9	47.2	49.8	54.0	56.3	65.0	68.4	67.7	68.4	69.1

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	58.2	54.8	48.9	47.2	49.8	54.0	56.3	64.5	68.3	68.2	69.0	68.5
4	58.2	55.0	48.9	47.2	49.8	54.0	56.2	64.5	67.9	68.3	69.0	66.8
5	58.2	55.0	48.9	47.2	49.8	54.0	56.2	64.5	68.3	68.2	68.6	67.6
8	59.2	55.3	48.8	47.1	49.8	54.0	56.6	64.6	68.8	68.7	68.0	70.3
9	58.2	54.9	48.9	47.2	49.8	54.0	56.2	64.5	68.1	68.3	69.1	66.8

Predicted Water Temperature
American River at the Mouth, Below Normal Year (1979)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	59.5	56.2	47.9	46.2	48.0	55.2	58.5	62.8	67.4	69.0	68.4	69.8

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	59.5	56.1	47.9	46.2	48.0	55.3	58.5	62.8	66.6	68.3	69.0	69.9
4	59.5	56.2	48.2	46.2	48.1	55.2	58.5	62.8	66.4	68.3	67.3	70.6
5	59.5	56.2	48.2	46.2	48.1	55.1	58.5	62.8	66.6	68.0	67.6	71.2
8	59.9	57.1	48.0	46.2	48.2	54.7	58.8	63.1	66.9	67.8	68.9	71.6
9	59.5	56.2	48.2	46.2	48.1	55.2	58.5	62.8	66.4	68.3	67.1	71.2

Predicted Water Temperature
American River at the Mouth, Dry Year (1964)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.0	55.1	46.1	45.0	48.2	52.1	58.9	63.2	68.0	69.1	67.5	69.1

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	58.0	55.0	46.1	45.0	48.3	52.3	58.5	64.1	65.5	68.1	68.3	67.1
4	58.0	54.9	46.1	45.0	48.2	52.1	58.9	63.1	65.3	68.2	68.3	67.0
5	58.0	55.0	46.1	45.0	48.2	52.3	58.4	64.1	65.5	68.1	68.3	67.1
8	58.4	55.5	46.0	44.9	48.2	52.1	58.8	63.3	65.9	69.1	68.5	67.8
9	58.0	54.9	46.1	45.0	48.2	52.1	58.8	63.2	65.4	68.3	68.1	67.1

Predicted Water Temperature
American River at the Mouth, Critical Year (1992)

Base Case Mean Predicted Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	66.1	60.4	50.6	46.3	52.2	57.2	63.8	70.2	69.2	68.2	73.9	71.2

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	65.5	60.8	50.5	46.2	51.8	57.5	63.4	69.4	66.8	71.4	75.9	71.2
4	66.5	60.5	50.3	46.0	52.0	56.8	64.4	69.6	66.5	72.5	75.9	71.3
5	66.2	60.6	50.3	46.1	52.1	57.0	64.1	69.2	66.6	72.5	75.9	71.3
8	67.2	60.5	50.3	46.0	51.9	56.6	64.4	71.1	66.5	75.0	75.9	70.7
9	66.4	60.6	50.2	46.1	52.1	57.0	64.4	69.5	66.7	71.9	75.9	71.2

Predicted Water Temperature
Stanislaus River at Goodwin, Wet Year (1980)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.6	56.9	52.4	47.5	46.3	48.5	49.5	51.2	53.5	55.8	56.6	57.4

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	58.6	56.6	52.1	48.6	46.1	48.3	48.6	50.4	52.3	54.7	55.5	56.6
4	58.7	56.8	52.2	48.6	46.2	48.3	48.7	50.5	52.4	54.8	55.6	56.7
5	58.6	56.6	52.1	48.4	46.1	48.3	48.6	50.5	52.4	54.8	55.5	56.6
8	58.7	56.8	52.2	48.6	46.2	48.3	48.7	50.5	52.4	54.8	55.6	56.7
9	59.0	57.0	52.9	50.6	48.9	48.2	48.0	49.2	50.9	54.2	55.5	56.6

Predicted Water Temperature
Stanislaus River at Goodwin, Above Normal Year (1963)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.5	57.7	52.8	46.4	50.3	50.1	50.3	51.6	53.8	55.7	56.7	57.7

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	59.2	58.0	51.9	46.6	50.5	50.6	50.1	51.4	53.4	55.6	56.4	57.7
4	59.3	58.1	52.1	46.8	50.6	50.4	50.4	51.5	53.5	55.8	56.6	57.9
5	59.3	58.1	52.1	46.8	50.6	50.3	50.4	51.6	53.6	55.8	56.7	58.0
8	59.1	58.0	51.9	46.6	50.5	50.5	50.2	51.4	53.4	55.7	56.4	57.7
9	58.6	57.4	52.4	46.8	49.7	50.7	49.7	51.1	54.0	55.6	56.1	57.4

Predicted Water Temperature
Stanislaus River at Goodwin, Below Normal Year (1950)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	59.2	58.6	53.4	48.4	48.9	49.8	51.5	52.8	54.3	56.4	57.5	58.2

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	59.4	58.5	52.1	48.3	49.1	49.9	51.0	52.2	54.8	56.8	57.8	58.9
4	59.5	58.5	52.1	48.3	49.1	49.9	51.0	52.3	54.8	56.9	57.9	59.0
5	59.4	58.5	52.2	48.4	49.2	49.9	51.1	52.3	54.8	56.9	57.9	59.0
8	59.3	58.4	52.0	48.2	49.0	49.9	50.9	52.2	54.7	56.7	57.7	58.7
9	59.2	58.3	53.0	48.5	48.8	50.0	50.8	52.1	54.3	56.2	57.4	58.2

Predicted Water Temperature
Stanislaus River at Goodwin, Critical Year (1976)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.5	56.3	52.3	50.2	50.4	52.0	52.5	55.2	57.1	58.5	58.8	59.7

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	58.0	55.8	51.9	49.7	50.2	52.1	52.0	54.4	56.4	57.8	58.1	59.4
4	58.1	55.9	52.0	49.8	50.2	52.0	52.1	54.5	56.6	58.0	58.3	59.6
5	58.1	55.9	51.9	49.7	50.2	52.1	52.0	54.4	56.4	57.8	58.1	59.4
8	58.1	55.9	52.0	49.7	50.2	52.0	52.0	54.4	56.4	57.9	58.1	59.4
9	59.1	56.9	52.7	50.2	50.4	51.7	52.3	55.0	57.4	58.8	59.0	60.1

Predicted Water Temperature
Stanislaus River at Orange Blossom, Wet Year (1980)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	61.2	55.1	49.8	47.5	46.5	49.7	50.8	53.8	59.3	62.8	62.0	61.5

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	61.2	54.9	49.6	48.6	46.3	49.5	50.0	53.1	58.7	62.2	58.9	61.0
4	61.2	55.0	49.7	48.6	46.4	49.5	50.1	53.2	58.7	62.3	59.0	61.1
5	61.2	54.9	49.6	48.4	46.3	49.5	50.0	53.2	58.7	62.3	58.9	61.0
8	61.2	55.0	49.7	48.6	46.4	49.5	50.1	53.2	58.7	62.3	59.0	61.1
9	60.0	55.7	51.4	50.0	49.3	48.9	49.5	51.1	52.8	61.4	58.9	60.5

Predicted Water Temperature
Stanislaus River at Orange Blossom, Above Normal Year (1963)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.8	56.5	50.6	43.6	53.9	52.9	52.3	57.5	60.5	61.9	62.0	62.4

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	59.0	56.4	48.6	43.8	54.0	52.3	52.1	55.2	56.4	59.8	59.6	62.4
4	59.0	56.5	48.8	43.9	54.0	52.2	52.4	55.2	56.5	59.9	59.8	62.5
5	59.0	56.5	48.8	43.9	54.0	52.1	52.4	55.4	56.6	60.0	59.9	62.5
8	59.0	56.4	48.6	43.8	54.0	52.2	52.2	55.2	56.4	60.0	59.7	62.4
9	58.8	56.1	49.9	44.3	53.1	52.7	51.1	53.8	60.6	59.7	59.4	62.4

Predicted Water Temperature
Stanislaus River at Orange Blossom, Below Normal Year (1950)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	59.2	57.5	50.9	46.4	49.5	52.5	54.5	58.4	59.5	62.4	63.1	62.2

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	59.3	57.3	48.4	46.1	49.6	52.6	52.7	54.1	57.6	60.4	60.8	62.6
4	59.4	57.3	48.4	46.1	49.6	52.6	52.7	54.2	57.6	60.5	60.9	62.7
5	59.3	57.3	48.4	46.1	49.7	52.6	52.8	54.2	57.6	60.5	60.9	62.7
8	59.3	57.2	48.3	46.0	49.6	52.6	52.6	54.1	57.5	60.3	60.8	62.5
9	59.2	57.2	50.2	46.6	49.4	52.0	53.0	54.8	57.2	60.0	61.9	62.4

Predicted Water Temperature
Stanislaus River at Orange Blossom, Critical Year (1976)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.8	54.8	50.6	49.5	50.6	54.4	54.5	61.1	61.3	62.9	61.7	63.5

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	58.5	54.4	50.2	48.7	50.8	54.5	53.7	57.3	59.4	60.9	60.2	63.3
4	58.6	54.5	50.3	48.7	50.8	54.4	53.9	57.4	59.6	61.0	60.3	63.4
5	58.6	54.5	50.2	48.7	50.8	54.5	53.8	57.3	59.4	60.9	60.2	63.3
8	58.6	54.5	50.3	48.7	50.8	54.4	53.8	57.3	59.4	60.9	60.2	63.3
9	59.2	55.6	51.2	49.3	50.8	53.3	53.4	57.2	60.2	61.6	60.9	63.9

Predicted Water Temperature
Stanislaus River at the Mouth, Wet Year (1980)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	62.1	52.2	46.9	47.6	47.4	53.3	56.3	61.0	65.2	70.2	68.7	66.8

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	62.1	52.1	46.9	48.4	47.3	53.3	55.9	60.8	65.2	70.1	66.8	66.7
4	62.1	52.2	46.9	48.4	47.4	53.3	55.9	60.8	65.2	70.2	66.8	66.8
5	62.1	52.1	46.9	48.3	47.3	53.3	55.9	60.8	65.2	70.2	66.8	66.7
8	62.1	52.2	46.9	48.4	47.4	53.3	55.9	60.8	65.2	70.2	66.8	66.8
9	61.7	52.7	48.0	48.6	50.7	51.8	55.5	58.0	59.5	69.9	66.8	66.5

Predicted Water Temperature
Stanislaus River at the Mouth, Above Normal Year (1963)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	58.9	54.2	46.2	40.5	56.7	55.0	56.8	63.9	67.0	68.7	68.7	68.3

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	58.9	54.0	44.9	40.6	56.7	54.7	56.7	62.6	64.1	67.6	67.0	68.3
4	58.9	54.0	45.0	40.6	56.7	54.7	56.8	62.6	64.1	67.6	67.0	68.3
5	58.9	54.0	45.0	40.6	56.7	54.7	56.8	62.7	64.2	67.7	67.1	68.3
8	58.9	54.0	44.9	40.6	56.7	54.7	56.7	62.6	64.2	67.7	67.0	68.3
9	58.9	54.0	45.6	40.8	56.5	54.9	55.7	61.1	67.0	67.5	66.9	68.3

Predicted Water Temperature
Stanislaus River at the Mouth, Below Normal Year (1950)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	59.2	55.5	45.5	43.9	50.2	54.6	60.9	64.5	65.4	70.5	69.9	67.3

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	59.2	55.4	44.0	43.7	50.2	54.6	58.6	60.4	64.0	68.7	68.0	67.4
4	59.2	55.4	44.0	43.7	50.2	54.6	58.7	60.5	64.0	68.8	68.0	67.4
5	59.2	55.4	44.1	43.7	50.2	54.6	58.6	60.4	64.0	68.8	68.0	67.4
8	59.2	55.4	44.0	43.7	50.2	54.6	58.5	60.4	63.9	68.7	68.0	67.4
9	59.2	55.4	45.0	44.0	50.1	54.5	59.4	61.9	63.8	68.6	69.2	67.4

Predicted Water Temperature
Stanislaus River at the Mouth, Critical Year (1976)

Base Case Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	59.4	51.7	46.8	47.5	51.4	56.3	58.8	67.0	67.6	69.6	66.8	68.3

Joint POD Alternatives- Predicted Mean Monthly Temperature (degrees F)

Alt	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	59.3	51.6	46.7	46.6	51.8	56.3	58.3	64.5	66.2	68.1	65.6	68.2
4	59.4	51.6	46.7	46.6	51.8	56.3	58.4	64.5	66.3	68.1	65.6	68.3
5	59.4	51.6	46.7	46.6	51.8	56.3	58.3	64.6	66.2	68.1	65.6	68.2
8	59.4	51.6	46.7	46.6	51.8	56.3	58.3	64.5	66.2	68.1	65.6	68.2
9	59.4	52.3	47.4	47.0	51.8	55.8	57.2	63.8	66.4	68.3	65.8	68.4

Results of the Range of Variability Analysis
Sacramento River at Red Bluff

Unimpaired Conditions (1922 - 93)

IHA Group 1	Mean	SD	Range limits Low	Range limits High	RVA Target Range Low	RVA Target Range High
Monthly Flow Magnitude						
October	4966	1777	2933	14630	3189	6742
November	7711	5372	3300	35471	3300	13083
December	13396	10489	3649	47214	3649	23885
January	17837	13990	3861	73900	3861	31826
February	22291	15087	4852	79618	7204	37378
March	19883	11768	4659	76197	8114	31651
April	16423	8718	4293	40438	7705	25141
May	10988	4487	3959	24927	6500	15475
June	7267	2479	3603	14360	3603	9745
July	4873	1029	3030	7739	3843	5902
August	4162	746	2867	5898	3416	4908
September	4342	816	2811	5993	3526	5158
IHA Group 2						
Mean Annual Extremes						
Annual 30-day minimum	4029	703	2811	5898	3326	4732
Annual 30-day maximum	30007	16299	5507	79618	13709	46306
IHA Group 3						
Timing of Annual Extremes						
Month of annual minimum	9	1	7	11	8	10
Month of annual maximum	2	1	11	5	1	3

IHA Group 1	Alternative 1 Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment	Alternative 2 Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment	Alternative 3 Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude															
October	7285	2822	3682	14636	36%	7354	2891	3682	14221	36%	7372	2713	3682	14221	44%
November	8916	5602	3721	41079	13%	9093	5520	3954	41302	13%	8861	5354	3951	41255	10%
December	12443	9546	4261	45352	17%	12474	9719	4219	45352	18%	12253	9558	4169	45352	17%
January	15381	13827	4733	78039	11%	15253	13833	3903	78039	11%	15122	13742	3903	78039	11%
February	18428	15133	4528	67087	29%	18488	14804	4582	66082	25%	18171	14651	4582	66078	26%
March	15455	13149	4037	68665	44%	15570	12954	4552	68665	39%	15462	13017	4522	68665	42%
April	11542	7317	5292	42993	38%	11557	7318	4880	42993	35%	11578	7335	4880	42993	35%
May	10719	3256	6178	20157	15%	10528	3208	6031	20157	10%	10447	3199	6031	20157	10%
June	10949	1822	6788	16681	82%	12069	2247	6832	17600	86%	12555	2335	7317	17625	89%
July	12794	2082	6837	16145	100%	12231	1719	7544	15428	100%	12314	1706	7544	15049	100%
August	10551	1384	6812	13406	100%	9828	1490	6424	13406	100%	10058	1652	6377	13406	100%
September	6269	2157	4099	13905	65%	6305	2393	4057	13905	57%	6589	2260	4057	13905	76%
IHA Group 2															
Mean Annual Extremes															
Annual 30-day minimum	5420	1427	3682	12290	75%	5441	1588	3682	12290	69%	5685	1583	3682	12290	71%
Annual 30-day maximum	26230	16781	9424	78039	43%	26081	16694	8873	78039	33%	25923	16515	8902	78039	32%
IHA Group 3															
Timing of Annual Extremes															
Month of annual minimum	10	1	8	3	19%	9	2	1	12	15%	10	1	9	3	19%
Month of annual maximum	3	3	10	8	42%	4	3	1	12	42%	4	3	1	12	46%

IHA Group 1	Alternative 4 Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment	Alternative 5 Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude										
October	7396	2925	3682	14221	36%	7396	2927	3682	14221	36%
November	9214	5548	4347	41330	14%	9209	5551	4347	41323	14%
December	12560	9765	4293	45352	18%	12553	9756	4325	45352	18%
January	15305	13816	3903	78039	11%	15305	13816	3903	78039	11%
February	18551	14870	4582	67095	26%	18555	14883	4582	67486	25%
March	15598	12972	4566	68665	39%	15571	12938	4569	68665	39%
April	11573	7299	5048	42993	35%	11577	7306	5048	42993	35%
May	10518	3205	6031	20157	10%	10518	3203	6031	20157	10%
June	11867	2200	6788	17219	85%	11879	2202	6788	17331	85%
July	12010	1711	7544	15032	100%	12033	1696	7544	15032	100%
August	9797	1475	6227	13406	100%	9796	1479	6227	13406	100%
September	6343	2406	4057	13905	57%	6338	2410	4057	13905	57%
IHA Group 2										
Mean Annual Extremes										
Annual 30-day minimum	5476	1638	3682	12290	69%	5470	1644	3682	12290	69%
Annual 30-day maximum	26031	16827	8088	78039	36%	26021	16826	8188	78039	36%
IHA Group 3										
Timing of Annual Extremes										
Month of annual minimum	10	1	8	3	11%	9	2	1	12	11%
Month of annual maximum	4	3	1	12	39%	4	3	1	12	39%

IHA Group 1	Alternative 6 Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment	Alternative 8 Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude										
October	7611	2948	3972	14705	42%	7380	2938	3682	14221	35%
November	9496	5705	3754	41354	15%	9049	5539	3954	41309	11%
December	12718	9783	4482	45352	18%	12480	9739	4196	45352	18%
January	15527	13821	4401	78039	11%	15248	13835	3903	78039	11%
February	18595	14938	4708	67113	25%	18504	14815	4582	66719	26%
March	15716	12926	4537	68665	32%	15563	12982	4537	68665	39%
April	11541	7305	5199	42993	36%	11473	7355	4880	42993	36%
May	10369	3272	6223	20157	13%	10490	3229	6031	20157	11%
June	11607	1965	6553	16681	85%	12121	2369	7178	17563	83%
July	11339	1637	6515	14247	100%	12276	1764	7544	15557	100%
August	9818	1416	6146	13406	100%	9812	1521	6392	13406	100%
September	6378	2404	4017	13905	58%	6351	2372	4057	13905	58%
IHA Group 2										
Mean Annual Extremes										
Annual 30-day minimum	5544	1666	3754	12290	69%	5476	1614	3682	12290	69%
Annual 30-day maximum	25944	16982	7617	78039	42%	26111	16687	8271	78039	35%
IHA Group 3										
Timing of Annual Extremes										
Month of annual minimum	10	1	8	3	17%	10	1	8	3	14%
Month of annual maximum	4	3	1	12	38%	4	3	1	12	44%

Results of the Range of Variability Analysis
Feather River at Oroville

Unimpaired Conditions (1922 - 93)

IHA Group 1	Mean	SD	Range limits Low	Range limits High	RVA Target Range Low	RVA Target Range High
Monthly Flow Magnitude						
October	1778	1545	929	13930	929	3323
November	3298	3478	960	20875	960	6775
December	5942	6691	1010	32535	1010	12634
January	7501	7271	1124	40257	1124	14772
February	9822	7567	1605	48304	2256	17389
March	10402	6363	1499	33056	4039	16766
April	11536	5937	1684	30808	5599	17473
May	10177	6214	1645	27696	3963	16390
June	5452	3680	1077	18889	1772	9132
July	2459	1065	1026	5995	1395	3524
August	1629	470	945	3210	1158	2099
September	1466	393	774	2593	1074	1859
IHA Group 2						
Mean Annual Extremes						
Annual 30-day minimum	1304	316	774	2458	987	1620
Annual 30-day maximum	16361	9178	2053	48304	7182	25539
IHA Group 3						
Timing of Annual Extremes						
Month of annual minimum	9	1	8	11	8	10
Month of annual maximum	3	2	12	5	1	5

Alternative 1

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2965	1349	906	7004	38%
November	2644	2242	908	14457	10%
December	4541	4851	894	24365	14%
January	5674	6782	894	35828	21%
February	6534	6600	900	28884	56%
March	6349	6575	748	31825	53%
April	3193	3826	756	18737	85%
May	3981	4080	748	19801	65%
June	3369	1853	1008	10769	21%
July	4380	1327	748	6298	82%
August	3708	2018	868	6425	92%
September	1825	1254	756	6511	86%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	979	124	748	1489	18%
Annual 30-day maximum	11485	7790	2452	35828	56%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	5	2	1	9	72%
Month of annual maximum	4	3	10	8	47%

Alternative 2

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2356	1367	894	7004	24%
November	2393	1940	908	14457	10%
December	4072	4776	894	24365	18%
January	5246	6621	894	35828	33%
February	6568	6325	900	25552	50%
March	6372	6467	748	31825	50%
April	3411	3753	756	18737	86%
May	3800	4133	748	19801	72%
June	4224	1859	1008	10769	10%
July	5984	2887	824	9819	81%
August	3102	2400	748	7749	93%
September	1631	1271	756	6511	85%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	949	124	748	1342	32%
Annual 30-day maximum	11841	7212	2131	35828	31%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	7	3	1	12	50%
Month of annual maximum	5	3	1	12	53%

Alternative 3

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2398	1356	953	7004	19%
November	2498	1982	908	14457	10%
December	3989	4727	894	24365	17%
January	5272	6634	894	35828	33%
February	6572	6312	900	26776	49%
March	6383	6468	748	31825	50%
April	3332	3772	756	18737	86%
May	3766	4119	748	19801	72%
June	4153	1822	1008	10769	10%
July	6026	2868	775	9570	81%
August	3134	2436	748	7744	88%
September	1645	1267	756	6511	83%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	948	123	748	1342	32%
Annual 30-day maximum	11824	7248	2013	35828	31%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	6	3	1	12	49%
Month of annual maximum	5	3	1	12	53%

Alternative 4

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2434	1363	894	7004	25%
November	2460	2030	908	14457	13%
December	4115	4798	894	24365	18%
January	5306	6679	894	35828	33%
February	6586	6293	900	26979	49%
March	6355	6439	748	31825	50%
April	3435	3752	756	18737	86%
May	3783	4146	748	19801	72%
June	4010	1853	1008	10769	13%
July	5922	2861	748	9623	81%
August	3150	2479	748	7706	90%
September	1599	1237	756	6511	82%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	945	125	748	1342	32%
Annual 30-day maximum	11771	7240	1976	35828	31%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	6	3	1	12	71%
Month of annual maximum	5	3	1	12	51%

Alternative 5

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2433	1367	899	7004	25%
November	2461	2036	908	14457	13%
December	4105	4790	894	24365	18%
January	5306	6677	894	35828	33%
February	6571	6305	900	27110	49%
March	6364	6484	748	31825	50%
April	3432	3752	756	18737	86%
May	3792	4143	748	19801	72%
June	4024	1856	1008	10769	13%
July	5916	2857	748	9623	81%
August	3147	2474	748	7706	89%
September	1603	1236	756	6511	82%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	945	125	748	1342	32%
Annual 30-day maximum	11787	7278	1976	35828	32%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	6	3	1	12	71%
Month of annual maximum	5	3	1	12	51%

Alternative 6

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2618	1601	894	7493	26%
November	2654	2120	908	14457	13%
December	4423	4949	894	24365	21%
January	5563	6731	894	35828	35%
February	6768	6566	900	28528	50%
March	6575	6472	748	31825	50%
April	3262	3758	756	18737	86%
May	3605	4172	748	19801	74%
June	3615	1973	827	10769	19%
July	5192	2831	748	8903	76%
August	3066	2426	748	7650	85%
September	1794	1341	756	6511	82%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	939	107	748	1204	29%
Annual 30-day maximum	11954	7443	2366	35828	33%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	5	2	1	9	76%
Month of annual maximum	5	3	1	12	49%

Alternative 8

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2291	1325	894	7004	19%
November	2351	1898	908	14457	10%
December	3913	4731	894	24365	18%
January	5189	6606	894	35828	33%
February	6494	6318	900	26194	53%
March	6371	6489	748	31825	50%
April	3263	3767	756	18737	86%
May	3680	4139	748	19801	74%
June	4218	1829	1008	10769	8%
July	6232	2893	842	9671	81%
August	3505	2558	748	7852	92%
September	1669	1279	756	6511	76%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	956	140	748	1514	31%
Annual 30-day maximum	11860	7173	2060	35828	28%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	5	2	1	9	75%
Month of annual maximum	5	3	1	12	50%

Results of the Range of Variability Analysis
American River at Fair Oaks

Unimpaired Conditions (1922 - 93)

IHA Group 1	Mean	SD	Range limits Low	Range limits High	RVA Target Range Low	RVA Target Range High
Monthly Flow Magnitude						
October	435	694	0	5458	0	1129
November	1557	2655	101	16582	101	4212
December	3200	4720	49	24585	49	7921
January	4463	4778	179	21424	179	9241
February	5718	5040	433	33658	678	10758
March	6099	3788	684	19013	2311	9887
April	7388	3310	1263	19024	4078	10698
May	8011	4184	1499	18508	3827	12195
June	4471	3264	286	15859	1208	7735
July	1048	1074	0	6224	0	2123
August	258	249	0	1466	8	507
September	198	168	0	1027	30	366
IHA Group 2						
Mean Annual Extremes						
Annual 30-day minimum	156	144	0	842	12	301
Annual 30-day maximum	10765	5905	1629	33658	4861	16670
IHA Group 3						
Timing of Annual Extremes						
Month of annual minimum	9	1	7	10	8	10
Month of annual maximum	4	2	12	6	2	6

Alternative 1

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2153	696	500	3600	88%
November	2699	2592	576	16422	11%
December	3667	3748	542	18593	10%
January	4399	4581	500	21897	15%
February	5226	5006	500	33077	14%
March	4031	3119	400	16319	39%
April	3737	2531	750	14290	64%
May	3391	2403	289	10321	71%
June	3932	2242	655	14409	8%
July	3521	1162	500	6488	92%
August	2766	1059	500	5932	96%
September	1914	1459	500	4974	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1198	737	289	2500	99%
Annual 30-day maximum	7868	5739	946	33077	50%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	2	1	11	19%
Month of annual maximum	5	3	1	12	51%

Alternative 2

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	1953	669	500	2798	85%
November	2665	2688	576	17412	10%
December	3436	3725	542	17635	10%
January	4254	4591	500	21897	15%
February	5219	5027	500	33077	18%
March	4097	3087	400	16319	36%
April	3770	2539	268	14290	64%
May	3498	2366	289	10321	69%
June	4761	1917	649	14409	8%
July	3169	1199	500	7881	88%
August	2429	1202	500	4933	93%
September	2238	1357	500	4974	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1221	715	268	2500	99%
Annual 30-day maximum	8128	5503	1188	33077	49%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	3	1	12	29%
Month of annual maximum	5	3	1	12	26%

Alternative 3

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2038	746	500	4330	85%
November	2568	2706	576	17331	7%
December	3304	3748	542	17634	10%
January	4160	4622	500	21897	14%
February	5060	5075	500	33077	18%
March	4003	3120	400	16319	36%
April	3757	2534	272	14290	65%
May	3540	2336	571	10321	69%
June	4924	1931	385	14409	10%
July	3248	1284	500	7783	89%
August	2536	1294	500	4933	92%
September	2352	1251	500	4974	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1272	724	272	2500	99%
Annual 30-day maximum	8172	5459	1051	33077	42%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	3	1	12	39%
Month of annual maximum	5	3	1	12	25%

Alternative 4

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	1969	680	500	2939	83%
November	2686	2697	576	17410	10%
December	3488	3757	542	17635	10%
January	4322	4619	500	21897	15%
February	5244	5014	500	33077	17%
March	4105	3063	400	16319	35%
April	3741	2531	268	14290	64%
May	3511	2351	289	10321	69%
June	4653	1966	642	14409	8%
July	3122	1054	500	7384	89%
August	2387	1188	500	4933	92%
September	2255	1368	500	4974	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1234	724	268	2500	99%
Annual 30-day maximum	8034	5609	1185	33077	51%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	3	1	12	25%
Month of annual maximum	5	3	1	12	28%

Alternative 5

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	1968	680	500	2940	83%
November	2686	2700	576	17410	10%
December	3479	3760	542	17635	10%
January	4320	4625	500	21897	15%
February	5244	5014	500	33077	17%
March	4126	3064	400	16319	35%
April	3738	2537	268	14290	64%
May	3498	2359	289	10321	69%
June	4669	1948	642	14409	8%
July	3118	1057	500	7385	89%
August	2389	1187	500	4933	92%
September	2251	1371	500	4974	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1226	723	268	2500	99%
Annual 30-day maximum	8067	5587	1185	33077	51%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	3	1	12	28%
Month of annual maximum	5	3	1	12	28%

Alternative 6

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2043	639	500	3196	85%
November	2784	2671	576	17452	11%
December	3598	3766	542	17634	10%
January	4400	4568	500	21897	15%
February	5286	4997	500	33077	15%
March	4141	3059	400	16319	38%
April	3615	2601	252	14290	67%
May	3391	2417	289	10321	71%
June	4446	2027	1036	14409	8%
July	2855	817	500	6063	89%
August	2538	1134	500	4933	96%
September	2375	1372	500	4974	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1325	748	252	2500	97%
Annual 30-day maximum	7920	5680	1069	33077	51%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	3	1	12	24%
Month of annual maximum	5	3	1	12	36%

Alternative 8

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	1980	674	500	3124	86%
November	2657	2690	576	17349	10%
December	3454	3727	542	17634	10%
January	4263	4567	500	21897	15%
February	5232	5029	500	33077	17%
March	4090	3075	400	16319	38%
April	3705	2554	270	14290	64%
May	3484	2373	289	10321	69%
June	4783	1948	648	14409	8%
July	3193	1168	500	7571	88%
August	2438	1184	500	4933	94%
September	2208	1357	500	4974	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1226	723	270	2500	99%
Annual 30-day maximum	8134	5478	1265	33077	47%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	3	1	12	31%
Month of annual maximum	4	2	10	7	21%

Results of the Range of Variability Analysis
San Joaquin River at Vernalis

Unimpaired Conditions (1922 - 93)

IHA Group 1	Mean	SD	Range limits Low	Range limits High	RVA Target Range Low	RVA Target Range High
Monthly Flow Magnitude						
October	903	990	147	6940	147	1893
November	2389	3816	219	25842	219	6206
December	4570	6526	277	35973	277	11095
January	6124	6659	375	33464	375	12783
February	9234	8104	433	41685	1130	17338
March	10519	7465	1059	42098	3054	17984
April	15561	6986	3434	43300	8575	22547
May	23634	11360	4334	58048	12274	34993
June	18505	12626	1279	63838	5879	31131
July	6393	6344	587	35044	587	12737
August	1636	1750	179	11909	179	3387
September	813	1004	118	5825	118	1817
IHA Group 2						
Mean Annual Extremes						
Annual 30-day minimum	484	518	118	4394	118	1003
Annual 30-day maximum	25044	12103	5034	63838	12941	37148
IHA Group 3						
Timing of Annual Extremes						
Month of annual minimum	9	1	8	1	8	10
Month of annual maximum	5	1	12	6	4	6

Alternative 1

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	3153	2566	1457	12688	44%
November	2081	1718	1387	13552	3%
December	2947	3631	1331	21495	6%
January	4452	5067	1288	24859	8%
February	6930	7373	1404	36536	8%
March	6240	7231	1406	41110	51%
April	5496	5043	1529	27032	88%
May	4695	5194	1217	26213	90%
June	3756	5465	1030	36445	82%
July	1805	1811	945	13585	1%
August	1363	198	992	1730	0%
September	1879	738	1356	6851	44%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1315	205	945	1730	97%
Annual 30-day maximum	9131	8463	1698	41110	78%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	2	1	12	67%
Month of annual maximum	2	2	10	6	68%

Alternative 2

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	3106	2258	1280	12441	79%
November	2011	1735	1182	13552	3%
December	2795	3526	1100	21495	4%
January	4234	4951	1088	24860	8%
February	6532	6969	1159	36536	7%
March	6157	7016	1202	41110	47%
April	5858	4846	1990	27030	88%
May	5422	4885	1871	26043	90%
June	3845	5119	846	36445	82%
July	1980	1731	776	13585	1%
August	1596	272	838	1920	0%
September	1851	718	1117	6498	43%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1415	280	776	1920	92%
Annual 30-day maximum	8911	8196	1990	41110	79%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	10	3	6	1	83%
Month of annual maximum	2	2	10	6	57%

Alternative 3

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	3239	2426	1267	12441	79%
November	2037	1734	1182	13552	3%
December	2873	3608	1124	21495	6%
January	4399	5156	1088	24860	8%
February	6866	7336	1154	36536	8%
March	6275	7206	1198	41110	47%
April	5903	4868	1974	27030	88%
May	5427	4933	1856	26212	90%
June	4063	5324	1313	36445	82%
July	2098	1728	1385	13585	1%
August	1700	124	1450	1921	0%
September	1859	717	1147	6514	43%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1470	235	1088	1921	100%
Annual 30-day maximum	9194	8379	1980	41110	79%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	10	2	6	13	76%
Month of annual maximum	5	3	1	12	60%

Alternative 4

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	3188	2406	1263	12441	88%
November	1986	1675	1182	13552	3%
December	2752	3403	1125	21495	3%
January	4115	4785	1089	24860	7%
February	6407	6942	1167	36536	8%
March	6151	7167	1205	41110	50%
April	5892	4858	1990	27033	88%
May	5477	4901	1871	26212	90%
June	4541	5101	1459	36445	82%
July	2356	1656	1698	13585	1%
August	1780	151	1370	2097	0%
September	1848	709	1173	6498	42%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1472	246	1089	1972	100%
Annual 30-day maximum	9010	8182	1990	41110	78%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	11	2	8	1	65%
Month of annual maximum	5	3	1	12	64%

Alternative 5

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	3152	2321	1260	12453	88%
November	2005	1708	1182	13552	3%
December	2772	3444	1125	21495	3%
January	4096	4789	1089	24860	7%
February	6386	6826	1167	36536	8%
March	6184	7107	1290	41110	50%
April	5887	4860	1990	27033	88%
May	5464	4893	1871	26212	90%
June	4517	5035	1402	36445	82%
July	2350	1647	1698	13585	1%
August	1805	149	1399	2097	0%
September	1867	721	1173	6498	43%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1475	250	1089	1972	100%
Annual 30-day maximum	8936	8097	1990	41110	81%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	11	2	8	1	68%
Month of annual maximum	5	3	1	12	67%

Alternative 6

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	3606	2431	2255	13213	100%
November	2068	1660	1294	13708	3%
December	2783	3315	1206	21541	3%
January	3979	4286	1149	24731	6%
February	7264	6901	1275	36533	8%
March	6977	7189	1632	41889	32%
April	7875	5355	2386	28719	63%
May	6857	5316	1902	28091	88%
June	4686	5487	1277	37225	83%
July	3544	1994	1913	14442	1%
August	1885	232	1213	2216	0%
September	1976	685	1339	6862	57%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1613	261	1149	2123	100%
Annual 30-day maximum	9988	8218	2733	41889	79%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	11	2	8	1	63%
Month of annual maximum	4	2	1	12	38%

Alternative 8

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	3010	1718	1361	9005	65%
November	2101	1469	1202	11693	3%
December	2866	3160	1148	19937	3%
January	4190	4655	998	24134	7%
February	6335	6834	992	36539	8%
March	6167	7022	1231	42323	50%
April	6104	4832	1665	27053	88%
May	5720	5196	1515	26568	90%
June	4061	5654	1249	40304	81%
July	2003	1754	912	13894	1%
August	1531	338	826	1917	0%
September	1839	748	1063	6797	36%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1436	303	826	1917	86%
Annual 30-day maximum	8753	8002	1726	42323	79%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	9	2	6	1	68%
Month of annual maximum	2	2	10	5	54%

Results of the Range of Variability Analysis
Stanislaus River at Melones Reservoir

IHA Group 1	Unimpaired Conditions (1922 - 93) Mean	SD	Range limits Low	Range limits High	RVA Target Range Low	RVA Target Range High
Monthly Flow Magnitude						
October	160	179	0	1434	0	339
November	475	878	34	6162	34	1353
December	858	1309	49	6712	49	2166
January	1178	1354	49	6240	49	2533
February	1651	1507	18	9596	144	3158
March	2003	1229	212	6696	775	3232
April	3222	1263	589	7290	1958	4485
May	4558	2247	717	9694	2311	6805
June	2914	2033	185	10640	881	4947
July	836	807	0	4659	30	1643
August	200	193	0	1254	6	393
September	108	113	0	640	0	221
IHA Group 2						
Mean Annual Extremes						
Annual 30-day minimum	69	67	0	488	2	135
Annual 30-day maximum	4922	2280	717	10640	2642	7202
IHA Group 3						
Timing of Annual Extremes						
Month of annual minimum	9	1	7	2	8	10
Month of annual maximum	4	1	12	6	3	5

IHA Group 1	Alternative 1 Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	601	1292	63	5362	15%
November	381	466	198	3360	3%
December	463	754	130	4744	4%
January	651	949	130	4918	7%
February	965	1204	124	4986	22%
March	544	988	130	5292	85%
April	750	433	471	1467	100%
May	449	328	255	2067	100%
June	585	909	255	4595	90%
July	352	244	265	2231	1%
August	317	44	283	407	10%
September	264	102	249	1110	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	115	60	63	289	19%
Annual 30-day maximum	1547	1543	471	5362	78%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	11	2	8	3	31%
Month of annual maximum	3	2	10	6	44%

IHA Group 1	Alternative 2 Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	565	1060	0	5362	44%
November	317	471	198	3360	3%
December	317	653	130	4744	3%
January	435	859	130	4918	6%
February	576	923	124	4969	29%
March	466	921	130	5292	90%
April	1120	630	471	3243	92%
May	1186	575	255	2707	94%
June	687	651	255	4595	85%
July	542	258	265	2231	1%
August	563	122	283	702	88%
September	253	67	0	758	99%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	120	81	0	631	14%
Annual 30-day maximum	1759	1179	478	5362	83%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	11	2	5	3	53%
Month of annual maximum	5	2	1	10	28%

IHA Group 1	Alternative 3 Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	535	1234	63	5362	14%
November	341	475	198	3360	3%
December	392	710	130	4744	4%
January	599	976	130	4918	7%
February	888	1175	124	4969	31%
March	527	989	130	5292	86%
April	744	424	471	1467	100%
May	443	325	255	2067	100%
June	648	882	255	4595	90%
July	475	243	265	2231	1%
August	558	52	412	675	100%
September	256	62	249	774	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	101	82	63	616	14%
Annual 30-day maximum	1520	1464	488	5362	79%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	9	3	3	10	17%
Month of annual maximum	6	3	1	12	90%

IHA Group 1	Alternative 4 Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	677	1177	63	5362	46%
November	333	474	198	3360	3%
December	350	661	130	4744	3%
January	518	902	130	4918	6%
February	769	1044	124	4969	26%
March	558	968	130	5292	82%
April	898	448	471	1701	100%
May	835	606	255	2425	97%
June	621	860	255	4595	89%
July	392	241	265	2231	1%
August	505	102	283	699	83%
September	256	60	249	758	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	131	79	63	631	22%
Annual 30-day maximum	1743	1348	471	5362	81%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	12	2	8	3	58%
Month of annual maximum	6	3	1	10	47%

IHA Group 1	Alternative 5 Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	627	1109	63	5362	43%
November	326	472	198	3360	3%
December	339	660	130	4744	3%
January	476	880	130	4918	6%
February	672	953	124	4969	26%
March	525	947	130	5292	85%
April	1068	505	471	2572	97%
May	1022	528	255	2484	99%
June	607	770	255	4595	88%
July	390	240	265	2231	1%
August	482	102	283	699	76%
September	256	60	249	758	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	129	79	63	631	22%
Annual 30-day maximum	1757	1218	471	5362	83%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	12	2	8	3	58%
Month of annual maximum	5	2	1	10	31%

IHA Group 1	Alternative 6 Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	582	1289	63	5362	15%
November	342	475	198	3360	3%
December	403	775	130	4744	4%
January	543	915	130	4918	6%
February	995	1129	124	4969	21%
March	648	941	130	5292	86%
April	797	403	471	1467	100%
May	540	315	255	2067	100%
June	579	897	255	4595	90%
July	308	246	265	2231	1%
August	413	126	283	655	46%
September	260	90	249	1016	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	123	72	63	380	22%
Annual 30-day maximum	1590	1487	471	5362	78%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	10	1	8	3	7%
Month of annual maximum	5	3	1	12	64%

IHA Group 1	Alternative 8 Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	418	456	125	1501	29%
November	451	416	208	1501	13%
December	463	484	208	3187	1%
January	473	571	146	3487	3%
February	621	724	146	4825	1%
March	533	851	146	6502	85%
April	1124	396	475	1591	100%
May	1196	572	455	3837	96%
June	971	1073	241	8460	78%
July	575	271	255	2545	1%
August	506	150	268	684	72%
September	270	100	224	1067	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	218	83	125	635	82%
Annual 30-day maximum	1367	1050	588	8460	94%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	9	2	3	10	17%
Month of annual maximum	5	2	1	12	40%

Unimpaired Conditions (1922 - 93)

IHA Group 1	Mean	SD	Range limits Low	Range limits High	RVA Target Range Low	RVA Target Range High
Monthly Flow Magnitude						
October	276	351	0	2493	0	627
November	827	1287	17	8788	17	2115
December	1456	2010	65	10590	65	3466
January	1800	1907	81	9417	81	3707
February	2569	1982	144	11111	587	4552
March	2976	1647	375	9123	1329	4623
April	4577	1700	1330	11111	2877	6277
May	7163	2874	1727	15640	4290	10037
June	5830	3566	286	17104	2264	9396
July	1910	1943	163	10264	163	3852
August	390	480	0	3340	0	870
September	194	287	0	1751	0	482
IHA Group 2						
Mean Annual Extremes						
Annual 30-day minimum	106	136	0	976	0	242
Annual 30-day maximum	7693	3075	1768	17104	4618	10769
IHA Group 3						
Timing of Annual Extremes						
Month of annual minimum	9	1	8	1	8	10
Month of annual maximum	5	1	11	6	4	6

Alternative 1

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	388	414	125	3065	17%
November	324	572	150	4500	3%
December	447	916	150	6265	3%
January	1034	1687	150	7405	11%
February	1436	2036	149	7430	74%
March	1697	1983	150	8555	67%
April	1215	1213	242	7048	92%
May	941	985	242	6407	97%
June	916	1910	50	10801	86%
July	407	985	50	6785	56%
August	152	94	50	250	0%
September	251	441	50	3223	11%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	129	78	50	250	24%
Annual 30-day maximum	2365	2423	242	10801	82%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	7	2	2	11	85%
Month of annual maximum	3	2	10	6	47%

Alternative 2

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	388	414	125	3065	17%
November	324	572	150	4500	3%
December	447	916	150	6265	3%
January	1034	1687	150	7405	11%
February	1436	2036	149	7430	74%
March	1697	1983	150	8555	67%
April	1215	1213	242	7048	92%
May	941	985	242	6407	97%
June	916	1910	50	10801	86%
July	407	985	50	6785	56%
August	152	94	50	250	0%
September	251	441	50	3223	11%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	129	78	50	250	24%
Annual 30-day maximum	2365	2423	242	10801	82%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	7	2	2	11	86%
Month of annual maximum	3	2	10	6	47%

Alternative 3

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	388	414	125	3065	17%
November	324	572	150	4500	3%
December	434	913	150	6265	3%
January	895	1494	150	6031	8%
February	1292	1954	149	7430	78%
March	1617	1973	150	8555	69%
April	1186	1217	242	7048	92%
May	941	985	242	6407	97%
June	904	1908	50	10801	86%
July	406	985	50	6785	56%
August	152	94	50	250	0%
September	251	441	50	3223	11%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	129	78	50	250	24%
Annual 30-day maximum	2248	2384	242	10801	83%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	7	2	2	11	88%
Month of annual maximum	4	2	1	12	43%

Alternative 4

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	388	414	125	3065	17%
November	324	572	150	4500	3%
December	434	913	150	6265	3%
January	905	1508	150	6041	8%
February	1301	1951	149	7430	76%
March	1632	1980	150	8555	68%
April	1192	1216	242	7048	92%
May	941	985	242	6407	97%
June	906	1912	50	10801	86%
July	406	985	50	6785	56%
August	152	94	50	250	0%
September	251	441	50	3223	11%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	129	78	50	250	24%
Annual 30-day maximum	2260	2384	242	10801	83%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	7	2	2	11	86%
Month of annual maximum	4	2	1	12	43%

Alternative 5

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	514	353	258	3056	14%
November	311	568	0	4503	4%
December	410	881	150	6269	3%
January	715	1243	150	5699	4%
February	1265	1755	149	7421	67%
March	1491	1793	150	8555	76%
April	1404	1106	525	7051	93%
May	1213	946	466	6412	97%
June	1073	1747	129	10411	88%
July	797	892	384	6797	3%
August	158	88	0	250	0%
September	248	440	50	3232	10%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	128	80	0	250	24%
Annual 30-day maximum	2189	2173	525	10411	88%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	9	1	8	11	74%
Month of annual maximum	4	2	1	12	29%

Alternative 6

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	388	414	125	3065	17%
November	324	572	150	4500	3%
December	447	916	150	6265	3%
January	1034	1687	150	7405	11%
February	1436	2036	149	7430	74%
March	1697	1983	150	8555	67%
April	1215	1213	242	7048	92%
May	941	985	242	6407	97%
June	916	1910	50	10801	86%
July	407	985	50	6785	56%
August	152	94	50	250	0%
September	251	441	50	3223	11%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	129	78	50	250	24%
Annual 30-day maximum	2365	2423	242	10801	82%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	7	2	2	11	85%
Month of annual maximum	3	2	10	6	47%

Alternative 8

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	386	413	125	3065	15%
November	324	572	150	4500	3%
December	434	909	150	6265	3%
January	1018	1653	150	7405	11%
February	1400	2027	149	7430	76%
March	1663	1996	150	8555	67%
April	1188	1216	242	7048	92%
May	941	985	242	6407	97%
June	901	1906	50	10801	88%
July	407	985	50	6785	56%
August	152	94	50	250	0%
September	251	441	50	3223	11%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	129	78	50	250	24%
Annual 30-day maximum	2331	2422	242	10801	85%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	7	2	2	11	86%
Month of annual maximum	3	2	10	6	43%

Results of the Range of Variability Analysis
Merced River at Exchequer Dam

Unimpaired Conditions (1922 - 93)

IHA Group 1	Mean	SD	Range limits Low	Range limits High	RVA Target Range Low	RVA Target Range High
Monthly Flow Magnitude						
October	117	128	0	831	0	244
November	341	586	17	4360	17	927
December	706	1059	16	6077	16	1765
January	949	1087	49	5637	49	2036
February	1497	1362	54	6530	135	2858
March	1595	1102	130	6028	493	2697
April	2464	1059	522	7222	1404	3523
May	3906	1858	635	9205	2048	5764
June	2845	2107	219	11044	738	4952
July	848	939	65	5735	65	1788
August	196	242	0	1580	0	438
September	89	131	0	791	0	220
IHA Group 2						
Mean Annual Extremes						
Annual 30-day minimum	43	66	0	488	0	109
Annual 30-day maximum	4169	2029	774	11044	2140	6198
IHA Group 3						
Timing of Annual Extremes						
Month of annual minimum	9	1	8	12	8	10
Month of annual maximum	5	1	12	6	4	6

Alternative 1

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	938	1161	33	3459	46%
November	256	437	32	2597	7%
December	488	839	81	4463	7%
January	691	983	65	4398	11%
February	1178	1421	54	6573	43%
March	457	880	65	4785	81%
April	219	505	67	4041	100%
May	630	1055	81	5449	86%
June	766	1403	17	7830	78%
July	142	463	16	3616	39%
August	62	41	16	186	0%
September	173	349	17	1988	13%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	39	22	16	114	3%
Annual 30-day maximum	2127	1706	101	7830	49%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	2	2	11	64%
Month of annual maximum	2	3	10	9	72%

Alternative 2

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	938	1161	33	3459	46%
November	256	437	32	2597	7%
December	488	839	81	4463	7%
January	691	983	65	4398	11%
February	1178	1421	54	6573	43%
March	457	880	65	4785	81%
April	219	505	67	4041	100%
May	630	1055	81	5449	86%
June	766	1403	17	7830	78%
July	142	463	16	3616	39%
August	62	41	16	186	0%
September	173	349	17	1988	13%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	39	22	16	114	3%
Annual 30-day maximum	2127	1706	101	7830	49%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	9	2	7	4	64%
Month of annual maximum	6	3	1	12	72%

Alternative 3

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	879	1174	0	3459	39%
November	220	336	0	1929	7%
December	423	707	81	3577	6%
January	624	954	65	4398	10%
February	979	1286	54	4647	54%
March	404	868	65	4785	85%
April	195	494	67	4041	100%
May	561	1047	65	5449	88%
June	698	1401	17	7830	79%
July	136	463	16	3616	88%
August	53	33	16	186	0%
September	164	327	17	1988	14%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	35	16	0	84	0%
Annual 30-day maximum	1898	1694	84	7830	54%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	1	4	10	61%
Month of annual maximum	6	3	1	12	71%

Alternative 4

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	903	1170	0	3459	42%
November	243	379	0	1929	8%
December	454	778	81	4463	6%
January	639	970	65	4398	11%
February	1047	1319	54	4647	49%
March	452	881	65	4785	81%
April	214	508	67	4041	100%
May	605	1050	65	5449	88%
June	750	1410	17	7830	78%
July	136	463	16	3616	89%
August	49	26	16	186	0%
September	184	361	17	1988	14%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	35	16	0	84	0%
Annual 30-day maximum	2015	1680	84	7830	50%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	1	4	10	63%
Month of annual maximum	7	3	1	12	72%

Alternative 5

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	635	967	0	3459	25%
November	191	318	0	1929	6%
December	298	580	81	3325	4%
January	496	787	65	4054	6%
February	951	1199	54	4602	31%
March	542	820	65	4785	83%
April	764	455	384	4041	100%
May	896	776	359	5449	93%
June	740	1227	17	7830	88%
July	385	449	16	3616	11%
August	88	70	0	259	0%
September	124	280	0	1913	8%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	48	34	0	259	3%
Annual 30-day maximum	1652	1476	384	7830	71%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	2	4	12	69%
Month of annual maximum	5	3	2	12	44%

Alternative 6

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	938	1161	33	3459	46%
November	256	437	32	2597	7%
December	488	839	81	4463	7%
January	691	983	65	4398	11%
February	1178	1421	54	6573	43%
March	457	880	65	4785	81%
April	219	505	67	4041	100%
May	630	1055	81	5449	86%
June	766	1403	17	7830	78%
July	142	463	16	3616	39%
August	62	41	16	186	0%
September	173	349	17	1988	13%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	39	22	16	114	3%
Annual 30-day maximum	2127	1706	101	7830	49%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	2	2	11	64%
Month of annual maximum	2	3	10	9	72%

Alternative 8

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	792	1074	0	3255	40%
November	214	334	0	1929	7%
December	426	726	81	3800	6%
January	626	949	65	4398	10%
February	972	1364	54	5727	53%
March	433	867	65	4785	82%
April	205	495	67	4041	100%
May	569	1046	81	5449	88%
June	723	1386	17	7830	78%
July	142	463	16	3616	39%
August	62	41	16	186	0%
September	159	323	0	1988	13%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	37	22	0	114	3%
Annual 30-day maximum	1831	1737	101	7830	58%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	2	3	11	57%
Month of annual maximum	6	3	1	12	64%

Results of the Range of Variability Analysis - Cumulative Impacts

San Joaquin River at Vernalis

	Unimpaired Conditions (1922 - 93)						No Project					Bay/Delta Plan					Cumulative Impacts				
			Range Limits		RVA Target Range				Range Limits		Rate of Non-			Range Limits		Rate of Non-			Range Limits		Rate of Non-
IHA Group 1	**Mean**	**SD**	**Low**	**High**	**Low**	**High**	**Mean**	**SD**	**Low**	**High**	**Attainment**	**Mean**	**SD**	**Low**	**High**	**Attainment**	**Mean**	**SD**	**Low**	**High**	**Attainment**
Monthly Flow Magnitude (cfs)																					
October	903	990	147	6,940	147	1,893	3,153	2,566	1,457	12,688	44%	3,091	2,270	1,254	12,441	78%	3,108	2,292	1,252	12,445	76%
November	2,389	3,816	219	25,842	219	6,206	2,081	1,718	1,387	13,552	3%	1,993	1,697	1,183	13,552	3%	2,003	1,691	1,186	13,555	3%
December	4,570	6,526	277	35,973	277	11,095	2,947	3,631	1,331	21,495	6%	2,768	3,475	1,124	21,495	4%	2,785	3,471	1,125	21,502	4%
January	6,124	6,659	375	33,464	375	12,783	4,452	5,067	1,288	24,859	8%	4,183	4,877	1,088	24,860	8%	4,206	4,898	1,088	24,863	8%
February	9,234	8,104	433	41,685	1,130	17,338	6,930	7,373	1,404	36,536	8%	6,486	6,946	1,159	36,536	7%	6,492	6,958	1,163	36,538	7%
March	10,519	7,465	1,059	42,098	3,054	17,984	6,240	7,231	1,406	41,110	51%	6,140	7,015	1,202	41,110	49%	6,124	7,029	1,208	41,111	49%
April	15,561	6,986	3,434	43,300	8,575	22,547	5,496	5,043	1,529	27,032	88%	5,852	4,864	1,990	27,030	88%	5,844	4,871	1,990	27,031	88%
May	23,634	11,360	4,334	58,048	12,274	34,993	4,695	5,194	1,217	26,213	90%	5,441	4,900	1,871	26,139	90%	5,432	4,910	1,871	26,214	90%
June	18,505	12,626	1,279	63,838	5,879	31,131	3,756	5,465	1,030	36,445	82%	3,930	5,157	1,253	36,445	82%	3,920	5,204	1,246	36,448	82%
July	6,393	6,344	587	35,044	587	12,737	1,805	1,811	945	13,585	1%	2,029	1,707	1,133	13,585	1%	2,032	1,708	1,122	13,588	1%
August	1,636	1,750	179	11,909	179	3,387	1,363	198	992	1,730	0%	1,638	197	1,163	1,921	0%	1,643	195	1,188	1,923	0%
September	813	1,004	118	5,825	118	1,817	1,879	738	1,356	6,851	44%	1,842	710	1,160	6,498	43%	1,843	710	1,184	6,501	43%
IHA Group 2																					
Mean Annual Extremes (cfs)																					
Annual 30-day minimum	484	518	118	4,394	118	1,003	1,315	205	945	1,730	97%	1,449	232	1,088	1,921	100%	1,453	236	1,088	1,923	100%
Annual 30-day maximum	25,044	12,103	5,034	63,838	12,941	37,148	9,131	8,463	1,698	41,110	78%	8,798	8,185	1,990	41,110	81%	8,816	8,190	1,990	41,111	81%
IHA Group 3																					
Timing of Annual Extremes																					
Month of annual minimum	9	1	8	1	8	10	8	2	1	12	67%	8	4	1	12	85%	7	4	1	12	82%
Month of annual maximum	5	1	12	6	4	6	2	2	10	6	68%	5	3	1	12	54%	5	3	1	12	54%

Sacramento River near Red Bluff

	Unimpaired Conditions (1922 - 93)						No Project					Bay/Delta Plan					Cumulative Impacts				
			Range Limits		RVA Target Range				Range Limits		Rate of Non-			Range Limits		Rate of Non-			Range Limits		Rate of Non-
IHA Group 1	**Mean**	**SD**	**Low**	**High**	**Low**	**High**	**Mean**	**SD**	**Low**	**High**	**Attainment**	**Mean**	**SD**	**Low**	**High**	**Attainment**	**Mean**	**SD**	**Low**	**High**	**Attainment**
Monthly Flow Magnitude (cfs)																					
October	4,966	1,777	2,933	14,630	3,189	6,742	7,285	2,822	3,682	14,636	36%	7,353	2,902	3,682	14,221	36%	7,367	2,789	3,682	14,221	43%
November	7,711	5,372	3,300	35,471	3,300	13,083	8,916	5,602	3,721	41,079	13%	9,105	5,511	4,352	41,303	13%	8,963	5,429	3,754	40,429	13%
December	13,396	10,489	3,649	47,214	3,649	23,885	12,443	9,546	4,261	45,352	17%	12,473	9,717	4,224	45,352	18%	12,394	9,676	3,990	45,352	18%
January	17,837	13,990	3,861	73,900	3,861	31,826	15,381	13,827	4,733	78,039	11%	15,251	13,833	3,903	78,039	11%	15,215	13,802	3,905	78,039	11%
February	22,291	15,087	4,852	79,618	7,204	37,378	18,428	15,133	4,528	67,087	29%	18,501	14,804	4,582	66,086	25%	18,336	14,791	4,582	65,733	28%
March	19,883	11,768	4,659	76,197	8,114	31,651	15,455	13,149	4,037	68,665	44%	15,581	12,966	4,555	68,665	39%	15,355	13,036	4,775	68,665	43%
April	16,423	8,718	4,293	40,438	7,705	25,141	11,542	7,317	5,292	42,993	38%	11,554	7,320	4,880	42,993	35%	11,559	7,316	5,048	42,993	36%
May	10,988	4,487	3,959	24,927	6,500	15,475	10,719	3,256	6,178	20,157	15%	10,533	3,202	6,031	20,157	10%	10,474	3,214	6,031	20,157	10%
June	7,267	2,479	3,603	14,360	3,603	9,745	10,949	1,822	6,788	16,681	82%	12,057	2,246	7,157	17,593	86%	11,059	1,771	7,281	16,681	81%
July	4,873	1,029	3,030	7,739	3,843	5,902	12,794	2,082	6,837	16,145	100%	12,213	1,738	7,544	15,329	100%	12,710	1,931	7,544	16,524	100%
August	4,162	746	2,867	5,898	3,416	4,908	10,551	1,384	6,812	13,406	100%	9,823	1,495	6,227	13,406	100%	10,044	1,659	6,301	13,406	100%
September	4,342	816	2,811	5,993	3,526	5,158	6,269	2,157	4,099	13,905	65%	6,306	2,393	4,057	13,905	57%	7,265	1,849	5,630	13,905	100%
IHA Group 2																					
Mean Annual Extremes (cfs)																					
Annual 30-day minimum	4,029	703	2,811	5,898	3,326	4,732	5,420	1,427	3,682	12,290	75%	5,438	1,589	3,682	12,290	68%	6,061	1,534	3,682	12,290	82%
Annual 30-day maximum	30,007	16,299	5,507	79,618	13,709	46,306	26,230	16,781	9,424	78,039	43%	26,097	16,701	8,859	78,039	33%	25,932	16,703	8,377	78,039	38%
IHA Group 3																					
Timing of Annual Extremes																					
Month of annual minimum	9	1	7	11	8	10	10	1	8	3	19%	9	2	1	12	13%	9	3	1	12	31%
Month of annual maximum	2	1	11	5	1	3	3	3	10	8	42%	4	3	1	12	40%	5	3	1	12	46%

Results of the Range of Variability Analysis
Sacramento River near Red Bluff
Joint POD Alternatives

	Unimpaired Conditions (1922 - 93)					
			Range limits		RVA Target Range	
IHA Group 1	Mean	SD	Low	High	Low	High
Monthly Flow Magnitude						
October	4966	1777	2933	14630	3189	6742
November	7711	5372	3300	35471	3300	13083
December	13396	10489	3649	47214	3649	23885
January	17837	13990	3861	73900	3861	31826
February	22291	15087	4852	79618	7204	37378
March	19883	11768	4659	76197	8114	31651
April	16423	8718	4293	40438	7705	25141
May	10988	4487	3959	24927	6500	15475
June	7267	2479	3603	14360	3603	9745
July	4873	1029	3030	7739	3843	5902
August	4162	746	2867	5898	3416	4908
September	4342	816	2811	5993	3526	5158
IHA Group 2						
Mean Annual Extremes						
Annual 30-day minimum	4029	703	2811	5898	3326	4732
Annual 30-day maximum	30007	16299	5507	79618	13709	46306
IHA Group 3						
Timing of Annual Extremes						
Month of annual minimum	9	1	7	11	8	10
Month of annual maximum	2	1	11	5	1	3

	Alternative 1					Alternative 2				
			Range limits		Rate of Non-			Range limits		Rate of Non-
IHA Group 1	Mean	SD	Low	High	Attainment	Mean	SD	Low	High	Attainment
Monthly Flow Magnitude										
October	7285	2822	3682	14636	36%	7353	2902	3682	14221	36%
November	8916	5602	3721	41079	13%	9105	5511	4352	41303	13%
December	12443	9546	4261	45352	17%	12473	9717	4224	45352	18%
January	15381	13827	4733	78039	11%	15251	13833	3903	78039	11%
February	18428	15133	4528	67087	29%	18501	14804	4582	66086	25%
March	15455	13149	4037	68665	44%	15581	12966	4555	68665	39%
April	11542	7317	5292	42993	38%	11554	7320	4880	42993	35%
May	10719	3256	6178	20157	15%	10533	3202	6031	20157	10%
June	10949	1822	6788	16681	82%	12057	2246	7157	17593	86%
July	12794	2082	6837	16145	100%	12213	1738	7544	15329	100%
August	10551	1384	6812	13406	100%	9823	1495	6227	13406	100%
September	6269	2157	4099	13905	65%	6306	2393	4057	13905	57%
IHA Group 2										
Mean Annual Extremes										
Annual 30-day minimum	5420	1427	3682	12290	75%	5438	1589	3682	12290	68%
Annual 30-day maximum	26230	16781	9424	78039	43%	26097	16701	8859	78039	33%
IHA Group 3										
Timing of Annual Extremes										
Month of annual minimum	10	1	8	3	19%	9	2	1	12	13%
Month of annual maximum	3	3	10	8	42%	4	3	1	12	40%

	Alternative 3					Alternative 4					Alternative 5				
			Range limits		Rate of Non-			Range limits		Rate of Non-			Range limits		Rate of Non-
IHA Group 1	Mean	SD	Low	High	Attainment	Mean	SD	Low	High	Attainment	Mean	SD	Low	High	Attainment
Monthly Flow Magnitude															
October	7424	2811	3682	14221	46%	7325	2769	3682	14221	43%	7287	2745	3682	14221	39%
November	8952	5448	3949	41303	11%	8829	5422	3949	41286	11%	8831	5438	3949	41089	11%
December	12405	9650	4259	45352	18%	12375	9662	4254	45352	18%	12310	9548	4261	45352	18%
January	15219	13795	3903	78039	11%	15161	13766	3903	78039	11%	15200	13767	3903	78039	11%
February	18362	14784	4582	65912	25%	18328	14799	4582	65667	25%	18342	14796	4582	65787	26%
March	15548	12967	4627	68665	39%	15504	12993	4785	68665	39%	15450	12959	4714	68665	38%
April	11573	7289	4880	42993	33%	11474	7322	4880	42993	35%	11582	7327	4880	42993	35%
May	10497	3197	6031	20157	10%	10442	3221	6031	20157	11%	10474	3194	6031	20157	10%
June	12080	2219	7216	17587	86%	12267	2311	7317	17585	86%	12087	2217	7216	17555	86%
July	12359	1737	7544	15218	100%	12467	1691	7544	15215	100%	12524	1702	7544	15681	100%
August	10064	1650	6227	13842	100%	10233	1737	6227	13640	100%	10399	1852	6227	14530	100%
September	6252	2313	4057	13905	60%	6361	2228	4057	13905	64%	6248	2302	4057	13905	61%
IHA Group 2															
Mean Annual Extremes															
Annual 30-day minimum	5499	1606	3682	12290	65%	5577	1603	3682	12290	63%	5461	1586	3682	12290	57%
Annual 30-day maximum	26004	16645	8917	78039	36%	26052	16577	9026	78039	35%	25957	16628	9026	78039	36%
IHA Group 3															
Timing of Annual Extremes															
Month of annual minimum	9	2	1	12	13%	9	2	1	12	14%	9	2	1	12	15%
Month of annual maximum	4	3	1	12	42%	4	3	1	12	44%	5	3	1	12	46%

Results of the Range of Variability Analysis

Sacramento River near Red Bluff

Joint POD Alternatives

Alternative 6

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	7188	2720	3682	14221	39%
November	8675	5348	3721	41119	10%
December	12250	9559	4130	45352	18%
January	15169	13727	3903	78039	11%
February	18241	14690	4582	64631	26%
March	15517	13045	4667	68665	39%
April	11966	7219	5048	42993	29%
May	10220	3191	6031	20157	10%
June	12489	2467	6951	17616	85%
July	12361	1897	7544	15631	100%
August	10521	1873	6243	14638	100%
September	6172	2280	3994	13905	57%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	5357	1472	3682	12290	58%
Annual 30-day maximum	25941	16578	8418	78039	35%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	9	2	1	12	11%
Month of annual maximum	4	3	1	12	46%

Alternative 7

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	7238	2721	3682	14221	39%
November	8791	5292	3721	39668	11%
December	12294	9546	4249	45352	18%
January	15216	13760	3903	78039	11%
February	18295	14790	4582	65177	25%
March	15369	13007	4751	68665	42%
April	11575	7321	4880	42993	35%
May	10442	3191	6031	20157	10%
June	12094	2215	7278	17530	85%
July	12705	1908	7544	16392	100%
August	10663	2015	6227	14788	100%
September	6031	2255	4057	13905	51%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	5310	1527	3682	12290	56%
Annual 30-day maximum	26001	16572	9026	78039	33%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	9	2	1	12	14%
Month of annual maximum	5	3	1	12	46%

Alternative 8

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	7315	2725	3682	14221	44%
November	8634	5196	3950	39041	11%
December	12226	9502	4145	45352	18%
January	15183	13758	3912	78039	11%
February	18203	14721	4582	63691	25%
March	15365	13051	4687	68665	42%
April	11558	7339	4880	42993	35%
May	10420	3198	6031	20157	10%
June	12053	2192	7216	17765	86%
July	12778	2012	7544	17048	100%
August	11026	2268	6227	16215	100%
September	5958	2098	4057	13905	54%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	5356	1549	3682	12323	58%
Annual 30-day maximum	25922	16552	9026	78039	36%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	9	2	1	12	14%
Month of annual maximum	5	3	1	12	46%

Alternative 9

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	7371	2823	3682	14221	42%
November	8903	5497	3954	41309	11%
December	12439	9741	4199	45352	18%
January	15245	13794	3903	78039	11%
February	18372	14830	4582	66755	25%
March	15499	13013	4793	68665	40%
April	11474	7347	4880	42993	36%
May	10479	3238	6031	20157	11%
June	12121	2382	7219	17563	83%
July	12434	1740	7544	15634	100%
August	10162	1730	6393	13489	100%
September	6267	2281	4057	13905	56%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	5477	1630	3682	12290	60%
Annual 30-day maximum	26061	16668	9026	78039	33%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	9	2	1	12	13%
Month of annual maximum	4	3	1	12	44%

Results of the Range of Variability Analysis

Feather River near Oroville

Joint POD Alternatives

Unimpaired Conditions (1922 - 93)

IHA Group 1	Mean	SD	Range limits Low	Range limits High	RVA Target Range Low	RVA Target Range High
Monthly Flow Magnitude						
October	1778	1545	929	13930	929	3323
November	3298	3478	960	20875	960	6775
December	5942	6691	1010	32535	1010	12634
January	7501	7271	1124	40257	1124	14772
February	9822	7567	1605	48304	2256	17389
March	10402	6363	1499	33056	4039	16766
April	11536	5937	1684	30808	5599	17473
May	10177	6214	1645	27696	3963	16390
June	5452	3680	1077	18889	1772	9132
July	2459	1065	1026	5995	1395	3524
August	1629	470	945	3210	1158	2099
September	1466	393	774	2593	1074	1859
IHA Group 2						
Mean Annual Extremes						
Annual 30-day minimum	1304	316	774	2458	987	1620
Annual 30-day maximum	16361	9178	2053	48304	7182	25539
IHA Group 3						
Timing of Annual Extremes						
Month of annual minimum	9	1	8	11	8	10
Month of annual maximum	3	2	12	5	1	5

Alternative 1

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2965	1349	906	7004	38%
November	2644	2242	908	14457	10%
December	4541	4851	894	24365	14%
January	5674	6782	894	35828	21%
February	6534	6600	900	28884	56%
March	6349	6575	748	31825	53%
April	3193	3826	756	18737	85%
May	3981	4080	748	19801	65%
June	3369	1853	1008	10769	21%
July	4380	1327	748	6298	82%
August	3708	2018	868	6425	92%
September	1825	1254	756	6511	86%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	979	124	748	1489	18%
Annual 30-day maximum	11485	7790	2452	35828	56%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	5	2	1	9	72%
Month of annual maximum	4	3	10	8	47%

Alternative 2

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2358	1365	894	7004	24%
November	2402	1943	908	14457	10%
December	4070	4772	894	24365	18%
January	5243	6623	894	35828	33%
February	6565	6315	900	25552	50%
March	6375	6469	748	31825	50%
April	3414	3754	756	18737	86%
May	3801	4134	748	19801	72%
June	4224	1867	1008	10769	10%
July	5977	2892	824	9719	81%
August	3101	2418	748	7749	93%
September	1630	1270	756	6511	85%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	946	125	748	1342	32%
Annual 30-day maximum	11846	7203	2025	35828	31%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	6	3	1	12	64%
Month of annual maximum	5	3	1	12	53%

Alternative 3

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2384	1361	894	7004	24%
November	2416	1927	908	14457	8%
December	4075	4767	894	24365	17%
January	5243	6638	894	35828	33%
February	6550	6264	900	25653	50%
March	6345	6490	748	31825	50%
April	3372	3768	756	18737	86%
May	3787	4143	748	19801	72%
June	4214	1874	1008	10769	10%
July	6016	2873	823	9716	81%
August	3113	2436	748	7746	90%
September	1645	1278	756	6511	82%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	949	123	748	1342	32%
Annual 30-day maximum	11816	7196	2026	35828	32%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	6	3	1	12	64%
Month of annual maximum	5	3	1	12	53%

Alternative 4

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2356	1326	894	7004	19%
November	2409	1989	908	14457	10%
December	4010	4727	894	24365	17%
January	5158	6616	894	35828	33%
February	6507	6352	900	26486	53%
March	6390	6477	748	31825	50%
April	3261	3770	756	18737	86%
May	3718	4133	748	19801	72%
June	4131	1866	1008	10769	10%
July	6139	2896	822	9714	82%
August	3405	2598	748	7889	93%
September	1689	1287	756	6511	81%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	952	128	748	1342	32%
Annual 30-day maximum	11846	7217	1959	35828	29%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	6	3	1	12	67%
Month of annual maximum	5	3	1	12	51%

Alternative 5

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2458	1376	894	7004	25%
November	2494	2072	908	14457	10%
December	4068	4742	894	24365	17%
January	5217	6609	894	35828	33%
February	6524	6291	900	26066	50%
March	6451	6451	748	31825	49%
April	3384	3765	756	18737	86%
May	3803	4130	748	19801	72%
June	4190	1896	1008	10769	11%
July	5889	2861	822	9715	81%
August	3011	2396	748	7743	89%
September	1680	1278	756	6511	83%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	949	123	748	1342	32%
Annual 30-day maximum	11756	7242	1924	35828	35%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	6	3	1	12	63%
Month of annual maximum	5	3	1	12	53%

Results of the Range of Variability Analysis
Feather River near Oroville
Joint POD Alternatives

Alternative 6

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2396	1316	894	7004	19%
November	2376	1931	908	14457	8%
December	3991	4699	894	24365	17%
January	5190	6594	894	35828	33%
February	6444	6326	900	26592	51%
March	6345	6468	748	31825	50%
April	3733	3705	756	18737	83%
May	3588	4103	748	19801	76%
June	4200	1830	1008	10769	8%
July	6073	2970	831	9714	81%
August	3164	2464	748	7953	92%
September	1688	1302	756	6511	78%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	967	155	748	1708	31%
Annual 30-day maximum	11747	7226	2152	35828	33%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	6	3	1	12	65%
Month of annual maximum	5	3	1	12	47%

Alternative 7

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2414	1423	1018	7004	21%
November	2384	1913	908	14457	8%
December	4068	4761	894	24365	17%
January	5256	6678	894	35828	33%
February	6497	6187	900	21715	50%
March	6346	6580	748	31825	50%
April	3368	3766	756	18737	86%
May	3834	4133	748	19801	72%
June	4221	1861	1008	10769	11%
July	7066	4135	822	13125	79%
August	2124	1567	748	7434	81%
September	1572	1221	756	6511	85%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	947	124	748	1342	32%
Annual 30-day maximum	12605	6987	2023	35828	29%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	6	3	1	12	63%
Month of annual maximum	5	3	1	12	57%

Alternative 8

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2426	1411	1025	7004	19%
November	2388	1911	908	14457	8%
December	4072	4763	894	24365	17%
January	5260	6674	894	35828	33%
February	6553	6276	900	24054	50%
March	6333	6518	748	31825	50%
April	3366	3762	756	18737	86%
May	3826	4135	748	19801	72%
June	4238	1875	1008	10769	11%
July	7015	4149	801	13124	79%
August	2118	1522	748	7407	78%
September	1568	1225	756	6511	88%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	947	122	748	1342	32%
Annual 30-day maximum	12604	6990	2024	35828	29%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	6	3	1	12	65%
Month of annual maximum	5	3	1	12	57%

Alternative 9

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2294	1329	894	7004	21%
November	2362	1901	908	14457	8%
December	3962	4717	894	24365	17%
January	5185	6608	894	35828	33%
February	6517	6341	900	26154	53%
March	6418	6458	748	31825	50%
April	3220	3774	756	18737	86%
May	3672	4140	748	19801	74%
June	4190	1843	1008	10769	8%
July	6203	2913	840	9665	81%
August	3483	2543	748	7847	90%
September	1679	1300	756	6511	79%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	959	143	748	1508	32%
Annual 30-day maximum	11889	7163	2057	35828	28%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	6	3	1	12	68%
Month of annual maximum	5	3	1	12	50%

Results of the Range of Variability Analysis
American River at Fair Oaks
Joint POD Alternatives

Unimpaired Conditions (1922 - 93)

IHA Group 1	Mean	SD	Range limits Low	Range limits High	RVA Target Range Low	RVA Target Range High
Monthly Flow Magnitude						
October	435	694	0	5458	0	1129
November	1557	2655	101	16582	101	4212
December	3200	4720	49	24585	49	7921
January	4463	4778	179	21424	179	9241
February	5718	5040	433	33658	678	10758
March	6099	3788	684	19013	2311	9887
April	7388	3310	1263	19024	4078	10698
May	8011	4184	1499	18508	3827	12195
June	4471	3264	286	15859	1208	7735
July	1048	1074	0	6224	0	2123
August	258	249	0	1466	8	507
September	198	168	0	1027	30	366
IHA Group 2						
Mean Annual Extremes						
Annual 30-day minimum	156	144	0	842	12	301
Annual 30-day maximum	10765	5905	1629	33658	4861	16670
IHA Group 3						
Timing of Annual Extremes						
Month of annual minimum	9	1	7	10	8	10
Month of annual maximum	4	2	12	6	2	6

Alternative 1

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2153	696	500	3600	88%
November	2699	2592	576	16422	11%
December	3667	3748	542	18593	10%
January	4399	4581	500	21897	15%
February	5226	5006	500	33077	14%
March	4031	3119	400	16319	39%
April	3737	2531	750	14290	64%
May	3391	2403	289	10321	71%
June	3932	2242	655	14409	8%
July	3521	1162	500	6488	92%
August	2766	1059	500	5932	96%
September	1914	1459	500	4974	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1198	737	289	2500	99%
Annual 30-day maximum	7868	5739	946	33077	50%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	2	1	11	19%
Month of annual maximum	5	3	1	12	51%

Alternative 2

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	1963	664	500	2798	86%
November	2661	2689	576	17412	10%
December	3437	3726	542	17635	10%
January	4258	4593	500	21897	15%
February	5228	5020	500	33077	17%
March	4118	3081	400	16319	35%
April	3765	2529	268	14290	64%
May	3497	2364	289	10321	69%
June	4746	1930	649	14409	8%
July	3170	1173	500	7608	88%
August	2408	1190	500	4933	93%
September	2240	1358	500	4974	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1221	715	268	2500	99%
Annual 30-day maximum	8105	5518	1165	33077	50%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	3	1	12	25%
Month of annual maximum	5	3	1	12	26%

Alternative 3

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2052	674	500	3373	89%
November	2629	2695	576	17424	8%
December	3378	3710	542	17635	10%
January	4229	4610	500	21897	15%
February	5176	5020	500	33077	18%
March	4049	3093	400	16319	38%
April	3767	2521	268	14290	65%
May	3514	2354	289	10321	69%
June	4717	1945	648	14409	8%
July	3255	1239	500	7607	90%
August	2590	1276	500	4933	93%
September	2126	1285	500	4974	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1215	688	268	2500	99%
Annual 30-day maximum	8055	5550	1217	33077	51%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	3	1	12	31%
Month of annual maximum	5	3	1	12	28%

Alternative 4

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	1975	662	500	3511	88%
November	2562	2633	576	16637	7%
December	3411	3752	542	17635	10%
January	4197	4607	500	21897	14%
February	5083	5059	500	33077	18%
March	4067	3124	400	16319	38%
April	3698	2558	268	14290	67%
May	3480	2366	289	10321	69%
June	4865	1917	650	14409	10%
July	3297	1276	500	7607	90%
August	2703	1391	500	5231	93%
September	2136	1253	500	4974	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1239	735	268	2500	99%
Annual 30-day maximum	8129	5451	1216	33077	42%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	3	1	12	32%
Month of annual maximum	5	3	1	12	25%

Alternative 5

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2015	701	500	3689	86%
November	2569	2671	576	17251	7%
December	3368	3716	542	17635	10%
January	4235	4568	500	21897	14%
February	5108	5053	500	33077	18%
March	4063	3131	400	16319	36%
April	3729	2539	268	14290	65%
May	3484	2365	289	10321	69%
June	4730	1934	650	14409	8%
July	3332	1279	500	7606	90%
August	2839	1429	500	5197	93%
September	1998	1278	500	4974	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1164	692	268	2500	99%
Annual 30-day maximum	8075	5498	1184	33077	51%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	3	1	12	29%
Month of annual maximum	5	3	1	12	31%

Results of the Range of Variability Analysis

American River at Fair Oaks

Joint POD Alternatives

Alternative 6

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2022	716	500	4460	85%
November	2575	2684	576	17285	7%
December	3371	3761	542	17638	10%
January	4188	4581	500	21897	14%
February	5092	5058	500	33077	18%
March	4049	3127	400	16319	36%
April	3896	2436	318	14290	63%
May	3377	2423	300	10321	71%
June	4891	1899	661	14409	8%
July	3294	1202	500	7324	90%
August	2777	1403	500	5292	93%
September	1952	1290	500	4974	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1131	710	300	2500	99%
Annual 30-day maximum	8129	5453	1083	33077	44%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	3	1	12	28%
Month of annual maximum	5	3	1	12	26%

Alternative 7

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2024	705	500	3915	85%
November	2545	2640	576	16890	7%
December	3331	3703	542	17634	10%
January	4230	4578	500	21897	15%
February	5124	5040	500	33077	18%
March	4033	3132	400	16319	39%
April	3753	2540	268	14290	64%
May	3516	2355	289	10321	69%
June	4717	1963	649	14409	8%
July	3422	1329	500	7604	89%
August	2922	1390	500	5269	93%
September	1849	1338	500	4974	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1031	669	268	2500	99%
Annual 30-day maximum	8118	5465	1236	33077	47%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	3	1	12	28%
Month of annual maximum	5	3	1	12	39%

Alternative 8

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	1937	744	500	3280	83%
November	2378	2599	580	16511	6%
December	3227	3695	542	17481	10%
January	4132	4597	500	21835	15%
February	4982	5064	500	33010	21%
March	3921	3112	400	16241	40%
April	3655	2508	259	14179	65%
May	3439	2311	298	10176	74%
June	4587	1955	391	14212	8%
July	3320	1348	500	7581	88%
August	2874	1337	500	4910	90%
September	1559	1178	500	4794	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	948	649	259	2500	99%
Annual 30-day maximum	7943	5511	1137	33010	51%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	3	1	12	26%
Month of annual maximum	5	3	1	12	38%

Alternative 9

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	2027	649	500	3535	88%
November	2615	2627	576	16673	7%
December	3425	3711	542	17635	10%
January	4243	4555	500	21897	15%
February	5112	5045	500	33077	18%
March	4052	3114	403	16319	39%
April	3703	2551	401	14290	65%
May	3462	2379	289	10321	69%
June	4783	1944	671	14409	8%
July	3276	1240	500	7571	89%
August	2679	1320	500	4933	94%
September	2096	1302	500	4974	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1230	746	289	2500	99%
Annual 30-day maximum	8067	5470	1021	33077	46%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	3	1	12	33%
Month of annual maximum	5	3	1	12	22%

Results of the Range of Variability Analysis

San Joaquin River at Vernalis

Joint POD Alternatives

Unimpaired Conditions (1922 - 93)

IHA Group 1	Mean	SD	Range limits Low	Range limits High	RVA Target Range Low	RVA Target Range High
Monthly Flow Magnitude						
October	903	990	147	6940	147	1893
November	2389	3816	219	25842	219	6206
December	4570	6526	277	35973	277	11095
January	6124	6659	375	33464	375	12783
February	9234	8104	433	41685	1130	17338
March	10519	7465	1059	42098	3054	17984
April	15561	6986	3434	43300	8575	22547
May	23634	11360	4334	58048	12274	34993
June	18505	12626	1279	63838	5879	31131
July	6393	6344	587	35044	587	12737
August	1636	1750	179	11909	179	3387
September	813	1004	118	5825	118	1817
IHA Group 2						
Mean Annual Extremes						
Annual 30-day minimum	484	518	118	4394	118	1003
Annual 30-day maximum	25044	12103	5034	63838	12941	37148
IHA Group 3						
Timing of Annual Extremes						
Month of annual minimum	9	1	8	1	8	10
Month of annual maximum	5	1	12	6	4	6

Alternative 1

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	3153	2566	1457	12688	44%
November	2081	1718	1387	13552	3%
December	2947	3631	1331	21495	6%
January	4452	5067	1288	24859	8%
February	6930	7373	1404	36536	8%
March	6240	7231	1406	41110	51%
April	5496	5043	1529	27032	88%
May	4695	5194	1217	26213	90%
June	3756	5465	1030	36445	82%
July	1805	1811	945	13585	1%
August	1363	198	992	1730	0%
September	1879	738	1356	6851	44%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1315	205	945	1730	97%
Annual 30-day maximum	9131	8463	1698	41110	78%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	2	1	12	67%
Month of annual maximum	2	2	10	6	68%

Alternative 2

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	3091	2270	1254	12441	78%
November	1993	1697	1183	13552	3%
December	2768	3475	1124	21495	4%
January	4183	4877	1088	24860	8%
February	6486	6946	1159	36536	7%
March	6140	7015	1202	41110	49%
April	5852	4864	1990	27030	88%
May	5441	4900	1871	26139	90%
June	3930	5157	1253	36445	82%
July	2029	1707	1133	13585	1%
August	1638	197	1163	1921	0%
September	1842	710	1160	6498	43%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1449	232	1088	1921	100%
Annual 30-day maximum	8798	8185	1990	41110	81%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	4	1	12	85%
Month of annual maximum	5	3	1	12	54%

Alternative 3

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	3097	2272	1270	12441	76%
November	2000	1697	1185	13552	3%
December	2776	3482	1125	21495	4%
January	4194	4889	1089	24860	8%
February	6482	6951	1160	36536	7%
March	6127	7026	1204	41110	49%
April	5852	4864	1990	27030	88%
May	5443	4900	1871	26143	90%
June	3934	5159	1258	36445	82%
July	2033	1706	1136	13585	1%
August	1642	197	1163	1921	0%
September	1847	709	1170	6498	43%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1453	234	1089	1921	100%
Annual 30-day maximum	8808	8188	1990	41110	81%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	4	1	12	86%
Month of annual maximum	5	3	1	12	54%

Alternative 4

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	3092	2274	1276	12441	76%
November	1999	1694	1185	13552	3%
December	2775	3482	1125	21495	4%
January	4192	4889	1089	24860	8%
February	6464	6952	1160	36536	7%
March	6111	6993	1206	41110	49%
April	5872	4854	1990	27030	88%
May	5460	4897	1871	26143	90%
June	3945	5140	1257	36445	82%
July	2035	1705	1136	13585	1%
August	1643	197	1162	1921	0%
September	1848	709	1176	6498	43%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1455	234	1089	1921	100%
Annual 30-day maximum	8811	8154	1990	41110	81%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	4	1	12	86%
Month of annual maximum	5	3	1	12	54%

Alternative 5

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	3099	2271	1277	12441	76%
November	2003	1697	1184	13552	3%
December	2778	3481	1125	21495	4%
January	4198	4893	1089	24860	8%
February	6486	6950	1160	36536	7%
March	6128	7026	1207	41110	49%
April	5853	4863	1990	27030	88%
May	5442	4900	1871	26143	90%
June	3936	5159	1264	36445	82%
July	2037	1705	1144	13585	1%
August	1645	197	1166	1921	0%
September	1851	708	1178	6498	43%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1456	235	1089	1921	100%
Annual 30-day maximum	8810	8188	1990	41110	81%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	4	1	12	86%
Month of annual maximum	5	3	1	12	54%

Results of the Range of Variability Analysis
San Joaquin River at Vernalis
Joint POD Alternatives

Alternative 6

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	3538	2916	1425	13367	51%
November	2121	1732	1208	13555	4%
December	3114	3770	1163	21498	6%
January	4611	5235	1076	24866	8%
February	7096	7457	1066	36543	10%
March	6312	7123	1288	41179	50%
April	5449	4830	1653	27142	88%
May	4957	5164	1507	27384	90%
June	4021	5659	1237	38237	81%
July	2032	1795	1116	13944	1%
August	1355	446	643	1921	0%
September	1689	797	928	6971	19%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1283	385	643	1921	68%
Annual 30-day maximum	9554	8504	1808	41179	76%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	9	2	1	12	29%
Month of annual maximum	5	3	1	12	71%

Alternative 7

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	3097	2269	1278	12441	76%
November	2002	1698	1184	13552	3%
December	2779	3479	1126	21495	4%
January	4203	4896	1089	24860	8%
February	6502	6943	1160	36536	7%
March	6128	7025	1207	41110	49%
April	5853	4863	1990	27030	88%
May	5430	4905	1871	26143	90%
June	3937	5159	1267	36445	82%
July	2038	1705	1135	13585	1%
August	1646	197	1170	1921	0%
September	1852	708	1178	6498	43%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1456	235	1089	1921	100%
Annual 30-day maximum	8812	8188	1990	41110	81%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	4	1	12	86%
Month of annual maximum	5	3	1	12	54%

Alternative 8

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	3101	2273	1270	12444	78%
November	2004	1697	1182	13555	3%
December	2783	3479	1124	21502	4%
January	4205	4896	1088	24863	8%
February	6499	6945	1162	36538	7%
March	6117	6994	1208	41111	49%
April	5863	4859	1990	27031	88%
May	5431	4906	1871	26154	90%
June	3931	5161	1231	36448	82%
July	2038	1705	1127	13588	1%
August	1646	197	1157	1923	0%
September	1851	709	1182	6501	43%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1457	235	1088	1923	100%
Annual 30-day maximum	8813	8157	1990	41111	81%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	4	1	12	85%
Month of annual maximum	5	3	1	12	54%

Alternative 9

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	3014	1718	1379	9005	65%
November	2103	1469	1202	11693	3%
December	2869	3159	1148	19937	3%
January	4191	4655	998	24134	7%
February	6337	6833	992	36539	8%
March	6169	7022	1236	42323	50%
April	6108	4831	1672	27053	88%
May	5723	5195	1515	26564	90%
June	4066	5653	1250	40304	81%
July	2008	1753	912	13894	1%
August	1535	339	823	1920	0%
September	1845	747	1083	6797	39%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	1440	305	823	1920	86%
Annual 30-day maximum	8756	8000	1725	42323	79%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	3	1	12	68%
Month of annual maximum	4	3	1	12	54%

Results of the Range of Variability Analysis
Stanislaus River at Melones Reservoir
Joint POD Alternatives

Unimpaired Conditions (1922 - 93)

IHA Group 1	Mean	SD	Range limits Low	Range limits High	RVA Target Range Low	RVA Target Range High
Monthly Flow Magnitude						
October	160	179	0	1434	0	339
November	475	878	34	6162	34	1353
December	858	1309	49	6712	49	2166
January	1178	1354	49	6240	49	2533
February	1651	1507	18	9596	144	3158
March	2003	1229	212	6696	775	3232
April	3222	1263	589	7290	1958	4485
May	4558	2247	717	9694	2311	6805
June	2914	2033	185	10640	881	4947
July	836	807	0	4659	30	1643
August	200	193	0	1254	6	393
September	108	113	0	640	0	221
IHA Group 2						
Mean Annual Extremes						
Annual 30-day minimum	69	67	0	488	2	135
Annual 30-day maximum	4922	2280	717	10640	2642	7202
IHA Group 3						
Timing of Annual Extremes						
Month of annual minimum	9	1	7	2	8	10
Month of annual maximum	4	1	12	6	3	5

Alternatives 1 and 2

IHA Group 1	Alt 1 Mean	Alt 1 SD	Alt 1 Range limits Low	Alt 1 Range limits High	Alt 1 Rate of Non-Attainment	Alt 2 Mean	Alt 2 SD	Alt 2 Range limits Low	Alt 2 Range limits High	Alt 2 Rate of Non-Attainment
Monthly Flow Magnitude										
October	601	1292	63	5362	15%	491	1083	63	5362	19%
November	381	466	198	3360	3%	319	471	198	3360	3%
December	463	754	130	4744	4%	325	653	130	4744	3%
January	651	949	130	4918	7%	446	861	130	4918	6%
February	965	1204	124	4986	22%	622	937	124	4969	28%
March	544	988	130	5292	85%	470	924	130	5292	92%
April	750	433	471	1467	100%	1093	645	471	3243	92%
May	449	328	255	2067	100%	1026	615	255	2707	94%
June	585	909	255	4595	90%	758	659	255	4595	83%
July	352	244	265	2231	1%	591	237	265	2231	1%
August	317	44	283	407	10%	604	73	283	702	99%
September	264	102	249	1110	100%	253	67	0	758	99%
IHA Group 2										
Mean Annual Extremes										
Annual 30-day minimum	115	60	63	289	19%	119	81	0	631	15%
Annual 30-day maximum	1547	1543	471	5362	78%	1681	1232	517	5362	83%
IHA Group 3										
Timing of Annual Extremes										
Month of annual minimum	11	2	8	3	31%	8	4	1	12	47%
Month of annual maximum	3	2	10	6	44%	5	2	1	10	50%

Alternatives 3, 4 and 5

IHA Group 1	Alt 3 Mean	Alt 3 SD	Alt 3 Range limits Low	Alt 3 Range limits High	Alt 3 Rate of Non-Attainment	Alt 4 Mean	Alt 4 SD	Alt 4 Range limits Low	Alt 4 Range limits High	Alt 4 Rate of Non-Attainment	Alt 5 Mean	Alt 5 SD	Alt 5 Range limits Low	Alt 5 Range limits High	Alt 5 Rate of Non-Attainment
Monthly Flow Magnitude															
October	495	1082	63	5362	21%	493	1083	63	5362	21%	495	1082	63	5362	21%
November	324	472	198	3360	3%	323	472	198	3360	3%	324	472	198	3360	3%
December	327	653	130	4744	3%	325	653	130	4744	3%	327	653	130	4744	3%
January	452	864	130	4918	6%	451	864	130	4918	6%	453	865	130	4918	6%
February	617	940	124	4969	29%	600	938	124	4969	31%	619	941	124	4969	29%
March	460	929	130	5292	92%	448	884	130	5292	92%	460	929	130	5292	92%
April	1093	644	471	3243	92%	1111	642	471	3243	92%	1092	643	471	3243	92%
May	1026	613	255	2702	94%	1043	613	255	2702	94%	1025	612	255	2705	94%
June	758	662	255	4595	83%	757	645	255	4595	82%	756	663	255	4595	83%
July	590	237	265	2231	1%	590	237	265	2231	1%	589	237	265	2231	1%
August	603	72	283	702	99%	605	73	283	703	99%	604	74	283	710	99%
September	253	67	0	758	99%	253	67	0	758	99%	253	67	0	758	99%
IHA Group 2															
Mean Annual Extremes															
Annual 30-day minimum	119	81	0	631	15%	118	80	0	631	15%	119	81	0	631	15%
Annual 30-day maximum	1682	1234	518	5362	83%	1695	1193	518	5362	83%	1682	1235	518	5362	83%
IHA Group 3															
Timing of Annual Extremes															
Month of annual minimum	8	4	1	12	47%	8	4	1	12	47%	8	4	1	12	47%
Month of annual maximum	5	2	1	10	50%	5	2	1	10	49%	5	2	1	10	50%

Results of the Range of Variability Analysis
Stanislaus River at Melones Reservoir
Joint POD Alternatives

Alternative 6

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	998	1607	224	5866	24%
November	428	472	225	3363	3%
December	628	906	224	5731	4%
January	811	1004	224	4924	8%
February	1134	1280	225	5973	7%
March	616	955	224	5361	83%
April	619	142	452	1579	100%
May	673	381	444	3238	99%
June	849	1122	200	6351	90%
July	586	306	75	2590	1%
August	314	213	50	631	44%
September	84	144	49	1230	3%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	71	69	49	631	3%
Annual 30-day maximum	1994	1808	624	6351	69%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	9	1	7	9	8%
Month of annual maximum	6	3	1	12	82%

Alternative 7

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	492	1083	63	5362	19%
November	323	471	198	3360	3%
December	328	654	130	4744	3%
January	453	865	130	4918	6%
February	627	940	124	4969	28%
March	460	929	130	5292	92%
April	1092	643	471	3243	92%
May	1024	613	255	2704	94%
June	756	663	255	4595	83%
July	589	237	265	2231	1%
August	600	74	283	703	99%
September	253	67	0	758	99%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	119	81	0	631	15%
Annual 30-day maximum	1682	1235	518	5362	83%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	4	1	12	47%
Month of annual maximum	5	2	1	10	50%

Alternative 8

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	496	1083	63	5362	21%
November	324	472	198	3360	3%
December	328	654	130	4744	3%
January	453	865	130	4918	6%
February	627	939	124	4969	28%
March	449	882	130	5292	92%
April	1101	648	471	3241	92%
May	1026	613	255	2709	94%
June	750	661	255	4595	85%
July	591	238	265	2231	1%
August	601	75	283	727	99%
September	253	67	0	758	99%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	119	81	0	631	15%
Annual 30-day maximum	1678	1208	520	5362	83%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	8	4	1	12	47%
Month of annual maximum	5	2	1	10	51%

Alternative 9

IHA Group 1	Mean	SD	Range limits Low	Range limits High	Rate of Non-Attainment
Monthly Flow Magnitude					
October	418	456	125	1501	29%
November	451	416	208	1501	13%
December	463	484	208	3187	1%
January	473	571	146	3487	3%
February	621	724	146	4825	1%
March	534	852	146	6502	85%
April	1124	396	475	1591	100%
May	1196	572	455	3837	96%
June	970	1073	241	8460	78%
July	573	271	254	2545	1%
August	504	150	268	685	72%
September	270	100	224	1067	100%
IHA Group 2					
Mean Annual Extremes					
Annual 30-day minimum	218	83	125	635	82%
Annual 30-day maximum	1368	1050	584	8460	94%
IHA Group 3					
Timing of Annual Extremes					
Month of annual minimum	9	2	3	10	17%
Month of annual maximum	6	2	3	12	43%

Flow and Joint Point Alternative 1

STUDY: 1995C6F-SWRCB-467 DWRSIM: recirc818-f, 17 Jun 97
CP # 4, SHASTA LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C6F-SWRCB-467/4/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 1067'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	989	993	999	1,003	1,019	1,038	1,060	1,067	1,062	1,047	1,030	1,023	29	7	0	5	20	37	44	1	4	6	4	1	1	1	**18**	19	22	7	-5	-15	-17	-7	6	6	6	5	3	2	4	**32**	**576**
1923	1,021	1,017	1,019	1,023	1,024	1,026	1,038	1,031	1,018	996	974	973	41	29	36	49	71	93	94	1	1	1	1	1	1	1	**7**	2	12	-7	-13	-22	-22	-1	6	6	4	3	1	1	5	**26**	**182**
1924	975	976	977	978	986	988	976	963	947	913	893	879	79	91	104	120	154	174	188	1	1	1	1	1	1	1	**7**	2	-12	-13	-16	-34	-20	-14	6	3	3	2	1	2	3	**20**	**140**
1925	883	898	907	917	992	1,008	1,040	1,047	1,037	1,012	994	992	59	27	20	30	55	73	75	1	1	1	1	1	1	1	**7**	16	32	7	-10	-25	-18	-2	6	6	6	4	1	2	5	**30**	**210**
1926	991	991	990	989	1,018	1,026	1,041	1,035	1,015	993	972	961	41	26	32	52	74	95	106	1	1	1	1	1	1	1	**7**	8	15	-6	-20	-22	-21	-11	6	6	4	2	1	1	3	**23**	**161**
1927	960	988	1,010	1,035	1,026	1,052	1,067	1,067	1,062	1,041	1,024	1,019	15	0	0	5	26	43	48	2	6	6	4	1	1	1	**21**	26	15	0	-5	-21	-17	-5	6	6	6	5	1	2	5	**31**	**651**
1928	1,017	1,017	1,020	1,028	1,044	1,046	1,066	1,066	1,053	1,027	1,004	998	21	1	1	14	40	63	69	1	5	5	3	1	1	1	**17**	2	20	0	-13	-26	-23	-6	6	6	6	3	1	1	4	**27**	**459**
1929	995	995	995	994	999	1,005	1,011	1,008	1,002	986	968	961	62	56	59	65	81	99	106	1	1	1	1	1	1	1	**7**	6	6	-3	-6	-16	-18	-7	6	6	5	4	2	2	4	**29**	**203**
1930	955	952	983	993	1,010	1,032	1,040	1,037	1,024	1,006	991	985	35	27	30	43	61	76	82	1	1	1	1	1	1	1	**7**	22	8	-3	-13	-18	-15	-6	6	6	5	3	2	3	4	**29**	**203**
1931	983	981	977	979	981	988	977	967	958	940	912	901	79	90	100	109	127	155	166	1	1	1	1	1	1	1	**7**	7	-11	-10	-9	-18	-28	-11	6	3	4	4	2	1	3	**23**	**161**
1932	902	903	918	930	940	964	968	978	971	958	944	939	103	99	89	96	109	123	128	1	1	1	1	1	1	1	**7**	24	4	10	-7	-13	-14	-5	6	6	6	4	3	3	5	**33**	**231**
1933	938	938	939	941	943	977	986	989	986	967	943	936	90	81	78	81	100	124	131	1	1	1	1	1	1	1	**7**	34	9	3	-3	-19	-24	-7	6	6	6	5	2	1	4	**30**	**210**
1934	933	933	942	960	979	993	997	992	986	974	943	934	74	70	75	81	93	124	133	1	1	1	1	1	1	1	**7**	14	4	-5	-6	-12	-31	-9	6	6	5	4	3	1	4	**29**	**203**
1935	925	936	940	958	977	997	1,040	1,055	1,048	1,026	1,009	1,003	70	27	12	19	41	58	64	1	1	3	2	1	1	1	**10**	20	43	15	-7	-22	-17	-6	6	6	6	4	1	2	4	**29**	**290**
1936	998	993	989	1,012	1,032	1,042	1,050	1,046	1,040	1,011	989	980	25	17	21	27	56	78	87	1	2	1	1	1	1	1	**8**	10	8	-4	-6	-29	-22	-9	6	6	5	4	1	1	4	**27**	**216**
1937	974	970	967	964	968	1,000	1,031	1,038	1,031	1,009	987	976	67	36	29	36	58	80	91	1	1	1	1	1	1	1	**7**	32	31	7	-7	-22	-22	-11	6	6	6	4	1	1	3	**27**	**189**
1938	976	1,002	1,020	1,035	1,030	1,024	1,049	1,067	1,067	1,058	1,045	1,036	43	18	0	0	9	22	31	1	2	6	6	4	1	1	**21**	-6	25	18	0	-9	-13	-9	4	6	6	6	4	3	4	**33**	**693**
1939	1,023	1,017	1,020	1,022	1,024	1,039	1,034	1,027	1,012	992	971	968	28	33	40	55	75	96	99	1	1	1	1	1	1	1	**7**	15	-5	-7	-15	-20	-21	-3	6	5	4	3	2	1	5	**26**	**182**
1940	961	957	963	1,006	1,017	1,025	1,059	1,064	1,052	1,028	1,008	1,004	42	8	3	15	39	59	63	1	4	5	2	1	1	1	**15**	8	34	5	-12	-24	-20	-4	6	6	6	3	1	2	5	**29**	**435**
1941	1,003	1,003	1,019	1,020	1,024	1,045	1,064	1,067	1,067	1,053	1,044	1,036	22	3	0	0	14	23	31	1	5	6	6	3	1	1	**23**	21	19	3	0	-14	-9	-8	6	6	6	6	3	4	4	**35**	**805**
1942	1,023	1,017	1,020	1,023	1,028	1,042	1,067	1,067	1,067	1,054	1,041	1,036	25	0	0	0	13	26	31	1	6	6	6	3	1	1	**24**	14	25	0	0	-13	-13	-5	6	6	6	6	3	3	5	**35**	**840**
1943	1,023	1,017	1,022	1,030	1,042	1,051	1,067	1,067	1,063	1,041	1,025	1,019	16	0	0	4	26	42	48	2	6	6	5	1	1	1	**22**	9	16	0	-4	-22	-16	-6	6	6	6	5	1	2	4	**30**	**660**
1944	1,018	1,017	1,015	1,014	1,023	1,033	1,036	1,033	1,021	998	974	963	34	31	34	46	69	93	104	1	1	1	1	1	1	1	**7**	10	3	-3	-12	-23	-24	-11	6	6	5	3	1	1	3	**25**	**175**
1945	962	974	991	1,000	1,035	1,048	1,060	1,064	1,058	1,033	1,012	1,005	19	7	3	9	34	55	62	2	4	5	4	1	1	1	**18**	13	12	4	-6	-25	-21	-7	6	6	6	4	1	1	4	**28**	**504**
1946	1,005	1,013	1,018	1,033	1,040	1,052	1,062	1,062	1,049	1,026	1,006	1,001	15	5	5	18	41	61	66	2	4	4	2	1	1	1	**15**	12	10	0	-13	-23	-20	-5	6	6	6	3	1	2	5	**29**	**435**
1947	999	1,000	1,002	1,000	1,008	1,029	1,038	1,024	1,018	996	974	964	38	29	43	49	71	93	103	1	1	1	1	1	1	1	**7**	21	9	-14	-6	-22	-22	-10	6	6	3	4	1	1	4	**25**	**175**
1948	971	975	978	1,003	1,008	1,025	1,062	1,067	1,067	1,046	1,026	1,023	42	5	0	0	21	41	44	1	4	6	6	1	1	1	**20**	17	37	5	0	-21	-20	-3	6	6	6	6	1	2	5	**32**	**640**
1949	1,020	1,017	1,016	1,012	1,016	1,050	1,063	1,064	1,052	1,030	1,009	1,004	17	4	3	15	37	58	63	2	5	5	2	1	1	1	**17**	34	13	1	-12	-22	-21	-5	6	6	6	3	1	1	5	**28**	**476**
1950	999	996	993	1,001	1,015	1,032	1,046	1,043	1,031	1,006	987	981	35	21	24	36	61	80	86	1	1	1	1	1	1	1	**7**	17	14	-3	-12	-25	-19	-6	6	6	5	3	1	2	4	**27**	**189**
1951	995	1,013	1,020	1,033	1,040	1,058	1,065	1,067	1,056	1,033	1,014	1,012	9	2	0	11	34	53	55	4	5	6	3	1	1	1	**21**	18	7	2	-11	-23	-19	-2	6	6	6	3	1	2	5	**29**	**609**
1952	1,010	1,015	1,019	1,032	1,038	1,048	1,058	1,067	1,067	1,058	1,046	1,036	19	9	0	0	9	21	31	2	4	6	6	4	1	1	**24**	10	10	9	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**840**
1953	1,023	1,017	1,021	1,022	1,033	1,051	1,065	1,067	1,067	1,053	1,042	1,036	16	2	0	0	14	25	31	2	5	6	6	3	1	1	**24**	18	14	2	0	-14	-11	-6	6	6	6	6	3	3	4	**34**	**816**
1954	1,023	1,017	1,021	1,030	1,035	1,051	1,067	1,067	1,059	1,039	1,024	1,023	16	0	0	8	28	43	44	2	6	6	4	1	1	1	**21**	16	16	0	-8	-20	-15	-1	6	6	6	4	2	3	5	**32**	**672**
1955	1,022	1,017	1,022	1,024	1,027	1,032	1,040	1,046	1,034	1,012	990	988	35	27	21	33	55	77	79	1	1	1	1	1	1	1	**7**	5	8	6	-12	-22	-22	-2	6	6	6	3	1	1	5	**28**	**196**
1956	986	990	1,017	1,017	1,019	1,048	1,067	1,067	1,067	1,056	1,045	1,036	19	0	0	0	11	22	31	2	6	6	6	3	1	1	**25**	29	19	0	0	-11	-11	-9	6	6	6	6	3	3	4	**34**	**850**
1957	1,023	1,017	1,016	1,017	1,035	1,052	1,066	1,067	1,063	1,045	1,031	1,034	15	1	0	4	22	36	33	2	5	6	5	1	1	1	**21**	17	14	1	-4	-18	-14	3	6	6	6	5	2	3	6	**34**	**714**
1958	1,023	1,017	1,021	1,029	1,067	1,024	1,053	1,067	1,067	1,058	1,047	1,036	43	14	0	0	9	20	31	1	3	6	6	4	1	1	**22**	-43	29	14	0	-9	-11	-11	1	6	6	6	4	3	3	**29**	**638**
1959	1,023	1,017	1,017	1,034	1,039	1,053	1,055	1,053	1,041	1,022	1,003	1,007	14	12	14	26	45	64	60	3	3	3	1	1	1	1	**13**	14	2	-2	-12	-19	-19	4	6	6	5	3	2	2	6	**30**	**390**
1960	1,003	1,001	1,000	1,004	1,032	1,056	1,062	1,067	1,055	1,036	1,014	1,010	11	5	0	12	31	53	57	3	4	6	3	1	1	1	**19**	24	6	5	-12	-19	-22	-4	6	6	6	3	2	1	5	**29**	**551**
1961	1,008	1,009	1,021	1,026	1,044	1,057	1,062	1,065	1,056	1,035	1,012	1,011	10	5	2	11	32	55	56	3	4	5	3	1	1	1	**18**	13	5	3	-9	-21	-23	-1	6	6	6	4	1	1	5	**29**	**522**
1962	1,006	1,008	1,019	1,019	1,035	1,052	1,064	1,064	1,053	1,029	1,009	1,006	15	3	3	14	38	58	61	2	5	5	3	1	1	1	**18**	17	12	0	-11	-24	-20	-3	6	6	6	3	1	2	5	**29**	**522**
1963	1,023	1,017	1,021	1,025	1,045	1,055	1,052	1,067	1,064	1,046	1,033	1,031	12	15	0	3	21	34	36	3	2	6	5	1	1	1	**19**	10	-3	15	-3	-18	-13	-2	6	5	6	5	2	3	5	**32**	**608**
1964	1,023	1,017	1,018	1,033	1,037	1,041	1,033	1,026	1,016	994	972	968	26	34	41	51	73	95	99	1	1	1	1	1	1	1	**7**	4	-8	-7	-10	-22	-22	-4	6	4	4	4	1	1	5	**25**	**175**
1965	967	976	1,017	1,022	1,040	1,052	1,065	1,067	1,061	1,042	1,032	1,030	15	2	0	6	25	35	37	2	5	6	4	1	1	1	**20**	12	13	2	-6	-19	-10	-2	6	6	6	4	2	4	5	**33**	**660**
1966	1,023	1,017	1,021	1,037	1,049	1,055	1,067	1,067	1,054	1,036	1,016	1,014	12	0	0	13	31	51	53	3	6	6	3	1	1	1	**21**	6	12	0	-13	-18	-20	-2	6	6	6	3	2	2	5	**30**	**630**
1967	1,010	1,017	1,021	1,030	1,044	1,048	1,064	1,067	1,067	1,058	1,047	1,036	19	3	0	0	9	20	31	2	5	6	6	4	1	1	**25**	4	16	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1968	1,023	1,017	1,019	1,025	1,034	1,054	1,059	1,059	1,049	1,031	1,019	1,017	13	8	8	18	36	48	50	3	4	4	2	1	1	1	**16**	20	5	0	-10	-18	-12	-2	6	6	6	4	2	3	5	**32**	**512**
1969	1,017	1,017	1,021	1,022	1,027	1,048	1,063	1,067	1,067	1,058	1,047	1,036	19	4	0	0	9	20	31	2	5	6	6	4	1	1	**25**	21	15	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1970	1,023	1,017	1,020	1,017	1,025	1,052	1,055	1,055	1,046	1,027	1,011	1,009	15	12	12	21	40	56	58	2	3	3	1	1	1	1	**12**	27	3	0	-9	-19	-16	-2	6	6	6	4	2	2	5	**31**	**372**
1971	1,009	1,017	1,020	1,028	1,041	1,043	1,065	1,067	1,067	1,054	1,044	1,036	24	2	0	0	13	23	31	1	5	6	6	3	1	1	**23**	2	22	2	0	-13	-10	-8	6	6	6	6	3	4	4	**35**	**805**
1972	1,023	1,017	1,022	1,033	1,045	1,056	1,066	1,066	1,054	1,037	1,020	1,020	11	1	1	13	30	47	47	3	5	5	3	1	1	1	**19**	11	10	0	-12	-17	-17	0	6	6	6	3	2	2	6	**31**	**589**
1973	1,022	1,017	1,021	1,030	1,034	1,053	1,065	1,067	1,056	1,034	1,021	1,020	14	2	0	11	33	46	47	3	5	6	3	1	1	1	**20**	19	12	2	-11	-22	-13	-1	6	6	6	3	1	3	5	**30**	**600**
1974	1,022	1,017	1,018	1,017	1,036	1,025	1,058	1,067	1,067	1,058	1,047	1,036	42	9	0	0	9	20	31	1	4	6	6	4	1	1	**23**	-11	33	9	0	-9	-11	-11	3	6	6	6	4	3	3	**31**	**713**
1975	1,023	1,017	1,021	1,024	1,045	1,039	1,061	1,067	1,067	1,058	1,047	1,036	28	6	0	0	9	20	31	1	4	6	6	4	1	1	**23**	-6	22	6	0	-9	-11	-11	4	6	6	6	4	3	3	**32**	**736**
1976	1,023	1,017	1,018	1,017	1,012	1,020	1,027	1,025	1,013	994	986	988	47	40	42	54	73	81	79	1	1	1	1	1	1	1	**7**	8	7	-2	-12	-19	-8	2	6	6	5	3	2	4	6	**32**	**224**
1977	988	989	988	985	985	985	958	952	930	908	892	896	82	109	115	137	159	175	171	1	1	1	1	1	1	1	**7**	0	-27	-6	-22	-22	-16	4	6	1	4	1	1	2	6	**21**	**147**
1978	895	903	938	1,020	1,031	1,047	1,067	1,067	1,066	1,051	1,041	1,036	20	0	0	1	16	26	31	1	6	6	5	2	1	1	**22**	16	20	0	-1	-15	-10	-5	6	6	6	5	3	4	5	**35**	**770**
1979	1,023	1,017	1,015	1,018	1,029	1,046	1,053	1,060	1,049	1,032	1,016	1,014	21	14	7	18	35	51	53	1	3	4	2	1	1	1	**13**	17	7	7	-11	-17	-16	-2	6	6	6	3	2	2	5	**30**	**390**
1980	1,014	1,017	1,019	1,029	1,019	1,046	1,059	1,064	1,058	1,047	1,037	1,036	21	8	3	9	20	30	31	1	4	5	4	1	1	1	**17**	27	13	5	-6	-11	-10	-1	6	6	6	4	3	4	5	**34**	**578**
1981	1,023	1,017	1,020	1,029	1,042	1,056	1,064	1,060	1,045	1,025	1,005	1,002	11	3	7	22	42	62	65	3	5	4	1	1	1	1	**16**	14	8	-4	-15	-20	-20	-3	6	6	5	3	2	2	5	**29**	**464**
1982	1,001	1,017	1,018	1,033	1,029	1,046	1,051	1,067	1,067	1,058	1,047	1,036	21	16	0	0	9	20	31	1	2	6	6	4	1	1	**21**	17	5	16	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1983	1,023	1,017	1,020	1,022	1,017	1,045	1,050	1,067	1,067	1,058	1,047	1,036	22	17	0	0	9	20	31	1	2	6	6	4	1	1	**21**	28	5	17	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1984	1,023	1,017	1,018	1,034	1,047	1,056	1,067	1,067	1,063	1,044	1,036	1,036	11	0	0	4	23	31	31	3	6	6	5	1	1	1	**23**	9	11	0	-4	-19	-8	0	6	6	6	5	2	4	6	**35**	**805**
1985	1,023	1,017	1,022	1,023	1,027	1,034	1,042	1,034	1,015	995	977	977	33	25	33	52	72	90	90	1	1	1	1	1	1	1	**7**	7	8	-8	-19	-20	-18	0	6	6	4	2	2	2	6	**28**	**196**
1986	979	983	992	1,017	1,017	1,029	1,047	1,049	1,038	1,022	1,007	1,010	38	20	18	29	45	60	57	1	1	2	1	1	1	1	**8**	12	18	2	-11	-16	-15	3	6	6	6	3	2	3	6	**32**	**256**
1987	1,010	1,009	1,008	1,009	1,020	1,046	1,050	1,044	1,026	1,003	978	978	21	17	23	41	64	89	89	1	2	1	1	1	1	1	**8**	26	4	-6	-18	-23	-25	0	6	6	4	2	1	1	6	**26**	**208**
1988	970	971	997	1,016	1,025	1,032	1,037	1,037	1,028	1,003	973	969	35	30	30	39	64	94	98	1	1	1	1	1	1	1	**7**	7	5	0	-9	-25	-30	-4	6	6	6	4	1	1	5	**29**	**203**
1989	964	976	982	987	992	1,042	1,061	1,058	1,046	1,030	1,016	1,017	25	6	9	21	37	51	50	1	4	4	1	1	1	1	**13**	50	19	-3	-12	-16	-14	1	6	6	5	3	2	3	6	**31**	**403**
1990	1,018	1,016	1,012	1,018	1,018	1,025	1,020	1,023	1,021	998	982	979	42	47	44	46	69	85	88	1	1	1	1	1	1	1	**7**	7	-5	3	-2	-23	-16	-3	6	5	6	5	1	2	5	**30**	**210**
1991	972	972	966	958	959	982	989	989	981	967	953	946	85	78	78	86	100	114	121	1	1	1	1	1	1	1	**7**	23	7	0	-8	-14	-14	-7	6	6	6	4	3	3	4	**32**	**224**
1992	945	944	945	948	986	1,007	1,020	1,014	1,003	988	966	963	60	47	53	64	79	101	104	1	1	1	1	1	1	1	**7**	21	13	-6	-11	-15	-22	-3	6	6	4	3	3	1	5	**28**	**196**
1993	957	956	970	1,002	1,034	1,031	1,059	1,067	1,067	1,051	1,041	1,038	36	8	0	0	16	26	29	1	4	6	6	2	1	1	**21**	-3	28	8	0	-16	-10	-3	5	6	6	6	2	4	5	**34**	**714**
1994	1,037	1,017	1,019	1,020	1,026	1,030	1,030	1,028	1,014	993	981	978	37	37	39	53	74	86	89	1	1	1	1	1	1	1	**7**	4	0	-2	-14	-21	-12	-3	6	6	5	3	1	3	5	**29**	**203**
																								73 - year Average:			**15**											**73 - year Average:**				**30**	**459.4**
																																								1929 - 34 Average:			**201.8**

STUDY: 1995C6F-SWRCB-467 DWRSIM: recirc818-f, 17 Jun 97
CP # 6, LAKE OROVILLE, EOP SURFACE ELEVATION (FT)
Project: /1995C6F-SWRCB-467/6/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 900

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	834	837	839	848	850	858	893	900	900	882	866	866	42	7	0	0	18	34	34	1	4	6	6	2	1	1	**21**	8	35	7	0	-18	-16	0	6	6	6	6	2	2	6	**34**	**714**
1923	870	873	858	862	869	874	895	900	888	864	837	836	26	5	0	12	36	63	64	1	4	6	3	1	1	1	**17**	5	21	5	-12	-24	-27	-1	6	6	6	3	1	1	5	**28**	**476**
1924	827	819	786	768	787	792	783	767	745	710	701	696	108	117	133	155	190	199	204	1	1	1	1	1	1	1	**7**	5	-9	-16	-22	-35	-9	-5	6	4	2	1	1	4	5	**23**	**161**
1925	689	693	700	716	784	812	832	838	821	786	773	771	88	68	62	79	114	127	129	1	1	1	1	1	1	1	**7**	28	20	6	-17	-35	-13	-2	6	6	6	2	1	3	5	**29**	**203**
1926	762	761	761	773	821	840	882	883	863	832	823	804	60	18	17	37	68	77	96	1	2	2	1	1	1	1	**9**	19	42	1	-20	-31	-9	-19	6	6	6	2	1	4	2	**27**	**243**
1927	785	815	813	834	849	863	890	900	890	865	843	840	37	10	0	10	35	57	60	1	3	6	3	1	1	1	**16**	14	27	10	-10	-25	-22	-3	6	6	6	4	1	1	5	**29**	**464**
1928	838	848	849	861	871	849	878	884	866	839	805	795	51	22	16	34	61	95	105	1	1	2	1	1	1	1	**8**	-22	29	6	-18	-27	-34	-10	1	6	6	2	1	1	4	**21**	**168**
1929	775	770	769	773	785	799	805	802	788	756	738	731	101	95	98	112	144	162	169	1	1	1	1	1	1	1	**7**	14	6	-3	-14	-32	-18	-7	6	6	5	3	1	2	4	**27**	**189**
1930	715	704	763	790	816	847	868	872	857	829	808	804	53	32	28	43	71	92	96	1	1	1	1	1	1	1	**7**	31	21	4	-15	-28	-21	-4	6	6	6	3	1	1	5	**28**	**196**
1931	788	779	768	779	790	809	792	780	761	717	702	687	91	108	120	139	183	198	213	1	1	1	1	1	1	1	**7**	19	-17	-12	-19	-44	-15	-15	6	2	3	2	1	3	3	**20**	**140**
1932	669	657	665	690	712	753	767	799	796	769	758	752	147	133	101	104	131	142	148	1	1	1	1	1	1	1	**7**	41	14	32	-3	-27	-11	-6	6	6	6	5	1	3	4	**31**	**217**
1933	740	735	731	741	749	752	763	775	765	738	725	716	148	137	125	135	162	175	184	1	1	1	1	1	1	1	**7**	3	11	12	-10	-27	-13	-9	6	6	6	4	1	3	4	**30**	**210**
1934	700	695	698	725	748	776	782	770	749	715	702	684	124	118	130	151	185	198	216	1	1	1	1	1	1	1	**7**	28	6	-12	-21	-34	-13	-18	6	6	3	1	1	3	2	**22**	**154**
1935	661	668	674	702	726	758	848	878	877	852	843	829	142	52	22	23	48	57	71	1	1	1	1	1	1	1	**7**	32	90	30	-1	-25	-9	-14	6	6	6	5	1	4	3	**31**	**217**
1936	822	814	795	837	849	860	886	897	894	868	840	836	40	14	3	6	32	60	64	1	3	5	4	1	1	1	**16**	11	26	11	-3	-26	-28	-4	6	6	6	5	1	1	5	**30**	**480**
1937	830	822	805	808	823	847	872	894	888	862	844	840	53	28	6	12	38	56	60	1	1	4	3	1	1	1	**12**	24	25	22	-6	-26	-18	-4	6	6	6	4	1	2	5	**30**	**360**
1938	837	848	854	858	849	849	882	900	900	893	891	887	51	18	0	0	7	9	13	1	2	6	6	4	4	3	**26**	0	33	18	0	-7	-2	-4	6	6	6	6	4	5	5	**38**	**988**
1939	874	864	854	845	837	833	823	821	799	756	706	704	67	77	79	101	144	194	196	1	1	1	1	1	1	1	**7**	-4	-10	-2	-22	-43	-50	-2	5	4	5	1	1	1	5	**22**	**154**
1940	687	678	677	738	834	849	879	890	873	847	820	817	51	21	10	27	53	80	83	1	1	3	1	1	1	1	**9**	15	30	11	-17	-26	-27	-3	6	6	6	2	1	1	5	**27**	**243**
1941	810	811	849	849	849	858	886	900	900	886	882	883	42	14	0	0	14	18	17	1	3	6	6	3	2	2	**23**	9	28	14	0	-14	-4	1	6	6	6	6	3	5	6	**38**	**874**
1942	874	874	849	849	850	867	882	900	900	883	870	870	33	18	0	0	17	30	30	1	2	6	6	2	1	1	**19**	17	15	18	0	-17	-13	0	6	6	6	6	2	3	6	**35**	**665**
1943	872	869	861	849	856	859	887	897	885	861	841	840	41	13	3	15	39	59	60	1	3	5	2	1	1	1	**14**	3	28	10	-12	-24	-20	-1	6	6	6	3	1	2	5	**29**	**406**
1944	841	844	843	849	857	868	879	870	865	835	802	797	32	21	30	35	65	98	103	1	1	1	1	1	1	1	**7**	11	11	-9	-5	-30	-33	-5	6	6	4	5	1	1	5	**28**	**196**
1945	786	793	809	823	862	865	880	889	878	853	826	823	35	20	11	22	47	74	77	1	1	3	1	1	1	1	**9**	3	15	9	-11	-25	-27	-3	6	6	6	3	1	1	5	**28**	**252**
1946	823	828	849	864	868	868	887	887	869	844	816	808	32	13	13	31	56	84	92	1	3	3	1	1	1	1	**11**	0	19	0	-18	-25	-28	-8	6	6	6	2	1	1	4	**26**	**286**
1947	791	797	805	811	833	855	864	843	831	794	752	727	45	36	57	69	106	148	173	1	1	1	1	1	1	1	**7**	22	9	-21	-12	-37	-42	-25	6	6	1	3	1	1	1	**19**	**133**
1948	723	724	715	752	762	782	842	871	877	854	827	811	118	58	29	23	46	73	89	1	1	1	1	1	1	1	**7**	20	60	29	6	-23	-27	-16	6	6	6	6	1	1	2	**28**	**196**
1949	789	784	784	783	791	820	839	844	832	803	766	760	80	61	56	68	97	134	140	1	1	1	1	1	1	1	**7**	29	19	5	-12	-29	-37	-6	6	6	6	3	1	1	4	**27**	**189**
1950	738	732	727	754	797	830	863	878	875	852	832	831	70	37	22	25	48	68	69	1	1	1	1	1	1	1	**7**	33	33	15	-3	-23	-20	-1	6	6	6	5	1	2	5	**31**	**217**
1951	835	849	854	853	858	870	884	898	895	871	845	843	30	16	2	5	29	55	57	1	2	5	4	1	1	1	**15**	12	14	14	-3	-24	-26	-2	6	6	6	5	1	1	5	**30**	**450**
1952	843	846	849	849	852	862	894	900	900	900	899	887	38	6	0	0	0	1	13	1	4	6	6	6	5	3	**31**	10	32	6	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1178**
1953	874	874	858	850	867	867	883	900	900	883	869	870	33	17	0	0	17	31	30	1	2	6	6	2	1	1	**19**	0	16	17	0	-17	-14	1	6	6	6	6	2	3	6	**35**	**665**
1954	873	871	874	858	857	859	883	892	875	848	824	812	41	17	8	25	52	76	88	1	2	4	1	1	1	1	**11**	2	24	9	-17	-27	-24	-12	6	6	6	2	1	1	3	**25**	**275**
1955	808	809	818	826	832	841	847	845	836	801	759	756	59	53	55	64	99	141	144	1	1	1	1	1	1	1	**7**	9	6	-2	-9	-35	-42	-3	6	6	5	4	1	1	5	**28**	**196**
1956	737	733	849	849	849	864	892	900	900	884	875	879	36	8	0	0	16	25	21	1	4	6	6	2	1	1	**21**	15	28	8	0	-16	-9	4	6	6	6	6	2	4	6	**36**	**756**
1957	869	874	874	871	853	863	873	891	883	864	842	842	37	27	9	17	36	58	58	1	1	4	2	1	1	1	**11**	10	10	18	-8	-19	-22	0	6	6	6	4	2	1	6	**31**	**341**
1958	843	846	860	854	849	849	879	900	900	896	892	887	51	21	0	0	4	8	13	1	1	6	6	5	4	3	**26**	0	30	21	0	-4	-4	-5	6	6	6	6	5	5	5	**39**	**1014**
1959	874	874	874	862	852	867	870	854	839	807	766	769	33	30	46	61	93	134	131	1	1	1	1	1	1	1	**7**	15	3	-16	-15	-32	-41	3	6	6	2	3	1	1	6	**25**	**175**
1960	755	752	745	758	819	857	873	863	847	814	789	770	43	27	37	53	86	111	130	1	1	1	1	1	1	1	**7**	38	16	-10	-16	-33	-25	-19	6	6	4	2	1	1	2	**22**	**154**
1961	753	755	765	776	806	828	836	823	803	757	706	700	72	64	77	97	143	194	200	1	1	1	1	1	1	1	**7**	22	8	-13	-20	-46	-51	-6	6	6	3	2	1	1	4	**23**	**161**
1962	675	674	681	693	759	793	834	828	811	773	732	709	107	66	72	89	127	168	191	1	1	1	1	1	1	1	**7**	34	41	-6	-17	-38	-41	-23	6	6	4	2	1	1	1	**21**	**147**
1963	782	791	823	845	867	858	876	900	892	870	852	853	42	24	0	8	30	48	47	1	1	6	4	1	1	1	**15**	-9	18	24	-8	-22	-18	1	4	6	6	4	1	2	6	**29**	**435**
1964	854	865	867	866	874	874	865	850	845	813	770	750	26	35	50	55	87	130	150	1	1	1	1	1	1	1	**7**	0	-9	-15	-5	-32	-43	-20	6	4	3	5	1	1	2	**22**	**154**
1965	727	728	849	849	863	870	887	900	895	876	864	865	30	13	0	5	24	36	35	1	3	6	4	1	1	1	**17**	7	17	13	-5	-19	-12	1	6	6	6	5	2	3	6	**34**	**578**
1966	869	859	860	864	870	874	894	879	861	838	806	794	26	6	21	39	62	94	106	1	4	1	1	1	1	1	**10**	4	20	-15	-18	-23	-32	-12	6	6	3	2	1	1	3	**22**	**220**
1967	769	780	818	849	860	853	879	900	900	900	896	887	47	21	0	0	0	4	13	1	1	6	6	6	5	3	**28**	-7	26	21	0	0	-4	-9	4	6	6	6	6	5	4	**37**	**1036**
1968	874	874	873	858	861	866	872	859	843	812	778	775	34	28	41	57	88	122	125	1	1	1	1	1	1	1	**7**	5	6	-13	-16	-31	-34	-3	6	6	3	2	1	1	5	**24**	**168**
1969	777	782	805	849	849	865	895	900	900	895	893	874	35	5	0	0	5	7	26	1	4	6	6	4	4	1	**26**	16	30	5	0	-5	-2	-19	6	6	6	6	5	5	2	**36**	**936**
1970	874	874	850	849	849	874	873	875	860	839	811	810	26	27	25	40	61	89	90	1	1	1	1	1	1	1	**7**	25	-1	2	-15	-21	-28	-1	6	5	6	3	1	1	5	**27**	**189**
1971	813	832	849	864	874	874	893	900	900	883	869	871	26	7	0	0	17	31	29	1	4	6	6	2	1	1	**21**	0	19	7	0	-17	-14	2	6	6	6	6	2	3	6	**35**	**735**
1972	874	874	865	869	867	874	884	871	854	830	799	788	26	16	29	46	70	101	112	1	2	1	1	1	1	1	**8**	7	10	-13	-17	-24	-31	-11	6	6	3	2	1	1	3	**22**	**176**
1973	769	785	812	849	849	860	882	900	881	855	833	830	40	18	0	19	45	67	70	1	2	6	2	1	1	1	**14**	11	22	18	-19	-26	-22	-3	6	6	6	2	1	1	5	**27**	**378**
1974	833	849	850	854	864	849	883	900	900	890	890	886	51	17	0	0	10	10	14	1	2	6	6	3	3	3	**24**	-15	34	17	0	-10	0	-4	3	6	6	6	4	6	5	**36**	**864**
1975	874	874	874	874	855	852	881	900	900	887	885	886	48	19	0	0	13	15	14	1	2	6	6	3	2	3	**23**	-3	29	19	0	-13	-2	1	5	6	6	6	3	5	6	**37**	**851**
1976	873	874	874	874	874	874	871	863	849	822	789	788	26	29	37	51	78	111	112	1	1	1	1	1	1	1	**7**	0	-3	-8	-14	-27	-33	-1	6	5	4	3	1	1	5	**25**	**175**
1977	765	756	737	725	723	722	663	652	622	599	589	595	178	237	248	278	301	311	305	1	1	1	1	1	1	1	**7**	-1	-59	-11	-30	-23	-10	6	5	1	3	1	1	4	6	**21**	**147**
1978	591	592	628	751	804	859	878	897	896	876	864	872	41	22	3	4	24	36	28	1	1	5	5	1	1	1	**15**	55	19	19	-1	-20	-12	8	6	6	6	5	2	3	6	**34**	**510**
1979	874	874	874	871	853	863	878	896	889	871	848	846	37	22	4	11	29	52	54	1	1	5	3	1	1	1	**13**	10	15	18	-7	-18	-23	-2	6	6	6	4	2	1	5	**30**	**390**
1980	850	853	858	850	849	865	881	893	888	871	864	863	35	19	7	12	29	36	37	1	2	4	3	1	1	1	**13**	16	16	12	-5	-17	-7	-1	6	6	6	5	2	4	5	**34**	**442**
1981	862	863	871	860	868	865	875	872	852	825	790	790	35	25	28	48	75	110	110	1	1	1	1	1	1	1	**7**	-3	10	-3	-20	-27	-35	0	5	6	5	2	1	1	6	**26**	**182**
1982	788	849	849	859	862	859	884	900	900	890	887	887	41	16	0	0	10	13	13	1	2	6	6	3	3	3	**24**	-3	25	16	0	-10	-3	0	5	6	6	6	4	5	6	**38**	**912**
1983	873	862	858	853	849	849	877	900	900	900	899	887	51	23	0	0	0	1	13	1	1	6	6	6	5	3	**28**	0	28	23	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1064**
1984	874	860	849	869	869	871	886	895	894	871	851	852	29	14	5	6	29	49	48	1	3	4	4	1	1	1	**15**	2	15	9	-1	-23	-20	1	6	6	6	5	1	2	6	**32**	**480**
1985	856	862	872	874	874	871	886	866	847	820	780	765	29	14	34	53	80	120	135	1	3	1	1	1	1	1	**9**	-3	15	-20	-19	-27	-40	-15	5	6	2	2	1	1	3	**20**	**180**
1986	749	745	752	785	849	849	871	875	871	845	828	839	51	29	25	29	55	72	61	1	1	1	1	1	1	1	**7**	0	22	4	-4	-26	-17	11	6	6	6	5	1	2	6	**32**	**224**
1987	841	847	848	848	859	867	862	851	832	798	752	747	33	38	49	68	102	148	153	1	1	1	1	1	1	1	**7**	8	-5	-11	-19	-34	-46	-5	6	5	3	2	1	1	5	**23**	**161**
1988	731	733	769	794	802	812	811	805	784	747	702	699	88	89	95	116	153	198	201	1	1	1	1	1	1	1	**7**	10	-1	-6	-21	-37	-45	-3	6	5	4	1	1	1	5	**23**	**161**
1989	682	700	710	718	735	846	870	868	851	823	807	797	54	30	32	49	77	93	103	1	1	1	1	1	1	1	**7**	111	24	-2	-17	-28	-16	-10	6	6	5	2	1	2	4	**26**	**182**
1990	789	790	768	779	785	810	807	807	792	746	722	719	90	93	93	108	154	178	181	1	1	1	1	1	1	1	**7**	25	-3	0	-15	-46	-24	-3	6	5	6	3	1	1	5	**27**	**189**
1991	697	689	673	658	661	710	733	747	737	714	699	703	190	167	153	163	186	201	197	1	1	1	1	1	1	1	**7**	49	23	14	-10	-23	-15	4	6	6	6	4	1	3	6	**32**	**224**
1992	697	688	684	688	719	749	764	753	729	700	686	682	151	136	147	171	200	214	218	1	1	1	1	1	1	1	**7**	30	15	-11	-24	-29	-14	-4	6	6	3	1	1	3	5	**25**	**175**
1993	668	659	674	738	787	861	894	900	900	882	864	863	39	6	0	0	18	36	37	1	4	6	6	2	1	1	**21**	74	33	6	0	-18	-18	-1	6	6	6	6	2	2	5	**33**	**693**
1994	868	874	874	871	862	874	874	871	856	827	794	790	26	26	29	44	73	106	110	1	1	1	1	1	1	1	**7**	12	0	-3	-15	-29	-33	-4	6	6	5	3	1	1	5	**27**	**189**
																							73 - year Average:				**12**											**73 - year Average:**			**29**	**387.7**
																																							1929 - 34 Average:				**184.3**

STUDY: 1995C6F-SWRCB-467 DWRSIM: recirc818-f, 17 Jun 97
CP # 8, FOLSOM LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C6F-SWRCB-467/8/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 466'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	414	409	414	414	424	428	443	466	466	462	449	434	38	23	0	0	4	17	32	1	1	6	6	5	2	1	**22**	4	15	23	0	-4	-13	-15	6	6	6	6	5	3	3	**35**	**770**
1923	425	423	424	424	424	428	449	466	458	435	422	422	38	17	0	8	31	44	44	1	2	6	4	1	1	1	**16**	4	21	17	-8	-23	-13	0	6	6	6	4	1	3	6	**32**	**512**
1924	407	398	376	358	354	334	335	350	335	333	336	343	132	131	116	131	133	130	123	1	1	1	1	1	1	1	**7**	-20	1	15	-15	-2	3	7	2	6	6	3	5	6	6	**34**	**238**
1925	355	369	384	393	424	437	449	461	442	413	394	390	29	17	5	24	53	72	76	1	2	4	1	1	1	1	**11**	13	12	12	-19	-29	-19	-4	6	6	6	2	1	2	5	**28**	**308**
1926	392	393	392	393	417	424	449	449	432	406	386	394	42	17	17	34	60	80	72	1	2	2	1	1	1	1	**9**	7	25	0	-17	-26	-20	8	6	6	6	2	1	2	6	**29**	**261**
1927	393	414	424	424	424	437	449	466	465	451	446	434	29	17	0	1	15	20	32	1	2	6	5	2	1	1	**18**	13	12	17	-1	-14	-5	-12	6	6	6	5	3	5	3	**34**	**612**
1928	425	424	424	424	424	437	449	457	447	422	408	411	29	17	9	19	44	58	55	1	2	4	2	1	1	1	**12**	13	12	8	-10	-25	-14	3	6	6	6	4	1	3	6	**32**	**384**
1929	404	398	394	383	381	388	400	409	409	369	343	360	78	66	57	57	97	123	106	1	1	1	1	1	1	1	**7**	7	12	9	0	-40	-26	17	6	6	6	6	1	1	6	**32**	**224**
1930	363	372	404	421	424	437	443	442	432	411	396	401	29	23	24	34	55	70	65	1	1	1	1	1	1	1	**7**	13	6	-1	-10	-21	-15	5	6	6	5	4	1	3	6	**31**	**217**
1931	393	390	382	379	378	386	334	359	349	334	333	341	80	132	107	117	132	133	125	1	1	1	1	1	1	1	**7**	8	-52	25	-10	-15	-1	8	6	1	6	4	3	5	6	**31**	**217**
1932	351	362	394	412	424	436	445	461	459	433	398	406	30	21	5	7	33	68	60	1	1	4	4	1	1	1	**13**	12	9	16	-2	-26	-35	8	6	6	6	5	1	1	6	**31**	**403**
1933	398	393	388	378	367	376	368	390	389	334	334	354	90	98	76	77	132	132	112	1	1	1	1	1	1	1	**7**	9	-8	22	-1	-55	0	20	6	4	6	5	1	6	6	**34**	**238**
1934	334	354	385	409	424	437	439	434	411	335	325	336	29	27	32	55	131	141	130	1	1	1	1	1	1	1	**7**	13	2	-5	-23	-76	-10	11	6	6	5	1	1	4	6	**29**	**203**
1935	334	361	378	402	411	414	449	466	461	438	420	418	52	17	0	5	28	46	48	1	2	6	4	1	1	1	**16**	3	35	17	-5	-23	-18	-2	6	6	6	5	1	2	5	**31**	**496**
1936	414	408	403	424	424	437	449	461	461	441	429	429	29	17	5	5	25	37	37	1	2	4	4	1	1	1	**14**	13	12	12	0	-20	-12	0	6	6	6	6	2	3	6	**35**	**490**
1937	421	413	406	399	423	437	449	466	455	442	436	434	29	17	0	11	24	30	32	1	2	6	3	1	1	1	**15**	14	12	17	-11	-13	-6	-2	6	6	6	3	3	4	5	**33**	**495**
1938	426	423	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1939	426	420	415	409	402	409	417	417	410	385	334	351	57	49	49	56	81	132	115	1	1	1	1	1	1	1	**7**	7	8	0	-7	-25	-51	17	6	6	6	4	1	1	6	**30**	**210**
1940	334	352	334	420	424	437	449	464	453	436	428	427	29	17	2	13	30	38	39	1	2	5	3	1	1	1	**14**	13	12	15	-11	-17	-8	-1	6	6	6	3	2	4	5	**32**	**448**
1941	422	418	424	424	424	437	449	466	458	449	444	434	29	17	0	8	17	22	32	1	2	6	4	2	1	1	**17**	13	12	17	-8	-9	-5	-10	6	6	6	4	4	5	4	**35**	**595**
1942	426	422	424	424	424	430	449	466	466	458	449	434	36	17	0	0	8	17	32	1	2	6	6	4	2	1	**22**	6	19	17	0	-8	-9	-15	6	6	6	6	4	4	3	**35**	**770**
1943	425	424	423	422	422	434	449	459	455	440	436	433	32	17	7	11	26	30	33	1	2	4	3	1	1	1	**13**	12	15	10	-4	-15	-4	-3	6	6	6	5	3	5	5	**36**	**468**
1944	425	418	412	405	406	418	419	433	426	412	396	404	48	47	33	40	54	70	62	1	1	1	1	1	1	1	**7**	12	1	14	-7	-14	-16	8	6	6	6	4	3	2	6	**33**	**231**
1945	399	407	414	416	424	437	449	465	456	442	437	434	29	17	1	10	24	29	32	1	2	5	3	1	1	1	**14**	13	12	16	-9	-14	-5	-3	6	6	6	4	3	5	5	**35**	**490**
1946	427	424	424	424	424	437	449	466	451	433	424	427	29	17	0	15	33	42	39	1	2	6	2	1	1	1	**14**	13	12	17	-15	-18	-9	3	6	6	6	3	2	4	6	**33**	**462**
1947	421	422	421	414	420	437	445	442	431	408	384	393	29	21	24	35	58	82	73	1	1	1	1	1	1	1	**7**	17	8	-3	-11	-23	-24	9	6	6	5	3	1	1	6	**28**	**196**
1948	387	389	368	386	389	390	429	454	456	445	439	434	76	37	12	10	21	27	32	1	1	3	3	1	1	1	**11**	1	39	25	2	-11	-6	-5	6	6	6	6	3	4	5	**36**	**396**
1949	425	419	416	406	400	422	444	461	451	435	423	426	44	22	5	15	31	43	40	1	1	4	2	1	1	1	**11**	22	22	17	-10	-16	-12	3	6	6	6	4	2	3	6	**33**	**363**
1950	416	410	402	424	424	437	449	466	459	445	440	434	29	17	0	7	21	26	32	1	2	6	4	1	1	1	**16**	13	12	17	-7	-14	-5	-6	6	6	6	4	3	5	4	**34**	**544**
1951	421	393	388	388	388	426	448	466	456	439	431	431	40	18	0	10	27	35	35	1	2	6	3	1	1	1	**15**	38	22	18	-10	-17	-8	0	6	6	6	4	2	4	6	**34**	**510**
1952	425	424	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1953	428	423	424	424	424	430	446	457	463	457	449	434	36	20	9	3	9	17	32	1	1	4	5	4	2	1	**18**	6	16	11	6	-6	-8	-15	6	6	6	6	4	4	3	**35**	**630**
1954	425	423	421	422	424	437	449	455	440	418	411	415	29	17	11	26	48	55	51	1	2	3	1	1	1	1	**10**	13	12	6	-15	-22	-7	4	6	6	6	3	1	4	6	**32**	**320**
1955	409	406	414	422	422	418	418	436	430	415	401	408	48	48	30	36	51	65	58	1	1	1	1	1	1	1	**7**	-4	0	18	-6	-15	-14	7	5	6	6	4	3	3	6	**33**	**231**
1956	389	386	420	402	406	425	441	466	466	461	449	434	41	25	0	0	5	17	32	1	1	6	6	4	2	1	**21**	19	16	25	0	-5	-12	-15	6	6	6	6	5	3	3	**35**	**735**
1957	428	422	417	412	424	437	441	466	458	444	439	434	29	25	0	8	22	27	32	1	1	6	4	1	1	1	**15**	13	4	25	-8	-14	-5	-5	6	6	6	4	3	5	5	**35**	**525**
1958	426	421	422	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1959	425	419	412	417	424	428	436	436	424	406	389	398	38	30	30	42	60	77	68	1	1	1	1	1	1	1	**7**	4	8	0	-12	-18	-17	9	6	6	6	3	2	2	6	**31**	**217**
1960	389	382	374	375	414	437	449	448	438	417	406	408	29	17	18	28	49	60	58	1	2	2	1	1	1	1	**9**	23	12	-1	-10	-21	-11	2	6	6	5	4	1	3	6	**31**	**279**
1961	401	399	398	389	390	395	405	417	410	395	387	393	71	61	49	56	71	79	73	1	1	1	1	1	1	1	**7**	5	10	12	-7	-15	-8	6	6	6	6	4	3	4	6	**35**	**245**
1962	391	388	390	389	424	434	449	457	449	428	419	421	32	17	9	17	38	47	45	1	2	4	2	1	1	1	**12**	10	15	8	-8	-21	-9	2	6	6	6	4	1	4	6	**33**	**396**
1963	441	424	424	424	419	430	449	466	461	445	440	434	36	17	0	5	21	26	32	1	2	6	4	1	1	1	**16**	11	19	17	-5	-16	-5	-6	6	6	6	5	2	5	4	**34**	**544**
1964	427	424	424	424	421	419	430	436	430	409	382	390	47	36	30	36	57	84	76	1	1	1	1	1	1	1	**7**	-2	11	6	-6	-21	-27	8	5	6	6	4	1	1	6	**29**	**203**
1965	370	380	393	392	395	414	449	465	460	447	444	434	52	17	1	6	19	22	32	1	2	5	4	2	1	1	**16**	19	35	16	-5	-13	-3	-10	6	6	6	5	3	5	4	**35**	**560**
1966	426	424	424	424	422	430	448	450	436	415	403	405	36	18	16	30	51	63	61	1	2	2	1	1	1	1	**9**	8	18	2	-14	-21	-12	2	6	6	6	3	1	3	6	**31**	**279**
1967	396	399	422	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1968	427	424	423	424	424	437	444	445	433	414	407	409	29	22	21	33	52	59	57	1	1	1	1	1	1	1	**7**	13	7	1	-12	-19	-7	2	6	6	6	3	2	4	6	**33**	**231**
1969	404	407	416	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1970	427	424	423	393	396	426	431	441	434	418	411	414	40	35	25	32	48	55	52	1	1	1	1	1	1	1	**7**	30	5	10	-7	-16	-7	3	6	6	6	4	2	4	6	**34**	**238**
1971	408	421	424	424	424	437	449	463	463	457	449	434	29	17	3	3	9	17	32	1	2	5	5	4	2	1	**20**	13	12	14	0	-6	-8	-15	6	6	6	6	4	4	3	**35**	**700**
1972	425	422	424	424	424	437	443	450	440	423	411	414	29	23	16	26	43	55	52	1	1	2	1	1	1	1	**8**	13	6	7	-10	-17	-12	3	6	6	6	4	2	3	6	**33**	**264**
1973	409	414	424	424	424	437	449	466	449	425	420	425	29	17	0	17	41	46	41	1	2	6	2	1	1	1	**14**	13	12	17	-17	-24	-5	5	6	6	6	2	1	5	6	**32**	**448**
1974	422	423	422	409	417	433	449	466	463	463	449	434	33	17	0	3	3	17	32	1	2	6	5	5	2	1	**22**	16	16	17	-3	0	-14	-15	6	6	6	5	6	3	3	**35**	**770**
1975	426	419	417	415	424	437	441	466	466	463	449	434	29	25	0	0	3	17	32	1	1	6	6	5	2	1	**22**	13	4	25	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**770**
1976	431	423	419	410	402	396	401	405	396	370	352	357	70	65	61	70	96	114	109	1	1	1	1	1	1	1	**7**	-6	5	4	-9	-26	-18	5	4	6	6	4	1	2	6	**29**	**203**
1977	357	360	353	340	337	338	334	341	334	319	305	291	128	132	125	132	147	161	175	1	1	1	1	1	1	1	**7**	1	-4	7	-7	-15	-14	-14	6	5	6	4	3	3	3	**30**	**210**
1978	286	304	358	424	424	437	449	466	461	451	441	434	29	17	0	5	15	25	32	1	2	6	4	2	1	1	**17**	13	12	17	-5	-10	-10	-7	6	6	6	5	4	4	4	**35**	**595**
1979	423	417	411	418	424	437	447	466	455	443	434	433	29	19	0	11	23	32	33	1	2	6	3	1	1	1	**15**	13	10	19	-11	-12	-9	-1	6	6	6	3	3	4	5	**33**	**495**
1980	426	423	424	405	399	430	449	464	456	455	449	434	36	17	2	10	11	17	32	1	2	5	3	3	2	1	**17**	31	19	15	-8	-1	-6	-15	6	6	6	4	5	4	3	**34**	**578**
1981	425	419	415	413	412	422	433	435	418	399	387	394	44	33	31	48	67	79	72	1	1	1	1	1	1	1	**7**	10	11	2	-17	-19	-12	7	6	6	6	2	2	3	6	**31**	**217**
1982	400	420	392	396	388	424	449	466	466	463	449	434	42	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	36	25	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1983	438	415	417	418	418	433	449	466	466	463	449	434	33	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	15	16	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1984	435	392	388	388	392	424	443	463	456	441	433	433	42	23	3	10	25	33	33	1	1	5	3	1	1	1	**13**	32	19	20	-7	-15	-8	0	6	6	6	4	3	4	6	**35**	**455**
1985	427	424	424	420	422	428	443	447	432	407	378	388	38	23	19	34	59	88	78	1	1	2	1	1	1	1	**8**	6	15	4	-15	-25	-29	10	6	6	6	3	1	1	6	**29**	**232**
1986	357	375	398	424	396	424	449	464	458	453	449	434	42	17	2	8	13	17	32	1	2	5	4	3	2	1	**18**	28	25	15	-6	-5	-4	-15	6	6	6	4	5	5	3	**35**	**630**
1987	427	420	413	405	404	410	419	420	407	382	334	340	56	47	46	59	84	132	126	1	1	1	1	1	1	1	**7**	6	9	1	-13	-25	-48	6	6	6	6	3	1	1	6	**29**	**203**
1988	334	334	369	396	403	406	407	404	384	356	334	390	60	59	62	82	110	132	76	1	1	1	1	1	1	1	**7**	3	1	-3	-20	-28	-22	56	6	6	5	2	1	1	6	**27**	**189**
1989	385	389	394	397	403	437	449	457	447	431	424	427	29	17	9	19	35	42	39	1	2	4	2	1	1	1	**12**	34	12	8	-10	-16	-7	3	6	6	6	4	2	4	6	**34**	**408**
1990	421	416	409	405	399	408	421	416	407	379	334	354	58	45	50	59	87	132	112	1	1	1	1	1	1	1	**7**	9	13	-5	-9	-28	-45	20	6	6	5	4	1	1	6	**29**	**203**
1991	334	340	334	332	332	383	407	425	426	420	411	409	83	59	41	40	46	55	57	1	1	1	1	1	1	1	**7**	51	24	18	1	-6	-9	-2	6	6	6	6	4	4	5	**37**	**259**
1992	403	396	388	374	393	407	417	416	403	364	334	328	59	49	50	63	102	132	138	1	1	1	1	1	1	1	**7**	14	10	-1	-13	-39	-30	-6	6	6	5	3	1	1	4	**26**	**182**
1993	327	326	363	424	427	434	449	466	466	454	449	434	32	17	0	0	12	17	32	1	2	6	6	3	2	1	**21**	7	15	17	0	-12	-5	-15	6	6	6	6	3	5	3	**35**	**735**
1994	423	413	407	395	390	390	398	403	399	372	335	332	76	68	63	67	94	131	134	1	1	1	1	1	1	1	**7**	0	8	5	-4	-27	-37	-3	6	6	6	5	1	1	5	**30**	**210**
																						73 - year Average:					**13**											**73 - year Average:**				**33**	**438.0**
																																								1929 - 34 Average:			**250.3**

STUDY: 1995C6F-SWRCB-467 DWRSIM: 8.18, 27 Nov 96
CP # 10, NEW MELONES RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C6F-SWRCB-467/10/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 1088'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	940	943	949	954	968	978	977	1005	1026	1019	1009	1001	120	110	111	83	62	69	79	1	1	1	1	1	1	1	**7**	10	-1	28	21	-7	-10	-8	6	5	6	6	4	4	4	**35**	**245**
1923	1000	1003	1011	1019	1025	1029	1032	1047	1047	1039	1028	1021	63	59	56	41	41	49	60	1	1	1	1	1	1	1	**7**	4	3	15	0	-8	-11	-7	6	6	6	6	4	3	4	**35**	**245**
1924	1020	1022	1025	1027	1030	1030	1024	1017	1008	1000	992	987	58	58	64	71	80	88	96	1	1	1	1	1	1	1	**7**	0	-6	-7	-9	-8	-8	-5	6	4	4	4	4	4	5	**31**	**217**
1925	985	987	989	991	1005	1014	1015	1028	1029	1022	1010	1003	83	74	73	60	59	66	78	1	1	1	1	1	1	1	**7**	9	1	13	1	-7	-12	-7	6	6	6	6	4	3	4	**35**	**245**
1926	1002	1003	1004	1006	1013	1018	1020	1016	1007	995	983	974	75	70	68	72	81	93	105	1	1	1	1	1	1	1	**7**	5	2	-4	-9	-12	-12	-9	6	6	5	4	3	3	4	**31**	**217**
1927	975	978	986	993	1007	1015	1022	1035	1040	1031	1020	1013	81	73	66	53	48	57	68	1	1	1	1	1	1	1	**7**	8	7	13	5	-9	-11	-7	6	6	6	6	4	3	4	**35**	**245**
1928	1013	1018	1022	1025	1031	1049	1049	1056	1049	1036	1024	1016	57	39	39	32	39	52	64	1	1	1	1	1	1	1	**7**	18	0	7	-7	-13	-12	-8	6	6	6	4	3	3	4	**32**	**224**
1929	1015	1017	1018	1019	1021	1022	1018	1015	1008	998	988	980	67	66	70	73	80	90	100	1	1	1	1	1	1	1	**7**	1	-4	-3	-7	-10	-10	-8	6	5	5	4	4	4	4	**32**	**224**
1930	980	981	981	984	989	996	996	992	990	978	965	957	99	92	92	96	98	110	123	1	1	1	1	1	1	1	**7**	7	0	-4	-2	-12	-13	-8	6	6	5	5	3	3	4	**32**	**224**
1931	957	959	959	960	961	963	958	950	940	931	921	912	127	125	130	138	148	157	167	1	1	1	1	1	1	1	**7**	2	-5	-8	-10	-9	-10	-9	6	5	4	4	4	4	4	**31**	**217**
1932	909	911	921	927	942	948	948	971	986	980	970	962	146	140	140	117	102	108	118	1	1	1	1	1	1	1	**7**	6	0	23	15	-6	-10	-8	6	6	6	6	4	4	4	**36**	**252**
1933	962	964	967	969	972	974	969	967	966	955	943	935	116	114	119	121	122	133	145	1	1	1	1	1	1	1	**7**	2	-5	-2	-1	-11	-12	-8	6	5	5	5	3	3	4	**31**	**217**
1934	935	937	939	943	948	955	949	941	930	920	903	892	140	133	139	147	158	168	185	1	1	1	1	1	1	1	**7**	7	-6	-8	-11	-10	-17	-11	6	4	4	3	4	2	3	**26**	**182**
1935	889	890	893	901	908	918	930	957	969	960	950	941	180	170	158	131	119	128	138	1	1	1	1	1	1	1	**7**	10	12	27	12	-9	-10	-9	6	6	6	6	4	4	4	**36**	**252**
1936	941	944	947	958	981	992	1001	1019	1024	1016	1007	1001	107	96	87	69	64	72	81	1	1	1	1	1	1	1	**7**	11	9	18	5	-8	-9	-6	6	6	6	6	4	4	4	**36**	**252**
1937	1001	1002	1005	1009	1019	1029	1029	1047	1048	1037	1026	1019	69	59	59	41	40	51	62	1	1	1	1	1	1	1	**7**	10	0	18	1	-11	-11	-7	6	6	6	6	3	3	4	**34**	**238**
1938	1018	1020	1030	1040	1050	1055	1063	1088	1088	1084	1076	1070	38	33	25	0	0	4	12	1	1	1	6	6	5	3	**23**	5	8	25	0	-4	-8	-6	6	6	6	6	5	4	4	**37**	**851**
1939	1050	1050	1050	1050	1050	1052	1050	1042	1032	1021	1010	1002	38	36	38	46	56	67	78	1	1	1	1	1	1	1	**7**	2	-2	-8	-10	-11	-11	-8	6	5	4	4	3	3	4	**29**	**203**
1940	1002	1002	1004	1016	1030	1047	1051	1064	1063	1054	1044	1036	58	41	37	24	25	34	44	1	1	1	1	1	1	1	**7**	17	4	13	-1	-9	-10	-8	6	6	6	5	4	4	4	**35**	**245**
1941	1035	1037	1041	1048	1050	1055	1052	1066	1072	1066	1057	1050	38	33	36	22	16	22	31	1	1	1	1	2	1	1	**8**	5	-3	14	6	-6	-9	-7	6	5	6	6	4	4	4	**35**	**280**
1942	1049	1050	1050	1050	1050	1055	1055	1068	1082	1078	1069	1064	38	33	33	20	6	10	19	1	1	1	1	4	3	2	**13**	5	0	13	14	-4	-9	-5	6	6	6	6	5	4	5	**38**	**494**
1943	1050	1050	1050	1050	1050	1055	1061	1068	1071	1064	1055	1048	38	33	27	20	17	24	33	1	1	1	1	2	1	1	**8**	5	6	7	3	-7	-9	-7	6	6	6	6	4	4	4	**36**	**288**
1944	1046	1048	1049	1050	1050	1053	1048	1048	1043	1032	1020	1012	38	35	40	40	45	56	68	1	1	1	1	1	1	1	**7**	3	-5	0	-5	-11	-12	-8	6	5	6	5	3	3	4	**32**	**224**
1945	1012	1017	1021	1026	1040	1048	1044	1054	1060	1053	1043	1036	48	40	44	34	28	35	45	1	1	1	1	1	1	1	**7**	8	-4	10	6	-7	-10	-7	6	5	6	6	4	4	4	**35**	**245**
1946	1035	1039	1048	1050	1050	1054	1055	1064	1062	1053	1043	1036	38	34	33	24	26	35	45	1	1	1	1	1	1	1	**7**	4	1	9	-2	-9	-10	-7	6	6	6	5	4	4	4	**35**	**245**
1947	1035	1037	1040	1042	1046	1050	1046	1041	1030	1018	1007	1000	42	38	42	47	58	70	81	1	1	1	1	1	1	1	**7**	4	-4	-5	-11	-12	-11	-7	6	5	5	3	3	3	4	**29**	**203**
1948	1000	1000	1001	1001	1001	1004	1004	1010	1019	1011	1003	997	87	84	84	78	69	77	85	1	1	1	1	1	1	1	**7**	3	0	6	9	-8	-8	-6	6	6	6	6	4	4	4	**36**	**252**
1949	997	998	1000	1001	1003	1008	1006	1012	1008	999	989	981	85	80	82	76	80	89	99	1	1	1	1	1	1	1	**7**	5	-2	6	-4	-9	-10	-8	6	5	6	5	4	4	4	**34**	**238**
1950	980	980	982	989	998	1004	1007	1021	1026	1018	1009	1003	90	84	81	67	62	70	79	1	1	1	1	1	1	1	**7**	6	3	14	5	-8	-9	-6	6	6	6	6	4	4	4	**36**	**252**
1951	1002	1031	1050	1050	1050	1055	1058	1064	1059	1050	1039	1032	38	33	30	24	29	38	49	1	1	1	1	1	1	1	**7**	5	3	6	-5	-9	-11	-7	6	6	6	5	4	3	4	**34**	**238**
1952	1031	1034	1041	1050	1050	1055	1058	1087	1088	1086	1078	1072	38	33	30	1	0	2	10	1	1	1	5	6	5	3	**22**	5	3	29	1	-2	-8	-6	6	6	6	6	5	4	4	**37**	**814**
1953	1050	1050	1050	1050	1050	1054	1053	1052	1057	1051	1041	1034	38	34	35	36	31	37	47	1	1	1	1	1	1	1	**7**	4	-1	-1	5	-6	-10	-7	6	5	5	6	4	4	4	**34**	**238**
1954	1033	1035	1038	1040	1044	1051	1054	1063	1056	1046	1035	1027	44	37	34	25	32	42	53	1	1	1	1	1	1	1	**7**	7	3	9	-7	-10	-11	-8	6	6	6	4	4	3	4	**33**	**231**
1955	1027	1029	1031	1036	1040	1042	1038	1034	1029	1018	1007	999	48	46	50	54	59	70	81	1	1	1	1	1	1	1	**7**	2	-4	-4	-5	-11	-11	-8	6	5	5	5	3	3	4	**31**	**217**
1956	998	1000	1026	1050	1050	1055	1055	1069	1079	1074	1065	1060	38	33	33	19	9	14	23	1	1	1	2	4	3	1	**13**	5	0	14	10	-5	-9	-5	6	6	6	6	5	4	5	**38**	**494**
1957	1050	1050	1050	1050	1050	1055	1052	1056	1059	1049	1039	1031	38	33	36	32	29	39	49	1	1	1	1	1	1	1	**7**	5	-3	4	3	-10	-10	-8	6	5	6	6	4	4	4	**35**	**245**
1958	1028	1030	1032	1039	1047	1055	1062	1088	1088	1083	1074	1067	41	33	26	0	0	5	14	1	1	1	6	6	4	3	**22**	8	7	26	0	-5	-9	-7	6	6	6	6	5	4	4	**37**	**814**
1959	1050	1050	1050	1050	1050	1053	1049	1040	1030	1019	1008	1001	38	35	39	48	58	69	80	1	1	1	1	1	1	1	**7**	3	-4	-9	-10	-11	-11	-7	6	5	4	4	3	3	4	**29**	**203**
1960	1000	1000	1001	1002	1008	1013	1011	1007	1000	990	979	969	80	75	77	81	88	98	109	1	1	1	1	1	1	1	**7**	5	-2	-4	-7	-10	-11	-10	6	5	5	4	4	3	4	**31**	**217**
1961	964	967	969	970	971	973	969	964	954	944	935	928	117	115	119	124	134	144	153	1	1	1	1	1	1	1	**7**	2	-4	-5	-10	-10	-9	-7	6	5	5	4	4	4	4	**32**	**224**
1962	927	928	929	929	940	946	949	957	963	955	944	935	148	142	139	131	125	133	144	1	1	1	1	1	1	1	**7**	6	3	8	6	-8	-11	-9	6	6	6	6	4	3	4	**35**	**245**
1963	935	938	941	949	968	975	975	1002	1010	1004	995	988	120	113	113	86	78	84	93	1	1	1	1	1	1	1	**7**	7	0	27	8	-6	-9	-7	6	6	6	6	4	4	4	**36**	**252**
1964	988	993	996	1001	1004	1008	1004	1001	996	985	974	964	84	80	84	87	92	103	114	1	1	1	1	1	1	1	**7**	4	-4	-3	-5	-11	-11	-10	6	5	5	5	3	3	4	**31**	**217**
1965	964	967	997	1018	1030	1037	1040	1051	1058	1053	1044	1037	58	51	48	37	30	35	44	1	1	1	1	1	1	1	**7**	7	3	11	7	-5	-9	-7	6	6	6	6	5	4	4	**37**	**259**
1966	1035	1039	1043	1048	1050	1053	1051	1053	1042	1030	1019	1010	38	35	37	35	46	58	69	1	1	1	1	1	1	1	**7**	3	-2	2	-11	-12	-11	-9	6	5	6	3	3	3	4	**30**	**210**
1967	1010	1012	1021	1033	1041	1052	1053	1073	1088	1088	1080	1074	47	36	35	15	0	0	8	1	1	1	2	6	6	4	**21**	11	1	20	15	0	-8	-6	6	6	6	6	6	4	4	**38**	**798**
1968	1050	1050	1050	1050	1050	1054	1050	1047	1037	1026	1014	1006	38	34	38	41	51	62	74	1	1	1	1	1	1	1	**7**	4	-4	-3	-10	-11	-12	-8	6	5	5	4	3	3	4	**30**	**210**
1969	1006	1009	1012	1041	1050	1055	1066	1088	1088	1084	1075	1068	38	33	22	0	0	4	13	1	1	1	6	6	5	3	**23**	5	11	22	0	-4	-9	-7	6	6	6	6	5	4	4	**37**	**851**
1970	1050	1050	1050	1050	1050	1055	1054	1060	1061	1051	1040	1033	38	33	34	28	27	37	48	1	1	1	1	1	1	1	**7**	5	-1	6	1	-10	-11	-7	6	5	6	6	4	3	4	**34**	**238**
1971	1032	1036	1044	1050	1050	1055	1052	1056	1060	1053	1043	1035	38	33	36	32	28	35	45	1	1	1	1	1	1	1	**7**	5	-3	4	4	-7	-10	-8	6	5	6	6	4	4	4	**35**	**245**
1972	1034	1037	1043	1048	1050	1055	1050	1053	1044	1032	1020	1013	38	33	38	35	44	56	68	1	1	1	1	1	1	1	**7**	5	-5	3	-9	-12	-12	-7	6	5	6	4	3	3	4	**31**	**217**
1973	1013	1015	1019	1031	1046	1055	1051	1063	1063	1054	1043	1036	42	33	37	25	25	34	45	1	1	1	1	1	1	1	**7**	9	-4	12	0	-9	-11	-7	6	5	6	6	4	3	4	**34**	**238**
1974	1035	1041	1049	1050	1050	1055	1059	1073	1077	1069	1060	1053	38	33	29	15	11	19	28	1	1	1	2	3	2	1	**11**	5	4	14	4	-8	-9	-7	6	6	6	6	4	4	4	**36**	**396**
1975	1050	1050	1050	1050	1050	1055	1050	1056	1068	1061	1052	1045	38	33	38	32	20	27	36	1	1	1	1	1	1	1	**7**	5	-5	6	12	-7	-9	-7	6	5	6	6	4	4	4	**35**	**245**
1976	1044	1047	1050	1050	1050	1051	1046	1040	1029	1020	1011	1004	38	37	42	48	59	68	77	1	1	1	1	1	1	1	**7**	1	-5	-6	-11	-9	-9	-7	6	5	4	3	4	4	4	**30**	**210**
1977	1004	1005	1007	1006	1005	1003	998	992	984	973	963	957	83	85	90	96	104	115	125	1	1	1	1	1	1	1	**7**	-2	-5	-6	-8	-11	-10	-6	5	5	4	4	3	4	4	**29**	**203**
1978	954	953	957	967	980	997	1004	1019	1027	1021	1011	1006	108	91	84	69	61	67	77	1	1	1	1	1	1	1	**7**	17	7	15	8	-6	-10	-5	6	6	6	6	4	4	5	**37**	**259**
1979	1006	1008	1012	1020	1033	1046	1047	1062	1059	1048	1037	1030	55	42	41	26	29	40	51	1	1	1	1	1	1	1	**7**	13	1	15	-3	-11	-11	-7	6	6	6	5	3	3	4	**33**	**231**
1980	1030	1033	1036	1050	1050	1055	1056	1063	1070	1068	1059	1053	38	33	32	25	18	20	29	1	1	1	1	2	1	1	**8**	5	1	7	7	-2	-9	-6	6	6	6	6	5	4	4	**37**	**296**
1981	1050	1050	1050	1050	1050	1053	1050	1044	1032	1019	1008	1002	38	35	38	44	56	69	80	1	1	1	1	1	1	1	**7**	3	-3	-6	-12	-13	-11	-6	6	5	4	3	3	3	4	**28**	**196**
1982	1002	1009	1024	1044	1050	1055	1071	1086	1088	1084	1076	1072	38	33	17	2	0	4	12	1	1	2	5	6	5	3	**23**	5	16	15	2	-4	-8	-4	6	6	6	6	5	4	5	**38**	**874**
1983	1050	1050	1050	1050	1050	1055	1056	1070	1088	1088	1083	1075	38	33	32	18	0	0	5	1	1	1	2	6	6	4	**21**	5	1	14	18	0	-5	-8	6	6	6	6	6	5	4	**39**	**819**
1984	1050	1050	1050	1050	1050	1055	1053	1059	1058	1051	1042	1036	38	33	35	29	30	37	46	1	1	1	1	1	1	1	**7**	5	-2	6	-1	-7	-9	-6	6	5	6	5	4	4	4	**34**	**238**
1985	1036	1041	1046	1049	1050	1054	1052	1050	1039	1027	1016	1010	38	34	36	38	49	61	72	1	1	1	1	1	1	1	**7**	4	-2	-2	-11	-12	-11	-6	6	5	5	3	3	3	4	**29**	**203**
1986	1011	1013	1017	1026	1050	1055	1056	1061	1065	1057	1048	1043	38	33	32	27	23	31	40	1	1	1	1	1	1	1	**7**	5	1	5	4	-8	-9	-5	6	6	6	6	4	4	5	**37**	**259**
1987	1043	1045	1047	1048	1049	1052	1047	1038	1028	1020	1013	1008	39	36	41	50	60	68	75	1	1	1	1	1	1	1	**7**	3	-5	-9	-10	-8	-7	-5	6	5	4	4	4	4	5	**32**	**224**
1988	1006	1005	1004	1004	1005	1006	1001	995	987	980	973	966	83	82	87	93	101	108	115	1	1	1	1	1	1	1	**7**	1	-5	-6	-8	-7	-7	-7	6	5	4	4	4	4	4	**31**	**217**
1989	964	962	961	961	961	973	971	968	961	951	942	936	127	115	117	120	127	137	146	1	1	1	1	1	1	1	**7**	12	-2	-3	-7	-10	-9	-6	6	5	5	4	4	4	4	**32**	**224**
1990	938	940	942	943	945	949	942	932	922	907	894	885	143	139	146	156	166	181	194	1	1	1	1	1	1	1	**7**	4	-7	-10	-10	-15	-13	-9	6	4	4	4	3	3	4	**28**	**196**
1991	882	881	884	881	879	887	882	879	866	851	836	829	209	201	206	209	222	237	252	1	1	1	1	1	1	1	**7**	8	-5	-3	-13	-15	-15	-7	6	5	5	3	3	3	4	**29**	**203**
1992	829	830	833	834	845	854	846	831	816	798	774	759	243	234	242	257	272	290	314	1	1	1	1	1	1	1	**7**	9	-8	-15	-15	-18	-24	-15	6	4	3	3	2	1	3	**22**	**154**
1993	764	772	783	812	909	960	969	985	994	986	977	972	179	128	119	103	94	102	111	1	1	1	1	1	1	1	**7**	51	9	16	9	-8	-9	-5	6	6	6	6	4	4	5	**37**	**259**
1994	971	972	975	975	976	982	978	976	968	959	950	945	112	106	110	112	120	129	138	1	1	1	1	1	1	1	**7**	6	-4	-2	-8	-9	-9	-5	6	5	5	4	4	4	5	**33**	**231**
																							73 - year Average:				**9**												**73 - year Average:**			**33**	**298.2**
																																									1929 - 34 Average:		**219.3**

STUDY: 1995C6F-SWRCB-467 DWRSIM: 8.18, 27 Nov 96
CP # 81, DON PEDRO RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C6F-SWRCB-467/81/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 832'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	599	582	579	601	656	690	699	724	782	779	763	752	142	133	108	50	53	69	80
1923	746	745	748	761	776	784	789	792	801	795	780	770	48	43	40	31	37	52	62
1924	764	762	757	755	756	754	749	744	735	723	709	701	78	83	88	97	109	123	131
1925	698	698	699	703	725	741	754	767	785	776	760	749	91	78	65	47	56	72	83
1926	743	741	736	735	744	749	763	776	774	759	744	735	83	69	56	58	73	88	97
1927	730	729	733	740	768	783	794	795	814	806	792	782	49	38	37	18	26	40	50
1928	776	776	776	779	787	800	802	819	819	805	790	780	32	30	13	13	27	42	52
1929	774	769	765	764	768	769	769	773	780	771	762	754	63	63	59	52	61	70	78
1930	752	749	746	746	752	759	761	764	777	769	760	753	73	71	68	55	63	72	79
1931	751	750	749	751	754	753	746	737	726	712	699	692	79	86	95	106	120	133	140
1932	689	685	695	710	745	760	761	768	786	781	766	756	72	71	64	46	51	66	76
1933	749	742	737	736	742	745	743	740	757	746	732	722	87	89	92	75	86	100	110
1934	715	713	711	714	725	732	731	727	724	708	693	685	100	101	105	108	124	139	147
1935	681	680	681	693	713	728	749	759	786	774	759	747	104	83	73	46	58	73	85
1936	740	738	733	738	776	792	801	819	832	823	808	798	40	31	13	0	9	24	34
1937	792	786	782	785	800	800	802	815	832	819	805	795	32	30	17	0	13	27	37
1938	789	784	800	800	800	800	800	804	831	832	819	808	32	32	28	1	0	13	24
1939	800	799	799	800	800	800	802	804	799	787	774	766	32	30	28	33	45	58	66
1940	764	763	761	774	800	800	802	816	829	814	799	789	32	30	16	3	18	33	43
1941	783	781	783	798	800	800	800	812	832	831	817	808	32	32	20	0	1	15	24
1942	800	798	800	800	800	800	802	807	831	832	818	808	32	30	25	1	0	14	24
1943	800	800	800	800	800	800	802	821	832	824	810	799	32	30	11	0	8	22	33
1944	794	792	788	787	793	800	801	808	814	802	787	777	32	31	24	18	30	45	55
1945	772	773	776	781	800	800	802	807	831	825	810	799	32	30	25	1	7	22	33
1946	796	797	800	800	800	800	802	806	812	796	780	769	32	30	26	20	36	52	63
1947	763	763	765	768	776	781	778	782	776	764	750	742	51	54	50	56	68	82	90
1948	739	738	737	739	740	740	736	745	770	760	742	732	92	96	87	62	72	90	100
1949	726	720	714	713	720	731	738	748	756	738	719	706	101	94	84	76	94	113	126
1950	700	693	687	693	712	725	733	746	762	747	729	717	107	99	86	70	85	103	115
1951	711	759	800	800	800	800	798	794	798	783	769	759	32	34	38	34	49	63	73
1952	752	750	757	782	800	800	800	820	832	832	819	808	32	32	12	0	0	13	24
1953	800	795	793	800	800	800	802	804	814	810	796	787	32	30	28	18	22	36	45
1954	782	778	775	776	785	797	802	819	820	805	789	780	35	30	13	12	27	43	52
1955	774	770	768	774	781	784	781	785	791	779	767	760	48	51	47	41	53	65	72
1956	755	751	800	800	800	800	802	818	832	832	818	808	32	30	14	0	0	14	24
1957	800	798	793	793	799	800	800	806	827	814	800	791	32	32	26	5	18	32	41
1958	786	781	779	784	800	800	800	821	832	832	819	808	32	32	11	0	0	13	24
1959	800	794	789	793	800	800	802	800	794	782	770	763	32	30	32	38	50	62	69
1960	761	758	755	756	763	769	770	776	779	768	759	753	63	62	56	53	64	73	79
1961	750	748	748	749	752	751	745	737	730	717	705	698	81	87	95	102	115	127	134
1962	695	692	691	692	716	736	746	751	776	768	755	744	96	86	81	56	64	77	88
1963	739	734	731	735	761	773	781	794	819	815	801	792	59	51	38	13	17	31	40
1964	787	788	789	793	800	800	797	795	797	786	775	768	32	35	37	35	46	57	64
1965	766	767	798	800	800	800	802	807	827	827	816	807	32	30	25	5	5	16	25
1966	800	800	800	800	800	800	801	798	791	776	761	752	32	31	34	41	56	71	80
1967	747	745	755	771	789	800	800	817	832	832	820	808	32	32	15	0	0	12	24
1968	800	795	791	792	800	800	802	805	803	791	779	771	32	30	27	29	41	53	61
1969	766	767	770	800	800	800	800	823	832	832	819	808	32	32	9	0	0	13	24
1970	800	799	800	800	800	800	799	799	807	795	780	771	32	33	33	25	37	52	61
1971	765	766	772	788	800	800	801	801	807	798	786	778	32	31	31	25	34	46	54
1972	773	769	772	778	792	800	800	799	796	784	773	767	32	32	33	36	48	59	65
1973	764	762	765	776	800	800	802	812	827	812	797	788	32	30	20	5	20	35	44
1974	783	787	798	800	800	800	800	806	828	819	805	796	32	32	26	4	13	27	36
1975	791	789	786	786	798	800	802	812	832	825	812	803	32	30	20	0	7	20	29
1976	800	800	799	799	800	799	794	787	777	767	757	751	33	38	45	55	65	75	81
1977	748	745	742	741	741	737	728	715	702	687	672	663	95	104	117	130	145	160	169
1978	659	655	658	684	717	749	762	777	814	822	808	803	83	70	55	18	10	24	29
1979	798	794	791	800	800	800	802	822	832	818	803	794	32	30	10	0	14	29	38
1980	789	788	787	800	800	800	800	817	832	832	819	808	32	32	15	0	0	13	24
1981	800	797	794	795	799	800	802	806	805	793	782	774	32	30	26	27	39	50	58
1982	770	776	795	800	800	800	800	820	832	832	820	808	32	32	12	0	0	12	24
1983	800	800	800	800	800	800	800	819	832	832	832	808	32	32	13	0	0	0	24
1984	800	800	800	800	800	800	797	803	814	801	786	776	32	35	29	18	31	46	56
1985	773	773	779	786	794	800	801	799	795	784	772	766	32	31	33	37	48	60	66
1986	763	764	767	774	800	800	802	827	832	825	811	802	32	30	5	0	7	21	30
1987	796	791	786	784	786	788	786	783	779	769	759	752	44	46	49	53	63	73	80
1988	750	749	749	754	759	761	756	747	740	728	716	709	71	76	85	92	104	116	123
1989	705	702	702	705	709	722	734	748	756	744	734	728	110	98	84	76	88	98	104
1990	727	726	726	728	732	734	732	730	728	714	700	692	98	100	102	104	118	132	140
1991	689	686	682	681	681	688	687	703	714	704	694	688	144	145	129	118	128	138	144
1992	687	687	687	689	698	703	706	714	713	699	685	675	129	126	118	119	133	147	157
1993	669	663	663	696	727	756	763	777	808	806	792	783	76	69	55	24	26	40	49
1994	777	771	767	766	769	772	770	773	772	762	752	746	60	62	59	60	70	80	86

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	1	1	1	1	1	1	1	**7**	34	9	25	58	-3	-16	-11	6	6	6	6	5	2	3	**34**	**238**
1923	1	1	1	1	1	1	1	**7**	8	5	3	9	-6	-15	-10	6	6	6	6	4	3	4	**35**	**245**
1924	1	1	1	1	1	1	1	**7**	-2	-5	-5	-9	-12	-14	-8	5	5	5	4	3	3	4	**29**	**203**
1925	1	1	1	1	1	1	1	**7**	16	13	13	18	-9	-16	-11	6	6	6	6	4	2	3	**33**	**231**
1926	1	1	1	1	1	1	1	**7**	5	14	13	-2	-15	-15	-9	6	6	6	5	3	3	4	**33**	**231**
1927	1	1	1	2	1	1	1	**8**	15	11	1	19	-8	-14	-10	6	6	6	6	4	3	4	**35**	**280**
1928	1	1	3	3	1	1	1	**11**	13	2	17	0	-14	-15	-10	6	6	6	6	3	3	4	**34**	**374**
1929	1	1	1	1	1	1	1	**7**	1	0	4	7	-9	-9	-8	6	6	6	6	4	4	4	**36**	**252**
1930	1	1	1	1	1	1	1	**7**	7	2	3	13	-8	-9	-7	6	6	6	6	4	4	4	**36**	**252**
1931	1	1	1	1	1	1	1	**7**	-1	-7	-9	-11	-14	-13	-7	5	4	4	3	3	3	4	**26**	**182**
1932	1	1	1	1	1	1	1	**7**	15	1	7	18	-5	-15	-10	6	6	6	6	5	3	4	**36**	**252**
1933	1	1	1	1	1	1	1	**7**	3	-2	-3	17	-11	-14	-10	6	5	5	6	3	3	4	**32**	**224**
1934	1	1	1	1	1	1	1	**7**	7	-1	-4	-3	-16	-15	-8	6	5	5	5	2	3	4	**30**	**210**
1935	1	1	1	1	1	1	1	**7**	15	21	10	27	-12	-15	-12	6	6	6	6	3	3	3	**33**	**231**
1936	1	1	3	6	4	1	1	**17**	16	9	18	13	-9	-15	-10	6	6	6	6	4	3	4	**35**	**595**
1937	1	1	2	6	3	1	1	**15**	0	2	13	17	-13	-14	-10	6	6	6	6	3	3	4	**34**	**510**
1938	1	1	1	5	6	3	1	**18**	0	0	4	27	1	-13	-11	6	6	6	6	6	3	3	**36**	**648**
1939	1	1	1	1	1	1	1	**7**	0	2	2	-5	-12	-13	-8	6	6	6	5	3	3	4	**33**	**231**
1940	1	1	2	5	2	1	1	**13**	0	2	14	13	-15	-15	-10	6	6	6	6	3	3	4	**34**	**442**
1941	1	1	1	6	5	2	1	**17**	0	0	12	20	-1	-14	-9	6	6	6	6	5	3	4	**36**	**612**
1942	1	1	1	5	6	3	1	**18**	0	2	5	24	1	-14	-10	6	6	6	6	6	3	4	**37**	**666**
1943	1	1	3	6	4	1	1	**17**	0	2	19	11	-8	-14	-11	6	6	6	6	4	3	3	**34**	**578**
1944	1	1	1	2	1	1	1	**8**	7	1	7	6	-12	-15	-10	6	6	6	6	3	3	4	**34**	**272**
1945	1	1	1	5	4	1	1	**14**	0	2	5	24	-6	-15	-11	6	6	6	6	4	3	3	**34**	**476**
1946	1	1	1	1	1	1	1	**7**	0	2	4	6	-16	-16	-11	6	6	6	6	2	2	3	**31**	**217**
1947	1	1	1	1	1	1	1	**7**	5	-3	4	-6	-12	-14	-8	6	5	6	4	3	3	4	**31**	**217**
1948	1	1	1	1	1	1	1	**7**	0	-4	9	25	-10	-18	-10	6	5	6	6	4	2	4	**33**	**231**
1949	1	1	1	1	1	1	1	**7**	11	7	10	8	-18	-19	-13	6	6	6	6	2	2	3	**31**	**217**
1950	1	1	1	1	1	1	1	**7**	13	8	13	16	-15	-18	-12	6	6	6	6	3	2	3	**32**	**224**
1951	1	1	1	1	1	1	1	**7**	0	-2	-4	4	-15	-14	-10	6	5	5	6	3	3	4	**32**	**224**
1952	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1953	1	1	1	2	1	1	1	**8**	0	2	2	10	-4	-14	-9	6	6	6	6	5	3	4	**36**	**288**
1954	1	1	3	3	1	1	1	**11**	12	5	17	1	-15	-16	-9	6	6	6	6	3	2	4	**33**	**363**
1955	1	1	1	1	1	1	1	**7**	3	-3	4	6	-12	-12	-7	6	5	6	6	3	3	4	**33**	**231**
1956	1	1	3	6	6	3	1	**21**	0	2	16	14	0	-14	-10	6	6	6	6	6	3	4	**37**	**777**
1957	1	1	1	4	2	1	1	**11**	1	0	6	21	-13	-14	-9	6	6	6	6	3	3	4	**34**	**374**
1958	1	1	3	6	6	3	1	**21**	0	0	21	11	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1959	1	1	1	1	1	1	1	**7**	0	2	-2	-6	-12	-12	-7	6	6	5	4	3	3	4	**31**	**217**
1960	1	1	1	1	1	1	1	**7**	6	1	6	3	-11	-9	-6	6	6	6	6	3	4	4	**35**	**245**
1961	1	1	1	1	1	1	1	**7**	-1	-6	-8	-7	-13	-12	-7	5	4	4	4	3	3	4	**27**	**189**
1962	1	1	1	1	1	1	1	**7**	20	10	5	25	-8	-13	-11	6	6	6	6	4	3	3	**34**	**238**
1963	1	1	1	3	2	1	1	**10**	12	8	13	25	-4	-14	-9	6	6	6	6	5	3	4	**36**	**360**
1964	1	1	1	1	1	1	1	**7**	0	-3	-2	2	-11	-11	-7	6	5	5	6	3	3	4	**32**	**224**
1965	1	1	1	4	4	2	1	**14**	0	2	5	20	0	-11	-9	6	6	6	6	6	3	4	**37**	**518**
1966	1	1	1	1	1	1	1	**7**	0	1	-3	-7	-15	-15	-9	6	6	5	4	3	3	4	**31**	**217**
1967	1	1	2	6	6	3	1	**20**	11	0	17	15	0	-12	-12	6	6	6	6	6	3	3	**36**	**720**
1968	1	1	1	1	1	1	1	**7**	0	2	3	-2	-12	-12	-8	6	6	6	5	3	3	4	**33**	**231**
1969	1	1	4	6	6	3	1	**22**	0	0	23	9	0	-13	-11	6	6	6	6	6	3	3	**36**	**792**
1970	1	1	1	1	1	1	1	**7**	0	-1	0	8	-12	-15	-9	6	5	6	6	3	3	4	**33**	**231**
1971	1	1	1	1	1	1	1	**7**	0	1	0	6	-9	-12	-8	6	6	6	6	4	3	4	**35**	**245**
1972	1	1	1	1	1	1	1	**7**	8	0	-1	-3	-12	-11	-6	6	6	5	5	3	3	4	**32**	**224**
1973	1	1	1	4	1	1	1	**10**	0	2	10	15	-15	-15	-9	6	6	6	6	3	3	4	**34**	**340**
1974	1	1	1	5	3	1	1	**13**	0	0	6	22	-9	-14	-9	6	6	6	6	4	3	4	**35**	**455**
1975	1	1	1	6	4	1	1	**15**	2	2	10	20	-7	-13	-9	6	6	6	6	4	3	4	**35**	**525**
1976	1	1	1	1	1	1	1	**7**	-1	-5	-7	-10	-10	-10	-6	5	5	4	4	4	4	4	**30**	**210**
1977	1	1	1	1	1	1	1	**7**	-4	-9	-13	-13	-15	-15	-9	5	4	3	3	3	3	4	**25**	**175**
1978	1	1	1	2	3	1	1	**10**	32	13	15	37	8	-14	-5	6	6	6	6	6	3	5	**38**	**380**
1979	1	1	3	6	3	1	1	**16**	0	2	20	10	-14	-15	-9	6	6	6	6	3	3	4	**34**	**544**
1980	1	1	2	6	6	3	1	**20**	0	0	17	15	0	-13	-11	6	6	6	6	6	3	3	**36**	**720**
1981	1	1	1	1	1	1	1	**7**	1	2	4	-1	-12	-11	-8	6	6	6	5	3	3	4	**33**	**231**
1982	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-12	-12	6	6	6	6	6	3	3	**36**	**756**
1983	1	1	3	6	6	6	1	**24**	0	0	19	13	0	0	-24	6	6	6	6	6	6	1	**37**	**888**
1984	1	1	1	2	1	1	1	**8**	0	-3	6	11	-13	-15	-10	6	5	6	6	3	3	4	**33**	**264**
1985	1	1	1	1	1	1	1	**7**	6	1	-2	-4	-11	-12	-6	6	6	5	5	3	3	4	**32**	**224**
1986	1	1	4	6	4	1	1	**18**	0	2	25	5	-7	-14	-9	6	6	6	6	4	3	4	**35**	**630**
1987	1	1	1	1	1	1	1	**7**	2	-2	-3	-4	-10	-10	-7	6	5	5	5	4	4	4	**33**	**231**
1988	1	1	1	1	1	1	1	**7**	2	-5	-9	-7	-12	-12	-7	6	5	4	4	3	3	4	**29**	**203**
1989	1	1	1	1	1	1	1	**7**	13	12	14	8	-12	-10	-6	6	6	6	6	3	4	4	**35**	**245**
1990	1	1	1	1	1	1	1	**7**	2	-2	-2	-2	-14	-14	-8	6	5	5	5	3	3	4	**31**	**217**
1991	1	1	1	1	1	1	1	**7**	7	-1	16	11	-10	-10	-6	6	5	6	6	4	4	4	**35**	**245**
1992	1	1	1	1	1	1	1	**7**	5	3	8	-1	-14	-14	-10	6	6	6	5	3	3	4	**33**	**231**
1993	1	1	1	1	1	1	1	**7**	29	7	14	31	-2	-14	-9	6	6	6	6	5	3	4	**36**	**252**
1994	1	1	1	1	1	1	1	**7**	3	-2	3	-1	-10	-10	-6	6	5	6	5	4	4	4	**34**	**238**
					73 - year Average:			**10**											**73 - year Average:**				**34**	**358.4**
																					1929 - 34 Average:			**228.7**

Flow and Joint Point Alternative 1

STUDY: 1995C6F-SWRCB-467 DWRSIM: 8.18, 27 Nov 96
CP # 20, LAKE McCLURE, EOP SURFACE ELEVATION (FT)
Project: /1995C6F-SWRCB-467/20/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 867'

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	680	680	696	712	759	779	789	845	867	860	846	836
1923	808	808	808	808	808	813	827	854	859	850	835	825
1924	808	808	808	808	808	807	809	811	799	781	768	758
1925	758	763	768	772	796	805	824	847	851	839	824	812
1926	808	808	808	808	808	814	834	832	831	827	820	812
1927	808	808	808	808	808	815	818	849	860	856	852	840
1928	808	808	808	808	808	809	808	824	822	815	811	807
1929	807	806	806	805	807	809	810	814	814	816	819	813
1930	808	807	807	807	806	802	806	808	812	815	819	816
1931	808	808	808	808	808	808	810	813	801	784	770	761
1932	760	760	778	789	808	817	826	852	867	857	843	832
1933	808	807	806	808	808	811	816	825	839	827	813	805
1934	803	802	805	808	808	816	823	818	809	793	780	770
1935	769	773	778	796	806	816	840	859	867	854	839	828
1936	808	808	808	808	808	820	840	859	865	853	838	827
1937	808	808	808	808	808	820	834	859	867	853	838	827
1938	808	808	808	808	808	820	840	859	867	867	855	840
1939	808	808	808	808	808	816	831	832	821	803	787	776
1940	778	779	780	806	808	820	837	859	861	845	829	816
1941	808	808	808	808	808	820	834	859	867	863	850	840
1942	808	808	808	808	808	820	838	859	867	860	851	840
1943	808	808	808	808	808	820	840	859	864	853	838	828
1944	808	808	808	808	808	817	815	838	840	827	810	796
1945	794	800	806	808	808	820	833	856	867	856	842	831
1946	808	808	808	808	808	818	837	859	857	842	826	813
1947	808	808	808	808	808	815	823	836	830	814	799	791
1948	790	791	792	794	795	795	799	823	839	825	807	794
1949	791	791	792	793	796	804	815	836	835	816	797	782
1950	779	779	779	786	798	801	818	838	839	822	803	789
1951	786	808	808	808	808	819	827	837	834	816	796	781
1952	777	778	791	808	808	820	840	859	867	864	852	840
1953	808	808	808	808	808	809	815	816	823	809	790	775
1954	772	771	772	775	785	798	815	833	826	805	785	770
1955	767	766	768	775	780	782	782	804	814	798	782	772
1956	769	769	808	808	808	819	832	859	867	863	850	840
1957	808	808	808	808	808	813	813	828	838	822	804	790
1958	787	787	792	798	808	820	840	859	867	862	850	840
1959	808	808	808	808	808	813	823	826	817	797	780	773
1960	772	771	771	772	784	792	806	819	816	801	787	777
1961	776	776	779	779	782	783	789	793	784	766	752	740
1962	739	739	741	744	784	793	816	831	845	832	815	802
1963	800	800	801	808	808	814	823	848	861	852	837	826
1964	808	808	808	808	808	808	811	821	819	803	787	777
1965	775	778	808	808	808	815	831	854	867	861	850	840
1966	808	808	808	808	808	814	828	838	826	804	784	771
1967	768	770	795	807	808	820	840	859	867	867	856	840
1968	808	808	808	808	808	812	817	821	812	793	777	766
1969	763	767	775	808	808	820	840	859	867	867	854	840
1970	808	808	808	808	808	820	821	837	837	821	802	789
1971	786	788	798	807	808	812	814	826	836	822	804	790
1972	787	787	795	799	806	816	819	832	833	818	804	797
1973	797	798	804	808	808	820	828	859	867	852	838	828
1974	808	808	808	808	808	820	833	859	867	854	839	829
1975	808	808	808	808	808	820	823	855	867	856	842	832
1976	808	808	808	808	808	809	808	809	798	781	768	759
1977	758	756	754	754	754	749	740	728	717	688	659	635
1978	629	626	642	693	741	782	815	859	867	867	856	840
1979	808	808	808	808	808	820	828	859	863	849	834	823
1980	808	808	808	808	808	820	835	859	867	867	855	840
1981	808	807	807	808	808	813	823	835	831	816	802	794
1982	793	801	808	808	808	820	840	859	867	865	854	840
1983	808	808	808	808	808	820	836	859	867	867	864	840
1984	808	808	808	808	808	820	827	850	848	832	814	801
1985	800	803	807	808	808	814	828	841	835	821	807	797
1986	798	800	806	808	808	820	839	859	867	855	841	830
1987	808	807	807	807	808	810	818	821	811	795	782	773
1988	772	773	775	781	785	791	797	801	794	777	763	753
1989	751	750	753	754	759	775	797	808	804	789	775	766
1990	768	768	769	771	775	782	793	794	785	769	754	742
1991	740	739	738	738	737	758	763	784	797	784	770	761
1992	760	761	762	764	777	782	798	803	793	779	766	756
1993	755	755	760	802	808	820	837	859	867	861	848	837
1994	808	807	808	808	808	810	815	821	813	798	784	775

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**
1922	88	78	22	0	7	21	31	1	1	1	6	4	1	1	**15**
1923	54	40	13	8	17	32	42	1	1	3	4	2	1	1	**13**
1924	60	58	56	68	86	99	109	1	1	1	1	1	1	1	**7**
1925	62	43	20	16	28	43	55	1	1	1	2	1	1	1	**8**
1926	53	33	35	36	40	47	55	1	1	1	1	1	1	1	**7**
1927	52	49	18	7	11	15	27	1	1	2	4	3	2	1	**14**
1928	58	59	43	45	52	56	60	1	1	1	1	1	1	1	**7**
1929	58	57	53	53	51	48	54	1	1	1	1	1	1	1	**7**
1930	65	61	59	55	52	48	51	1	1	1	1	1	1	1	**7**
1931	59	57	54	66	83	97	106	1	1	1	1	1	1	1	**7**
1932	50	41	15	0	10	24	35	1	1	2	6	3	1	1	**15**
1933	56	51	42	28	40	54	62	1	1	1	1	1	1	1	**7**
1934	51	44	49	58	74	87	97	1	1	1	1	1	1	1	**7**
1935	51	27	8	0	13	28	39	1	1	4	6	3	1	1	**17**
1936	47	27	8	2	14	29	40	1	1	4	5	3	1	1	**16**
1937	47	33	8	0	14	29	40	1	1	4	6	3	1	1	**17**
1938	47	27	8	0	0	12	27	1	1	4	6	6	3	1	**22**
1939	51	36	35	46	64	80	91	1	1	1	1	1	1	1	**7**
1940	47	30	8	6	22	38	51	1	1	4	4	1	1	1	**13**
1941	47	33	8	0	4	17	27	1	1	4	6	5	2	1	**20**
1942	47	29	8	0	7	16	27	1	1	4	6	4	2	1	**19**
1943	47	27	8	3	14	29	39	1	1	4	5	3	1	1	**16**
1944	50	52	29	27	40	57	71	1	1	1	1	1	1	1	**7**
1945	47	34	11	0	11	25	36	1	1	3	6	3	1	1	**16**
1946	49	30	8	10	25	41	54	1	1	4	3	1	1	1	**12**
1947	52	44	31	37	53	68	76	1	1	1	1	1	1	1	**7**
1948	72	68	44	28	42	60	73	1	1	1	1	1	1	1	**7**
1949	63	52	31	32	51	70	85	1	1	1	1	1	1	1	**7**
1950	66	49	29	28	45	64	78	1	1	1	1	1	1	1	**7**
1951	48	40	30	33	51	71	86	1	1	1	1	1	1	1	**7**
1952	47	27	8	0	3	15	27	1	1	4	6	5	2	1	**20**
1953	58	52	51	44	58	77	92	1	1	1	1	1	1	1	**7**
1954	69	52	34	41	62	82	97	1	1	1	1	1	1	1	**7**
1955	85	85	63	53	69	85	95	1	1	1	1	1	1	1	**7**
1956	48	35	8	0	4	17	27	1	1	4	6	5	2	1	**20**
1957	54	54	39	29	45	63	77	1	1	1	1	1	1	1	**7**
1958	47	27	8	0	5	17	27	1	1	4	6	4	2	1	**19**
1959	54	44	41	50	70	87	94	1	1	1	1	1	1	1	**7**
1960	75	61	48	51	66	80	90	1	1	1	1	1	1	1	**7**
1961	84	78	74	83	101	115	127	1	1	1	1	1	1	1	**7**
1962	74	51	36	22	35	52	65	1	1	1	1	1	1	1	**7**
1963	53	44	19	6	15	30	41	1	1	2	4	2	1	1	**12**
1964	59	56	46	48	64	80	90	1	1	1	1	1	1	1	**7**
1965	52	36	13	0	6	17	27	1	1	3	6	4	2	1	**18**
1966	53	39	29	41	63	83	96	1	1	1	1	1	1	1	**7**
1967	47	27	8	0	0	11	27	1	1	4	6	6	3	1	**22**
1968	55	50	46	55	74	90	101	1	1	1	1	1	1	1	**7**
1969	47	27	8	0	0	13	27	1	1	4	6	6	3	1	**22**
1970	47	46	30	30	46	65	78	1	1	1	1	1	1	1	**7**
1971	55	53	41	31	45	63	77	1	1	1	1	1	1	1	**7**
1972	51	48	35	34	49	63	70	1	1	1	1	1	1	1	**7**
1973	47	39	8	0	15	29	39	1	1	4	6	2	1	1	**16**
1974	47	34	8	0	13	28	38	1	1	4	6	3	1	1	**17**
1975	47	44	12	0	11	25	35	1	1	3	6	3	1	1	**16**
1976	58	59	58	69	86	99	108	1	1	1	1	1	1	1	**7**
1977	118	127	139	150	179	208	232	1	1	1	1	1	1	1	**7**
1978	85	52	8	0	0	11	27	1	1	4	6	6	3	1	**22**
1979	47	39	8	4	18	33	44	1	1	4	5	2	1	1	**15**
1980	47	32	8	0	0	12	27	1	1	4	6	6	3	1	**22**
1981	54	44	32	36	51	65	73	1	1	1	1	1	1	1	**7**
1982	47	27	8	0	2	13	27	1	1	4	6	5	3	1	**21**
1983	47	31	8	0	0	3	27	1	1	4	6	6	5	1	**24**
1984	47	40	17	19	35	53	66	1	1	2	2	1	1	1	**9**
1985	53	39	26	32	46	60	70	1	1	1	1	1	1	1	**7**
1986	47	28	8	0	12	26	37	1	1	4	6	3	1	1	**17**
1987	57	49	46	56	72	85	94	1	1	1	1	1	1	1	**7**
1988	76	70	66	73	90	104	114	1	1	1	1	1	1	1	**7**
1989	92	70	59	63	78	92	101	1	1	1	1	1	1	1	**7**
1990	85	74	73	82	98	113	125	1	1	1	1	1	1	1	**7**
1991	109	104	83	70	83	97	106	1	1	1	1	1	1	1	**7**
1992	85	69	64	74	88	101	111	1	1	1	1	1	1	1	**7**
1993	47	30	8	0	6	19	30	1	1	4	6	4	2	1	**19**
1994	57	52	46	54	69	83	92	1	1	1	1	1	1	1	**7**
												73 - year Average:			**12**

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	20	10	56	22	-7	-14	-10	6	6	6	6	4	3	4	**35**	**525**
1923	5	14	27	5	-9	-15	-10	6	6	6	6	4	3	4	**35**	**455**
1924	-1	2	2	-12	-18	-13	-10	5	6	6	3	2	3	4	**29**	**203**
1925	9	19	23	4	-12	-15	-12	6	6	6	6	3	3	3	**33**	**264**
1926	6	20	-2	-1	-4	-7	-8	6	6	5	5	5	4	4	**35**	**245**
1927	7	3	31	11	-4	-4	-12	6	6	6	6	5	5	3	**37**	**518**
1928	1	-1	16	-2	-7	-4	-4	6	5	6	5	4	5	5	**36**	**252**
1929	2	1	4	0	2	3	-6	6	6	6	6	6	6	4	**40**	**280**
1930	-4	4	2	4	3	4	-3	5	6	6	6	6	6	5	**40**	**280**
1931	0	2	3	-12	-17	-14	-9	6	6	6	3	2	3	4	**30**	**210**
1932	9	9	26	15	-10	-14	-11	6	6	6	6	4	3	3	**34**	**510**
1933	3	5	9	14	-12	-14	-8	6	6	6	6	3	3	4	**34**	**238**
1934	8	7	-5	-9	-16	-13	-10	6	6	5	4	2	3	4	**30**	**210**
1935	10	24	19	8	-13	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1936	12	20	19	6	-12	-15	-11	6	6	6	6	3	3	3	**33**	**528**
1937	12	14	25	8	-14	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1938	12	20	19	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1939	8	15	1	-11	-18	-16	-11	6	6	6	3	2	2	3	**28**	**196**
1940	12	17	22	2	-16	-16	-13	6	6	6	6	2	2	3	**31**	**403**
1941	12	14	25	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1942	12	18	21	8	-7	-9	-11	6	6	6	6	4	4	3	**35**	**665**
1943	12	20	19	5	-11	-15	-10	6	6	6	6	3	3	4	**34**	**544**
1944	9	-2	23	2	-13	-17	-14	6	5	6	6	3	2	3	**31**	**217**
1945	12	13	23	11	-11	-14	-11	6	6	6	6	3	3	3	**33**	**528**
1946	10	19	22	-2	-15	-16	-13	6	6	6	5	3	2	3	**31**	**372**
1947	7	8	13	-6	-16	-15	-8	6	6	6	4	2	3	4	**31**	**217**
1948	0	4	24	16	-14	-18	-13	6	6	6	6	3	2	3	**32**	**224**
1949	8	11	21	-1	-19	-19	-15	6	6	6	5	2	2	3	**30**	**210**
1950	3	17	20	1	-17	-19	-14	6	6	6	6	2	2	3	**31**	**217**
1951	11	8	10	-3	-18	-20	-15	6	6	6	5	2	2	3	**30**	**210**
1952	12	20	19	8	-3	-12	-12	6	6	6	6	5	3	3	**35**	**700**
1953	1	6	1	7	-14	-19	-15	6	6	6	6	3	2	3	**32**	**224**
1954	13	17	18	-7	-21	-20	-15	6	6	6	4	1	2	3	**28**	**196**
1955	2	0	22	10	-16	-16	-10	6	6	6	6	2	2	4	**32**	**224**
1956	11	13	27	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1957	5	0	15	10	-16	-18	-14	6	6	6	6	2	2	3	**31**	**217**
1958	12	20	19	8	-5	-12	-10	6	6	6	6	5	3	4	**36**	**684**
1959	5	10	3	-9	-20	-17	-7	6	6	6	4	2	2	4	**30**	**210**
1960	8	14	13	-3	-15	-14	-10	6	6	6	5	3	3	4	**33**	**231**
1961	1	6	4	-9	-18	-14	-12	6	6	6	4	2	3	3	**30**	**210**
1962	9	23	15	14	-13	-17	-13	6	6	6	6	3	2	3	**32**	**224**
1963	6	9	25	13	-9	-15	-11	6	6	6	6	4	3	3	**34**	**408**
1964	0	3	10	-2	-16	-16	-10	6	6	6	5	2	2	4	**31**	**217**
1965	7	16	23	13	-6	-11	-10	6	6	6	6	4	3	4	**35**	**630**
1966	6	14	10	-12	-22	-20	-13	6	6	6	3	1	2	3	**27**	**189**
1967	12	20	19	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1968	4	5	4	-9	-19	-16	-11	6	6	6	4	2	2	3	**29**	**203**
1969	12	20	19	8	0	-13	-14	6	6	6	6	6	3	3	**36**	**792**
1970	12	1	16	0	-16	-19	-13	6	6	6	6	2	2	3	**31**	**217**
1971	4	2	12	10	-14	-18	-14	6	6	6	6	3	2	3	**32**	**224**
1972	10	3	13	1	-15	-14	-7	6	6	6	6	3	3	4	**34**	**238**
1973	12	8	31	8	-15	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1974	12	13	26	8	-13	-15	-10	6	6	6	6	3	3	4	**34**	**578**
1975	12	3	32	12	-11	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1976	1	-1	1	-11	-17	-13	-9	6	5	6	3	2	3	4	**29**	**203**
1977	-5	-9	-12	-11	-29	-29	-24	5	4	3	3	1	1	1	**18**	**126**
1978	41	33	44	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1979	12	8	31	4	-14	-15	-11	6	6	6	6	3	3	3	**33**	**495**
1980	12	15	24	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1981	5	10	12	-4	-15	-14	-8	6	6	6	5	3	3	4	**33**	**231**
1982	12	20	19	8	-2	-11	-14	6	6	6	6	5	3	3	**35**	**735**
1983	12	16	23	8	0	-3	-24	6	6	6	6	6	5	1	**36**	**864**
1984	12	7	23	-2	-16	-18	-13	6	6	6	5	2	2	3	**30**	**270**
1985	6	14	13	-6	-14	-14	-10	6	6	6	4	3	3	4	**32**	**224**
1986	12	19	20	8	-12	-14	-11	6	6	6	6	3	3	3	**33**	**561**
1987	2	8	3	-10	-16	-13	-9	6	6	6	4	2	3	4	**31**	**217**
1988	6	6	4	-7	-17	-14	-10	6	6	6	4	2	3	4	**31**	**217**
1989	16	22	11	-4	-15	-14	-9	6	6	6	5	3	3	4	**33**	**231**
1990	7	11	1	-9	-16	-15	-12	6	6	6	4	2	3	3	**30**	**210**
1991	21	5	21	13	-13	-14	-9	6	6	6	6	3	3	4	**34**	**238**
1992	5	16	5	-10	-14	-13	-10	6	6	6	4	3	3	4	**32**	**224**
1993	12	17	22	8	-6	-13	-11	6	6	6	6	4	3	3	**34**	**646**
1994	2	5	6	-8	-15	-14	-9	6	6	6	4	3	3	4	**32**	**224**
												73 - year Average:			**33**	**386.7**
														1929 - 34 Average:		**288.0**

STUDY: 1995C6F-SWRCB-467 DWRSIM: 8.18, 27 Nov 96
CP # 18, MILLERTON LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C6F-SWRCB-467/18/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 576'

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	491	505	527	547	549	566	559	576	576	562	518	491
1923	485	495	520	537	531	517	541	549	540	526	463	470
1924	483	494	508	522	516	503	506	511	505	478	464	468
1925	465	474	490	503	508	493	514	532	522	499	483	475
1926	477	490	505	519	522	508	549	563	535	494	473	485
1927	491	506	528	545	560	561	560	569	576	543	492	482
1928	482	503	525	542	540	543	551	554	522	477	465	477
1929	485	499	513	523	517	513	531	531	527	506	466	477
1930	480	495	507	518	514	510	525	534	518	489	466	482
1931	487	501	513	522	517	508	510	516	508	482	466	466
1932	467	476	503	520	543	531	524	532	552	518	492	477
1933	477	489	501	516	512	501	520	537	526	509	466	467
1934	470	480	500	517	511	503	516	527	523	498	477	486
1935	490	500	515	535	532	509	542	563	574	538	469	479
1936	486	502	518	533	560	558	564	576	563	521	472	478
1937	488	497	516	535	560	570	576	576	576	538	484	469
1938	472	486	533	560	560	542	529	467	572	576	532	520
1939	513	514	529	538	532	524	542	560	539	504	473	495
1940	495	504	517	550	550	552	548	561	553	512	466	471
1941	481	494	528	556	560	573	573	569	576	569	527	506
1942	497	507	532	552	549	553	554	562	576	555	509	477
1943	477	494	518	557	556	576	574	576	562	526	491	476
1944	479	491	508	521	524	507	516	517	501	494	490	480
1945	481	503	523	533	560	568	565	571	576	554	511	491
1946	485	502	531	548	528	524	536	559	546	510	478	480
1947	481	500	526	543	541	530	545	556	535	497	473	481
1948	488	503	518	529	523	530	556	551	541	483	480	484
1949	490	500	513	526	524	511	522	538	521	482	477	489
1950	492	503	519	536	541	524	534	551	539	506	476	482
1951	490	533	560	560	554	546	552	546	514	463	463	481
1952	488	500	530	559	560	567	559	526	576	571	525	508
1953	501	514	533	549	538	532	541	536	518	497	478	481
1954	488	497	514	532	532	527	537	560	544	507	465	483
1955	489	502	522	540	537	520	534	545	537	504	481	487
1956	491	499	560	560	560	576	576	561	576	566	524	505
1957	496	504	517	527	525	529	546	561	562	526	471	481
1958	488	501	525	545	554	565	576	576	576	557	516	498
1959	492	507	523	530	536	528	550	566	551	500	470	475
1960	474	475	480	490	503	498	515	525	509	496	483	481
1961	481	491	505	511	510	511	526	539	527	486	467	467
1962	468	471	484	492	538	529	527	555	569	540	489	476
1963	479	491	501	518	558	558	576	576	576	564	520	503
1964	490	517	542	551	547	544	553	561	551	508	476	484
1965	481	496	529	560	556	554	559	551	561	540	512	496
1966	487	513	546	558	541	526	545	564	550	506	486	486
1967	490	502	539	559	560	571	565	514	570	576	539	522
1968	515	521	539	545	545	539	550	554	539	506	478	482
1969	480	496	513	560	524	521	467	469	576	576	538	513
1970	498	516	540	560	560	554	554	555	544	517	476	477
1971	482	502	534	551	548	533	541	544	520	498	491	478
1972	479	491	519	536	532	524	537	543	540	497	481	481
1973	489	501	523	545	560	560	550	575	576	542	483	477
1974	487	510	545	560	544	550	559	570	573	537	490	473
1975	476	494	515	528	535	526	533	536	567	525	476	482
1976	489	511	531	541	539	544	547	542	519	492	479	494
1977	490	496	500	503	501	464	465	464	462	466	461	462
1978	462	462	484	532	560	552	510	498	576	576	548	539
1979	528	535	549	560	555	562	560	571	563	521	477	482
1980	489	488	508	560	560	558	566	550	576	576	542	513
1981	503	512	520	528	531	533	547	553	543	510	477	488
1982	491	504	536	560	560	576	546	561	576	576	546	541
1983	531	556	560	560	513	484	467	467	483	564	572	576
1984	560	560	560	560	560	568	570	570	557	530	487	483
1985	482	492	511	536	533	526	551	563	539	501	483	483
1986	490	508	534	554	550	552	574	565	576	558	503	479
1987	480	489	492	495	496	511	530	551	539	503	473	480
1988	482	495	507	526	516	527	539	547	527	498	483	486
1989	486	497	505	515	512	516	537	552	540	502	478	484
1990	489	495	502	510	510	517	532	544	525	508	479	483
1991	480	486	492	499	493	489	501	508	512	506	480	486
1992	485	490	494	498	499	490	493	494	480	470	465	466
1993	467	466	476	536	543	556	558	576	576	571	522	499
1994	490	497	507	512	508	520	534	548	528	498	478	484

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	10	17	0	0	14	58	85	3	2	6	6	3	1	1	**22**
1923	59	35	27	36	50	113	106	1	1	1	1	1	1	1	**7**
1924	73	70	65	71	98	112	108	1	1	1	1	1	1	1	**7**
1925	83	62	44	54	77	93	101	1	1	1	1	1	1	1	**7**
1926	68	27	13	41	82	103	91	1	1	3	1	1	1	1	**9**
1927	15	16	7	0	33	84	94	2	2	4	6	1	1	1	**17**
1928	33	25	22	54	99	111	99	1	1	1	1	1	1	1	**7**
1929	63	45	45	49	70	110	99	1	1	1	1	1	1	1	**7**
1930	66	51	42	58	87	110	94	1	1	1	1	1	1	1	**7**
1931	68	66	60	68	94	110	110	1	1	1	1	1	1	1	**7**
1932	45	52	44	24	58	84	99	1	1	1	1	1	1	1	**7**
1933	75	56	39	50	67	110	109	1	1	1	1	1	1	1	**7**
1934	73	60	49	53	78	99	90	1	1	1	1	1	1	1	**7**
1935	67	34	13	2	38	107	97	1	1	3	5	1	1	1	**13**
1936	18	12	0	13	55	104	98	2	3	6	3	1	1	1	**17**
1937	6	0	0	0	38	92	107	4	6	6	6	1	1	1	**25**
1938	34	47	109	4	0	44	56	1	1	1	5	6	1	1	**16**
1939	52	34	16	37	72	103	81	1	1	2	1	1	1	1	**8**
1940	24	28	15	23	64	110	105	1	1	2	1	1	1	1	**8**
1941	3	3	7	0	7	49	70	5	5	4	6	4	1	1	**26**
1942	23	22	14	0	21	67	99	1	1	3	6	1	1	1	**14**
1943	0	2	0	14	50	85	100	6	5	6	3	1	1	1	**23**
1944	69	60	59	75	82	86	96	1	1	1	1	1	1	1	**7**
1945	8	11	5	0	22	65	85	4	3	4	6	1	1	1	**20**
1946	52	40	17	30	66	98	96	1	1	2	1	1	1	1	**8**
1947	46	31	20	41	79	103	95	1	1	1	1	1	1	1	**7**
1948	46	20	25	35	93	96	92	1	1	1	1	1	1	1	**7**
1949	65	54	38	55	94	99	87	1	1	1	1	1	1	1	**7**
1950	52	42	25	37	70	100	94	1	1	1	1	1	1	1	**7**
1951	30	24	30	62	113	113	95	1	1	1	1	1	1	1	**7**
1952	9	17	50	0	5	51	68	4	2	1	6	4	1	1	**19**
1953	44	35	40	58	79	98	95	1	1	1	1	1	1	1	**7**
1954	49	39	16	32	69	111	93	1	1	2	1	1	1	1	**8**
1955	56	42	31	39	72	95	89	1	1	1	1	1	1	1	**7**
1956	0	0	15	0	10	52	71	6	6	2	6	3	1	1	**25**
1957	47	30	15	14	50	105	95	1	1	2	3	1	1	1	**10**
1958	11	0	0	0	19	60	78	3	6	6	6	2	1	1	**25**
1959	48	26	10	25	76	106	101	1	1	3	1	1	1	1	**9**
1960	78	61	51	67	80	93	95	1	1	1	1	1	1	1	**7**
1961	65	50	37	49	90	109	109	1	1	1	1	1	1	1	**7**
1962	47	49	21	7	36	87	100	1	1	1	4	1	1	1	**10**
1963	18	0	0	0	12	56	73	2	6	6	6	3	1	1	**25**
1964	32	23	15	25	68	100	92	1	1	2	1	1	1	1	**8**
1965	22	17	25	15	36	64	80	1	2	1	2	1	1	1	**9**
1966	50	31	12	26	70	90	90	1	1	3	1	1	1	1	**9**
1967	5	11	62	6	0	37	54	4	3	1	4	6	1	1	**20**
1968	37	26	22	37	70	98	94	1	1	1	1	1	1	1	**7**
1969	55	109	107	0	0	38	63	1	1	1	6	6	1	1	**17**
1970	22	22	21	32	59	100	99	1	1	1	1	1	1	1	**7**
1971	43	35	32	56	78	85	98	1	1	1	1	1	1	1	**7**
1972	52	39	33	36	79	95	95	1	1	1	1	1	1	1	**7**
1973	16	26	1	0	34	93	99	2	1	5	6	1	1	1	**17**
1974	26	17	6	3	39	86	103	1	2	4	5	1	1	1	**15**
1975	50	43	40	9	51	100	94	1	1	1	4	1	1	1	**10**
1976	32	29	34	57	84	97	82	1	1	1	1	1	1	1	**7**
1977	112	111	112	114	110	115	114	1	1	1	1	1	1	1	**7**
1978	24	66	78	0	0	28	37	1	1	1	6	6	1	1	**17**
1979	14	16	5	13	55	99	94	3	2	4	3	1	1	1	**15**
1980	18	10	26	0	0	34	63	2	3	1	6	6	1	1	**20**
1981	43	29	23	33	66	99	88	1	1	1	1	1	1	1	**7**
1982	0	30	15	0	0	30	35	6	1	2	6	6	1	1	**23**
1983	92	109	109	93	12	4	0	1	1	1	1	3	5	6	**18**
1984	8	6	6	19	46	89	93	4	4	4	2	1	1	1	**17**
1985	50	25	13	37	75	93	93	1	1	3	1	1	1	1	**9**
1986	24	2	11	0	18	73	97	1	5	3	6	2	1	1	**19**
1987	65	46	25	37	73	103	96	1	1	1	1	1	1	1	**7**
1988	49	37	29	49	78	93	90	1	1	1	1	1	1	1	**7**
1989	60	39	24	36	74	98	92	1	1	1	1	1	1	1	**7**
1990	59	44	32	51	68	97	93	1	1	1	1	1	1	1	**7**
1991	87	75	68	64	70	96	90	1	1	1	1	1	1	1	**7**
1992	86	83	82	96	106	111	110	1	1	1	1	1	1	1	**7**
1993	20	18	0	0	5	54	77	1	2	6	6	4	1	1	**21**
1994	56	42	28	48	78	98	92	1	1	1	1	1	1	1	**7**
													73 - year Average:		**12**

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Largemouth Bass Reservoir Habitat Index = Product
1922	17	-7	17	0	-14	-44	-27	6	4	6	6	3	1	1	**27**	**594**
1923	-14	24	8	-9	-14	-63	7	3	6	6	4	3	1	6	**29**	**203**
1924	-13	3	5	-6	-27	-14	4	3	6	6	4	1	3	6	**29**	**203**
1925	-15	21	18	-10	-23	-16	-8	3	6	6	4	1	2	4	**26**	**182**
1926	-14	41	14	-28	-41	-21	12	3	6	6	1	1	1	6	**24**	**216**
1927	1	-1	9	7	-33	-51	-10	6	5	6	6	1	1	4	**29**	**493**
1928	3	8	3	-32	-45	-12	12	6	6	6	1	1	3	6	**29**	**203**
1929	-4	18	0	-4	-21	-40	11	5	6	6	5	1	1	6	**30**	**210**
1930	-4	15	9	-16	-29	-23	16	5	6	6	2	1	1	6	**27**	**189**
1931	-9	2	6	-8	-26	-16	0	4	6	6	4	1	2	6	**29**	**203**
1932	-12	-7	8	20	-34	-26	-15	3	4	6	6	1	1	3	**24**	**168**
1933	-11	19	17	-11	-17	-43	1	3	6	6	3	2	1	6	**27**	**189**
1934	-8	13	11	-4	-25	-21	9	4	6	6	5	1	1	6	**29**	**203**
1935	-23	33	21	11	-36	-69	10	1	6	6	6	1	1	6	**27**	**351**
1936	-2	6	12	-13	-42	-49	6	5	6	6	3	1	1	6	**28**	**476**
1937	10	6	0	0	-38	-54	-15	6	6	6	6	1	1	3	**29**	**725**
1938	-18	-13	-62	105	4	-44	-12	2	3	1	6	6	1	3	**22**	**352**
1939	-8	18	18	-21	-35	-31	22	4	6	6	1	1	1	6	**25**	**200**
1940	2	-4	13	-8	-41	-46	5	6	5	6	4	1	1	6	**29**	**232**
1941	13	0	-4	7	-7	-42	-21	6	6	5	6	4	1	1	**29**	**754**
1942	4	1	8	14	-21	-46	-32	6	6	6	6	1	1	1	**27**	**378**
1943	20	-2	2	-14	-36	-35	-15	6	5	6	3	1	1	3	**25**	**575**
1944	-17	9	1	-16	-7	-4	-10	2	6	6	2	4	5	4	**29**	**203**
1945	8	-3	6	5	-22	-43	-20	6	5	6	6	1	1	2	**27**	**540**
1946	-4	12	23	-13	-36	-32	2	5	6	6	3	1	1	6	**28**	**224**
1947	-11	15	11	-21	-38	-24	8	3	6	6	1	1	1	6	**24**	**168**
1948	7	26	-5	-10	-58	-3	4	6	6	5	4	1	5	6	**33**	**231**
1949	-13	11	16	-17	-39	-5	12	3	6	6	2	1	5	6	**29**	**203**
1950	-17	10	17	-12	-33	-30	6	2	6	6	3	1	1	6	**25**	**175**
1951	-8	6	-6	-32	-51	0	18	4	6	4	1	1	6	6	**28**	**196**
1952	7	-8	-33	50	-5	-46	-17	6	4	1	6	5	1	2	**25**	**475**
1953	-6	9	-5	-18	-21	-19	3	4	6	5	2	1	2	6	**26**	**182**
1954	-5	10	23	-16	-37	-42	18	5	6	6	2	1	1	6	**27**	**216**
1955	-17	14	11	-8	-33	-23	6	2	6	6	4	1	1	6	**26**	**182**
1956	16	0	-15	15	-10	-42	-19	6	6	3	6	4	1	2	**28**	**700**
1957	4	17	15	1	-36	-55	10	6	6	6	6	1	1	6	**32**	**320**
1958	11	11	0	0	-19	-41	-18	6	6	6	6	2	1	2	**29**	**725**
1959	-8	22	16	-15	-51	-30	5	4	6	6	3	1	1	6	**27**	**243**
1960	-5	17	10	-16	-13	-13	-2	5	6	6	2	3	3	5	**30**	**210**
1961	1	15	13	-12	-41	-19	0	6	6	6	3	1	2	6	**30**	**210**
1962	-9	-2	28	14	-29	-51	-13	4	5	6	6	1	1	3	**26**	**260**
1963	0	18	0	0	-12	-44	-17	6	6	6	6	3	1	2	**30**	**750**
1964	-3	9	8	-10	-43	-32	8	5	6	6	4	1	1	6	**29**	**232**
1965	-2	5	-8	10	-21	-28	-16	5	6	4	6	1	1	2	**25**	**225**
1966	-15	19	19	-14	-44	-20	0	3	6	6	3	1	2	6	**27**	**243**
1967	11	-6	-51	56	6	-37	-17	6	4	1	6	6	1	2	**26**	**520**
1968	-6	11	4	-15	-33	-28	4	4	6	6	3	1	1	6	**27**	**189**
1969	-3	-54	2	107	0	-38	-25	5	1	6	6	6	1	1	**26**	**442**
1970	-6	0	1	-11	-27	-41	1	4	6	6	3	1	1	6	**27**	**189**
1971	-15	8	3	-24	-22	-7	-13	3	6	6	1	1	4	3	**24**	**168**
1972	-8	13	6	-3	-43	-16	0	4	6	6	5	1	2	6	**30**	**210**
1973	0	-10	25	1	-34	-59	-6	6	4	6	6	1	1	4	**28**	**476**
1974	6	9	11	3	-36	-47	-17	6	6	6	6	1	1	2	**28**	**420**
1975	-9	7	3	31	-42	-49	6	4	6	6	6	1	1	6	**30**	**300**
1976	5	3	-5	-23	-27	-13	15	6	6	5	1	1	3	6	**28**	**196**
1977	-37	1	-1	-2	4	-5	1	1	6	5	5	6	5	6	**34**	**238**
1978	-8	-42	-12	78	0	-28	-9	4	1	3	6	6	1	4	**25**	**425**
1979	7	-2	11	-8	-42	-44	5	6	5	6	4	1	1	6	**29**	**435**
1980	-2	8	-16	26	0	-34	-29	5	6	2	6	6	1	1	**27**	**540**
1981	2	14	6	-10	-33	-33	11	6	6	6	4	1	1	6	**30**	**210**
1982	16	-30	15	15	0	-30	-5	6	1	6	6	6	1	5	**31**	**713**
1983	-29	-17	0	16	81	8	4	1	2	6	6	6	6	6	**33**	**594**
1984	8	2	0	-13	-27	-43	-4	6	6	6	3	1	1	5	**28**	**476**
1985	-7	25	12	-24	-38	-18	0	4	6	6	1	1	2	6	**26**	**234**
1986	2	22	-9	11	-18	-55	-24	6	6	4	6	2	1	1	**26**	**494**
1987	15	19	21	-12	-36	-30	7	6	6	6	3	1	1	6	**29**	**203**
1988	11	12	8	-20	-29	-15	3	6	6	6	2	1	3	6	**30**	**210**
1989	4	21	15	-12	-38	-24	6	6	6	6	3	1	1	6	**29**	**203**
1990	7	15	12	-19	-17	-29	4	6	6	6	2	2	1	6	**29**	**203**
1991	-4	12	7	4	-6	-26	6	5	6	6	6	4	1	6	**34**	**238**
1992	-9	3	1	-14	-10	-5	1	4	6	6	3	4	5	6	**34**	**238**
1993	13	2	18	0	-5	-49	-23	6	6	6	6	5	1	1	**31**	**651**
1994	12	14	14	-20	-30	-20	6	6	6	6	2	1	2	6	**29**	**203**
											73 - year Average:				**28**	**329.2**
													1929 - 34 Average:			**193.7**

STUDY: 1995C6F-SWRCB-467 DWRSIM: recirc818-f, 17 Jun 97
CP # 12, SWP SAN LUIS RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C6F-SWRCB-467/12/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 544'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	421	436	471	516	539	544	544	527	484	431	404	420	0	0	17	60	113	140	124	6	6	2	1	1	1	1	**18**	5	0	-17	-43	-53	-27	16	6	6	2	1	1	1	6	**23**	**414**
1923	454	483	499	514	524	528	526	499	439	391	368	355	16	18	45	105	153	176	189	2	2	1	1	1	1	1	**9**	4	-2	-27	-60	-48	-23	-13	6	5	1	1	1	1	3	**18**	**162**
1924	380	404	438	481	521	534	511	499	474	434	392	378	10	33	45	70	110	152	166	3	1	1	1	1	1	1	**9**	13	-23	-12	-25	-40	-42	-14	6	1	3	1	1	1	3	**16**	**144**
1925	370	384	424	433	484	509	524	504	458	429	383	374	35	20	40	86	115	161	170	1	1	1	1	1	1	1	**7**	25	15	-20	-46	-29	-46	-9	6	6	2	1	1	1	4	**21**	**147**
1926	374	386	398	453	497	526	535	517	473	449	393	393	18	9	27	71	95	151	151	2	4	1	1	1	1	1	**11**	29	9	-18	-44	-24	-56	0	6	6	2	1	1	1	6	**23**	**253**
1927	401	439	476	521	544	544	541	516	462	419	392	410	0	3	28	82	125	152	134	6	5	1	1	1	1	1	**16**	0	-3	-25	-54	-43	-27	18	6	5	1	1	1	1	6	**21**	**336**
1928	446	476	493	507	519	525	526	503	451	414	394	386	19	18	41	93	130	150	158	2	2	1	1	1	1	1	**9**	6	1	-23	-52	-37	-20	-8	6	6	1	1	1	2	4	**21**	**189**
1929	404	439	472	503	539	544	538	519	487	465	426	401	0	6	25	57	79	118	143	6	4	1	1	1	1	1	**15**	5	-6	-19	-32	-22	-39	-25	6	4	2	1	1	1	1	**16**	**240**
1930	401	406	451	501	535	543	544	526	486	464	432	418	1	0	18	58	80	112	126	5	6	2	1	1	1	1	**17**	8	1	-18	-40	-22	-32	-14	6	6	2	1	1	1	3	**20**	**340**
1931	418	444	451	476	514	532	522	506	472	447	396	383	12	22	38	72	97	148	161	3	1	1	1	1	1	1	**9**	18	-10	-16	-34	-25	-51	-13	6	4	2	1	1	1	3	**18**	**162**
1932	364	365	425	485	527	537	505	493	458	433	400	380	7	39	51	86	111	144	164	4	1	1	1	1	1	1	**10**	10	-32	-12	-35	-25	-33	-20	6	1	3	1	1	1	2	**15**	**150**
1933	380	390	398	438	485	524	502	487	458	438	396	379	20	42	57	86	106	148	165	1	1	1	1	1	1	1	**7**	39	-22	-15	-29	-20	-42	-17	6	1	3	1	2	1	2	**16**	**112**
1934	379	379	421	467	511	538	508	489	454	427	385	369	6	36	55	90	117	159	175	4	1	1	1	1	1	1	**10**	27	-30	-19	-35	-27	-42	-16	6	1	2	1	1	1	2	**14**	**140**
1935	369	393	396	461	468	505	520	494	436	392	326	335	39	24	50	108	152	218	209	1	1	1	1	1	1	1	**7**	37	15	-26	-58	-44	-66	9	6	6	1	1	1	1	6	**22**	**154**
1936	378	410	445	494	523	527	528	507	452	410	384	380	17	16	37	92	134	160	164	2	2	1	1	1	1	1	**9**	4	1	-21	-55	-42	-26	-4	6	6	1	1	1	1	5	**21**	**189**
1937	395	414	449	488	523	532	539	531	487	442	409	408	12	5	13	57	102	135	136	3	4	3	1	1	1	1	**14**	9	7	-8	-44	-45	-33	-1	6	6	4	1	1	1	5	**24**	**336**
1938	421	456	493	522	536	544	544	534	505	463	435	452	0	0	10	39	81	109	92	6	6	3	1	1	1	1	**19**	8	0	-10	-29	-42	-28	17	6	6	4	1	1	1	6	**25**	**475**
1939	483	509	514	527	540	544	544	520	476	450	429	403	0	0	24	68	94	115	141	6	6	1	1	1	1	1	**17**	4	0	-24	-44	-26	-21	-26	6	6	1	1	1	1	1	**17**	**289**
1940	409	415	415	478	521	528	526	497	434	380	355	354	16	18	47	110	164	189	190	2	2	1	1	1	1	1	**9**	7	-2	-29	-63	-54	-25	-1	6	5	1	1	1	1	5	**20**	**180**
1941	377	414	449	500	520	525	523	510	476	436	399	421	19	21	34	68	108	145	123	2	1	1	1	1	1	1	**8**	5	-2	-13	-34	-40	-37	22	6	5	3	1	1	1	6	**23**	**184**
1942	457	489	497	513	525	529	527	505	469	428	403	423	15	17	39	75	116	141	121	2	2	1	1	1	1	1	**9**	4	-2	-22	-36	-41	-25	20	6	5	1	1	1	1	6	**21**	**189**
1943	457	488	498	513	524	535	536	526	465	427	403	408	9	8	18	79	117	141	136	4	4	2	1	1	1	1	**14**	11	1	-10	-61	-38	-24	5	6	6	4	1	1	1	6	**25**	**350**
1944	434	465	492	512	525	532	534	510	466	439	424	413	12	10	34	78	105	120	131	3	3	1	1	1	1	1	**11**	7	2	-24	-44	-27	-15	-11	6	6	1	1	1	3	3	**21**	**231**
1945	414	452	488	528	544	544	541	515	461	419	392	391	0	3	29	83	125	152	153	6	5	1	1	1	1	1	**16**	0	-3	-26	-54	-42	-27	-1	6	5	1	1	1	1	5	**20**	**320**
1946	421	455	487	507	518	523	522	493	434	386	363	356	21	22	51	110	158	181	188	1	1	1	1	1	1	1	**7**	5	-1	-29	-59	-48	-23	-7	6	5	1	1	1	1	4	**19**	**133**
1947	381	419	453	498	520	529	530	501	448	411	389	388	15	14	43	96	133	155	156	2	3	1	1	1	1	1	**10**	9	1	-29	-53	-37	-22	-1	6	6	1	1	1	1	5	**21**	**210**
1948	388	414	425	461	498	514	531	500	443	391	350	358	30	13	44	101	153	194	186	1	3	1	1	1	1	1	**9**	16	17	-31	-57	-52	-41	8	6	6	1	1	1	1	6	**22**	**198**
1949	384	417	445	492	527	538	537	515	465	431	407	400	6	7	29	79	113	137	144	4	4	1	1	1	1	1	**13**	11	-1	-22	-50	-34	-24	-7	6	5	1	1	1	1	4	**19**	**247**
1950	407	437	447	497	532	539	538	514	465	427	405	409	5	6	30	79	117	139	135	4	4	1	1	1	1	1	**13**	7	-1	-24	-49	-38	-22	4	6	5	1	1	1	1	6	**21**	**273**
1951	423	454	489	522	532	536	533	503	446	389	353	354	8	11	41	98	155	191	190	4	3	1	1	1	1	1	**12**	4	-3	-30	-57	-57	-36	1	6	5	1	1	1	1	6	**21**	**252**
1952	387	421	451	502	517	523	529	522	496	458	444	462	21	15	22	48	86	100	82	1	2	1	1	1	1	1	**8**	6	6	-7	-26	-38	-14	18	6	6	4	1	1	3	6	**27**	**216**
1953	493	508	514	528	538	543	541	518	472	431	408	427	1	3	26	72	113	136	117	5	5	1	1	1	1	1	**15**	5	-2	-23	-46	-41	-23	19	6	5	1	1	1	1	6	**21**	**315**
1954	460	490	506	520	531	536	536	508	451	407	378	384	8	8	36	93	137	166	160	4	4	1	1	1	1	1	**13**	5	0	-28	-57	-44	-29	6	6	6	1	1	1	1	6	**22**	**286**
1955	405	437	467	510	535	541	541	514	464	431	414	402	3	3	30	80	113	130	142	5	5	1	1	1	1	1	**15**	6	0	-27	-50	-33	-17	-12	6	6	1	1	1	2	3	**20**	**300**
1956	411	443	481	523	536	544	543	520	470	411	375	389	0	1	24	74	133	169	155	6	5	1	1	1	1	1	**16**	8	-1	-23	-50	-59	-36	14	6	5	1	1	1	1	6	**21**	**336**
1957	422	451	477	514	526	532	532	507	453	410	383	385	12	12	37	91	134	161	159	3	3	1	1	1	1	1	**11**	6	0	-25	-54	-43	-27	2	6	6	1	1	1	1	6	**22**	**242**
1958	422	453	483	525	537	541	542	526	494	442	419	436	3	2	18	50	102	125	108	5	5	2	1	1	1	1	**16**	4	1	-16	-32	-52	-23	17	6	6	2	1	1	1	6	**23**	**368**
1959	468	497	505	518	530	536	537	511	462	430	413	409	8	7	33	82	114	131	135	4	4	1	1	1	1	1	**13**	6	1	-26	-49	-32	-17	-4	6	6	1	1	1	2	5	**22**	**286**
1960	420	439	449	483	523	544	537	511	463	434	386	391	0	7	33	81	110	158	153	6	4	1	1	1	1	1	**15**	21	-7	-26	-48	-29	-48	5	6	4	1	1	1	1	6	**20**	**300**
1961	399	435	468	515	540	544	543	518	472	445	424	408	0	1	26	72	99	120	136	6	5	1	1	1	1	1	**16**	4	-1	-25	-46	-27	-21	-16	6	5	1	1	1	1	2	**17**	**272**
1962	408	429	464	513	539	543	542	508	447	398	354	358	1	2	36	97	146	190	186	5	5	1	1	1	1	1	**15**	4	-1	-34	-61	-49	-44	4	6	5	1	1	1	1	6	**21**	**315**
1963	399	430	458	501	526	531	530	504	450	404	372	387	13	14	40	94	140	172	157	3	3	1	1	1	1	1	**11**	5	-1	-26	-54	-46	-32	15	6	5	1	1	1	1	6	**21**	**231**
1964	423	454	482	506	518	526	528	500	448	413	394	387	18	16	44	96	131	150	157	2	2	1	1	1	1	1	**9**	8	2	-28	-52	-35	-19	-7	6	6	1	1	1	2	4	**21**	**189**
1965	394	431	468	518	541	544	544	518	457	405	370	381	0	0	26	87	139	174	163	6	6	1	1	1	1	1	**17**	3	0	-26	-61	-52	-35	11	6	6	1	1	1	1	6	**22**	**374**
1966	418	449	479	510	520	526	527	498	445	407	386	383	18	17	46	99	137	158	161	2	2	1	1	1	1	1	**9**	6	1	-29	-53	-38	-21	-3	6	6	1	1	1	1	5	**21**	**189**
1967	404	439	477	523	539	543	544	534	505	484	465	480	1	0	10	39	60	79	64	5	6	3	1	1	1	1	**18**	4	1	-10	-29	-21	-19	15	6	6	4	1	1	2	6	**26**	**468**
1968	503	514	519	532	542	544	543	516	464	429	409	404	0	1	28	80	115	135	140	6	5	1	1	1	1	1	**16**	2	-1	-27	-52	-35	-20	-5	6	5	1	1	1	2	5	**21**	**336**
1969	415	450	482	524	537	544	544	536	511	476	453	469	0	0	8	33	68	91	75	6	6	4	1	1	1	1	**20**	7	0	-8	-25	-35	-23	16	6	6	4	1	1	1	6	**25**	**500**
1970	499	513	518	532	544	544	542	518	464	425	402	403	0	2	26	80	119	142	141	6	5	1	1	1	1	1	**16**	0	-2	-24	-54	-39	-23	1	6	5	1	1	1	1	6	**21**	**336**
1971	418	453	483	515	525	531	531	505	455	410	383	399	13	13	39	89	134	161	145	3	3	1	1	1	1	1	**11**	6	0	-26	-50	-45	-27	16	6	6	1	1	1	1	6	**22**	**242**
1972	431	461	490	526	538	543	543	513	459	411	383	379	1	1	31	85	133	161	165	5	5	1	1	1	1	1	**15**	5	0	-30	-54	-48	-28	-4	6	6	1	1	1	1	5	**21**	**315**
1973	414	446	476	520	532	536	533	505	444	394	367	364	8	11	39	100	150	177	180	4	3	1	1	1	1	1	**12**	4	-3	-28	-61	-50	-27	-3	6	5	1	1	1	1	5	**20**	**240**
1974	404	437	467	504	516	521	521	497	450	403	374	393	23	23	47	94	141	170	151	1	1	1	1	1	1	1	**7**	5	0	-24	-47	-47	-29	19	6	6	1	1	1	1	6	**22**	**154**
1975	428	459	489	509	521	526	524	495	438	381	353	372	18	20	49	106	163	191	172	2	1	1	1	1	1	1	**8**	5	-2	-29	-57	-57	-28	19	6	5	1	1	1	1	6	**21**	**168**
1976	408	440	467	505	519	530	528	505	465	444	421	395	14	16	39	79	100	123	149	3	2	1	1	1	1	1	**10**	11	-2	-23	-40	-21	-23	-26	6	5	1	1	1	1	1	**16**	**160**
1977	408	414	416	416	437	441	472	469	439	413	387	373	103	72	75	105	131	157	171	1	1	1	1	1	1	1	**7**	4	31	-3	-30	-26	-26	-14	6	6	5	1	1	1	3	**23**	**161**
1978	344	351	417	482	513	525	533	529	493	444	410	432	19	11	15	51	100	134	112	2	3	2	1	1	1	1	**11**	12	8	-4	-36	-49	-34	22	6	6	5	1	1	1	6	**26**	**286**
1979	465	496	506	522	534	538	536	512	463	420	394	390	6	8	32	81	124	150	154	4	4	1	1	1	1	1	**13**	4	-2	-24	-49	-43	-26	-4	6	5	1	1	1	1	5	**20**	**260**
1980	418	453	483	506	522	534	540	533	495	446	410	432	10	4	11	49	98	134	112	3	5	3	1	1	1	1	**15**	12	6	-7	-38	-49	-36	22	6	6	4	1	1	1	6	**25**	**375**
1981	465	497	503	517	530	536	536	513	464	431	413	400	8	8	31	80	113	131	144	4	4	1	1	1	1	1	**13**	6	0	-23	-49	-33	-18	-13	6	6	1	1	1	2	3	**20**	**260**
1982	407	445	479	525	538	543	544	527	485	430	400	412	1	0	17	59	114	144	132	5	6	2	1	1	1	1	**17**	5	1	-17	-42	-55	-30	12	6	6	2	1	1	1	6	**23**	**391**
1983	442	473	504	531	544	544	544	539	523	514	501	509	0	0	5	21	30	43	35	6	6	4	1	1	1	1	**20**	0	0	-5	-16	-9	-13	8	6	6	5	2	4	3	6	**32**	**640**
1984	524	536	542	544	544	544	541	517	465	425	399	404	0	3	27	79	119	145	140	6	5	1	1	1	1	1	**16**	0	-3	-24	-52	-40	-26	5	6	5	1	1	1	1	6	**21**	**336**
1985	440	472	493	507	520	527	528	499	445	407	385	385	17	16	45	99	137	159	159	2	2	1	1	1	1	1	**9**	7	1	-29	-54	-38	-22	0	6	6	1	1	1	1	6	**22**	**198**
1986	396	419	453	503	541	544	544	534	509	481	445	460	0	0	10	35	63	99	84	6	6	3	1	1	1	1	**19**	3	0	-10	-25	-28	-36	15	6	6	4	1	1	1	6	**25**	**475**
1987	489	504	524	544	544	544	529	503	456	427	414	387	0	15	41	88	117	130	157	6	2	1	1	1	1	1	**13**	0	-15	-26	-47	-29	-13	-27	6	3	1	1	1	3	1	**16**	**208**
1988	391	402	441	491	520	521	496	478	443	426	421	406	23	48	66	101	118	123	138	1	1	1	1	1	1	1	**7**	1	-25	-18	-35	-17	-5	-15	6	1	2	1	2	5	3	**20**	**140**
1989	406	429	439	453	480	518	532	512	465	439	387	397	26	12	32	79	105	157	147	1	3	1	1	1	1	1	**9**	38	14	-20	-47	-26	-52	10	6	6	2	1	1	1	6	**23**	**207**
1990	428	458	491	528	544	544	541	522	486	471	431	406	0	3	22	58	73	113	138	6	5	1	1	1	1	1	**16**	0	-3	-19	-36	-15	-40	-25	6	5	2	1	3	1	1	**19**	**304**
1991	405	406	412	412	442	494	523	519	498	474	431	424	50	21	25	46	70	113	120	1	1	1	1	1	1	1	**7**	52	29	-4	-21	-24	-43	-7	6	6	5	1	1	1	4	**24**	**168**
1992	429	435	442	454	502	535	544	525	495	471	431	413	9	0	19	49	73	113	131	4	6	2	1	1	1	1	**16**	33	9	-19	-30	-24	-40	-18	6	6	2	1	1	1	2	**19**	**304**
1993	413	419	463	519	534	538	535	515	471	428	401	417	6	9	29	73	116	143	127	4	4	1	1	1	1	1	**13**	4	-3	-20	-44	-43	-27	16	6	5	2	1	1	1	6	**22**	**286**
1994	443	475	495	509	522	530	533	512	472	453	434	405	14	11	32	72	91	110	139	3	3	1	1	1	1	1	**11**	8	3	-21	-40	-19	-19	-29	6	6	1	1	2	2	1	**19**	**209**
																							73 - year Average:				**12**											**73 - year Average:**				**21**	**265.0**
																																							1929 - 34 Average:				**190.7**

STUDY: 1995C06F-SWRCB-468 DWRSIM: recirc818-f, 17 Jun 97
CP # 4, SHASTA LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-468/4/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 1067'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	989	993	999	1,003	1,019	1,038	1,060	1,067	1,062	1,048	1,031	1,025
1923	1,023	1,017	1,019	1,023	1,020	1,021	1,033	1,029	1,015	996	978	976
1924	978	978	978	978	986	986	975	961	944	922	904	889
1925	893	906	915	925	997	1,012	1,043	1,054	1,045	1,027	1,012	1,008
1926	1,006	1,003	1,000	997	1,023	1,025	1,038	1,032	1,011	988	969	962
1927	960	988	1,011	1,035	1,026	1,052	1,067	1,067	1,058	1,044	1,027	1,022
1928	1,020	1,017	1,020	1,028	1,044	1,046	1,066	1,062	1,048	1,021	999	993
1929	991	992	992	992	998	999	1,002	996	988	970	952	944
1930	942	941	972	984	1,001	1,024	1,034	1,035	1,015	996	982	980
1931	976	975	973	975	978	986	977	967	959	939	923	909
1932	904	903	919	930	940	965	968	976	969	955	941	933
1933	931	928	929	932	935	969	980	985	981	961	946	940
1934	938	937	946	963	983	995	995	990	980	947	919	904
1935	898	910	914	937	957	981	1,026	1,034	1,026	1,008	994	989
1936	987	984	981	1,006	1,032	1,044	1,053	1,051	1,043	1,023	1,003	998
1937	993	989	983	977	977	1,004	1,033	1,041	1,037	1,016	997	990
1938	988	1,010	1,020	1,035	1,030	1,024	1,049	1,067	1,067	1,058	1,045	1,036
1939	1,023	1,017	1,020	1,022	1,024	1,039	1,031	1,024	999	977	949	945
1940	942	937	945	993	1,017	1,025	1,059	1,064	1,054	1,034	1,017	1,015
1941	1,014	1,013	1,019	1,020	1,024	1,045	1,064	1,067	1,067	1,058	1,047	1,036
1942	1,023	1,017	1,020	1,023	1,028	1,042	1,067	1,067	1,067	1,058	1,046	1,036
1943	1,023	1,017	1,022	1,030	1,042	1,051	1,067	1,067	1,059	1,045	1,030	1,024
1944	1,023	1,017	1,015	1,014	1,023	1,033	1,038	1,038	1,019	995	974	967
1945	969	981	996	1,005	1,039	1,053	1,065	1,067	1,062	1,040	1,023	1,018
1946	1,017	1,017	1,018	1,033	1,039	1,050	1,062	1,064	1,054	1,036	1,020	1,017
1947	1,014	1,014	1,015	1,011	1,018	1,038	1,044	1,034	1,019	995	977	971
1948	977	980	982	1,007	1,006	1,018	1,056	1,067	1,067	1,052	1,037	1,036
1949	1,023	1,017	1,016	1,012	1,016	1,050	1,063	1,064	1,048	1,026	1,008	1,004
1950	1,000	997	994	1,002	1,016	1,033	1,047	1,046	1,034	1,012	995	993
1951	1,006	1,017	1,020	1,033	1,040	1,057	1,064	1,067	1,051	1,030	1,012	1,010
1952	1,008	1,013	1,019	1,032	1,038	1,048	1,058	1,067	1,067	1,058	1,046	1,036
1953	1,023	1,017	1,021	1,022	1,033	1,051	1,065	1,067	1,067	1,058	1,046	1,036
1954	1,023	1,017	1,021	1,030	1,035	1,051	1,067	1,064	1,059	1,042	1,029	1,029
1955	1,023	1,017	1,022	1,024	1,027	1,025	1,039	1,047	1,028	1,004	987	986
1956	984	987	1,017	1,017	1,019	1,048	1,067	1,067	1,067	1,058	1,047	1,036
1957	1,023	1,017	1,016	1,017	1,035	1,052	1,058	1,067	1,060	1,043	1,029	1,031
1958	1,023	1,017	1,021	1,029	1,067	1,024	1,053	1,067	1,067	1,058	1,047	1,036
1959	1,023	1,017	1,017	1,034	1,039	1,050	1,054	1,054	1,035	1,010	994	998
1960	995	993	990	996	1,024	1,051	1,058	1,066	1,048	1,028	1,009	1,007
1961	1,004	1,006	1,021	1,026	1,044	1,057	1,064	1,067	1,048	1,024	1,003	1,001
1962	998	1,002	1,014	1,016	1,035	1,051	1,062	1,063	1,051	1,031	1,013	1,011
1963	1,023	1,017	1,021	1,025	1,045	1,055	1,052	1,067	1,063	1,052	1,040	1,036
1964	1,023	1,017	1,018	1,033	1,034	1,037	1,031	1,026	1,010	989	969	968
1965	967	977	1,017	1,022	1,040	1,052	1,065	1,066	1,056	1,040	1,030	1,028
1966	1,023	1,017	1,021	1,037	1,049	1,055	1,067	1,064	1,049	1,029	1,013	1,010
1967	1,006	1,017	1,021	1,030	1,044	1,048	1,064	1,067	1,067	1,058	1,047	1,036
1968	1,023	1,017	1,019	1,025	1,034	1,054	1,056	1,058	1,042	1,021	1,013	1,011
1969	1,010	1,011	1,021	1,022	1,027	1,048	1,063	1,067	1,067	1,058	1,047	1,036
1970	1,023	1,017	1,020	1,017	1,025	1,052	1,055	1,055	1,043	1,023	1,010	1,008
1971	1,009	1,017	1,020	1,028	1,040	1,043	1,063	1,067	1,067	1,058	1,047	1,036
1972	1,023	1,017	1,022	1,033	1,045	1,056	1,067	1,067	1,050	1,029	1,015	1,015
1973	1,016	1,017	1,021	1,030	1,034	1,053	1,065	1,067	1,059	1,041	1,029	1,028
1974	1,023	1,017	1,018	1,017	1,036	1,025	1,058	1,067	1,067	1,058	1,047	1,036
1975	1,023	1,017	1,021	1,024	1,045	1,039	1,061	1,067	1,067	1,058	1,047	1,036
1976	1,023	1,017	1,018	1,017	1,012	1,017	1,024	1,020	995	974	969	971
1977	974	975	975	977	967	966	949	943	921	902	883	879
1978	868	867	912	1,017	1,031	1,047	1,067	1,067	1,064	1,054	1,044	1,036
1979	1,023	1,017	1,015	1,018	1,029	1,046	1,053	1,062	1,048	1,030	1,018	1,016
1980	1,016	1,017	1,020	1,029	1,019	1,046	1,059	1,064	1,056	1,045	1,035	1,035
1981	1,023	1,017	1,020	1,029	1,042	1,056	1,064	1,062	1,042	1,018	1,002	999
1982	998	1,017	1,018	1,033	1,029	1,046	1,051	1,067	1,067	1,058	1,047	1,036
1983	1,023	1,017	1,020	1,022	1,017	1,045	1,050	1,067	1,067	1,058	1,047	1,036
1984	1,023	1,017	1,018	1,034	1,047	1,056	1,064	1,067	1,059	1,043	1,036	1,036
1985	1,023	1,017	1,022	1,023	1,027	1,034	1,042	1,033	1,010	989	972	974
1986	976	980	990	1,014	1,017	1,029	1,047	1,049	1,038	1,022	1,006	1,010
1987	1,010	1,009	1,008	1,009	1,019	1,046	1,047	1,040	1,008	985	956	949
1988	945	947	979	1,000	1,001	1,004	1,010	1,009	991	960	945	942
1989	943	955	962	969	976	1,039	1,058	1,054	1,039	1,018	1,007	1,007
1990	1,009	1,007	1,003	1,008	1,008	1,015	1,008	1,013	998	973	957	954
1991	949	947	947	948	944	970	981	981	971	958	943	936
1992	935	933	934	939	977	999	1,011	1,003	988	972	959	953
1993	949	946	960	995	1,027	1,031	1,059	1,067	1,067	1,054	1,046	1,045
1994	1,043	1,017	1,019	1,020	1,026	1,027	1,027	1,026	999	978	955	953

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	29	7	0	5	19	36	42	1	4	6	4	2	1	1	19
1923	46	34	38	52	71	89	91	1	1	1	1	1	1	1	7
1924	81	92	106	123	145	163	178	1	1	1	1	1	1	1	7
1925	55	24	13	22	40	55	59	1	1	3	1	1	1	1	9
1926	42	29	35	56	79	98	105	1	1	1	1	1	1	1	7
1927	15	0	0	9	23	40	45	2	6	6	4	1	1	1	21
1928	21	1	5	19	46	68	74	1	5	4	2	1	1	1	15
1929	68	65	71	79	97	115	123	1	1	1	1	1	1	1	7
1930	43	33	32	52	71	85	87	1	1	1	1	1	1	1	7
1931	81	90	100	108	128	144	158	1	1	1	1	1	1	1	7
1932	102	99	91	98	112	126	134	1	1	1	1	1	1	1	7
1933	98	87	82	86	106	121	127	1	1	1	1	1	1	1	7
1934	72	72	77	87	120	148	163	1	1	1	1	1	1	1	7
1935	86	41	33	41	59	73	78	1	1	1	1	1	1	1	7
1936	23	14	16	24	44	64	69	1	3	2	1	1	1	1	10
1937	63	34	26	30	51	70	77	1	1	1	1	1	1	1	7
1938	43	18	0	0	9	22	31	1	2	6	6	4	1	1	21
1939	28	36	43	68	90	118	122	1	1	1	1	1	1	1	7
1940	42	8	3	13	33	50	52	1	4	5	3	1	1	1	16
1941	22	3	0	0	9	20	31	1	5	6	6	4	1	1	24
1942	25	0	0	0	9	21	31	1	6	6	6	4	1	1	25
1943	16	0	0	8	22	37	43	2	6	6	4	1	1	1	21
1944	34	29	29	48	72	93	100	1	1	1	1	1	1	1	7
1945	14	2	0	5	27	44	49	3	5	6	4	1	1	1	21
1946	17	5	3	13	31	47	50	2	4	5	3	1	1	1	17
1947	29	23	33	48	72	90	96	1	1	1	1	1	1	1	7
1948	49	11	0	0	15	30	31	1	3	6	6	2	1	1	20
1949	17	4	3	19	41	59	63	2	5	5	2	1	1	1	17
1950	34	20	21	33	55	72	74	1	1	1	1	1	1	1	7
1951	10	3	0	16	37	55	57	3	5	6	2	1	1	1	19
1952	19	9	0	0	9	21	31	2	4	6	6	4	1	1	24
1953	16	2	0	0	9	21	31	2	5	6	6	4	1	1	25
1954	16	0	3	8	25	38	38	2	6	5	4	1	1	1	20
1955	42	28	20	39	63	80	81	1	1	1	1	1	1	1	7
1956	19	0	0	0	9	20	31	2	6	6	6	4	1	1	26
1957	15	9	0	7	24	38	36	2	4	6	4	1	1	1	19
1958	43	14	0	0	9	20	31	1	3	6	6	4	1	1	22
1959	17	13	13	32	57	73	69	2	3	3	1	1	1	1	12
1960	16	9	1	19	39	58	60	2	4	5	2	1	1	1	16
1961	10	3	0	19	43	64	66	3	5	6	2	1	1	1	19
1962	16	5	4	16	36	54	56	2	4	5	2	1	1	1	16
1963	12	15	0	4	15	27	31	3	2	6	5	2	1	1	20
1964	30	36	41	57	78	98	99	1	1	1	1	1	1	1	7
1965	15	2	1	11	27	37	39	2	5	5	3	1	1	1	18
1966	12	0	3	18	38	54	57	3	6	5	2	1	1	1	19
1967	19	3	0	0	9	20	31	2	5	6	6	4	1	1	25
1968	13	11	9	25	46	54	56	3	3	4	1	1	1	1	14
1969	19	4	0	0	9	20	31	2	5	6	6	4	1	1	25
1970	15	12	12	24	44	57	59	2	3	3	1	1	1	1	12
1971	24	4	0	0	9	20	31	1	5	6	6	4	1	1	24
1972	11	0	0	17	38	52	52	3	6	6	2	1	1	1	20
1973	14	2	0	8	26	38	39	3	5	6	4	1	1	1	21
1974	42	9	0	0	9	20	31	1	4	6	6	4	1	1	23
1975	28	6	0	0	9	20	31	1	4	6	6	4	1	1	23
1976	50	43	47	72	93	98	96	1	1	1	1	1	1	1	7
1977	101	118	124	146	165	184	188	1	1	1	1	1	1	1	7
1978	20	0	0	3	13	23	31	1	6	6	5	3	1	1	23
1979	21	14	5	19	37	49	51	1	3	4	2	1	1	1	13
1980	21	8	3	11	22	32	32	1	4	5	3	1	1	1	16
1981	11	3	5	25	49	65	68	3	5	4	1	1	1	1	16
1982	21	16	0	0	9	20	31	1	2	6	6	4	1	1	21
1983	22	17	0	0	9	20	31	1	2	6	6	4	1	1	21
1984	11	3	0	8	24	31	31	3	5	6	4	1	1	1	21
1985	33	25	34	57	78	95	93	1	1	1	1	1	1	1	7
1986	38	20	18	29	45	61	57	1	1	2	1	1	1	1	8
1987	21	20	27	59	82	111	118	1	1	1	1	1	1	1	7
1988	63	57	58	76	107	122	125	1	1	1	1	1	1	1	7
1989	28	9	13	28	49	60	60	1	4	3	1	1	1	1	12
1990	52	59	54	69	94	110	113	1	1	1	1	1	1	1	7
1991	97	86	86	96	109	124	131	1	1	1	1	1	1	1	7
1992	68	56	64	79	95	108	114	1	1	1	1	1	1	1	7
1993	36	8	0	0	13	21	22	1	4	6	6	3	1	1	22
1994	40	40	41	68	89	112	114	1	1	1	1	1	1	1	7
												73 - year Average:			15

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	19	22	7	-5	-14	-17	-6	6	6	6	5	3	2	4	32	608
1923	1	12	-4	-14	-19	-18	-2	6	6	5	3	2	2	5	29	203
1924	0	-11	-14	-17	-22	-18	-15	6	3	3	2	1	2	3	20	140
1925	15	31	11	-9	-18	-15	-4	6	6	6	4	2	3	5	32	288
1926	2	13	-6	-21	-23	-19	-7	6	6	4	1	1	2	4	24	168
1927	26	15	0	-9	-14	-17	-5	6	6	6	4	3	2	5	32	672
1928	2	20	-4	-14	-27	-22	-6	6	6	5	3	1	1	4	26	390
1929	1	3	-6	-8	-18	-18	-8	6	6	4	4	2	2	4	28	196
1930	23	10	1	-20	-19	-14	-2	6	6	6	2	2	3	5	30	210
1931	8	-9	-10	-8	-20	-16	-14	6	4	4	4	2	2	3	25	175
1932	25	3	8	-7	-14	-14	-8	6	6	6	4	3	3	4	32	224
1933	34	11	5	-4	-20	-15	-6	6	6	6	5	2	3	4	32	224
1934	12	0	-5	-10	-33	-28	-15	6	6	5	4	1	1	3	26	182
1935	24	45	8	-8	-18	-14	-5	6	6	6	4	2	3	5	32	224
1936	12	9	-2	-8	-20	-20	-5	6	6	5	4	2	2	5	30	300
1937	27	29	8	-4	-21	-19	-7	6	6	6	5	1	2	4	30	210
1938	-6	25	18	0	-9	-13	-9	4	6	6	6	4	3	4	33	693
1939	15	-8	-7	-25	-22	-28	-4	6	4	4	1	1	1	5	22	154
1940	8	34	5	-10	-20	-17	-2	6	6	6	4	2	2	5	31	496
1941	21	19	3	0	-9	-11	-11	6	6	6	6	4	3	3	34	816
1942	14	25	0	0	-9	-12	-10	6	6	6	6	4	3	4	35	875
1943	9	16	0	-8	-14	-15	-6	6	6	6	4	3	3	4	32	672
1944	10	5	0	-19	-24	-21	-7	6	6	6	2	1	1	4	26	182
1945	14	12	2	-5	-22	-17	-5	6	6	6	5	1	2	5	31	651
1946	11	12	2	-10	-18	-16	-3	6	6	6	4	2	2	5	31	527
1947	20	6	-10	-15	-24	-18	-6	6	6	4	3	1	2	4	26	182
1948	12	38	11	0	-15	-15	-1	6	6	6	6	3	3	5	35	700
1949	34	13	1	-16	-22	-18	-4	6	6	6	2	1	2	5	28	476
1950	17	14	-1	-12	-22	-17	-2	6	6	5	3	1	2	5	28	196
1951	17	7	3	-16	-21	-18	-2	6	6	6	2	1	2	5	28	532
1952	10	10	9	0	-9	-12	-10	6	6	6	6	4	3	4	35	840
1953	18	14	2	0	-9	-12	-10	6	6	6	6	4	3	4	35	875
1954	16	16	-3	-5	-17	-13	0	6	6	5	5	2	3	6	33	660
1955	-2	14	8	-19	-24	-17	-1	5	6	6	2	1	2	5	27	189
1956	29	19	0	0	-9	-11	-11	6	6	6	6	4	3	3	34	884
1957	17	6	9	-7	-17	-14	2	6	6	6	4	2	3	6	33	627
1958	-43	29	14	0	-9	-11	-11	1	6	6	6	4	3	3	29	638
1959	11	4	0	-19	-25	-16	4	6	6	6	2	1	2	6	29	348
1960	27	7	8	-18	-20	-19	-2	6	6	6	2	2	2	5	29	464
1961	13	7	3	-19	-24	-21	-2	6	6	6	2	1	1	5	27	513
1962	16	11	1	-12	-20	-18	-2	6	6	6	3	2	2	5	30	480
1963	10	-3	15	-4	-11	-12	-4	6	5	6	5	3	3	5	33	660
1964	3	-6	-5	-16	-21	-20	-1	6	4	5	2	1	2	5	25	175
1965	12	13	1	-10	-16	-10	-2	6	6	6	4	2	4	5	33	594
1966	6	12	-3	-15	-20	-16	-3	6	6	5	3	2	2	5	29	551
1967	4	16	3	0	-9	-11	-11	6	6	6	6	4	3	3	34	850
1968	20	2	2	-16	-21	-8	-2	6	6	6	2	1	4	5	30	420
1969	21	15	4	0	-9	-11	-11	6	6	6	6	4	3	3	34	850
1970	27	3	0	-12	-20	-13	-2	6	6	6	3	2	3	5	31	372
1971	3	20	4	0	-9	-11	-11	6	6	6	6	4	3	3	34	816
1972	11	11	0	-17	-21	-14	0	6	6	6	2	1	3	6	30	600
1973	19	12	2	-8	-18	-12	-1	6	6	6	4	2	3	5	32	672
1974	-11	33	9	0	-9	-11	-11	3	6	6	6	4	3	3	31	713
1975	-6	22	6	0	-9	-11	-11	4	6	6	6	4	3	3	32	736
1976	5	7	-4	-25	-21	-5	2	6	6	5	1	1	5	6	30	210
1977	-1	-17	-6	-22	-19	-19	-4	5	2	4	1	2	2	5	21	147
1978	16	20	0	-3	-10	-10	-8	6	6	6	5	4	4	4	35	805
1979	17	7	9	-14	-18	-12	-2	6	6	6	3	2	3	5	31	403
1980	27	13	5	-8	-11	-10	0	6	6	6	4	3	4	6	35	560
1981	14	8	-2	-20	-24	-16	-3	6	6	5	2	1	2	5	27	432
1982	17	5	16	0	-9	-11	-11	6	6	6	6	4	3	3	34	714
1983	28	5	17	0	-9	-11	-11	6	6	6	6	4	3	3	34	714
1984	9	8	3	-8	-16	-7	0	6	6	6	4	2	4	6	34	714
1985	7	8	-9	-23	-21	-17	2	6	6	4	1	1	2	6	26	182
1986	12	18	2	-11	-16	-16	4	6	6	6	3	2	2	6	31	248
1987	27	1	-7	-32	-23	-29	-7	6	6	4	1	1	1	4	23	161
1988	3	6	-1	-18	-31	-15	-3	6	6	5	2	1	3	5	28	196
1989	63	19	-4	-15	-21	-11	0	6	6	5	3	1	3	6	30	360
1990	7	-7	5	-15	-25	-16	-3	6	4	6	3	1	2	5	27	189
1991	26	11	0	-10	-13	-15	-7	6	6	6	4	3	3	4	32	224
1992	22	12	-8	-15	-16	-13	-6	6	6	4	3	2	3	4	28	196
1993	4	28	8	0	-13	-8	-1	6	6	6	6	3	4	5	36	792
1994	1	0	-1	-27	-21	-23	-2	6	6	5	1	1	1	5	25	175
												73 - year Average:			30	459.1
														1929 - '34 Average:		201.8

STUDY: 1995C06F-SWRCB-468 DWRSIM: recirc818-f, 17 Jun 97
CP # 6, LAKE OROVILLE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-468/6/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 900'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	DFMRE APR	DFMRE MAY	DFMRE JUN	DFMRE JUL	DFMRE AUG	DFMRE SEP
1922	833	833	835	844	850	858	893	900	900	880	876	876	42	7	0	0	20	24	24
1923	874	874	858	862	859	868	891	897	878	839	805	808	32	9	3	22	61	95	92
1924	800	788	761	766	784	774	761	750	728	709	700	694	126	139	150	172	191	200	206
1925	695	699	705	722	789	817	836	843	825	793	782	780	83	64	57	75	107	118	120
1926	777	779	781	794	837	856	887	874	853	812	799	781	44	13	26	47	88	101	119
1927	778	809	810	833	849	863	890	900	900	865	854	852	37	10	0	0	35	46	48
1928	849	859	860	868	871	849	878	863	842	788	737	730	51	22	37	58	112	163	170
1929	717	712	710	715	729	746	749	752	744	726	715	709	154	151	148	156	174	185	191
1930	701	698	760	788	816	848	871	874	855	814	776	772	52	29	26	45	86	124	128
1931	763	755	746	760	772	789	776	763	740	720	709	702	111	124	137	160	180	191	198
1932	696	688	693	718	740	774	780	805	777	753	742	736	126	120	95	123	147	158	164
1933	727	715	713	725	735	740	743	758	752	736	725	717	160	157	142	148	164	175	183
1934	713	705	708	734	756	778	770	760	736	710	700	686	122	130	140	164	190	200	214
1935	671	675	682	710	733	764	852	862	848	824	814	794	136	48	38	52	76	86	106
1936	785	775	773	823	849	860	886	897	887	847	828	824	40	14	3	13	53	72	76
1937	817	806	801	804	821	845	870	883	860	834	821	816	55	30	17	40	66	79	84
1938	811	825	854	858	849	849	882	900	900	899	896	887	51	18	0	0	1	4	13
1939	874	864	854	845	837	833	822	813	778	713	656	650	67	78	87	122	187	244	250
1940	639	629	631	704	813	849	879	883	867	829	820	809	51	21	17	33	71	80	91
1941	801	801	842	849	849	858	886	900	900	890	886	887	42	14	0	0	10	14	13
1942	874	874	849	849	850	867	882	900	900	885	882	882	33	18	0	0	15	18	18
1943	874	869	861	849	856	859	887	893	892	860	849	850	41	13	7	8	40	51	50
1944	851	853	853	859	857	868	879	895	875	835	797	791	32	21	5	25	65	103	109
1945	786	793	809	823	862	865	880	896	877	837	813	808	35	20	4	23	63	87	92
1946	808	816	849	864	868	868	887	892	870	831	788	785	32	13	8	30	69	112	115
1947	777	783	791	797	823	845	855	850	832	777	731	724	55	45	50	68	123	169	176
1948	728	729	725	761	763	783	843	872	878	844	827	821	117	57	28	22	56	73	79
1949	814	812	812	817	823	843	862	866	844	796	759	755	57	38	34	56	104	141	145
1950	741	740	741	771	818	849	881	900	886	848	820	819	51	19	0	14	52	80	81
1951	823	849	854	853	858	870	886	900	889	848	819	820	30	14	0	11	52	81	80
1952	824	827	849	849	852	862	894	900	900	900	899	887	38	6	0	0	0	1	13
1953	874	874	858	850	867	867	883	900	900	870	869	870	33	17	0	0	30	31	30
1954	872	871	874	858	857	859	883	863	847	800	753	753	41	17	37	53	100	147	147
1955	754	756	764	777	786	799	808	822	794	730	706	703	101	92	78	106	170	194	197
1956	694	690	845	849	849	864	892	900	900	873	870	874	36	8	0	0	27	30	26
1957	869	874	874	871	853	863	863	881	866	827	795	800	37	37	19	34	73	105	100
1958	802	806	825	845	849	849	879	900	900	898	894	887	51	21	0	0	2	6	13
1959	874	874	874	862	852	867	871	874	853	807	757	761	33	29	26	47	93	143	139
1960	754	742	737	752	813	853	853	859	840	800	788	782	47	47	41	60	100	112	118
1961	772	774	783	795	823	841	840	846	826	768	727	723	59	60	54	74	132	173	177
1962	706	703	712	727	789	823	844	843	828	772	745	724	77	56	57	72	128	155	176
1963	798	810	838	859	867	858	876	900	893	857	845	846	42	24	0	7	43	55	54
1964	847	859	861	866	874	874	880	884	867	826	779	752	26	20	16	33	74	121	148
1965	739	740	849	849	863	870	887	881	884	854	848	849	30	13	19	16	46	52	51
1966	853	859	860	864	870	874	894	882	862	821	772	767	26	6	18	38	79	128	133
1967	753	764	802	849	860	853	879	900	900	900	896	887	47	21	0	0	0	4	13
1968	874	874	873	858	861	866	863	867	848	801	764	761	34	37	33	52	99	136	139
1969	762	767	790	849	849	865	895	900	900	895	893	874	35	5	0	0	5	7	26
1970	874	874	850	849	849	874	869	871	857	818	787	789	26	31	29	43	82	113	111
1971	792	818	846	864	874	874	893	900	900	871	853	855	26	7	0	0	29	47	45
1972	860	866	865	869	867	874	884	886	867	826	781	782	26	16	14	33	74	119	118
1973	778	793	820	849	849	860	882	900	869	829	810	806	40	18	0	31	71	90	94
1974	810	849	850	854	864	849	883	900	900	889	888	886	51	17	0	0	11	12	14
1975	874	874	874	874	855	852	881	900	900	877	876	877	48	19	0	0	23	24	23
1976	873	874	874	874	874	874	871	862	840	794	759	759	26	29	38	60	106	141	141
1977	749	739	723	719	704	698	674	666	638	614	606	603	202	226	234	262	286	294	297
1978	592	592	628	751	804	859	878	897	891	871	861	869	41	22	3	9	29	39	31
1979	871	874	874	871	853	863	878	896	862	828	819	816	37	22	4	38	72	81	84
1980	822	825	833	850	849	865	881	893	888	873	866	865	35	19	7	12	27	34	35
1981	864	865	873	860	868	865	875	872	851	806	762	762	35	25	28	49	94	138	138
1982	770	849	849	859	862	859	884	900	900	889	886	887	41	16	0	0	11	14	13
1983	873	862	858	853	849	849	877	900	900	900	899	887	51	23	0	0	0	1	13
1984	874	860	849	869	869	871	885	894	878	840	830	832	29	15	6	22	60	70	68
1985	836	850	860	866	874	871	886	872	849	804	754	736	29	14	28	51	96	146	164
1986	727	723	730	766	849	849	871	875	871	842	831	842	51	29	25	29	58	69	58
1987	844	850	846	847	858	867	855	845	817	756	717	712	33	45	55	83	144	183	188
1988	700	703	742	769	771	771	770	759	734	714	701	699	129	130	141	166	186	199	201
1989	692	711	721	728	732	844	870	860	843	796	779	777	56	30	40	57	104	121	123
1990	788	789	774	787	795	820	808	808	783	727	714	705	80	92	92	117	173	186	195
1991	687	678	660	657	645	700	722	737	721	699	693	692	200	178	163	179	201	207	208
1992	688	684	685	689	720	750	765	754	727	702	690	684	150	135	146	173	198	210	216
1993	676	670	689	757	809	861	894	900	900	881	876	875	39	6	0	0	19	24	25
1994	874	874	874	871	862	874	872	866	844	802	754	749	26	28	34	56	98	146	151

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Fluctuation MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	1	4	6	6	1	1	1	20	8	35	7	0	-20	-4	0	6	6	6	6	2	5	6	37	740
1923	1	4	5	1	1	1	1	14	9	23	6	-19	-39	-34	3	6	6	6	2	1	1	6	28	392
1924	1	1	1	1	1	1	1	7	-10	-13	-11	-22	-19	-9	-6	4	3	3	1	2	4	4	21	147
1925	1	1	1	1	1	1	1	7	28	19	7	-18	-32	-11	-2	6	6	6	2	1	3	5	29	203
1926	1	3	1	1	1	1	1	9	19	31	-13	-21	-41	-13	-18	6	6	3	1	1	3	2	22	198
1927	1	3	6	6	1	1	1	19	14	27	10	0	-35	-11	-2	6	6	6	6	1	3	5	33	627
1928	1	1	1	1	1	1	1	7	-22	29	-15	-21	-54	-51	-7	1	6	3	1	1	1	4	17	119
1929	1	1	1	1	1	1	1	7	17	3	3	-8	-18	-11	-6	6	6	6	4	2	3	4	31	217
1930	1	1	1	1	1	1	1	7	32	23	3	-19	-41	-38	-4	6	6	6	2	1	1	5	27	189
1931	1	1	1	1	1	1	1	7	17	-13	-13	-23	-20	-11	-7	6	3	3	1	2	3	4	22	154
1932	1	1	1	1	1	1	1	7	34	6	25	-28	-24	-11	-6	6	6	6	1	1	3	4	27	189
1933	1	1	1	1	1	1	1	7	5	3	15	-6	-16	-11	-8	6	6	6	4	2	3	4	31	217
1934	1	1	1	1	1	1	1	7	22	-8	-10	-24	-26	-10	-14	6	4	4	1	1	4	3	23	161
1935	1	1	1	1	1	1	1	7	31	88	10	-14	-24	-10	-20	6	6	6	3	1	4	2	28	196
1936	1	3	5	3	1	1	1	15	11	26	11	-10	-40	-19	-4	6	6	6	4	1	2	5	30	450
1937	1	1	2	1	1	1	1	8	24	25	13	-23	-26	-13	-5	6	6	6	1	1	3	5	28	224
1938	1	2	6	6	5	5	3	28	0	33	18	0	-1	-3	-9	6	6	6	6	5	5	4	38	1064
1939	1	1	1	1	1	1	1	7	-4	-11	-9	-35	-65	-57	-6	5	3	4	1	1	1	4	19	133
1940	1	1	2	1	1	1	1	8	36	30	4	-16	-38	-9	-11	6	6	6	2	1	4	3	28	224
1941	1	3	6	6	3	3	3	25	9	28	14	0	-10	-4	1	6	6	6	6	4	5	6	39	975
1942	1	2	6	6	2	2	2	21	17	15	18	0	-15	-3	0	6	6	6	6	3	5	6	38	798
1943	1	3	4	4	1	1	1	15	3	28	6	-1	-32	-11	1	6	6	6	5	1	3	6	33	495
1944	1	1	4	1	1	1	1	10	11	11	16	-20	-40	-38	-6	6	6	6	2	1	1	4	26	260
1945	1	1	5	1	1	1	1	11	3	15	16	-19	-40	-24	-5	6	6	6	2	1	1	5	27	297
1946	1	3	4	1	1	1	1	12	0	19	5	-22	-39	-43	-3	6	6	6	1	1	1	5	26	312
1947	1	1	1	1	1	1	1	7	22	10	-5	-18	-55	-46	-7	6	6	5	2	1	1	4	25	175
1948	1	1	1	1	1	1	1	7	20	60	29	6	-34	-17	-6	6	6	6	6	1	2	4	31	217
1949	1	1	1	1	1	1	1	7	20	19	4	-22	-48	-37	-4	6	6	6	1	1	1	5	26	182
1950	1	2	6	3	1	1	1	15	31	32	19	-14	-38	-28	-1	6	6	6	3	1	1	5	28	420
1951	1	3	6	3	1	1	1	16	12	16	14	-11	-41	-29	1	6	6	6	3	1	1	6	29	464
1952	1	4	6	6	6	5	3	31	10	32	6	0	0	-1	-12	6	6	6	6	6	5	3	38	1178
1953	1	2	6	6	1	1	1	18	0	16	17	0	-30	-1	1	6	6	6	6	1	5	6	36	648
1954	1	2	1	1	1	1	1	8	2	24	-20	-16	-47	-47	0	6	6	2	2	1	1	6	24	192
1955	1	1	1	1	1	1	1	7	13	9	14	-28	-64	-24	-3	6	6	6	1	1	1	5	26	182
1956	1	4	6	6	1	1	1	20	15	28	8	0	-27	-3	4	6	6	6	6	1	5	6	36	720
1957	1	1	2	1	1	1	1	8	10	0	18	-15	-39	-32	5	6	6	6	3	1	1	6	29	232
1958	1	1	6	6	5	4	3	26	0	30	21	0	-2	-4	-7	6	6	6	6	5	5	4	38	988
1959	1	1	1	1	1	1	1	7	15	4	3	-21	-46	-50	4	6	6	6	1	1	1	6	27	189
1960	1	1	1	1	1	1	1	7	40	0	6	-19	-40	-12	-6	6	6	6	2	1	3	4	28	196
1961	1	1	1	1	1	1	1	7	18	-1	6	-20	-58	-41	-4	6	5	6	2	1	1	5	26	182
1962	1	1	1	1	1	1	1	7	34	21	-1	-15	-56	-27	-21	6	6	5	3	1	1	1	23	161
1963	1	1	6	4	1	1	1	15	-9	18	24	-7	-36	-12	1	4	6	6	4	1	3	6	30	450
1964	1	1	2	1	1	1	1	8	0	6	4	-17	-41	-47	-27	6	6	6	2	1	1	1	23	184
1965	1	3	2	2	1	1	1	11	7	17	-6	3	-30	-6	1	6	6	4	6	1	4	6	33	363
1966	1	4	2	1	1	1	1	11	4	20	-12	-20	-41	-49	-5	6	6	3	2	1	1	5	24	264
1967	1	1	6	6	6	5	3	28	-7	26	21	0	0	-4	-9	4	6	6	6	6	5	4	37	1036
1968	1	1	1	1	1	1	1	7	5	-3	4	-19	-47	-37	-3	6	5	6	2	1	1	5	26	182
1969	1	4	6	6	4	4	1	26	16	30	5	0	-5	-2	-19	6	6	6	6	5	5	2	36	936
1970	1	1	1	1	1	1	1	7	25	-5	2	-14	-39	-31	2	6	5	6	3	1	1	6	28	196
1971	1	4	6	6	1	1	1	20	0	19	7	0	-29	-18	2	6	6	6	6	1	2	6	33	660
1972	1	2	3	1	1	1	1	10	7	10	2	-19	-41	-45	1	6	6	6	2	1	1	6	28	280
1973	1	2	6	1	1	1	1	13	11	22	18	-31	-40	-19	-4	6	6	6	1	1	2	5	27	351
1974	1	2	6	6	3	3	3	24	-15	34	17	0	-11	-1	-2	3	6	6	6	3	5	5	34	816
1975	1	2	6	6	1	1	1	18	-3	29	19	0	-23	-1	1	5	6	6	6	1	5	6	35	630
1976	1	1	1	1	1	1	1	7	0	-3	-9	-22	-46	-35	0	6	5	4	1	1	1	6	24	168
1977	1	1	1	1	1	1	1	7	-6	-24	-8	-28	-24	-8	-3	4	1	4	1	1	4	5	20	140
1978	1	1	5	4	1	1	1	14	55	19	19	-6	-20	-10	8	6	6	6	4	2	4	6	34	476
1979	1	1	5	1	1	1	1	11	10	15	18	-34	-34	-9	-3	6	6	6	1	1	4	5	29	319
1980	1	2	4	3	1	1	1	13	16	16	12	-5	-15	-7	-1	6	6	6	5	3	4	5	35	455
1981	1	1	1	1	1	1	1	7	-3	10	-3	-21	-45	-44	0	5	6	5	1	1	1	6	25	175
1982	1	2	6	6	3	3	3	24	-3	25	16	0	-11	-3	1	5	6	6	6	3	5	6	37	888
1983	1	1	6	6	6	5	3	28	0	28	23	0	0	-1	-12	6	6	6	6	6	5	3	38	1064
1984	1	2	4	1	1	1	1	11	2	14	9	-16	-38	-10	2	6	6	6	2	1	4	6	31	341
1985	1	3	1	1	1	1	1	9	-3	15	-14	-23	-45	-50	-18	5	6	3	1	1	1	2	19	171
1986	1	1	1	1	1	1	1	7	0	22	4	-4	-29	-11	11	6	6	6	5	1	3	6	33	231
1987	1	1	1	1	1	1	1	7	9	-12	-10	-28	-61	-39	-5	6	3	4	1	1	1	5	21	147
1988	1	1	1	1	1	1	1	7	0	-1	-11	-25	-20	-13	-2	6	5	3	1	2	3	5	25	175
1989	1	1	1	1	1	1	1	7	112	26	-10	-17	-47	-17	-2	6	6	4	2	1	2	5	26	182
1990	1	1	1	1	1	1	1	7	25	-12	0	-25	-56	-13	-9	6	3	6	1	1	3	4	24	168
1991	1	1	1	1	1	1	1	7	55	22	15	-16	-22	-6	-1	6	6	6	2	1	4	5	30	210
1992	1	1	1	1	1	1	1	7	30	15	-11	-27	-25	-12	-6	6	6	3	1	1	3	4	24	168
1993	1	4	6	6	2	1	1	21	52	33	6	0	-19	-5	-1	6	6	6	6	2	5	5	36	756
1994	1	1	1	1	1	1	1	7	12	-2	-6	-22	-42	-48	-5	6	5	4	1	1	1	5	23	161

73 - year Average: 12 (Elevation score SUM)

73 - year Average: 29 (Fluctuation score SUM) **384.2** (Product)

1929 - '34 Average: 187.8

STUDY: 1995C06F-SWRCB-468 DWRSIM: recirc818-f, 17 Jun 97
CP # 8, FOLSOM LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-468/8/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 466'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	414	409	414	414	424	428	443	466	466	463	449	434	38	23	0	0	3	17	32
1923	425	423	424	424	419	420	449	466	451	431	424	422	46	17	0	15	35	42	44
1924	416	408	398	386	384	365	367	367	334	334	337	334	101	99	99	132	132	129	132
1925	347	361	379	389	424	437	449	466	449	433	421	418	29	17	0	17	33	45	48
1926	413	406	401	392	412	413	444	442	416	374	335	348	53	22	24	50	92	131	118
1927	356	398	419	424	424	437	449	466	461	456	449	434	29	17	0	5	10	17	32
1928	425	424	424	424	424	437	449	453	441	416	406	407	29	17	13	25	50	60	59
1929	400	393	389	377	375	374	388	394	374	335	347	351	92	78	72	92	131	119	115
1930	334	334	384	406	421	437	443	442	415	380	334	335	29	23	24	51	86	132	131
1931	334	349	362	376	385	399	393	390	335	334	334	334	67	73	76	131	132	132	132
1932	334	334	380	402	424	436	441	457	443	402	372	376	30	25	9	23	64	94	90
1933	352	334	355	366	369	382	344	370	336	334	345	340	84	122	96	130	132	121	126
1934	334	335	375	402	420	425	417	412	334	324	313	326	41	49	54	132	142	153	140
1935	334	361	378	402	418	421	449	452	452	432	417	411	45	17	14	14	34	49	55
1936	407	403	401	424	424	437	449	461	456	448	441	434	29	17	5	10	18	25	32
1937	425	417	411	404	424	437	449	466	454	441	433	430	29	17	0	12	25	33	36
1938	422	419	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1939	426	420	415	409	402	409	415	418	390	334	334	335	57	51	48	76	132	132	131
1940	334	334	334	420	424	437	449	461	448	431	424	425	29	17	5	18	35	42	41
1941	420	416	424	424	424	437	449	466	458	455	449	434	29	17	0	8	11	17	32
1942	426	422	424	424	424	430	449	466	466	463	449	434	36	17	0	0	3	17	32
1943	425	424	423	422	422	434	449	459	451	446	442	434	32	17	7	15	20	24	32
1944	425	419	413	405	407	419	420	433	413	392	377	372	47	46	33	53	74	89	94
1945	365	394	413	424	424	437	449	466	455	444	438	434	29	17	0	11	22	28	32
1946	427	424	424	424	423	437	449	466	451	438	431	430	29	17	0	15	28	35	36
1947	421	422	421	412	414	431	440	443	416	385	357	360	35	26	23	50	81	109	106
1948	377	389	395	415	411	407	442	462	459	453	448	434	59	24	4	7	13	18	32
1949	425	419	416	406	400	422	443	459	442	426	417	416	44	23	7	24	40	49	50
1950	410	404	395	421	424	437	449	466	455	443	439	434	29	17	0	11	23	27	32
1951	428	393	388	388	388	426	449	466	450	436	430	431	40	17	0	16	30	36	35
1952	425	424	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1953	428	423	424	424	424	430	446	458	464	463	449	434	36	20	8	2	3	17	32
1954	425	423	421	422	424	437	449	452	441	422	417	420	29	17	14	25	44	49	46
1955	414	408	411	417	418	413	424	434	417	394	378	376	53	42	32	49	72	88	90
1956	361	363	420	402	406	425	441	466	466	463	449	434	41	25	0	0	3	17	32
1957	428	422	417	412	424	437	433	459	448	436	429	428	29	33	7	18	30	37	38
1958	421	416	417	422	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1959	425	419	412	417	424	425	433	433	411	388	375	385	41	33	33	55	78	91	81
1960	385	380	378	387	424	437	448	446	427	404	393	398	29	18	20	39	62	73	68
1961	393	391	390	383	389	398	408	420	405	387	377	381	68	58	46	61	79	89	85
1962	382	384	391	392	424	431	447	454	447	427	419	417	35	19	12	19	39	47	49
1963	441	424	424	424	419	430	449	466	459	454	449	434	36	17	0	7	12	17	32
1964	427	424	424	424	418	414	425	438	417	381	351	335	52	41	28	49	85	115	131
1965	335	367	393	392	395	414	449	463	453	446	443	434	52	17	3	13	20	23	32
1966	426	424	424	424	422	430	448	447	427	404	393	394	36	18	19	39	62	73	72
1967	394	402	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1968	427	424	423	424	424	437	439	441	419	395	393	396	29	27	25	47	71	73	70
1969	394	399	408	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1970	427	424	423	393	396	426	431	440	429	413	412	415	40	35	26	37	53	54	51
1971	409	419	424	424	423	437	447	461	461	460	449	434	29	19	5	5	6	17	32
1972	425	422	424	424	424	437	444	451	432	410	403	403	29	22	15	34	56	63	63
1973	402	407	422	424	424	437	449	466	451	434	428	429	29	17	0	15	32	38	37
1974	422	423	422	409	417	433	449	466	463	463	449	434	33	17	0	3	3	17	32
1975	426	419	417	415	424	437	441	466	466	463	449	434	29	25	0	0	3	17	32
1976	431	423	419	410	402	392	397	401	366	334	340	341	74	69	65	100	132	126	125
1977	335	334	330	325	321	323	334	341	334	319	305	291	143	132	125	132	147	161	175
1978	286	304	358	424	424	437	449	466	459	453	444	434	29	17	0	7	13	22	32
1979	423	417	411	418	424	437	447	466	449	433	426	425	29	19	0	17	33	40	41
1980	421	419	420	405	399	430	449	464	453	453	449	434	36	17	2	13	13	17	32
1981	425	419	415	413	412	422	433	435	411	390	384	385	44	33	31	55	76	82	81
1982	395	420	392	396	388	424	449	466	466	463	449	434	42	17	0	0	3	17	32
1983	438	415	417	418	418	433	449	466	466	463	449	434	33	17	0	0	3	17	32
1984	435	392	388	388	392	424	441	464	453	440	435	434	42	25	2	13	26	31	32
1985	427	424	424	420	422	428	443	442	413	373	335	335	38	23	24	53	93	131	131
1986	335	366	396	424	396	424	449	464	458	453	448	434	42	17	2	8	13	18	32
1987	427	420	413	405	404	410	416	418	386	336	324	334	56	50	48	80	130	142	132
1988	334	334	369	396	387	385	393	390	352	324	309	374	81	73	76	114	142	157	92
1989	358	378	394	403	402	437	449	452	433	410	405	408	29	17	14	33	56	61	58
1990	405	404	401	400	398	410	413	414	380	334	343	344	56	53	52	86	132	123	122
1991	334	334	335	332	332	383	407	425	417	412	408	406	83	59	41	49	54	58	60
1992	399	387	377	360	384	400	410	406	365	334	323	316	66	56	60	101	132	143	150
1993	315	315	357	424	427	434	449	466	466	455	449	434	32	17	0	0	11	17	32
1994	423	413	407	395	390	388	396	401	375	334	334	332	78	70	65	91	132	132	134

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Change MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	1	1	6	6	5	2	1	**22**	4	15	23	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**770**
1923	1	2	6	2	1	1	1	**14**	1	29	17	-15	-20	-7	-2	6	6	6	3	2	4	5	**32**	**448**
1924	1	1	1	1	1	1	1	**7**	-19	2	0	-33	0	3	-3	2	6	6	1	6	6	5	**32**	**224**
1925	1	2	6	2	1	1	1	**14**	13	12	17	-17	-16	-12	-3	6	6	6	2	2	3	5	**30**	**420**
1926	1	1	1	1	1	1	1	**7**	1	31	-2	-26	-42	-39	13	6	6	5	1	1	1	6	**26**	**182**
1927	1	2	6	4	3	2	1	**19**	13	12	17	-5	-5	-7	-15	6	6	6	5	5	4	3	**35**	**665**
1928	1	2	3	1	1	1	1	**10**	13	12	4	-12	-25	-10	1	6	6	6	3	1	4	6	**32**	**320**
1929	1	1	1	1	1	1	1	**7**	-1	14	6	-20	-39	12	4	5	6	6	2	1	6	6	**32**	**224**
1930	1	1	1	1	1	1	1	**7**	16	6	-1	-27	-35	-46	1	6	6	5	1	1	1	6	**26**	**182**
1931	1	1	1	1	1	1	1	**7**	14	-6	-3	-55	-1	0	0	6	4	5	1	5	6	6	**33**	**231**
1932	1	1	4	1	1	1	1	**10**	12	5	16	-14	-41	-30	4	6	6	6	3	1	1	6	**29**	**290**
1933	1	1	1	1	1	1	1	**7**	13	-38	26	-34	-2	11	-5	6	1	6	1	5	6	5	**30**	**210**
1934	1	1	1	1	1	1	1	**7**	5	-8	-5	-78	-10	-11	13	6	4	5	1	4	3	6	**29**	**203**
1935	1	2	3	3	1	1	1	**12**	3	28	3	0	-20	-15	-6	6	6	6	6	2	3	4	**33**	**396**
1936	1	2	4	3	2	1	1	**14**	13	12	12	-5	-8	-7	-7	6	6	6	5	4	4	4	**35**	**490**
1937	1	2	6	3	1	1	1	**15**	13	12	17	-12	-13	-8	-3	6	6	6	3	3	4	5	**33**	**495**
1938	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1939	1	1	1	1	1	1	1	**7**	7	6	3	-28	-56	0	1	6	6	6	1	1	6	6	**32**	**224**
1940	1	2	4	2	1	1	1	**12**	13	12	12	-13	-17	-7	1	6	6	6	3	2	4	6	**33**	**396**
1941	1	2	6	4	3	2	1	**19**	13	12	17	-8	-3	-6	-15	6	6	6	4	5	4	3	**34**	**646**
1942	1	2	6	6	5	2	1	**23**	6	19	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1943	1	2	4	2	1	1	1	**12**	12	15	10	-8	-5	-4	-8	6	6	6	4	5	5	4	**36**	**432**
1944	1	1	1	1	1	1	1	**7**	12	1	13	-20	-21	-15	-5	6	6	6	2	1	3	5	**29**	**203**
1945	1	2	6	3	1	1	1	**15**	13	12	17	-11	-11	-6	-4	6	6	6	3	3	4	5	**33**	**495**
1946	1	2	6	2	1	1	1	**14**	14	12	17	-15	-13	-7	-1	6	6	6	3	3	4	5	**33**	**462**
1947	1	1	1	1	1	1	1	**7**	17	9	3	-27	-31	-28	3	6	6	6	1	1	1	6	**27**	**189**
1948	1	1	5	4	3	2	1	**17**	-4	35	20	-3	-6	-5	-14	5	6	6	5	4	5	3	**34**	**578**
1949	1	1	4	1	1	1	1	**10**	22	21	16	-17	-16	-9	-1	6	6	6	2	2	4	5	**31**	**310**
1950	1	2	6	3	1	1	1	**15**	13	12	17	-11	-12	-4	-5	6	6	6	3	3	5	5	**34**	**510**
1951	1	2	6	2	1	1	1	**14**	38	23	17	-16	-14	-6	1	6	6	6	2	3	4	6	**33**	**462**
1952	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1953	1	1	4	5	5	2	1	**19**	6	16	12	6	-1	-14	-15	6	6	6	6	5	3	3	**35**	**665**
1954	1	2	3	1	1	1	1	**10**	13	12	3	-11	-19	-5	3	6	6	6	3	2	5	6	**34**	**340**
1955	1	1	1	1	1	1	1	**7**	-5	11	10	-17	-23	-16	-2	5	6	6	2	1	2	5	**27**	**189**
1956	1	1	6	6	5	2	1	**22**	19	16	25	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**770**
1957	1	1	4	2	1	1	1	**11**	13	-4	26	-11	-12	-7	-1	6	5	6	3	3	4	5	**32**	**352**
1958	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1959	1	1	1	1	1	1	1	**7**	1	8	0	-22	-23	-13	10	6	6	6	1	1	3	6	**29**	**203**
1960	1	2	1	1	1	1	1	**8**	13	11	-2	-19	-23	-11	5	6	6	5	2	1	3	6	**29**	**232**
1961	1	1	1	1	1	1	1	**7**	9	10	12	-15	-18	-10	4	6	6	6	3	2	4	6	**33**	**231**
1962	1	2	3	2	1	1	1	**11**	7	16	7	-7	-20	-8	-2	6	6	6	4	2	4	5	**33**	**363**
1963	1	2	6	4	3	2	1	**19**	11	19	17	-7	-5	-5	-15	6	6	6	4	5	5	3	**35**	**665**
1964	1	1	1	1	1	1	1	**7**	-4	11	13	-21	-36	-30	-16	5	6	6	1	1	1	2	**22**	**154**
1965	1	2	5	3	1	1	1	**14**	19	35	14	-10	-7	-3	-9	6	6	6	4	4	5	4	**35**	**490**
1966	1	2	2	1	1	1	1	**9**	8	18	-1	-20	-23	-11	1	6	6	5	2	1	3	6	**29**	**261**
1967	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1968	1	1	1	1	1	1	1	**7**	13	2	2	-22	-24	-2	3	6	6	6	1	1	5	6	**31**	**217**
1969	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1970	1	1	1	1	1	1	1	**7**	30	5	9	-11	-16	-1	3	6	6	6	3	2	5	6	**34**	**238**
1971	1	2	4	4	4	2	1	**18**	14	10	14	0	-1	-11	-15	6	6	6	6	5	3	3	**35**	**630**
1972	1	1	2	1	1	1	1	**8**	13	7	7	-19	-22	-7	0	6	6	6	2	1	4	6	**31**	**248**
1973	1	2	6	2	1	1	1	**14**	13	12	17	-15	-17	-6	1	6	6	6	3	2	4	6	**33**	**462**
1974	1	2	6	5	5	2	1	**22**	16	16	17	-3	0	-14	-15	6	6	6	5	6	3	3	**35**	**770**
1975	1	1	6	6	5	2	1	**22**	13	4	25	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**770**
1976	1	1	1	1	1	1	1	**7**	-10	5	4	-35	-32	6	1	4	6	6	1	1	6	6	**30**	**210**
1977	1	1	1	1	1	1	1	**7**	2	11	7	-7	-15	-14	-14	6	6	6	4	3	3	3	**31**	**217**
1978	1	2	6	4	3	1	1	**18**	13	12	17	-7	-6	-9	-10	6	6	6	4	4	4	4	**34**	**612**
1979	1	2	6	2	1	1	1	**14**	13	10	19	-17	-16	-7	-1	6	6	6	2	2	4	5	**31**	**434**
1980	1	2	5	3	3	2	1	**17**	31	19	15	-11	0	-4	-15	6	6	6	3	6	5	3	**35**	**595**
1981	1	1	1	1	1	1	1	**7**	10	11	2	-24	-21	-6	1	6	6	6	1	1	4	6	**30**	**210**
1982	1	2	6	6	5	2	1	**23**	36	25	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1983	1	2	6	6	5	2	1	**23**	15	16	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1984	1	1	5	3	1	1	1	**13**	32	17	23	-11	-13	-5	-1	6	6	6	3	3	5	5	**34**	**442**
1985	1	1	1	1	1	1	1	**7**	6	15	-1	-29	-40	-38	0	6	6	5	1	1	1	6	**26**	**182**
1986	1	2	5	4	3	2	1	**18**	28	25	15	-6	-5	-5	-14	6	6	6	4	5	5	3	**35**	**630**
1987	1	1	1	1	1	1	1	**7**	6	6	2	-32	-50	-12	10	6	6	6	1	1	3	6	**29**	**203**
1988	1	1	1	1	1	1	1	**7**	-2	8	-3	-38	-28	-15	65	5	6	5	1	1	3	6	**27**	**189**
1989	1	2	3	1	1	1	1	**10**	35	12	3	-19	-23	-5	3	6	6	6	2	1	5	6	**32**	**320**
1990	1	1	1	1	1	1	1	**7**	12	3	1	-34	-46	9	1	6	6	6	1	1	6	6	**32**	**224**
1991	1	1	1	1	1	1	1	**7**	51	24	18	-8	-5	-4	-2	6	6	6	4	5	5	5	**37**	**259**
1992	1	1	1	1	1	1	1	**7**	16	10	-4	-41	-31	-11	-7	6	6	5	1	1	3	4	**26**	**182**
1993	1	2	6	6	3	2	1	**21**	7	15	17	0	-11	-6	-15	6	6	6	6	3	4	3	**34**	**714**
1994	1	1	1	1	1	1	1	**7**	-2	8	5	-26	-41	0	-2	5	6	6	1	1	6	5	**30**	**210**

73 - year Average: 13

73 - year Average: 32.14 427.12

1929 - '34 Average: 223.3

STUDY: 1995C06F-SWRCB-468 DWRSIM: 8.18, 27 Nov 96
CP # 10, NEW MELONES RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-468/10/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 1088'

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	939	942	948	953	968	977	973	989	1012	1003	991	981
1923	980	983	993	1001	1008	1007	1004	1008	1008	999	984	975
1924	974	976	980	984	987	988	978	964	951	939	927	923
1925	919	921	925	928	947	958	958	970	973	965	951	944
1926	942	943	946	948	958	960	959	944	930	913	891	879
1927	876	881	894	905	929	940	947	952	952	941	928	922
1928	923	929	934	938	946	969	972	974	966	955	943	936
1929	933	935	938	941	944	946	941	936	929	919	904	894
1930	890	892	897	902	912	923	921	911	909	894	877	864
1931	865	870	874	878	882	886	873	852	839	827	813	801
1932	800	805	817	826	849	859	860	882	907	900	885	873
1933	874	876	882	887	891	894	880	864	860	844	828	815
1934	811	815	821	827	836	846	835	814	793	770	735	715
1935	715	719	730	752	767	783	811	854	875	860	841	828
1936	828	832	838	855	891	909	925	943	951	941	928	921
1937	921	924	927	932	945	959	960	987	992	981	968	961
1938	961	964	977	989	1008	1029	1038	1066	1087	1083	1073	1068
1939	1050	1050	1050	1050	1050	1052	1050	1038	1025	1012	999	992
1940	988	989	991	1003	1018	1035	1044	1055	1046	1033	1021	1013
1941	1013	1015	1020	1027	1037	1047	1043	1058	1064	1058	1047	1040
1942	1038	1039	1045	1050	1050	1055	1055	1067	1081	1078	1067	1062
1943	1050	1050	1050	1050	1050	1055	1061	1068	1067	1059	1048	1041
1944	1039	1040	1042	1043	1046	1050	1045	1041	1034	1021	1008	1000
1945	998	1003	1007	1012	1026	1035	1035	1048	1054	1045	1033	1026
1946	1025	1030	1040	1048	1050	1054	1052	1060	1057	1046	1034	1027
1947	1026	1029	1031	1033	1037	1040	1028	1019	1010	999	988	981
1948	978	980	982	984	985	989	987	988	996	986	974	967
1949	964	966	970	972	976	982	974	976	970	957	944	937
1950	933	933	936	944	954	963	959	966	971	960	947	940
1951	936	973	1017	1029	1040	1051	1043	1035	1027	1014	1001	994
1952	992	995	1002	1016	1027	1040	1043	1073	1088	1086	1076	1070
1953	1050	1050	1050	1050	1050	1054	1046	1036	1037	1028	1016	1008
1954	1005	1007	1010	1013	1015	1023	1025	1028	1018	1005	992	982
1955	978	981	985	991	991	991	982	975	971	957	944	936
1956	933	936	968	1000	1014	1024	1014	1033	1045	1038	1026	1019
1957	1018	1020	1023	1026	1032	1039	1027	1023	1022	1009	997	987
1958	981	984	987	995	1003	1018	1025	1055	1069	1064	1054	1047
1959	1045	1047	1049	1050	1050	1053	1046	1030	1018	1005	992	983
1960	978	980	983	986	993	999	996	990	979	965	952	942
1961	935	938	942	945	947	950	944	934	922	904	886	875
1962	875	878	882	885	902	912	915	912	916	900	879	865
1963	860	865	871	885	914	916	918	942	947	939	927	920
1964	921	926	930	936	938	941	932	921	909	888	868	854
1965	848	854	903	936	952	962	974	978	989	984	973	966
1966	966	972	978	985	992	997	985	982	969	954	941	932
1967	930	933	945	960	970	986	994	1020	1050	1054	1044	1037
1968	1036	1038	1041	1044	1050	1054	1042	1033	1022	1008	994	984
1969	981	986	989	1020	1040	1055	1065	1088	1088	1084	1074	1066
1970	1050	1050	1050	1050	1050	1055	1047	1041	1039	1025	1012	1005
1971	1003	1007	1015	1022	1029	1035	1026	1021	1021	1010	997	989
1972	985	989	996	1001	1002	1006	992	989	979	965	951	944
1973	941	944	950	966	985	999	1000	1018	1022	1012	1001	996
1974	997	1003	1012	1025	1035	1049	1053	1064	1064	1054	1043	1035
1975	1034	1036	1039	1043	1050	1055	1050	1049	1061	1053	1042	1034
1976	1033	1036	1038	1040	1043	1045	1039	1030	1019	1009	1000	994
1977	994	995	997	997	997	997	988	975	966	954	942	936
1978	934	934	938	949	961	981	991	1009	1020	1018	1008	1005
1979	1005	1008	1011	1020	1032	1046	1046	1056	1051	1037	1023	1016
1980	1017	1020	1023	1050	1050	1055	1056	1063	1070	1068	1057	1051
1981	1050	1050	1050	1050	1050	1053	1045	1034	1019	1005	992	984
1982	982	990	1005	1026	1050	1055	1071	1086	1088	1084	1075	1071
1983	1050	1050	1050	1050	1050	1055	1056	1070	1088	1088	1082	1075
1984	1050	1050	1050	1050	1050	1055	1044	1037	1033	1022	1011	1006
1985	1005	1010	1015	1018	1023	1029	1026	1020	1010	1000	989	984
1986	982	986	990	1000	1048	1055	1056	1061	1065	1055	1045	1040
1987	1039	1041	1044	1044	1046	1049	1044	1034	1023	1014	1006	1002
1988	998	998	999	1000	1002	1004	998	987	977	968	959	953
1989	952	951	952	953	956	968	963	957	949	937	926	921
1990	924	927	931	934	937	941	933	917	898	878	862	853
1991	852	854	858	858	858	866	861	855	845	831	818	811
1992	812	814	820	823	834	843	835	815	797	775	748	723
1993	732	745	762	794	897	948	936	941	952	942	932	927
1994	927	928	931	932	933	939	935	930	920	901	884	876

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**
1922	120	111	115	99	76	85	97	1	1	1	1	1	1	1	**7**
1923	80	81	84	80	80	89	104	1	1	1	1	1	1	1	**7**
1924	101	100	110	124	137	149	161	1	1	1	1	1	1	1	**7**
1925	141	130	130	118	115	123	137	1	1	1	1	1	1	1	**7**
1926	130	128	129	144	158	175	197	1	1	1	1	1	1	1	**7**
1927	159	148	141	136	136	147	160	1	1	1	1	1	1	1	**7**
1928	142	119	116	114	122	133	145	1	1	1	1	1	1	1	**7**
1929	144	142	147	152	159	169	184	1	1	1	1	1	1	1	**7**
1930	176	165	167	177	179	194	211	1	1	1	1	1	1	1	**7**
1931	206	202	215	236	249	261	275	1	1	1	1	1	1	1	**7**
1932	239	229	228	206	181	188	203	1	1	1	1	1	1	1	**7**
1933	197	194	208	224	228	244	260	1	1	1	1	1	1	1	**7**
1934	252	242	253	274	295	318	353	1	1	1	1	1	1	1	**7**
1935	321	305	277	234	213	228	247	1	1	1	1	1	1	1	**7**
1936	197	179	163	145	137	147	160	1	1	1	1	1	1	1	**7**
1937	143	129	128	101	96	107	120	1	1	1	1	1	1	1	**7**
1938	80	59	50	22	1	5	15	1	1	1	1	5	4	2	**15**
1939	38	36	38	50	63	76	89	1	1	1	1	1	1	1	**7**
1940	70	53	44	33	42	55	67	1	1	1	1	1	1	1	**7**
1941	51	41	45	30	24	30	41	1	1	1	1	1	1	1	**7**
1942	38	33	33	21	7	10	21	1	1	1	1	4	3	1	**12**
1943	38	33	27	20	21	29	40	1	1	1	1	1	1	1	**7**
1944	42	38	43	47	54	67	80	1	1	1	1	1	1	1	**7**
1945	62	53	53	40	34	43	55	1	1	1	1	1	1	1	**7**
1946	38	34	36	28	31	42	54	1	1	1	1	1	1	1	**7**
1947	51	48	60	69	78	89	100	1	1	1	1	1	1	1	**7**
1948	103	99	101	100	92	102	114	1	1	1	1	1	1	1	**7**
1949	112	106	114	112	118	131	144	1	1	1	1	1	1	1	**7**
1950	134	125	129	122	117	128	141	1	1	1	1	1	1	1	**7**
1951	48	37	45	53	61	74	87	1	1	1	1	1	1	1	**7**
1952	61	48	45	15	0	2	12	1	1	1	2	6	5	3	**19**
1953	38	34	42	52	51	60	72	1	1	1	1	1	1	1	**7**
1954	73	65	63	60	70	83	96	1	1	1	1	1	1	1	**7**
1955	97	97	106	113	117	131	144	1	1	1	1	1	1	1	**7**
1956	74	64	74	55	43	50	62	1	1	1	1	1	1	1	**7**
1957	56	49	61	65	66	79	91	1	1	1	1	1	1	1	**7**
1958	85	70	63	33	19	24	34	1	1	1	1	2	1	1	**8**
1959	38	35	42	58	70	83	96	1	1	1	1	1	1	1	**7**
1960	95	89	92	98	109	123	136	1	1	1	1	1	1	1	**7**
1961	141	138	144	154	166	184	202	1	1	1	1	1	1	1	**7**
1962	186	176	173	176	172	188	209	1	1	1	1	1	1	1	**7**
1963	174	172	170	146	141	149	161	1	1	1	1	1	1	1	**7**
1964	150	147	156	167	179	200	220	1	1	1	1	1	1	1	**7**
1965	136	126	114	110	99	104	115	1	1	1	1	1	1	1	**7**
1966	96	91	103	106	119	134	147	1	1	1	1	1	1	1	**7**
1967	118	102	94	68	38	34	44	1	1	1	1	1	1	1	**7**
1968	38	34	46	55	66	80	94	1	1	1	1	1	1	1	**7**
1969	48	33	23	0	0	4	14	1	1	1	6	6	5	3	**23**
1970	38	33	41	47	49	63	76	1	1	1	1	1	1	1	**7**
1971	59	53	62	67	67	78	91	1	1	1	1	1	1	1	**7**
1972	86	82	96	99	109	123	137	1	1	1	1	1	1	1	**7**
1973	103	89	88	70	66	76	87	1	1	1	1	1	1	1	**7**
1974	53	39	35	24	24	34	45	1	1	1	1	1	1	1	**7**
1975	38	33	38	39	27	35	46	1	1	1	1	1	1	1	**7**
1976	45	43	49	58	69	79	88	1	1	1	1	1	1	1	**7**
1977	91	91	100	113	122	134	146	1	1	1	1	1	1	1	**7**
1978	127	107	97	79	68	70	80	1	1	1	1	1	1	1	**7**
1979	56	42	42	32	37	51	65	1	1	1	1	1	1	1	**7**
1980	38	33	32	25	18	20	31	1	1	1	1	2	1	1	**8**
1981	38	35	43	54	69	83	96	1	1	1	1	1	1	1	**7**
1982	38	33	17	2	0	4	13	1	1	2	5	6	5	3	**23**
1983	38	33	32	18	0	0	6	1	1	1	2	6	6	4	**21**
1984	38	33	44	51	55	66	77	1	1	1	1	1	1	1	**7**
1985	65	59	62	68	78	88	99	1	1	1	1	1	1	1	**7**
1986	40	33	32	27	23	33	43	1	1	1	1	1	1	1	**7**
1987	42	39	44	54	65	74	82	1	1	1	1	1	1	1	**7**
1988	86	84	90	101	111	120	129	1	1	1	1	1	1	1	**7**
1989	132	120	125	131	139	151	162	1	1	1	1	1	1	1	**7**
1990	151	147	155	171	190	210	226	1	1	1	1	1	1	1	**7**
1991	230	222	227	233	243	257	270	1	1	1	1	1	1	1	**7**
1992	254	245	253	273	291	313	340	1	1	1	1	1	1	1	**7**
1993	191	140	152	147	136	146	156	1	1	1	1	1	1	1	**7**
1994	155	149	153	158	168	187	204	1	1	1	1	1	1	1	**7**
													73 - year Average:		**8**

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	9	-4	16	23	-9	-12	-10	6	5	6	6	4	3	4	**34**	**238**
1923	-1	-3	4	0	-9	-15	-9	5	5	6	6	4	3	4	**33**	**231**
1924	1	-10	-14	-13	-12	-12	-4	6	4	3	3	3	3	5	**27**	**189**
1925	11	0	12	3	-8	-14	-7	6	6	6	6	4	3	4	**35**	**245**
1926	2	-1	-15	-14	-17	-22	-12	6	5	3	3	2	1	3	**23**	**161**
1927	11	7	5	0	-11	-13	-6	6	6	6	6	3	3	4	**34**	**238**
1928	23	3	2	-8	-11	-12	-7	6	6	6	4	3	3	4	**32**	**224**
1929	2	-5	-5	-7	-10	-15	-10	6	5	5	4	4	3	4	**31**	**217**
1930	11	-2	-10	-2	-15	-17	-13	6	5	4	5	3	2	3	**28**	**196**
1931	4	-13	-21	-13	-12	-14	-12	6	3	1	3	3	3	3	**22**	**154**
1932	10	1	22	25	-7	-15	-12	6	6	6	6	4	3	3	**34**	**238**
1933	3	-14	-16	-4	-16	-16	-13	6	3	2	5	2	2	3	**23**	**161**
1934	10	-11	-21	-21	-23	-35	-20	6	3	1	1	1	1	2	**15**	**105**
1935	16	28	43	21	-15	-19	-13	6	6	6	6	3	2	3	**32**	**224**
1936	18	16	18	8	-10	-13	-7	6	6	6	6	4	3	4	**35**	**245**
1937	14	1	27	5	-11	-13	-7	6	6	6	6	3	3	4	**34**	**238**
1938	21	9	28	21	-4	-10	-5	6	6	6	6	5	4	5	**38**	**570**
1939	2	-2	-12	-13	-13	-13	-7	6	5	3	3	3	3	4	**27**	**189**
1940	17	9	11	-9	-13	-12	-8	6	6	6	4	3	3	4	**32**	**224**
1941	10	-4	15	6	-6	-11	-7	6	5	6	6	4	3	4	**34**	**238**
1942	5	0	12	14	-3	-11	-5	6	6	6	6	5	3	5	**37**	**444**
1943	5	6	7	-1	-8	-11	-7	6	6	6	5	4	3	4	**34**	**238**
1944	4	-5	-4	-7	-13	-13	-8	6	5	5	4	3	3	4	**30**	**210**
1945	9	0	13	6	-9	-12	-7	6	6	6	6	4	3	4	**35**	**245**
1946	4	-2	8	-3	-11	-12	-7	6	5	6	5	3	3	4	**32**	**224**
1947	3	-12	-9	-9	-11	-11	-7	6	3	4	4	3	3	4	**27**	**189**
1948	4	-2	1	8	-10	-12	-7	6	5	6	6	4	3	4	**34**	**238**
1949	6	-8	2	-6	-13	-13	-7	6	4	6	4	3	3	4	**30**	**210**
1950	9	-4	7	5	-11	-13	-7	6	5	6	6	3	3	4	**33**	**231**
1951	11	-8	-8	-8	-13	-13	-7	6	4	4	4	3	3	4	**28**	**196**
1952	13	3	30	15	-2	-10	-6	6	6	6	6	5	4	4	**37**	**703**
1953	4	-8	-10	1	-9	-12	-8	6	4	4	6	4	3	4	**31**	**217**
1954	8	2	3	-10	-13	-13	-10	6	6	6	4	3	3	4	**32**	**224**
1955	0	-9	-7	-4	-14	-13	-8	6	4	4	5	3	3	4	**29**	**203**
1956	10	-10	19	12	-7	-12	-7	6	4	6	6	4	3	4	**33**	**231**
1957	7	-12	-4	-1	-13	-12	-10	6	3	5	5	3	3	4	**29**	**203**
1958	15	7	30	14	-5	-10	-7	6	6	6	6	5	4	4	**37**	**296**
1959	3	-7	-16	-12	-13	-13	-9	6	4	2	3	3	3	4	**25**	**175**
1960	6	-3	-6	-11	-14	-13	-10	6	5	4	3	3	3	4	**28**	**196**
1961	3	-6	-10	-12	-18	-18	-11	6	4	4	3	2	2	3	**24**	**168**
1962	10	3	-3	4	-16	-21	-14	6	6	5	6	2	1	3	**29**	**203**
1963	2	2	24	5	-8	-12	-7	6	6	6	6	4	3	4	**35**	**245**
1964	3	-9	-11	-12	-21	-20	-14	6	4	3	3	1	2	3	**22**	**154**
1965	10	12	4	11	-5	-11	-7	6	6	6	6	5	3	4	**36**	**252**
1966	5	-12	-3	-13	-15	-13	-9	6	3	5	3	3	3	4	**27**	**189**
1967	16	8	26	30	4	-10	-7	6	6	6	6	6	4	4	**38**	**266**
1968	4	-12	-9	-11	-14	-14	-10	6	3	4	3	3	3	4	**26**	**182**
1969	15	10	23	0	-4	-10	-8	6	6	6	6	5	4	4	**37**	**851**
1970	5	-8	-6	-2	-14	-13	-7	6	4	4	5	3	3	4	**29**	**203**
1971	6	-9	-5	0	-11	-13	-8	6	4	5	6	3	3	4	**31**	**217**
1972	4	-14	-3	-10	-14	-14	-7	6	3	5	4	3	3	4	**28**	**196**
1973	14	1	18	4	-10	-11	-5	6	6	6	6	4	3	5	**36**	**252**
1974	14	4	11	0	-10	-11	-8	6	6	6	6	4	3	4	**35**	**245**
1975	5	-5	-1	12	-8	-11	-8	6	5	5	6	4	3	4	**33**	**231**
1976	2	-6	-9	-11	-10	-9	-6	6	4	4	3	4	4	4	**29**	**203**
1977	0	-9	-13	-9	-12	-12	-6	6	4	3	4	3	3	4	**27**	**189**
1978	20	10	18	11	-2	-10	-3	6	6	6	6	5	4	5	**38**	**266**
1979	14	0	10	-5	-14	-14	-7	6	6	6	5	3	3	4	**33**	**231**
1980	5	1	7	7	-2	-11	-6	6	6	6	6	5	3	4	**36**	**288**
1981	3	-8	-11	-15	-14	-13	-8	6	4	3	3	3	3	4	**26**	**182**
1982	5	16	15	2	-4	-9	-4	6	6	6	6	5	4	5	**38**	**874**
1983	5	1	14	18	0	-6	-7	6	6	6	6	6	4	4	**38**	**798**
1984	5	-11	-7	-4	-11	-11	-5	6	3	4	5	3	3	5	**29**	**203**
1985	6	-3	-6	-10	-10	-11	-5	6	5	4	4	4	3	5	**31**	**217**
1986	7	1	5	4	-10	-10	-5	6	6	6	6	4	4	5	**37**	**259**
1987	3	-5	-10	-11	-9	-8	-4	6	5	4	3	4	4	5	**31**	**217**
1988	2	-6	-11	-10	-9	-9	-6	6	4	3	4	4	4	4	**29**	**203**
1989	12	-5	-6	-8	-12	-11	-5	6	5	4	4	3	3	5	**30**	**210**
1990	4	-8	-16	-19	-20	-16	-9	6	4	2	2	2	2	4	**22**	**154**
1991	8	-5	-6	-10	-14	-13	-7	6	5	4	4	3	3	4	**29**	**203**
1992	9	-8	-20	-18	-22	-27	-25	6	4	2	2	1	1	1	**17**	**119**
1993	51	-12	5	11	-10	-10	-5	6	3	6	6	4	4	5	**34**	**238**
1994	6	-4	-5	-10	-19	-17	-8	6	5	5	4	2	2	4	**28**	**196**
													73 - year Average:		**31**	**253.5**
														1929 - '34 Average:		**178.5**

Flow Alternative 2

STUDY: 1995C06F-SWRCB-468 DWRSIM: 8.18, 27 Nov 96
CP # 81, DON PEDRO RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-468/81/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 832'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	599	582	579	601	656	690	699	724	782	779	763	752	142	133	108	50	53	69	80	1	1	1	1	1	1	1	**7**	34	9	25	58	-3	-16	-11	6	6	6	6	5	2	3	**34**	238
1923	746	745	748	761	776	784	789	792	801	795	780	770	48	43	40	31	37	52	62	1	1	1	1	1	1	1	**7**	8	5	3	9	-6	-15	-10	6	6	6	6	4	3	4	**35**	245
1924	764	762	757	755	756	754	749	744	735	723	709	701	78	83	88	97	109	123	131	1	1	1	1	1	1	1	**7**	-2	-5	-5	-9	-12	-14	-8	5	5	5	4	3	3	4	**29**	203
1925	698	698	699	703	725	741	754	767	785	776	760	749	91	78	65	47	56	72	83	1	1	1	1	1	1	1	**7**	16	13	13	18	-9	-16	-11	6	6	6	6	4	2	3	**33**	231
1926	743	741	736	735	744	749	763	776	774	759	744	735	83	69	56	58	73	88	97	1	1	1	1	1	1	1	**7**	5	14	13	-2	-15	-15	-9	6	6	6	5	3	3	4	**33**	231
1927	730	729	733	740	768	783	794	795	814	806	792	782	49	38	37	18	26	40	50	1	1	1	2	1	1	1	**8**	15	11	1	19	-8	-14	-10	6	6	6	6	4	3	4	**35**	280
1928	776	776	776	779	787	800	802	819	819	805	790	780	32	30	13	13	27	42	52	1	1	3	3	1	1	1	**11**	13	2	17	0	-14	-15	-10	6	6	6	6	3	3	4	**34**	374
1929	774	769	765	764	768	769	769	773	780	771	762	754	63	63	59	52	61	70	78	1	1	1	1	1	1	1	**7**	1	0	4	7	-9	-9	-8	6	6	6	6	4	4	4	**36**	252
1930	752	749	746	746	752	759	761	764	777	769	760	753	73	71	68	55	63	72	79	1	1	1	1	1	1	1	**7**	7	2	3	13	-8	-9	-7	6	6	6	6	4	4	4	**36**	252
1931	751	750	749	751	754	753	746	737	726	712	699	692	79	86	95	106	120	133	140	1	1	1	1	1	1	1	**7**	-1	-7	-9	-11	-14	-13	-7	5	4	4	3	3	3	4	**26**	182
1932	689	685	695	710	745	760	761	768	786	781	766	756	72	71	64	46	51	66	76	1	1	1	1	1	1	1	**7**	15	1	7	18	-5	-15	-10	6	6	6	6	5	3	4	**36**	252
1933	749	742	737	736	742	745	743	740	757	746	732	722	87	89	92	75	86	100	110	1	1	1	1	1	1	1	**7**	3	-2	-3	17	-11	-14	-10	6	5	5	6	3	3	4	**32**	224
1934	715	713	711	714	725	732	731	727	724	708	693	685	100	101	105	108	124	139	147	1	1	1	1	1	1	1	**7**	7	-1	-4	-3	-16	-15	-8	6	5	5	5	2	3	4	**30**	210
1935	681	680	681	693	713	728	749	759	786	774	759	747	104	83	73	46	58	73	85	1	1	1	1	1	1	1	**7**	15	21	10	27	-12	-15	-12	6	6	6	6	3	3	3	**33**	231
1936	740	738	733	738	776	792	801	819	832	823	808	798	40	31	13	0	9	24	34	1	1	3	6	4	1	1	**17**	16	9	18	13	-9	-15	-10	6	6	6	6	4	3	4	**35**	595
1937	792	786	782	785	800	800	802	815	832	819	805	795	32	30	17	0	13	27	37	1	1	2	6	3	1	1	**15**	0	2	13	17	-13	-14	-10	6	6	6	6	3	3	4	**34**	510
1938	789	784	800	800	800	800	800	804	831	832	819	808	32	32	28	1	0	13	24	1	1	1	5	6	3	1	**18**	0	0	4	27	1	-13	-11	6	6	6	6	6	3	3	**36**	648
1939	800	799	799	800	800	800	802	804	799	787	774	766	32	30	28	33	45	58	66	1	1	1	1	1	1	1	**7**	0	2	2	-5	-12	-13	-8	6	6	6	5	3	3	4	**33**	231
1940	764	763	761	774	800	800	802	816	829	814	799	789	32	30	16	3	18	33	43	1	1	2	5	2	1	1	**13**	0	2	14	13	-15	-15	-10	6	6	6	6	3	3	4	**34**	442
1941	783	781	783	798	800	800	800	812	832	831	817	808	32	32	20	0	1	15	24	1	1	1	6	5	2	1	**17**	0	0	12	20	-1	-14	-9	6	6	6	6	5	3	4	**36**	612
1942	800	798	800	800	800	800	802	807	831	832	818	808	32	30	25	1	0	14	24	1	1	1	5	6	3	1	**18**	0	2	5	24	1	-14	-10	6	6	6	6	6	3	4	**37**	666
1943	800	800	800	800	800	800	802	821	832	824	810	799	32	30	11	0	8	22	33	1	1	3	6	4	1	1	**17**	0	2	19	11	-8	-14	-11	6	6	6	6	4	3	3	**34**	578
1944	794	792	788	787	793	800	801	808	814	802	787	777	32	31	24	18	30	45	55	1	1	1	2	1	1	1	**8**	7	1	7	6	-12	-15	-10	6	6	6	6	3	3	4	**34**	272
1945	772	773	776	781	800	800	802	807	831	825	810	799	32	30	25	1	7	22	33	1	1	1	5	4	1	1	**14**	0	2	5	24	-6	-15	-11	6	6	6	6	4	3	3	**34**	476
1946	796	797	800	800	800	800	802	806	812	796	780	769	32	30	26	20	36	52	63	1	1	1	1	1	1	1	**7**	0	2	4	6	-16	-16	-11	6	6	6	6	2	2	3	**31**	217
1947	763	763	765	768	776	781	778	782	776	764	750	742	51	54	50	56	68	82	90	1	1	1	1	1	1	1	**7**	5	-3	4	-6	-12	-14	-8	6	5	6	4	3	3	4	**31**	217
1948	739	738	737	739	740	740	736	745	770	760	742	732	92	96	87	62	72	90	100	1	1	1	1	1	1	1	**7**	0	-4	9	25	-10	-18	-10	6	5	6	6	4	2	4	**33**	231
1949	726	720	714	713	720	731	738	748	756	738	719	706	101	94	84	76	94	113	126	1	1	1	1	1	1	1	**7**	11	7	10	8	-18	-19	-13	6	6	6	6	2	2	3	**31**	217
1950	700	693	687	693	712	725	733	746	762	747	729	717	107	99	86	70	85	103	115	1	1	1	1	1	1	1	**7**	13	8	13	16	-15	-18	-12	6	6	6	6	3	2	3	**32**	224
1951	711	759	800	800	800	800	798	794	798	783	769	759	32	34	38	34	49	63	73	1	1	1	1	1	1	1	**7**	0	-2	-4	4	-15	-14	-10	6	5	5	6	3	3	4	**32**	224
1952	752	750	757	782	800	800	800	820	832	832	819	808	32	32	12	0	0	13	24	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-13	-11	6	6	6	6	6	3	3	**36**	756
1953	800	795	793	800	800	800	802	804	814	810	796	787	32	30	28	18	22	36	45	1	1	1	2	1	1	1	**8**	0	2	2	10	-4	-14	-9	6	6	6	6	5	3	4	**36**	288
1954	782	778	775	776	785	797	802	819	820	805	789	780	35	30	13	12	27	43	52	1	1	3	3	1	1	1	**11**	12	5	17	1	-15	-16	-9	6	6	6	6	3	2	4	**33**	363
1955	774	770	768	774	781	784	781	785	791	779	767	760	48	51	47	41	53	65	72	1	1	1	1	1	1	1	**7**	3	-3	4	6	-12	-12	-7	6	5	6	6	3	3	4	**33**	231
1956	755	751	800	800	800	800	802	818	832	832	818	808	32	30	14	0	0	14	24	1	1	3	6	6	3	1	**21**	0	2	16	14	0	-14	-10	6	6	6	6	6	3	4	**37**	777
1957	800	798	793	793	799	800	800	806	827	814	800	791	32	32	26	5	18	32	41	1	1	1	4	2	1	1	**11**	1	0	6	21	-13	-14	-9	6	6	6	6	3	3	4	**34**	374
1958	786	781	779	784	800	800	800	821	832	832	819	808	32	32	11	0	0	13	24	1	1	3	6	6	3	1	**21**	0	0	21	11	0	-13	-11	6	6	6	6	6	3	3	**36**	756
1959	800	794	789	793	800	800	802	800	794	782	770	763	32	30	32	38	50	62	69	1	1	1	1	1	1	1	**7**	0	2	-2	-6	-12	-12	-7	6	6	5	4	3	3	4	**31**	217
1960	761	758	755	756	763	769	770	776	779	768	759	753	63	62	56	53	64	73	79	1	1	1	1	1	1	1	**7**	6	1	6	3	-11	-9	-6	6	6	6	6	3	4	4	**35**	245
1961	750	748	748	749	752	751	745	737	730	717	705	698	81	87	95	102	115	127	134	1	1	1	1	1	1	1	**7**	-1	-6	-8	-7	-13	-12	-7	5	4	4	4	3	3	4	**27**	189
1962	695	692	691	692	716	736	746	751	776	768	755	744	96	86	81	56	64	77	88	1	1	1	1	1	1	1	**7**	20	10	5	25	-8	-13	-11	6	6	6	6	4	3	3	**34**	238
1963	739	734	731	735	761	773	781	794	819	815	801	792	59	51	38	13	17	31	40	1	1	1	3	2	1	1	**10**	12	8	13	25	-4	-14	-9	6	6	6	6	5	3	4	**36**	360
1964	787	788	789	793	800	800	797	795	797	786	775	768	32	35	37	35	46	57	64	1	1	1	1	1	1	1	**7**	0	-3	-2	2	-11	-11	-7	6	5	5	6	3	3	4	**32**	224
1965	766	767	798	800	800	800	802	807	827	827	816	807	32	30	25	5	5	16	25	1	1	1	4	4	2	1	**14**	0	2	5	20	0	-11	-9	6	6	6	6	6	3	4	**37**	518
1966	800	800	800	800	800	800	801	798	791	776	761	752	32	31	34	41	56	71	80	1	1	1	1	1	1	1	**7**	0	1	-3	-7	-15	-15	-9	6	6	5	4	3	3	4	**31**	217
1967	747	745	755	771	789	800	800	817	832	832	820	808	32	32	15	0	0	12	24	1	1	2	6	6	3	1	**20**	11	0	17	15	0	-12	-12	6	6	6	6	6	3	3	**36**	720
1968	800	795	791	792	800	800	802	805	803	791	779	771	32	30	27	29	41	53	61	1	1	1	1	1	1	1	**7**	0	2	3	-2	-12	-12	-8	6	6	6	5	3	3	4	**33**	231
1969	766	767	770	800	800	800	800	823	832	832	819	808	32	32	9	0	0	13	24	1	1	4	6	6	3	1	**22**	0	0	23	9	0	-13	-11	6	6	6	6	6	3	3	**36**	792
1970	800	799	800	800	800	800	799	799	807	795	780	771	32	33	33	25	37	52	61	1	1	1	1	1	1	1	**7**	0	-1	0	8	-12	-15	-9	6	5	6	6	3	3	4	**33**	231
1971	765	766	772	788	800	800	801	801	807	798	786	778	32	31	31	25	34	46	54	1	1	1	1	1	1	1	**7**	0	1	0	6	-9	-12	-8	6	6	6	6	4	3	4	**35**	245
1972	773	769	772	778	792	800	800	799	796	784	773	767	32	32	33	36	48	59	65	1	1	1	1	1	1	1	**7**	8	0	-1	-3	-12	-11	-6	6	6	5	5	3	3	4	**32**	224
1973	764	762	765	776	800	800	802	812	827	812	797	788	32	30	20	5	20	35	44	1	1	1	4	1	1	1	**10**	0	2	10	15	-15	-15	-9	6	6	6	6	3	3	4	**34**	340
1974	783	787	798	800	800	800	800	806	828	819	805	796	32	32	26	4	13	27	36	1	1	1	5	3	1	1	**13**	0	0	6	22	-9	-14	-9	6	6	6	6	4	3	4	**35**	455
1975	791	789	786	786	798	800	802	812	832	825	812	803	32	30	20	0	7	20	29	1	1	1	6	4	1	1	**15**	2	2	10	20	-7	-13	-9	6	6	6	6	4	3	4	**35**	525
1976	800	800	799	799	800	799	794	787	777	767	757	751	33	38	45	55	65	75	81	1	1	1	1	1	1	1	**7**	-1	-5	-7	-10	-10	-10	-6	5	5	4	4	4	4	4	**30**	210
1977	748	745	742	741	741	737	728	715	702	687	672	663	95	104	117	130	145	160	169	1	1	1	1	1	1	1	**7**	-4	-9	-13	-13	-15	-15	-9	5	4	3	3	3	3	4	**25**	175
1978	659	655	658	684	717	749	762	777	814	822	808	803	83	70	55	18	10	24	29	1	1	1	2	3	1	1	**10**	32	13	15	37	8	-14	-5	6	6	6	6	6	3	5	**38**	380
1979	798	794	791	800	800	800	802	822	832	818	803	794	32	30	10	0	14	29	38	1	1	3	6	3	1	1	**16**	0	2	20	10	-14	-15	-9	6	6	6	6	3	3	4	**34**	544
1980	789	788	787	800	800	800	800	817	832	832	819	808	32	32	15	0	0	13	24	1	1	2	6	6	3	1	**20**	0	0	17	15	0	-13	-11	6	6	6	6	6	3	3	**36**	720
1981	800	797	794	795	799	800	802	806	805	793	782	774	32	30	26	27	39	50	58	1	1	1	1	1	1	1	**7**	1	2	4	-1	-12	-11	-8	6	6	6	5	3	3	4	**33**	231
1982	770	776	795	800	800	800	800	820	832	832	820	808	32	32	12	0	0	12	24	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-12	-12	6	6	6	6	6	3	3	**36**	756
1983	800	800	800	800	800	800	800	819	832	832	832	808	32	32	13	0	0	0	24	1	1	3	6	6	6	1	**24**	0	0	19	13	0	0	-24	6	6	6	6	6	6	1	**37**	888
1984	800	800	800	800	800	800	797	803	814	801	786	776	32	35	29	18	31	46	56	1	1	1	2	1	1	1	**8**	0	-3	6	11	-13	-15	-10	6	5	6	6	3	3	4	**33**	264
1985	773	773	779	786	794	800	801	799	795	784	772	766	32	31	33	37	48	60	66	1	1	1	1	1	1	1	**7**	6	1	-2	-4	-11	-12	-6	6	6	5	5	3	3	4	**32**	224
1986	763	764	767	774	800	800	802	827	832	825	811	802	32	30	5	0	7	21	30	1	1	4	6	4	1	1	**18**	0	2	25	5	-7	-14	-9	6	6	6	6	4	3	4	**35**	630
1987	796	791	786	784	786	788	786	783	779	769	759	752	44	46	49	53	63	73	80	1	1	1	1	1	1	1	**7**	2	-2	-3	-4	-10	-10	-7	6	5	5	5	4	4	4	**33**	231
1988	750	749	749	754	759	761	756	747	740	728	716	709	71	76	85	92	104	116	123	1	1	1	1	1	1	1	**7**	2	-5	-9	-7	-12	-12	-7	6	5	4	4	3	3	4	**29**	203
1989	705	702	702	705	709	722	734	748	756	744	734	728	110	98	84	76	88	98	104	1	1	1	1	1	1	1	**7**	13	12	14	8	-12	-10	-6	6	6	6	6	3	4	4	**35**	245
1990	727	726	726	728	732	734	732	730	728	714	700	692	98	100	102	104	118	132	140	1	1	1	1	1	1	1	**7**	2	-2	-2	-2	-14	-14	-8	6	5	5	5	3	3	4	**31**	217
1991	689	686	682	681	681	688	687	703	714	704	694	688	144	145	129	118	128	138	144	1	1	1	1	1	1	1	**7**	7	-1	16	11	-10	-10	-6	6	5	6	6	4	4	4	**35**	245
1992	687	687	687	689	698	703	706	714	713	699	685	675	129	126	118	119	133	147	157	1	1	1	1	1	1	1	**7**	5	3	8	-1	-14	-14	-10	6	6	6	5	3	3	4	**33**	231
1993	669	663	663	696	727	756	763	777	808	806	792	783	76	69	55	24	26	40	49	1	1	1	1	1	1	1	**7**	29	7	14	31	-2	-14	-9	6	6	6	6	5	3	4	**36**	252
1994	777	771	767	766	769	772	770	773	772	762	752	746	60	62	59	60	70	80	86	1	1	1	1	1	1	1	**7**	3	-2	3	-1	-10	-10	-6	6	5	6	5	4	4	4	**34**	238

73 - year Average: 10

73 - year Average: 34 **358.4**

1929 - '34 Average: 228.7

Flow Alternative 2

STUDY: 1995C06F-SWRCB-468 DWRSIM: 8.18, 27 Nov 96
CP # 20, LAKE McCLURE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-468/20/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 867'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	680	680	696	712	759	779	789	845	867	860	846	836	88	78	22	0	7	21	31	1	1	1	6	4	1	1	**15**	20	10	56	22	-7	-14	-10	6	6	6	6	4	3	4	**35**	**525**
1923	808	808	808	808	808	813	827	854	859	850	835	825	54	40	13	8	17	32	42	1	1	3	4	2	1	1	**13**	5	14	27	5	-9	-15	-10	6	6	6	6	4	3	4	**35**	**455**
1924	808	808	808	808	808	807	809	811	799	781	768	758	60	58	56	68	86	99	109	1	1	1	1	1	1	1	**7**	-1	2	2	-12	-18	-13	-10	5	6	6	3	2	3	4	**29**	**203**
1925	758	763	768	772	796	805	824	847	851	839	824	812	62	43	20	16	28	43	55	1	1	1	2	1	1	1	**8**	9	19	23	4	-12	-15	-12	6	6	6	6	3	3	3	**33**	**264**
1926	808	808	808	808	808	814	834	832	831	827	820	812	53	33	35	36	40	47	55	1	1	1	1	1	1	1	**7**	6	20	-2	-1	-4	-7	-8	6	6	5	5	5	4	4	**35**	**245**
1927	808	808	808	808	808	815	818	849	860	856	852	840	52	49	18	7	11	15	27	1	1	2	4	3	2	1	**14**	7	3	31	11	-4	-4	-12	6	6	6	6	5	5	3	**37**	**518**
1928	808	808	808	808	808	809	808	824	822	815	811	807	58	59	43	45	52	56	60	1	1	1	1	1	1	1	**7**	1	-1	16	-2	-7	-4	-4	6	5	6	5	4	5	5	**36**	**252**
1929	807	806	806	805	807	809	810	814	814	816	819	813	58	57	53	53	51	48	54	1	1	1	1	1	1	1	**7**	2	1	4	0	2	3	-6	6	6	6	6	6	6	4	**40**	**280**
1930	808	807	807	807	806	802	806	808	812	815	819	816	65	61	59	55	52	48	51	1	1	1	1	1	1	1	**7**	-4	4	2	4	3	4	-3	5	6	6	6	6	6	5	**40**	**280**
1931	808	808	808	808	808	808	810	813	801	784	770	761	59	57	54	66	83	97	106	1	1	1	1	1	1	1	**7**	0	2	3	-12	-17	-14	-9	6	6	6	3	2	3	4	**30**	**210**
1932	760	760	778	789	808	817	826	852	867	857	843	832	50	41	15	0	10	24	35	1	1	2	6	3	1	1	**15**	9	9	26	15	-10	-14	-11	6	6	6	6	4	3	3	**34**	**510**
1933	808	807	806	808	808	811	816	825	839	827	813	805	56	51	42	28	40	54	62	1	1	1	1	1	1	1	**7**	3	5	9	14	-12	-14	-8	6	6	6	6	3	3	4	**34**	**238**
1934	803	802	805	808	808	816	823	818	809	793	780	770	51	44	49	58	74	87	97	1	1	1	1	1	1	1	**7**	8	7	-5	-9	-16	-13	-10	6	6	5	4	2	3	4	**30**	**210**
1935	769	773	778	796	806	816	840	859	867	854	839	828	51	27	8	0	13	28	39	1	1	4	6	3	1	1	**17**	10	24	19	8	-13	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1936	808	808	808	808	808	820	840	859	865	853	838	827	47	27	8	2	14	29	40	1	1	4	5	3	1	1	**16**	12	20	19	6	-12	-15	-11	6	6	6	6	3	3	3	**33**	**528**
1937	808	808	808	808	808	820	834	859	867	853	838	827	47	33	8	0	14	29	40	1	1	4	6	3	1	1	**17**	12	14	25	8	-14	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1938	808	808	808	808	808	820	840	859	867	867	855	840	47	27	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1939	808	808	808	808	808	816	831	832	821	803	787	776	51	36	35	46	64	80	91	1	1	1	1	1	1	1	**7**	8	15	1	-11	-18	-16	-11	6	6	6	3	2	2	3	**28**	**196**
1940	778	779	780	806	808	820	837	859	861	845	829	816	47	30	8	6	22	38	51	1	1	4	4	1	1	1	**13**	12	17	22	2	-16	-16	-13	6	6	6	6	2	2	3	**31**	**403**
1941	808	808	808	808	808	820	834	859	867	863	850	840	47	33	8	0	4	17	27	1	1	4	6	5	2	1	**20**	12	14	25	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1942	808	808	808	808	808	820	838	859	867	860	851	840	47	29	8	0	7	16	27	1	1	4	6	4	2	1	**19**	12	18	21	8	-7	-9	-11	6	6	6	6	4	4	3	**35**	**665**
1943	808	808	808	808	808	820	840	859	864	853	838	828	47	27	8	3	14	29	39	1	1	4	5	3	1	1	**16**	12	20	19	5	-11	-15	-10	6	6	6	6	3	3	4	**34**	**544**
1944	808	808	808	808	808	817	815	838	840	827	810	796	50	52	29	27	40	57	71	1	1	1	1	1	1	1	**7**	9	-2	23	2	-13	-17	-14	6	5	6	6	3	2	3	**31**	**217**
1945	794	800	806	808	808	820	833	856	867	856	842	831	47	34	11	0	11	25	36	1	1	3	6	3	1	1	**16**	12	13	23	11	-11	-14	-11	6	6	6	6	3	3	3	**33**	**528**
1946	808	808	808	808	808	818	837	859	857	842	826	813	49	30	8	10	25	41	54	1	1	4	3	1	1	1	**12**	10	19	22	-2	-15	-16	-13	6	6	6	5	3	2	3	**31**	**372**
1947	808	808	808	808	808	815	823	836	830	814	799	791	52	44	31	37	53	68	76	1	1	1	1	1	1	1	**7**	7	8	13	-6	-16	-15	-8	6	6	6	4	2	3	4	**31**	**217**
1948	790	791	792	794	795	795	799	823	839	825	807	794	72	68	44	28	42	60	73	1	1	1	1	1	1	1	**7**	0	4	24	16	-14	-18	-13	6	6	6	6	3	2	3	**32**	**224**
1949	791	791	792	793	796	804	815	836	835	816	797	782	63	52	31	32	51	70	85	1	1	1	1	1	1	1	**7**	8	11	21	-1	-19	-19	-15	6	6	6	5	2	2	3	**30**	**210**
1950	779	779	779	786	798	801	818	838	839	822	803	789	66	49	29	28	45	64	78	1	1	1	1	1	1	1	**7**	3	17	20	1	-17	-19	-14	6	6	6	6	2	2	3	**31**	**217**
1951	786	808	808	808	808	819	827	837	834	816	796	781	48	40	30	33	51	71	86	1	1	1	1	1	1	1	**7**	11	8	10	-3	-18	-20	-15	6	6	6	5	2	2	3	**30**	**210**
1952	777	778	791	808	808	820	840	859	867	864	852	840	47	27	8	0	3	15	27	1	1	4	6	5	2	1	**20**	12	20	19	8	-3	-12	-12	6	6	6	6	5	3	3	**35**	**700**
1953	808	808	808	808	808	809	815	816	823	809	790	775	58	52	51	44	58	77	92	1	1	1	1	1	1	1	**7**	1	6	1	7	-14	-19	-15	6	6	6	6	3	2	3	**32**	**224**
1954	772	771	772	775	785	798	815	833	826	805	785	770	69	52	34	41	62	82	97	1	1	1	1	1	1	1	**7**	13	17	18	-7	-21	-20	-15	6	6	6	4	1	2	3	**28**	**196**
1955	767	766	768	775	780	782	782	804	814	798	782	772	85	85	63	53	69	85	95	1	1	1	1	1	1	1	**7**	2	0	22	10	-16	-16	-10	6	6	6	6	2	2	4	**32**	**224**
1956	769	769	808	808	808	819	832	859	867	863	850	840	48	35	8	0	4	17	27	1	1	4	6	5	2	1	**20**	11	13	27	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1957	808	808	808	808	808	813	813	828	838	822	804	790	54	54	39	29	45	63	77	1	1	1	1	1	1	1	**7**	5	0	15	10	-16	-18	-14	6	6	6	6	2	2	3	**31**	**217**
1958	787	787	792	798	808	820	840	859	867	862	850	840	47	27	8	0	5	17	27	1	1	4	6	4	2	1	**19**	12	20	19	8	-5	-12	-10	6	6	6	6	5	3	4	**36**	**684**
1959	808	808	808	808	808	813	823	826	817	797	780	773	54	44	41	50	70	87	94	1	1	1	1	1	1	1	**7**	5	10	3	-9	-20	-17	-7	6	6	6	4	2	2	4	**30**	**210**
1960	772	771	771	772	784	792	806	819	816	801	787	777	75	61	48	51	66	80	90	1	1	1	1	1	1	1	**7**	8	14	13	-3	-15	-14	-10	6	6	6	5	3	3	4	**33**	**231**
1961	776	776	779	779	782	783	789	793	784	766	752	740	84	78	74	83	101	115	127	1	1	1	1	1	1	1	**7**	1	6	4	-9	-18	-14	-12	6	6	6	4	2	3	3	**30**	**210**
1962	739	739	741	744	784	793	816	831	845	832	815	802	74	51	36	22	35	52	65	1	1	1	1	1	1	1	**7**	9	23	15	14	-13	-17	-13	6	6	6	6	3	2	3	**32**	**224**
1963	800	800	801	808	808	814	823	848	861	852	837	826	53	44	19	6	15	30	41	1	1	2	4	2	1	1	**12**	6	9	25	13	-9	-15	-11	6	6	6	6	4	3	3	**34**	**408**
1964	808	808	808	808	808	808	811	821	819	803	787	777	59	56	46	48	64	80	90	1	1	1	1	1	1	1	**7**	0	3	10	-2	-16	-16	-10	6	6	6	5	2	2	4	**31**	**217**
1965	775	778	808	808	808	815	831	854	867	861	850	840	52	36	13	0	6	17	27	1	1	3	6	4	2	1	**18**	7	16	23	13	-6	-11	-10	6	6	6	6	4	3	4	**35**	**630**
1966	808	808	808	808	808	814	828	838	826	804	784	771	53	39	29	41	63	83	96	1	1	1	1	1	1	1	**7**	6	14	10	-12	-22	-20	-13	6	6	6	3	1	2	3	**27**	**189**
1967	768	770	795	807	808	820	840	859	867	867	856	840	47	27	8	0	0	11	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1968	808	808	808	808	808	812	817	821	812	793	777	766	55	50	46	55	74	90	101	1	1	1	1	1	1	1	**7**	4	5	4	-9	-19	-16	-11	6	6	6	4	2	2	3	**29**	**203**
1969	763	767	775	808	808	820	840	859	867	867	854	840	47	27	8	0	0	13	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-13	-14	6	6	6	6	6	3	3	**36**	**792**
1970	808	808	808	808	808	820	821	837	837	821	802	789	47	46	30	30	46	65	78	1	1	1	1	1	1	1	**7**	12	1	16	0	-16	-19	-13	6	6	6	6	2	2	3	**31**	**217**
1971	786	788	798	807	808	812	814	826	836	822	804	790	55	53	41	31	45	63	77	1	1	1	1	1	1	1	**7**	4	2	12	10	-14	-18	-14	6	6	6	6	3	2	3	**32**	**224**
1972	787	787	795	799	806	816	819	832	833	818	804	797	51	48	35	34	49	63	70	1	1	1	1	1	1	1	**7**	10	3	13	1	-15	-14	-7	6	6	6	6	3	3	4	**34**	**238**
1973	797	798	804	808	808	820	828	859	867	852	838	828	47	39	8	0	15	29	39	1	1	4	6	2	1	1	**16**	12	8	31	8	-15	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1974	808	808	808	808	808	820	833	859	867	854	839	829	47	34	8	0	13	28	38	1	1	4	6	3	1	1	**17**	12	13	26	8	-13	-15	-10	6	6	6	6	3	3	4	**34**	**578**
1975	808	808	808	808	808	820	823	855	867	856	842	832	47	44	12	0	11	25	35	1	1	3	6	3	1	1	**16**	12	3	32	12	-11	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1976	808	808	808	808	808	809	808	809	798	781	768	759	58	59	58	69	86	99	108	1	1	1	1	1	1	1	**7**	1	-1	1	-11	-17	-13	-9	6	5	6	3	2	3	4	**29**	**203**
1977	758	756	754	754	754	749	740	728	717	688	659	635	118	127	139	150	179	208	232	1	1	1	1	1	1	1	**7**	-5	-9	-12	-11	-29	-29	-24	5	4	3	3	1	1	1	**18**	**126**
1978	629	626	642	693	741	782	815	859	867	867	856	840	85	52	8	0	0	11	27	1	1	4	6	6	3	1	**22**	41	33	44	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1979	808	808	808	808	808	820	828	859	863	849	834	823	47	39	8	4	18	33	44	1	1	4	5	2	1	1	**15**	12	8	31	4	-14	-15	-11	6	6	6	6	3	3	3	**33**	**495**
1980	808	808	808	808	808	820	835	859	867	867	855	840	47	32	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	15	24	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1981	808	807	807	808	808	813	823	835	831	816	802	794	54	44	32	36	51	65	73	1	1	1	1	1	1	1	**7**	5	10	12	-4	-15	-14	-8	6	6	6	5	3	3	4	**33**	**231**
1982	793	801	808	808	808	820	840	859	867	865	854	840	47	27	8	0	2	13	27	1	1	4	6	5	3	1	**21**	12	20	19	8	-2	-11	-14	6	6	6	6	5	3	3	**35**	**735**
1983	808	808	808	808	808	820	836	859	867	867	864	840	47	31	8	0	0	3	27	1	1	4	6	6	5	1	**24**	12	16	23	8	0	-3	-24	6	6	6	6	6	5	1	**36**	**864**
1984	808	808	808	808	808	820	827	850	848	832	814	801	47	40	17	19	35	53	66	1	1	2	2	1	1	1	**9**	12	7	23	-2	-16	-18	-13	6	6	6	5	2	2	3	**30**	**270**
1985	800	803	807	808	808	814	828	841	835	821	807	797	53	39	26	32	46	60	70	1	1	1	1	1	1	1	**7**	6	14	13	-6	-14	-14	-10	6	6	6	4	3	3	4	**32**	**224**
1986	798	800	806	808	808	820	839	859	867	855	841	830	47	28	8	0	12	26	37	1	1	4	6	3	1	1	**17**	12	19	20	8	-12	-14	-11	6	6	6	6	3	3	3	**33**	**561**
1987	808	807	807	807	808	810	818	821	811	795	782	773	57	49	46	56	72	85	94	1	1	1	1	1	1	1	**7**	2	8	3	-10	-16	-13	-9	6	6	6	4	2	3	4	**31**	**217**
1988	772	773	775	781	785	791	797	801	794	777	763	753	76	70	66	73	90	104	114	1	1	1	1	1	1	1	**7**	6	6	4	-7	-17	-14	-10	6	6	6	4	2	3	4	**31**	**217**
1989	751	750	753	754	759	775	797	808	804	789	775	766	92	70	59	63	78	92	101	1	1	1	1	1	1	1	**7**	16	22	11	-4	-15	-14	-9	6	6	6	5	3	3	4	**33**	**231**
1990	768	768	769	771	775	782	793	794	785	769	754	742	85	74	73	82	98	113	125	1	1	1	1	1	1	1	**7**	7	11	1	-9	-16	-15	-12	6	6	6	4	2	3	3	**30**	**210**
1991	740	739	738	738	737	758	763	784	797	784	770	761	109	104	83	70	83	97	106	1	1	1	1	1	1	1	**7**	21	5	21	13	-13	-14	-9	6	6	6	6	3	3	4	**34**	**238**
1992	760	761	762	764	777	782	798	803	793	779	766	756	85	69	64	74	88	101	111	1	1	1	1	1	1	1	**7**	5	16	5	-10	-14	-13	-10	6	6	6	4	3	3	4	**32**	**224**
1993	755	755	760	802	808	820	837	859	867	861	848	837	47	30	8	0	6	19	30	1	1	4	6	4	2	1	**19**	12	17	22	8	-6	-13	-11	6	6	6	6	4	3	3	**34**	**646**
1994	808	807	808	808	808	810	815	821	813	798	784	775	57	52	46	54	69	83	92	1	1	1	1	1	1	1	**7**	2	5	6	-8	-15	-14	-9	6	6	6	4	3	3	4	**32**	**224**
																									73 - year Average:		**12**													**73 - year Average:**		**33**	**386.7**
																																								1929 - '34 Average:			**288.0**

Flow Alternative 2

STUDY: 1995C06F-SWRCB-468 DWRSIM: 8.18, 27 Nov 96
CP # 18, MILLERTON LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-468/18/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 576'

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	491	505	527	547	549	566	559	576	576	562	518	491
1923	485	495	520	537	531	517	541	549	540	526	463	470
1924	483	494	508	522	516	503	506	511	505	478	464	468
1925	465	474	490	503	508	493	514	532	522	499	483	475
1926	477	490	505	519	522	508	549	563	535	494	473	485
1927	491	506	528	545	560	561	560	569	576	543	492	482
1928	482	503	525	542	540	543	551	554	522	477	465	477
1929	485	499	513	523	517	513	531	531	527	506	466	477
1930	480	495	507	518	514	510	525	534	518	489	466	482
1931	487	501	513	522	517	508	510	516	508	482	466	466
1932	467	476	503	520	543	531	524	532	552	518	492	477
1933	477	489	501	516	512	501	520	537	526	509	466	467
1934	470	480	500	517	511	503	516	527	523	498	477	486
1935	490	500	515	535	532	509	542	563	574	538	469	479
1936	486	502	518	533	560	558	564	576	563	521	472	478
1937	488	497	516	535	560	570	576	576	576	538	484	469
1938	472	486	533	560	560	542	529	467	572	576	532	520
1939	513	514	529	538	532	524	542	560	539	504	473	495
1940	495	504	517	550	550	552	548	561	553	512	466	471
1941	481	494	528	556	560	573	573	569	576	569	527	506
1942	497	507	532	552	549	553	554	562	576	555	509	477
1943	477	494	518	557	556	576	574	576	562	526	491	476
1944	479	491	508	521	524	507	516	517	501	494	490	480
1945	481	503	523	533	560	568	565	571	576	554	511	491
1946	485	502	531	548	528	524	536	559	546	510	478	480
1947	481	500	526	543	541	530	545	556	535	497	473	481
1948	488	503	518	529	523	530	556	551	541	483	480	484
1949	490	500	513	526	524	511	522	538	521	482	477	489
1950	492	503	519	536	541	524	534	551	539	506	476	482
1951	490	533	560	560	554	546	552	546	514	463	463	481
1952	488	500	530	559	560	567	559	526	576	571	525	508
1953	501	514	533	549	538	532	541	536	518	497	478	481
1954	488	497	514	532	532	527	537	560	544	507	465	483
1955	489	502	522	540	537	520	534	545	537	504	481	487
1956	491	499	560	560	560	576	576	561	576	566	524	505
1957	496	504	517	527	525	529	546	561	562	526	471	481
1958	488	501	525	545	554	565	576	576	576	557	516	498
1959	492	507	523	530	536	528	550	566	551	500	470	475
1960	474	475	480	490	503	498	515	525	509	496	483	481
1961	481	491	505	511	510	511	526	539	527	486	467	467
1962	468	471	484	492	538	529	527	555	569	540	489	476
1963	479	491	501	518	558	558	576	576	576	564	520	503
1964	490	517	542	551	547	544	553	561	551	508	476	484
1965	481	496	529	560	556	554	559	551	561	540	512	496
1966	487	513	546	558	541	526	545	564	550	506	486	486
1967	490	502	539	559	560	571	565	514	570	576	539	522
1968	515	521	539	545	545	539	550	554	539	506	478	482
1969	480	496	513	560	524	521	467	469	576	576	538	513
1970	498	516	540	560	560	554	554	555	544	517	476	477
1971	482	502	534	551	548	533	541	544	520	498	491	478
1972	479	491	519	536	532	524	537	543	540	497	481	481
1973	489	501	523	545	560	560	550	575	576	542	483	477
1974	487	510	545	560	544	550	559	570	573	537	490	473
1975	476	494	515	528	535	526	533	536	567	525	476	482
1976	489	511	531	541	539	544	547	542	519	492	479	494
1977	490	496	500	503	501	464	465	464	462	466	461	462
1978	462	462	484	532	560	552	510	498	576	576	548	539
1979	528	535	549	560	555	562	560	571	563	521	477	482
1980	489	488	508	560	560	558	566	550	576	576	542	513
1981	503	512	520	528	531	533	547	553	543	510	477	488
1982	491	504	536	560	560	576	546	561	576	576	546	541
1983	531	556	560	560	513	484	467	467	483	564	572	576
1984	560	560	560	560	560	568	570	570	557	530	487	483
1985	482	492	511	536	533	526	551	563	539	501	483	483
1986	490	508	534	554	550	552	574	565	576	558	503	479
1987	480	489	492	495	496	511	530	551	539	503	473	480
1988	482	495	507	526	516	527	539	547	527	498	483	486
1989	486	497	505	515	512	516	537	552	540	502	478	484
1990	489	495	502	510	510	517	532	544	525	508	479	483
1991	480	486	492	499	493	489	501	508	512	506	480	486
1992	485	490	494	498	499	490	493	494	480	470	465	466
1993	467	466	476	536	543	556	558	576	576	571	522	499
1994	490	497	507	512	508	520	534	548	528	498	478	484

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	10	17	0	0	14	58	85	3	2	6	6	3	1	1	22
1923	59	35	27	36	50	113	106	1	1	1	1	1	1	1	7
1924	73	70	65	71	98	112	108	1	1	1	1	1	1	1	7
1925	83	62	44	54	77	93	101	1	1	1	1	1	1	1	7
1926	68	27	13	41	82	103	91	1	1	3	1	1	1	1	9
1927	15	16	7	0	33	84	94	2	2	4	6	1	1	1	17
1928	33	25	22	54	99	111	99	1	1	1	1	1	1	1	7
1929	63	45	45	49	70	110	99	1	1	1	1	1	1	1	7
1930	66	51	42	58	87	110	94	1	1	1	1	1	1	1	7
1931	68	66	60	68	94	110	110	1	1	1	1	1	1	1	7
1932	45	52	44	24	58	84	99	1	1	1	1	1	1	1	7
1933	75	56	39	50	67	110	109	1	1	1	1	1	1	1	7
1934	73	60	49	53	78	99	90	1	1	1	1	1	1	1	7
1935	67	34	13	2	38	107	97	1	1	3	5	1	1	1	13
1936	18	12	0	13	55	104	98	2	3	6	3	1	1	1	17
1937	6	0	0	0	38	92	107	4	6	6	6	1	1	1	25
1938	34	47	109	4	0	44	56	1	1	1	5	6	1	1	16
1939	52	34	16	37	72	103	81	1	1	2	1	1	1	1	8
1940	24	28	15	23	64	110	105	1	1	2	1	1	1	1	8
1941	3	3	7	0	7	49	70	5	5	4	6	4	1	1	26
1942	23	22	14	0	21	67	99	1	1	3	6	1	1	1	14
1943	0	2	0	14	50	85	100	6	5	6	3	1	1	1	23
1944	69	60	59	75	82	86	96	1	1	1	1	1	1	1	7
1945	8	11	5	0	22	65	85	4	3	4	6	1	1	1	20
1946	52	40	17	30	66	98	96	1	1	2	1	1	1	1	8
1947	46	31	20	41	79	103	95	1	1	1	1	1	1	1	7
1948	46	20	25	35	93	96	92	1	1	1	1	1	1	1	7
1949	65	54	38	55	94	99	87	1	1	1	1	1	1	1	7
1950	52	42	25	37	70	100	94	1	1	1	1	1	1	1	7
1951	30	24	30	62	113	113	95	1	1	1	1	1	1	1	7
1952	9	17	50	0	5	51	68	4	2	1	6	4	1	1	19
1953	44	35	40	58	79	98	95	1	1	1	1	1	1	1	7
1954	49	39	16	32	69	111	93	1	1	2	1	1	1	1	8
1955	56	42	31	39	72	95	89	1	1	1	1	1	1	1	7
1956	0	0	15	0	10	52	71	6	6	2	6	3	1	1	25
1957	47	30	15	14	50	105	95	1	1	2	3	1	1	1	10
1958	11	0	0	0	19	60	78	3	6	6	6	2	1	1	25
1959	48	26	10	25	76	106	101	1	1	3	1	1	1	1	9
1960	78	61	51	67	80	93	95	1	1	1	1	1	1	1	7
1961	65	50	37	49	90	109	109	1	1	1	1	1	1	1	7
1962	47	49	21	7	36	87	100	1	1	1	4	1	1	1	10
1963	18	0	0	0	12	56	73	2	6	6	6	3	1	1	25
1964	32	23	15	25	68	100	92	1	1	2	1	1	1	1	8
1965	22	17	25	15	36	64	80	1	2	1	2	1	1	1	9
1966	50	31	12	26	70	90	90	1	1	3	1	1	1	1	9
1967	5	11	62	6	0	37	54	4	3	1	4	6	1	1	20
1968	37	26	22	37	70	98	94	1	1	1	1	1	1	1	7
1969	55	109	107	0	0	38	63	1	1	1	6	6	1	1	17
1970	22	22	21	32	59	100	99	1	1	1	1	1	1	1	7
1971	43	35	32	56	78	85	98	1	1	1	1	1	1	1	7
1972	52	39	33	36	79	95	95	1	1	1	1	1	1	1	7
1973	16	26	1	0	34	93	99	2	1	5	6	1	1	1	17
1974	26	17	6	3	39	86	103	1	2	4	5	1	1	1	15
1975	50	43	40	9	51	100	94	1	1	1	4	1	1	1	10
1976	32	29	34	57	84	97	82	1	1	1	1	1	1	1	7
1977	112	111	112	114	110	115	114	1	1	1	1	1	1	1	7
1978	24	66	78	0	0	28	37	1	1	1	6	6	1	1	17
1979	14	16	5	13	55	99	94	3	2	4	3	1	1	1	15
1980	18	10	26	0	0	34	63	2	3	1	6	6	1	1	20
1981	43	29	23	33	66	99	88	1	1	1	1	1	1	1	7
1982	0	30	15	0	0	30	35	6	1	2	6	6	1	1	23
1983	92	109	109	93	12	4	0	1	1	1	1	3	5	6	18
1984	8	6	6	19	46	89	93	4	4	4	2	1	1	1	17
1985	50	25	13	37	75	93	93	1	1	3	1	1	1	1	9
1986	24	2	11	0	18	73	97	1	5	3	6	2	1	1	19
1987	65	46	25	37	73	103	96	1	1	1	1	1	1	1	7
1988	49	37	29	49	78	93	90	1	1	1	1	1	1	1	7
1989	60	39	24	36	74	98	92	1	1	1	1	1	1	1	7
1990	59	44	32	51	68	97	93	1	1	1	1	1	1	1	7
1991	87	75	68	64	70	96	90	1	1	1	1	1	1	1	7
1992	86	83	82	96	106	111	110	1	1	1	1	1	1	1	7
1993	20	18	0	0	5	54	77	1	2	6	6	4	1	1	21
1994	56	42	28	48	78	98	92	1	1	1	1	1	1	1	7

73 - year Average: 12

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	Fluctuation MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	17	-7	17	0	-14	-44	-27	6	4	6	6	3	1	1	27	594
1923	-14	24	8	-9	-14	-63	7	3	6	6	4	3	1	6	29	203
1924	-13	3	5	-6	-27	-14	4	3	6	6	4	1	3	6	29	203
1925	-15	21	18	-10	-23	-16	-8	3	6	6	4	1	2	4	26	182
1926	-14	41	14	-28	-41	-21	12	3	6	6	1	1	1	6	24	216
1927	1	-1	9	7	-33	-51	-10	6	5	6	6	1	1	4	29	493
1928	3	8	3	-32	-45	-12	12	6	6	6	1	1	3	6	29	203
1929	-4	18	0	-4	-21	-40	11	5	6	6	5	1	1	6	30	210
1930	-4	15	9	-16	-29	-23	16	5	6	6	2	1	1	6	27	189
1931	-9	2	6	-8	-26	-16	0	4	6	6	4	1	2	6	29	203
1932	-12	-7	8	20	-34	-26	-15	3	4	6	6	1	1	3	24	168
1933	-11	19	17	-11	-17	-43	1	3	6	6	3	2	1	6	27	189
1934	-8	13	11	-4	-25	-21	9	4	6	6	5	1	1	6	29	203
1935	-23	33	21	11	-36	-69	10	1	6	6	6	1	1	6	27	351
1936	-2	6	12	-13	-42	-49	6	5	6	6	3	1	1	6	28	476
1937	10	6	0	0	-38	-54	-15	6	6	6	6	1	1	3	29	725
1938	-18	-13	-62	105	4	-44	-12	2	3	1	6	6	1	3	22	352
1939	-8	18	18	-21	-35	-31	22	4	6	6	1	1	1	6	25	200
1940	2	-4	13	-8	-41	-46	5	6	5	6	4	1	1	6	29	232
1941	13	0	-4	7	-7	-42	-21	6	6	5	6	4	1	1	29	754
1942	4	1	8	14	-21	-46	-32	6	6	6	6	1	1	1	27	378
1943	20	-2	2	-14	-36	-35	-15	6	5	6	3	1	1	3	25	575
1944	-17	9	1	-16	-7	-4	-10	2	6	6	2	4	5	4	29	203
1945	8	-3	6	5	-22	-43	-20	6	5	6	6	1	1	2	27	540
1946	-4	12	23	-13	-36	-32	2	5	6	6	3	1	1	6	28	224
1947	-11	15	11	-21	-38	-24	8	3	6	6	1	1	1	6	24	168
1948	7	26	-5	-10	-58	-3	4	6	6	5	4	1	5	6	33	231
1949	-13	11	16	-17	-39	-5	12	3	6	6	2	1	5	6	29	203
1950	-17	10	17	-12	-33	-30	6	2	6	6	3	1	1	6	25	175
1951	-8	6	-6	-32	-51	0	18	4	6	4	1	1	6	6	28	196
1952	7	-8	-33	50	-5	-46	-17	6	4	1	6	5	1	2	25	475
1953	-6	9	-5	-18	-21	-19	3	4	6	5	2	1	2	6	26	182
1954	-5	10	23	-16	-37	-42	18	5	6	6	2	1	1	6	27	216
1955	-17	14	11	-8	-33	-23	6	2	6	6	4	1	1	6	26	182
1956	16	0	-15	15	-10	-42	-19	6	6	3	6	4	1	2	28	700
1957	4	17	15	1	-36	-55	10	6	6	6	6	1	1	6	32	320
1958	11	11	0	0	-19	-41	-18	6	6	6	6	2	1	2	29	725
1959	-8	22	16	-15	-51	-30	5	4	6	6	3	1	1	6	27	243
1960	-5	17	10	-16	-13	-13	-2	5	6	6	2	3	3	5	30	210
1961	1	15	13	-12	-41	-19	0	6	6	6	3	1	2	6	30	210
1962	-9	-2	28	14	-29	-51	-13	4	5	6	6	1	1	3	26	260
1963	0	18	0	0	-12	-44	-17	6	6	6	6	3	1	2	30	750
1964	-3	9	8	-10	-43	-32	8	5	6	6	4	1	1	6	29	232
1965	-2	5	-8	10	-21	-28	-16	5	6	4	6	1	1	2	25	225
1966	-15	19	19	-14	-44	-20	0	3	6	6	3	1	2	6	27	243
1967	11	-6	-51	56	6	-37	-17	6	4	1	6	6	1	2	26	520
1968	-6	11	4	-15	-33	-28	4	4	6	6	3	1	1	6	27	189
1969	-3	-54	2	107	0	-38	-25	5	1	6	6	6	1	1	26	442
1970	-6	0	1	-11	-27	-41	1	4	6	6	3	1	1	6	27	189
1971	-15	8	3	-24	-22	-7	-13	3	6	6	1	1	4	3	24	168
1972	-8	13	6	-3	-43	-16	0	4	6	6	5	1	2	6	30	210
1973	0	-10	25	1	-34	-59	-6	6	4	6	6	1	1	4	28	476
1974	6	9	11	3	-36	-47	-17	6	6	6	6	1	1	2	28	420
1975	-9	7	3	31	-42	-49	6	4	6	6	6	1	1	6	30	300
1976	5	3	-5	-23	-27	-13	15	6	6	5	1	1	3	6	28	196
1977	-37	1	-1	-2	4	-5	1	1	6	5	5	6	5	6	34	238
1978	-8	-42	-12	78	0	-28	-9	4	1	3	6	6	1	4	25	425
1979	7	-2	11	-8	-42	-44	5	6	5	6	4	1	1	6	29	435
1980	-2	8	-16	26	0	-34	-29	5	6	2	6	6	1	1	27	540
1981	2	14	6	-10	-33	-33	11	6	6	6	4	1	1	6	30	210
1982	16	-30	15	15	0	-30	-5	6	1	6	6	6	1	5	31	713
1983	-29	-17	0	16	81	8	4	1	2	6	6	6	6	6	33	594
1984	8	2	0	-13	-27	-43	-4	6	6	6	3	1	1	5	28	476
1985	-7	25	12	-24	-38	-18	0	4	6	6	1	1	2	6	26	234
1986	2	22	-9	11	-18	-55	-24	6	6	4	6	2	1	1	26	494
1987	15	19	21	-12	-36	-30	7	6	6	6	3	1	1	6	29	203
1988	11	12	8	-20	-29	-15	3	6	6	6	2	1	3	6	30	210
1989	4	21	15	-12	-38	-24	6	6	6	6	3	1	1	6	29	203
1990	7	15	12	-19	-17	-29	4	6	6	6	2	2	1	6	29	203
1991	-4	12	7	4	-6	-26	6	5	6	6	6	4	1	6	34	238
1992	-9	3	1	-14	-10	-5	1	4	6	6	3	4	5	6	34	238
1993	13	2	18	0	-5	-49	-23	6	6	6	6	5	1	1	31	651
1994	12	14	14	-20	-30	-20	6	6	6	6	2	1	2	6	29	203

73 - year Average: 28 — 329.2
1929 - '34 Average: 193.7

Flow Alternative 2

STUDY: 1995C06F-SWRCB-468 DWRSIM: recirc818-f, 17 Jun 97
CP # 12, SWP SAN LUIS RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-468/12/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 544'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	419	441	475	520	539	544	543	539	524	475	430	439	0	1	5	20	69	114	105	6	5	4	1	1	1	1	**19**	5	-1	-4	-15	-49	-45	9	6	5	5	3	1	1	6	**27**	**513**
1923	471	496	500	515	526	532	528	506	470	448	418	405	12	16	38	74	96	126	139	3	2	1	1	1	1	1	**10**	6	-4	-22	-36	-22	-30	-13	6	5	1	1	1	1	3	**18**	**180**
1924	424	436	465	511	532	532	523	499	466	428	392	389	12	21	45	78	116	152	155	3	1	1	1	1	1	1	**9**	0	-9	-24	-33	-38	-36	-3	6	4	1	1	1	1	5	**19**	**171**
1925	389	400	444	475	522	533	525	499	459	416	362	343	11	19	45	85	128	182	201	3	2	1	1	1	1	1	**10**	11	-8	-26	-40	-43	-54	-19	6	4	1	1	1	1	2	**16**	**160**
1926	365	382	401	459	502	514	510	489	455	447	394	384	30	34	55	89	97	150	160	1	1	1	1	1	1	1	**7**	12	-4	-21	-34	-8	-53	-10	6	5	1	1	4	1	4	**22**	**154**
1927	393	434	474	520	544	544	540	529	498	464	413	427	0	4	15	46	80	131	117	6	5	2	1	1	1	1	**17**	0	-4	-11	-31	-34	-51	14	6	5	3	1	1	1	6	**23**	**391**
1928	460	490	499	514	526	532	528	506	459	438	416	402	12	16	38	85	106	128	142	3	2	1	1	1	1	1	**10**	6	-4	-22	-47	-21	-22	-14	6	5	1	1	1	1	3	**18**	**180**
1929	414	441	469	517	533	543	533	520	499	468	436	433	1	11	24	45	76	108	111	5	3	1	1	1	1	1	**13**	10	-10	-13	-21	-31	-32	-3	6	4	3	1	1	1	5	**21**	**273**
1930	433	439	484	533	542	544	527	497	468	461	447	425	0	17	47	76	83	97	119	6	2	1	1	1	1	1	**13**	2	-17	-30	-29	-7	-14	-22	6	2	1	1	4	3	1	**18**	**234**
1931	431	436	437	478	492	492	485	472	451	419	372	372	52	59	72	93	125	172	172	1	1	1	1	1	1	1	**7**	0	-7	-13	-21	-32	-47	0	6	4	3	1	1	1	6	**22**	**154**
1932	385	384	448	506	536	529	521	503	482	453	414	398	15	23	41	62	91	130	146	2	1	1	1	1	1	1	**8**	-7	-8	-18	-21	-29	-39	-16	4	4	2	1	1	1	2	**15**	**120**
1933	416	424	426	473	495	503	501	488	459	422	373	373	41	43	56	85	122	171	171	1	1	1	1	1	1	1	**7**	8	-2	-13	-29	-37	-49	0	6	5	3	1	1	1	6	**23**	**161**
1934	390	386	437	493	509	509	497	474	451	428	395	388	35	47	70	93	116	149	156	1	1	1	1	1	1	1	**7**	0	-12	-23	-23	-23	-33	-7	6	3	1	1	1	1	4	**17**	**119**
1935	382	404	424	485	492	527	533	507	471	426	353	357	17	11	37	73	118	191	187	2	3	1	1	1	1	1	**10**	35	6	-26	-36	-45	-73	4	6	6	1	1	1	1	6	**22**	**220**
1936	395	411	425	481	525	542	542	526	492	457	416	410	2	2	18	52	87	128	134	5	5	2	1	1	1	1	**16**	17	0	-16	-34	-35	-41	-6	6	6	2	1	1	1	4	**21**	**336**
1937	430	445	470	518	535	544	544	539	510	463	412	401	0	0	5	34	81	132	143	6	6	4	1	1	1	1	**20**	9	0	-5	-29	-47	-51	-11	6	6	5	1	1	1	3	**23**	**460**
1938	431	465	499	515	530	540	544	544	537	504	470	486	4	0	0	7	40	74	58	5	6	6	4	1	1	1	**24**	10	4	0	-7	-33	-34	16	6	6	6	4	1	1	6	**30**	**720**
1939	513	522	526	539	544	544	526	495	464	453	438	419	0	18	49	80	91	106	125	6	2	1	1	1	1	1	**13**	0	-18	-31	-31	-11	-15	-19	6	2	1	1	3	3	2	**18**	**234**
1940	424	421	416	480	520	527	524	502	461	434	352	350	17	20	42	83	110	192	194	2	1	1	1	1	1	1	**8**	7	-3	-22	-41	-27	-82	-2	6	5	1	1	1	1	5	**20**	**160**
1941	389	422	460	511	535	539	536	533	518	468	427	446	5	8	11	26	76	117	98	4	4	3	1	1	1	1	**15**	4	-3	-3	-15	-50	-41	19	6	5	5	3	1	1	6	**27**	**405**
1942	478	492	497	512	525	529	525	517	508	461	420	438	15	19	27	36	83	124	106	2	2	1	1	1	1	1	**9**	4	-4	-8	-9	-47	-41	18	6	5	4	4	1	1	6	**27**	**243**
1943	470	485	490	506	517	529	532	535	507	464	415	421	15	12	9	37	80	129	123	2	3	4	1	1	1	1	**13**	12	3	3	-28	-43	-49	6	6	6	6	1	1	1	6	**27**	**351**
1944	454	485	501	516	530	537	519	488	455	441	425	413	7	25	56	89	103	119	131	4	1	1	1	1	1	1	**10**	7	-18	-31	-33	-14	-16	-12	6	2	1	1	3	2	3	**18**	**180**
1945	419	456	492	519	535	541	530	503	466	445	408	400	3	14	41	78	99	136	144	5	3	1	1	1	1	1	**13**	6	-11	-27	-37	-21	-37	-8	6	3	1	1	1	1	4	**17**	**221**
1946	437	469	495	510	521	528	516	489	448	428	411	399	16	28	55	96	116	133	145	2	1	1	1	1	1	1	**8**	7	-12	-27	-41	-20	-17	-12	6	3	1	1	2	2	3	**18**	**144**
1947	421	454	487	516	529	538	523	491	458	446	429	409	6	21	53	86	98	115	135	4	1	1	1	1	1	1	**10**	9	-15	-32	-33	-12	-17	-20	6	3	1	1	3	2	2	**18**	**180**
1948	413	422	422	474	491	513	511	491	457	419	349	359	31	33	53	87	125	195	185	1	1	1	1	1	1	1	**7**	22	-2	-20	-34	-38	-70	10	6	5	2	1	1	1	6	**22**	**154**
1949	388	414	446	492	513	541	523	494	452	431	407	395	3	21	50	92	113	137	149	5	1	1	1	1	1	1	**11**	28	-18	-29	-42	-21	-24	-12	6	2	1	1	1	1	3	**15**	**165**
1950	407	420	431	484	522	530	518	490	455	433	414	404	14	26	54	89	111	130	140	3	1	1	1	1	1	1	**9**	8	-12	-28	-35	-22	-19	-10	6	3	1	1	1	2	4	**18**	**162**
1951	427	459	495	524	535	540	527	507	465	434	410	405	4	17	37	79	110	134	139	5	2	1	1	1	1	1	**12**	5	-13	-20	-42	-31	-24	-5	6	3	2	1	1	1	5	**19**	**228**
1952	431	460	490	519	532	537	541	544	536	510	492	499	7	3	0	8	34	52	45	4	5	6	4	1	1	1	**22**	5	4	3	-8	-26	-18	7	6	6	6	4	1	2	6	**31**	**682**
1953	506	515	519	532	542	544	529	515	493	468	430	446	0	15	29	51	76	114	98	6	2	1	1	1	1	1	**13**	2	-15	-14	-22	-25	-38	16	6	3	3	1	1	1	6	**21**	**273**
1954	478	494	500	515	527	533	526	508	460	436	415	403	11	18	36	84	108	129	141	3	2	1	1	1	1	1	**10**	6	-7	-18	-48	-24	-21	-12	6	4	2	1	1	1	3	**18**	**180**
1955	435	464	494	518	530	538	520	493	465	459	425	418	6	24	51	79	85	119	126	4	1	1	1	1	1	1	**10**	8	-18	-27	-28	-6	-34	-7	6	2	1	1	4	1	4	**19**	**190**
1956	431	453	494	528	542	544	538	527	507	475	434	444	0	6	17	37	69	110	100	6	4	2	1	1	1	1	**16**	2	-6	-11	-20	-32	-41	10	6	4	3	2	1	1	6	**23**	**368**
1957	470	495	500	514	527	533	524	501	468	450	429	420	11	20	43	76	94	115	124	3	1	1	1	1	1	1	**9**	6	-9	-23	-33	-18	-21	-9	6	4	1	1	2	1	4	**19**	**171**
1958	452	482	506	522	534	537	538	538	530	494	474	488	7	6	6	14	50	70	56	4	4	4	3	1	1	1	**18**	3	1	0	-8	-36	-20	14	6	6	6	4	1	2	6	**31**	**558**
1959	496	504	509	522	534	541	521	488	453	437	426	421	3	23	56	91	107	118	123	5	1	1	1	1	1	1	**11**	7	-20	-33	-35	-16	-11	-5	6	2	1	1	2	3	5	**20**	**220**
1960	432	446	457	504	539	544	526	493	460	439	385	361	0	18	51	84	105	159	183	6	2	1	1	1	1	1	**13**	5	-18	-33	-33	-21	-54	-24	6	2	1	1	1	1	1	**13**	**169**
1961	378	416	455	503	536	544	524	490	461	452	430	409	0	20	54	83	92	114	135	6	1	1	1	1	1	1	**12**	8	-20	-34	-29	-9	-22	-21	6	2	1	1	4	1	1	**16**	**192**
1962	414	419	457	491	528	534	516	484	433	402	326	336	10	28	60	111	142	218	208	3	1	1	1	1	1	1	**9**	6	-18	-32	-51	-31	-76	10	6	2	1	1	1	1	6	**18**	**162**
1963	377	412	443	489	523	529	529	520	496	464	429	444	15	15	24	48	80	115	100	2	2	1	1	1	1	1	**9**	6	0	-9	-24	-32	-35	15	6	6	4	1	1	1	6	**25**	**225**
1964	473	502	514	529	540	544	519	482	439	415	395	397	0	25	62	105	129	149	147	6	1	1	1	1	1	1	**12**	4	-25	-37	-43	-24	-20	2	6	1	1	1	1	2	6	**18**	**216**
1965	402	433	469	519	532	539	540	526	495	465	420	427	5	4	18	49	79	124	117	4	5	2	1	1	1	1	**15**	7	1	-14	-31	-30	-45	7	6	6	3	1	1	1	6	**24**	**360**
1966	458	487	498	512	523	529	512	482	435	413	397	387	15	32	62	109	131	147	157	2	1	1	1	1	1	1	**8**	6	-17	-30	-47	-22	-16	-10	6	2	1	1	1	2	4	**17**	**136**
1967	401	437	476	515	528	533	538	541	534	522	502	505	11	6	3	10	22	42	39	3	4	5	3	1	1	1	**18**	5	5	3	-7	-12	-20	3	6	6	6	4	3	2	6	**33**	**594**
1968	512	523	527	540	544	544	529	496	458	440	423	417	0	15	48	86	104	121	127	6	2	1	1	1	1	1	**13**	0	-15	-33	-38	-18	-17	-6	6	3	1	1	2	2	4	**19**	**247**
1969	437	468	501	523	536	544	544	544	537	517	489	503	0	0	0	7	27	55	41	6	6	6	4	1	1	1	**25**	8	0	0	-7	-20	-28	14	6	6	6	4	2	1	6	**31**	**775**
1970	517	526	530	544	544	544	534	511	470	449	414	409	0	10	33	74	95	130	135	6	3	1	1	1	1	1	**14**	0	-10	-23	-41	-21	-35	-5	6	4	1	1	1	1	5	**19**	**266**
1971	431	464	496	514	524	530	519	503	476	454	435	447	14	25	41	68	90	109	97	3	1	1	1	1	1	1	**9**	6	-11	-16	-27	-22	-19	12	6	3	2	1	1	2	6	**21**	**189**
1972	475	502	513	528	540	544	526	494	455	437	424	410	0	18	50	89	107	120	134	6	2	1	1	1	1	1	**13**	4	-18	-32	-39	-18	-13	-14	6	2	1	1	2	3	3	**18**	**234**
1973	434	466	497	523	534	540	533	512	481	459	420	418	4	11	32	63	85	124	126	5	3	1	1	1	1	1	**13**	6	-7	-21	-31	-22	-39	-2	6	4	1	1	1	1	5	**19**	**247**
1974	451	480	502	518	530	535	533	521	492	462	438	450	9	11	23	52	82	106	94	4	3	1	1	1	1	1	**12**	5	-2	-12	-29	-30	-24	12	6	5	3	1	1	1	6	**23**	**276**
1975	474	483	488	502	516	520	517	502	477	444	429	440	24	27	42	67	100	115	104	1	1	1	1	1	1	1	**7**	4	-3	-15	-25	-33	-15	11	6	5	3	1	1	3	6	**25**	**175**
1976	467	485	491	506	520	532	516	490	473	470	447	431	12	28	54	71	74	97	113	3	1	1	1	1	1	1	**9**	12	-16	-26	-17	-3	-23	-16	6	2	1	2	5	1	2	**19**	**171**
1977	431	439	441	458	458	458	461	449	429	406	398	412	86	83	95	115	138	146	132	1	1	1	1	1	1	1	**7**	0	3	-12	-20	-23	-8	14	6	6	3	2	1	4	6	**28**	**196**
1978	417	434	484	532	544	544	544	544	526	469	413	433	0	0	0	18	75	131	111	6	6	6	2	1	1	1	**23**	0	0	0	-18	-57	-56	20	6	6	6	2	1	1	6	**28**	**644**
1979	466	488	492	507	521	528	522	504	474	455	409	405	16	22	40	70	89	135	139	2	1	1	1	1	1	1	**8**	7	-6	-18	-30	-19	-46	-4	6	4	2	1	2	1	5	**21**	**168**
1980	441	475	502	519	534	544	544	544	527	491	451	468	0	0	0	17	53	93	76	6	6	6	2	1	1	1	**23**	10	0	0	-17	-36	-40	17	6	6	6	2	1	1	6	**28**	**644**
1981	499	519	525	539	544	544	530	496	459	441	423	411	0	14	48	85	103	121	133	6	3	1	1	1	1	1	**14**	0	-14	-34	-37	-18	-18	-12	6	3	1	1	2	2	3	**18**	**252**
1982	423	458	492	523	536	543	544	544	531	494	462	472	1	0	0	13	50	82	72	5	6	6	3	1	1	1	**23**	7	1	0	-13	-37	-32	10	6	6	6	3	1	1	6	**29**	**667**
1983	496	515	521	535	544	544	544	544	537	527	514	521	0	0	0	7	17	30	23	6	6	6	4	2	1	1	**26**	0	0	0	-7	-10	-13	7	6	6	6	4	4	3	6	**35**	**910**
1984	536	544	544	544	544	544	536	514	478	458	412	413	0	8	30	66	86	132	131	6	4	1	1	1	1	1	**15**	0	-8	-22	-36	-20	-46	1	6	4	1	1	2	1	6	**21**	**315**
1985	450	482	497	512	525	532	512	478	434	414	398	397	12	32	66	110	130	146	147	3	1	1	1	1	1	1	**9**	7	-20	-34	-44	-20	-16	-1	6	2	1	1	2	2	5	**19**	**171**
1986	402	408	446	499	529	543	544	544	532	490	459	468	1	0	0	12	54	85	76	5	6	6	3	1	1	1	**23**	14	1	0	-12	-42	-31	9	6	6	6	3	1	1	6	**29**	**667**
1987	497	509	535	544	544	544	523	488	460	450	425	411	0	21	56	84	94	119	133	6	1	1	1	1	1	1	**12**	0	-21	-35	-28	-10	-25	-14	6	1	1	1	4	1	3	**17**	**204**
1988	420	416	455	505	519	519	508	493	483	463	425	421	25	36	51	61	81	119	123	1	1	1	1	1	1	1	**7**	0	-11	-15	-10	-20	-38	-4	6	3	3	4	2	1	5	**24**	**168**
1989	421	437	454	492	492	527	517	486	450	439	386	395	17	27	58	94	105	158	149	2	1	1	1	1	1	1	**8**	35	-10	-31	-36	-11	-53	9	6	4	1	1	3	1	6	**22**	**176**
1990	410	427	456	499	519	524	509	480	463	456	400	384	20	35	64	81	88	144	160	1	1	1	1	1	1	1	**7**	5	-15	-29	-17	-7	-56	-16	6	3	1	2	4	1	2	**19**	**133**
1991	384	391	391	406	406	470	471	461	443	420	403	405	74	73	83	101	124	141	139	1	1	1	1	1	1	1	**7**	64	1	-10	-18	-23	-17	2	6	6	4	2	1	2	6	**27**	**189**
1992	408	422	437	483	517	541	532	514	495	462	419	412	3	12	30	49	82	125	132	5	3	1	1	1	1	1	**13**	24	-9	-18	-19	-33	-43	-7	6	4	2	2	1	1	4	**20**	**260**
1993	412	419	466	520	530	534	529	523	507	460	404	409	10	15	21	37	84	140	135	3	2	1	1	1	1	1	**10**	4	-5	-6	-16	-47	-56	5	6	5	4	2	1	1	6	**25**	**250**
1994	445	476	488	502	516	526	505	473	449	446	445	432	18	39	71	95	98	99	112	2	1	1	1	1	1	1	**8**	10	-21	-32	-24	-3	-1	-13	6	1	1	1	5	5	3	**22**	**176**

73 - year Average: 12

73 - year Average: 22 **285.5**

1929 - '34 Average: 176.8

STUDY: 1995C06F-SWRCB-506   DWRSIM: recirc818-f, 17 Jun 97
CP # 4, SHASTA LAKE, EOP SURFACE ELEVATION   (FT)
Project: /1995C06F-SWRCB-506/4/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 1067'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	DFMRE APR	DFMRE MAY	DFMRE JUN	DFMRE JUL	DFMRE AUG	DFMRE SEP
1922	989	993	999	1,003	1,019	1,038	1,060	1,067	1,062	1,048	1,031	1,025	29	7	0	5	19	36	42
1923	1,023	1,017	1,019	1,023	1,020	1,021	1,033	1,029	1,015	997	979	977	46	34	38	52	70	88	90
1924	979	979	979	979	987	987	976	962	947	925	907	893	80	91	105	120	142	160	174
1925	898	909	918	928	999	1,014	1,045	1,055	1,050	1,033	1,019	1,016	53	22	12	17	34	48	51
1926	1,013	1,011	1,008	1,004	1,031	1,032	1,044	1,039	1,019	995	978	971	35	23	28	48	72	89	96
1927	970	994	1,017	1,035	1,026	1,052	1,067	1,067	1,058	1,045	1,029	1,023	15	0	0	9	22	38	44
1928	1,021	1,017	1,020	1,028	1,044	1,046	1,066	1,062	1,048	1,023	1,002	996	21	1	5	19	44	65	71
1929	994	994	994	994	1,000	1,002	1,004	998	991	975	957	950	65	63	69	76	92	110	117
1930	949	947	978	989	1,006	1,028	1,039	1,039	1,023	1,004	990	988	39	28	28	44	63	77	79
1931	985	983	980	982	984	990	982	972	964	946	934	921	77	85	95	103	121	133	146
1932	916	915	931	941	950	974	977	985	978	964	950	944	93	90	82	89	103	117	123
1933	942	938	939	941	943	977	985	988	984	967	952	946	90	82	79	83	100	115	121
1934	945	943	951	969	987	998	998	993	985	955	932	917	69	69	74	82	112	135	150
1935	912	923	928	948	967	990	1,034	1,040	1,033	1,014	1,001	996	77	33	27	34	53	66	71
1936	992	989	986	1,010	1,032	1,043	1,052	1,050	1,042	1,022	1,002	997	24	15	17	25	45	65	70
1937	993	989	985	979	980	1,007	1,036	1,044	1,040	1,022	1,003	996	60	31	23	27	45	64	71
1938	993	1,015	1,020	1,035	1,030	1,024	1,049	1,067	1,067	1,058	1,045	1,036	43	18	0	0	9	22	31
1939	1,023	1,017	1,020	1,022	1,024	1,039	1,031	1,024	1,000	980	952	949	28	36	43	67	87	115	118
1940	945	940	949	996	1,017	1,025	1,059	1,064	1,053	1,033	1,017	1,015	42	8	3	14	34	50	52
1941	1,013	1,013	1,019	1,020	1,024	1,045	1,064	1,067	1,067	1,058	1,047	1,036	22	3	0	0	9	20	31
1942	1,023	1,017	1,020	1,023	1,028	1,042	1,067	1,067	1,067	1,058	1,046	1,036	25	0	0	0	9	21	31
1943	1,023	1,017	1,022	1,030	1,042	1,051	1,067	1,067	1,059	1,046	1,031	1,025	16	0	0	8	21	36	42
1944	1,023	1,017	1,015	1,014	1,023	1,033	1,038	1,038	1,021	997	977	970	34	29	29	46	70	90	97
1945	972	983	997	1,005	1,039	1,052	1,064	1,067	1,062	1,041	1,023	1,018	15	3	0	5	26	44	49
1946	1,017	1,017	1,018	1,033	1,039	1,050	1,062	1,064	1,056	1,039	1,023	1,020	17	5	3	11	28	44	47
1947	1,017	1,017	1,018	1,014	1,021	1,040	1,046	1,037	1,023	1,000	983	977	27	21	30	44	67	84	90
1948	982	984	985	1,009	1,008	1,019	1,057	1,067	1,067	1,053	1,038	1,036	48	10	0	0	14	29	31
1949	1,023	1,017	1,016	1,012	1,016	1,050	1,063	1,064	1,050	1,029	1,011	1,007	17	4	3	17	38	56	60
1950	1,003	999	995	1,003	1,016	1,033	1,046	1,045	1,033	1,011	994	992	34	21	22	34	56	73	75
1951	1,005	1,017	1,020	1,033	1,040	1,057	1,064	1,067	1,051	1,030	1,012	1,010	10	3	0	16	37	55	57
1952	1,008	1,013	1,019	1,032	1,038	1,048	1,058	1,067	1,067	1,058	1,046	1,036	19	9	0	0	9	21	31
1953	1,023	1,017	1,021	1,022	1,033	1,051	1,065	1,067	1,067	1,058	1,046	1,036	16	2	0	0	9	21	31
1954	1,023	1,017	1,021	1,030	1,035	1,051	1,067	1,064	1,059	1,042	1,030	1,030	16	0	3	8	25	37	37
1955	1,023	1,017	1,022	1,024	1,027	1,025	1,039	1,047	1,031	1,007	989	988	42	28	20	36	60	78	79
1956	986	989	1,017	1,017	1,019	1,048	1,067	1,067	1,067	1,058	1,047	1,036	19	0	0	0	9	20	31
1957	1,023	1,017	1,016	1,017	1,035	1,052	1,058	1,067	1,060	1,043	1,029	1,032	15	9	0	7	24	38	35
1958	1,023	1,017	1,021	1,029	1,067	1,024	1,053	1,067	1,067	1,058	1,047	1,036	43	14	0	0	9	20	31
1959	1,023	1,017	1,017	1,034	1,039	1,050	1,054	1,054	1,036	1,012	995	999	17	13	13	31	55	72	68
1960	996	994	991	997	1,025	1,052	1,059	1,067	1,050	1,030	1,012	1,010	15	8	0	17	37	55	57
1961	1,007	1,009	1,021	1,026	1,044	1,057	1,064	1,067	1,049	1,025	1,005	1,004	10	3	0	18	42	62	63
1962	1,000	1,003	1,014	1,016	1,035	1,050	1,062	1,063	1,051	1,031	1,014	1,011	17	5	4	16	36	53	56
1963	1,023	1,017	1,021	1,025	1,045	1,055	1,052	1,067	1,063	1,052	1,040	1,036	12	15	0	4	15	27	31
1964	1,023	1,017	1,018	1,033	1,034	1,038	1,032	1,027	1,012	991	971	969	29	35	40	55	76	96	98
1965	968	978	1,017	1,022	1,040	1,052	1,065	1,066	1,057	1,042	1,032	1,030	15	2	1	10	25	35	37
1966	1,023	1,017	1,021	1,037	1,049	1,055	1,067	1,064	1,049	1,030	1,015	1,012	12	0	3	18	37	52	55
1967	1,008	1,017	1,021	1,030	1,044	1,048	1,064	1,067	1,067	1,058	1,047	1,036	19	3	0	0	9	20	31
1968	1,023	1,017	1,019	1,025	1,034	1,054	1,056	1,058	1,042	1,022	1,015	1,012	13	11	9	25	45	52	55
1969	1,012	1,013	1,021	1,022	1,027	1,048	1,063	1,067	1,067	1,058	1,047	1,036	19	4	0	0	9	20	31
1970	1,023	1,017	1,020	1,017	1,025	1,052	1,055	1,055	1,044	1,025	1,012	1,010	15	12	12	23	42	55	57
1971	1,010	1,017	1,020	1,028	1,040	1,043	1,063	1,067	1,067	1,058	1,047	1,036	24	4	0	0	9	20	31
1972	1,023	1,017	1,022	1,033	1,045	1,056	1,067	1,067	1,051	1,032	1,018	1,018	11	0	0	16	35	49	49
1973	1,020	1,017	1,021	1,030	1,034	1,053	1,065	1,067	1,058	1,044	1,033	1,032	14	2	0	9	23	34	35
1974	1,023	1,017	1,018	1,017	1,036	1,024	1,058	1,067	1,067	1,058	1,047	1,036	43	9	0	0	9	20	31
1975	1,023	1,017	1,021	1,024	1,045	1,039	1,061	1,067	1,067	1,058	1,047	1,036	28	6	0	0	9	20	31
1976	1,023	1,017	1,018	1,017	1,012	1,017	1,024	1,020	996	974	970	972	50	43	47	71	93	97	95
1977	975	976	976	977	968	967	949	944	923	905	888	884	100	118	123	144	162	179	183
1978	873	872	916	1,019	1,031	1,047	1,067	1,067	1,064	1,057	1,047	1,036	20	0	0	3	10	20	31
1979	1,023	1,017	1,015	1,018	1,029	1,046	1,053	1,062	1,051	1,034	1,022	1,020	21	14	5	16	33	45	47
1980	1,020	1,017	1,020	1,029	1,019	1,046	1,059	1,064	1,056	1,045	1,035	1,035	21	8	3	11	22	32	32
1981	1,023	1,017	1,020	1,029	1,042	1,056	1,064	1,062	1,042	1,019	1,003	1,000	11	3	5	25	48	64	67
1982	999	1,017	1,018	1,033	1,029	1,046	1,051	1,067	1,067	1,058	1,047	1,036	21	16	0	0	9	20	31
1983	1,023	1,017	1,020	1,022	1,017	1,045	1,050	1,067	1,067	1,058	1,047	1,036	22	17	0	0	9	20	31
1984	1,023	1,017	1,018	1,034	1,047	1,056	1,064	1,067	1,060	1,044	1,038	1,036	11	3	0	7	23	29	31
1985	1,023	1,017	1,022	1,023	1,027	1,034	1,042	1,034	1,012	993	977	979	33	25	33	55	74	90	88
1986	982	985	993	1,017	1,017	1,029	1,047	1,049	1,037	1,020	1,005	1,008	38	20	18	30	47	62	59
1987	1,008	1,007	1,007	1,008	1,018	1,045	1,045	1,039	1,008	985	957	951	22	22	28	59	82	110	116
1988	947	948	980	1,001	1,003	1,005	1,010	1,010	992	961	946	942	62	57	57	75	106	121	125
1989	942	955	962	969	976	1,039	1,058	1,054	1,040	1,020	1,009	1,009	28	9	13	27	47	58	58
1990	1,011	1,009	1,005	1,011	1,011	1,017	1,012	1,018	1,003	982	962	959	50	55	49	64	85	105	108
1991	953	951	950	951	947	973	984	984	974	961	946	940	94	83	83	93	106	121	127
1992	939	937	938	942	980	1,002	1,014	1,007	993	975	962	955	65	53	60	74	92	105	112
1993	951	949	963	996	1,029	1,031	1,059	1,067	1,067	1,056	1,048	1,048	36	8	0	0	11	19	19
1994	1,043	1,017	1,019	1,020	1,026	1,027	1,027	1,026	999	979	957	954	40	40	41	68	88	110	113

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Fluct. MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	1	4	6	4	2	1	1	**19**	19	22	7	-5	-14	-17	-6	6	6	6	5	3	2	4	**32**	**608**
1923	1	1	1	1	1	1	1	**7**	1	12	-4	-14	-18	-18	-2	6	6	5	3	2	2	5	**29**	**203**
1924	1	1	1	1	1	1	1	**7**	0	-11	-14	-15	-22	-18	-14	6	3	3	3	1	2	3	**21**	**147**
1925	1	1	3	2	1	1	1	**10**	15	31	10	-5	-17	-14	-3	6	6	6	5	2	3	5	**33**	**330**
1926	1	1	1	1	1	1	1	**7**	1	12	-5	-20	-24	-17	-7	6	6	5	2	1	2	4	**26**	**182**
1927	2	6	6	4	1	1	1	**21**	26	15	0	-9	-13	-16	-6	6	6	6	4	3	2	4	**31**	**651**
1928	1	5	4	2	1	1	1	**15**	2	20	-4	-14	-25	-21	-6	6	6	5	3	1	1	4	**26**	**390**
1929	1	1	1	1	1	1	1	**7**	2	2	-6	-7	-16	-18	-7	6	6	4	4	2	2	4	**28**	**196**
1930	1	1	1	1	1	1	1	**7**	22	11	0	-16	-19	-14	-2	6	6	6	2	2	3	5	**30**	**210**
1931	1	1	1	1	1	1	1	**7**	6	-8	-10	-8	-18	-12	-13	6	4	4	4	2	3	3	**26**	**182**
1932	1	1	1	1	1	1	1	**7**	24	3	8	-7	-14	-14	-6	6	6	6	4	3	3	4	**32**	**224**
1933	1	1	1	1	1	1	1	**7**	34	8	3	-4	-17	-15	-6	6	6	6	5	2	3	4	**32**	**224**
1934	1	1	1	1	1	1	1	**7**	11	0	-5	-8	-30	-23	-15	6	6	5	4	1	1	3	**26**	**182**
1935	1	1	1	1	1	1	1	**7**	23	44	6	-7	-19	-13	-5	6	6	6	4	2	3	5	**32**	**224**
1936	1	2	2	1	1	1	1	**9**	11	9	-2	-8	-20	-20	-5	6	6	5	4	2	2	5	**30**	**270**
1937	1	1	1	1	1	1	1	**7**	27	29	8	-4	-18	-19	-7	6	6	6	5	2	2	4	**31**	**217**
1938	1	2	6	6	4	1	1	**21**	-6	25	18	0	-9	-13	-9	4	6	6	6	4	3	4	**33**	**693**
1939	1	1	1	1	1	1	1	**7**	15	-8	-7	-24	-20	-28	-3	6	4	4	1	2	1	5	**23**	**161**
1940	1	4	5	3	1	1	1	**16**	8	34	5	-11	-20	-16	-2	6	6	6	3	2	2	5	**30**	**480**
1941	1	5	6	6	4	1	1	**24**	21	19	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1942	1	6	6	6	4	1	1	**25**	14	25	0	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**875**
1943	2	6	6	4	1	1	1	**21**	9	16	0	-8	-13	-15	-6	6	6	6	4	3	3	4	**32**	**672**
1944	1	1	1	1	1	1	1	**7**	10	5	0	-17	-24	-20	-7	6	6	6	2	1	2	4	**27**	**189**
1945	2	5	6	4	1	1	1	**20**	13	12	3	-5	-21	-18	-5	6	6	6	5	1	2	5	**31**	**620**
1946	2	4	5	3	1	1	1	**17**	11	12	2	-8	-17	-16	-3	6	6	6	4	2	2	5	**31**	**527**
1947	1	1	1	1	1	1	1	**7**	19	6	-9	-14	-23	-17	-6	6	6	4	3	1	2	4	**26**	**182**
1948	1	3	6	6	3	1	1	**21**	11	38	10	0	-14	-15	-2	6	6	6	6	3	3	5	**35**	**735**
1949	2	5	5	2	1	1	1	**17**	34	13	1	-14	-21	-18	-4	6	6	6	3	1	2	5	**29**	**493**
1950	1	1	1	1	1	1	1	**7**	17	13	-1	-12	-22	-17	-2	6	6	5	3	1	2	5	**28**	**196**
1951	3	5	6	2	1	1	1	**19**	17	7	3	-16	-21	-18	-2	6	6	6	2	1	2	5	**28**	**532**
1952	2	4	6	6	4	1	1	**24**	10	10	9	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**840**
1953	2	5	6	6	4	1	1	**25**	18	14	2	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**875**
1954	2	6	5	4	1	1	1	**20**	16	16	-3	-5	-17	-12	0	6	6	5	5	2	3	6	**33**	**660**
1955	1	1	1	1	1	1	1	**7**	-2	14	8	-16	-24	-18	-1	5	6	6	2	1	2	5	**27**	**189**
1956	2	6	6	6	4	1	1	**26**	29	19	0	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**884**
1957	2	4	6	4	1	1	1	**19**	17	6	9	-7	-17	-14	3	6	6	6	4	2	3	6	**33**	**627**
1958	1	3	6	6	4	1	1	**22**	-43	29	14	0	-9	-11	-11	1	6	6	6	4	3	3	**29**	**638**
1959	2	3	3	1	1	1	1	**12**	11	4	0	-18	-24	-17	4	6	6	6	2	1	2	6	**29**	**348**
1960	2	4	6	2	1	1	1	**17**	27	7	8	-17	-20	-18	-2	6	6	6	2	2	2	5	**29**	**493**
1961	3	5	6	2	1	1	1	**19**	13	7	3	-18	-24	-20	-1	6	6	6	2	1	2	5	**28**	**532**
1962	2	4	5	2	1	1	1	**16**	15	12	1	-12	-20	-17	-3	6	6	6	3	2	2	5	**30**	**480**
1963	3	2	6	5	2	1	1	**20**	10	-3	15	-4	-11	-12	-4	6	5	6	5	3	3	5	**33**	**660**
1964	1	1	1	1	1	1	1	**7**	4	-6	-5	-15	-21	-20	-2	6	4	5	3	1	2	5	**26**	**182**
1965	2	5	5	3	1	1	1	**18**	12	13	1	-9	-15	-10	-2	6	6	6	4	3	4	5	**34**	**612**
1966	3	6	5	2	1	1	1	**19**	6	12	-3	-15	-19	-15	-3	6	6	5	3	2	3	5	**30**	**570**
1967	2	5	6	6	4	1	1	**25**	4	16	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1968	3	3	4	1	1	1	1	**14**	20	2	2	-16	-20	-7	-3	6	6	6	2	2	4	5	**31**	**434**
1969	2	5	6	6	4	1	1	**25**	21	15	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1970	2	3	3	1	1	1	1	**12**	27	3	0	-11	-19	-13	-2	6	6	6	3	2	3	5	**31**	**372**
1971	1	5	6	6	4	1	1	**24**	3	20	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1972	3	6	6	2	1	1	1	**20**	11	11	0	-16	-19	-14	0	6	6	6	2	2	3	6	**31**	**620**
1973	3	5	6	4	1	1	1	**21**	19	12	2	-9	-14	-11	-1	6	6	6	4	3	3	5	**33**	**693**
1974	1	4	6	6	4	1	1	**23**	-12	34	9	0	-9	-11	-11	3	6	6	6	4	3	3	**31**	**713**
1975	1	4	6	6	4	1	1	**23**	-6	22	6	0	-9	-11	-11	4	6	6	6	4	3	3	**32**	**736**
1976	1	1	1	1	1	1	1	**7**	5	7	-4	-24	-22	-4	2	6	6	5	1	1	5	6	**30**	**210**
1977	1	1	1	1	1	1	1	**7**	-1	-18	-5	-21	-18	-17	-4	5	2	5	1	2	2	5	**22**	**154**
1978	1	6	6	5	3	1	1	**23**	16	20	0	-3	-7	-10	-11	6	6	6	5	4	4	3	**34**	**782**
1979	1	3	4	2	1	1	1	**13**	17	7	9	-11	-17	-12	-2	6	6	6	3	2	3	5	**31**	**403**
1980	1	4	5	3	1	1	1	**16**	27	13	5	-8	-11	-10	0	6	6	6	4	3	4	6	**35**	**560**
1981	3	5	4	1	1	1	1	**16**	14	8	-2	-20	-23	-16	-3	6	6	5	2	1	2	5	**27**	**432**
1982	1	2	6	6	4	1	1	**21**	17	5	16	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1983	1	2	6	6	4	1	1	**21**	28	5	17	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1984	3	5	6	4	1	1	1	**21**	9	8	3	-7	-16	-6	-2	6	6	6	4	2	4	5	**33**	**693**
1985	1	1	1	1	1	1	1	**7**	7	8	-8	-22	-19	-16	2	6	6	4	1	2	2	6	**27**	**189**
1986	1	1	2	1	1	1	1	**8**	12	18	2	-12	-17	-15	3	6	6	6	3	2	3	6	**32**	**256**
1987	1	1	1	1	1	1	1	**7**	27	0	-6	-31	-23	-28	-6	6	6	4	1	1	1	4	**23**	**161**
1988	1	1	1	1	1	1	1	**7**	2	5	0	-18	-31	-15	-4	6	6	6	2	1	3	5	**29**	**203**
1989	1	4	3	1	1	1	1	**12**	63	19	-4	-14	-20	-11	0	6	6	5	3	2	3	6	**31**	**372**
1990	1	1	1	1	1	1	1	**7**	6	-5	6	-15	-21	-20	-3	6	5	6	3	1	2	5	**28**	**196**
1991	1	1	1	1	1	1	1	**7**	26	11	0	-10	-13	-15	-6	6	6	6	4	3	3	4	**32**	**224**
1992	1	1	1	1	1	1	1	**7**	22	12	-7	-14	-18	-13	-7	6	6	4	3	2	3	4	**28**	**196**
1993	1	4	6	6	3	2	2	**24**	2	28	8	0	-11	-8	0	6	6	6	6	3	4	6	**37**	**888**
1994	1	1	1	1	1	1	1	**7**	1	0	-1	-27	-20	-22	-3	6	6	5	1	2	1	5	**26**	**182**
							73 - year Average:	**15**													73 - year Average:	**30**	**463.2**
																						1929 - '34 Average:	**203.0**

STUDY: 1995C06F-SWRCB-506 DWRSIM: recirc818-f, 17 Jun 97
CP # 6, LAKE OROVILLE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-506/6/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 900'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	833	833	835	844	850	858	893	900	900	880	876	877	42	7	0	0	20	24	23
1923	874	874	858	862	859	868	891	897	881	843	811	814	32	9	3	19	57	89	86
1924	802	791	763	768	787	776	763	752	731	712	704	697	124	137	148	169	188	196	203
1925	698	702	709	726	792	820	838	846	831	804	793	791	80	62	54	69	96	107	109
1926	777	779	781	795	837	857	887	874	854	814	801	786	43	13	26	46	86	99	114
1927	767	798	798	826	849	863	890	900	900	865	856	853	37	10	0	0	35	44	47
1928	851	861	862	868	871	849	878	863	843	791	739	732	51	22	37	57	109	161	168
1929	719	714	712	717	731	748	751	753	748	732	723	716	152	149	147	152	168	177	184
1930	708	705	766	794	821	852	874	877	861	823	790	787	48	26	23	39	77	110	113
1931	776	768	760	773	786	801	788	773	749	727	717	710	99	112	127	151	173	183	190
1932	704	695	700	724	747	780	785	809	779	727	710	704	120	115	91	121	173	190	196
1933	695	683	682	693	703	708	711	728	721	707	697	690	192	189	172	179	193	203	210
1934	686	677	680	707	730	758	751	741	719	697	688	681	142	149	159	181	203	212	219
1935	669	673	680	708	731	762	851	861	846	823	813	798	138	49	39	54	77	87	102
1936	790	780	778	826	849	860	886	897	886	847	827	824	40	14	3	14	53	73	76
1937	817	805	801	804	821	845	870	883	862	836	823	819	55	30	17	38	64	77	81
1938	814	828	854	858	849	849	882	900	900	899	896	887	51	18	0	0	1	4	13
1939	874	864	854	845	837	833	822	814	779	715	659	653	67	78	86	121	185	241	247
1940	643	632	635	706	815	849	879	884	871	834	826	817	51	21	16	29	66	74	83
1941	806	807	846	849	849	858	886	900	900	890	886	887	42	14	0	0	10	14	13
1942	874	874	849	849	850	867	882	900	900	886	882	883	33	18	0	0	14	18	17
1943	874	869	861	849	856	859	887	893	892	860	850	851	41	13	7	8	40	50	49
1944	852	854	853	860	857	868	879	895	876	836	800	794	32	21	5	24	64	100	106
1945	789	796	812	825	862	865	880	896	877	837	816	811	35	20	4	23	63	84	89
1946	811	819	849	864	868	868	887	892	871	833	791	788	32	13	8	29	67	109	112
1947	780	786	794	800	825	847	857	852	835	783	729	722	53	43	48	65	117	171	178
1948	725	727	722	758	761	781	841	870	876	843	827	821	119	59	30	24	57	73	79
1949	814	812	812	817	823	843	862	866	845	799	754	749	57	38	34	55	101	146	151
1950	736	736	737	767	815	846	879	898	893	855	827	827	54	21	2	7	45	73	73
1951	830	849	854	853	858	870	886	900	891	850	822	823	30	14	0	9	50	78	77
1952	827	830	849	849	852	862	894	900	900	900	899	887	38	6	0	0	0	1	13
1953	874	874	858	850	867	867	883	900	900	870	869	870	33	17	0	0	30	31	30
1954	872	871	874	858	857	859	883	863	848	800	754	754	41	17	37	52	100	146	146
1955	755	757	765	778	787	799	809	823	797	735	715	712	101	91	77	103	165	185	188
1956	703	699	849	849	849	864	892	900	900	872	870	873	36	8	0	0	28	30	27
1957	869	874	874	871	853	863	863	881	866	828	790	796	37	37	19	34	72	110	104
1958	798	802	822	842	849	849	879	900	900	898	894	887	51	21	0	0	2	6	13
1959	874	874	874	862	852	867	871	874	853	808	758	762	33	29	26	47	92	142	138
1960	755	744	739	753	815	854	854	860	841	801	789	780	46	46	40	59	99	111	120
1961	769	772	781	792	822	839	839	844	825	767	716	712	61	61	56	75	133	184	188
1962	695	690	700	714	778	814	837	836	821	762	734	713	86	63	64	79	138	166	187
1963	788	800	832	855	867	858	876	900	893	857	846	847	42	24	0	7	43	54	53
1964	848	859	862	866	874	874	880	885	869	829	783	758	26	20	15	31	71	117	142
1965	746	746	849	849	863	870	887	881	883	853	847	848	30	13	19	17	47	53	52
1966	852	859	860	864	870	874	894	882	862	822	774	768	26	6	18	38	78	126	132
1967	755	765	803	849	860	853	879	900	900	900	896	887	47	21	0	0	0	4	13
1968	874	874	873	858	861	866	863	867	848	802	765	762	34	37	33	52	98	135	138
1969	764	769	792	849	849	865	895	900	900	895	893	874	35	5	0	0	5	7	26
1970	874	874	850	849	849	874	869	871	858	820	790	791	26	31	29	42	80	110	109
1971	794	820	848	864	874	874	893	900	900	872	853	856	26	7	0	0	28	47	44
1972	861	866	865	869	867	874	884	887	868	829	786	787	26	16	13	32	71	114	113
1973	783	798	823	849	849	860	882	900	879	841	820	817	40	18	0	21	59	80	83
1974	820	849	850	854	859	849	883	900	900	889	888	886	51	17	0	0	11	12	14
1975	874	874	874	874	855	852	881	900	900	878	876	878	48	19	0	0	22	24	22
1976	873	874	874	874	874	874	871	862	840	796	752	752	26	29	38	60	104	148	148
1977	740	729	712	708	693	688	663	652	624	602	593	590	212	237	248	276	298	307	310
1978	580	579	616	743	797	859	878	897	893	876	867	874	41	22	3	7	24	33	26
1979	874	874	874	871	853	863	878	896	865	831	822	820	37	22	4	35	69	78	80
1980	824	828	836	850	849	865	881	893	888	873	866	865	35	19	7	12	27	34	35
1981	864	865	873	860	868	865	875	872	851	807	763	764	35	25	28	49	93	137	136
1982	771	849	849	859	862	859	884	900	900	889	886	887	41	16	0	0	11	14	13
1983	873	862	858	853	849	849	877	900	900	900	899	887	51	23	0	0	0	1	13
1984	874	860	849	869	869	871	885	894	879	842	833	834	29	15	6	21	58	67	66
1985	838	852	862	868	874	871	886	872	850	807	759	745	29	14	28	50	93	141	155
1986	736	733	740	774	849	849	871	875	871	841	831	842	51	29	25	29	59	69	58
1987	844	849	846	847	858	867	855	845	817	757	713	708	33	45	55	83	143	187	192
1988	696	698	738	765	768	768	767	756	733	713	701	699	132	133	144	167	187	199	201
1989	690	709	719	726	727	841	867	857	841	795	778	775	59	33	43	59	105	122	125
1990	787	788	772	785	793	819	797	797	773	726	713	707	81	103	103	127	174	187	193
1991	689	680	663	660	648	702	724	739	726	704	699	698	198	176	161	174	196	201	202
1992	693	688	690	693	725	754	769	760	736	712	700	694	146	131	140	164	188	200	206
1993	685	679	698	765	817	861	894	900	900	881	877	876	39	6	0	0	19	23	24
1994	874	874	874	871	862	874	872	866	845	803	756	751	26	28	34	55	97	144	149

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	Fluctuation MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	1	4	6	6	1	1	1	**20**	8	35	7	0	-20	-4	1	6	6	6	6	2	5	6	**37**	**740**
1923	1	4	5	2	1	1	1	**15**	9	23	6	-16	-38	-32	3	6	6	6	2	1	1	6	**28**	**420**
1924	1	1	1	1	1	1	1	**7**	-11	-13	-11	-21	-19	-8	-7	3	3	3	1	2	4	4	**20**	**140**
1925	1	1	1	1	1	1	1	**7**	28	18	8	-15	-27	-11	-2	6	6	6	3	1	3	5	**30**	**210**
1926	1	3	1	1	1	1	1	**9**	20	30	-13	-20	-40	-13	-15	6	6	3	2	1	3	3	**24**	**216**
1927	1	3	6	6	1	1	1	**19**	14	27	10	0	-35	-9	-3	6	6	6	6	1	4	5	**34**	**646**
1928	1	1	1	1	1	1	1	**7**	-22	29	-15	-20	-52	-52	-7	1	6	3	2	1	1	4	**18**	**126**
1929	1	1	1	1	1	1	1	**7**	17	3	2	-5	-16	-9	-7	6	6	6	5	2	4	4	**33**	**231**
1930	1	1	1	1	1	1	1	**7**	31	22	3	-16	-38	-33	-3	6	6	6	2	1	1	5	**27**	**189**
1931	1	1	1	1	1	1	1	**7**	15	-13	-15	-24	-22	-10	-7	6	3	3	1	1	4	4	**22**	**154**
1932	1	1	1	1	1	1	1	**7**	33	5	24	-30	-52	-17	-6	6	6	6	1	1	2	4	**26**	**182**
1933	1	1	1	1	1	1	1	**7**	5	3	17	-7	-14	-10	-7	6	6	6	4	3	4	4	**33**	**231**
1934	1	1	1	1	1	1	1	**7**	28	-7	-10	-22	-22	-9	-7	6	4	4	1	1	4	4	**24**	**168**
1935	1	1	1	1	1	1	1	**7**	31	89	10	-15	-23	-10	-15	6	6	6	3	1	4	3	**29**	**203**
1936	1	3	5	3	1	1	1	**15**	11	26	11	-11	-39	-20	-3	6	6	6	3	1	2	5	**29**	**435**
1937	1	1	2	1	1	1	1	**8**	24	25	13	-21	-26	-13	-4	6	6	6	1	1	3	5	**28**	**224**
1938	1	2	6	6	5	5	3	**28**	0	33	18	0	-1	-3	-9	6	6	6	6	5	5	4	**38**	**1064**
1939	1	1	1	1	1	1	1	**7**	-4	-11	-8	-35	-64	-56	-6	5	3	4	1	1	1	4	**19**	**133**
1940	1	1	2	1	1	1	1	**8**	34	30	5	-13	-37	-8	-9	6	6	6	3	1	4	4	**30**	**240**
1941	1	3	6	6	3	3	3	**25**	9	28	14	0	-10	-4	1	6	6	6	6	4	5	6	**39**	**975**
1942	1	2	6	6	3	2	2	**22**	17	15	18	0	-14	-4	1	6	6	6	6	3	5	6	**38**	**836**
1943	1	3	4	4	1	1	1	**15**	3	28	6	-1	-32	-10	1	6	6	6	5	1	4	6	**34**	**510**
1944	1	1	4	1	1	1	1	**10**	11	11	16	-19	-40	-36	-6	6	6	6	2	1	1	4	**26**	**260**
1945	1	1	5	1	1	1	1	**11**	3	15	16	-19	-40	-21	-5	6	6	6	2	1	1	5	**27**	**297**
1946	1	3	4	1	1	1	1	**12**	0	19	5	-21	-38	-42	-3	6	6	6	1	1	1	5	**26**	**312**
1947	1	1	1	1	1	1	1	**7**	22	10	-5	-17	-52	-54	-7	6	6	5	2	1	1	4	**25**	**175**
1948	1	1	1	1	1	1	1	**7**	20	60	29	6	-33	-16	-6	6	6	6	6	1	2	4	**31**	**217**
1949	1	1	1	1	1	1	1	**7**	20	19	4	-21	-46	-45	-5	6	6	6	1	1	1	5	**26**	**182**
1950	1	1	5	4	1	1	1	**14**	31	33	19	-5	-38	-28	0	6	6	6	5	1	1	6	**31**	**434**
1951	1	3	6	4	1	1	1	**17**	12	16	14	-9	-41	-28	1	6	6	6	4	1	1	6	**30**	**510**
1952	1	4	6	6	6	5	3	**31**	10	32	6	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1178**
1953	1	2	6	6	1	1	1	**18**	0	16	17	0	-30	-1	1	6	6	6	6	1	5	6	**36**	**648**
1954	1	2	1	1	1	1	1	**8**	2	24	-20	-15	-48	-46	0	6	6	2	3	1	1	6	**25**	**200**
1955	1	1	1	1	1	1	1	**7**	12	10	14	-26	-62	-20	-3	6	6	6	1	1	2	5	**27**	**189**
1956	1	4	6	6	1	1	1	**20**	15	28	8	0	-28	-2	3	6	6	6	6	1	5	6	**36**	**720**
1957	1	1	2	1	1	1	1	**8**	10	0	18	-15	-38	-38	6	6	6	6	3	1	1	6	**29**	**232**
1958	1	1	6	6	5	4	3	**26**	0	30	21	0	-2	-4	-7	6	6	6	6	5	5	4	**38**	**988**
1959	1	1	1	1	1	1	1	**7**	15	4	3	-21	-45	-50	4	6	6	6	1	1	1	6	**27**	**189**
1960	1	1	1	1	1	1	1	**7**	39	0	6	-19	-40	-12	-9	6	6	6	2	1	3	4	**28**	**196**
1961	1	1	1	1	1	1	1	**7**	17	0	5	-19	-58	-51	-4	6	6	6	2	1	1	5	**27**	**189**
1962	1	1	1	1	1	1	1	**7**	36	23	-1	-15	-59	-28	-21	6	6	5	3	1	1	1	**23**	**161**
1963	1	1	6	4	1	1	1	**15**	-9	18	24	-7	-36	-11	1	4	6	6	4	1	3	6	**30**	**450**
1964	1	1	2	1	1	1	1	**8**	0	6	5	-16	-40	-46	-25	6	6	6	2	1	1	1	**23**	**184**
1965	1	3	2	2	1	1	1	**11**	7	17	-6	2	-30	-6	1	6	6	4	6	1	4	6	**33**	**363**
1966	1	4	2	1	1	1	1	**11**	4	20	-12	-20	-40	-48	-6	6	6	3	2	1	1	4	**23**	**253**
1967	1	1	6	6	6	5	3	**28**	-7	26	21	0	0	-4	-9	4	6	6	6	6	5	4	**37**	**1036**
1968	1	1	1	1	1	1	1	**7**	5	-3	4	-19	-46	-37	-3	6	5	6	2	1	1	5	**26**	**182**
1969	1	4	6	6	4	4	1	**26**	16	30	5	0	-5	-2	-19	6	6	6	6	5	5	2	**36**	**936**
1970	1	1	1	1	1	1	1	**7**	25	-5	2	-13	-38	-30	1	6	5	6	3	1	1	6	**28**	**196**
1971	1	4	6	6	1	1	1	**20**	0	19	7	0	-28	-19	3	6	6	6	6	1	2	6	**33**	**660**
1972	1	2	3	1	1	1	1	**10**	7	10	3	-19	-39	-43	1	6	6	6	2	1	1	6	**28**	**280**
1973	1	2	6	1	1	1	1	**13**	11	22	18	-21	-38	-21	-3	6	6	6	1	1	1	5	**26**	**338**
1974	1	2	6	6	3	3	3	**24**	-10	34	17	0	-11	-1	-2	4	6	6	6	3	5	5	**35**	**840**
1975	1	2	6	6	1	1	1	**18**	-3	29	19	0	-22	-2	2	5	6	6	6	1	5	6	**35**	**630**
1976	1	1	1	1	1	1	1	**7**	0	-3	-9	-22	-44	-44	0	6	5	4	1	1	1	6	**24**	**168**
1977	1	1	1	1	1	1	1	**7**	-5	-25	-11	-28	-22	-9	-3	5	1	3	1	1	4	5	**20**	**140**
1978	1	1	5	4	1	1	1	**14**	62	19	19	-4	-17	-9	7	6	6	6	5	2	4	6	**35**	**490**
1979	1	1	5	1	1	1	1	**11**	10	15	18	-31	-34	-9	-2	6	6	6	1	1	4	5	**29**	**319**
1980	1	2	4	3	1	1	1	**13**	16	16	12	-5	-15	-7	-1	6	6	6	5	3	4	5	**35**	**455**
1981	1	1	1	1	1	1	1	**7**	-3	10	-3	-21	-44	-44	1	5	6	5	1	1	1	6	**25**	**175**
1982	1	2	6	6	3	3	3	**24**	-3	25	16	0	-11	-3	1	5	6	6	6	3	5	6	**37**	**888**
1983	1	1	6	6	6	5	3	**28**	0	28	23	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1064**
1984	1	2	4	1	1	1	1	**11**	2	14	9	-15	-37	-9	1	6	6	6	3	1	4	6	**32**	**352**
1985	1	3	1	1	1	1	1	**9**	-3	15	-14	-22	-43	-48	-14	5	6	3	1	1	1	3	**20**	**180**
1986	1	1	1	1	1	1	1	**7**	0	22	4	-4	-30	-10	11	6	6	6	5	1	4	6	**34**	**238**
1987	1	1	1	1	1	1	1	**7**	9	-12	-10	-28	-60	-44	-5	6	3	4	1	1	1	5	**21**	**147**
1988	1	1	1	1	1	1	1	**7**	0	-1	-11	-23	-20	-12	-2	6	5	3	1	2	3	5	**25**	**175**
1989	1	1	1	1	1	1	1	**7**	114	26	-10	-16	-46	-17	-3	6	6	4	2	1	2	5	**26**	**182**
1990	1	1	1	1	1	1	1	**7**	26	-22	0	-24	-47	-13	-6	6	1	6	1	1	3	4	**22**	**154**
1991	1	1	1	1	1	1	1	**7**	54	22	15	-13	-22	-5	-1	6	6	6	3	1	5	5	**32**	**224**
1992	1	1	1	1	1	1	1	**7**	29	15	-9	-24	-24	-12	-6	6	6	4	1	1	3	4	**25**	**175**
1993	1	4	6	6	2	1	1	**21**	44	33	6	0	-19	-4	-1	6	6	6	6	2	5	5	**36**	**756**
1994	1	1	1	1	1	1	1	**7**	12	-2	-6	-21	-42	-47	-5	6	5	4	1	1	1	5	**23**	**161**
73 - year Average:								**12**															**29**	**388.2**
1929 - '34 Average:																								**192.5**

STUDY: 1995C06F-SWRCB-506 DWRSIM: recirc818-f, 17 Jun 97
CP # 8, FOLSOM LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-506/8/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 466'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	414	409	414	414	424	428	443	466	466	463	449	434	38	23	0	0	3	17	32	1	1	6	6	5	2	1	**22**	4	15	23	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**770**
1923	425	423	424	424	419	420	449	466	452	435	429	426	46	17	0	14	31	37	40	1	2	6	3	1	1	1	**15**	1	29	17	-14	-17	-6	-3	6	6	6	3	2	4	5	**32**	**480**
1924	421	412	404	392	390	374	376	372	334	334	337	334	92	90	94	132	132	129	132	1	1	1	1	1	1	1	**7**	-16	2	-4	-38	0	3	-3	2	6	5	1	6	6	5	**31**	**217**
1925	348	363	379	389	424	437	449	466	454	439	428	422	29	17	0	12	27	38	44	1	2	6	3	1	1	1	**15**	13	12	17	-12	-15	-11	-6	6	6	6	3	3	3	4	**31**	**465**
1926	418	411	406	399	417	418	448	446	423	391	353	363	48	18	20	43	75	113	103	1	2	1	1	1	1	1	**8**	1	30	-2	-23	-32	-38	10	6	6	5	1	1	1	6	**26**	**208**
1927	369	405	424	424	424	437	449	466	461	457	449	434	29	17	0	5	9	17	32	1	2	6	4	4	2	1	**20**	13	12	17	-5	-4	-8	-15	6	6	6	5	5	4	3	**35**	**700**
1928	425	424	424	424	424	437	449	453	442	418	411	411	29	17	13	24	48	55	55	1	2	3	1	1	1	1	**10**	13	12	4	-11	-24	-7	0	6	6	6	3	1	4	6	**32**	**320**
1929	405	399	395	384	382	381	393	398	388	346	356	359	85	73	68	78	120	110	107	1	1	1	1	1	1	1	**7**	-1	12	5	-10	-42	10	3	5	6	6	4	1	6	6	**34**	**238**
1930	335	334	384	406	421	437	443	442	421	394	375	377	29	23	24	45	72	91	89	1	1	1	1	1	1	1	**7**	16	6	-1	-21	-27	-19	2	6	6	5	1	1	2	6	**27**	**189**
1931	374	384	392	402	407	414	410	408	353	334	339	334	52	56	58	113	132	127	132	1	1	1	1	1	1	1	**7**	7	-4	-2	-55	-19	5	-5	6	5	5	1	2	6	5	**30**	**210**
1932	334	334	380	402	424	424	432	450	435	394	366	370	42	34	16	31	72	100	96	1	1	2	1	1	1	1	**8**	0	8	18	-15	-41	-28	4	6	6	6	3	1	1	6	**29**	**232**
1933	342	334	355	366	369	382	358	379	347	334	355	351	84	108	87	119	132	111	115	1	1	1	1	1	1	1	**7**	13	-24	21	-32	-13	21	-4	6	1	6	1	3	6	5	**28**	**196**
1934	336	334	375	402	420	426	419	413	353	333	323	334	40	47	53	113	133	143	132	1	1	1	1	1	1	1	**7**	6	-7	-6	-60	-20	-10	11	6	4	4	1	2	4	6	**27**	**189**
1935	334	361	378	402	415	417	449	453	453	435	423	418	49	17	13	13	31	43	48	1	2	3	3	1	1	1	**12**	2	32	4	0	-18	-12	-5	6	6	6	6	2	3	5	**34**	**408**
1936	414	409	403	424	424	437	449	461	455	448	442	434	29	17	5	11	18	24	32	1	2	4	3	2	1	1	**14**	13	12	12	-6	-7	-6	-8	6	6	6	4	4	4	4	**34**	**476**
1937	425	417	411	404	424	437	449	466	454	444	439	434	29	17	0	12	22	27	32	1	2	6	3	1	1	1	**15**	13	12	17	-12	-10	-5	-5	6	6	6	3	4	5	5	**35**	**525**
1938	426	423	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1939	426	420	415	409	402	409	415	418	392	334	334	335	57	51	48	74	132	132	131	1	1	1	1	1	1	1	**7**	7	6	3	-26	-58	0	1	6	6	6	1	1	6	6	**32**	**224**
1940	334	334	334	420	424	437	449	461	447	430	423	425	29	17	5	19	36	43	41	1	2	4	2	1	1	1	**12**	13	12	12	-14	-17	-7	2	6	6	6	3	2	4	6	**33**	**396**
1941	420	415	424	424	424	437	449	466	458	455	449	434	29	17	0	8	11	17	32	1	2	6	4	3	2	1	**19**	13	12	17	-8	-3	-6	-15	6	6	6	4	5	4	3	**34**	**646**
1942	426	422	424	424	424	430	449	466	466	463	449	434	36	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	6	19	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1943	425	424	423	422	422	434	449	459	451	448	444	434	32	17	7	15	18	22	32	1	2	4	2	2	1	1	**13**	12	15	10	-8	-3	-4	-10	6	6	6	4	5	5	4	**36**	**468**
1944	425	419	413	405	407	419	420	433	416	396	384	376	47	46	33	50	70	82	90	1	1	1	1	1	1	1	**7**	12	1	13	-17	-20	-12	-8	6	6	6	2	2	3	4	**29**	**203**
1945	370	397	416	424	424	437	449	466	455	444	439	434	29	17	0	11	22	27	32	1	2	6	3	1	1	1	**15**	13	12	17	-11	-11	-5	-5	6	6	6	3	3	5	5	**34**	**510**
1946	427	424	424	424	424	437	449	466	453	440	435	432	29	17	0	13	26	31	34	1	2	6	3	1	1	1	**15**	13	12	17	-13	-13	-5	-3	6	6	6	3	3	5	5	**34**	**510**
1947	424	424	423	414	417	433	442	445	420	394	378	382	33	24	21	46	72	88	84	1	1	1	1	1	1	1	**7**	16	9	3	-25	-26	-16	4	6	6	6	1	1	2	6	**28**	**196**
1948	395	402	392	409	405	401	438	458	455	451	446	434	65	28	8	11	15	20	32	1	1	4	3	2	1	1	**13**	-4	37	20	-3	-4	-5	-12	5	6	6	5	5	5	3	**35**	**455**
1949	425	419	416	406	400	422	443	459	444	425	418	417	44	23	7	22	41	48	49	1	1	4	1	1	1	1	**10**	22	21	16	-15	-19	-7	-1	6	6	6	3	2	4	5	**32**	**320**
1950	411	405	396	422	424	437	449	466	455	444	439	434	29	17	0	11	22	27	32	1	2	6	3	1	1	1	**15**	13	12	17	-11	-11	-5	-5	6	6	6	3	3	5	5	**34**	**510**
1951	428	393	388	388	388	426	449	466	450	436	431	431	40	17	0	16	30	35	35	1	2	6	2	1	1	1	**14**	38	23	17	-16	-14	-5	0	6	6	6	2	3	5	6	**34**	**476**
1952	425	424	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1953	428	423	424	424	424	430	446	458	464	463	449	434	36	20	8	2	3	17	32	1	1	4	5	5	2	1	**19**	6	16	12	6	-1	-14	-15	6	6	6	6	5	3	3	**35**	**665**
1954	425	423	421	422	424	437	449	452	441	422	417	420	29	17	14	25	44	49	46	1	2	3	1	1	1	1	**10**	13	12	3	-11	-19	-5	3	6	6	6	3	2	5	6	**34**	**340**
1955	415	408	412	418	418	414	424	434	421	400	388	387	52	42	32	45	66	78	79	1	1	1	1	1	1	1	**7**	-4	10	10	-13	-21	-12	-1	5	6	6	3	1	3	5	**29**	**203**
1956	379	379	420	402	406	425	441	466	466	463	449	434	41	25	0	0	3	17	32	1	1	6	6	5	2	1	**22**	19	16	25	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**770**
1957	428	422	417	412	424	437	433	459	448	436	430	429	29	33	7	18	30	36	37	1	1	4	2	1	1	1	**11**	13	-4	26	-11	-12	-6	-1	6	5	6	3	3	4	5	**32**	**352**
1958	422	416	417	422	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1959	425	419	412	417	424	425	433	433	411	389	378	387	41	33	33	55	77	88	79	1	1	1	1	1	1	1	**7**	1	8	0	-22	-22	-11	9	6	6	6	1	1	3	6	**29**	**203**
1960	387	383	382	390	424	437	448	446	427	406	395	401	29	18	20	39	60	71	65	1	2	1	1	1	1	1	**8**	13	11	-2	-19	-21	-11	6	6	6	5	2	1	3	6	**29**	**232**
1961	397	395	393	387	392	401	411	423	407	389	379	384	65	55	43	59	77	87	82	1	1	1	1	1	1	1	**7**	9	10	12	-16	-18	-10	5	6	6	6	2	2	4	6	**32**	**224**
1962	385	387	394	395	424	431	448	454	448	428	420	418	35	18	12	18	38	46	48	1	2	3	2	1	1	1	**11**	7	17	6	-6	-20	-8	-2	6	6	6	4	2	4	5	**33**	**363**
1963	441	424	424	424	419	430	449	466	459	454	449	434	36	17	0	7	12	17	32	1	2	6	4	3	2	1	**19**	11	19	17	-7	-5	-5	-15	6	6	6	4	5	5	3	**35**	**665**
1964	427	424	424	424	418	415	426	432	413	382	355	334	51	40	34	53	84	111	132	1	1	1	1	1	1	1	**7**	-3	11	6	-19	-31	-27	-21	5	6	6	2	1	1	1	**22**	**154**
1965	335	367	393	392	395	414	449	464	454	448	445	434	52	17	2	12	18	21	32	1	2	5	3	2	1	1	**15**	19	35	15	-10	-6	-3	-11	6	6	6	4	4	5	3	**34**	**510**
1966	426	424	424	424	422	430	448	447	428	405	395	396	36	18	19	38	61	71	70	1	2	2	1	1	1	1	**9**	8	18	-1	-19	-23	-10	1	6	6	5	2	1	4	6	**30**	**270**
1967	391	395	419	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1968	427	424	423	424	424	437	439	441	419	396	391	394	29	27	25	47	70	75	72	1	1	1	1	1	1	1	**7**	13	2	2	-22	-23	-5	3	6	6	6	1	1	5	6	**31**	**217**
1969	399	407	419	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1970	427	424	423	393	396	426	431	440	431	415	414	417	40	35	26	35	51	52	49	1	1	1	1	1	1	1	**7**	30	5	9	-9	-16	-1	3	6	6	6	4	2	5	6	**35**	**245**
1971	411	421	424	424	423	437	447	461	461	459	449	434	29	19	5	5	7	17	32	1	2	4	4	4	2	1	**18**	14	10	14	0	-2	-10	-15	6	6	6	6	5	4	3	**36**	**648**
1972	425	422	424	424	424	437	444	451	433	413	407	407	29	22	15	33	53	59	59	1	1	2	1	1	1	1	**8**	13	7	7	-18	-20	-6	0	6	6	6	2	2	4	6	**32**	**256**
1973	402	407	422	424	424	437	449	466	451	439	432	433	29	17	0	15	27	34	33	1	2	6	2	1	1	1	**14**	13	12	17	-15	-12	-7	1	6	6	6	3	3	4	6	**34**	**476**
1974	427	423	422	409	417	432	449	466	463	463	449	434	34	17	0	3	3	17	32	1	2	6	5	5	2	1	**22**	15	17	17	-3	0	-14	-15	6	6	6	5	6	3	3	**35**	**770**
1975	426	419	417	415	424	437	441	466	466	463	449	434	29	25	0	0	3	17	32	1	1	6	6	5	2	1	**22**	13	4	25	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**770**
1976	431	423	419	410	402	392	397	401	368	334	340	341	74	69	65	98	132	126	125	1	1	1	1	1	1	1	**7**	-10	5	4	-33	-34	6	1	4	6	6	1	1	6	6	**30**	**210**
1977	335	334	330	325	321	323	333	341	334	319	306	291	143	133	125	132	147	160	175	1	1	1	1	1	1	1	**7**	2	10	8	-7	-15	-13	-15	6	6	6	4	3	3	3	**31**	**217**
1978	287	304	359	424	424	437	449	466	459	456	449	434	29	17	0	7	10	17	32	1	2	6	4	3	2	1	**19**	13	12	17	-7	-3	-7	-15	6	6	6	4	5	4	3	**34**	**646**
1979	423	417	411	418	424	437	447	466	452	437	429	426	29	19	0	14	29	37	40	1	2	6	3	1	1	1	**15**	13	10	19	-14	-15	-8	-3	6	6	6	3	3	4	5	**33**	**495**
1980	423	420	421	405	399	430	449	464	453	453	449	434	36	17	2	13	13	17	32	1	2	5	3	3	2	1	**17**	31	19	15	-11	0	-4	-15	6	6	6	3	6	5	3	**35**	**595**
1981	425	419	415	413	412	422	433	435	411	392	386	387	44	33	31	55	74	80	79	1	1	1	1	1	1	1	**7**	10	11	2	-24	-19	-6	1	6	6	6	1	2	4	6	**31**	**217**
1982	396	420	392	396	388	424	449	466	466	463	449	434	42	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	36	25	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1983	438	415	417	418	418	433	449	466	466	463	449	434	33	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	15	16	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1984	435	392	388	388	392	424	441	464	454	442	437	434	42	25	2	12	24	29	32	1	1	5	3	1	1	1	**13**	32	17	23	-10	-12	-5	-3	6	6	6	4	3	5	5	**35**	**455**
1985	427	424	424	420	422	428	443	444	418	385	361	368	38	23	22	48	81	105	98	1	1	1	1	1	1	1	**7**	6	15	1	-26	-33	-24	7	6	6	6	1	1	1	6	**27**	**189**
1986	366	386	409	424	396	424	449	464	456	451	447	434	42	17	2	10	15	19	32	1	2	5	3	2	2	1	**16**	28	25	15	-8	-5	-4	-13	6	6	6	4	5	5	3	**35**	**560**
1987	427	420	413	405	404	410	416	418	387	339	327	334	56	50	48	79	127	139	132	1	1	1	1	1	1	1	**7**	6	6	2	-31	-48	-12	7	6	6	6	1	1	3	6	**29**	**203**
1988	334	334	369	396	389	387	395	393	358	334	318	383	79	71	73	108	132	148	83	1	1	1	1	1	1	1	**7**	-2	8	-2	-35	-24	-16	65	5	6	5	1	1	2	6	**26**	**182**
1989	365	378	389	394	388	437	449	452	435	413	407	411	29	17	14	31	53	59	55	1	2	3	1	1	1	1	**10**	49	12	3	-17	-22	-6	4	6	6	6	2	1	4	6	**31**	**310**
1990	408	407	403	403	401	413	420	419	389	334	334	335	53	46	47	77	132	132	131	1	1	1	1	1	1	1	**7**	12	7	-1	-30	-55	0	1	6	6	5	1	1	6	6	**31**	**217**
1991	334	334	334	332	332	383	407	425	426	421	416	414	83	59	41	40	45	50	52	1	1	1	1	1	1	1	**7**	51	24	18	1	-5	-5	-2	6	6	6	6	5	5	5	**39**	**273**
1992	408	397	389	376	395	408	416	412	385	334	323	316	58	50	54	81	132	143	150	1	1	1	1	1	1	1	**7**	13	8	-4	-27	-51	-11	-7	6	6	5	1	1	3	4	**26**	**182**
1993	315	314	357	424	427	434	449	466	466	458	449	434	32	17	0	0	8	17	32	1	2	6	6	4	2	1	**22**	7	15	17	0	-8	-9	-15	6	6	6	6	4	4	3	**35**	**770**
1994	423	413	407	395	390	388	396	401	376	334	334	332	78	70	65	90	132	132	134	1	1	1	1	1	1	1	**7**	-2	8	5	-25	-42	0	-2	5	6	6	1	1	6	5	**30**	**210**

73 - year Average: 13

73 - year Average: 32 **430.7**

1929 - '34 Average: 209.0

STUDY: 1995C06F-SWRCB-506 DWRSIM: recirc818-d, 21 May 97
CP # 10, NEW MELONES RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-506/10/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 1088'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	940	942	948	954	968	978	977	993	1015	1008	996	987
1923	986	990	998	1006	1013	1013	1015	1020	1020	1013	1001	994
1924	993	994	997	1000	1003	1003	997	991	979	969	957	953
1925	948	950	954	957	976	987	987	997	1001	997	985	978
1926	975	976	979	981	992	993	995	992	981	967	954	946
1927	943	946	954	962	980	991	997	1000	1007	1000	991	984
1928	985	991	995	998	1005	1023	1023	1026	1020	1010	1000	994
1929	990	992	995	997	1000	1001	997	995	989	979	969	962
1930	958	959	962	966	972	980	980	975	974	964	953	944
1931	945	948	950	953	955	957	952	945	934	924	909	900
1932	899	902	913	921	936	942	943	957	970	965	955	947
1933	947	949	953	955	958	960	954	951	950	938	925	916
1934	911	915	921	925	931	937	931	921	903	886	867	856
1935	847	849	853	861	868	878	896	932	945	937	926	918
1936	917	921	924	935	959	970	982	998	1003	997	987	979
1937	979	982	986	990	1001	1011	1011	1029	1030	1019	1008	1001
1938	1001	1003	1013	1022	1041	1055	1063	1088	1088	1084	1075	1069
1939	1050	1050	1050	1050	1050	1052	1050	1042	1031	1020	1008	1001
1940	999	999	1002	1013	1028	1044	1050	1060	1060	1050	1039	1032
1941	1031	1033	1037	1044	1050	1055	1052	1066	1072	1066	1056	1049
1942	1048	1049	1050	1050	1050	1055	1055	1067	1081	1078	1067	1062
1943	1050	1050	1050	1050	1050	1055	1061	1068	1068	1061	1052	1045
1944	1043	1044	1046	1047	1050	1053	1048	1047	1043	1031	1019	1011
1945	1010	1014	1018	1024	1038	1045	1043	1054	1060	1053	1043	1035
1946	1035	1039	1048	1050	1050	1054	1054	1061	1060	1051	1040	1033
1947	1032	1035	1037	1040	1043	1045	1037	1032	1021	1009	996	988
1948	985	986	988	990	991	994	994	996	1003	997	988	981
1949	978	981	984	987	990	996	995	999	997	987	976	968
1950	965	965	968	976	985	994	994	999	1005	998	987	979
1951	976	1009	1048	1050	1050	1055	1054	1054	1050	1038	1026	1018
1952	1017	1020	1027	1041	1050	1055	1058	1087	1088	1086	1076	1070
1953	1050	1050	1050	1050	1050	1054	1051	1045	1051	1043	1030	1023
1954	1020	1022	1025	1028	1030	1037	1036	1038	1030	1018	1005	997
1955	995	997	1000	1005	1005	1008	1003	1001	1000	991	979	970
1956	968	971	1001	1027	1041	1050	1049	1062	1072	1067	1056	1050
1957	1048	1050	1050	1050	1050	1055	1046	1050	1053	1042	1030	1021
1958	1017	1019	1021	1028	1037	1051	1057	1084	1088	1082	1072	1065
1959	1050	1050	1050	1050	1050	1053	1049	1037	1026	1014	1002	995
1960	991	993	995	997	1002	1008	1006	1002	996	985	973	963
1961	955	959	963	965	968	971	967	962	951	940	929	923
1962	922	924	927	929	940	946	948	948	950	942	929	921
1963	916	921	925	933	952	954	955	978	983	977	964	957
1964	958	963	967	973	975	978	973	968	963	951	939	930
1965	926	930	961	988	1001	1009	1017	1018	1023	1017	1005	999
1966	998	1002	1007	1013	1018	1023	1021	1025	1017	1007	998	990
1967	988	991	1001	1012	1020	1031	1033	1055	1081	1084	1074	1069
1968	1050	1050	1050	1050	1050	1054	1048	1044	1034	1022	1008	1000
1969	998	1001	1004	1034	1050	1055	1066	1088	1088	1084	1074	1066
1970	1050	1050	1050	1050	1050	1055	1048	1053	1054	1043	1029	1022
1971	1021	1025	1033	1041	1045	1051	1044	1048	1052	1042	1029	1022
1972	1018	1021	1027	1033	1033	1037	1024	1027	1018	1005	992	982
1973	979	982	988	1001	1016	1027	1027	1036	1037	1025	1012	1005
1974	1005	1011	1021	1034	1043	1055	1059	1070	1071	1061	1050	1043
1975	1042	1044	1047	1050	1050	1055	1050	1050	1063	1055	1043	1036
1976	1034	1037	1040	1042	1044	1047	1042	1036	1026	1017	1007	1002
1977	1001	1003	1004	1004	1005	1005	998	990	982	971	959	953
1978	952	951	955	966	978	996	1003	1018	1026	1021	1009	1004
1979	1004	1006	1010	1018	1031	1044	1045	1054	1051	1039	1025	1018
1980	1019	1022	1025	1050	1050	1055	1056	1063	1070	1068	1057	1051
1981	1050	1050	1050	1050	1050	1053	1050	1044	1031	1018	1005	999
1982	997	1004	1019	1039	1050	1055	1071	1086	1088	1084	1074	1071
1983	1050	1050	1050	1050	1050	1055	1056	1070	1088	1088	1081	1075
1984	1050	1050	1050	1050	1050	1055	1049	1055	1054	1046	1035	1029
1985	1029	1034	1039	1042	1045	1049	1041	1039	1027	1015	1003	997
1986	996	999	1002	1011	1050	1055	1056	1061	1065	1057	1047	1042
1987	1041	1043	1046	1046	1048	1051	1046	1038	1029	1021	1014	1010
1988	1005	1005	1005	1007	1008	1010	1006	1000	993	985	977	971
1989	970	970	971	972	974	986	984	981	976	965	954	949
1990	952	955	959	962	965	970	963	953	942	930	921	912
1991	911	912	917	917	917	923	920	916	905	888	871	863
1992	865	867	872	876	887	895	887	873	856	842	825	816
1993	819	824	831	850	930	964	968	967	978	970	959	954
1994	954	955	958	959	960	966	962	960	952	942	931	926

YEAR	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	120	110	111	95	73	80	92	1	1	1	1	1	1	1	**7**
1923	75	75	73	68	68	75	87	1	1	1	1	1	1	1	**7**
1924	85	85	91	97	109	119	131	1	1	1	1	1	1	1	**7**
1925	112	101	101	91	87	91	103	1	1	1	1	1	1	1	**7**
1926	96	95	93	96	107	121	134	1	1	1	1	1	1	1	**7**
1927	108	97	91	88	81	88	97	1	1	1	1	1	1	1	**7**
1928	83	65	65	62	68	78	88	1	1	1	1	1	1	1	**7**
1929	88	87	91	93	99	109	119	1	1	1	1	1	1	1	**7**
1930	116	108	108	113	114	124	135	1	1	1	1	1	1	1	**7**
1931	133	131	136	143	154	164	179	1	1	1	1	1	1	1	**7**
1932	152	146	145	131	118	123	133	1	1	1	1	1	1	1	**7**
1933	130	128	134	137	138	150	163	1	1	1	1	1	1	1	**7**
1934	157	151	157	167	185	202	221	1	1	1	1	1	1	1	**7**
1935	220	210	192	156	143	151	162	1	1	1	1	1	1	1	**7**
1936	129	118	106	90	85	91	101	1	1	1	1	1	1	1	**7**
1937	87	77	77	59	58	69	80	1	1	1	1	1	1	1	**7**
1938	47	33	25	0	0	4	13	1	1	1	6	6	5	3	**23**
1939	38	36	38	46	57	68	80	1	1	1	1	1	1	1	**7**
1940	60	44	38	28	28	38	49	1	1	1	1	1	1	1	**7**
1941	38	33	36	22	16	22	32	1	1	1	1	2	1	1	**8**
1942	38	33	33	21	7	10	21	1	1	1	1	4	3	1	**12**
1943	38	33	27	20	20	27	36	1	1	1	1	1	1	1	**7**
1944	38	35	40	41	45	57	69	1	1	1	1	1	1	1	**7**
1945	50	43	45	34	28	35	45	1	1	1	1	1	1	1	**7**
1946	38	34	34	27	28	37	48	1	1	1	1	1	1	1	**7**
1947	45	43	51	56	67	79	92	1	1	1	1	1	1	1	**7**
1948	97	94	94	92	85	91	100	1	1	1	1	1	1	1	**7**
1949	98	92	93	89	91	101	112	1	1	1	1	1	1	1	**7**
1950	103	94	94	89	83	90	101	1	1	1	1	1	1	1	**7**
1951	38	33	34	34	38	50	62	1	1	1	1	1	1	1	**7**
1952	38	33	30	1	0	2	12	1	1	1	5	6	5	3	**22**
1953	38	34	37	43	37	45	58	1	1	1	1	1	1	1	**7**
1954	58	51	52	50	58	70	83	1	1	1	1	1	1	1	**7**
1955	83	80	85	87	88	97	109	1	1	1	1	1	1	1	**7**
1956	47	38	39	26	16	21	32	1	1	1	1	2	1	1	**8**
1957	38	33	42	38	35	46	58	1	1	1	1	1	1	1	**7**
1958	51	37	31	4	0	6	16	1	1	1	5	6	4	2	**20**
1959	38	35	39	51	62	74	86	1	1	1	1	1	1	1	**7**
1960	86	80	82	86	92	103	115	1	1	1	1	1	1	1	**7**
1961	120	117	121	126	137	148	159	1	1	1	1	1	1	1	**7**
1962	148	142	140	140	138	146	159	1	1	1	1	1	1	1	**7**
1963	136	134	133	110	105	111	124	1	1	1	1	1	1	1	**7**
1964	113	110	115	120	125	137	149	1	1	1	1	1	1	1	**7**
1965	87	79	71	70	65	71	83	1	1	1	1	1	1	1	**7**
1966	70	65	67	63	71	81	90	1	1	1	1	1	1	1	**7**
1967	68	57	55	33	7	4	14	1	1	1	1	4	5	3	**16**
1968	38	34	40	44	54	66	80	1	1	1	1	1	1	1	**7**
1969	38	33	22	0	0	4	14	1	1	1	6	6	5	3	**23**
1970	38	33	40	35	34	45	59	1	1	1	1	1	1	1	**7**
1971	43	37	44	40	36	46	59	1	1	1	1	1	1	1	**7**
1972	55	51	64	61	70	83	96	1	1	1	1	1	1	1	**7**
1973	72	61	61	52	51	63	76	1	1	1	1	1	1	1	**7**
1974	45	33	29	18	17	27	38	1	1	1	2	2	1	1	**9**
1975	38	33	38	38	25	33	45	1	1	1	1	1	1	1	**7**
1976	44	41	46	52	62	71	81	1	1	1	1	1	1	1	**7**
1977	83	83	90	98	106	117	129	1	1	1	1	1	1	1	**7**
1978	110	92	85	70	62	67	79	1	1	1	1	1	1	1	**7**
1979	57	44	43	34	37	49	63	1	1	1	1	1	1	1	**7**
1980	38	33	32	25	18	20	31	1	1	1	1	2	1	1	**8**
1981	38	35	38	44	57	70	83	1	1	1	1	1	1	1	**7**
1982	38	33	17	2	0	4	14	1	1	2	5	6	5	3	**23**
1983	38	33	32	18	0	0	7	1	1	1	2	6	6	4	**21**
1984	38	33	39	33	34	42	53	1	1	1	1	1	1	1	**7**
1985	43	39	47	49	61	73	85	1	1	1	1	1	1	1	**7**
1986	38	33	32	27	23	31	41	1	1	1	1	1	1	1	**7**
1987	40	37	42	50	59	67	74	1	1	1	1	1	1	1	**7**
1988	80	78	82	88	95	103	111	1	1	1	1	1	1	1	**7**
1989	114	102	104	107	112	123	134	1	1	1	1	1	1	1	**7**
1990	123	118	125	135	146	158	167	1	1	1	1	1	1	1	**7**
1991	171	165	168	172	183	200	217	1	1	1	1	1	1	1	**7**
1992	201	193	201	215	232	246	263	1	1	1	1	1	1	1	**7**
1993	158	124	120	121	110	118	129	1	1	1	1	1	1	1	**7**
1994	128	122	126	128	136	146	157	1	1	1	1	1	1	1	**7**

73 - year Average: 8

YEAR	Change MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	10	-1	16	22	-7	-12	-9	6	5	6	6	4	3	4	**34**	**238**
1923	0	2	5	0	-7	-12	-7	6	6	6	6	4	3	4	**35**	**245**
1924	0	-6	-6	-12	-10	-12	-4	6	4	4	3	4	3	5	**29**	**203**
1925	11	0	10	4	-4	-12	-7	6	6	6	6	5	3	4	**36**	**252**
1926	1	2	-3	-11	-14	-13	-8	6	6	5	3	3	3	4	**30**	**210**
1927	11	6	3	7	-7	-9	-7	6	6	6	6	4	4	4	**36**	**252**
1928	18	0	3	-6	-10	-10	-6	6	6	6	4	4	4	4	**34**	**238**
1929	1	-4	-2	-6	-10	-10	-7	6	5	5	4	4	4	4	**32**	**224**
1930	8	0	-5	-1	-10	-11	-9	6	6	5	5	4	3	4	**33**	**231**
1931	2	-5	-7	-11	-10	-15	-9	6	5	4	3	4	3	4	**29**	**203**
1932	6	1	14	13	-5	-10	-8	6	6	6	6	5	4	4	**37**	**259**
1933	2	-6	-3	-1	-12	-13	-9	6	4	5	5	3	3	4	**30**	**210**
1934	6	-6	-10	-18	-17	-19	-11	6	4	4	2	2	2	3	**23**	**161**
1935	10	18	36	13	-8	-11	-8	6	6	6	6	4	3	4	**35**	**245**
1936	11	12	16	5	-6	-10	-8	6	6	6	6	4	4	4	**36**	**252**
1937	10	0	18	1	-11	-11	-7	6	6	6	6	3	3	4	**34**	**238**
1938	14	8	25	0	-4	-9	-6	6	6	6	6	5	4	4	**37**	**851**
1939	2	-2	-8	-11	-11	-12	-7	6	5	4	3	3	3	4	**28**	**196**
1940	16	6	10	0	-10	-11	-7	6	6	6	6	4	3	4	**35**	**245**
1941	5	-3	14	6	-6	-10	-7	6	5	6	6	4	4	4	**35**	**280**
1942	5	0	12	14	-3	-11	-5	6	6	6	6	5	3	5	**37**	**444**
1943	5	6	7	0	-7	-9	-7	6	6	6	6	4	4	4	**36**	**252**
1944	3	-5	-1	-4	-12	-12	-8	6	5	5	5	3	3	4	**31**	**217**
1945	7	-2	11	6	-7	-10	-8	6	5	6	6	4	4	4	**35**	**245**
1946	4	0	7	-1	-9	-11	-7	6	6	6	5	4	3	4	**34**	**238**
1947	2	-8	-5	-11	-12	-13	-8	6	4	5	3	3	3	4	**28**	**196**
1948	3	0	2	7	-6	-9	-7	6	6	6	6	4	4	4	**36**	**252**
1949	6	-1	4	-2	-10	-11	-8	6	5	6	5	4	3	4	**33**	**231**
1950	9	0	5	6	-7	-11	-8	6	6	6	6	4	3	4	**35**	**245**
1951	5	-1	0	-4	-12	-12	-8	6	5	6	5	3	3	4	**32**	**224**
1952	5	3	29	1	-2	-10	-6	6	6	6	6	5	4	4	**37**	**814**
1953	4	-3	-6	6	-8	-13	-7	6	5	4	6	4	3	4	**32**	**224**
1954	7	-1	2	-8	-12	-13	-8	6	5	6	4	3	3	4	**31**	**217**
1955	3	-5	-2	-1	-9	-12	-9	6	5	5	5	4	3	4	**32**	**224**
1956	9	-1	13	10	-5	-11	-6	6	5	6	6	5	3	4	**35**	**280**
1957	5	-9	4	3	-11	-12	-9	6	4	6	6	3	3	4	**32**	**224**
1958	14	6	27	4	-6	-10	-7	6	6	6	6	4	4	4	**36**	**720**
1959	3	-4	-12	-11	-12	-12	-7	6	5	3	3	3	3	4	**27**	**189**
1960	6	-2	-4	-6	-11	-12	-10	6	5	5	4	3	3	4	**30**	**210**
1961	3	-4	-5	-11	-11	-11	-6	6	5	5	3	3	3	4	**29**	**203**
1962	6	2	0	2	-8	-13	-8	6	6	6	6	4	3	4	**35**	**245**
1963	2	1	23	5	-6	-13	-7	6	6	6	6	4	3	4	**35**	**245**
1964	3	-5	-5	-5	-12	-12	-9	6	5	5	5	3	3	4	**31**	**217**
1965	8	8	1	5	-6	-12	-6	6	6	6	6	4	3	4	**35**	**245**
1966	5	-2	4	-8	-10	-9	-8	6	5	6	4	4	4	4	**33**	**231**
1967	11	2	22	26	3	-10	-5	6	6	6	6	6	4	5	**39**	**624**
1968	4	-6	-4	-10	-12	-14	-8	6	4	5	4	3	3	4	**29**	**203**
1969	5	11	22	0	-4	-10	-8	6	6	6	6	5	4	4	**37**	**851**
1970	5	-7	5	1	-11	-14	-7	6	4	6	6	3	3	4	**32**	**224**
1971	6	-7	4	4	-10	-13	-7	6	4	6	6	4	3	4	**33**	**231**
1972	4	-13	3	-9	-13	-13	-10	6	3	6	4	3	3	4	**29**	**203**
1973	11	0	9	1	-12	-13	-7	6	6	6	6	3	3	4	**34**	**238**
1974	12	4	11	1	-10	-11	-7	6	6	6	6	4	3	4	**35**	**315**
1975	5	-5	0	13	-8	-12	-7	6	5	6	6	4	3	4	**34**	**238**
1976	3	-5	-6	-10	-9	-10	-5	6	5	4	4	4	4	5	**32**	**224**
1977	0	-7	-8	-8	-11	-12	-6	6	4	4	4	3	3	4	**28**	**196**
1978	18	7	15	8	-5	-12	-5	6	6	6	6	5	3	5	**37**	**259**
1979	13	1	9	-3	-12	-14	-7	6	6	6	5	3	3	4	**33**	**231**
1980	5	1	7	7	-2	-11	-6	6	6	6	6	5	3	4	**36**	**288**
1981	3	-3	-6	-13	-13	-13	-6	6	5	4	3	3	3	4	**28**	**196**
1982	5	16	15	2	-4	-10	-3	6	6	6	6	5	4	5	**38**	**874**
1983	5	1	14	18	0	-7	-6	6	6	6	6	6	4	4	**38**	**798**
1984	5	-6	6	-1	-8	-11	-6	6	4	6	5	4	3	4	**32**	**224**
1985	4	-8	-2	-12	-12	-12	-6	6	4	5	3	3	3	4	**28**	**196**
1986	5	1	5	4	-8	-10	-5	6	6	6	6	4	4	5	**37**	**259**
1987	3	-5	-8	-9	-8	-7	-4	6	5	4	4	4	4	5	**32**	**224**
1988	2	-4	-6	-7	-8	-8	-6	6	5	4	4	4	4	4	**31**	**217**
1989	12	-2	-3	-5	-11	-11	-5	6	5	5	5	3	3	5	**32**	**224**
1990	5	-7	-10	-11	-12	-9	-9	6	4	4	3	3	4	4	**28**	**196**
1991	6	-3	-4	-11	-17	-17	-8	6	5	5	3	2	2	4	**27**	**189**
1992	8	-8	-14	-17	-14	-17	-9	6	4	3	2	3	2	4	**24**	**168**
1993	34	4	-1	11	-8	-11	-5	6	6	5	6	4	3	5	**35**	**245**
1994	6	-4	-2	-8	-10	-11	-5	6	5	5	4	4	3	5	**32**	**224**

73 - year Average: 33 **285.3**

1929 - '34 Average: 214.7

STUDY: 1995C06F-SWRCB-506 DWRSIM: recirc818-d, 21 May 97
CP # 81, DON PEDRO RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-506/81/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 832'

Difference from Maximum Reservoir Elevation [DFMRE]

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	599	582	579	601	656	690	699	724	782	779	763	752	142	133	108	50	53	69	80
1923	746	745	748	761	776	784	789	792	792	785	770	760	48	43	40	40	47	62	72
1924	754	751	746	744	745	743	738	733	725	711	697	689	89	94	99	107	121	135	143
1925	685	686	687	691	712	731	744	757	758	747	730	718	101	88	75	74	85	102	114
1926	711	708	703	702	712	719	734	740	737	720	702	691	113	98	92	95	112	130	141
1927	686	685	690	698	732	748	761	762	782	775	759	748	84	71	70	50	57	73	84
1928	741	741	742	745	755	774	781	800	799	785	769	759	58	51	32	33	47	63	73
1929	752	747	742	742	745	747	747	751	751	741	731	723	85	85	81	81	91	101	109
1930	720	716	713	713	720	728	730	733	733	723	712	704	104	102	99	99	109	120	128
1931	702	700	700	702	705	704	696	686	669	651	635	624	128	136	146	163	181	197	208
1932	617	609	630	650	697	715	717	726	746	741	725	712	117	115	106	86	91	107	120
1933	703	695	689	688	695	699	696	693	714	701	684	670	133	136	139	118	131	148	162
1934	661	659	656	660	674	685	685	679	674	653	635	622	147	147	153	158	179	197	210
1935	612	611	614	635	662	682	707	720	752	738	720	706	150	125	112	80	94	112	126
1936	698	696	690	696	741	759	768	788	806	796	781	770	73	64	44	26	36	51	62
1937	764	758	754	757	785	800	802	815	832	819	805	795	32	30	17	0	13	27	37
1938	789	784	800	800	800	800	800	804	831	832	819	808	32	32	28	1	0	13	24
1939	800	799	799	800	800	800	802	800	796	783	770	762	32	30	32	36	49	62	70
1940	760	759	757	770	799	800	802	816	816	801	785	775	32	30	16	16	31	47	57
1941	769	767	769	784	800	800	800	812	832	831	817	808	32	32	20	0	1	15	24
1942	800	798	800	800	800	800	802	807	831	832	818	808	32	30	25	1	0	14	24
1943	800	800	800	800	800	800	802	821	832	824	810	799	32	30	11	0	8	22	33
1944	794	792	788	787	793	800	801	808	808	795	780	770	32	31	24	24	37	52	62
1945	765	766	769	775	800	800	802	807	831	825	810	799	32	30	25	1	7	22	33
1946	796	797	800	800	800	800	802	806	806	790	774	763	32	30	26	26	42	58	69
1947	757	756	759	762	770	775	772	776	770	757	743	736	57	60	56	62	75	89	96
1948	733	732	731	732	733	734	730	738	765	753	736	725	98	102	94	67	79	96	107
1949	719	712	707	706	713	725	732	742	742	724	703	690	107	100	90	90	108	129	142
1950	683	675	668	674	696	709	719	733	733	715	695	682	123	113	99	99	117	137	150
1951	675	729	780	800	800	800	798	794	794	779	765	754	32	34	38	38	53	67	78
1952	748	746	752	778	799	800	800	820	832	832	819	808	32	32	12	0	0	13	24
1953	800	795	793	800	800	800	800	800	809	806	792	782	32	32	32	23	26	40	50
1954	778	773	770	772	781	793	802	819	819	804	789	779	39	30	13	13	28	43	53
1955	773	769	768	774	780	782	779	782	783	770	758	750	50	53	50	49	62	74	82
1956	745	741	791	800	800	800	801	817	832	832	818	808	32	31	15	0	0	14	24
1957	800	798	793	793	799	800	800	805	827	814	800	791	32	32	27	5	18	32	41
1958	786	781	779	783	800	800	800	821	832	832	819	808	32	32	11	0	0	13	24
1959	800	794	789	793	800	800	802	800	794	782	770	763	32	30	32	38	50	62	69
1960	761	758	755	756	763	769	770	776	776	765	755	749	63	62	56	56	67	77	83
1961	746	744	744	746	748	747	741	733	726	713	701	694	85	91	99	106	119	131	138
1962	691	688	686	688	712	733	742	747	773	765	751	741	99	90	85	59	67	81	91
1963	736	731	728	732	758	770	778	792	817	812	798	790	62	54	40	15	20	34	42
1964	784	785	786	791	797	799	797	794	794	783	772	765	33	35	38	38	49	60	67
1965	763	764	795	800	800	800	802	807	827	827	816	807	32	30	25	5	5	16	25
1966	800	800	800	800	800	800	800	796	789	775	759	750	32	32	36	43	57	73	82
1967	745	743	754	769	787	800	800	817	832	832	820	808	32	32	15	0	0	12	24
1968	800	795	791	792	800	800	800	800	798	786	774	766	32	32	32	34	46	58	66
1969	761	762	765	800	800	800	800	823	832	832	819	808	32	32	9	0	0	13	24
1970	800	799	800	800	800	800	799	799	799	786	771	762	32	33	33	33	46	61	70
1971	756	756	763	779	792	800	801	801	807	798	786	778	32	31	31	25	34	46	54
1972	773	769	772	778	792	800	800	798	795	784	773	766	32	32	34	37	48	59	66
1973	763	762	764	776	800	800	802	812	812	797	782	772	32	30	20	20	35	50	60
1974	767	772	783	800	800	800	800	806	828	819	805	796	32	32	26	4	13	27	36
1975	791	789	786	786	798	800	802	812	832	825	812	803	32	30	20	0	7	20	29
1976	800	800	799	799	800	799	794	787	777	767	757	751	33	38	45	55	65	75	81
1977	748	745	742	741	741	737	728	715	702	687	672	663	95	104	117	130	145	160	169
1978	659	655	658	684	717	749	762	777	814	814	800	795	83	70	55	18	18	32	37
1979	790	786	782	792	800	800	802	822	823	808	794	784	32	30	10	9	24	38	48
1980	779	778	777	800	800	800	800	817	832	832	819	808	32	32	15	0	0	13	24
1981	800	797	794	795	799	800	802	806	805	793	782	774	32	30	26	27	39	50	58
1982	770	776	795	800	800	800	800	820	832	832	820	808	32	32	12	0	0	12	24
1983	800	800	800	800	800	800	800	819	832	832	832	808	32	32	13	0	0	0	24
1984	800	800	800	800	800	800	797	803	803	790	774	764	32	35	29	29	42	58	68
1985	761	761	767	774	783	790	791	790	785	773	762	755	42	41	42	47	59	70	77
1986	752	753	757	764	800	800	802	827	832	825	811	802	32	30	5	0	7	21	30
1987	796	791	786	784	786	788	786	783	779	769	759	752	44	46	49	53	63	73	80
1988	750	749	749	754	759	761	756	747	740	728	716	709	71	76	85	92	104	116	123
1989	705	702	702	705	709	722	734	748	748	737	726	720	110	98	84	84	95	106	112
1990	718	717	717	720	724	727	724	722	719	705	691	684	105	108	110	113	127	141	148
1991	679	675	671	670	669	678	677	695	695	685	673	665	154	155	137	137	147	159	167
1992	664	664	663	666	678	684	687	687	686	669	652	641	148	145	145	146	163	180	191
1993	635	629	629	666	702	734	741	757	789	788	773	763	98	91	75	43	44	59	69
1994	758	751	746	745	749	752	750	754	752	741	731	725	80	82	78	80	91	101	107

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	1	1	1	1	1	1	1	**7**	34	9	25	58	-3	-16	-11	6	6	6	6	5	2	3	**34**	**238**
1923	1	1	1	1	1	1	1	**7**	8	5	3	0	-7	-15	-10	6	6	6	6	4	3	4	**35**	**245**
1924	1	1	1	1	1	1	1	**7**	-2	-5	-5	-8	-14	-14	-8	5	5	5	4	3	3	4	**29**	**203**
1925	1	1	1	1	1	1	1	**7**	19	13	13	1	-11	-17	-12	6	6	6	6	3	2	3	**32**	**224**
1926	1	1	1	1	1	1	1	**7**	7	15	6	-3	-17	-18	-11	6	6	6	5	2	2	3	**30**	**210**
1927	1	1	1	1	1	1	1	**7**	16	13	1	20	-7	-16	-11	6	6	6	6	4	2	3	**33**	**231**
1928	1	1	1	1	1	1	1	**7**	19	7	19	-1	-14	-16	-10	6	6	6	5	3	2	4	**32**	**224**
1929	1	1	1	1	1	1	1	**7**	2	0	4	0	-10	-10	-8	6	6	6	6	4	4	4	**36**	**252**
1930	1	1	1	1	1	1	1	**7**	8	2	3	0	-10	-11	-8	6	6	6	6	4	3	4	**35**	**245**
1931	1	1	1	1	1	1	1	**7**	-1	-8	-10	-17	-18	-16	-11	5	4	4	2	2	2	3	**22**	**154**
1932	1	1	1	1	1	1	1	**7**	18	2	9	20	-5	-16	-13	6	6	6	6	5	2	3	**34**	**238**
1933	1	1	1	1	1	1	1	**7**	4	-3	-3	21	-13	-17	-14	6	5	5	6	3	2	3	**30**	**210**
1934	1	1	1	1	1	1	1	**7**	11	0	-6	-5	-21	-18	-13	6	6	4	5	1	2	3	**27**	**189**
1935	1	1	1	1	1	1	1	**7**	20	25	13	32	-14	-18	-14	6	6	6	6	3	2	3	**32**	**224**
1936	1	1	1	1	1	1	1	**7**	18	9	20	18	-10	-15	-11	6	6	6	6	4	3	3	**34**	**238**
1937	1	1	2	6	3	1	1	**15**	15	2	13	17	-13	-14	-10	6	6	6	6	3	3	4	**34**	**510**
1938	1	1	1	5	6	3	1	**18**	0	0	4	27	1	-13	-11	6	6	6	6	6	3	3	**36**	**648**
1939	1	1	1	1	1	1	1	**7**	0	2	-2	-4	-13	-13	-8	6	6	5	5	3	3	4	**32**	**224**
1940	1	1	2	2	1	1	1	**9**	1	2	14	0	-15	-16	-10	6	6	6	6	3	2	4	**33**	**297**
1941	1	1	1	6	5	2	1	**17**	0	0	12	20	-1	-14	-9	6	6	6	6	5	3	4	**36**	**612**
1942	1	1	1	5	6	3	1	**18**	0	2	5	24	1	-14	-10	6	6	6	6	6	3	4	**37**	**666**
1943	1	1	3	6	4	1	1	**17**	0	2	19	11	-8	-14	-11	6	6	6	6	4	3	3	**34**	**578**
1944	1	1	1	1	1	1	1	**7**	7	1	7	0	-13	-15	-10	6	6	6	6	3	3	4	**34**	**238**
1945	1	1	1	5	4	1	1	**14**	0	2	5	24	-6	-15	-11	6	6	6	6	4	3	3	**34**	**476**
1946	1	1	1	1	1	1	1	**7**	0	2	4	0	-16	-16	-11	6	6	6	6	2	2	3	**31**	**217**
1947	1	1	1	1	1	1	1	**7**	5	-3	4	-6	-13	-14	-7	6	5	6	4	3	3	4	**31**	**217**
1948	1	1	1	1	1	1	1	**7**	1	-4	8	27	-12	-17	-11	6	5	6	6	3	2	3	**31**	**217**
1949	1	1	1	1	1	1	1	**7**	12	7	10	0	-18	-21	-13	6	6	6	6	2	1	3	**30**	**210**
1950	1	1	1	1	1	1	1	**7**	13	10	14	0	-18	-20	-13	6	6	6	6	2	2	3	**31**	**217**
1951	1	1	1	1	1	1	1	**7**	0	-2	-4	0	-15	-14	-11	6	5	5	6	3	3	3	**31**	**217**
1952	1	1	3	6	6	3	1	**21**	1	0	20	12	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1953	1	1	1	1	1	1	1	**7**	0	0	0	9	-3	-14	-10	6	6	6	6	5	3	4	**36**	**252**
1954	1	1	3	3	1	1	1	**11**	12	9	17	0	-15	-15	-10	6	6	6	6	3	3	4	**34**	**374**
1955	1	1	1	1	1	1	1	**7**	2	-3	3	1	-13	-12	-8	6	5	6	6	3	3	4	**33**	**231**
1956	1	1	2	6	6	3	1	**20**	0	1	16	15	0	-14	-10	6	6	6	6	6	3	4	**37**	**740**
1957	1	1	1	4	2	1	1	**11**	1	0	5	22	-13	-14	-9	6	6	6	6	3	3	4	**34**	**374**
1958	1	1	3	6	6	3	1	**21**	0	0	21	11	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1959	1	1	1	1	1	1	1	**7**	0	2	-2	-6	-12	-12	-7	6	6	5	4	3	3	4	**31**	**217**
1960	1	1	1	1	1	1	1	**7**	6	1	6	0	-11	-10	-6	6	6	6	6	3	4	4	**35**	**245**
1961	1	1	1	1	1	1	1	**7**	-1	-6	-8	-7	-13	-12	-7	5	4	4	4	3	3	4	**27**	**189**
1962	1	1	1	1	1	1	1	**7**	21	9	5	26	-8	-14	-10	6	6	6	6	4	3	4	**35**	**245**
1963	1	1	1	2	1	1	1	**8**	12	8	14	25	-5	-14	-8	6	6	6	6	5	3	4	**36**	**288**
1964	1	1	1	1	1	1	1	**7**	2	-2	-3	0	-11	-11	-7	6	5	5	6	3	3	4	**32**	**224**
1965	1	1	1	4	4	2	1	**14**	0	2	5	20	0	-11	-9	6	6	6	6	6	3	4	**37**	**518**
1966	1	1	1	1	1	1	1	**7**	0	0	-4	-7	-14	-16	-9	6	6	5	4	3	2	4	**30**	**210**
1967	1	1	2	6	6	3	1	**20**	13	0	17	15	0	-12	-12	6	6	6	6	6	3	3	**36**	**720**
1968	1	1	1	1	1	1	1	**7**	0	0	0	-2	-12	-12	-8	6	6	6	5	3	3	4	**33**	**231**
1969	1	1	4	6	6	3	1	**22**	0	0	23	9	0	-13	-11	6	6	6	6	6	3	3	**36**	**792**
1970	1	1	1	1	1	1	1	**7**	0	-1	0	0	-13	-15	-9	6	5	6	6	3	3	4	**33**	**231**
1971	1	1	1	1	1	1	1	**7**	8	1	0	6	-9	-12	-8	6	6	6	6	4	3	4	**35**	**245**
1972	1	1	1	1	1	1	1	**7**	8	0	-2	-3	-11	-11	-7	6	6	5	5	3	3	4	**32**	**224**
1973	1	1	1	1	1	1	1	**7**	0	2	10	0	-15	-15	-10	6	6	6	6	3	3	4	**34**	**238**
1974	1	1	1	5	3	1	1	**13**	0	0	6	22	-9	-14	-9	6	6	6	6	4	3	4	**35**	**455**
1975	1	1	1	6	4	1	1	**15**	2	2	10	20	-7	-13	-9	6	6	6	6	4	3	4	**35**	**525**
1976	1	1	1	1	1	1	1	**7**	-1	-5	-7	-10	-10	-10	-6	5	5	4	4	4	4	4	**30**	**210**
1977	1	1	1	1	1	1	1	**7**	-4	-9	-13	-13	-15	-15	-9	5	4	3	3	3	3	4	**25**	**175**
1978	1	1	1	2	2	1	1	**9**	32	13	15	37	0	-14	-5	6	6	6	6	6	3	5	**38**	**342**
1979	1	1	3	4	1	1	1	**12**	0	2	20	1	-15	-14	-10	6	6	6	6	3	3	4	**34**	**408**
1980	1	1	2	6	6	3	1	**20**	0	0	17	15	0	-13	-11	6	6	6	6	6	3	3	**36**	**720**
1981	1	1	1	1	1	1	1	**7**	1	2	4	-1	-12	-11	-8	6	6	6	5	3	3	4	**33**	**231**
1982	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-12	-12	6	6	6	6	6	3	3	**36**	**756**
1983	1	1	3	6	6	6	1	**24**	0	0	19	13	0	0	-24	6	6	6	6	6	6	1	**37**	**888**
1984	1	1	1	1	1	1	1	**7**	0	-3	6	0	-13	-16	-10	6	5	6	6	3	2	4	**32**	**224**
1985	1	1	1	1	1	1	1	**7**	7	1	-1	-5	-12	-11	-7	6	6	5	5	3	3	4	**32**	**224**
1986	1	1	4	6	4	1	1	**18**	0	2	25	5	-7	-14	-9	6	6	6	6	4	3	4	**35**	**630**
1987	1	1	1	1	1	1	1	**7**	2	-2	-3	-4	-10	-10	-7	6	5	5	5	4	4	4	**33**	**231**
1988	1	1	1	1	1	1	1	**7**	2	-5	-9	-7	-12	-12	-7	6	5	4	4	3	3	4	**29**	**203**
1989	1	1	1	1	1	1	1	**7**	13	12	14	0	-11	-11	-6	6	6	6	6	3	3	4	**34**	**238**
1990	1	1	1	1	1	1	1	**7**	3	-3	-2	-3	-14	-14	-7	6	5	5	5	3	3	4	**31**	**217**
1991	1	1	1	1	1	1	1	**7**	9	-1	18	0	-10	-12	-8	6	5	6	6	4	3	4	**34**	**238**
1992	1	1	1	1	1	1	1	**7**	6	3	0	-1	-17	-17	-11	6	6	6	5	2	2	3	**30**	**210**
1993	1	1	1	1	1	1	1	**7**	32	7	16	32	-1	-15	-10	6	6	6	6	5	3	4	**36**	**252**
1994	1	1	1	1	1	1	1	**7**	3	-2	4	-2	-11	-10	-6	6	5	6	5	3	4	4	**33**	**231**
							73 - year Average:	**10**														**73 - year Average:**	**33**	**339.4**
																							1929 - '34 Average:	**214.7**

Flow Alternative 3

STUDY: 1995C06F-SWRCB-506 DWRSIM: recirc818-d, 21 May 97
CP # 20, LAKE McCLURE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-506/20/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 867'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	680	680	696	712	759	779	789	845	867	860	847	837	88	78	22	0	7	20	30	1	1	1	6	4	1	1	**15**	20	10	56	22	-7	-13	-10	6	6	6	6	4	3	4	**35**	**525**
1923	808	808	808	808	808	813	818	847	847	837	822	810	54	49	20	20	30	45	57	1	1	1	1	1	1	1	**7**	5	5	29	0	-10	-15	-12	6	6	6	6	4	3	3	**34**	**238**
1924	808	808	808	808	808	807	806	804	792	773	760	749	60	61	63	75	94	107	118	1	1	1	1	1	1	1	**7**	-1	-1	-2	-12	-19	-13	-11	5	5	5	3	2	3	3	**26**	**182**
1925	749	754	760	765	789	798	818	842	842	829	813	801	69	49	25	25	38	54	66	1	1	1	1	1	1	1	**7**	9	20	24	0	-13	-16	-12	6	6	6	6	3	2	3	**32**	**224**
1926	800	799	800	802	808	814	830	829	828	824	817	809	53	37	38	39	43	50	58	1	1	1	1	1	1	1	**7**	6	16	-1	-1	-4	-7	-8	6	6	5	5	5	4	4	**35**	**245**
1927	807	808	808	808	808	815	818	849	850	845	842	840	52	49	18	17	22	25	27	1	1	2	2	1	1	1	**9**	7	3	31	1	-5	-3	-2	6	6	6	6	5	5	5	**39**	**351**
1928	808	808	808	808	808	809	808	820	818	812	809	805	58	59	47	49	55	58	62	1	1	1	1	1	1	1	**7**	1	-1	12	-2	-6	-3	-4	6	5	6	5	4	5	5	**36**	**252**
1929	805	804	804	803	806	807	809	810	810	810	811	804	60	58	57	57	57	56	63	1	1	1	1	1	1	1	**7**	1	2	1	0	0	1	-7	6	6	6	6	6	6	4	**40**	**280**
1930	803	802	802	802	802	798	800	800	800	801	801	799	69	67	67	67	66	66	68	1	1	1	1	1	1	1	**7**	-4	2	0	0	1	0	-2	5	6	6	6	6	6	5	**40**	**280**
1931	798	798	798	798	800	800	797	796	783	764	748	737	67	70	71	84	103	119	130	1	1	1	1	1	1	1	**7**	0	-3	-1	-13	-19	-16	-11	6	5	5	3	2	2	3	**26**	**182**
1932	735	736	759	770	805	814	823	850	867	857	843	832	53	44	17	0	10	24	35	1	1	2	6	3	1	1	**15**	9	9	27	17	-10	-14	-11	6	6	6	6	4	3	3	**34**	**510**
1933	808	807	806	808	808	811	812	812	826	812	797	788	56	55	55	41	55	70	79	1	1	1	1	1	1	1	**7**	3	1	0	14	-14	-15	-9	6	6	6	6	3	3	4	**34**	**238**
1934	786	785	789	795	803	811	816	812	803	786	773	763	56	51	55	64	81	94	104	1	1	1	1	1	1	1	**7**	8	5	-4	-9	-17	-13	-10	6	6	5	4	2	3	4	**30**	**210**
1935	762	766	771	789	800	810	840	859	867	854	839	828	57	27	8	0	13	28	39	1	1	4	6	3	1	1	**17**	10	30	19	8	-13	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1936	808	808	808	808	808	820	840	859	865	853	838	827	47	27	8	2	14	29	40	1	1	4	5	3	1	1	**16**	12	20	19	6	-12	-15	-11	6	6	6	6	3	3	3	**33**	**528**
1937	808	808	808	808	808	820	834	859	867	853	838	827	47	33	8	0	14	29	40	1	1	4	6	3	1	1	**17**	12	14	25	8	-14	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1938	808	808	808	808	808	820	840	859	867	867	855	840	47	27	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1939	808	808	808	808	808	816	831	830	819	801	784	773	51	36	37	48	66	83	94	1	1	1	1	1	1	1	**7**	8	15	-1	-11	-18	-17	-11	6	6	5	3	2	2	3	**27**	**189**
1940	773	774	775	802	808	820	837	859	856	840	823	810	47	30	8	11	27	44	57	1	1	4	3	1	1	1	**12**	12	17	22	-3	-16	-17	-13	6	6	6	5	2	2	3	**30**	**360**
1941	807	807	808	808	808	820	834	859	867	864	851	840	47	33	8	0	3	16	27	1	1	4	6	5	2	1	**20**	12	14	25	8	-3	-13	-11	6	6	6	6	5	3	3	**35**	**700**
1942	808	808	808	808	808	820	838	859	867	861	852	840	47	29	8	0	6	15	27	1	1	4	6	4	2	1	**19**	12	18	21	8	-6	-9	-12	6	6	6	6	4	4	3	**35**	**665**
1943	808	808	808	808	808	820	840	859	862	851	836	825	47	27	8	5	16	31	42	1	1	4	4	2	1	1	**14**	12	20	19	3	-11	-15	-11	6	6	6	6	3	3	3	**33**	**462**
1944	808	808	808	808	808	817	815	834	835	821	803	789	50	52	33	32	46	64	78	1	1	1	1	1	1	1	**7**	9	-2	19	1	-14	-18	-14	6	5	6	6	3	2	3	**31**	**217**
1945	787	794	800	804	808	820	833	856	867	856	842	832	47	34	11	0	11	25	35	1	1	3	6	3	1	1	**16**	12	13	23	11	-11	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1946	808	808	808	808	808	818	834	857	856	841	825	811	49	33	10	11	26	42	56	1	1	3	3	1	1	1	**11**	10	16	23	-1	-15	-16	-14	6	6	6	5	3	2	3	**31**	**341**
1947	808	808	808	808	808	815	815	820	812	795	778	769	52	52	47	55	72	89	98	1	1	1	1	1	1	1	**7**	7	0	5	-8	-17	-17	-9	6	6	6	4	2	2	4	**30**	**210**
1948	768	769	770	772	774	774	776	800	820	803	784	768	93	91	67	47	64	83	99	1	1	1	1	1	1	1	**7**	0	2	24	20	-17	-19	-16	6	6	6	6	2	2	2	**30**	**210**
1949	766	765	766	767	771	780	781	801	800	777	754	735	87	86	66	67	90	113	132	1	1	1	1	1	1	1	**7**	9	1	20	-1	-23	-23	-19	6	6	6	5	1	1	2	**27**	**189**
1950	731	730	731	740	757	761	775	800	801	779	756	737	106	92	67	66	88	111	130	1	1	1	1	1	1	1	**7**	4	14	25	1	-22	-23	-19	6	6	6	6	1	1	2	**28**	**196**
1951	734	797	808	808	808	819	819	819	817	796	774	759	48	48	48	50	71	93	108	1	1	1	1	1	1	1	**7**	11	0	0	-2	-21	-22	-15	6	6	6	5	1	1	3	**28**	**196**
1952	755	756	769	804	808	820	840	859	867	864	852	840	47	27	8	0	3	15	27	1	1	4	6	5	2	1	**20**	12	20	19	8	-3	-12	-12	6	6	6	6	5	3	3	**35**	**700**
1953	808	808	808	808	808	809	809	810	810	796	775	760	58	58	57	57	71	92	107	1	1	1	1	1	1	1	**7**	1	0	1	0	-14	-21	-15	6	6	6	6	3	1	3	**31**	**217**
1954	756	756	757	760	770	784	802	823	814	793	771	755	83	65	44	53	74	96	112	1	1	1	1	1	1	1	**7**	14	18	21	-9	-21	-22	-16	6	6	6	4	1	1	2	**26**	**182**
1955	752	750	754	761	766	766	767	783	785	767	748	735	101	100	84	82	100	119	132	1	1	1	1	1	1	1	**7**	0	1	16	2	-18	-19	-13	6	6	6	6	2	2	3	**31**	**217**
1956	732	732	808	808	808	819	819	853	867	863	850	840	48	48	14	0	4	17	27	1	1	3	6	5	2	1	**19**	11	0	34	14	-4	-13	-10	6	6	6	6	5	3	4	**36**	**684**
1957	808	808	808	808	808	813	813	814	817	798	778	763	54	54	53	50	69	89	104	1	1	1	1	1	1	1	**7**	5	0	1	3	-19	-20	-15	6	6	6	6	2	2	3	**31**	**217**
1958	759	760	765	772	791	817	840	859	867	862	850	840	50	27	8	0	5	17	27	1	1	4	6	4	2	1	**19**	26	23	19	8	-5	-12	-10	6	6	6	6	5	3	4	**36**	**684**
1959	808	808	808	808	808	813	816	817	808	788	770	763	54	51	50	59	79	97	104	1	1	1	1	1	1	1	**7**	5	3	1	-9	-20	-18	-7	6	6	6	4	2	2	4	**30**	**210**
1960	762	761	761	762	774	782	797	809	806	790	775	766	85	70	58	61	77	92	101	1	1	1	1	1	1	1	**7**	8	15	12	-3	-16	-15	-9	6	6	6	5	2	3	4	**32**	**224**
1961	765	765	767	768	770	771	775	775	767	747	730	718	96	92	92	100	120	137	149	1	1	1	1	1	1	1	**7**	1	4	0	-8	-20	-17	-12	6	6	6	4	2	2	3	**29**	**203**
1962	717	717	720	722	767	776	801	815	830	816	798	783	91	66	52	37	51	69	84	1	1	1	1	1	1	1	**7**	9	25	14	15	-14	-18	-15	6	6	6	6	3	2	3	**32**	**224**
1963	782	782	783	792	808	814	823	848	861	852	837	826	53	44	19	6	15	30	41	1	1	2	4	2	1	1	**12**	6	9	25	13	-9	-15	-11	6	6	6	6	4	3	3	**34**	**408**
1964	808	808	808	808	808	808	809	809	807	791	774	764	59	58	58	60	76	93	103	1	1	1	1	1	1	1	**7**	0	1	0	-2	-16	-17	-10	6	6	6	5	2	2	4	**31**	**217**
1965	762	765	808	808	808	815	831	853	867	861	850	840	52	36	14	0	6	17	27	1	1	3	6	4	2	1	**18**	7	16	22	14	-6	-11	-10	6	6	6	6	4	3	4	**35**	**630**
1966	808	808	808	808	808	814	814	815	800	776	752	736	53	53	52	67	91	115	131	1	1	1	1	1	1	1	**7**	6	0	1	-15	-24	-24	-16	6	6	6	3	1	1	2	**25**	**175**
1967	732	735	766	779	791	819	840	859	867	867	856	840	48	27	8	0	0	11	27	1	1	4	6	6	3	1	**22**	28	21	19	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1968	808	808	808	808	808	812	813	813	803	783	767	756	55	54	54	64	84	100	111	1	1	1	1	1	1	1	**7**	4	1	0	-10	-20	-16	-11	6	6	6	4	2	2	3	**29**	**203**
1969	752	757	765	808	808	820	840	859	867	867	854	840	47	27	8	0	0	13	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-13	-14	6	6	6	6	6	3	3	**36**	**792**
1970	808	808	808	808	808	820	821	821	822	802	782	767	47	46	46	45	65	85	100	1	1	1	1	1	1	1	**7**	12	1	0	1	-20	-20	-15	6	6	6	6	2	2	3	**31**	**217**
1971	765	767	778	788	795	800	800	801	803	786	765	749	67	67	66	64	81	102	118	1	1	1	1	1	1	1	**7**	5	0	1	2	-17	-21	-16	6	6	6	6	2	1	2	**29**	**203**
1972	745	745	755	761	768	781	781	782	782	763	743	734	86	86	85	85	104	124	133	1	1	1	1	1	1	1	**7**	13	0	1	0	-19	-20	-9	6	6	6	6	2	2	4	**32**	**224**
1973	734	736	744	762	791	807	817	859	862	848	833	823	60	50	8	5	19	34	44	1	1	4	4	2	1	1	**14**	16	10	42	3	-14	-15	-10	6	6	6	6	3	3	4	**34**	**476**
1974	808	808	808	808	808	820	833	859	866	852	838	827	47	34	8	1	15	29	40	1	1	4	5	2	1	1	**15**	12	13	26	7	-14	-14	-11	6	6	6	6	3	3	3	**33**	**495**
1975	808	808	808	808	808	820	823	852	867	856	842	832	47	44	15	0	11	25	35	1	1	2	6	3	1	1	**15**	12	3	29	15	-11	-14	-10	6	6	6	6	3	3	4	**34**	**510**
1976	808	808	808	808	808	809	808	807	795	778	764	755	58	59	60	72	89	103	112	1	1	1	1	1	1	1	**7**	1	-1	-1	-12	-17	-14	-9	6	5	5	3	2	3	4	**28**	**196**
1977	754	752	750	750	750	745	737	726	715	685	655	631	122	130	141	152	182	212	236	1	1	1	1	1	1	1	**7**	-5	-8	-11	-11	-30	-30	-24	5	4	3	3	1	1	1	**18**	**126**
1978	626	626	642	693	741	782	815	859	867	867	857	840	85	52	8	0	0	10	27	1	1	4	6	6	3	1	**22**	41	33	44	8	0	-10	-17	6	6	6	6	6	4	2	**36**	**792**
1979	808	808	808	808	808	820	828	859	859	844	829	818	47	39	8	8	23	38	49	1	1	4	4	1	1	1	**13**	12	8	31	0	-15	-15	-11	6	6	6	6	3	3	3	**33**	**429**
1980	808	808	808	808	808	820	835	859	867	867	855	840	47	32	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	15	24	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1981	808	807	807	808	808	813	813	818	813	797	781	772	54	54	49	54	70	86	95	1	1	1	1	1	1	1	**7**	5	0	5	-5	-16	-16	-9	6	6	6	5	2	2	4	**31**	**217**
1982	771	780	795	808	808	820	840	859	867	865	854	840	47	27	8	0	2	13	27	1	1	4	6	5	3	1	**21**	12	20	19	8	-2	-11	-14	6	6	6	6	5	3	3	**35**	**735**
1983	808	808	808	808	808	820	836	859	867	867	864	840	47	31	8	0	0	3	27	1	1	4	6	6	5	1	**24**	12	16	23	8	0	-3	-24	6	6	6	6	6	5	1	**36**	**864**
1984	808	808	808	808	808	820	821	821	819	800	778	763	47	46	46	48	67	89	104	1	1	1	1	1	1	1	**7**	12	1	0	-2	-19	-22	-15	6	6	6	5	2	1	3	**29**	**203**
1985	762	766	770	773	780	787	799	800	793	774	758	744	80	68	67	74	93	109	123	1	1	1	1	1	1	1	**7**	7	12	1	-7	-19	-16	-14	6	6	6	4	2	2	3	**29**	**203**
1986	745	748	757	767	808	820	839	859	867	855	841	830	47	28	8	0	12	26	37	1	1	4	6	3	1	1	**17**	12	19	20	8	-12	-14	-11	6	6	6	6	3	3	3	**33**	**561**
1987	808	807	807	807	808	810	818	815	805	789	776	767	57	49	52	62	78	91	100	1	1	1	1	1	1	1	**7**	2	8	-3	-10	-16	-13	-9	6	6	5	4	2	3	4	**30**	**210**
1988	766	767	769	775	779	785	789	790	782	765	749	738	82	78	77	85	102	118	129	1	1	1	1	1	1	1	**7**	6	4	1	-8	-17	-16	-11	6	6	6	4	2	2	3	**29**	**203**
1989	736	735	738	739	744	763	782	790	786	769	754	743	104	85	77	81	98	113	124	1	1	1	1	1	1	1	**7**	19	19	8	-4	-17	-15	-11	6	6	6	5	2	3	3	**31**	**217**
1990	745	746	747	750	755	762	772	764	754	734	716	701	105	95	103	113	133	151	166	1	1	1	1	1	1	1	**7**	7	10	-8	-10	-20	-18	-15	6	6	4	4	2	2	3	**27**	**189**
1991	699	697	697	696	696	721	727	751	752	734	717	703	146	140	116	115	133	150	164	1	1	1	1	1	1	1	**7**	25	6	24	1	-18	-17	-14	6	6	6	6	2	2	3	**31**	**217**
1992	703	704	706	708	726	734	755	749	734	717	697	682	133	112	118	133	150	170	185	1	1	1	1	1	1	1	**7**	8	21	-6	-15	-17	-20	-15	6	6	4	3	2	2	3	**26**	**182**
1993	680	681	689	749	775	803	803	837	861	855	841	831	64	64	30	6	12	26	36	1	1	1	4	3	1	1	**12**	28	0	34	24	-6	-14	-10	6	6	6	6	4	3	4	**35**	**420**
1994	808	807	808	808	808	810	815	819	811	796	782	772	57	52	48	56	71	85	95	1	1	1	1	1	1	1	**7**	2	5	4	-8	-15	-14	-10	6	6	6	4	3	3	4	**32**	**224**

73 - year Average: 11

73 - year Average: 32 **365.8**

1929 - '34 Average: 283.3

Flow Alternative 3

STUDY: 1995C06F-SWRCB-506 DWRSIM: recirc818-f, 17 Jun 97
CP # 18, MILLERTON LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-506/18/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 576'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	491	505	527	547	549	566	559	576	576	562	518	491
1923	485	495	520	537	531	517	541	549	540	526	463	470
1924	483	494	508	522	516	503	506	511	505	478	464	468
1925	465	474	490	503	508	493	514	532	522	499	483	475
1926	477	490	505	519	522	508	549	563	535	494	473	485
1927	491	506	528	545	560	561	560	569	576	543	492	482
1928	482	503	525	542	540	543	551	554	522	477	465	477
1929	485	499	513	523	517	513	531	531	527	506	466	477
1930	480	495	507	518	514	510	525	534	518	489	466	482
1931	487	501	513	522	517	508	510	516	508	482	466	466
1932	467	476	503	520	543	531	524	532	552	518	492	477
1933	477	489	501	516	512	501	520	537	526	509	466	467
1934	470	480	500	517	511	503	516	527	523	498	477	486
1935	490	500	515	535	532	509	542	563	574	538	469	479
1936	486	502	518	533	560	558	564	576	563	521	472	478
1937	488	497	516	535	560	570	576	576	576	538	484	469
1938	472	486	533	560	560	542	529	467	572	576	532	520
1939	513	514	529	538	532	524	542	560	539	504	473	495
1940	495	504	517	550	550	552	548	561	553	512	466	471
1941	481	494	528	556	560	573	573	569	576	569	527	506
1942	497	507	532	552	549	553	554	562	576	555	509	477
1943	477	494	518	557	556	576	574	576	562	526	491	476
1944	479	491	508	521	524	507	516	517	501	494	490	480
1945	481	503	523	533	560	568	565	571	576	554	511	491
1946	485	502	531	548	528	524	536	559	546	510	478	480
1947	481	500	526	543	541	530	545	556	535	497	473	481
1948	488	503	518	529	523	530	556	551	541	483	480	484
1949	490	500	513	526	524	511	522	538	521	482	477	489
1950	492	503	519	536	541	524	534	551	539	506	476	482
1951	490	533	560	560	554	546	552	546	514	463	463	481
1952	488	500	530	559	560	567	559	526	576	571	525	508
1953	501	514	533	549	538	532	541	536	518	497	478	481
1954	488	497	514	532	532	527	537	560	544	507	465	483
1955	489	502	522	540	537	520	534	545	537	504	481	487
1956	491	499	560	560	560	576	576	561	576	566	524	505
1957	496	504	517	527	525	529	546	561	562	526	471	481
1958	488	501	525	545	554	565	576	576	576	557	516	498
1959	492	507	523	530	536	528	550	566	551	500	470	475
1960	474	475	480	490	503	498	515	525	509	496	483	481
1961	481	491	505	511	510	511	526	539	527	486	467	467
1962	468	471	484	492	538	529	527	555	569	540	489	476
1963	479	491	501	518	558	558	576	576	576	564	520	503
1964	490	517	542	551	547	544	553	561	551	508	476	484
1965	481	496	529	560	556	554	559	551	561	540	512	496
1966	487	513	546	558	541	526	545	564	550	506	486	486
1967	490	502	539	559	560	571	565	514	570	576	539	522
1968	515	521	539	545	545	539	550	554	539	506	478	482
1969	480	496	513	560	524	521	467	469	576	576	538	513
1970	498	516	540	560	560	554	554	555	544	517	476	477
1971	482	502	534	551	548	533	541	544	520	498	491	478
1972	479	491	519	536	532	524	537	543	540	497	481	481
1973	489	501	523	545	560	560	550	575	576	542	483	477
1974	487	510	545	560	544	550	559	570	573	537	490	473
1975	476	494	515	528	535	526	533	536	567	525	476	482
1976	489	511	531	541	539	544	547	542	519	492	479	494
1977	490	496	500	503	501	464	465	464	462	466	461	462
1978	462	462	484	532	560	552	510	498	576	576	548	539
1979	528	535	549	560	555	562	560	571	563	521	477	482
1980	489	488	508	560	560	558	566	550	576	576	542	513
1981	503	512	520	528	531	533	547	553	543	510	477	488
1982	491	504	536	560	560	576	546	561	576	576	546	541
1983	531	556	560	560	513	484	467	467	483	564	572	576
1984	560	560	560	560	560	568	570	570	557	530	487	483
1985	482	492	511	536	533	526	551	563	539	501	483	483
1986	490	508	534	554	550	552	574	565	576	558	503	479
1987	480	489	492	495	496	511	530	551	539	503	473	480
1988	482	495	507	526	516	527	539	547	527	498	483	486
1989	486	497	505	515	512	516	537	552	540	502	478	484
1990	489	495	502	510	510	517	532	544	525	508	479	483
1991	480	486	492	499	493	489	501	508	512	506	480	486
1992	485	490	494	498	499	490	493	494	480	470	465	466
1993	467	466	476	536	543	556	558	576	576	571	522	499
1994	490	497	507	512	508	520	534	548	528	498	478	484

YEAR	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	10	17	0	0	14	58	85	3	2	6	6	3	1	1	**22**
1923	59	35	27	36	50	113	106	1	1	1	1	1	1	1	**7**
1924	73	70	65	71	98	112	108	1	1	1	1	1	1	1	**7**
1925	83	62	44	54	77	93	101	1	1	1	1	1	1	1	**7**
1926	68	27	13	41	82	103	91	1	1	3	1	1	1	1	**9**
1927	15	16	7	0	33	84	94	2	2	4	6	1	1	1	**17**
1928	33	25	22	54	99	111	99	1	1	1	1	1	1	1	**7**
1929	63	45	45	49	70	110	99	1	1	1	1	1	1	1	**7**
1930	66	51	42	58	87	110	94	1	1	1	1	1	1	1	**7**
1931	68	66	60	68	94	110	110	1	1	1	1	1	1	1	**7**
1932	45	52	44	24	58	84	99	1	1	1	1	1	1	1	**7**
1933	75	56	39	50	67	110	109	1	1	1	1	1	1	1	**7**
1934	73	60	49	53	78	99	90	1	1	1	1	1	1	1	**7**
1935	67	34	13	2	38	107	97	1	1	3	5	1	1	1	**13**
1936	18	12	0	13	55	104	98	2	3	6	3	1	1	1	**17**
1937	6	0	0	0	38	92	107	4	6	6	6	1	1	1	**25**
1938	34	47	109	4	0	44	56	1	1	1	5	6	1	1	**16**
1939	52	34	16	37	72	103	81	1	1	2	1	1	1	1	**8**
1940	24	28	15	23	64	110	105	1	1	2	1	1	1	1	**8**
1941	3	3	7	0	7	49	70	5	5	4	6	4	1	1	**26**
1942	23	22	14	0	21	67	99	1	1	3	6	1	1	1	**14**
1943	0	2	0	14	50	85	100	6	5	6	3	1	1	1	**23**
1944	69	60	59	75	82	86	96	1	1	1	1	1	1	1	**7**
1945	8	11	5	0	22	65	85	4	3	4	6	1	1	1	**20**
1946	52	40	17	30	66	98	96	1	1	2	1	1	1	1	**8**
1947	46	31	20	41	79	103	95	1	1	1	1	1	1	1	**7**
1948	46	20	25	35	93	96	92	1	1	1	1	1	1	1	**7**
1949	65	54	38	55	94	99	87	1	1	1	1	1	1	1	**7**
1950	52	42	25	37	70	100	94	1	1	1	1	1	1	1	**7**
1951	30	24	30	62	113	113	95	1	1	1	1	1	1	1	**7**
1952	9	17	50	0	5	51	68	4	2	1	6	4	1	1	**19**
1953	44	35	40	58	79	98	95	1	1	1	1	1	1	1	**7**
1954	49	39	16	32	69	111	93	1	1	2	1	1	1	1	**8**
1955	56	42	31	39	72	95	89	1	1	1	1	1	1	1	**7**
1956	0	0	15	0	10	52	71	6	6	2	6	3	1	1	**25**
1957	47	30	15	14	50	105	95	1	1	2	3	1	1	1	**10**
1958	11	0	0	0	19	60	78	3	6	6	6	2	1	1	**25**
1959	48	26	10	25	76	106	101	1	1	3	1	1	1	1	**9**
1960	78	61	51	67	80	93	95	1	1	1	1	1	1	1	**7**
1961	65	50	37	49	90	109	109	1	1	1	1	1	1	1	**7**
1962	47	49	21	7	36	87	100	1	1	1	4	1	1	1	**10**
1963	18	0	0	0	12	56	73	2	6	6	6	3	1	1	**25**
1964	32	23	15	25	68	100	92	1	1	2	1	1	1	1	**8**
1965	22	17	25	15	36	64	80	1	2	1	2	1	1	1	**9**
1966	50	31	12	26	70	90	90	1	1	3	1	1	1	1	**9**
1967	5	11	62	6	0	37	54	4	3	1	4	6	1	1	**20**
1968	37	26	22	37	70	98	94	1	1	1	1	1	1	1	**7**
1969	55	109	107	0	0	38	63	1	1	1	6	6	1	1	**17**
1970	22	22	21	32	59	100	99	1	1	1	1	1	1	1	**7**
1971	43	35	32	56	78	85	98	1	1	1	1	1	1	1	**7**
1972	52	39	33	36	79	95	95	1	1	1	1	1	1	1	**7**
1973	16	26	1	0	34	93	99	2	1	5	6	1	1	1	**17**
1974	26	17	6	3	39	86	103	1	2	4	5	1	1	1	**15**
1975	50	43	40	9	51	100	94	1	1	1	4	1	1	1	**10**
1976	32	29	34	57	84	97	82	1	1	1	1	1	1	1	**7**
1977	112	111	112	114	110	115	114	1	1	1	1	1	1	1	**7**
1978	24	66	78	0	0	28	37	1	1	1	6	6	1	1	**17**
1979	14	16	5	13	55	99	94	3	2	4	3	1	1	1	**15**
1980	18	10	26	0	0	34	63	2	3	1	6	6	1	1	**20**
1981	43	29	23	33	66	99	88	1	1	1	1	1	1	1	**7**
1982	0	30	15	0	0	30	35	6	1	2	6	6	1	1	**23**
1983	92	109	109	93	12	4	0	1	1	1	1	3	5	6	**18**
1984	8	6	6	19	46	89	93	4	4	4	2	1	1	1	**17**
1985	50	25	13	37	75	93	93	1	1	3	1	1	1	1	**9**
1986	24	2	11	0	18	73	97	1	5	3	6	2	1	1	**19**
1987	65	46	25	37	73	103	96	1	1	1	1	1	1	1	**7**
1988	49	37	29	49	78	93	90	1	1	1	1	1	1	1	**7**
1989	60	39	24	36	74	98	92	1	1	1	1	1	1	1	**7**
1990	59	44	32	51	68	97	93	1	1	1	1	1	1	1	**7**
1991	87	75	68	64	70	96	90	1	1	1	1	1	1	1	**7**
1992	86	83	82	96	106	111	110	1	1	1	1	1	1	1	**7**
1993	20	18	0	0	5	54	77	1	2	6	6	4	1	1	**21**
1994	56	42	28	48	78	98	92	1	1	1	1	1	1	1	**7**
												73 - year Average:			**12**

YEAR	Change MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	17	-7	17	0	-14	-44	-27	6	4	6	6	3	1	1	**27**	**594**
1923	-14	24	8	-9	-14	-63	7	3	6	6	4	3	1	6	**29**	**203**
1924	-13	3	5	-6	-27	-14	4	3	6	6	4	1	3	6	**29**	**203**
1925	-15	21	18	-10	-23	-16	-8	3	6	6	4	1	2	4	**26**	**182**
1926	-14	41	14	-28	-41	-21	12	3	6	6	1	1	1	6	**24**	**216**
1927	1	-1	9	7	-33	-51	-10	6	5	6	6	1	1	4	**29**	**493**
1928	3	8	3	-32	-45	-12	12	6	6	6	1	1	3	6	**29**	**203**
1929	-4	18	0	-4	-21	-40	11	5	6	6	5	1	1	6	**30**	**210**
1930	-4	15	9	-16	-29	-23	16	5	6	6	2	1	1	6	**27**	**189**
1931	-9	2	6	-8	-26	-16	0	4	6	6	4	1	2	6	**29**	**203**
1932	-12	-7	8	20	-34	-26	-15	3	4	6	6	1	1	3	**24**	**168**
1933	-11	19	17	-11	-17	-43	1	3	6	6	3	2	1	6	**27**	**189**
1934	-8	13	11	-4	-25	-21	9	4	6	6	5	1	1	6	**29**	**203**
1935	-23	33	21	11	-36	-69	10	1	6	6	6	1	1	6	**27**	**351**
1936	-2	6	12	-13	-42	-49	6	5	6	6	3	1	1	6	**28**	**476**
1937	10	6	0	0	-38	-54	-15	6	6	6	6	1	1	3	**29**	**725**
1938	-18	-13	-62	105	4	-44	-12	2	3	1	6	6	1	3	**22**	**352**
1939	-8	18	18	-21	-35	-31	22	4	6	6	1	1	1	6	**25**	**200**
1940	2	-4	13	-8	-41	-46	5	6	5	6	4	1	1	6	**29**	**232**
1941	13	0	-4	7	-7	-42	-21	6	6	5	6	4	1	1	**29**	**754**
1942	4	1	8	14	-21	-46	-32	6	6	6	6	1	1	1	**27**	**378**
1943	20	-2	2	-14	-36	-35	-15	6	5	6	3	1	1	3	**25**	**575**
1944	-17	9	1	-16	-7	-4	-10	2	6	6	2	4	5	4	**29**	**203**
1945	8	-3	6	5	-22	-43	-20	6	5	6	6	1	1	2	**27**	**540**
1946	-4	12	23	-13	-36	-32	2	5	6	6	3	1	1	6	**28**	**224**
1947	-11	15	11	-21	-38	-24	8	3	6	6	1	1	1	6	**24**	**168**
1948	7	26	-5	-10	-58	-3	4	6	6	5	4	1	5	6	**33**	**231**
1949	-13	11	16	-17	-39	-5	12	3	6	6	2	1	5	6	**29**	**203**
1950	-17	10	17	-12	-33	-30	6	2	6	6	3	1	1	6	**25**	**175**
1951	-8	6	-6	-32	-51	0	18	4	6	4	1	1	6	6	**28**	**196**
1952	7	-8	-33	50	-5	-46	-17	6	4	1	6	5	1	2	**25**	**475**
1953	-6	9	-5	-18	-21	-19	3	4	6	5	2	1	2	6	**26**	**182**
1954	-5	10	23	-16	-37	-42	18	5	6	6	2	1	1	6	**27**	**216**
1955	-17	14	11	-8	-33	-23	6	2	6	6	4	1	1	6	**26**	**182**
1956	16	0	-15	15	-10	-42	-19	6	6	3	6	4	1	2	**28**	**700**
1957	4	17	15	1	-36	-55	10	6	6	6	6	1	1	6	**32**	**320**
1958	11	11	0	0	-19	-41	-18	6	6	6	6	2	1	2	**29**	**725**
1959	-8	22	16	-15	-51	-30	5	4	6	6	3	1	1	6	**27**	**243**
1960	-5	17	10	-16	-13	-13	-2	5	6	6	2	3	3	5	**30**	**210**
1961	1	15	13	-12	-41	-19	0	6	6	6	3	1	2	6	**30**	**210**
1962	-9	-2	28	14	-29	-51	-13	4	5	6	6	1	1	3	**26**	**260**
1963	0	18	0	0	-12	-44	-17	6	6	6	6	3	1	2	**30**	**750**
1964	-3	9	8	-10	-43	-32	8	5	6	6	4	1	1	6	**29**	**232**
1965	-2	5	-8	10	-21	-28	-16	5	6	4	6	1	1	2	**25**	**225**
1966	-15	19	19	-14	-44	-20	0	3	6	6	3	1	2	6	**27**	**243**
1967	11	-6	-51	56	6	-37	-17	6	4	1	6	6	1	2	**26**	**520**
1968	-6	11	4	-15	-33	-28	4	4	6	6	3	1	1	6	**27**	**189**
1969	-3	-54	2	107	0	-38	-25	5	1	6	6	6	1	1	**26**	**442**
1970	-6	0	1	-11	-27	-41	1	4	6	6	3	1	1	6	**27**	**189**
1971	-15	8	3	-24	-22	-7	-13	3	6	6	1	1	4	3	**24**	**168**
1972	-8	13	6	-3	-43	-16	0	4	6	6	5	1	2	6	**30**	**210**
1973	0	-10	25	1	-34	-59	-6	6	4	6	6	1	1	4	**28**	**476**
1974	6	9	11	3	-36	-47	-17	6	6	6	6	1	1	2	**28**	**420**
1975	-9	7	3	31	-42	-49	6	4	6	6	6	1	1	6	**30**	**300**
1976	5	3	-5	-23	-27	-13	15	6	6	5	1	1	3	6	**28**	**196**
1977	-37	1	-1	-2	4	-5	1	1	6	5	5	6	5	6	**34**	**238**
1978	-8	-42	-12	78	0	-28	-9	4	1	3	6	6	1	4	**25**	**425**
1979	7	-2	11	-8	-42	-44	5	6	5	6	4	1	1	6	**29**	**435**
1980	-2	8	-16	26	0	-34	-29	5	6	2	6	6	1	1	**27**	**540**
1981	2	14	6	-10	-33	-33	11	6	6	6	4	1	1	6	**30**	**210**
1982	16	-30	15	15	0	-30	-5	6	1	6	6	6	1	5	**31**	**713**
1983	-29	-17	0	16	81	8	4	1	2	6	6	6	6	6	**33**	**594**
1984	8	2	0	-13	-27	-43	-4	6	6	6	3	1	1	5	**28**	**476**
1985	-7	25	12	-24	-38	-18	0	4	6	6	1	1	2	6	**26**	**234**
1986	2	22	-9	11	-18	-55	-24	6	6	4	6	2	1	1	**26**	**494**
1987	15	19	21	-12	-36	-30	7	6	6	6	3	1	1	6	**29**	**203**
1988	11	12	8	-20	-29	-15	3	6	6	6	2	1	3	6	**30**	**210**
1989	4	21	15	-12	-38	-24	6	6	6	6	3	1	1	6	**29**	**203**
1990	7	15	12	-19	-17	-29	4	6	6	6	2	2	1	6	**29**	**203**
1991	-4	12	7	4	-6	-26	6	5	6	6	6	4	1	6	**34**	**238**
1992	-9	3	1	-14	-10	-5	1	4	6	6	3	4	5	6	**34**	**238**
1993	13	2	18	0	-5	-49	-23	6	6	6	6	5	1	1	**31**	**651**
1994	12	14	14	-20	-30	-20	6	6	6	6	2	1	2	6	**29**	**203**
												73 - year Average:			**28**	**329.2**
													1929 - '34 Average:			**193.7**

STUDY: 1995C06F-SWRCB-506 DWRSIM: recirc818-f, 17 Jun 97
CP # 12, SWP SAN LUIS RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-506/12/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 544'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	419	441	475	520	539	544	543	539	524	477	432	442	0	1	5	20	67	112	102	6	5	4	1	1	1	1	**19**	5	-1	-4	-15	-47	-45	10	6	5	5	3	1	1	6	**27**	**513**
1923	473	497	502	517	527	534	529	507	473	448	418	405	10	15	37	71	96	126	139	3	2	1	1	1	1	1	**10**	7	-5	-22	-34	-25	-30	-13	6	5	1	1	1	1	3	**18**	**180**
1924	420	433	461	508	528	528	520	497	464	426	389	384	16	24	47	80	118	155	160	2	1	1	1	1	1	1	**8**	0	-8	-23	-33	-38	-37	-5	6	4	1	1	1	1	5	**19**	**152**
1925	385	395	439	470	517	528	521	495	453	409	351	334	16	23	49	91	135	193	210	2	1	1	1	1	1	1	**8**	11	-7	-26	-42	-44	-58	-17	6	4	1	1	1	1	2	**16**	**128**
1926	374	390	407	463	505	516	511	487	451	438	385	371	28	33	57	93	106	159	173	1	1	1	1	1	1	1	**7**	11	-5	-24	-36	-13	-53	-14	6	5	1	1	3	1	3	**20**	**140**
1927	401	440	477	523	541	544	540	530	499	464	414	423	0	4	14	45	80	130	121	6	5	3	1	1	1	1	**18**	3	-4	-10	-31	-35	-50	9	6	5	4	1	1	1	6	**24**	**432**
1928	457	488	500	515	527	533	527	506	458	437	415	402	11	17	38	86	107	129	142	3	2	1	1	1	1	1	**10**	6	-6	-21	-48	-21	-22	-13	6	4	1	1	1	1	3	**17**	**170**
1929	414	440	469	517	532	541	532	518	495	467	436	433	3	12	26	49	77	108	111	5	3	1	1	1	1	1	**13**	9	-9	-14	-23	-28	-31	-3	6	4	3	1	1	1	5	**21**	**273**
1930	433	438	482	531	542	544	526	495	465	456	437	414	0	18	49	79	88	107	130	6	2	1	1	1	1	1	**13**	2	-18	-31	-30	-9	-19	-23	6	2	1	1	4	2	1	**17**	**221**
1931	418	423	424	467	481	485	475	462	452	422	370	366	59	69	82	92	122	174	178	1	1	1	1	1	1	1	**7**	4	-10	-13	-10	-30	-52	-4	6	4	3	4	1	1	5	**24**	**168**
1932	377	376	439	498	526	526	518	499	479	472	441	426	18	26	45	65	72	103	118	2	1	1	1	1	1	1	**8**	0	-8	-19	-20	-7	-31	-15	6	4	2	2	4	1	3	**22**	**176**
1933	442	449	449	493	513	521	518	506	479	444	399	398	23	26	38	65	100	145	146	1	1	1	1	1	1	1	**7**	8	-3	-12	-27	-35	-45	-1	6	5	3	1	1	1	5	**22**	**154**
1934	412	412	457	509	519	519	507	484	458	433	403	391	25	37	60	86	111	141	153	1	1	1	1	1	1	1	**7**	0	-12	-23	-26	-25	-30	-12	6	3	1	1	1	1	3	**16**	**112**
1935	389	410	429	489	497	528	530	507	472	429	360	356	16	14	37	72	115	184	188	2	3	1	1	1	1	1	**10**	31	2	-23	-35	-43	-69	-4	6	6	1	1	1	1	5	**21**	**210**
1936	395	416	435	489	532	543	543	526	493	458	416	410	1	1	18	51	86	128	134	5	5	2	1	1	1	1	**16**	11	0	-17	-33	-35	-42	-6	6	6	2	1	1	1	4	**21**	**336**
1937	429	442	467	516	535	543	544	540	511	462	412	405	1	0	4	33	82	132	139	5	6	5	1	1	1	1	**20**	8	1	-4	-29	-49	-50	-7	6	6	5	1	1	1	4	**24**	**480**
1938	437	470	499	515	530	540	544	544	537	504	471	486	4	0	0	7	40	73	58	5	6	6	4	1	1	1	**24**	10	4	0	-7	-33	-33	15	6	6	6	4	1	1	6	**30**	**720**
1939	513	522	526	539	544	544	526	495	463	450	434	414	0	18	49	81	94	110	130	6	2	1	1	1	1	1	**13**	0	-18	-31	-32	-13	-16	-20	6	2	1	1	3	2	2	**17**	**221**
1940	419	416	409	475	516	523	523	500	463	435	354	353	21	21	44	81	109	190	191	1	1	1	1	1	1	1	**7**	7	0	-23	-37	-28	-81	-1	6	6	1	1	1	1	5	**21**	**147**
1941	392	425	463	515	538	542	539	536	521	472	431	450	2	5	8	23	72	113	94	5	4	4	1	1	1	1	**17**	4	-3	-3	-15	-49	-41	19	6	5	5	3	1	1	6	**27**	**459**
1942	482	495	500	516	528	532	528	520	511	464	423	440	12	16	24	33	80	121	104	3	2	1	1	1	1	1	**10**	4	-4	-8	-9	-47	-41	17	6	5	4	4	1	1	6	**27**	**270**
1943	472	487	492	507	519	531	533	537	508	464	415	422	13	11	7	36	80	129	122	3	3	4	1	1	1	1	**14**	12	2	4	-29	-44	-49	7	6	6	6	1	1	1	6	**27**	**378**
1944	455	486	501	516	530	537	518	487	453	439	421	411	7	26	57	91	105	123	133	4	1	1	1	1	1	1	**10**	7	-19	-31	-34	-14	-18	-10	6	2	1	1	3	2	4	**19**	**190**
1945	417	454	490	517	533	539	530	504	467	448	409	402	5	14	40	77	96	135	142	4	3	1	1	1	1	1	**12**	6	-9	-26	-37	-19	-39	-7	6	4	1	1	2	1	4	**19**	**228**
1946	439	472	497	512	523	530	517	490	449	428	411	399	14	27	54	95	116	133	145	3	1	1	1	1	1	1	**9**	7	-13	-27	-41	-21	-17	-12	6	3	1	1	1	2	3	**17**	**153**
1947	419	453	486	515	528	536	521	487	452	437	425	404	8	23	57	92	107	119	140	4	1	1	1	1	1	1	**10**	8	-15	-34	-35	-15	-12	-21	6	3	1	1	3	3	1	**18**	**180**
1948	410	422	435	488	503	524	523	501	464	417	342	351	20	21	43	80	127	202	193	1	1	1	1	1	1	1	**7**	21	-1	-22	-37	-47	-75	9	6	5	1	1	1	1	6	**21**	**147**
1949	382	408	438	484	506	537	519	489	447	427	407	394	7	25	55	97	117	137	150	4	1	1	1	1	1	1	**10**	31	-18	-30	-42	-20	-20	-13	6	2	1	1	2	2	3	**17**	**170**
1950	406	420	434	487	524	532	520	491	455	432	413	403	12	24	53	89	112	131	141	3	1	1	1	1	1	1	**9**	8	-12	-29	-36	-23	-19	-10	6	3	1	1	1	2	4	**18**	**162**
1951	426	457	493	523	534	539	526	506	464	435	411	406	5	18	38	80	109	133	138	4	2	1	1	1	1	1	**11**	5	-13	-20	-42	-29	-24	-5	6	3	2	1	1	1	5	**19**	**209**
1952	432	461	491	520	533	538	542	544	536	510	492	499	6	2	0	8	34	52	45	4	5	6	4	1	1	1	**22**	5	4	2	-8	-26	-18	7	6	6	6	4	1	2	6	**31**	**682**
1953	506	515	519	532	542	544	529	515	493	469	430	447	0	15	29	51	75	114	97	6	2	1	1	1	1	1	**13**	2	-15	-14	-22	-24	-39	17	6	3	3	1	1	1	6	**21**	**273**
1954	478	494	501	516	527	533	526	508	460	436	415	403	11	18	36	84	108	129	141	3	2	1	1	1	1	1	**10**	6	-7	-18	-48	-24	-21	-12	6	4	2	1	1	1	3	**18**	**180**
1955	435	465	494	518	530	537	520	494	467	461	425	418	7	24	50	77	83	119	126	4	1	1	1	1	1	1	**10**	7	-17	-26	-27	-6	-36	-7	6	2	1	1	4	1	4	**19**	**190**
1956	431	453	495	528	542	544	538	528	506	475	434	444	0	6	16	38	69	110	100	6	4	2	1	1	1	1	**16**	2	-6	-10	-22	-31	-41	10	6	4	4	1	1	1	6	**23**	**368**
1957	470	495	500	514	527	533	523	500	466	446	430	420	11	21	44	78	98	114	124	3	1	1	1	1	1	1	**9**	6	-10	-23	-34	-20	-16	-10	6	4	1	1	2	2	4	**20**	**180**
1958	452	481	506	522	534	537	538	538	530	494	474	488	7	6	6	14	50	70	56	4	4	4	3	1	1	1	**18**	3	1	0	-8	-36	-20	14	6	6	6	4	1	2	6	**31**	**558**
1959	496	505	509	523	534	541	521	488	453	438	426	421	3	23	56	91	106	118	123	5	1	1	1	1	1	1	**11**	7	-20	-33	-35	-15	-12	-5	6	2	1	1	3	3	5	**21**	**231**
1960	432	446	457	504	539	544	525	491	458	437	380	358	0	19	53	86	107	164	186	6	2	1	1	1	1	1	**13**	5	-19	-34	-33	-21	-57	-22	6	2	1	1	1	1	1	**13**	**169**
1961	376	414	452	501	534	544	523	487	457	445	430	407	0	21	57	87	99	114	137	6	1	1	1	1	1	1	**12**	10	-21	-36	-30	-12	-15	-23	6	1	1	1	3	3	1	**16**	**192**
1962	412	419	456	492	530	535	517	485	433	402	326	336	9	27	59	111	142	218	208	4	1	1	1	1	1	1	**10**	5	-18	-32	-52	-31	-76	10	6	2	1	1	1	1	6	**18**	**180**
1963	376	411	443	489	522	529	528	520	496	465	431	445	15	16	24	48	79	113	99	2	2	1	1	1	1	1	**9**	7	-1	-8	-24	-31	-34	14	6	5	4	1	1	1	6	**24**	**216**
1964	475	503	515	531	541	544	518	482	437	413	391	395	0	26	62	107	131	153	149	6	1	1	1	1	1	1	**12**	3	-26	-36	-45	-24	-22	4	6	1	1	1	1	1	6	**17**	**204**
1965	401	431	466	516	531	538	539	525	492	464	419	428	6	5	19	52	80	125	116	4	4	2	1	1	1	1	**14**	7	1	-14	-33	-28	-45	9	6	6	3	1	1	1	6	**24**	**336**
1966	458	487	497	512	523	529	512	481	435	413	397	387	15	32	63	109	131	147	157	2	1	1	1	1	1	1	**8**	6	-17	-31	-46	-22	-16	-10	6	2	1	1	1	2	4	**17**	**136**
1967	401	437	476	515	528	534	538	541	534	522	502	505	10	6	3	10	22	42	39	3	4	5	3	1	1	1	**18**	6	4	3	-7	-12	-20	3	6	6	6	4	3	2	6	**33**	**594**
1968	512	523	527	540	544	544	529	496	458	440	423	417	0	15	48	86	104	121	127	6	2	1	1	1	1	1	**13**	0	-15	-33	-38	-18	-17	-6	6	3	1	1	2	2	4	**19**	**247**
1969	432	462	495	523	536	544	544	544	537	517	489	504	0	0	0	7	27	55	40	6	6	6	4	1	1	1	**25**	8	0	0	-7	-20	-28	15	6	6	6	4	2	1	6	**31**	**775**
1970	517	526	530	544	544	544	534	511	470	449	414	409	0	10	33	74	95	130	135	6	3	1	1	1	1	1	**14**	0	-10	-23	-41	-21	-35	-5	6	4	1	1	1	1	5	**19**	**266**
1971	431	464	496	514	524	530	520	503	476	455	435	448	14	24	41	68	89	109	96	3	1	1	1	1	1	1	**9**	6	-10	-17	-27	-21	-20	13	6	4	2	1	1	2	6	**22**	**198**
1972	475	502	513	528	540	544	526	493	453	434	419	404	0	18	51	91	110	125	140	6	2	1	1	1	1	1	**13**	4	-18	-33	-40	-19	-15	-15	6	2	1	1	2	3	3	**18**	**234**
1973	431	463	494	523	534	540	534	512	485	452	422	422	4	10	32	59	92	122	122	5	3	1	1	1	1	1	**13**	6	-6	-22	-27	-33	-30	0	6	4	1	1	1	1	6	**20**	**260**
1974	454	483	504	520	531	536	534	522	493	464	438	450	8	10	22	51	80	106	94	4	3	1	1	1	1	1	**12**	5	-2	-12	-29	-29	-26	12	6	5	3	1	1	1	6	**23**	**276**
1975	474	484	488	503	516	521	517	502	477	444	429	440	23	27	42	67	100	115	104	1	1	1	1	1	1	1	**7**	5	-4	-15	-25	-33	-15	11	6	5	3	1	1	3	6	**25**	**175**
1976	467	485	491	506	520	532	514	487	467	465	448	429	12	30	57	77	79	96	115	3	1	1	1	1	1	1	**9**	12	-18	-27	-20	-2	-17	-19	6	2	1	2	5	2	2	**20**	**180**
1977	430	437	439	456	456	456	459	447	428	405	399	413	88	85	97	116	139	145	131	1	1	1	1	1	1	1	**7**	0	3	-12	-19	-23	-6	14	6	6	3	2	1	4	6	**28**	**196**
1978	418	435	485	535	544	544	544	544	526	469	414	433	0	0	0	18	75	130	111	6	6	6	2	1	1	1	**23**	0	0	0	-18	-57	-55	19	6	6	6	2	1	1	6	**28**	**644**
1979	466	489	493	508	521	528	522	504	474	455	409	405	16	22	40	70	89	135	139	2	1	1	1	1	1	1	**8**	7	-6	-18	-30	-19	-46	-4	6	4	2	1	2	1	5	**21**	**168**
1980	439	474	502	519	534	544	544	544	527	493	453	469	0	0	0	17	51	91	75	6	6	6	2	1	1	1	**23**	10	0	0	-17	-34	-40	16	6	6	6	2	1	1	6	**28**	**644**
1981	500	520	526	540	544	544	530	496	459	441	423	411	0	14	48	85	103	121	133	6	3	1	1	1	1	1	**14**	0	-14	-34	-37	-18	-18	-12	6	3	1	1	2	2	3	**18**	**252**
1982	423	458	491	523	536	543	544	544	531	494	462	472	1	0	0	13	50	82	72	5	6	6	3	1	1	1	**23**	7	1	0	-13	-37	-32	10	6	6	6	3	1	1	6	**29**	**667**
1983	496	515	521	535	544	544	544	544	537	527	514	521	0	0	0	7	17	30	23	6	6	6	4	2	1	1	**26**	0	0	0	-7	-10	-13	7	6	6	6	4	4	3	6	**35**	**910**
1984	536	544	544	544	544	544	536	514	479	459	413	421	0	8	30	65	85	131	123	6	4	1	1	1	1	1	**15**	0	-8	-22	-35	-20	-46	8	6	4	1	1	2	1	6	**21**	**315**
1985	456	487	498	513	525	533	515	484	439	420	403	397	11	29	60	105	124	141	147	3	1	1	1	1	1	1	**9**	8	-18	-31	-45	-19	-17	-6	6	2	1	1	2	2	4	**18**	**162**
1986	402	409	447	499	530	544	544	544	532	492	459	468	0	0	0	12	52	85	76	6	6	6	3	1	1	1	**24**	14	0	0	-12	-40	-33	9	6	6	6	3	1	1	6	**29**	**696**
1987	497	508	533	544	544	544	523	488	459	447	425	410	0	21	56	85	97	119	134	6	1	1	1	1	1	1	**12**	0	-21	-35	-29	-12	-22	-15	6	1	1	1	3	1	3	**16**	**192**
1988	420	416	454	504	517	517	506	491	479	460	425	421	27	38	53	65	84	119	123	1	1	1	1	1	1	1	**7**	0	-11	-15	-12	-19	-35	-4	6	3	3	3	2	1	5	**23**	**161**
1989	421	439	462	501	501	532	521	490	453	440	386	395	12	23	54	91	104	158	149	3	1	1	1	1	1	1	**9**	31	-11	-31	-37	-13	-54	9	6	3	1	1	3	1	6	**21**	**189**
1990	409	426	455	499	519	523	507	478	460	448	401	383	21	37	66	84	96	143	161	1	1	1	1	1	1	1	**7**	4	-16	-29	-18	-12	-47	-18	6	2	1	2	3	1	2	**17**	**119**
1991	383	389	389	404	404	468	468	457	444	424	408	410	76	76	87	100	120	136	134	1	1	1	1	1	1	1	**7**	64	0	-11	-13	-20	-16	2	6	6	3	3	2	2	6	**28**	**196**
1992	413	425	439	484	516	539	528	512	489	470	430	422	5	16	32	55	74	114	122	4	2	1	1	1	1	1	**11**	23	-11	-16	-23	-19	-40	-8	6	3	2	1	2	1	4	**19**	**209**
1993	422	428	472	528	540	543	539	533	518	464	411	416	1	5	11	26	80	133	128	5	4	3	1	1	1	1	**16**	3	-4	-6	-15	-54	-53	5	6	5	4	3	1	1	6	**26**	**416**
1994	451	482	491	505	518	528	507	475	450	446	445	432	16	37	69	94	98	99	112	2	1	1	1	1	1	1	**8**	10	-21	-32	-25	-4	-1	-13	6	1	1	1	5	5	3	**22**	**176**

73 - year Average: 13

73 - year Average: 22 **288.9**

1929 - '34 Average: 184.0

Flow Alternative 4

STUDY: 1995C06F-SWRCB-507 DWRSIM: recirc818-f, 17 Jun 97
CP # 4, SHASTA LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-507/4/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 1067'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	989	993	999	1,003	1,019	1,038	1,060	1,067	1,062	1,048	1,031	1,025	29	7	0	5	19	36	42	1	4	6	4	2	1	1	**19**	19	22	7	-5	-14	-17	-6	6	6	6	5	3	2	4	**32**	**608**
1923	1,023	1,017	1,019	1,023	1,020	1,021	1,033	1,029	1,015	997	979	977	46	34	38	52	70	88	90	1	1	1	1	1	1	1	**7**	1	12	-4	-14	-18	-18	-2	6	6	5	3	2	2	5	**29**	**203**
1924	979	979	979	979	987	987	976	962	947	925	907	893	80	91	105	120	142	160	174	1	1	1	1	1	1	1	**7**	0	-11	-14	-15	-22	-18	-14	6	3	3	3	1	2	3	**21**	**147**
1925	898	909	918	928	999	1,014	1,045	1,056	1,050	1,033	1,019	1,016	53	22	11	17	34	48	51	1	1	3	2	1	1	1	**10**	15	31	11	-6	-17	-14	-3	6	6	6	4	2	3	5	**32**	**320**
1926	1,013	1,011	1,008	1,004	1,031	1,032	1,044	1,039	1,019	995	978	971	35	23	28	48	72	89	96	1	1	1	1	1	1	1	**7**	1	12	-5	-20	-24	-17	-7	6	6	5	2	1	2	4	**26**	**182**
1927	970	994	1,017	1,035	1,026	1,052	1,067	1,067	1,058	1,045	1,029	1,023	15	0	0	9	22	38	44	2	6	6	4	1	1	1	**21**	26	15	0	-9	-13	-16	-6	6	6	6	4	3	2	4	**31**	**651**
1928	1,021	1,017	1,020	1,028	1,044	1,046	1,066	1,062	1,048	1,023	1,002	996	21	1	5	19	44	65	71	1	5	4	2	1	1	1	**15**	2	20	-4	-14	-25	-21	-6	6	6	5	3	1	1	4	**26**	**390**
1929	994	994	994	994	1,000	1,002	1,004	998	991	975	957	950	65	63	69	76	92	110	117	1	1	1	1	1	1	1	**7**	2	2	-6	-7	-16	-18	-7	6	6	4	4	2	2	4	**28**	**196**
1930	949	947	978	989	1,006	1,028	1,039	1,039	1,023	1,004	990	988	39	28	28	44	63	77	79	1	1	1	1	1	1	1	**7**	22	11	0	-16	-19	-14	-2	6	6	6	2	2	3	5	**30**	**210**
1931	985	983	980	982	984	990	982	972	964	946	933	921	77	85	95	103	121	134	146	1	1	1	1	1	1	1	**7**	6	-8	-10	-8	-18	-13	-12	6	4	4	4	2	3	3	**26**	**182**
1932	916	915	931	941	949	974	977	985	978	964	949	943	93	90	82	89	103	118	124	1	1	1	1	1	1	1	**7**	25	3	8	-7	-14	-15	-6	6	6	6	4	3	3	4	**32**	**224**
1933	942	939	939	941	943	977	985	988	984	967	953	946	90	82	79	83	100	114	121	1	1	1	1	1	1	1	**7**	34	8	3	-4	-17	-14	-7	6	6	6	5	2	3	4	**32**	**224**
1934	946	944	952	969	988	999	999	993	985	956	932	917	68	68	74	82	111	135	150	1	1	1	1	1	1	1	**7**	11	0	-6	-8	-29	-24	-15	6	6	4	4	1	1	3	**25**	**175**
1935	912	924	928	948	968	990	1,034	1,041	1,033	1,015	1,002	996	77	33	26	34	52	65	71	1	1	1	1	1	1	1	**7**	22	44	7	-8	-18	-13	-6	6	6	6	4	2	3	4	**31**	**217**
1936	993	989	986	1,010	1,032	1,043	1,052	1,050	1,042	1,022	1,002	997	24	15	17	25	45	65	70	1	2	2	1	1	1	1	**9**	11	9	-2	-8	-20	-20	-5	6	6	5	4	2	2	5	**30**	**270**
1937	993	989	985	979	980	1,007	1,036	1,044	1,040	1,020	1,001	994	60	31	23	27	47	66	73	1	1	1	1	1	1	1	**7**	27	29	8	-4	-20	-19	-7	6	6	6	5	2	2	4	**31**	**217**
1938	991	1,013	1,020	1,035	1,030	1,024	1,049	1,067	1,067	1,058	1,045	1,036	43	18	0	0	9	22	31	1	2	6	6	4	1	1	**21**	-6	25	18	0	-9	-13	-9	4	6	6	6	4	3	4	**33**	**693**
1939	1,023	1,017	1,020	1,022	1,024	1,039	1,031	1,024	999	979	951	948	28	36	43	68	88	116	119	1	1	1	1	1	1	1	**7**	15	-8	-7	-25	-20	-28	-3	6	4	4	1	2	1	5	**23**	**161**
1940	944	939	947	995	1,017	1,025	1,059	1,064	1,053	1,033	1,016	1,014	42	8	3	14	34	51	53	1	4	5	3	1	1	1	**16**	8	34	5	-11	-20	-17	-2	6	6	6	3	2	2	5	**30**	**480**
1941	1,013	1,012	1,019	1,020	1,024	1,045	1,064	1,067	1,067	1,058	1,047	1,036	22	3	0	0	9	20	31	1	5	6	6	4	1	1	**24**	21	19	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1942	1,023	1,017	1,020	1,023	1,028	1,042	1,067	1,067	1,067	1,058	1,046	1,036	25	0	0	0	9	21	31	1	6	6	6	4	1	1	**25**	14	25	0	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**875**
1943	1,023	1,017	1,022	1,030	1,042	1,051	1,067	1,067	1,059	1,046	1,031	1,025	16	0	0	8	21	36	42	2	6	6	4	1	1	1	**21**	9	16	0	-8	-13	-15	-6	6	6	6	4	3	3	4	**32**	**672**
1944	1,023	1,017	1,015	1,014	1,023	1,033	1,038	1,038	1,021	997	977	970	34	29	29	46	70	90	97	1	1	1	1	1	1	1	**7**	10	5	0	-17	-24	-20	-7	6	6	6	2	1	2	4	**27**	**189**
1945	972	983	997	1,005	1,039	1,052	1,064	1,067	1,062	1,041	1,023	1,018	15	3	0	5	26	44	49	2	5	6	4	1	1	1	**20**	13	12	3	-5	-21	-18	-5	6	6	6	5	1	2	5	**31**	**620**
1946	1,017	1,017	1,018	1,033	1,039	1,050	1,062	1,064	1,056	1,039	1,023	1,020	17	5	3	11	28	44	47	2	4	5	3	1	1	1	**17**	11	12	2	-8	-17	-16	-3	6	6	6	4	2	2	5	**31**	**527**
1947	1,017	1,017	1,018	1,014	1,021	1,040	1,046	1,037	1,023	1,000	983	977	27	21	30	44	67	84	90	1	1	1	1	1	1	1	**7**	19	6	-9	-14	-23	-17	-6	6	6	4	3	1	2	4	**26**	**182**
1948	982	984	985	1,009	1,007	1,019	1,057	1,067	1,067	1,053	1,038	1,036	48	10	0	0	14	29	31	1	3	6	6	3	1	1	**21**	12	38	10	0	-14	-15	-2	6	6	6	6	3	3	5	**35**	**735**
1949	1,023	1,017	1,016	1,012	1,016	1,050	1,063	1,064	1,050	1,029	1,011	1,007	17	4	3	17	38	56	60	2	5	5	2	1	1	1	**17**	34	13	1	-14	-21	-18	-4	6	6	6	3	1	2	5	**29**	**493**
1950	1,003	999	995	1,003	1,016	1,033	1,046	1,045	1,033	1,011	994	992	34	21	22	34	56	73	75	1	1	1	1	1	1	1	**7**	17	13	-1	-12	-22	-17	-2	6	6	5	3	1	2	5	**28**	**196**
1951	1,005	1,017	1,020	1,033	1,040	1,057	1,064	1,067	1,051	1,030	1,012	1,010	10	3	0	16	37	55	57	3	5	6	2	1	1	1	**19**	17	7	3	-16	-21	-18	-2	6	6	6	2	1	2	5	**28**	**532**
1952	1,008	1,013	1,019	1,032	1,038	1,048	1,058	1,067	1,067	1,058	1,046	1,036	19	9	0	0	9	21	31	2	4	6	6	4	1	1	**24**	10	10	9	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**840**
1953	1,023	1,017	1,021	1,022	1,033	1,051	1,065	1,067	1,067	1,058	1,046	1,036	16	2	0	0	9	21	31	2	5	6	6	4	1	1	**25**	18	14	2	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**875**
1954	1,023	1,017	1,021	1,030	1,035	1,051	1,067	1,064	1,060	1,043	1,031	1,030	16	0	3	7	24	36	37	2	6	5	4	1	1	1	**20**	16	16	-3	-4	-17	-12	-1	6	6	5	5	2	3	5	**32**	**640**
1955	1,023	1,017	1,022	1,024	1,027	1,026	1,040	1,048	1,031	1,008	990	989	41	27	19	36	59	77	78	1	1	2	1	1	1	1	**8**	-1	14	8	-17	-23	-18	-1	5	6	6	2	1	2	5	**27**	**216**
1956	987	990	1,017	1,017	1,019	1,048	1,067	1,067	1,067	1,058	1,047	1,036	19	0	0	0	9	20	31	2	6	6	6	4	1	1	**26**	29	19	0	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**884**
1957	1,023	1,017	1,016	1,017	1,035	1,052	1,058	1,067	1,060	1,043	1,029	1,032	15	9	0	7	24	38	35	2	4	6	4	1	1	1	**19**	17	6	9	-7	-17	-14	3	6	6	6	4	2	3	6	**33**	**627**
1958	1,023	1,017	1,021	1,029	1,067	1,024	1,053	1,067	1,067	1,058	1,047	1,036	43	14	0	0	9	20	31	1	3	6	6	4	1	1	**22**	-43	29	14	0	-9	-11	-11	1	6	6	6	4	3	3	**29**	**638**
1959	1,023	1,017	1,017	1,034	1,039	1,050	1,054	1,054	1,036	1,012	995	999	17	13	13	31	55	72	68	2	3	3	1	1	1	1	**12**	11	4	0	-18	-24	-17	4	6	6	6	2	1	2	6	**29**	**348**
1960	996	994	991	997	1,025	1,052	1,059	1,067	1,050	1,030	1,012	1,010	15	8	0	17	37	55	57	2	4	6	2	1	1	1	**17**	27	7	8	-17	-20	-18	-2	6	6	6	2	2	2	5	**29**	**493**
1961	1,007	1,009	1,021	1,026	1,044	1,057	1,064	1,067	1,049	1,025	1,005	1,004	10	3	0	18	42	62	63	3	5	6	2	1	1	1	**19**	13	7	3	-18	-24	-20	-1	6	6	6	2	1	2	5	**28**	**532**
1962	1,000	1,003	1,014	1,016	1,035	1,050	1,062	1,063	1,051	1,031	1,014	1,011	17	5	4	16	36	53	56	2	4	5	2	1	1	1	**16**	15	12	1	-12	-20	-17	-3	6	6	6	3	2	2	5	**30**	**480**
1963	1,023	1,017	1,021	1,025	1,045	1,055	1,052	1,067	1,063	1,052	1,040	1,036	12	15	0	4	15	27	31	3	2	6	5	2	1	1	**20**	10	-3	15	-4	-11	-12	-4	6	5	6	5	3	3	5	**33**	**660**
1964	1,023	1,017	1,018	1,033	1,034	1,038	1,032	1,027	1,012	991	971	969	29	35	40	55	76	96	98	1	1	1	1	1	1	1	**7**	4	-6	-5	-15	-21	-20	-2	6	4	5	3	1	2	5	**26**	**182**
1965	968	978	1,017	1,022	1,040	1,052	1,065	1,066	1,057	1,042	1,032	1,030	15	2	1	10	25	35	37	2	5	5	3	1	1	1	**18**	12	13	1	-9	-15	-10	-2	6	6	6	4	3	4	5	**34**	**612**
1966	1,023	1,017	1,021	1,037	1,049	1,055	1,067	1,064	1,049	1,030	1,015	1,012	12	0	3	18	37	52	55	3	6	5	2	1	1	1	**19**	6	12	-3	-15	-19	-15	-3	6	6	5	3	2	3	5	**30**	**570**
1967	1,008	1,017	1,021	1,030	1,044	1,048	1,064	1,067	1,067	1,058	1,047	1,036	19	3	0	0	9	20	31	2	5	6	6	4	1	1	**25**	4	16	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1968	1,023	1,017	1,019	1,025	1,034	1,054	1,056	1,058	1,042	1,022	1,015	1,012	13	11	9	25	45	52	55	3	3	4	1	1	1	1	**14**	20	2	2	-16	-20	-7	-3	6	6	6	2	2	4	5	**31**	**434**
1969	1,012	1,013	1,021	1,022	1,027	1,048	1,063	1,067	1,067	1,058	1,047	1,036	19	4	0	0	9	20	31	2	5	6	6	4	1	1	**25**	21	15	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1970	1,023	1,017	1,020	1,017	1,025	1,052	1,055	1,055	1,043	1,025	1,012	1,010	15	12	12	24	42	55	57	2	3	3	1	1	1	1	**12**	27	3	0	-12	-18	-13	-2	6	6	6	3	2	3	5	**31**	**372**
1971	1,010	1,017	1,020	1,028	1,040	1,043	1,063	1,067	1,067	1,058	1,047	1,036	24	4	0	0	9	20	31	1	5	6	6	4	1	1	**24**	3	20	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1972	1,023	1,017	1,022	1,033	1,045	1,056	1,067	1,067	1,051	1,032	1,018	1,019	11	0	0	16	35	49	48	3	6	6	2	1	1	1	**20**	11	11	0	-16	-19	-14	1	6	6	6	2	2	3	6	**31**	**620**
1973	1,020	1,017	1,021	1,030	1,034	1,053	1,065	1,067	1,058	1,044	1,033	1,032	14	2	0	9	23	34	35	3	5	6	4	1	1	1	**21**	19	12	2	-9	-14	-11	-1	6	6	6	4	3	3	5	**33**	**693**
1974	1,023	1,017	1,018	1,017	1,036	1,025	1,058	1,067	1,067	1,058	1,047	1,036	42	9	0	0	9	20	31	1	4	6	6	4	1	1	**23**	-11	33	9	0	-9	-11	-11	3	6	6	6	4	3	3	**31**	**713**
1975	1,023	1,017	1,021	1,024	1,045	1,039	1,061	1,067	1,067	1,058	1,047	1,036	28	6	0	0	9	20	31	1	4	6	6	4	1	1	**23**	-6	22	6	0	-9	-11	-11	4	6	6	6	4	3	3	**32**	**736**
1976	1,023	1,017	1,018	1,017	1,012	1,017	1,024	1,020	996	974	970	972	50	43	47	71	93	97	95	1	1	1	1	1	1	1	**7**	5	7	-4	-24	-22	-4	2	6	6	5	1	1	5	6	**30**	**210**
1977	975	976	976	977	968	968	950	944	923	906	889	885	99	117	123	144	161	178	182	1	1	1	1	1	1	1	**7**	0	-18	-6	-21	-17	-17	-4	6	2	4	1	2	2	5	**22**	**154**
1978	874	873	916	1,019	1,031	1,047	1,067	1,067	1,064	1,056	1,047	1,036	20	0	0	3	11	20	31	1	6	6	5	3	1	1	**23**	16	20	0	-3	-8	-9	-11	6	6	6	5	4	4	3	**34**	**782**
1979	1,023	1,017	1,015	1,018	1,029	1,046	1,053	1,062	1,051	1,034	1,022	1,020	21	14	5	16	33	45	47	1	3	4	2	1	1	1	**13**	17	7	9	-11	-17	-12	-2	6	6	6	3	2	3	5	**31**	**403**
1980	1,020	1,017	1,020	1,029	1,019	1,046	1,059	1,064	1,056	1,045	1,035	1,035	21	8	3	11	22	32	32	1	4	5	3	1	1	1	**16**	27	13	5	-8	-11	-10	0	6	6	6	4	3	4	6	**35**	**560**
1981	1,023	1,017	1,020	1,029	1,042	1,056	1,064	1,062	1,042	1,019	1,003	1,000	11	3	5	25	48	64	67	3	5	4	1	1	1	1	**16**	14	8	-2	-20	-23	-16	-3	6	6	5	2	1	2	5	**27**	**432**
1982	999	1,017	1,018	1,033	1,029	1,046	1,051	1,067	1,067	1,058	1,047	1,036	21	16	0	0	9	20	31	1	2	6	6	4	1	1	**21**	17	5	16	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1983	1,023	1,017	1,020	1,022	1,017	1,045	1,050	1,067	1,067	1,058	1,047	1,036	22	17	0	0	9	20	31	1	2	6	6	4	1	1	**21**	28	5	17	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1984	1,023	1,017	1,018	1,034	1,047	1,056	1,064	1,067	1,060	1,044	1,038	1,036	11	3	0	7	23	29	31	3	5	6	4	1	1	1	**21**	9	8	3	-7	-16	-6	-2	6	6	6	4	2	4	5	**33**	**693**
1985	1,023	1,017	1,022	1,023	1,027	1,034	1,042	1,034	1,013	993	979	980	33	25	33	54	74	88	87	1	1	1	1	1	1	1	**7**	7	8	-8	-21	-20	-14	1	6	6	4	1	2	3	6	**28**	**196**
1986	983	986	994	1,018	1,017	1,029	1,047	1,049	1,037	1,020	1,005	1,008	38	20	18	30	47	62	59	1	1	2	1	1	1	1	**8**	12	18	2	-12	-17	-15	3	6	6	6	3	2	3	6	**32**	**256**
1987	1,008	1,007	1,007	1,008	1,018	1,045	1,045	1,039	1,007	985	957	950	22	22	28	60	82	110	117	1	1	1	1	1	1	1	**7**	27	0	-6	-32	-22	-28	-7	6	6	4	1	1	1	4	**23**	**161**
1988	946	948	979	1,001	1,002	1,005	1,011	1,010	993	962	947	945	62	56	57	74	105	120	122	1	1	1	1	1	1	1	**7**	3	6	-1	-17	-31	-15	-2	6	6	5	2	1	3	5	**28**	**196**
1989	945	958	964	971	978	1,040	1,060	1,056	1,042	1,022	1,011	1,011	27	7	11	25	45	56	56	1	4	3	1	1	1	1	**12**	62	20	-4	-14	-20	-11	0	6	6	5	3	2	3	6	**31**	**372**
1990	1,013	1,011	1,007	1,013	1,013	1,019	1,014	1,020	1,005	985	964	960	48	53	47	62	82	103	107	1	1	1	1	1	1	1	**7**	6	-5	6	-15	-20	-21	-4	6	5	6	3	2	1	5	**28**	**196**
1991	955	953	952	953	948	974	985	985	976	962	948	941	93	82	82	91	105	119	126	1	1	1	1	1	1	1	**7**	26	11	0	-9	-14	-14	-7	6	6	6	4	3	3	4	**32**	**224**
1992	940	939	940	943	982	1,003	1,014	1,006	992	971	957	951	64	53	61	75	96	110	116	1	1	1	1	1	1	1	**7**	21	11	-8	-14	-21	-14	-6	6	6	4	3	1	3	4	**27**	**189**
1993	947	944	959	993	1,025	1,031	1,059	1,067	1,067	1,056	1,048	1,048	36	8	0	0	11	19	19	1	4	6	6	3	2	2	**24**	6	28	8	0	-11	-8	0	6	6	6	6	3	4	6	**37**	**888**
1994	1,043	1,017	1,019	1,020	1,026	1,027	1,027	1,026	999	979	958	955	40	40	41	68	88	109	112	1	1	1	1	1	1	1	**7**	1	0	-1	-27	-20	-21	-3	6	6	5	1	2	1	5	**26**	**182**
																								73 - year Average:			**15**												**73 - year Average:**		**30**	**462.9**
																																								1929 - '34 Average:		**201.8**

STUDY: 1995C06F-SWRCB-507 DWRSIM: recirc818-f, 17 Jun 97
CP # 6, LAKE OROVILLE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-507/6/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 900

Difference from Maximum Reservoir Elevation [DFMRE]

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	DFMRE APR	DFMRE MAY	DFMRE JUN	DFMRE JUL	DFMRE AUG	DFMRE SEP
1922	833	833	835	844	850	858	893	900	900	880	876	877	42	7	0	0	20	24	23
1923	874	874	858	862	859	868	891	897	882	843	812	814	32	9	3	18	57	88	86
1924	805	793	765	770	789	778	765	752	731	711	703	697	122	135	148	169	189	197	203
1925	697	701	708	725	791	819	838	845	830	803	792	789	81	62	55	70	97	108	111
1926	776	777	780	793	836	856	887	874	854	814	802	786	44	13	26	46	86	98	114
1927	767	798	798	826	849	863	890	900	900	865	856	853	37	10	0	0	35	44	47
1928	851	861	862	868	871	849	878	863	843	791	739	732	51	22	37	57	109	161	168
1929	719	714	712	717	731	748	751	753	748	732	723	716	152	149	147	152	168	177	184
1930	708	705	766	794	821	852	874	877	861	823	790	787	48	26	23	39	77	110	113
1931	776	768	760	773	786	801	788	773	748	727	716	710	99	112	127	152	173	184	190
1932	704	694	700	724	746	780	785	809	779	727	711	704	120	115	91	121	173	189	196
1933	695	683	682	694	704	709	712	728	722	707	698	691	191	188	172	178	193	202	209
1934	687	678	681	708	730	759	751	742	720	697	689	681	141	149	158	180	203	211	219
1935	669	674	680	708	732	763	851	861	846	823	813	798	137	49	39	54	77	87	102
1936	790	780	778	826	849	860	886	897	886	847	827	824	40	14	3	14	53	73	76
1937	817	805	801	804	821	845	870	882	860	835	821	816	55	30	18	40	65	79	84
1938	811	825	854	858	849	849	882	900	900	899	896	887	51	18	0	0	1	4	13
1939	874	864	854	845	837	833	822	813	778	714	656	651	67	78	87	122	186	244	249
1940	640	629	632	705	813	849	879	884	871	834	825	816	51	21	16	29	66	75	84
1941	805	806	845	849	849	858	886	900	900	890	886	887	42	14	0	0	10	14	13
1942	874	874	849	849	850	867	882	900	900	886	882	883	33	18	0	0	14	18	17
1943	874	869	861	849	856	859	887	893	892	860	850	851	41	13	7	8	40	50	49
1944	852	854	853	860	857	868	879	895	876	836	800	794	32	21	5	24	64	100	106
1945	789	796	812	825	862	865	880	896	877	837	815	810	35	20	4	23	63	85	90
1946	810	818	849	864	868	868	887	892	871	833	791	788	32	13	8	29	67	109	112
1947	780	786	794	800	825	847	857	852	835	783	729	722	53	43	48	65	117	171	178
1948	725	727	722	758	761	781	841	870	876	844	827	821	119	59	30	24	56	73	79
1949	815	812	812	817	823	843	862	866	845	799	754	749	57	38	34	55	101	146	151
1950	736	736	737	767	815	846	879	898	893	855	828	827	54	21	2	7	45	72	73
1951	831	849	854	853	858	870	886	900	891	850	822	823	30	14	0	9	50	78	77
1952	827	830	849	849	852	862	894	900	900	900	899	887	38	6	0	0	0	1	13
1953	874	874	858	850	867	867	883	900	900	871	869	870	33	17	0	0	29	31	30
1954	873	871	874	858	857	859	883	863	848	801	754	754	41	17	37	52	99	146	146
1955	756	757	766	778	787	800	809	823	797	735	715	711	100	91	77	103	165	185	189
1956	702	699	849	849	849	864	892	900	900	873	870	874	36	8	0	0	27	30	26
1957	869	874	874	871	853	863	863	881	866	828	791	796	37	37	19	34	72	109	104
1958	799	802	822	842	849	849	879	900	900	898	894	887	51	21	0	0	2	6	13
1959	874	874	874	862	852	867	871	874	853	808	758	762	33	29	26	47	92	142	138
1960	755	744	739	753	815	854	854	860	841	801	789	780	46	46	40	59	99	111	120
1961	770	772	781	792	822	839	839	844	825	767	716	712	61	61	56	75	133	184	188
1962	695	690	700	714	778	814	837	836	821	762	734	713	86	63	64	79	138	166	187
1963	788	800	832	855	867	858	876	900	893	857	846	847	42	24	0	7	43	54	53
1964	848	859	862	866	874	874	880	885	869	829	783	758	26	20	15	31	71	117	142
1965	746	746	849	849	863	870	887	881	883	853	847	848	30	13	19	17	47	53	52
1966	852	859	860	864	870	874	894	882	862	822	774	768	26	6	18	38	78	126	132
1967	755	765	803	849	860	853	879	900	900	900	896	887	47	21	0	0	0	4	13
1968	874	874	873	858	861	866	863	867	848	802	765	762	34	37	33	52	98	135	138
1969	764	769	792	849	849	865	895	900	900	895	893	874	35	5	0	0	5	7	26
1970	874	874	850	849	849	874	869	871	858	820	790	792	26	31	29	42	80	110	108
1971	795	820	848	864	874	874	893	900	900	872	854	856	26	7	0	0	28	46	44
1972	861	867	865	869	867	874	884	887	868	829	786	787	26	16	13	32	71	114	113
1973	783	798	824	849	849	860	882	900	879	841	820	817	40	18	0	21	59	80	83
1974	820	849	850	854	864	849	883	900	900	889	889	886	51	17	0	0	11	11	14
1975	874	874	874	874	855	852	881	900	900	878	876	878	48	19	0	0	22	24	22
1976	873	874	874	874	874	874	871	862	840	796	752	752	26	29	38	60	104	148	148
1977	740	729	712	708	693	689	664	653	625	603	595	591	211	236	247	275	297	305	309
1978	581	581	617	744	798	859	878	897	893	875	866	874	41	22	3	7	25	34	26
1979	874	874	874	871	853	863	878	896	865	831	822	820	37	22	4	35	69	78	80
1980	824	828	836	850	849	865	881	893	888	873	866	865	35	19	7	12	27	34	35
1981	864	865	873	860	868	865	875	872	851	807	763	764	35	25	28	49	93	137	136
1982	771	849	849	859	862	859	884	900	900	889	886	887	41	16	0	0	11	14	13
1983	873	862	858	853	849	849	877	900	900	900	899	887	51	23	0	0	0	1	13
1984	874	860	849	869	869	871	885	894	879	842	833	834	29	15	6	21	58	67	66
1985	838	852	862	868	874	871	886	872	850	807	758	746	29	14	28	50	93	142	154
1986	737	733	741	775	849	849	871	875	871	841	831	842	51	29	25	29	59	69	58
1987	844	850	846	847	858	867	855	845	817	757	712	707	33	45	55	83	143	188	193
1988	695	698	738	765	767	768	766	756	733	713	701	698	132	134	144	167	187	199	202
1989	690	709	719	726	727	842	867	857	842	795	778	776	58	33	43	58	105	122	124
1990	787	788	772	785	793	819	797	798	773	726	713	706	81	103	102	127	174	187	194
1991	688	680	662	660	648	702	724	739	722	700	695	693	198	176	161	178	200	205	207
1992	689	684	686	689	720	750	765	756	731	708	696	690	150	135	144	169	192	204	210
1993	682	676	695	762	814	861	894	900	900	881	877	876	39	6	0	0	19	23	24
1994	874	874	874	871	862	874	872	866	845	803	756	751	26	28	34	55	97	144	149

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	Fluctuation MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	1	4	6	6	1	1	1	**20**	8	35	7	0	-20	-4	1	6	6	6	6	2	5	6	**37**	**740**
1923	1	4	5	2	1	1	1	**15**	9	23	6	-15	-39	-31	2	6	6	6	3	1	1	6	**29**	**435**
1924	1	1	1	1	1	1	1	**7**	-11	-13	-13	-21	-20	-8	-6	3	3	3	1	2	4	4	**20**	**140**
1925	1	1	1	1	1	1	1	**7**	28	19	7	-15	-27	-11	-3	6	6	6	3	1	3	5	**30**	**210**
1926	1	3	1	1	1	1	1	**9**	20	31	-13	-20	-40	-12	-16	6	6	3	2	1	3	2	**23**	**207**
1927	1	3	6	6	1	1	1	**19**	14	27	10	0	-35	-9	-3	6	6	6	6	1	4	5	**34**	**646**
1928	1	1	1	1	1	1	1	**7**	-22	29	-15	-20	-52	-52	-7	1	6	3	2	1	1	4	**18**	**126**
1929	1	1	1	1	1	1	1	**7**	17	3	2	-5	-16	-9	-7	6	6	6	5	2	4	4	**33**	**231**
1930	1	1	1	1	1	1	1	**7**	31	22	3	-16	-38	-33	-3	6	6	6	2	1	1	5	**27**	**189**
1931	1	1	1	1	1	1	1	**7**	15	-13	-15	-25	-21	-11	-6	6	3	3	1	1	3	4	**21**	**147**
1932	1	1	1	1	1	1	1	**7**	34	5	24	-30	-52	-16	-7	6	6	6	1	1	2	4	**26**	**182**
1933	1	1	1	1	1	1	1	**7**	5	3	16	-6	-15	-9	-7	6	6	6	4	3	4	4	**33**	**231**
1934	1	1	1	1	1	1	1	**7**	29	-8	-9	-22	-23	-8	-8	6	4	4	1	1	4	4	**24**	**168**
1935	1	1	1	1	1	1	1	**7**	31	88	10	-15	-23	-10	-15	6	6	6	3	1	4	3	**29**	**203**
1936	1	3	5	3	1	1	1	**15**	11	26	11	-11	-39	-20	-3	6	6	6	3	1	2	5	**29**	**435**
1937	1	1	2	1	1	1	1	**8**	24	25	12	-22	-25	-14	-5	6	6	6	1	1	3	5	**28**	**224**
1938	1	2	6	6	5	5	3	**28**	0	33	18	0	-1	-3	-9	6	6	6	6	5	5	4	**38**	**1064**
1939	1	1	1	1	1	1	1	**7**	-4	-11	-9	-35	-64	-58	-5	5	3	4	1	1	1	5	**20**	**140**
1940	1	1	2	1	1	1	1	**8**	36	30	5	-13	-37	-9	-9	6	6	6	3	1	4	4	**30**	**240**
1941	1	3	6	6	3	3	3	**25**	9	28	14	0	-10	-4	1	6	6	6	6	4	5	6	**39**	**975**
1942	1	2	6	6	3	2	2	**22**	17	15	18	0	-14	-4	1	6	6	6	6	3	5	6	**38**	**836**
1943	1	3	4	4	1	1	1	**15**	3	28	6	-1	-32	-10	1	6	6	6	5	1	4	6	**34**	**510**
1944	1	1	4	1	1	1	1	**10**	11	11	16	-19	-40	-36	-6	6	6	6	2	1	1	4	**26**	**260**
1945	1	1	5	1	1	1	1	**11**	3	15	16	-19	-40	-22	-5	6	6	6	2	1	1	5	**27**	**297**
1946	1	3	4	1	1	1	1	**12**	0	19	5	-21	-38	-42	-3	6	6	6	1	1	1	5	**26**	**312**
1947	1	1	1	1	1	1	1	**7**	22	10	-5	-17	-52	-54	-7	6	6	5	2	1	1	4	**25**	**175**
1948	1	1	1	1	1	1	1	**7**	20	60	29	6	-32	-17	-6	6	6	6	6	1	2	4	**31**	**217**
1949	1	1	1	1	1	1	1	**7**	20	19	4	-21	-46	-45	-5	6	6	6	1	1	1	5	**26**	**182**
1950	1	1	5	4	1	1	1	**14**	31	33	19	-5	-38	-27	-1	6	6	6	5	1	1	5	**30**	**420**
1951	1	3	6	4	1	1	1	**17**	12	16	14	-9	-41	-28	1	6	6	6	4	1	1	6	**30**	**510**
1952	1	4	6	6	6	5	3	**31**	10	32	6	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1178**
1953	1	2	6	6	1	1	1	**18**	0	16	17	0	-29	-2	1	6	6	6	6	1	5	6	**36**	**648**
1954	1	2	1	1	1	1	1	**8**	2	24	-20	-15	-47	-47	0	6	6	2	3	1	1	6	**25**	**200**
1955	1	1	1	1	1	1	1	**7**	13	9	14	-26	-62	-20	-4	6	6	6	1	1	2	5	**27**	**189**
1956	1	4	6	6	1	1	1	**20**	15	28	8	0	-27	-3	4	6	6	6	6	1	5	6	**36**	**720**
1957	1	1	2	1	1	1	1	**8**	10	0	18	-15	-38	-37	5	6	6	6	3	1	1	6	**29**	**232**
1958	1	1	6	6	5	4	3	**26**	0	30	21	0	-2	-4	-7	6	6	6	6	5	5	4	**38**	**988**
1959	1	1	1	1	1	1	1	**7**	15	4	3	-21	-45	-50	4	6	6	6	1	1	1	6	**27**	**189**
1960	1	1	1	1	1	1	1	**7**	39	0	6	-19	-40	-12	-9	6	6	6	2	1	3	4	**28**	**196**
1961	1	1	1	1	1	1	1	**7**	17	0	5	-19	-58	-51	-4	6	6	6	2	1	1	5	**27**	**189**
1962	1	1	1	1	1	1	1	**7**	36	23	-1	-15	-59	-28	-21	6	6	5	3	1	1	1	**23**	**161**
1963	1	1	6	4	1	1	1	**15**	-9	18	24	-7	-36	-11	1	4	6	6	4	1	3	6	**30**	**450**
1964	1	1	2	1	1	1	1	**8**	0	6	5	-16	-40	-46	-25	6	6	6	2	1	1	1	**23**	**184**
1965	1	3	2	2	1	1	1	**11**	7	17	-6	2	-30	-6	1	6	6	4	6	1	4	6	**33**	**363**
1966	1	4	2	1	1	1	1	**11**	4	20	-12	-20	-40	-48	-6	6	6	3	2	1	1	4	**23**	**253**
1967	1	1	6	6	6	5	3	**28**	-7	26	21	0	0	-4	-9	4	6	6	6	6	5	4	**37**	**1036**
1968	1	1	1	1	1	1	1	**7**	5	-3	4	-19	-46	-37	-3	6	5	6	2	1	1	5	**26**	**182**
1969	1	4	6	6	4	4	1	**26**	16	30	5	0	-5	-2	-19	6	6	6	6	5	5	2	**36**	**936**
1970	1	1	1	1	1	1	1	**7**	25	-5	2	-13	-38	-30	2	6	5	6	3	1	1	6	**28**	**196**
1971	1	4	6	6	1	1	1	**20**	0	19	7	0	-28	-18	2	6	6	6	6	1	2	6	**33**	**660**
1972	1	2	3	1	1	1	1	**10**	7	10	3	-19	-39	-43	1	6	6	6	2	1	1	6	**28**	**280**
1973	1	2	6	1	1	1	1	**13**	11	22	18	-21	-38	-21	-3	6	6	6	1	1	1	5	**26**	**338**
1974	1	2	6	6	3	3	3	**24**	-15	34	17	0	-11	0	-3	3	6	6	6	3	6	5	**35**	**840**
1975	1	2	6	6	1	1	1	**18**	-3	29	19	0	-22	-2	2	5	6	6	6	1	5	6	**35**	**630**
1976	1	1	1	1	1	1	1	**7**	0	-3	-9	-22	-44	-44	0	6	5	4	1	1	1	6	**24**	**168**
1977	1	1	1	1	1	1	1	**7**	-4	-25	-11	-28	-22	-8	-4	5	1	3	1	1	4	5	**20**	**140**
1978	1	1	5	4	1	1	1	**14**	61	19	19	-4	-18	-9	8	6	6	6	5	2	4	6	**35**	**490**
1979	1	1	5	1	1	1	1	**11**	10	15	18	-31	-34	-9	-2	6	6	6	1	1	4	5	**29**	**319**
1980	1	2	4	3	1	1	1	**13**	16	16	12	-5	-15	-7	-1	6	6	6	5	3	4	5	**35**	**455**
1981	1	1	1	1	1	1	1	**7**	-3	10	-3	-21	-44	-44	1	5	6	5	1	1	1	6	**25**	**175**
1982	1	2	6	6	3	3	3	**24**	-3	25	16	0	-11	-3	1	5	6	6	6	3	5	6	**37**	**888**
1983	1	1	6	6	6	5	3	**28**	0	28	23	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1064**
1984	1	2	4	1	1	1	1	**11**	2	14	9	-15	-37	-9	1	6	6	6	3	1	4	6	**32**	**352**
1985	1	3	1	1	1	1	1	**9**	-3	15	-14	-22	-43	-49	-12	5	6	3	1	1	1	3	**20**	**180**
1986	1	1	1	1	1	1	1	**7**	0	22	4	-4	-30	-10	11	6	6	6	5	1	4	6	**34**	**238**
1987	1	1	1	1	1	1	1	**7**	9	-12	-10	-28	-60	-45	-5	6	3	4	1	1	1	5	**21**	**147**
1988	1	1	1	1	1	1	1	**7**	1	-2	-10	-23	-20	-12	-3	6	5	4	1	2	3	5	**26**	**182**
1989	1	1	1	1	1	1	1	**7**	115	25	-10	-15	-47	-17	-2	6	6	4	3	1	2	5	**27**	**189**
1990	1	1	1	1	1	1	1	**7**	26	-22	1	-25	-47	-13	-7	6	1	6	1	1	3	4	**22**	**154**
1991	1	1	1	1	1	1	1	**7**	54	22	15	-17	-22	-5	-2	6	6	6	2	1	5	5	**31**	**217**
1992	1	1	1	1	1	1	1	**7**	30	15	-9	-25	-23	-12	-6	6	6	4	1	1	3	4	**25**	**175**
1993	1	4	6	6	2	1	1	**21**	47	33	6	0	-19	-4	-1	6	6	6	6	2	5	5	**36**	**756**
1994	1	1	1	1	1	1	1	**7**	12	-2	-6	-21	-42	-47	-5	6	5	4	1	1	1	5	**23**	**161**
				73 - year Average:				**12**												**73 - year Average:**			**29**	**388.2**
																					1929 - '34 Average:			**191.3**

STUDY: 1995C06F-SWRCB-507 DWRSIM: recirc818-f, 17 Jun 97
CP # 8, FOLSOM LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-507/8/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 466

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	414	409	414	414	424	428	443	466	466	463	449	434	38	23	0	0	3	17	32	1	1	6	6	5	2	1	22	4	15	23	0	-3	-14	-15	6	6	6	6	5	3	3	35	770
1923	425	423	424	424	419	420	449	466	452	435	429	426	46	17	0	14	31	37	40	1	2	6	3	1	1	1	15	1	29	17	-14	-17	-6	-3	6	6	6	3	2	4	5	32	480
1924	421	412	404	392	390	373	375	371	334	334	337	334	93	91	95	132	132	129	132	1	1	1	1	1	1	1	7	-17	2	-4	-37	0	3	-3	2	6	5	1	6	6	5	31	217
1925	348	363	379	389	424	437	449	466	454	439	428	422	29	17	0	12	27	38	44	1	2	6	3	1	1	1	15	13	12	17	-12	-15	-11	-6	6	6	6	3	3	3	4	31	465
1926	418	411	406	399	417	418	448	446	423	391	353	363	48	18	20	43	75	113	103	1	2	1	1	1	1	1	8	1	30	-2	-23	-32	-38	10	6	6	5	1	1	1	6	26	208
1927	369	405	424	424	424	437	449	466	461	457	449	434	29	17	0	5	9	17	32	1	2	6	4	4	2	1	20	13	12	17	-5	-4	-8	-15	6	6	6	5	5	4	3	35	700
1928	425	424	424	424	424	437	449	453	442	418	411	411	29	17	13	24	48	55	55	1	2	3	1	1	1	1	10	13	12	4	-11	-24	-7	0	6	6	6	3	1	4	6	32	320
1929	405	399	395	384	382	381	393	398	388	346	356	359	85	73	68	78	120	110	107	1	1	1	1	1	1	1	7	-1	12	5	-10	-42	10	3	5	6	6	4	1	6	6	34	238
1930	335	334	384	406	421	437	443	442	421	394	375	377	29	23	24	45	72	91	89	1	1	1	1	1	1	1	7	16	6	-1	-21	-27	-19	2	6	6	5	1	1	2	6	27	189
1931	374	384	392	402	407	414	410	407	351	334	339	334	52	56	59	115	132	127	132	1	1	1	1	1	1	1	7	7	-4	-3	-56	-17	5	-5	6	5	5	1	2	6	5	30	210
1932	334	334	380	402	424	424	432	450	436	396	368	372	42	34	16	30	70	98	94	1	1	2	1	1	1	1	8	0	8	18	-14	-40	-28	4	6	6	6	3	1	1	6	29	232
1933	346	334	355	366	369	382	359	379	348	334	355	351	84	107	87	118	132	111	115	1	1	1	1	1	1	1	7	13	-23	20	-31	-14	21	-4	6	1	6	1	3	6	5	28	196
1934	337	334	375	402	420	426	419	413	354	333	323	334	40	47	53	112	133	143	132	1	1	1	1	1	1	1	7	6	-7	-6	-59	-21	-10	11	6	4	4	1	1	4	6	26	182
1935	334	361	378	402	415	417	449	454	453	436	423	418	49	17	12	13	30	43	48	1	2	3	3	1	1	1	12	2	32	5	-1	-17	-13	-5	6	6	6	5	2	3	5	33	396
1936	415	409	403	424	424	437	449	461	455	448	442	434	29	17	5	11	18	24	32	1	2	4	3	2	1	1	14	13	12	12	-6	-7	-6	-8	6	6	6	4	4	4	4	34	476
1937	425	417	411	404	424	437	449	466	454	442	435	432	29	17	0	12	24	31	34	1	2	6	3	1	1	1	15	13	12	17	-12	-12	-7	-3	6	6	6	3	3	4	5	33	495
1938	424	422	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	23	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1939	426	420	415	409	402	409	415	418	391	334	334	335	57	51	48	75	132	132	131	1	1	1	1	1	1	1	7	7	6	3	-27	-57	0	1	6	6	6	1	1	6	6	32	224
1940	334	334	334	420	424	437	449	461	447	430	423	424	29	17	5	19	36	43	42	1	2	4	2	1	1	1	12	13	12	12	-14	-17	-7	1	6	6	6	3	2	4	6	33	396
1941	419	415	424	424	424	437	449	466	458	455	449	434	29	17	0	8	11	17	32	1	2	6	4	3	2	1	19	13	12	17	-8	-3	-6	-15	6	6	6	4	5	4	3	34	646
1942	426	422	424	424	424	430	449	466	466	463	449	434	36	17	0	0	3	17	32	1	2	6	6	5	2	1	23	6	19	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1943	425	424	423	422	422	434	449	459	451	447	443	434	32	17	7	15	19	23	32	1	2	4	2	2	1	1	13	12	15	10	-8	-4	-4	-9	6	6	6	4	5	5	4	36	468
1944	425	419	413	405	407	419	420	433	416	396	384	377	47	46	33	50	70	82	89	1	1	1	1	1	1	1	7	12	1	13	-17	-20	-12	-7	6	6	6	2	2	3	4	29	203
1945	370	397	416	424	424	437	449	466	455	444	439	434	29	17	0	11	22	27	32	1	2	6	3	1	1	1	15	13	12	17	-11	-11	-5	-5	6	6	6	3	3	5	5	34	510
1946	427	424	424	424	424	437	449	466	453	440	435	432	29	17	0	13	26	31	34	1	2	6	3	1	1	1	15	13	12	17	-13	-13	-5	-3	6	6	6	3	3	5	5	34	510
1947	424	424	423	414	417	433	442	445	420	394	378	382	33	24	21	46	72	88	84	1	1	1	1	1	1	1	7	16	9	3	-25	-26	-16	4	6	6	6	1	1	2	6	28	196
1948	395	402	392	409	405	401	438	458	455	450	446	434	65	28	8	11	16	20	32	1	1	4	3	2	1	1	13	-4	37	20	-3	-5	-4	-12	5	6	6	5	5	5	3	35	455
1949	425	419	416	406	400	422	443	459	444	426	418	417	44	23	7	22	40	48	49	1	1	4	1	1	1	1	10	22	21	16	-15	-18	-8	-1	6	6	6	3	2	4	5	32	320
1950	411	405	396	422	424	437	449	466	455	444	439	434	29	17	0	11	22	27	32	1	2	6	3	1	1	1	15	13	12	17	-11	-11	-5	-5	6	6	6	3	3	5	5	34	510
1951	428	393	388	388	388	426	449	466	450	436	431	431	40	17	0	16	30	35	35	1	2	6	2	1	1	1	14	38	23	17	-16	-14	-5	0	6	6	6	2	3	5	6	34	476
1952	425	424	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	23	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1953	428	423	424	424	424	430	446	458	464	463	449	434	36	20	8	2	3	17	32	1	1	4	5	5	2	1	19	6	16	12	6	-1	-14	-15	6	6	6	6	5	3	3	35	665
1954	425	423	421	422	424	437	449	452	441	423	418	421	29	17	14	25	43	48	45	1	2	3	1	1	1	1	10	13	12	3	-11	-18	-5	3	6	6	6	3	2	5	6	34	340
1955	415	409	412	419	419	409	420	437	423	402	390	389	57	46	29	43	64	76	77	1	1	1	1	1	1	1	7	-10	11	17	-14	-21	-12	-1	4	6	6	3	1	3	5	28	196
1956	381	379	420	402	406	425	441	466	466	463	449	434	41	25	0	0	3	17	32	1	1	6	6	5	2	1	22	19	16	25	0	-3	-14	-15	6	6	6	6	5	3	3	35	770
1957	428	422	417	412	424	437	433	459	448	436	430	429	29	33	7	18	30	36	37	1	1	4	2	1	1	1	11	13	-4	26	-11	-12	-6	-1	6	5	6	3	3	4	5	32	352
1958	422	416	417	422	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	23	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1959	425	419	412	417	424	425	433	433	411	389	378	387	41	33	33	55	77	88	79	1	1	1	1	1	1	1	7	1	8	0	-22	-22	-11	9	6	6	6	1	1	3	6	29	203
1960	387	383	382	390	424	437	448	446	427	406	395	401	29	18	20	39	60	71	65	1	2	1	1	1	1	1	8	13	11	-2	-19	-21	-11	6	6	6	5	2	1	3	6	29	232
1961	397	395	393	387	392	401	411	423	407	389	379	384	65	55	43	59	77	87	82	1	1	1	1	1	1	1	7	9	10	12	-16	-18	-10	5	6	6	6	2	2	4	6	32	224
1962	385	387	394	395	424	431	448	454	448	428	420	418	35	18	12	18	38	46	48	1	2	3	2	1	1	1	11	7	17	6	-6	-20	-8	-2	6	6	6	4	2	4	5	33	363
1963	441	424	424	424	419	430	449	466	459	454	449	434	36	17	0	7	12	17	32	1	2	6	4	3	2	1	19	11	19	17	-7	-5	-5	-15	6	6	6	4	5	5	3	35	665
1964	427	424	424	424	418	415	426	432	413	382	355	334	51	40	34	53	84	111	132	1	1	1	1	1	1	1	7	-3	11	6	-19	-31	-27	-21	5	6	6	2	1	1	1	22	154
1965	335	367	393	392	395	414	449	464	454	448	445	434	52	17	2	12	18	21	32	1	2	5	3	2	1	1	15	19	35	15	-10	-6	-3	-11	6	6	6	4	4	5	3	34	510
1966	426	424	424	424	422	430	448	447	428	405	395	396	36	18	19	38	61	71	70	1	2	2	1	1	1	1	9	8	18	-1	-19	-23	-10	1	6	6	5	2	1	4	6	30	270
1967	391	395	419	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	23	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1968	427	424	423	424	424	437	439	441	419	396	391	394	29	27	25	47	70	75	72	1	1	1	1	1	1	1	7	13	2	2	-22	-23	-5	3	6	6	6	1	1	5	6	31	217
1969	399	407	419	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	23	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1970	427	424	423	393	396	426	431	440	430	415	414	417	40	35	26	36	51	52	49	1	1	1	1	1	1	1	7	30	5	9	-10	-15	-1	3	6	6	6	4	3	5	6	36	252
1971	411	420	424	424	423	437	447	461	461	459	449	434	29	19	5	5	7	17	32	1	2	4	4	4	2	1	18	14	10	14	0	-2	-10	-15	6	6	6	6	5	4	3	36	648
1972	425	422	424	424	424	437	444	451	433	413	407	407	29	22	15	33	53	59	59	1	1	2	1	1	1	1	8	13	7	7	-18	-20	-6	0	6	6	6	2	2	4	6	32	256
1973	403	408	422	424	424	437	449	466	451	439	432	433	29	17	0	15	27	34	33	1	2	6	2	1	1	1	14	13	12	17	-15	-12	-7	1	6	6	6	3	3	4	6	34	476
1974	427	423	422	409	417	433	449	466	463	463	449	434	33	17	0	3	3	17	32	1	2	6	5	5	2	1	22	16	16	17	-3	0	-14	-15	6	6	6	5	6	3	3	35	770
1975	426	419	417	415	424	437	441	466	466	463	449	434	29	25	0	0	3	17	32	1	1	6	6	5	2	1	22	13	4	25	0	-3	-14	-15	6	6	6	6	5	3	3	35	770
1976	431	423	419	410	402	392	397	401	368	334	340	341	74	69	65	98	132	126	125	1	1	1	1	1	1	1	7	-10	5	4	-33	-34	6	1	4	6	6	1	1	6	6	30	210
1977	335	334	330	325	321	323	333	341	334	319	306	291	143	133	125	132	147	160	175	1	1	1	1	1	1	1	7	2	10	8	-7	-15	-13	-15	6	6	6	4	3	3	3	31	217
1978	287	304	359	424	424	437	449	466	459	455	449	434	29	17	0	7	11	17	32	1	2	6	4	3	2	1	19	13	12	17	-7	-4	-6	-15	6	6	6	4	5	4	3	34	646
1979	423	417	411	418	424	437	447	466	452	437	429	426	29	19	0	14	29	37	40	1	2	6	3	1	1	1	15	13	10	19	-14	-15	-8	-3	6	6	6	3	3	4	5	33	495
1980	423	420	421	405	399	430	449	464	453	453	449	434	36	17	2	13	13	17	32	1	2	5	3	3	2	1	17	31	19	15	-11	0	-4	-15	6	6	6	3	6	5	3	35	595
1981	425	419	415	413	412	422	433	435	411	392	386	387	44	33	31	55	74	80	79	1	1	1	1	1	1	1	7	10	11	2	-24	-19	-6	1	6	6	6	1	2	4	6	31	217
1982	397	420	392	396	388	424	449	466	466	463	449	434	42	17	0	0	3	17	32	1	2	6	6	5	2	1	23	36	25	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1983	438	415	417	418	418	433	449	466	466	463	449	434	33	17	0	0	3	17	32	1	2	6	6	5	2	1	23	15	16	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1984	435	392	388	388	392	424	441	464	454	442	437	434	42	25	2	12	24	29	32	1	1	5	3	1	1	1	13	32	17	23	-10	-12	-5	-3	6	6	6	4	3	5	5	35	455
1985	427	424	424	420	422	428	443	444	420	388	365	372	38	23	22	46	78	101	94	1	1	1	1	1	1	1	7	6	15	1	-24	-32	-23	7	6	6	6	1	1	1	6	27	189
1986	370	389	411	424	396	424	449	464	456	451	447	434	42	17	2	10	15	19	32	1	2	5	3	2	2	1	16	28	25	15	-8	-5	-4	-13	6	6	6	4	5	5	3	35	560
1987	427	420	413	405	404	410	416	418	386	336	324	334	56	50	48	80	130	142	132	1	1	1	1	1	1	1	7	6	6	2	-32	-50	-12	10	6	6	6	1	1	3	6	29	203
1988	334	334	369	396	388	386	394	391	356	332	316	376	80	72	75	110	134	150	90	1	1	1	1	1	1	1	7	-2	8	-3	-35	-24	-16	60	5	6	5	1	1	2	6	26	182
1989	356	377	393	402	397	437	449	452	435	414	409	413	29	17	14	31	52	57	53	1	2	3	1	1	1	1	10	40	12	3	-17	-21	-5	4	6	6	6	2	1	5	6	32	320
1990	409	408	405	405	403	414	422	421	392	338	334	335	52	44	45	74	128	132	131	1	1	1	1	1	1	1	7	11	8	-1	-29	-54	-4	1	6	6	5	1	1	5	6	30	210
1991	334	334	334	332	332	383	407	425	414	409	405	404	83	59	41	52	57	61	62	1	1	1	1	1	1	1	7	51	24	18	-11	-5	-4	-1	6	6	6	3	5	5	5	36	252
1992	397	384	374	356	381	397	409	405	375	334	322	316	69	57	61	91	132	144	150	1	1	1	1	1	1	1	7	16	12	-4	-30	-41	-12	-6	6	6	5	1	1	3	4	26	182
1993	315	314	357	424	427	434	449	466	466	458	449	434	32	17	0	0	8	17	32	1	2	6	6	4	2	1	22	7	15	17	0	-8	-9	-15	6	6	6	6	4	4	3	35	770
1994	423	413	407	395	390	388	396	401	376	334	334	332	78	70	65	90	132	132	134	1	1	1	1	1	1	1	7	-2	8	5	-25	-42	0	-2	5	6	6	1	1	6	5	30	210

73 - year Average: 13

73 - year Average: 32 **429.8**

1929 - '34 Average: 207.8

STUDY: 1995C06F-SWRCB-507 DWRSIM: recirc818-f, 17 Jun 97
CP # 10, NEW MELONES RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-507/10/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 1088'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	939	942	948	953	968	977	974	990	1013	1006	995	986	120	111	114	98	75	82	93	1	1	1	1	1	1	1	**7**	9	-3	16	23	-7	-11	-9	6	5	6	6	4	3	4	**34**	**238**
1923	984	988	997	1005	1011	1011	1008	1013	1013	1005	994	985	77	77	80	75	75	83	94	1	1	1	1	1	1	1	**7**	0	-3	5	0	-8	-11	-9	6	5	6	6	4	3	4	**34**	**238**
1924	985	986	990	994	996	997	991	982	971	961	950	945	92	91	97	106	117	127	138	1	1	1	1	1	1	1	**7**	1	-6	-9	-11	-10	-11	-5	6	4	4	3	4	3	5	**29**	**203**
1925	940	942	946	950	968	979	979	991	995	991	978	971	120	109	109	97	93	97	110	1	1	1	1	1	1	1	**7**	11	0	12	4	-4	-13	-7	6	6	6	6	5	3	4	**36**	**252**
1926	968	969	972	974	985	987	985	972	961	948	935	927	103	101	103	116	127	140	153	1	1	1	1	1	1	1	**7**	2	-2	-13	-11	-13	-13	-8	6	5	3	3	3	3	4	**27**	**189**
1927	925	928	937	944	963	974	981	986	985	977	965	959	125	114	107	102	103	111	123	1	1	1	1	1	1	1	**7**	11	7	5	-1	-8	-12	-6	6	6	6	5	4	3	4	**34**	**238**
1928	960	966	971	975	983	1003	1001	1003	997	986	972	965	105	85	87	85	91	102	116	1	1	1	1	1	1	1	**7**	20	-2	2	-6	-11	-14	-7	6	5	6	4	3	3	4	**31**	**217**
1929	962	964	967	970	973	975	970	967	960	950	940	933	115	113	118	121	128	138	148	1	1	1	1	1	1	1	**7**	2	-5	-3	-7	-10	-10	-7	6	5	5	4	4	4	4	**32**	**224**
1930	929	931	933	937	943	951	949	942	941	931	920	908	145	137	139	146	147	157	168	1	1	1	1	1	1	1	**7**	8	-2	-7	-1	-10	-11	-12	6	5	4	5	4	3	3	**30**	**210**
1931	909	913	917	921	923	925	920	907	890	875	858	848	165	163	168	181	198	213	230	1	1	1	1	1	1	1	**7**	2	-5	-13	-17	-15	-17	-10	6	5	3	2	3	2	4	**25**	**175**
1932	847	850	862	870	893	904	904	924	938	933	923	912	195	184	184	164	150	155	165	1	1	1	1	1	1	1	**7**	11	0	20	14	-5	-10	-11	6	6	6	6	5	4	3	**36**	**252**
1933	913	916	921	924	926	928	919	904	904	885	865	853	162	160	169	184	184	203	223	1	1	1	1	1	1	1	**7**	2	-9	-15	0	-19	-20	-12	6	4	3	6	2	2	3	**26**	**182**
1934	847	851	857	863	872	882	871	851	833	816	791	773	216	206	217	237	255	272	297	1	1	1	1	1	1	1	**7**	10	-11	-20	-18	-17	-25	-18	6	3	2	2	2	1	2	**18**	**126**
1935	757	761	768	782	793	809	827	870	891	879	862	850	295	279	261	218	197	209	226	1	1	1	1	1	1	1	**7**	16	18	43	21	-12	-17	-12	6	6	6	6	3	2	3	**32**	**224**
1936	850	854	859	877	913	927	939	957	964	955	945	937	175	161	149	131	124	133	143	1	1	1	1	1	1	1	**7**	14	12	18	7	-9	-10	-8	6	6	6	6	4	4	4	**36**	**252**
1937	937	940	944	948	961	975	977	1001	1005	997	988	981	127	113	111	87	83	91	100	1	1	1	1	1	1	1	**7**	14	2	24	4	-8	-9	-7	6	6	6	6	4	4	4	**36**	**252**
1938	981	984	996	1005	1024	1045	1053	1080	1088	1084	1075	1070	64	43	35	8	0	4	13	1	1	1	4	6	5	3	**21**	21	8	27	8	-4	-9	-5	6	6	6	6	5	4	5	**38**	**798**
1939	1050	1050	1050	1050	1050	1052	1050	1038	1027	1016	1004	996	38	36	38	50	61	72	84	1	1	1	1	1	1	1	**7**	2	-2	-12	-11	-11	-12	-8	6	5	3	3	3	3	4	**27**	**189**
1940	995	995	997	1009	1024	1040	1048	1059	1058	1049	1038	1030	64	48	40	29	30	39	50	1	1	1	1	1	1	1	**7**	16	8	11	-1	-9	-11	-8	6	6	6	5	4	3	4	**34**	**238**
1941	1029	1031	1036	1043	1050	1055	1052	1066	1072	1066	1056	1050	38	33	36	22	16	22	32	1	1	1	1	2	1	1	**8**	5	-3	14	6	-6	-10	-6	6	5	6	6	4	4	4	**35**	**280**
1942	1048	1050	1050	1050	1050	1055	1055	1067	1081	1078	1068	1062	38	33	33	21	7	10	20	1	1	1	1	4	3	1	**12**	5	0	12	14	-3	-10	-6	6	6	6	6	5	4	4	**37**	**444**
1943	1050	1050	1050	1050	1050	1055	1061	1068	1067	1060	1051	1044	38	33	27	20	21	28	37	1	1	1	1	1	1	1	**7**	5	6	7	-1	-7	-9	-7	6	6	6	5	4	4	4	**35**	**245**
1944	1042	1043	1044	1046	1048	1052	1047	1046	1041	1030	1018	1010	40	36	41	42	47	58	70	1	1	1	1	1	1	1	**7**	4	-5	-1	-5	-11	-12	-8	6	5	5	5	3	3	4	**31**	**217**
1945	1008	1013	1017	1022	1036	1044	1043	1054	1060	1053	1043	1036	52	44	45	34	28	35	45	1	1	1	1	1	1	1	**7**	8	-1	11	6	-7	-10	-7	6	5	6	6	4	4	4	**35**	**245**
1946	1035	1039	1049	1050	1050	1054	1052	1060	1059	1050	1039	1032	38	34	36	28	29	38	49	1	1	1	1	1	1	1	**7**	4	-2	8	-1	-9	-11	-7	6	5	6	5	4	3	4	**33**	**231**
1947	1031	1034	1036	1039	1042	1044	1034	1023	1012	1000	986	977	46	44	54	65	76	88	102	1	1	1	1	1	1	1	**7**	2	-10	-11	-11	-12	-14	-9	6	4	3	3	3	3	4	**26**	**182**
1948	973	975	977	979	980	984	982	985	994	986	976	969	108	104	106	103	94	102	112	1	1	1	1	1	1	1	**7**	4	-2	3	9	-8	-10	-7	6	5	6	6	4	4	4	**35**	**245**
1949	966	969	972	975	978	985	979	981	978	968	956	949	110	103	109	107	110	120	132	1	1	1	1	1	1	1	**7**	7	-6	2	-3	-10	-12	-7	6	4	6	5	4	3	4	**32**	**224**
1950	945	946	948	956	966	975	971	978	987	977	966	958	122	113	117	110	101	111	122	1	1	1	1	1	1	1	**7**	9	-4	7	9	-10	-11	-8	6	5	6	6	4	3	4	**34**	**238**
1951	955	992	1032	1043	1050	1055	1053	1053	1049	1037	1025	1018	38	33	35	35	39	51	63	1	1	1	1	1	1	1	**7**	5	-2	0	-4	-12	-12	-7	6	5	6	5	3	3	4	**32**	**224**
1952	1016	1019	1026	1040	1050	1055	1058	1087	1088	1086	1077	1070	38	33	30	1	0	2	11	1	1	1	5	6	5	3	**22**	5	3	29	1	-2	-9	-7	6	6	6	6	5	4	4	**37**	**814**
1953	1050	1050	1050	1050	1050	1054	1049	1043	1049	1041	1029	1021	38	34	39	45	39	47	59	1	1	1	1	1	1	1	**7**	4	-5	-6	6	-8	-12	-8	6	5	4	6	4	3	4	**32**	**224**
1954	1018	1020	1023	1026	1028	1036	1036	1038	1031	1019	1007	999	60	52	52	50	57	69	81	1	1	1	1	1	1	1	**7**	8	0	2	-7	-12	-12	-8	6	6	6	4	3	3	4	**32**	**224**
1955	996	998	1002	1006	1007	1010	1003	997	996	986	974	966	81	78	85	91	92	102	114	1	1	1	1	1	1	1	**7**	3	-7	-6	-1	-10	-12	-8	6	4	4	5	4	3	4	**30**	**210**
1956	963	966	997	1024	1037	1047	1039	1055	1065	1060	1050	1043	51	41	49	33	23	28	38	1	1	1	1	1	1	1	**7**	10	-8	16	10	-5	-10	-7	6	4	6	6	5	4	4	**35**	**245**
1957	1041	1043	1045	1047	1050	1055	1044	1043	1042	1031	1020	1012	38	33	44	45	46	57	68	1	1	1	1	1	1	1	**7**	5	-11	-1	-1	-11	-11	-8	6	3	5	5	3	3	4	**29**	**203**
1958	1007	1009	1012	1018	1027	1042	1049	1075	1088	1082	1072	1065	61	46	39	13	0	6	16	1	1	1	3	6	4	2	**18**	15	7	26	13	-6	-10	-7	6	6	6	6	4	4	4	**36**	**648**
1959	1050	1050	1050	1050	1050	1053	1046	1030	1019	1008	996	988	38	35	42	58	69	80	92	1	1	1	1	1	1	1	**7**	3	-7	-16	-11	-11	-12	-8	6	4	2	3	3	3	4	**25**	**175**
1960	983	984	987	990	996	1002	999	994	987	975	962	953	92	86	89	94	101	113	126	1	1	1	1	1	1	1	**7**	6	-3	-5	-7	-12	-13	-9	6	5	5	4	3	3	4	**30**	**210**
1961	945	948	952	954	957	960	954	944	933	923	908	898	131	128	134	144	155	165	180	1	1	1	1	1	1	1	**7**	3	-6	-10	-11	-10	-15	-10	6	4	4	3	4	3	4	**28**	**196**
1962	897	900	904	907	923	929	931	929	932	923	906	893	165	159	157	159	156	165	182	1	1	1	1	1	1	1	**7**	6	2	-2	3	-9	-17	-13	6	6	5	6	4	2	3	**32**	**224**
1963	887	892	899	912	933	935	936	959	965	958	946	940	155	153	152	129	123	130	142	1	1	1	1	1	1	1	**7**	2	1	23	6	-7	-12	-6	6	6	6	6	4	3	4	**35**	**245**
1964	940	945	949	955	957	961	952	943	938	926	911	897	131	127	136	145	150	162	177	1	1	1	1	1	1	1	**7**	4	-9	-9	-5	-12	-15	-14	6	4	4	5	3	3	3	**28**	**196**
1965	891	897	937	964	979	989	998	999	1004	998	985	977	109	99	90	89	84	90	103	1	1	1	1	1	1	1	**7**	10	9	1	5	-6	-13	-8	6	6	6	6	4	3	4	**35**	**245**
1966	976	982	988	994	999	1004	996	993	983	971	959	950	89	84	92	95	105	117	129	1	1	1	1	1	1	1	**7**	5	-8	-3	-10	-12	-12	-9	6	4	5	4	3	3	4	**29**	**203**
1967	948	951	963	978	989	1001	1002	1025	1054	1058	1049	1042	99	87	86	63	34	30	39	1	1	1	1	1	1	1	**7**	12	1	23	29	4	-9	-7	6	6	6	6	6	4	4	**38**	**266**
1968	1040	1042	1044	1047	1050	1054	1045	1039	1029	1017	1003	995	38	34	43	49	59	71	85	1	1	1	1	1	1	1	**7**	4	-9	-6	-10	-12	-14	-8	6	4	4	4	3	3	4	**28**	**196**
1969	993	997	999	1029	1049	1055	1066	1088	1088	1084	1074	1066	39	33	22	0	0	4	14	1	1	1	6	6	5	3	**23**	6	11	22	0	-4	-10	-8	6	6	6	6	5	4	4	**37**	**851**
1970	1050	1050	1050	1050	1050	1055	1048	1053	1054	1043	1030	1023	38	33	40	35	34	45	58	1	1	1	1	1	1	1	**7**	5	-7	5	1	-11	-13	-7	6	4	6	6	3	3	4	**32**	**224**
1971	1021	1025	1033	1040	1045	1051	1045	1049	1053	1044	1031	1024	43	37	43	39	35	44	57	1	1	1	1	1	1	1	**7**	6	-6	4	4	-9	-13	-7	6	4	6	6	4	3	4	**33**	**231**
1972	1020	1023	1029	1034	1035	1037	1025	1025	1016	1003	990	981	53	51	63	63	72	85	98	1	1	1	1	1	1	1	**7**	2	-12	0	-9	-13	-13	-9	6	3	6	4	3	3	4	**29**	**203**
1973	977	980	986	999	1014	1025	1025	1037	1038	1026	1014	1007	74	63	63	51	50	62	74	1	1	1	1	1	1	1	**7**	11	0	12	1	-12	-12	-7	6	6	6	6	3	3	4	**34**	**238**
1974	1007	1013	1022	1035	1045	1055	1059	1070	1070	1061	1050	1043	43	33	29	18	18	27	38	1	1	1	2	2	1	1	**9**	10	4	11	0	-9	-11	-7	6	6	6	6	4	3	4	**35**	**315**
1975	1042	1044	1047	1050	1050	1055	1050	1049	1061	1054	1042	1035	38	33	38	39	27	34	46	1	1	1	1	1	1	1	**7**	5	-5	-1	12	-7	-12	-7	6	5	5	6	4	3	4	**33**	**231**
1976	1034	1037	1039	1041	1043	1046	1040	1034	1024	1016	1006	1000	45	42	48	54	64	72	82	1	1	1	1	1	1	1	**7**	3	-6	-6	-10	-8	-10	-6	6	4	4	4	4	4	4	**30**	**210**
1977	1000	1001	1003	1003	1003	1003	997	989	981	969	957	952	85	85	91	99	107	119	131	1	1	1	1	1	1	1	**7**	0	-6	-8	-8	-12	-12	-5	6	4	4	4	3	3	5	**29**	**203**
1978	950	950	954	964	977	995	1002	1017	1025	1019	1009	1004	111	93	86	71	63	69	79	1	1	1	1	1	1	1	**7**	18	7	15	8	-6	-10	-5	6	6	6	6	4	4	5	**37**	**259**
1979	1003	1006	1009	1018	1030	1044	1044	1054	1051	1038	1025	1018	58	44	44	34	37	50	63	1	1	1	1	1	1	1	**7**	14	0	10	-3	-13	-13	-7	6	6	6	5	3	3	4	**33**	**231**
1980	1019	1022	1025	1050	1050	1055	1056	1063	1070	1068	1057	1051	38	33	32	25	18	20	31	1	1	1	1	2	1	1	**8**	5	1	7	7	-2	-11	-6	6	6	6	6	5	3	4	**36**	**288**
1981	1050	1050	1050	1050	1050	1053	1045	1035	1022	1010	998	992	38	35	43	53	66	78	90	1	1	1	1	1	1	1	**7**	3	-8	-10	-13	-12	-12	-6	6	4	4	3	3	3	4	**27**	**189**
1982	989	997	1012	1032	1050	1055	1071	1086	1088	1084	1075	1071	38	33	17	2	0	4	13	1	1	2	5	6	5	3	**23**	5	16	15	2	-4	-9	-4	6	6	6	6	5	4	5	**38**	**874**
1983	1050	1050	1050	1050	1050	1055	1056	1070	1088	1088	1082	1075	38	33	32	18	0	0	6	1	1	1	2	6	6	4	**21**	5	1	14	18	0	-6	-7	6	6	6	6	6	4	4	**38**	**798**
1984	1050	1050	1050	1050	1050	1055	1049	1052	1051	1043	1032	1027	38	33	39	36	37	45	56	1	1	1	1	1	1	1	**7**	5	-6	3	-1	-8	-11	-5	6	4	6	5	4	3	5	**33**	**231**
1985	1026	1031	1036	1039	1042	1046	1036	1030	1019	1007	996	989	46	42	52	58	69	81	92	1	1	1	1	1	1	1	**7**	4	-10	-6	-11	-12	-11	-7	6	4	4	3	3	3	4	**27**	**189**
1986	987	990	994	1003	1050	1055	1056	1061	1065	1057	1048	1043	38	33	32	27	23	31	40	1	1	1	1	1	1	1	**7**	5	1	5	4	-8	-9	-5	6	6	6	6	4	4	5	**37**	**259**
1987	1042	1045	1047	1048	1049	1052	1048	1039	1030	1022	1015	1011	39	36	40	49	58	66	73	1	1	1	1	1	1	1	**7**	3	-4	-9	-9	-8	-7	-4	6	5	4	4	4	4	5	**32**	**224**
1988	1007	1006	1007	1008	1010	1012	1006	997	989	982	974	967	78	76	82	91	99	106	114	1	1	1	1	1	1	1	**7**	2	-6	-9	-8	-7	-8	-7	6	4	4	4	4	4	4	**30**	**210**
1989	967	966	967	968	971	982	978	972	967	956	946	941	117	106	110	116	121	132	142	1	1	1	1	1	1	1	**7**	11	-4	-6	-5	-11	-10	-5	6	5	4	5	3	4	5	**32**	**224**
1990	944	947	951	954	957	962	953	938	927	914	899	890	131	126	135	150	161	174	189	1	1	1	1	1	1	1	**7**	5	-9	-15	-11	-13	-15	-9	6	4	3	3	3	3	4	**26**	**182**
1991	889	890	895	895	895	904	898	892	876	859	842	835	193	184	190	196	212	229	246	1	1	1	1	1	1	1	**7**	9	-6	-6	-16	-17	-17	-7	6	4	4	2	2	2	4	**24**	**168**
1992	836	839	844	847	859	867	859	845	828	814	790	775	229	221	229	243	260	274	298	1	1	1	1	1	1	1	**7**	8	-8	-14	-17	-14	-24	-15	6	4	3	2	3	1	3	**22**	**154**
1993	780	789	800	822	915	959	953	955	966	957	947	943	173	129	135	133	122	131	141	1	1	1	1	1	1	1	**7**	44	-6	2	11	-9	-10	-4	6	4	6	6	4	4	5	**35**	**245**
1994	942	943	946	947	949	954	950	946	938	928	917	909	139	134	138	142	150	160	171	1	1	1	1	1	1	1	**7**	5	-4	-4	-8	-10	-11	-8	6	5	5	4	4	3	4	**31**	**217**
																							73 - year Average:				**8**											**73 - year Average:**			**32**	**271.8**
																																								1929 - '34 Average:			**194.8**

Flow Alternative 4

STUDY: 1995C06F-SWRCB-507 DWRSIM: recirc818-f, 17 Jun 97
CP # 81, DON PEDRO RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-507/81/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 832'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	599	582	579	601	656	690	699	724	782	779	763	752
1923	746	745	748	761	776	784	789	792	792	785	770	760
1924	754	751	746	744	745	743	738	733	725	711	697	689
1925	685	686	687	691	712	731	744	757	758	747	730	718
1926	711	708	703	702	712	719	734	748	745	729	712	701
1927	695	694	699	708	740	756	768	769	789	781	766	756
1928	749	749	750	753	762	781	790	808	808	793	777	768
1929	762	756	752	751	755	757	757	761	761	750	740	733
1930	730	727	724	725	730	738	739	743	743	733	723	716
1931	713	712	711	713	717	716	708	697	684	666	649	640
1932	637	632	644	665	708	726	727	735	755	750	734	722
1933	714	706	699	698	705	709	707	704	724	711	694	684
1934	674	672	669	673	687	695	695	690	686	666	648	637
1935	632	632	633	648	675	692	717	729	760	746	729	716
1936	708	705	700	705	748	766	775	794	812	803	788	777
1937	771	765	761	764	792	800	802	815	832	819	805	795
1938	789	784	800	800	800	800	800	804	831	832	819	808
1939	800	799	799	800	800	800	802	804	799	787	774	766
1940	764	763	761	774	800	800	802	816	816	801	785	775
1941	769	767	769	784	800	800	800	812	832	831	817	808
1942	800	798	800	800	800	800	802	807	831	832	818	808
1943	800	800	800	800	800	800	802	821	832	824	810	799
1944	794	792	788	787	793	800	801	808	808	795	780	770
1945	765	766	769	775	800	800	802	807	831	825	810	799
1946	796	797	800	800	800	800	802	806	806	790	774	763
1947	757	756	759	762	770	775	772	776	770	757	743	736
1948	733	732	731	732	733	734	730	738	765	753	736	725
1949	719	712	707	706	713	725	732	742	742	725	703	690
1950	684	676	668	675	696	709	719	733	733	716	695	682
1951	675	730	780	800	800	800	798	794	794	779	765	754
1952	748	746	752	778	799	800	800	820	832	832	819	808
1953	800	795	793	800	800	800	802	802	811	808	794	784
1954	779	775	772	774	783	795	802	819	819	804	789	779
1955	774	769	768	774	780	782	779	783	783	770	758	750
1956	745	741	791	800	800	800	802	818	832	832	818	808
1957	800	798	793	793	799	800	800	806	827	814	800	791
1958	786	781	779	784	800	800	800	821	832	832	819	808
1959	800	794	789	793	800	800	802	800	794	782	770	763
1960	761	758	755	756	763	769	770	776	776	765	755	749
1961	746	744	744	746	748	747	741	733	726	713	701	694
1962	691	688	686	688	712	733	742	747	773	765	751	741
1963	736	731	728	732	758	770	778	792	817	812	798	790
1964	784	785	786	791	797	799	797	794	794	783	772	765
1965	763	764	795	800	800	800	802	807	827	827	816	807
1966	800	800	800	800	800	800	801	798	791	776	761	752
1967	747	745	755	771	789	800	800	817	832	832	820	808
1968	800	795	791	792	800	800	802	804	802	790	778	770
1969	766	766	769	800	800	800	800	823	832	832	819	808
1970	800	799	800	800	800	800	799	799	799	786	771	762
1971	756	756	763	779	792	800	800	799	805	797	785	776
1972	771	767	770	777	790	800	800	798	795	784	773	766
1973	763	762	764	776	800	800	802	812	812	797	782	772
1974	767	772	783	800	800	800	800	806	828	819	805	796
1975	791	789	786	786	798	800	802	812	832	825	812	803
1976	800	800	799	799	800	799	794	787	777	767	757	751
1977	748	745	742	741	741	737	728	715	702	687	672	663
1978	659	655	658	684	717	749	762	777	814	814	800	795
1979	790	786	782	792	800	800	802	822	823	808	794	784
1980	779	778	777	800	800	800	800	817	832	832	819	808
1981	800	797	794	795	799	800	802	806	805	793	782	774
1982	770	776	795	800	800	800	800	820	832	832	820	808
1983	800	800	800	800	800	800	800	819	832	832	832	808
1984	800	800	800	800	800	800	797	803	803	790	774	764
1985	761	761	767	774	783	790	791	790	786	773	762	756
1986	753	753	757	764	800	800	802	827	832	825	811	802
1987	796	791	786	784	786	788	786	783	779	769	759	752
1988	750	749	749	754	759	761	756	747	740	728	716	709
1989	705	702	702	705	709	722	734	748	748	737	726	720
1990	718	717	717	720	724	727	724	722	719	705	691	684
1991	679	675	671	670	669	678	677	695	706	696	686	679
1992	677	678	677	680	690	695	697	697	697	683	665	654
1993	648	643	642	679	712	743	750	766	797	796	781	771
1994	766	760	755	754	758	761	759	762	761	750	740	734

YEAR	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	142	133	108	50	53	69	80	1	1	1	1	1	1	1	**7**
1923	48	43	40	40	47	62	72	1	1	1	1	1	1	1	**7**
1924	89	94	99	107	121	135	143	1	1	1	1	1	1	1	**7**
1925	101	88	75	74	85	102	114	1	1	1	1	1	1	1	**7**
1926	113	98	84	87	103	120	131	1	1	1	1	1	1	1	**7**
1927	76	64	63	43	51	66	76	1	1	1	1	1	1	1	**7**
1928	51	42	24	24	39	55	64	1	1	1	1	1	1	1	**7**
1929	75	75	71	71	82	92	99	1	1	1	1	1	1	1	**7**
1930	94	93	89	89	99	109	116	1	1	1	1	1	1	1	**7**
1931	116	124	135	148	166	183	192	1	1	1	1	1	1	1	**7**
1932	106	105	97	77	82	98	110	1	1	1	1	1	1	1	**7**
1933	123	125	128	108	121	138	148	1	1	1	1	1	1	1	**7**
1934	137	137	142	146	166	184	195	1	1	1	1	1	1	1	**7**
1935	140	115	103	72	86	103	116	1	1	1	1	1	1	1	**7**
1936	66	57	38	20	29	44	55	1	1	1	1	1	1	1	**7**
1937	32	30	17	0	13	27	37	1	1	2	6	3	1	1	**15**
1938	32	32	28	1	0	13	24	1	1	1	5	6	3	1	**18**
1939	32	30	28	33	45	58	66	1	1	1	1	1	1	1	**7**
1940	32	30	16	16	31	47	57	1	1	2	2	1	1	1	**9**
1941	32	32	20	0	1	15	24	1	1	1	6	5	2	1	**17**
1942	32	30	25	1	0	14	24	1	1	1	5	6	3	1	**18**
1943	32	30	11	0	8	22	33	1	1	3	6	4	1	1	**17**
1944	32	31	24	24	37	52	62	1	1	1	1	1	1	1	**7**
1945	32	30	25	1	7	22	33	1	1	1	5	4	1	1	**14**
1946	32	30	26	26	42	58	69	1	1	1	1	1	1	1	**7**
1947	57	60	56	62	75	89	96	1	1	1	1	1	1	1	**7**
1948	98	102	94	67	79	96	107	1	1	1	1	1	1	1	**7**
1949	107	100	90	90	107	129	142	1	1	1	1	1	1	1	**7**
1950	123	113	99	99	116	137	150	1	1	1	1	1	1	1	**7**
1951	32	34	38	38	53	67	78	1	1	1	1	1	1	1	**7**
1952	32	32	12	0	0	13	24	1	1	3	6	6	3	1	**21**
1953	32	30	30	21	24	38	48	1	1	1	1	1	1	1	**7**
1954	37	30	13	13	28	43	53	1	1	3	3	1	1	1	**11**
1955	50	53	49	49	62	74	82	1	1	1	1	1	1	1	**7**
1956	32	30	14	0	0	14	24	1	1	3	6	6	3	1	**21**
1957	32	32	26	5	18	32	41	1	1	1	4	2	1	1	**11**
1958	32	32	11	0	0	13	24	1	1	3	6	6	3	1	**21**
1959	32	30	32	38	50	62	69	1	1	1	1	1	1	1	**7**
1960	63	62	56	56	67	77	83	1	1	1	1	1	1	1	**7**
1961	85	91	99	106	119	131	138	1	1	1	1	1	1	1	**7**
1962	99	90	85	59	67	81	91	1	1	1	1	1	1	1	**7**
1963	62	54	40	15	20	34	42	1	1	1	2	1	1	1	**8**
1964	33	35	38	38	49	60	67	1	1	1	1	1	1	1	**7**
1965	32	30	25	5	5	16	25	1	1	1	4	4	2	1	**14**
1966	32	31	34	41	56	71	80	1	1	1	1	1	1	1	**7**
1967	32	32	15	0	0	12	24	1	1	2	6	6	3	1	**20**
1968	32	30	28	30	42	54	62	1	1	1	1	1	1	1	**7**
1969	32	32	9	0	0	13	24	1	1	4	6	6	3	1	**22**
1970	32	33	33	33	46	61	70	1	1	1	1	1	1	1	**7**
1971	32	32	33	27	35	47	56	1	1	1	1	1	1	1	**7**
1972	32	32	34	37	48	59	66	1	1	1	1	1	1	1	**7**
1973	32	30	20	20	35	50	60	1	1	1	1	1	1	1	**7**
1974	32	32	26	4	13	27	36	1	1	1	5	3	1	1	**13**
1975	32	30	20	0	7	20	29	1	1	1	6	4	1	1	**15**
1976	33	38	45	55	65	75	81	1	1	1	1	1	1	1	**7**
1977	95	104	117	130	145	160	169	1	1	1	1	1	1	1	**7**
1978	83	70	55	18	18	32	37	1	1	1	2	2	1	1	**9**
1979	32	30	10	9	24	38	48	1	1	3	4	1	1	1	**12**
1980	32	32	15	0	0	13	24	1	1	2	6	6	3	1	**20**
1981	32	30	26	27	39	50	58	1	1	1	1	1	1	1	**7**
1982	32	32	12	0	0	12	24	1	1	3	6	6	3	1	**21**
1983	32	32	13	0	0	0	24	1	1	3	6	6	6	1	**24**
1984	32	35	29	29	42	58	68	1	1	1	1	1	1	1	**7**
1985	42	41	42	46	59	70	76	1	1	1	1	1	1	1	**7**
1986	32	30	5	0	7	21	30	1	1	4	6	4	1	1	**18**
1987	44	46	49	53	63	73	80	1	1	1	1	1	1	1	**7**
1988	71	76	85	92	104	116	123	1	1	1	1	1	1	1	**7**
1989	110	98	84	84	95	106	112	1	1	1	1	1	1	1	**7**
1990	105	108	110	113	127	141	148	1	1	1	1	1	1	1	**7**
1991	154	155	137	126	136	146	153	1	1	1	1	1	1	1	**7**
1992	137	135	135	135	149	167	178	1	1	1	1	1	1	1	**7**
1993	89	82	66	35	36	51	61	1	1	1	1	1	1	1	**7**
1994	71	73	70	71	82	92	98	1	1	1	1	1	1	1	**7**
										73 - year Average:					**10**

YEAR	Change MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	34	9	25	58	-3	-16	-11	6	6	6	6	5	2	3	**34**	**238**
1923	8	5	3	0	-7	-15	-10	6	6	6	6	4	3	4	**35**	**245**
1924	-2	-5	-5	-8	-14	-14	-8	5	5	5	4	3	3	4	**29**	**203**
1925	19	13	13	1	-11	-17	-12	6	6	6	6	3	2	3	**32**	**224**
1926	7	15	14	-3	-16	-17	-11	6	6	6	5	2	2	3	**30**	**210**
1927	16	12	1	20	-8	-15	-10	6	6	6	6	4	3	4	**35**	**245**
1928	19	9	18	0	-15	-16	-9	6	6	6	6	3	2	4	**33**	**231**
1929	2	0	4	0	-11	-10	-7	6	6	6	6	3	4	4	**35**	**245**
1930	8	1	4	0	-10	-10	-7	6	6	6	6	4	4	4	**36**	**252**
1931	-1	-8	-11	-13	-18	-17	-9	5	4	3	3	2	2	4	**23**	**161**
1932	18	1	8	20	-5	-16	-12	6	6	6	6	5	2	3	**34**	**238**
1933	4	-2	-3	20	-13	-17	-10	6	5	5	6	3	2	4	**31**	**217**
1934	8	0	-5	-4	-20	-18	-11	6	6	5	5	2	2	3	**29**	**203**
1935	17	25	12	31	-14	-17	-13	6	6	6	6	3	2	3	**32**	**224**
1936	18	9	19	18	-9	-15	-11	6	6	6	6	4	3	3	**34**	**238**
1937	8	2	13	17	-13	-14	-10	6	6	6	6	3	3	4	**34**	**510**
1938	0	0	4	27	1	-13	-11	6	6	6	6	6	3	3	**36**	**648**
1939	0	2	2	-5	-12	-13	-8	6	6	6	5	3	3	4	**33**	**231**
1940	0	2	14	0	-15	-16	-10	6	6	6	6	3	2	4	**33**	**297**
1941	0	0	12	20	-1	-14	-9	6	6	6	6	5	3	4	**36**	**612**
1942	0	2	5	24	1	-14	-10	6	6	6	6	6	3	4	**37**	**666**
1943	0	2	19	11	-8	-14	-11	6	6	6	6	4	3	3	**34**	**578**
1944	7	1	7	0	-13	-15	-10	6	6	6	6	3	3	4	**34**	**238**
1945	0	2	5	24	-6	-15	-11	6	6	6	6	4	3	3	**34**	**476**
1946	0	2	4	0	-16	-16	-11	6	6	6	6	2	2	3	**31**	**217**
1947	5	-3	4	-6	-13	-14	-7	6	5	6	4	3	3	4	**31**	**217**
1948	1	-4	8	27	-12	-17	-11	6	5	6	6	3	2	3	**31**	**217**
1949	12	7	10	0	-17	-22	-13	6	6	6	6	2	1	3	**30**	**210**
1950	13	10	14	0	-17	-21	-13	6	6	6	6	2	1	3	**30**	**210**
1951	0	-2	-4	0	-15	-14	-11	6	5	5	6	3	3	3	**31**	**217**
1952	1	0	20	12	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1953	0	2	0	9	-3	-14	-10	6	6	6	6	5	3	4	**36**	**252**
1954	12	7	17	0	-15	-15	-10	6	6	6	6	3	3	4	**34**	**374**
1955	2	-3	4	0	-13	-12	-8	6	5	6	6	3	3	4	**33**	**231**
1956	0	2	16	14	0	-14	-10	6	6	6	6	6	3	4	**37**	**777**
1957	1	0	6	21	-13	-14	-9	6	6	6	6	3	3	4	**34**	**374**
1958	0	0	21	11	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1959	0	2	-2	-6	-12	-12	-7	6	6	5	4	3	3	4	**31**	**217**
1960	6	1	6	0	-11	-10	-6	6	6	6	6	3	4	4	**35**	**245**
1961	-1	-6	-8	-7	-13	-12	-7	5	4	4	4	3	3	4	**27**	**189**
1962	21	9	5	26	-8	-14	-10	6	6	6	6	4	3	4	**35**	**245**
1963	12	8	14	25	-5	-14	-8	6	6	6	6	5	3	4	**36**	**288**
1964	2	-2	-3	0	-11	-11	-7	6	5	5	6	3	3	4	**32**	**224**
1965	0	2	5	20	0	-11	-9	6	6	6	6	6	3	4	**37**	**518**
1966	0	1	-3	-7	-15	-15	-9	6	6	5	4	3	3	4	**31**	**217**
1967	11	0	17	15	0	-12	-12	6	6	6	6	6	3	3	**36**	**720**
1968	0	2	2	-2	-12	-12	-8	6	6	6	5	3	3	4	**33**	**231**
1969	0	0	23	9	0	-13	-11	6	6	6	6	6	3	3	**36**	**792**
1970	0	-1	0	0	-13	-15	-9	6	5	6	6	3	3	4	**33**	**231**
1971	8	0	-1	6	-8	-12	-9	6	6	5	6	4	3	4	**34**	**238**
1972	10	0	-2	-3	-11	-11	-7	6	6	5	5	3	3	4	**32**	**224**
1973	0	2	10	0	-15	-15	-10	6	6	6	6	3	3	4	**34**	**238**
1974	0	0	6	22	-9	-14	-9	6	6	6	6	4	3	4	**35**	**455**
1975	2	2	10	20	-7	-13	-9	6	6	6	6	4	3	4	**35**	**525**
1976	-1	-5	-7	-10	-10	-10	-6	5	5	4	4	4	4	4	**30**	**210**
1977	-4	-9	-13	-13	-15	-15	-9	5	4	3	3	3	3	4	**25**	**175**
1978	32	13	15	37	0	-14	-5	6	6	6	6	6	3	5	**38**	**342**
1979	0	2	20	1	-15	-14	-10	6	6	6	6	3	3	4	**34**	**408**
1980	0	0	17	15	0	-13	-11	6	6	6	6	6	3	3	**36**	**720**
1981	1	2	4	-1	-12	-11	-8	6	6	6	5	3	3	4	**33**	**231**
1982	0	0	20	12	0	-12	-12	6	6	6	6	6	3	3	**36**	**756**
1983	0	0	19	13	0	0	-24	6	6	6	6	6	6	1	**37**	**888**
1984	0	-3	6	0	-13	-16	-10	6	5	6	6	3	2	4	**32**	**224**
1985	7	1	-1	-4	-13	-11	-6	6	6	5	5	3	3	4	**32**	**224**
1986	0	2	25	5	-7	-14	-9	6	6	6	6	4	3	4	**35**	**630**
1987	2	-2	-3	-4	-10	-10	-7	6	5	5	5	4	4	4	**33**	**231**
1988	2	-5	-9	-7	-12	-12	-7	6	5	4	4	3	3	4	**29**	**203**
1989	13	12	14	0	-11	-11	-6	6	6	6	6	3	3	4	**34**	**238**
1990	3	-3	-2	-3	-14	-14	-7	6	5	5	5	3	3	4	**31**	**217**
1991	9	-1	18	11	-10	-10	-7	6	5	6	6	4	4	4	**35**	**245**
1992	5	2	0	0	-14	-18	-11	6	6	6	6	3	2	3	**32**	**224**
1993	31	7	16	31	-1	-15	-10	6	6	6	6	5	3	4	**36**	**252**
1994	3	-2	3	-1	-11	-10	-6	6	5	6	5	3	4	4	**33**	**231**
											73 - year Average:				**33**	**340.9**
													1929 - '34 Average:			**219.3**

STUDY: 1995C06F-SWRCB-507 DWRSIM: recirc818-f, 17 Jun 97
CP # 20, LAKE McCLURE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-507/20/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 867'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	680	680	696	712	759	779	789	845	867	860	847	837	88	78	22	0	7	20	30	1	1	1	6	4	1	1	**15**	20	10	56	22	-7	-13	-10	6	6	6	6	4	3	4	**35**	**525**
1923	808	808	808	808	808	813	827	854	854	845	830	820	54	40	13	13	22	37	47	1	1	3	3	1	1	1	**11**	5	14	27	0	-9	-15	-10	6	6	6	6	4	3	4	**35**	**385**
1924	808	808	808	808	808	807	808	806	794	776	762	751	60	59	61	73	91	105	116	1	1	1	1	1	1	1	**7**	-1	1	-2	-12	-18	-14	-11	5	6	5	3	2	3	3	**27**	**189**
1925	751	757	762	767	791	800	819	843	844	831	815	803	67	48	24	23	36	52	64	1	1	1	1	1	1	1	**7**	9	19	24	1	-13	-16	-12	6	6	6	6	3	2	3	**32**	**224**
1926	801	801	802	804	808	814	834	832	832	828	821	813	53	33	35	35	39	46	54	1	1	1	1	1	1	1	**7**	6	20	-2	0	-4	-7	-8	6	6	5	6	5	4	4	**36**	**252**
1927	808	808	808	808	808	815	818	849	860	856	853	840	52	49	18	7	11	14	27	1	1	2	4	3	3	1	**15**	7	3	31	11	-4	-3	-13	6	6	6	6	5	5	3	**37**	**555**
1928	808	808	808	808	808	809	808	824	822	816	812	809	58	59	43	45	51	55	58	1	1	1	1	1	1	1	**7**	1	-1	16	-2	-6	-4	-3	6	5	6	5	4	5	5	**36**	**252**
1929	808	807	807	806	808	810	811	813	813	813	814	807	57	56	54	54	54	53	60	1	1	1	1	1	1	1	**7**	2	1	2	0	0	1	-7	6	6	6	6	6	6	4	**40**	**280**
1930	807	806	805	805	805	801	805	807	807	807	808	806	66	62	60	60	60	59	61	1	1	1	1	1	1	1	**7**	-4	4	2	0	0	1	-2	5	6	6	6	6	6	5	**40**	**280**
1931	804	804	804	805	806	806	804	802	790	771	757	746	61	63	65	77	96	110	121	1	1	1	1	1	1	1	**7**	0	-2	-2	-12	-19	-14	-11	6	5	5	3	2	3	3	**27**	**189**
1932	744	745	766	777	808	817	826	852	867	857	843	832	50	41	15	0	10	24	35	1	1	2	6	3	1	1	**15**	9	9	26	15	-10	-14	-11	6	6	6	6	4	3	3	**34**	**510**
1933	808	807	806	808	808	811	816	825	836	824	810	801	56	51	42	31	43	57	66	1	1	1	1	1	1	1	**7**	3	5	9	11	-12	-14	-9	6	6	6	6	3	3	4	**34**	**238**
1934	800	799	802	808	808	816	823	819	810	794	780	771	51	44	48	57	73	87	96	1	1	1	1	1	1	1	**7**	8	7	-4	-9	-16	-14	-9	6	6	5	4	2	3	4	**30**	**210**
1935	770	774	779	796	806	817	840	859	867	854	839	828	50	27	8	0	13	28	39	1	1	4	6	3	1	1	**17**	11	23	19	8	-13	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1936	808	808	808	808	808	820	840	859	865	853	838	827	47	27	8	2	14	29	40	1	1	4	5	3	1	1	**16**	12	20	19	6	-12	-15	-11	6	6	6	6	3	3	3	**33**	**528**
1937	808	808	808	808	808	820	834	859	867	853	838	827	47	33	8	0	14	29	40	1	1	4	6	3	1	1	**17**	12	14	25	8	-14	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1938	808	808	808	808	808	820	840	859	867	867	855	840	47	27	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1939	808	808	808	808	808	816	831	832	821	803	787	776	51	36	35	46	64	80	91	1	1	1	1	1	1	1	**7**	8	15	1	-11	-18	-16	-11	6	6	6	3	2	2	3	**28**	**196**
1940	776	777	778	804	808	820	837	859	856	840	823	810	47	30	8	11	27	44	57	1	1	4	3	1	1	1	**12**	12	17	22	-3	-16	-17	-13	6	6	6	5	2	2	3	**30**	**360**
1941	807	807	808	808	808	820	834	859	867	864	851	840	47	33	8	0	3	16	27	1	1	4	6	5	2	1	**20**	12	14	25	8	-3	-13	-11	6	6	6	6	5	3	3	**35**	**700**
1942	808	808	808	808	808	820	838	859	867	861	852	840	47	29	8	0	6	15	27	1	1	4	6	4	2	1	**19**	12	18	21	8	-6	-9	-12	6	6	6	6	4	4	3	**35**	**665**
1943	808	808	808	808	808	820	840	859	864	853	838	828	47	27	8	3	14	29	39	1	1	4	5	3	1	1	**16**	12	20	19	5	-11	-15	-10	6	6	6	6	3	3	4	**34**	**544**
1944	808	808	808	808	808	817	815	835	835	822	804	790	50	52	32	32	45	63	77	1	1	1	1	1	1	1	**7**	9	-2	20	0	-13	-18	-14	6	5	6	6	3	2	3	**31**	**217**
1945	788	795	801	805	808	820	833	856	867	856	842	832	47	34	11	0	11	25	35	1	1	3	6	3	1	1	**16**	12	13	23	11	-11	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1946	808	808	808	808	808	818	837	859	858	843	826	813	49	30	8	9	24	41	54	1	1	4	4	1	1	1	**13**	10	19	22	-1	-15	-17	-13	6	6	6	5	3	2	3	**31**	**403**
1947	808	808	808	808	808	815	818	832	825	809	794	784	52	49	35	42	58	73	83	1	1	1	1	1	1	1	**7**	7	3	14	-7	-16	-15	-10	6	6	6	4	2	3	4	**31**	**217**
1948	784	785	786	788	790	789	794	815	833	818	800	786	78	73	52	34	49	67	81	1	1	1	1	1	1	1	**7**	-1	5	21	18	-15	-18	-14	5	6	6	6	3	2	3	**31**	**217**
1949	783	782	783	785	789	797	804	827	826	805	786	770	70	63	40	41	62	81	97	1	1	1	1	1	1	1	**7**	8	7	23	-1	-21	-19	-16	6	6	6	5	1	2	2	**28**	**196**
1950	767	767	767	774	787	791	808	830	830	811	792	777	76	59	37	37	56	75	90	1	1	1	1	1	1	1	**7**	4	17	22	0	-19	-19	-15	6	6	6	6	2	2	3	**31**	**217**
1951	774	808	808	808	808	819	819	819	817	796	774	759	48	48	48	50	71	93	108	1	1	1	1	1	1	1	**7**	11	0	0	-2	-21	-22	-15	6	6	6	5	1	1	3	**28**	**196**
1952	754	756	769	804	808	820	840	859	867	864	852	840	47	27	8	0	3	15	27	1	1	4	6	5	2	1	**20**	12	20	19	8	-3	-12	-12	6	6	6	6	5	3	3	**35**	**700**
1953	808	808	808	808	808	809	809	810	810	796	775	760	58	58	57	57	71	92	107	1	1	1	1	1	1	1	**7**	1	0	1	0	-14	-21	-15	6	6	6	6	3	1	3	**31**	**217**
1954	756	756	757	760	770	784	802	823	814	793	771	755	83	65	44	53	74	96	112	1	1	1	1	1	1	1	**7**	14	18	21	-9	-21	-22	-16	6	6	6	4	1	1	2	**26**	**182**
1955	752	750	754	761	766	766	767	791	791	774	756	744	101	100	76	76	93	111	123	1	1	1	1	1	1	1	**7**	0	1	24	0	-17	-18	-12	6	6	6	6	2	2	3	**31**	**217**
1956	740	740	808	808	808	819	831	859	867	863	851	840	48	36	8	0	4	16	27	1	1	4	6	5	2	1	**20**	11	12	28	8	-4	-12	-11	6	6	6	6	5	3	3	**35**	**700**
1957	808	808	808	808	808	813	813	826	834	817	799	784	54	54	41	33	50	68	83	1	1	1	1	1	1	1	**7**	5	0	13	8	-17	-18	-15	6	6	6	6	2	2	3	**31**	**217**
1958	781	782	786	794	808	820	840	859	867	862	850	840	47	27	8	0	5	17	27	1	1	4	6	4	2	1	**19**	12	20	19	8	-5	-12	-10	6	6	6	6	5	3	4	**36**	**684**
1959	808	808	808	808	808	813	823	826	817	797	780	773	54	44	41	50	70	87	94	1	1	1	1	1	1	1	**7**	5	10	3	-9	-20	-17	-7	6	6	6	4	2	2	4	**30**	**210**
1960	772	771	771	772	784	792	806	819	816	801	787	777	75	61	48	51	66	80	90	1	1	1	1	1	1	1	**7**	8	14	13	-3	-15	-14	-10	6	6	6	5	3	3	4	**33**	**231**
1961	776	776	779	779	782	783	789	793	784	766	752	740	84	78	74	83	101	115	127	1	1	1	1	1	1	1	**7**	1	6	4	-9	-18	-14	-12	6	6	6	4	2	3	3	**30**	**210**
1962	739	739	741	744	784	793	816	831	845	832	815	802	74	51	36	22	35	52	65	1	1	1	1	1	1	1	**7**	9	23	15	14	-13	-17	-13	6	6	6	6	3	2	3	**32**	**224**
1963	801	800	801	808	808	814	823	848	861	852	837	826	53	44	19	6	15	30	41	1	1	2	4	2	1	1	**12**	6	9	25	13	-9	-15	-11	6	6	6	6	4	3	3	**34**	**408**
1964	808	808	808	808	808	808	811	817	815	799	783	774	59	56	50	52	68	84	93	1	1	1	1	1	1	1	**7**	0	3	6	-2	-16	-16	-9	6	6	6	5	2	2	4	**31**	**217**
1965	771	775	808	808	808	815	831	854	867	861	850	840	52	36	13	0	6	17	27	1	1	3	6	4	2	1	**18**	7	16	23	13	-6	-11	-10	6	6	6	6	4	3	4	**35**	**630**
1966	808	808	808	808	808	814	825	835	823	801	780	767	53	42	32	44	66	87	100	1	1	1	1	1	1	1	**7**	6	11	10	-12	-22	-21	-13	6	6	6	3	1	1	3	**26**	**182**
1967	764	766	791	804	808	820	840	859	867	867	856	840	47	27	8	0	0	11	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1968	808	808	808	808	808	812	812	813	803	783	767	755	55	55	54	64	84	100	112	1	1	1	1	1	1	1	**7**	4	0	1	-10	-20	-16	-12	6	6	6	4	2	2	3	**29**	**203**
1969	751	757	765	808	808	820	840	859	867	867	855	840	47	27	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1970	808	808	808	808	808	820	821	821	822	802	782	767	47	46	46	45	65	85	100	1	1	1	1	1	1	1	**7**	12	1	0	1	-20	-20	-15	6	6	6	6	2	2	3	**31**	**217**
1971	765	767	778	788	795	800	800	801	803	786	765	749	67	67	66	64	81	102	118	1	1	1	1	1	1	1	**7**	5	0	1	2	-17	-21	-16	6	6	6	6	2	1	2	**29**	**203**
1972	745	745	755	761	768	781	781	789	788	769	751	742	86	86	78	79	98	116	125	1	1	1	1	1	1	1	**7**	13	0	8	-1	-19	-18	-9	6	6	6	5	2	2	4	**31**	**217**
1973	742	744	752	768	797	813	822	859	862	848	833	823	54	45	8	5	19	34	44	1	1	4	4	2	1	1	**14**	16	9	37	3	-14	-15	-10	6	6	6	6	3	3	4	**34**	**476**
1974	808	808	808	808	808	820	833	859	867	854	839	829	47	34	8	0	13	28	38	1	1	4	6	3	1	1	**17**	12	13	26	8	-13	-15	-10	6	6	6	6	3	3	4	**34**	**578**
1975	808	808	808	808	808	820	823	855	867	856	842	832	47	44	12	0	11	25	35	1	1	3	6	3	1	1	**16**	12	3	32	12	-11	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1976	808	808	808	808	808	809	808	806	795	777	764	755	58	59	61	72	90	103	112	1	1	1	1	1	1	1	**7**	1	-1	-2	-11	-18	-13	-9	6	5	5	3	2	3	4	**28**	**196**
1977	753	751	750	750	750	745	737	726	715	685	655	631	122	130	141	152	182	212	236	1	1	1	1	1	1	1	**7**	-5	-8	-11	-11	-30	-30	-24	5	4	3	3	1	1	1	**18**	**126**
1978	626	626	642	693	741	782	815	859	867	867	857	840	85	52	8	0	0	10	27	1	1	4	6	6	3	1	**22**	41	33	44	8	0	-10	-17	6	6	6	6	6	4	2	**36**	**792**
1979	808	808	808	808	808	820	828	859	859	844	829	818	47	39	8	8	23	38	49	1	1	4	4	1	1	1	**13**	12	8	31	0	-15	-15	-11	6	6	6	6	3	3	3	**33**	**429**
1980	808	808	808	808	808	820	835	859	867	867	855	840	47	32	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	15	24	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1981	808	807	807	808	808	813	823	832	828	813	799	791	54	44	35	39	54	68	76	1	1	1	1	1	1	1	**7**	5	10	9	-4	-15	-14	-8	6	6	6	5	3	3	4	**33**	**231**
1982	789	798	808	808	808	820	840	859	867	865	854	840	47	27	8	0	2	13	27	1	1	4	6	5	3	1	**21**	12	20	19	8	-2	-11	-14	6	6	6	6	5	3	3	**35**	**735**
1983	808	808	808	808	808	820	836	859	867	867	864	840	47	31	8	0	0	3	27	1	1	4	6	6	5	1	**24**	12	16	23	8	0	-3	-24	6	6	6	6	6	5	1	**36**	**864**
1984	808	808	808	808	808	820	821	826	824	805	784	769	47	46	41	43	62	83	98	1	1	1	1	1	1	1	**7**	12	1	5	-2	-19	-21	-15	6	6	6	5	2	1	3	**29**	**203**
1985	768	772	776	779	786	793	808	809	802	784	768	757	74	59	58	65	83	99	110	1	1	1	1	1	1	1	**7**	7	15	1	-7	-18	-16	-11	6	6	6	4	2	2	3	**29**	**203**
1986	758	760	768	777	808	820	839	859	867	855	841	830	47	28	8	0	12	26	37	1	1	4	6	3	1	1	**17**	12	19	20	8	-12	-14	-11	6	6	6	6	3	3	3	**33**	**561**
1987	808	807	807	807	808	810	818	818	808	793	779	770	57	49	49	59	74	88	97	1	1	1	1	1	1	1	**7**	2	8	0	-10	-15	-14	-9	6	6	6	4	3	3	4	**32**	**224**
1988	769	771	773	778	782	788	794	799	791	775	761	750	79	73	68	76	92	106	117	1	1	1	1	1	1	1	**7**	6	6	5	-8	-16	-14	-11	6	6	6	4	2	3	3	**30**	**210**
1989	748	747	750	751	756	773	795	806	802	786	772	764	94	72	61	65	81	95	103	1	1	1	1	1	1	1	**7**	17	22	11	-4	-16	-14	-8	6	6	6	5	2	3	4	**32**	**224**
1990	765	766	767	769	773	779	791	792	783	767	751	739	88	76	75	84	100	116	128	1	1	1	1	1	1	1	**7**	6	12	1	-9	-16	-16	-12	6	6	6	4	2	2	3	**29**	**203**
1991	737	736	736	735	735	755	761	781	795	782	768	759	112	106	86	72	85	99	108	1	1	1	1	1	1	1	**7**	20	6	20	14	-13	-14	-9	6	6	6	6	3	3	4	**34**	**238**
1992	758	759	760	762	775	780	797	797	786	772	759	747	87	70	70	81	95	108	120	1	1	1	1	1	1	1	**7**	5	17	0	-11	-14	-13	-12	6	6	6	3	3	3	3	**30**	**210**
1993	746	746	752	796	808	820	833	859	867	861	848	837	47	34	8	0	6	19	30	1	1	4	6	4	2	1	**19**	12	13	26	8	-6	-13	-11	6	6	6	6	4	3	3	**34**	**646**
1994	808	807	808	808	808	810	815	821	813	798	784	775	57	52	46	54	69	83	92	1	1	1	1	1	1	1	**7**	2	5	6	-8	-15	-14	-9	6	6	6	4	3	3	4	**32**	**224**
																							73 - year Average:				**11**												**73 - year Average:**			**32**	**380.0**
																																								1929 - '34 Average:			**284.5**

STUDY: 1995C06F-SWRCB-507 DWRSIM: recirc818-f, 17 Jun 97
CP # 18, MILLERTON LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-507/18/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 576'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Surface Elevation												DFMRE							Elevation Score								Fluctuation							Fluctuation Score								
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	491	505	527	547	549	566	559	576	576	562	518	491	10	17	0	0	14	58	85	3	2	6	6	3	1	1	**22**	17	-7	17	0	-14	-44	-27	6	4	6	6	3	1	1	**27**	**594**
1923	485	495	520	537	531	517	541	549	540	526	463	470	59	35	27	36	50	113	106	1	1	1	1	1	1	1	**7**	-14	24	8	-9	-14	-63	7	3	6	6	4	3	1	6	**29**	**203**
1924	483	494	508	522	516	503	506	511	505	478	464	468	73	70	65	71	98	112	108	1	1	1	1	1	1	1	**7**	-13	3	5	-6	-27	-14	4	3	6	6	4	1	3	6	**29**	**203**
1925	465	474	490	503	508	493	514	532	522	499	483	475	83	62	44	54	77	93	101	1	1	1	1	1	1	1	**7**	-15	21	18	-10	-23	-16	-8	3	6	6	4	1	2	4	**26**	**182**
1926	477	490	505	519	522	508	549	563	535	494	473	485	68	27	13	41	82	103	91	1	1	3	1	1	1	1	**9**	-14	41	14	-28	-41	-21	12	3	6	6	1	1	1	6	**24**	**216**
1927	491	506	528	545	560	561	560	569	576	543	492	482	15	16	7	0	33	84	94	2	2	4	6	1	1	1	**17**	1	-1	9	7	-33	-51	-10	6	5	6	6	1	1	4	**29**	**493**
1928	482	503	525	542	540	543	551	554	522	477	465	477	33	25	22	54	99	111	99	1	1	1	1	1	1	1	**7**	3	8	3	-32	-45	-12	12	6	6	6	1	1	3	6	**29**	**203**
1929	485	499	513	523	517	513	531	531	527	506	466	477	63	45	45	49	70	110	99	1	1	1	1	1	1	1	**7**	-4	18	0	-4	-21	-40	11	5	6	6	5	1	1	6	**30**	**210**
1930	480	495	507	518	514	510	525	534	518	489	466	482	66	51	42	58	87	110	94	1	1	1	1	1	1	1	**7**	-4	15	9	-16	-29	-23	16	5	6	6	2	1	1	6	**27**	**189**
1931	487	501	513	522	517	508	510	516	508	482	466	466	68	66	60	68	94	110	110	1	1	1	1	1	1	1	**7**	-9	2	6	-8	-26	-16	0	4	6	6	4	1	2	6	**29**	**203**
1932	467	476	503	520	543	531	524	532	552	518	492	477	45	52	44	24	58	84	99	1	1	1	1	1	1	1	**7**	-12	-7	8	20	-34	-26	-15	3	4	6	6	1	1	3	**24**	**168**
1933	477	489	501	516	512	501	520	537	526	509	466	467	75	56	39	50	67	110	109	1	1	1	1	1	1	1	**7**	-11	19	17	-11	-17	-43	1	3	6	6	3	2	1	6	**27**	**189**
1934	470	480	500	517	511	503	516	527	523	498	477	486	73	60	49	53	78	99	90	1	1	1	1	1	1	1	**7**	-8	13	11	-4	-25	-21	9	4	6	6	5	1	1	6	**29**	**203**
1935	490	500	515	535	532	509	542	563	574	538	469	479	67	34	13	2	38	107	97	1	1	3	5	1	1	1	**13**	-23	33	21	11	-36	-69	10	1	6	6	6	1	1	6	**27**	**351**
1936	486	502	518	533	560	558	564	576	563	521	472	478	18	12	0	13	55	104	98	2	3	6	3	1	1	1	**17**	-2	6	12	-13	-42	-49	6	5	6	6	3	1	1	6	**28**	**476**
1937	488	497	516	535	560	570	576	576	576	538	484	469	6	0	0	0	38	92	107	4	6	6	6	1	1	1	**25**	10	6	0	0	-38	-54	-15	6	6	6	6	1	1	3	**29**	**725**
1938	472	486	533	560	560	542	529	467	572	576	532	520	34	47	109	4	0	44	56	1	1	1	5	6	1	1	**16**	-18	-13	-62	105	4	-44	-12	2	3	1	6	6	1	3	**22**	**352**
1939	513	514	529	538	532	524	542	560	539	504	473	495	52	34	16	37	72	103	81	1	1	2	1	1	1	1	**8**	-8	18	18	-21	-35	-31	22	4	6	6	1	1	1	6	**25**	**200**
1940	495	504	517	550	550	552	548	561	553	512	466	471	24	28	15	23	64	110	105	1	1	2	1	1	1	1	**8**	2	-4	13	-8	-41	-46	5	6	5	6	4	1	1	6	**29**	**232**
1941	481	494	528	556	560	573	573	569	576	569	527	506	3	3	7	0	7	49	70	5	5	4	6	4	1	1	**26**	13	0	-4	7	-7	-42	-21	6	6	5	6	4	1	1	**29**	**754**
1942	497	507	532	552	549	553	554	562	576	555	509	477	23	22	14	0	21	67	99	1	1	3	6	1	1	1	**14**	4	1	8	14	-21	-46	-32	6	6	6	6	1	1	1	**27**	**378**
1943	477	494	518	557	556	576	574	576	562	526	491	476	0	2	0	14	50	85	100	6	5	6	3	1	1	1	**23**	20	-2	2	-14	-36	-35	-15	6	5	6	3	1	1	3	**25**	**575**
1944	479	491	508	521	524	507	516	517	501	494	490	480	69	60	59	75	82	86	96	1	1	1	1	1	1	1	**7**	-17	9	1	-16	-7	-4	-10	2	6	6	2	4	5	4	**29**	**203**
1945	481	503	523	533	560	568	565	571	576	554	511	491	8	11	5	0	22	65	85	4	3	4	6	1	1	1	**20**	8	-3	6	5	-22	-43	-20	6	5	6	6	1	1	2	**27**	**540**
1946	485	502	531	548	528	524	536	559	546	510	478	480	52	40	17	30	66	98	96	1	1	2	1	1	1	1	**8**	-4	12	23	-13	-36	-32	2	5	6	6	3	1	1	6	**28**	**224**
1947	481	500	526	543	541	530	545	556	535	497	473	481	46	31	20	41	79	103	95	1	1	1	1	1	1	1	**7**	-11	15	11	-21	-38	-24	8	3	6	6	1	1	1	6	**24**	**168**
1948	488	503	518	529	523	530	556	551	541	483	480	484	46	20	25	35	93	96	92	1	1	1	1	1	1	1	**7**	7	26	-5	-10	-58	-3	4	6	6	5	4	1	5	6	**33**	**231**
1949	490	500	513	526	524	511	522	538	521	482	477	489	65	54	38	55	94	99	87	1	1	1	1	1	1	1	**7**	-13	11	16	-17	-39	-5	12	3	6	6	2	1	5	6	**29**	**203**
1950	492	503	519	536	541	524	534	551	539	506	476	482	52	42	25	37	70	100	94	1	1	1	1	1	1	1	**7**	-17	10	17	-12	-33	-30	6	2	6	6	3	1	1	6	**25**	**175**
1951	490	533	560	560	554	546	552	546	514	463	463	481	30	24	30	62	113	113	95	1	1	1	1	1	1	1	**7**	-8	6	-6	-32	-51	0	18	4	6	4	1	1	6	6	**28**	**196**
1952	488	500	530	559	560	567	559	526	576	571	525	508	9	17	50	0	5	51	68	4	2	1	6	4	1	1	**19**	7	-8	-33	50	-5	-46	-17	6	4	1	6	5	1	2	**25**	**475**
1953	501	514	533	549	538	532	541	536	518	497	478	481	44	35	40	58	79	98	95	1	1	1	1	1	1	1	**7**	-6	9	-5	-18	-21	-19	3	4	6	5	2	1	2	6	**26**	**182**
1954	488	497	514	532	532	527	537	560	544	507	465	483	49	39	16	32	69	111	93	1	1	2	1	1	1	1	**8**	-5	10	23	-16	-37	-42	18	5	6	6	2	1	1	6	**27**	**216**
1955	489	502	522	540	537	520	534	545	537	504	481	487	56	42	31	39	72	95	89	1	1	1	1	1	1	1	**7**	-17	14	11	-8	-33	-23	6	2	6	6	4	1	1	6	**26**	**182**
1956	491	499	560	560	560	576	576	561	576	566	524	505	0	0	15	0	10	52	71	6	6	2	6	3	1	1	**25**	16	0	-15	15	-10	-42	-19	6	6	3	6	4	1	2	**28**	**700**
1957	496	504	517	527	525	529	546	561	562	526	471	481	47	30	15	14	50	105	95	1	1	2	3	1	1	1	**10**	4	17	15	1	-36	-55	10	6	6	6	6	1	1	6	**32**	**320**
1958	488	501	525	545	554	565	576	576	576	557	516	498	11	0	0	0	19	60	78	3	6	6	6	2	1	1	**25**	11	11	0	0	-19	-41	-18	6	6	6	6	2	1	2	**29**	**725**
1959	492	507	523	530	536	528	550	566	551	500	470	475	48	26	10	25	76	106	101	1	1	3	1	1	1	1	**9**	-8	22	16	-15	-51	-30	5	4	6	6	3	1	1	6	**27**	**243**
1960	474	475	480	490	503	498	515	525	509	496	483	481	78	61	51	67	80	93	95	1	1	1	1	1	1	1	**7**	-5	17	10	-16	-13	-13	-2	5	6	6	2	3	3	5	**30**	**210**
1961	481	491	505	511	510	511	526	539	527	486	467	467	65	50	37	49	90	109	109	1	1	1	1	1	1	1	**7**	1	15	13	-12	-41	-19	0	6	6	6	3	1	2	6	**30**	**210**
1962	468	471	484	492	538	529	527	555	569	540	489	476	47	49	21	7	36	87	100	1	1	1	4	1	1	1	**10**	-9	-2	28	14	-29	-51	-13	4	5	6	6	1	1	3	**26**	**260**
1963	479	491	501	518	558	558	576	576	576	564	520	503	18	0	0	0	12	56	73	2	6	6	6	3	1	1	**25**	0	18	0	0	-12	-44	-17	6	6	6	6	3	1	2	**30**	**750**
1964	490	517	542	551	547	544	553	561	551	508	476	484	32	23	15	25	68	100	92	1	1	2	1	1	1	1	**8**	-3	9	8	-10	-43	-32	8	5	6	6	4	1	1	6	**29**	**232**
1965	481	496	529	560	556	554	559	551	561	540	512	496	22	17	25	15	36	64	80	1	2	1	2	1	1	1	**9**	-2	5	-8	10	-21	-28	-16	5	6	4	6	1	1	2	**25**	**225**
1966	487	513	546	558	541	526	545	564	550	506	486	486	50	31	12	26	70	90	90	1	1	3	1	1	1	1	**9**	-15	19	19	-14	-44	-20	0	3	6	6	3	1	2	6	**27**	**243**
1967	490	502	539	559	560	571	565	514	570	576	539	522	5	11	62	6	0	37	54	4	3	1	4	6	1	1	**20**	11	-6	-51	56	6	-37	-17	6	4	1	6	6	1	2	**26**	**520**
1968	515	521	539	545	545	539	550	554	539	506	478	482	37	26	22	37	70	98	94	1	1	1	1	1	1	1	**7**	-6	11	4	-15	-33	-28	4	4	6	6	3	1	1	6	**27**	**189**
1969	480	496	513	560	524	521	467	469	576	576	538	513	55	109	107	0	0	38	63	1	1	1	6	6	1	1	**17**	-3	-54	2	107	0	-38	-25	5	1	6	6	6	1	1	**26**	**442**
1970	498	516	540	560	560	554	554	555	544	517	476	477	22	22	21	32	59	100	99	1	1	1	1	1	1	1	**7**	-6	0	1	-11	-27	-41	1	4	6	6	3	1	1	6	**27**	**189**
1971	482	502	534	551	548	533	541	544	520	498	491	478	43	35	32	56	78	85	98	1	1	1	1	1	1	1	**7**	-15	8	3	-24	-22	-7	-13	3	6	6	1	1	4	3	**24**	**168**
1972	479	491	519	536	532	524	537	543	540	497	481	481	52	39	33	36	79	95	95	1	1	1	1	1	1	1	**7**	-8	13	6	-3	-43	-16	0	4	6	6	5	1	2	6	**30**	**210**
1973	489	501	523	545	560	560	550	575	576	542	483	477	16	26	1	0	34	93	99	2	1	5	6	1	1	1	**17**	0	-10	25	1	-34	-59	-6	6	4	6	6	1	1	4	**28**	**476**
1974	487	510	545	560	544	550	559	570	573	537	490	473	26	17	6	3	39	86	103	1	2	4	5	1	1	1	**15**	6	9	11	3	-36	-47	-17	6	6	6	6	1	1	2	**28**	**420**
1975	476	494	515	528	535	526	533	536	567	525	476	482	50	43	40	9	51	100	94	1	1	1	4	1	1	1	**10**	-9	7	3	31	-42	-49	6	4	6	6	6	1	1	6	**30**	**300**
1976	489	511	531	541	539	544	547	542	519	492	479	494	32	29	34	57	84	97	82	1	1	1	1	1	1	1	**7**	5	3	-5	-23	-27	-13	15	6	6	5	1	1	3	6	**28**	**196**
1977	490	496	500	503	501	464	465	464	462	466	461	462	112	111	112	114	110	115	114	1	1	1	1	1	1	1	**7**	-37	1	-1	-2	4	-5	1	1	6	5	5	6	5	6	**34**	**238**
1978	462	462	484	532	560	552	510	498	576	576	548	539	24	66	78	0	0	28	37	1	1	1	6	6	1	1	**17**	-8	-42	-12	78	0	-28	-9	4	1	3	6	6	1	4	**25**	**425**
1979	528	535	549	560	555	562	560	571	563	521	477	482	14	16	5	13	55	99	94	3	2	4	3	1	1	1	**15**	7	-2	11	-8	-42	-44	5	6	5	6	4	1	1	6	**29**	**435**
1980	489	488	508	560	560	558	566	550	576	576	542	513	18	10	26	0	0	34	63	2	3	1	6	6	1	1	**20**	-2	8	-16	26	0	-34	-29	5	6	2	6	6	1	1	**27**	**540**
1981	503	512	520	528	531	533	547	553	543	510	477	488	43	29	23	33	66	99	88	1	1	1	1	1	1	1	**7**	2	14	6	-10	-33	-33	11	6	6	6	4	1	1	6	**30**	**210**
1982	491	504	536	560	560	576	546	561	576	576	546	541	0	30	15	0	0	30	35	6	1	2	6	6	1	1	**23**	16	-30	15	15	0	-30	-5	6	1	6	6	6	1	5	**31**	**713**
1983	531	556	560	560	513	484	467	467	483	564	572	576	92	109	109	93	12	4	0	1	1	1	1	3	5	6	**18**	-29	-17	0	16	81	8	4	1	2	6	6	6	6	6	**33**	**594**
1984	560	560	560	560	560	568	570	570	557	530	487	483	8	6	6	19	46	89	93	4	4	4	2	1	1	1	**17**	8	2	0	-13	-27	-43	-4	6	6	6	3	1	1	5	**28**	**476**
1985	482	492	511	536	533	526	551	563	539	501	483	483	50	25	13	37	75	93	93	1	1	3	1	1	1	1	**9**	-7	25	12	-24	-38	-18	0	4	6	6	1	1	2	6	**26**	**234**
1986	490	508	534	554	550	552	574	565	576	558	503	479	24	2	11	0	18	73	97	1	5	3	6	2	1	1	**19**	2	22	-9	11	-18	-55	-24	6	6	4	6	2	1	1	**26**	**494**
1987	480	489	492	495	496	511	530	551	539	503	473	480	65	46	25	37	73	103	96	1	1	1	1	1	1	1	**7**	15	19	21	-12	-36	-30	7	6	6	6	3	1	1	6	**29**	**203**
1988	482	495	507	526	516	527	539	547	527	498	483	486	49	37	29	49	78	93	90	1	1	1	1	1	1	1	**7**	11	12	8	-20	-29	-15	3	6	6	6	2	1	3	6	**30**	**210**
1989	486	497	505	515	512	516	537	552	540	502	478	484	60	39	24	36	74	98	92	1	1	1	1	1	1	1	**7**	4	21	15	-12	-38	-24	6	6	6	6	3	1	1	6	**29**	**203**
1990	489	495	502	510	510	517	532	544	525	508	479	483	59	44	32	51	68	97	93	1	1	1	1	1	1	1	**7**	7	15	12	-19	-17	-29	4	6	6	6	2	2	1	6	**29**	**203**
1991	480	486	492	499	493	489	501	508	512	506	480	486	87	75	68	64	70	96	90	1	1	1	1	1	1	1	**7**	-4	12	7	4	-6	-26	6	5	6	6	6	4	1	6	**34**	**238**
1992	485	490	494	498	499	490	493	494	480	470	465	466	86	83	82	96	106	111	110	1	1	1	1	1	1	1	**7**	-9	3	1	-14	-10	-5	1	4	6	6	3	4	5	6	**34**	**238**
1993	467	466	476	536	543	556	558	576	576	571	522	499	20	18	0	0	5	54	77	1	2	6	6	4	1	1	**21**	13	2	18	0	-5	-49	-23	6	6	6	6	5	1	1	**31**	**651**
1994	490	497	507	512	508	520	534	548	528	498	478	484	56	42	28	48	78	98	92	1	1	1	1	1	1	1	**7**	12	14	14	-20	-30	-20	6	6	6	6	2	1	2	6	**29**	**203**
																								73 - year Average:			**12**											**73 - year Average:**				**28**	**329.2**
																																								1929 - '34 Average:			**193.7**

STUDY: 1995C06F-SWRCB-507 DWRSIM: recirc818-f, 17 Jun 97
CP # 12, SWP SAN LUIS RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-507/12/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 544'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index = Product

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	419	441	475	520	539	544	543	539	524	477	433	442
1923	473	497	502	517	527	534	529	507	473	448	418	405
1924	422	435	463	509	530	530	520	498	465	427	389	384
1925	384	394	438	469	516	528	520	494	453	409	350	334
1926	374	390	408	464	506	517	512	488	452	437	384	371
1927	400	439	477	523	541	544	540	530	500	464	414	428
1928	461	492	500	515	527	533	527	506	458	437	415	402
1929	414	440	469	517	532	541	532	518	495	467	436	433
1930	433	438	482	531	542	544	526	495	465	456	437	414
1931	418	423	424	467	481	485	475	462	452	422	370	366
1932	377	376	439	498	527	527	519	500	479	472	441	427
1933	442	449	450	493	513	521	518	506	479	444	399	397
1934	413	413	457	510	521	521	508	486	459	434	403	391
1935	389	410	429	489	497	528	531	507	473	429	360	357
1936	396	416	435	490	532	543	543	527	493	458	416	410
1937	429	442	467	516	535	543	544	539	510	462	412	401
1938	433	466	499	515	530	540	544	544	537	504	471	486
1939	513	522	526	539	544	544	526	494	462	449	434	414
1940	419	416	409	475	516	523	522	499	462	435	352	352
1941	391	424	462	514	537	541	538	535	520	470	430	449
1942	481	494	499	515	527	531	527	519	510	463	422	440
1943	472	486	491	507	518	530	533	536	508	464	415	422
1944	455	486	501	516	530	537	519	487	453	439	421	411
1945	417	454	490	517	533	539	529	503	466	447	409	402
1946	439	471	496	512	523	529	517	490	449	428	411	399
1947	421	454	487	515	529	536	521	487	452	437	425	404
1948	410	422	435	488	503	524	523	501	464	417	342	351
1949	382	408	438	484	506	537	519	489	447	427	407	394
1950	406	420	434	487	524	532	520	491	455	432	413	403
1951	426	457	493	523	534	539	526	506	464	435	411	406
1952	432	461	491	520	533	538	542	544	536	510	492	499
1953	506	515	519	532	542	544	529	515	493	469	430	447
1954	478	494	501	516	527	533	526	508	460	436	415	403
1955	435	465	494	518	530	537	520	493	466	461	425	418
1956	431	453	495	528	542	544	538	528	507	475	434	444
1957	470	496	500	514	527	533	523	500	466	446	430	420
1958	452	481	506	522	534	537	538	538	530	494	474	488
1959	496	505	509	523	534	541	521	488	453	438	426	421
1960	432	446	457	504	539	544	525	491	458	437	380	358
1961	376	414	452	501	534	544	523	487	457	445	430	407
1962	412	419	456	492	530	535	517	484	433	402	326	336
1963	376	411	443	489	522	529	528	520	496	465	431	445
1964	475	503	515	531	541	544	518	482	437	413	391	395
1965	401	431	467	517	531	538	539	525	492	464	419	428
1966	459	487	497	512	523	529	512	481	435	413	397	387
1967	401	437	476	515	528	534	538	541	534	522	502	505
1968	512	523	527	540	544	544	529	496	458	440	423	417
1969	432	462	495	523	536	544	544	544	537	517	489	503
1970	517	526	530	544	544	544	534	511	472	451	415	410
1971	432	465	496	515	524	531	520	504	476	455	435	448
1972	475	502	513	528	540	544	526	493	453	434	419	404
1973	432	463	494	523	534	540	534	512	485	452	422	422
1974	454	483	504	520	531	536	534	522	493	464	438	451
1975	474	484	488	503	516	521	517	502	477	444	430	440
1976	467	485	491	506	520	532	514	487	467	465	448	429
1977	430	437	439	456	456	456	459	447	428	405	399	413
1978	418	435	485	535	544	544	544	544	526	469	413	433
1979	466	488	492	507	521	528	522	504	474	455	409	405
1980	439	474	502	519	534	544	544	544	527	492	452	469
1981	500	519	525	539	544	544	530	496	459	441	423	411
1982	423	458	491	523	536	543	544	544	531	494	462	472
1983	496	515	521	535	544	544	544	544	537	527	514	521
1984	536	544	544	544	544	544	536	514	479	459	413	421
1985	456	487	498	513	525	533	515	485	440	421	404	397
1986	402	409	447	499	530	544	544	544	532	492	459	468
1987	497	508	534	544	544	544	523	487	458	447	425	410
1988	420	416	454	504	517	517	506	491	479	460	425	421
1989	421	437	457	494	494	527	516	486	450	439	386	395
1990	410	427	456	498	519	523	506	477	458	446	401	383
1991	383	389	389	404	404	468	468	457	444	424	408	409
1992	412	425	439	484	517	540	530	514	492	475	436	429
1993	429	435	479	532	542	544	539	533	518	464	412	417
1994	452	482	491	505	518	528	507	475	450	446	445	432

YEAR	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	0	1	5	20	67	111	102	6	5	4	1	1	1	1	**19**
1923	10	15	37	71	96	126	139	3	2	1	1	1	1	1	**10**
1924	14	24	46	79	117	155	160	3	1	1	1	1	1	1	**9**
1925	16	24	50	91	135	194	210	2	1	1	1	1	1	1	**8**
1926	27	32	56	92	107	160	173	1	1	1	1	1	1	1	**7**
1927	0	4	14	44	80	130	116	6	5	3	1	1	1	1	**18**
1928	11	17	38	86	107	129	142	3	2	1	1	1	1	1	**10**
1929	3	12	26	49	77	108	111	5	3	1	1	1	1	1	**13**
1930	0	18	49	79	88	107	130	6	2	1	1	1	1	1	**13**
1931	59	69	82	92	122	174	178	1	1	1	1	1	1	1	**7**
1932	17	25	44	65	72	103	117	2	1	1	1	1	1	1	**8**
1933	23	26	38	65	100	145	147	1	1	1	1	1	1	1	**7**
1934	23	36	58	85	110	141	153	1	1	1	1	1	1	1	**7**
1935	16	13	37	71	115	184	187	2	3	1	1	1	1	1	**10**
1936	1	1	17	51	86	128	134	5	5	2	1	1	1	1	**16**
1937	1	0	5	34	82	132	143	5	6	4	1	1	1	1	**19**
1938	4	0	0	7	40	73	58	5	6	6	4	1	1	1	**24**
1939	0	18	50	82	95	110	130	6	2	1	1	1	1	1	**13**
1940	21	22	45	82	109	192	192	1	1	1	1	1	1	1	**7**
1941	3	6	9	24	74	114	95	5	4	4	1	1	1	1	**17**
1942	13	17	25	34	81	122	104	3	2	1	1	1	1	1	**10**
1943	14	11	8	36	80	129	122	3	3	4	1	1	1	1	**14**
1944	7	25	57	91	105	123	133	4	1	1	1	1	1	1	**10**
1945	5	15	41	78	97	135	142	4	2	1	1	1	1	1	**11**
1946	15	27	54	95	116	133	145	2	1	1	1	1	1	1	**8**
1947	8	23	57	92	107	119	140	4	1	1	1	1	1	1	**10**
1948	20	21	43	80	127	202	193	1	1	1	1	1	1	1	**7**
1949	7	25	55	97	117	137	150	4	1	1	1	1	1	1	**10**
1950	12	24	53	89	112	131	141	3	1	1	1	1	1	1	**9**
1951	5	18	38	80	109	133	138	4	2	1	1	1	1	1	**11**
1952	6	2	0	8	34	52	45	4	5	6	4	1	1	1	**22**
1953	0	15	29	51	75	114	97	6	2	1	1	1	1	1	**13**
1954	11	18	36	84	108	129	141	3	2	1	1	1	1	1	**10**
1955	7	24	51	78	83	119	126	4	1	1	1	1	1	1	**10**
1956	0	6	16	37	69	110	100	6	4	2	1	1	1	1	**16**
1957	11	21	44	78	98	114	124	3	1	1	1	1	1	1	**9**
1958	7	6	6	14	50	70	56	4	4	4	3	1	1	1	**18**
1959	3	23	56	91	106	118	123	5	1	1	1	1	1	1	**11**
1960	0	19	53	86	107	164	186	6	2	1	1	1	1	1	**13**
1961	0	21	57	87	99	114	137	6	1	1	1	1	1	1	**12**
1962	9	27	60	111	142	218	208	4	1	1	1	1	1	1	**10**
1963	15	16	24	48	79	113	99	2	2	1	1	1	1	1	**9**
1964	0	26	62	107	131	153	149	6	1	1	1	1	1	1	**12**
1965	6	5	19	52	80	125	116	4	4	2	1	1	1	1	**14**
1966	15	32	63	109	131	147	157	2	1	1	1	1	1	1	**8**
1967	10	6	3	10	22	42	39	3	4	5	3	1	1	1	**18**
1968	0	15	48	86	104	121	127	6	2	1	1	1	1	1	**13**
1969	0	0	0	7	27	55	41	6	6	6	4	1	1	1	**25**
1970	0	10	33	72	93	129	134	6	3	1	1	1	1	1	**14**
1971	13	24	40	68	89	109	96	3	1	1	1	1	1	1	**9**
1972	0	18	51	91	110	125	140	6	2	1	1	1	1	1	**13**
1973	4	10	32	59	92	122	122	5	3	1	1	1	1	1	**13**
1974	8	10	22	51	80	106	93	4	3	1	1	1	1	1	**12**
1975	23	27	42	67	100	114	104	1	1	1	1	1	1	1	**7**
1976	12	30	57	77	79	96	115	3	1	1	1	1	1	1	**9**
1977	88	85	97	116	139	145	131	1	1	1	1	1	1	1	**7**
1978	0	0	0	18	75	131	111	6	6	6	2	1	1	1	**23**
1979	16	22	40	70	89	135	139	2	1	1	1	1	1	1	**8**
1980	0	0	0	17	52	92	75	6	6	6	2	1	1	1	**23**
1981	0	14	48	85	103	121	133	6	3	1	1	1	1	1	**14**
1982	1	0	0	13	50	82	72	5	6	6	3	1	1	1	**23**
1983	0	0	0	7	17	30	23	6	6	6	4	2	1	1	**26**
1984	0	8	30	65	85	131	123	6	4	1	1	1	1	1	**15**
1985	11	29	59	104	123	140	147	3	1	1	1	1	1	1	**9**
1986	0	0	0	12	52	85	76	6	6	6	3	1	1	1	**24**
1987	0	21	57	86	97	119	134	6	1	1	1	1	1	1	**12**
1988	27	38	53	65	84	119	123	1	1	1	1	1	1	1	**7**
1989	17	28	58	94	105	158	149	2	1	1	1	1	1	1	**8**
1990	21	38	67	86	98	143	161	1	1	1	1	1	1	1	**7**
1991	76	76	87	100	120	136	135	1	1	1	1	1	1	1	**7**
1992	4	14	30	52	69	108	115	5	3	1	1	1	1	1	**13**
1993	0	5	11	26	80	132	127	6	4	3	1	1	1	1	**17**
1994	16	37	69	94	98	99	112	2	1	1	1	1	1	1	**8**
												73 - year Average:			**13**

YEAR	Fluctuation MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	5	-1	-4	-15	-47	-44	9	6	5	5	3	1	1	6	**27**	**513**
1923	7	-5	-22	-34	-25	-30	-13	6	5	1	1	1	1	3	**18**	**180**
1924	0	-10	-22	-33	-38	-38	-5	6	4	1	1	1	1	5	**19**	**171**
1925	12	-8	-26	-41	-44	-59	-16	6	4	1	1	1	1	2	**16**	**128**
1926	11	-5	-24	-36	-15	-53	-13	6	5	1	1	3	1	3	**20**	**140**
1927	3	-4	-10	-30	-36	-50	14	6	5	4	1	1	1	6	**24**	**432**
1928	6	-6	-21	-48	-21	-22	-13	6	4	1	1	1	1	3	**17**	**170**
1929	9	-9	-14	-23	-28	-31	-3	6	4	3	1	1	1	5	**21**	**273**
1930	2	-18	-31	-30	-9	-19	-23	6	2	1	1	4	2	1	**17**	**221**
1931	4	-10	-13	-10	-30	-52	-4	6	4	3	4	1	1	5	**24**	**168**
1932	0	-8	-19	-21	-7	-31	-14	6	4	2	1	4	1	3	**21**	**168**
1933	8	-3	-12	-27	-35	-45	-2	6	5	3	1	1	1	5	**22**	**154**
1934	0	-13	-22	-27	-25	-31	-12	6	3	1	1	1	1	3	**16**	**112**
1935	31	3	-24	-34	-44	-69	-3	6	6	1	1	1	1	5	**21**	**210**
1936	11	0	-16	-34	-35	-42	-6	6	6	2	1	1	1	4	**21**	**336**
1937	8	1	-5	-29	-48	-50	-11	6	6	5	1	1	1	3	**23**	**437**
1938	10	4	0	-7	-33	-33	15	6	6	6	4	1	1	6	**30**	**720**
1939	0	-18	-32	-32	-13	-15	-20	6	2	1	1	3	3	2	**18**	**234**
1940	7	-1	-23	-37	-27	-83	0	6	5	1	1	1	1	6	**21**	**147**
1941	4	-3	-3	-15	-50	-40	19	6	5	5	3	1	1	6	**27**	**459**
1942	4	-4	-8	-9	-47	-41	18	6	5	4	4	1	1	6	**27**	**270**
1943	12	3	3	-28	-44	-49	7	6	6	6	1	1	1	6	**27**	**378**
1944	7	-18	-32	-34	-14	-18	-10	6	2	1	1	3	2	4	**19**	**190**
1945	6	-10	-26	-37	-19	-38	-7	6	4	1	1	2	1	4	**19**	**209**
1946	6	-12	-27	-41	-21	-17	-12	6	3	1	1	1	2	3	**17**	**136**
1947	7	-15	-34	-35	-15	-12	-21	6	3	1	1	3	3	1	**18**	**180**
1948	21	-1	-22	-37	-47	-75	9	6	5	1	1	1	1	6	**21**	**147**
1949	31	-18	-30	-42	-20	-20	-13	6	2	1	1	2	2	3	**17**	**170**
1950	8	-12	-29	-36	-23	-19	-10	6	3	1	1	1	2	4	**18**	**162**
1951	5	-13	-20	-42	-29	-24	-5	6	3	2	1	1	1	5	**19**	**209**
1952	5	4	2	-8	-26	-18	7	6	6	6	4	1	2	6	**31**	**682**
1953	2	-15	-14	-22	-24	-39	17	6	3	3	1	1	1	6	**21**	**273**
1954	6	-7	-18	-48	-24	-21	-12	6	4	2	1	1	1	3	**18**	**180**
1955	7	-17	-27	-27	-5	-36	-7	6	2	1	1	5	1	4	**20**	**200**
1956	2	-6	-10	-21	-32	-41	10	6	4	4	1	1	1	6	**23**	**368**
1957	6	-10	-23	-34	-20	-16	-10	6	4	1	1	2	2	4	**20**	**180**
1958	3	1	0	-8	-36	-20	14	6	6	6	4	1	2	6	**31**	**558**
1959	7	-20	-33	-35	-15	-12	-5	6	2	1	1	3	3	5	**21**	**231**
1960	5	-19	-34	-33	-21	-57	-22	6	2	1	1	1	1	1	**13**	**169**
1961	10	-21	-36	-30	-12	-15	-23	6	1	1	1	3	3	1	**16**	**192**
1962	5	-18	-33	-51	-31	-76	10	6	2	1	1	1	1	6	**18**	**180**
1963	7	-1	-8	-24	-31	-34	14	6	5	4	1	1	1	6	**24**	**216**
1964	3	-26	-36	-45	-24	-22	4	6	1	1	1	1	1	6	**17**	**204**
1965	7	1	-14	-33	-28	-45	9	6	6	3	1	1	1	6	**24**	**336**
1966	6	-17	-31	-46	-22	-16	-10	6	2	1	1	1	2	4	**17**	**136**
1967	6	4	3	-7	-12	-20	3	6	6	6	4	3	2	6	**33**	**594**
1968	0	-15	-33	-38	-18	-17	-6	6	3	1	1	2	2	4	**19**	**247**
1969	8	0	0	-7	-20	-28	14	6	6	6	4	2	1	6	**31**	**775**
1970	0	-10	-23	-39	-21	-36	-5	6	4	1	1	1	1	5	**19**	**266**
1971	7	-11	-16	-28	-21	-20	13	6	3	2	1	1	2	6	**21**	**189**
1972	4	-18	-33	-40	-19	-15	-15	6	2	1	1	2	3	3	**18**	**234**
1973	6	-6	-22	-27	-33	-30	0	6	4	1	1	1	1	6	**20**	**260**
1974	5	-2	-12	-29	-29	-26	13	6	5	3	1	1	1	6	**23**	**276**
1975	5	-4	-15	-25	-33	-14	10	6	5	3	1	1	3	6	**25**	**175**
1976	12	-18	-27	-20	-2	-17	-19	6	2	1	2	5	2	2	**20**	**180**
1977	0	3	-12	-19	-23	-6	14	6	6	3	2	1	4	6	**28**	**196**
1978	0	0	0	-18	-57	-56	20	6	6	6	2	1	1	6	**28**	**644**
1979	7	-6	-18	-30	-19	-46	-4	6	4	2	1	2	1	5	**21**	**168**
1980	10	0	0	-17	-35	-40	17	6	6	6	2	1	1	6	**28**	**644**
1981	0	-14	-34	-37	-18	-18	-12	6	3	1	1	2	2	3	**18**	**252**
1982	7	1	0	-13	-37	-32	10	6	6	6	3	1	1	6	**29**	**667**
1983	0	0	0	-7	-10	-13	7	6	6	6	4	4	3	6	**35**	**910**
1984	0	-8	-22	-35	-20	-46	8	6	4	1	1	2	1	6	**21**	**315**
1985	8	-18	-30	-45	-19	-17	-7	6	2	1	1	2	2	4	**18**	**162**
1986	14	0	0	-12	-40	-33	9	6	6	6	3	1	1	6	**29**	**696**
1987	0	-21	-36	-29	-11	-22	-15	6	1	1	1	3	1	3	**16**	**192**
1988	0	-11	-15	-12	-19	-35	-4	6	3	3	3	2	1	5	**23**	**161**
1989	33	-11	-30	-36	-11	-53	9	6	3	1	1	3	1	6	**21**	**168**
1990	4	-17	-29	-19	-12	-45	-18	6	2	1	2	3	1	2	**17**	**119**
1991	64	0	-11	-13	-20	-16	1	6	6	3	3	2	2	6	**28**	**196**
1992	23	-10	-16	-22	-17	-39	-7	6	4	2	1	2	1	4	**20**	**260**
1993	2	-5	-6	-15	-54	-52	5	6	5	4	3	1	1	6	**26**	**442**
1994	10	-21	-32	-25	-4	-1	-13	6	1	1	1	5	5	3	**22**	**176**
												73 - year Average:			**22**	**288.9**
														1929 - '34 Average:		**182.7**

Flow Alternative 5

STUDY: 1995C06H-SWRCB-513 DWRSIM: recirc818-h, 05 Sep 97
CP # 4, SHASTA LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06H-SWRCB-513/4/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 1067'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	989	993	999	1,003	1,018	1,037	1,059	1,067	1,062	1,048	1,031	1,025	30	8	0	5	19	36	42	1	4	6	4	2	1	1	**19**	19	22	8	-5	-14	-17	-6	6	6	6	5	3	2	4	**32**	**608**
1923	1,022	1,017	1,019	1,022	1,022	1,022	1,034	1,030	1,016	1,001	984	982	45	33	37	51	66	83	85	1	1	1	1	1	1	1	**7**	0	12	-4	-14	-15	-17	-2	6	6	5	3	3	2	5	**30**	**210**
1924	983	982	981	981	987	987	977	963	949	933	915	905	80	90	104	118	134	152	162	1	1	1	1	1	1	1	**7**	0	-10	-14	-14	-16	-18	-10	6	4	3	3	2	2	4	**24**	**168**
1925	908	919	927	936	1,003	1,011	1,042	1,052	1,048	1,037	1,024	1,024	56	25	15	19	30	43	43	1	1	2	2	1	1	1	**9**	8	31	10	-4	-11	-13	0	6	6	6	5	3	3	6	**35**	**315**
1926	1,021	1,017	1,014	1,010	1,036	1,039	1,050	1,047	1,031	1,012	996	990	28	17	20	36	55	71	77	1	2	1	1	1	1	1	**8**	3	11	-3	-16	-19	-16	-6	6	6	5	2	2	2	4	**27**	**216**
1927	988	1,007	1,021	1,035	1,026	1,052	1,067	1,067	1,061	1,047	1,032	1,027	15	0	0	6	20	35	40	2	6	6	4	1	1	1	**21**	26	15	0	-6	-14	-15	-5	6	6	6	4	3	3	5	**33**	**693**
1928	1,023	1,017	1,020	1,028	1,043	1,046	1,066	1,064	1,046	1,029	1,010	1,004	21	1	3	21	38	57	63	1	5	5	1	1	1	1	**15**	3	20	-2	-18	-17	-19	-6	6	6	5	2	2	2	4	**27**	**405**
1929	1,001	1,000	999	998	1,002	1,003	1,008	1,005	995	980	962	955	64	59	62	72	87	105	112	1	1	1	1	1	1	1	**7**	1	5	-3	-10	-15	-18	-7	6	6	5	4	3	2	4	**30**	**210**
1930	953	953	983	993	1,009	1,031	1,041	1,040	1,029	1,014	1,003	1,000	36	26	27	38	53	64	67	1	1	1	1	1	1	1	**7**	22	10	-1	-11	-15	-11	-3	6	6	5	3	3	3	5	**31**	**217**
1931	996	992	988	987	987	991	984	975	967	955	944	935	76	83	92	100	112	123	132	1	1	1	1	1	1	1	**7**	4	-7	-9	-8	-12	-11	-9	6	4	4	4	3	3	4	**28**	**196**
1932	935	935	948	956	964	988	990	997	990	978	964	958	79	77	70	77	89	103	109	1	1	1	1	1	1	1	**7**	24	2	7	-7	-12	-14	-6	6	6	6	4	3	3	4	**32**	**224**
1933	955	954	955	957	959	991	993	995	992	980	964	956	76	74	72	75	87	103	111	1	1	1	1	1	1	1	**7**	32	2	2	-3	-12	-16	-8	6	6	6	5	3	2	4	**32**	**224**
1934	954	954	962	979	995	1,007	1,010	1,004	995	985	973	964	60	57	63	72	82	94	103	1	1	1	1	1	1	1	**7**	12	3	-6	-9	-10	-12	-9	6	6	4	4	4	3	4	**31**	**217**
1935	962	970	973	989	1,004	1,022	1,060	1,067	1,057	1,046	1,036	1,030	45	7	0	10	21	31	37	1	4	6	3	1	1	1	**17**	18	38	7	-10	-11	-10	-6	6	6	6	4	3	4	4	**33**	**561**
1936	1,023	1,017	1,012	1,034	1,032	1,041	1,048	1,046	1,039	1,021	1,002	997	26	19	21	28	46	65	70	1	2	1	1	1	1	1	**8**	9	7	-2	-7	-18	-19	-5	6	6	5	4	2	2	5	**30**	**240**
1937	992	988	983	977	979	1,005	1,034	1,042	1,037	1,020	1,001	995	62	33	25	30	47	66	72	1	1	1	1	1	1	1	**7**	26	29	8	-5	-17	-19	-6	6	6	6	5	2	2	4	**31**	**217**
1938	992	1,013	1,020	1,034	1,030	1,024	1,049	1,067	1,067	1,058	1,045	1,036	43	18	0	0	9	22	31	1	2	6	6	4	1	1	**21**	-6	25	18	0	-9	-13	-9	4	6	6	6	4	3	4	**33**	**693**
1939	1,023	1,017	1,020	1,022	1,023	1,038	1,033	1,026	1,009	993	976	972	29	34	41	58	74	91	95	1	1	1	1	1	1	1	**7**	15	-5	-7	-17	-16	-17	-4	6	5	4	2	2	2	5	**26**	**182**
1940	968	964	972	1,012	1,017	1,025	1,059	1,064	1,049	1,033	1,014	1,009	42	8	3	18	34	53	58	1	4	5	2	1	1	1	**15**	8	34	5	-15	-16	-19	-5	6	6	6	3	2	2	5	**30**	**450**
1941	1,007	1,007	1,019	1,020	1,024	1,045	1,064	1,067	1,067	1,058	1,047	1,036	22	3	0	0	9	20	31	1	5	6	6	4	1	1	**24**	21	19	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1942	1,023	1,017	1,020	1,023	1,028	1,042	1,067	1,067	1,067	1,058	1,046	1,036	25	0	0	0	9	21	31	1	6	6	6	4	1	1	**25**	14	25	0	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**875**
1943	1,023	1,017	1,022	1,030	1,042	1,051	1,067	1,067	1,060	1,048	1,033	1,028	16	0	0	7	19	34	39	2	6	6	4	2	1	1	**22**	9	16	0	-7	-12	-15	-5	6	6	6	4	3	3	5	**33**	**726**
1944	1,023	1,017	1,015	1,013	1,022	1,032	1,038	1,037	1,028	1,008	990	984	35	29	30	39	59	77	83	1	1	1	1	1	1	1	**7**	10	6	-1	-9	-20	-18	-6	6	6	5	4	2	2	4	**29**	**203**
1945	984	991	1,003	1,010	1,042	1,053	1,064	1,067	1,060	1,044	1,027	1,023	14	3	0	7	23	40	44	3	5	6	4	1	1	1	**21**	11	11	3	-7	-16	-17	-4	6	6	6	4	2	2	5	**31**	**651**
1946	1,021	1,017	1,018	1,033	1,039	1,050	1,062	1,064	1,054	1,041	1,027	1,024	17	5	3	13	26	40	43	2	4	5	3	1	1	1	**17**	11	12	2	-10	-13	-14	-3	6	6	6	4	3	3	5	**33**	**561**
1947	1,021	1,017	1,017	1,014	1,020	1,039	1,045	1,036	1,030	1,011	994	990	28	22	31	37	56	73	77	1	1	1	1	1	1	1	**7**	19	6	-9	-6	-19	-17	-4	6	6	4	4	2	2	5	**29**	**203**
1948	992	991	990	1,011	1,013	1,026	1,061	1,067	1,067	1,055	1,040	1,036	41	6	0	0	12	27	31	1	4	6	6	3	1	1	**22**	13	35	6	0	-12	-15	-4	6	6	6	6	3	3	5	**35**	**770**
1949	1,023	1,017	1,016	1,011	1,015	1,050	1,060	1,064	1,054	1,039	1,023	1,020	17	7	3	13	28	44	47	2	4	5	3	1	1	1	**17**	35	10	4	-10	-15	-16	-3	6	6	6	4	3	2	5	**32**	**544**
1950	1,016	1,012	1,008	1,016	1,029	1,043	1,056	1,055	1,043	1,027	1,010	1,008	24	11	12	24	40	57	59	1	3	3	1	1	1	1	**11**	14	13	-1	-12	-16	-17	-2	6	6	5	3	2	2	5	**29**	**319**
1951	1,018	1,017	1,020	1,033	1,040	1,055	1,062	1,067	1,052	1,035	1,017	1,015	12	5	0	15	32	50	52	3	4	6	2	1	1	1	**18**	15	7	5	-15	-17	-18	-2	6	6	6	3	2	2	5	**30**	**540**
1952	1,013	1,017	1,019	1,032	1,038	1,048	1,058	1,067	1,067	1,058	1,046	1,036	19	9	0	0	9	21	31	2	4	6	6	4	1	1	**24**	10	10	9	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**840**
1953	1,023	1,017	1,021	1,022	1,033	1,050	1,065	1,067	1,067	1,058	1,046	1,036	17	2	0	0	9	21	31	2	5	6	6	4	1	1	**25**	17	15	2	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**875**
1954	1,023	1,017	1,021	1,030	1,035	1,051	1,067	1,067	1,058	1,047	1,037	1,036	16	0	0	9	20	30	31	2	6	6	4	1	1	1	**21**	16	16	0	-9	-11	-10	-1	6	6	6	4	3	4	5	**34**	**714**
1955	1,023	1,017	1,022	1,024	1,026	1,027	1,040	1,048	1,038	1,020	1,003	1,003	40	27	19	29	47	64	64	1	1	2	1	1	1	1	**8**	1	13	8	-10	-18	-17	0	6	6	6	4	2	2	6	**32**	**256**
1956	1,000	1,001	1,017	1,017	1,019	1,046	1,064	1,067	1,067	1,058	1,047	1,036	21	3	0	0	9	20	31	1	5	6	6	4	1	1	**24**	27	18	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1957	1,023	1,017	1,016	1,017	1,035	1,052	1,060	1,067	1,059	1,047	1,034	1,036	15	7	0	8	20	33	31	2	4	6	4	1	1	1	**19**	17	8	7	-8	-12	-13	2	6	6	6	4	3	3	6	**34**	**646**
1958	1,023	1,017	1,021	1,029	1,067	1,024	1,053	1,067	1,067	1,058	1,047	1,036	43	14	0	0	9	20	31	1	3	6	6	4	1	1	**22**	-43	29	14	0	-9	-11	-11	1	6	6	6	4	3	3	**29**	**638**
1959	1,023	1,017	1,017	1,034	1,039	1,052	1,056	1,055	1,045	1,029	1,016	1,020	15	11	12	22	38	51	47	2	3	3	1	1	1	1	**12**	13	4	-1	-10	-16	-13	4	6	6	5	4	2	3	6	**32**	**384**
1960	1,018	1,017	1,015	1,019	1,044	1,057	1,064	1,067	1,056	1,042	1,027	1,026	10	3	0	11	25	40	41	3	5	6	3	1	1	1	**20**	13	7	3	-11	-14	-15	-1	6	6	6	3	3	3	5	**32**	**640**
1961	1,023	1,017	1,021	1,026	1,044	1,057	1,064	1,067	1,056	1,040	1,023	1,024	10	3	0	11	27	44	43	3	5	6	3	1	1	1	**20**	13	7	3	-11	-16	-17	1	6	6	6	3	2	2	6	**31**	**620**
1962	1,020	1,017	1,022	1,022	1,035	1,051	1,063	1,065	1,051	1,035	1,019	1,017	16	4	2	16	32	48	50	2	5	5	2	1	1	1	**17**	16	12	2	-14	-16	-16	-2	6	6	6	3	2	2	5	**30**	**510**
1963	1,023	1,017	1,021	1,025	1,045	1,055	1,052	1,067	1,064	1,053	1,041	1,036	12	15	0	3	14	26	31	3	2	6	5	3	1	1	**21**	10	-3	15	-3	-11	-12	-5	6	5	6	5	3	3	5	**33**	**693**
1964	1,023	1,017	1,018	1,032	1,036	1,040	1,035	1,030	1,017	999	982	981	27	32	37	50	68	85	86	1	1	1	1	1	1	1	**7**	4	-5	-5	-13	-18	-17	-1	6	5	5	3	2	2	5	**28**	**196**
1965	980	986	1,017	1,022	1,039	1,049	1,065	1,067	1,060	1,049	1,040	1,036	18	2	0	7	18	27	31	2	5	6	4	2	1	1	**21**	10	16	2	-7	-11	-9	-4	6	6	6	4	3	4	5	**34**	**714**
1966	1,023	1,017	1,021	1,037	1,049	1,055	1,065	1,065	1,056	1,045	1,034	1,034	12	2	2	11	22	33	33	3	5	5	3	1	1	1	**19**	6	10	0	-9	-11	-11	0	6	6	6	4	3	3	6	**34**	**646**
1967	1,023	1,017	1,021	1,030	1,044	1,048	1,064	1,067	1,067	1,058	1,047	1,036	19	3	0	0	9	20	31	2	5	6	6	4	1	1	**25**	4	16	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1968	1,023	1,017	1,019	1,025	1,034	1,054	1,057	1,059	1,046	1,035	1,029	1,030	13	10	8	21	32	38	37	3	3	4	1	1	1	1	**14**	20	3	2	-13	-11	-6	1	6	6	6	3	3	4	6	**34**	**476**
1969	1,023	1,017	1,021	1,022	1,027	1,048	1,063	1,067	1,067	1,058	1,047	1,036	19	4	0	0	9	20	31	2	5	6	6	4	1	1	**25**	21	15	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1970	1,023	1,017	1,020	1,017	1,025	1,051	1,055	1,055	1,044	1,033	1,020	1,018	16	12	12	23	34	47	49	2	3	3	1	1	1	1	**12**	26	4	0	-11	-11	-13	-2	6	6	6	3	3	3	5	**32**	**384**
1971	1,018	1,017	1,020	1,028	1,041	1,043	1,065	1,067	1,067	1,058	1,047	1,036	24	2	0	0	9	20	31	1	5	6	6	4	1	1	**24**	2	22	2	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1972	1,023	1,017	1,021	1,033	1,044	1,056	1,059	1,061	1,051	1,038	1,028	1,031	11	8	6	16	29	39	36	3	4	4	2	1	1	1	**16**	12	3	2	-10	-13	-10	3	6	6	6	4	3	4	6	**35**	**560**
1973	1,023	1,017	1,021	1,030	1,034	1,053	1,065	1,067	1,058	1,047	1,037	1,035	14	2	0	9	20	30	32	3	5	6	4	1	1	1	**21**	19	12	2	-9	-11	-10	-2	6	6	6	4	3	4	5	**34**	**714**
1974	1,023	1,017	1,018	1,017	1,036	1,025	1,058	1,067	1,067	1,058	1,047	1,036	42	9	0	0	9	20	31	1	4	6	6	4	1	1	**23**	-11	33	9	0	-9	-11	-11	3	6	6	6	4	3	3	**31**	**713**
1975	1,023	1,017	1,021	1,023	1,045	1,039	1,061	1,067	1,067	1,058	1,047	1,036	28	6	0	0	9	20	31	1	4	6	6	4	1	1	**23**	-6	22	6	0	-9	-11	-11	4	6	6	6	4	3	3	**32**	**736**
1976	1,023	1,017	1,018	1,017	1,012	1,018	1,026	1,025	1,006	992	989	990	49	41	42	61	75	78	77	1	1	1	1	1	1	1	**7**	6	8	-1	-19	-14	-3	1	6	6	5	2	3	5	6	**33**	**231**
1977	991	991	991	989	986	985	974	968	957	945	934	936	82	93	99	110	122	133	131	1	1	1	1	1	1	1	**7**	-1	-11	-6	-11	-12	-11	2	5	3	4	3	3	3	6	**27**	**189**
1978	934	936	963	1,020	1,031	1,047	1,067	1,067	1,064	1,057	1,047	1,036	20	0	0	3	10	20	31	1	6	6	5	3	1	1	**23**	16	20	0	-3	-7	-10	-11	6	6	6	5	4	4	3	**34**	**782**
1979	1,023	1,017	1,015	1,017	1,028	1,045	1,052	1,061	1,052	1,039	1,028	1,028	22	15	6	15	28	39	39	1	2	4	2	1	1	1	**12**	17	7	9	-9	-13	-11	0	6	6	6	4	3	3	6	**34**	**408**
1980	1,023	1,017	1,020	1,029	1,019	1,046	1,059	1,063	1,057	1,046	1,036	1,036	21	8	4	10	21	31	31	1	4	5	3	1	1	1	**16**	27	13	4	-6	-11	-10	0	6	6	6	4	3	4	6	**35**	**560**
1981	1,023	1,017	1,020	1,029	1,042	1,056	1,064	1,062	1,050	1,035	1,022	1,021	11	3	5	17	32	45	46	3	5	4	2	1	1	1	**17**	14	8	-2	-12	-15	-13	-1	6	6	5	3	3	3	5	**31**	**527**
1982	1,019	1,017	1,018	1,033	1,029	1,046	1,051	1,067	1,067	1,058	1,047	1,036	21	16	0	0	9	20	31	1	2	6	6	4	1	1	**21**	17	5	16	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1983	1,023	1,017	1,020	1,022	1,017	1,045	1,050	1,067	1,067	1,058	1,047	1,036	22	17	0	0	9	20	31	1	2	6	6	4	1	1	**21**	28	5	17	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1984	1,023	1,017	1,018	1,034	1,047	1,056	1,067	1,067	1,059	1,049	1,043	1,036	11	0	0	8	18	24	31	3	6	6	4	2	1	1	**23**	9	11	0	-8	-10	-6	-7	6	6	6	4	4	4	4	**34**	**782**
1985	1,023	1,017	1,022	1,023	1,027	1,033	1,041	1,035	1,019	1,003	990	991	34	26	32	48	64	77	76	1	1	1	1	1	1	1	**7**	6	8	-6	-16	-16	-13	1	6	6	4	2	2	3	6	**29**	**203**
1986	992	993	1,000	1,022	1,017	1,029	1,045	1,048	1,036	1,019	1,004	1,007	38	22	19	31	48	63	60	1	1	2	1	1	1	1	**8**	12	16	3	-12	-17	-15	3	6	6	6	3	2	3	6	**32**	**256**
1987	1,007	1,006	1,005	1,006	1,016	1,042	1,046	1,042	1,020	1,002	988	987	25	21	25	47	65	79	80	1	1	1	1	1	1	1	**7**	26	4	-4	-22	-18	-14	-1	6	6	5	1	2	3	5	**28**	**196**
1988	986	987	1,008	1,026	1,030	1,035	1,040	1,041	1,029	1,012	1,000	997	32	27	26	38	55	67	70	1	1	1	1	1	1	1	**7**	5	5	1	-12	-17	-12	-3	6	6	6	3	2	3	5	**31**	**217**
1989	994	1,000	1,001	1,002	1,003	1,042	1,057	1,049	1,039	1,025	1,015	1,015	25	10	18	28	42	52	52	1	3	2	1	1	1	1	**10**	39	15	-8	-10	-14	-10	0	6	6	4	4	3	4	6	**33**	**330**
1990	1,017	1,015	1,011	1,017	1,017	1,024	1,019	1,026	1,021	1,003	990	987	43	48	41	46	64	77	80	1	1	1	1	1	1	1	**7**	7	-5	7	-5	-18	-13	-3	6	5	6	5	2	3	5	**32**	**224**
1991	985	984	980	978	977	996	1,002	1,002	994	984	969	963	71	65	65	73	83	98	104	1	1	1	1	1	1	1	**7**	19	6	0	-8	-10	-15	-6	6	6	6	4	4	3	4	**33**	**231**
1992	960	958	958	962	996	1,017	1,030	1,024	1,010	998	986	982	50	37	43	57	69	81	85	1	1	1	1	1	1	1	**7**	21	13	-6	-14	-12	-12	-4	6	6	4	3	3	3	5	**30**	**210**
1993	981	980	990	1,016	1,044	1,031	1,057	1,067	1,067	1,057	1,049	1,049	36	10	0	0	10	18	18	1	3	6	6	3	2	2	**23**	-13	26	10	0	-10	-8	0	3	6	6	6	4	4	6	**35**	**805**
1994	1,043	1,017	1,019	1,020	1,026	1,027	1,028	1,027	1,007	990	978	975	40	39	40	60	77	89	92	1	1	1	1	1	1	1	**7**	1	1	-1	-20	-17	-12	-3	6	6	5	2	2	3	5	**29**	**203**

73 - year Average: 15

73 - year Average: 32 **486.6**

1929 - '34 Average: 214.7

STUDY: 1995C06H-SWRCB-513 DWRSIM: recirc818-h, 05 Sep 97
CP # 6, LAKE OROVILLE, EOP SURFACE ELEVATION (FT)
Project: /1995C06H-SWRCB-513/6/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 900'

Difference from Maximum Reservoir Elevation [DFMRE]

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	834	834	837	846	850	858	893	900	900	891	888	887	42	7	0	0	9	12	13
1923	874	874	858	862	862	874	895	900	894	856	833	835	26	5	0	6	44	67	65
1924	830	822	800	805	822	811	807	788	739	706	687	681	89	93	112	161	194	213	219
1925	682	686	693	709	779	787	816	824	816	790	779	778	113	84	76	84	110	121	122
1926	774	776	781	794	837	856	887	879	868	828	791	786	44	13	21	32	72	109	114
1927	772	803	806	831	849	863	890	900	900	871	867	864	37	10	0	0	29	33	36
1928	861	861	864	868	871	849	878	866	859	817	782	776	51	22	34	41	83	118	124
1929	767	763	761	766	777	791	793	795	780	745	730	723	109	107	105	120	155	170	177
1930	716	705	768	796	824	856	878	886	874	836	811	808	44	22	14	26	64	89	92
1931	791	783	758	772	784	805	795	784	749	711	692	686	95	105	116	151	189	208	214
1932	676	664	675	699	721	758	769	802	790	772	763	759	142	131	98	110	128	137	141
1933	753	741	741	752	761	768	771	787	778	760	753	747	132	129	113	122	140	147	153
1934	745	741	748	771	795	811	794	792	772	749	739	726	89	106	108	128	151	161	174
1935	715	719	726	753	773	801	877	880	880	848	831	827	99	23	20	20	52	69	73
1936	822	819	812	849	849	860	886	878	878	846	832	828	40	14	22	22	54	68	72
1937	822	812	808	811	825	849	874	896	892	866	853	849	51	26	4	8	34	47	51
1938	846	854	854	858	849	849	882	900	900	899	896	887	51	18	0	0	1	4	13
1939	874	864	854	845	837	833	823	823	793	733	694	690	67	77	77	107	167	206	210
1940	682	669	670	731	830	849	879	888	885	856	850	843	51	21	12	15	44	50	57
1941	837	835	849	849	849	858	886	900	900	897	892	887	42	14	0	0	3	8	13
1942	874	874	849	849	850	867	882	900	900	897	894	887	33	18	0	0	3	6	13
1943	874	869	861	849	856	859	887	897	900	875	865	865	41	13	3	0	25	35	35
1944	866	869	868	870	857	868	879	895	880	841	822	818	32	21	5	20	59	78	82
1945	809	816	828	838	862	865	880	896	888	850	836	833	35	20	4	12	50	64	67
1946	833	838	849	864	868	868	887	900	886	849	823	821	32	13	0	14	51	77	79
1947	814	820	825	829	848	862	872	868	853	810	759	739	38	28	32	47	90	141	161
1948	742	744	740	773	777	797	852	881	887	852	825	821	103	48	19	13	48	75	79
1949	814	810	810	815	822	841	848	860	846	800	770	765	59	52	40	54	100	130	135
1950	759	759	760	788	830	859	889	900	900	863	833	833	41	11	0	0	37	67	67
1951	837	849	854	853	858	870	886	900	898	859	833	833	30	14	0	2	41	67	67
1952	837	840	849	849	852	862	894	900	900	900	899	887	38	6	0	0	0	1	13
1953	874	874	858	850	867	867	883	900	900	886	884	885	33	17	0	0	14	16	15
1954	874	871	874	858	857	859	883	868	863	823	783	783	41	17	32	37	77	117	117
1955	784	786	794	807	816	825	832	842	827	773	751	747	75	68	58	73	127	149	153
1956	739	735	849	849	849	864	892	900	900	891	888	887	36	8	0	0	9	12	13
1957	869	874	874	871	853	863	867	885	885	847	821	825	37	33	15	15	53	79	75
1958	826	829	843	854	849	849	879	900	900	898	894	887	51	21	0	0	2	6	13
1959	874	874	874	862	852	867	869	872	853	810	769	773	33	31	28	47	90	131	127
1960	765	756	756	768	826	857	870	876	866	836	828	812	43	30	24	34	64	72	88
1961	789	792	801	812	834	852	861	866	850	805	753	743	48	39	34	50	95	147	157
1962	724	725	735	749	808	835	863	869	859	826	809	796	65	37	31	41	74	91	104
1963	849	857	867	859	867	858	876	900	900	870	864	865	42	24	0	0	30	36	35
1964	866	865	867	866	874	874	880	885	876	836	793	776	26	20	15	24	64	107	124
1965	764	764	849	849	863	870	887	885	888	861	860	861	30	13	15	12	39	40	39
1966	865	859	860	864	870	874	890	884	868	830	785	780	26	10	16	32	70	115	120
1967	770	780	818	849	860	853	879	900	900	900	896	887	47	21	0	0	0	4	13
1968	874	874	873	858	861	866	866	871	858	819	791	789	34	34	29	42	81	109	111
1969	791	796	819	849	849	865	895	900	900	895	893	874	35	5	0	0	5	7	26
1970	874	874	850	849	849	874	872	874	867	830	818	819	26	28	26	33	70	82	81
1971	821	839	849	864	874	874	893	900	900	877	870	872	26	7	0	0	23	30	28
1972	874	874	865	869	867	874	871	875	858	819	771	771	26	29	25	42	81	129	129
1973	768	783	810	849	849	860	882	900	887	850	836	834	40	18	0	13	50	64	66
1974	836	849	850	854	864	849	883	900	900	900	899	886	51	17	0	0	0	1	14
1975	874	874	874	874	855	852	881	900	900	890	889	886	48	19	0	0	10	11	14
1976	873	874	874	874	874	874	871	864	846	804	766	765	26	29	36	54	96	134	135
1977	759	750	736	732	716	712	692	682	660	639	630	627	188	208	218	240	261	270	273
1978	615	616	651	764	817	859	878	897	896	881	876	884	41	22	3	4	19	24	16
1979	874	874	874	871	853	863	878	896	865	838	828	826	37	22	4	35	62	72	74
1980	831	834	842	850	849	865	881	893	888	879	872	871	35	19	7	12	21	28	29
1981	869	871	874	860	868	865	875	872	853	811	778	778	35	25	28	47	89	122	122
1982	786	849	849	859	862	859	884	900	900	897	893	887	41	16	0	0	3	7	13
1983	873	862	858	853	849	849	877	900	900	900	899	887	51	23	0	0	0	1	13
1984	874	860	849	869	869	871	886	895	892	859	851	853	29	14	5	8	41	49	47
1985	857	862	872	874	874	871	886	874	854	813	763	759	29	14	26	46	87	137	141
1986	752	749	755	788	849	849	871	875	871	845	839	849	51	29	25	29	55	61	51
1987	852	858	856	857	868	867	857	847	824	767	732	727	33	43	53	76	133	168	173
1988	714	716	755	780	783	785	784	782	758	715	703	700	115	116	118	142	185	197	200
1989	692	710	721	728	741	849	859	842	834	785	737	737	51	41	58	66	115	163	163
1990	750	752	756	769	777	803	785	785	771	745	731	726	97	115	115	129	155	169	174
1991	711	702	689	687	680	727	750	762	754	732	725	723	173	150	138	146	168	175	177
1992	723	718	719	723	754	778	794	785	761	733	721	717	122	106	115	139	167	179	183
1993	713	704	723	785	831	861	894	900	900	885	881	879	39	6	0	0	15	19	21
1994	874	874	874	871	862	874	873	870	852	814	773	768	26	27	30	48	86	127	132

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Change MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	1	4	6	6	4	3	3	**27**	8	35	7	0	-9	-3	-1
1923	1	4	6	4	1	1	1	**18**	12	21	5	-6	-38	-23	2
1924	1	1	1	1	1	1	1	**7**	-11	-4	-19	-49	-33	-19	-6
1925	1	1	1	1	1	1	1	**7**	8	29	8	-8	-26	-11	-1
1926	1	3	1	1	1	1	1	**9**	19	31	-8	-11	-40	-37	-5
1927	1	3	6	6	1	1	1	**19**	14	27	10	0	-29	-4	-3
1928	1	1	1	1	1	1	1	**7**	-22	29	-12	-7	-42	-35	-6
1929	1	1	1	1	1	1	1	**7**	14	2	2	-15	-35	-15	-7
1930	1	1	3	1	1	1	1	**9**	32	22	8	-12	-38	-25	-3
1931	1	1	1	1	1	1	1	**7**	21	-10	-11	-35	-38	-19	-6
1932	1	1	1	1	1	1	1	**7**	37	11	33	-12	-18	-9	-4
1933	1	1	1	1	1	1	1	**7**	7	3	16	-9	-18	-7	-6
1934	1	1	1	1	1	1	1	**7**	16	-17	-2	-20	-23	-10	-13
1935	1	1	1	1	1	1	1	**7**	28	76	3	0	-32	-17	-4
1936	1	3	1	1	1	1	1	**9**	11	26	-8	0	-32	-14	-4
1937	1	1	5	4	1	1	1	**14**	24	25	22	-4	-26	-13	-4
1938	1	2	6	6	5	5	3	**28**	0	33	18	0	-1	-3	-9
1939	1	1	1	1	1	1	1	**7**	-4	-10	0	-30	-60	-39	-4
1940	1	1	3	2	1	1	1	**10**	19	30	9	-3	-29	-6	-7
1941	1	3	6	6	5	4	3	**28**	9	28	14	0	-3	-5	-5
1942	1	2	6	6	5	4	3	**27**	17	15	18	0	-3	-3	-7
1943	1	3	5	6	1	1	1	**18**	3	28	10	3	-25	-10	0
1944	1	1	4	1	1	1	1	**10**	11	11	16	-15	-39	-19	-4
1945	1	1	5	3	1	1	1	**13**	3	15	16	-8	-38	-14	-3
1946	1	3	6	3	1	1	1	**16**	0	19	13	-14	-37	-26	-2
1947	1	1	1	1	1	1	1	**7**	14	10	-4	-15	-43	-51	-20
1948	1	1	2	3	1	1	1	**10**	20	55	29	6	-35	-27	-4
1949	1	1	1	1	1	1	1	**7**	19	7	12	-14	-46	-30	-5
1950	1	3	6	6	1	1	1	**19**	29	30	11	0	-37	-30	0
1951	1	3	6	5	1	1	1	**18**	12	16	14	-2	-39	-26	0
1952	1	4	6	6	6	5	3	**31**	10	32	6	0	0	-1	-12
1953	1	2	6	6	3	2	2	**22**	0	16	17	0	-14	-2	1
1954	1	2	1	1	1	1	1	**8**	2	24	-15	-5	-40	-40	0
1955	1	1	1	1	1	1	1	**7**	9	7	10	-15	-54	-22	-4
1956	1	4	6	6	4	3	3	**27**	15	28	8	0	-9	-3	-1
1957	1	1	2	2	1	1	1	**9**	10	4	18	0	-38	-26	4
1958	1	1	6	6	5	4	3	**26**	0	30	21	0	-2	-4	-7
1959	1	1	1	1	1	1	1	**7**	15	2	3	-19	-43	-41	4
1960	1	1	1	1	1	1	1	**7**	31	13	6	-10	-30	-8	-16
1961	1	1	1	1	1	1	1	**7**	18	9	5	-16	-45	-52	-10
1962	1	1	1	1	1	1	1	**7**	27	28	6	-10	-33	-17	-13
1963	1	1	6	6	1	1	1	**17**	-9	18	24	0	-30	-6	1
1964	1	1	2	1	1	1	1	**8**	0	6	5	-9	-40	-43	-17
1965	1	3	2	3	1	1	1	**12**	7	17	-2	3	-27	-1	1
1966	1	3	2	1	1	1	1	**10**	4	16	-6	-16	-38	-45	-5
1967	1	1	6	6	6	5	3	**28**	-7	26	21	0	0	-4	-9
1968	1	1	1	1	1	1	1	**7**	5	0	5	-13	-39	-28	-2
1969	1	4	6	6	4	4	1	**26**	16	30	5	0	-5	-2	-19
1970	1	1	1	1	1	1	1	**7**	25	-2	2	-7	-37	-12	1
1971	1	4	6	6	1	1	1	**20**	0	19	7	0	-23	-7	2
1972	1	1	1	1	1	1	1	**7**	7	-3	4	-17	-39	-48	0
1973	1	2	6	3	1	1	1	**15**	11	22	18	-13	-37	-14	-2
1974	1	2	6	6	6	5	3	**29**	-15	34	17	0	0	-1	-13
1975	1	2	6	6	3	3	3	**24**	-3	29	19	0	-10	-1	-3
1976	1	1	1	1	1	1	1	**7**	0	-3	-7	-18	-42	-38	-1
1977	1	1	1	1	1	1	1	**7**	-4	-20	-10	-22	-21	-9	-3
1978	1	1	5	5	2	1	2	**17**	42	19	19	-1	-15	-5	8
1979	1	1	5	1	1	1	1	**11**	10	15	18	-31	-27	-10	-2
1980	1	2	4	3	1	1	1	**13**	16	16	12	-5	-9	-7	-1
1981	1	1	1	1	1	1	1	**7**	-3	10	-3	-19	-42	-33	0
1982	1	2	6	6	5	4	3	**27**	-3	25	16	0	-3	-4	-6
1983	1	1	6	6	6	5	3	**28**	0	28	23	0	0	-1	-12
1984	1	3	4	4	1	1	1	**15**	2	15	9	-3	-33	-8	2
1985	1	3	1	1	1	1	1	**9**	-3	15	-12	-20	-41	-50	-4
1986	1	1	1	1	1	1	1	**7**	0	22	4	-4	-26	-6	10
1987	1	1	1	1	1	1	1	**7**	-1	-10	-10	-23	-57	-35	-5
1988	1	1	1	1	1	1	1	**7**	2	-1	-2	-24	-43	-12	-3
1989	1	1	1	1	1	1	1	**7**	108	10	-17	-8	-49	-48	0
1990	1	1	1	1	1	1	1	**7**	26	-18	0	-14	-26	-14	-5
1991	1	1	1	1	1	1	1	**7**	47	23	12	-8	-22	-7	-2
1992	1	1	1	1	1	1	1	**7**	24	16	-9	-24	-28	-12	-4
1993	1	4	6	6	2	2	1	**22**	30	33	6	0	-15	-4	-2
1994	1	1	1	1	1	1	1	**7**	12	-1	-3	-18	-38	-41	-5
						73 - year Average:		**13**							

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	6	6	6	6	4	5	5	**38**	**1026**
1923	6	6	6	4	1	1	6	**30**	**540**
1924	3	5	2	1	1	2	4	**18**	**126**
1925	6	6	6	4	1	3	5	**31**	**217**
1926	6	6	4	3	1	1	5	**26**	**234**
1927	6	6	6	6	1	5	5	**35**	**665**
1928	1	6	3	4	1	1	4	**20**	**140**
1929	6	6	6	3	1	3	4	**29**	**203**
1930	6	6	6	3	1	1	5	**28**	**252**
1931	6	4	3	1	1	2	4	**21**	**147**
1932	6	6	6	3	2	4	5	**32**	**224**
1933	6	6	6	4	2	4	4	**32**	**224**
1934	6	2	5	2	1	4	3	**23**	**161**
1935	6	6	6	6	1	2	5	**32**	**224**
1936	6	6	4	6	1	3	5	**31**	**279**
1937	6	6	6	5	1	3	5	**32**	**448**
1938	6	6	6	6	5	5	4	**38**	**1064**
1939	5	4	6	1	1	1	5	**23**	**161**
1940	6	6	6	5	1	4	4	**32**	**320**
1941	6	6	6	6	5	5	5	**39**	**1092**
1942	6	6	6	6	5	5	4	**38**	**1026**
1943	6	6	6	6	1	4	6	**35**	**630**
1944	6	6	6	3	1	2	5	**29**	**290**
1945	6	6	6	4	1	3	5	**31**	**403**
1946	6	6	6	3	1	1	5	**28**	**448**
1947	6	6	5	3	1	1	2	**24**	**168**
1948	6	6	6	6	1	1	5	**31**	**310**
1949	6	6	6	3	1	1	5	**28**	**196**
1950	6	6	6	6	1	1	6	**32**	**608**
1951	6	6	6	5	1	1	6	**31**	**558**
1952	6	6	6	6	6	5	3	**38**	**1178**
1953	6	6	6	6	3	5	6	**38**	**836**
1954	6	6	3	5	1	1	6	**28**	**224**
1955	6	6	6	3	1	1	5	**28**	**196**
1956	6	6	6	6	4	5	5	**38**	**1026**
1957	6	6	6	6	1	1	6	**32**	**288**
1958	6	6	6	6	5	5	4	**38**	**988**
1959	6	6	6	2	1	1	6	**28**	**196**
1960	6	6	6	4	1	4	2	**29**	**203**
1961	6	6	6	2	1	1	4	**26**	**182**
1962	6	6	6	4	1	2	3	**28**	**196**
1963	4	6	6	6	1	4	6	**33**	**561**
1964	6	6	6	4	1	1	2	**26**	**208**
1965	6	6	5	6	1	5	6	**35**	**420**
1966	6	6	4	2	1	1	5	**25**	**250**
1967	4	6	6	6	6	5	4	**37**	**1036**
1968	6	6	6	3	1	1	5	**28**	**196**
1969	6	6	6	6	5	5	2	**36**	**936**
1970	6	5	6	4	1	3	6	**31**	**217**
1971	6	6	6	6	1	4	6	**35**	**700**
1972	6	5	6	2	1	1	6	**27**	**189**
1973	6	6	6	3	1	3	5	**30**	**450**
1974	3	6	6	6	6	5	3	**35**	**1015**
1975	5	6	6	6	4	5	5	**37**	**888**
1976	6	5	4	2	1	1	5	**24**	**168**
1977	5	2	4	1	1	4	5	**22**	**154**
1978	6	6	6	5	3	5	6	**37**	**629**
1979	6	6	6	1	1	4	5	**29**	**319**
1980	6	6	6	5	4	4	5	**36**	**468**
1981	5	6	5	2	1	1	6	**26**	**182**
1982	5	6	6	6	5	5	4	**37**	**999**
1983	6	6	6	6	6	5	3	**38**	**1064**
1984	6	6	6	5	1	4	6	**34**	**510**
1985	5	6	3	2	1	1	5	**23**	**207**
1986	6	6	6	5	1	4	6	**34**	**238**
1987	5	4	4	1	1	1	5	**21**	**147**
1988	6	5	5	1	1	3	5	**26**	**182**
1989	6	6	2	4	1	1	6	**26**	**182**
1990	6	2	6	3	1	3	5	**26**	**182**
1991	6	6	6	4	1	4	5	**32**	**224**
1992	6	6	4	1	1	3	5	**26**	**182**
1993	6	6	6	6	3	5	5	**37**	**814**
1994	6	5	5	2	1	1	5	**25**	**175**
					73 - year Average:			**30**	**438.2**
						1929 - '34 Average:			**201.8**

Flow Alternative 5

STUDY: 1995C06H-SWRCB-513 DWRSIM: recirc818-h, 05 Sep 97
CP # 8, FOLSOM LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06H-SWRCB-513/8/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 466'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	414	409	414	414	424	428	443	466	466	463	449	434	38	23	0	0	3	17	32	1	1	6	6	5	2	1	**22**	4	15	23	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**770**
1923	425	423	424	424	421	424	449	466	451	448	443	434	42	17	0	15	18	23	32	1	2	6	2	2	1	1	**15**	3	25	17	-15	-3	-5	-9	6	6	6	3	5	5	4	**35**	**525**
1924	425	416	407	395	388	373	382	385	388	388	389	392	93	84	81	78	78	77	74	1	1	1	1	1	1	1	**7**	-15	9	3	3	0	1	3	3	6	6	6	6	6	6	**39**	**273**
1925	395	395	398	399	424	420	449	466	456	449	444	434	46	17	0	10	17	22	32	1	2	6	3	2	1	1	**16**	-4	29	17	-10	-7	-5	-10	5	6	6	4	4	5	4	**34**	**544**
1926	425	419	414	405	419	420	449	449	433	415	406	408	46	17	17	33	51	60	58	1	2	2	1	1	1	1	**9**	1	29	0	-16	-18	-9	2	6	6	6	2	2	4	6	**32**	**288**
1927	403	418	424	424	424	437	449	466	464	460	449	434	29	17	0	2	6	17	32	1	2	6	5	4	2	1	**21**	13	12	17	-2	-4	-11	-15	6	6	6	5	5	3	3	**34**	**714**
1928	425	424	424	424	424	437	449	456	440	427	421	423	29	17	10	26	39	45	43	1	2	3	1	1	1	1	**10**	13	12	7	-16	-13	-6	2	6	6	6	2	3	4	6	**33**	**330**
1929	417	408	401	388	386	384	401	410	396	369	376	386	82	65	56	70	97	90	80	1	1	1	1	1	1	1	**7**	-2	17	9	-14	-27	7	10	5	6	6	3	1	6	6	**33**	**231**
1930	392	394	415	424	424	437	443	442	429	412	405	406	29	23	24	37	54	61	60	1	1	1	1	1	1	1	**7**	13	6	-1	-13	-17	-7	1	6	6	5	3	2	4	6	**32**	**224**
1931	397	394	387	381	374	378	385	392	390	389	390	393	88	81	74	76	77	76	73	1	1	1	1	1	1	1	**7**	4	7	7	-2	-1	1	3	6	6	6	5	5	6	6	**40**	**280**
1932	388	385	402	413	424	434	443	459	457	448	443	434	32	23	7	9	18	23	32	1	1	4	4	2	1	1	**14**	10	9	16	-2	-9	-5	-9	6	6	6	5	4	5	4	**36**	**504**
1933	424	416	409	398	385	388	392	408	410	399	398	405	78	74	58	56	67	68	61	1	1	1	1	1	1	1	**7**	3	4	16	2	-11	-1	7	6	6	6	6	3	5	6	**38**	**266**
1934	401	396	404	412	419	428	435	433	412	387	370	375	38	31	33	54	79	96	91	1	1	1	1	1	1	1	**7**	9	7	-2	-21	-25	-17	5	6	6	5	1	1	2	6	**27**	**189**
1935	375	389	401	419	424	427	449	466	458	452	448	434	39	17	0	8	14	18	32	1	2	6	4	3	2	1	**19**	3	22	17	-8	-6	-4	-14	6	6	6	4	4	5	3	**34**	**646**
1936	426	420	415	424	424	437	449	461	456	454	449	434	29	17	5	10	12	17	32	1	2	4	3	3	2	1	**16**	13	12	12	-5	-2	-5	-15	6	6	6	5	5	5	3	**36**	**576**
1937	425	417	411	404	424	437	449	466	452	446	441	434	29	17	0	14	20	25	32	1	2	6	3	1	1	1	**15**	13	12	17	-14	-6	-5	-7	6	6	6	3	4	5	4	**34**	**510**
1938	426	423	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1939	426	420	415	409	402	409	417	418	406	390	385	392	57	49	48	60	76	81	74	1	1	1	1	1	1	1	**7**	7	8	1	-12	-16	-5	7	6	6	6	3	2	5	6	**34**	**238**
1940	397	396	392	424	424	437	449	464	449	443	438	434	29	17	2	17	23	28	32	1	2	5	2	1	1	1	**13**	13	12	15	-15	-6	-5	-4	6	6	6	3	4	5	5	**35**	**455**
1941	425	420	424	424	424	437	449	466	458	455	449	434	29	17	0	8	11	17	32	1	2	6	4	3	2	1	**19**	13	12	17	-8	-3	-6	-15	6	6	6	4	5	4	3	**34**	**646**
1942	426	422	424	424	424	430	449	466	466	463	449	434	36	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	6	19	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1943	425	424	423	422	422	434	449	459	452	450	446	434	32	17	7	14	16	20	32	1	2	4	3	2	1	1	**14**	12	15	10	-7	-2	-4	-12	6	6	6	4	5	5	3	**35**	**490**
1944	425	419	413	405	407	419	420	433	426	416	416	419	47	46	33	40	50	50	47	1	1	1	1	1	1	1	**7**	12	1	13	-7	-10	0	3	6	6	6	4	4	6	6	**38**	**266**
1945	414	418	421	421	424	437	449	466	454	449	444	434	29	17	0	12	17	22	32	1	2	6	3	2	1	1	**16**	13	12	17	-12	-5	-5	-10	6	6	6	3	5	5	4	**35**	**560**
1946	427	424	424	424	424	437	449	466	451	445	440	434	29	17	0	15	21	26	32	1	2	6	2	1	1	1	**14**	13	12	17	-15	-6	-5	-6	6	6	6	3	4	5	4	**34**	**476**
1947	425	424	423	414	417	433	442	445	431	414	411	413	33	24	21	35	52	55	53	1	1	1	1	1	1	1	**7**	16	9	3	-14	-17	-3	2	6	6	6	3	2	5	6	**34**	**238**
1948	412	409	405	413	410	411	445	466	463	459	449	434	55	21	0	3	7	17	32	1	1	6	5	4	2	1	**20**	1	34	21	-3	-4	-10	-15	6	6	6	5	5	4	3	**35**	**700**
1949	425	419	416	406	400	422	441	460	449	438	432	431	44	25	6	17	28	34	35	1	1	4	2	1	1	1	**11**	22	19	19	-11	-11	-6	-1	6	6	6	3	3	4	5	**33**	**363**
1950	422	415	408	424	424	437	449	466	455	452	447	434	29	17	0	11	14	19	32	1	2	6	3	3	2	1	**18**	13	12	17	-11	-3	-5	-13	6	6	6	3	5	5	3	**34**	**612**
1951	429	393	388	388	388	426	449	466	451	442	437	434	40	17	0	15	24	29	32	1	2	6	2	1	1	1	**14**	38	23	17	-15	-9	-5	-3	6	6	6	3	4	5	5	**35**	**490**
1952	427	424	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1953	428	423	424	424	424	430	446	458	464	463	449	434	36	20	8	2	3	17	32	1	1	4	5	5	2	1	**19**	6	16	12	6	-1	-14	-15	6	6	6	6	5	3	3	**35**	**665**
1954	425	423	421	422	424	437	449	455	440	429	424	427	29	17	11	26	37	42	39	1	2	3	1	1	1	1	**10**	13	12	6	-15	-11	-5	3	6	6	6	3	3	5	6	**35**	**350**
1955	422	415	419	424	424	416	420	437	431	418	416	419	50	46	29	35	48	50	47	1	1	1	1	1	1	1	**7**	-8	4	17	-6	-13	-2	3	4	6	6	4	3	5	6	**34**	**238**
1956	413	406	420	402	406	425	441	466	466	463	449	434	41	25	0	0	3	17	32	1	1	6	6	5	2	1	**22**	19	16	25	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**770**
1957	428	422	417	412	424	437	436	461	449	443	438	434	29	30	5	17	23	28	32	1	1	4	2	1	1	1	**11**	13	-1	25	-12	-6	-5	-4	6	5	6	3	4	5	5	**34**	**374**
1958	426	421	422	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1959	425	419	412	417	424	428	435	435	421	404	392	401	38	31	31	45	62	74	65	1	1	1	1	1	1	1	**7**	4	7	0	-14	-17	-12	9	6	6	6	3	2	3	6	**32**	**224**
1960	398	391	384	385	420	437	449	447	436	419	414	415	29	17	19	30	47	52	51	1	2	2	1	1	1	1	**9**	17	12	-2	-11	-17	-5	1	6	6	5	3	2	5	6	**33**	**297**
1961	408	403	397	386	387	392	404	416	408	396	391	397	74	62	50	58	70	75	69	1	1	1	1	1	1	1	**7**	5	12	12	-8	-12	-5	6	6	6	6	4	3	5	6	**36**	**252**
1962	392	383	380	372	421	430	449	457	443	433	426	427	36	17	9	23	33	40	39	1	2	4	1	1	1	1	**11**	9	19	8	-14	-10	-7	1	6	6	6	3	4	4	6	**35**	**385**
1963	441	424	424	424	419	430	449	466	460	455	449	434	36	17	0	6	11	17	32	1	2	6	4	3	2	1	**19**	11	19	17	-6	-5	-6	-15	6	6	6	4	5	4	3	**34**	**646**
1964	427	424	424	424	421	419	430	436	422	407	405	403	47	36	30	44	59	61	63	1	1	1	1	1	1	1	**7**	-2	11	6	-14	-15	-2	-2	5	6	6	3	3	5	5	**33**	**231**
1965	402	404	393	392	395	414	449	465	458	457	449	434	52	17	1	8	9	17	32	1	2	5	4	4	2	1	**19**	19	35	16	-7	-1	-8	-15	6	6	6	4	5	4	3	**34**	**646**
1966	426	424	424	424	422	430	446	447	433	417	412	413	36	20	19	33	49	54	53	1	1	2	1	1	1	1	**8**	8	16	1	-14	-16	-5	1	6	6	6	3	2	5	6	**34**	**272**
1967	407	409	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1968	427	424	423	424	424	437	441	442	424	409	406	408	29	25	24	42	57	60	58	1	1	1	1	1	1	1	**7**	13	4	1	-18	-15	-3	2	6	6	6	2	3	5	6	**34**	**238**
1969	403	407	416	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1970	427	424	423	393	396	426	432	441	431	425	421	424	40	34	25	35	41	45	42	1	1	1	1	1	1	1	**7**	30	6	9	-10	-6	-4	3	6	6	6	4	4	5	6	**37**	**259**
1971	418	424	424	424	424	437	449	463	463	461	449	434	29	17	3	3	5	17	32	1	2	5	5	4	2	1	**20**	13	12	14	0	-2	-12	-15	6	6	6	6	5	3	3	**35**	**700**
1972	425	422	424	424	424	437	437	444	433	418	416	418	29	29	22	33	48	50	48	1	1	1	1	1	1	1	**7**	13	0	7	-11	-15	-2	2	6	6	6	3	3	5	6	**35**	**245**
1973	414	415	424	424	424	437	449	466	450	442	436	434	29	17	0	16	24	30	32	1	2	6	2	1	1	1	**14**	13	12	17	-16	-8	-6	-2	6	6	6	2	4	4	5	**33**	**462**
1974	427	423	422	409	417	433	449	466	463	463	449	434	33	17	0	3	3	17	32	1	2	6	5	5	2	1	**22**	16	16	17	-3	0	-14	-15	6	6	6	5	6	3	3	**35**	**770**
1975	426	419	417	415	424	437	441	466	466	463	449	434	29	25	0	0	3	17	32	1	1	6	6	5	2	1	**22**	13	4	25	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**770**
1976	431	423	419	410	402	394	399	405	387	368	372	376	72	67	61	79	98	94	90	1	1	1	1	1	1	1	**7**	-8	5	6	-18	-19	4	4	4	6	6	2	2	6	6	**32**	**224**
1977	381	383	381	379	357	358	358	363	363	355	346	339	108	108	103	103	111	120	127	1	1	1	1	1	1	1	**7**	1	0	5	0	-8	-9	-7	6	6	6	6	4	4	4	**36**	**252**
1978	334	334	372	424	424	437	449	466	460	457	449	434	29	17	0	6	9	17	32	1	2	6	4	4	2	1	**20**	13	12	17	-6	-3	-8	-15	6	6	6	4	5	4	3	**34**	**680**
1979	423	417	411	418	424	437	447	466	455	445	439	434	29	19	0	11	21	27	32	1	2	6	3	1	1	1	**15**	13	10	19	-11	-10	-6	-5	6	6	6	3	4	4	5	**34**	**510**
1980	427	424	424	405	399	430	449	464	456	455	449	434	36	17	2	10	11	17	32	1	2	5	3	3	2	1	**17**	31	19	15	-8	-1	-6	-15	6	6	6	4	5	4	3	**34**	**578**
1981	425	419	415	413	412	422	433	435	419	402	397	403	44	33	31	47	64	69	63	1	1	1	1	1	1	1	**7**	10	11	2	-16	-17	-5	6	6	6	6	2	2	5	6	**33**	**231**
1982	403	420	392	396	388	424	449	466	466	463	449	434	42	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	36	25	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1983	438	415	417	418	418	433	449	466	466	463	449	434	33	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	15	16	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1984	435	392	388	388	392	424	444	464	452	447	442	434	42	22	2	14	19	24	32	1	1	5	3	2	1	1	**14**	32	20	20	-12	-5	-5	-8	6	6	6	3	5	5	4	**35**	**490**
1985	427	424	424	420	422	428	443	447	433	415	411	415	38	23	19	33	51	55	51	1	1	2	1	1	1	1	**8**	6	15	4	-14	-18	-4	4	6	6	6	3	2	5	6	**34**	**272**
1986	409	410	419	424	396	424	449	464	457	452	448	434	42	17	2	9	14	18	32	1	2	5	4	3	2	1	**18**	28	25	15	-7	-5	-4	-14	6	6	6	4	5	5	3	**35**	**630**
1987	427	420	413	405	404	410	419	423	403	382	363	369	56	47	43	63	84	103	97	1	1	1	1	1	1	1	**7**	6	9	4	-20	-21	-19	6	6	6	6	2	1	2	6	**29**	**203**
1988	364	362	386	407	411	412	415	410	389	362	330	399	54	51	56	77	104	136	67	1	1	1	1	1	1	1	**7**	1	3	-5	-21	-27	-32	69	6	6	5	1	1	1	6	**26**	**182**
1989	391	391	391	389	393	437	448	447	437	424	418	422	29	18	19	29	42	48	44	1	2	2	1	1	1	1	**9**	44	11	-1	-10	-13	-6	4	6	6	5	4	3	4	6	**34**	**306**
1990	419	414	407	405	403	414	423	424	407	388	386	394	52	43	42	59	78	80	72	1	1	1	1	1	1	1	**7**	11	9	1	-17	-19	-2	8	6	6	6	2	2	5	6	**33**	**231**
1991	394	388	381	371	361	394	415	433	434	429	420	419	72	51	33	32	37	46	47	1	1	1	1	1	1	1	**7**	33	21	18	1	-5	-9	-1	6	6	6	6	5	4	5	**38**	**266**
1992	413	403	391	375	394	408	418	418	406	389	380	378	58	48	48	60	77	86	88	1	1	1	1	1	1	1	**7**	14	10	0	-12	-17	-9	-2	6	6	6	3	2	4	5	**32**	**224**
1993	377	377	394	424	427	434	449	466	466	460	449	434	32	17	0	0	6	17	32	1	2	6	6	4	2	1	**22**	7	15	17	0	-6	-11	-15	6	6	6	6	4	3	3	**34**	**748**
1994	423	413	407	395	390	388	397	402	389	375	376	374	78	69	64	77	91	90	92	1	1	1	1	1	1	1	**7**	-2	9	5	-13	-14	1	-2	5	6	6	3	3	6	5	**34**	**238**

73 - year Average: 13

73 - year Average: 34 **464.4**

1929 - '34 Average: 282.3

STUDY: 1995C06H-SWRCB-513 DWRSIM: recirc818-h, 05 Sep 97
CP # 10, NEW MELONES RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06H-SWRCB-513/10/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 1088'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	940	943	949	954	968	978	977	1005	1026	1019	1009	1001
1923	1000	1003	1011	1019	1025	1029	1032	1047	1047	1039	1028	1021
1924	1020	1022	1025	1028	1031	1031	1025	1019	1011	1005	998	994
1925	994	996	999	1001	1015	1024	1025	1038	1039	1032	1020	1013
1926	1013	1014	1016	1018	1025	1030	1032	1030	1022	1012	1004	997
1927	998	1000	1007	1013	1027	1035	1041	1053	1058	1049	1039	1032
1928	1032	1036	1040	1043	1049	1055	1056	1063	1056	1044	1033	1025
1929	1025	1026	1029	1031	1034	1035	1031	1030	1024	1016	1009	1003
1930	1004	1005	1007	1010	1015	1021	1021	1018	1017	1009	1000	994
1931	994	997	999	1001	1003	1005	1001	995	987	979	970	964
1932	963	965	972	978	992	998	998	1015	1028	1024	1016	1010
1933	1010	1012	1015	1017	1019	1021	1017	1015	1015	1007	998	992
1934	992	994	997	1001	1005	1010	1006	999	992	982	972	965
1935	964	965	968	973	978	984	995	1016	1026	1019	1011	1005
1936	1005	1007	1009	1018	1036	1044	1048	1059	1062	1054	1043	1036
1937	1035	1036	1039	1042	1050	1055	1050	1063	1063	1054	1044	1036
1938	1035	1036	1045	1050	1050	1055	1063	1088	1088	1084	1076	1070
1939	1050	1050	1050	1050	1050	1052	1050	1042	1032	1021	1011	1004
1940	1003	1004	1006	1017	1032	1048	1051	1064	1063	1054	1044	1036
1941	1035	1036	1041	1047	1050	1055	1052	1066	1072	1066	1057	1050
1942	1049	1050	1050	1050	1050	1055	1055	1068	1082	1078	1069	1064
1943	1050	1050	1050	1050	1050	1055	1061	1068	1071	1064	1055	1048
1944	1046	1048	1049	1050	1050	1053	1048	1048	1043	1032	1021	1012
1945	1012	1017	1021	1026	1040	1048	1044	1054	1060	1053	1043	1036
1946	1035	1039	1048	1050	1050	1054	1055	1064	1062	1053	1043	1036
1947	1035	1037	1040	1042	1046	1050	1046	1041	1031	1019	1009	1002
1948	1002	1003	1005	1007	1009	1012	1013	1019	1029	1023	1015	1009
1949	1010	1012	1014	1017	1019	1024	1024	1030	1028	1020	1012	1006
1950	1006	1006	1008	1014	1022	1028	1030	1043	1046	1036	1025	1018
1951	1017	1046	1050	1050	1050	1055	1058	1064	1059	1050	1039	1032
1952	1031	1034	1041	1050	1050	1055	1058	1087	1088	1086	1078	1072
1953	1050	1050	1050	1050	1050	1054	1053	1052	1057	1052	1041	1034
1954	1033	1035	1038	1041	1045	1052	1055	1064	1057	1048	1037	1029
1955	1028	1031	1034	1039	1042	1045	1040	1036	1032	1021	1010	1002
1956	1002	1004	1030	1050	1050	1055	1055	1069	1079	1074	1065	1060
1957	1050	1050	1050	1050	1050	1055	1052	1056	1059	1049	1039	1031
1958	1028	1030	1032	1039	1048	1055	1062	1088	1088	1083	1074	1067
1959	1050	1050	1050	1050	1050	1053	1049	1040	1031	1020	1010	1003
1960	1002	1003	1005	1008	1013	1019	1017	1013	1007	999	991	981
1961	978	981	985	987	990	993	990	984	976	967	958	951
1962	951	953	956	958	969	975	977	986	992	984	974	965
1963	965	968	972	981	998	1003	1002	1024	1030	1021	1011	1004
1964	1004	1007	1011	1015	1019	1022	1019	1017	1013	1004	996	989
1965	988	992	1016	1037	1049	1055	1058	1067	1074	1069	1061	1055
1966	1050	1050	1050	1050	1050	1053	1051	1053	1043	1031	1020	1011
1967	1011	1013	1022	1034	1042	1053	1054	1074	1088	1088	1080	1074
1968	1050	1050	1050	1050	1050	1054	1050	1047	1038	1027	1015	1007
1969	1007	1011	1013	1043	1050	1055	1066	1088	1088	1084	1075	1068
1970	1050	1050	1050	1050	1050	1055	1054	1060	1061	1051	1040	1033
1971	1032	1036	1044	1050	1050	1055	1052	1056	1060	1053	1043	1036
1972	1034	1037	1043	1048	1050	1055	1050	1053	1045	1034	1022	1015
1973	1015	1017	1022	1034	1049	1055	1051	1063	1063	1054	1043	1036
1974	1035	1040	1049	1050	1050	1055	1059	1073	1077	1069	1060	1053
1975	1050	1050	1050	1050	1050	1055	1050	1056	1068	1061	1052	1045
1976	1044	1047	1050	1050	1050	1052	1047	1041	1033	1025	1018	1012
1977	1012	1014	1015	1015	1016	1016	1011	1006	1001	994	986	980
1978	979	978	982	993	1002	1017	1024	1039	1047	1041	1031	1026
1979	1026	1028	1032	1040	1050	1055	1054	1067	1064	1053	1043	1036
1980	1036	1039	1041	1050	1050	1055	1056	1063	1070	1068	1059	1053
1981	1050	1050	1050	1050	1050	1053	1050	1044	1032	1020	1010	1004
1982	1004	1011	1025	1046	1050	1055	1071	1086	1088	1084	1076	1072
1983	1050	1050	1050	1050	1050	1055	1056	1070	1088	1088	1083	1075
1984	1050	1050	1050	1050	1050	1055	1053	1059	1058	1051	1042	1036
1985	1036	1041	1046	1049	1050	1054	1052	1050	1039	1028	1018	1012
1986	1012	1015	1018	1028	1050	1055	1056	1061	1065	1057	1048	1043
1987	1043	1045	1047	1048	1049	1052	1048	1040	1032	1025	1020	1016
1988	1015	1015	1015	1017	1019	1021	1017	1011	1006	1001	997	992
1989	991	990	991	993	995	1004	1002	1000	996	989	981	976
1990	979	981	986	989	993	996	990	981	971	962	955	949
1991	948	949	953	953	955	960	957	955	948	938	930	925
1992	926	928	932	934	941	947	942	932	923	912	898	889
1993	888	889	895	923	937	957	961	980	990	985	975	969
1994	971	976	982	987	991	994	987	980	971	961	952	944

Difference from Maximum Reservoir Elevation [DFMRE]

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	120	110	111	83	62	69	79
1923	63	59	56	41	41	49	60
1924	57	57	63	69	77	83	90
1925	73	64	63	50	49	56	68
1926	63	58	56	58	66	76	84
1927	61	53	47	35	30	39	49
1928	39	33	32	25	32	44	55
1929	54	53	57	58	64	72	79
1930	73	67	67	70	71	79	88
1931	85	83	87	93	101	109	118
1932	96	90	90	73	60	64	72
1933	69	67	71	73	73	81	90
1934	83	78	82	89	96	106	116
1935	110	104	93	72	62	69	77
1936	52	44	40	29	26	34	45
1937	38	33	38	25	25	34	44
1938	38	33	25	0	0	4	12
1939	38	36	38	46	56	67	77
1940	56	40	37	24	25	34	44
1941	38	33	36	22	16	22	31
1942	38	33	33	20	6	10	19
1943	38	33	27	20	17	24	33
1944	38	35	40	40	45	56	67
1945	48	40	44	34	28	35	45
1946	38	34	33	24	26	35	45
1947	42	38	42	47	57	69	79
1948	79	76	75	69	59	65	73
1949	69	64	64	58	60	68	76
1950	66	60	58	45	42	52	63
1951	38	33	30	24	29	38	49
1952	38	33	30	1	0	2	10
1953	38	34	35	36	31	36	47
1954	43	36	33	24	31	40	51
1955	46	43	48	52	56	67	78
1956	38	33	33	19	9	14	23
1957	38	33	36	32	29	39	49
1958	40	33	26	0	0	5	14
1959	38	35	39	48	57	68	78
1960	75	69	71	75	81	89	97
1961	98	95	98	104	112	121	130
1962	119	113	111	102	96	104	114
1963	90	85	86	64	58	67	77
1964	69	66	69	71	75	84	92
1965	39	33	30	21	14	19	27
1966	38	35	37	35	45	57	68
1967	46	35	34	14	0	0	8
1968	38	34	38	41	50	61	73
1969	38	33	22	0	0	4	13
1970	38	33	34	28	27	37	48
1971	38	33	36	32	28	35	45
1972	38	33	38	35	43	54	66
1973	39	33	37	25	25	34	45
1974	38	33	29	15	11	19	28
1975	38	33	38	32	20	27	36
1976	38	36	41	47	55	63	70
1977	72	72	77	82	87	94	102
1978	86	71	64	49	41	47	57
1979	38	33	34	21	24	35	45
1980	38	33	32	25	18	20	29
1981	38	35	38	44	56	68	78
1982	38	33	17	2	0	4	12
1983	38	33	32	18	0	0	5
1984	38	33	35	29	30	37	46
1985	38	34	36	38	49	60	70
1986	38	33	32	27	23	31	40
1987	39	36	40	48	56	63	68
1988	69	67	71	77	82	87	91
1989	93	84	86	88	92	99	107
1990	95	92	98	107	117	126	133
1991	133	128	131	133	140	150	158
1992	147	141	146	156	165	176	190
1993	151	131	127	108	98	103	113
1994	97	94	101	108	117	127	136

Reservoir Elevation Score

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**
1922	1	1	1	1	1	1	1	**7**
1923	1	1	1	1	1	1	1	**7**
1924	1	1	1	1	1	1	1	**7**
1925	1	1	1	1	1	1	1	**7**
1926	1	1	1	1	1	1	1	**7**
1927	1	1	1	1	1	1	1	**7**
1928	1	1	1	1	1	1	1	**7**
1929	1	1	1	1	1	1	1	**7**
1930	1	1	1	1	1	1	1	**7**
1931	1	1	1	1	1	1	1	**7**
1932	1	1	1	1	1	1	1	**7**
1933	1	1	1	1	1	1	1	**7**
1934	1	1	1	1	1	1	1	**7**
1935	1	1	1	1	1	1	1	**7**
1936	1	1	1	1	1	1	1	**7**
1937	1	1	1	1	1	1	1	**7**
1938	1	1	1	6	6	5	3	**23**
1939	1	1	1	1	1	1	1	**7**
1940	1	1	1	1	1	1	1	**7**
1941	1	1	1	1	2	1	1	**8**
1942	1	1	1	1	4	3	2	**13**
1943	1	1	1	1	2	1	1	**8**
1944	1	1	1	1	1	1	1	**7**
1945	1	1	1	1	1	1	1	**7**
1946	1	1	1	1	1	1	1	**7**
1947	1	1	1	1	1	1	1	**7**
1948	1	1	1	1	1	1	1	**7**
1949	1	1	1	1	1	1	1	**7**
1950	1	1	1	1	1	1	1	**7**
1951	1	1	1	1	1	1	1	**7**
1952	1	1	1	5	6	5	3	**22**
1953	1	1	1	1	1	1	1	**7**
1954	1	1	1	1	1	1	1	**7**
1955	1	1	1	1	1	1	1	**7**
1956	1	1	1	2	4	3	1	**13**
1957	1	1	1	1	1	1	1	**7**
1958	1	1	1	6	6	4	3	**22**
1959	1	1	1	1	1	1	1	**7**
1960	1	1	1	1	1	1	1	**7**
1961	1	1	1	1	1	1	1	**7**
1962	1	1	1	1	1	1	1	**7**
1963	1	1	1	1	1	1	1	**7**
1964	1	1	1	1	1	1	1	**7**
1965	1	1	1	1	3	2	1	**10**
1966	1	1	1	1	1	1	1	**7**
1967	1	1	1	3	6	6	4	**22**
1968	1	1	1	1	1	1	1	**7**
1969	1	1	1	6	6	5	3	**23**
1970	1	1	1	1	1	1	1	**7**
1971	1	1	1	1	1	1	1	**7**
1972	1	1	1	1	1	1	1	**7**
1973	1	1	1	1	1	1	1	**7**
1974	1	1	1	2	3	2	1	**11**
1975	1	1	1	1	1	1	1	**7**
1976	1	1	1	1	1	1	1	**7**
1977	1	1	1	1	1	1	1	**7**
1978	1	1	1	1	1	1	1	**7**
1979	1	1	1	1	1	1	1	**7**
1980	1	1	1	1	2	1	1	**8**
1981	1	1	1	1	1	1	1	**7**
1982	1	1	2	5	6	5	3	**23**
1983	1	1	1	2	6	6	4	**21**
1984	1	1	1	1	1	1	1	**7**
1985	1	1	1	1	1	1	1	**7**
1986	1	1	1	1	1	1	1	**7**
1987	1	1	1	1	1	1	1	**7**
1988	1	1	1	1	1	1	1	**7**
1989	1	1	1	1	1	1	1	**7**
1990	1	1	1	1	1	1	1	**7**
1991	1	1	1	1	1	1	1	**7**
1992	1	1	1	1	1	1	1	**7**
1993	1	1	1	1	1	1	1	**7**
1994	1	1	1	1	1	1	1	**7**

73 - year Average: 9

Reservoir Change from Previous Month [fluctuation]

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	10	-1	28	21	-7	-10	-8
1923	4	3	15	0	-8	-11	-7
1924	0	-6	-6	-8	-6	-7	-4
1925	9	1	13	1	-7	-12	-7
1926	5	2	-2	-8	-10	-8	-7
1927	8	6	12	5	-9	-10	-7
1928	6	1	7	-7	-12	-11	-8
1929	1	-4	-1	-6	-8	-7	-6
1930	6	0	-3	-1	-8	-9	-6
1931	2	-4	-6	-8	-8	-9	-6
1932	6	0	17	13	-4	-8	-6
1933	2	-4	-2	0	-8	-9	-6
1934	5	-4	-7	-7	-10	-10	-7
1935	6	11	21	10	-7	-8	-6
1936	8	4	11	3	-8	-11	-7
1937	5	-5	13	0	-9	-10	-8
1938	5	8	25	0	-4	-8	-6
1939	2	-2	-8	-10	-11	-10	-7
1940	16	3	13	-1	-9	-10	-8
1941	5	-3	14	6	-6	-9	-7
1942	5	0	13	14	-4	-9	-5
1943	5	6	7	3	-7	-9	-7
1944	3	-5	0	-5	-11	-11	-9
1945	8	-4	10	6	-7	-10	-7
1946	4	1	9	-2	-9	-10	-7
1947	4	-4	-5	-10	-12	-10	-7
1948	3	1	6	10	-6	-8	-6
1949	5	0	6	-2	-8	-8	-6
1950	6	2	13	3	-10	-11	-7
1951	5	3	6	-5	-9	-11	-7
1952	5	3	29	1	-2	-8	-6
1953	4	-1	-1	5	-5	-11	-7
1954	7	3	9	-7	-9	-11	-8
1955	3	-5	-4	-4	-11	-11	-8
1956	5	0	14	10	-5	-9	-5
1957	5	-3	4	3	-10	-10	-8
1958	7	7	26	0	-5	-9	-7
1959	3	-4	-9	-9	-11	-10	-7
1960	6	-2	-4	-6	-8	-8	-10
1961	3	-3	-6	-8	-9	-9	-7
1962	6	2	9	6	-8	-10	-9
1963	5	-1	22	6	-9	-10	-7
1964	3	-3	-2	-4	-9	-8	-7
1965	6	3	9	7	-5	-8	-6
1966	3	-2	2	-10	-12	-11	-9
1967	11	1	20	14	0	-8	-6
1968	4	-4	-3	-9	-11	-12	-8
1969	5	11	22	0	-4	-9	-7
1970	5	-1	6	1	-10	-11	-7
1971	5	-3	4	4	-7	-10	-7
1972	5	-5	3	-8	-11	-12	-7
1973	6	-4	12	0	-9	-11	-7
1974	5	4	14	4	-8	-9	-7
1975	5	-5	6	12	-7	-9	-7
1976	2	-5	-6	-8	-8	-7	-6
1977	0	-5	-5	-5	-7	-8	-6
1978	15	7	15	8	-6	-10	-5
1979	5	-1	13	-3	-11	-10	-7
1980	5	1	7	7	-2	-9	-6
1981	3	-3	-6	-12	-12	-10	-6
1982	5	16	15	2	-4	-8	-4
1983	5	1	14	18	0	-5	-8
1984	5	-2	6	-1	-7	-9	-6
1985	4	-2	-2	-11	-11	-10	-6
1986	5	1	5	4	-8	-9	-5
1987	3	-4	-8	-8	-7	-5	-4
1988	2	-4	-6	-5	-5	-4	-5
1989	9	-2	-2	-4	-7	-8	-5
1990	3	-6	-9	-10	-9	-7	-6
1991	5	-3	-2	-7	-10	-8	-5
1992	6	-5	-10	-9	-11	-14	-9
1993	20	4	19	10	-5	-10	-6
1994	3	-7	-7	-9	-10	-9	-8

Reservoir Fluctuation Score and Largemouth Bass Reservoir Habitat Index

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	6	5	6	6	4	4	4	**35**	**245**
1923	6	6	6	6	4	3	4	**35**	**245**
1924	6	4	4	4	4	4	5	**31**	**217**
1925	6	6	6	6	4	3	4	**35**	**245**
1926	6	6	5	4	4	4	4	**33**	**231**
1927	6	6	6	6	4	4	4	**36**	**252**
1928	6	6	6	4	3	3	4	**32**	**224**
1929	6	5	5	4	4	4	4	**32**	**224**
1930	6	6	5	5	4	4	4	**34**	**238**
1931	6	5	4	4	4	4	4	**31**	**217**
1932	6	6	6	6	5	4	4	**37**	**259**
1933	6	5	5	6	4	4	4	**34**	**238**
1934	6	5	4	4	4	4	4	**31**	**217**
1935	6	6	6	6	4	4	4	**36**	**252**
1936	6	6	6	6	4	3	4	**35**	**245**
1937	6	5	6	6	4	4	4	**35**	**245**
1938	6	6	6	6	5	4	4	**37**	**851**
1939	6	5	4	4	3	4	4	**30**	**210**
1940	6	6	6	5	4	4	4	**35**	**245**
1941	6	5	6	6	4	4	4	**35**	**280**
1942	6	6	6	6	5	4	5	**38**	**494**
1943	6	6	6	6	4	4	4	**36**	**288**
1944	6	5	6	5	3	3	4	**32**	**224**
1945	6	5	6	6	4	4	4	**35**	**245**
1946	6	6	6	5	4	4	4	**35**	**245**
1947	6	5	5	4	3	4	4	**31**	**217**
1948	6	6	6	6	4	4	4	**36**	**252**
1949	6	6	6	5	4	4	4	**35**	**245**
1950	6	6	6	6	4	3	4	**35**	**245**
1951	6	6	6	5	4	3	4	**34**	**238**
1952	6	6	6	6	5	4	4	**37**	**814**
1953	6	5	5	6	5	3	4	**34**	**238**
1954	6	6	6	4	4	3	4	**33**	**231**
1955	6	5	5	5	3	3	4	**31**	**217**
1956	6	6	6	6	5	4	5	**38**	**494**
1957	6	5	6	6	4	4	4	**35**	**245**
1958	6	6	6	6	5	4	4	**37**	**814**
1959	6	5	4	4	3	4	4	**30**	**210**
1960	6	5	5	4	4	4	4	**32**	**224**
1961	6	5	4	4	4	4	4	**31**	**217**
1962	6	6	6	6	4	4	4	**36**	**252**
1963	6	5	6	6	4	4	4	**35**	**245**
1964	6	5	5	5	4	4	4	**33**	**231**
1965	6	6	6	6	5	4	4	**37**	**370**
1966	6	5	6	4	3	3	4	**31**	**217**
1967	6	6	6	6	6	4	4	**38**	**836**
1968	6	5	5	4	3	3	4	**30**	**210**
1969	6	6	6	6	5	4	4	**37**	**851**
1970	6	5	6	6	4	3	4	**34**	**238**
1971	6	5	6	6	4	4	4	**35**	**245**
1972	6	5	6	4	3	3	4	**31**	**217**
1973	6	5	6	6	4	3	4	**34**	**238**
1974	6	6	6	6	4	4	4	**36**	**396**
1975	6	5	6	6	4	4	4	**35**	**245**
1976	6	5	4	4	4	4	4	**31**	**217**
1977	6	5	5	5	4	4	4	**33**	**231**
1978	6	6	6	6	4	4	5	**37**	**259**
1979	6	5	6	5	3	4	4	**33**	**231**
1980	6	6	6	6	5	4	4	**37**	**296**
1981	6	5	4	3	3	4	4	**29**	**203**
1982	6	6	6	6	5	4	5	**38**	**874**
1983	6	6	6	6	6	5	4	**39**	**819**
1984	6	5	6	5	4	4	4	**34**	**238**
1985	6	5	5	3	3	4	4	**30**	**210**
1986	6	6	6	6	4	4	5	**37**	**259**
1987	6	5	4	4	4	5	5	**33**	**231**
1988	6	5	4	5	5	5	5	**35**	**245**
1989	6	5	5	5	4	4	5	**34**	**238**
1990	6	4	4	4	4	4	4	**30**	**210**
1991	6	5	5	4	4	4	5	**33**	**231**
1992	6	5	4	4	3	3	4	**29**	**203**
1993	6	6	6	6	5	4	4	**37**	**259**
1994	6	4	4	4	4	4	4	**30**	**210**

73 - year Average: 34 **304.5**
1929 - '34 Average: 232.2

Flow Alternative 5

STUDY: 1995C06H-SWRCB-513 DWRSIM: recirc818-h, 05 Sep 97
CP # 81, DON PEDRO RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06H-SWRCB-513/81/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 832'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	599	582	579	601	655	686	691	712	769	764	747	736	146	141	120	63	68	85	96
1923	729	728	732	744	758	764	766	768	776	767	751	740	68	66	64	56	65	81	92
1924	734	731	726	724	726	723	715	706	696	678	660	649	109	117	126	136	154	172	183
1925	642	642	644	649	675	694	707	721	740	728	708	695	138	125	111	92	104	124	137
1926	686	683	676	674	685	688	702	718	713	690	669	654	144	130	114	119	142	163	178
1927	644	643	649	661	697	712	725	725	745	733	715	702	120	107	107	87	99	117	130
1928	693	693	694	698	708	731	739	757	754	732	713	700	101	93	75	78	100	119	132
1929	691	684	678	677	683	685	685	689	699	684	669	658	147	147	143	133	148	163	174
1930	651	646	642	643	652	664	665	671	692	674	659	650	168	167	161	140	158	173	182
1931	644	642	641	644	649	647	634	609	575	536	526	531	185	198	223	257	296	306	301
1932	528	524	547	585	655	671	670	680	702	695	673	656	161	162	152	130	137	159	176
1933	644	634	623	621	631	634	625	613	645	622	581	555	198	207	219	187	210	251	277
1934	535	532	526	533	561	583	577	561	551	531	524	527	249	255	271	281	301	308	305
1935	524	524	527	554	593	619	656	671	708	696	677	671	213	176	161	124	136	155	161
1936	660	657	650	657	711	728	737	758	775	763	746	734	104	95	74	57	69	86	98
1937	727	720	714	718	751	772	777	788	804	790	774	764	60	55	44	28	42	58	68
1938	758	752	771	785	800	800	800	804	831	832	819	808	32	32	28	1	0	13	24
1939	800	799	799	800	800	800	801	801	795	780	766	759	32	31	31	37	52	66	73
1940	754	754	751	764	792	800	802	815	826	808	793	782	32	30	17	6	24	39	50
1941	776	774	776	792	800	800	800	809	832	829	815	805	32	32	23	0	3	17	27
1942	799	797	800	800	800	800	802	807	831	832	818	808	32	30	25	1	0	14	24
1943	800	800	800	800	800	800	802	819	829	819	804	794	32	30	13	3	13	28	38
1944	788	786	782	781	787	793	792	797	802	788	772	762	39	40	35	30	44	60	70
1945	755	756	760	765	789	800	802	805	827	819	804	793	32	30	27	5	13	28	39
1946	790	791	800	800	800	800	801	804	808	790	774	763	32	31	28	24	42	58	69
1947	755	755	758	761	768	771	765	768	760	743	729	721	61	67	64	72	89	103	111
1948	714	714	712	714	713	710	703	711	739	723	702	690	122	129	121	93	109	130	142
1949	680	672	665	664	670	682	687	695	701	676	648	632	150	145	137	131	156	184	200
1950	613	598	584	597	635	648	658	675	694	668	641	621	184	174	157	138	164	191	211
1951	604	685	745	769	786	798	794	789	791	772	758	747	34	38	43	41	60	74	85
1952	740	738	745	772	790	800	800	820	832	832	819	808	32	32	12	0	0	13	24
1953	800	795	793	800	800	800	800	801	809	801	787	777	32	32	31	23	31	45	55
1954	771	767	764	765	772	783	790	806	805	785	769	759	49	42	26	27	47	63	73
1955	751	746	745	751	757	758	751	754	760	743	729	721	74	81	78	72	89	103	111
1956	714	709	765	800	800	800	799	812	832	831	817	808	32	33	20	0	1	15	24
1957	800	798	794	793	798	800	798	802	822	805	791	781	32	34	30	10	27	41	51
1958	775	771	768	773	789	800	800	821	832	830	817	808	32	32	11	0	2	15	24
1959	800	794	789	793	800	800	799	795	788	772	759	752	32	33	37	44	60	73	80
1960	748	745	742	743	751	757	757	762	764	750	739	733	75	75	70	68	82	93	99
1961	729	726	727	728	730	730	721	709	700	683	668	659	102	111	123	132	149	164	173
1962	651	648	645	647	679	700	709	712	740	727	710	698	132	123	120	92	105	122	134
1963	690	685	680	686	713	724	732	746	773	765	750	739	108	100	86	59	67	82	93
1964	732	733	735	740	746	747	742	737	738	722	707	699	85	90	95	94	110	125	133
1965	694	695	736	772	789	798	802	804	822	819	808	799	34	30	28	10	13	24	33
1966	793	797	800	800	800	800	798	792	783	765	748	739	32	34	40	49	67	84	93
1967	733	730	741	758	773	796	800	815	832	832	820	808	36	32	17	0	0	12	24
1968	800	795	791	792	800	800	800	802	798	781	769	762	32	32	30	34	51	63	70
1969	755	756	759	800	800	800	800	823	832	832	819	808	32	32	9	0	0	13	24
1970	800	799	800	800	800	800	797	795	801	786	771	762	32	35	37	31	46	61	70
1971	755	756	763	778	791	800	799	797	802	789	776	768	32	33	35	30	43	56	64
1972	761	757	760	766	778	786	784	780	775	759	747	739	46	48	52	57	73	85	93
1973	734	733	735	748	774	792	792	801	814	796	781	771	40	40	31	18	36	51	61
1974	766	771	782	800	800	800	800	803	822	810	796	787	32	32	29	10	22	36	45
1975	782	780	777	777	788	800	800	808	832	823	809	800	32	32	24	0	9	23	32
1976	798	798	797	797	799	798	792	783	773	760	750	744	34	40	49	59	72	82	88
1977	740	738	735	734	734	730	721	706	692	672	655	647	102	111	126	140	160	177	185
1978	640	636	639	665	701	733	744	759	794	800	786	780	99	88	73	38	32	46	52
1979	775	771	767	777	796	800	801	820	828	812	798	788	32	31	12	4	20	34	44
1980	784	782	781	800	800	800	800	814	832	832	819	808	32	32	18	0	0	13	24
1981	800	797	794	795	798	800	802	804	801	787	776	768	32	30	28	31	45	56	64
1982	763	768	788	800	800	800	800	820	832	832	820	808	32	32	12	0	0	12	24
1983	800	800	800	800	800	800	800	817	832	832	832	808	32	32	15	0	0	0	24
1984	800	800	800	800	800	800	795	799	808	793	777	767	32	37	33	24	39	55	65
1985	763	764	770	776	784	789	788	785	779	764	752	745	43	44	47	53	68	80	87
1986	741	742	745	753	800	800	801	825	832	822	808	799	32	31	7	0	10	24	33
1987	794	788	783	781	783	785	782	778	774	760	749	743	47	50	54	58	72	83	89
1988	739	737	737	743	748	750	743	733	725	709	696	688	82	89	99	107	123	136	144
1989	682	678	679	682	686	700	713	728	736	721	708	701	132	119	104	96	111	124	131
1990	698	697	697	699	704	707	702	698	695	676	658	649	125	130	134	137	156	174	183
1991	641	637	633	632	631	641	637	657	671	654	641	633	191	195	175	161	178	191	199
1992	629	630	629	632	644	651	652	660	659	637	612	592	181	180	172	173	195	220	240
1993	577	567	565	632	669	702	707	722	755	750	734	723	130	125	110	77	82	98	109
1994	715	708	702	701	705	709	706	710	708	691	678	670	123	126	122	124	141	154	162

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Change MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	1	1	1	1	1	1	1	**7**	31	5	21	57	-5	-17	-11	6	6	6	6	5	2	3	**34**	**238**
1923	1	1	1	1	1	1	1	**7**	6	2	2	8	-9	-16	-11	6	6	6	6	4	2	3	**33**	**231**
1924	1	1	1	1	1	1	1	**7**	-3	-8	-9	-10	-18	-18	-11	5	4	4	4	2	2	3	**24**	**168**
1925	1	1	1	1	1	1	1	**7**	19	13	14	19	-12	-20	-13	6	6	6	6	3	2	3	**32**	**224**
1926	1	1	1	1	1	1	1	**7**	3	14	16	-5	-23	-21	-15	6	6	6	5	1	1	3	**28**	**196**
1927	1	1	1	1	1	1	1	**7**	15	13	0	20	-12	-18	-13	6	6	6	6	3	2	3	**32**	**224**
1928	1	1	1	1	1	1	1	**7**	23	8	18	-3	-22	-19	-13	6	6	6	5	1	2	3	**29**	**203**
1929	1	1	1	1	1	1	1	**7**	2	0	4	10	-15	-15	-11	6	6	6	6	3	3	3	**33**	**231**
1930	1	1	1	1	1	1	1	**7**	12	1	6	21	-18	-15	-9	6	6	6	6	2	3	4	**33**	**231**
1931	1	1	1	1	1	1	1	**7**	-2	-13	-25	-34	-39	-10	5	5	3	1	1	1	4	6	**21**	**147**
1932	1	1	1	1	1	1	1	**7**	16	-1	10	22	-7	-22	-17	6	5	6	6	4	1	2	**30**	**210**
1933	1	1	1	1	1	1	1	**7**	3	-9	-12	32	-23	-41	-26	6	4	3	6	1	1	1	**22**	**154**
1934	1	1	1	1	1	1	1	**7**	22	-6	-16	-10	-20	-7	3	6	4	2	4	2	4	6	**28**	**196**
1935	1	1	1	1	1	1	1	**7**	26	37	15	37	-12	-19	-6	6	6	6	6	3	2	4	**33**	**231**
1936	1	1	1	1	1	1	1	**7**	17	9	21	17	-12	-17	-12	6	6	6	6	3	2	3	**32**	**224**
1937	1	1	1	1	1	1	1	**7**	21	5	11	16	-14	-16	-10	6	6	6	6	3	2	4	**33**	**231**
1938	1	1	1	5	6	3	1	**18**	0	0	4	27	1	-13	-11	6	6	6	6	6	3	3	**36**	**648**
1939	1	1	1	1	1	1	1	**7**	0	1	0	-6	-15	-14	-7	6	6	6	4	3	3	4	**32**	**224**
1940	1	1	2	4	1	1	1	**11**	8	2	13	11	-18	-15	-11	6	6	6	6	2	3	3	**32**	**352**
1941	1	1	1	6	5	2	1	**17**	0	0	9	23	-3	-14	-10	6	6	6	6	5	3	4	**36**	**612**
1942	1	1	1	5	6	3	1	**18**	0	2	5	24	1	-14	-10	6	6	6	6	6	3	4	**37**	**666**
1943	1	1	3	5	3	1	1	**15**	0	2	17	10	-10	-15	-10	6	6	6	6	4	3	4	**35**	**525**
1944	1	1	1	1	1	1	1	**7**	6	-1	5	5	-14	-16	-10	6	5	6	6	3	2	4	**32**	**224**
1945	1	1	1	4	3	1	1	**12**	11	2	3	22	-8	-15	-11	6	6	6	6	4	3	3	**34**	**408**
1946	1	1	1	1	1	1	1	**7**	0	1	3	4	-18	-16	-11	6	6	6	6	2	2	3	**31**	**217**
1947	1	1	1	1	1	1	1	**7**	3	-6	3	-8	-17	-14	-8	6	4	6	4	2	3	4	**29**	**203**
1948	1	1	1	1	1	1	1	**7**	-3	-7	8	28	-16	-21	-12	5	4	6	6	2	1	3	**27**	**189**
1949	1	1	1	1	1	1	1	**7**	12	5	8	6	-25	-28	-16	6	6	6	6	1	1	2	**28**	**196**
1950	1	1	1	1	1	1	1	**7**	13	10	17	19	-26	-27	-20	6	6	6	6	1	1	2	**28**	**196**
1951	1	1	1	1	1	1	1	**7**	12	-4	-5	2	-19	-14	-11	6	5	5	6	2	3	3	**30**	**210**
1952	1	1	3	6	6	3	1	**21**	10	0	20	12	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1953	1	1	1	1	1	1	1	**7**	0	0	1	8	-8	-14	-10	6	6	6	6	4	3	4	**35**	**245**
1954	1	1	1	1	1	1	1	**7**	11	7	16	-1	-20	-16	-10	6	6	6	5	2	2	4	**31**	**217**
1955	1	1	1	1	1	1	1	**7**	1	-7	3	6	-17	-14	-8	6	4	6	6	2	3	4	**31**	**217**
1956	1	1	1	6	5	2	1	**17**	0	-1	13	20	-1	-14	-9	6	5	6	6	5	3	4	**35**	**595**
1957	1	1	1	3	1	1	1	**9**	2	-2	4	20	-17	-14	-10	6	5	6	6	2	3	4	**32**	**288**
1958	1	1	3	6	5	2	1	**19**	11	0	21	11	-2	-13	-9	6	6	6	6	5	3	4	**36**	**684**
1959	1	1	1	1	1	1	1	**7**	0	-1	-4	-7	-16	-13	-7	6	5	5	4	2	3	4	**29**	**203**
1960	1	1	1	1	1	1	1	**7**	6	0	5	2	-14	-11	-6	6	6	6	6	3	3	4	**34**	**238**
1961	1	1	1	1	1	1	1	**7**	0	-9	-12	-9	-17	-15	-9	6	4	3	4	2	3	4	**26**	**182**
1962	1	1	1	1	1	1	1	**7**	21	9	3	28	-13	-17	-12	6	6	6	6	3	2	3	**32**	**224**
1963	1	1	1	1	1	1	1	**7**	11	8	14	27	-8	-15	-11	6	6	6	6	4	3	3	**34**	**238**
1964	1	1	1	1	1	1	1	**7**	1	-5	-5	1	-16	-15	-8	6	5	5	6	2	3	4	**31**	**217**
1965	1	1	1	3	3	1	1	**11**	9	4	2	18	-3	-11	-9	6	6	6	6	5	3	4	**36**	**396**
1966	1	1	1	1	1	1	1	**7**	0	-2	-6	-9	-18	-17	-9	6	5	4	4	2	2	4	**27**	**189**
1967	1	1	2	6	6	3	1	**20**	23	4	15	17	0	-12	-12	6	6	6	6	6	3	3	**36**	**720**
1968	1	1	1	1	1	1	1	**7**	0	0	2	-4	-17	-12	-7	6	6	6	5	2	3	4	**32**	**224**
1969	1	1	4	6	6	3	1	**22**	0	0	23	9	0	-13	-11	6	6	6	6	6	3	3	**36**	**792**
1970	1	1	1	1	1	1	1	**7**	0	-3	-2	6	-15	-15	-9	6	5	5	6	3	3	4	**32**	**224**
1971	1	1	1	1	1	1	1	**7**	9	-1	-2	5	-13	-13	-8	6	5	5	6	3	3	4	**32**	**224**
1972	1	1	1	1	1	1	1	**7**	8	-2	-4	-5	-16	-12	-8	6	5	5	5	2	3	4	**30**	**210**
1973	1	1	1	2	1	1	1	**8**	18	0	9	13	-18	-15	-10	6	6	6	6	2	3	4	**33**	**264**
1974	1	1	1	3	1	1	1	**9**	0	0	3	19	-12	-14	-9	6	6	6	6	3	3	4	**34**	**306**
1975	1	1	1	6	4	1	1	**15**	12	0	8	24	-9	-14	-9	6	6	6	6	4	3	4	**35**	**525**
1976	1	1	1	1	1	1	1	**7**	-1	-6	-9	-10	-13	-10	-6	5	4	4	4	3	4	4	**28**	**196**
1977	1	1	1	1	1	1	1	**7**	-4	-9	-15	-14	-20	-17	-8	5	4	3	3	2	2	4	**23**	**161**
1978	1	1	1	1	1	1	1	**7**	32	11	15	35	6	-14	-6	6	6	6	6	6	3	4	**37**	**259**
1979	1	1	3	5	1	1	1	**13**	4	1	19	8	-16	-14	-10	6	6	6	6	2	3	4	**33**	**429**
1980	1	1	2	6	6	3	1	**20**	0	0	14	18	0	-13	-11	6	6	6	6	6	3	3	**36**	**720**
1981	1	1	1	1	1	1	1	**7**	2	2	2	-3	-14	-11	-8	6	6	6	5	3	3	4	**33**	**231**
1982	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-12	-12	6	6	6	6	6	3	3	**36**	**756**
1983	1	1	2	6	6	6	1	**23**	0	0	17	15	0	0	-24	6	6	6	6	6	6	1	**37**	**851**
1984	1	1	1	1	1	1	1	**7**	0	-5	4	9	-15	-16	-10	6	5	6	6	3	2	4	**32**	**224**
1985	1	1	1	1	1	1	1	**7**	5	-1	-3	-6	-15	-12	-7	6	5	5	4	3	3	4	**30**	**210**
1986	1	1	4	6	3	1	1	**17**	0	1	24	7	-10	-14	-9	6	6	6	6	4	3	4	**35**	**595**
1987	1	1	1	1	1	1	1	**7**	2	-3	-4	-4	-14	-11	-6	6	5	5	5	3	3	4	**31**	**217**
1988	1	1	1	1	1	1	1	**7**	2	-7	-10	-8	-16	-13	-8	6	4	4	4	2	3	4	**27**	**189**
1989	1	1	1	1	1	1	1	**7**	14	13	15	8	-15	-13	-7	6	6	6	6	3	3	4	**34**	**238**
1990	1	1	1	1	1	1	1	**7**	3	-5	-4	-3	-19	-18	-9	6	5	5	5	2	2	4	**29**	**203**
1991	1	1	1	1	1	1	1	**7**	10	-4	20	14	-17	-13	-8	6	5	6	6	2	3	4	**32**	**224**
1992	1	1	1	1	1	1	1	**7**	7	1	8	-1	-22	-25	-20	6	6	6	5	1	1	2	**27**	**189**
1993	1	1	1	1	1	1	1	**7**	33	5	15	33	-5	-16	-11	6	6	6	6	5	2	3	**34**	**238**
1994	1	1	1	1	1	1	1	**7**	4	-3	4	-2	-17	-13	-8	6	5	6	5	2	3	4	**31**	**217**
							73 - year Average:	**10**													73 - year Average:		**32**	**314.2**
																						1929 - '34 Average:		**194.8**

Flow Alternative 5

STUDY: 1995C06H-SWRCB-513 DWRSIM: recirc818-h, 05 Sep 97
CP # 20, LAKE McCLURE, EOP SURFACE ELEVATION (FT)
Project: /1995C06H-SWRCB-513/20/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 867'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	677	677	693	709	754	771	768	820	861	851	835	825	96	99	47	6	16	32	42
1923	808	808	808	808	808	808	814	836	838	825	807	795	59	53	31	29	42	60	72
1924	794	794	795	795	797	796	794	794	779	761	744	733	71	73	73	88	106	123	134
1925	730	736	742	748	773	781	795	817	820	801	781	767	86	72	50	47	66	86	100
1926	764	764	765	767	779	782	801	794	791	782	773	763	85	66	73	76	85	94	104
1927	760	761	765	766	772	775	769	799	810	800	794	793	92	98	68	57	67	73	74
1928	792	793	798	803	806	805	797	807	801	790	784	780	62	70	60	66	77	83	87
1929	778	776	776	775	778	780	777	779	777	777	780	773	87	90	88	90	90	87	94
1930	770	769	769	768	768	763	764	763	767	767	770	768	104	103	104	100	100	97	99
1931	765	765	765	766	768	767	766	766	749	726	707	692	100	101	101	118	141	160	175
1932	688	689	717	732	774	779	779	804	825	810	792	777	88	88	63	42	57	75	90
1933	773	771	771	774	774	775	774	779	797	778	761	749	92	93	88	70	89	106	118
1934	746	745	749	757	767	776	780	772	760	737	720	706	91	87	95	107	130	147	161
1935	702	709	717	740	749	758	794	825	844	827	809	796	109	73	42	23	40	58	71
1936	792	793	794	801	808	817	833	854	857	842	826	814	50	34	13	10	25	41	53
1937	808	808	808	808	808	820	825	859	865	849	833	821	47	42	8	2	18	34	46
1938	808	808	808	808	808	820	836	859	867	864	851	840	47	31	8	0	3	16	27
1939	808	808	808	808	808	814	824	821	806	786	769	758	53	43	46	61	81	98	109
1940	758	759	760	788	808	820	829	851	851	830	812	798	47	38	16	16	37	55	69
1941	794	794	808	808	808	820	825	859	867	860	846	836	47	42	8	0	7	21	31
1942	808	808	808	808	808	815	824	842	867	857	847	837	52	43	25	0	10	20	30
1943	808	808	808	808	808	820	834	852	853	837	821	809	47	33	15	14	30	46	58
1944	805	805	806	808	808	815	807	825	825	807	789	773	52	60	42	42	60	78	94
1945	770	777	784	789	808	820	825	841	852	837	822	809	47	42	26	15	30	45	58
1946	808	808	808	808	808	813	825	841	836	816	796	781	54	42	26	31	51	71	86
1947	779	785	795	800	805	809	811	822	812	794	776	766	58	56	45	55	73	91	101
1948	764	765	766	768	766	763	761	781	800	777	756	736	104	106	86	67	90	111	131
1949	730	730	731	733	734	743	750	771	767	734	705	680	124	117	96	100	133	162	187
1950	672	671	671	685	703	704	722	747	745	709	673	637	163	145	120	122	158	194	230
1951	627	734	801	808	808	814	814	816	809	783	759	740	53	53	51	58	84	108	127
1952	734	735	752	790	798	820	832	859	867	861	847	837	47	35	8	0	6	20	30
1953	808	808	808	808	808	806	806	800	805	785	763	745	61	61	67	62	82	104	122
1954	739	739	740	744	753	766	777	794	780	748	720	697	101	90	73	87	119	147	170
1955	690	688	693	704	707	705	695	723	734	706	678	657	162	172	144	133	161	189	210
1956	647	647	774	808	808	814	817	842	863	856	841	831	53	50	25	4	11	26	36
1957	808	808	808	808	808	811	804	814	822	799	779	763	56	63	53	45	68	88	104
1958	758	759	764	771	785	809	833	859	867	859	845	835	58	34	8	0	8	22	32
1959	808	808	808	808	808	810	815	813	801	778	761	752	57	52	54	66	89	106	115
1960	750	748	748	749	763	771	783	795	790	772	757	745	96	84	72	77	95	110	122
1961	742	742	746	746	749	750	753	753	742	718	697	682	117	114	114	125	149	170	185
1962	678	679	682	685	739	749	769	782	798	776	754	734	118	98	85	69	91	113	133
1963	730	730	731	743	782	783	785	807	820	804	784	769	84	82	60	47	63	83	98
1964	765	772	775	780	781	779	775	781	776	754	731	720	88	92	86	91	113	136	147
1965	714	719	779	808	808	810	817	832	847	837	824	813	57	50	35	20	30	43	54
1966	808	808	808	808	808	811	819	825	808	781	759	743	56	48	42	59	86	108	124
1967	737	739	769	783	788	812	829	859	867	867	855	840	55	38	8	0	0	12	27
1968	808	808	808	808	808	809	808	808	796	774	757	743	58	59	59	71	93	110	124
1969	738	743	753	808	808	820	840	859	867	865	851	840	47	27	8	0	2	16	27
1970	808	808	808	808	808	819	810	820	816	792	770	754	48	57	47	51	75	97	113
1971	749	752	764	774	779	781	775	782	793	768	745	726	86	92	85	74	99	122	141
1972	720	721	730	737	743	754	751	764	763	735	714	702	113	116	103	104	132	153	165
1973	699	702	713	732	764	779	779	824	833	812	793	779	88	88	43	34	55	74	88
1974	775	788	800	808	808	820	825	849	857	839	824	811	47	42	18	10	28	43	56
1975	807	807	808	808	808	820	813	837	865	850	835	825	47	54	30	2	17	32	42
1976	808	808	808	808	808	809	804	803	790	772	759	748	58	63	64	77	95	108	119
1977	746	745	743	743	742	737	723	705	689	651	626	626	130	144	162	178	216	241	241
1978	625	625	641	692	737	776	801	839	867	867	855	840	91	66	28	0	0	12	27
1979	808	808	808	808	808	820	820	850	851	832	816	804	47	47	17	16	35	51	63
1980	800	801	804	808	808	820	825	844	865	861	848	838	47	42	23	2	6	19	29
1981	808	807	807	808	808	810	815	824	817	799	783	774	57	52	43	50	68	84	93
1982	771	781	795	808	808	820	840	859	867	862	849	840	47	27	8	0	5	18	27
1983	808	808	808	808	808	820	827	859	867	867	863	840	47	40	8	0	0	4	27
1984	808	808	808	808	808	816	815	832	826	802	780	765	51	52	35	41	65	87	102
1985	762	767	771	774	777	781	793	803	794	772	755	742	86	74	64	73	95	112	125
1986	740	744	753	764	808	820	829	851	863	847	832	821	47	38	16	4	20	35	46
1987	808	807	807	807	808	810	814	814	803	786	773	764	57	53	53	64	81	94	103
1988	761	763	765	770	774	779	782	784	774	757	739	728	88	85	83	93	110	128	139
1989	725	724	727	728	732	753	773	782	777	759	742	731	114	94	85	90	108	125	136
1990	732	733	734	737	741	749	759	756	743	723	702	687	118	108	111	124	144	165	180
1991	682	681	680	679	678	705	707	731	748	730	713	698	162	160	136	119	137	154	169
1992	695	697	698	701	720	728	745	747	731	714	692	677	139	122	120	136	153	175	190
1993	672	674	682	744	764	788	796	835	855	847	833	822	79	71	32	12	20	34	45
1994	808	807	808	808	808	810	811	815	806	790	775	766	57	56	52	61	77	92	101

YEAR	Elev. Score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Fluct. MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. Score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	1	1	1	4	2	1	1	**11**	17	-3	52	41	-10	-16	-10	6	5	6	6	4	2	4	**33**	**363**
1923	1	1	1	1	1	1	1	**7**	0	6	22	2	-13	-18	-12	6	6	6	6	3	2	3	**32**	**224**
1924	1	1	1	1	1	1	1	**7**	-1	-2	0	-15	-18	-17	-11	5	5	6	3	2	2	3	**26**	**182**
1925	1	1	1	1	1	1	1	**7**	8	14	22	3	-19	-20	-14	6	6	6	6	2	2	3	**31**	**217**
1926	1	1	1	1	1	1	1	**7**	3	19	-7	-3	-9	-9	-10	6	6	4	5	4	4	4	**33**	**231**
1927	1	1	1	1	1	1	1	**7**	3	-6	30	11	-10	-6	-1	6	4	6	6	4	4	5	**35**	**245**
1928	1	1	1	1	1	1	1	**7**	-1	-8	10	-6	-11	-6	-4	5	4	6	4	3	4	5	**31**	**217**
1929	1	1	1	1	1	1	1	**7**	2	-3	2	-2	0	3	-7	6	5	6	5	6	6	4	**38**	**266**
1930	1	1	1	1	1	1	1	**7**	-5	1	-1	4	0	3	-2	5	6	5	6	6	6	5	**39**	**273**
1931	1	1	1	1	1	1	1	**7**	-1	-1	0	-17	-23	-19	-15	5	5	6	2	1	2	3	**24**	**168**
1932	1	1	1	1	1	1	1	**7**	5	0	25	21	-15	-18	-15	6	6	6	6	3	2	3	**32**	**224**
1933	1	1	1	1	1	1	1	**7**	1	-1	5	18	-19	-17	-12	6	5	6	6	2	2	3	**30**	**210**
1934	1	1	1	1	1	1	1	**7**	9	4	-8	-12	-23	-17	-14	6	6	4	3	1	2	3	**25**	**175**
1935	1	1	1	1	1	1	1	**7**	9	36	31	19	-17	-18	-13	6	6	6	6	2	2	3	**31**	**217**
1936	1	1	3	3	1	1	1	**11**	9	16	21	3	-15	-16	-12	6	6	6	6	3	2	3	**32**	**352**
1937	1	1	4	5	2	1	1	**15**	12	5	34	6	-16	-16	-12	6	6	6	6	2	2	3	**31**	**465**
1938	1	1	4	6	5	2	1	**20**	12	16	23	8	-3	-13	-11	6	6	6	6	5	3	3	**35**	**700**
1939	1	1	1	1	1	1	1	**7**	6	10	-3	-15	-20	-17	-11	6	6	5	3	2	2	3	**27**	**189**
1940	1	1	2	2	1	1	1	**9**	12	9	22	0	-21	-18	-14	6	6	6	6	1	2	3	**30**	**270**
1941	1	1	4	6	4	1	1	**18**	12	5	34	8	-7	-14	-10	6	6	6	6	4	3	4	**35**	**630**
1942	1	1	1	6	3	1	1	**14**	7	9	18	25	-10	-10	-10	6	6	6	6	4	4	4	**36**	**504**
1943	1	1	2	3	1	1	1	**10**	12	14	18	1	-16	-16	-12	6	6	6	6	2	2	3	**31**	**310**
1944	1	1	1	1	1	1	1	**7**	7	-8	18	0	-18	-18	-16	6	4	6	6	2	2	2	**28**	**196**
1945	1	1	1	2	1	1	1	**8**	12	5	16	11	-15	-15	-13	6	6	6	6	3	3	3	**33**	**264**
1946	1	1	1	1	1	1	1	**7**	5	12	16	-5	-20	-20	-15	6	6	6	5	2	2	3	**30**	**210**
1947	1	1	1	1	1	1	1	**7**	4	2	11	-10	-18	-18	-10	6	6	6	4	2	2	4	**30**	**210**
1948	1	1	1	1	1	1	1	**7**	-3	-2	20	19	-23	-21	-20	5	5	6	6	1	1	2	**26**	**182**
1949	1	1	1	1	1	1	1	**7**	9	7	21	-4	-33	-29	-25	6	6	6	5	1	1	1	**26**	**182**
1950	1	1	1	1	1	1	1	**7**	1	18	25	-2	-36	-36	-36	6	6	6	5	1	1	1	**26**	**182**
1951	1	1	1	1	1	1	1	**7**	6	0	2	-7	-26	-24	-19	6	6	6	4	1	1	2	**26**	**182**
1952	1	1	4	6	4	1	1	**18**	22	12	27	8	-6	-14	-10	6	6	6	6	4	3	4	**35**	**630**
1953	1	1	1	1	1	1	1	**7**	-2	0	-6	5	-20	-22	-18	5	6	4	6	2	1	2	**26**	**182**
1954	1	1	1	1	1	1	1	**7**	13	11	17	-14	-32	-28	-23	6	6	6	3	1	1	1	**24**	**168**
1955	1	1	1	1	1	1	1	**7**	-2	-10	28	11	-28	-28	-21	5	4	6	6	1	1	1	**24**	**168**
1956	1	1	1	5	3	1	1	**13**	6	3	25	21	-7	-15	-10	6	6	6	6	4	3	4	**35**	**455**
1957	1	1	1	1	1	1	1	**7**	3	-7	10	8	-23	-20	-16	6	4	6	6	1	2	2	**27**	**189**
1958	1	1	4	6	4	1	1	**18**	24	24	26	8	-8	-14	-10	6	6	6	6	4	3	4	**35**	**630**
1959	1	1	1	1	1	1	1	**7**	2	5	-2	-12	-23	-17	-9	6	6	5	3	1	2	4	**27**	**189**
1960	1	1	1	1	1	1	1	**7**	8	12	12	-5	-18	-15	-12	6	6	6	5	2	3	3	**31**	**217**
1961	1	1	1	1	1	1	1	**7**	1	3	0	-11	-24	-21	-15	6	6	6	3	1	1	3	**26**	**182**
1962	1	1	1	1	1	1	1	**7**	10	20	13	16	-22	-22	-20	6	6	6	6	1	1	2	**28**	**196**
1963	1	1	1	1	1	1	1	**7**	1	2	22	13	-16	-20	-15	6	6	6	6	2	2	3	**31**	**217**
1964	1	1	1	1	1	1	1	**7**	-2	-4	6	-5	-22	-23	-11	5	5	6	5	1	1	3	**26**	**182**
1965	1	1	1	1	1	1	1	**7**	2	7	15	15	-10	-13	-11	6	6	6	6	4	3	3	**34**	**238**
1966	1	1	1	1	1	1	1	**7**	3	8	6	-17	-27	-22	-16	6	6	6	2	1	1	2	**24**	**168**
1967	1	1	4	6	6	3	1	**22**	24	17	30	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1968	1	1	1	1	1	1	1	**7**	1	-1	0	-12	-22	-17	-14	6	5	6	3	1	2	3	**26**	**182**
1969	1	1	4	6	5	2	1	**20**	12	20	19	8	-2	-14	-11	6	6	6	6	5	3	3	**35**	**700**
1970	1	1	1	1	1	1	1	**7**	11	-9	10	-4	-24	-22	-16	6	4	6	5	1	1	2	**25**	**175**
1971	1	1	1	1	1	1	1	**7**	2	-6	7	11	-25	-23	-19	6	4	6	6	1	1	2	**26**	**182**
1972	1	1	1	1	1	1	1	**7**	11	-3	13	-1	-28	-21	-12	6	5	6	5	1	1	3	**27**	**189**
1973	1	1	1	1	1	1	1	**7**	15	0	45	9	-21	-19	-14	6	6	6	6	1	2	3	**30**	**210**
1974	1	1	2	3	1	1	1	**10**	12	5	24	8	-18	-15	-13	6	6	6	6	2	3	3	**32**	**320**
1975	1	1	1	5	2	1	1	**12**	12	-7	24	28	-15	-15	-10	6	4	6	6	3	3	4	**32**	**384**
1976	1	1	1	1	1	1	1	**7**	1	-5	-1	-13	-18	-13	-11	6	5	5	3	2	3	3	**27**	**189**
1977	1	1	1	1	1	1	1	**7**	-5	-14	-18	-16	-38	-25	0	5	3	2	2	1	1	6	**20**	**140**
1978	1	1	1	6	6	3	1	**19**	39	25	38	28	0	-12	-15	6	6	6	6	6	3	3	**36**	**684**
1979	1	1	2	2	1	1	1	**9**	12	0	30	1	-19	-16	-12	6	6	6	6	2	2	3	**31**	**279**
1980	1	1	1	5	4	2	1	**15**	12	5	19	21	-4	-13	-10	6	6	6	6	5	3	4	**36**	**540**
1981	1	1	1	1	1	1	1	**7**	2	5	9	-7	-18	-16	-9	6	6	6	4	2	2	4	**30**	**210**
1982	1	1	4	6	4	2	1	**19**	12	20	19	8	-5	-13	-9	6	6	6	6	5	3	4	**36**	**684**
1983	1	1	4	6	6	5	1	**24**	12	7	32	8	0	-4	-23	6	6	6	6	6	5	1	**36**	**864**
1984	1	1	1	1	1	1	1	**7**	8	-1	17	-6	-24	-22	-15	6	5	6	4	1	1	3	**26**	**182**
1985	1	1	1	1	1	1	1	**7**	4	12	10	-9	-22	-17	-13	6	6	6	4	1	2	3	**28**	**196**
1986	1	1	2	5	1	1	1	**12**	12	9	22	12	-16	-15	-11	6	6	6	6	2	3	3	**32**	**384**
1987	1	1	1	1	1	1	1	**7**	2	4	0	-11	-17	-13	-9	6	6	6	3	2	3	4	**30**	**210**
1988	1	1	1	1	1	1	1	**7**	5	3	2	-10	-17	-18	-11	6	6	6	4	2	2	3	**29**	**203**
1989	1	1	1	1	1	1	1	**7**	21	20	9	-5	-18	-17	-11	6	6	6	5	2	2	3	**30**	**210**
1990	1	1	1	1	1	1	1	**7**	8	10	-3	-13	-20	-21	-15	6	6	5	3	2	1	3	**26**	**182**
1991	1	1	1	1	1	1	1	**7**	27	2	24	17	-18	-17	-15	6	6	6	6	2	2	3	**31**	**217**
1992	1	1	1	1	1	1	1	**7**	8	17	2	-16	-17	-22	-15	6	6	6	2	2	1	3	**26**	**182**
1993	1	1	1	3	1	1	1	**9**	24	8	39	20	-8	-14	-11	6	6	6	6	4	3	3	**34**	**306**
1994	1	1	1	1	1	1	1	**7**	2	1	4	-9	-16	-15	-9	6	6	6	4	2	3	4	**31**	**217**
							73 - year Average:	**9**														**73 - year Average:**	**30**	**294.0**
																							1929 - '34 Average:	**219.3**

Flow Alternative 5

STUDY: 1995C06H-SWRCB-513 DWRSIM: recirc818-h, 05 Sep 97
CP # 18, MILLERTON LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06H-SWRCB-513/18/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 576'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	465	465	489	514	516	540	540	564	566	537	459	459	36	36	12	10	39	117	117	1	1	3	3	1	1	1	11	24	0	24	2	-29	-78	0	6	6	6	6	1	1	6	32	352
1923	459	459	488	513	504	473	500	499	470	459	459	459	103	76	77	106	117	117	117	1	1	1	1	1	1	1	7	-31	27	-1	-29	-11	0	0	1	6	5	1	3	6	6	28	196
1924	459	459	472	485	466	459	459	459	459	459	459	459	117	117	117	117	117	117	117	1	1	1	1	1	1	1	7	-7	0	0	0	0	0	0	4	6	6	6	6	6	6	40	280
1925	459	459	470	481	486	459	466	464	459	459	459	459	117	110	112	117	117	117	117	1	1	1	1	1	1	1	7	-27	7	-2	-5	0	0	0	1	6	5	5	6	6	6	35	245
1926	459	459	472	484	487	459	498	498	459	459	459	459	117	78	78	117	117	117	117	1	1	1	1	1	1	1	7	-28	39	0	-39	0	0	0	1	6	6	1	6	6	6	32	224
1927	459	460	483	505	529	521	512	514	519	459	459	459	55	64	62	57	117	117	117	1	1	1	1	1	1	1	7	-8	-9	2	5	-60	0	0	4	4	6	6	1	6	6	33	231
1928	459	465	487	506	498	483	478	459	459	459	459	459	93	98	117	117	117	117	117	1	1	1	1	1	1	1	7	-15	-5	-19	0	0	0	0	3	5	2	6	6	6	6	34	238
1929	459	459	470	483	465	459	461	459	459	459	459	459	117	115	117	117	117	117	117	1	1	1	1	1	1	1	7	-6	2	-2	0	0	0	0	4	6	5	6	6	6	6	39	273
1930	459	459	468	481	463	459	459	459	459	459	459	459	117	117	117	117	117	117	117	1	1	1	1	1	1	1	7	-4	0	0	0	0	0	0	5	6	6	6	6	6	6	41	287
1931	459	459	468	479	461	459	459	459	459	459	459	459	117	117	117	117	117	117	117	1	1	1	1	1	1	1	7	-2	0	0	0	0	0	0	5	6	6	6	6	6	6	41	287
1932	459	459	483	500	527	503	486	482	499	459	459	459	73	90	94	77	117	117	117	1	1	1	1	1	1	1	7	-24	-17	-4	17	-40	0	0	1	2	5	6	1	6	6	27	189
1933	459	459	467	481	475	459	467	465	459	459	459	459	117	109	111	117	117	117	117	1	1	1	1	1	1	1	7	-16	8	-2	-6	0	0	0	2	6	5	4	6	6	6	35	245
1934	459	459	475	492	475	459	459	459	459	459	459	459	117	117	117	117	117	117	117	1	1	1	1	1	1	1	7	-16	0	0	0	0	0	0	2	6	6	6	6	6	6	38	266
1935	459	459	473	496	492	459	499	518	524	459	459	459	117	77	58	52	117	117	117	1	1	1	1	1	1	1	7	-33	40	19	6	-65	0	0	1	6	6	6	1	6	6	32	224
1936	459	459	474	494	539	529	538	557	530	459	459	459	47	38	19	46	117	117	117	1	1	2	1	1	1	1	8	-10	9	19	-27	-71	0	0	4	6	6	1	1	6	6	30	240
1937	459	459	478	503	560	564	576	576	557	493	459	459	12	0	0	19	83	117	117	3	6	6	2	1	1	1	20	4	12	0	-19	-64	-34	0	6	6	6	2	1	1	6	28	560
1938	459	459	518	558	560	542	529	467	572	568	503	459	34	47	109	4	8	73	117	1	1	1	5	4	1	1	14	-18	-13	-62	105	-4	-65	-44	2	3	1	6	5	1	1	19	266
1939	459	459	477	490	476	459	465	470	459	459	459	459	117	111	106	117	117	117	117	1	1	1	1	1	1	1	7	-17	6	5	-11	0	0	0	2	6	6	3	6	6	6	35	245
1940	459	459	471	514	515	506	493	501	469	459	459	459	70	83	75	107	117	117	117	1	1	1	1	1	1	1	7	-9	-13	8	-32	-10	0	0	4	3	6	1	4	6	6	30	210
1941	459	459	502	539	560	567	551	543	566	546	469	459	9	25	33	10	30	107	117	4	1	1	3	1	1	1	12	7	-16	-8	23	-20	-77	-10	6	2	4	6	2	1	4	25	300
1942	459	459	494	524	526	522	520	532	568	532	459	459	54	56	44	8	44	117	117	1	1	1	4	1	1	1	10	-4	-2	12	36	-36	-73	0	5	5	6	6	1	1	6	30	300
1943	459	459	484	534	533	576	574	576	542	476	459	459	0	2	0	34	100	117	117	6	5	6	1	1	1	1	21	43	-2	2	-34	-66	-17	0	6	5	6	1	1	2	6	27	567
1944	459	459	475	487	487	459	459	459	459	459	459	459	117	117	117	117	117	117	117	1	1	1	1	1	1	1	7	-28	0	0	0	0	0	0	1	6	6	6	6	6	6	37	259
1945	459	466	489	500	546	548	538	536	540	488	459	459	28	38	40	36	88	117	117	1	1	1	1	1	1	1	7	2	-10	-2	4	-52	-29	0	6	4	5	6	1	1	6	29	203
1946	459	460	495	516	490	469	480	504	463	459	459	459	107	96	72	113	117	117	117	1	1	1	1	1	1	1	7	-21	11	24	-41	-4	0	0	1	6	6	1	5	6	6	31	217
1947	459	462	491	512	505	468	470	463	459	459	459	459	108	106	113	117	117	117	117	1	1	1	1	1	1	1	7	-37	2	-7	-4	0	0	0	1	6	4	5	6	6	6	34	238
1948	459	459	473	488	476	471	492	459	459	459	459	459	105	84	117	117	117	117	117	1	1	1	1	1	1	1	7	-5	21	-33	0	0	0	0	5	6	1	6	6	6	6	36	252
1949	459	459	470	483	476	459	459	459	459	459	459	459	117	117	117	117	117	117	117	1	1	1	1	1	1	1	7	-17	0	0	0	0	0	0	2	6	6	6	6	6	6	38	266
1950	459	459	474	493	496	459	459	462	459	459	459	459	117	117	114	117	117	117	117	1	1	1	1	1	1	1	7	-37	0	3	-3	0	0	0	1	6	6	5	6	6	6	36	252
1951	459	498	557	560	553	537	526	506	484	459	459	459	39	50	70	92	117	117	117	1	1	1	1	1	1	1	7	-16	-11	-20	-22	-25	0	0	2	3	2	1	1	6	6	21	147
1952	459	459	494	531	545	548	552	526	576	567	502	459	28	24	50	0	9	74	117	1	1	1	6	4	1	1	15	3	4	-26	50	-9	-65	-43	6	6	1	6	4	1	1	25	375
1953	459	459	483	506	484	459	459	459	459	459	459	459	117	117	117	117	117	117	117	1	1	1	1	1	1	1	7	-25	0	0	0	0	0	0	1	6	6	6	6	6	6	37	259
1954	459	459	475	485	489	459	459	475	459	459	459	459	117	117	101	117	117	117	117	1	1	1	1	1	1	1	7	-30	0	16	-16	0	0	0	1	6	6	2	6	6	6	33	231
1955	459	459	481	503	493	459	459	459	459	459	459	459	117	117	117	117	117	117	117	1	1	1	1	1	1	1	7	-34	0	0	0	0	0	0	1	6	6	6	6	6	6	37	259
1956	459	459	559	560	560	576	568	529	555	529	459	459	0	8	47	21	47	117	117	6	4	1	1	1	1	1	15	16	-8	-39	26	-26	-70	0	6	4	1	6	1	1	6	25	375
1957	459	459	474	486	479	461	468	471	459	459	459	459	115	108	105	117	117	117	117	1	1	1	1	1	1	1	7	-18	7	3	-12	0	0	0	2	6	6	3	6	6	6	35	245
1958	459	459	486	512	524	530	554	568	574	543	474	459	46	22	8	2	33	102	117	1	1	4	5	1	1	1	14	6	24	14	6	-31	-69	-15	6	6	6	6	1	1	3	29	406
1959	459	459	477	486	490	459	473	479	459	459	459	459	117	103	97	117	117	117	117	1	1	1	1	1	1	1	7	-31	14	6	-20	0	0	0	1	6	6	2	6	6	6	33	231
1960	459	459	459	463	471	459	459	459	459	459	459	459	117	117	117	117	117	117	117	1	1	1	1	1	1	1	7	-12	0	0	0	0	0	0	3	6	6	6	6	6	6	39	273
1961	459	459	468	473	459	459	459	459	459	459	459	459	117	117	117	117	117	117	117	1	1	1	1	1	1	1	7	0	0	0	0	0	0	0	6	6	6	6	6	6	6	42	294
1962	459	459	464	470	522	494	471	493	503	459	459	459	82	105	83	73	117	117	117	1	1	1	1	1	1	1	7	-28	-23	22	10	-44	0	0	1	1	6	6	1	6	6	27	189
1963	459	459	465	483	534	526	549	544	551	521	459	459	50	27	32	25	55	117	117	1	1	1	1	1	1	1	7	-8	23	-5	7	-30	-62	0	4	6	5	6	1	1	6	29	203
1964	459	476	504	515	504	481	472	459	459	459	459	459	95	104	117	117	117	117	117	1	1	1	1	1	1	1	7	-23	-9	-13	0	0	0	0	1	4	3	6	6	6	6	32	224
1965	459	459	496	540	535	524	529	511	514	459	459	459	52	47	65	62	117	117	117	1	1	1	1	1	1	1	7	-11	5	-18	3	-55	0	0	3	6	2	6	1	6	6	30	210
1966	459	473	514	529	500	459	473	480	459	459	459	459	117	103	96	117	117	117	117	1	1	1	1	1	1	1	7	-41	14	7	-21	0	0	0	1	6	6	1	6	6	6	32	224
1967	459	459	505	531	549	555	562	514	570	574	522	470	21	14	62	6	2	54	106	1	3	1	4	5	1	1	16	6	7	-48	56	4	-52	-52	6	6	1	6	6	1	1	27	432
1968	459	463	488	495	491	459	459	459	459	459	459	459	117	117	117	117	117	117	117	1	1	1	1	1	1	1	7	-32	0	0	0	0	0	0	1	6	6	6	6	6	6	37	259
1969	459	459	475	557	524	521	467	469	576	576	524	463	55	109	107	0	0	52	113	1	1	1	6	6	1	1	17	-3	-54	2	107	0	-52	-61	5	1	6	6	6	1	1	26	442
1970	459	464	495	544	555	541	529	518	488	459	459	459	35	47	58	88	117	117	117	1	1	1	1	1	1	1	7	-14	-12	-11	-30	-29	0	0	3	3	3	1	1	6	6	23	161
1971	459	460	498	520	510	468	462	459	459	459	459	459	108	114	117	117	117	117	117	1	1	1	1	1	1	1	7	-42	-6	-3	0	0	0	0	1	4	5	6	6	6	6	34	238
1972	459	459	490	510	500	468	459	459	459	459	459	459	108	117	117	117	117	117	117	1	1	1	1	1	1	1	7	-32	-9	0	0	0	0	0	1	4	6	6	6	6	6	35	245
1973	459	459	483	512	532	523	500	528	538	462	459	459	53	76	48	38	114	117	117	1	1	1	1	1	1	1	7	-9	-23	28	10	-76	-3	0	4	1	6	6	1	5	6	29	203
1974	459	470	511	545	526	523	536	548	554	490	459	459	53	40	28	22	86	117	117	1	1	1	1	1	1	1	7	-3	13	12	6	-64	-31	0	5	6	6	6	1	1	6	31	217
1975	459	459	481	494	503	477	483	479	515	459	459	459	99	93	97	61	117	117	117	1	1	1	1	1	1	1	7	-26	6	-4	36	-56	0	0	1	6	5	6	1	6	6	31	217
1976	459	469	489	499	486	473	459	459	459	459	459	459	103	117	117	117	117	117	117	1	1	1	1	1	1	1	7	-13	-14	0	0	0	0	0	3	3	6	6	6	6	6	36	252
1977	459	459	459	459	459	459	459	459	459	459	459	459	117	117	117	117	117	117	117	1	1	1	1	1	1	1	7	0	0	0	0	0	0	0	6	6	6	6	6	6	6	42	294
1978	459	459	475	524	556	552	510	498	566	559	508	463	24	66	78	10	17	68	113	1	1	1	3	2	1	1	10	-4	-42	-12	68	-7	-51	-45	5	1	3	6	4	1	1	21	210
1979	459	459	479	504	496	496	484	497	462	459	459	459	80	92	79	114	117	117	117	1	1	1	1	1	1	1	7	0	-12	13	-35	-3	0	0	6	3	6	1	5	6	6	33	231
1980	459	459	476	555	560	558	566	550	561	567	514	459	18	10	26	15	9	62	117	2	3	1	2	4	1	1	14	-2	8	-16	11	6	-53	-55	5	6	2	6	6	1	1	27	378
1981	459	459	466	477	476	459	459	459	459	459	459	459	117	117	117	117	117	117	117	1	1	1	1	1	1	1	7	-17	0	0	0	0	0	0	2	6	6	6	6	6	6	38	266
1982	459	459	499	533	546	561	546	561	569	564	514	477	15	30	15	7	12	62	99	2	1	2	4	3	1	1	14	15	-15	15	8	-5	-50	-37	6	3	6	6	5	1	1	28	392
1983	459	506	560	560	513	484	467	467	483	576	571	568	92	109	109	93	0	5	8	1	1	1	1	6	4	4	18	-29	-17	0	16	93	-5	-3	1	2	6	6	6	5	5	31	558
1984	560	560	560	560	560	562	549	538	509	459	459	459	14	27	38	67	117	117	117	3	1	1	1	1	1	1	9	2	-13	-11	-29	-50	0	0	6	3	3	1	1	6	6	26	234
1985	459	459	477	505	497	466	486	483	459	459	459	459	110	90	93	117	117	117	117	1	1	1	1	1	1	1	7	-31	20	-3	-24	0	0	0	1	6	5	1	6	6	6	31	217
1986	459	463	494	520	550	552	574	565	576	546	459	459	24	2	11	0	30	117	117	1	5	3	6	1	1	1	18	2	22	-9	11	-30	-87	0	6	6	4	6	1	1	6	30	540
1987	459	459	459	462	459	459	459	468	459	459	459	459	117	117	108	117	117	117	117	1	1	1	1	1	1	1	7	0	0	9	-9	0	0	0	6	6	6	4	6	6	6	40	280
1988	459	459	468	491	462	459	459	459	459	459	459	459	117	117	117	117	117	117	117	1	1	1	1	1	1	1	7	-3	0	0	0	0	0	0	5	6	6	6	6	6	6	41	287
1989	459	459	462	472	459	459	461	459	459	459	459	459	117	115	117	117	117	117	117	1	1	1	1	1	1	1	7	0	2	-2	0	0	0	0	6	6	5	6	6	6	6	41	287
1990	459	459	460	464	459	459	459	459	459	459	459	459	117	117	117	117	117	117	117	1	1	1	1	1	1	1	7	0	0	0	0	0	0	0	6	6	6	6	6	6	6	42	294
1991	459	459	459	463	459	459	459	459	459	459	459	459	117	117	117	117	117	117	117	1	1	1	1	1	1	1	7	0	0	0	0	0	0	0	6	6	6	6	6	6	6	42	294
1992	459	459	459	461	459	459	459	459	459	459	459	459	117	117	117	117	117	117	117	1	1	1	1	1	1	1	7	0	0	0	0	0	0	0	6	6	6	6	6	6	6	42	294
1993	459	459	461	523	531	539	532	549	566	549	462	459	37	44	27	10	27	114	117	1	1	1	3	1	1	1	9	8	-7	17	17	-17	-87	-3	6	4	6	6	2	1	5	30	270
1994	459	459	468	471	459	459	459	459	459	459	459	459	117	117	117	117	117	117	117	1	1	1	1	1	1	1	7	0	0	0	0	0	0	0	6	6	6	6	6	6	6	42	294

73 - year Average: 9

73 - year Average: 33 **278.7**

1929 - '34 Average: 257.8

STUDY: 1995C06H-SWRCB-513 DWRSIM: recirc818-h, 05 Sep 97
CP # 12, SWP SAN LUIS RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06H-SWRCB-513/12/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 544'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	422	446	481	524	539	542	539	532	511	463	419	434
1923	465	485	490	504	515	522	524	510	479	455	420	413
1924	430	444	474	520	540	540	531	518	503	469	436	426
1925	439	449	487	519	544	544	540	523	471	428	378	365
1926	393	413	427	479	518	528	529	508	470	458	437	414
1927	442	474	508	536	544	544	543	535	506	475	428	435
1928	464	494	509	523	535	540	539	522	484	456	417	403
1929	416	446	477	518	532	542	530	514	498	486	444	434
1930	440	443	485	533	544	544	532	509	474	464	441	419
1931	439	455	485	529	544	544	534	518	498	467	426	413
1932	423	425	471	525	542	542	539	528	494	453	409	401
1933	413	423	434	486	509	519	517	505	479	451	409	403
1934	414	421	465	514	528	534	523	499	469	435	387	373
1935	381	388	406	469	483	517	524	515	486	460	417	413
1936	446	464	490	522	533	539	539	527	497	464	416	418
1937	433	449	476	521	537	544	544	542	517	465	412	401
1938	434	467	499	515	529	537	542	544	535	514	487	497
1939	505	513	518	531	543	544	534	510	476	464	437	419
1940	428	434	434	494	529	535	535	509	473	426	348	358
1941	402	436	469	520	535	539	536	529	508	465	429	449
1942	474	484	489	504	515	520	518	512	494	450	426	443
1943	475	485	492	508	519	530	529	526	501	464	415	421
1944	456	487	500	515	529	536	527	506	470	457	423	408
1945	426	462	497	523	536	541	539	526	495	464	412	404
1946	436	469	500	515	526	532	528	510	475	452	419	405
1947	430	462	494	521	533	541	528	498	455	432	413	398
1948	420	440	452	502	514	534	537	521	491	450	412	408
1949	434	460	484	516	529	538	522	498	455	435	407	394
1950	406	421	436	489	524	531	524	501	465	436	412	406
1951	437	466	500	527	537	543	537	519	481	449	426	421
1952	449	476	505	521	530	534	532	534	524	501	480	483
1953	491	500	505	519	529	535	528	519	506	473	439	456
1954	487	505	514	529	539	544	540	525	485	453	423	409
1955	440	468	496	515	527	535	524	505	473	465	432	418
1956	434	466	504	528	541	544	541	533	509	466	427	437
1957	464	487	492	506	519	526	520	505	475	454	432	423
1958	455	484	512	527	539	542	539	531	518	493	471	474
1959	482	491	496	510	522	530	519	497	462	451	432	425
1960	437	451	463	513	544	544	529	507	466	438	378	371
1961	401	437	471	515	544	544	527	496	458	440	426	404
1962	416	439	472	513	543	544	533	505	461	420	336	344
1963	382	416	445	489	522	529	530	525	499	481	443	457
1964	486	514	523	538	544	544	525	497	453	425	402	397
1965	404	437	470	518	530	538	540	529	499	466	423	437
1966	467	492	498	512	523	530	520	496	451	431	413	404
1967	436	467	501	517	527	532	529	532	523	504	484	486
1968	494	505	509	523	533	540	531	507	474	456	432	417
1969	453	486	512	528	541	544	544	544	537	522	500	505
1970	512	521	525	539	544	544	541	523	490	462	413	405
1971	429	462	494	515	524	531	525	513	493	472	441	453
1972	480	506	517	532	543	544	536	508	466	446	429	411
1973	444	474	503	522	533	539	539	527	495	460	420	418
1974	451	480	505	520	532	536	533	525	499	470	452	463
1975	474	483	488	502	516	520	519	510	485	447	427	437
1976	465	485	491	506	520	531	520	497	473	469	446	428
1977	437	445	451	472	472	472	475	465	444	416	405	414
1978	433	432	481	530	544	544	544	544	523	463	409	429
1979	462	485	489	503	517	524	526	514	487	459	416	409
1980	447	481	508	525	541	544	544	540	519	479	442	457
1981	489	507	514	528	539	544	537	511	474	458	430	410
1982	436	469	503	524	535	540	544	544	525	490	460	470
1983	494	507	513	527	540	544	544	544	537	524	514	521
1984	536	544	544	544	544	544	541	524	492	464	412	431
1985	464	492	498	513	525	533	521	495	452	433	417	401
1986	413	433	468	517	543	544	544	544	529	495	459	468
1987	496	509	533	544	544	544	526	498	465	453	423	407
1988	419	424	460	510	514	514	506	491	475	466	440	433
1989	437	466	497	525	535	544	535	513	468	449	433	424
1990	448	461	474	519	540	544	532	509	482	452	407	388
1991	394	397	408	431	431	488	493	485	460	432	405	403
1992	425	436	449	492	521	544	532	511	483	457	419	402
1993	413	406	450	508	537	541	538	530	510	462	409	410
1994	446	476	489	503	517	526	514	489	462	459	448	436

Difference from Maximum Reservoir Elevation [DFMRE]

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	2	5	12	33	81	125	110
1923	22	20	34	65	89	124	131
1924	4	13	26	41	75	108	118
1925	0	4	21	73	116	166	179
1926	16	15	36	74	86	107	130
1927	0	1	9	38	69	116	109
1928	4	5	22	60	88	127	141
1929	2	14	30	46	58	100	110
1930	0	12	35	70	80	103	125
1931	0	10	26	46	77	118	131
1932	2	5	16	50	91	135	143
1933	25	27	39	65	93	135	141
1934	10	21	45	75	109	157	171
1935	27	20	29	58	84	127	131
1936	5	5	17	47	80	128	126
1937	0	0	2	27	79	132	143
1938	7	2	0	9	30	57	47
1939	0	10	34	68	80	107	125
1940	9	9	35	71	118	196	186
1941	5	8	15	36	79	115	95
1942	24	26	32	50	94	118	101
1943	14	15	18	43	80	129	123
1944	8	17	38	74	87	121	136
1945	3	5	18	49	80	132	140
1946	12	16	34	69	92	125	139
1947	3	16	46	89	112	131	146
1948	10	7	23	53	94	132	136
1949	6	22	46	89	109	137	150
1950	13	20	43	79	108	132	138
1951	1	7	25	63	95	118	123
1952	10	12	10	20	43	64	61
1953	9	16	25	38	71	105	88
1954	0	4	19	59	91	121	135
1955	9	20	39	71	79	112	126
1956	0	3	11	35	78	117	107
1957	18	24	39	69	90	112	121
1958	2	5	13	26	51	73	70
1959	14	25	47	82	93	112	119
1960	0	15	37	78	106	166	173
1961	0	17	48	86	104	118	140
1962	0	11	39	83	124	208	200
1963	15	14	19	45	63	101	87
1964	0	19	47	91	119	142	147
1965	6	4	15	45	78	121	107
1966	14	24	48	93	113	131	140
1967	12	15	12	21	40	60	58
1968	4	13	37	70	88	112	127
1969	0	0	0	7	22	44	39
1970	0	3	21	54	82	131	139
1971	13	19	31	51	72	103	91
1972	0	8	36	78	98	115	133
1973	5	5	17	49	84	124	126
1974	8	11	19	45	74	92	81
1975	24	25	34	59	97	117	107
1976	13	24	47	71	75	98	116
1977	72	69	79	100	128	139	130
1978	0	0	0	21	81	135	115
1979	20	18	30	57	85	128	135
1980	0	0	4	25	65	102	87
1981	0	7	33	70	86	114	134
1982	4	0	0	19	54	84	74
1983	0	0	0	7	20	30	23
1984	0	3	20	52	80	132	113
1985	11	23	49	92	111	127	143
1986	0	0	0	15	49	85	76
1987	0	18	46	79	91	121	137
1988	30	38	53	69	78	104	111
1989	0	9	31	76	95	111	120
1990	0	12	35	62	92	137	156
1991	56	51	59	84	112	139	141
1992	0	12	33	61	87	125	142
1993	3	6	14	34	82	135	134
1994	18	30	55	82	85	96	108

Reservoir Elevation Scores

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	5	4	3	1	1	1	1	**16**
1923	1	1	1	1	1	1	1	**7**
1924	5	3	1	1	1	1	1	**13**
1925	6	5	1	1	1	1	1	**16**
1926	2	2	1	1	1	1	1	**9**
1927	6	5	4	1	1	1	1	**19**
1928	5	4	1	1	1	1	1	**14**
1929	5	3	1	1	1	1	1	**13**
1930	6	3	1	1	1	1	1	**14**
1931	6	3	1	1	1	1	1	**14**
1932	5	4	2	1	1	1	1	**15**
1933	1	1	1	1	1	1	1	**7**
1934	3	1	1	1	1	1	1	**9**
1935	1	1	1	1	1	1	1	**7**
1936	4	4	2	1	1	1	1	**14**
1937	6	6	5	1	1	1	1	**21**
1938	4	5	6	4	1	1	1	**22**
1939	6	3	1	1	1	1	1	**14**
1940	4	4	1	1	1	1	1	**13**
1941	4	4	2	1	1	1	1	**14**
1942	1	1	1	1	1	1	1	**7**
1943	3	2	2	1	1	1	1	**11**
1944	4	2	1	1	1	1	1	**11**
1945	5	4	2	1	1	1	1	**15**
1946	3	2	1	1	1	1	1	**10**
1947	5	2	1	1	1	1	1	**12**
1948	3	4	1	1	1	1	1	**12**
1949	4	1	1	1	1	1	1	**10**
1950	3	1	1	1	1	1	1	**9**
1951	5	4	1	1	1	1	1	**14**
1952	3	3	3	1	1	1	1	**13**
1953	4	2	1	1	1	1	1	**11**
1954	6	5	2	1	1	1	1	**17**
1955	4	1	1	1	1	1	1	**10**
1956	6	5	3	1	1	1	1	**18**
1957	2	1	1	1	1	1	1	**8**
1958	5	4	3	1	1	1	1	**16**
1959	3	1	1	1	1	1	1	**9**
1960	6	2	1	1	1	1	1	**13**
1961	6	2	1	1	1	1	1	**13**
1962	6	3	1	1	1	1	1	**14**
1963	2	3	2	1	1	1	1	**11**
1964	6	2	1	1	1	1	1	**13**
1965	4	5	2	1	1	1	1	**15**
1966	3	1	1	1	1	1	1	**9**
1967	3	2	3	1	1	1	1	**12**
1968	5	3	1	1	1	1	1	**13**
1969	6	6	6	4	1	1	1	**25**
1970	6	5	1	1	1	1	1	**16**
1971	3	2	1	1	1	1	1	**10**
1972	6	4	1	1	1	1	1	**15**
1973	4	4	2	1	1	1	1	**14**
1974	4	3	2	1	1	1	1	**13**
1975	1	1	1	1	1	1	1	**7**
1976	3	1	1	1	1	1	1	**9**
1977	1	1	1	1	1	1	1	**7**
1978	6	6	6	1	1	1	1	**22**
1979	1	2	1	1	1	1	1	**8**
1980	6	6	5	1	1	1	1	**21**
1981	6	4	1	1	1	1	1	**15**
1982	5	6	6	2	1	1	1	**22**
1983	6	6	6	4	1	1	1	**25**
1984	6	5	1	1	1	1	1	**16**
1985	3	1	1	1	1	1	1	**9**
1986	6	6	6	2	1	1	1	**23**
1987	6	2	1	1	1	1	1	**13**
1988	1	1	1	1	1	1	1	**7**
1989	6	4	1	1	1	1	1	**15**
1990	6	3	1	1	1	1	1	**14**
1991	1	1	1	1	1	1	1	**7**
1992	6	3	1	1	1	1	1	**14**
1993	5	4	3	1	1	1	1	**16**
1994	2	1	1	1	1	1	1	**8**
73 - year Average:								**13**

Reservoir Change from Previous Month [fluctuation]

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	3	-3	-7	-21	-48	-44	15
1923	7	2	-14	-31	-24	-35	-7
1924	0	-9	-13	-15	-34	-33	-10
1925	0	-4	-17	-52	-43	-50	-13
1926	10	1	-21	-38	-12	-21	-23
1927	0	-1	-8	-29	-31	-47	7
1928	5	-1	-17	-38	-28	-39	-14
1929	10	-12	-16	-16	-12	-42	-10
1930	0	-12	-23	-35	-10	-23	-22
1931	0	-10	-16	-20	-31	-41	-13
1932	0	-3	-11	-34	-41	-44	-8
1933	10	-2	-12	-26	-28	-42	-6
1934	6	-11	-24	-30	-34	-48	-14
1935	34	7	-9	-29	-26	-43	-4
1936	6	0	-12	-30	-33	-48	2
1937	7	0	-2	-25	-52	-53	-11
1938	8	5	2	-9	-21	-27	10
1939	1	-10	-24	-34	-12	-27	-18
1940	6	0	-26	-36	-47	-78	10
1941	4	-3	-7	-21	-43	-36	20
1942	5	-2	-6	-18	-44	-24	17
1943	11	-1	-3	-25	-37	-49	6
1944	7	-9	-21	-36	-13	-34	-15
1945	5	-2	-13	-31	-31	-52	-8
1946	6	-4	-18	-35	-23	-33	-14
1947	8	-13	-30	-43	-23	-19	-15
1948	20	3	-16	-30	-41	-38	-4
1949	9	-16	-24	-43	-20	-28	-13
1950	7	-7	-23	-36	-29	-24	-6
1951	6	-6	-18	-38	-32	-23	-5
1952	4	-2	2	-10	-23	-21	3
1953	6	-7	-9	-13	-33	-34	17
1954	5	-4	-15	-40	-32	-30	-14
1955	8	-11	-19	-32	-8	-33	-14
1956	3	-3	-8	-24	-43	-39	10
1957	7	-6	-15	-30	-21	-22	-9
1958	3	-3	-8	-13	-25	-22	3
1959	8	-11	-22	-35	-11	-19	-7
1960	0	-15	-22	-41	-28	-60	-7
1961	0	-17	-31	-38	-18	-14	-22
1962	1	-11	-28	-44	-41	-84	8
1963	7	1	-5	-26	-18	-38	14
1964	0	-19	-28	-44	-28	-23	-5
1965	8	2	-11	-30	-33	-43	14
1966	7	-10	-24	-45	-20	-18	-9
1967	5	-3	3	-9	-19	-20	2
1968	7	-9	-24	-33	-18	-24	-15
1969	3	0	0	-7	-15	-22	5
1970	0	-3	-18	-33	-28	-49	-8
1971	7	-6	-12	-20	-21	-31	12
1972	1	-8	-28	-42	-20	-17	-18
1973	6	0	-12	-32	-35	-40	-2
1974	4	-3	-8	-26	-29	-18	11
1975	4	-1	-9	-25	-38	-20	10
1976	11	-11	-23	-24	-4	-23	-18
1977	0	3	-10	-21	-28	-11	9
1978	0	0	0	-21	-60	-54	20
1979	7	2	-12	-27	-28	-43	-7
1980	3	0	-4	-21	-40	-37	15
1981	5	-7	-26	-37	-16	-28	-20
1982	5	4	0	-19	-35	-30	10
1983	4	0	0	-7	-13	-10	7
1984	0	-3	-17	-32	-28	-52	19
1985	8	-12	-26	-43	-19	-16	-16
1986	1	0	0	-15	-34	-36	9
1987	0	-18	-28	-33	-12	-30	-16
1988	0	-8	-15	-16	-9	-26	-7
1989	9	-9	-22	-45	-19	-16	-9
1990	4	-12	-23	-27	-30	-45	-19
1991	57	5	-8	-25	-28	-27	-2
1992	23	-12	-21	-28	-26	-38	-17
1993	4	-3	-8	-20	-48	-53	1
1994	9	-12	-25	-27	-3	-11	-12

Reservoir Fluctuation Scores and Largemouth Bass Reservoir Habitat Index

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	6	5	4	1	1	1	6	**24**	**384**
1923	6	6	3	1	1	1	4	**22**	**154**
1924	6	4	3	3	1	1	4	**22**	**286**
1925	6	5	2	1	1	1	3	**19**	**304**
1926	6	6	1	1	3	1	1	**19**	**171**
1927	6	5	4	1	1	1	6	**24**	**456**
1928	6	5	2	1	1	1	3	**19**	**266**
1929	6	3	2	2	3	1	4	**21**	**273**
1930	6	3	1	1	4	1	1	**17**	**238**
1931	6	4	2	2	1	1	3	**19**	**266**
1932	6	5	3	1	1	1	4	**21**	**315**
1933	6	5	3	1	1	1	4	**21**	**147**
1934	6	3	1	1	1	1	3	**16**	**144**
1935	6	6	4	1	1	1	5	**24**	**168**
1936	6	6	3	1	1	1	6	**24**	**336**
1937	6	6	5	1	1	1	3	**23**	**483**
1938	6	6	6	4	1	1	6	**30**	**660**
1939	6	4	1	1	3	1	2	**18**	**252**
1940	6	6	1	1	1	1	6	**22**	**286**
1941	6	5	4	1	1	1	6	**24**	**336**
1942	6	5	4	2	1	1	6	**25**	**175**
1943	6	5	5	1	1	1	6	**25**	**275**
1944	6	4	1	1	3	1	3	**19**	**209**
1945	6	5	3	1	1	1	4	**21**	**315**
1946	6	5	2	1	1	1	3	**19**	**190**
1947	6	3	1	1	1	2	3	**17**	**204**
1948	6	6	2	1	1	1	5	**22**	**264**
1949	6	2	1	1	2	1	3	**16**	**160**
1950	6	4	1	1	1	1	4	**18**	**162**
1951	6	4	2	1	1	1	5	**20**	**280**
1952	6	5	6	4	1	1	6	**29**	**377**
1953	6	4	4	3	1	1	6	**25**	**275**
1954	6	5	3	1	1	1	3	**20**	**340**
1955	6	3	2	1	4	1	3	**20**	**200**
1956	6	5	4	1	1	1	6	**24**	**432**
1957	6	4	3	1	1	1	4	**20**	**160**
1958	6	5	4	3	1	1	6	**26**	**416**
1959	6	3	1	1	3	2	4	**20**	**180**
1960	6	3	1	1	1	1	4	**17**	**221**
1961	6	2	1	1	2	3	1	**16**	**208**
1962	6	3	1	1	1	1	6	**19**	**266**
1963	6	6	5	1	2	1	6	**27**	**297**
1964	6	2	1	1	1	1	5	**17**	**221**
1965	6	6	3	1	1	1	6	**24**	**360**
1966	6	4	1	1	2	2	4	**20**	**180**
1967	6	5	6	4	2	2	6	**31**	**372**
1968	6	4	1	1	2	1	3	**18**	**234**
1969	6	6	6	4	3	1	6	**32**	**800**
1970	6	5	2	1	1	1	4	**20**	**320**
1971	6	4	3	2	1	1	6	**23**	**230**
1972	6	4	1	1	2	2	2	**18**	**270**
1973	6	6	3	1	1	1	5	**23**	**322**
1974	6	5	4	1	1	2	6	**25**	**325**
1975	6	5	4	1	1	2	6	**25**	**175**
1976	6	3	1	1	5	1	2	**19**	**171**
1977	6	6	4	1	1	3	6	**27**	**189**
1978	6	6	6	1	1	1	6	**27**	**594**
1979	6	6	3	1	1	1	4	**22**	**176**
1980	6	6	5	1	1	1	6	**26**	**546**
1981	6	4	1	1	2	1	2	**17**	**255**
1982	6	6	6	2	1	1	6	**28**	**616**
1983	6	6	6	4	3	4	6	**35**	**875**
1984	6	5	2	1	1	1	6	**22**	**352**
1985	6	3	1	1	2	2	2	**17**	**153**
1986	6	6	6	3	1	1	6	**29**	**667**
1987	6	2	1	1	3	1	2	**16**	**208**
1988	6	4	3	2	4	1	4	**24**	**168**
1989	6	4	1	1	2	2	4	**20**	**300**
1990	6	3	1	1	1	1	2	**15**	**210**
1991	6	6	4	1	1	1	5	**24**	**168**
1992	6	3	1	1	1	1	2	**15**	**210**
1993	6	5	4	2	1	1	6	**25**	**400**
1994	6	3	1	1	5	3	3	**22**	**176**
73 - year Average:								**22**	**298.3**
1929 - '34 Average:									**230.5**

Flow Alternative 6

STUDY: 1995C06F-SWRCB-485 DWRSIM: recirc818-f, 18 Jun 97
CP # 4, SHASTA LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-485/4/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 1067'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	DFMRE APR	DFMRE MAY	DFMRE JUN	DFMRE JUL	DFMRE AUG	DFMRE SEP
1922	989	992	998	1,003	1,018	1,037	1,059	1,067	1,062	1,047	1,030	1,024	30	8	0	5	20	37	43
1923	1,022	1,017	1,019	1,023	1,023	1,023	1,035	1,030	1,015	996	977	976	44	32	37	52	71	90	91
1924	977	977	977	978	985	986	974	961	940	915	896	879	81	93	106	127	152	171	188
1925	883	899	908	918	993	1,007	1,039	1,050	1,038	1,016	1,002	997	60	28	17	29	51	65	70
1926	992	989	984	981	1,010	1,017	1,031	1,024	998	971	949	942	50	36	43	69	96	118	125
1927	944	973	998	1,023	1,026	1,052	1,067	1,067	1,061	1,045	1,025	1,020	15	0	0	6	22	42	47
1928	1,018	1,017	1,020	1,028	1,044	1,046	1,066	1,062	1,042	1,016	995	988	21	1	5	25	51	72	79
1929	985	986	987	989	996	1,003	1,004	997	988	968	950	943	64	63	70	79	99	117	124
1930	940	939	970	982	999	1,022	1,033	1,033	1,013	994	978	975	45	34	34	54	73	89	92
1931	972	971	970	973	977	986	977	967	954	933	917	904	81	90	100	113	134	150	163
1932	898	897	914	925	935	961	964	972	965	951	936	928	106	103	95	102	116	131	139
1933	926	921	922	925	928	964	973	978	973	952	938	930	103	94	89	94	115	129	137
1934	928	928	938	956	975	989	991	986	972	939	923	908	78	76	81	95	128	144	159
1935	902	913	917	940	959	983	1,027	1,035	1,027	1,004	990	985	84	40	32	40	63	77	82
1936	982	980	978	1,004	1,032	1,044	1,054	1,052	1,045	1,022	1,000	993	23	13	15	22	45	67	74
1937	989	985	980	975	978	1,006	1,035	1,044	1,040	1,021	1,002	995	61	32	23	27	46	65	72
1938	992	1,013	1,020	1,035	1,030	1,024	1,049	1,067	1,067	1,058	1,045	1,036	43	18	0	0	9	22	31
1939	1,023	1,017	1,020	1,022	1,024	1,039	1,031	1,024	998	975	944	940	28	36	43	69	92	123	127
1940	936	930	940	989	1,017	1,025	1,059	1,063	1,051	1,029	1,008	1,004	42	8	4	16	38	59	63
1941	1,004	1,004	1,019	1,020	1,024	1,045	1,064	1,067	1,067	1,058	1,047	1,036	22	3	0	0	9	20	31
1942	1,023	1,017	1,020	1,023	1,028	1,042	1,067	1,067	1,067	1,058	1,046	1,036	25	0	0	0	9	21	31
1943	1,023	1,017	1,022	1,030	1,042	1,051	1,067	1,067	1,059	1,046	1,031	1,025	16	0	0	8	21	36	42
1944	1,023	1,017	1,015	1,014	1,023	1,033	1,038	1,038	1,017	993	972	964	34	29	29	50	74	95	103
1945	966	979	994	1,001	1,036	1,049	1,062	1,067	1,058	1,037	1,018	1,011	18	5	0	9	30	49	56
1946	1,010	1,017	1,018	1,033	1,039	1,051	1,063	1,065	1,050	1,031	1,015	1,008	16	4	2	17	36	52	59
1947	1,002	1,003	1,003	1,000	1,007	1,026	1,034	1,023	1,008	987	965	950	41	33	44	59	80	102	117
1948	957	961	963	993	993	1,005	1,047	1,067	1,066	1,050	1,035	1,033	62	20	0	1	17	32	34
1949	1,023	1,017	1,016	1,012	1,016	1,050	1,063	1,064	1,043	1,020	999	993	17	4	3	24	47	68	74
1950	987	982	979	990	1,005	1,023	1,040	1,039	1,026	1,005	988	986	44	27	28	41	62	79	81
1951	999	1,017	1,020	1,033	1,040	1,058	1,065	1,067	1,051	1,029	1,011	1,008	9	2	0	16	38	56	59
1952	1,006	1,011	1,019	1,032	1,038	1,048	1,058	1,067	1,067	1,058	1,046	1,036	19	9	0	0	9	21	31
1953	1,023	1,017	1,021	1,022	1,033	1,051	1,065	1,067	1,067	1,057	1,042	1,036	16	2	0	0	10	25	31
1954	1,023	1,017	1,021	1,030	1,035	1,051	1,067	1,063	1,053	1,036	1,022	1,018	16	0	4	14	31	45	49
1955	1,015	1,017	1,022	1,024	1,027	1,023	1,037	1,045	1,024	1,000	983	983	44	30	22	43	67	84	84
1956	981	987	1,017	1,017	1,019	1,048	1,067	1,067	1,067	1,058	1,047	1,036	19	0	0	0	9	20	31
1957	1,023	1,017	1,016	1,017	1,035	1,052	1,058	1,067	1,060	1,042	1,028	1,027	15	9	0	7	25	39	40
1958	1,023	1,017	1,021	1,029	1,067	1,024	1,053	1,067	1,067	1,058	1,047	1,036	43	14	0	0	9	20	31
1959	1,023	1,017	1,017	1,034	1,039	1,052	1,057	1,056	1,036	1,011	995	997	15	10	11	31	56	72	70
1960	990	981	981	988	1,017	1,045	1,052	1,060	1,041	1,020	1,001	997	22	15	7	26	47	66	70
1961	990	993	1,010	1,017	1,044	1,057	1,062	1,067	1,048	1,024	1,003	1,000	10	5	0	19	43	64	67
1962	990	987	999	1,001	1,035	1,053	1,066	1,066	1,052	1,031	1,009	1,007	14	1	1	15	36	58	60
1963	1,023	1,017	1,021	1,025	1,045	1,055	1,052	1,067	1,063	1,049	1,034	1,032	12	15	0	4	18	33	35
1964	1,023	1,017	1,018	1,033	1,032	1,031	1,025	1,020	1,003	985	958	953	36	42	47	64	82	109	114
1965	952	962	1,017	1,022	1,041	1,053	1,065	1,064	1,055	1,040	1,030	1,028	14	2	3	12	27	37	39
1966	1,023	1,017	1,021	1,037	1,049	1,055	1,063	1,062	1,043	1,023	1,007	1,000	12	4	5	24	44	60	67
1967	991	1,006	1,021	1,030	1,044	1,048	1,064	1,067	1,067	1,058	1,047	1,036	19	3	0	0	9	20	31
1968	1,023	1,017	1,019	1,025	1,034	1,054	1,056	1,058	1,040	1,019	1,010	1,005	13	11	9	27	48	57	62
1969	1,000	1,001	1,013	1,022	1,027	1,048	1,063	1,067	1,067	1,058	1,047	1,036	19	4	0	0	9	20	31
1970	1,023	1,017	1,020	1,017	1,025	1,052	1,055	1,055	1,041	1,021	1,004	1,000	15	12	12	26	46	63	67
1971	998	1,017	1,020	1,028	1,041	1,043	1,064	1,067	1,067	1,058	1,047	1,036	24	3	0	0	9	20	31
1972	1,023	1,017	1,022	1,033	1,045	1,056	1,067	1,067	1,048	1,028	1,015	1,011	11	0	0	19	39	52	56
1973	1,012	1,017	1,021	1,030	1,034	1,053	1,065	1,067	1,059	1,042	1,026	1,023	14	2	0	8	25	41	44
1974	1,023	1,017	1,018	1,017	1,036	1,025	1,058	1,067	1,067	1,058	1,047	1,036	42	9	0	0	9	20	31
1975	1,023	1,017	1,021	1,024	1,045	1,039	1,061	1,067	1,067	1,057	1,046	1,036	28	6	0	0	10	21	31
1976	1,023	1,017	1,018	1,017	1,012	1,020	1,027	1,023	997	976	972	974	47	40	44	70	91	95	93
1977	976	977	977	978	968	967	948	942	917	895	875	872	100	119	125	150	172	192	195
1978	861	859	907	1,014	1,031	1,047	1,067	1,067	1,064	1,055	1,045	1,036	20	0	0	3	12	22	31
1979	1,023	1,017	1,013	1,015	1,026	1,044	1,052	1,060	1,042	1,023	1,011	1,007	23	15	7	25	44	56	60
1980	1,007	1,010	1,013	1,029	1,019	1,046	1,059	1,064	1,056	1,045	1,035	1,035	21	8	3	11	22	32	32
1981	1,023	1,016	1,019	1,028	1,042	1,056	1,064	1,062	1,040	1,016	999	993	11	3	5	27	51	68	74
1982	990	1,017	1,018	1,033	1,029	1,046	1,051	1,067	1,067	1,058	1,047	1,036	21	16	0	0	9	20	31
1983	1,023	1,017	1,020	1,022	1,017	1,045	1,050	1,067	1,067	1,058	1,047	1,036	22	17	0	0	9	20	31
1984	1,023	1,017	1,018	1,034	1,047	1,056	1,064	1,067	1,058	1,042	1,029	1,027	11	3	0	9	25	38	40
1985	1,023	1,017	1,022	1,023	1,027	1,034	1,042	1,035	1,009	989	973	972	33	25	32	58	78	94	95
1986	975	979	989	1,014	1,017	1,029	1,048	1,050	1,039	1,023	1,007	1,011	38	19	17	28	44	60	56
1987	1,011	1,010	1,009	1,010	1,020	1,047	1,047	1,041	1,008	985	953	947	20	20	26	59	82	114	120
1988	943	945	976	999	999	1,002	1,009	1,008	989	954	939	936	65	58	59	78	113	128	131
1989	936	949	956	963	970	1,034	1,055	1,051	1,032	1,012	999	1,000	33	12	16	35	55	68	67
1990	1,003	1,002	999	1,006	1,007	1,016	1,008	1,014	999	973	957	953	51	59	53	68	94	110	114
1991	948	946	945	946	942	968	979	979	969	956	942	934	99	88	88	98	111	125	133
1992	933	931	932	937	975	998	1,010	1,003	988	972	959	953	69	57	64	79	95	108	114
1993	949	946	960	995	1,027	1,031	1,059	1,067	1,067	1,051	1,042	1,040	36	8	0	0	16	25	27
1994	1,039	1,017	1,019	1,020	1,026	1,030	1,030	1,028	1,001	980	959	956	37	37	39	66	87	108	111

YEAR	Elev. MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	Fluct. MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	1	4	6	4	1	1	1	**18**	19	22	8	-5	-15	-17	-6	6	6	6	5	3	2	4	**32**	**576**
1923	1	1	1	1	1	1	1	**7**	0	12	-5	-15	-19	-19	-1	6	6	5	3	2	2	5	**29**	**203**
1924	1	1	1	1	1	1	1	**7**	1	-12	-13	-21	-25	-19	-17	6	3	3	1	1	2	2	**18**	**126**
1925	1	1	2	1	1	1	1	**8**	14	32	11	-12	-22	-14	-5	6	6	6	3	1	3	5	**30**	**240**
1926	1	1	1	1	1	1	1	**7**	7	14	-7	-26	-27	-22	-7	6	6	4	1	1	1	4	**23**	**161**
1927	2	6	6	4	1	1	1	**21**	26	15	0	-6	-16	-20	-5	6	6	6	4	2	2	5	**31**	**651**
1928	1	5	4	1	1	1	1	**14**	2	20	-4	-20	-26	-21	-7	6	6	5	2	1	1	4	**25**	**350**
1929	1	1	1	1	1	1	1	**7**	7	1	-7	-9	-20	-18	-7	6	6	4	4	2	2	4	**28**	**196**
1930	1	1	1	1	1	1	1	**7**	23	11	0	-20	-19	-16	-3	6	6	6	2	2	2	5	**29**	**203**
1931	1	1	1	1	1	1	1	**7**	9	-9	-10	-13	-21	-16	-13	6	4	4	3	1	2	3	**23**	**161**
1932	1	1	1	1	1	1	1	**7**	26	3	8	-7	-14	-15	-8	6	6	6	4	3	3	4	**32**	**224**
1933	1	1	1	1	1	1	1	**7**	36	9	5	-5	-21	-14	-8	6	6	6	5	1	3	4	**31**	**217**
1934	1	1	1	1	1	1	1	**7**	14	2	-5	-14	-33	-16	-15	6	6	5	3	1	2	3	**26**	**182**
1935	1	1	1	1	1	1	1	**7**	24	44	8	-8	-23	-14	-5	6	6	6	4	1	3	5	**31**	**217**
1936	1	3	2	1	1	1	1	**10**	12	10	-2	-7	-23	-22	-7	6	6	5	4	1	1	4	**27**	**270**
1937	1	1	1	1	1	1	1	**7**	28	29	9	-4	-19	-19	-7	6	6	6	5	2	2	4	**31**	**217**
1938	1	2	6	6	4	1	1	**21**	-6	25	18	0	-9	-13	-9	4	6	6	6	4	3	4	**33**	**693**
1939	1	1	1	1	1	1	1	**7**	15	-8	-7	-26	-23	-31	-4	6	4	4	1	1	1	5	**22**	**154**
1940	1	4	5	2	1	1	1	**15**	8	34	4	-12	-22	-21	-4	6	6	6	3	1	1	5	**28**	**420**
1941	1	5	6	6	4	1	1	**24**	21	19	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1942	1	6	6	6	4	1	1	**25**	14	25	0	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**875**
1943	2	6	6	4	1	1	1	**21**	9	16	0	-8	-13	-15	-6	6	6	6	4	3	3	4	**32**	**672**
1944	1	1	1	1	1	1	1	**7**	10	5	0	-21	-24	-21	-8	6	6	6	1	1	1	4	**25**	**175**
1945	2	4	6	4	1	1	1	**19**	13	13	5	-9	-21	-19	-7	6	6	6	4	1	2	4	**29**	**551**
1946	2	5	5	2	1	1	1	**17**	12	12	2	-15	-19	-16	-7	6	6	6	3	2	2	4	**29**	**493**
1947	1	1	1	1	1	1	1	**7**	19	8	-11	-15	-21	-22	-15	6	6	3	3	1	1	3	**23**	**161**
1948	1	1	6	5	2	1	1	**17**	12	42	20	-1	-16	-15	-2	6	6	6	5	2	3	5	**33**	**561**
1949	2	5	5	1	1	1	1	**16**	34	13	1	-21	-23	-21	-6	6	6	6	1	1	1	4	**25**	**400**
1950	1	1	1	1	1	1	1	**7**	18	17	-1	-13	-21	-17	-2	6	6	5	3	1	2	5	**28**	**196**
1951	4	5	6	2	1	1	1	**20**	18	7	2	-16	-22	-18	-3	6	6	6	2	1	2	5	**28**	**560**
1952	2	4	6	6	4	1	1	**24**	10	10	9	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**840**
1953	2	5	6	6	3	1	1	**24**	18	14	2	0	-10	-15	-6	6	6	6	6	4	3	4	**35**	**840**
1954	2	6	5	3	1	1	1	**19**	16	16	-4	-10	-17	-14	-4	6	6	5	4	2	3	5	**31**	**589**
1955	1	1	1	1	1	1	1	**7**	-4	14	8	-21	-24	-17	0	5	6	6	1	1	2	6	**27**	**189**
1956	2	6	6	6	4	1	1	**26**	29	19	0	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**884**
1957	2	4	6	4	1	1	1	**19**	17	6	9	-7	-18	-14	-1	6	6	6	4	2	3	5	**32**	**608**
1958	1	3	6	6	4	1	1	**22**	-43	29	14	0	-9	-11	-11	1	6	6	6	4	3	3	**29**	**638**
1959	2	3	3	1	1	1	1	**12**	13	5	-1	-20	-25	-16	2	6	6	5	2	1	2	6	**28**	**336**
1960	1	2	4	1	1	1	1	**11**	28	7	8	-19	-21	-19	-4	6	6	6	2	1	2	5	**28**	**308**
1961	3	4	6	2	1	1	1	**18**	13	5	5	-19	-24	-21	-3	6	6	6	2	1	1	5	**27**	**486**
1962	3	5	5	2	1	1	1	**18**	18	13	0	-14	-21	-22	-2	6	6	6	3	1	1	5	**28**	**504**
1963	3	2	6	5	2	1	1	**20**	10	-3	15	-4	-14	-15	-2	6	5	6	5	3	3	5	**33**	**660**
1964	1	1	1	1	1	1	1	**7**	-1	-6	-5	-17	-18	-27	-5	5	4	5	2	2	1	5	**24**	**168**
1965	3	5	5	3	1	1	1	**19**	12	12	-1	-9	-15	-10	-2	6	6	5	4	3	4	5	**33**	**627**
1966	3	5	4	1	1	1	1	**16**	6	8	-1	-19	-20	-16	-7	6	6	5	2	2	2	4	**27**	**432**
1967	2	5	6	6	4	1	1	**25**	4	16	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1968	3	3	4	1	1	1	1	**14**	20	2	2	-18	-21	-9	-5	6	6	6	2	1	4	5	**30**	**420**
1969	2	5	6	6	4	1	1	**25**	21	15	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1970	2	3	3	1	1	1	1	**12**	27	3	0	-14	-20	-17	-4	6	6	6	3	2	2	5	**30**	**360**
1971	1	5	6	6	4	1	1	**24**	2	21	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1972	3	6	6	2	1	1	1	**20**	11	11	0	-19	-20	-13	-4	6	6	6	2	2	3	5	**30**	**600**
1973	3	5	6	4	1	1	1	**21**	19	12	2	-8	-17	-16	-3	6	6	6	4	2	2	5	**31**	**651**
1974	1	4	6	6	4	1	1	**23**	-11	33	9	0	-9	-11	-11	3	6	6	6	4	3	3	**31**	**713**
1975	1	4	6	6	3	1	1	**22**	-6	22	6	0	-10	-11	-10	4	6	6	6	4	3	4	**33**	**726**
1976	1	1	1	1	1	1	1	**7**	8	7	-4	-26	-21	-4	2	6	6	5	1	1	5	6	**30**	**210**
1977	1	1	1	1	1	1	1	**7**	-1	-19	-6	-25	-22	-20	-3	5	2	4	1	1	2	5	**20**	**140**
1978	1	6	6	5	3	1	1	**23**	16	20	0	-3	-9	-10	-9	6	6	6	5	4	4	4	**35**	**805**
1979	1	2	4	1	1	1	1	**11**	18	8	8	-18	-19	-12	-4	6	6	6	2	2	3	5	**30**	**330**
1980	1	4	5	3	1	1	1	**16**	27	13	5	-8	-11	-10	0	6	6	6	4	3	4	6	**35**	**560**
1981	3	5	4	1	1	1	1	**16**	14	8	-2	-22	-24	-17	-6	6	6	5	1	1	2	4	**25**	**400**
1982	1	2	6	6	4	1	1	**21**	17	5	16	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1983	1	2	6	6	4	1	1	**21**	28	5	17	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1984	3	5	6	4	1	1	1	**21**	9	8	3	-9	-16	-13	-2	6	6	6	4	2	3	5	**32**	**672**
1985	1	1	1	1	1	1	1	**7**	7	8	-7	-26	-20	-16	-1	6	6	4	1	2	2	5	**26**	**182**
1986	1	2	2	1	1	1	1	**9**	12	19	2	-11	-16	-16	4	6	6	6	3	2	2	6	**31**	**279**
1987	1	1	1	1	1	1	1	**7**	27	0	-6	-33	-23	-32	-6	6	6	4	1	1	1	4	**23**	**161**
1988	1	1	1	1	1	1	1	**7**	3	7	-1	-19	-35	-15	-3	6	6	5	2	1	3	5	**28**	**196**
1989	1	3	2	1	1	1	1	**10**	64	21	-4	-19	-20	-13	1	6	6	5	2	2	3	6	**30**	**300**
1990	1	1	1	1	1	1	1	**7**	9	-8	6	-15	-26	-16	-4	6	4	6	3	1	2	5	**27**	**189**
1991	1	1	1	1	1	1	1	**7**	26	11	0	-10	-13	-14	-8	6	6	6	4	3	3	4	**32**	**224**
1992	1	1	1	1	1	1	1	**7**	23	12	-7	-15	-16	-13	-6	6	6	4	3	2	3	4	**28**	**196**
1993	1	4	6	6	2	1	1	**21**	4	28	8	0	-16	-9	-2	6	6	6	6	2	4	5	**35**	**735**
1994	1	1	1	1	1	1	1	**7**	4	0	-2	-27	-21	-21	-3	6	6	5	1	1	1	5	**25**	**175**
							73 - year Average:	**14**														**73 - year Average:**	**29**	**441.1**
																							1929 - '34 Average:	**197.2**

STUDY: 1995C06F-SWRCB-485 DWRSIM: recirc818-f, 18 Jun 97
CP # 6, LAKE OROVILLE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-485/6/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 900'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

Elevation (ft)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	833	830	832	836	850	858	893	900	900	880	876	876
1923	874	874	858	862	858	871	894	900	881	842	812	814
1924	805	794	763	768	786	776	762	751	728	708	699	693
1925	693	697	704	721	788	816	836	843	825	795	783	782
1926	778	775	777	791	834	854	887	874	853	814	800	777
1927	774	805	806	830	849	863	890	900	899	863	851	848
1928	845	856	857	868	871	849	878	865	845	794	744	737
1929	724	719	717	723	737	753	758	760	753	737	728	721
1930	713	710	770	798	824	855	877	880	862	824	789	786
1931	776	768	760	773	786	799	786	771	749	728	718	711
1932	705	696	702	726	748	781	787	812	783	729	712	706
1933	696	684	683	695	704	710	718	732	725	711	700	693
1934	689	681	683	710	733	761	753	743	719	695	683	676
1935	671	675	682	710	733	764	852	862	848	824	814	796
1936	780	771	769	820	849	860	886	897	888	849	829	826
1937	814	793	778	769	776	801	832	845	825	788	767	761
1938	756	774	850	858	849	849	882	900	900	899	896	887
1939	874	864	854	845	837	833	822	813	778	713	656	650
1940	640	629	632	704	813	849	879	884	867	829	822	811
1941	802	798	839	849	849	858	886	900	900	890	886	887
1942	874	874	849	849	850	867	882	900	900	885	882	882
1943	874	869	861	849	856	859	887	897	895	863	853	853
1944	854	857	856	862	857	868	879	895	875	835	797	791
1945	786	793	809	823	862	865	880	896	878	838	813	808
1946	808	816	849	864	868	868	887	892	870	831	789	785
1947	776	782	791	797	823	845	855	850	833	779	725	718
1948	721	722	718	755	758	778	839	868	874	840	822	806
1949	798	796	796	801	809	832	852	856	833	780	746	741
1950	726	717	711	744	792	831	864	883	872	834	822	821
1951	825	849	854	853	858	870	886	900	889	848	820	820
1952	823	826	849	849	852	862	894	900	900	900	899	887
1953	874	874	858	850	867	867	883	900	900	870	868	870
1954	872	871	874	858	857	859	883	866	851	805	758	759
1955	760	762	770	783	790	803	812	825	798	735	712	709
1956	700	696	848	849	849	864	892	900	900	873	870	874
1957	869	874	874	871	853	863	863	881	866	827	790	795
1958	797	801	821	841	849	849	879	900	900	898	894	887
1959	874	874	874	862	852	867	871	874	853	808	758	761
1960	754	743	737	752	813	854	854	859	840	798	786	778
1961	767	770	779	790	820	838	843	849	828	771	713	709
1962	692	688	697	712	776	812	847	846	831	776	747	726
1963	800	812	839	859	867	858	876	900	893	857	846	847
1964	848	859	861	866	874	874	880	885	868	827	780	756
1965	743	744	849	849	863	870	887	884	886	853	847	848
1966	852	859	860	864	870	874	888	877	858	817	768	762
1967	749	759	797	848	860	853	879	900	900	900	896	887
1968	874	874	873	858	861	866	863	867	848	802	764	761
1969	763	768	791	849	849	865	895	900	900	895	893	874
1970	874	874	850	849	849	874	869	871	857	818	787	789
1971	792	818	846	864	874	874	893	900	900	871	853	855
1972	860	866	865	869	867	874	884	887	868	828	785	786
1973	782	797	823	849	849	860	882	900	872	833	819	815
1974	819	849	850	854	864	849	883	900	900	889	888	886
1975	874	874	874	874	855	852	881	900	900	877	876	877
1976	873	874	874	874	874	874	871	862	840	795	751	751
1977	740	728	712	708	692	688	667	656	627	605	596	593
1978	582	582	619	745	799	859	878	897	893	874	865	872
1979	874	874	874	871	853	863	878	896	867	829	820	818
1980	822	826	834	850	849	865	881	893	888	873	866	865
1981	864	865	873	860	868	865	875	872	851	806	762	763
1982	768	848	849	859	862	859	884	900	900	889	886	887
1983	873	862	858	853	849	849	877	900	900	900	899	887
1984	874	860	849	869	869	871	885	894	878	840	831	832
1985	836	850	860	866	874	871	886	872	850	806	757	744
1986	735	731	738	773	849	849	871	875	871	842	831	842
1987	844	850	848	849	860	867	857	847	819	759	710	705
1988	693	695	735	762	765	765	764	754	732	711	699	697
1989	688	707	717	724	724	840	865	856	838	790	776	771
1990	778	779	772	786	792	818	805	805	780	727	713	703
1991	687	679	665	662	650	703	726	740	723	701	696	695
1992	691	686	688	691	722	752	767	755	729	704	693	687
1993	678	673	691	759	811	861	894	900	900	881	874	873
1994	874	874	874	871	862	874	872	867	845	803	755	750

DFMRE and Reservoir Elevation Score

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	42	7	0	0	20	24	24	1	4	6	6	1	1	1	**20**
1923	29	6	0	19	58	88	86	1	4	6	2	1	1	1	**16**
1924	124	138	149	172	192	201	207	1	1	1	1	1	1	1	**7**
1925	84	64	57	75	105	117	118	1	1	1	1	1	1	1	**7**
1926	46	13	26	47	86	100	123	1	3	1	1	1	1	1	**9**
1927	37	10	0	1	37	49	52	1	3	6	5	1	1	1	**18**
1928	51	22	35	55	106	156	163	1	1	1	1	1	1	1	**7**
1929	147	142	140	147	163	172	179	1	1	1	1	1	1	1	**7**
1930	45	23	20	38	76	111	114	1	1	1	1	1	1	1	**7**
1931	101	114	129	151	172	182	189	1	1	1	1	1	1	1	**7**
1932	119	113	88	117	171	188	194	1	1	1	1	1	1	1	**7**
1933	190	182	168	175	189	200	207	1	1	1	1	1	1	1	**7**
1934	139	147	157	181	205	217	224	1	1	1	1	1	1	1	**7**
1935	136	48	38	52	76	86	104	1	1	1	1	1	1	1	**7**
1936	40	14	3	12	51	71	74	1	3	5	3	1	1	1	**15**
1937	99	68	55	75	112	133	139	1	1	1	1	1	1	1	**7**
1938	51	18	0	0	1	4	13	1	2	6	6	5	5	3	**28**
1939	67	78	87	122	187	244	250	1	1	1	1	1	1	1	**7**
1940	51	21	16	33	71	78	89	1	1	2	1	1	1	1	**8**
1941	42	14	0	0	10	14	13	1	3	6	6	3	3	3	**25**
1942	33	18	0	0	15	18	18	1	2	6	6	2	2	2	**21**
1943	41	13	3	5	37	47	47	1	3	5	4	1	1	1	**16**
1944	32	21	5	25	65	103	109	1	1	4	1	1	1	1	**10**
1945	35	20	4	22	62	87	92	1	1	5	1	1	1	1	**11**
1946	32	13	8	30	69	111	115	1	3	4	1	1	1	1	**12**
1947	55	45	50	67	121	175	182	1	1	1	1	1	1	1	**7**
1948	122	61	32	26	60	78	94	1	1	1	1	1	1	1	**7**
1949	68	48	44	67	120	154	159	1	1	1	1	1	1	1	**7**
1950	69	36	17	28	66	78	79	1	1	2	1	1	1	1	**8**
1951	30	14	0	11	52	80	80	1	3	6	3	1	1	1	**16**
1952	38	6	0	0	0	1	13	1	4	6	6	6	5	3	**31**
1953	33	17	0	0	30	32	30	1	2	6	6	1	1	1	**18**
1954	41	17	34	49	95	142	141	1	2	1	1	1	1	1	**8**
1955	97	88	75	102	165	188	191	1	1	1	1	1	1	1	**7**
1956	36	8	0	0	27	30	26	1	4	6	6	1	1	1	**20**
1957	37	37	19	34	73	110	105	1	1	2	1	1	1	1	**8**
1958	51	21	0	0	2	6	13	1	1	6	6	5	4	3	**26**
1959	33	29	26	47	92	142	139	1	1	1	1	1	1	1	**7**
1960	46	46	41	60	102	114	122	1	1	1	1	1	1	1	**7**
1961	62	57	51	72	129	187	191	1	1	1	1	1	1	1	**7**
1962	88	53	54	69	124	153	174	1	1	1	1	1	1	1	**7**
1963	42	24	0	7	43	54	53	1	1	6	4	1	1	1	**15**
1964	26	20	15	32	73	120	144	1	1	2	1	1	1	1	**8**
1965	30	13	16	14	47	53	52	1	3	2	3	1	1	1	**12**
1966	26	12	23	42	83	132	138	1	3	1	1	1	1	1	**9**
1967	47	21	0	0	0	4	13	1	1	6	6	6	5	3	**28**
1968	34	37	33	52	98	136	139	1	1	1	1	1	1	1	**7**
1969	35	5	0	0	5	7	26	1	4	6	6	4	4	1	**26**
1970	26	31	29	43	82	113	111	1	1	1	1	1	1	1	**7**
1971	26	7	0	0	29	47	45	1	4	6	6	1	1	1	**20**
1972	26	16	13	32	72	115	114	1	2	3	1	1	1	1	**10**
1973	40	18	0	28	67	81	85	1	2	6	1	1	1	1	**13**
1974	51	17	0	0	11	12	14	1	2	6	6	3	3	3	**24**
1975	48	19	0	0	23	24	23	1	2	6	6	1	1	1	**18**
1976	26	29	38	60	105	149	149	1	1	1	1	1	1	1	**7**
1977	212	233	244	273	295	304	307	1	1	1	1	1	1	1	**7**
1978	41	22	3	7	26	35	28	1	1	5	4	1	1	1	**14**
1979	37	22	4	33	71	80	82	1	1	5	1	1	1	1	**11**
1980	35	19	7	12	27	34	35	1	2	4	3	1	1	1	**13**
1981	35	25	28	49	94	138	137	1	1	1	1	1	1	1	**7**
1982	41	16	0	0	11	14	13	1	2	6	6	3	3	3	**24**
1983	51	23	0	0	0	1	13	1	1	6	6	6	5	3	**28**
1984	29	15	6	22	60	69	68	1	2	4	1	1	1	1	**11**
1985	29	14	28	50	94	143	156	1	3	1	1	1	1	1	**9**
1986	51	29	25	29	58	69	58	1	1	1	1	1	1	1	**7**
1987	33	43	53	81	141	190	195	1	1	1	1	1	1	1	**7**
1988	135	136	146	168	189	201	203	1	1	1	1	1	1	1	**7**
1989	60	35	44	62	110	124	129	1	1	1	1	1	1	1	**7**
1990	82	95	95	120	173	187	197	1	1	1	1	1	1	1	**7**
1991	197	174	160	177	199	204	205	1	1	1	1	1	1	1	**7**
1992	148	133	145	171	196	207	213	1	1	1	1	1	1	1	**7**
1993	39	6	0	0	19	26	27	1	4	6	6	2	1	1	**21**
1994	26	28	33	55	97	145	150	1	1	1	1	1	1	1	**7**
											73 - year Average:				**12**

Reservoir Change from Previous Month [fluctuation], Fluctuation Score and Product

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	8	35	7	0	-20	-4	0	6	6	6	6	2	5	6	**37**	**740**
1923	13	23	6	-19	-39	-30	2	6	6	6	2	1	1	6	**28**	**448**
1924	-10	-14	-11	-23	-20	-9	-6	4	3	3	1	2	4	4	**21**	**147**
1925	28	20	7	-18	-30	-12	-1	6	6	6	2	1	3	5	**29**	**203**
1926	20	33	-13	-21	-39	-14	-23	6	6	3	1	1	3	1	**21**	**189**
1927	14	27	10	-1	-36	-12	-3	6	6	6	5	1	3	5	**32**	**576**
1928	-22	29	-13	-20	-51	-50	-7	1	6	3	2	1	1	4	**18**	**126**
1929	16	5	2	-7	-16	-9	-7	6	6	6	4	2	4	4	**32**	**224**
1930	31	22	3	-18	-38	-35	-3	6	6	6	2	1	1	5	**27**	**189**
1931	13	-13	-15	-22	-21	-10	-7	6	3	3	1	1	4	4	**22**	**154**
1932	33	6	25	-29	-54	-17	-6	6	6	6	1	1	2	4	**26**	**182**
1933	6	8	14	-7	-14	-11	-7	6	6	6	4	3	3	4	**32**	**224**
1934	28	-8	-10	-24	-24	-12	-7	6	4	4	1	1	3	4	**23**	**161**
1935	31	88	10	-14	-24	-10	-18	6	6	6	3	1	4	2	**28**	**196**
1936	11	26	11	-9	-39	-20	-3	6	6	6	4	1	2	5	**30**	**450**
1937	25	31	13	-20	-37	-21	-6	6	6	6	2	1	1	4	**26**	**182**
1938	0	33	18	0	-1	-3	-9	6	6	6	6	5	5	4	**38**	**1064**
1939	-4	-11	-9	-35	-65	-57	-6	5	3	4	1	1	1	4	**19**	**133**
1940	36	30	5	-17	-38	-7	-11	6	6	6	2	1	4	3	**28**	**224**
1941	9	28	14	0	-10	-4	1	6	6	6	6	4	5	6	**39**	**975**
1942	17	15	18	0	-15	-3	0	6	6	6	6	3	5	6	**38**	**798**
1943	3	28	10	-2	-32	-10	0	6	6	6	5	1	4	6	**34**	**544**
1944	11	11	16	-20	-40	-38	-6	6	6	6	2	1	1	4	**26**	**260**
1945	3	15	16	-18	-40	-25	-5	6	6	6	2	1	1	5	**27**	**297**
1946	0	19	5	-22	-39	-42	-4	6	6	6	1	1	1	5	**26**	**312**
1947	22	10	-5	-17	-54	-54	-7	6	6	5	2	1	1	4	**25**	**175**
1948	20	61	29	6	-34	-18	-16	6	6	6	6	1	2	2	**29**	**203**
1949	23	20	4	-23	-53	-34	-5	6	6	6	1	1	1	5	**26**	**182**
1950	39	33	19	-11	-38	-12	-1	6	6	6	3	1	3	5	**30**	**240**
1951	12	16	14	-11	-41	-28	0	6	6	6	3	1	1	6	**29**	**464**
1952	10	32	6	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1178**
1953	0	16	17	0	-30	-2	2	6	6	6	6	1	5	6	**36**	**648**
1954	2	24	-17	-15	-46	-47	1	6	6	2	3	1	1	6	**25**	**200**
1955	13	9	13	-27	-63	-23	-3	6	6	6	1	1	1	5	**26**	**182**
1956	15	28	8	0	-27	-3	4	6	6	6	6	1	5	6	**36**	**720**
1957	10	0	18	-15	-39	-37	5	6	6	6	3	1	1	6	**29**	**232**
1958	0	30	21	0	-2	-4	-7	6	6	6	6	5	5	4	**38**	**988**
1959	15	4	3	-21	-45	-50	3	6	6	6	1	1	1	6	**27**	**189**
1960	41	0	5	-19	-42	-12	-8	6	6	6	2	1	3	4	**28**	**196**
1961	18	5	6	-21	-57	-58	-4	6	6	6	1	1	1	5	**26**	**182**
1962	36	35	-1	-15	-55	-29	-21	6	6	5	3	1	1	1	**23**	**161**
1963	-9	18	24	-7	-36	-11	1	4	6	6	4	1	3	6	**30**	**450**
1964	0	6	5	-17	-41	-47	-24	6	6	6	2	1	1	1	**23**	**184**
1965	7	17	-3	2	-33	-6	1	6	6	5	6	1	4	6	**34**	**408**
1966	4	14	-11	-19	-41	-49	-6	6	6	3	2	1	1	4	**23**	**207**
1967	-7	26	21	0	0	-4	-9	4	6	6	6	6	5	4	**37**	**1036**
1968	5	-3	4	-19	-46	-38	-3	6	5	6	2	1	1	5	**26**	**182**
1969	16	30	5	0	-5	-2	-19	6	6	6	6	5	5	2	**36**	**936**
1970	25	-5	2	-14	-39	-31	2	6	5	6	3	1	1	6	**28**	**196**
1971	0	19	7	0	-29	-18	2	6	6	6	6	1	2	6	**33**	**660**
1972	7	10	3	-19	-40	-43	1	6	6	6	2	1	1	6	**28**	**280**
1973	11	22	18	-28	-39	-14	-4	6	6	6	1	1	3	5	**28**	**364**
1974	-15	34	17	0	-11	-1	-2	3	6	6	6	3	5	5	**34**	**816**
1975	-3	29	19	0	-23	-1	1	5	6	6	6	1	5	6	**35**	**630**
1976	0	-3	-9	-22	-45	-44	0	6	5	4	1	1	1	6	**24**	**168**
1977	-4	-21	-11	-29	-22	-9	-3	5	1	3	1	1	4	5	**20**	**140**
1978	60	19	19	-4	-19	-9	7	6	6	6	5	2	4	6	**35**	**490**
1979	10	15	18	-29	-38	-9	-2	6	6	6	1	1	4	5	**29**	**319**
1980	16	16	12	-5	-15	-7	-1	6	6	6	5	3	4	5	**35**	**455**
1981	-3	10	-3	-21	-45	-44	1	5	6	5	1	1	1	6	**25**	**175**
1982	-3	25	16	0	-11	-3	1	5	6	6	6	3	5	6	**37**	**888**
1983	0	28	23	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1064**
1984	2	14	9	-16	-38	-9	1	6	6	6	2	1	4	6	**31**	**341**
1985	-3	15	-14	-22	-44	-49	-13	5	6	3	1	1	1	3	**20**	**180**
1986	0	22	4	-4	-29	-11	11	6	6	6	5	1	3	6	**33**	**231**
1987	7	-10	-10	-28	-60	-49	-5	6	4	4	1	1	1	5	**22**	**154**
1988	0	-1	-10	-22	-21	-12	-2	6	5	4	1	1	3	5	**25**	**175**
1989	116	25	-9	-18	-48	-14	-5	6	6	4	2	1	3	5	**27**	**189**
1990	26	-13	0	-25	-53	-14	-10	6	3	6	1	1	3	4	**24**	**168**
1991	53	23	14	-17	-22	-5	-1	6	6	6	2	1	5	5	**31**	**217**
1992	30	15	-12	-26	-25	-11	-6	6	6	3	1	1	3	4	**24**	**168**
1993	50	33	6	0	-19	-7	-1	6	6	6	6	2	4	5	**35**	**735**
1994	12	-2	-5	-22	-42	-48	-5	6	5	5	1	1	1	5	**24**	**168**
											73 - year Average:				**29**	**382.4**
														1929 - '34 Average:		**189.0**

STUDY: 1995C06F-SWRCB-485 DWRSIM: recirc818-f, 18 Jun 97
CP # 8, FOLSOM LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-485/8/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 466'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	414	405	410	410	424	428	443	466	466	463	449	434	38	23	0	0	3	17	32
1923	425	423	424	424	423	423	449	466	448	426	404	387	43	17	0	18	40	62	79
1924	394	396	394	395	401	387	388	366	334	334	337	334	79	78	100	132	132	129	132
1925	349	363	380	390	424	434	449	466	445	422	410	402	32	17	0	21	44	56	64
1926	383	368	336	322	377	389	427	425	390	334	334	348	77	39	41	76	132	132	118
1927	338	390	412	424	424	437	449	466	461	450	433	427	29	17	0	5	16	33	39
1928	423	424	424	424	424	437	449	453	434	409	403	396	29	17	13	32	57	63	70
1929	357	338	325	276	307	339	365	377	367	334	347	351	127	101	89	99	132	119	115
1930	334	334	384	406	421	437	443	442	413	378	334	335	29	23	24	53	88	132	131
1931	334	343	353	369	379	392	387	382	334	334	335	334	74	79	84	132	132	131	132
1932	334	334	380	402	424	436	441	457	428	380	366	370	30	25	9	38	86	100	96
1933	343	334	355	366	369	382	335	358	334	334	349	344	84	131	108	132	132	117	122
1934	335	335	375	402	420	424	414	406	334	323	313	326	42	52	60	132	143	153	140
1935	334	361	378	402	418	421	449	453	452	418	395	373	45	17	13	14	48	71	93
1936	378	390	399	424	424	437	449	461	456	444	427	418	29	17	5	10	22	39	48
1937	405	383	372	361	402	430	449	466	454	444	439	429	36	17	0	12	22	27	37
1938	422	419	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1939	426	420	415	409	402	409	415	418	387	334	334	335	57	51	48	79	132	132	131
1940	334	334	334	420	424	437	449	459	445	425	409	408	29	17	7	21	41	57	58
1941	403	402	424	424	424	437	449	466	458	455	449	434	29	17	0	8	11	17	32
1942	426	422	424	424	424	430	449	466	466	463	449	434	36	17	0	0	3	17	32
1943	425	424	423	422	422	434	449	459	451	448	444	433	32	17	7	15	18	22	33
1944	425	418	412	405	406	418	419	433	410	387	370	356	48	47	33	56	79	96	110
1945	346	383	405	413	424	437	449	466	451	440	432	426	29	17	0	15	26	34	40
1946	423	424	424	424	424	437	449	466	446	431	425	418	29	17	0	20	35	41	48
1947	408	409	408	400	407	426	436	439	407	365	335	334	40	30	27	59	101	131	132
1948	344	365	366	395	386	380	422	449	449	440	435	431	86	44	17	17	26	31	35
1949	422	416	413	403	396	419	441	457	438	420	404	395	47	25	9	28	46	62	71
1950	368	334	335	398	424	437	449	466	454	443	434	434	29	17	0	12	23	32	32
1951	428	393	388	388	388	426	449	466	450	434	429	425	40	17	0	16	32	37	41
1952	423	424	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1953	428	423	424	424	424	430	446	458	464	462	445	434	36	20	8	2	4	21	32
1954	425	423	421	422	424	437	449	450	435	415	413	411	29	17	16	31	51	53	55
1955	403	401	408	416	416	410	420	438	417	392	361	335	56	46	28	49	74	105	131
1956	338	359	420	402	406	425	441	466	466	463	449	434	41	25	0	0	3	17	32
1957	428	422	417	412	424	437	433	459	447	435	429	423	29	33	7	19	31	37	43
1958	419	414	415	422	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1959	425	419	412	417	424	428	435	436	411	389	377	384	38	31	30	55	77	89	82
1960	365	334	343	359	409	437	447	446	424	401	387	387	29	19	20	42	65	79	79
1961	368	376	385	387	397	408	415	423	407	388	378	378	58	51	43	59	78	88	88
1962	359	343	357	359	418	427	449	456	446	426	410	408	39	17	10	20	40	56	58
1963	439	424	424	424	419	430	449	466	459	449	442	434	36	17	0	7	17	24	32
1964	427	424	424	424	416	408	419	433	407	347	334	334	58	47	33	59	119	132	132
1965	335	367	393	392	395	414	449	461	452	446	443	434	52	17	5	14	20	23	32
1966	426	424	424	424	422	430	445	444	419	395	388	382	36	21	22	47	71	78	84
1967	369	386	419	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1968	427	424	423	424	424	437	439	441	417	393	390	387	29	27	25	49	73	76	79
1969	386	399	416	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1970	427	424	423	393	396	426	431	440	427	411	403	401	40	35	26	39	55	63	65
1971	389	406	424	424	422	437	447	461	460	459	449	434	29	19	5	6	7	17	32
1972	425	422	424	424	424	437	444	451	430	409	403	397	29	22	15	36	57	63	69
1973	396	403	417	424	424	437	449	466	451	435	423	425	29	17	0	15	31	43	41
1974	422	423	422	409	417	433	449	466	463	463	449	434	33	17	0	3	3	17	32
1975	426	419	417	415	424	437	441	466	466	463	449	434	29	25	0	0	4	19	32
1976	431	423	419	410	402	396	401	404	370	334	337	338	70	65	62	96	132	129	128
1977	335	334	330	325	321	323	333	335	333	318	304	288	143	133	131	133	148	162	178
1978	284	301	358	424	424	437	449	466	459	453	445	434	29	17	0	7	13	21	32
1979	423	417	407	414	424	437	447	466	444	426	418	413	29	19	0	22	40	48	53
1980	410	411	415	405	399	430	449	464	453	453	449	434	36	17	2	13	13	17	32
1981	425	418	413	412	410	421	431	434	408	387	379	372	45	35	32	58	79	87	94
1982	371	420	392	396	388	424	449	466	466	463	449	434	42	17	0	0	3	17	32
1983	438	415	417	418	418	433	449	466	466	463	449	434	33	17	0	0	3	17	32
1984	435	392	388	388	392	424	441	464	452	439	425	425	42	25	2	14	27	41	41
1985	422	424	424	422	424	426	447	444	411	372	336	334	40	19	22	55	94	130	132
1986	335	366	396	424	396	424	449	464	458	453	449	434	42	17	2	8	13	17	32
1987	427	420	413	405	404	410	416	417	386	337	325	334	56	50	49	80	129	141	132
1988	334	334	369	396	385	383	391	388	350	320	303	372	83	75	78	116	146	163	94
1989	358	377	393	403	395	437	449	452	429	405	394	404	29	17	14	37	61	72	62
1990	405	403	400	402	403	417	420	418	384	334	335	335	49	46	48	82	132	131	131
1991	334	334	335	332	332	383	407	425	420	415	410	409	83	59	41	46	51	56	57
1992	402	390	381	366	387	403	410	406	365	334	323	316	63	56	60	101	132	143	150
1993	316	315	357	424	427	434	449	466	466	451	447	432	32	17	0	0	15	19	34
1994	421	411	405	393	388	388	396	401	377	334	334	332	78	70	65	89	132	132	134

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Change MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	1	1	6	6	5	2	1	**22**	4	15	23	0	-3	-14	-15
1923	1	2	6	2	1	1	1	**14**	0	26	17	-18	-22	-22	-17
1924	1	1	1	1	1	1	1	**7**	-14	1	-22	-32	0	3	-3
1925	1	2	6	1	1	1	1	**13**	10	15	17	-21	-23	-12	-8
1926	1	1	1	1	1	1	1	**7**	12	38	-2	-35	-56	0	14
1927	1	2	6	4	2	1	1	**17**	13	12	17	-5	-11	-17	-6
1928	1	2	3	1	1	1	1	**10**	13	12	4	-19	-25	-6	-7
1929	1	1	1	1	1	1	1	**7**	32	26	12	-10	-33	13	4
1930	1	1	1	1	1	1	1	**7**	16	6	-1	-29	-35	-44	1
1931	1	1	1	1	1	1	1	**7**	13	-5	-5	-48	0	1	-1
1932	1	1	4	1	1	1	1	**10**	12	5	16	-29	-48	-14	4
1933	1	1	1	1	1	1	1	**7**	13	-47	23	-24	0	15	-5
1934	1	1	1	1	1	1	1	**7**	4	-10	-8	-72	-11	-10	13
1935	1	2	3	3	1	1	1	**12**	3	28	4	-1	-34	-23	-22
1936	1	2	4	3	1	1	1	**13**	13	12	12	-5	-12	-17	-9
1937	1	2	6	3	1	1	1	**15**	28	19	17	-12	-10	-5	-10
1938	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15
1939	1	1	1	1	1	1	1	**7**	7	6	3	-31	-53	0	1
1940	1	2	4	1	1	1	1	**11**	13	12	10	-14	-20	-16	-1
1941	1	2	6	4	3	2	1	**19**	13	12	17	-8	-3	-6	-15
1942	1	2	6	6	5	2	1	**23**	6	19	17	0	-3	-14	-15
1943	1	2	4	2	2	1	1	**13**	12	15	10	-8	-3	-4	-11
1944	1	1	1	1	1	1	1	**7**	12	1	14	-23	-23	-17	-14
1945	1	2	6	2	1	1	1	**14**	13	12	17	-15	-11	-8	-6
1946	1	2	6	1	1	1	1	**13**	13	12	17	-20	-15	-6	-7
1947	1	1	1	1	1	1	1	**7**	19	10	3	-32	-42	-30	-1
1948	1	1	2	2	1	1	1	**9**	-6	42	27	0	-9	-5	-4
1949	1	1	4	1	1	1	1	**10**	23	22	16	-19	-18	-16	-9
1950	1	2	6	3	1	1	1	**15**	13	12	17	-12	-11	-9	0
1951	1	2	6	2	1	1	1	**14**	38	23	17	-16	-16	-5	-4
1952	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15
1953	1	1	4	5	5	1	1	**18**	6	16	12	6	-2	-17	-11
1954	1	2	2	1	1	1	1	**9**	13	12	1	-15	-20	-2	-2
1955	1	1	1	1	1	1	1	**7**	-6	10	18	-21	-25	-31	-26
1956	1	1	6	6	5	2	1	**22**	19	16	25	0	-3	-14	-15
1957	1	1	4	2	1	1	1	**11**	13	-4	26	-12	-12	-6	-6
1958	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15
1959	1	1	1	1	1	1	1	**7**	4	7	1	-25	-22	-12	7
1960	1	2	1	1	1	1	1	**8**	28	10	-1	-22	-23	-14	0
1961	1	1	1	1	1	1	1	**7**	11	7	8	-16	-19	-10	0
1962	1	2	3	1	1	1	1	**10**	9	22	7	-10	-20	-16	-2
1963	1	2	6	4	2	1	1	**17**	11	19	17	-7	-10	-7	-8
1964	1	1	1	1	1	1	1	**7**	-8	11	14	-26	-60	-13	0
1965	1	2	4	3	1	1	1	**13**	19	35	12	-9	-6	-3	-9
1966	1	1	1	1	1	1	1	**7**	8	15	-1	-25	-24	-7	-6
1967	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15
1968	1	1	1	1	1	1	1	**7**	13	2	2	-24	-24	-3	-3
1969	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15
1970	1	1	1	1	1	1	1	**7**	30	5	9	-13	-16	-8	-2
1971	1	2	4	4	4	2	1	**18**	15	10	14	-1	-1	-10	-15
1972	1	1	2	1	1	1	1	**8**	13	7	7	-21	-21	-6	-6
1973	1	2	6	2	1	1	1	**14**	13	12	17	-15	-16	-12	2
1974	1	2	6	5	5	2	1	**22**	16	16	17	-3	0	-14	-15
1975	1	1	6	6	5	2	1	**22**	13	4	25	0	-4	-15	-13
1976	1	1	1	1	1	1	1	**7**	-6	5	3	-34	-36	3	1
1977	1	1	1	1	1	1	1	**7**	2	10	2	-2	-15	-14	-16
1978	1	2	6	4	3	1	1	**18**	13	12	17	-7	-6	-8	-11
1979	1	2	6	1	1	1	1	**13**	13	10	19	-22	-18	-8	-5
1980	1	2	5	3	3	2	1	**17**	31	19	15	-11	0	-4	-15
1981	1	1	1	1	1	1	1	**7**	11	10	3	-26	-21	-8	-7
1982	1	2	6	6	5	2	1	**23**	36	25	17	0	-3	-14	-15
1983	1	2	6	6	5	2	1	**23**	15	16	17	0	-3	-14	-15
1984	1	1	5	3	1	1	1	**13**	32	17	23	-12	-13	-14	0
1985	1	2	1	1	1	1	1	**8**	2	21	-3	-33	-39	-36	-2
1986	1	2	5	4	3	2	1	**18**	28	25	15	-6	-5	-4	-15
1987	1	1	1	1	1	1	1	**7**	6	6	1	-31	-49	-12	9
1988	1	1	1	1	1	1	1	**7**	-2	8	-3	-38	-30	-17	69
1989	1	2	3	1	1	1	1	**10**	42	12	3	-23	-24	-11	10
1990	1	1	1	1	1	1	1	**7**	14	3	-2	-34	-50	1	0
1991	1	1	1	1	1	1	1	**7**	51	24	18	-5	-5	-5	-1
1992	1	1	1	1	1	1	1	**7**	16	7	-4	-41	-31	-11	-7
1993	1	2	6	6	2	2	1	**20**	7	15	17	0	-15	-4	-15
1994	1	1	1	1	1	1	1	**7**	0	8	5	-24	-43	0	-2
					73 - year Average:			**13**							

YEAR	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	6	6	6	6	5	3	3	**35**	770
1923	6	6	6	2	1	1	2	**24**	336
1924	3	6	1	1	6	6	5	**28**	196
1925	6	6	6	1	1	3	4	**27**	351
1926	6	6	5	1	1	6	6	**31**	217
1927	6	6	6	5	3	2	4	**32**	544
1928	6	6	6	2	1	4	4	**29**	290
1929	6	6	6	4	1	6	6	**35**	245
1930	6	6	5	1	1	1	6	**26**	182
1931	6	5	5	1	6	6	5	**34**	238
1932	6	6	6	1	1	3	6	**29**	290
1933	6	1	6	1	6	6	5	**31**	217
1934	6	4	4	1	3	4	6	**28**	196
1935	6	6	6	5	1	1	1	**26**	312
1936	6	6	6	5	3	2	4	**32**	416
1937	6	6	6	3	4	5	4	**34**	510
1938	6	6	6	6	5	3	3	**35**	805
1939	6	6	6	1	1	6	6	**32**	224
1940	6	6	6	3	2	2	5	**30**	330
1941	6	6	6	4	5	4	3	**34**	646
1942	6	6	6	6	5	3	3	**35**	805
1943	6	6	6	4	5	5	3	**35**	455
1944	6	6	6	1	1	2	3	**25**	175
1945	6	6	6	3	3	4	4	**32**	448
1946	6	6	6	2	3	4	4	**31**	403
1947	6	6	6	1	1	1	5	**26**	182
1948	4	6	6	6	4	5	5	**36**	324
1949	6	6	6	2	2	2	4	**28**	280
1950	6	6	6	3	3	4	6	**34**	510
1951	6	6	6	2	2	5	5	**32**	448
1952	6	6	6	6	5	3	3	**35**	805
1953	6	6	6	6	5	2	3	**34**	612
1954	6	6	6	3	2	5	5	**33**	297
1955	4	6	6	1	1	1	1	**20**	140
1956	6	6	6	6	5	3	3	**35**	770
1957	6	5	6	3	3	4	4	**31**	341
1958	6	6	6	6	5	3	3	**35**	805
1959	6	6	6	1	1	3	6	**29**	203
1960	6	6	5	1	1	3	6	**28**	224
1961	6	6	6	2	2	4	6	**32**	224
1962	6	6	6	4	2	2	5	**31**	310
1963	6	6	6	4	4	4	4	**34**	578
1964	4	6	6	1	1	3	6	**27**	189
1965	6	6	6	4	4	5	4	**35**	455
1966	6	6	5	1	1	4	4	**27**	189
1967	6	6	6	6	5	3	3	**35**	805
1968	6	6	6	1	1	5	5	**30**	210
1969	6	6	6	6	5	3	3	**35**	805
1970	6	6	6	3	2	4	5	**32**	224
1971	6	6	6	5	5	4	3	**35**	630
1972	6	6	6	1	1	4	4	**28**	224
1973	6	6	6	3	2	3	6	**32**	448
1974	6	6	6	5	6	3	3	**35**	770
1975	6	6	6	6	5	3	3	**35**	770
1976	4	6	6	1	1	6	6	**30**	210
1977	6	6	6	5	3	3	2	**31**	217
1978	6	6	6	4	4	4	3	**33**	594
1979	6	6	6	1	2	4	5	**30**	390
1980	6	6	6	3	6	5	3	**35**	595
1981	6	6	6	1	1	4	4	**28**	196
1982	6	6	6	6	5	3	3	**35**	805
1983	6	6	6	6	5	3	3	**35**	805
1984	6	6	6	3	3	3	6	**33**	429
1985	6	6	5	1	1	1	5	**25**	200
1986	6	6	6	4	5	5	3	**35**	630
1987	6	6	6	1	1	3	6	**29**	203
1988	5	6	5	1	1	2	6	**26**	182
1989	6	6	6	1	1	3	6	**29**	290
1990	6	6	5	1	1	6	6	**31**	217
1991	6	6	6	5	5	5	5	**38**	266
1992	6	6	5	1	1	3	4	**26**	182
1993	6	6	6	6	3	5	3	**35**	700
1994	6	6	6	1	1	6	5	**31**	217
					73 - year Average:			**31**	**406.9**
							1929 - '34 Average:		**228.0**

STUDY: 1995C06F-SWRCB-485 DWRSIM: recirc818, 14 Apr 97
CP # 10, NEW MELONES RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-485/10/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 1088'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	940	943	949	954	968	978	977	1005	1026	1018	1005	998	120	110	111	83	62	70	83
1923	997	1000	1008	1015	1022	1026	1028	1044	1044	1034	1021	1014	66	62	60	44	44	54	67
1924	1014	1015	1018	1021	1024	1024	1019	1012	1003	995	985	981	64	64	69	76	85	93	103
1925	980	983	986	990	1004	1013	1014	1027	1027	1017	1004	997	84	75	74	61	61	71	84
1926	996	997	999	1001	1009	1014	1016	1014	1004	994	983	975	79	74	72	74	84	94	105
1927	975	979	987	994	1008	1016	1023	1036	1041	1029	1017	1010	80	72	65	52	47	59	71
1928	1010	1015	1019	1022	1028	1045	1046	1054	1044	1030	1017	1009	60	43	42	34	44	58	71
1929	1009	1011	1013	1015	1018	1019	1015	1014	1006	999	989	983	70	69	73	74	82	89	99
1930	983	985	987	991	996	1002	1002	999	996	987	975	967	92	86	86	89	92	101	113
1931	968	971	973	975	978	981	976	968	958	948	937	931	110	107	112	120	130	140	151
1932	931	932	940	945	960	967	967	990	1002	997	986	978	128	121	121	98	86	91	102
1933	978	980	984	987	989	991	986	984	983	972	959	951	99	97	102	104	105	116	129
1934	952	954	958	962	968	974	969	961	949	939	927	920	120	114	119	127	139	149	161
1935	919	920	923	928	933	939	950	978	990	981	968	960	155	149	138	110	98	107	120
1936	960	962	966	977	998	1006	1015	1031	1034	1023	1010	1002	90	82	73	57	54	65	78
1937	1002	1004	1007	1010	1020	1030	1030	1049	1049	1037	1025	1017	68	58	58	39	39	51	63
1938	1017	1019	1029	1038	1050	1055	1063	1088	1088	1084	1075	1069	38	33	25	0	0	4	13
1939	1050	1050	1050	1050	1050	1052	1050	1042	1031	1018	1006	998	38	36	38	46	57	70	82
1940	998	999	1001	1012	1027	1043	1050	1064	1063	1052	1041	1033	61	45	38	24	25	36	47
1941	1032	1034	1039	1046	1050	1055	1052	1066	1072	1065	1055	1049	38	33	36	22	16	23	33
1942	1047	1048	1050	1050	1050	1055	1055	1068	1082	1078	1068	1063	38	33	33	20	6	10	20
1943	1050	1050	1050	1050	1050	1055	1061	1068	1071	1062	1053	1045	38	33	27	20	17	26	35
1944	1044	1045	1046	1048	1050	1053	1048	1048	1041	1028	1015	1007	38	35	40	40	47	60	73
1945	1007	1011	1015	1021	1034	1043	1042	1054	1060	1052	1040	1033	54	45	46	34	28	36	48
1946	1032	1036	1046	1050	1050	1054	1055	1064	1062	1051	1039	1032	38	34	33	24	26	37	49
1947	1031	1034	1036	1039	1042	1047	1042	1037	1026	1014	1001	994	46	41	46	51	62	74	87
1948	994	995	997	999	1001	1004	1005	1011	1021	1013	1003	998	87	84	83	77	67	75	85
1949	998	1000	1003	1005	1008	1012	1012	1018	1014	1005	995	988	80	76	76	70	74	83	93
1950	988	988	991	997	1005	1011	1013	1026	1027	1016	1003	996	83	77	75	62	61	72	85
1951	996	1024	1050	1050	1050	1055	1058	1064	1059	1048	1035	1027	38	33	30	24	29	40	53
1952	1027	1029	1036	1050	1050	1055	1058	1087	1088	1086	1076	1070	38	33	30	1	0	2	12
1953	1050	1050	1050	1050	1050	1054	1053	1052	1057	1050	1038	1030	38	34	35	36	31	38	50
1954	1030	1032	1034	1038	1042	1049	1052	1061	1054	1042	1029	1022	46	39	36	27	34	46	59
1955	1021	1023	1027	1031	1035	1038	1035	1033	1031	1022	1012	1005	53	50	53	55	57	66	76
1956	1006	1008	1033	1050	1050	1055	1055	1069	1079	1073	1063	1058	38	33	33	19	9	15	25
1957	1050	1050	1050	1050	1050	1055	1052	1056	1059	1048	1035	1027	38	33	36	32	29	40	53
1958	1024	1026	1028	1035	1044	1055	1062	1088	1088	1082	1072	1065	44	33	26	0	0	6	16
1959	1050	1050	1050	1050	1050	1053	1049	1040	1030	1018	1006	999	38	35	39	48	58	70	82
1960	998	1000	1002	1004	1009	1015	1013	1009	1001	991	978	969	79	73	75	79	87	97	110
1961	965	969	973	975	978	981	977	972	961	951	940	933	110	107	111	116	127	137	148
1962	933	935	938	940	951	957	959	968	971	962	950	941	137	131	129	120	117	126	138
1963	941	944	949	957	975	983	984	1010	1019	1012	1003	998	113	105	104	78	69	76	85
1964	998	1002	1005	1010	1013	1017	1014	1011	1006	997	987	978	75	71	74	77	82	91	101
1965	977	981	1008	1029	1041	1048	1051	1060	1067	1061	1051	1044	47	40	37	28	21	27	37
1966	1042	1046	1050	1050	1050	1053	1051	1053	1041	1028	1014	1006	38	35	37	35	47	60	74
1967	1005	1007	1017	1028	1036	1048	1049	1069	1088	1088	1078	1073	52	40	39	19	0	0	10
1968	1050	1050	1050	1050	1050	1054	1050	1047	1037	1024	1011	1003	38	34	38	41	51	64	77
1969	1003	1006	1009	1039	1050	1055	1066	1088	1088	1084	1074	1066	38	33	22	0	0	4	14
1970	1050	1050	1050	1050	1050	1055	1054	1060	1061	1049	1036	1029	38	33	34	28	27	39	52
1971	1028	1032	1040	1048	1050	1055	1052	1056	1060	1052	1039	1032	38	33	36	32	28	36	49
1972	1030	1033	1039	1044	1048	1054	1049	1052	1044	1032	1019	1012	40	34	39	36	44	56	69
1973	1012	1014	1019	1031	1046	1055	1051	1063	1063	1052	1039	1032	42	33	37	25	25	36	49
1974	1031	1037	1045	1050	1050	1055	1059	1073	1077	1068	1057	1051	38	33	29	15	11	20	31
1975	1050	1050	1050	1050	1050	1055	1050	1056	1068	1060	1050	1042	38	33	38	32	20	28	38
1976	1041	1044	1047	1048	1050	1052	1047	1041	1031	1023	1014	1009	38	36	41	47	57	65	74
1977	1008	1010	1011	1011	1012	1012	1006	1001	995	986	975	969	76	76	82	87	93	102	113
1978	967	967	971	982	994	1009	1015	1030	1038	1033	1021	1016	94	79	73	58	50	55	67
1979	1015	1018	1021	1030	1042	1055	1054	1067	1064	1052	1039	1032	46	33	34	21	24	36	49
1980	1032	1035	1037	1050	1050	1055	1056	1063	1070	1068	1057	1051	38	33	32	25	18	20	31
1981	1050	1050	1050	1050	1050	1053	1050	1044	1031	1018	1006	1000	38	35	38	44	57	70	82
1982	1000	1007	1022	1042	1050	1055	1071	1086	1088	1084	1075	1071	38	33	17	2	0	4	13
1983	1050	1050	1050	1050	1050	1055	1056	1070	1088	1088	1082	1075	38	33	32	18	0	0	6
1984	1050	1050	1050	1050	1050	1055	1053	1059	1058	1049	1038	1033	38	33	35	29	30	39	50
1985	1033	1038	1043	1046	1050	1054	1052	1050	1038	1025	1014	1007	38	34	36	38	50	63	74
1986	1008	1011	1014	1023	1050	1055	1056	1061	1065	1055	1045	1040	38	33	32	27	23	33	43
1987	1039	1041	1044	1044	1046	1049	1044	1036	1026	1019	1012	1008	42	39	44	52	62	69	76
1988	1007	1006	1007	1008	1010	1012	1007	1002	995	988	980	974	78	76	81	86	93	100	108
1989	973	972	974	975	977	989	987	984	977	968	958	953	111	99	101	104	111	120	130
1990	956	959	963	966	969	973	967	957	946	937	928	922	119	115	121	131	142	151	160
1991	921	922	925	925	925	930	927	925	912	897	881	873	163	158	161	163	176	191	207
1992	875	877	883	886	897	906	898	883	865	848	831	821	191	182	190	205	223	240	257
1993	824	829	836	855	941	987	996	1008	1017	1009	1001	997	147	101	92	80	71	79	87
1994	996	997	1000	1001	1002	1006	1003	1001	993	982	971	966	86	82	85	87	95	106	117

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	Fluctuation MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	1	1	1	1	1	1	1	**7**	10	-1	28	21	-8	-13	-7	6	5	6	6	4	3	4	**34**	**238**
1923	1	1	1	1	1	1	1	**7**	4	2	16	0	-10	-13	-7	6	6	6	6	4	3	4	**35**	**245**
1924	1	1	1	1	1	1	1	**7**	0	-5	-7	-9	-8	-10	-4	6	5	4	4	4	4	5	**32**	**224**
1925	1	1	1	1	1	1	1	**7**	9	1	13	0	-10	-13	-7	6	6	6	6	4	3	4	**35**	**245**
1926	1	1	1	1	1	1	1	**7**	5	2	-2	-10	-10	-11	-8	6	6	5	4	4	3	4	**32**	**224**
1927	1	1	1	1	1	1	1	**7**	8	7	13	5	-12	-12	-7	6	6	6	6	3	3	4	**34**	**238**
1928	1	1	1	1	1	1	1	**7**	17	1	8	-10	-14	-13	-8	6	6	6	4	3	3	4	**32**	**224**
1929	1	1	1	1	1	1	1	**7**	1	-4	-1	-8	-7	-10	-6	6	5	5	4	4	4	4	**32**	**224**
1930	1	1	1	1	1	1	1	**7**	6	0	-3	-3	-9	-12	-8	6	6	5	5	4	3	4	**33**	**231**
1931	1	1	1	1	1	1	1	**7**	3	-5	-8	-10	-10	-11	-6	6	5	4	4	4	3	4	**30**	**210**
1932	1	1	1	1	1	1	1	**7**	7	0	23	12	-5	-11	-8	6	6	6	6	5	3	4	**36**	**252**
1933	1	1	1	1	1	1	1	**7**	2	-5	-2	-1	-11	-13	-8	6	5	5	5	3	3	4	**31**	**217**
1934	1	1	1	1	1	1	1	**7**	6	-5	-8	-12	-10	-12	-7	6	5	4	3	4	3	4	**29**	**203**
1935	1	1	1	1	1	1	1	**7**	6	11	28	12	-9	-13	-8	6	6	6	6	4	3	4	**35**	**245**
1936	1	1	1	1	1	1	1	**7**	8	9	16	3	-11	-13	-8	6	6	6	6	3	3	4	**34**	**238**
1937	1	1	1	1	1	1	1	**7**	10	0	19	0	-12	-12	-8	6	6	6	6	3	3	4	**34**	**238**
1938	1	1	1	6	6	5	3	**23**	5	8	25	0	-4	-9	-6	6	6	6	6	5	4	4	**37**	**851**
1939	1	1	1	1	1	1	1	**7**	2	-2	-8	-11	-13	-12	-8	6	5	4	3	3	3	4	**28**	**196**
1940	1	1	1	1	1	1	1	**7**	16	7	14	-1	-11	-11	-8	6	6	6	5	3	3	4	**33**	**231**
1941	1	1	1	1	2	1	1	**8**	5	-3	14	6	-7	-10	-6	6	5	6	6	4	4	4	**35**	**280**
1942	1	1	1	1	4	3	1	**12**	5	0	13	14	-4	-10	-5	6	6	6	6	5	4	5	**38**	**456**
1943	1	1	1	1	2	1	1	**8**	5	6	7	3	-9	-9	-8	6	6	6	6	4	4	4	**36**	**288**
1944	1	1	1	1	1	1	1	**7**	3	-5	0	-7	-13	-13	-8	6	5	6	4	3	3	4	**31**	**217**
1945	1	1	1	1	1	1	1	**7**	9	-1	12	6	-8	-12	-7	6	5	6	6	4	3	4	**34**	**238**
1946	1	1	1	1	1	1	1	**7**	4	1	9	-2	-11	-12	-7	6	6	6	5	3	3	4	**33**	**231**
1947	1	1	1	1	1	1	1	**7**	5	-5	-5	-11	-12	-13	-7	6	5	5	3	3	3	4	**29**	**203**
1948	1	1	1	1	1	1	1	**7**	3	1	6	10	-8	-10	-5	6	6	6	6	4	4	5	**37**	**259**
1949	1	1	1	1	1	1	1	**7**	4	0	6	-4	-9	-10	-7	6	6	6	5	4	4	4	**35**	**245**
1950	1	1	1	1	1	1	1	**7**	6	2	13	1	-11	-13	-7	6	6	6	6	3	3	4	**34**	**238**
1951	1	1	1	1	1	1	1	**7**	5	3	6	-5	-11	-13	-8	6	6	6	5	3	3	4	**33**	**231**
1952	1	1	1	5	6	5	3	**22**	5	3	29	1	-2	-10	-6	6	6	6	6	5	4	4	**37**	**814**
1953	1	1	1	1	1	1	1	**7**	4	-1	-1	5	-7	-12	-8	6	5	5	6	4	3	4	**33**	**231**
1954	1	1	1	1	1	1	1	**7**	7	3	9	-7	-12	-13	-7	6	6	6	4	3	3	4	**32**	**224**
1955	1	1	1	1	1	1	1	**7**	3	-3	-2	-2	-9	-10	-7	6	5	5	5	4	4	4	**33**	**231**
1956	1	1	1	2	4	2	1	**12**	5	0	14	10	-6	-10	-5	6	6	6	6	4	4	5	**37**	**444**
1957	1	1	1	1	1	1	1	**7**	5	-3	4	3	-11	-13	-8	6	5	6	6	3	3	4	**33**	**231**
1958	1	1	1	6	6	4	2	**21**	11	7	26	0	-6	-10	-7	6	6	6	6	4	4	4	**36**	**756**
1959	1	1	1	1	1	1	1	**7**	3	-4	-9	-10	-12	-12	-7	6	5	4	4	3	3	4	**29**	**203**
1960	1	1	1	1	1	1	1	**7**	6	-2	-4	-8	-10	-13	-9	6	5	5	4	4	3	4	**31**	**217**
1961	1	1	1	1	1	1	1	**7**	3	-4	-5	-11	-10	-11	-7	6	5	5	3	4	3	4	**30**	**210**
1962	1	1	1	1	1	1	1	**7**	6	2	9	3	-9	-12	-9	6	6	6	6	4	3	4	**35**	**245**
1963	1	1	1	1	1	1	1	**7**	8	1	26	9	-7	-9	-5	6	6	6	6	4	4	5	**37**	**259**
1964	1	1	1	1	1	1	1	**7**	4	-3	-3	-5	-9	-10	-9	6	5	5	5	4	4	4	**33**	**231**
1965	1	1	1	1	1	1	1	**7**	7	3	9	7	-6	-10	-7	6	6	6	6	4	4	4	**36**	**252**
1966	1	1	1	1	1	1	1	**7**	3	-2	2	-12	-13	-14	-8	6	5	6	3	3	3	4	**30**	**210**
1967	1	1	1	2	6	6	3	**20**	12	1	20	19	0	-10	-5	6	6	6	6	6	4	5	**39**	**780**
1968	1	1	1	1	1	1	1	**7**	4	-4	-3	-10	-13	-13	-8	6	5	5	4	3	3	4	**30**	**210**
1969	1	1	1	6	6	5	3	**23**	5	11	22	0	-4	-10	-8	6	6	6	6	5	4	4	**37**	**851**
1970	1	1	1	1	1	1	1	**7**	5	-1	6	1	-12	-13	-7	6	5	6	6	3	3	4	**33**	**231**
1971	1	1	1	1	1	1	1	**7**	5	-3	4	4	-8	-13	-7	6	5	6	6	4	3	4	**34**	**238**
1972	1	1	1	1	1	1	1	**7**	6	-5	3	-8	-12	-13	-7	6	5	6	4	3	3	4	**31**	**217**
1973	1	1	1	1	1	1	1	**7**	9	-4	12	0	-11	-13	-7	6	5	6	6	3	3	4	**33**	**231**
1974	1	1	1	2	3	1	1	**10**	5	4	14	4	-9	-11	-6	6	6	6	6	4	3	4	**35**	**350**
1975	1	1	1	1	1	1	1	**7**	5	-5	6	12	-8	-10	-8	6	5	6	6	4	4	4	**35**	**245**
1976	1	1	1	1	1	1	1	**7**	2	-5	-6	-10	-8	-9	-5	6	5	4	4	4	4	5	**32**	**224**
1977	1	1	1	1	1	1	1	**7**	0	-6	-5	-6	-9	-11	-6	6	4	5	4	4	3	4	**30**	**210**
1978	1	1	1	1	1	1	1	**7**	15	6	15	8	-5	-12	-5	6	6	6	6	5	3	5	**37**	**259**
1979	1	1	1	1	1	1	1	**7**	13	-1	13	-3	-12	-13	-7	6	5	6	5	3	3	4	**32**	**224**
1980	1	1	1	1	2	1	1	**8**	5	1	7	7	-2	-11	-6	6	6	6	6	5	3	4	**36**	**288**
1981	1	1	1	1	1	1	1	**7**	3	-3	-6	-13	-13	-12	-6	6	5	4	3	3	3	4	**28**	**196**
1982	1	1	2	5	6	5	3	**23**	5	16	15	2	-4	-9	-4	6	6	6	6	5	4	5	**38**	**874**
1983	1	1	1	2	6	6	4	**21**	5	1	14	18	0	-6	-7	6	6	6	6	6	4	4	**38**	**798**
1984	1	1	1	1	1	1	1	**7**	5	-2	6	-1	-9	-11	-5	6	5	6	5	4	3	5	**34**	**238**
1985	1	1	1	1	1	1	1	**7**	4	-2	-2	-12	-13	-11	-7	6	5	5	3	3	3	4	**29**	**203**
1986	1	1	1	1	1	1	1	**7**	5	1	5	4	-10	-10	-5	6	6	6	6	4	4	5	**37**	**259**
1987	1	1	1	1	1	1	1	**7**	3	-5	-8	-10	-7	-7	-4	6	5	4	4	4	4	5	**32**	**224**
1988	1	1	1	1	1	1	1	**7**	2	-5	-5	-7	-7	-8	-6	6	5	5	4	4	4	4	**32**	**224**
1989	1	1	1	1	1	1	1	**7**	12	-2	-3	-7	-9	-10	-5	6	5	5	4	4	4	5	**33**	**231**
1990	1	1	1	1	1	1	1	**7**	4	-6	-10	-11	-9	-9	-6	6	4	4	3	4	4	4	**29**	**203**
1991	1	1	1	1	1	1	1	**7**	5	-3	-2	-13	-15	-16	-8	6	5	5	3	3	2	4	**28**	**196**
1992	1	1	1	1	1	1	1	**7**	9	-8	-15	-18	-17	-17	-10	6	4	3	2	2	2	4	**23**	**161**
1993	1	1	1	1	1	1	1	**7**	46	9	12	9	-8	-8	-4	6	6	6	6	4	4	5	**37**	**259**
1994	1	1	1	1	1	1	1	**7**	4	-3	-2	-8	-11	-11	-5	6	5	5	4	3	3	5	**31**	**217**
							73 - year Average:	**9**														**73 - year Average:**	**33**	**294.0**
																							1929 - '34 Average:	**222.8**

Flow Alternative 6

STUDY: 1995C06F-SWRCB-485 DWRSIM: recirc818, 14 Apr 97
CP # 81, DON PEDRO RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-485/81/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 832'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

	EOP Surface Elevation (FT)												DFMRE						
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	599	582	579	601	656	690	699	724	782	779	763	752	142	133	108	50	53	69	80
1923	746	745	748	761	776	784	789	792	801	795	780	770	48	43	40	31	37	52	62
1924	764	762	757	755	756	754	749	744	735	723	709	701	78	83	88	97	109	123	131
1925	698	698	699	703	725	741	754	767	785	776	760	749	91	78	65	47	56	72	83
1926	743	741	736	735	744	749	763	776	774	759	744	735	83	69	56	58	73	88	97
1927	730	729	733	740	768	783	794	795	814	806	792	782	49	38	37	18	26	40	50
1928	776	776	776	779	787	800	802	819	819	805	790	780	32	30	13	13	27	42	52
1929	774	769	765	764	768	769	769	773	780	771	762	754	63	63	59	52	61	70	78
1930	752	749	746	746	752	759	761	764	777	769	760	753	73	71	68	55	63	72	79
1931	751	750	749	751	754	753	746	737	726	712	699	692	79	86	95	106	120	133	140
1932	689	685	695	710	745	760	761	768	786	781	766	756	72	71	64	46	51	66	76
1933	749	742	737	736	742	745	743	740	757	746	732	722	87	89	92	75	86	100	110
1934	715	713	711	714	725	732	731	727	724	708	693	685	100	101	105	108	124	139	147
1935	681	680	681	693	713	728	749	759	786	774	759	747	104	83	73	46	58	73	85
1936	740	738	733	738	776	792	801	819	832	823	808	798	40	31	13	0	9	24	34
1937	792	786	782	785	800	800	802	815	832	819	805	795	32	30	17	0	13	27	37
1938	789	784	800	800	800	800	800	804	831	832	819	808	32	32	28	1	0	13	24
1939	800	799	799	800	800	800	802	804	799	787	774	766	32	30	28	33	45	58	66
1940	764	763	761	774	800	800	802	816	829	814	799	789	32	30	16	3	18	33	43
1941	783	781	783	798	800	800	800	812	832	831	817	808	32	32	20	0	1	15	24
1942	800	798	800	800	800	800	802	807	831	832	818	808	32	30	25	1	0	14	24
1943	800	800	800	800	800	800	802	821	832	824	810	799	32	30	11	0	8	22	33
1944	794	792	788	787	793	800	801	808	814	802	787	777	32	31	24	18	30	45	55
1945	772	773	776	781	800	800	802	807	831	825	810	799	32	30	25	1	7	22	33
1946	796	797	800	800	800	800	802	806	812	796	780	769	32	30	26	20	36	52	63
1947	763	763	765	768	776	781	778	782	776	764	750	742	51	54	50	56	68	82	90
1948	739	738	737	739	740	740	736	745	770	760	742	732	92	96	87	62	72	90	100
1949	726	720	714	713	720	731	738	748	756	738	719	706	101	94	84	76	94	113	126
1950	700	693	687	693	712	725	733	746	762	747	729	717	107	99	86	70	85	103	115
1951	711	759	800	800	800	800	798	794	798	783	769	759	32	34	38	34	49	63	73
1952	752	750	757	782	800	800	800	820	832	832	819	808	32	32	12	0	0	13	24
1953	800	795	793	800	800	800	802	804	814	810	796	787	32	30	28	18	22	36	45
1954	782	778	775	776	785	797	802	819	820	805	789	780	35	30	13	12	27	43	52
1955	774	770	768	774	781	784	781	785	791	779	767	760	48	51	47	41	53	65	72
1956	755	751	800	800	800	800	802	818	832	832	818	808	32	30	14	0	0	14	24
1957	800	798	793	793	799	800	800	806	827	814	800	791	32	32	26	5	18	32	41
1958	786	781	779	784	800	800	800	821	832	832	819	808	32	32	11	0	0	13	24
1959	800	794	789	793	800	800	802	800	794	782	770	763	32	30	32	38	50	62	69
1960	761	758	755	756	763	769	770	776	779	768	759	753	63	62	56	53	64	73	79
1961	750	748	748	749	752	751	745	737	730	717	705	698	81	87	95	102	115	127	134
1962	695	692	691	692	716	736	746	751	776	768	755	744	96	86	81	56	64	77	88
1963	739	734	731	735	761	773	781	794	819	815	801	792	59	51	38	13	17	31	40
1964	787	788	789	793	800	800	797	795	797	786	775	768	32	35	37	35	46	57	64
1965	766	767	798	800	800	800	802	807	827	827	816	807	32	30	25	5	5	16	25
1966	800	800	800	800	800	800	801	798	791	776	761	752	32	31	34	41	56	71	80
1967	747	745	755	771	789	800	800	817	832	832	820	808	32	32	15	0	0	12	24
1968	800	795	791	792	800	800	802	805	803	791	779	771	32	30	27	29	41	53	61
1969	766	767	770	800	800	800	800	823	832	832	819	808	32	32	9	0	0	13	24
1970	800	799	800	800	800	800	799	799	807	795	780	771	32	33	33	25	37	52	61
1971	765	766	772	788	800	800	801	801	807	798	786	778	32	31	31	25	34	46	54
1972	773	769	772	778	792	800	800	799	796	784	773	767	32	32	33	36	48	59	65
1973	764	762	765	776	800	800	802	812	827	812	797	788	32	30	20	5	20	35	44
1974	783	787	798	800	800	800	800	806	828	819	805	796	32	32	26	4	13	27	36
1975	791	789	786	796	798	800	802	812	832	825	812	803	32	30	20	0	7	20	29
1976	800	800	799	799	800	799	794	787	777	767	757	751	33	38	45	55	65	75	81
1977	748	745	742	741	741	737	728	715	702	687	672	663	95	104	117	130	145	160	169
1978	659	655	658	684	717	749	762	777	814	822	808	803	83	70	55	18	10	24	29
1979	798	794	791	800	800	800	802	822	832	818	803	794	32	30	10	0	14	29	38
1980	789	788	787	800	800	800	800	817	832	832	819	808	32	32	15	0	0	13	24
1981	800	797	794	795	799	800	802	806	805	793	782	774	32	30	26	27	39	50	58
1982	770	776	795	800	800	800	800	820	832	832	820	808	32	32	12	0	0	12	24
1983	800	800	800	800	800	800	800	819	832	832	832	808	32	32	13	0	0	0	24
1984	800	800	800	800	800	800	797	803	814	801	786	776	32	35	29	18	31	46	56
1985	773	773	779	786	794	800	801	799	795	784	772	766	32	31	33	37	48	60	66
1986	763	764	767	774	800	800	802	827	832	825	811	802	32	30	5	0	7	21	30
1987	796	791	786	784	786	788	786	783	779	769	759	752	44	46	49	53	63	73	80
1988	750	749	749	754	759	761	756	747	740	728	716	709	71	76	85	92	104	116	123
1989	705	702	702	705	709	722	734	748	756	744	734	728	110	98	84	76	88	98	104
1990	727	726	726	728	732	734	732	730	728	714	700	692	98	100	102	104	118	132	140
1991	689	686	682	681	681	688	687	703	714	704	694	688	144	145	129	118	128	138	144
1992	687	687	687	689	698	703	706	714	713	699	685	675	129	126	118	119	133	147	157
1993	669	663	663	696	727	756	763	777	808	806	792	783	76	69	55	24	26	40	49
1994	777	771	767	766	769	772	770	773	772	762	752	746	60	62	59	60	70	80	86

	Elevation Score								Fluctuation							Fluctuation Score								
YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	1	1	1	1	1	1	1	**7**	34	9	25	58	-3	-16	-11	6	6	6	6	5	2	3	**34**	**238**
1923	1	1	1	1	1	1	1	**7**	8	5	3	9	-6	-15	-10	6	6	6	6	4	3	4	**35**	**245**
1924	1	1	1	1	1	1	1	**7**	-2	-5	-5	-9	-12	-14	-8	5	5	5	4	3	3	4	**29**	**203**
1925	1	1	1	1	1	1	1	**7**	16	13	13	18	-9	-16	-11	6	6	6	6	4	2	3	**33**	**231**
1926	1	1	1	1	1	1	1	**7**	5	14	13	-2	-15	-15	-9	6	6	6	5	3	3	4	**33**	**231**
1927	1	1	1	2	1	1	1	**8**	15	11	1	19	-8	-14	-10	6	6	6	6	4	3	4	**35**	**280**
1928	1	1	3	3	1	1	1	**11**	13	2	17	0	-14	-15	-10	6	6	6	6	3	3	4	**34**	**374**
1929	1	1	1	1	1	1	1	**7**	1	0	4	7	-9	-9	-8	6	6	6	6	4	4	4	**36**	**252**
1930	1	1	1	1	1	1	1	**7**	7	2	3	13	-8	-9	-7	6	6	6	6	4	4	4	**36**	**252**
1931	1	1	1	1	1	1	1	**7**	-1	-7	-9	-11	-14	-13	-7	5	4	4	3	3	3	4	**26**	**182**
1932	1	1	1	1	1	1	1	**7**	15	1	7	18	-5	-15	-10	6	6	6	6	5	3	4	**36**	**252**
1933	1	1	1	1	1	1	1	**7**	3	-2	-3	17	-11	-14	-10	6	5	5	6	3	3	4	**32**	**224**
1934	1	1	1	1	1	1	1	**7**	7	-1	-4	-3	-16	-15	-8	6	5	5	5	2	3	4	**30**	**210**
1935	1	1	1	1	1	1	1	**7**	15	21	10	27	-12	-15	-12	6	6	6	6	3	3	3	**33**	**231**
1936	1	1	3	6	4	1	1	**17**	16	9	18	13	-9	-15	-10	6	6	6	6	4	3	4	**35**	**595**
1937	1	1	2	6	3	1	1	**15**	0	2	13	17	-13	-14	-10	6	6	6	6	3	3	4	**34**	**510**
1938	1	1	1	5	6	3	1	**18**	0	0	4	27	1	-13	-11	6	6	6	6	6	3	3	**36**	**648**
1939	1	1	1	1	1	1	1	**7**	0	2	2	-5	-12	-13	-8	6	6	6	5	3	3	4	**33**	**231**
1940	1	1	2	5	2	1	1	**13**	0	2	14	13	-15	-15	-10	6	6	6	6	3	3	4	**34**	**442**
1941	1	1	1	6	5	2	1	**17**	0	0	12	20	-1	-14	-9	6	6	6	6	5	3	4	**36**	**612**
1942	1	1	1	5	6	3	1	**18**	0	2	5	24	1	-14	-10	6	6	6	6	6	3	4	**37**	**666**
1943	1	1	3	6	4	1	1	**17**	0	2	19	11	-8	-14	-11	6	6	6	6	4	3	3	**34**	**578**
1944	1	1	1	2	1	1	1	**8**	7	1	7	6	-12	-15	-10	6	6	6	6	3	3	4	**34**	**272**
1945	1	1	1	5	4	1	1	**14**	0	2	5	24	-6	-15	-11	6	6	6	6	4	3	3	**34**	**476**
1946	1	1	1	1	1	1	1	**7**	0	2	4	6	-16	-16	-11	6	6	6	6	2	2	3	**31**	**217**
1947	1	1	1	1	1	1	1	**7**	5	-3	4	-6	-12	-14	-8	6	5	6	4	3	3	4	**31**	**217**
1948	1	1	1	1	1	1	1	**7**	0	-4	9	25	-10	-18	-10	6	5	6	6	4	2	4	**33**	**231**
1949	1	1	1	1	1	1	1	**7**	11	7	10	8	-18	-19	-13	6	6	6	6	2	2	3	**31**	**217**
1950	1	1	1	1	1	1	1	**7**	13	8	13	16	-15	-18	-12	6	6	6	6	3	2	3	**32**	**224**
1951	1	1	1	1	1	1	1	**7**	0	-2	-4	4	-15	-14	-10	6	5	5	6	3	3	4	**32**	**224**
1952	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1953	1	1	1	2	1	1	1	**8**	0	2	2	10	-4	-14	-9	6	6	6	6	5	3	4	**36**	**288**
1954	1	1	3	3	1	1	1	**11**	12	5	17	1	-15	-16	-9	6	6	6	6	3	2	4	**33**	**363**
1955	1	1	1	1	1	1	1	**7**	3	-3	4	6	-12	-12	-7	6	5	6	6	3	3	4	**33**	**231**
1956	1	1	3	6	6	3	1	**21**	0	2	16	14	0	-14	-10	6	6	6	6	6	3	4	**37**	**777**
1957	1	1	1	4	2	1	1	**11**	1	0	6	21	-13	-14	-9	6	6	6	6	3	3	4	**34**	**374**
1958	1	1	3	6	6	3	1	**21**	0	0	21	11	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1959	1	1	1	1	1	1	1	**7**	0	2	-2	-6	-12	-12	-7	6	6	5	4	3	3	4	**31**	**217**
1960	1	1	1	1	1	1	1	**7**	6	1	6	3	-11	-9	-6	6	6	6	6	3	4	4	**35**	**245**
1961	1	1	1	1	1	1	1	**7**	-1	-6	-8	-7	-13	-12	-7	5	4	4	4	3	3	4	**27**	**189**
1962	1	1	1	1	1	1	1	**7**	20	10	5	25	-8	-13	-11	6	6	6	6	4	3	3	**34**	**238**
1963	1	1	1	3	2	1	1	**10**	12	8	13	25	-4	-14	-9	6	6	6	6	5	3	4	**36**	**360**
1964	1	1	1	1	1	1	1	**7**	0	-3	-2	2	-11	-11	-7	6	5	5	6	3	3	4	**32**	**224**
1965	1	1	1	4	4	2	1	**14**	0	2	5	20	0	-11	-9	6	6	6	6	6	3	4	**37**	**518**
1966	1	1	1	1	1	1	1	**7**	0	1	-3	-7	-15	-15	-9	6	6	5	4	3	3	4	**31**	**217**
1967	1	1	2	6	6	3	1	**20**	11	0	17	15	0	-12	-12	6	6	6	6	6	3	3	**36**	**720**
1968	1	1	1	1	1	1	1	**7**	0	2	3	-2	-12	-12	-8	6	6	6	5	3	3	4	**33**	**231**
1969	1	1	4	6	6	3	1	**22**	0	0	23	9	0	-13	-11	6	6	6	6	6	3	3	**36**	**792**
1970	1	1	1	1	1	1	1	**7**	0	-1	0	8	-12	-15	-9	6	5	6	6	3	3	4	**33**	**231**
1971	1	1	1	1	1	1	1	**7**	0	1	0	6	-9	-12	-8	6	6	6	6	4	3	4	**35**	**245**
1972	1	1	1	1	1	1	1	**7**	8	0	-1	-3	-12	-11	-6	6	6	5	5	3	3	4	**32**	**224**
1973	1	1	1	4	1	1	1	**10**	0	2	10	15	-15	-15	-9	6	6	6	6	3	3	4	**34**	**340**
1974	1	1	1	5	3	1	1	**13**	0	0	6	22	-9	-14	-9	6	6	6	6	4	3	4	**35**	**455**
1975	1	1	1	6	4	1	1	**15**	2	2	10	20	-7	-13	-9	6	6	6	6	4	3	4	**35**	**525**
1976	1	1	1	1	1	1	1	**7**	-1	-5	-7	-10	-10	-10	-6	5	5	4	4	4	4	4	**30**	**210**
1977	1	1	1	1	1	1	1	**7**	-4	-9	-13	-13	-15	-15	-9	5	4	3	3	3	3	4	**25**	**175**
1978	1	1	1	2	3	1	1	**10**	32	13	15	37	8	-14	-5	6	6	6	6	6	3	5	**38**	**380**
1979	1	1	3	6	3	1	1	**16**	0	2	20	10	-14	-15	-9	6	6	6	6	3	3	4	**34**	**544**
1980	1	1	2	6	6	3	1	**20**	0	0	17	15	0	-13	-11	6	6	6	6	6	3	3	**36**	**720**
1981	1	1	1	1	1	1	1	**7**	1	2	4	-1	-12	-11	-8	6	6	6	5	3	3	4	**33**	**231**
1982	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-12	-12	6	6	6	6	6	3	3	**36**	**756**
1983	1	1	3	6	6	6	1	**24**	0	0	19	13	0	0	-24	6	6	6	6	6	6	1	**37**	**888**
1984	1	1	1	2	1	1	1	**8**	0	-3	6	11	-13	-15	-10	6	5	6	6	3	3	4	**33**	**264**
1985	1	1	1	1	1	1	1	**7**	6	1	-2	-4	-11	-12	-6	6	6	5	5	3	3	4	**32**	**224**
1986	1	1	4	6	4	1	1	**18**	0	2	25	5	-7	-14	-9	6	6	6	6	4	3	4	**35**	**630**
1987	1	1	1	1	1	1	1	**7**	2	-2	-3	-4	-10	-10	-7	6	5	5	5	4	4	4	**33**	**231**
1988	1	1	1	1	1	1	1	**7**	2	-5	-9	-7	-12	-12	-7	6	5	4	4	3	3	4	**29**	**203**
1989	1	1	1	1	1	1	1	**7**	13	12	14	8	-12	-10	-6	6	6	6	6	3	4	4	**35**	**245**
1990	1	1	1	1	1	1	1	**7**	2	-2	-2	-2	-14	-14	-8	6	5	5	5	3	3	4	**31**	**217**
1991	1	1	1	1	1	1	1	**7**	7	-1	16	11	-10	-10	-6	6	5	6	6	4	4	4	**35**	**245**
1992	1	1	1	1	1	1	1	**7**	5	3	8	-1	-14	-14	-10	6	6	6	5	3	3	4	**33**	**231**
1993	1	1	1	1	1	1	1	**7**	29	7	14	31	-2	-14	-9	6	6	6	6	5	3	4	**36**	**252**
1994	1	1	1	1	1	1	1	**7**	3	-2	3	-1	-10	-10	-6	6	5	6	5	4	4	4	**34**	**238**
					73 - year Average:			**10**												**73 - year Average:**			**34**	**358.4**
																					1929 - '34 Average:			**228.7**

Flow Alternative 6

STUDY: 1995C06F-SWRCB-485 DWRSIM: recirc818, 14 Apr 97
CP # 20, LAKE McCLURE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-485/20/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 867'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

	EOP Surface Elevation (FT)												DFMRE							Elevation Score								Fluctuation							Fluctuation Score								
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	680	680	696	712	759	779	789	845	867	860	846	836	88	78	22	0	7	21	31	1	1	1	6	4	1	1	**15**	20	10	56	22	-7	-14	-10	6	6	6	6	4	3	4	**35**	**525**
1923	808	808	808	808	808	813	827	854	859	850	835	825	54	40	13	8	17	32	42	1	1	3	4	2	1	1	**13**	5	14	27	5	-9	-15	-10	6	6	6	6	4	3	4	**35**	**455**
1924	808	808	808	808	808	807	809	811	799	781	768	758	60	58	56	68	86	99	109	1	1	1	1	1	1	1	**7**	-1	2	2	-12	-18	-13	-10	5	6	6	3	2	3	4	**29**	**203**
1925	758	763	768	772	796	805	824	847	851	839	824	812	62	43	20	16	28	43	55	1	1	1	2	1	1	1	**8**	9	19	23	4	-12	-15	-12	6	6	6	6	3	3	3	**33**	**264**
1926	808	808	808	808	808	814	834	832	831	827	820	812	53	33	35	36	40	47	55	1	1	1	1	1	1	1	**7**	6	20	-2	-1	-4	-7	-8	6	6	5	5	5	4	4	**35**	**245**
1927	808	808	808	808	808	815	818	849	860	856	852	840	52	49	18	7	11	15	27	1	1	2	4	3	2	1	**14**	7	3	31	11	-4	-4	-12	6	6	6	6	5	5	3	**37**	**518**
1928	808	808	808	808	808	809	808	824	822	815	811	807	58	59	43	45	52	56	60	1	1	1	1	1	1	1	**7**	1	-1	16	-2	-7	-4	-4	6	5	6	5	4	5	5	**36**	**252**
1929	807	806	806	805	807	809	810	814	814	816	819	813	58	57	53	53	51	48	54	1	1	1	1	1	1	1	**7**	2	1	4	0	2	3	-6	6	6	6	6	6	6	4	**40**	**280**
1930	808	807	807	807	806	802	806	808	812	815	819	816	65	61	59	55	52	48	51	1	1	1	1	1	1	1	**7**	-4	4	2	4	3	4	-3	5	6	6	6	6	6	5	**40**	**280**
1931	808	808	808	808	808	808	810	813	801	784	770	761	59	57	54	66	83	97	106	1	1	1	1	1	1	1	**7**	0	2	3	-12	-17	-14	-9	6	6	6	3	2	3	4	**30**	**210**
1932	760	760	778	789	808	817	826	852	867	857	843	832	50	41	15	0	10	24	35	1	1	2	6	3	1	1	**15**	9	9	26	15	-10	-14	-11	6	6	6	6	4	3	3	**34**	**510**
1933	808	807	806	808	808	811	816	825	839	827	813	805	56	51	42	28	40	54	62	1	1	1	1	1	1	1	**7**	3	5	9	14	-12	-14	-8	6	6	6	6	3	3	4	**34**	**238**
1934	803	802	805	808	808	816	823	818	809	793	780	770	51	44	49	58	74	87	97	1	1	1	1	1	1	1	**7**	8	7	-5	-9	-16	-13	-10	6	6	5	4	2	3	4	**30**	**210**
1935	769	773	778	796	806	816	840	859	867	854	839	828	51	27	8	0	13	28	39	1	1	4	6	3	1	1	**17**	10	24	19	8	-13	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1936	808	808	808	808	808	820	840	859	865	853	838	827	47	27	8	2	14	29	40	1	1	4	5	3	1	1	**16**	12	20	19	6	-12	-15	-11	6	6	6	6	3	3	3	**33**	**528**
1937	808	808	808	808	808	820	834	859	867	853	838	827	47	33	8	0	14	29	40	1	1	4	6	3	1	1	**17**	12	14	25	8	-14	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1938	808	808	808	808	808	820	840	859	867	867	855	840	47	27	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1939	808	808	808	808	808	816	831	832	821	803	787	776	51	36	35	46	64	80	91	1	1	1	1	1	1	1	**7**	8	15	1	-11	-18	-16	-11	6	6	6	3	2	2	3	**28**	**196**
1940	778	779	780	806	808	820	837	859	861	845	829	816	47	30	8	6	22	38	51	1	1	4	4	1	1	1	**13**	12	17	22	2	-16	-16	-13	6	6	6	6	2	2	3	**31**	**403**
1941	808	808	808	808	808	820	834	859	867	863	850	840	47	33	8	0	4	17	27	1	1	4	6	5	2	1	**20**	12	14	25	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1942	808	808	808	808	808	820	838	859	867	860	851	840	47	29	8	0	7	16	27	1	1	4	6	4	2	1	**19**	12	18	21	8	-7	-9	-11	6	6	6	6	4	4	3	**35**	**665**
1943	808	808	808	808	808	820	840	859	864	853	838	828	47	27	8	3	14	29	39	1	1	4	5	3	1	1	**16**	12	20	19	5	-11	-15	-10	6	6	6	6	3	3	4	**34**	**544**
1944	808	808	808	808	808	817	815	838	840	827	810	796	50	52	29	27	40	57	71	1	1	1	1	1	1	1	**7**	9	-2	23	2	-13	-17	-14	6	5	6	6	3	2	3	**31**	**217**
1945	794	800	806	808	808	820	833	856	867	856	842	831	47	34	11	0	11	25	36	1	1	3	6	3	1	1	**16**	12	13	23	11	-11	-14	-11	6	6	6	6	3	3	3	**33**	**528**
1946	808	808	808	808	808	818	837	859	857	842	826	813	49	30	8	10	25	41	54	1	1	4	3	1	1	1	**12**	10	19	22	-2	-15	-16	-13	6	6	6	5	3	2	3	**31**	**372**
1947	808	808	808	808	808	815	823	836	830	814	799	791	52	44	31	37	53	68	76	1	1	1	1	1	1	1	**7**	7	8	13	-6	-16	-15	-8	6	6	6	4	2	3	4	**31**	**217**
1948	790	791	792	794	795	795	799	823	839	825	807	794	72	68	44	28	42	60	73	1	1	1	1	1	1	1	**7**	0	4	24	16	-14	-18	-13	6	6	6	6	3	2	3	**32**	**224**
1949	791	791	792	793	796	804	815	836	835	816	797	782	63	52	31	32	51	70	85	1	1	1	1	1	1	1	**7**	8	11	21	-1	-19	-19	-15	6	6	6	5	2	2	3	**30**	**210**
1950	779	779	779	786	798	801	818	838	839	822	803	789	66	49	29	28	45	64	78	1	1	1	1	1	1	1	**7**	3	17	20	1	-17	-19	-14	6	6	6	6	2	2	3	**31**	**217**
1951	786	808	808	808	808	819	827	837	834	816	796	781	48	40	30	33	51	71	86	1	1	1	1	1	1	1	**7**	11	8	10	-3	-18	-20	-15	6	6	6	5	2	2	3	**30**	**210**
1952	777	778	791	808	808	820	840	859	867	864	852	840	47	27	8	0	3	15	27	1	1	4	6	5	2	1	**20**	12	20	19	8	-3	-12	-12	6	6	6	6	5	3	3	**35**	**700**
1953	808	808	808	808	808	809	815	816	823	809	790	775	58	52	51	44	58	77	92	1	1	1	1	1	1	1	**7**	1	6	1	7	-14	-19	-15	6	6	6	6	3	2	3	**32**	**224**
1954	772	771	772	775	785	798	815	833	826	805	785	770	69	52	34	41	62	82	97	1	1	1	1	1	1	1	**7**	13	17	18	-7	-21	-20	-15	6	6	6	4	1	2	3	**28**	**196**
1955	767	766	768	775	780	782	782	804	814	798	782	772	85	85	63	53	69	85	95	1	1	1	1	1	1	1	**7**	2	0	22	10	-16	-16	-10	6	6	6	6	2	2	4	**32**	**224**
1956	769	769	808	808	808	819	832	859	867	863	850	840	48	35	8	0	4	17	27	1	1	4	6	5	2	1	**20**	11	13	27	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1957	808	808	808	808	808	813	813	828	838	822	804	790	54	54	39	29	45	63	77	1	1	1	1	1	1	1	**7**	5	0	15	10	-16	-18	-14	6	6	6	6	2	2	3	**31**	**217**
1958	787	787	792	798	808	820	840	859	867	862	850	840	47	27	8	0	5	17	27	1	1	4	6	4	2	1	**19**	12	20	19	8	-5	-12	-10	6	6	6	6	5	3	4	**36**	**684**
1959	808	808	808	808	808	813	823	826	817	797	780	773	54	44	41	50	70	87	94	1	1	1	1	1	1	1	**7**	5	10	3	-9	-20	-17	-7	6	6	6	4	2	2	4	**30**	**210**
1960	772	771	771	772	784	792	806	819	816	801	787	777	75	61	48	51	66	80	90	1	1	1	1	1	1	1	**7**	8	14	13	-3	-15	-14	-10	6	6	6	5	3	3	4	**33**	**231**
1961	776	776	779	779	782	783	789	793	784	766	752	740	84	78	74	83	101	115	127	1	1	1	1	1	1	1	**7**	1	6	4	-9	-18	-14	-12	6	6	6	4	2	3	3	**30**	**210**
1962	739	739	741	744	784	793	816	831	845	832	815	802	74	51	36	22	35	52	65	1	1	1	1	1	1	1	**7**	9	23	15	14	-13	-17	-13	6	6	6	6	3	2	3	**32**	**224**
1963	800	800	801	808	808	814	823	848	861	852	837	826	53	44	19	6	15	30	41	1	1	2	4	2	1	1	**12**	6	9	25	13	-9	-15	-11	6	6	6	6	4	3	3	**34**	**408**
1964	808	808	808	808	808	808	811	821	819	803	787	777	59	56	46	48	64	80	90	1	1	1	1	1	1	1	**7**	0	3	10	-2	-16	-16	-10	6	6	6	5	2	2	4	**31**	**217**
1965	775	778	808	808	808	815	831	854	867	861	850	840	52	36	13	0	6	17	27	1	1	3	6	4	2	1	**18**	7	16	23	13	-6	-11	-10	6	6	6	6	4	3	4	**35**	**630**
1966	808	808	808	808	808	814	828	838	826	804	784	771	53	39	29	41	63	83	96	1	1	1	1	1	1	1	**7**	6	14	10	-12	-22	-20	-13	6	6	6	3	1	2	3	**27**	**189**
1967	768	770	795	807	808	820	840	859	867	867	856	840	47	27	8	0	0	11	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1968	808	808	808	808	808	812	817	821	812	793	777	766	55	50	46	55	74	90	101	1	1	1	1	1	1	1	**7**	4	5	4	-9	-19	-16	-11	6	6	6	4	2	2	3	**29**	**203**
1969	763	767	775	808	808	820	840	859	867	867	854	840	47	27	8	0	0	13	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-13	-14	6	6	6	6	6	3	3	**36**	**792**
1970	808	808	808	808	808	820	821	837	837	821	802	789	47	46	30	30	46	65	78	1	1	1	1	1	1	1	**7**	12	1	16	0	-16	-19	-13	6	6	6	6	2	2	3	**31**	**217**
1971	786	788	798	807	808	812	814	826	836	822	804	790	55	53	41	31	45	63	77	1	1	1	1	1	1	1	**7**	4	2	12	10	-14	-18	-14	6	6	6	6	3	2	3	**32**	**224**
1972	787	787	795	799	806	816	819	832	833	818	804	797	51	48	35	34	49	63	70	1	1	1	1	1	1	1	**7**	10	3	13	1	-15	-14	-7	6	6	6	6	3	3	4	**34**	**238**
1973	797	798	804	808	808	820	828	859	867	852	838	828	47	39	8	0	15	29	39	1	1	4	6	2	1	1	**16**	12	8	31	8	-15	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1974	808	808	808	808	808	820	833	859	867	854	839	829	47	34	8	0	13	28	38	1	1	4	6	3	1	1	**17**	12	13	26	8	-13	-15	-10	6	6	6	6	3	3	4	**34**	**578**
1975	808	808	808	808	808	820	823	855	867	856	842	832	47	44	12	0	11	25	35	1	1	3	6	3	1	1	**16**	12	3	32	12	-11	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1976	808	808	808	808	808	809	808	809	798	781	768	759	58	59	58	69	86	99	108	1	1	1	1	1	1	1	**7**	1	-1	1	-11	-17	-13	-9	6	5	6	3	2	3	4	**29**	**203**
1977	758	756	754	754	754	749	740	728	717	688	659	635	118	127	139	150	179	208	232	1	1	1	1	1	1	1	**7**	-5	-9	-12	-11	-29	-29	-24	5	4	3	3	1	1	1	**18**	**126**
1978	629	626	642	693	741	782	815	859	867	867	856	840	85	52	8	0	0	11	27	1	1	4	6	6	3	1	**22**	41	33	44	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1979	808	808	808	808	808	820	828	859	863	849	834	823	47	39	8	4	18	33	44	1	1	4	5	2	1	1	**15**	12	8	31	4	-14	-15	-11	6	6	6	6	3	3	3	**33**	**495**
1980	808	808	808	808	808	820	835	859	867	867	855	840	47	32	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	15	24	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1981	808	807	807	808	808	813	823	835	831	816	802	794	54	44	32	36	51	65	73	1	1	1	1	1	1	1	**7**	5	10	12	-4	-15	-14	-8	6	6	6	5	3	3	4	**33**	**231**
1982	793	801	808	808	808	820	840	859	867	865	854	840	47	27	8	0	2	13	27	1	1	4	6	5	3	1	**21**	12	20	19	8	-2	-11	-14	6	6	6	6	5	3	3	**35**	**735**
1983	808	808	808	808	808	820	836	859	867	867	864	840	47	31	8	0	0	3	27	1	1	4	6	6	5	1	**24**	12	16	23	8	0	-3	-24	6	6	6	6	6	5	1	**36**	**864**
1984	808	808	808	808	808	820	827	850	848	832	814	801	47	40	17	19	35	53	66	1	1	2	2	1	1	1	**9**	12	7	23	-2	-16	-18	-13	6	6	6	5	2	2	3	**30**	**270**
1985	800	803	807	808	808	814	828	841	835	821	807	797	53	39	26	32	46	60	70	1	1	1	1	1	1	1	**7**	6	14	13	-6	-14	-14	-10	6	6	6	4	3	3	4	**32**	**224**
1986	798	800	806	808	808	820	839	859	867	855	841	830	47	28	8	0	12	26	37	1	1	4	6	3	1	1	**17**	12	19	20	8	-12	-14	-11	6	6	6	6	3	3	3	**33**	**561**
1987	808	807	807	807	808	810	818	821	811	795	782	773	57	49	46	56	72	85	94	1	1	1	1	1	1	1	**7**	2	8	3	-10	-16	-13	-9	6	6	6	4	2	3	4	**31**	**217**
1988	772	773	775	781	785	791	797	801	794	777	763	753	76	70	66	73	90	104	114	1	1	1	1	1	1	1	**7**	6	6	4	-7	-17	-14	-10	6	6	6	4	2	3	4	**31**	**217**
1989	751	750	753	754	759	775	797	808	804	789	775	766	92	70	59	63	78	92	101	1	1	1	1	1	1	1	**7**	16	22	11	-4	-15	-14	-9	6	6	6	5	3	3	4	**33**	**231**
1990	768	768	769	771	775	782	793	794	785	769	754	742	85	74	73	82	98	113	125	1	1	1	1	1	1	1	**7**	7	11	1	-9	-16	-15	-12	6	6	6	4	2	3	3	**30**	**210**
1991	740	739	738	738	737	758	763	784	797	784	770	761	109	104	83	70	83	97	106	1	1	1	1	1	1	1	**7**	21	5	21	13	-13	-14	-9	6	6	6	6	3	3	4	**34**	**238**
1992	760	761	762	764	777	782	798	803	793	779	766	756	85	69	64	74	88	101	111	1	1	1	1	1	1	1	**7**	5	16	5	-10	-14	-13	-10	6	6	6	4	3	3	4	**32**	**224**
1993	755	755	760	802	808	820	837	859	867	861	848	837	47	30	8	0	6	19	30	1	1	4	6	4	2	1	**19**	12	17	22	8	-6	-13	-11	6	6	6	6	4	3	3	**34**	**646**
1994	808	807	808	808	808	810	815	821	813	798	784	775	57	52	46	54	69	83	92	1	1	1	1	1	1	1	**7**	2	5	6	-8	-15	-14	-9	6	6	6	4	3	3	4	**32**	**224**

73 - year Average: 12

73 - year Average: 33 **386.7**

1929 - '34 Average: 288.0

Flow Alternative 6

STUDY: 1995C06F-SWRCB-485 DWRSIM: recirc818, 14 Apr 97
CP # 18, MILLERTON LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-485/18/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 576'

Difference from Maximum Reservoir Elevation [DFMRE]

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	491	505	527	547	549	566	559	576	576	562	518	491	10	17	0	0	14	58	85
1923	485	495	520	537	531	517	541	549	540	526	463	470	59	35	27	36	50	113	106
1924	483	494	508	522	516	503	506	511	505	478	464	468	73	70	65	71	98	112	108
1925	465	474	490	503	508	493	514	532	522	499	483	475	83	62	44	54	77	93	101
1926	477	490	505	519	522	508	549	563	535	494	473	485	68	27	13	41	82	103	91
1927	491	506	528	545	560	561	560	569	576	543	492	482	15	16	7	0	33	84	94
1928	482	503	525	542	540	543	551	554	522	477	465	477	33	25	22	54	99	111	99
1929	485	499	513	523	517	513	531	531	527	506	466	477	63	45	45	49	70	110	99
1930	480	495	507	518	514	510	525	534	518	489	466	482	66	51	42	58	87	110	94
1931	487	501	513	522	517	508	510	516	508	482	466	466	68	66	60	68	94	110	110
1932	467	476	503	520	543	531	524	532	552	518	492	477	45	52	44	24	58	84	99
1933	477	489	501	516	512	501	520	537	526	509	466	467	75	56	39	50	67	110	109
1934	470	480	500	517	511	503	516	527	523	498	477	486	73	60	49	53	78	99	90
1935	490	500	515	535	532	509	542	563	574	538	469	479	67	34	13	2	38	107	97
1936	486	502	518	533	560	558	564	576	563	521	472	478	18	12	0	13	55	104	98
1937	488	497	516	535	560	570	576	576	576	538	484	469	6	0	0	0	38	92	107
1938	472	486	533	560	560	542	529	467	572	576	532	520	34	47	109	4	0	44	56
1939	513	514	529	538	532	524	542	560	539	504	473	495	52	34	16	37	72	103	81
1940	495	504	517	550	550	552	548	561	553	512	466	471	24	28	15	23	64	110	105
1941	481	494	528	556	560	573	573	569	576	569	527	506	3	3	7	0	7	49	70
1942	497	507	532	552	549	553	554	562	576	555	509	477	23	22	14	0	21	67	99
1943	477	494	518	557	556	576	574	576	562	526	491	476	0	2	0	14	50	85	100
1944	479	491	508	521	524	507	516	517	501	494	490	480	69	60	59	75	82	86	96
1945	481	503	523	533	560	568	565	571	576	554	511	491	8	11	5	0	22	65	85
1946	485	502	531	548	528	524	536	559	546	510	478	480	52	40	17	30	66	98	96
1947	481	500	526	543	541	530	545	556	535	497	473	481	46	31	20	41	79	103	95
1948	488	503	518	529	523	530	556	551	541	483	480	484	46	20	25	35	93	96	92
1949	490	500	513	526	524	511	522	538	521	482	477	489	65	54	38	55	94	99	87
1950	492	503	519	536	541	524	534	551	539	506	476	482	52	42	25	37	70	100	94
1951	490	533	560	560	554	546	552	546	514	463	463	481	30	24	30	62	113	113	95
1952	488	500	530	559	560	567	559	526	576	571	525	508	9	17	50	0	5	51	68
1953	501	514	533	549	538	532	541	536	518	497	478	481	44	35	40	58	79	98	95
1954	488	497	514	532	532	527	537	560	544	507	465	483	49	39	16	32	69	111	93
1955	489	502	522	540	537	520	534	545	537	504	481	487	56	42	31	39	72	95	89
1956	491	499	560	560	560	576	576	561	576	566	524	505	0	0	15	0	10	52	71
1957	496	504	517	527	525	529	546	561	562	526	471	481	47	30	15	14	50	105	95
1958	488	501	525	545	554	565	576	576	576	557	516	498	11	0	0	0	19	60	78
1959	492	507	523	530	536	528	550	566	551	500	470	475	48	26	10	25	76	106	101
1960	474	475	480	490	503	498	515	525	509	496	483	481	78	61	51	67	80	93	95
1961	481	491	505	511	510	511	526	539	527	486	467	467	65	50	37	49	90	109	109
1962	468	471	484	492	538	529	527	555	569	540	489	476	47	49	21	7	36	87	100
1963	479	491	501	518	558	558	576	576	576	564	520	503	18	0	0	0	12	56	73
1964	490	517	542	551	547	544	553	561	551	508	476	484	32	23	15	25	68	100	92
1965	481	496	529	560	556	554	559	551	561	540	512	496	22	17	25	15	36	64	80
1966	487	513	546	558	541	526	545	564	550	506	486	486	50	31	12	26	70	90	90
1967	490	502	539	559	560	571	565	514	570	576	539	522	5	11	62	6	0	37	54
1968	515	521	539	545	545	539	550	554	539	506	478	482	37	26	22	37	70	98	94
1969	480	496	513	560	524	521	467	469	576	576	538	513	55	109	107	0	0	38	63
1970	498	516	540	560	560	554	554	555	544	517	476	477	22	22	21	32	59	100	99
1971	482	502	534	551	548	533	541	544	520	498	491	478	43	35	32	56	78	85	98
1972	479	491	519	536	532	524	537	543	540	497	481	481	52	39	33	36	79	95	95
1973	489	501	523	545	560	560	550	575	576	542	483	477	16	26	1	0	34	93	99
1974	487	510	545	560	544	550	559	570	573	537	490	473	26	17	6	3	39	86	103
1975	476	494	515	528	535	526	533	536	567	525	476	482	50	43	40	9	51	100	94
1976	489	511	531	541	539	544	547	542	519	492	479	494	32	29	34	57	84	97	82
1977	490	496	500	503	501	464	465	464	462	466	461	462	112	111	112	114	110	115	114
1978	462	462	484	532	560	552	510	498	576	576	548	539	24	66	78	0	0	28	37
1979	528	535	549	560	555	562	560	571	563	521	477	482	14	16	5	13	55	99	94
1980	489	488	508	560	560	558	566	550	576	576	542	513	18	10	26	0	0	34	63
1981	503	512	520	528	531	533	547	553	543	510	477	488	43	29	23	33	66	99	88
1982	491	504	536	560	560	576	546	561	576	576	546	541	0	30	15	0	0	30	35
1983	531	556	560	560	513	484	467	467	483	564	572	576	92	109	109	93	12	4	0
1984	560	560	560	560	560	568	570	570	557	530	487	483	8	6	6	19	46	89	93
1985	482	492	511	536	533	526	551	563	539	501	483	483	50	25	13	37	75	93	93
1986	490	508	534	554	550	552	574	565	576	558	503	479	24	2	11	0	18	73	97
1987	480	489	492	495	496	511	530	551	539	503	473	480	65	46	25	37	73	103	96
1988	482	495	507	526	516	527	539	547	527	498	483	486	49	37	29	49	78	93	90
1989	486	497	505	515	512	516	537	552	540	502	478	484	60	39	24	36	74	98	92
1990	489	495	502	510	510	517	532	544	525	508	479	483	59	44	32	51	68	97	93
1991	480	486	492	499	493	489	501	508	512	506	480	486	87	75	68	64	70	96	90
1992	485	490	494	498	499	490	493	494	480	470	465	466	86	83	82	96	106	111	110
1993	467	466	476	536	543	556	558	576	576	571	522	499	20	18	0	0	5	54	77
1994	490	497	507	512	508	520	534	548	528	498	478	484	56	42	28	48	78	98	92

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Fluct. MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	3	2	6	6	3	1	1	**22**	17	-7	17	0	-14	-44	-27	6	4	6	6	3	1	1	**27**	**594**
1923	1	1	1	1	1	1	1	**7**	-14	24	8	-9	-14	-63	7	3	6	6	4	3	1	6	**29**	**203**
1924	1	1	1	1	1	1	1	**7**	-13	3	5	-6	-27	-14	4	3	6	6	4	1	3	6	**29**	**203**
1925	1	1	1	1	1	1	1	**7**	-15	21	18	-10	-23	-16	-8	3	6	6	4	1	2	4	**26**	**182**
1926	1	1	3	1	1	1	1	**9**	-14	41	14	-28	-41	-21	12	3	6	6	1	1	1	6	**24**	**216**
1927	2	2	4	6	1	1	1	**17**	1	-1	9	7	-33	-51	-10	6	5	6	6	1	1	4	**29**	**493**
1928	1	1	1	1	1	1	1	**7**	3	8	3	-32	-45	-12	12	6	6	6	1	1	3	6	**29**	**203**
1929	1	1	1	1	1	1	1	**7**	-4	18	0	-4	-21	-40	11	5	6	6	5	1	1	6	**30**	**210**
1930	1	1	1	1	1	1	1	**7**	-4	15	9	-16	-29	-23	16	5	6	6	2	1	1	6	**27**	**189**
1931	1	1	1	1	1	1	1	**7**	-9	2	6	-8	-26	-16	0	4	6	6	4	1	2	6	**29**	**203**
1932	1	1	1	1	1	1	1	**7**	-12	-7	8	20	-34	-26	-15	3	4	6	6	1	1	3	**24**	**168**
1933	1	1	1	1	1	1	1	**7**	-11	19	17	-11	-17	-43	1	3	6	6	3	2	1	6	**27**	**189**
1934	1	1	1	1	1	1	1	**7**	-8	13	11	-4	-25	-21	9	4	6	6	5	1	1	6	**29**	**203**
1935	1	1	3	5	1	1	1	**13**	-23	33	21	11	-36	-69	10	1	6	6	6	1	1	6	**27**	**351**
1936	2	3	6	3	1	1	1	**17**	-2	6	12	-13	-42	-49	6	5	6	6	3	1	1	6	**28**	**476**
1937	4	6	6	6	1	1	1	**25**	10	6	0	0	-38	-54	-15	6	6	6	6	1	1	3	**29**	**725**
1938	1	1	1	5	6	1	1	**16**	-18	-13	-62	105	4	-44	-12	2	3	1	6	6	1	3	**22**	**352**
1939	1	1	2	1	1	1	1	**8**	-8	18	18	-21	-35	-31	22	4	6	6	1	1	1	6	**25**	**200**
1940	1	1	2	1	1	1	1	**8**	2	-4	13	-8	-41	-46	5	6	5	6	4	1	1	6	**29**	**232**
1941	5	5	4	6	4	1	1	**26**	13	0	-4	7	-7	-42	-21	6	6	5	6	4	1	1	**29**	**754**
1942	1	1	3	6	1	1	1	**14**	4	1	8	14	-21	-46	-32	6	6	6	6	1	1	1	**27**	**378**
1943	6	5	6	3	1	1	1	**23**	20	-2	2	-14	-36	-35	-15	6	5	6	3	1	1	3	**25**	**575**
1944	1	1	1	1	1	1	1	**7**	-17	9	1	-16	-7	-4	-10	2	6	6	2	4	5	4	**29**	**203**
1945	4	3	4	6	1	1	1	**20**	8	-3	6	5	-22	-43	-20	6	5	6	6	1	1	2	**27**	**540**
1946	1	1	2	1	1	1	1	**8**	-4	12	23	-13	-36	-32	2	5	6	6	3	1	1	6	**28**	**224**
1947	1	1	1	1	1	1	1	**7**	-11	15	11	-21	-38	-24	8	3	6	6	1	1	1	6	**24**	**168**
1948	1	1	1	1	1	1	1	**7**	7	26	-5	-10	-58	-3	4	6	6	5	4	1	5	6	**33**	**231**
1949	1	1	1	1	1	1	1	**7**	-13	11	16	-17	-39	-5	12	3	6	6	2	1	5	6	**29**	**203**
1950	1	1	1	1	1	1	1	**7**	-17	10	17	-12	-33	-30	6	2	6	6	3	1	1	6	**25**	**175**
1951	1	1	1	1	1	1	1	**7**	-8	6	-6	-32	-51	0	18	4	6	4	1	1	6	6	**28**	**196**
1952	4	2	1	6	4	1	1	**19**	7	-8	-33	50	-5	-46	-17	6	4	1	6	5	1	2	**25**	**475**
1953	1	1	1	1	1	1	1	**7**	-6	9	-5	-18	-21	-19	3	4	6	5	2	1	2	6	**26**	**182**
1954	1	1	2	1	1	1	1	**8**	-5	10	23	-16	-37	-42	18	5	6	6	2	1	1	6	**27**	**216**
1955	1	1	1	1	1	1	1	**7**	-17	14	11	-8	-33	-23	6	2	6	6	4	1	1	6	**26**	**182**
1956	6	6	2	6	3	1	1	**25**	16	0	-15	15	-10	-42	-19	6	6	3	6	4	1	2	**28**	**700**
1957	1	1	2	3	1	1	1	**10**	4	17	15	1	-36	-55	10	6	6	6	6	1	1	6	**32**	**320**
1958	3	6	6	6	2	1	1	**25**	11	11	0	0	-19	-41	-18	6	6	6	6	2	1	2	**29**	**725**
1959	1	1	3	1	1	1	1	**9**	-8	22	16	-15	-51	-30	5	4	6	6	3	1	1	6	**27**	**243**
1960	1	1	1	1	1	1	1	**7**	-5	17	10	-16	-13	-13	-2	5	6	6	2	3	3	5	**30**	**210**
1961	1	1	1	1	1	1	1	**7**	1	15	13	-12	-41	-19	0	6	6	6	3	1	2	6	**30**	**210**
1962	1	1	1	4	1	1	1	**10**	-9	-2	28	14	-29	-51	-13	4	5	6	6	1	1	3	**26**	**260**
1963	2	6	6	6	3	1	1	**25**	0	18	0	0	-12	-44	-17	6	6	6	6	3	1	2	**30**	**750**
1964	1	1	2	1	1	1	1	**8**	-3	9	8	-10	-43	-32	8	5	6	6	4	1	1	6	**29**	**232**
1965	1	2	1	2	1	1	1	**9**	-2	5	-8	10	-21	-28	-16	5	6	4	6	1	1	2	**25**	**225**
1966	1	1	3	1	1	1	1	**9**	-15	19	19	-14	-44	-20	0	3	6	6	3	1	2	6	**27**	**243**
1967	4	3	1	4	6	1	1	**20**	11	-6	-51	56	6	-37	-17	6	4	1	6	6	1	2	**26**	**520**
1968	1	1	1	1	1	1	1	**7**	-6	11	4	-15	-33	-28	4	4	6	6	3	1	1	6	**27**	**189**
1969	1	1	1	6	6	1	1	**17**	-3	-54	2	107	0	-38	-25	5	1	6	6	6	1	1	**26**	**442**
1970	1	1	1	1	1	1	1	**7**	-6	0	1	-11	-27	-41	1	4	6	6	3	1	1	6	**27**	**189**
1971	1	1	1	1	1	1	1	**7**	-15	8	3	-24	-22	-7	-13	3	6	6	1	1	4	3	**24**	**168**
1972	1	1	1	1	1	1	1	**7**	-8	13	6	-3	-43	-16	0	4	6	6	5	1	2	6	**30**	**210**
1973	2	1	5	6	1	1	1	**17**	0	-10	25	1	-34	-59	-6	6	4	6	6	1	1	4	**28**	**476**
1974	1	2	4	5	1	1	1	**15**	6	9	11	3	-36	-47	-17	6	6	6	6	1	1	2	**28**	**420**
1975	1	1	1	4	1	1	1	**10**	-9	7	3	31	-42	-49	6	4	6	6	6	1	1	6	**30**	**300**
1976	1	1	1	1	1	1	1	**7**	5	3	-5	-23	-27	-13	15	6	6	5	1	1	3	6	**28**	**196**
1977	1	1	1	1	1	1	1	**7**	-37	1	-1	-2	4	-5	1	1	6	5	5	6	5	6	**34**	**238**
1978	1	1	1	6	6	1	1	**17**	-8	-42	-12	78	0	-28	-9	4	1	3	6	6	1	4	**25**	**425**
1979	3	2	4	3	1	1	1	**15**	7	-2	11	-8	-42	-44	5	6	5	6	4	1	1	6	**29**	**435**
1980	2	3	1	6	6	1	1	**20**	-2	8	-16	26	0	-34	-29	5	6	2	6	6	1	1	**27**	**540**
1981	1	1	1	1	1	1	1	**7**	2	14	6	-10	-33	-33	11	6	6	6	4	1	1	6	**30**	**210**
1982	6	1	2	6	6	1	1	**23**	16	-30	15	15	0	-30	-5	6	1	6	6	6	1	5	**31**	**713**
1983	1	1	1	1	3	5	6	**18**	-29	-17	0	16	81	8	4	1	2	6	6	6	6	6	**33**	**594**
1984	4	4	4	2	1	1	1	**17**	8	2	0	-13	-27	-43	-4	6	6	6	3	1	1	5	**28**	**476**
1985	1	1	3	1	1	1	1	**9**	-7	25	12	-24	-38	-18	0	4	6	6	1	1	2	6	**26**	**234**
1986	1	5	3	6	2	1	1	**19**	2	22	-9	11	-18	-55	-24	6	6	4	6	2	1	1	**26**	**494**
1987	1	1	1	1	1	1	1	**7**	15	19	21	-12	-36	-30	7	6	6	6	3	1	1	6	**29**	**203**
1988	1	1	1	1	1	1	1	**7**	11	12	8	-20	-29	-15	3	6	6	6	2	1	3	6	**30**	**210**
1989	1	1	1	1	1	1	1	**7**	4	21	15	-12	-38	-24	6	6	6	6	3	1	1	6	**29**	**203**
1990	1	1	1	1	1	1	1	**7**	7	15	12	-19	-17	-29	4	6	6	6	2	2	1	6	**29**	**203**
1991	1	1	1	1	1	1	1	**7**	-4	12	7	4	-6	-26	6	5	6	6	6	4	1	6	**34**	**238**
1992	1	1	1	1	1	1	1	**7**	-9	3	1	-14	-10	-5	1	4	6	6	3	4	5	6	**34**	**238**
1993	1	2	6	6	4	1	1	**21**	13	2	18	0	-5	-49	-23	6	6	6	6	5	1	1	**31**	**651**
1994	1	1	1	1	1	1	1	**7**	12	14	14	-20	-30	-20	6	6	6	6	2	1	2	6	**29**	**203**
73 - year Average:								**12**															**28**	**329.2**
1929 - '34 Average:																								**193.7**

Flow Alternative 6

STUDY: 1995C06F-SWRCB-485 DWRSIM: recirc818-f, 18 Jun 97
CP # 12, SWP SAN LUIS RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-485/12/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 544'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	419	450	484	527	544	544	540	528	513	464	416	427	0	4	16	31	80	128	117
1923	459	486	505	542	544	544	535	501	462	436	412	408	0	9	43	82	108	132	136
1924	418	420	445	488	512	512	501	483	457	417	379	375	32	43	61	87	127	165	169
1925	372	383	431	464	512	526	517	485	451	424	362	359	18	27	59	93	120	182	185
1926	399	423	448	490	517	522	517	491	466	453	385	384	22	27	53	78	91	159	160
1927	391	434	474	521	544	544	536	513	467	439	407	411	0	8	31	77	105	137	133
1928	446	476	499	532	544	544	538	508	466	440	414	409	0	6	36	78	104	130	135
1929	436	461	484	527	544	544	536	521	497	465	433	430	0	8	23	47	79	111	114
1930	430	436	481	531	543	544	526	494	466	456	445	423	0	18	50	78	88	99	121
1931	430	434	435	476	488	491	481	465	450	418	371	370	53	63	79	94	126	173	174
1932	383	383	447	505	535	528	521	498	484	482	445	431	16	23	46	60	62	99	113
1933	447	455	456	500	520	528	523	509	480	444	401	401	16	21	35	64	100	143	143
1934	412	409	456	509	520	520	508	483	462	440	379	367	24	36	61	82	104	165	177
1935	373	376	401	466	474	510	518	489	445	416	341	352	34	26	55	99	128	203	192
1936	390	390	390	453	501	521	521	499	461	437	410	409	23	23	45	83	107	134	135
1937	438	467	495	533	544	544	544	541	512	462	414	412	0	0	3	32	82	130	132
1938	443	475	505	544	544	544	544	544	537	504	471	486	0	0	0	7	40	73	58
1939	513	529	538	544	544	544	526	491	460	447	437	418	0	18	53	84	97	107	126
1940	420	417	411	477	517	537	532	504	449	414	344	346	7	12	40	95	130	200	198
1941	384	415	449	501	533	544	543	540	526	477	437	456	0	1	4	18	67	107	88
1942	487	503	529	544	544	544	540	531	523	477	438	455	0	4	13	21	67	106	89
1943	485	500	523	544	544	544	544	544	512	466	417	426	0	0	0	32	78	127	118
1944	458	489	504	539	544	544	525	491	458	441	422	413	0	19	53	86	103	122	131
1945	417	454	488	523	544	544	533	504	469	446	412	411	0	11	40	75	98	132	133
1946	444	475	503	542	544	544	525	493	447	413	409	410	0	19	51	97	131	135	134
1947	437	466	494	523	544	544	520	479	440	418	408	408	0	24	65	104	126	136	136
1948	411	416	416	468	485	509	508	480	442	413	338	348	35	36	64	102	131	206	196
1949	383	412	445	492	514	542	520	487	451	429	410	408	2	24	57	93	115	134	136
1950	435	463	470	519	544	544	529	495	464	446	415	405	0	15	49	80	98	129	139
1951	426	459	496	532	544	544	520	485	432	404	398	400	0	24	59	112	140	146	144
1952	422	452	480	518	544	544	544	544	536	511	492	499	0	0	0	8	33	52	45
1953	518	532	538	544	544	544	524	501	473	450	422	439	0	20	43	71	94	122	105
1954	470	488	510	541	544	544	534	508	457	426	402	403	0	10	36	87	118	142	141
1955	428	457	485	521	533	539	518	487	460	452	418	418	5	26	57	84	92	126	126
1956	419	431	475	513	544	544	531	521	500	468	426	436	0	13	23	44	76	118	108
1957	463	488	498	529	544	544	526	493	451	426	418	421	0	18	51	93	118	126	123
1958	451	480	503	536	544	544	544	544	536	500	481	495	0	0	0	8	44	63	49
1959	508	529	538	544	544	544	519	479	440	419	409	408	0	25	65	104	125	135	136
1960	439	469	471	515	544	544	524	488	455	432	370	358	0	20	56	89	112	174	186
1961	395	424	460	503	529	540	516	476	444	428	417	402	4	28	68	100	116	127	142
1962	433	460	493	523	544	544	520	480	427	386	331	339	0	24	64	117	158	213	205
1963	375	408	437	483	518	535	531	513	477	449	411	419	9	13	31	67	95	133	125
1964	451	479	493	525	536	543	516	474	433	409	389	394	1	28	70	111	135	155	150
1965	397	428	465	516	542	544	544	526	492	465	422	429	0	0	18	52	79	122	115
1966	459	488	506	544	544	544	520	480	433	402	399	404	0	24	64	111	142	145	140
1967	432	462	496	530	544	544	544	544	537	525	506	509	0	0	0	7	19	38	35
1968	523	533	538	544	544	544	523	484	445	424	410	417	0	21	60	99	120	134	127
1969	445	473	505	543	544	544	544	544	537	517	489	503	0	0	0	7	27	55	41
1970	517	530	538	544	544	544	528	494	451	429	411	416	0	16	50	93	115	133	128
1971	444	476	507	535	544	544	525	499	461	431	416	428	0	19	45	83	113	128	116
1972	456	483	496	528	544	544	517	475	433	408	403	404	0	27	69	111	136	141	140
1973	426	458	489	522	544	544	537	514	476	446	411	414	0	7	30	68	98	133	130
1974	445	473	496	535	544	544	542	528	496	467	442	454	0	2	16	48	77	102	90
1975	478	494	514	544	544	544	539	517	491	459	429	439	0	5	27	53	85	115	105
1976	466	486	502	533	544	544	525	495	473	467	448	429	0	19	49	71	77	96	115
1977	430	436	438	456	456	456	457	446	429	408	402	418	88	87	98	115	136	142	126
1978	424	442	491	538	544	544	544	544	526	469	413	433	0	0	0	18	75	131	111
1979	466	488	506	544	544	544	537	512	479	459	409	413	0	7	32	65	85	135	131
1980	448	480	503	544	544	544	544	544	527	493	454	471	0	0	0	17	51	90	73
1981	502	524	538	544	544	544	526	487	449	428	411	411	0	18	57	95	116	133	133
1982	436	469	502	537	544	544	544	544	531	494	462	471	0	0	0	13	50	82	73
1983	496	515	536	544	544	544	544	544	537	527	514	521	0	0	0	7	17	30	23
1984	536	544	544	544	544	544	527	493	453	434	410	415	0	17	51	91	110	134	129
1985	451	482	502	534	544	544	519	478	432	403	376	378	0	25	66	112	141	168	166
1986	379	385	424	479	516	531	543	544	533	493	463	473	13	1	0	11	51	81	71
1987	502	514	538	544	544	544	523	485	455	441	427	412	0	21	59	89	103	117	132
1988	418	414	453	503	517	517	505	488	476	460	426	424	27	39	56	68	84	118	120
1989	420	437	458	496	496	527	515	482	449	436	385	391	17	29	62	95	108	159	153
1990	406	424	440	486	508	513	497	466	450	447	393	383	31	47	78	94	97	151	161
1991	383	389	389	405	405	470	471	460	443	420	404	406	74	73	84	101	124	140	138
1992	409	423	438	484	517	540	531	510	494	461	420	413	4	13	34	50	83	124	131
1993	413	420	467	521	531	544	526	512	496	460	407	415	0	18	32	48	84	137	129
1994	450	480	495	529	544	544	521	485	454	441	432	416	0	23	59	90	103	112	128

YEAR	Elev. Score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Fluct. MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. Score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	6	5	2	1	1	1	1	**17**	0	-4	-12	-15	-49	-48	11	6	5	3	3	1	1	6	**25**	425
1923	6	4	1	1	1	1	1	**15**	0	-9	-34	-39	-26	-24	-4	6	4	1	1	1	1	5	**19**	285
1924	1	1	1	1	1	1	1	**7**	0	-11	-18	-26	-40	-38	-4	6	3	2	1	1	1	5	**19**	133
1925	2	1	1	1	1	1	1	**8**	14	-9	-32	-34	-27	-62	-3	6	4	1	1	1	1	5	**19**	152
1926	1	1	1	1	1	1	1	**7**	5	-5	-26	-25	-13	-68	-1	6	5	1	1	3	1	5	**22**	154
1927	6	4	1	1	1	1	1	**15**	0	-8	-23	-46	-28	-32	4	6	4	1	1	1	1	6	**20**	300
1928	6	4	1	1	1	1	1	**15**	0	-6	-30	-42	-26	-26	-5	6	4	1	1	1	1	5	**19**	285
1929	6	4	1	1	1	1	1	**15**	0	-8	-15	-24	-32	-32	-3	6	4	3	1	1	1	5	**21**	315
1930	6	2	1	1	1	1	1	**13**	1	-18	-32	-28	-10	-11	-22	6	2	1	1	4	3	1	**18**	234
1931	1	1	1	1	1	1	1	**7**	3	-10	-16	-15	-32	-47	-1	6	4	2	3	1	1	5	**22**	154
1932	2	1	1	1	1	1	1	**8**	-7	-7	-23	-14	-2	-37	-14	4	4	1	3	5	1	3	**21**	168
1933	2	1	1	1	1	1	1	**8**	8	-5	-14	-29	-36	-43	0	6	5	3	1	1	1	6	**23**	184
1934	1	1	1	1	1	1	1	**7**	0	-12	-25	-21	-22	-61	-12	6	3	1	1	1	1	3	**16**	112
1935	1	1	1	1	1	1	1	**7**	36	8	-29	-44	-29	-75	11	6	6	1	1	1	1	6	**22**	154
1936	1	1	1	1	1	1	1	**7**	20	0	-22	-38	-24	-27	-1	6	6	1	1	1	1	5	**21**	147
1937	6	6	5	1	1	1	1	**21**	0	0	-3	-29	-50	-48	-2	6	6	5	1	1	1	5	**25**	525
1938	6	6	6	4	1	1	1	**25**	0	0	0	-7	-33	-33	15	6	6	6	4	1	1	6	**30**	750
1939	6	2	1	1	1	1	1	**13**	0	-18	-35	-31	-13	-10	-19	6	2	1	1	3	4	2	**19**	247
1940	4	3	1	1	1	1	1	**12**	20	-5	-28	-55	-35	-70	2	6	5	1	1	1	1	6	**21**	252
1941	6	5	5	2	1	1	1	**21**	11	-1	-3	-14	-49	-40	19	6	5	5	3	1	1	6	**27**	567
1942	6	5	3	1	1	1	1	**18**	0	-4	-9	-8	-46	-39	17	6	5	4	4	1	1	6	**27**	486
1943	6	6	6	1	1	1	1	**22**	0	0	0	-32	-46	-49	9	6	6	6	1	1	1	6	**27**	594
1944	6	2	1	1	1	1	1	**13**	0	-19	-34	-33	-17	-19	-9	6	2	1	1	2	2	4	**18**	234
1945	6	3	1	1	1	1	1	**14**	0	-11	-29	-35	-23	-34	-1	6	3	1	1	1	1	5	**18**	252
1946	6	2	1	1	1	1	1	**13**	0	-19	-32	-46	-34	-4	1	6	2	1	1	1	5	6	**22**	286
1947	6	1	1	1	1	1	1	**12**	0	-24	-41	-39	-22	-10	0	6	1	1	1	1	4	6	**20**	240
1948	1	1	1	1	1	1	1	**7**	24	-1	-28	-38	-29	-75	10	6	5	1	1	1	1	6	**21**	147
1949	5	1	1	1	1	1	1	**11**	28	-22	-33	-36	-22	-19	-2	6	1	1	1	1	2	5	**17**	187
1950	6	2	1	1	1	1	1	**13**	0	-15	-34	-31	-18	-31	-10	6	3	1	1	2	1	4	**18**	234
1951	6	1	1	1	1	1	1	**12**	0	-24	-35	-53	-28	-6	2	6	1	1	1	1	4	6	**20**	240
1952	6	6	6	4	1	1	1	**25**	0	0	0	-8	-25	-19	7	6	6	6	4	1	2	6	**31**	775
1953	6	1	1	1	1	1	1	**12**	0	-20	-23	-28	-23	-28	17	6	2	1	1	1	1	6	**18**	216
1954	6	3	1	1	1	1	1	**14**	0	-10	-26	-51	-31	-24	1	6	4	1	1	1	1	6	**20**	280
1955	4	1	1	1	1	1	1	**10**	6	-21	-31	-27	-8	-34	0	6	1	1	1	4	1	6	**20**	200
1956	6	3	1	1	1	1	1	**14**	0	-13	-10	-21	-32	-42	10	6	3	4	1	1	1	6	**22**	308
1957	6	2	1	1	1	1	1	**13**	0	-18	-33	-42	-25	-8	3	6	2	1	1	1	4	6	**21**	273
1958	6	6	6	4	1	1	1	**25**	0	0	0	-8	-36	-19	14	6	6	6	4	1	2	6	**31**	775
1959	6	1	1	1	1	1	1	**12**	0	-25	-40	-39	-21	-10	-1	6	1	1	1	1	4	5	**19**	228
1960	6	1	1	1	1	1	1	**12**	0	-20	-36	-33	-23	-62	-12	6	2	1	1	1	1	3	**15**	180
1961	5	1	1	1	1	1	1	**11**	11	-24	-40	-32	-16	-11	-15	6	1	1	1	2	3	3	**17**	187
1962	6	1	1	1	1	1	1	**12**	0	-24	-40	-53	-41	-55	8	6	1	1	1	1	1	6	**17**	204
1963	4	3	1	1	1	1	1	**12**	17	-4	-18	-36	-28	-38	8	6	5	2	1	1	1	6	**22**	264
1964	5	1	1	1	1	1	1	**11**	7	-27	-42	-41	-24	-20	5	6	1	1	1	1	2	6	**18**	198
1965	6	6	2	1	1	1	1	**18**	2	0	-18	-34	-27	-43	7	6	6	2	1	1	1	6	**23**	414
1966	6	1	1	1	1	1	1	**12**	0	-24	-40	-47	-31	-3	5	6	1	1	1	1	5	6	**21**	252
1967	6	6	6	4	2	1	1	**26**	0	0	0	-7	-12	-19	3	6	6	6	4	3	2	6	**33**	858
1968	6	1	1	1	1	1	1	**12**	0	-21	-39	-39	-21	-14	7	6	1	1	1	1	3	6	**19**	228
1969	6	6	6	4	1	1	1	**25**	0	0	0	-7	-20	-28	14	6	6	6	4	2	1	6	**31**	775
1970	6	2	1	1	1	1	1	**13**	0	-16	-34	-43	-22	-18	5	6	2	1	1	1	2	6	**19**	247
1971	6	2	1	1	1	1	1	**13**	0	-19	-26	-38	-30	-15	12	6	2	1	1	1	3	6	**20**	260
1972	6	1	1	1	1	1	1	**12**	0	-27	-42	-42	-25	-5	1	6	1	1	1	1	5	6	**21**	252
1973	6	4	1	1	1	1	1	**15**	0	-7	-23	-38	-30	-35	3	6	4	1	1	1	1	6	**20**	300
1974	6	5	2	1	1	1	1	**17**	0	-2	-14	-32	-29	-25	12	6	5	3	1	1	1	6	**23**	391
1975	6	4	1	1	1	1	1	**15**	0	-5	-22	-26	-32	-30	10	6	5	1	1	1	1	6	**21**	315
1976	6	2	1	1	1	1	1	**13**	0	-19	-30	-22	-6	-19	-19	6	2	1	1	4	2	2	**18**	234
1977	1	1	1	1	1	1	1	**7**	0	1	-11	-17	-21	-6	16	6	6	3	2	1	4	6	**28**	196
1978	6	6	6	2	1	1	1	**23**	0	0	0	-18	-57	-56	20	6	6	6	2	1	1	6	**28**	644
1979	6	4	1	1	1	1	1	**15**	0	-7	-25	-33	-20	-50	4	6	4	1	1	2	1	6	**21**	315
1980	6	6	6	2	1	1	1	**23**	0	0	0	-17	-34	-39	17	6	6	6	2	1	1	6	**28**	644
1981	6	2	1	1	1	1	1	**13**	0	-18	-39	-38	-21	-17	0	6	2	1	1	1	2	6	**19**	247
1982	6	6	6	3	1	1	1	**24**	0	0	0	-13	-37	-32	9	6	6	6	3	1	1	6	**29**	696
1983	6	6	6	4	2	1	1	**26**	0	0	0	-7	-10	-13	7	6	6	6	4	4	3	6	**35**	910
1984	6	2	1	1	1	1	1	**13**	0	-17	-34	-40	-19	-24	5	6	2	1	1	2	1	6	**19**	247
1985	6	1	1	1	1	1	1	**12**	0	-25	-41	-46	-29	-27	2	6	1	1	1	1	1	6	**17**	204
1986	3	5	6	3	1	1	1	**20**	15	12	1	-11	-40	-30	10	6	6	6	3	1	1	6	**29**	580
1987	6	1	1	1	1	1	1	**12**	0	-21	-38	-30	-14	-14	-15	6	1	1	1	3	3	3	**18**	216
1988	1	1	1	1	1	1	1	**7**	0	-12	-17	-12	-16	-34	-2	6	3	2	3	2	1	5	**22**	154
1989	2	1	1	1	1	1	1	**8**	31	-12	-33	-33	-13	-51	6	6	3	1	1	3	1	6	**21**	168
1990	1	1	1	1	1	1	1	**7**	5	-16	-31	-16	-3	-54	-10	6	2	1	2	5	1	4	**21**	147
1991	1	1	1	1	1	1	1	**7**	65	1	-11	-17	-23	-16	2	6	6	3	2	1	2	6	**26**	182
1992	5	3	1	1	1	1	1	**13**	23	-9	-21	-16	-33	-41	-7	6	4	1	2	1	1	4	**19**	247
1993	6	2	1	1	1	1	1	**13**	13	-18	-14	-16	-36	-53	8	6	2	3	2	1	1	6	**21**	273
1994	6	1	1	1	1	1	1	**12**	0	-23	-36	-31	-13	-9	-16	6	1	1	1	3	4	2	**18**	216

73 - year Average: 14 (Reservoir Elevation SUM)

73 - year Average: 22 (Reservoir Fluctuation SUM) **319.8** (Product)

1929 - '34 Average: 194.5

STUDY: 1995C06F-SWRCB-519A DWRSIM: recirc818-h, 03 Sep 97
CP # 4, CVP SHASTA LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-519A/4/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 1067'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	989	993	999	1,003	1,019	1,038	1,060	1,067	1,062	1,047	1,031	1,024	29	7	0	5	20	36	43	1	4	6	4	1	1	1	**18**	19	22	7	-5	-15	-16	-7	6	6	6	5	3	2	4	**32**	**576**
1923	1,022	1,017	1,019	1,023	1,021	1,021	1,034	1,029	1,015	996	977	976	46	33	38	52	71	90	91	1	1	1	1	1	1	1	**7**	0	13	-5	-14	-19	-19	-1	6	6	5	3	2	2	5	**29**	**203**
1924	977	977	977	978	985	986	974	961	942	920	902	886	81	93	106	125	147	165	181	1	1	1	1	1	1	1	**7**	1	-12	-13	-19	-22	-18	-16	6	3	3	2	1	2	2	**19**	**133**
1925	890	904	912	922	995	1,000	1,033	1,044	1,034	1,014	1,000	996	67	34	23	33	53	67	71	1	1	1	1	1	1	1	**7**	5	33	11	-10	-20	-14	-4	6	6	6	4	2	3	5	**32**	**224**
1926	995	995	993	992	1,020	1,023	1,038	1,031	1,005	985	964	957	44	29	36	62	82	103	110	1	1	1	1	1	1	1	**7**	3	15	-7	-26	-20	-21	-7	6	6	4	1	2	1	4	**24**	**168**
1927	956	984	1,007	1,032	1,026	1,052	1,067	1,067	1,058	1,041	1,025	1,019	15	0	0	9	26	42	48	2	6	6	4	1	1	1	**21**	26	15	0	-9	-17	-16	-6	6	6	6	4	2	2	4	**30**	**630**
1928	1,017	1,017	1,020	1,028	1,044	1,046	1,066	1,063	1,042	1,016	994	988	21	1	4	25	51	73	79	1	5	5	1	1	1	1	**15**	2	20	-3	-21	-26	-22	-6	6	6	5	1	1	1	4	**24**	**360**
1929	987	988	990	991	998	1,004	1,005	1,001	994	978	960	953	63	62	66	73	89	107	114	1	1	1	1	1	1	1	**7**	6	1	-4	-7	-16	-18	-7	6	6	5	4	2	2	4	**29**	**203**
1930	951	951	982	992	1,009	1,031	1,041	1,040	1,020	1,000	985	982	36	26	27	47	67	82	85	1	1	1	1	1	1	1	**7**	22	10	-1	-20	-20	-15	-3	6	6	5	2	2	3	5	**29**	**203**
1931	980	979	977	979	982	989	981	972	963	945	932	918	78	86	95	104	122	135	149	1	1	1	1	1	1	1	**7**	7	-8	-9	-9	-18	-13	-14	6	4	4	4	2	3	3	**26**	**182**
1932	913	913	928	939	947	972	975	983	976	962	948	941	95	92	84	91	105	119	126	1	1	1	1	1	1	1	**7**	25	3	8	-7	-14	-14	-7	6	6	6	4	3	3	4	**32**	**224**
1933	940	941	941	943	946	979	984	988	984	969	955	948	88	83	79	83	98	112	119	1	1	1	1	1	1	1	**7**	33	5	4	-4	-15	-14	-7	6	6	6	5	3	3	4	**33**	**231**
1934	947	946	955	972	990	1,001	999	994	985	953	930	915	66	68	73	82	114	137	152	1	1	1	1	1	1	1	**7**	11	-2	-5	-9	-32	-23	-15	6	5	5	4	1	1	3	**25**	**175**
1935	910	921	926	946	966	989	1,033	1,040	1,033	1,015	1,001	995	78	34	27	34	52	66	72	1	1	1	1	1	1	1	**7**	23	44	7	-7	-18	-14	-6	6	6	6	4	2	3	4	**31**	**217**
1936	992	988	986	1,010	1,032	1,043	1,052	1,050	1,043	1,022	1,002	997	24	15	17	24	45	65	70	1	2	2	1	1	1	1	**9**	11	9	-2	-7	-21	-20	-5	6	6	5	4	1	2	5	**29**	**261**
1937	993	989	984	979	980	1,007	1,036	1,044	1,041	1,021	1,002	995	60	31	23	26	46	65	72	1	1	1	1	1	1	1	**7**	27	29	8	-3	-20	-19	-7	6	6	6	5	2	2	4	**31**	**217**
1938	992	1,013	1,020	1,035	1,030	1,024	1,049	1,067	1,067	1,058	1,045	1,036	43	18	0	0	9	22	31	1	2	6	6	4	1	1	**21**	-6	25	18	0	-9	-13	-9	4	6	6	6	4	3	4	**33**	**693**
1939	1,023	1,017	1,020	1,022	1,024	1,039	1,029	1,022	995	968	938	933	28	38	45	72	99	129	134	1	1	1	1	1	1	1	**7**	15	-10	-7	-27	-27	-30	-5	6	4	4	1	1	1	5	**22**	**154**
1940	928	922	933	985	1,017	1,025	1,059	1,064	1,054	1,033	1,015	1,013	42	8	3	13	34	52	54	1	4	5	3	1	1	1	**16**	8	34	5	-10	-21	-18	-2	6	6	6	4	1	2	5	**30**	**480**
1941	1,012	1,011	1,019	1,020	1,024	1,045	1,064	1,067	1,067	1,058	1,047	1,036	22	3	0	0	9	20	31	1	5	6	6	4	1	1	**24**	21	19	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1942	1,023	1,017	1,020	1,023	1,028	1,042	1,067	1,067	1,067	1,058	1,045	1,036	25	0	0	0	9	22	31	1	6	6	6	4	1	1	**25**	14	25	0	0	-9	-13	-9	6	6	6	6	4	3	4	**35**	**875**
1943	1,023	1,017	1,022	1,030	1,042	1,051	1,067	1,067	1,059	1,044	1,028	1,023	16	0	0	8	23	39	44	2	6	6	4	1	1	1	**21**	9	16	0	-8	-15	-16	-5	6	6	6	4	3	2	5	**32**	**672**
1944	1,021	1,017	1,015	1,014	1,023	1,033	1,038	1,038	1,017	993	971	963	34	29	29	50	74	96	104	1	1	1	1	1	1	1	**7**	10	5	0	-21	-24	-22	-8	6	6	6	1	1	1	4	**25**	**175**
1945	965	978	993	1,002	1,037	1,050	1,062	1,067	1,061	1,039	1,021	1,016	17	5	0	6	28	46	51	2	4	6	4	1	1	1	**19**	13	12	5	-6	-22	-18	-5	6	6	6	4	1	2	5	**30**	**570**
1946	1,015	1,017	1,018	1,033	1,039	1,050	1,062	1,064	1,051	1,032	1,015	1,011	17	5	3	16	35	52	56	2	4	5	2	1	1	1	**16**	11	12	2	-13	-19	-17	-4	6	6	6	3	2	2	5	**30**	**480**
1947	1,008	1,008	1,009	1,005	1,012	1,032	1,039	1,028	1,013	990	969	960	35	28	39	54	77	98	107	1	1	1	1	1	1	1	**7**	20	7	-11	-15	-23	-21	-9	6	6	3	3	1	1	4	**24**	**168**
1948	967	971	974	1,001	1,000	1,012	1,053	1,067	1,066	1,050	1,033	1,033	55	14	0	1	17	34	34	1	3	6	5	2	1	1	**19**	12	41	14	-1	-16	-17	0	6	6	6	5	2	2	6	**33**	**627**
1949	1,023	1,017	1,016	1,012	1,016	1,050	1,063	1,065	1,045	1,022	1,004	1,000	17	4	2	22	45	63	67	2	5	5	1	1	1	1	**16**	34	13	2	-20	-23	-18	-4	6	6	6	2	1	2	5	**28**	**448**
1950	997	994	992	1,000	1,015	1,033	1,048	1,047	1,034	1,013	995	993	34	19	20	33	54	72	74	1	2	1	1	1	1	1	**8**	18	15	-1	-13	-21	-18	-2	6	6	5	3	1	2	5	**28**	**224**
1951	1,006	1,017	1,020	1,033	1,040	1,057	1,061	1,067	1,051	1,029	1,011	1,009	10	6	0	16	38	56	58	3	4	6	2	1	1	1	**18**	17	4	6	-16	-22	-18	-2	6	6	6	2	1	2	5	**28**	**504**
1952	1,007	1,012	1,019	1,032	1,038	1,048	1,058	1,067	1,067	1,058	1,046	1,036	19	9	0	0	9	21	31	2	4	6	6	4	1	1	**24**	10	10	9	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**840**
1953	1,023	1,017	1,021	1,022	1,033	1,051	1,065	1,067	1,067	1,057	1,046	1,036	16	2	0	0	10	21	31	2	5	6	6	3	1	1	**24**	18	14	2	0	-10	-11	-10	6	6	6	6	4	3	4	**35**	**840**
1954	1,023	1,017	1,021	1,030	1,035	1,051	1,067	1,064	1,053	1,034	1,019	1,018	16	0	3	14	33	48	49	2	6	5	3	1	1	1	**19**	16	16	-3	-11	-19	-15	-1	6	6	5	3	2	3	5	**30**	**570**
1955	1,017	1,017	1,022	1,024	1,027	1,026	1,039	1,047	1,026	1,002	985	985	41	28	20	41	65	82	82	1	1	1	1	1	1	1	**7**	-1	13	8	-21	-24	-17	0	5	6	6	1	1	2	6	**27**	**189**
1956	983	987	1,017	1,017	1,019	1,048	1,067	1,067	1,067	1,058	1,047	1,036	19	0	0	0	9	20	31	2	6	6	6	4	1	1	**26**	29	19	0	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**884**
1957	1,023	1,017	1,016	1,017	1,035	1,052	1,055	1,067	1,058	1,040	1,024	1,027	15	12	0	9	27	43	40	2	3	6	4	1	1	1	**18**	17	3	12	-9	-18	-16	3	6	6	6	4	2	2	6	**32**	**576**
1958	1,023	1,017	1,021	1,029	1,067	1,024	1,053	1,067	1,067	1,058	1,047	1,036	43	14	0	0	9	20	31	1	3	6	6	4	1	1	**22**	-43	29	14	0	-9	-11	-11	1	6	6	6	4	3	3	**29**	**638**
1959	1,023	1,017	1,017	1,034	1,039	1,050	1,053	1,052	1,031	1,005	988	992	17	14	15	36	62	79	75	2	3	2	1	1	1	1	**11**	11	3	-1	-21	-26	-17	4	6	6	5	1	1	2	6	**27**	**297**
1960	990	988	986	993	1,022	1,050	1,057	1,065	1,046	1,025	1,006	1,002	17	10	2	21	42	61	65	2	3	5	1	1	1	1	**14**	28	7	8	-19	-21	-19	-4	6	6	6	2	1	2	5	**28**	**392**
1961	998	1,001	1,017	1,022	1,044	1,057	1,065	1,067	1,049	1,025	1,003	1,000	10	2	0	18	42	64	67	3	5	6	2	1	1	1	**19**	13	8	2	-18	-24	-22	-3	6	6	6	2	1	1	5	**27**	**513**
1962	997	1,000	1,012	1,014	1,035	1,051	1,060	1,062	1,048	1,026	1,008	1,005	16	7	5	19	41	59	62	2	4	4	2	1	1	1	**15**	16	9	2	-14	-22	-18	-3	6	6	6	3	1	2	5	**29**	**435**
1963	1,023	1,017	1,021	1,026	1,045	1,055	1,052	1,067	1,062	1,052	1,039	1,036	12	15	0	5	15	28	31	3	2	6	4	2	1	1	**19**	10	-3	15	-5	-10	-13	-3	6	5	6	5	4	3	5	**34**	**646**
1964	1,023	1,017	1,018	1,033	1,034	1,033	1,027	1,022	1,005	986	960	960	34	40	45	62	81	107	107	1	1	1	1	1	1	1	**7**	-1	-6	-5	-17	-19	-26	0	5	4	5	2	2	1	6	**25**	**175**
1965	959	969	1,017	1,022	1,041	1,053	1,065	1,066	1,056	1,040	1,030	1,028	14	2	1	11	27	37	39	3	5	5	3	1	1	1	**19**	12	12	1	-10	-16	-10	-2	6	6	6	4	2	4	5	**33**	**627**
1966	1,023	1,017	1,021	1,037	1,049	1,055	1,067	1,065	1,045	1,025	1,008	1,005	12	0	2	22	42	59	62	3	6	5	1	1	1	1	**18**	6	12	-2	-20	-20	-17	-3	6	6	5	2	2	2	5	**28**	**504**
1967	1,000	1,014	1,021	1,030	1,044	1,048	1,064	1,067	1,067	1,058	1,047	1,036	19	3	0	0	9	20	31	2	5	6	6	4	1	1	**25**	4	16	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1968	1,023	1,017	1,019	1,025	1,034	1,054	1,053	1,055	1,036	1,013	1,004	1,003	13	14	12	31	54	63	64	3	3	3	1	1	1	1	**13**	20	-1	2	-19	-23	-9	-1	6	5	6	2	1	4	5	**29**	**377**
1969	1,003	1,005	1,017	1,022	1,027	1,048	1,063	1,067	1,067	1,058	1,047	1,036	19	4	0	0	9	20	31	2	5	6	6	4	1	1	**25**	21	15	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1970	1,023	1,017	1,020	1,017	1,025	1,052	1,052	1,052	1,039	1,018	1,004	1,002	15	15	15	28	49	63	65	2	2	2	1	1	1	1	**10**	27	0	0	-13	-21	-14	-2	6	6	6	3	1	3	5	**30**	**300**
1971	1,003	1,017	1,020	1,028	1,041	1,043	1,058	1,067	1,067	1,058	1,047	1,036	24	9	0	0	9	20	31	1	4	6	6	4	1	1	**23**	2	15	9	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**782**
1972	1,023	1,017	1,022	1,033	1,045	1,056	1,064	1,066	1,047	1,025	1,010	1,011	11	3	1	20	42	57	56	3	5	5	1	1	1	1	**17**	11	8	2	-19	-22	-15	1	6	6	6	2	1	3	6	**30**	**510**
1973	1,012	1,017	1,021	1,030	1,034	1,053	1,065	1,067	1,059	1,042	1,030	1,029	14	2	0	8	25	37	38	3	5	6	4	1	1	1	**21**	19	12	2	-8	-17	-12	-1	6	6	6	4	2	3	5	**32**	**672**
1974	1,023	1,017	1,018	1,017	1,036	1,025	1,058	1,067	1,067	1,058	1,047	1,036	42	9	0	0	9	20	31	1	4	6	6	4	1	1	**23**	-11	33	9	0	-9	-11	-11	3	6	6	6	4	3	3	**31**	**713**
1975	1,023	1,017	1,021	1,024	1,045	1,039	1,061	1,067	1,067	1,058	1,047	1,036	28	6	0	0	9	20	31	1	4	6	6	4	1	1	**23**	-6	22	6	0	-9	-11	-11	4	6	6	6	4	3	3	**32**	**736**
1976	1,023	1,017	1,018	1,017	1,012	1,017	1,024	1,021	996	974	969	971	50	43	46	71	93	98	96	1	1	1	1	1	1	1	**7**	5	7	-3	-25	-22	-5	2	6	6	5	1	1	5	6	**30**	**210**
1977	973	974	974	976	966	967	949	943	920	901	882	879	100	118	124	147	166	185	188	1	1	1	1	1	1	1	**7**	1	-18	-6	-23	-19	-19	-3	6	2	4	1	2	2	5	**22**	**154**
1978	868	867	912	1,017	1,031	1,047	1,067	1,067	1,064	1,054	1,045	1,036	20	0	0	3	13	22	31	1	6	6	5	3	1	1	**23**	16	20	0	-3	-10	-9	-9	6	6	6	5	4	4	4	**35**	**805**
1979	1,023	1,017	1,015	1,018	1,029	1,046	1,053	1,061	1,046	1,027	1,014	1,012	21	14	6	21	40	53	55	1	3	4	1	1	1	1	**12**	17	7	8	-15	-19	-13	-2	6	6	6	3	2	3	5	**31**	**372**
1980	1,012	1,015	1,017	1,029	1,019	1,046	1,059	1,064	1,055	1,045	1,034	1,035	21	8	3	12	22	33	32	1	4	5	3	1	1	1	**16**	27	13	5	-9	-10	-11	1	6	6	6	4	4	3	6	**35**	**560**
1981	1,023	1,017	1,020	1,029	1,042	1,056	1,061	1,059	1,037	1,011	994	992	11	6	8	30	56	73	75	3	4	4	1	1	1	1	**15**	14	5	-2	-22	-26	-17	-2	6	6	5	1	1	2	5	**26**	**390**
1982	993	1,017	1,018	1,033	1,029	1,046	1,051	1,067	1,067	1,058	1,047	1,036	21	16	0	0	9	20	31	1	2	6	6	4	1	1	**21**	17	5	16	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1983	1,023	1,017	1,020	1,022	1,017	1,045	1,050	1,067	1,067	1,058	1,047	1,036	22	17	0	0	9	20	31	1	2	6	6	4	1	1	**21**	28	5	17	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1984	1,023	1,017	1,018	1,034	1,047	1,056	1,061	1,067	1,058	1,041	1,035	1,036	11	6	0	9	26	32	31	3	4	6	4	1	1	1	**20**	9	5	6	-9	-17	-6	1	6	6	6	4	2	4	6	**34**	**680**
1985	1,023	1,017	1,022	1,023	1,027	1,034	1,042	1,034	1,007	987	966	968	33	25	33	60	80	101	99	1	1	1	1	1	1	1	**7**	7	8	-8	-27	-20	-21	2	6	6	4	1	2	1	6	**26**	**182**
1986	970	974	986	1,011	1,017	1,029	1,048	1,050	1,039	1,023	1,007	1,010	38	19	17	28	44	60	57	1	2	2	1	1	1	1	**9**	12	19	2	-11	-16	-16	3	6	6	6	3	2	2	6	**31**	**279**
1987	1,010	1,009	1,009	1,010	1,020	1,046	1,043	1,038	1,005	980	949	947	21	24	29	62	87	118	120	1	1	1	1	1	1	1	**7**	26	-3	-5	-33	-25	-31	-2	6	5	5	1	1	1	5	**24**	**168**
1988	943	945	976	999	1,001	1,004	1,007	1,008	990	959	944	942	63	60	59	77	108	123	125	1	1	1	1	1	1	1	**7**	3	3	1	-18	-31	-15	-2	6	6	6	2	1	3	5	**29**	**203**
1989	942	955	961	968	975	1,038	1,058	1,055	1,037	1,016	1,005	1,006	29	9	12	30	51	62	61	1	4	3	1	1	1	1	**12**	63	20	-3	-18	-21	-11	1	6	6	5	2	1	3	6	**29**	**348**
1990	1,008	1,007	1,004	1,010	1,010	1,018	1,007	1,014	999	979	963	959	49	60	53	68	88	104	108	1	1	1	1	1	1	1	**7**	8	-11	7	-15	-20	-16	-4	6	3	6	3	2	2	5	**27**	**189**
1991	955	953	953	954	950	976	986	986	977	963	949	942	91	81	81	90	104	118	125	1	1	1	1	1	1	1	**7**	26	10	0	-9	-14	-14	-7	6	6	6	4	3	3	4	**32**	**224**
1992	941	940	941	944	983	1,004	1,012	1,006	991	979	966	960	63	55	61	76	88	101	107	1	1	1	1	1	1	1	**7**	21	8	-6	-15	-12	-13	-6	6	6	4	3	3	3	4	**29**	**203**
1993	956	954	968	1,000	1,032	1,031	1,059	1,067	1,067	1,054	1,046	1,045	36	8	0	0	13	21	22	1	4	6	6	3	1	1	**22**	-1	28	8	0	-13	-8	-1	5	6	6	6	3	4	5	**35**	**770**
1994	1,043	1,017	1,019	1,020	1,026	1,027	1,025	1,025	998	975	952	950	40	42	42	69	92	115	117	1	1	1	1	1	1	1	**7**	1	-2	0	-27	-23	-23	-2	6	5	6	1	1	1	5	**25**	**175**

73 - year Average: 14

73 - year Average: 30 **443.14**

1929 - '34 Average: 203.0

Flow Alternative 7

STUDY: 1995C06F-SWRCB-519A DWRSIM: recirc818-h, 03 Sep 97
CP # 6, SWP LAKE OROVILLE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-519A/6/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 900'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP	Elev. Score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	Fluct. MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. Score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	833	833	835	844	850	858	893	900	900	871	866	867	42	7	0	0	29	34	33	1	4	6	6	1	1	1	**20**	8	35	7	0	-29	-5	1	6	6	6	6	1	5	6	**36**	**720**
1923	871	874	858	862	859	865	888	894	875	836	797	800	35	12	6	25	64	103	100	1	3	4	1	1	1	1	**12**	6	23	6	-19	-39	-39	3	6	6	6	2	1	1	6	**28**	**336**
1924	789	777	770	775	794	781	763	750	728	707	697	691	119	137	150	172	193	203	209	1	1	1	1	1	1	1	**7**	-13	-18	-13	-22	-21	-10	-6	3	2	3	1	1	4	4	**18**	**126**
1925	691	695	702	718	786	782	810	820	801	775	764	763	118	90	80	99	125	136	137	1	1	1	1	1	1	1	**7**	-4	28	10	-19	-26	-11	-1	5	6	6	2	1	3	5	**28**	**196**
1926	759	760	762	776	824	844	887	877	856	824	812	795	56	13	23	44	76	88	105	1	3	1	1	1	1	1	**9**	20	43	-10	-21	-32	-12	-17	6	6	4	1	1	3	2	**23**	**207**
1927	776	807	808	832	849	863	890	900	898	861	843	841	37	10	0	2	39	57	59	1	3	6	5	1	1	1	**18**	14	27	10	-2	-37	-18	-2	6	6	6	5	1	2	5	**31**	**558**
1928	838	848	849	861	871	849	878	870	849	799	745	738	51	22	30	51	101	155	162	1	1	1	1	1	1	1	**7**	-22	29	-8	-21	-50	-54	-7	1	6	4	1	1	1	4	**18**	**126**
1929	724	719	717	723	736	753	754	756	749	731	721	714	147	146	144	151	169	179	186	1	1	1	1	1	1	1	**7**	17	1	2	-7	-18	-10	-7	6	6	6	4	2	4	4	**32**	**224**
1930	704	701	762	790	818	850	864	870	853	812	772	770	50	36	30	47	88	128	130	1	1	1	1	1	1	1	**7**	32	14	6	-17	-41	-40	-2	6	6	6	2	1	1	5	**27**	**189**
1931	759	751	741	755	768	785	765	755	731	712	702	695	115	135	145	169	188	198	205	1	1	1	1	1	1	1	**7**	17	-20	-10	-24	-19	-10	-7	6	2	4	1	2	4	4	**23**	**161**
1932	689	684	689	714	736	772	775	803	782	761	752	746	128	125	97	118	139	148	154	1	1	1	1	1	1	1	**7**	36	3	28	-21	-21	-9	-6	6	6	6	1	1	4	4	**28**	**196**
1933	737	725	725	737	748	752	742	757	752	737	726	719	148	158	143	148	163	174	181	1	1	1	1	1	1	1	**7**	4	-10	15	-5	-15	-11	-7	6	4	6	5	3	3	4	**31**	**217**
1934	715	708	711	738	759	781	767	758	736	713	702	692	119	133	142	164	187	198	208	1	1	1	1	1	1	1	**7**	22	-14	-9	-22	-23	-11	-10	6	3	4	1	1	3	4	**22**	**154**
1935	678	683	689	717	741	770	856	867	853	829	821	805	130	44	33	47	71	79	95	1	1	1	1	1	1	1	**7**	29	86	11	-14	-24	-8	-16	6	6	6	3	1	4	2	**28**	**196**
1936	798	788	776	825	849	860	886	897	888	849	826	823	40	14	3	12	51	74	77	1	3	5	3	1	1	1	**15**	11	26	11	-9	-39	-23	-3	6	6	6	4	1	1	5	**29**	**435**
1937	815	804	800	803	820	843	869	882	859	834	821	815	57	31	18	41	66	79	85	1	1	2	1	1	1	1	**8**	23	26	13	-23	-25	-13	-6	6	6	6	1	1	3	4	**27**	**216**
1938	811	825	854	858	849	849	882	900	900	898	895	887	51	18	0	0	2	5	13	1	2	6	6	5	4	3	**27**	0	33	18	0	-2	-3	-8	6	6	6	6	5	5	4	**38**	**1026**
1939	874	864	854	845	837	833	816	809	773	706	653	648	67	84	91	127	194	247	252	1	1	1	1	1	1	1	**7**	-4	-17	-7	-36	-67	-53	-5	5	2	4	1	1	1	5	**19**	**133**
1940	637	626	629	703	812	849	879	886	867	826	818	805	51	21	14	33	74	82	95	1	1	3	1	1	1	1	**9**	37	30	7	-19	-41	-8	-13	6	6	6	2	1	4	3	**28**	**252**
1941	798	799	841	849	849	858	886	900	900	890	885	887	42	14	0	0	10	15	13	1	3	6	6	3	2	3	**24**	9	28	14	0	-10	-5	2	6	6	6	6	4	5	6	**39**	**936**
1942	874	874	849	849	850	867	882	900	900	878	874	875	33	18	0	0	22	26	25	1	2	6	6	1	1	1	**18**	17	15	18	0	-22	-4	1	6	6	6	6	1	5	6	**36**	**648**
1943	874	869	861	849	856	859	887	897	891	854	843	843	41	13	3	9	46	57	57	1	3	5	4	1	1	1	**16**	3	28	10	-6	-37	-11	0	6	6	6	4	1	3	6	**32**	**512**
1944	845	847	846	853	857	868	875	891	870	830	791	785	32	25	9	30	70	109	115	1	1	4	1	1	1	1	**10**	11	7	16	-21	-40	-39	-6	6	6	6	1	1	1	4	**25**	**250**
1945	777	783	800	816	858	865	880	896	877	837	812	807	35	20	4	23	63	88	93	1	1	5	1	1	1	1	**11**	7	15	16	-19	-40	-25	-5	6	6	6	2	1	1	5	**27**	**297**
1946	807	815	849	864	868	868	887	896	874	834	792	789	32	13	4	26	66	108	111	1	3	5	1	1	1	1	**13**	0	19	9	-22	-40	-42	-3	6	6	6	1	1	1	5	**26**	**338**
1947	773	779	787	793	821	843	846	841	825	766	727	720	57	54	59	75	134	173	180	1	1	1	1	1	1	1	**7**	22	3	-5	-16	-59	-39	-7	6	6	5	2	1	1	4	**25**	**175**
1948	723	724	721	758	760	780	840	869	876	839	822	804	120	60	31	24	61	78	96	1	1	1	1	1	1	1	**7**	20	60	29	7	-37	-17	-18	6	6	6	6	1	2	2	**29**	**203**
1949	797	795	795	800	808	831	851	859	836	785	755	750	69	49	41	64	115	145	150	1	1	1	1	1	1	1	**7**	23	20	8	-23	-51	-30	-5	6	6	6	1	1	1	5	**26**	**182**
1950	735	728	727	759	806	841	873	892	878	840	821	820	59	27	8	22	60	79	80	1	1	4	1	1	1	1	**10**	35	32	19	-14	-38	-19	-1	6	6	6	3	1	2	5	**29**	**290**
1951	824	849	854	853	858	870	880	894	880	839	803	803	30	20	6	20	61	97	97	1	1	4	1	1	1	1	**10**	12	10	14	-14	-41	-36	0	6	6	6	3	1	1	6	**29**	**290**
1952	809	814	848	849	852	862	894	900	900	900	899	887	38	6	0	0	0	1	13	1	4	6	6	6	5	3	**31**	10	32	6	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1178**
1953	874	874	858	850	867	867	883	900	900	867	863	865	33	17	0	0	33	37	35	1	2	6	6	1	1	1	**18**	0	16	17	0	-33	-4	2	6	6	6	6	1	5	6	**36**	**648**
1954	867	871	874	858	857	859	883	874	858	814	766	761	41	17	26	42	86	134	139	1	2	1	1	1	1	1	**8**	2	24	-9	-16	-44	-48	-5	6	6	4	2	1	1	5	**25**	**200**
1955	762	764	772	785	794	807	816	828	802	740	709	705	93	84	72	98	160	191	195	1	1	1	1	1	1	1	**7**	13	9	12	-26	-62	-31	-4	6	6	6	1	1	1	5	**26**	**182**
1956	696	693	846	849	849	864	892	900	900	871	867	871	36	8	0	0	29	33	29	1	4	6	6	1	1	1	**20**	15	28	8	0	-29	-4	4	6	6	6	6	1	5	6	**36**	**720**
1957	869	874	874	871	853	863	857	876	860	821	782	787	37	43	24	40	79	118	113	1	1	1	1	1	1	1	**7**	10	-6	19	-16	-39	-39	5	6	4	6	2	1	1	6	**26**	**182**
1958	789	793	815	836	849	849	879	900	900	898	894	887	51	21	0	0	2	6	13	1	1	6	6	5	4	3	**26**	0	30	21	0	-2	-4	-7	6	6	6	6	5	5	4	**38**	**988**
1959	874	874	874	862	852	867	867	870	849	800	748	752	33	33	30	51	100	152	148	1	1	1	1	1	1	1	**7**	15	0	3	-21	-49	-52	4	6	6	6	1	1	1	6	**27**	**189**
1960	743	731	726	741	803	847	845	851	832	783	770	764	53	55	49	68	117	130	136	1	1	1	1	1	1	1	**7**	44	-2	6	-19	-49	-13	-6	6	5	6	2	1	3	4	**27**	**189**
1961	753	756	765	776	806	828	826	831	811	748	704	700	72	74	69	89	152	196	200	1	1	1	1	1	1	1	**7**	22	-2	5	-20	-63	-44	-4	6	5	6	2	1	1	5	**26**	**182**
1962	684	681	690	705	770	806	827	830	813	753	731	710	94	73	70	87	147	169	190	1	1	1	1	1	1	1	**7**	36	21	3	-17	-60	-22	-21	6	6	6	2	1	1	1	**23**	**161**
1963	785	798	830	853	867	858	876	900	891	855	837	838	42	24	0	9	45	63	62	1	1	6	4	1	1	1	**15**	-9	18	24	-9	-36	-18	1	4	6	6	4	1	2	6	**29**	**435**
1964	839	850	853	863	872	874	879	879	864	823	773	742	26	21	21	36	77	127	158	1	1	1	1	1	1	1	**7**	2	5	0	-15	-41	-50	-31	6	6	6	3	1	1	1	**24**	**168**
1965	727	728	849	849	863	870	887	889	891	855	847	848	30	13	11	9	45	53	52	1	3	3	4	1	1	1	**14**	7	17	2	2	-36	-8	1	6	6	6	6	1	4	6	**35**	**490**
1966	852	859	860	864	870	874	894	886	866	825	778	771	26	6	14	34	75	122	129	1	4	3	1	1	1	1	**12**	4	20	-8	-20	-41	-47	-7	6	6	4	2	1	1	4	**24**	**288**
1967	757	768	806	849	860	853	879	900	900	900	896	887	47	21	0	0	0	4	13	1	1	6	6	6	5	3	**28**	-7	26	21	0	0	-4	-9	4	6	6	6	6	5	4	**37**	**1036**
1968	874	874	873	858	861	866	856	860	841	790	756	753	34	44	40	59	110	144	147	1	1	1	1	1	1	1	**7**	5	-10	4	-19	-51	-34	-3	6	4	6	2	1	1	5	**25**	**175**
1969	755	760	783	849	849	865	895	900	900	895	893	874	35	5	0	0	5	7	26	1	4	6	6	4	4	1	**26**	16	30	5	0	-5	-2	-19	6	6	6	6	5	5	2	**36**	**936**
1970	874	874	850	849	849	874	864	866	852	810	777	779	26	36	34	48	90	123	121	1	1	1	1	1	1	1	**7**	25	-10	2	-14	-42	-33	2	6	4	6	3	1	1	6	**27**	**189**
1971	781	808	839	864	874	874	892	900	900	869	846	848	26	8	0	0	31	54	52	1	4	6	6	1	1	1	**20**	0	18	8	0	-31	-23	2	6	6	6	6	1	1	6	**32**	**640**
1972	853	859	865	869	867	874	882	886	866	826	780	781	26	18	14	34	74	120	119	1	2	3	1	1	1	1	**10**	7	8	4	-20	-40	-46	1	6	6	6	2	1	1	6	**28**	**280**
1973	777	792	819	849	849	860	882	900	870	830	814	810	40	18	0	30	70	86	90	1	2	6	1	1	1	1	**13**	11	22	18	-30	-40	-16	-4	6	6	6	1	1	2	5	**27**	**351**
1974	814	849	850	854	864	849	883	900	900	887	886	886	51	17	0	0	13	14	14	1	2	6	6	3	3	3	**24**	-15	34	17	0	-13	-1	0	3	6	6	6	3	5	6	**35**	**840**
1975	874	874	874	874	855	852	881	900	900	874	873	874	48	19	0	0	26	27	26	1	2	6	6	1	1	1	**18**	-3	29	19	0	-26	-1	1	5	6	6	6	1	5	6	**35**	**630**
1976	873	874	874	874	874	874	867	860	838	792	765	765	26	33	40	62	108	135	135	1	1	1	1	1	1	1	**7**	0	-7	-7	-22	-46	-27	0	6	4	4	1	1	1	6	**23**	**161**
1977	756	748	732	728	713	707	668	657	628	605	595	592	193	232	243	272	295	305	308	1	1	1	1	1	1	1	**7**	-6	-39	-11	-29	-23	-10	-3	4	1	3	1	1	4	5	**19**	**133**
1978	581	581	618	745	798	859	878	897	892	871	862	869	41	22	3	8	29	38	31	1	1	5	4	1	1	1	**14**	61	19	19	-5	-21	-9	7	6	6	6	5	1	4	6	**34**	**476**
1979	872	874	874	871	853	863	876	894	864	825	813	810	37	24	6	36	75	87	90	1	1	4	1	1	1	1	**10**	10	13	18	-30	-39	-12	-3	6	6	6	1	1	3	5	**28**	**280**
1980	817	821	829	850	849	865	881	893	888	870	863	862	35	19	7	12	30	37	38	1	2	4	3	1	1	1	**13**	16	16	12	-5	-18	-7	-1	6	6	6	5	2	4	5	**34**	**442**
1981	861	862	870	860	868	865	869	867	845	797	758	758	35	31	33	55	103	142	142	1	1	1	1	1	1	1	**7**	-3	4	-2	-22	-48	-39	0	5	6	5	1	1	1	6	**25**	**175**
1982	763	845	849	859	862	859	884	900	900	887	884	887	41	16	0	0	13	16	13	1	2	6	6	3	2	3	**23**	-3	25	16	0	-13	-3	3	5	6	6	6	3	5	6	**37**	**851**
1983	873	862	858	853	849	849	877	900	900	900	899	887	51	23	0	0	0	1	13	1	1	6	6	6	5	3	**28**	0	28	23	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1064**
1984	874	860	849	869	869	871	881	890	873	835	822	823	29	19	10	27	65	78	77	1	2	3	1	1	1	1	**10**	2	10	9	-17	-38	-13	1	6	6	6	2	1	3	6	**30**	**300**
1985	827	841	851	857	870	871	886	875	853	809	758	739	29	14	25	47	91	142	161	1	3	1	1	1	1	1	**9**	1	15	-11	-22	-44	-51	-19	6	6	3	1	1	1	2	**20**	**180**
1986	729	725	732	768	849	849	871	875	871	843	830	841	51	29	25	29	57	70	59	1	1	1	1	1	1	1	**7**	0	22	4	-4	-28	-13	11	6	6	6	5	1	3	6	**33**	**231**
1987	843	849	847	848	859	867	856	846	819	758	713	708	33	44	54	81	142	187	192	1	1	1	1	1	1	1	**7**	8	-11	-10	-27	-61	-45	-5	6	3	4	1	1	1	5	**21**	**147**
1988	695	698	737	765	768	768	767	760	738	718	705	703	132	133	140	162	182	195	197	1	1	1	1	1	1	1	**7**	0	-1	-7	-22	-20	-13	-2	6	5	4	1	2	3	5	**26**	**182**
1989	694	713	723	730	730	843	868	863	845	800	791	788	57	32	37	55	100	109	112	1	1	1	1	1	1	1	**7**	113	25	-5	-18	-45	-9	-3	6	6	5	2	1	4	5	**29**	**203**
1990	794	795	778	792	799	824	804	804	779	730	717	711	76	96	96	121	170	183	189	1	1	1	1	1	1	1	**7**	25	-20	0	-25	-49	-13	-6	6	2	6	1	1	3	4	**23**	**161**
1991	693	685	669	667	654	706	717	732	717	698	691	690	194	183	168	183	202	209	210	1	1	1	1	1	1	1	**7**	52	11	15	-15	-19	-7	-1	6	6	6	3	2	4	5	**32**	**224**
1992	686	683	684	687	719	749	764	754	726	701	689	683	151	136	146	174	199	211	217	1	1	1	1	1	1	1	**7**	30	15	-10	-28	-25	-12	-6	6	6	4	1	1	3	4	**25**	**175**
1993	675	669	687	756	808	861	894	900	900	873	869	868	39	6	0	0	27	31	32	1	4	6	6	1	1	1	**20**	53	33	6	0	-27	-4	-1	6	6	6	6	1	5	5	**35**	**700**
1994	873	874	874	871	862	874	867	864	842	799	752	746	26	33	36	58	101	148	154	1	1	1	1	1	1	1	**7**	12	-7	-3	-22	-43	-47	-6	6	4	5	1	1	1	4	**22**	**154**

73 - year Average: 12

73 - year Average: 29 **374.04**

1929 - '34 Average: 190.2

Flow Alternative 7

STUDY: 1995C06F-SWRCB-519A DWRSIM: recirc818-h, 03 Sep 97
CP # 8, CVP FOLSOM L, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-519A/8/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 466'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Elevation												DFMRE							Elevation Score								Fluctuation							Fluctuation Score								
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	414	409	414	414	424	428	443	466	466	463	449	434	38	23	0	0	3	17	32	1	1	6	6	5	2	1	**22**	4	15	23	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**770**
1923	425	423	424	424	419	421	449	466	451	428	414	410	45	17	0	15	38	52	56	1	2	6	2	1	1	1	**14**	2	28	17	-15	-23	-14	-4	6	6	6	3	1	3	5	**30**	**420**
1924	405	399	393	383	380	361	351	353	334	334	337	334	105	115	113	132	132	129	132	1	1	1	1	1	1	1	**7**	-19	-10	2	-19	0	3	-3	2	4	6	2	6	6	5	**31**	**217**
1925	349	363	380	390	424	409	440	464	444	424	410	405	57	26	2	22	42	56	61	1	1	5	1	1	1	1	**11**	-15	31	24	-20	-20	-14	-5	3	6	6	2	2	3	5	**27**	**297**
1926	398	393	391	384	406	406	439	436	402	341	335	348	60	27	30	64	125	131	118	1	1	1	1	1	1	1	**7**	0	33	-3	-34	-61	-6	13	6	6	5	1	1	4	6	**29**	**203**
1927	356	398	419	424	424	437	449	466	461	452	447	434	29	17	0	5	14	19	32	1	2	6	4	3	2	1	**19**	13	12	17	-5	-9	-5	-13	6	6	6	5	4	5	3	**35**	**665**
1928	425	424	424	424	424	437	449	454	435	409	399	399	29	17	12	31	57	67	67	1	2	3	1	1	1	1	**10**	13	12	5	-19	-26	-10	0	6	6	6	2	1	4	6	**31**	**310**
1929	386	378	373	360	365	376	388	399	392	376	382	384	90	78	67	74	90	84	82	1	1	1	1	1	1	1	**7**	11	12	11	-7	-16	6	2	6	6	6	4	2	6	6	**36**	**252**
1930	372	367	397	411	422	437	443	442	416	387	356	361	29	23	24	50	79	110	105	1	1	1	1	1	1	1	**7**	15	6	-1	-26	-29	-31	5	6	6	5	1	1	1	6	**26**	**182**
1931	351	362	372	385	392	403	390	392	338	334	335	334	63	76	74	128	132	131	132	1	1	1	1	1	1	1	**7**	11	-13	2	-54	-4	1	-1	6	3	6	1	5	6	5	**32**	**224**
1932	334	334	380	402	424	426	429	450	429	385	384	387	40	37	16	37	81	82	79	1	1	2	1	1	1	1	**8**	2	3	21	-21	-44	-1	3	6	6	6	1	1	5	6	**31**	**248**
1933	368	336	349	352	339	366	337	372	356	334	351	346	100	129	94	110	132	115	120	1	1	1	1	1	1	1	**7**	27	-29	35	-16	-22	17	-5	6	1	6	2	1	6	5	**27**	**189**
1934	335	334	375	402	420	427	415	415	349	333	323	334	39	51	51	117	133	143	132	1	1	1	1	1	1	1	**7**	7	-12	0	-66	-16	-10	11	6	3	6	1	2	4	6	**28**	**196**
1935	334	361	378	402	416	418	449	454	453	437	423	417	48	17	12	13	29	43	49	1	2	3	3	1	1	1	**12**	2	31	5	-1	-16	-14	-6	6	6	6	5	2	3	4	**32**	**384**
1936	414	408	402	424	424	437	449	461	456	447	441	434	29	17	5	10	19	25	32	1	2	4	3	2	1	1	**14**	13	12	12	-5	-9	-6	-7	6	6	6	5	4	4	4	**35**	**490**
1937	425	417	411	404	424	437	449	466	455	443	436	433	29	17	0	11	23	30	33	1	2	6	3	1	1	1	**15**	13	12	17	-11	-12	-7	-3	6	6	6	3	3	4	5	**33**	**495**
1938	425	422	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1939	426	420	415	409	402	409	412	416	381	334	334	335	57	54	50	85	132	132	131	1	1	1	1	1	1	1	**7**	7	3	4	-35	-47	0	1	6	6	6	1	1	6	6	**32**	**224**
1940	334	334	334	419	424	437	449	461	448	430	421	422	29	17	5	18	36	45	44	1	2	4	2	1	1	1	**12**	13	12	12	-13	-18	-9	1	6	6	6	3	2	4	6	**33**	**396**
1941	417	412	424	424	424	437	449	466	458	455	449	434	29	17	0	8	11	17	32	1	2	6	4	3	2	1	**19**	13	12	17	-8	-3	-6	-15	6	6	6	4	5	4	3	**34**	**646**
1942	426	422	424	424	424	430	449	466	466	463	449	434	36	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	6	19	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1943	425	424	423	422	422	434	449	459	451	445	441	434	32	17	7	15	21	25	32	1	2	4	2	1	1	1	**12**	12	15	10	-8	-6	-4	-7	6	6	6	4	4	5	4	**35**	**420**
1944	425	419	413	405	407	419	420	433	410	384	357	367	47	46	33	56	82	109	99	1	1	1	1	1	1	1	**7**	12	1	13	-23	-26	-27	10	6	6	6	1	1	1	6	**27**	**189**
1945	360	390	411	424	424	437	448	465	454	442	435	433	29	18	1	12	24	31	33	1	2	5	3	1	1	1	**14**	13	11	17	-11	-12	-7	-2	6	6	6	3	3	4	5	**33**	**462**
1946	426	424	424	424	424	437	449	466	447	432	426	425	29	17	0	19	34	40	41	1	2	6	2	1	1	1	**14**	13	12	17	-19	-15	-6	-1	6	6	6	2	3	4	5	**32**	**448**
1947	421	422	421	413	419	437	445	442	412	374	335	334	29	21	24	54	92	131	132	1	1	1	1	1	1	1	**7**	18	8	-3	-30	-38	-39	-1	6	6	5	1	1	1	5	**25**	**175**
1948	352	370	375	401	396	390	429	455	455	447	441	434	76	37	11	11	19	25	32	1	1	3	3	2	1	1	**12**	-6	39	26	0	-8	-6	-7	4	6	6	6	4	4	4	**34**	**408**
1949	425	419	416	406	400	422	443	460	439	422	412	410	44	23	6	27	44	54	56	1	1	4	1	1	1	1	**10**	22	21	17	-21	-17	-10	-2	6	6	6	1	2	4	5	**30**	**300**
1950	403	400	395	423	424	437	449	466	455	443	439	434	29	17	0	11	23	27	32	1	2	6	3	1	1	1	**15**	13	12	17	-11	-12	-4	-5	6	6	6	3	3	5	5	**34**	**510**
1951	428	393	388	388	388	426	446	466	450	434	428	428	40	20	0	16	32	38	38	1	1	6	2	1	1	1	**13**	38	20	20	-16	-16	-6	0	6	6	6	2	2	4	6	**32**	**416**
1952	422	424	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1953	428	423	424	424	424	430	446	458	464	463	449	434	36	20	8	2	3	17	32	1	1	4	5	5	2	1	**19**	6	16	12	6	-1	-14	-15	6	6	6	6	5	3	3	**35**	**665**
1954	425	423	421	422	424	437	449	452	435	414	410	413	29	17	14	31	52	56	53	1	2	3	1	1	1	1	**10**	13	12	3	-17	-21	-4	3	6	6	6	2	1	5	6	**32**	**320**
1955	407	404	412	420	420	410	420	438	417	393	370	362	56	46	28	49	73	96	104	1	1	1	1	1	1	1	**7**	-10	10	18	-21	-24	-23	-8	4	6	6	1	1	1	4	**23**	**161**
1956	336	357	420	402	406	425	441	466	466	463	449	434	41	25	0	0	3	17	32	1	1	6	6	5	2	1	**22**	19	16	25	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**770**
1957	428	422	417	412	424	437	430	456	447	433	428	427	29	36	10	19	33	38	39	1	1	3	2	1	1	1	**10**	13	-7	26	-9	-14	-5	-1	6	4	6	4	3	5	5	**33**	**330**
1958	423	418	419	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1959	425	419	412	417	424	425	431	433	408	382	360	374	41	35	33	58	84	106	92	1	1	1	1	1	1	1	**7**	1	6	2	-25	-26	-22	14	6	6	6	1	1	1	6	**27**	**189**
1960	368	360	354	375	420	437	447	446	425	402	389	391	29	19	20	41	64	77	75	1	2	1	1	1	1	1	**8**	17	10	-1	-21	-23	-13	2	6	6	5	1	1	3	6	**28**	**224**
1961	389	392	395	394	402	410	416	424	408	389	378	379	56	50	42	58	77	88	87	1	1	1	1	1	1	1	**7**	8	6	8	-16	-19	-11	1	6	6	6	2	2	3	6	**31**	**217**
1962	380	382	389	390	424	431	445	453	443	425	415	412	35	21	13	23	41	51	54	1	1	3	1	1	1	1	**9**	7	14	8	-10	-18	-10	-3	6	6	6	4	2	4	5	**33**	**297**
1963	441	424	424	424	419	430	449	466	459	453	448	434	36	17	0	7	13	18	32	1	2	6	4	3	2	1	**19**	11	19	17	-7	-6	-5	-14	6	6	6	4	4	5	3	**34**	**646**
1964	427	424	424	424	418	410	421	435	410	361	334	335	56	45	31	56	105	132	131	1	1	1	1	1	1	1	**7**	-8	11	14	-25	-49	-27	1	4	6	6	1	1	1	6	**25**	**175**
1965	335	367	393	392	395	414	449	463	453	446	443	434	52	17	3	13	20	23	32	1	2	5	3	1	1	1	**14**	19	35	14	-10	-7	-3	-9	6	6	6	4	4	5	4	**35**	**490**
1966	426	424	424	424	422	430	448	448	423	400	387	388	36	18	18	43	66	79	78	1	2	2	1	1	1	1	**9**	8	18	0	-25	-23	-13	1	6	6	6	1	1	3	6	**29**	**261**
1967	389	402	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1968	427	424	423	424	424	437	436	437	412	386	386	390	29	30	29	54	80	80	76	1	1	1	1	1	1	1	**7**	13	-1	1	-25	-26	0	4	6	5	6	1	1	6	6	**31**	**217**
1969	396	404	417	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1970	427	424	423	393	396	426	427	437	425	408	405	409	40	39	29	41	58	61	57	1	1	1	1	1	1	1	**7**	30	1	10	-12	-17	-3	4	6	6	6	3	2	5	6	**34**	**238**
1971	403	416	424	424	423	437	441	460	460	458	449	434	29	25	6	6	8	17	32	1	1	4	4	4	2	1	**17**	14	4	19	0	-2	-9	-15	6	6	6	6	5	4	3	**36**	**612**
1972	425	422	424	424	424	437	441	448	427	405	396	401	29	25	18	39	61	70	65	1	1	2	1	1	1	1	**8**	13	4	7	-21	-22	-9	5	6	6	6	1	1	4	6	**30**	**240**
1973	401	406	420	424	424	437	449	466	452	435	429	430	29	17	0	14	31	37	36	1	2	6	3	1	1	1	**15**	13	12	17	-14	-17	-6	1	6	6	6	3	2	4	6	**33**	**495**
1974	423	423	422	409	417	433	449	466	463	463	449	434	33	17	0	3	3	17	32	1	2	6	5	5	2	1	**22**	16	16	17	-3	0	-14	-15	6	6	6	5	6	3	3	**35**	**770**
1975	426	419	417	415	424	437	441	466	466	463	449	434	29	25	0	0	3	17	32	1	1	6	6	5	2	1	**22**	13	4	25	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**770**
1976	431	423	419	410	402	392	397	402	369	334	335	335	74	69	64	97	132	131	131	1	1	1	1	1	1	1	**7**	-10	5	5	-33	-35	1	0	4	6	6	1	1	6	6	**30**	**210**
1977	334	334	330	325	321	323	333	341	334	319	305	291	143	133	125	132	147	161	175	1	1	1	1	1	1	1	**7**	2	10	8	-7	-15	-14	-14	6	6	6	4	3	3	3	**31**	**217**
1978	286	304	358	424	424	437	449	466	459	453	444	434	29	17	0	7	13	22	32	1	2	6	4	3	1	1	**18**	13	12	17	-7	-6	-9	-10	6	6	6	4	4	4	4	**34**	**612**
1979	423	417	411	418	424	437	446	466	447	429	421	419	29	20	0	19	37	45	47	1	1	6	2	1	1	1	**13**	13	9	20	-19	-18	-8	-2	6	6	6	2	2	4	5	**31**	**403**
1980	416	414	414	405	399	430	449	464	453	453	449	434	36	17	2	13	13	17	32	1	2	5	3	3	2	1	**17**	31	19	15	-11	0	-4	-15	6	6	6	3	6	5	3	**35**	**595**
1981	425	419	415	413	412	422	430	432	406	383	371	377	44	36	34	60	83	95	89	1	1	1	1	1	1	1	**7**	10	8	2	-26	-23	-12	6	6	6	6	1	1	3	6	**29**	**203**
1982	386	420	392	396	388	424	449	466	466	463	449	434	42	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	36	25	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1983	438	415	417	418	418	433	449	466	466	463	449	434	33	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	15	16	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1984	435	392	388	388	392	424	439	462	449	437	431	430	42	27	4	17	29	35	36	1	1	5	2	1	1	1	**12**	32	15	23	-13	-12	-6	-1	6	6	6	3	3	4	5	**33**	**396**
1985	424	424	424	420	422	428	443	443	409	364	334	343	38	23	23	57	102	132	123	1	1	1	1	1	1	1	**7**	6	15	0	-34	-45	-30	9	6	6	6	1	1	1	6	**27**	**189**
1986	340	369	399	424	396	424	449	464	458	453	448	434	42	17	2	8	13	18	32	1	2	5	4	3	2	1	**18**	28	25	15	-6	-5	-5	-14	6	6	6	4	5	5	3	**35**	**630**
1987	427	420	413	405	404	410	412	415	382	334	321	334	56	54	51	84	132	145	132	1	1	1	1	1	1	1	**7**	6	2	3	-33	-48	-13	13	6	6	6	1	1	3	6	**29**	**203**
1988	334	334	369	396	389	387	390	389	350	321	305	372	79	76	77	116	145	161	94	1	1	1	1	1	1	1	**7**	-2	3	-1	-39	-29	-16	67	5	6	5	1	1	2	6	**26**	**182**
1989	358	378	393	403	396	437	449	453	431	408	403	407	29	17	13	35	58	63	59	1	2	3	1	1	1	1	**10**	41	12	4	-22	-23	-5	4	6	6	6	1	1	5	6	**31**	**310**
1990	404	403	399	399	397	409	410	413	380	334	343	344	57	56	53	86	132	123	122	1	1	1	1	1	1	1	**7**	12	1	3	-33	-46	9	1	6	6	6	1	1	6	6	**32**	**224**
1991	334	334	335	332	332	383	407	425	414	409	404	404	83	59	41	52	57	62	62	1	1	1	1	1	1	1	**7**	51	24	18	-11	-5	-5	0	6	6	6	3	5	5	6	**37**	**259**
1992	397	385	375	361	389	407	409	408	374	334	323	317	59	57	58	92	132	143	149	1	1	1	1	1	1	1	**7**	18	2	-1	-34	-40	-11	-6	6	6	5	1	1	3	4	**26**	**182**
1993	316	315	357	424	427	434	449	466	466	456	449	434	32	17	0	0	10	17	32	1	2	6	6	3	2	1	**21**	7	15	17	0	-10	-7	-15	6	6	6	6	4	4	3	**35**	**735**
1994	423	413	407	395	390	388	394	400	374	334	334	332	78	72	66	92	132	132	134	1	1	1	1	1	1	1	**7**	-2	6	6	-26	-40	0	-2	5	6	6	1	1	6	5	**30**	**210**

73 - year Average: 13

73 - year Average: 32 **416.75**

1929 - '34 Average: 215.2

Flow Alternative 7

STUDY: 1995C06F-SWRCB-519A DWRSIM: recirc818-h, 03 Sep 97
CP # 10, NEW MELONES RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-519A/10/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 1088'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	939	941	945	949	962	971	970	998	1022	1015	1005	999
1923	998	1000	1006	1013	1018	1021	1023	1038	1040	1033	1021	1016
1924	1015	1016	1019	1021	1023	1023	1018	1010	999	990	983	980
1925	979	981	983	986	1000	1008	1010	1023	1026	1020	1011	1006
1926	1005	1006	1007	1009	1015	1019	1021	1016	1005	994	984	978
1927	977	979	986	992	1005	1012	1019	1031	1037	1028	1017	1013
1928	1012	1017	1020	1022	1027	1045	1046	1054	1047	1035	1027	1022
1929	1021	1023	1025	1026	1028	1029	1026	1023	1014	1005	998	994
1930	994	995	996	999	1002	1008	1008	1004	1000	989	980	973
1931	972	975	977	979	981	982	978	969	957	945	938	933
1932	931	933	939	942	955	961	959	978	991	982	971	964
1933	963	964	967	968	970	971	965	960	957	944	934	928
1934	927	929	932	935	939	945	939	928	913	896	883	875
1935	871	871	873	878	883	891	905	934	946	935	921	911
1936	908	911	915	926	947	957	967	987	994	982	968	961
1937	960	962	964	967	978	991	990	1008	1011	1001	991	984
1938	982	984	995	1003	1020	1041	1055	1083	1088	1087	1079	1075
1939	1050	1050	1050	1050	1050	1052	1050	1043	1033	1024	1017	1012
1940	1011	1011	1012	1022	1036	1052	1059	1074	1074	1065	1056	1051
1941	1050	1050	1050	1050	1050	1055	1056	1073	1081	1076	1068	1063
1942	1050	1050	1050	1050	1050	1055	1060	1076	1088	1087	1078	1074
1943	1050	1050	1050	1050	1050	1055	1066	1075	1080	1074	1065	1060
1944	1050	1050	1050	1050	1050	1053	1049	1049	1045	1035	1027	1021
1945	1021	1025	1028	1032	1045	1052	1052	1063	1071	1065	1056	1051
1946	1050	1050	1050	1050	1050	1054	1060	1071	1070	1061	1052	1048
1947	1048	1050	1050	1050	1050	1054	1050	1045	1036	1025	1018	1014
1948	1014	1015	1016	1017	1019	1021	1021	1025	1034	1025	1017	1013
1949	1012	1014	1016	1017	1019	1023	1023	1027	1023	1012	1005	1001
1950	999	999	1000	1005	1012	1018	1020	1034	1038	1029	1022	1018
1951	1016	1043	1050	1050	1050	1055	1058	1064	1060	1050	1041	1036
1952	1035	1037	1042	1050	1050	1055	1062	1088	1088	1088	1080	1075
1953	1050	1050	1050	1050	1050	1054	1054	1054	1061	1056	1049	1045
1954	1044	1046	1048	1050	1050	1055	1059	1068	1063	1054	1047	1042
1955	1041	1043	1045	1049	1050	1052	1048	1044	1041	1031	1023	1018
1956	1017	1019	1043	1050	1050	1055	1059	1076	1088	1084	1075	1071
1957	1050	1050	1050	1050	1050	1055	1053	1058	1061	1053	1046	1040
1958	1037	1039	1040	1046	1050	1055	1066	1088	1088	1084	1076	1071
1959	1050	1050	1050	1050	1050	1053	1050	1041	1032	1022	1015	1011
1960	1010	1012	1013	1015	1019	1025	1023	1017	1009	998	991	983
1961	978	982	985	986	989	991	987	980	968	956	949	944
1962	943	944	946	947	957	962	964	970	973	962	953	946
1963	945	947	950	957	974	980	979	1003	1011	1003	993	987
1964	986	990	993	997	1000	1002	998	994	986	972	963	956
1965	954	957	986	1007	1018	1025	1034	1047	1057	1052	1043	1039
1966	1037	1041	1045	1050	1050	1053	1052	1055	1045	1034	1027	1021
1967	1020	1021	1030	1039	1046	1055	1062	1084	1088	1088	1080	1075
1968	1050	1050	1050	1050	1050	1054	1051	1048	1039	1029	1021	1015
1969	1015	1018	1020	1048	1050	1055	1071	1088	1088	1087	1078	1072
1970	1050	1050	1050	1050	1050	1055	1054	1060	1061	1051	1042	1037
1971	1036	1040	1046	1050	1050	1055	1055	1061	1065	1059	1052	1048
1972	1047	1050	1050	1050	1050	1055	1051	1055	1047	1036	1029	1024
1973	1024	1026	1029	1040	1050	1055	1055	1069	1072	1062	1052	1048
1974	1047	1050	1050	1050	1050	1055	1064	1080	1086	1079	1069	1065
1975	1050	1050	1050	1050	1050	1055	1055	1063	1077	1071	1062	1057
1976	1050	1050	1050	1050	1050	1051	1046	1039	1028	1019	1013	1008
1977	1007	1008	1009	1009	1009	1008	1003	997	989	977	970	965
1978	962	962	964	973	983	1000	1006	1020	1030	1028	1018	1015
1979	1014	1016	1019	1026	1037	1050	1050	1064	1061	1051	1041	1036
1980	1036	1038	1040	1050	1050	1055	1061	1070	1080	1080	1071	1066
1981	1050	1050	1050	1050	1050	1053	1051	1045	1033	1022	1016	1012
1982	1012	1018	1032	1050	1050	1055	1071	1088	1088	1087	1079	1075
1983	1050	1050	1050	1050	1050	1055	1061	1077	1088	1088	1083	1075
1984	1050	1050	1050	1050	1050	1055	1055	1061	1060	1053	1046	1042
1985	1042	1046	1050	1050	1050	1054	1052	1050	1040	1030	1024	1020
1986	1020	1022	1025	1033	1050	1055	1060	1068	1074	1066	1058	1056
1987	1050	1050	1050	1050	1050	1052	1047	1038	1027	1019	1015	1012
1988	1010	1010	1010	1011	1012	1014	1009	1002	994	986	982	977
1989	975	974	975	975	977	988	986	981	973	961	955	952
1990	953	956	959	961	964	968	961	949	937	925	919	912
1991	909	910	914	914	915	922	917	911	895	876	866	861
1992	861	862	867	870	878	886	878	860	841	823	813	805
1993	806	810	815	832	924	969	977	989	997	987	975	971
1994	969	970	973	973	973	978	974	970	960	948	941	938

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**
1922	126	117	118	90	66	73	83	1	1	1	1	1	1	1	**7**
1923	70	67	65	50	48	55	67	1	1	1	1	1	1	1	**7**
1924	65	65	70	78	89	98	105	1	1	1	1	1	1	1	**7**
1925	88	80	78	65	62	68	77	1	1	1	1	1	1	1	**7**
1926	73	69	67	72	83	94	104	1	1	1	1	1	1	1	**7**
1927	83	76	69	57	51	60	71	1	1	1	1	1	1	1	**7**
1928	61	43	42	34	41	53	61	1	1	1	1	1	1	1	**7**
1929	60	59	62	65	74	83	90	1	1	1	1	1	1	1	**7**
1930	86	80	80	84	88	99	108	1	1	1	1	1	1	1	**7**
1931	107	106	110	119	131	143	150	1	1	1	1	1	1	1	**7**
1932	133	127	129	110	97	106	117	1	1	1	1	1	1	1	**7**
1933	118	117	123	128	131	144	154	1	1	1	1	1	1	1	**7**
1934	149	143	149	160	175	192	205	1	1	1	1	1	1	1	**7**
1935	205	197	183	154	142	153	167	1	1	1	1	1	1	1	**7**
1936	141	131	121	101	94	106	120	1	1	1	1	1	1	1	**7**
1937	110	97	98	80	77	87	97	1	1	1	1	1	1	1	**7**
1938	68	47	33	5	0	1	9	1	1	1	4	6	5	4	**22**
1939	38	36	38	45	55	64	71	1	1	1	1	1	1	1	**7**
1940	52	36	29	14	14	23	32	1	1	1	3	3	1	1	**11**
1941	38	33	32	15	7	12	20	1	1	1	2	4	3	1	**13**
1942	38	33	28	12	0	1	10	1	1	1	3	6	5	3	**20**
1943	38	33	22	13	8	14	23	1	1	1	3	4	3	1	**14**
1944	38	35	39	39	43	53	61	1	1	1	1	1	1	1	**7**
1945	43	36	36	25	17	23	32	1	1	1	1	2	1	1	**8**
1946	38	34	28	17	18	27	36	1	1	1	2	2	1	1	**9**
1947	38	34	38	43	52	63	70	1	1	1	1	1	1	1	**7**
1948	69	67	67	63	54	63	71	1	1	1	1	1	1	1	**7**
1949	69	65	65	61	65	76	83	1	1	1	1	1	1	1	**7**
1950	76	70	68	54	50	59	66	1	1	1	1	1	1	1	**7**
1951	38	33	30	24	28	38	47	1	1	1	1	1	1	1	**7**
1952	38	33	26	0	0	0	8	1	1	1	6	6	6	4	**25**
1953	38	34	34	34	27	32	39	1	1	1	1	1	1	1	**7**
1954	38	33	29	20	25	34	41	1	1	1	1	1	1	1	**7**
1955	38	36	40	44	47	57	65	1	1	1	1	1	1	1	**7**
1956	38	33	29	12	0	4	13	1	1	1	3	6	5	3	**20**
1957	38	33	35	30	27	35	42	1	1	1	1	1	1	1	**7**
1958	38	33	22	0	0	4	12	1	1	1	6	6	5	3	**23**
1959	38	35	38	47	56	66	73	1	1	1	1	1	1	1	**7**
1960	69	63	65	71	79	90	97	1	1	1	1	1	1	1	**7**
1961	99	97	101	108	120	132	139	1	1	1	1	1	1	1	**7**
1962	131	126	124	118	115	126	135	1	1	1	1	1	1	1	**7**
1963	114	108	109	85	77	85	95	1	1	1	1	1	1	1	**7**
1964	88	86	90	94	102	116	125	1	1	1	1	1	1	1	**7**
1965	70	63	54	41	31	36	45	1	1	1	1	1	1	1	**7**
1966	38	35	36	33	43	54	61	1	1	1	1	1	1	1	**7**
1967	42	33	26	4	0	0	8	1	1	1	5	6	6	4	**24**
1968	38	34	37	40	49	59	67	1	1	1	1	1	1	1	**7**
1969	38	33	17	0	0	1	10	1	1	2	6	6	5	3	**24**
1970	38	33	34	28	27	37	46	1	1	1	1	1	1	1	**7**
1971	38	33	33	27	23	29	36	1	1	1	1	1	1	1	**7**
1972	38	33	37	33	41	52	59	1	1	1	1	1	1	1	**7**
1973	38	33	33	19	16	26	36	1	1	1	2	2	1	1	**9**
1974	38	33	24	8	2	9	19	1	1	1	4	5	4	2	**18**
1975	38	33	33	25	11	17	26	1	1	1	1	3	2	1	**10**
1976	38	37	42	49	60	69	75	1	1	1	1	1	1	1	**7**
1977	79	80	85	91	99	111	118	1	1	1	1	1	1	1	**7**
1978	105	88	82	68	58	60	70	1	1	1	1	1	1	1	**7**
1979	51	38	38	24	27	37	47	1	1	1	1	1	1	1	**7**
1980	38	33	27	18	8	8	17	1	1	1	2	4	4	2	**15**
1981	38	35	37	43	55	66	72	1	1	1	1	1	1	1	**7**
1982	38	33	17	0	0	1	9	1	1	2	6	6	5	4	**25**
1983	38	33	27	11	0	0	5	1	1	1	3	6	6	4	**22**
1984	38	33	33	27	28	35	42	1	1	1	1	1	1	1	**7**
1985	38	34	36	38	48	58	64	1	1	1	1	1	1	1	**7**
1986	38	33	28	20	14	22	30	1	1	1	1	3	1	1	**9**
1987	38	36	41	50	61	69	73	1	1	1	1	1	1	1	**7**
1988	76	74	79	86	94	102	106	1	1	1	1	1	1	1	**7**
1989	111	100	102	107	115	127	133	1	1	1	1	1	1	1	**7**
1990	124	120	127	139	151	163	169	1	1	1	1	1	1	1	**7**
1991	173	166	171	177	193	212	222	1	1	1	1	1	1	1	**7**
1992	210	202	210	228	247	265	275	1	1	1	1	1	1	1	**7**
1993	164	119	111	99	91	101	113	1	1	1	1	1	1	1	**7**
1994	115	110	114	118	128	140	147	1	1	1	1	1	1	1	**7**
												73 - year Average:			**10**

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	9	-1	28	24	-7	-10	-6	6	5	6	6	4	4	4	**35**	**245**
1923	3	2	15	2	-7	-12	-5	6	6	6	6	4	3	5	**36**	**252**
1924	0	-5	-8	-11	-9	-7	-3	6	5	4	3	4	4	5	**31**	**217**
1925	8	2	13	3	-6	-9	-5	6	6	6	6	4	4	5	**37**	**259**
1926	4	2	-5	-11	-11	-10	-6	6	6	5	3	3	4	4	**31**	**217**
1927	7	7	12	6	-9	-11	-4	6	6	6	6	4	3	5	**36**	**252**
1928	18	1	8	-7	-12	-8	-5	6	6	6	4	3	4	5	**34**	**238**
1929	1	-3	-3	-9	-9	-7	-4	6	5	5	4	4	4	5	**33**	**231**
1930	6	0	-4	-4	-11	-9	-7	6	6	5	5	3	4	4	**33**	**231**
1931	1	-4	-9	-12	-12	-7	-5	6	5	4	3	3	4	5	**30**	**210**
1932	6	-2	19	13	-9	-11	-7	6	5	6	6	4	3	4	**34**	**238**
1933	1	-6	-5	-3	-13	-10	-6	6	4	5	5	3	4	4	**31**	**217**
1934	6	-6	-11	-15	-17	-13	-8	6	4	3	3	2	3	4	**25**	**175**
1935	8	14	29	12	-11	-14	-10	6	6	6	6	3	3	4	**34**	**238**
1936	10	10	20	7	-12	-14	-7	6	6	6	6	3	3	4	**34**	**238**
1937	13	-1	18	3	-10	-10	-7	6	5	6	6	4	4	4	**35**	**245**
1938	21	14	28	5	-1	-8	-4	6	6	6	6	5	4	5	**38**	**836**
1939	2	-2	-7	-10	-9	-7	-5	6	5	4	4	4	4	5	**32**	**224**
1940	16	7	15	0	-9	-9	-5	6	6	6	6	4	4	5	**37**	**407**
1941	5	1	17	8	-5	-8	-5	6	6	6	6	5	4	5	**38**	**494**
1942	5	5	16	12	-1	-9	-4	6	6	6	6	5	4	5	**38**	**760**
1943	5	11	9	5	-6	-9	-5	6	6	6	6	4	4	5	**37**	**518**
1944	3	-4	0	-4	-10	-8	-6	6	5	6	5	4	4	4	**34**	**238**
1945	7	0	11	8	-6	-9	-5	6	6	6	6	4	4	5	**37**	**296**
1946	4	6	11	-1	-9	-9	-4	6	6	6	5	4	4	5	**36**	**324**
1947	4	-4	-5	-9	-11	-7	-4	6	5	5	4	3	4	5	**32**	**224**
1948	2	0	4	9	-9	-8	-4	6	6	6	6	4	4	5	**37**	**259**
1949	4	0	4	-4	-11	-7	-4	6	6	6	5	3	4	5	**35**	**245**
1950	6	2	14	4	-9	-7	-4	6	6	6	6	4	4	5	**37**	**259**
1951	5	3	6	-4	-10	-9	-5	6	6	6	5	4	4	5	**36**	**252**
1952	5	7	26	0	0	-8	-5	6	6	6	6	6	4	5	**39**	**975**
1953	4	0	0	7	-5	-7	-4	6	6	6	6	5	4	5	**38**	**266**
1954	5	4	9	-5	-9	-7	-5	6	6	6	5	4	4	5	**36**	**252**
1955	2	-4	-4	-3	-10	-8	-5	6	5	5	5	4	4	5	**34**	**238**
1956	5	4	17	12	-4	-9	-4	6	6	6	6	5	4	5	**38**	**760**
1957	5	-2	5	3	-8	-7	-6	6	5	6	6	4	4	4	**35**	**245**
1958	5	11	22	0	-4	-8	-5	6	6	6	6	5	4	5	**38**	**874**
1959	3	-3	-9	-9	-10	-7	-4	6	5	4	4	4	4	5	**32**	**224**
1960	6	-2	-6	-8	-11	-7	-8	6	5	4	4	3	4	4	**30**	**210**
1961	2	-4	-7	-12	-12	-7	-5	6	5	4	3	3	4	5	**30**	**210**
1962	5	2	6	3	-11	-9	-7	6	6	6	6	3	4	4	**35**	**245**
1963	6	-1	24	8	-8	-10	-6	6	5	6	6	4	4	4	**35**	**245**
1964	2	-4	-4	-8	-14	-9	-7	6	5	5	4	3	4	4	**31**	**217**
1965	7	9	13	10	-5	-9	-4	6	6	6	6	5	4	5	**38**	**266**
1966	3	-1	3	-10	-11	-7	-6	6	5	6	4	3	4	4	**32**	**224**
1967	9	7	22	4	0	-8	-5	6	6	6	6	6	4	5	**39**	**936**
1968	4	-3	-3	-9	-10	-8	-6	6	5	5	4	4	4	4	**32**	**224**
1969	5	16	17	0	-1	-9	-6	6	6	6	6	5	4	4	**37**	**888**
1970	5	-1	6	1	-10	-9	-5	6	5	6	6	4	4	5	**36**	**252**
1971	5	0	6	4	-6	-7	-4	6	6	6	6	4	4	5	**37**	**259**
1972	5	-4	4	-8	-11	-7	-5	6	5	6	4	3	4	5	**33**	**231**
1973	5	0	14	3	-10	-10	-4	6	6	6	6	4	4	5	**37**	**333**
1974	5	9	16	6	-7	-10	-4	6	6	6	6	4	4	5	**37**	**666**
1975	5	0	8	14	-6	-9	-5	6	6	6	6	4	4	5	**37**	**370**
1976	1	-5	-7	-11	-9	-6	-5	6	5	4	3	4	4	5	**31**	**217**
1977	-1	-5	-6	-8	-12	-7	-5	5	5	4	4	3	4	5	**30**	**210**
1978	17	6	14	10	-2	-10	-3	6	6	6	6	5	4	5	**38**	**266**
1979	13	0	14	-3	-10	-10	-5	6	6	6	5	4	4	5	**36**	**252**
1980	5	6	9	10	0	-9	-5	6	6	6	6	6	4	5	**39**	**585**
1981	3	-2	-6	-12	-11	-6	-4	6	5	4	3	3	4	5	**30**	**210**
1982	5	16	17	0	-1	-8	-4	6	6	6	6	5	4	5	**38**	**950**
1983	5	6	16	11	0	-5	-8	6	6	6	6	6	5	4	**39**	**858**
1984	5	0	6	-1	-7	-7	-4	6	6	6	5	4	4	5	**36**	**252**
1985	4	-2	-2	-10	-10	-6	-4	6	5	5	4	4	4	5	**33**	**231**
1986	5	5	8	6	-8	-8	-2	6	6	6	6	4	4	5	**37**	**333**
1987	2	-5	-9	-11	-8	-4	-3	6	5	4	3	4	5	5	**32**	**224**
1988	2	-5	-7	-8	-8	-4	-5	6	5	4	4	4	5	5	**33**	**231**
1989	11	-2	-5	-8	-12	-6	-3	6	5	5	4	3	4	5	**32**	**224**
1990	4	-7	-12	-12	-12	-6	-7	6	4	3	3	3	4	4	**27**	**189**
1991	7	-5	-6	-16	-19	-10	-5	6	5	4	2	2	4	5	**28**	**196**
1992	8	-8	-18	-19	-18	-10	-8	6	4	2	2	2	4	4	**24**	**168**
1993	45	8	12	8	-10	-12	-4	6	6	6	6	4	3	5	**36**	**252**
1994	5	-4	-4	-10	-12	-7	-3	6	5	5	4	3	4	5	**32**	**224**
												73 - year Average:			**34**	**338.64**
												1929 - '34 Average:				**217.0**

Flow Alternative 7

STUDY: 1995C06F-SWRCB-519A DWRSIM: recirc818-h, 03 Sep 97
CP # 81, DON PEDRO RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-519A/81/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 832'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	599	582	580	601	656	690	699	725	782	779	763	752	142	133	107	50	53	69	80	1	1	1	1	1	1	1	**7**	34	9	26	57	-3	-16	-11	6	6	6	6	5	2	3	**34**	**238**
1923	746	745	749	761	776	784	788	792	801	795	780	770	48	44	40	31	37	52	62	1	1	1	1	1	1	1	**7**	8	4	4	9	-6	-15	-10	6	6	6	6	4	3	4	**35**	**245**
1924	764	762	757	755	756	754	749	744	736	724	710	701	78	83	88	96	108	122	131	1	1	1	1	1	1	1	**7**	-2	-5	-5	-8	-12	-14	-9	5	5	5	4	3	3	4	**29**	**203**
1925	698	699	699	703	725	741	755	768	786	777	761	751	91	77	64	46	55	71	81	1	1	1	1	1	1	1	**7**	16	14	13	18	-9	-16	-10	6	6	6	6	4	2	4	**34**	**238**
1926	745	742	738	737	746	751	765	778	775	761	746	736	81	67	54	57	71	86	96	1	1	1	1	1	1	1	**7**	5	14	13	-3	-14	-15	-10	6	6	6	5	3	3	4	**33**	**231**
1927	732	731	735	742	770	785	795	797	815	808	793	783	47	37	35	17	24	39	49	1	1	1	2	1	1	1	**8**	15	10	2	18	-7	-15	-10	6	6	6	6	4	3	4	**35**	**280**
1928	777	777	778	781	789	800	802	819	819	804	789	779	32	30	13	13	28	43	53	1	1	3	3	1	1	1	**11**	11	2	17	0	-15	-15	-10	6	6	6	6	3	3	4	**34**	**374**
1929	773	768	765	764	767	769	770	775	782	773	764	757	63	62	57	50	59	68	75	1	1	1	1	1	1	1	**7**	2	1	5	7	-9	-9	-7	6	6	6	6	4	4	4	**36**	**252**
1930	754	751	748	749	754	761	764	768	782	773	764	758	71	68	64	50	59	68	74	1	1	1	1	1	1	1	**7**	7	3	4	14	-9	-9	-6	6	6	6	6	4	4	4	**36**	**252**
1931	756	755	754	756	759	757	751	742	731	718	705	697	75	81	90	101	114	127	135	1	1	1	1	1	1	1	**7**	-2	-6	-9	-11	-13	-13	-8	5	4	4	3	3	3	4	**26**	**182**
1932	694	691	700	716	750	764	765	772	790	785	770	760	68	67	60	42	47	62	72	1	1	1	1	1	1	1	**7**	14	1	7	18	-5	-15	-10	6	6	6	6	5	3	4	**36**	**252**
1933	753	746	741	740	746	749	747	744	761	750	736	727	83	85	88	71	82	96	105	1	1	1	1	1	1	1	**7**	3	-2	-3	17	-11	-14	-9	6	5	5	6	3	3	4	**32**	**224**
1934	720	719	717	720	730	738	737	733	730	715	700	692	94	95	99	102	117	132	140	1	1	1	1	1	1	1	**7**	8	-1	-4	-3	-15	-15	-8	6	5	5	5	3	3	4	**31**	**217**
1935	688	688	689	700	720	733	754	764	791	779	764	752	99	78	68	41	53	68	80	1	1	1	1	1	1	1	**7**	13	21	10	27	-12	-15	-12	6	6	6	6	3	3	3	**33**	**231**
1936	746	744	739	744	781	796	802	820	832	823	808	798	36	30	12	0	9	24	34	1	1	3	6	4	1	1	**17**	15	6	18	12	-9	-15	-10	6	6	6	6	4	3	4	**35**	**595**
1937	792	786	782	785	800	800	802	816	832	819	805	795	32	30	16	0	13	27	37	1	1	2	6	3	1	1	**15**	0	2	14	16	-13	-14	-10	6	6	6	6	3	3	4	**34**	**510**
1938	789	784	800	800	800	800	800	804	831	832	819	808	32	32	28	1	0	13	24	1	1	1	5	6	3	1	**18**	0	0	4	27	1	-13	-11	6	6	6	6	6	3	3	**36**	**648**
1939	800	799	799	800	800	800	802	804	800	787	774	766	32	30	28	32	45	58	66	1	1	1	1	1	1	1	**7**	0	2	2	-4	-13	-13	-8	6	6	6	5	3	3	4	**33**	**231**
1940	764	764	761	774	800	800	802	816	829	814	799	789	32	30	16	3	18	33	43	1	1	2	5	2	1	1	**13**	0	2	14	13	-15	-15	-10	6	6	6	6	3	3	4	**34**	**442**
1941	784	781	783	798	800	800	800	812	832	831	817	808	32	32	20	0	1	15	24	1	1	1	6	5	2	1	**17**	0	0	12	20	-1	-14	-9	6	6	6	6	5	3	4	**36**	**612**
1942	800	798	800	800	800	800	802	807	831	832	818	808	32	30	25	1	0	14	24	1	1	1	5	6	3	1	**18**	0	2	5	24	1	-14	-10	6	6	6	6	6	3	4	**37**	**666**
1943	800	800	800	800	800	800	802	822	832	824	810	799	32	30	10	0	8	22	33	1	1	3	6	4	1	1	**17**	0	2	20	10	-8	-14	-11	6	6	6	6	4	3	3	**34**	**578**
1944	794	792	788	787	793	800	802	809	816	803	788	778	32	30	23	16	29	44	54	1	1	1	2	1	1	1	**8**	7	2	7	7	-13	-15	-10	6	6	6	6	3	3	4	**34**	**272**
1945	773	774	778	783	800	800	802	807	831	825	810	799	32	30	25	1	7	22	33	1	1	1	5	4	1	1	**14**	0	2	5	24	-6	-15	-11	6	6	6	6	4	3	3	**34**	**476**
1946	796	797	800	800	800	800	802	806	812	796	780	769	32	30	26	20	36	52	63	1	1	1	1	1	1	1	**7**	0	2	4	6	-16	-16	-11	6	6	6	6	2	2	3	**31**	**217**
1947	763	763	765	769	776	781	778	783	777	764	750	743	51	54	49	55	68	82	89	1	1	1	1	1	1	1	**7**	5	-3	5	-6	-13	-14	-7	6	5	6	4	3	3	4	**31**	**217**
1948	740	739	738	739	740	741	737	747	772	762	744	734	91	95	85	60	70	88	98	1	1	1	1	1	1	1	**7**	1	-4	10	25	-10	-18	-10	6	5	6	6	4	2	4	**33**	**231**
1949	728	722	717	716	723	733	740	749	756	739	720	707	99	92	83	76	93	112	125	1	1	1	1	1	1	1	**7**	10	7	9	7	-17	-19	-13	6	6	6	6	2	2	3	**31**	**217**
1950	700	694	688	694	713	725	734	747	763	748	730	719	107	98	85	69	84	102	113	1	1	1	1	1	1	1	**7**	12	9	13	16	-15	-18	-11	6	6	6	6	3	2	3	**32**	**224**
1951	713	760	800	800	800	800	798	794	798	783	769	759	32	34	38	34	49	63	73	1	1	1	1	1	1	1	**7**	0	-2	-4	4	-15	-14	-10	6	5	5	6	3	3	4	**32**	**224**
1952	752	750	757	782	800	800	800	820	832	832	819	808	32	32	12	0	0	13	24	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1953	800	795	793	800	800	800	802	804	814	810	796	787	32	30	28	18	22	36	45	1	1	1	2	1	1	1	**8**	0	2	2	10	-4	-14	-9	6	6	6	6	5	3	4	**36**	**288**
1954	782	778	775	777	785	797	802	820	820	806	790	780	35	30	12	12	26	42	52	1	1	3	3	1	1	1	**11**	12	5	18	0	-14	-16	-10	6	6	6	6	3	2	4	**33**	**363**
1955	775	771	769	775	782	785	782	786	792	780	768	761	47	50	46	40	52	64	71	1	1	1	1	1	1	1	**7**	3	-3	4	6	-12	-12	-7	6	5	6	6	3	3	4	**33**	**231**
1956	756	752	800	800	800	800	802	818	832	832	818	808	32	30	14	0	0	14	24	1	1	3	6	6	3	1	**21**	0	2	16	14	0	-14	-10	6	6	6	6	6	3	4	**37**	**777**
1957	800	798	793	793	799	800	800	807	828	815	801	792	32	32	25	4	17	31	40	1	1	1	5	2	1	1	**12**	1	0	7	21	-13	-14	-9	6	6	6	6	3	3	4	**34**	**408**
1958	787	783	780	785	800	800	800	821	832	832	819	808	32	32	11	0	0	13	24	1	1	3	6	6	3	1	**21**	0	0	21	11	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1959	800	794	789	793	800	800	802	800	794	782	770	764	32	30	32	38	50	62	68	1	1	1	1	1	1	1	**7**	0	2	-2	-6	-12	-12	-6	6	6	5	4	3	3	4	**31**	**217**
1960	761	758	755	756	764	769	771	777	780	770	760	754	63	61	55	52	62	72	78	1	1	1	1	1	1	1	**7**	5	2	6	3	-10	-10	-6	6	6	6	6	4	4	4	**36**	**252**
1961	751	749	749	751	753	752	746	738	731	719	707	700	80	86	94	101	113	125	132	1	1	1	1	1	1	1	**7**	-1	-6	-8	-7	-12	-12	-7	5	4	4	4	3	3	4	**27**	**189**
1962	697	694	692	694	718	737	748	753	779	771	757	747	95	84	79	53	61	75	85	1	1	1	1	1	1	1	**7**	19	11	5	26	-8	-14	-10	6	6	6	6	4	3	4	**35**	**245**
1963	742	737	734	738	763	775	783	797	822	817	803	795	57	49	35	10	15	29	37	1	1	1	3	2	1	1	**10**	12	8	14	25	-5	-14	-8	6	6	6	6	5	3	4	**36**	**360**
1964	789	790	791	796	800	800	797	795	797	786	775	769	32	35	37	35	46	57	63	1	1	1	1	1	1	1	**7**	0	-3	-2	2	-11	-11	-6	6	5	5	6	3	3	4	**32**	**224**
1965	766	767	798	800	800	800	802	807	828	828	817	807	32	30	25	4	4	15	25	1	1	1	5	5	2	1	**16**	0	2	5	21	0	-11	-10	6	6	6	6	6	3	4	**37**	**592**
1966	800	800	800	800	800	800	800	796	789	774	759	750	32	32	36	43	58	73	82	1	1	1	1	1	1	1	**7**	0	0	-4	-7	-15	-15	-9	6	6	5	4	3	3	4	**31**	**217**
1967	745	742	753	769	787	800	800	817	832	832	820	808	32	32	15	0	0	12	24	1	1	2	6	6	3	1	**20**	13	0	17	15	0	-12	-12	6	6	6	6	6	3	3	**36**	**720**
1968	800	795	791	792	800	800	802	805	803	791	779	771	32	30	27	29	41	53	61	1	1	1	1	1	1	1	**7**	0	2	3	-2	-12	-12	-8	6	6	6	5	3	3	4	**33**	**231**
1969	767	767	770	800	800	800	800	823	832	832	819	808	32	32	9	0	0	13	24	1	1	4	6	6	3	1	**22**	0	0	23	9	0	-13	-11	6	6	6	6	6	3	3	**36**	**792**
1970	800	799	800	800	800	800	799	799	807	795	780	771	32	33	33	25	37	52	61	1	1	1	1	1	1	1	**7**	0	-1	0	8	-12	-15	-9	6	5	6	6	3	3	4	**33**	**231**
1971	766	766	772	788	800	800	801	801	807	799	787	778	32	31	31	25	33	45	54	1	1	1	1	1	1	1	**7**	0	1	0	6	-8	-12	-9	6	6	6	6	4	3	4	**35**	**245**
1972	773	769	772	779	792	800	800	798	795	783	772	766	32	32	34	37	49	60	66	1	1	1	1	1	1	1	**7**	8	0	-2	-3	-12	-11	-6	6	6	5	5	3	3	4	**32**	**224**
1973	763	762	764	775	800	800	802	812	827	812	798	788	32	30	20	5	20	34	44	1	1	1	4	1	1	1	**10**	0	2	10	15	-15	-14	-10	6	6	6	6	3	3	4	**34**	**340**
1974	783	787	798	800	800	800	800	806	828	819	805	796	32	32	26	4	13	27	36	1	1	1	5	3	1	1	**13**	0	0	6	22	-9	-14	-9	6	6	6	6	4	3	4	**35**	**455**
1975	791	789	786	786	798	800	802	812	832	825	812	803	32	30	20	0	7	20	29	1	1	1	6	4	1	1	**15**	2	2	10	20	-7	-13	-9	6	6	6	6	4	3	4	**35**	**525**
1976	800	800	799	799	800	799	794	788	778	767	758	752	33	38	44	54	65	74	80	1	1	1	1	1	1	1	**7**	-1	-5	-6	-10	-11	-9	-6	5	5	4	4	3	4	4	**29**	**203**
1977	749	747	743	743	742	738	729	717	703	689	674	665	94	103	115	129	143	158	167	1	1	1	1	1	1	1	**7**	-4	-9	-12	-14	-14	-15	-9	5	4	3	3	3	3	4	**25**	**175**
1978	661	656	659	685	718	750	762	778	815	822	809	803	82	70	54	17	10	23	29	1	1	1	2	3	1	1	**10**	32	12	16	37	7	-13	-6	6	6	6	6	6	3	4	**37**	**370**
1979	799	795	792	800	800	800	802	822	832	818	803	794	32	30	10	0	14	29	38	1	1	3	6	3	1	1	**16**	0	2	20	10	-14	-15	-9	6	6	6	6	3	3	4	**34**	**544**
1980	789	788	787	800	800	800	800	817	832	832	819	808	32	32	15	0	0	13	24	1	1	2	6	6	3	1	**20**	0	0	17	15	0	-13	-11	6	6	6	6	6	3	3	**36**	**720**
1981	800	797	794	795	799	800	802	806	805	793	782	775	32	30	26	27	39	50	57	1	1	1	1	1	1	1	**7**	1	2	4	-1	-12	-11	-7	6	6	6	5	3	3	4	**33**	**231**
1982	771	777	796	800	800	800	800	820	832	832	820	808	32	32	12	0	0	12	24	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-12	-12	6	6	6	6	6	3	3	**36**	**756**
1983	800	800	800	800	800	800	800	819	832	832	832	808	32	32	13	0	0	0	24	1	1	3	6	6	6	1	**24**	0	0	19	13	0	0	-24	6	6	6	6	6	6	1	**37**	**888**
1984	800	800	800	800	800	800	797	802	813	801	786	775	32	35	30	19	31	46	57	1	1	1	2	1	1	1	**8**	0	-3	5	11	-12	-15	-11	6	5	6	6	3	3	3	**32**	**256**
1985	772	773	779	786	794	800	801	800	796	784	773	766	32	31	32	36	48	59	66	1	1	1	1	1	1	1	**7**	6	1	-1	-4	-12	-11	-7	6	6	5	5	3	3	4	**32**	**224**
1986	764	764	768	774	800	800	802	827	832	825	811	802	32	30	5	0	7	21	30	1	1	4	6	4	1	1	**18**	0	2	25	5	-7	-14	-9	6	6	6	6	4	3	4	**35**	**630**
1987	796	791	786	784	786	788	786	784	780	770	760	754	44	46	48	52	62	72	78	1	1	1	1	1	1	1	**7**	2	-2	-2	-4	-10	-10	-6	6	5	5	5	4	4	4	**33**	**231**
1988	751	750	750	755	760	762	757	749	742	730	718	711	70	75	83	90	102	114	121	1	1	1	1	1	1	1	**7**	2	-5	-8	-7	-12	-12	-7	6	5	4	4	3	3	4	**29**	**203**
1989	707	704	705	707	711	725	737	753	760	749	738	733	107	95	79	72	83	94	99	1	1	1	1	1	1	1	**7**	14	12	16	7	-11	-11	-5	6	6	6	6	3	3	5	**35**	**245**
1990	731	731	731	733	736	739	737	735	733	720	707	699	93	95	97	99	112	125	133	1	1	1	1	1	1	1	**7**	3	-2	-2	-2	-13	-13	-8	6	5	5	5	3	3	4	**31**	**217**
1991	695	692	689	688	688	695	694	711	722	712	702	696	137	138	121	110	120	130	136	1	1	1	1	1	1	1	**7**	7	-1	17	11	-10	-10	-6	6	5	6	6	4	4	4	**35**	**245**
1992	695	695	694	697	706	711	714	722	722	707	694	685	121	118	110	110	125	138	147	1	1	1	1	1	1	1	**7**	5	3	8	0	-15	-13	-9	6	6	6	6	3	3	4	**34**	**238**
1993	680	675	674	705	734	762	769	783	813	812	798	789	70	63	49	19	20	34	43	1	1	1	2	1	1	1	**8**	28	7	14	30	-1	-14	-9	6	6	6	6	5	3	4	**36**	**288**
1994	783	777	773	772	775	778	777	782	780	770	761	755	54	55	50	52	62	71	77	1	1	1	1	1	1	1	**7**	3	-1	5	-2	-10	-9	-6	6	5	6	5	4	4	4	**34**	**238**

73 - year Average: 11

73 - year Average: 34 **360.53**

1929 - '34 Average: 229.8

Flow Alternative 7

STUDY: 1995C06F-SWRCB-519A DWRSIM: recirc818-h, 03 Sep 97

CP # 20, LAKE McCLURE, EOP SURFACE ELEVATION (FT)

Project: /1995C06F-SWRCB-519A/20/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 867'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	680	680	696	712	759	779	789	845	867	860	846	836	88	78	22	0	7	21	31	1	1	1	6	4	1	1	**15**	20	10	56	22	-7	-14	-10	6	6	6	6	4	3	4	**35**	**525**
1923	808	808	808	808	808	813	826	853	859	849	834	825	54	41	14	8	18	33	42	1	1	3	4	2	1	1	**13**	5	13	27	6	-10	-15	-9	6	6	6	6	4	3	4	**35**	**455**
1924	808	808	808	808	808	807	807	807	794	776	763	752	60	60	60	73	91	104	115	1	1	1	1	1	1	1	**7**	-1	0	0	-13	-18	-13	-11	5	6	6	3	2	3	3	**28**	**196**
1925	752	758	763	767	792	801	818	840	845	832	816	803	66	49	27	22	35	51	64	1	1	1	1	1	1	1	**7**	9	17	22	5	-13	-16	-13	6	6	6	6	3	2	3	**32**	**224**
1926	802	802	803	805	808	814	834	832	831	827	820	812	53	33	35	36	40	47	55	1	1	1	1	1	1	1	**7**	6	20	-2	-1	-4	-7	-8	6	6	5	5	5	4	4	**35**	**245**
1927	808	808	808	808	808	815	817	847	859	854	850	840	52	50	20	8	13	17	27	1	1	1	4	3	2	1	**13**	7	2	30	12	-5	-4	-10	6	6	6	6	5	5	4	**38**	**494**
1928	808	808	808	808	808	809	806	819	817	810	806	802	58	61	48	50	57	61	65	1	1	1	1	1	1	1	**7**	1	-3	13	-2	-7	-4	-4	6	5	6	5	4	5	5	**36**	**252**
1929	802	801	801	800	802	804	804	807	807	809	812	806	63	63	60	60	58	55	61	1	1	1	1	1	1	1	**7**	2	0	3	0	2	3	-6	6	6	6	6	6	6	4	**40**	**280**
1930	805	804	803	803	803	799	802	803	807	810	813	811	68	65	64	60	57	54	56	1	1	1	1	1	1	1	**7**	-4	3	1	4	3	3	-2	5	6	6	6	6	6	5	**40**	**280**
1931	808	808	808	808	808	808	808	808	796	778	765	755	59	59	59	71	89	102	112	1	1	1	1	1	1	1	**7**	0	0	0	-12	-18	-13	-10	6	6	6	3	2	3	4	**30**	**210**
1932	753	754	773	784	808	817	824	848	867	857	843	832	50	43	19	0	10	24	35	1	1	2	6	3	1	1	**15**	9	7	24	19	-10	-14	-11	6	6	6	6	4	3	3	**34**	**510**
1933	808	807	806	808	808	811	814	821	836	824	809	801	56	53	46	31	43	58	66	1	1	1	1	1	1	1	**7**	3	3	7	15	-12	-15	-8	6	6	6	6	3	3	4	**34**	**238**
1934	800	799	802	807	808	816	823	818	809	793	779	770	51	44	49	58	74	88	97	1	1	1	1	1	1	1	**7**	8	7	-5	-9	-16	-14	-9	6	6	5	4	2	3	4	**30**	**210**
1935	769	773	778	795	806	816	840	859	867	854	839	828	51	27	8	0	13	28	39	1	1	4	6	3	1	1	**17**	10	24	19	8	-13	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1936	808	808	808	808	808	820	840	859	865	853	838	827	47	27	8	2	14	29	40	1	1	4	5	3	1	1	**16**	12	20	19	6	-12	-15	-11	6	6	6	6	3	3	3	**33**	**528**
1937	808	808	808	808	808	820	834	859	867	853	838	827	47	33	8	0	14	29	40	1	1	4	6	3	1	1	**17**	12	14	25	8	-14	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1938	808	808	808	808	808	820	840	859	867	867	855	840	47	27	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1939	808	808	808	808	808	816	831	831	820	802	786	775	51	36	36	47	65	81	92	1	1	1	1	1	1	1	**7**	8	15	0	-11	-18	-16	-11	6	6	6	3	2	2	3	**28**	**196**
1940	777	778	779	805	808	820	837	859	861	845	829	816	47	30	8	6	22	38	51	1	1	4	4	1	1	1	**13**	12	17	22	2	-16	-16	-13	6	6	6	6	2	2	3	**31**	**403**
1941	808	808	808	808	808	820	834	859	867	863	850	840	47	33	8	0	4	17	27	1	1	4	6	5	2	1	**20**	12	14	25	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1942	808	808	808	808	808	820	838	859	867	860	851	840	47	29	8	0	7	16	27	1	1	4	6	4	2	1	**19**	12	18	21	8	-7	-9	-11	6	6	6	6	4	4	3	**35**	**665**
1943	808	808	808	808	808	820	840	859	864	853	838	828	47	27	8	3	14	29	39	1	1	4	5	3	1	1	**16**	12	20	19	5	-11	-15	-10	6	6	6	6	3	3	4	**34**	**544**
1944	808	808	808	808	808	817	812	833	835	822	804	790	50	55	34	32	45	63	77	1	1	1	1	1	1	1	**7**	9	-5	21	2	-13	-18	-14	6	5	6	6	3	2	3	**31**	**217**
1945	788	795	801	805	808	820	833	856	867	856	842	831	47	34	11	0	11	25	36	1	1	3	6	3	1	1	**16**	12	13	23	11	-11	-14	-11	6	6	6	6	3	3	3	**33**	**528**
1946	808	808	808	808	808	818	835	856	855	839	823	810	49	32	11	12	28	44	57	1	1	3	3	1	1	1	**11**	10	17	21	-1	-16	-16	-13	6	6	6	5	2	2	3	**30**	**330**
1947	808	808	808	808	808	815	821	833	826	810	795	786	52	46	34	41	57	72	81	1	1	1	1	1	1	1	**7**	7	6	12	-7	-16	-15	-9	6	6	6	4	2	3	4	**31**	**217**
1948	785	786	787	789	791	790	794	817	834	820	801	787	77	73	50	33	47	66	80	1	1	1	1	1	1	1	**7**	-1	4	23	17	-14	-19	-14	5	6	6	6	3	2	3	**31**	**217**
1949	784	784	785	786	790	798	807	827	826	805	785	770	69	60	40	41	62	82	97	1	1	1	1	1	1	1	**7**	8	9	20	-1	-21	-20	-15	6	6	6	5	1	2	3	**29**	**203**
1950	767	766	766	774	787	790	805	825	826	806	786	771	77	62	42	41	61	81	96	1	1	1	1	1	1	1	**7**	3	15	20	1	-20	-20	-15	6	6	6	6	2	2	3	**31**	**217**
1951	768	808	808	808	808	819	825	832	830	811	791	775	48	42	35	37	56	76	92	1	1	1	1	1	1	1	**7**	11	6	7	-2	-19	-20	-16	6	6	6	5	2	2	2	**29**	**203**
1952	772	773	786	808	808	820	840	859	867	864	852	840	47	27	8	0	3	15	27	1	1	4	6	5	2	1	**20**	12	20	19	8	-3	-12	-12	6	6	6	6	5	3	3	**35**	**700**
1953	808	808	808	808	808	809	813	811	818	804	784	769	58	54	56	49	63	83	98	1	1	1	1	1	1	1	**7**	1	4	-2	7	-14	-20	-15	6	6	5	6	3	2	3	**31**	**217**
1954	766	766	766	769	779	793	808	825	816	795	774	758	74	59	42	51	72	93	109	1	1	1	1	1	1	1	**7**	14	15	17	-9	-21	-21	-16	6	6	6	4	1	1	2	**26**	**182**
1955	755	753	757	764	769	771	771	794	804	788	770	761	96	96	73	63	79	97	106	1	1	1	1	1	1	1	**7**	2	0	23	10	-16	-18	-9	6	6	6	6	2	2	4	**32**	**224**
1956	758	758	808	808	808	819	832	859	867	863	850	840	48	35	8	0	4	17	27	1	1	4	6	5	2	1	**20**	11	13	27	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1957	808	808	808	808	808	813	810	824	834	817	799	784	54	57	43	33	50	68	83	1	1	1	1	1	1	1	**7**	5	-3	14	10	-17	-18	-15	6	5	6	6	2	2	3	**30**	**210**
1958	781	781	786	793	808	820	840	859	867	862	850	840	47	27	8	0	5	17	27	1	1	4	6	4	2	1	**19**	12	20	19	8	-5	-12	-10	6	6	6	6	5	3	4	**36**	**684**
1959	808	808	808	808	808	813	820	821	812	792	775	768	54	47	46	55	75	92	99	1	1	1	1	1	1	1	**7**	5	7	1	-9	-20	-17	-7	6	6	6	4	2	2	4	**30**	**210**
1960	767	766	766	766	778	786	801	814	811	796	782	772	81	66	53	56	71	85	95	1	1	1	1	1	1	1	**7**	8	15	13	-3	-15	-14	-10	6	6	6	5	3	3	4	**33**	**231**
1961	771	771	773	774	777	777	782	783	775	757	740	728	90	85	84	92	110	127	139	1	1	1	1	1	1	1	**7**	0	5	1	-8	-18	-17	-12	6	6	6	4	2	2	3	**29**	**203**
1962	727	727	729	732	774	784	805	820	834	821	803	789	83	62	47	33	46	64	78	1	1	1	1	1	1	1	**7**	10	21	15	14	-13	-18	-14	6	6	6	6	3	2	3	**32**	**224**
1963	787	787	788	796	808	814	823	848	861	852	837	826	53	44	19	6	15	30	41	1	1	2	4	2	1	1	**12**	6	9	25	13	-9	-15	-11	6	6	6	6	4	3	3	**34**	**408**
1964	808	808	808	808	808	808	809	817	815	799	782	773	59	58	50	52	68	85	94	1	1	1	1	1	1	1	**7**	0	1	8	-2	-16	-17	-9	6	6	6	5	2	2	4	**31**	**217**
1965	770	774	808	808	808	815	831	854	867	861	850	840	52	36	13	0	6	17	27	1	1	3	6	4	2	1	**18**	7	16	23	13	-6	-11	-10	6	6	6	6	4	3	4	**35**	**630**
1966	808	808	808	808	808	814	825	833	820	798	777	764	53	42	34	47	69	90	103	1	1	1	1	1	1	1	**7**	6	11	8	-13	-22	-21	-13	6	6	6	3	1	1	3	**26**	**182**
1967	761	763	788	801	808	820	840	859	867	867	856	840	47	27	8	0	0	11	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1968	808	808	808	808	808	812	815	818	808	789	773	762	55	52	49	59	78	94	105	1	1	1	1	1	1	1	**7**	4	3	3	-10	-19	-16	-11	6	6	6	4	2	2	3	**29**	**203**
1969	759	763	771	808	808	820	840	859	867	867	854	840	47	27	8	0	0	13	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-13	-14	6	6	6	6	6	3	3	**36**	**792**
1970	808	808	808	808	808	820	818	833	833	816	797	783	47	49	34	34	51	70	84	1	1	1	1	1	1	1	**7**	12	-2	15	0	-17	-19	-14	6	5	6	6	2	2	3	**30**	**210**
1971	780	783	793	802	808	812	811	821	831	816	798	784	55	56	46	36	51	69	83	1	1	1	1	1	1	1	**7**	4	-1	10	10	-15	-18	-14	6	5	6	6	3	2	3	**31**	**217**
1972	781	781	789	794	800	811	811	824	824	808	793	786	56	56	43	43	59	74	81	1	1	1	1	1	1	1	**7**	11	0	13	0	-16	-15	-7	6	6	6	6	2	3	4	**33**	**231**
1973	786	788	794	807	808	820	828	859	867	852	838	828	47	39	8	0	15	29	39	1	1	4	6	2	1	1	**16**	12	8	31	8	-15	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1974	808	808	808	808	808	820	833	859	867	854	839	829	47	34	8	0	13	28	38	1	1	4	6	3	1	1	**17**	12	13	26	8	-13	-15	-10	6	6	6	6	3	3	4	**34**	**578**
1975	808	808	808	808	808	820	823	855	867	856	842	832	47	44	12	0	11	25	35	1	1	3	6	3	1	1	**16**	12	3	32	12	-11	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1976	808	808	808	808	808	809	806	806	794	777	764	754	58	61	61	73	90	103	113	1	1	1	1	1	1	1	**7**	1	-3	0	-12	-17	-13	-10	6	5	6	3	2	3	4	**29**	**203**
1977	753	751	750	750	749	745	732	716	703	672	637	626	122	135	151	164	195	230	241	1	1	1	1	1	1	1	**7**	-4	-13	-16	-13	-31	-35	-11	5	3	2	3	1	1	3	**18**	**126**
1978	626	626	641	693	741	782	815	859	867	867	856	840	85	52	8	0	0	11	27	1	1	4	6	6	3	1	**22**	41	33	44	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1979	808	808	808	808	808	820	828	859	863	849	834	823	47	39	8	4	18	33	44	1	1	4	5	2	1	1	**15**	12	8	31	4	-14	-15	-11	6	6	6	6	3	3	3	**33**	**495**
1980	808	808	808	808	808	820	835	859	867	867	855	840	47	32	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	15	24	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1981	808	807	807	808	808	813	822	834	830	815	801	793	54	45	33	37	52	66	74	1	1	1	1	1	1	1	**7**	5	9	12	-4	-15	-14	-8	6	6	6	5	3	3	4	**33**	**231**
1982	791	800	808	808	808	820	840	859	867	865	854	840	47	27	8	0	2	13	27	1	1	4	6	5	3	1	**21**	12	20	19	8	-2	-11	-14	6	6	6	6	5	3	3	**35**	**735**
1983	808	808	808	808	808	820	836	859	867	867	864	840	47	31	8	0	0	3	27	1	1	4	6	6	5	1	**24**	12	16	23	8	0	-3	-24	6	6	6	6	6	5	1	**36**	**864**
1984	808	808	808	808	808	820	825	846	844	828	809	796	47	42	21	23	39	58	71	1	1	1	1	1	1	1	**7**	12	5	21	-2	-16	-19	-13	6	6	6	5	2	2	3	**30**	**210**
1985	795	798	802	804	808	814	827	839	833	818	804	795	53	40	28	34	49	63	72	1	1	1	1	1	1	1	**7**	6	13	12	-6	-15	-14	-9	6	6	6	4	3	3	4	**32**	**224**
1986	795	797	803	808	808	820	839	859	867	855	841	830	47	28	8	0	12	26	37	1	1	4	6	3	1	1	**17**	12	19	20	8	-12	-14	-11	6	6	6	6	3	3	3	**33**	**561**
1987	808	807	807	807	808	810	817	819	809	793	780	771	57	50	48	58	74	87	96	1	1	1	1	1	1	1	**7**	2	7	2	-10	-16	-13	-9	6	6	6	4	2	3	4	**31**	**217**
1988	770	771	773	779	783	789	793	796	788	771	757	745	78	74	71	79	96	110	122	1	1	1	1	1	1	1	**7**	6	4	3	-8	-17	-14	-12	6	6	6	4	2	3	3	**30**	**210**
1989	743	743	745	746	751	769	790	800	796	780	766	757	98	77	67	71	87	101	110	1	1	1	1	1	1	1	**7**	18	21	10	-4	-16	-14	-9	6	6	6	5	2	3	4	**32**	**224**
1990	759	760	760	763	766	773	782	780	772	755	737	725	94	85	87	95	112	130	142	1	1	1	1	1	1	1	**7**	7	9	-2	-8	-17	-18	-12	6	6	5	4	2	2	3	**28**	**196**
1991	723	722	721	721	720	741	748	770	785	771	757	746	126	119	97	82	96	110	121	1	1	1	1	1	1	1	**7**	21	7	22	15	-14	-14	-11	6	6	6	6	3	3	3	**33**	**231**
1992	745	746	747	749	764	770	786	790	778	765	749	738	97	81	77	89	102	118	129	1	1	1	1	1	1	1	**7**	6	16	4	-12	-13	-16	-11	6	6	6	3	3	2	3	**29**	**203**
1993	736	737	743	789	808	820	837	859	867	861	848	837	47	30	8	0	6	19	30	1	1	4	6	4	2	1	**19**	12	17	22	8	-6	-13	-11	6	6	6	6	4	3	3	**34**	**646**
1994	808	807	808	808	808	810	814	820	812	797	783	774	57	53	47	55	70	84	93	1	1	1	1	1	1	1	**7**	2	4	6	-8	-15	-14	-9	6	6	6	4	3	3	4	**32**	**224**

73 - year Average: 11

73 - year Average: 32 **382.4**

1929 - '34 Average: 288.0

Flow Alternative 7

STUDY: 1995C06F-SWRCB-519A DWRSIM: recirc818-h, 03 Sep 97
CP # 18, CVP MILLERTON LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-519A/18/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 576'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	491	505	527	547	549	566	559	576	576	562	518	491
1923	485	495	520	537	531	517	541	549	540	526	463	470
1924	483	494	508	522	516	503	506	511	505	478	464	468
1925	465	474	490	503	508	493	514	532	522	499	483	475
1926	477	490	505	519	522	508	549	563	535	494	473	485
1927	491	506	528	545	560	561	560	569	576	543	492	482
1928	482	503	525	542	540	543	551	554	522	477	465	477
1929	485	499	513	523	517	513	531	531	527	506	466	477
1930	480	495	507	518	514	510	525	534	518	489	466	482
1931	487	501	513	522	517	508	510	516	508	482	466	466
1932	467	476	503	520	543	531	524	532	552	518	492	477
1933	477	489	501	516	512	501	520	537	526	509	466	467
1934	470	480	500	517	511	503	516	527	523	498	477	486
1935	490	500	515	535	532	509	542	563	574	538	469	479
1936	486	502	518	533	560	558	564	576	563	521	472	478
1937	488	497	516	535	560	570	576	576	576	538	484	469
1938	472	486	533	560	560	542	529	467	572	576	532	520
1939	513	514	529	538	532	524	542	560	539	504	473	495
1940	495	504	517	550	550	552	548	561	553	512	466	471
1941	481	494	528	556	560	573	573	569	576	569	527	506
1942	497	507	532	552	549	553	554	562	576	555	509	477
1943	477	494	518	557	556	576	574	576	562	526	491	476
1944	479	491	508	521	524	507	516	517	501	494	490	480
1945	481	503	523	533	560	568	565	571	576	554	511	491
1946	485	502	531	548	528	524	536	559	546	510	478	480
1947	481	500	526	543	541	530	545	556	535	497	473	481
1948	488	503	518	529	523	530	556	551	541	483	480	484
1949	490	500	513	526	524	511	522	538	521	482	477	489
1950	492	503	519	536	541	524	534	551	539	506	476	482
1951	490	533	560	560	554	546	552	546	514	463	463	481
1952	488	500	530	559	560	567	559	526	576	571	525	508
1953	501	514	533	549	538	532	541	536	518	497	478	481
1954	488	497	514	532	532	527	537	560	544	507	465	483
1955	489	502	522	540	537	520	534	545	537	504	481	487
1956	491	499	560	560	560	576	576	561	576	566	524	505
1957	496	504	517	527	525	529	546	561	562	526	471	481
1958	488	501	525	545	554	565	576	576	576	557	516	498
1959	492	507	523	530	536	528	550	566	551	500	470	475
1960	474	475	480	490	503	498	515	525	509	496	483	481
1961	481	491	505	511	510	511	526	539	527	486	467	467
1962	468	471	484	492	538	529	527	555	569	540	489	476
1963	479	491	501	518	558	558	576	576	576	564	520	503
1964	490	517	542	551	547	544	553	561	551	508	476	484
1965	481	496	529	560	556	554	559	551	561	540	512	496
1966	487	513	546	558	541	526	545	564	550	506	486	486
1967	490	502	539	559	560	571	565	514	570	576	539	522
1968	515	521	539	545	545	539	550	554	539	506	478	482
1969	480	496	513	560	524	521	467	469	576	576	538	513
1970	498	516	540	560	560	554	554	555	544	517	476	477
1971	482	502	534	551	548	533	541	544	520	498	491	478
1972	479	491	519	536	532	524	537	543	540	497	481	481
1973	489	501	523	545	560	560	550	575	576	542	483	477
1974	487	510	545	560	544	550	559	570	573	537	490	473
1975	476	494	515	528	535	526	533	536	567	525	476	482
1976	489	511	531	541	539	544	547	542	519	492	479	494
1977	490	496	500	503	501	464	465	464	462	466	461	462
1978	462	462	484	532	560	552	510	498	576	576	548	539
1979	528	535	549	560	555	562	560	571	563	521	477	482
1980	489	488	508	560	560	558	566	550	576	576	542	513
1981	503	512	520	528	531	533	547	553	543	510	477	488
1982	491	504	536	560	560	576	546	561	576	576	546	541
1983	531	556	560	560	513	484	467	467	483	564	572	576
1984	560	560	560	560	560	568	570	570	557	530	487	483
1985	482	492	511	536	533	526	551	563	539	501	483	483
1986	490	508	534	554	550	552	574	565	576	558	503	479
1987	480	489	492	495	496	511	530	551	539	503	473	480
1988	482	495	507	526	516	527	539	547	527	498	483	486
1989	486	497	505	515	512	516	537	552	540	502	478	484
1990	489	495	502	510	510	517	532	544	525	508	479	483
1991	480	486	492	489	493	489	501	508	512	506	480	486
1992	485	490	494	498	499	490	493	494	480	470	465	466
1993	467	466	476	536	543	556	558	576	576	571	522	499
1994	490	497	507	512	508	520	534	548	528	498	478	484

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	10	17	0	0	14	58	85
1923	59	35	27	36	50	113	106
1924	73	70	65	71	98	112	108
1925	83	62	44	54	77	93	101
1926	68	27	13	41	82	103	91
1927	15	16	7	0	33	84	94
1928	33	25	22	54	99	111	99
1929	63	45	45	49	70	110	99
1930	66	51	42	58	87	110	94
1931	68	66	60	68	94	110	110
1932	45	52	44	24	58	84	99
1933	75	56	39	50	67	110	109
1934	73	60	49	53	78	99	90
1935	67	34	13	2	38	107	97
1936	18	12	0	13	55	104	98
1937	6	0	0	0	38	92	107
1938	34	47	109	4	0	44	56
1939	52	34	16	37	72	103	81
1940	24	28	15	23	64	110	105
1941	3	3	7	0	7	49	70
1942	23	22	14	0	21	67	99
1943	0	2	0	14	50	85	100
1944	69	60	59	75	82	86	96
1945	8	11	5	0	22	65	85
1946	52	40	17	30	66	98	96
1947	46	31	20	41	79	103	95
1948	46	20	25	35	93	96	92
1949	65	54	38	55	94	99	87
1950	52	42	25	37	70	100	94
1951	30	24	30	62	113	113	95
1952	9	17	50	0	5	51	68
1953	44	35	40	58	79	98	95
1954	49	39	16	32	69	111	93
1955	56	42	31	39	72	95	89
1956	0	0	15	0	10	52	71
1957	47	30	15	14	50	105	95
1958	11	0	0	0	19	60	78
1959	48	26	10	25	76	106	101
1960	78	61	51	67	80	93	95
1961	65	50	37	49	90	109	109
1962	47	49	21	7	36	87	100
1963	18	0	0	0	12	56	73
1964	32	23	15	25	68	100	92
1965	22	17	25	15	36	64	80
1966	50	31	12	26	70	90	90
1967	5	11	62	6	0	37	54
1968	37	26	22	37	70	98	94
1969	55	109	107	0	0	38	63
1970	22	22	21	32	59	100	99
1971	43	35	32	56	78	85	98
1972	52	39	33	36	79	95	95
1973	16	26	1	0	34	93	99
1974	26	17	6	3	39	86	103
1975	50	43	40	9	51	100	94
1976	32	29	34	57	84	97	82
1977	112	111	112	114	110	115	114
1978	24	66	78	0	0	28	37
1979	14	16	5	13	55	99	94
1980	18	10	26	0	0	34	63
1981	43	29	23	33	66	99	88
1982	0	30	15	0	0	30	35
1983	92	109	109	93	12	4	0
1984	8	6	6	19	46	89	93
1985	50	25	13	37	75	93	93
1986	24	2	11	0	18	73	97
1987	65	46	25	37	73	103	96
1988	49	37	29	49	78	93	90
1989	60	39	24	36	74	98	92
1990	59	44	32	51	68	97	93
1991	87	75	68	64	70	96	90
1992	86	83	82	96	106	111	110
1993	20	18	0	0	5	54	77
1994	56	42	28	48	78	98	92

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	3	2	6	6	3	1	1	**22**
1923	1	1	1	1	1	1	1	**7**
1924	1	1	1	1	1	1	1	**7**
1925	1	1	1	1	1	1	1	**7**
1926	1	1	3	1	1	1	1	**9**
1927	2	2	4	6	1	1	1	**17**
1928	1	1	1	1	1	1	1	**7**
1929	1	1	1	1	1	1	1	**7**
1930	1	1	1	1	1	1	1	**7**
1931	1	1	1	1	1	1	1	**7**
1932	1	1	1	1	1	1	1	**7**
1933	1	1	1	1	1	1	1	**7**
1934	1	1	1	1	1	1	1	**7**
1935	1	1	3	5	1	1	1	**13**
1936	2	3	6	3	1	1	1	**17**
1937	4	6	6	6	1	1	1	**25**
1938	1	1	1	5	6	1	1	**16**
1939	1	1	2	1	1	1	1	**8**
1940	1	1	2	1	1	1	1	**8**
1941	5	5	4	6	4	1	1	**26**
1942	1	1	3	6	1	1	1	**14**
1943	6	5	6	3	1	1	1	**23**
1944	1	1	1	1	1	1	1	**7**
1945	4	3	4	6	1	1	1	**20**
1946	1	1	2	1	1	1	1	**8**
1947	1	1	1	1	1	1	1	**7**
1948	1	1	1	1	1	1	1	**7**
1949	1	1	1	1	1	1	1	**7**
1950	1	1	1	1	1	1	1	**7**
1951	1	1	1	1	1	1	1	**7**
1952	4	2	1	6	4	1	1	**19**
1953	1	1	1	1	1	1	1	**7**
1954	1	1	2	1	1	1	1	**8**
1955	1	1	1	1	1	1	1	**7**
1956	6	6	2	6	3	1	1	**25**
1957	1	1	2	3	1	1	1	**10**
1958	3	6	6	6	2	1	1	**25**
1959	1	1	3	1	1	1	1	**9**
1960	1	1	1	1	1	1	1	**7**
1961	1	1	1	1	1	1	1	**7**
1962	1	1	1	4	1	1	1	**10**
1963	2	6	6	6	3	1	1	**25**
1964	1	1	2	1	1	1	1	**8**
1965	1	2	1	2	1	1	1	**9**
1966	1	1	3	1	1	1	1	**9**
1967	4	3	1	4	6	1	1	**20**
1968	1	1	1	1	1	1	1	**7**
1969	1	1	1	6	6	1	1	**17**
1970	1	1	1	1	1	1	1	**7**
1971	1	1	1	1	1	1	1	**7**
1972	1	1	1	1	1	1	1	**7**
1973	2	1	5	6	1	1	1	**17**
1974	1	2	4	5	1	1	1	**15**
1975	1	1	1	4	1	1	1	**10**
1976	1	1	1	1	1	1	1	**7**
1977	1	1	1	1	1	1	1	**7**
1978	1	1	1	6	6	1	1	**17**
1979	3	2	4	3	1	1	1	**15**
1980	2	3	1	6	6	1	1	**20**
1981	1	1	1	1	1	1	1	**7**
1982	6	1	2	6	6	1	1	**23**
1983	1	1	1	1	3	5	6	**18**
1984	4	4	4	2	1	1	1	**17**
1985	1	1	3	1	1	1	1	**9**
1986	1	5	3	6	2	1	1	**19**
1987	1	1	1	1	1	1	1	**7**
1988	1	1	1	1	1	1	1	**7**
1989	1	1	1	1	1	1	1	**7**
1990	1	1	1	1	1	1	1	**7**
1991	1	1	1	1	1	1	1	**7**
1992	1	1	1	1	1	1	1	**7**
1993	1	2	6	6	4	1	1	**21**
1994	1	1	1	1	1	1	1	**7**
					73 - year Average:			**12**

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	17	-7	17	0	-14	-44	-27
1923	-14	24	8	-9	-14	-63	7
1924	-13	3	5	-6	-27	-14	4
1925	-15	21	18	-10	-23	-16	-8
1926	-14	41	14	-28	-41	-21	12
1927	1	-1	9	7	-33	-51	-10
1928	3	8	3	-32	-45	-12	12
1929	-4	18	0	-4	-21	-40	11
1930	-4	15	9	-16	-29	-23	16
1931	-9	2	6	-8	-26	-16	0
1932	-12	-7	8	20	-34	-26	-15
1933	-11	19	17	-11	-17	-43	1
1934	-8	13	11	-4	-25	-21	9
1935	-23	33	21	11	-36	-69	10
1936	-2	6	12	-13	-42	-49	6
1937	10	6	0	0	-38	-54	-15
1938	-18	-13	-62	105	4	-44	-12
1939	-8	18	18	-21	-35	-31	22
1940	2	-4	13	-8	-41	-46	5
1941	13	0	-4	7	-7	-42	-21
1942	4	1	8	14	-21	-46	-32
1943	20	-2	2	-14	-36	-35	-15
1944	-17	9	1	-16	-7	-4	-10
1945	8	-3	6	5	-22	-43	-20
1946	-4	12	23	-13	-36	-32	2
1947	-11	15	11	-21	-38	-24	8
1948	7	26	-5	-10	-58	-3	4
1949	-13	11	16	-17	-39	-5	12
1950	-17	10	17	-12	-33	-30	6
1951	-8	6	-6	-32	-51	0	18
1952	7	-8	-33	50	-5	-46	-17
1953	-6	9	-5	-18	-21	-19	3
1954	-5	10	23	-16	-37	-42	18
1955	-17	14	11	-8	-33	-23	6
1956	16	0	-15	15	-10	-42	-19
1957	4	17	15	1	-36	-55	10
1958	11	11	0	0	-19	-41	-18
1959	-8	22	16	-15	-51	-30	5
1960	-5	17	10	-16	-13	-13	-2
1961	1	15	13	-12	-41	-19	0
1962	-9	-2	28	14	-29	-51	-13
1963	0	18	0	0	-12	-44	-17
1964	-3	9	8	-10	-43	-32	8
1965	-2	5	-8	10	-21	-28	-16
1966	-15	19	19	-14	-44	-20	0
1967	11	-6	-51	56	6	-37	-17
1968	-6	11	4	-15	-33	-28	4
1969	-3	-54	2	107	0	-38	-25
1970	-6	0	1	-11	-27	-41	1
1971	-15	8	3	-24	-22	-7	-13
1972	-8	13	6	-3	-43	-16	0
1973	0	-10	25	1	-34	-59	-6
1974	6	9	11	3	-36	-47	-17
1975	-9	7	3	31	-42	-49	6
1976	5	3	-5	-23	-27	-13	15
1977	-37	1	-1	-2	4	-5	1
1978	-8	-42	-12	78	0	-28	-9
1979	7	-2	11	-8	-42	-44	5
1980	-2	8	-16	26	0	-34	-29
1981	2	14	6	-10	-33	-33	11
1982	16	-30	15	15	0	-30	-5
1983	-29	-17	0	16	81	8	4
1984	8	2	0	-13	-27	-43	-4
1985	-7	25	12	-24	-38	-18	0
1986	2	22	-9	11	-18	-55	-24
1987	15	19	21	-12	-36	-30	7
1988	11	12	8	-20	-29	-15	3
1989	4	21	15	-12	-38	-24	6
1990	7	15	12	-19	-17	-29	4
1991	-4	12	7	4	-6	-26	6
1992	-9	3	1	-14	-10	-5	1
1993	13	2	18	0	-5	-49	-23
1994	12	14	14	-20	-30	-20	6

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	6	4	6	6	3	1	1	**27**	**594**
1923	3	6	6	4	3	1	6	**29**	**203**
1924	3	6	6	4	1	3	6	**29**	**203**
1925	3	6	6	4	1	2	4	**26**	**182**
1926	3	6	6	1	1	1	6	**24**	**216**
1927	6	5	6	6	1	1	4	**29**	**493**
1928	6	6	6	1	1	3	6	**29**	**203**
1929	5	6	6	5	1	1	6	**30**	**210**
1930	5	6	6	2	1	1	6	**27**	**189**
1931	4	6	6	4	1	2	6	**29**	**203**
1932	3	4	6	6	1	1	3	**24**	**168**
1933	3	6	6	3	2	1	6	**27**	**189**
1934	4	6	6	5	1	1	6	**29**	**203**
1935	1	6	6	6	1	1	6	**27**	**351**
1936	5	6	6	3	1	1	6	**28**	**476**
1937	6	6	6	6	1	1	3	**29**	**725**
1938	2	3	1	6	6	1	3	**22**	**352**
1939	4	6	6	1	1	1	6	**25**	**200**
1940	6	5	6	4	1	1	6	**29**	**232**
1941	6	6	5	6	4	1	1	**29**	**754**
1942	6	6	6	6	1	1	1	**27**	**378**
1943	6	5	6	3	1	1	3	**25**	**575**
1944	2	6	6	2	4	5	4	**29**	**203**
1945	6	5	6	6	1	1	2	**27**	**540**
1946	5	6	6	3	1	1	6	**28**	**224**
1947	3	6	6	1	1	1	6	**24**	**168**
1948	6	6	5	4	1	5	6	**33**	**231**
1949	3	6	6	2	1	5	6	**29**	**203**
1950	2	6	6	3	1	1	6	**25**	**175**
1951	4	6	4	1	1	6	6	**28**	**196**
1952	6	4	1	6	5	1	2	**25**	**475**
1953	4	6	5	2	1	2	6	**26**	**182**
1954	5	6	6	2	1	1	6	**27**	**216**
1955	2	6	6	4	1	1	6	**26**	**182**
1956	6	6	3	6	4	1	2	**28**	**700**
1957	6	6	6	6	1	1	6	**32**	**320**
1958	6	6	6	6	2	1	2	**29**	**725**
1959	4	6	6	3	1	1	6	**27**	**243**
1960	5	6	6	2	3	3	5	**30**	**210**
1961	6	6	6	3	1	2	6	**30**	**210**
1962	4	5	6	6	1	1	3	**26**	**260**
1963	6	6	6	6	3	1	2	**30**	**750**
1964	5	6	6	4	1	1	6	**29**	**232**
1965	5	6	4	6	1	1	2	**25**	**225**
1966	3	6	6	3	1	2	6	**27**	**243**
1967	6	4	1	6	6	1	2	**26**	**520**
1968	4	6	6	3	1	1	6	**27**	**189**
1969	5	1	6	6	6	1	1	**26**	**442**
1970	4	6	6	3	1	1	6	**27**	**189**
1971	3	6	6	1	1	4	3	**24**	**168**
1972	4	6	6	5	1	2	6	**30**	**210**
1973	6	4	6	6	1	1	4	**28**	**476**
1974	6	6	6	6	1	1	2	**28**	**420**
1975	4	6	6	6	1	1	6	**30**	**300**
1976	6	6	5	1	1	3	6	**28**	**196**
1977	1	6	5	5	6	5	6	**34**	**238**
1978	4	1	3	6	6	1	4	**25**	**425**
1979	6	5	6	4	1	1	6	**29**	**435**
1980	5	6	2	6	6	1	1	**27**	**540**
1981	6	6	6	4	1	1	6	**30**	**210**
1982	6	1	6	6	6	1	5	**31**	**713**
1983	1	2	6	6	6	6	6	**33**	**594**
1984	6	6	6	3	1	1	5	**28**	**476**
1985	4	6	6	1	1	2	6	**26**	**234**
1986	6	6	4	6	2	1	1	**26**	**494**
1987	6	6	6	3	1	1	6	**29**	**203**
1988	6	6	6	2	1	3	6	**30**	**210**
1989	6	6	6	3	1	1	6	**29**	**203**
1990	6	6	6	2	2	1	6	**29**	**203**
1991	5	6	6	6	4	1	6	**34**	**238**
1992	4	6	6	3	4	5	6	**34**	**238**
1993	6	6	6	6	5	1	1	**31**	**651**
1994	6	6	6	2	1	2	6	**29**	**203**
					73 - year Average:			**28**	**329.2**
					1929 - '34 Average:				**193.7**

Flow Alternative 7

STUDY: 1995C06F-SWRCB-519A DWRSIM: recirc818-h, 03 Sep 97
CP # 12, SWP SAN LUIS RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-519A/12/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 544'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	419	441	476	521	539	544	544	520	503	464	415	424	0	0	24	41	80	129	120	6	6	1	1	1	1	1	**17**	5	0	-24	-17	-39	-49	9	6	6	1	2	1	1	6	**23**	**391**
1923	457	486	491	506	517	524	526	492	456	438	418	405	20	18	52	88	106	126	139	1	2	1	1	1	1	1	**8**	7	2	-34	-36	-18	-20	-13	6	6	1	1	2	2	3	**21**	**168**
1924	428	438	445	494	524	524	523	498	465	428	388	383	20	21	46	79	116	156	161	1	1	1	1	1	1	1	**7**	0	-1	-25	-33	-37	-40	-5	6	5	1	1	1	1	5	**20**	**140**
1925	382	394	440	472	520	530	539	509	476	438	390	385	14	5	35	68	106	154	159	3	4	1	1	1	1	1	**12**	10	9	-30	-33	-38	-48	-5	6	6	1	1	1	1	5	**21**	**252**
1926	401	414	426	479	521	532	538	506	481	461	394	383	12	6	38	63	83	150	161	3	4	1	1	1	1	1	**12**	11	6	-32	-25	-20	-67	-11	6	6	1	1	2	1	3	**20**	**240**
1927	411	450	489	534	544	544	543	508	474	452	411	423	0	1	36	70	92	133	121	6	5	1	1	1	1	1	**16**	0	-1	-35	-34	-22	-41	12	6	5	1	1	1	1	6	**21**	**336**
1928	457	487	497	512	525	531	532	493	454	433	415	401	13	12	51	90	111	129	143	3	3	1	1	1	1	1	**11**	6	1	-39	-39	-21	-18	-14	6	6	1	1	1	2	3	**20**	**220**
1929	413	437	464	511	537	543	537	517	488	451	414	409	1	7	27	56	93	130	135	5	4	1	1	1	1	1	**14**	6	-6	-20	-29	-37	-37	-5	6	4	2	1	1	1	5	**20**	**280**
1930	409	415	465	517	530	541	535	496	468	461	447	425	3	9	48	76	83	97	119	5	4	1	1	1	1	1	**14**	11	-6	-39	-28	-7	-14	-22	6	4	1	1	4	3	1	**20**	**280**
1931	430	435	436	478	493	494	495	475	456	421	373	371	50	49	69	88	123	171	173	1	1	1	1	1	1	1	**7**	1	1	-20	-19	-35	-48	-2	6	6	2	2	1	1	5	**23**	**161**
1932	380	383	447	505	536	536	536	513	494	465	413	399	8	8	31	50	79	131	145	4	4	1	1	1	1	1	**13**	0	0	-23	-19	-29	-52	-14	6	6	1	2	1	1	3	**20**	**260**
1933	420	428	433	481	504	511	520	501	468	428	378	374	33	24	43	76	116	166	170	1	1	1	1	1	1	1	**7**	7	9	-19	-33	-40	-50	-4	6	6	2	1	1	1	5	**22**	**154**
1934	383	383	434	490	506	506	506	477	456	433	398	388	38	38	67	88	111	146	156	1	1	1	1	1	1	1	**7**	0	0	-29	-21	-23	-35	-10	6	6	1	1	1	1	4	**20**	**140**
1935	384	407	428	489	498	532	538	513	476	428	357	356	12	6	31	68	116	187	188	3	4	1	1	1	1	1	**12**	34	6	-25	-37	-48	-71	-1	6	6	1	1	1	1	5	**21**	**252**
1936	395	415	445	497	536	541	543	519	485	455	417	410	3	1	25	59	89	127	134	5	5	1	1	1	1	1	**15**	5	2	-24	-34	-30	-38	-7	6	6	1	1	1	1	4	**20**	**300**
1937	430	445	470	519	537	544	544	541	511	463	412	401	0	0	3	33	81	132	143	6	6	5	1	1	1	1	**21**	7	0	-3	-30	-48	-51	-11	6	6	5	1	1	1	3	**23**	**483**
1938	433	467	500	516	531	541	544	544	537	502	466	482	3	0	0	7	42	78	62	5	6	6	4	1	1	1	**24**	10	3	0	-7	-35	-36	16	6	6	6	4	1	1	6	**30**	**720**
1939	511	521	526	539	544	544	537	501	472	462	443	421	0	7	43	72	82	101	123	6	4	1	1	1	1	1	**15**	0	-7	-36	-29	-10	-19	-22	6	4	1	1	4	2	1	**19**	**285**
1940	424	422	417	483	526	532	533	500	456	431	353	350	12	11	44	88	113	191	194	3	3	1	1	1	1	1	**11**	6	1	-33	-44	-25	-78	-3	6	6	1	1	1	1	5	**21**	**231**
1941	389	422	460	513	534	538	535	532	517	465	421	441	6	9	12	27	79	123	103	4	4	3	1	1	1	1	**15**	4	-3	-3	-15	-52	-44	20	6	5	5	3	1	1	6	**27**	**405**
1942	474	489	495	510	522	527	524	499	491	452	416	434	17	20	45	53	92	128	110	2	1	1	1	1	1	1	**8**	5	-3	-25	-8	-39	-36	18	6	5	1	4	1	1	6	**24**	**192**
1943	467	484	490	505	517	529	532	524	495	464	416	418	15	12	20	49	80	128	126	2	3	1	1	1	1	1	**10**	12	3	-8	-29	-31	-48	2	6	6	4	1	1	1	6	**25**	**250**
1944	453	485	503	518	532	539	527	493	463	450	431	410	5	17	51	81	94	113	134	4	2	1	1	1	1	1	**11**	7	-12	-34	-30	-13	-19	-21	6	3	1	1	3	2	1	**17**	**187**
1945	418	456	492	519	535	541	534	501	464	443	406	394	3	10	43	80	101	138	150	5	3	1	1	1	1	1	**13**	6	-7	-33	-37	-21	-37	-12	6	4	1	1	1	1	3	**17**	**221**
1946	432	465	495	510	521	528	517	480	443	423	406	392	16	27	64	101	121	138	152	2	1	1	1	1	1	1	**8**	7	-11	-37	-37	-20	-17	-14	6	3	1	1	2	2	3	**18**	**144**
1947	418	452	486	517	531	540	529	490	458	447	421	409	4	15	54	86	97	123	135	5	2	1	1	1	1	1	**12**	9	-11	-39	-32	-11	-26	-12	6	3	1	1	3	1	3	**18**	**216**
1948	412	420	420	472	489	511	528	483	447	418	351	361	33	16	61	97	126	193	183	1	2	1	1	1	1	1	**8**	22	17	-45	-36	-29	-67	10	6	6	1	1	1	1	6	**22**	**176**
1949	387	413	445	493	516	544	531	491	455	433	402	389	0	13	53	89	111	142	155	6	3	1	1	1	1	1	**14**	28	-13	-40	-36	-22	-31	-13	6	3	1	1	1	1	3	**16**	**224**
1950	402	415	424	478	519	530	530	491	459	442	410	401	14	14	53	85	102	134	143	3	3	1	1	1	1	1	**11**	11	0	-39	-32	-17	-32	-9	6	6	1	1	2	1	4	**21**	**231**
1951	426	458	495	524	534	540	535	496	452	425	400	392	4	9	48	92	119	144	152	5	4	1	1	1	1	1	**14**	6	-5	-39	-44	-27	-25	-8	6	5	1	1	1	1	4	**19**	**266**
1952	419	450	481	518	531	536	540	543	535	507	487	498	8	4	1	9	37	57	46	4	5	5	4	1	1	1	**21**	5	4	3	-8	-28	-20	11	6	6	6	4	1	2	6	**31**	**651**
1953	505	514	518	532	542	544	537	497	472	450	406	425	0	7	47	72	94	138	119	6	4	1	1	1	1	1	**15**	2	-7	-40	-25	-22	-44	19	6	4	1	1	1	1	6	**20**	**300**
1954	458	486	493	508	520	527	529	488	447	424	403	396	17	15	56	97	120	141	148	2	2	1	1	1	1	1	**9**	7	2	-41	-41	-23	-21	-7	6	6	1	1	1	1	4	**20**	**180**
1955	417	450	480	524	535	542	528	492	465	456	426	418	2	16	52	79	88	118	126	5	2	1	1	1	1	1	**12**	7	-14	-36	-27	-9	-30	-8	6	3	1	1	4	1	4	**20**	**240**
1956	430	443	484	520	534	544	543	519	498	466	422	433	0	1	25	46	78	122	111	6	5	1	1	1	1	1	**16**	10	-1	-24	-21	-32	-44	11	6	5	1	1	1	1	6	**21**	**336**
1957	460	486	496	510	524	530	531	493	462	445	423	413	14	13	51	82	99	121	131	3	3	1	1	1	1	1	**11**	6	1	-38	-31	-17	-22	-10	6	6	1	1	2	1	4	**21**	**231**
1958	446	477	506	522	534	538	539	539	530	492	472	486	6	5	5	14	52	72	58	4	4	4	3	1	1	1	**18**	4	1	0	-9	-38	-20	14	6	6	6	4	1	2	6	**31**	**558**
1959	496	505	509	522	535	541	529	489	455	440	428	419	3	15	55	89	104	116	125	5	2	1	1	1	1	1	**12**	6	-12	-40	-34	-15	-12	-9	6	3	1	1	3	3	4	**21**	**252**
1960	431	444	456	499	540	544	527	485	454	438	382	364	0	17	59	90	106	162	180	6	2	1	1	1	1	1	**13**	4	-17	-42	-31	-16	-56	-18	6	2	1	1	2	1	2	**15**	**195**
1961	380	415	454	501	536	544	526	485	455	445	421	404	0	18	59	89	99	123	140	6	2	1	1	1	1	1	**13**	8	-18	-41	-30	-10	-24	-17	6	2	1	1	4	1	2	**17**	**221**
1962	410	415	454	488	529	535	530	486	442	413	332	342	9	14	58	102	131	212	202	4	3	1	1	1	1	1	**12**	6	-5	-44	-44	-29	-81	10	6	5	1	1	1	1	6	**21**	**252**
1963	386	421	452	497	525	531	534	505	479	448	422	437	13	10	39	65	96	122	107	3	3	1	1	1	1	1	**11**	6	3	-29	-26	-31	-26	15	6	6	1	1	1	1	6	**22**	**242**
1964	467	496	509	524	535	543	522	478	438	418	401	400	1	22	66	106	126	143	144	5	1	1	1	1	1	1	**11**	8	-21	-44	-40	-20	-17	-1	6	1	1	1	2	2	5	**18**	**198**
1965	404	435	471	522	534	541	543	512	479	460	421	428	3	1	32	65	84	123	116	5	5	1	1	1	1	1	**15**	7	2	-31	-33	-19	-39	7	6	6	1	1	2	1	6	**23**	**345**
1966	459	488	499	514	524	531	518	475	433	411	392	382	13	26	69	111	133	152	162	3	1	1	1	1	1	1	**9**	7	-13	-43	-42	-22	-19	-10	6	3	1	1	1	2	4	**18**	**162**
1967	396	433	472	514	528	533	538	541	534	522	500	505	11	6	3	10	22	44	39	3	4	5	3	1	1	1	**18**	5	5	3	-7	-12	-22	5	6	6	6	4	3	1	6	**32**	**576**
1968	512	523	527	540	544	544	543	502	466	449	425	410	0	1	42	78	95	119	134	6	5	1	1	1	1	1	**16**	0	-1	-41	-36	-17	-24	-15	6	5	1	1	2	1	3	**19**	**304**
1969	422	453	487	523	536	544	544	544	537	514	484	499	0	0	0	7	30	60	45	6	6	6	4	1	1	1	**25**	8	0	0	-7	-23	-30	15	6	6	6	4	1	1	6	**30**	**750**
1970	517	526	530	544	544	544	543	509	469	448	417	409	0	1	35	75	96	127	135	6	5	1	1	1	1	1	**16**	0	-1	-34	-40	-21	-31	-8	6	5	1	1	1	1	4	**19**	**304**
1971	429	462	495	518	528	534	535	492	461	437	415	428	10	9	52	83	107	129	116	3	4	1	1	1	1	1	**12**	6	1	-43	-31	-24	-22	13	6	6	1	1	1	1	6	**22**	**264**
1972	458	485	505	521	533	540	530	489	455	441	430	411	4	14	55	89	103	114	133	5	3	1	1	1	1	1	**13**	7	-10	-41	-34	-14	-11	-19	6	4	1	1	3	3	2	**20**	**260**
1973	435	467	499	525	536	542	541	514	482	459	417	415	2	3	30	62	85	127	129	5	5	1	1	1	1	1	**15**	6	-1	-27	-32	-23	-42	-2	6	5	1	1	1	1	5	**20**	**300**
1974	447	477	502	518	530	535	533	502	470	438	421	434	9	11	42	74	106	123	110	4	3	1	1	1	1	1	**12**	5	-2	-31	-32	-32	-17	13	6	5	1	1	1	2	6	**22**	**264**
1975	464	483	488	502	516	521	519	480	454	430	416	428	23	25	64	90	114	128	116	1	1	1	1	1	1	1	**7**	5	-2	-39	-26	-24	-14	12	6	5	1	1	1	3	6	**23**	**161**
1976	456	483	491	505	520	532	521	488	472	473	442	424	12	23	56	72	71	102	120	3	1	1	1	1	1	1	**9**	12	-11	-33	-16	1	-31	-18	6	3	1	2	6	1	2	**21**	**189**
1977	426	434	436	454	454	454	468	456	439	418	409	422	90	76	88	105	126	135	122	1	1	1	1	1	1	1	**7**	0	14	-12	-17	-21	-9	13	6	6	3	2	1	4	6	**28**	**196**
1978	428	444	493	535	544	544	544	544	526	469	413	433	0	0	0	18	75	131	111	6	6	6	2	1	1	1	**23**	0	0	0	-18	-57	-56	20	6	6	6	2	1	1	6	**28**	**644**
1979	466	488	492	507	521	528	529	503	473	459	416	410	16	15	41	71	85	128	134	2	2	1	1	1	1	1	**9**	7	1	-26	-30	-14	-43	-6	6	6	1	1	3	1	4	**22**	**198**
1980	446	480	507	524	540	544	544	540	522	488	446	462	0	0	4	22	56	98	82	6	6	5	1	1	1	1	**21**	4	0	-4	-18	-34	-42	16	6	6	5	2	1	1	6	**27**	**567**
1981	494	517	523	537	544	544	544	504	468	451	427	404	0	0	40	76	93	117	140	6	6	1	1	1	1	1	**17**	0	0	-40	-36	-17	-24	-23	6	6	1	1	2	1	1	**18**	**306**
1982	416	452	486	523	537	543	544	544	531	494	460	470	1	0	0	13	50	84	74	5	6	6	3	1	1	1	**23**	6	1	0	-13	-37	-34	10	6	6	6	3	1	1	6	**29**	**667**
1983	495	514	520	535	544	544	544	544	537	527	514	521	0	0	0	7	17	30	23	6	6	6	4	2	1	1	**26**	0	0	0	-7	-10	-13	7	6	6	6	4	4	3	6	**35**	**910**
1984	536	544	544	544	544	544	543	507	471	450	408	403	0	1	37	73	94	136	141	6	5	1	1	1	1	1	**16**	0	-1	-36	-36	-21	-42	-5	6	5	1	1	1	1	5	**20**	**320**
1985	440	473	496	511	524	531	519	475	435	416	399	397	13	25	69	109	128	145	147	3	1	1	1	1	1	1	**9**	7	-12	-44	-40	-19	-17	-2	6	3	1	1	2	2	5	**20**	**180**
1986	401	408	446	499	529	544	544	544	531	488	457	465	0	0	0	13	56	87	79	6	6	6	3	1	1	1	**24**	15	0	0	-13	-43	-31	8	6	6	6	3	1	1	6	**29**	**696**
1987	495	508	534	544	544	544	536	496	468	458	437	414	0	8	48	76	86	107	130	6	4	1	1	1	1	1	**15**	0	-8	-40	-28	-10	-21	-23	6	4	1	1	4	1	1	**18**	**270**
1988	421	418	457	506	519	519	516	494	482	461	422	417	25	28	50	62	83	122	127	1	1	1	1	1	1	1	**7**	0	-3	-22	-12	-21	-39	-5	6	5	1	3	1	1	5	**22**	**154**
1989	414	431	453	492	492	527	533	492	461	452	386	394	17	11	52	83	92	158	150	2	3	1	1	1	1	1	**10**	35	6	-41	-31	-9	-66	8	6	6	1	1	4	1	6	**25**	**250**
1990	416	428	460	503	523	528	527	494	479	459	401	382	16	17	50	65	85	143	162	2	2	1	1	1	1	1	**9**	5	-1	-33	-15	-20	-58	-19	6	5	1	3	2	1	2	**20**	**180**
1991	383	390	390	405	405	468	484	467	455	432	414	415	76	60	77	89	112	130	129	1	1	1	1	1	1	1	**7**	63	16	-17	-12	-23	-18	1	6	6	2	3	1	2	6	**26**	**182**
1992	418	431	446	489	525	544	544	519	502	468	423	415	0	0	25	42	76	121	129	6	6	1	1	1	1	1	**17**	19	0	-25	-17	-34	-45	-8	6	6	1	2	1	1	4	**21**	**357**
1993	415	422	469	519	530	534	530	505	488	450	405	410	10	14	39	56	94	139	134	3	3	1	1	1	1	1	**11**	4	-4	-25	-17	-38	-45	5	6	5	1	2	1	1	6	**22**	**242**
1994	446	476	488	502	516	526	516	478	454	451	447	433	18	28	66	90	93	97	111	2	1	1	1	1	1	1	**8**	10	-10	-38	-24	-3	-4	-14	6	4	1	1	5	5	3	**25**	**200**

73 - year Average: 13

73 - year Average: 22 **302.2**

1929 - '34 Average: 212.5

Prepared by Kevin Long

Rsrvr519 - San Luis Reservoir

STUDY: 1995C06F-SWRCBDS-622A DWRSIM: recirc818VA, 09 Apr 98
CP # 4, SHASTA LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCBDS-622A/4/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 1067'

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	989	993	999	1,003	1,019	1,038	1,060	1,067	1,062	1,047	1,030	1,024
1923	1,021	1,017	1,019	1,023	1,021	1,018	1,031	1,026	1,015	996	978	976
1924	978	978	978	978	986	986	975	961	947	928	910	897
1925	901	912	920	930	1,000	1,015	1,045	1,056	1,046	1,028	1,014	1,010
1926	1,007	1,005	1,002	998	1,025	1,026	1,039	1,034	1,010	988	965	958
1927	957	985	1,008	1,033	1,026	1,052	1,067	1,067	1,058	1,043	1,026	1,021
1928	1,019	1,017	1,020	1,028	1,044	1,046	1,066	1,063	1,048	1,022	1,001	995
1929	993	993	993	994	1,000	1,006	1,009	1,003	994	979	961	954
1930	952	952	983	993	1,009	1,032	1,042	1,041	1,021	1,001	987	983
1931	982	980	978	980	984	991	983	973	962	940	924	911
1932	906	905	921	932	941	966	969	977	970	956	942	935
1933	933	930	930	933	936	970	981	985	980	959	945	939
1934	937	936	945	962	982	994	995	990	982	949	937	922
1935	916	927	932	951	971	992	1,036	1,043	1,035	1,016	1,002	997
1936	994	990	986	1,009	1,032	1,043	1,051	1,049	1,042	1,018	999	994
1937	990	986	981	975	976	1,004	1,033	1,042	1,039	1,018	999	992
1938	990	1,012	1,020	1,035	1,030	1,024	1,049	1,067	1,067	1,058	1,045	1,036
1939	1,023	1,017	1,020	1,022	1,024	1,039	1,033	1,026	1,000	979	950	946
1940	942	938	946	994	1,017	1,025	1,059	1,064	1,057	1,037	1,020	1,019
1941	1,017	1,017	1,019	1,020	1,024	1,045	1,064	1,067	1,067	1,058	1,047	1,036
1942	1,023	1,017	1,020	1,023	1,028	1,042	1,067	1,067	1,067	1,058	1,046	1,036
1943	1,023	1,017	1,022	1,030	1,042	1,051	1,067	1,067	1,058	1,044	1,028	1,023
1944	1,021	1,017	1,015	1,014	1,023	1,033	1,038	1,038	1,018	994	973	966
1945	968	980	995	1,004	1,039	1,052	1,065	1,067	1,061	1,040	1,022	1,017
1946	1,016	1,017	1,018	1,033	1,038	1,049	1,061	1,063	1,053	1,034	1,018	1,015
1947	1,012	1,012	1,013	1,009	1,016	1,036	1,042	1,032	1,016	993	974	968
1948	974	977	979	1,005	1,003	1,015	1,055	1,067	1,066	1,052	1,037	1,036
1949	1,023	1,017	1,016	1,012	1,016	1,050	1,063	1,065	1,047	1,025	1,007	1,003
1950	999	996	993	1,001	1,015	1,032	1,046	1,045	1,033	1,011	994	992
1951	1,005	1,017	1,020	1,033	1,040	1,057	1,064	1,067	1,051	1,029	1,011	1,009
1952	1,007	1,012	1,019	1,032	1,038	1,048	1,058	1,067	1,067	1,058	1,046	1,036
1953	1,023	1,017	1,021	1,022	1,033	1,051	1,065	1,067	1,067	1,058	1,046	1,036
1954	1,023	1,017	1,021	1,030	1,035	1,051	1,067	1,064	1,060	1,042	1,030	1,029
1955	1,023	1,017	1,022	1,024	1,027	1,025	1,039	1,047	1,027	1,003	985	985
1956	984	988	1,017	1,017	1,019	1,048	1,067	1,067	1,067	1,058	1,047	1,036
1957	1,023	1,017	1,016	1,017	1,035	1,052	1,059	1,067	1,061	1,043	1,029	1,032
1958	1,023	1,017	1,021	1,029	1,067	1,024	1,053	1,067	1,067	1,058	1,047	1,036
1959	1,023	1,017	1,017	1,034	1,039	1,051	1,057	1,056	1,036	1,011	994	997
1960	995	992	990	996	1,026	1,052	1,060	1,067	1,049	1,029	1,010	1,008
1961	1,005	1,007	1,021	1,026	1,044	1,057	1,064	1,067	1,048	1,023	1,001	1,000
1962	996	1,000	1,012	1,014	1,035	1,051	1,063	1,065	1,054	1,034	1,016	1,014
1963	1,023	1,017	1,021	1,025	1,045	1,055	1,052	1,067	1,062	1,052	1,040	1,036
1964	1,023	1,017	1,018	1,033	1,034	1,038	1,032	1,027	1,010	989	968	962
1965	961	972	1,017	1,022	1,041	1,052	1,065	1,066	1,056	1,041	1,030	1,029
1966	1,023	1,017	1,021	1,037	1,049	1,055	1,067	1,065	1,048	1,029	1,013	1,010
1967	1,006	1,017	1,021	1,030	1,044	1,048	1,064	1,067	1,067	1,058	1,047	1,036
1968	1,023	1,017	1,019	1,025	1,034	1,054	1,057	1,059	1,042	1,021	1,012	1,010
1969	1,010	1,011	1,021	1,022	1,027	1,048	1,063	1,067	1,067	1,058	1,047	1,036
1970	1,023	1,017	1,020	1,017	1,025	1,052	1,057	1,057	1,046	1,027	1,014	1,012
1971	1,012	1,017	1,020	1,028	1,041	1,043	1,065	1,067	1,067	1,058	1,047	1,036
1972	1,023	1,017	1,022	1,033	1,045	1,056	1,067	1,067	1,049	1,028	1,014	1,014
1973	1,015	1,017	1,021	1,030	1,034	1,053	1,065	1,067	1,060	1,043	1,031	1,030
1974	1,023	1,017	1,018	1,017	1,036	1,025	1,058	1,067	1,067	1,058	1,047	1,036
1975	1,023	1,017	1,021	1,024	1,045	1,039	1,061	1,067	1,067	1,058	1,047	1,036
1976	1,023	1,017	1,018	1,017	1,012	1,017	1,024	1,022	997	978	974	976
1977	979	980	980	981	971	971	952	946	925	906	889	885
1978	874	873	917	1,020	1,031	1,047	1,067	1,067	1,064	1,054	1,045	1,036
1979	1,023	1,017	1,015	1,018	1,029	1,046	1,053	1,062	1,047	1,028	1,016	1,014
1980	1,014	1,017	1,019	1,029	1,019	1,046	1,059	1,064	1,056	1,046	1,035	1,036
1981	1,023	1,017	1,020	1,029	1,042	1,056	1,064	1,062	1,042	1,018	1,001	998
1982	997	1,017	1,018	1,033	1,029	1,046	1,051	1,067	1,067	1,058	1,047	1,036
1983	1,023	1,017	1,020	1,022	1,017	1,045	1,050	1,067	1,067	1,058	1,047	1,036
1984	1,023	1,017	1,018	1,034	1,047	1,056	1,067	1,067	1,062	1,045	1,039	1,036
1985	1,023	1,017	1,022	1,023	1,027	1,034	1,042	1,035	1,010	990	974	976
1986	978	982	991	1,016	1,017	1,029	1,047	1,049	1,038	1,022	1,007	1,010
1987	1,010	1,009	1,008	1,009	1,020	1,046	1,048	1,043	1,012	988	962	956
1988	952	954	985	1,006	1,005	1,008	1,013	1,013	993	961	944	940
1989	940	953	960	967	974	1,037	1,057	1,053	1,037	1,016	1,004	1,004
1990	1,007	1,005	1,002	1,008	1,009	1,016	1,008	1,013	998	972	956	952
1991	948	945	945	946	941	967	979	979	969	955	941	933
1992	932	930	932	936	975	998	1,010	1,003	989	974	960	954
1993	951	948	962	996	1,028	1,031	1,059	1,067	1,067	1,054	1,046	1,045
1994	1,043	1,017	1,019	1,020	1,026	1,027	1,028	1,027	1,000	980	957	954

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**
1922	29	7	0	5	20	37	43	1	4	6	4	1	1	1	**18**
1923	49	36	41	52	71	89	91	1	1	1	1	1	1	1	**7**
1924	81	92	106	120	139	157	170	1	1	1	1	1	1	1	**7**
1925	52	22	11	21	39	53	57	1	1	3	1	1	1	1	**9**
1926	41	28	33	57	79	102	109	1	1	1	1	1	1	1	**7**
1927	15	0	0	9	24	41	46	2	6	6	4	1	1	1	**21**
1928	21	1	4	19	45	66	72	1	5	5	2	1	1	1	**16**
1929	61	58	64	73	88	106	113	1	1	1	1	1	1	1	**7**
1930	35	25	26	46	66	80	84	1	1	1	1	1	1	1	**7**
1931	76	84	94	105	127	143	156	1	1	1	1	1	1	1	**7**
1932	101	98	90	97	111	125	132	1	1	1	1	1	1	1	**7**
1933	97	86	82	87	108	122	128	1	1	1	1	1	1	1	**7**
1934	73	72	77	85	118	130	145	1	1	1	1	1	1	1	**7**
1935	75	31	24	32	51	65	70	1	1	1	1	1	1	1	**7**
1936	24	16	18	25	49	68	73	1	2	2	1	1	1	1	**9**
1937	63	34	25	28	49	68	75	1	1	1	1	1	1	1	**7**
1938	43	18	0	0	9	22	31	1	2	6	6	4	1	1	**21**
1939	28	34	41	67	88	117	121	1	1	1	1	1	1	1	**7**
1940	42	8	3	10	30	47	48	1	4	5	3	1	1	1	**16**
1941	22	3	0	0	9	20	31	1	5	6	6	4	1	1	**24**
1942	25	0	0	0	9	21	31	1	6	6	6	4	1	1	**25**
1943	16	0	0	9	23	39	44	2	6	6	4	1	1	1	**21**
1944	34	29	29	49	73	94	101	1	1	1	1	1	1	1	**7**
1945	15	2	0	6	27	45	50	2	5	6	4	1	1	1	**20**
1946	18	6	4	14	33	49	52	2	4	5	3	1	1	1	**17**
1947	31	25	35	51	74	93	99	1	1	1	1	1	1	1	**7**
1948	52	12	0	1	15	30	31	1	3	6	5	2	1	1	**19**
1949	17	4	2	20	42	60	64	2	5	5	1	1	1	1	**16**
1950	35	21	22	34	56	73	75	1	1	1	1	1	1	1	**7**
1951	10	3	0	16	38	56	58	3	5	6	2	1	1	1	**19**
1952	19	9	0	0	9	21	31	2	4	6	6	4	1	1	**24**
1953	16	2	0	0	9	21	31	2	5	6	6	4	1	1	**25**
1954	16	0	3	7	25	37	38	2	6	5	4	1	1	1	**20**
1955	42	28	20	40	64	82	82	1	1	1	1	1	1	1	**7**
1956	19	0	0	0	9	20	31	2	6	6	6	4	1	1	**26**
1957	15	8	0	6	24	38	35	2	4	6	4	1	1	1	**19**
1958	43	14	0	0	9	20	31	1	3	6	6	4	1	1	**22**
1959	16	10	11	31	56	73	70	2	3	3	1	1	1	1	**12**
1960	15	7	0	18	38	57	59	2	4	6	2	1	1	1	**17**
1961	10	3	0	19	44	66	67	3	5	6	2	1	1	1	**19**
1962	16	4	2	13	33	51	53	2	5	5	3	1	1	1	**18**
1963	12	15	0	5	15	27	31	3	2	6	4	2	1	1	**19**
1964	29	35	40	57	78	99	105	1	1	1	1	1	1	1	**7**
1965	15	2	1	11	26	37	38	2	5	5	3	1	1	1	**18**
1966	12	0	2	19	38	54	57	3	6	5	2	1	1	1	**19**
1967	19	3	0	0	9	20	31	2	5	6	6	4	1	1	**25**
1968	13	10	8	25	46	55	57	3	3	4	1	1	1	1	**14**
1969	19	4	0	0	9	20	31	2	5	6	6	4	1	1	**25**
1970	15	10	10	21	40	53	55	2	3	3	1	1	1	1	**12**
1971	24	2	0	0	9	20	31	1	5	6	6	4	1	1	**24**
1972	11	0	0	18	39	53	53	3	6	6	2	1	1	1	**20**
1973	14	2	0	7	24	36	37	3	5	6	4	1	1	1	**21**
1974	42	9	0	0	9	20	31	1	4	6	6	4	1	1	**23**
1975	28	6	0	0	9	20	31	1	4	6	6	4	1	1	**23**
1976	50	43	45	70	89	93	91	1	1	1	1	1	1	1	**7**
1977	96	115	121	142	161	178	182	1	1	1	1	1	1	1	**7**
1978	20	0	0	3	13	22	31	1	6	6	5	3	1	1	**23**
1979	21	14	5	20	39	51	53	1	3	4	1	1	1	1	**12**
1980	21	8	3	11	21	32	31	1	4	5	3	1	1	1	**16**
1981	11	3	5	25	49	66	69	3	5	4	1	1	1	1	**16**
1982	21	16	0	0	9	20	31	1	2	6	6	4	1	1	**21**
1983	22	17	0	0	9	20	31	1	2	6	6	4	1	1	**21**
1984	11	0	0	5	22	28	31	3	6	6	4	1	1	1	**22**
1985	33	25	32	57	77	93	91	1	1	1	1	1	1	1	**7**
1986	38	20	18	29	45	60	57	1	1	2	1	1	1	1	**8**
1987	21	19	24	55	79	105	111	1	2	1	1	1	1	1	**8**
1988	59	54	54	74	106	123	127	1	1	1	1	1	1	1	**7**
1989	30	10	14	30	51	63	63	1	3	3	1	1	1	1	**11**
1990	51	59	54	69	95	111	115	1	1	1	1	1	1	1	**7**
1991	100	88	88	98	112	126	134	1	1	1	1	1	1	1	**7**
1992	69	57	64	78	93	107	113	1	1	1	1	1	1	1	**7**
1993	36	8	0	0	13	21	22	1	4	6	6	3	1	1	**22**
1994	40	39	40	67	87	110	113	1	1	1	1	1	1	1	**7**

73 - year Average: 15

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

YEAR	Change MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Largemouth Bass Reservoir Habitat Index Product**
1922	19	22	7	-5	-15	-17	-6	6	6	6	5	3	2	4	**32**	**576**
1923	-3	13	-5	-11	-19	-18	-2	5	6	5	3	2	2	5	**28**	**196**
1924	0	-11	-14	-14	-19	-18	-13	6	3	3	3	2	2	3	**22**	**154**
1925	15	30	11	-10	-18	-14	-4	6	6	6	4	2	3	5	**32**	**288**
1926	1	13	-5	-24	-22	-23	-7	6	6	5	1	1	1	4	**24**	**168**
1927	26	15	0	-9	-15	-17	-5	6	6	6	4	3	2	5	**32**	**672**
1928	2	20	-3	-15	-26	-21	-6	6	6	5	3	1	1	4	**26**	**416**
1929	6	3	-6	-9	-15	-18	-7	6	6	4	4	3	2	4	**29**	**203**
1930	23	10	-1	-20	-20	-14	-4	6	6	5	2	2	3	5	**29**	**203**
1931	7	-8	-10	-11	-22	-16	-13	6	4	4	3	1	2	3	**23**	**161**
1932	25	3	8	-7	-14	-14	-7	6	6	6	4	3	3	4	**32**	**224**
1933	34	11	4	-5	-21	-14	-6	6	6	6	5	1	3	4	**31**	**217**
1934	12	1	-5	-8	-33	-12	-15	6	6	5	4	1	3	3	**28**	**196**
1935	21	44	7	-8	-19	-14	-5	6	6	6	4	2	3	5	**32**	**224**
1936	11	8	-2	-7	-24	-19	-5	6	6	5	4	1	2	5	**29**	**261**
1937	28	29	9	-3	-21	-19	-7	6	6	6	5	1	2	4	**30**	**210**
1938	-6	25	18	0	-9	-13	-9	4	6	6	6	4	3	4	**33**	**693**
1939	15	-6	-7	-26	-21	-29	-4	6	4	4	1	1	1	5	**22**	**154**
1940	8	34	5	-7	-20	-17	-1	6	6	6	4	2	2	5	**31**	**496**
1941	21	19	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1942	14	25	0	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**875**
1943	9	16	0	-9	-14	-16	-5	6	6	6	4	3	2	5	**32**	**672**
1944	10	5	0	-20	-24	-21	-7	6	6	6	2	1	1	4	**26**	**182**
1945	13	13	2	-6	-21	-18	-5	6	6	6	4	1	2	5	**30**	**600**
1946	11	12	2	-10	-19	-16	-3	6	6	6	4	2	2	5	**31**	**527**
1947	20	6	-10	-16	-23	-19	-6	6	6	4	2	1	2	4	**25**	**175**
1948	12	40	12	-1	-14	-15	-1	6	6	6	5	3	3	5	**34**	**646**
1949	34	13	2	-18	-22	-18	-4	6	6	6	2	1	2	5	**28**	**448**
1950	17	14	-1	-12	-22	-17	-2	6	6	5	3	1	2	5	**28**	**196**
1951	17	7	3	-16	-22	-18	-2	6	6	6	2	1	2	5	**28**	**532**
1952	10	10	9	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**840**
1953	18	14	2	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**875**
1954	16	16	-3	-4	-18	-12	-1	6	6	5	5	2	3	5	**32**	**640**
1955	-2	14	8	-20	-24	-18	0	5	6	6	2	1	2	6	**28**	**196**
1956	29	19	0	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**884**
1957	17	7	8	-6	-18	-14	3	6	6	6	4	2	3	6	**33**	**627**
1958	-43	29	14	0	-9	-11	-11	1	6	6	6	4	3	3	**29**	**638**
1959	12	6	-1	-20	-25	-17	3	6	6	5	2	1	2	6	**28**	**336**
1960	26	8	7	-18	-20	-19	-2	6	6	6	2	2	2	5	**29**	**493**
1961	13	7	3	-19	-25	-22	-1	6	6	6	2	1	1	5	**27**	**513**
1962	16	12	2	-11	-20	-18	-2	6	6	6	3	2	2	5	**30**	**540**
1963	10	-3	15	-5	-10	-12	-4	6	5	6	5	4	3	5	**34**	**646**
1964	4	-6	-5	-17	-21	-21	-6	6	4	5	2	1	1	4	**23**	**161**
1965	11	13	1	-10	-15	-11	-1	6	6	6	4	3	3	5	**33**	**594**
1966	6	12	-2	-17	-19	-16	-3	6	6	5	2	2	2	5	**28**	**532**
1967	4	16	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1968	20	3	2	-17	-21	-9	-2	6	6	6	2	1	4	5	**30**	**420**
1969	21	15	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1970	27	5	0	-11	-19	-13	-2	6	6	6	3	2	3	5	**31**	**372**
1971	2	22	2	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1972	11	11	0	-18	-21	-14	0	6	6	6	2	1	3	6	**30**	**600**
1973	19	12	2	-7	-17	-12	-1	6	6	6	4	2	3	5	**32**	**672**
1974	-11	33	9	0	-9	-11	-11	3	6	6	6	4	3	3	**31**	**713**
1975	-6	22	6	0	-9	-11	-11	4	6	6	6	4	3	3	**32**	**736**
1976	5	7	-2	-25	-19	-4	2	6	6	5	1	2	5	6	**31**	**217**
1977	0	-19	-6	-21	-19	-17	-4	6	2	4	1	2	2	5	**22**	**154**
1978	16	20	0	-3	-10	-9	-9	6	6	6	5	4	4	4	**35**	**805**
1979	17	7	9	-15	-19	-12	-2	6	6	6	3	2	3	5	**31**	**372**
1980	27	13	5	-8	-10	-11	1	6	6	6	4	4	3	6	**35**	**560**
1981	14	8	-2	-20	-24	-17	-3	6	6	5	2	1	2	5	**27**	**432**
1982	17	5	16	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1983	28	5	17	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1984	9	11	0	-5	-17	-6	-3	6	6	6	5	2	4	5	**34**	**748**
1985	7	8	-7	-25	-20	-16	2	6	6	4	1	2	2	6	**27**	**189**
1986	12	18	2	-11	-16	-15	3	6	6	6	3	2	3	6	**32**	**256**
1987	26	2	-5	-31	-24	-26	-6	6	6	5	1	1	1	4	**24**	**192**
1988	3	5	0	-20	-32	-17	-4	6	6	6	2	1	2	5	**28**	**196**
1989	63	20	-4	-16	-21	-12	0	6	6	5	2	1	3	6	**29**	**319**
1990	7	-8	5	-15	-26	-16	-4	6	4	6	3	1	2	5	**27**	**189**
1991	26	12	0	-10	-14	-14	-8	6	6	6	4	3	3	4	**32**	**224**
1992	23	12	-7	-14	-15	-14	-6	6	6	4	3	3	3	4	**29**	**203**
1993	3	28	8	0	-13	-8	-1	6	6	6	6	3	4	5	**36**	**792**
1994	1	1	-1	-27	-20	-23	-3	6	6	5	1	2	1	5	**26**	**182**

73 - year Average: 30 457.30
1929 - '34 Average: 200.7

STUDY: 1995C06F-SWRCBDS-622A DWRSIM: recirc818VA, 09 Apr 98
CP # 6, LAKE OROVILLE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCBDS-622A/6/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 900'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	834	834	836	844	850	858	893	900	900	869	865	866	42	7	0	0	31	35	34	1	4	6	6	1	1	1	**20**	8	35	7	0	-31	-4	1	6	6	6	6	1	5	6	**36**	**720**
1923	870	872	858	862	859	872	895	900	881	842	802	805	28	5	0	19	58	98	95	1	4	6	2	1	1	1	**16**	13	23	5	-19	-39	-40	3	6	6	6	2	1	1	6	**28**	**448**
1924	794	782	776	781	799	785	774	761	737	714	704	695	115	126	139	163	186	196	205	1	1	1	1	1	1	1	**7**	-14	-11	-13	-24	-23	-10	-9	3	3	3	1	1	4	4	**19**	**133**
1925	694	698	705	721	789	816	836	843	824	793	782	778	84	64	57	76	107	118	122	1	1	1	1	1	1	1	**7**	27	20	7	-19	-31	-11	-4	6	6	6	2	1	3	5	**29**	**203**
1926	775	776	778	792	835	855	887	877	856	812	797	775	45	13	23	44	88	103	125	1	3	1	1	1	1	1	**9**	20	32	-10	-21	-44	-15	-22	6	6	4	1	1	3	1	**22**	**198**
1927	771	802	802	828	849	863	890	900	898	861	844	841	37	10	0	2	39	56	59	1	3	6	5	1	1	1	**18**	14	27	10	-2	-37	-17	-3	6	6	6	5	1	2	5	**31**	**558**
1928	838	849	850	862	871	849	878	867	847	796	741	734	51	22	33	53	104	159	166	1	1	1	1	1	1	1	**7**	-22	29	-11	-20	-51	-55	-7	1	6	3	2	1	1	4	**18**	**126**
1929	721	716	714	719	733	750	757	761	754	738	728	721	150	143	139	146	162	172	179	1	1	1	1	1	1	1	**7**	17	7	4	-7	-16	-10	-7	6	6	6	4	2	4	4	**32**	**224**
1930	712	709	769	797	823	854	876	884	866	827	790	787	46	24	16	34	73	110	113	1	1	2	1	1	1	1	**8**	31	22	8	-18	-39	-37	-3	6	6	6	2	1	1	5	**27**	**216**
1931	777	769	760	773	786	801	788	773	749	726	714	708	99	112	127	151	174	186	192	1	1	1	1	1	1	1	**7**	15	-13	-15	-24	-23	-12	-6	6	3	3	1	1	3	4	**21**	**147**
1932	702	693	698	722	745	778	791	822	795	738	716	710	122	109	78	105	162	184	190	1	1	1	1	1	1	1	**7**	33	13	31	-27	-57	-22	-6	6	6	6	1	1	1	4	**25**	**175**
1933	700	688	687	699	710	715	721	737	731	715	704	697	185	179	163	169	185	196	203	1	1	1	1	1	1	1	**7**	5	6	16	-6	-16	-11	-7	6	6	6	4	2	3	4	**31**	**217**
1934	693	685	687	714	737	764	758	749	724	700	688	680	136	142	151	176	200	212	220	1	1	1	1	1	1	1	**7**	27	-6	-9	-25	-24	-12	-8	6	4	4	1	1	3	4	**23**	**161**
1935	672	677	683	711	735	765	853	862	846	821	809	790	135	47	38	54	79	91	110	1	1	1	1	1	1	1	**7**	30	88	9	-16	-25	-12	-19	6	6	6	2	1	3	2	**26**	**182**
1936	783	773	771	822	849	860	886	882	874	834	801	795	40	14	18	26	66	99	105	1	3	2	1	1	1	1	**10**	11	26	-4	-8	-40	-33	-6	6	6	5	4	1	1	4	**27**	**270**
1937	786	774	770	773	790	824	849	864	841	813	792	785	76	51	36	59	87	108	115	1	1	1	1	1	1	1	**7**	34	25	15	-23	-28	-21	-7	6	6	6	1	1	1	4	**25**	**175**
1938	781	798	854	858	849	849	882	900	900	899	896	887	51	18	0	0	1	4	13	1	2	6	6	5	5	3	**28**	0	33	18	0	-1	-3	-9	6	6	6	6	5	5	4	**38**	**1064**
1939	874	864	854	845	837	833	824	820	785	721	663	658	67	76	80	115	179	237	242	1	1	1	1	1	1	1	**7**	-4	-9	-4	-35	-64	-58	-5	5	4	5	1	1	1	5	**22**	**154**
1940	644	634	636	708	816	849	879	885	867	828	820	804	51	21	15	33	72	80	96	1	1	2	1	1	1	1	**8**	33	30	6	-18	-39	-8	-16	6	6	6	2	1	4	2	**27**	**216**
1941	800	801	842	849	849	858	886	900	900	890	886	887	42	14	0	0	10	14	13	1	3	6	6	3	3	3	**25**	9	28	14	0	-10	-4	1	6	6	6	6	4	5	6	**39**	**975**
1942	874	874	849	849	850	867	882	900	900	880	876	877	33	18	0	0	20	24	23	1	2	6	6	1	1	1	**18**	17	15	18	0	-20	-4	1	6	6	6	6	2	5	6	**37**	**666**
1943	874	869	861	849	856	859	887	897	896	861	850	851	41	13	3	4	39	50	49	1	3	5	5	1	1	1	**17**	3	28	10	-1	-35	-11	1	6	6	6	5	1	3	6	**33**	**561**
1944	852	855	854	860	857	868	879	895	875	835	796	790	32	21	5	25	65	104	110	1	1	4	1	1	1	1	**10**	11	11	16	-20	-40	-39	-6	6	6	6	2	1	1	4	**26**	**260**
1945	785	792	808	823	862	865	880	896	877	837	801	796	35	20	4	23	63	99	104	1	1	5	1	1	1	1	**11**	3	15	16	-19	-40	-36	-5	6	6	6	2	1	1	5	**27**	**297**
1946	796	804	849	864	868	868	887	897	875	836	795	792	32	13	3	25	64	105	108	1	3	5	1	1	1	1	**13**	0	19	10	-22	-39	-41	-3	6	6	6	1	1	1	5	**26**	**338**
1947	780	786	794	800	825	848	857	853	836	783	729	722	52	43	47	64	117	171	178	1	1	1	1	1	1	1	**7**	23	9	-4	-17	-53	-54	-7	6	6	5	2	1	1	4	**25**	**175**
1948	725	726	723	759	762	782	842	871	877	841	823	813	118	58	29	23	59	77	87	1	1	1	1	1	1	1	**7**	20	60	29	6	-36	-18	-10	6	6	6	6	1	2	4	**31**	**217**
1949	806	803	804	808	817	837	857	863	841	791	753	748	63	43	37	59	109	147	152	1	1	1	1	1	1	1	**7**	20	20	6	-22	-50	-38	-5	6	6	6	1	1	1	5	**26**	**182**
1950	733	729	730	761	808	842	875	894	881	843	817	816	58	25	6	19	57	83	84	1	1	4	2	1	1	1	**11**	34	33	19	-13	-38	-26	-1	6	6	6	3	1	1	5	**28**	**308**
1951	821	849	854	853	858	870	886	900	888	846	817	815	30	14	0	12	54	83	85	1	3	6	3	1	1	1	**16**	12	16	14	-12	-42	-29	-2	6	6	6	3	1	1	5	**28**	**448**
1952	820	824	849	849	852	862	894	900	900	900	899	887	38	6	0	0	0	1	13	1	4	6	6	6	5	3	**31**	10	32	6	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1178**
1953	874	874	858	850	867	867	883	900	900	867	865	867	33	17	0	0	33	35	33	1	2	6	6	1	1	1	**18**	0	16	17	0	-33	-2	2	6	6	6	6	1	5	6	**36**	**648**
1954	869	871	874	858	857	859	883	869	853	808	761	758	41	17	31	47	92	139	142	1	2	1	1	1	1	1	**8**	2	24	-14	-16	-45	-47	-3	6	6	3	2	1	1	5	**24**	**192**
1955	759	761	769	782	791	804	813	826	799	737	705	702	96	87	74	101	163	195	198	1	1	1	1	1	1	1	**7**	13	9	13	-27	-62	-32	-3	6	6	6	1	1	1	5	**26**	**182**
1956	693	689	844	849	849	864	892	900	900	871	860	863	36	8	0	0	29	40	37	1	4	6	6	1	1	1	**20**	15	28	8	0	-29	-11	3	6	6	6	6	1	3	6	**34**	**680**
1957	869	874	874	871	853	863	866	884	869	830	792	797	37	34	16	31	70	108	103	1	1	2	1	1	1	1	**8**	10	3	18	-15	-39	-38	5	6	6	6	3	1	1	6	**29**	**232**
1958	799	803	822	843	849	849	879	900	900	898	894	887	51	21	0	0	2	6	13	1	1	6	6	5	4	3	**26**	0	30	21	0	-2	-4	-7	6	6	6	6	5	5	4	**38**	**988**
1959	874	874	874	862	852	867	874	877	856	813	762	766	33	26	23	44	87	138	134	1	1	1	1	1	1	1	**7**	15	7	3	-21	-43	-51	4	6	6	6	1	1	1	6	**27**	**189**
1960	758	748	743	757	818	857	859	865	846	809	797	788	43	41	35	54	91	103	112	1	1	1	1	1	1	1	**7**	39	2	6	-19	-37	-12	-9	6	6	6	2	1	3	4	**28**	**196**
1961	766	768	777	789	819	837	837	843	823	763	718	714	63	63	57	77	137	182	186	1	1	1	1	1	1	1	**7**	18	0	6	-20	-60	-45	-4	6	6	6	2	1	1	5	**27**	**189**
1962	699	695	705	719	783	818	843	845	829	774	739	717	82	57	55	71	126	161	183	1	1	1	1	1	1	1	**7**	35	25	2	-16	-55	-35	-22	6	6	6	2	1	1	1	**23**	**161**
1963	792	804	834	857	867	858	876	900	890	855	836	837	42	24	0	10	45	64	63	1	1	6	3	1	1	1	**14**	-9	18	24	-10	-35	-19	1	4	6	6	4	1	2	6	**29**	**406**
1964	838	850	852	862	871	874	880	885	869	829	782	758	26	20	15	31	71	118	142	1	1	2	1	1	1	1	**8**	3	6	5	-16	-40	-47	-24	6	6	6	2	1	1	1	**23**	**184**
1965	746	746	849	849	863	870	887	884	886	853	846	848	30	13	16	14	47	54	52	1	3	2	3	1	1	1	**12**	7	17	-3	2	-33	-7	2	6	6	5	6	1	4	6	**34**	**408**
1966	852	859	860	864	870	874	894	884	864	824	777	769	26	6	16	36	76	123	131	1	4	2	1	1	1	1	**11**	4	20	-10	-20	-40	-47	-8	6	6	4	2	1	1	4	**24**	**264**
1967	756	767	805	849	860	853	879	900	900	900	896	887	47	21	0	0	0	4	13	1	1	6	6	6	5	3	**28**	-7	26	21	0	0	-4	-9	4	6	6	6	6	5	4	**37**	**1036**
1968	874	874	873	858	861	866	866	870	851	806	765	762	34	34	30	49	94	135	138	1	1	1	1	1	1	1	**7**	5	0	4	-19	-45	-41	-3	6	6	6	2	1	1	5	**27**	**189**
1969	764	769	792	849	849	865	895	900	900	895	893	874	35	5	0	0	5	7	26	1	4	6	6	4	4	1	**26**	16	30	5	0	-5	-2	-19	6	6	6	6	5	5	2	**36**	**936**
1970	874	874	850	849	849	874	874	876	863	824	781	782	26	26	24	37	76	119	118	1	1	1	1	1	1	1	**7**	25	0	2	-13	-39	-43	1	6	6	6	3	1	1	6	**29**	**203**
1971	785	812	842	864	874	874	893	900	900	870	852	854	26	7	0	0	30	48	46	1	4	6	6	1	1	1	**20**	0	19	7	0	-30	-18	2	6	6	6	6	1	2	6	**33**	**660**
1972	859	865	865	869	867	874	884	887	868	828	784	785	26	16	13	32	72	116	115	1	2	3	1	1	1	1	**10**	7	10	3	-19	-40	-44	1	6	6	6	2	1	1	6	**28**	**280**
1973	781	797	822	849	849	860	882	900	871	832	803	800	40	18	0	29	68	97	100	1	2	6	1	1	1	1	**13**	11	22	18	-29	-39	-29	-3	6	6	6	1	1	1	5	**26**	**338**
1974	804	849	850	854	864	849	883	900	900	888	887	886	51	17	0	0	12	13	14	1	2	6	6	3	3	3	**24**	-15	34	17	0	-12	-1	-1	3	6	6	6	3	5	5	**34**	**816**
1975	874	874	874	874	855	852	881	900	900	874	873	874	48	19	0	0	26	27	26	1	2	6	6	1	1	1	**18**	-3	29	19	0	-26	-1	1	5	6	6	6	1	5	6	**35**	**630**
1976	873	874	874	874	874	874	871	864	842	797	759	759	26	29	36	58	103	141	141	1	1	1	1	1	1	1	**7**	0	-3	-7	-22	-45	-38	0	6	5	4	1	1	1	6	**24**	**168**
1977	751	741	725	721	706	701	679	670	641	617	608	605	199	221	230	259	283	292	295	1	1	1	1	1	1	1	**7**	-5	-22	-9	-29	-24	-9	-3	5	1	4	1	1	4	5	**21**	**147**
1978	595	594	631	753	805	859	878	897	892	872	863	870	41	22	3	8	28	37	30	1	1	5	4	1	1	1	**14**	54	19	19	-5	-20	-9	7	6	6	6	5	2	4	6	**35**	**490**
1979	873	874	874	871	853	863	878	896	864	826	810	807	37	22	4	36	74	90	93	1	1	5	1	1	1	1	**11**	10	15	18	-32	-38	-16	-3	6	6	6	1	1	2	5	**27**	**297**
1980	813	818	827	850	849	865	881	893	888	874	867	865	35	19	7	12	26	33	35	1	2	4	3	1	1	1	**13**	16	16	12	-5	-14	-7	-2	6	6	6	5	3	4	5	**35**	**455**
1981	864	866	874	860	868	865	875	872	851	807	758	759	35	25	28	49	93	142	141	1	1	1	1	1	1	1	**7**	-3	10	-3	-21	-44	-49	1	5	6	5	1	1	1	6	**25**	**175**
1982	766	847	849	859	862	859	884	900	900	889	885	887	41	16	0	0	11	15	13	1	2	6	6	3	2	3	**23**	-3	25	16	0	-11	-4	2	5	6	6	6	3	5	6	**37**	**851**
1983	873	862	858	853	849	849	877	900	900	900	899	887	51	23	0	0	0	1	13	1	1	6	6	6	5	3	**28**	0	28	23	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1064**
1984	874	860	849	869	869	871	886	895	879	841	822	824	29	14	5	21	59	78	76	1	3	4	1	1	1	1	**12**	2	15	9	-16	-38	-19	2	6	6	6	2	1	2	6	**29**	**348**
1985	828	841	851	857	870	871	886	874	852	808	759	740	29	14	26	48	92	141	160	1	3	1	1	1	1	1	**9**	1	15	-12	-22	-44	-49	-19	6	6	3	1	1	1	2	**20**	**180**
1986	731	727	734	770	849	849	871	875	871	843	831	842	51	29	25	29	57	69	58	1	1	1	1	1	1	1	**7**	0	22	4	-4	-28	-12	11	6	6	6	5	1	3	6	**33**	**231**
1987	844	850	848	849	860	867	859	849	822	762	720	715	33	41	51	78	138	180	185	1	1	1	1	1	1	1	**7**	7	-8	-10	-27	-60	-42	-5	6	4	4	1	1	1	5	**22**	**154**
1988	703	706	745	771	773	773	772	763	735	715	703	700	127	128	137	165	185	197	200	1	1	1	1	1	1	1	**7**	0	-1	-9	-28	-20	-12	-3	6	5	4	1	2	3	5	**26**	**182**
1989	693	711	721	729	730	843	869	860	842	796	778	775	57	31	40	58	104	122	125	1	1	1	1	1	1	1	**7**	113	26	-9	-18	-46	-18	-3	6	6	4	2	1	2	5	**26**	**182**
1990	786	788	771	784	792	818	806	806	781	724	711	700	82	94	94	119	176	189	200	1	1	1	1	1	1	1	**7**	26	-12	0	-25	-57	-13	-11	6	3	6	1	1	3	3	**23**	**161**
1991	683	675	655	653	648	701	724	738	722	701	695	694	199	176	162	178	199	205	206	1	1	1	1	1	1	1	**7**	53	23	14	-16	-21	-6	-1	6	6	6	2	1	4	5	**30**	**210**
1992	691	687	688	692	723	752	767	756	732	707	695	689	148	133	144	168	193	205	211	1	1	1	1	1	1	1	**7**	29	15	-11	-24	-25	-12	-6	6	6	3	1	1	3	4	**24**	**168**
1993	682	677	696	763	815	861	894	900	900	871	867	866	39	6	0	0	29	33	34	1	4	6	6	1	1	1	**20**	46	33	6	0	-29	-4	-1	6	6	6	6	1	5	5	**35**	**700**
1994	872	874	874	871	862	874	873	869	847	806	758	753	26	27	31	53	94	142	147	1	1	1	1	1	1	1	**7**	12	-1	-4	-22	-41	-48	-5	6	5	5	1	1	1	5	**24**	**168**

73 - year Average: 12

73 - year Average: 29 **377.12**

1929 - '34 Average: 190.0

STUDY: 1995C06F-SWRCBDS-622A DWRSIM: recirc818VA, 09 Apr 98
CP # 8, FOLSOM LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCBDS-622A/8/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 466'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Elevation												DFMRE						
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	414	409	414	414	424	428	443	466	466	462	449	434	38	23	0	0	4	17	32
1923	425	423	424	424	419	416	449	466	458	437	422	424	50	17	0	8	29	44	42
1924	419	410	402	390	387	369	377	381	346	334	337	334	97	89	85	120	132	129	132
1925	349	363	380	390	424	435	449	466	448	432	421	418	31	17	0	18	34	45	48
1926	414	407	402	393	413	413	444	443	413	370	334	348	53	22	23	53	96	132	118
1927	356	398	419	424	424	437	449	466	461	454	449	434	29	17	0	5	12	17	32
1928	425	424	424	424	424	437	449	454	441	417	409	411	29	17	12	25	49	57	55
1929	405	399	394	383	382	388	396	401	389	362	369	371	78	70	65	77	104	97	95
1930	357	351	391	411	424	437	443	442	418	389	365	369	29	23	24	48	77	101	97
1931	360	369	379	390	398	407	402	397	334	334	334	334	59	64	69	132	132	132	132
1932	334	334	380	402	424	436	445	461	441	401	370	374	30	21	5	25	65	96	92
1933	350	334	355	366	373	385	355	375	334	334	345	340	81	111	91	132	132	121	126
1934	334	335	375	402	420	425	419	415	334	324	313	326	41	47	51	132	142	153	140
1935	334	361	378	402	415	418	449	454	453	434	422	421	48	17	12	13	32	44	45
1936	418	412	406	424	424	437	449	461	456	444	438	434	29	17	5	10	22	28	32
1937	425	417	411	404	424	437	449	466	455	442	435	432	29	17	0	11	24	31	34
1938	425	422	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1939	426	420	415	409	402	409	417	421	391	334	334	335	57	49	45	75	132	132	131
1940	334	334	334	420	424	437	449	461	452	435	425	428	29	17	5	14	31	41	38
1941	419	414	424	424	424	437	449	466	458	455	449	434	29	17	0	8	11	17	32
1942	426	422	424	424	424	430	449	466	466	463	449	434	36	17	0	0	3	17	32
1943	425	424	423	422	422	434	449	459	450	445	441	434	32	17	7	16	21	25	32
1944	425	419	413	405	407	419	420	433	412	389	372	368	47	46	33	54	77	94	98
1945	360	391	411	424	424	437	449	466	455	443	437	434	29	17	0	11	23	29	32
1946	427	424	424	424	423	437	449	466	450	437	429	428	29	17	0	16	29	37	38
1947	419	420	419	410	412	429	439	442	413	380	354	341	37	27	24	53	86	112	125
1948	362	378	384	407	404	399	436	457	457	451	447	434	67	30	9	9	15	19	32
1949	425	419	416	406	400	422	443	460	441	425	416	414	44	23	6	25	41	50	52
1950	408	406	402	424	424	437	449	466	455	443	439	434	29	17	0	11	23	27	32
1951	428	393	388	388	388	426	449	466	450	434	429	429	40	17	0	16	32	37	37
1952	423	424	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1953	428	423	424	424	424	430	446	458	464	463	449	434	36	20	8	2	3	17	32
1954	425	423	421	422	424	437	449	452	442	423	417	420	29	17	14	24	43	49	46
1955	415	408	412	418	418	413	424	434	416	392	376	367	53	42	32	50	74	90	99
1956	345	364	420	402	406	425	441	466	466	463	449	434	41	25	0	0	3	17	32
1957	428	422	417	412	424	437	435	460	450	437	431	430	29	31	6	16	29	35	36
1958	423	417	419	423	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1959	425	419	412	417	424	426	435	436	412	389	376	383	40	31	30	54	77	90	83
1960	381	376	373	383	422	437	448	447	427	405	393	400	29	18	19	39	61	73	66
1961	395	392	391	384	390	399	409	421	405	387	375	379	67	57	45	61	79	91	87
1962	380	382	389	390	424	431	449	456	450	431	421	420	35	17	10	16	35	45	46
1963	441	424	424	424	419	430	449	466	459	454	449	434	36	17	0	7	12	17	32
1964	427	424	424	424	418	415	426	432	410	374	335	334	51	40	34	56	92	131	132
1965	335	367	393	392	395	414	449	464	453	446	444	434	52	17	2	13	20	22	32
1966	426	424	424	424	422	430	448	449	427	404	393	395	36	18	17	39	62	73	71
1967	394	403	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1968	427	424	423	424	424	437	441	442	419	395	393	395	29	25	24	47	71	73	71
1969	393	398	408	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1970	427	424	423	393	396	426	433	442	433	417	415	419	40	33	24	33	49	51	47
1971	413	422	424	424	424	437	449	463	463	461	449	434	29	17	3	3	5	17	32
1972	425	422	424	424	424	437	444	451	431	409	403	402	29	22	15	35	57	63	64
1973	401	406	421	424	424	437	449	466	453	437	430	431	29	17	0	13	29	36	35
1974	424	423	422	409	417	433	449	466	463	463	449	434	33	17	0	3	3	17	32
1975	426	419	417	415	424	437	441	466	466	463	449	434	29	25	0	0	3	17	32
1976	431	423	419	410	402	392	398	403	369	334	342	343	74	68	63	97	132	124	123
1977	335	334	330	325	321	323	334	341	334	319	305	291	143	132	125	132	147	161	175
1978	287	304	358	424	424	437	449	466	459	453	445	434	29	17	0	7	13	21	32
1979	423	417	411	418	424	437	447	466	447	430	423	422	29	19	0	19	36	43	44
1980	419	416	417	405	399	430	449	464	454	454	449	434	36	17	2	12	12	17	32
1981	425	419	415	413	412	422	433	435	411	390	383	383	44	33	31	55	76	83	83
1982	393	420	392	396	388	424	449	466	466	463	449	434	42	17	0	0	3	17	32
1983	438	415	417	418	418	433	449	466	466	463	449	434	33	17	0	0	3	17	32
1984	435	392	388	388	392	424	444	464	455	443	438	434	42	22	2	11	23	28	32
1985	427	424	424	420	422	428	443	445	414	376	338	336	38	23	21	52	90	128	130
1986	335	366	396	424	396	424	449	464	458	453	449	434	42	17	2	8	13	17	32
1987	427	420	413	405	404	410	417	420	390	351	334	334	56	49	46	76	115	132	132
1988	334	334	369	396	388	387	395	395	357	333	317	382	79	71	71	109	133	149	84
1989	371	383	393	399	393	437	449	452	432	409	401	405	29	17	14	34	57	65	61
1990	402	401	396	396	394	407	412	413	379	334	340	341	59	54	53	87	132	126	125
1991	334	334	335	332	332	383	407	425	421	415	411	409	83	59	41	45	51	55	57
1992	403	391	382	367	388	403	412	408	369	334	323	316	63	54	58	97	132	143	150
1993	316	315	357	424	427	434	449	466	466	455	449	434	32	17	0	0	11	17	32
1994	423	413	407	395	390	388	397	402	378	334	334	332	78	69	64	88	132	132	134

	Elevation score								Change [fluctuation]							Fluctuation score								
YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	1	1	6	6	5	2	1	22	4	15	23	0	-4	-13	-15	6	6	6	6	5	3	3	35	770
1923	1	2	6	4	1	1	1	16	-3	33	17	-8	-21	-15	2	5	6	6	4	1	3	6	31	496
1924	1	1	1	1	1	1	1	7	-18	8	4	-35	-12	3	-3	2	6	6	1	3	6	5	29	203
1925	1	2	6	2	1	1	1	14	11	14	17	-18	-16	-11	-3	6	6	6	2	2	3	5	30	420
1926	1	1	1	1	1	1	1	7	0	31	-1	-30	-43	-36	14	6	6	5	1	1	1	6	26	182
1927	1	2	6	4	3	2	1	19	13	12	17	-5	-7	-5	-15	6	6	6	5	4	5	3	35	665
1928	1	2	3	1	1	1	1	10	13	12	5	-13	-24	-8	2	6	6	6	3	1	4	6	32	320
1929	1	1	1	1	1	1	1	7	6	8	5	-12	-27	7	2	6	6	6	3	1	6	6	34	238
1930	1	1	1	1	1	1	1	7	13	6	-1	-24	-29	-24	4	6	6	5	1	1	1	6	26	182
1931	1	1	1	1	1	1	1	7	9	-5	-5	-63	0	0	0	6	5	5	1	6	6	6	35	245
1932	1	1	4	1	1	1	1	10	12	9	16	-20	-40	-31	4	6	6	6	2	1	1	6	28	280
1933	1	1	1	1	1	1	1	7	12	-30	20	-41	0	11	-5	6	1	6	1	6	6	5	31	217
1934	1	1	1	1	1	1	1	7	5	-6	-4	-81	-10	-11	13	6	4	5	1	4	3	6	29	203
1935	1	2	3	3	1	1	1	12	3	31	5	-1	-19	-12	-1	6	6	6	5	2	3	5	33	396
1936	1	2	4	3	1	1	1	13	13	12	12	-5	-12	-6	-4	6	6	6	5	3	4	5	35	455
1937	1	2	6	3	1	1	1	15	13	12	17	-11	-13	-7	-3	6	6	6	3	3	4	5	33	495
1938	1	2	6	6	5	2	1	23	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1939	1	1	1	1	1	1	1	7	7	8	4	-30	-57	0	1	6	6	6	1	1	6	6	32	224
1940	1	2	4	3	1	1	1	13	13	12	12	-9	-17	-10	3	6	6	6	4	2	4	6	34	442
1941	1	2	6	4	3	2	1	19	13	12	17	-8	-3	-6	-15	6	6	6	4	5	4	3	34	646
1942	1	2	6	6	5	2	1	23	6	19	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1943	1	2	4	2	1	1	1	12	12	15	10	-9	-5	-4	-7	6	6	6	4	5	5	4	36	432
1944	1	1	1	1	1	1	1	7	12	1	13	-21	-23	-17	-4	6	6	6	1	1	2	5	27	189
1945	1	2	6	3	1	1	1	15	13	12	17	-11	-12	-6	-3	6	6	6	3	3	4	5	33	495
1946	1	2	6	2	1	1	1	14	14	12	17	-16	-13	-8	-1	6	6	6	2	3	4	5	32	448
1947	1	1	1	1	1	1	1	7	17	10	3	-29	-33	-26	-13	6	6	6	1	1	1	3	24	168
1948	1	1	4	4	2	2	1	15	-5	37	21	0	-6	-4	-13	5	6	6	6	4	5	3	35	525
1949	1	1	4	1	1	1	1	10	22	21	17	-19	-16	-9	-2	6	6	6	2	2	4	5	31	310
1950	1	2	6	3	1	1	1	15	13	12	17	-11	-12	-4	-5	6	6	6	3	3	5	5	34	510
1951	1	2	6	2	1	1	1	14	38	23	17	-16	-16	-5	0	6	6	6	2	2	5	6	33	462
1952	1	2	6	6	5	2	1	23	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1953	1	1	4	5	5	2	1	19	6	16	12	6	-1	-14	-15	6	6	6	6	5	3	3	35	665
1954	1	2	3	1	1	1	1	10	13	12	3	-10	-19	-6	3	6	6	6	4	2	4	6	34	340
1955	1	1	1	1	1	1	1	7	-5	11	10	-18	-24	-16	-9	5	6	6	2	1	2	4	26	182
1956	1	1	6	6	5	2	1	22	19	16	25	0	-3	-14	-15	6	6	6	6	5	3	3	35	770
1957	1	1	4	2	1	1	1	11	13	-2	25	-10	-13	-6	-1	6	5	6	4	3	4	5	33	363
1958	1	2	6	6	5	2	1	23	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1959	1	1	1	1	1	1	1	7	2	9	1	-24	-23	-13	7	6	6	6	1	1	3	6	29	203
1960	1	2	2	1	1	1	1	9	15	11	-1	-20	-22	-12	7	6	6	5	2	1	3	6	29	261
1961	1	1	1	1	1	1	1	7	9	10	12	-16	-18	-12	4	6	6	6	2	2	3	6	31	217
1962	1	2	3	2	1	1	1	11	7	18	7	-6	-19	-10	-1	6	6	6	4	2	4	5	33	363
1963	1	2	6	4	3	2	1	19	11	19	17	-7	-5	-5	-15	6	6	6	4	5	5	3	35	665
1964	1	1	1	1	1	1	1	7	-3	11	6	-22	-36	-39	-1	5	6	6	1	1	1	5	25	175
1965	1	2	5	3	1	1	1	14	19	35	15	-11	-7	-2	-10	6	6	6	3	4	5	4	34	476
1966	1	2	2	1	1	1	1	9	8	18	1	-22	-23	-11	2	6	6	6	1	1	3	6	29	261
1967	1	2	6	6	5	2	1	23	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1968	1	1	1	1	1	1	1	7	13	4	1	-23	-24	-2	2	6	6	6	1	1	5	6	31	217
1969	1	2	6	6	5	2	1	23	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1970	1	1	1	1	1	1	1	7	30	7	9	-9	-16	-2	4	6	6	6	4	2	5	6	35	245
1971	1	2	5	5	4	2	1	20	13	12	14	0	-2	-12	-15	6	6	6	6	5	3	3	35	700
1972	1	1	2	1	1	1	1	8	13	7	7	-20	-22	-6	-1	6	6	6	2	1	4	5	30	240
1973	1	2	6	3	1	1	1	15	13	12	17	-13	-16	-7	1	6	6	6	3	2	4	6	33	495
1974	1	2	6	5	5	2	1	22	16	16	17	-3	0	-14	-15	6	6	6	5	6	3	3	35	770
1975	1	1	6	6	5	2	1	22	13	4	25	0	-3	-14	-15	6	6	6	6	5	3	3	35	770
1976	1	1	1	1	1	1	1	7	-10	6	5	-34	-35	8	1	4	6	6	1	1	6	6	30	210
1977	1	1	1	1	1	1	1	7	2	11	7	-7	-15	-14	-14	6	6	6	4	3	3	3	31	217
1978	1	2	6	4	3	1	1	18	13	12	17	-7	-6	-8	-11	6	6	6	4	4	4	3	33	594
1979	1	2	6	2	1	1	1	14	13	10	19	-19	-17	-7	-1	6	6	6	2	2	4	5	31	434
1980	1	2	5	3	3	2	1	17	31	19	15	-10	0	-5	-15	6	6	6	4	6	5	3	36	612
1981	1	1	1	1	1	1	1	7	10	11	2	-24	-21	-7	0	6	6	6	1	1	4	6	30	210
1982	1	2	6	6	5	2	1	23	36	25	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1983	1	2	6	6	5	2	1	23	15	16	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1984	1	1	5	3	1	1	1	13	32	20	20	-9	-12	-5	-4	6	6	6	4	3	5	5	35	455
1985	1	1	1	1	1	1	1	7	6	15	2	-31	-38	-38	-2	6	6	6	1	1	1	5	26	182
1986	1	2	5	4	3	2	1	18	28	25	15	-6	-5	-4	-15	6	6	6	4	5	5	3	35	630
1987	1	1	1	1	1	1	1	7	6	7	3	-30	-39	-17	0	6	6	6	1	1	2	6	28	196
1988	1	1	1	1	1	1	1	7	-1	8	0	-38	-24	-16	65	5	6	6	1	1	2	6	27	189
1989	1	2	3	1	1	1	1	10	44	12	3	-20	-23	-8	4	6	6	6	2	1	4	6	31	310
1990	1	1	1	1	1	1	1	7	13	5	1	-34	-45	6	1	6	6	6	1	1	6	6	32	224
1991	1	1	1	1	1	1	1	7	51	24	18	-4	-6	-4	-2	6	6	6	5	4	5	5	37	259
1992	1	1	1	1	1	1	1	7	15	9	-4	-39	-35	-11	-7	6	6	5	1	1	3	4	26	182
1993	1	2	6	6	3	2	1	21	7	15	17	0	-11	-6	-15	6	6	6	6	3	4	3	34	714
1994	1	1	1	1	1	1	1	7	-2	9	5	-24	-44	0	-2	5	6	6	1	1	6	5	30	210
73 - year Average:								13								73 - year Average:							32	428.27
1929 - '34 Average:																								227.5

Flow Alternative 8

STUDY: 1995C06F-SWRCBDS-622A DWRSIM: recirc818VA, 09 Apr 98
CP # 10, NEW MELONES RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCBDS-622A/10/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 1088'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	939	942	947	952	967	976	970	994	1018	1012	1001	994
1923	993	995	1003	1010	1015	1019	1016	1025	1026	1019	1007	1001
1924	1000	1001	1003	1005	1006	1006	1000	990	977	965	957	952
1925	951	953	956	959	977	988	986	998	1000	993	979	971
1926	969	970	972	973	982	988	989	983	969	954	943	935
1927	935	938	946	953	972	981	986	997	1004	995	982	976
1928	975	980	984	987	993	1010	1008	1014	1006	993	979	971
1929	970	972	973	975	978	979	973	968	958	946	937	930
1930	930	931	933	937	942	950	950	944	940	928	916	904
1931	905	909	912	916	920	922	915	899	882	871	858	849
1932	847	849	860	868	891	901	900	927	941	934	925	916
1933	916	919	922	925	927	929	924	920	917	899	883	872
1934	872	877	882	888	897	906	897	881	862	846	832	823
1935	819	821	824	832	839	848	867	908	926	915	896	885
1936	884	888	892	910	937	947	958	978	985	974	961	953
1937	953	955	958	962	975	988	985	1004	1007	997	985	977
1938	976	978	990	999	1018	1039	1048	1073	1088	1086	1077	1072
1939	1065	1060	1055	1051	1050	1052	1044	1032	1022	1011	1000	993
1940	992	992	993	1004	1018	1034	1038	1050	1049	1038	1027	1020
1941	1018	1020	1024	1029	1039	1049	1044	1057	1061	1056	1047	1039
1942	1038	1039	1043	1050	1051	1055	1056	1067	1077	1074	1066	1060
1943	1053	1050	1050	1057	1061	1076	1082	1087	1085	1078	1069	1063
1944	1055	1050	1050	1050	1050	1053	1042	1036	1032	1021	1009	1001
1945	1000	1004	1007	1011	1025	1032	1028	1036	1042	1035	1024	1017
1946	1016	1019	1028	1035	1041	1046	1047	1054	1052	1042	1031	1025
1947	1024	1026	1029	1030	1033	1038	1030	1021	1011	1000	987	979
1948	979	980	981	982	984	987	985	988	997	987	974	967
1949	966	968	971	973	976	982	979	983	978	964	954	947
1950	946	946	948	955	965	973	974	990	994	982	971	963
1951	963	998	1038	1049	1052	1055	1053	1054	1049	1038	1027	1020
1952	1018	1020	1026	1040	1050	1055	1058	1085	1088	1087	1079	1073
1953	1065	1060	1056	1056	1054	1055	1050	1044	1050	1043	1032	1025
1954	1023	1024	1026	1028	1031	1038	1036	1041	1034	1022	1010	1003
1955	1002	1003	1005	1009	1011	1014	1008	1003	999	987	973	965
1956	964	967	998	1024	1037	1047	1046	1059	1066	1062	1052	1047
1957	1045	1046	1047	1049	1050	1055	1046	1045	1048	1037	1026	1018
1958	1014	1015	1016	1022	1030	1045	1052	1076	1086	1081	1073	1066
1959	1058	1054	1050	1050	1050	1053	1043	1030	1020	1009	998	992
1960	990	991	992	993	998	1004	1000	994	983	969	958	949
1961	945	949	952	954	956	959	955	947	936	927	919	909
1962	907	910	913	917	929	935	936	941	944	935	925	914
1963	914	918	923	931	949	956	955	981	993	984	971	964
1964	964	969	972	978	982	986	981	974	966	952	942	934
1965	932	936	968	994	1006	1013	1017	1025	1034	1029	1019	1012
1966	1010	1014	1018	1022	1026	1030	1023	1022	1011	999	987	978
1967	976	978	989	1001	1008	1019	1021	1042	1064	1069	1061	1055
1968	1050	1050	1050	1050	1050	1054	1045	1036	1027	1016	1004	996
1969	995	998	1000	1028	1049	1056	1067	1088	1088	1086	1076	1069
1970	1062	1058	1057	1075	1080	1083	1078	1079	1075	1065	1055	1050
1971	1048	1050	1050	1050	1050	1054	1049	1048	1052	1044	1032	1025
1972	1023	1025	1030	1034	1037	1043	1034	1033	1024	1012	1000	993
1973	993	994	998	1010	1024	1035	1030	1041	1042	1030	1019	1012
1974	1011	1016	1024	1036	1045	1055	1060	1071	1070	1063	1053	1047
1975	1046	1047	1050	1050	1050	1055	1051	1054	1063	1057	1047	1040
1976	1039	1041	1043	1044	1046	1048	1038	1028	1016	1006	995	988
1977	987	988	988	988	987	987	980	972	963	952	944	939
1978	935	935	938	949	961	980	984	998	1008	1006	995	992
1979	990	992	995	1002	1015	1028	1024	1035	1032	1020	1008	1002
1980	1001	1004	1005	1037	1055	1058	1059	1063	1067	1065	1056	1050
1981	1050	1050	1050	1050	1050	1053	1045	1033	1021	1009	998	993
1982	992	998	1012	1031	1055	1069	1085	1088	1088	1085	1077	1074
1983	1071	1076	1084	1088	1088	1088	1088	1088	1088	1088	1083	1075
1984	1070	1080	1088	1088	1088	1088	1082	1084	1078	1071	1063	1059
1985	1052	1050	1050	1050	1050	1053	1047	1038	1027	1016	1005	999
1986	999	1001	1003	1012	1052	1075	1076	1079	1079	1070	1062	1058
1987	1051	1050	1050	1049	1050	1051	1042	1028	1017	1007	998	994
1988	991	990	990	991	992	994	987	977	967	958	953	947
1989	945	944	944	945	948	959	957	952	944	933	925	920
1990	923	926	930	932	936	940	933	921	904	890	879	871
1991	870	871	875	876	878	886	882	876	861	846	834	827
1992	828	830	835	839	850	859	851	834	816	798	777	772
1993	776	784	794	818	916	963	971	984	994	984	972	967
1994	966	966	969	970	970	976	971	966	956	944	936	932

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	121	112	118	94	70	76	87	1	1	1	1	1	1	1	7
1923	73	69	72	63	62	69	81	1	1	1	1	1	1	1	7
1924	82	82	88	98	111	123	131	1	1	1	1	1	1	1	7
1925	111	100	102	90	88	95	109	1	1	1	1	1	1	1	7
1926	106	100	99	105	119	134	145	1	1	1	1	1	1	1	7
1927	116	107	102	91	84	93	106	1	1	1	1	1	1	1	7
1928	95	78	80	74	82	95	109	1	1	1	1	1	1	1	7
1929	110	109	115	120	130	142	151	1	1	1	1	1	1	1	7
1930	146	138	138	144	148	160	172	1	1	1	1	1	1	1	7
1931	168	166	173	189	206	217	230	1	1	1	1	1	1	1	7
1932	197	187	188	161	147	154	163	1	1	1	1	1	1	1	7
1933	161	159	164	168	171	189	205	1	1	1	1	1	1	1	7
1934	191	182	191	207	226	242	256	1	1	1	1	1	1	1	7
1935	249	240	221	180	162	173	192	1	1	1	1	1	1	1	7
1936	151	141	130	110	103	114	127	1	1	1	1	1	1	1	7
1937	113	100	103	84	81	91	103	1	1	1	1	1	1	1	7
1938	70	49	40	15	0	2	11	1	1	1	2	6	5	3	19
1939	38	36	44	56	66	77	88	1	1	1	1	1	1	1	7
1940	70	54	50	38	39	50	61	1	1	1	1	1	1	1	7
1941	49	39	44	31	27	32	41	1	1	1	1	1	1	1	7
1942	37	33	32	21	11	14	22	1	1	1	1	3	3	1	11
1943	27	12	6	1	3	10	19	1	3	4	5	5	3	2	23
1944	38	35	46	52	56	67	79	1	1	1	1	1	1	1	7
1945	63	56	60	52	46	53	64	1	1	1	1	1	1	1	7
1946	47	42	41	34	36	46	57	1	1	1	1	1	1	1	7
1947	55	50	58	67	77	88	101	1	1	1	1	1	1	1	7
1948	104	101	103	100	91	101	114	1	1	1	1	1	1	1	7
1949	112	106	109	105	110	124	134	1	1	1	1	1	1	1	7
1950	123	115	114	98	94	106	117	1	1	1	1	1	1	1	7
1951	36	33	35	34	39	50	61	1	1	1	1	1	1	1	7
1952	38	33	30	3	0	1	9	1	1	1	5	6	5	4	23
1953	34	33	38	44	38	45	56	1	1	1	1	1	1	1	7
1954	57	50	52	47	54	66	78	1	1	1	1	1	1	1	7
1955	77	74	80	85	89	101	115	1	1	1	1	1	1	1	7
1956	51	41	42	29	22	26	36	1	1	1	1	1	1	1	7
1957	38	33	42	43	40	51	62	1	1	1	1	1	1	1	7
1958	58	43	36	12	2	7	15	1	1	1	3	5	4	2	17
1959	38	35	45	58	68	79	90	1	1	1	1	1	1	1	7
1960	90	84	88	94	105	119	130	1	1	1	1	1	1	1	7
1961	132	129	133	141	152	161	169	1	1	1	1	1	1	1	7
1962	159	153	152	147	144	153	163	1	1	1	1	1	1	1	7
1963	139	132	133	107	95	104	117	1	1	1	1	1	1	1	7
1964	106	102	107	114	122	136	146	1	1	1	1	1	1	1	7
1965	82	75	71	63	54	59	69	1	1	1	1	1	1	1	7
1966	62	58	65	66	77	89	101	1	1	1	1	1	1	1	7
1967	80	69	67	46	24	19	27	1	1	1	1	1	2	1	8
1968	38	34	43	52	61	72	84	1	1	1	1	1	1	1	7
1969	39	32	21	0	0	2	12	1	1	1	6	6	5	3	23
1970	8	5	10	9	13	23	33	4	4	3	4	3	1	1	20
1971	38	34	39	40	36	44	56	1	1	1	1	1	1	1	7
1972	51	45	54	55	64	76	88	1	1	1	1	1	1	1	7
1973	64	53	58	47	46	58	69	1	1	1	1	1	1	1	7
1974	43	33	28	17	18	25	35	1	1	1	2	2	1	1	9
1975	38	33	37	34	25	31	41	1	1	1	1	1	1	1	7
1976	42	40	50	60	72	82	93	1	1	1	1	1	1	1	7
1977	101	101	108	116	125	136	144	1	1	1	1	1	1	1	7
1978	127	108	104	90	80	82	93	1	1	1	1	1	1	1	7
1979	73	60	64	53	56	68	80	1	1	1	1	1	1	1	7
1980	33	30	29	25	21	23	32	1	1	1	1	1	1	1	7
1981	38	35	43	55	67	79	90	1	1	1	1	1	1	1	7
1982	33	19	3	0	0	3	11	1	2	5	6	6	5	3	28
1983	0	0	0	0	0	0	5	6	6	6	6	6	6	4	40
1984	0	0	6	4	10	17	25	6	6	4	5	3	2	1	27
1985	38	35	41	50	61	72	83	1	1	1	1	1	1	1	7
1986	36	13	12	9	9	18	26	1	3	3	4	4	2	1	18
1987	38	37	46	60	71	81	90	1	1	1	1	1	1	1	7
1988	96	94	101	111	121	130	135	1	1	1	1	1	1	1	7
1989	140	129	131	136	144	155	163	1	1	1	1	1	1	1	7
1990	152	148	155	167	184	198	209	1	1	1	1	1	1	1	7
1991	210	202	206	212	227	242	254	1	1	1	1	1	1	1	7
1992	238	229	237	254	272	290	311	1	1	1	1	1	1	1	7
1993	172	125	117	104	94	104	116	1	1	1	1	1	1	1	7
1994	118	112	117	122	132	144	152	1	1	1	1	1	1	1	7

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	9	-6	24	24	-6	-11	-7	6	4	6	6	4	3	4	33	231
1923	4	-3	9	1	-7	-12	-6	6	5	6	6	4	3	4	34	238
1924	0	-6	-10	-13	-12	-8	-5	6	4	4	3	3	4	5	29	203
1925	11	-2	12	2	-7	-14	-8	6	5	6	6	4	3	4	34	238
1926	6	1	-6	-14	-15	-11	-8	6	6	4	3	3	3	4	29	203
1927	9	5	11	7	-9	-13	-6	6	6	6	6	4	3	4	35	245
1928	17	-2	6	-8	-13	-14	-8	6	5	6	4	3	3	4	31	217
1929	1	-6	-5	-10	-12	-9	-7	6	4	5	4	3	4	4	30	210
1930	8	0	-6	-4	-12	-12	-12	6	6	4	5	3	3	3	30	210
1931	2	-7	-16	-17	-11	-13	-9	6	4	2	2	3	3	4	24	168
1932	10	-1	27	14	-7	-9	-9	6	5	6	6	4	4	4	35	245
1933	2	-5	-4	-3	-18	-16	-11	6	5	5	5	2	2	3	28	196
1934	9	-9	-16	-19	-16	-14	-9	6	4	2	2	2	3	4	23	161
1935	9	19	41	18	-11	-19	-11	6	6	6	6	3	2	3	32	224
1936	10	11	20	7	-11	-13	-8	6	6	6	6	3	3	4	34	238
1937	13	-3	19	3	-10	-12	-8	6	5	6	6	4	3	4	34	238
1938	21	9	25	15	-2	-9	-5	6	6	6	6	5	4	5	38	722
1939	2	-8	-12	-10	-11	-11	-7	6	4	3	4	3	3	4	27	189
1940	16	4	12	-1	-11	-11	-7	6	6	6	5	3	3	4	33	231
1941	10	-5	13	4	-5	-9	-8	6	5	6	6	5	4	4	36	252
1942	4	1	11	10	-3	-8	-6	6	6	6	6	5	4	4	37	407
1943	15	6	5	-2	-7	-9	-6	6	6	6	5	4	4	4	35	805
1944	3	-11	-6	-4	-11	-12	-8	6	3	4	5	3	3	4	28	196
1945	7	-4	8	6	-7	-11	-7	6	5	6	6	4	3	4	34	238
1946	5	1	7	-2	-10	-11	-6	6	6	6	5	4	3	4	34	238
1947	5	-8	-9	-10	-11	-13	-8	6	4	4	4	3	3	4	28	196
1948	3	-2	3	9	-10	-13	-7	6	5	6	6	4	3	4	34	238
1949	6	-3	4	-5	-14	-10	-7	6	5	6	5	3	4	4	33	231
1950	8	1	16	4	-12	-11	-8	6	6	6	6	3	3	4	34	238
1951	3	-2	1	-5	-11	-11	-7	6	5	6	5	3	3	4	32	224
1952	5	3	27	3	-1	-8	-6	6	6	6	6	5	4	4	37	851
1953	1	-5	-6	6	-7	-11	-7	6	5	4	6	4	3	4	32	224
1954	7	-2	5	-7	-12	-12	-7	6	5	6	4	3	3	4	31	217
1955	3	-6	-5	-4	-12	-14	-8	6	4	5	5	3	3	4	30	210
1956	10	-1	13	7	-4	-10	-5	6	5	6	6	5	4	5	37	259
1957	5	-9	-1	3	-11	-11	-8	6	4	5	6	3	3	4	31	217
1958	15	7	24	10	-5	-8	-7	6	6	6	6	5	4	4	37	629
1959	3	-10	-13	-10	-11	-11	-6	6	4	3	4	3	3	4	27	189
1960	6	-4	-6	-11	-14	-11	-9	6	5	4	3	3	3	4	28	196
1961	3	-4	-8	-11	-9	-8	-10	6	5	4	3	4	4	4	30	210
1962	6	1	5	3	-9	-10	-11	6	6	6	6	4	4	3	35	245
1963	7	-1	26	12	-9	-13	-7	6	5	6	6	4	3	4	34	238
1964	4	-5	-7	-8	-14	-10	-8	6	5	4	4	3	4	4	30	210
1965	7	4	8	9	-5	-10	-7	6	6	6	6	5	4	4	37	259
1966	4	-7	-1	-11	-12	-12	-9	6	4	5	3	3	3	4	28	196
1967	11	2	21	22	5	-8	-6	6	6	6	6	6	4	4	38	304
1968	4	-9	-9	-9	-11	-12	-8	6	4	4	4	3	3	4	28	196
1969	7	11	21	0	-2	-10	-7	6	6	6	6	5	4	4	37	851
1970	3	-5	1	-4	-10	-10	-5	6	5	6	5	4	4	5	35	700
1971	4	-5	-1	4	-8	-12	-7	6	5	5	6	4	3	4	33	231
1972	6	-9	-1	-9	-12	-12	-7	6	4	5	4	3	3	4	29	203
1973	11	-5	11	1	-12	-11	-7	6	5	6	6	3	3	4	33	231
1974	10	5	11	-1	-7	-10	-6	6	6	6	5	4	4	4	35	315
1975	5	-4	3	9	-6	-10	-7	6	5	6	6	4	4	4	35	245
1976	2	-10	-10	-12	-10	-11	-7	6	4	4	3	4	3	4	28	196
1977	0	-7	-8	-9	-11	-8	-5	6	4	4	4	3	4	5	30	210
1978	19	4	14	10	-2	-11	-3	6	6	6	6	5	3	5	37	259
1979	13	-4	11	-3	-12	-12	-6	6	5	6	5	3	3	4	32	224
1980	3	1	4	4	-2	-9	-6	6	6	6	6	5	4	4	37	259
1981	3	-8	-12	-12	-12	-11	-5	6	4	3	3	3	3	5	27	189
1982	14	16	3	0	-3	-8	-3	6	6	6	6	5	4	5	38	1064
1983	0	0	0	0	0	-5	-8	6	6	6	6	6	5	4	39	1560
1984	0	-6	2	-6	-7	-8	-4	6	4	6	4	4	4	5	33	891
1985	3	-6	-9	-11	-11	-11	-6	6	4	4	3	3	3	4	27	189
1986	23	1	3	0	-9	-8	-4	6	6	6	6	4	4	5	37	666
1987	1	-9	-14	-11	-10	-9	-4	6	4	3	3	4	4	5	29	203
1988	2	-7	-10	-10	-9	-5	-6	6	4	4	4	4	5	4	31	217
1989	11	-2	-5	-8	-11	-8	-5	6	5	5	4	3	4	5	32	224
1990	4	-7	-12	-17	-14	-11	-8	6	4	3	2	3	3	4	25	175
1991	8	-4	-6	-15	-15	-12	-7	6	5	4	3	3	3	4	28	196
1992	9	-8	-17	-18	-18	-21	-5	6	4	2	2	2	1	5	22	154
1993	47	8	13	10	-10	-12	-5	6	6	6	6	4	3	5	36	252
1994	6	-5	-5	-10	-12	-8	-4	6	5	5	4	3	4	5	32	224

73 - year Average: 9

73 - year Average: 32 **312.99**

1929 - '34 Average: 198.3

STUDY: 1995C06F-SWRCBDS-622A DWRSIM: recirc818VA, 09 Apr 98
CP # 81, DON PEDRO RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCBDS-622A/81/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 832'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	599	582	579	601	656	690	699	723	781	778	762	751	142	133	109	51	54	70	81	1	1	1	1	1	1	1	7	34	9	24	58	-3	-16	-11	6	6	6	6	5	2	3	34	238
1923	745	744	747	759	774	783	787	789	798	792	776	767	49	45	43	34	40	56	65	1	1	1	1	1	1	1	7	9	4	2	9	-6	-16	-9	6	6	6	6	4	2	4	34	238
1924	761	758	753	751	753	750	745	739	730	717	703	695	82	87	93	102	115	129	137	1	1	1	1	1	1	1	7	-3	-5	-6	-9	-13	-14	-8	5	5	4	4	3	3	4	28	196
1925	692	692	693	697	719	736	748	761	779	769	753	742	96	84	71	53	63	79	90	1	1	1	1	1	1	1	7	17	12	13	18	-10	-16	-11	6	6	6	6	4	2	3	33	231
1926	736	734	729	728	737	742	756	769	766	751	736	726	90	76	63	66	81	96	106	1	1	1	1	1	1	1	7	5	14	13	-3	-15	-15	-10	6	6	6	5	3	3	4	33	231
1927	721	720	725	732	761	776	786	786	805	798	783	773	56	46	46	27	34	49	59	1	1	1	1	1	1	1	7	15	10	0	19	-7	-15	-10	6	6	6	6	4	3	4	35	245
1928	767	767	767	770	779	797	802	818	818	803	788	779	35	30	14	14	29	44	53	1	1	3	3	1	1	1	11	18	5	16	0	-15	-15	-9	6	6	6	6	3	3	4	34	374
1929	772	767	764	763	766	768	768	770	778	769	759	752	64	64	62	54	63	73	80	1	1	1	1	1	1	1	7	2	0	2	8	-9	-10	-7	6	6	6	6	4	4	4	36	252
1930	749	746	743	744	749	757	758	761	774	765	756	749	75	74	71	58	67	76	83	1	1	1	1	1	1	1	7	8	1	3	13	-9	-9	-7	6	6	6	6	4	4	4	36	252
1931	747	746	746	748	750	749	742	734	722	708	695	688	83	90	98	110	124	137	144	1	1	1	1	1	1	1	7	-1	-7	-8	-12	-14	-13	-7	5	4	4	3	3	3	4	26	182
1932	685	681	691	706	742	757	757	763	781	776	762	751	75	75	69	51	56	70	81	1	1	1	1	1	1	1	7	15	0	6	18	-5	-14	-11	6	6	6	6	5	3	3	35	245
1933	744	737	731	731	736	739	737	733	751	739	725	714	93	95	99	81	93	107	118	1	1	1	1	1	1	1	7	3	-2	-4	18	-12	-14	-11	6	5	5	6	3	3	3	31	217
1934	707	706	703	706	717	726	724	718	714	698	684	674	106	108	114	118	134	148	158	1	1	1	1	1	1	1	7	9	-2	-6	-4	-16	-14	-10	6	5	4	5	2	3	4	29	203
1935	668	668	669	683	704	719	741	752	780	768	751	739	113	91	80	52	64	81	93	1	1	1	1	1	1	1	7	15	22	11	28	-12	-17	-12	6	6	6	6	3	2	3	32	224
1936	733	731	726	731	769	785	794	811	829	820	805	794	47	38	21	3	12	27	38	1	1	1	5	3	1	1	13	16	9	17	18	-9	-15	-11	6	6	6	6	4	3	3	34	442
1937	788	783	779	782	800	800	802	815	832	819	805	795	32	30	17	0	13	27	37	1	1	2	6	3	1	1	15	0	2	13	17	-13	-14	-10	6	6	6	6	3	3	4	34	510
1938	789	784	800	800	800	800	800	804	831	832	819	808	32	32	28	1	0	13	24	1	1	1	5	6	3	1	18	0	0	4	27	1	-13	-11	6	6	6	6	6	3	3	36	648
1939	800	799	799	800	800	800	802	803	798	786	773	765	32	30	29	34	46	59	67	1	1	1	1	1	1	1	7	0	2	1	-5	-12	-13	-8	6	6	6	5	3	3	4	33	231
1940	763	762	760	772	800	800	802	815	828	813	798	788	32	30	17	4	19	34	44	1	1	2	5	2	1	1	13	0	2	13	13	-15	-15	-10	6	6	6	6	3	3	4	34	442
1941	782	780	782	797	800	800	800	812	832	831	817	808	32	32	20	0	1	15	24	1	1	1	6	5	2	1	17	0	0	12	20	-1	-14	-9	6	6	6	6	5	3	4	36	612
1942	800	798	800	800	800	800	802	807	831	832	818	808	32	30	25	1	0	14	24	1	1	1	5	6	3	1	18	0	2	5	24	1	-14	-10	6	6	6	6	6	3	4	37	666
1943	800	800	800	800	800	800	802	821	832	824	810	799	32	30	11	0	8	22	33	1	1	3	6	4	1	1	17	0	2	19	11	-8	-14	-11	6	6	6	6	4	3	3	34	578
1944	794	792	788	787	793	800	800	805	812	800	785	775	32	32	27	20	32	47	57	1	1	1	1	1	1	1	7	7	0	5	7	-12	-15	-10	6	6	6	6	3	3	4	34	238
1945	770	770	774	779	800	800	802	806	830	824	809	798	32	30	26	2	8	23	34	1	1	1	5	4	1	1	14	0	2	4	24	-6	-15	-11	6	6	6	6	4	3	3	34	476
1946	795	796	800	800	800	800	802	805	811	795	779	768	32	30	27	21	37	53	64	1	1	1	1	1	1	1	7	0	2	3	6	-16	-16	-11	6	6	6	6	2	2	3	31	217
1947	762	762	764	767	775	780	776	780	774	761	747	739	52	56	52	58	71	85	93	1	1	1	1	1	1	1	7	5	-4	4	-6	-13	-14	-8	6	5	6	4	3	3	4	31	217
1948	736	736	735	736	737	738	733	742	768	757	739	729	94	99	90	64	75	93	103	1	1	1	1	1	1	1	7	1	-5	9	26	-11	-18	-10	6	5	6	6	3	2	4	32	224
1949	723	716	711	710	717	728	735	744	751	734	714	701	104	97	88	81	98	118	131	1	1	1	1	1	1	1	7	11	7	9	7	-17	-20	-13	6	6	6	6	2	2	3	31	217
1950	695	688	682	688	707	720	729	740	757	741	723	710	112	103	92	75	91	109	122	1	1	1	1	1	1	1	7	13	9	11	17	-16	-18	-13	6	6	6	6	2	2	3	31	217
1951	705	753	800	800	800	800	796	792	796	781	767	757	32	36	40	36	51	65	75	1	1	1	1	1	1	1	7	0	-4	-4	4	-15	-14	-10	6	5	5	6	3	3	4	32	224
1952	750	748	754	780	800	800	800	820	832	832	819	808	32	32	12	0	0	13	24	1	1	3	6	6	3	1	21	0	0	20	12	0	-13	-11	6	6	6	6	6	3	3	36	756
1953	800	795	793	800	800	800	801	802	812	808	794	785	32	31	30	20	24	38	47	1	1	1	1	1	1	1	7	0	1	1	10	-4	-14	-9	6	6	6	6	5	3	4	36	252
1954	780	776	773	775	783	795	802	819	820	805	789	780	37	30	13	12	27	43	52	1	1	3	3	1	1	1	11	12	7	17	1	-15	-16	-9	6	6	6	6	3	2	4	33	363
1955	774	770	768	774	781	784	781	785	791	779	767	760	48	51	47	41	53	65	72	1	1	1	1	1	1	1	7	3	-3	4	6	-12	-12	-7	6	5	6	6	3	3	4	33	231
1956	755	751	800	800	800	800	801	816	832	832	818	808	32	31	16	0	0	14	24	1	1	2	6	6	3	1	20	0	1	15	16	0	-14	-10	6	6	6	6	6	3	4	37	740
1957	800	798	793	793	799	800	799	804	825	812	798	789	32	33	28	7	20	34	43	1	1	1	4	1	1	1	10	1	-1	5	21	-13	-14	-9	6	5	6	6	3	3	4	33	330
1958	784	779	777	781	800	800	800	821	832	832	819	808	32	32	11	0	0	13	24	1	1	3	6	6	3	1	21	0	0	21	11	0	-13	-11	6	6	6	6	6	3	3	36	756
1959	800	794	789	793	800	800	800	798	792	780	767	761	32	32	34	40	52	65	71	1	1	1	1	1	1	1	7	0	0	-2	-6	-12	-13	-6	6	6	5	4	3	3	4	31	217
1960	758	756	753	753	761	767	768	773	776	766	756	750	65	64	59	56	66	76	82	1	1	1	1	1	1	1	7	6	1	5	3	-10	-10	-6	6	6	6	6	4	4	4	36	252
1961	747	745	745	747	749	748	742	734	727	714	702	695	84	90	98	105	118	130	137	1	1	1	1	1	1	1	7	-1	-6	-8	-7	-13	-12	-7	5	4	4	4	3	3	4	27	189
1962	692	689	687	689	713	734	742	745	772	764	749	739	98	90	87	60	68	83	93	1	1	1	1	1	1	1	7	21	8	3	27	-8	-15	-10	6	6	6	6	4	3	4	35	245
1963	734	729	726	730	756	768	776	788	814	809	795	786	64	56	44	18	23	37	46	1	1	1	2	1	1	1	8	12	8	12	26	-5	-14	-9	6	6	6	6	5	3	4	36	288
1964	781	782	783	787	794	796	793	790	793	782	770	764	36	39	42	39	50	62	68	1	1	1	1	1	1	1	7	2	-3	-3	3	-11	-12	-6	6	5	5	6	3	3	4	32	224
1965	762	762	794	800	800	800	802	806	826	826	815	806	32	30	26	6	6	17	26	1	1	1	4	4	2	1	14	0	2	4	20	0	-11	-9	6	6	6	6	6	3	4	37	518
1966	800	800	800	800	800	800	800	796	789	774	759	749	32	32	36	43	58	73	83	1	1	1	1	1	1	1	7	0	0	-4	-7	-15	-15	-10	6	6	5	4	3	3	4	31	217
1967	745	742	753	769	787	800	800	817	832	832	820	808	32	32	15	0	0	12	24	1	1	2	6	6	3	1	20	13	0	17	15	0	-12	-12	6	6	6	6	6	3	3	36	720
1968	800	795	791	792	800	800	801	804	801	789	777	769	32	31	28	31	43	55	63	1	1	1	1	1	1	1	7	0	1	3	-3	-12	-12	-8	6	6	6	5	3	3	4	33	231
1969	765	765	769	800	800	800	800	823	832	832	819	808	32	32	9	0	0	13	24	1	1	4	6	6	3	1	22	0	0	23	9	0	-13	-11	6	6	6	6	6	3	3	36	792
1970	800	799	800	800	800	800	798	797	805	792	778	769	32	34	35	27	40	54	63	1	1	1	1	1	1	1	7	0	-2	-1	8	-13	-14	-9	6	5	5	6	3	3	4	32	224
1971	763	763	770	786	798	800	800	799	805	796	784	776	32	32	33	27	36	48	56	1	1	1	1	1	1	1	7	2	0	-1	6	-9	-12	-8	6	6	5	6	4	3	4	34	238
1972	771	767	770	776	790	800	800	798	796	784	773	767	32	32	34	36	48	59	65	1	1	1	1	1	1	1	7	10	0	-2	-2	-12	-11	-6	6	6	5	5	3	3	4	32	224
1973	763	762	765	776	800	800	802	812	827	812	797	788	32	30	20	5	20	35	44	1	1	1	4	1	1	1	10	0	2	10	15	-15	-15	-9	6	6	6	6	3	3	4	34	340
1974	783	787	798	800	800	800	800	806	828	819	805	796	32	32	26	4	13	27	36	1	1	1	5	3	1	1	13	0	0	6	22	-9	-14	-9	6	6	6	6	4	3	4	35	455
1975	791	789	786	786	798	800	802	811	832	825	812	803	32	30	21	0	7	20	29	1	1	1	6	4	1	1	15	2	2	9	21	-7	-13	-9	6	6	6	6	4	3	4	35	525
1976	800	800	799	799	800	799	794	787	777	767	757	751	33	38	45	55	65	75	81	1	1	1	1	1	1	1	7	-1	-5	-7	-10	-10	-10	-6	5	5	4	4	4	4	4	30	210
1977	748	745	742	741	741	737	728	715	702	687	672	663	95	104	117	130	145	160	169	1	1	1	1	1	1	1	7	-4	-9	-13	-13	-15	-15	-9	5	4	3	3	3	3	4	25	175
1978	659	655	658	684	717	749	762	777	814	822	808	803	83	70	55	18	10	24	29	1	1	1	2	3	1	1	10	32	13	15	37	8	-14	-5	6	6	6	6	6	3	5	38	380
1979	798	794	791	800	800	800	802	821	831	817	803	793	32	30	11	1	15	29	39	1	1	3	5	2	1	1	14	0	2	19	10	-14	-14	-10	6	6	6	6	3	3	4	34	476
1980	789	787	786	800	800	800	800	817	832	832	819	808	32	32	15	0	0	13	24	1	1	2	6	6	3	1	20	0	0	17	15	0	-13	-11	6	6	6	6	6	3	3	36	720
1981	800	797	794	795	799	800	802	805	804	792	781	773	32	30	27	28	40	51	59	1	1	1	1	1	1	1	7	1	2	3	-1	-12	-11	-8	6	6	6	5	3	3	4	33	231
1982	769	775	794	800	800	800	800	820	832	832	820	808	32	32	12	0	0	12	24	1	1	3	6	6	3	1	21	0	0	20	12	0	-12	-12	6	6	6	6	6	3	3	36	756
1983	800	800	800	800	800	800	800	819	832	832	832	808	32	32	13	0	0	0	24	1	1	3	6	6	6	1	24	0	0	19	13	0	0	-24	6	6	6	6	6	6	1	37	888
1984	800	800	800	800	800	800	796	801	812	799	784	773	32	36	31	20	33	48	59	1	1	1	1	1	1	1	7	0	-4	5	11	-13	-15	-11	6	5	6	6	3	3	3	32	224
1985	771	771	777	784	792	799	800	797	793	781	770	764	33	32	35	39	51	62	68	1	1	1	1	1	1	1	7	7	1	-3	-4	-12	-11	-6	6	6	5	5	3	3	4	32	224
1986	761	762	765	772	800	800	802	827	832	825	811	802	32	30	5	0	7	21	30	1	1	4	6	4	1	1	18	0	2	25	5	-7	-14	-9	6	6	6	6	4	3	4	35	630
1987	796	791	786	784	786	788	786	783	779	769	759	752	44	46	49	53	63	73	80	1	1	1	1	1	1	1	7	2	-2	-3	-4	-10	-10	-7	6	5	5	5	4	4	4	33	231
1988	750	749	749	754	759	761	755	746	738	727	714	707	71	77	86	94	105	118	125	1	1	1	1	1	1	1	7	2	-6	-9	-8	-11	-13	-7	6	4	4	4	3	3	4	28	196
1989	703	700	700	703	707	720	733	746	754	743	732	727	112	99	86	78	89	100	105	1	1	1	1	1	1	1	7	13	13	13	8	-11	-11	-5	6	6	6	6	3	3	5	35	245
1990	725	725	724	726	730	733	730	728	726	712	698	690	99	102	104	106	120	134	142	1	1	1	1	1	1	1	7	3	-3	-2	-2	-14	-14	-8	6	5	5	5	3	3	4	31	217
1991	687	684	680	679	678	686	685	702	713	703	692	686	146	147	130	119	129	140	146	1	1	1	1	1	1	1	7	8	-1	17	11	-10	-11	-6	6	5	6	6	4	3	4	34	238
1992	685	685	685	687	697	701	704	712	711	697	684	673	131	128	120	121	135	148	159	1	1	1	1	1	1	1	7	4	3	8	-1	-14	-13	-11	6	6	6	5	3	3	3	32	224
1993	667	661	660	694	726	754	762	776	806	805	791	781	78	70	56	26	27	41	51	1	1	1	1	1	1	1	7	28	8	14	30	-1	-14	-10	6	6	6	6	5	3	4	36	252
1994	776	770	766	765	768	771	768	771	770	759	749	744	61	64	61	62	73	83	88	1	1	1	1	1	1	1	7	3	-3	3	-1	-11	-10	-5	6	5	6	5	3	4	5	34	238

73 - year Average: 10 (Reservoir Elevation Scores SUM)

73 - year Average: 33 (Reservoir Fluctuation Scores SUM) **350.26** (Product)

1929 - '34 Average: 225.2

STUDY: 1995C06F-SWRCBDS-622A DWRSIM: recirc818VA, 09 Apr 98
CP # 20, LAKE McCLURE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCBDS-622A/20/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 867'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Fluct. MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	675	675	691	707	756	777	785	837	867	860	846	836	90	82	30	0	7	21	31	1	1	1	6	4	1	1	**15**	21	8	52	30	-7	-14	-10	6	6	6	6	4	3	4	**35**	525
1923	808	808	808	808	808	813	823	846	851	841	826	815	54	44	21	16	26	41	52	1	1	1	2	1	1	1	**8**	5	10	23	5	-10	-15	-11	6	6	6	6	4	3	3	**34**	272
1924	808	808	808	808	808	807	805	803	790	772	758	746	60	62	64	77	95	109	121	1	1	1	1	1	1	1	**7**	-1	-2	-2	-13	-18	-14	-12	5	5	5	3	2	3	3	**26**	182
1925	742	748	755	760	784	794	810	831	835	822	804	792	73	57	36	32	45	63	75	1	1	1	1	1	1	1	**7**	10	16	21	4	-13	-18	-12	6	6	6	6	3	2	3	**32**	224
1926	787	787	788	790	803	809	827	820	819	815	807	799	58	40	47	48	52	60	68	1	1	1	1	1	1	1	**7**	6	18	-7	-1	-4	-8	-8	6	6	4	5	5	4	4	**34**	238
1927	795	796	800	800	808	814	815	839	852	847	843	840	53	52	28	15	20	24	27	1	1	1	2	1	1	1	**8**	6	1	24	13	-5	-4	-3	6	6	6	6	5	5	5	**39**	312
1928	808	808	808	808	808	809	804	813	811	804	800	797	58	63	54	56	63	67	70	1	1	1	1	1	1	1	**7**	1	-5	9	-2	-7	-4	-3	6	5	6	5	4	5	5	**36**	252
1929	794	793	792	792	794	796	794	794	794	796	799	793	71	73	73	73	71	68	74	1	1	1	1	1	1	1	**7**	2	-2	0	0	2	3	-6	6	5	6	6	6	6	4	**39**	273
1930	789	788	788	787	787	782	784	781	786	789	793	791	85	83	86	81	78	74	76	1	1	1	1	1	1	1	**7**	-5	2	-3	5	3	4	-2	5	6	5	6	6	6	5	**39**	273
1931	787	786	786	787	789	789	792	795	781	763	747	735	78	75	72	86	104	120	132	1	1	1	1	1	1	1	**7**	0	3	3	-14	-18	-16	-12	6	6	6	3	2	2	3	**28**	196
1932	730	731	753	766	802	811	817	838	859	849	833	823	56	50	29	8	18	34	44	1	1	1	4	2	1	1	**11**	9	6	21	21	-10	-16	-10	6	6	6	6	4	2	4	**34**	374
1933	808	807	806	808	808	811	814	819	834	822	807	799	56	53	48	33	45	60	68	1	1	1	1	1	1	1	**7**	3	3	5	15	-12	-15	-8	6	6	6	6	3	3	4	**34**	238
1934	795	794	797	803	808	816	819	809	800	783	769	760	51	48	58	67	84	98	107	1	1	1	1	1	1	1	**7**	8	3	-10	-9	-17	-14	-9	6	6	4	4	2	3	4	**29**	203
1935	756	760	765	783	795	805	839	859	867	854	839	828	62	28	8	0	13	28	39	1	1	4	6	3	1	1	**17**	10	34	20	8	-13	-15	-11	6	6	6	6	3	3	3	**33**	561
1936	808	808	808	808	808	820	840	859	865	853	838	827	47	27	8	2	14	29	40	1	1	4	5	3	1	1	**16**	12	20	19	6	-12	-15	-11	6	6	6	6	3	3	3	**33**	528
1937	808	808	808	808	808	820	834	859	867	853	838	827	47	33	8	0	14	29	40	1	1	4	6	3	1	1	**17**	12	14	25	8	-14	-15	-11	6	6	6	6	3	3	3	**33**	561
1938	808	808	808	808	808	820	840	859	867	867	855	840	47	27	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-12	-15	6	6	6	6	6	3	3	**36**	792
1939	808	808	808	808	808	816	826	823	810	792	774	763	51	41	44	57	75	93	104	1	1	1	1	1	1	1	**7**	8	10	-3	-13	-18	-18	-11	6	6	5	3	2	2	3	**27**	189
1940	762	763	764	793	808	820	836	859	861	845	829	816	47	31	8	6	22	38	51	1	1	4	4	1	1	1	**13**	12	16	23	2	-16	-16	-13	6	6	6	6	2	2	3	**31**	403
1941	808	808	808	808	808	820	834	859	867	863	850	840	47	33	8	0	4	17	27	1	1	4	6	5	2	1	**20**	12	14	25	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	720
1942	808	808	808	808	808	820	837	859	867	860	851	840	47	30	8	0	7	16	27	1	1	4	6	4	2	1	**19**	12	17	22	8	-7	-9	-11	6	6	6	6	4	4	3	**35**	665
1943	808	808	808	808	808	820	840	859	864	853	838	828	47	27	8	3	14	29	39	1	1	4	5	3	1	1	**16**	12	20	19	5	-11	-15	-10	6	6	6	6	3	3	4	**34**	544
1944	808	808	808	808	808	817	807	829	831	817	799	785	50	60	38	36	50	68	82	1	1	1	1	1	1	1	**7**	9	-10	22	2	-14	-18	-14	6	4	6	6	3	2	3	**30**	210
1945	779	786	793	797	808	820	832	850	863	853	838	828	47	35	17	4	14	29	39	1	1	2	5	3	1	1	**14**	12	12	18	13	-10	-15	-10	6	6	6	6	4	3	4	**35**	490
1946	808	808	808	808	808	818	832	851	850	834	816	803	49	35	16	17	33	51	64	1	1	2	2	1	1	1	**9**	10	14	19	-1	-16	-18	-13	6	6	6	5	2	2	3	**30**	270
1947	800	806	808	808	808	815	819	829	822	806	790	780	52	48	38	45	61	77	87	1	1	1	1	1	1	1	**7**	7	4	10	-7	-16	-16	-10	6	6	6	4	2	2	4	**30**	210
1948	777	778	779	781	783	782	785	806	826	809	791	776	85	82	61	41	58	76	91	1	1	1	1	1	1	1	**7**	-1	3	21	20	-17	-18	-15	5	6	6	6	2	2	3	**30**	210
1949	770	769	770	771	776	785	793	811	810	788	767	749	82	74	56	57	79	100	118	1	1	1	1	1	1	1	**7**	9	8	18	-1	-22	-21	-18	6	6	6	5	1	1	2	**27**	189
1950	742	741	741	751	766	769	786	805	806	785	763	745	98	81	62	61	82	104	122	1	1	1	1	1	1	1	**7**	3	17	19	1	-21	-22	-18	6	6	6	6	1	1	2	**28**	196
1951	738	800	808	808	808	819	820	828	825	805	784	768	48	47	39	42	62	83	99	1	1	1	1	1	1	1	**7**	11	1	8	-3	-20	-21	-16	6	6	6	5	2	1	2	**28**	196
1952	762	763	776	808	808	820	840	859	867	864	852	840	47	27	8	0	3	15	27	1	1	4	6	5	2	1	**20**	12	20	19	8	-3	-12	-12	6	6	6	6	5	3	3	**35**	700
1953	808	808	808	808	808	809	809	805	813	798	778	762	58	58	62	54	69	89	105	1	1	1	1	1	1	1	**7**	1	0	-4	8	-15	-20	-16	6	6	5	6	3	2	2	**30**	210
1954	756	756	756	760	770	784	801	817	808	787	765	747	83	66	50	59	80	102	120	1	1	1	1	1	1	1	**7**	14	17	16	-9	-21	-22	-18	6	6	6	4	1	1	2	**26**	182
1955	740	738	742	750	756	759	756	777	788	771	752	740	108	111	90	79	96	115	127	1	1	1	1	1	1	1	**7**	3	-3	21	11	-17	-19	-12	6	5	6	6	2	2	3	**30**	210
1956	733	733	808	808	808	819	826	855	867	863	850	840	48	41	12	0	4	17	27	1	1	3	6	5	2	1	**19**	11	7	29	12	-4	-13	-10	6	6	6	6	5	3	4	**36**	684
1957	808	808	808	808	808	813	807	818	829	811	793	777	54	60	49	38	56	74	90	1	1	1	1	1	1	1	**7**	5	-6	11	11	-18	-18	-16	6	4	6	6	2	2	2	**28**	196
1958	771	772	777	784	801	820	840	859	867	862	850	840	47	27	8	0	5	17	27	1	1	4	6	4	2	1	**19**	19	20	19	8	-5	-12	-10	6	6	6	6	5	3	4	**36**	684
1959	808	808	808	808	808	813	815	815	806	785	768	761	54	52	52	61	82	99	106	1	1	1	1	1	1	1	**7**	5	2	0	-9	-21	-17	-7	6	6	6	4	1	2	4	**29**	203
1960	757	755	755	756	769	777	790	801	798	781	767	757	90	77	66	69	86	100	110	1	1	1	1	1	1	1	**7**	8	13	11	-3	-17	-14	-10	6	6	6	5	2	3	4	**32**	224
1961	751	752	755	755	759	760	766	770	762	740	723	711	107	101	97	105	127	144	156	1	1	1	1	1	1	1	**7**	1	6	4	-8	-22	-17	-12	6	6	6	4	1	2	3	**28**	196
1962	704	705	708	711	759	768	790	800	817	802	782	766	99	77	67	50	65	85	101	1	1	1	1	1	1	1	**7**	9	22	10	17	-15	-20	-16	6	6	6	6	3	2	2	**31**	217
1963	762	762	763	772	808	814	819	839	853	844	829	817	53	48	28	14	23	38	50	1	1	1	3	1	1	1	**9**	6	5	20	14	-9	-15	-12	6	6	6	6	4	3	3	**34**	306
1964	808	808	808	808	808	808	809	816	814	798	781	772	59	58	51	53	69	86	95	1	1	1	1	1	1	1	**7**	0	1	7	-2	-16	-17	-9	6	6	6	5	2	2	4	**31**	217
1965	766	770	808	808	808	815	831	848	867	861	850	840	52	36	19	0	6	17	27	1	1	2	6	4	2	1	**17**	7	16	17	19	-6	-11	-10	6	6	6	6	4	3	4	**35**	595
1966	808	808	808	808	808	814	821	829	816	793	771	759	53	46	38	51	74	96	108	1	1	1	1	1	1	1	**7**	6	7	8	-13	-23	-22	-12	6	6	6	3	1	1	3	**26**	182
1967	751	754	780	794	804	820	840	859	867	867	856	840	47	27	8	0	0	11	27	1	1	4	6	6	3	1	**22**	16	20	19	8	0	-11	-16	6	6	6	6	6	3	2	**35**	770
1968	808	808	808	808	808	812	809	810	801	781	764	752	55	58	57	66	86	103	115	1	1	1	1	1	1	1	**7**	4	-3	1	-9	-20	-17	-12	6	5	6	4	2	2	3	**28**	196
1969	744	750	760	808	808	820	840	859	867	867	854	840	47	27	8	0	0	13	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-13	-14	6	6	6	6	6	3	3	**36**	792
1970	808	808	808	808	808	820	814	828	828	810	791	776	47	53	39	39	57	76	91	1	1	1	1	1	1	1	**7**	12	-6	14	0	-18	-19	-15	6	4	6	6	2	2	3	**29**	203
1971	770	773	784	794	800	804	799	808	820	803	784	769	63	68	59	47	64	83	98	1	1	1	1	1	1	1	**7**	4	-5	9	12	-17	-19	-15	6	5	6	6	2	2	3	**30**	210
1972	763	763	771	776	784	796	797	809	810	794	777	770	71	70	58	57	73	90	97	1	1	1	1	1	1	1	**7**	12	1	12	1	-16	-17	-7	6	6	6	6	2	2	4	**32**	224
1973	767	768	775	790	808	820	827	859	867	852	838	828	47	40	8	0	15	29	39	1	1	4	6	2	1	1	**16**	12	7	32	8	-15	-14	-10	6	6	6	6	3	3	4	**34**	544
1974	808	808	808	808	808	820	833	859	867	854	839	829	47	34	8	0	13	28	38	1	1	4	6	3	1	1	**17**	12	13	26	8	-13	-15	-10	6	6	6	6	3	3	4	**34**	578
1975	808	808	808	808	808	820	822	849	867	856	842	832	47	45	18	0	11	25	35	1	1	2	6	3	1	1	**15**	12	2	27	18	-11	-14	-10	6	6	6	6	3	3	4	**34**	510
1976	808	808	808	808	808	809	806	804	793	775	762	752	58	61	63	74	92	105	115	1	1	1	1	1	1	1	**7**	1	-3	-2	-11	-18	-13	-10	6	5	5	3	2	3	4	**28**	196
1977	747	745	743	743	743	738	727	711	696	663	628	626	129	140	156	171	204	239	241	1	1	1	1	1	1	1	**7**	-5	-11	-16	-15	-33	-35	-2	5	3	2	3	1	1	5	**20**	140
1978	626	626	641	693	741	782	815	859	867	867	856	840	85	52	8	0	0	11	27	1	1	4	6	6	3	1	**22**	41	33	44	8	0	-11	-16	6	6	6	6	6	3	2	**35**	770
1979	808	808	808	808	808	820	826	858	862	848	833	822	47	41	9	5	19	34	45	1	1	4	4	2	1	1	**14**	12	6	32	4	-14	-15	-11	6	6	6	6	3	3	3	**33**	462
1980	808	808	808	808	808	820	834	859	867	867	855	840	47	33	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	14	25	8	0	-12	-15	6	6	6	6	6	3	3	**36**	792
1981	808	807	807	808	808	813	817	826	822	805	791	782	54	50	41	45	62	76	85	1	1	1	1	1	1	1	**7**	5	4	9	-4	-17	-14	-9	6	6	6	5	2	3	4	**32**	224
1982	778	787	801	808	808	820	840	859	867	865	854	840	47	27	8	0	2	13	27	1	1	4	6	5	3	1	**21**	12	20	19	8	-2	-11	-14	6	6	6	6	5	3	3	**35**	735
1983	808	808	808	808	808	820	836	859	867	867	864	840	47	31	8	0	0	3	27	1	1	4	6	6	5	1	**24**	12	16	23	8	0	-3	-24	6	6	6	6	6	5	1	**36**	864
1984	808	808	808	808	808	820	822	841	839	823	803	789	47	45	26	28	44	64	78	1	1	1	1	1	1	1	**7**	12	2	19	-2	-16	-20	-14	6	6	6	5	2	2	3	**30**	210
1985	785	789	793	796	802	807	820	830	824	808	794	783	60	47	37	43	59	73	84	1	1	1	1	1	1	1	**7**	5	13	10	-6	-16	-14	-11	6	6	6	4	2	3	3	**30**	210
1986	780	783	790	799	808	820	839	859	867	855	841	830	47	28	8	0	12	26	37	1	1	4	6	3	1	1	**17**	12	19	20	8	-12	-14	-11	6	6	6	6	3	3	3	**33**	561
1987	808	807	807	807	808	810	817	817	807	791	777	769	57	50	50	60	76	90	98	1	1	1	1	1	1	1	**7**	2	7	0	-10	-16	-14	-8	6	6	6	4	2	3	4	**31**	217
1988	765	766	768	773	778	783	786	786	778	761	744	733	84	81	81	89	106	123	134	1	1	1	1	1	1	1	**7**	5	3	0	-8	-17	-17	-11	6	6	6	4	2	2	3	**29**	203
1989	727	727	729	730	735	756	779	792	788	771	757	745	111	88	75	79	96	110	122	1	1	1	1	1	1	1	**7**	21	23	13	-4	-17	-14	-12	6	6	6	5	2	3	3	**31**	217
1990	744	745	746	749	754	761	773	774	765	746	728	716	106	94	93	102	121	139	151	1	1	1	1	1	1	1	**7**	7	12	1	-9	-19	-18	-12	6	6	6	4	2	2	3	**29**	203
1991	710	709	708	707	707	729	736	761	775	762	746	734	138	131	106	92	105	121	133	1	1	1	1	1	1	1	**7**	22	7	25	14	-13	-16	-12	6	6	6	6	3	2	3	**32**	224
1992	729	730	732	734	751	758	775	781	769	754	737	726	109	92	86	98	113	130	141	1	1	1	1	1	1	1	**7**	7	17	6	-12	-15	-17	-11	6	6	6	3	3	2	3	**29**	203
1993	721	721	727	777	799	820	834	859	867	861	848	837	47	33	8	0	6	19	30	1	1	4	6	4	2	1	**19**	21	14	25	8	-6	-13	-11	6	6	6	6	4	3	3	**34**	646
1994	808	807	808	808	808	810	811	814	806	790	776	767	57	56	53	61	77	91	100	1	1	1	1	1	1	1	**7**	2	1	3	-8	-16	-14	-9	6	6	6	4	2	3	4	**31**	217

73 - year Average: 11

73 - year Average: 32 367.4

1929 - '34 Average: 259.5

STUDY: 1995C06F-SWRCBDS-622A DWRSIM: recirc818VA, 09 Apr 98
CP # 18, MILLERTON LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCBDS-622A/18/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 576'

Difference from Maximum Reservoir Elevation [DFMRE]

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	491	505	527	547	549	566	559	576	576	562	518	491	10	17	0	0	14	58	85
1923	485	495	520	537	531	517	541	549	540	526	463	470	59	35	27	36	50	113	106
1924	483	494	508	522	516	503	506	511	505	478	464	468	73	70	65	71	98	112	108
1925	465	474	490	503	508	493	514	532	522	499	483	475	83	62	44	54	77	93	101
1926	477	490	505	519	522	508	549	563	535	494	473	485	68	27	13	41	82	103	91
1927	491	506	528	545	560	561	560	569	576	543	492	482	15	16	7	0	33	84	94
1928	482	503	525	542	540	543	551	554	522	477	465	477	33	25	22	54	99	111	99
1929	485	499	513	523	517	513	531	531	527	506	466	477	63	45	45	49	70	110	99
1930	480	495	507	518	514	510	525	534	518	489	466	482	66	51	42	58	87	110	94
1931	487	501	513	522	517	508	510	516	508	482	466	466	68	66	60	68	94	110	110
1932	467	476	503	520	543	531	524	532	552	518	492	477	45	52	44	24	58	84	99
1933	477	489	501	516	512	501	520	537	526	509	466	467	75	56	39	50	67	110	109
1934	470	480	500	517	511	503	516	527	523	498	477	486	73	60	49	53	78	99	90
1935	490	500	515	535	532	509	542	563	574	538	469	479	67	34	13	2	38	107	97
1936	486	502	518	533	560	558	564	576	563	521	472	478	18	12	0	13	55	104	98
1937	488	497	516	535	560	570	576	576	576	538	484	469	6	0	0	0	38	92	107
1938	472	486	533	560	560	542	529	467	572	576	532	520	34	47	109	4	0	44	56
1939	513	514	529	538	532	524	542	560	539	504	473	495	52	34	16	37	72	103	81
1940	495	504	517	550	550	552	548	561	553	512	466	471	24	28	15	23	64	110	105
1941	481	494	528	556	560	573	573	569	576	569	527	506	3	3	7	0	7	49	70
1942	497	507	532	552	549	553	554	562	576	555	509	477	23	22	14	0	21	67	99
1943	477	494	518	557	556	576	574	576	562	526	491	476	0	2	0	14	50	85	100
1944	479	491	508	521	524	507	516	517	501	494	490	480	69	60	59	75	82	86	96
1945	481	503	523	533	560	568	565	571	576	554	511	491	8	11	5	0	22	65	85
1946	485	502	531	548	528	524	536	559	546	510	478	480	52	40	17	30	66	98	96
1947	481	500	526	543	541	530	545	556	535	497	473	481	46	31	20	41	79	103	95
1948	488	503	518	529	523	530	556	551	541	483	480	484	46	20	25	35	93	96	92
1949	490	500	513	526	524	511	522	538	521	482	477	489	65	54	38	55	94	99	87
1950	492	503	519	536	541	524	534	551	539	506	476	482	52	42	25	37	70	100	94
1951	490	533	560	560	554	546	552	546	514	463	463	481	30	24	30	62	113	113	95
1952	488	500	530	559	560	567	559	526	576	571	525	508	9	17	50	0	5	51	68
1953	501	514	533	549	538	532	541	536	518	497	478	481	44	35	40	58	79	98	95
1954	488	497	514	532	532	527	537	560	544	507	465	483	49	39	16	32	69	111	93
1955	489	502	522	540	537	520	534	545	537	504	481	487	56	42	31	39	72	95	89
1956	491	499	560	560	560	576	576	561	576	566	524	505	0	0	15	0	10	52	71
1957	496	504	517	527	525	529	546	561	562	526	471	481	47	30	15	14	50	105	95
1958	488	501	525	545	554	565	576	576	576	557	516	498	11	0	0	0	19	60	78
1959	492	507	523	530	536	528	550	566	551	500	470	475	48	26	10	25	76	106	101
1960	474	475	480	490	503	498	515	525	509	496	483	481	78	61	51	67	80	93	95
1961	481	491	505	511	510	511	526	539	527	486	467	467	65	50	37	49	90	109	109
1962	468	471	484	492	538	529	527	555	569	540	489	476	47	49	21	7	36	87	100
1963	479	491	501	518	558	558	576	576	576	564	520	503	18	0	0	0	12	56	73
1964	490	517	542	551	547	544	553	561	551	508	476	484	32	23	15	25	68	100	92
1965	481	496	529	560	556	554	559	551	561	540	512	496	22	17	25	15	36	64	80
1966	487	513	546	558	541	526	545	564	550	506	486	486	50	31	12	26	70	90	90
1967	490	502	539	559	560	571	565	514	570	576	539	522	5	11	62	6	0	37	54
1968	515	521	539	545	545	539	550	554	539	506	478	482	37	26	22	37	70	98	94
1969	480	496	513	560	524	521	467	469	576	576	538	513	55	109	107	0	0	38	63
1970	498	516	540	560	560	554	554	555	544	517	476	477	22	22	21	32	59	100	99
1971	482	502	534	551	548	533	541	544	520	498	491	478	43	35	32	56	78	85	98
1972	479	491	519	536	532	524	537	543	540	497	481	481	52	39	33	36	79	95	95
1973	489	501	523	545	560	560	550	575	576	542	483	477	16	26	1	0	34	93	99
1974	487	510	545	560	544	550	559	570	573	537	490	473	26	17	6	3	39	86	103
1975	476	494	515	528	535	526	533	536	567	525	476	482	50	43	40	9	51	100	94
1976	489	511	531	541	539	544	547	542	519	492	479	494	32	29	34	57	84	97	82
1977	490	496	500	503	501	464	465	464	462	466	461	462	112	111	112	114	110	115	114
1978	462	462	484	532	560	552	510	498	576	576	548	539	24	66	78	0	0	28	37
1979	528	535	549	560	555	562	560	571	563	521	477	482	14	16	5	13	55	99	94
1980	489	488	508	560	560	558	566	550	576	576	542	513	18	10	26	0	0	34	63
1981	503	512	520	528	531	533	547	553	543	510	477	488	43	29	23	33	66	99	88
1982	491	504	536	560	560	576	546	561	576	576	546	541	0	30	15	0	0	30	35
1983	531	556	560	560	513	484	467	467	483	564	572	576	92	109	109	93	12	4	0
1984	560	560	560	560	560	568	570	570	557	530	487	483	8	6	6	19	46	89	93
1985	482	492	511	536	533	526	551	563	539	501	483	483	50	25	13	37	75	93	93
1986	490	508	534	554	550	552	574	565	576	558	503	479	24	2	11	0	18	73	97
1987	480	489	492	495	496	511	530	551	539	503	473	480	65	46	25	37	73	103	96
1988	482	495	507	526	516	527	539	547	527	498	483	486	49	37	29	49	78	93	90
1989	486	497	505	515	512	516	537	552	540	502	478	484	60	39	24	36	74	98	92
1990	489	495	502	510	510	517	532	544	525	508	479	483	59	44	32	51	68	97	93
1991	480	486	492	499	493	489	501	508	512	506	480	486	87	75	68	64	70	96	90
1992	485	490	494	498	499	490	493	494	480	470	465	466	86	83	82	96	106	111	110
1993	467	466	476	536	543	556	558	576	576	571	522	499	20	18	0	0	5	54	77
1994	490	497	507	512	508	520	534	548	528	498	478	484	56	42	28	48	78	98	92

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	Change MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	3	2	6	6	3	1	1	**22**	17	-7	17	0	-14	-44	-27	6	4	6	6	3	1	1	**27**	**594**
1923	1	1	1	1	1	1	1	**7**	-14	24	8	-9	-14	-63	7	3	6	6	4	3	1	6	**29**	**203**
1924	1	1	1	1	1	1	1	**7**	-13	3	5	-6	-27	-14	4	3	6	6	4	1	3	6	**29**	**203**
1925	1	1	1	1	1	1	1	**7**	-15	21	18	-10	-23	-16	-8	3	6	6	4	1	2	4	**26**	**182**
1926	1	1	3	1	1	1	1	**9**	-14	41	14	-28	-41	-21	12	3	6	6	1	1	1	6	**24**	**216**
1927	2	2	4	6	1	1	1	**17**	1	-1	9	7	-33	-51	-10	6	5	6	6	1	1	4	**29**	**493**
1928	1	1	1	1	1	1	1	**7**	3	8	3	-32	-45	-12	12	6	6	6	1	1	3	6	**29**	**203**
1929	1	1	1	1	1	1	1	**7**	-4	18	0	-4	-21	-40	11	5	6	6	5	1	1	6	**30**	**210**
1930	1	1	1	1	1	1	1	**7**	-4	15	9	-16	-29	-23	16	5	6	6	2	1	1	6	**27**	**189**
1931	1	1	1	1	1	1	1	**7**	-9	2	6	-8	-26	-16	0	4	6	6	4	1	2	6	**29**	**203**
1932	1	1	1	1	1	1	1	**7**	-12	-7	8	20	-34	-26	-15	3	4	6	6	1	1	3	**24**	**168**
1933	1	1	1	1	1	1	1	**7**	-11	19	17	-11	-17	-43	1	3	6	6	3	2	1	6	**27**	**189**
1934	1	1	1	1	1	1	1	**7**	-8	13	11	-4	-25	-21	9	4	6	6	5	1	1	6	**29**	**203**
1935	1	1	3	5	1	1	1	**13**	-23	33	21	11	-36	-69	10	1	6	6	6	1	1	6	**27**	**351**
1936	2	3	6	3	1	1	1	**17**	-2	6	12	-13	-42	-49	6	5	6	6	3	1	1	6	**28**	**476**
1937	4	6	6	6	1	1	1	**25**	10	6	0	0	-38	-54	-15	6	6	6	6	1	1	3	**29**	**725**
1938	1	1	1	5	6	1	1	**16**	-18	-13	-62	105	4	-44	-12	2	3	1	6	6	1	3	**22**	**352**
1939	1	1	2	1	1	1	1	**8**	-8	18	18	-21	-35	-31	22	4	6	6	1	1	1	6	**25**	**200**
1940	1	1	2	1	1	1	1	**8**	2	-4	13	-8	-41	-46	5	6	5	6	4	1	1	6	**29**	**232**
1941	5	5	4	6	4	1	1	**26**	13	0	-4	7	-7	-42	-21	6	6	5	6	4	1	1	**29**	**754**
1942	1	1	3	6	1	1	1	**14**	4	1	8	14	-21	-46	-32	6	6	6	6	1	1	1	**27**	**378**
1943	6	5	6	3	1	1	1	**23**	20	-2	2	-14	-36	-35	-15	6	5	6	3	1	1	3	**25**	**575**
1944	1	1	1	1	1	1	1	**7**	-17	9	1	-16	-7	-4	-10	2	6	6	2	4	5	4	**29**	**203**
1945	4	3	4	6	1	1	1	**20**	8	-3	6	5	-22	-43	-20	6	5	6	6	1	1	2	**27**	**540**
1946	1	1	2	1	1	1	1	**8**	-4	12	23	-13	-36	-32	2	5	6	6	3	1	1	6	**28**	**224**
1947	1	1	1	1	1	1	1	**7**	-11	15	11	-21	-38	-24	8	3	6	6	1	1	1	6	**24**	**168**
1948	1	1	1	1	1	1	1	**7**	7	26	-5	-10	-58	-3	4	6	6	5	4	1	5	6	**33**	**231**
1949	1	1	1	1	1	1	1	**7**	-13	11	16	-17	-39	-5	12	3	6	6	2	1	5	6	**29**	**203**
1950	1	1	1	1	1	1	1	**7**	-17	10	17	-12	-33	-30	6	2	6	6	3	1	1	6	**25**	**175**
1951	1	1	1	1	1	1	1	**7**	-8	6	-6	-32	-51	0	18	4	6	4	1	1	6	6	**28**	**196**
1952	4	2	1	6	4	1	1	**19**	7	-8	-33	50	-5	-46	-17	6	4	1	6	5	1	2	**25**	**475**
1953	1	1	1	1	1	1	1	**7**	-6	9	-5	-18	-21	-19	3	4	6	5	2	1	2	6	**26**	**182**
1954	1	1	2	1	1	1	1	**8**	-5	10	23	-16	-37	-42	18	5	6	6	2	1	1	6	**27**	**216**
1955	1	1	1	1	1	1	1	**7**	-17	14	11	-8	-33	-23	6	2	6	6	4	1	1	6	**26**	**182**
1956	6	6	2	6	3	1	1	**25**	16	0	-15	15	-10	-42	-19	6	6	3	6	4	1	2	**28**	**700**
1957	1	1	2	3	1	1	1	**10**	4	17	15	1	-36	-55	10	6	6	6	6	1	1	6	**32**	**320**
1958	3	6	6	6	2	1	1	**25**	11	11	0	0	-19	-41	-18	6	6	6	6	2	1	2	**29**	**725**
1959	1	1	3	1	1	1	1	**9**	-8	22	16	-15	-51	-30	5	4	6	6	3	1	1	6	**27**	**243**
1960	1	1	1	1	1	1	1	**7**	-5	17	10	-16	-13	-13	-2	5	6	6	2	3	3	5	**30**	**210**
1961	1	1	1	1	1	1	1	**7**	1	15	13	-12	-41	-19	0	6	6	6	3	1	2	6	**30**	**210**
1962	1	1	1	4	1	1	1	**10**	-9	-2	28	14	-29	-51	-13	4	5	6	6	1	1	3	**26**	**260**
1963	2	6	6	6	3	1	1	**25**	0	18	0	0	-12	-44	-17	6	6	6	6	3	1	2	**30**	**750**
1964	1	1	2	1	1	1	1	**8**	-3	9	8	-10	-43	-32	8	5	6	6	4	1	1	6	**29**	**232**
1965	1	2	1	2	1	1	1	**9**	-2	5	-8	10	-21	-28	-16	5	6	4	6	1	1	2	**25**	**225**
1966	1	1	3	1	1	1	1	**9**	-15	19	19	-14	-44	-20	0	3	6	6	3	1	2	6	**27**	**243**
1967	4	3	1	4	6	1	1	**20**	11	-6	-51	56	6	-37	-17	6	4	1	6	6	1	2	**26**	**520**
1968	1	1	1	1	1	1	1	**7**	-6	11	4	-15	-33	-28	4	4	6	6	3	1	1	6	**27**	**189**
1969	1	1	1	6	6	1	1	**17**	-3	-54	2	107	0	-38	-25	5	1	6	6	6	1	1	**26**	**442**
1970	1	1	1	1	1	1	1	**7**	-6	0	1	-11	-27	-41	1	4	6	6	3	1	1	6	**27**	**189**
1971	1	1	1	1	1	1	1	**7**	-15	8	3	-24	-22	-7	-13	3	6	6	1	1	4	3	**24**	**168**
1972	1	1	1	1	1	1	1	**7**	-8	13	6	-3	-43	-16	0	4	6	6	5	1	2	6	**30**	**210**
1973	2	1	5	6	1	1	1	**17**	0	-10	25	1	-34	-59	-6	6	4	6	6	1	1	4	**28**	**476**
1974	1	2	4	5	1	1	1	**15**	6	9	11	3	-36	-47	-17	6	6	6	6	1	1	2	**28**	**420**
1975	1	1	1	4	1	1	1	**10**	-9	7	3	31	-42	-49	6	4	6	6	6	1	1	6	**30**	**300**
1976	1	1	1	1	1	1	1	**7**	5	3	-5	-23	-27	-13	15	6	6	5	1	1	3	6	**28**	**196**
1977	1	1	1	1	1	1	1	**7**	-37	1	-1	-2	4	-5	1	1	6	5	5	6	5	6	**34**	**238**
1978	1	1	1	6	6	1	1	**17**	-8	-42	-12	78	0	-28	-9	4	1	3	6	6	1	4	**25**	**425**
1979	3	2	4	3	1	1	1	**15**	7	-2	11	-8	-42	-44	5	6	5	6	4	1	1	6	**29**	**435**
1980	2	3	1	6	6	1	1	**20**	-2	8	-16	26	0	-34	-29	5	6	2	6	6	1	1	**27**	**540**
1981	1	1	1	1	1	1	1	**7**	2	14	6	-10	-33	-33	11	6	6	6	4	1	1	6	**30**	**210**
1982	6	1	2	6	6	1	1	**23**	16	-30	15	15	0	-30	-5	6	1	6	6	6	1	5	**31**	**713**
1983	1	1	1	1	3	5	6	**18**	-29	-17	0	16	81	8	4	1	2	6	6	6	6	6	**33**	**594**
1984	4	4	4	2	1	1	1	**17**	8	2	0	-13	-27	-43	-4	6	6	6	3	1	1	5	**28**	**476**
1985	1	1	3	1	1	1	1	**9**	-7	25	12	-24	-38	-18	0	4	6	6	1	1	2	6	**26**	**234**
1986	1	5	3	6	2	1	1	**19**	2	22	-9	11	-18	-55	-24	6	6	4	6	2	1	1	**26**	**494**
1987	1	1	1	1	1	1	1	**7**	15	19	21	-12	-36	-30	7	6	6	6	3	1	1	6	**29**	**203**
1988	1	1	1	1	1	1	1	**7**	11	12	8	-20	-29	-15	3	6	6	6	2	1	3	6	**30**	**210**
1989	1	1	1	1	1	1	1	**7**	4	21	15	-12	-38	-24	6	6	6	6	3	1	1	6	**29**	**203**
1990	1	1	1	1	1	1	1	**7**	7	15	12	-19	-17	-29	4	6	6	6	2	2	1	6	**29**	**203**
1991	1	1	1	1	1	1	1	**7**	-4	12	7	4	-6	-26	6	5	6	6	6	4	1	6	**34**	**238**
1992	1	1	1	1	1	1	1	**7**	-9	3	1	-14	-10	-5	1	4	6	6	3	4	5	6	**34**	**238**
1993	1	2	6	6	4	1	1	**21**	13	2	18	0	-5	-49	-23	6	6	6	6	5	1	1	**31**	**651**
1994	1	1	1	1	1	1	1	**7**	12	14	14	-20	-30	-20	6	6	6	6	2	1	2	6	**29**	**203**

73 - year Average: 12

73 - year Average: 28 **329.2**

1929 - '34 Average: 193.7

STUDY: 1995C06F-SWRCBDS-622A DWRSIM: recirc818VA, 09 Apr 98
CP # 12, SWP SAN LUIS RESERVIOR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCBDS-622A/12/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 544'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	DFMRE APR	DFMRE MAY	DFMRE JUN	DFMRE JUL	DFMRE AUG	DFMRE SEP
1922	419	441	476	520	539	544	533	519	502	467	418	428	0	11	25	42	77	126	116
1923	461	486	491	506	517	525	517	492	453	437	425	409	19	27	52	91	107	119	135
1924	427	440	453	502	532	532	520	496	462	423	380	377	12	24	48	82	121	164	167
1925	375	385	431	463	511	526	516	488	454	416	353	343	18	28	56	90	128	191	201
1926	367	386	407	465	507	517	507	477	446	440	387	384	27	37	67	98	104	157	160
1927	392	433	472	519	544	544	532	513	481	456	420	430	0	12	31	63	88	124	114
1928	463	494	503	518	530	537	527	501	456	436	419	405	7	17	43	88	108	125	139
1929	417	444	473	521	538	544	534	520	498	466	432	430	0	10	24	46	78	112	114
1930	430	435	480	529	541	544	523	491	460	450	436	413	0	21	53	84	94	108	131
1931	418	422	422	465	478	481	470	457	448	419	369	366	63	74	87	96	125	175	178
1932	381	381	444	503	531	524	508	485	466	466	440	426	20	36	59	78	78	104	118
1933	437	444	445	490	510	519	512	498	475	441	397	397	25	32	46	69	103	147	147
1934	410	407	454	507	518	518	505	481	460	438	375	359	26	39	63	84	106	169	185
1935	366	377	401	467	476	512	507	486	458	426	361	358	32	37	58	86	118	183	186
1936	399	423	446	500	541	544	533	510	473	450	417	408	0	11	34	71	94	127	136
1937	428	441	467	516	533	542	544	540	510	462	413	402	2	0	4	34	82	131	142
1938	433	466	499	515	530	541	544	544	538	505	472	487	3	0	0	6	39	72	57
1939	516	525	530	543	544	544	525	492	461	450	437	417	0	19	52	83	94	107	127
1940	423	421	417	482	520	527	519	496	451	427	354	358	17	25	48	93	117	190	186
1941	395	428	466	518	541	544	541	538	523	472	431	450	0	3	6	21	72	113	94
1942	481	495	501	516	528	532	523	508	500	461	420	438	12	21	36	44	83	124	106
1943	471	486	492	507	519	531	533	529	500	464	415	419	13	11	15	44	80	129	125
1944	454	485	501	516	530	537	520	488	455	441	426	413	7	24	56	89	103	118	131
1945	419	457	492	519	536	542	521	491	455	436	413	404	2	23	53	89	108	131	140
1946	440	473	499	515	525	532	515	486	447	428	412	400	12	29	58	97	116	132	144
1947	425	457	490	523	536	544	522	485	450	434	422	407	0	22	59	94	110	122	137
1948	411	419	419	472	489	511	504	480	447	414	355	366	33	40	64	97	130	189	178
1949	398	427	459	504	525	544	521	487	448	427	406	396	0	23	57	96	117	138	148
1950	407	421	430	484	523	531	514	482	450	434	416	409	13	30	62	94	110	128	135
1951	433	465	502	529	539	544	522	493	450	422	398	397	0	22	51	94	122	146	147
1952	424	455	485	521	534	539	543	544	536	509	490	498	5	1	0	8	35	54	46
1953	506	514	519	532	542	544	527	509	488	468	431	448	0	17	35	56	76	113	96
1954	480	498	506	521	532	539	525	500	451	427	405	397	5	19	44	93	117	139	147
1955	430	461	491	523	535	542	520	489	461	452	423	419	2	24	55	83	92	121	125
1956	431	443	485	520	534	544	526	504	482	449	418	429	0	18	40	62	95	126	115
1957	456	482	488	502	516	524	511	488	456	443	434	426	20	33	56	88	101	110	118
1958	458	489	514	530	542	544	544	544	535	498	478	492	0	0	0	9	46	66	52
1959	501	510	514	527	539	544	521	485	449	432	418	417	0	23	59	95	112	126	127
1960	428	441	452	499	538	544	523	490	458	437	381	358	0	21	54	86	107	163	186
1961	391	428	464	511	540	544	522	487	459	449	430	409	0	22	57	85	95	114	135
1962	416	421	459	492	529	536	512	475	424	395	333	344	8	32	69	120	149	211	200
1963	383	418	450	495	527	535	528	515	491	460	437	452	9	16	29	53	84	107	92
1964	481	509	518	533	544	544	515	474	430	405	383	387	0	29	70	114	139	161	157
1965	392	423	459	511	530	537	533	516	483	458	415	423	7	11	28	61	86	129	121
1966	455	484	492	507	518	525	505	471	430	412	398	391	19	39	73	114	132	146	153
1967	405	441	482	523	536	541	544	544	536	525	504	508	3	0	0	8	19	40	36
1968	515	526	530	543	544	544	525	489	450	431	416	410	0	19	55	94	113	128	134
1969	431	463	496	521	534	544	544	544	537	516	486	501	0	0	0	7	28	58	43
1970	517	525	530	544	544	544	523	490	446	425	409	405	0	21	54	98	119	135	139
1971	429	462	495	510	520	528	513	495	468	450	434	446	16	31	49	76	94	110	98
1972	474	502	520	536	544	544	520	482	442	423	407	395	0	24	62	102	121	137	149
1973	421	454	485	517	528	535	524	500	471	453	430	431	9	20	44	73	91	114	113
1974	463	492	511	527	538	542	541	518	489	459	432	444	2	3	26	55	85	112	100
1975	472	485	490	504	517	522	510	489	464	436	420	432	22	34	55	80	108	124	112
1976	460	486	493	508	523	534	517	490	472	468	448	432	10	27	54	72	76	96	112
1977	434	442	445	463	463	463	464	451	432	407	396	410	81	80	93	112	137	148	134
1978	414	431	481	529	544	544	544	544	526	469	413	433	0	0	0	18	75	131	111
1979	466	488	492	507	521	529	519	496	468	456	420	416	15	25	48	76	88	124	128
1980	451	485	510	527	542	544	542	544	527	490	450	467	0	2	0	17	54	94	77
1981	498	518	524	538	544	544	527	493	454	436	421	409	0	17	51	90	108	123	135
1982	422	457	490	522	535	542	544	544	531	494	461	471	2	0	0	13	50	83	73
1983	496	515	520	535	544	544	544	544	537	527	514	521	0	0	0	7	17	30	23
1984	536	544	544	544	544	544	525	498	460	440	412	425	0	19	46	84	104	132	119
1985	459	488	496	511	524	531	508	471	428	408	391	395	13	36	73	116	136	153	149
1986	401	408	446	499	530	544	544	544	533	489	458	467	0	0	0	11	55	86	77
1987	496	511	537	544	544	544	522	485	457	447	425	413	0	22	59	87	97	119	131
1988	422	419	457	507	520	520	508	491	482	462	425	420	24	36	53	62	82	119	124
1989	419	437	459	498	498	532	518	486	450	438	386	395	12	26	58	94	106	158	149
1990	410	427	455	498	519	523	506	477	460	454	396	382	21	38	67	84	90	148	162
1991	384	391	391	405	400	465	464	453	436	414	397	400	79	80	91	108	130	147	144
1992	405	419	435	481	513	537	526	507	490	457	414	407	7	18	37	54	87	130	137
1993	407	414	463	519	530	534	520	503	487	453	408	415	10	24	41	57	91	136	129
1994	450	480	489	503	517	527	505	471	446	443	442	429	17	39	73	98	101	102	115

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	Fluct. MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	6	3	1	1	1	1	1	**14**	5	-11	-14	-17	-35	-49	10	6	3	3	2	1	1	6	**22**	**308**
1923	2	1	1	1	1	1	1	**8**	8	-8	-25	-39	-16	-12	-16	6	4	1	1	2	3	2	**19**	**152**
1924	3	1	1	1	1	1	1	**9**	0	-12	-24	-34	-39	-43	-3	6	3	1	1	1	1	5	**18**	**162**
1925	2	1	1	1	1	1	1	**8**	15	-10	-28	-34	-38	-63	-10	6	4	1	1	1	1	4	**18**	**144**
1926	1	1	1	1	1	1	1	**7**	10	-10	-30	-31	-6	-53	-3	6	4	1	1	4	1	5	**22**	**154**
1927	6	3	1	1	1	1	1	**14**	0	-12	-19	-32	-25	-36	10	6	3	2	1	1	1	6	**20**	**280**
1928	4	2	1	1	1	1	1	**11**	7	-10	-26	-45	-20	-17	-14	6	4	1	1	2	2	3	**19**	**209**
1929	6	3	1	1	1	1	1	**14**	6	-10	-14	-22	-32	-34	-2	6	4	3	1	1	1	5	**21**	**294**
1930	6	1	1	1	1	1	1	**12**	3	-21	-32	-31	-10	-14	-23	6	1	1	1	4	3	1	**17**	**204**
1931	1	1	1	1	1	1	1	**7**	3	-11	-13	-9	-29	-50	-3	6	3	3	4	1	1	5	**23**	**161**
1932	1	1	1	1	1	1	1	**7**	-7	-16	-23	-19	0	-26	-14	4	2	1	2	6	1	3	**19**	**133**
1933	1	1	1	1	1	1	1	**7**	9	-7	-14	-23	-34	-44	0	6	4	3	1	1	1	6	**22**	**154**
1934	1	1	1	1	1	1	1	**7**	0	-13	-24	-21	-22	-63	-16	6	3	1	1	1	1	2	**15**	**105**
1935	1	1	1	1	1	1	1	**7**	36	-5	-21	-28	-32	-65	-3	6	5	1	1	1	1	5	**20**	**140**
1936	6	3	1	1	1	1	1	**14**	3	-11	-23	-37	-23	-33	-9	6	3	1	1	1	1	4	**17**	**238**
1937	5	6	5	1	1	1	1	**20**	9	2	-4	-30	-48	-49	-11	6	6	5	1	1	1	3	**23**	**460**
1938	5	6	6	4	1	1	1	**24**	11	3	0	-6	-33	-33	15	6	6	6	4	1	1	6	**30**	**720**
1939	6	2	1	1	1	1	1	**13**	0	-19	-33	-31	-11	-13	-20	6	2	1	1	3	3	2	**18**	**234**
1940	2	1	1	1	1	1	1	**8**	7	-8	-23	-45	-24	-73	4	6	4	1	1	1	1	6	**20**	**160**
1941	6	5	4	1	1	1	1	**19**	3	-3	-3	-15	-51	-41	19	6	5	5	3	1	1	6	**27**	**513**
1942	3	1	1	1	1	1	1	**9**	4	-9	-15	-8	-39	-41	18	6	4	3	4	1	1	6	**25**	**225**
1943	3	3	2	1	1	1	1	**12**	12	2	-4	-29	-36	-49	4	6	6	5	1	1	1	6	**26**	**312**
1944	4	1	1	1	1	1	1	**10**	7	-17	-32	-33	-14	-15	-13	6	2	1	1	3	3	3	**19**	**190**
1945	5	1	1	1	1	1	1	**11**	6	-21	-30	-36	-19	-23	-9	6	1	1	1	2	1	4	**16**	**176**
1946	3	1	1	1	1	1	1	**9**	7	-17	-29	-39	-19	-16	-12	6	2	1	1	2	2	3	**17**	**153**
1947	6	1	1	1	1	1	1	**12**	8	-22	-37	-35	-16	-12	-15	6	1	1	1	2	3	3	**17**	**204**
1948	1	1	1	1	1	1	1	**7**	22	-7	-24	-33	-33	-59	11	6	4	1	1	1	1	6	**20**	**140**
1949	6	1	1	1	1	1	1	**12**	19	-23	-34	-39	-21	-21	-10	6	1	1	1	1	1	4	**15**	**180**
1950	3	1	1	1	1	1	1	**9**	8	-17	-32	-32	-16	-18	-7	6	2	1	1	2	2	4	**18**	**162**
1951	6	1	1	1	1	1	1	**12**	5	-22	-29	-43	-28	-24	-1	6	1	1	1	1	1	5	**16**	**192**
1952	4	5	6	4	1	1	1	**22**	5	4	1	-8	-27	-19	8	6	6	6	4	1	2	6	**31**	**682**
1953	6	2	1	1	1	1	1	**13**	2	-17	-18	-21	-20	-37	17	6	2	2	1	2	1	6	**20**	**260**
1954	4	2	1	1	1	1	1	**11**	7	-14	-25	-49	-24	-22	-8	6	3	1	1	1	1	4	**17**	**187**
1955	5	1	1	1	1	1	1	**11**	7	-22	-31	-28	-9	-29	-4	6	1	1	1	4	1	5	**19**	**209**
1956	6	2	1	1	1	1	1	**13**	10	-18	-22	-22	-33	-31	11	6	2	1	1	1	1	6	**18**	**234**
1957	1	1	1	1	1	1	1	**7**	8	-13	-23	-32	-13	-9	-8	6	3	1	1	3	4	4	**22**	**154**
1958	6	6	6	4	1	1	1	**25**	2	0	0	-9	-37	-20	14	6	6	6	4	1	2	6	**31**	**775**
1959	6	1	1	1	1	1	1	**12**	5	-23	-36	-36	-17	-14	-1	6	1	1	1	2	3	5	**19**	**228**
1960	6	1	1	1	1	1	1	**12**	6	-21	-33	-32	-21	-56	-23	6	1	1	1	1	1	1	**12**	**144**
1961	6	1	1	1	1	1	1	**12**	4	-22	-35	-28	-10	-19	-21	6	1	1	1	4	2	1	**16**	**192**
1962	4	1	1	1	1	1	1	**10**	7	-24	-37	-51	-29	-62	11	6	1	1	1	1	1	6	**17**	**170**
1963	4	2	1	1	1	1	1	**11**	8	-7	-13	-24	-31	-23	15	6	4	3	1	1	1	6	**22**	**242**
1964	6	1	1	1	1	1	1	**12**	0	-29	-41	-44	-25	-22	4	6	1	1	1	1	1	6	**17**	**204**
1965	4	3	1	1	1	1	1	**12**	7	-4	-17	-33	-25	-43	8	6	5	2	1	1	1	6	**22**	**264**
1966	2	1	1	1	1	1	1	**8**	7	-20	-34	-41	-18	-14	-7	6	2	1	1	2	3	4	**19**	**152**
1967	5	6	6	4	2	1	1	**25**	5	3	0	-8	-11	-21	4	6	6	6	4	3	1	6	**32**	**800**
1968	6	2	1	1	1	1	1	**13**	0	-19	-36	-39	-19	-15	-6	6	2	1	1	2	3	4	**19**	**247**
1969	6	6	6	4	1	1	1	**25**	10	0	0	-7	-21	-30	15	6	6	6	4	1	1	6	**30**	**750**
1970	6	1	1	1	1	1	1	**12**	0	-21	-33	-44	-21	-16	-4	6	1	1	1	1	2	5	**17**	**204**
1971	2	1	1	1	1	1	1	**8**	8	-15	-18	-27	-18	-16	12	6	3	2	1	2	2	6	**22**	**176**
1972	6	1	1	1	1	1	1	**12**	0	-24	-38	-40	-19	-16	-12	6	1	1	1	2	2	3	**16**	**192**
1973	4	1	1	1	1	1	1	**10**	7	-11	-24	-29	-18	-23	1	6	3	1	1	2	1	6	**20**	**200**
1974	5	5	1	1	1	1	1	**15**	4	-1	-23	-29	-30	-27	12	6	5	1	1	1	1	6	**21**	**315**
1975	1	1	1	1	1	1	1	**7**	5	-12	-21	-25	-28	-16	12	6	3	1	1	1	2	6	**20**	**140**
1976	3	1	1	1	1	1	1	**9**	11	-17	-27	-18	-4	-20	-16	6	2	1	2	5	2	2	**20**	**180**
1977	1	1	1	1	1	1	1	**7**	0	1	-13	-19	-25	-11	14	6	6	3	2	1	3	6	**27**	**189**
1978	6	6	6	2	1	1	1	**23**	0	0	0	-18	-57	-56	20	6	6	6	2	1	1	6	**28**	**644**
1979	2	1	1	1	1	1	1	**8**	8	-10	-23	-28	-12	-36	-4	6	4	1	1	3	1	5	**21**	**168**
1980	6	5	6	2	1	1	1	**22**	2	-2	2	-17	-37	-40	17	6	5	6	2	1	1	6	**27**	**594**
1981	6	2	1	1	1	1	1	**13**	0	-17	-34	-39	-18	-15	-12	6	2	1	1	2	3	3	**18**	**234**
1982	5	6	6	3	1	1	1	**23**	7	2	0	-13	-37	-33	10	6	6	6	3	1	1	6	**29**	**667**
1983	6	6	6	4	2	1	1	**26**	0	0	0	-7	-10	-13	7	6	6	6	4	4	3	6	**35**	**910**
1984	6	2	1	1	1	1	1	**13**	0	-19	-27	-38	-20	-28	13	6	2	1	1	2	1	6	**19**	**247**
1985	3	1	1	1	1	1	1	**9**	7	-23	-37	-43	-20	-17	4	6	1	1	1	2	2	6	**19**	**171**
1986	6	6	6	3	1	1	1	**24**	14	0	0	-11	-44	-31	9	6	6	6	3	1	1	6	**29**	**696**
1987	6	1	1	1	1	1	1	**12**	0	-22	-37	-28	-10	-22	-12	6	1	1	1	4	1	3	**17**	**204**
1988	1	1	1	1	1	1	1	**7**	0	-12	-17	-9	-20	-37	-5	6	3	2	4	2	1	5	**23**	**161**
1989	3	1	1	1	1	1	1	**9**	34	-14	-32	-36	-12	-52	9	6	3	1	1	3	1	6	**21**	**189**
1990	1	1	1	1	1	1	1	**7**	4	-17	-29	-17	-6	-58	-14	6	2	1	2	4	1	3	**19**	**133**
1991	1	1	1	1	1	1	1	**7**	65	-1	-11	-17	-22	-17	3	6	5	3	2	1	2	6	**25**	**175**
1992	4	2	1	1	1	1	1	**11**	24	-11	-19	-17	-33	-43	-7	6	3	2	2	1	1	4	**19**	**209**
1993	3	1	1	1	1	1	1	**9**	4	-14	-17	-16	-34	-45	7	6	3	2	2	1	1	6	**21**	**189**
1994	2	1	1	1	1	1	1	**8**	10	-22	-34	-25	-3	-1	-13	6	1	1	1	5	5	3	**22**	**176**
							73 - year Average:	**12**														**73 - year Average:**	**21**	**275.6**
																							1929 - '34 Average:	**175.2**

STUDY: 1995C6F-SWRCB-492 DWRSIM: recirc818-f, 17 Jun 97
CP # 4, CVP SHASTA LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-492/4/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 1067'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	DFMRE APR	DFMRE MAY	DFMRE JUN	DFMRE JUL	DFMRE AUG	DFMRE SEP
1922	989	991	998	1,002	1,018	1,037	1,059	1,067	1,062	1,048	1,031	1,025	30	8	0	5	19	36	42
1923	1,023	1,017	1,019	1,023	1,024	1,026	1,038	1,034	1,023	1,003	986	978	41	29	33	44	64	81	89
1924	979	979	979	980	987	986	975	961	939	917	899	879	81	92	106	128	150	168	188
1925	883	899	908	918	993	1,008	1,040	1,051	1,042	1,018	1,003	996	59	27	16	25	49	64	71
1926	995	994	989	988	1,016	1,024	1,039	1,032	1,015	990	971	961	43	28	35	52	77	96	106
1927	960	987	1,010	1,035	1,026	1,052	1,067	1,067	1,062	1,044	1,027	1,022	15	0	0	5	23	40	45
1928	1,020	1,017	1,020	1,028	1,044	1,046	1,066	1,062	1,049	1,022	1,000	993	21	1	5	18	45	67	74
1929	988	988	989	989	995	1,001	1,002	995	986	965	947	937	66	65	72	81	102	120	130
1930	936	936	967	980	998	1,020	1,031	1,031	1,020	997	985	976	47	36	36	47	70	82	91
1931	974	974	972	976	980	988	980	970	959	941	927	912	79	87	97	108	126	140	155
1932	908	907	922	934	943	967	970	979	971	957	943	931	100	97	88	96	110	124	136
1933	929	924	925	927	930	966	974	979	975	955	941	929	101	93	88	92	112	126	138
1934	928	928	939	956	976	990	991	986	972	941	927	911	77	76	81	95	126	140	156
1935	905	916	921	942	962	985	1,029	1,037	1,029	1,006	992	985	82	38	30	38	61	75	82
1936	982	979	977	1,004	1,032	1,044	1,054	1,052	1,048	1,024	1,004	996	23	13	15	19	43	63	71
1937	992	987	983	977	978	1,005	1,035	1,043	1,040	1,018	999	991	62	32	24	27	49	68	76
1938	988	1,010	1,020	1,035	1,030	1,024	1,049	1,067	1,067	1,058	1,045	1,036	43	18	0	0	9	22	31
1939	1,023	1,017	1,020	1,022	1,024	1,039	1,031	1,023	1,003	978	951	943	28	36	44	64	89	116	124
1940	940	934	943	992	1,017	1,025	1,059	1,064	1,057	1,035	1,018	1,012	42	8	3	10	32	49	55
1941	1,010	1,010	1,019	1,020	1,024	1,045	1,064	1,067	1,067	1,058	1,047	1,036	22	3	0	0	9	20	31
1942	1,023	1,017	1,020	1,023	1,028	1,042	1,067	1,067	1,067	1,058	1,046	1,036	25	0	0	0	9	21	31
1943	1,023	1,017	1,022	1,030	1,042	1,051	1,067	1,067	1,063	1,050	1,036	1,029	16	0	0	4	17	31	38
1944	1,023	1,017	1,015	1,014	1,023	1,033	1,038	1,038	1,024	999	979	970	34	29	29	43	68	88	97
1945	971	983	996	1,003	1,037	1,050	1,062	1,067	1,061	1,039	1,019	1,011	17	5	0	6	28	48	56
1946	1,010	1,017	1,018	1,033	1,031	1,043	1,055	1,057	1,047	1,028	1,013	1,005	24	12	10	20	39	54	62
1947	1,000	1,001	1,002	999	1,007	1,027	1,035	1,024	1,016	990	967	958	40	32	43	51	77	100	109
1948	965	969	972	1,000	999	1,016	1,056	1,067	1,067	1,052	1,036	1,031	51	11	0	0	15	31	36
1949	1,023	1,017	1,016	1,012	1,016	1,050	1,063	1,064	1,049	1,023	1,005	997	17	4	3	18	44	62	70
1950	993	991	988	997	1,013	1,031	1,047	1,046	1,036	1,014	997	990	36	20	21	31	53	70	77
1951	1,003	1,017	1,020	1,033	1,040	1,057	1,064	1,067	1,056	1,035	1,011	1,006	10	3	0	11	32	56	61
1952	1,004	1,009	1,019	1,032	1,038	1,048	1,058	1,067	1,067	1,058	1,046	1,036	19	9	0	0	9	21	31
1953	1,023	1,017	1,021	1,022	1,033	1,051	1,065	1,067	1,067	1,057	1,045	1,036	16	2	0	0	10	22	31
1954	1,023	1,017	1,021	1,030	1,035	1,051	1,067	1,063	1,061	1,043	1,031	1,025	16	0	4	6	24	36	42
1955	1,022	1,017	1,022	1,024	1,027	1,032	1,044	1,052	1,039	1,011	993	987	35	23	15	28	56	74	80
1956	984	988	1,017	1,017	1,019	1,048	1,067	1,067	1,067	1,058	1,047	1,036	19	0	0	0	9	20	31
1957	1,023	1,017	1,016	1,017	1,035	1,052	1,058	1,067	1,063	1,044	1,031	1,028	15	9	0	4	23	36	39
1958	1,023	1,017	1,021	1,029	1,067	1,024	1,053	1,067	1,067	1,058	1,047	1,036	43	14	0	0	9	20	31
1959	1,023	1,017	1,017	1,034	1,039	1,052	1,056	1,056	1,043	1,019	1,000	998	15	11	11	24	48	67	69
1960	991	987	987	993	1,021	1,048	1,055	1,063	1,052	1,029	1,010	1,005	19	12	4	15	38	57	62
1961	1,000	1,003	1,019	1,024	1,044	1,057	1,062	1,066	1,054	1,028	1,006	1,001	10	5	1	13	39	61	66
1962	997	999	1,011	1,007	1,035	1,053	1,066	1,067	1,058	1,036	1,015	1,009	14	1	0	9	31	52	58
1963	1,023	1,017	1,021	1,025	1,045	1,055	1,052	1,067	1,064	1,052	1,040	1,036	12	15	0	3	15	27	31
1964	1,023	1,017	1,018	1,033	1,037	1,041	1,036	1,031	1,022	998	980	971	26	31	36	45	69	87	96
1965	970	978	1,017	1,022	1,040	1,052	1,065	1,066	1,060	1,046	1,037	1,033	15	2	1	7	21	30	34
1966	1,023	1,017	1,021	1,037	1,049	1,055	1,067	1,064	1,053	1,034	1,012	1,005	12	0	3	14	33	55	62
1967	997	1,011	1,021	1,030	1,044	1,048	1,064	1,067	1,067	1,058	1,047	1,036	19	3	0	0	9	20	31
1968	1,023	1,017	1,019	1,025	1,034	1,054	1,056	1,058	1,048	1,029	1,019	1,015	13	11	9	19	38	48	52
1969	1,011	1,012	1,021	1,022	1,027	1,048	1,063	1,067	1,067	1,058	1,047	1,036	19	4	0	0	9	20	31
1970	1,023	1,017	1,020	1,017	1,025	1,052	1,055	1,054	1,048	1,030	1,015	1,009	15	12	13	19	37	52	58
1971	1,007	1,017	1,020	1,028	1,041	1,043	1,063	1,067	1,067	1,058	1,047	1,036	24	4	0	0	9	20	31
1972	1,023	1,017	1,022	1,033	1,045	1,056	1,067	1,067	1,056	1,036	1,019	1,015	11	0	0	11	31	48	52
1973	1,016	1,017	1,021	1,030	1,034	1,053	1,065	1,067	1,059	1,039	1,023	1,018	14	2	0	8	28	44	49
1974	1,021	1,017	1,018	1,017	1,036	1,025	1,058	1,067	1,067	1,058	1,047	1,036	42	9	0	0	9	20	31
1975	1,023	1,017	1,021	1,024	1,045	1,039	1,061	1,067	1,067	1,057	1,046	1,036	28	6	0	0	10	21	31
1976	1,023	1,017	1,018	1,017	1,012	1,020	1,027	1,023	1,005	985	980	975	47	40	44	62	82	87	92
1977	977	978	978	979	967	967	949	943	921	903	884	874	100	118	124	146	164	183	193
1978	863	862	909	1,015	1,031	1,047	1,067	1,067	1,066	1,054	1,043	1,036	20	0	0	1	13	24	31
1979	1,023	1,017	1,015	1,018	1,029	1,046	1,053	1,062	1,048	1,027	1,015	1,008	21	14	5	19	40	52	59
1980	1,008	1,011	1,014	1,029	1,019	1,046	1,059	1,064	1,058	1,047	1,037	1,034	21	8	3	9	20	30	33
1981	1,023	1,017	1,020	1,029	1,042	1,056	1,064	1,062	1,047	1,024	1,006	1,000	11	3	5	20	43	61	67
1982	996	1,017	1,018	1,033	1,029	1,046	1,051	1,067	1,067	1,058	1,047	1,036	21	16	0	0	9	20	31
1983	1,023	1,017	1,020	1,022	1,017	1,045	1,050	1,067	1,067	1,058	1,047	1,036	22	17	0	0	9	20	31
1984	1,023	1,017	1,018	1,034	1,047	1,056	1,064	1,067	1,063	1,047	1,035	1,032	11	3	0	4	20	32	35
1985	1,023	1,017	1,022	1,023	1,027	1,034	1,042	1,035	1,016	995	977	971	33	25	32	51	72	90	96
1986	973	977	988	1,014	1,017	1,029	1,048	1,050	1,039	1,020	1,005	1,002	38	19	17	28	47	62	65
1987	1,003	1,003	1,003	1,005	1,015	1,043	1,044	1,038	1,012	982	954	948	24	23	29	55	85	113	119
1988	944	945	976	998	1,005	1,008	1,015	1,015	998	967	949	942	59	52	52	69	100	118	125
1989	942	955	962	969	976	1,039	1,058	1,054	1,045	1,022	1,010	1,005	28	9	13	22	45	57	62
1990	1,008	1,006	1,003	1,009	1,009	1,017	1,009	1,015	1,007	981	965	956	50	58	52	60	86	102	111
1991	952	951	951	952	947	973	984	984	974	961	946	936	94	83	83	93	106	121	131
1992	934	933	934	938	977	999	1,010	1,003	987	968	955	946	68	57	64	80	99	112	121
1993	942	939	954	990	1,022	1,031	1,059	1,067	1,067	1,054	1,046	1,043	36	8	0	0	13	21	24
1994	1,042	1,017	1,019	1,020	1,026	1,030	1,030	1,029	1,009	988	968	958	37	37	38	58	79	99	109

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	1	4	6	4	2	1	1	**19**	19	22	8	-5	-14	-17	-6	6	6	6	5	3	2	4	**32**	**608**
1923	1	1	1	1	1	1	1	**7**	2	12	-4	-11	-20	-17	-8	6	6	5	3	2	2	4	**28**	**196**
1924	1	1	1	1	1	1	1	**7**	-1	-11	-14	-22	-22	-18	-20	5	3	3	1	1	2	2	**17**	**119**
1925	1	1	2	1	1	1	1	**8**	15	32	11	-9	-24	-15	-7	6	6	6	4	1	3	4	**30**	**240**
1926	1	1	1	1	1	1	1	**7**	8	15	-7	-17	-25	-19	-10	6	6	4	2	1	2	4	**25**	**175**
1927	2	6	6	4	1	1	1	**21**	26	15	0	-5	-18	-17	-5	6	6	6	5	2	2	5	**32**	**672**
1928	1	5	4	2	1	1	1	**15**	2	20	-4	-13	-27	-22	-7	6	6	5	3	1	1	4	**26**	**390**
1929	1	1	1	1	1	1	1	**7**	6	1	-7	-9	-21	-18	-10	6	6	4	4	1	2	4	**27**	**189**
1930	1	1	1	1	1	1	1	**7**	22	11	0	-11	-23	-12	-9	6	6	6	3	1	3	4	**29**	**203**
1931	1	1	1	1	1	1	1	**7**	8	-8	-10	-11	-18	-14	-15	6	4	4	3	2	3	3	**25**	**175**
1932	1	1	1	1	1	1	1	**7**	24	3	9	-8	-14	-14	-12	6	6	6	4	3	3	3	**31**	**217**
1933	1	1	1	1	1	1	1	**7**	36	8	5	-4	-20	-14	-12	6	6	6	5	2	3	3	**31**	**217**
1934	1	1	1	1	1	1	1	**7**	14	1	-5	-14	-31	-14	-16	6	6	5	3	1	3	2	**26**	**182**
1935	1	1	1	1	1	1	1	**7**	23	44	8	-8	-23	-14	-7	6	6	6	4	1	3	4	**30**	**210**
1936	1	3	2	2	1	1	1	**11**	12	10	-2	-4	-24	-20	-8	6	6	5	5	1	2	4	**29**	**319**
1937	1	1	1	1	1	1	1	**7**	27	30	8	-3	-22	-19	-8	6	6	6	5	1	2	4	**30**	**210**
1938	1	2	6	6	4	1	1	**21**	-6	25	18	0	-9	-13	-9	4	6	6	6	4	3	4	**33**	**693**
1939	1	1	1	1	1	1	1	**7**	15	-8	-8	-20	-25	-27	-8	6	4	4	2	1	1	4	**22**	**154**
1940	1	4	5	3	1	1	1	**16**	8	34	5	-7	-22	-17	-6	6	6	6	4	1	2	4	**29**	**464**
1941	1	5	6	6	4	1	1	**24**	21	19	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1942	1	6	6	6	4	1	1	**25**	14	25	0	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**875**
1943	2	6	6	5	2	1	1	**23**	9	16	0	-4	-13	-14	-7	6	6	6	5	3	3	4	**33**	**759**
1944	1	1	1	1	1	1	1	**7**	10	5	0	-14	-25	-20	-9	6	6	6	3	1	2	4	**28**	**196**
1945	2	4	6	4	1	1	1	**19**	13	12	5	-6	-22	-20	-8	6	6	6	4	1	2	4	**29**	**551**
1946	1	3	3	1	1	1	1	**11**	12	12	2	-10	-19	-15	-8	6	6	6	4	2	3	4	**31**	**341**
1947	1	1	1	1	1	1	1	**7**	20	8	-11	-8	-26	-23	-9	6	6	3	4	1	1	4	**25**	**175**
1948	1	3	6	6	2	1	1	**20**	17	40	11	0	-15	-16	-5	6	6	6	6	3	2	5	**34**	**680**
1949	2	5	5	2	1	1	1	**17**	34	13	1	-15	-26	-18	-8	6	6	6	3	1	2	4	**28**	**476**
1950	1	1	1	1	1	1	1	**7**	18	16	-1	-10	-22	-17	-7	6	6	5	4	1	2	4	**28**	**196**
1951	3	5	6	3	1	1	1	**20**	17	7	3	-11	-21	-24	-5	6	6	6	3	1	1	5	**28**	**560**
1952	2	4	6	6	4	1	1	**24**	10	10	9	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**840**
1953	2	5	6	6	3	1	1	**24**	18	14	2	0	-10	-12	-9	6	6	6	6	4	3	4	**35**	**840**
1954	2	6	5	4	1	1	1	**20**	16	16	-4	-2	-18	-12	-6	6	6	5	5	2	3	4	**31**	**620**
1955	1	1	2	1	1	1	1	**8**	5	12	8	-13	-28	-18	-6	6	6	6	3	1	2	4	**28**	**224**
1956	2	6	6	6	4	1	1	**26**	29	19	0	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**884**
1957	2	4	6	5	1	1	1	**20**	17	6	9	-4	-19	-13	-3	6	6	6	5	2	3	5	**33**	**660**
1958	1	3	6	6	4	1	1	**22**	-43	29	14	0	-9	-11	-11	1	6	6	6	4	3	3	**29**	**638**
1959	2	3	3	1	1	1	1	**12**	13	4	0	-13	-24	-19	-2	6	6	6	3	1	2	5	**29**	**348**
1960	2	3	5	2	1	1	1	**15**	27	7	8	-11	-23	-19	-5	6	6	6	3	1	2	5	**29**	**435**
1961	3	4	5	3	1	1	1	**18**	13	5	4	-12	-26	-22	-5	6	6	6	3	1	1	5	**28**	**504**
1962	3	5	6	4	1	1	1	**21**	18	13	1	-9	-22	-21	-6	6	6	6	4	1	1	4	**28**	**588**
1963	3	2	6	5	2	1	1	**20**	10	-3	15	-3	-12	-12	-4	6	5	6	5	3	3	5	**33**	**660**
1964	1	1	1	1	1	1	1	**7**	4	-5	-5	-9	-24	-18	-9	6	5	5	4	1	2	4	**27**	**189**
1965	2	5	5	4	1	1	1	**19**	12	13	1	-6	-14	-9	-4	6	6	6	4	3	4	5	**34**	**646**
1966	3	6	5	3	1	1	1	**20**	6	12	-3	-11	-19	-22	-7	6	6	5	3	2	1	4	**27**	**540**
1967	2	5	6	6	4	1	1	**25**	4	16	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1968	3	3	4	2	1	1	1	**15**	20	2	2	-10	-19	-10	-4	6	6	6	4	2	4	5	**33**	**495**
1969	2	5	6	6	4	1	1	**25**	21	15	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1970	2	3	3	2	1	1	1	**13**	27	3	-1	-6	-18	-15	-6	6	6	5	4	2	3	4	**30**	**390**
1971	1	5	6	6	4	1	1	**24**	2	20	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1972	3	6	6	3	1	1	1	**21**	11	11	0	-11	-20	-17	-4	6	6	6	3	2	2	5	**30**	**630**
1973	3	5	6	4	1	1	1	**21**	19	12	2	-8	-20	-16	-5	6	6	6	4	2	2	5	**31**	**651**
1974	1	4	6	6	4	1	1	**23**	-11	33	9	0	-9	-11	-11	3	6	6	6	4	3	3	**31**	**713**
1975	1	4	6	6	3	1	1	**22**	-6	22	6	0	-10	-11	-10	4	6	6	6	4	3	4	**33**	**726**
1976	1	1	1	1	1	1	1	**7**	8	7	-4	-18	-20	-5	-5	6	6	5	2	2	5	5	**31**	**217**
1977	1	1	1	1	1	1	1	**7**	0	-18	-6	-22	-18	-19	-10	6	2	4	1	2	2	4	**21**	**147**
1978	1	6	6	5	3	1	1	**23**	16	20	0	-1	-12	-11	-7	6	6	6	5	3	3	4	**33**	**759**
1979	1	3	4	2	1	1	1	**13**	17	7	9	-14	-21	-12	-7	6	6	6	3	1	3	4	**29**	**377**
1980	1	4	5	4	1	1	1	**17**	27	13	5	-6	-11	-10	-3	6	6	6	4	3	4	5	**34**	**578**
1981	3	5	4	1	1	1	1	**16**	14	8	-2	-15	-23	-18	-6	6	6	5	3	1	2	4	**27**	**432**
1982	1	2	6	6	4	1	1	**21**	17	5	16	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1983	1	2	6	6	4	1	1	**21**	28	5	17	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1984	3	5	6	5	1	1	1	**22**	9	8	3	-4	-16	-12	-3	6	6	6	5	2	3	5	**33**	**726**
1985	1	1	1	1	1	1	1	**7**	7	8	-7	-19	-21	-18	-6	6	6	4	2	1	2	4	**25**	**175**
1986	1	2	2	1	1	1	1	**9**	12	19	2	-11	-19	-15	-3	6	6	6	3	2	3	5	**31**	**279**
1987	1	1	1	1	1	1	1	**7**	28	1	-6	-26	-30	-28	-6	6	6	4	1	1	1	4	**23**	**161**
1988	1	1	1	1	1	1	1	**7**	3	7	0	-17	-31	-18	-7	6	6	6	2	1	2	4	**27**	**189**
1989	1	4	3	1	1	1	1	**12**	63	19	-4	-9	-23	-12	-5	6	6	5	4	1	3	5	**30**	**360**
1990	1	1	1	1	1	1	1	**7**	8	-8	6	-8	-26	-16	-9	6	4	6	4	1	2	4	**27**	**189**
1991	1	1	1	1	1	1	1	**7**	26	11	0	-10	-13	-15	-10	6	6	6	4	3	3	4	**32**	**224**
1992	1	1	1	1	1	1	1	**7**	22	11	-7	-16	-19	-13	-9	6	6	4	2	2	3	4	**27**	**189**
1993	1	4	6	6	3	1	1	**22**	9	28	8	0	-13	-8	-3	6	6	6	6	3	4	5	**36**	**792**
1994	1	1	1	1	1	1	1	**7**	4	0	-1	-20	-21	-20	-10	6	6	5	2	1	2	4	**26**	**182**
					73 - year Average:			**15**												**73 - year Average:**			**30**	**457.5**
																					1929 - '34 Average:			**197.2**

STUDY: 1995C6F-SWRCB-492 DWRSIM: recirc818-f, 17 Jun 97
CP # 6, SWP LAKE OROVILLE & PALERMO DIV, EOP SURFACE ELEVATION (FT)
Project: /1995C6F-SWRCB-492/6/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 900'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	829	829	831	840	850	858	893	900	900	883	879	880	42	7	0	0	17	21	20	1	4	6	6	2	1	1	**21**	8	35	7	0	-17	-4	1	6	6	6	6	2	5	6	**37**	**777**
1923	874	874	858	862	869	874	895	900	881	827	786	789	26	5	0	19	73	114	111	1	4	6	2	1	1	1	**16**	5	21	5	-19	-54	-41	3	6	6	6	2	1	1	6	**28**	**448**
1924	776	764	750	755	774	761	748	733	712	693	684	680	139	152	167	188	207	216	220	1	1	1	1	1	1	1	**7**	-13	-13	-15	-21	-19	-9	-4	3	3	3	1	2	4	5	**21**	**147**
1925	681	685	692	708	777	805	829	836	820	787	775	775	95	71	64	80	113	125	125	1	1	1	1	1	1	1	**7**	28	24	7	-16	-33	-12	0	6	6	6	2	1	3	6	**30**	**210**
1926	770	768	769	783	829	849	887	873	852	824	810	793	51	13	27	48	76	90	107	1	3	1	1	1	1	1	**9**	20	38	-14	-21	-28	-14	-17	6	6	3	1	1	3	2	**22**	**198**
1927	784	815	816	837	849	863	890	900	900	850	837	834	37	10	0	0	50	63	66	1	3	6	6	1	1	1	**19**	14	27	10	0	-50	-13	-3	6	6	6	6	1	3	5	**33**	**627**
1928	831	842	843	855	869	849	878	862	842	774	754	748	51	22	38	58	126	146	152	1	1	1	1	1	1	1	**7**	-20	29	-16	-20	-68	-20	-6	2	6	2	2	1	2	4	**19**	**133**
1929	732	727	725	730	744	759	764	766	759	742	732	728	141	136	134	141	158	168	172	1	1	1	1	1	1	1	**7**	15	5	2	-7	-17	-10	-4	6	6	6	4	2	4	5	**33**	**231**
1930	717	713	773	801	825	857	879	882	864	827	813	811	43	21	18	36	73	87	89	1	1	2	1	1	1	1	**8**	32	22	3	-18	-37	-14	-2	6	6	6	2	1	3	5	**29**	**232**
1931	800	792	750	763	774	788	775	761	740	720	709	704	112	125	139	160	180	191	196	1	1	1	1	1	1	1	**7**	14	-13	-14	-21	-20	-11	-5	6	3	3	1	2	3	5	**23**	**161**
1932	698	689	695	719	741	775	781	805	785	765	756	752	125	119	95	115	135	144	148	1	1	1	1	1	1	1	**7**	34	6	24	-20	-20	-9	-4	6	6	6	2	2	4	5	**31**	**217**
1933	743	731	729	741	751	755	758	772	762	745	735	730	145	142	128	138	155	165	170	1	1	1	1	1	1	1	**7**	4	3	14	-10	-17	-10	-5	6	6	6	4	2	4	5	**33**	**231**
1934	726	716	719	746	766	783	775	763	737	712	699	690	117	125	137	163	188	201	210	1	1	1	1	1	1	1	**7**	17	-8	-12	-26	-25	-13	-9	6	4	3	1	1	3	4	**22**	**154**
1935	684	689	695	723	747	775	860	860	844	807	795	767	125	40	40	56	93	105	133	1	1	1	1	1	1	1	**7**	28	85	0	-16	-37	-12	-28	6	6	6	2	1	3	1	**25**	**175**
1936	756	746	725	781	846	860	886	897	888	843	833	823	40	14	3	12	57	67	77	1	3	5	3	1	1	1	**15**	14	26	11	-9	-45	-10	-10	6	6	6	4	1	4	4	**31**	**465**
1937	803	783	768	761	768	794	827	849	837	808	778	772	106	73	51	63	92	122	128	1	1	1	1	1	1	1	**7**	26	33	22	-12	-29	-30	-6	6	6	6	3	1	1	4	**27**	**189**
1938	767	785	854	858	849	849	882	900	900	894	891	887	51	18	0	0	6	9	13	1	2	6	6	4	4	3	**26**	0	33	18	0	-6	-3	-4	6	6	6	6	4	5	5	**38**	**988**
1939	874	864	854	845	837	833	822	814	778	712	695	694	67	78	86	122	188	205	206	1	1	1	1	1	1	1	**7**	-4	-11	-8	-36	-66	-17	-1	5	3	4	1	1	2	5	**21**	**147**
1940	682	669	668	729	829	849	879	879	861	821	784	775	51	21	21	39	79	116	125	1	1	1	1	1	1	1	**7**	20	30	0	-18	-40	-37	-9	6	6	6	2	1	1	4	**26**	**182**
1941	768	770	821	849	849	858	886	900	900	877	873	875	42	14	0	0	23	27	25	1	3	6	6	1	1	1	**19**	9	28	14	0	-23	-4	2	6	6	6	6	1	5	6	**36**	**684**
1942	874	874	849	849	850	867	882	900	900	882	878	879	33	18	0	0	18	22	21	1	2	6	6	2	1	1	**19**	17	15	18	0	-18	-4	1	6	6	6	6	2	5	6	**37**	**703**
1943	874	869	861	849	856	859	887	893	894	859	849	849	41	13	7	6	41	51	51	1	3	4	4	1	1	1	**15**	3	28	6	1	-35	-10	0	6	6	6	6	1	4	6	**35**	**525**
1944	851	853	852	859	857	868	876	892	872	815	773	767	32	24	8	28	85	127	133	1	1	4	1	1	1	1	**10**	11	8	16	-20	-57	-42	-6	6	6	6	2	1	1	4	**26**	**260**
1945	755	762	778	794	844	863	878	895	875	824	795	788	37	22	5	25	76	105	112	1	1	4	1	1	1	1	**10**	19	15	17	-20	-51	-29	-7	6	6	6	2	1	1	4	**26**	**260**
1946	788	796	848	864	865	868	887	892	869	813	770	767	32	13	8	31	87	130	133	1	3	4	1	1	1	1	**12**	3	19	5	-23	-56	-43	-3	6	6	6	1	1	1	5	**26**	**312**
1947	754	760	768	775	803	830	840	835	816	760	734	727	70	60	65	84	140	166	173	1	1	1	1	1	1	1	**7**	27	10	-5	-19	-56	-26	-7	6	6	5	2	1	1	4	**25**	**175**
1948	730	731	727	762	763	783	843	872	878	840	822	817	117	57	28	22	60	78	83	1	1	1	1	1	1	1	**7**	20	60	29	6	-38	-18	-5	6	6	6	6	1	2	5	**32**	**224**
1949	810	807	808	813	820	840	859	863	840	797	773	769	60	41	37	60	103	127	131	1	1	1	1	1	1	1	**7**	20	19	4	-23	-43	-24	-4	6	6	6	1	1	1	5	**26**	**182**
1950	755	748	742	772	819	849	882	900	890	849	834	834	51	18	0	10	51	66	66	1	2	6	3	1	1	1	**15**	30	33	18	-10	-41	-15	0	6	6	6	4	1	3	6	**32**	**480**
1951	837	849	854	853	858	870	886	900	896	839	820	820	30	14	0	4	61	80	80	1	3	6	5	1	1	1	**18**	12	16	14	-4	-57	-19	0	6	6	6	5	1	2	6	**32**	**576**
1952	824	827	849	849	852	862	894	900	900	900	899	887	38	6	0	0	0	1	13	1	4	6	6	6	5	3	**31**	10	32	6	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1178**
1953	874	874	858	850	867	867	883	900	900	854	852	853	33	17	0	0	46	48	47	1	2	6	6	1	1	1	**18**	0	16	17	0	-46	-2	1	6	6	6	6	1	5	6	**36**	**648**
1954	856	864	873	858	857	859	883	862	847	777	760	760	41	17	38	53	123	140	140	1	2	1	1	1	1	1	**8**	2	24	-21	-15	-70	-17	0	6	6	1	3	1	2	6	**25**	**200**
1955	761	763	771	784	793	805	815	827	800	764	750	746	95	85	73	100	136	150	154	1	1	1	1	1	1	1	**7**	12	10	12	-27	-36	-14	-4	6	6	6	1	1	3	5	**28**	**196**
1956	737	734	849	849	849	864	892	900	900	872	869	873	36	8	0	0	28	31	27	1	4	6	6	1	1	1	**20**	15	28	8	0	-28	-3	4	6	6	6	6	1	5	6	**36**	**720**
1957	869	874	874	871	853	863	862	881	865	818	808	813	37	38	19	35	82	92	87	1	1	2	1	1	1	1	**8**	10	-1	19	-16	-47	-10	5	6	5	6	2	1	4	6	**30**	**240**
1958	815	819	833	853	849	849	879	900	900	898	894	887	51	21	0	0	2	6	13	1	1	6	6	5	4	3	**26**	0	30	21	0	-2	-4	-7	6	6	6	6	5	5	4	**38**	**988**
1959	874	874	874	862	852	861	865	868	846	775	731	735	39	35	32	54	125	169	165	1	1	1	1	1	1	1	**7**	9	4	3	-22	-71	-44	4	6	6	6	1	1	1	6	**27**	**189**
1960	719	706	692	707	775	828	828	834	813	766	754	748	72	72	66	87	134	146	152	1	1	1	1	1	1	1	**7**	53	0	6	-21	-47	-12	-6	6	6	6	1	1	3	4	**27**	**189**
1961	736	739	750	761	791	818	824	829	804	750	723	719	82	76	71	96	150	177	181	1	1	1	1	1	1	1	**7**	27	6	5	-25	-54	-27	-4	6	6	6	1	1	1	5	**26**	**182**
1962	703	701	711	725	788	822	855	853	840	779	759	745	78	45	47	60	121	141	155	1	1	1	1	1	1	1	**7**	34	33	-2	-13	-61	-20	-14	6	6	5	3	1	2	3	**26**	**182**
1963	815	824	849	859	867	858	876	900	895	849	843	844	42	24	0	5	51	57	56	1	1	6	4	1	1	1	**15**	-9	18	24	-5	-46	-6	1	4	6	6	5	1	4	6	**32**	**480**
1964	845	856	858	866	874	874	880	885	869	810	754	752	26	20	15	31	90	146	148	1	1	2	1	1	1	1	**8**	0	6	5	-16	-59	-56	-2	6	6	6	2	1	1	5	**27**	**216**
1965	737	737	849	849	863	870	887	881	884	860	858	859	30	13	19	16	40	42	41	1	3	2	2	1	1	1	**11**	7	17	-6	3	-24	-2	1	6	6	4	6	1	5	6	**34**	**374**
1966	863	859	860	864	870	874	894	882	861	799	744	737	26	6	18	39	101	156	163	1	4	2	1	1	1	1	**11**	4	20	-12	-21	-62	-55	-7	6	6	3	1	1	1	4	**22**	**242**
1967	711	724	766	827	857	853	879	900	900	900	896	887	47	21	0	0	0	4	13	1	1	6	6	6	5	3	**28**	-4	26	21	0	0	-4	-9	5	6	6	6	6	5	4	**38**	**1064**
1968	874	874	873	858	861	866	863	867	847	778	757	754	34	37	33	53	122	143	146	1	1	1	1	1	1	1	**7**	5	-3	4	-20	-69	-21	-3	6	5	6	2	1	1	5	**26**	**182**
1969	755	761	783	849	849	865	895	900	900	894	892	874	35	5	0	0	6	8	26	1	4	6	6	4	4	1	**26**	16	30	5	0	-6	-2	-18	6	6	6	6	4	5	2	**35**	**910**
1970	874	874	850	849	849	874	868	870	858	798	765	766	26	32	30	42	102	135	134	1	1	1	1	1	1	1	**7**	25	-6	2	-12	-60	-33	1	6	4	6	3	1	1	6	**27**	**189**
1971	769	796	831	856	866	874	893	900	900	857	852	854	26	7	0	0	43	48	46	1	4	6	6	1	1	1	**20**	8	19	7	0	-43	-5	2	6	6	6	6	1	5	6	**36**	**720**
1972	859	865	865	869	867	874	884	887	867	807	791	791	26	16	13	33	93	109	109	1	2	3	1	1	1	1	**10**	7	10	3	-20	-60	-16	0	6	6	6	2	1	2	6	**29**	**290**
1973	787	803	826	849	849	860	882	900	868	819	804	800	40	18	0	32	81	96	100	1	2	6	1	1	1	1	**13**	11	22	18	-32	-49	-15	-4	6	6	6	1	1	3	5	**28**	**364**
1974	804	849	850	854	864	849	883	900	900	886	885	886	51	17	0	0	14	15	14	1	2	6	6	3	2	3	**23**	-15	34	17	0	-14	-1	1	3	6	6	6	3	5	6	**35**	**805**
1975	874	874	874	874	855	852	881	900	900	876	875	877	48	19	0	0	24	25	23	1	2	6	6	1	1	1	**18**	-3	29	19	0	-24	-1	2	5	6	6	6	1	5	6	**35**	**630**
1976	873	874	874	874	874	874	871	862	840	782	769	769	26	29	38	60	118	131	131	1	1	1	1	1	1	1	**7**	0	-3	-9	-22	-58	-13	0	6	5	4	1	1	3	6	**26**	**182**
1977	756	747	731	727	709	703	680	668	632	609	600	608	197	220	232	268	291	300	292	1	1	1	1	1	1	1	**7**	-6	-23	-12	-36	-23	-9	8	4	1	3	1	1	4	6	**20**	**140**
1978	597	597	633	754	807	859	878	897	894	865	848	856	41	22	3	6	35	52	44	1	1	5	4	1	1	1	**14**	52	19	19	-3	-29	-17	8	6	6	6	5	1	2	6	**32**	**448**
1979	858	862	856	870	853	863	878	896	862	820	805	802	37	22	4	38	80	95	98	1	1	5	1	1	1	1	**11**	10	15	18	-34	-42	-15	-3	6	6	6	1	1	3	5	**28**	**308**
1980	809	814	824	850	849	865	881	893	888	866	859	858	35	19	7	12	34	41	42	1	2	4	3	1	1	1	**13**	16	16	12	-5	-22	-7	-1	6	6	6	5	1	4	5	**33**	**429**
1981	857	858	866	860	868	865	875	872	850	783	761	761	35	25	28	50	117	139	139	1	1	1	1	1	1	1	**7**	-3	10	-3	-22	-67	-22	0	5	6	5	1	1	1	6	**25**	**175**
1982	767	847	849	859	862	859	884	900	900	895	891	887	41	16	0	0	5	9	13	1	2	6	6	4	4	3	**26**	-3	25	16	0	-5	-4	-4	5	6	6	6	5	5	5	**38**	**988**
1983	873	862	858	853	849	849	877	900	900	900	899	887	51	23	0	0	0	1	13	1	1	6	6	6	5	3	**28**	0	28	23	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1064**
1984	874	860	849	869	869	871	884	893	877	824	798	801	29	16	7	23	76	102	99	1	2	4	1	1	1	1	**11**	2	13	9	-16	-53	-26	3	6	6	6	2	1	1	6	**28**	**308**
1985	807	824	835	841	853	869	884	870	847	777	720	724	31	16	30	53	123	180	176	1	2	1	1	1	1	1	**8**	16	15	-14	-23	-70	-57	4	6	6	3	1	1	1	6	**24**	**192**
1986	705	700	707	746	851	849	871	875	871	849	837	847	51	29	25	29	51	63	53	1	1	1	1	1	1	1	**7**	-2	22	4	-4	-22	-12	10	5	6	6	5	1	3	6	**32**	**224**
1987	850	852	848	849	859	867	854	844	815	755	734	729	33	46	56	85	145	166	171	1	1	1	1	1	1	1	**7**	8	-13	-10	-29	-60	-21	-5	6	3	4	1	1	1	5	**21**	**147**
1988	715	718	757	782	781	777	775	765	735	713	701	698	123	125	135	165	187	199	202	1	1	1	1	1	1	1	**7**	-4	-2	-10	-30	-22	-12	-3	5	5	4	1	1	3	5	**24**	**168**
1989	687	705	715	723	722	839	865	855	837	787	776	776	61	35	45	63	113	129	124	1	1	1	1	1	1	1	**7**	117	26	-10	-18	-50	-16	5	6	6	4	2	1	2	6	**27**	**189**
1990	787	788	771	784	792	818	805	805	780	735	721	719	82	95	95	120	165	179	181	1	1	1	1	1	1	1	**7**	26	-13	0	-25	-45	-14	-2	6	3	6	1	1	3	5	**25**	**175**
1991	698	690	680	678	665	713	736	750	739	719	714	718	187	164	150	161	181	186	182	1	1	1	1	1	1	1	**7**	48	23	14	-11	-20	-5	4	6	6	6	3	2	5	6	**34**	**238**
1992	712	708	709	713	744	770	785	771	742	710	698	694	130	115	129	158	190	202	206	1	1	1	1	1	1	1	**7**	26	15	-14	-29	-32	-12	-4	6	6	3	1	1	3	5	**25**	**175**
1993	681	672	690	758	810	861	894	900	900	867	858	857	39	6	0	0	33	42	43	1	4	6	6	1	1	1	**20**	51	33	6	0	-33	-9	-1	6	6	6	6	1	4	5	**34**	**680**
1994	862	868	874	871	862	871	869	863	841	774	720	714	29	31	37	59	126	180	186	1	1	1	1	1	1	1	**7**	9	-2	-6	-22	-67	-54	-6	6	5	4	1	1	1	4	**22**	**154**
																								73 - year Average:			**12**												**73 - year Average:**			**29**	**384.3**
																																									1929 - '34 Average:		**204.3**

STUDY: 1995C6F-SWRCB-492 DWRSIM: recirc818-f, 17 Jun 97
CP # 8, CVP FOLSOM L&SAN JUAN&RSVLLE DV, EOP SURFACE ELEVATION (FT)
Project: /1995C6F-SWRCB-492/8/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 466'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Elevation												Difference from Maximum Reservoir Elevation [DFMRE]							Reservoir Elevation Score								Reservoir Change from Previous Month [fluctuation]							Reservoir Fluctuation Score								Largemouth Bass Reservoir Habitat Index =
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	414	403	408	407	424	428	442	466	466	463	449	434	38	24	0	0	3	17	32	1	1	6	6	5	2	1	**22**	4	14	24	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**770**
1923	425	422	424	424	424	428	449	466	457	440	423	418	38	17	0	9	26	43	48	1	2	6	4	1	1	1	**16**	4	21	17	-9	-17	-17	-5	6	6	6	4	2	2	5	**31**	**496**
1924	412	403	392	378	374	360	367	368	364	362	361	363	106	99	98	102	104	105	103	1	1	1	1	1	1	1	**7**	-14	7	1	-4	-2	-1	2	3	6	6	5	5	5	6	**36**	**252**
1925	370	380	393	401	424	436	449	466	448	426	413	410	30	17	0	18	40	53	56	1	2	6	2	1	1	1	**14**	12	13	17	-18	-22	-13	-3	6	6	6	2	1	3	5	**29**	**406**
1926	404	401	386	377	401	406	439	436	418	382	367	376	60	27	30	48	84	99	90	1	1	1	1	1	1	1	**7**	5	33	-3	-18	-36	-15	9	6	6	5	2	1	3	6	**29**	**203**
1927	381	411	424	424	424	437	449	466	464	454	447	433	29	17	0	2	12	19	33	1	2	6	5	3	2	1	**20**	13	12	17	-2	-10	-7	-14	6	6	6	5	4	4	3	**34**	**680**
1928	425	424	424	423	423	437	449	453	442	417	409	406	29	17	13	24	49	57	60	1	2	3	1	1	1	1	**10**	14	12	4	-11	-25	-8	-3	6	6	6	3	1	4	5	**31**	**310**
1929	385	376	369	350	346	356	377	388	376	366	370	379	110	89	78	90	100	96	87	1	1	1	1	1	1	1	**7**	10	21	11	-12	-10	4	9	6	6	6	3	4	6	6	**37**	**259**
1930	372	367	396	410	421	437	443	440	425	393	371	376	29	23	26	41	73	95	90	1	1	1	1	1	1	1	**7**	16	6	-3	-15	-32	-22	5	6	6	5	3	1	1	6	**28**	**196**
1931	367	371	378	388	395	404	401	399	366	365	366	366	62	65	67	100	101	100	100	1	1	1	1	1	1	1	**7**	9	-3	-2	-33	-1	1	0	6	5	5	1	5	6	6	**34**	**238**
1932	365	366	396	414	424	425	431	449	433	389	379	388	41	35	17	33	77	87	78	1	1	2	1	1	1	1	**8**	1	6	18	-16	-44	-10	9	6	6	6	2	1	4	6	**31**	**248**
1933	369	365	371	372	373	384	366	384	367	363	374	381	82	100	82	99	103	92	85	1	1	1	1	1	1	1	**7**	11	-18	18	-17	-4	11	7	6	2	6	2	5	6	6	**33**	**231**
1934	374	371	391	409	423	427	418	414	365	351	340	345	39	48	52	101	115	126	121	1	1	1	1	1	1	1	**7**	4	-9	-4	-49	-14	-11	5	6	4	5	1	3	3	6	**28**	**196**
1935	353	372	386	407	420	422	449	454	452	425	410	409	44	17	12	14	41	56	57	1	2	3	3	1	1	1	**12**	2	27	5	-2	-27	-15	-1	6	6	6	5	1	3	5	**32**	**384**
1936	404	402	399	424	424	437	449	461	459	445	438	434	29	17	5	7	21	28	32	1	2	4	4	1	1	1	**14**	13	12	12	-2	-14	-7	-4	6	6	6	5	3	4	5	**35**	**490**
1937	424	408	401	391	416	437	449	466	454	440	431	424	29	17	0	12	26	35	42	1	2	6	3	1	1	1	**15**	21	12	17	-12	-14	-9	-7	6	6	6	3	3	4	4	**32**	**480**
1938	415	412	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1939	425	419	413	406	398	406	415	417	403	365	360	369	60	51	49	63	101	106	97	1	1	1	1	1	1	1	**7**	8	9	2	-14	-38	-5	9	6	6	6	3	1	5	6	**33**	**231**
1940	365	365	366	424	424	437	449	460	450	432	423	424	29	17	6	16	34	43	42	1	2	4	2	1	1	1	**12**	13	12	11	-10	-18	-9	1	6	6	6	4	2	4	6	**34**	**408**
1941	417	411	424	424	424	437	449	466	457	452	447	434	29	17	0	9	14	19	32	1	2	6	4	3	2	1	**19**	13	12	17	-9	-5	-5	-13	6	6	6	4	5	5	3	**35**	**665**
1942	425	420	424	424	424	430	449	466	466	463	449	434	36	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	6	19	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1943	425	424	423	422	422	434	449	458	453	449	443	433	32	17	8	13	17	23	33	1	2	4	3	2	1	1	**14**	12	15	9	-5	-4	-6	-10	6	6	6	5	5	4	4	**36**	**504**
1944	424	416	410	402	403	414	422	427	414	397	373	370	52	44	39	52	69	93	96	1	1	1	1	1	1	1	**7**	11	8	5	-13	-17	-24	-3	6	6	6	3	2	1	5	**29**	**203**
1945	367	394	413	420	424	437	449	465	454	441	430	424	29	17	1	12	25	36	42	1	2	5	3	1	1	1	**14**	13	12	16	-11	-13	-11	-6	6	6	6	3	3	3	4	**31**	**434**
1946	421	424	424	424	417	434	449	466	450	436	428	421	32	17	0	16	30	38	45	1	2	6	2	1	1	1	**14**	17	15	17	-16	-14	-8	-7	6	6	6	2	3	4	4	**31**	**434**
1947	411	411	410	402	408	427	436	438	418	384	366	376	39	30	28	48	82	100	90	1	1	1	1	1	1	1	**7**	19	9	2	-20	-34	-18	10	6	6	6	2	1	2	6	**29**	**203**
1948	386	396	398	417	412	412	445	465	461	453	447	434	54	21	1	5	13	19	32	1	1	5	4	3	2	1	**17**	0	33	20	-4	-8	-6	-13	6	6	6	5	4	4	3	**34**	**578**
1949	424	417	414	404	397	419	440	455	444	419	411	409	47	26	11	22	47	55	57	1	1	3	1	1	1	1	**9**	22	21	15	-11	-25	-8	-2	6	6	6	3	1	4	5	**31**	**279**
1950	396	390	381	413	424	437	449	466	458	447	441	434	29	17	0	8	19	25	32	1	2	6	4	2	1	1	**17**	13	12	17	-8	-11	-6	-7	6	6	6	4	3	4	4	**33**	**561**
1951	428	393	388	388	388	426	449	466	455	440	423	425	40	17	0	11	26	43	41	1	2	6	3	1	1	1	**15**	38	23	17	-11	-15	-17	2	6	6	6	3	3	2	6	**32**	**480**
1952	420	422	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1953	427	421	424	424	424	429	445	456	461	462	449	434	37	21	10	5	4	17	32	1	1	3	4	5	2	1	**17**	5	16	11	5	1	-13	-15	6	6	6	6	6	3	3	**36**	**612**
1954	424	422	418	419	424	437	449	451	441	422	415	415	29	17	15	25	44	51	51	1	2	2	1	1	1	1	**9**	13	12	2	-10	-19	-7	0	6	6	6	4	2	4	6	**34**	**306**
1955	408	401	404	410	409	412	422	430	420	398	390	393	54	44	36	46	68	76	73	1	1	1	1	1	1	1	**7**	3	10	8	-10	-22	-8	3	6	6	6	4	1	4	6	**33**	**231**
1956	367	367	420	402	406	425	440	466	466	463	449	434	41	26	0	0	3	17	32	1	1	6	6	5	2	1	**22**	19	15	26	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**770**
1957	427	420	416	410	424	437	434	459	454	440	433	430	29	32	7	12	26	33	36	1	1	4	3	1	1	1	**12**	13	-3	25	-5	-14	-7	-3	6	5	6	5	3	4	5	**34**	**408**
1958	422	416	417	421	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1959	424	417	410	414	422	424	432	433	416	397	382	390	42	34	33	50	69	84	76	1	1	1	1	1	1	1	**7**	2	8	1	-17	-19	-15	8	6	6	6	2	2	3	6	**31**	**217**
1960	382	372	369	376	416	437	448	446	433	408	398	403	29	18	20	33	58	68	63	1	2	1	1	1	1	1	**8**	21	11	-2	-13	-25	-10	5	6	6	5	3	1	4	6	**31**	**248**
1961	394	391	389	382	387	395	405	416	407	389	380	385	71	61	50	59	77	86	81	1	1	1	1	1	1	1	**7**	8	10	11	-9	-18	-9	5	6	6	6	4	2	4	6	**34**	**238**
1962	386	385	391	387	424	433	449	455	452	430	417	418	33	17	11	14	36	49	48	1	2	3	3	1	1	1	**12**	9	16	6	-3	-22	-13	1	6	6	6	5	1	3	6	**33**	**396**
1963	441	424	424	424	419	430	449	466	460	451	445	434	36	17	0	6	15	21	32	1	2	6	4	2	1	1	**17**	11	19	17	-6	-9	-6	-11	6	6	6	4	4	4	3	**33**	**561**
1964	426	424	423	424	421	418	428	433	423	400	367	366	48	38	33	43	66	99	100	1	1	1	1	1	1	1	**7**	-3	10	5	-10	-23	-33	-1	5	6	6	4	1	1	5	**28**	**196**
1965	367	387	393	392	395	414	449	463	457	450	446	434	52	17	3	9	16	20	32	1	2	5	4	2	1	1	**16**	19	35	14	-6	-7	-4	-12	6	6	6	4	4	5	3	**34**	**544**
1966	425	424	423	424	422	429	446	446	429	407	392	394	37	20	20	37	59	74	72	1	1	1	1	1	1	1	**7**	7	17	0	-17	-22	-15	2	6	6	6	2	1	3	6	**30**	**210**
1967	389	397	423	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1968	427	424	422	424	424	437	440	440	424	403	394	400	29	26	26	42	63	72	66	1	1	1	1	1	1	1	**7**	13	3	0	-16	-21	-9	6	6	6	6	2	1	4	6	**31**	**217**
1969	394	398	407	424	424	436	449	466	466	463	449	434	30	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	12	13	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1970	427	422	423	393	396	425	430	439	434	419	411	410	41	36	27	32	47	55	56	1	1	1	1	1	1	1	**7**	29	5	9	-5	-15	-8	-1	6	6	6	5	3	4	5	**35**	**245**
1971	400	413	424	424	424	437	447	460	459	456	449	434	29	19	6	7	10	17	32	1	2	4	4	3	2	1	**17**	13	10	13	-1	-3	-7	-15	6	6	6	5	5	4	3	**35**	**595**
1972	425	421	424	423	424	437	443	449	437	416	407	407	29	23	17	29	50	59	59	1	1	2	1	1	1	1	**8**	13	6	6	-12	-21	-9	0	6	6	6	3	1	4	6	**32**	**256**
1973	402	406	420	424	424	437	449	466	450	431	420	423	29	17	0	16	35	46	43	1	2	6	2	1	1	1	**14**	13	12	17	-16	-19	-11	3	6	6	6	2	2	3	6	**31**	**434**
1974	419	423	422	409	417	433	449	466	462	462	449	434	33	17	0	4	4	17	32	1	2	6	5	5	2	1	**22**	16	16	17	-4	0	-13	-15	6	6	6	5	6	3	3	**35**	**770**
1975	425	417	415	412	424	437	440	466	466	462	447	434	29	26	0	0	4	19	32	1	1	6	6	5	2	1	**22**	13	3	26	0	-4	-15	-13	6	6	6	6	5	3	3	**35**	**770**
1976	430	423	418	409	400	394	399	403	388	368	371	373	72	67	63	78	98	95	93	1	1	1	1	1	1	1	**7**	-6	5	4	-15	-20	3	2	4	6	6	3	2	6	6	**33**	**231**
1977	366	366	363	361	355	355	359	363	358	346	335	328	111	107	103	108	120	131	138	1	1	1	1	1	1	1	**7**	0	4	4	-5	-12	-11	-7	6	6	6	5	3	3	4	**33**	**231**
1978	324	328	369	424	424	437	449	466	460	453	442	434	29	17	0	6	13	24	32	1	2	6	4	3	1	1	**18**	13	12	17	-6	-7	-11	-8	6	6	6	4	4	3	4	**33**	**594**
1979	422	415	409	415	424	437	447	466	449	429	421	419	29	19	0	17	37	45	47	1	2	6	2	1	1	1	**14**	13	10	19	-17	-20	-8	-2	6	6	6	2	2	4	5	**31**	**434**
1980	415	412	412	405	399	430	449	463	454	453	448	434	36	17	3	12	13	18	32	1	2	5	3	3	2	1	**17**	31	19	14	-9	-1	-5	-14	6	6	6	4	5	5	3	**35**	**595**
1981	425	418	413	411	409	419	429	430	416	398	387	392	47	37	36	50	68	79	74	1	1	1	1	1	1	1	**7**	10	10	1	-14	-18	-11	5	6	6	6	3	2	3	6	**32**	**224**
1982	392	420	392	396	388	424	449	466	466	463	449	434	42	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	36	25	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1983	437	415	417	418	418	433	449	466	466	463	449	434	33	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	15	16	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1984	434	392	388	388	392	424	441	463	455	442	430	429	42	25	3	11	24	36	37	1	1	5	3	1	1	1	**13**	32	17	22	-8	-13	-12	-1	6	6	6	4	3	3	5	**33**	**429**
1985	422	424	424	420	421	426	447	442	423	394	366	368	40	19	24	43	72	100	98	1	2	1	1	1	1	1	**8**	5	21	-5	-19	-29	-28	2	6	6	5	2	1	1	6	**27**	**216**
1986	367	385	408	424	396	424	448	462	456	445	439	434	42	18	4	10	21	27	32	1	2	5	3	1	1	1	**14**	28	24	14	-6	-11	-6	-5	6	6	6	4	3	4	5	**34**	**476**
1987	426	419	411	403	401	407	413	413	394	366	353	361	59	53	53	72	100	113	105	1	1	1	1	1	1	1	**7**	6	6	0	-19	-28	-13	8	6	6	6	2	1	3	6	**30**	**210**
1988	360	364	386	407	408	404	406	400	378	351	320	393	62	60	66	88	115	146	73	1	1	1	1	1	1	1	**7**	-4	2	-6	-22	-27	-31	73	5	6	4	1	1	1	6	**24**	**168**
1989	377	382	387	389	384	437	449	452	441	417	410	412	29	17	14	25	49	56	54	1	2	3	1	1	1	1	**10**	53	12	3	-11	-24	-7	2	6	6	6	3	1	4	6	**32**	**320**
1990	408	407	403	402	399	410	415	416	400	366	369	378	56	51	50	66	100	97	88	1	1	1	1	1	1	1	**7**	11	5	1	-16	-34	3	9	6	6	6	2	1	6	6	**33**	**231**
1991	366	361	358	344	330	382	405	422	421	415	409	406	84	61	44	45	51	57	60	1	1	1	1	1	1	1	**7**	52	23	17	-1	-6	-6	-3	6	6	6	5	4	4	5	**36**	**252**
1992	398	385	374	354	379	394	406	403	375	363	352	343	72	60	63	91	103	114	123	1	1	1	1	1	1	1	**7**	15	12	-3	-28	-12	-11	-9	6	6	5	1	3	3	4	**28**	**196**
1993	341	339	369	424	427	434	449	466	466	454	448	434	32	17	0	0	12	18	32	1	2	6	6	3	2	1	**21**	7	15	17	0	-12	-6	-14	6	6	6	6	3	4	3	**34**	**714**
1994	422	411	405	392	386	386	394	398	391	374	365	361	80	72	68	75	92	101	105	1	1	1	1	1	1	1	**7**	0	8	4	-7	-17	-9	-4	6	6	6	4	2	4	5	**33**	**231**
																							73 - year Average:				**13**												**73 - year Average:**			**33**	**427.9**
																																									1929 - '34 Average:		**228.0**

STUDY: 1995C6F-SWRCB-492 DWRSIM: recirc818-f, 17 JUN 97
CP # 10, NEW MELONES RESERVOIR & CVP DIV, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-492/10/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 1088'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Surface Elevation (ft)												DFMRE							Elevation Score								Fluctuation							Fluctuation Score								
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	940	943	948	954	968	978	973	990	1013	1004	992	981	120	110	115	98	75	84	96	1	1	1	1	1	1	1	**7**	10	-5	17	23	-9	-12	-11	6	5	6	6	4	3	3	**33**	**231**
1923	980	984	994	1002	1008	1008	1006	1013	1013	1004	991	982	80	80	82	75	75	84	97	1	1	1	1	1	1	1	**7**	0	-2	7	0	-9	-13	-9	6	5	6	6	4	3	4	**34**	**238**
1924	981	983	987	991	994	994	986	974	961	949	937	933	94	94	102	114	127	139	151	1	1	1	1	1	1	1	**7**	0	-8	-12	-13	-12	-12	-4	6	4	3	3	3	3	5	**27**	**189**
1925	932	934	938	941	960	971	973	989	993	984	971	963	128	117	115	99	95	104	117	1	1	1	1	1	1	1	**7**	11	2	16	4	-9	-13	-8	6	6	6	6	4	3	4	**35**	**245**
1926	962	963	966	968	979	982	983	973	960	945	931	923	109	106	105	115	128	143	157	1	1	1	1	1	1	1	**7**	3	1	-10	-13	-15	-14	-8	6	6	4	3	3	3	4	**29**	**203**
1927	923	927	935	942	961	972	981	993	995	986	973	966	127	116	107	95	93	102	115	1	1	1	1	1	1	1	**7**	11	9	12	2	-9	-13	-7	6	6	6	6	4	3	4	**35**	**245**
1928	967	973	978	982	990	1009	1007	1011	1003	992	977	970	98	79	81	77	85	96	111	1	1	1	1	1	1	1	**7**	19	-2	4	-8	-11	-15	-7	6	5	6	4	3	3	4	**31**	**217**
1929	968	971	974	976	980	981	977	973	962	950	938	931	108	107	111	115	126	138	150	1	1	1	1	1	1	1	**7**	1	-4	-4	-11	-12	-12	-7	6	5	5	3	3	3	4	**29**	**203**
1930	931	933	935	939	945	953	952	947	943	930	914	901	143	135	136	141	145	158	174	1	1	1	1	1	1	1	**7**	8	-1	-5	-4	-13	-16	-13	6	5	5	5	3	2	3	**29**	**203**
1931	902	907	911	915	919	922	915	901	883	865	846	837	169	166	173	187	205	223	242	1	1	1	1	1	1	1	**7**	3	-7	-14	-18	-18	-19	-9	6	4	3	2	2	2	4	**23**	**161**
1932	836	839	850	859	882	893	893	926	941	934	922	911	206	195	195	162	147	154	166	1	1	1	1	1	1	1	**7**	11	0	33	15	-7	-12	-11	6	6	6	6	4	3	3	**34**	**238**
1933	911	914	920	923	925	927	922	919	916	895	873	861	163	161	166	169	172	193	215	1	1	1	1	1	1	1	**7**	2	-5	-3	-3	-21	-22	-12	6	5	5	5	1	1	3	**26**	**182**
1934	862	866	872	878	887	897	888	874	854	835	815	802	201	191	200	214	234	253	273	1	1	1	1	1	1	1	**7**	10	-9	-14	-20	-19	-20	-13	6	4	3	2	2	2	3	**22**	**154**
1935	798	801	808	816	823	833	851	894	914	899	880	868	265	255	237	194	174	189	208	1	1	1	1	1	1	1	**7**	10	18	43	20	-15	-19	-12	6	6	6	6	3	2	3	**32**	**224**
1936	867	871	877	894	927	938	950	973	980	970	957	949	161	150	138	115	108	118	131	1	1	1	1	1	1	1	**7**	11	12	23	7	-10	-13	-8	6	6	6	6	4	3	4	**35**	**245**
1937	950	952	956	960	973	987	989	1011	1014	1005	995	989	115	101	99	77	74	83	93	1	1	1	1	1	1	1	**7**	14	2	22	3	-9	-10	-6	6	6	6	6	4	4	4	**36**	**252**
1938	989	992	1002	1011	1030	1051	1059	1085	1088	1084	1075	1069	58	37	29	3	0	4	13	1	1	1	5	6	5	3	**22**	21	8	26	3	-4	-9	-6	6	6	6	6	5	4	4	**37**	**814**
1939	1050	1050	1050	1050	1050	1052	1050	1038	1025	1012	999	992	38	36	38	50	63	76	89	1	1	1	1	1	1	1	**7**	2	-2	-12	-13	-13	-13	-7	6	5	3	3	3	3	4	**27**	**189**
1940	989	990	992	1004	1019	1035	1044	1055	1054	1041	1029	1022	69	53	44	33	34	47	59	1	1	1	1	1	1	1	**7**	16	9	11	-1	-13	-12	-7	6	6	6	5	3	3	4	**33**	**231**
1941	1021	1023	1029	1035	1045	1055	1051	1065	1071	1064	1055	1048	43	33	37	23	17	24	33	1	1	1	1	2	1	1	**8**	10	-4	14	6	-7	-9	-7	6	5	6	6	4	4	4	**35**	**280**
1942	1046	1047	1050	1050	1050	1055	1055	1067	1081	1078	1068	1062	38	33	33	21	7	10	20	1	1	1	1	4	3	1	**12**	5	0	12	14	-3	-10	-6	6	6	6	6	5	4	4	**37**	**444**
1943	1050	1050	1050	1050	1050	1055	1061	1068	1071	1062	1053	1045	38	33	27	20	17	26	35	1	1	1	1	2	1	1	**8**	5	6	7	3	-9	-9	-8	6	6	6	6	4	4	4	**36**	**288**
1944	1044	1045	1046	1048	1050	1053	1048	1045	1038	1025	1012	1004	38	35	40	43	50	63	76	1	1	1	1	1	1	1	**7**	3	-5	-3	-7	-13	-13	-8	6	5	5	4	3	3	4	**30**	**210**
1945	1003	1007	1011	1017	1030	1039	1039	1051	1057	1049	1036	1029	58	49	49	37	31	39	52	1	1	1	1	1	1	1	**7**	9	0	12	6	-8	-13	-7	6	6	6	6	4	3	4	**35**	**245**
1946	1029	1033	1043	1050	1050	1054	1052	1061	1058	1046	1034	1028	38	34	36	27	30	42	54	1	1	1	1	1	1	1	**7**	4	-2	9	-3	-12	-12	-6	6	5	6	5	3	3	4	**32**	**224**
1947	1026	1029	1032	1034	1037	1040	1034	1025	1016	1006	995	989	51	48	54	63	72	82	93	1	1	1	1	1	1	1	**7**	3	-6	-9	-9	-10	-11	-6	6	4	4	4	4	3	4	**29**	**203**
1948	988	989	992	993	994	997	997	999	1007	998	988	981	94	91	91	89	81	90	100	1	1	1	1	1	1	1	**7**	3	0	2	8	-9	-10	-7	6	6	6	6	4	4	4	**36**	**252**
1949	979	982	985	988	991	996	992	995	990	977	964	957	97	92	96	93	98	111	124	1	1	1	1	1	1	1	**7**	5	-4	3	-5	-13	-13	-7	6	5	6	5	3	3	4	**32**	**224**
1950	955	956	958	966	976	985	984	996	1000	991	978	970	112	103	104	92	88	97	110	1	1	1	1	1	1	1	**7**	9	-1	12	4	-9	-13	-8	6	5	6	6	4	3	4	**34**	**238**
1951	969	1003	1043	1050	1050	1055	1048	1041	1033	1020	1007	1000	38	33	40	47	55	68	81	1	1	1	1	1	1	1	**7**	5	-7	-7	-8	-13	-13	-7	6	4	4	4	3	3	4	**28**	**196**
1952	999	1001	1008	1022	1033	1046	1049	1078	1088	1086	1076	1070	55	42	39	10	0	2	12	1	1	1	3	6	5	3	**20**	13	3	29	10	-2	-10	-6	6	6	6	6	5	4	4	**37**	**740**
1953	1050	1050	1050	1050	1050	1054	1046	1036	1038	1029	1016	1009	38	34	42	52	50	59	72	1	1	1	1	1	1	1	**7**	4	-8	-10	2	-9	-13	-7	6	4	4	6	4	3	4	**31**	**217**
1954	1006	1008	1011	1014	1016	1024	1026	1029	1020	1007	994	984	72	64	62	59	68	81	94	1	1	1	1	1	1	1	**7**	8	2	3	-9	-13	-13	-10	6	6	6	4	3	3	4	**32**	**224**
1955	982	985	989	994	996	999	993	988	984	970	957	949	92	89	95	100	104	118	131	1	1	1	1	1	1	1	**7**	3	-6	-5	-4	-14	-13	-8	6	4	5	5	3	3	4	**30**	**210**
1956	949	951	984	1012	1026	1035	1026	1043	1054	1048	1036	1030	62	53	62	45	34	40	52	1	1	1	1	1	1	1	**7**	9	-9	17	11	-6	-12	-6	6	4	6	6	4	3	4	**33**	**231**
1957	1027	1029	1031	1034	1039	1046	1034	1031	1032	1019	1007	999	49	42	54	57	56	69	81	1	1	1	1	1	1	1	**7**	7	-12	-3	1	-13	-12	-8	6	3	5	6	3	3	4	**30**	**210**
1958	994	997	999	1005	1014	1029	1036	1065	1079	1073	1063	1056	74	59	52	23	9	15	25	1	1	1	1	4	2	1	**11**	15	7	29	14	-6	-10	-7	6	6	6	6	4	4	4	**36**	**396**
1959	1050	1050	1050	1050	1050	1053	1046	1030	1018	1005	992	983	38	35	42	58	70	83	96	1	1	1	1	1	1	1	**7**	3	-7	-16	-12	-13	-13	-9	6	4	2	3	3	3	4	**25**	**175**
1960	980	982	984	987	994	1000	997	992	981	967	954	944	94	88	91	96	107	121	134	1	1	1	1	1	1	1	**7**	6	-3	-5	-11	-14	-13	-10	6	5	5	3	3	3	4	**29**	**203**
1961	940	944	947	950	952	956	951	944	932	920	901	891	136	132	137	144	156	168	187	1	1	1	1	1	1	1	**7**	4	-5	-7	-12	-12	-19	-10	6	5	4	3	3	2	4	**27**	**189**
1962	891	894	898	901	918	925	927	936	939	928	912	898	170	163	161	152	149	160	176	1	1	1	1	1	1	1	**7**	7	2	9	3	-11	-16	-14	6	6	6	6	3	2	3	**32**	**224**
1963	898	903	910	922	940	947	948	978	986	977	965	959	148	141	140	110	102	111	123	1	1	1	1	1	1	1	**7**	7	1	30	8	-9	-12	-6	6	6	6	6	4	3	4	**35**	**245**
1964	959	964	968	974	979	983	977	969	961	947	934	926	109	105	111	119	127	141	154	1	1	1	1	1	1	1	**7**	4	-6	-8	-8	-14	-13	-8	6	4	4	4	3	3	4	**28**	**196**
1965	925	929	960	987	1000	1008	1016	1017	1022	1014	1003	996	88	80	72	71	66	74	85	1	1	1	1	1	1	1	**7**	8	8	1	5	-8	-11	-7	6	6	6	6	4	3	4	**35**	**245**
1966	995	1000	1005	1010	1015	1020	1011	1010	1000	988	975	966	73	68	77	78	88	100	113	1	1	1	1	1	1	1	**7**	5	-9	-1	-10	-12	-13	-9	6	4	5	4	3	3	4	**29**	**203**
1967	965	968	980	994	1002	1014	1015	1038	1065	1069	1060	1054	86	74	73	50	23	19	28	1	1	1	1	1	2	1	**8**	12	1	23	27	4	-9	-6	6	6	6	6	6	4	4	**38**	**304**
1968	1050	1050	1050	1050	1050	1054	1042	1033	1022	1008	995	984	38	34	46	55	66	80	93	1	1	1	1	1	1	1	**7**	4	-12	-9	-11	-14	-13	-11	6	3	4	3	3	3	3	**25**	**175**
1969	983	988	991	1021	1041	1055	1066	1088	1088	1084	1074	1066	47	33	22	0	0	4	14	1	1	1	6	6	5	3	**23**	14	11	22	0	-4	-10	-8	6	6	6	6	5	4	4	**37**	**851**
1970	1050	1050	1050	1050	1050	1055	1047	1041	1039	1025	1012	1005	38	33	41	47	49	63	76	1	1	1	1	1	1	1	**7**	5	-8	-6	-2	-14	-13	-7	6	4	4	5	3	3	4	**29**	**203**
1971	1004	1008	1016	1023	1029	1036	1027	1024	1024	1013	1000	993	59	52	61	64	64	75	88	1	1	1	1	1	1	1	**7**	7	-9	-3	0	-11	-13	-7	6	4	5	6	3	3	4	**31**	**217**
1972	990	993	1000	1005	1007	1010	998	998	989	976	962	955	81	78	90	90	99	112	126	1	1	1	1	1	1	1	**7**	3	-12	0	-9	-13	-14	-7	6	3	6	4	3	3	4	**29**	**203**
1973	955	958	963	979	997	1009	1010	1029	1032	1022	1012	1007	91	79	78	59	56	66	76	1	1	1	1	1	1	1	**7**	12	1	19	3	-10	-10	-5	6	6	6	6	4	4	5	**37**	**259**
1974	1007	1013	1023	1036	1045	1055	1059	1070	1070	1061	1050	1042	43	33	29	18	18	27	38	1	1	1	2	2	1	1	**9**	10	4	11	0	-9	-11	-8	6	6	6	6	4	3	4	**35**	**315**
1975	1041	1044	1047	1050	1050	1055	1050	1049	1062	1053	1042	1035	38	33	38	39	26	35	46	1	1	1	1	1	1	1	**7**	5	-5	-1	13	-9	-11	-7	6	5	5	6	4	3	4	**33**	**231**
1976	1033	1036	1039	1041	1043	1046	1040	1031	1020	1010	1001	995	45	42	48	57	68	78	87	1	1	1	1	1	1	1	**7**	3	-6	-9	-11	-10	-9	-6	6	4	4	3	4	4	4	**29**	**203**
1977	995	996	997	998	998	998	990	980	971	958	946	940	90	90	98	108	117	130	142	1	1	1	1	1	1	1	**7**	0	-8	-10	-9	-13	-12	-6	6	4	4	4	3	3	4	**28**	**196**
1978	939	939	942	953	965	986	995	1012	1023	1021	1012	1009	123	102	93	76	65	67	76	1	1	1	1	1	1	1	**7**	21	9	17	11	-2	-9	-3	6	6	6	6	5	4	5	**38**	**266**
1979	1009	1011	1015	1023	1036	1049	1049	1058	1053	1040	1026	1019	52	39	39	30	35	48	62	1	1	1	1	1	1	1	**7**	13	0	9	-5	-13	-14	-7	6	6	6	5	3	3	4	**33**	**231**
1980	1020	1022	1025	1050	1050	1055	1056	1063	1070	1068	1057	1051	38	33	32	25	18	20	31	1	1	1	1	2	1	1	**8**	5	1	7	7	-2	-11	-6	6	6	6	6	5	3	4	**36**	**288**
1981	1050	1050	1050	1050	1050	1053	1045	1034	1019	1005	992	984	38	35	43	54	69	83	96	1	1	1	1	1	1	1	**7**	3	-8	-11	-15	-14	-13	-8	6	4	3	3	3	3	4	**26**	**182**
1982	983	992	1006	1027	1050	1055	1071	1086	1088	1084	1075	1071	38	33	17	2	0	4	13	1	1	2	5	6	5	3	**23**	5	16	15	2	-4	-9	-4	6	6	6	6	5	4	5	**38**	**874**
1983	1050	1050	1050	1050	1050	1055	1056	1070	1088	1088	1082	1075	38	33	32	18	0	0	6	1	1	1	2	6	6	4	**21**	5	1	14	18	0	-6	-7	6	6	6	6	6	4	4	**38**	**798**
1984	1050	1050	1050	1050	1050	1055	1044	1037	1033	1022	1012	1006	38	33	44	51	55	66	76	1	1	1	1	1	1	1	**7**	5	-11	-7	-4	-11	-10	-6	6	3	4	5	3	4	4	**29**	**203**
1985	1006	1010	1016	1019	1024	1030	1027	1022	1012	1002	992	986	64	58	61	66	76	86	96	1	1	1	1	1	1	1	**7**	6	-3	-5	-10	-10	-10	-6	6	5	5	4	4	4	4	**32**	**224**
1986	986	989	993	1003	1050	1055	1056	1061	1065	1055	1045	1040	38	33	32	27	23	33	43	1	1	1	1	1	1	1	**7**	5	1	5	4	-10	-10	-5	6	6	6	6	4	4	5	**37**	**259**
1987	1039	1041	1044	1044	1046	1049	1044	1034	1023	1014	1006	1002	42	39	44	54	65	74	82	1	1	1	1	1	1	1	**7**	3	-5	-10	-11	-9	-8	-4	6	5	4	3	4	4	5	**31**	**217**
1988	999	999	999	1000	1002	1004	998	990	980	970	961	955	86	84	90	98	108	118	127	1	1	1	1	1	1	1	**7**	2	-6	-8	-10	-10	-9	-6	6	4	4	4	4	4	4	**30**	**210**
1989	954	954	955	956	958	970	967	962	954	943	931	927	130	118	121	126	134	145	157	1	1	1	1	1	1	1	**7**	12	-3	-5	-8	-11	-12	-4	6	5	5	4	3	3	5	**31**	**217**
1990	930	932	937	939	942	947	940	929	914	895	879	870	146	141	148	159	174	193	209	1	1	1	1	1	1	1	**7**	5	-7	-11	-15	-19	-16	-9	6	4	3	3	2	2	4	**24**	**168**
1991	869	870	875	875	875	883	878	873	857	838	821	813	213	205	210	215	231	250	267	1	1	1	1	1	1	1	**7**	8	-5	-5	-16	-19	-17	-8	6	5	5	2	2	2	4	**26**	**182**
1992	815	817	823	826	837	846	838	821	799	768	731	715	251	242	250	267	289	320	357	1	1	1	1	1	1	1	**7**	9	-8	-17	-22	-31	-37	-16	6	4	2	1	1	1	2	**17**	**119**
1993	723	737	755	789	885	940	928	933	944	934	924	920	203	148	160	155	144	154	164	1	1	1	1	1	1	1	**7**	55	-12	5	11	-10	-10	-4	6	3	6	6	4	4	5	**34**	**238**
1994	919	920	924	924	926	931	928	924	911	892	875	867	162	157	160	164	177	196	213	1	1	1	1	1	1	1	**7**	5	-3	-4	-13	-19	-17	-8	6	5	5	3	2	2	4	**27**	**189**
																							73 - year Average:				**8**												**73 - year Average:**			**31**	**265.7**
																																							1929 - '34 Average:				**190.2**

STUDY: 1995C06F-SWRCB-492 DWRSIM: recirc818-f, 17 Jun 97
CP # 81, NEW DON PEDRO RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-492/81/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 832'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Elevation												DFMRE							Elevation Score								Fluctuation							Fluctuation Score								
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	599	581	579	600	656	690	698	724	781	778	763	752	142	134	108	51	54	69	80	1	1	1	1	1	1	1	**7**	34	8	26	57	-3	-15	-11	6	6	6	6	5	3	3	**35**	**245**
1923	746	745	748	760	775	784	787	789	799	792	777	767	48	45	43	33	40	55	65	1	1	1	1	1	1	1	**7**	9	3	2	10	-7	-15	-10	6	6	6	6	4	3	4	**35**	**245**
1924	761	759	754	752	753	751	746	740	731	718	704	696	81	86	92	101	114	128	136	1	1	1	1	1	1	1	**7**	-2	-5	-6	-9	-13	-14	-8	5	5	4	4	3	3	4	**28**	**196**
1925	691	692	693	696	718	736	748	759	777	768	752	741	96	84	73	55	64	80	91	1	1	1	1	1	1	1	**7**	18	12	11	18	-9	-16	-11	6	6	6	6	4	2	3	**33**	**231**
1926	734	732	727	726	735	739	753	765	762	746	731	721	93	79	67	70	86	101	111	1	1	1	1	1	1	1	**7**	4	14	12	-3	-16	-15	-10	6	6	6	5	2	3	4	**32**	**224**
1927	713	713	717	726	755	770	781	779	797	789	774	764	62	51	53	35	43	58	68	1	1	1	1	1	1	1	**7**	15	11	-2	18	-8	-15	-10	6	6	5	6	4	3	4	**34**	**238**
1928	758	758	759	762	770	789	797	814	814	799	784	774	43	35	18	18	33	48	58	1	1	2	2	1	1	1	**9**	19	8	17	0	-15	-15	-10	6	6	6	6	3	3	4	**34**	**306**
1929	767	762	758	757	761	763	763	765	773	764	754	746	69	69	67	59	68	78	86	1	1	1	1	1	1	1	**7**	2	0	2	8	-9	-10	-8	6	6	6	6	4	4	4	**36**	**252**
1930	742	739	736	737	743	750	751	754	768	759	749	742	82	81	78	64	73	83	90	1	1	1	1	1	1	1	**7**	7	1	3	14	-9	-10	-7	6	6	6	6	4	4	4	**36**	**252**
1931	740	739	739	741	743	742	734	722	709	695	682	673	90	98	110	123	137	150	159	1	1	1	1	1	1	1	**7**	-1	-8	-12	-13	-14	-13	-9	5	4	3	3	3	3	4	**25**	**175**
1932	669	664	676	693	732	747	748	752	769	764	748	737	85	84	80	63	68	84	95	1	1	1	1	1	1	1	**7**	15	1	4	17	-5	-16	-11	6	6	6	6	5	2	3	**34**	**238**
1933	730	723	716	715	722	726	721	714	732	720	703	692	106	111	118	100	112	129	140	1	1	1	1	1	1	1	**7**	4	-5	-7	18	-12	-17	-11	6	5	4	6	3	2	3	**29**	**203**
1934	683	681	678	682	693	702	701	693	689	670	652	642	130	131	139	143	162	180	190	1	1	1	1	1	1	1	**7**	9	-1	-8	-4	-19	-18	-10	6	5	4	5	2	2	4	**28**	**196**
1935	634	633	635	649	676	693	718	730	760	747	730	717	139	114	102	72	85	102	115	1	1	1	1	1	1	1	**7**	17	25	12	30	-13	-17	-13	6	6	6	6	3	2	3	**32**	**224**
1936	709	707	701	706	749	767	776	793	811	801	786	775	65	56	39	21	31	46	57	1	1	1	1	1	1	1	**7**	18	9	17	18	-10	-15	-11	6	6	6	6	4	3	3	**34**	**238**
1937	769	764	760	762	790	800	802	815	832	819	805	795	32	30	17	0	13	27	37	1	1	2	6	3	1	1	**15**	10	2	13	17	-13	-14	-10	6	6	6	6	3	3	4	**34**	**510**
1938	789	784	800	800	800	800	800	804	831	832	819	808	32	32	28	1	0	13	24	1	1	1	5	6	3	1	**18**	0	0	4	27	1	-13	-11	6	6	6	6	6	3	3	**36**	**648**
1939	800	799	799	800	800	800	802	804	799	787	774	766	32	30	28	33	45	58	66	1	1	1	1	1	1	1	**7**	0	2	2	-5	-12	-13	-8	6	6	6	5	3	3	4	**33**	**231**
1940	763	763	761	773	800	800	802	816	829	814	799	789	32	30	16	3	18	33	43	1	1	2	5	2	1	1	**13**	0	2	14	13	-15	-15	-10	6	6	6	6	3	3	4	**34**	**442**
1941	783	781	783	798	800	800	800	812	832	831	817	808	32	32	20	0	1	15	24	1	1	1	6	5	2	1	**17**	0	0	12	20	-1	-14	-9	6	6	6	6	5	3	4	**36**	**612**
1942	800	798	800	800	800	800	802	807	831	832	818	808	32	30	25	1	0	14	24	1	1	1	5	6	3	1	**18**	0	2	5	24	1	-14	-10	6	6	6	6	6	3	4	**37**	**666**
1943	800	800	800	800	800	800	802	821	832	824	810	799	32	30	11	0	8	22	33	1	1	3	6	4	1	1	**17**	0	2	19	11	-8	-14	-11	6	6	6	6	4	3	3	**34**	**578**
1944	794	792	788	787	793	800	801	808	814	802	787	777	32	31	24	18	30	45	55	1	1	1	2	1	1	1	**8**	7	1	7	6	-12	-15	-10	6	6	6	6	3	3	4	**34**	**272**
1945	772	772	776	781	800	800	802	807	831	825	810	799	32	30	25	1	7	22	33	1	1	1	5	4	1	1	**14**	0	2	5	24	-6	-15	-11	6	6	6	6	4	3	3	**34**	**476**
1946	796	797	800	800	800	800	802	806	812	796	780	769	32	30	26	20	36	52	63	1	1	1	1	1	1	1	**7**	0	2	4	6	-16	-16	-11	6	6	6	6	2	2	3	**31**	**217**
1947	763	763	765	768	776	781	777	782	776	763	749	742	51	55	50	56	69	83	90	1	1	1	1	1	1	1	**7**	5	-4	5	-6	-13	-14	-7	6	5	6	4	3	3	4	**31**	**217**
1948	738	737	736	738	739	739	734	742	767	756	739	728	93	98	90	65	76	93	104	1	1	1	1	1	1	1	**7**	0	-5	8	25	-11	-17	-11	6	5	6	6	3	2	3	**31**	**217**
1949	721	715	710	709	716	727	733	742	750	732	712	699	105	99	90	82	100	120	133	1	1	1	1	1	1	1	**7**	11	6	9	8	-18	-20	-13	6	6	6	6	2	2	3	**31**	**217**
1950	691	685	678	684	704	717	725	735	752	736	717	704	115	107	97	80	96	115	128	1	1	1	1	1	1	1	**7**	13	8	10	17	-16	-19	-13	6	6	6	6	2	2	3	**31**	**217**
1951	698	747	796	800	800	800	798	794	798	783	769	759	32	34	38	34	49	63	73	1	1	1	1	1	1	1	**7**	0	-2	-4	4	-15	-14	-10	6	5	5	6	3	3	4	**32**	**224**
1952	752	750	757	782	800	800	800	820	832	832	819	808	32	32	12	0	0	13	24	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1953	800	795	793	800	800	800	802	804	813	810	796	787	32	30	28	19	22	36	45	1	1	1	2	1	1	1	**8**	0	2	2	9	-3	-14	-9	6	6	6	6	5	3	4	**36**	**288**
1954	782	778	774	776	785	796	802	818	819	804	789	779	36	30	14	13	28	43	53	1	1	3	3	1	1	1	**11**	11	6	16	1	-15	-15	-10	6	6	6	6	3	3	4	**34**	**374**
1955	773	769	767	773	779	783	779	782	788	776	764	756	49	53	50	44	56	68	76	1	1	1	1	1	1	1	**7**	4	-4	3	6	-12	-12	-8	6	5	6	6	3	3	4	**33**	**231**
1956	750	747	796	800	800	800	802	818	832	832	818	808	32	30	14	0	0	14	24	1	1	3	6	6	3	1	**21**	0	2	16	14	0	-14	-10	6	6	6	6	6	3	4	**37**	**777**
1957	800	798	793	793	799	800	800	805	826	814	800	791	32	32	27	6	18	32	41	1	1	1	4	2	1	1	**11**	1	0	5	21	-12	-14	-9	6	6	6	6	3	3	4	**34**	**374**
1958	785	781	778	783	800	800	800	821	832	832	819	808	32	32	11	0	0	13	24	1	1	3	6	6	3	1	**21**	0	0	21	11	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1959	800	794	789	793	800	800	802	800	794	782	769	763	32	30	32	38	50	63	69	1	1	1	1	1	1	1	**7**	0	2	-2	-6	-12	-13	-6	6	6	5	4	3	3	4	**31**	**217**
1960	760	757	754	755	763	768	769	775	778	767	757	751	64	63	57	54	65	75	81	1	1	1	1	1	1	1	**7**	5	1	6	3	-11	-10	-6	6	6	6	6	3	4	4	**35**	**245**
1961	748	745	745	747	749	749	742	732	725	712	700	693	83	90	100	107	120	132	139	1	1	1	1	1	1	1	**7**	0	-7	-10	-7	-13	-12	-7	6	4	4	4	3	3	4	**28**	**196**
1962	690	687	685	686	711	732	741	744	770	762	748	738	100	91	88	62	70	84	94	1	1	1	1	1	1	1	**7**	21	9	3	26	-8	-14	-10	6	6	6	6	4	3	4	**35**	**245**
1963	731	726	723	727	753	764	772	783	808	803	789	780	68	60	49	24	29	43	52	1	1	1	1	1	1	1	**7**	11	8	11	25	-5	-14	-9	6	6	6	6	5	3	4	**36**	**252**
1964	774	775	776	781	788	791	787	783	785	774	762	756	41	45	49	47	58	70	76	1	1	1	1	1	1	1	**7**	3	-4	-4	2	-11	-12	-6	6	5	5	6	3	3	4	**32**	**224**
1965	751	752	785	800	800	800	802	807	827	827	816	807	32	30	25	5	5	16	25	1	1	1	4	4	2	1	**14**	0	2	5	20	0	-11	-9	6	6	6	6	6	3	4	**37**	**518**
1966	800	800	800	800	800	800	801	797	790	775	760	750	32	31	35	42	57	72	82	1	1	1	1	1	1	1	**7**	0	1	-4	-7	-15	-15	-10	6	6	5	4	3	3	4	**31**	**217**
1967	745	742	753	769	787	800	800	817	832	832	820	808	32	32	15	0	0	12	24	1	1	2	6	6	3	1	**20**	13	0	17	15	0	-12	-12	6	6	6	6	6	3	3	**36**	**720**
1968	800	795	791	792	800	800	802	805	803	791	779	771	32	30	27	29	41	53	61	1	1	1	1	1	1	1	**7**	0	2	3	-2	-12	-12	-8	6	6	6	5	3	3	4	**33**	**231**
1969	766	766	770	800	800	800	800	823	832	832	819	808	32	32	9	0	0	13	24	1	1	4	6	6	3	1	**22**	0	0	23	9	0	-13	-11	6	6	6	6	6	3	3	**36**	**792**
1970	800	799	800	800	800	800	799	799	807	794	780	771	32	33	33	25	38	52	61	1	1	1	1	1	1	1	**7**	0	-1	0	8	-13	-14	-9	6	5	6	6	3	3	4	**33**	**231**
1971	765	765	772	788	800	800	801	800	806	797	785	777	32	31	32	26	35	47	55	1	1	1	1	1	1	1	**7**	0	1	-1	6	-9	-12	-8	6	6	5	6	4	3	4	**34**	**238**
1972	771	767	770	777	790	799	799	796	793	781	770	764	33	33	36	39	51	62	68	1	1	1	1	1	1	1	**7**	9	0	-3	-3	-12	-11	-6	6	6	5	5	3	3	4	**32**	**224**
1973	759	758	761	772	798	800	802	812	827	812	797	788	32	30	20	5	20	35	44	1	1	1	4	1	1	1	**10**	2	2	10	15	-15	-15	-9	6	6	6	6	3	3	4	**34**	**340**
1974	783	787	798	800	800	800	800	806	828	819	805	796	32	32	26	4	13	27	36	1	1	1	5	3	1	1	**13**	0	0	6	22	-9	-14	-9	6	6	6	6	4	3	4	**35**	**455**
1975	791	789	786	786	798	800	802	812	832	825	812	803	32	30	20	0	7	20	29	1	1	1	6	4	1	1	**15**	2	2	10	20	-7	-13	-9	6	6	6	6	4	3	4	**35**	**525**
1976	800	800	799	799	800	799	794	786	777	766	757	751	33	38	46	55	66	75	81	1	1	1	1	1	1	1	**7**	-1	-5	-8	-9	-11	-9	-6	5	5	4	4	3	4	4	**29**	**203**
1977	748	745	742	741	741	737	727	714	700	686	670	661	95	105	118	132	146	162	171	1	1	1	1	1	1	1	**7**	-4	-10	-13	-14	-14	-16	-9	5	4	3	3	3	2	4	**24**	**168**
1978	657	652	655	681	715	747	760	775	812	820	807	801	85	72	57	20	12	25	31	1	1	1	1	3	1	1	**9**	32	13	15	37	8	-13	-6	6	6	6	6	6	3	4	**37**	**333**
1979	797	793	790	799	800	800	802	822	832	818	803	794	32	30	10	0	14	29	38	1	1	3	6	3	1	1	**16**	0	2	20	10	-14	-15	-9	6	6	6	6	3	3	4	**34**	**544**
1980	789	788	787	800	800	800	800	817	832	832	819	808	32	32	15	0	0	13	24	1	1	2	6	6	3	1	**20**	0	0	17	15	0	-13	-11	6	6	6	6	6	3	3	**36**	**720**
1981	800	797	794	795	799	800	802	806	805	793	782	774	32	30	26	27	39	50	58	1	1	1	1	1	1	1	**7**	1	2	4	-1	-12	-11	-8	6	6	6	5	3	3	4	**33**	**231**
1982	770	775	795	800	800	800	800	820	832	832	820	808	32	32	12	0	0	12	24	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-12	-12	6	6	6	6	6	3	3	**36**	**756**
1983	800	800	800	800	800	800	800	819	832	832	832	808	32	32	13	0	0	0	24	1	1	3	6	6	6	1	**24**	0	0	19	13	0	0	-24	6	6	6	6	6	6	1	**37**	**888**
1984	800	800	800	800	800	800	797	802	814	801	786	775	32	35	30	18	31	46	57	1	1	1	2	1	1	1	**8**	0	-3	5	12	-13	-15	-11	6	5	6	6	3	3	3	**32**	**256**
1985	772	773	779	786	794	800	801	799	795	783	772	766	32	31	33	37	49	60	66	1	1	1	1	1	1	1	**7**	6	1	-2	-4	-12	-11	-6	6	6	5	5	3	3	4	**32**	**224**
1986	762	763	766	773	800	800	802	827	832	825	811	802	32	30	5	0	7	21	30	1	1	4	6	4	1	1	**18**	0	2	25	5	-7	-14	-9	6	6	6	6	4	3	4	**35**	**630**
1987	796	791	786	784	786	788	786	783	779	769	759	752	44	46	49	53	63	73	80	1	1	1	1	1	1	1	**7**	2	-2	-3	-4	-10	-10	-7	6	5	5	5	4	4	4	**33**	**231**
1988	750	748	748	754	759	761	755	746	739	727	715	707	71	77	86	93	105	117	125	1	1	1	1	1	1	1	**7**	2	-6	-9	-7	-12	-12	-8	6	4	4	4	3	3	4	**28**	**196**
1989	704	701	701	703	707	721	732	745	753	742	731	726	111	100	87	79	90	101	106	1	1	1	1	1	1	1	**7**	14	11	13	8	-11	-11	-5	6	6	6	6	3	3	5	**35**	**245**
1990	724	724	723	725	729	732	729	725	722	708	694	686	100	103	107	110	124	138	146	1	1	1	1	1	1	1	**7**	3	-3	-4	-3	-14	-14	-8	6	5	5	5	3	3	4	**31**	**217**
1991	683	679	675	673	673	682	681	697	708	698	688	681	150	151	135	124	134	144	151	1	1	1	1	1	1	1	**7**	9	-1	16	11	-10	-10	-7	6	5	6	6	4	4	4	**35**	**245**
1992	680	680	680	682	692	697	699	705	705	691	675	664	135	133	127	127	141	157	168	1	1	1	1	1	1	1	**7**	5	2	6	0	-14	-16	-11	6	6	6	6	3	2	3	**32**	**224**
1993	659	653	652	688	720	749	757	771	802	801	787	777	83	75	61	30	31	45	55	1	1	1	1	1	1	1	**7**	29	8	14	31	-1	-14	-10	6	6	6	6	5	3	4	**36**	**252**
1994	771	766	761	761	764	767	764	767	766	755	745	739	65	68	65	66	77	87	93	1	1	1	1	1	1	1	**7**	3	-3	3	-1	-11	-10	-6	6	5	6	5	3	4	4	**33**	**231**
																							73 - year Average:				**10**											**73 - year Average:**				**33**	**348.3**
																																						1929 - '34 Average:					**219.3**

STUDY: 1995C06F-SWRCB-492 DWRSIM: recirc818-f, 17 Jun 97
CP # 20, LAKE McCLURE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-492/20/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 867'

Difference from Maximum Reservoir Elevation [DFMRE]

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	DFMRE APR	DFMRE MAY	DFMRE JUN	DFMRE JUL	DFMRE AUG	DFMRE SEP
1922	679	679	695	711	759	779	789	845	867	860	846	836	88	78	22	0	7	21	31
1923	808	808	808	808	808	812	825	851	856	846	832	821	55	42	16	11	21	35	46
1924	808	808	808	808	808	807	808	809	796	779	765	755	60	59	58	71	88	102	112
1925	751	757	762	767	791	800	818	839	844	831	814	802	67	49	28	23	36	53	65
1926	801	800	801	803	808	812	831	826	825	821	813	805	55	36	41	42	46	54	62
1927	801	801	805	806	808	815	817	843	853	848	844	840	52	50	24	14	19	23	27
1928	808	808	808	808	808	809	808	821	819	812	808	805	58	59	46	48	55	59	62
1929	803	802	801	801	803	805	806	809	809	811	814	807	62	61	58	58	56	53	60
1930	804	803	803	803	802	798	801	801	806	809	812	810	69	66	66	61	58	55	57
1931	808	808	808	808	808	808	808	806	794	776	762	752	59	59	61	73	91	105	115
1932	751	751	770	782	808	817	826	846	864	854	839	829	50	41	21	3	13	28	38
1933	808	807	806	808	808	811	813	816	830	817	802	794	56	54	51	37	50	65	73
1934	789	788	792	798	805	813	819	811	801	784	771	761	54	48	56	66	83	96	106
1935	757	762	766	784	796	806	840	859	867	854	839	828	61	27	8	0	13	28	39
1936	808	808	808	808	808	820	840	856	861	849	834	823	47	27	11	6	18	33	44
1937	808	808	808	808	808	820	834	859	867	853	838	827	47	33	8	0	14	29	40
1938	808	808	808	808	808	820	840	859	867	867	855	840	47	27	8	0	0	12	27
1939	808	808	808	808	808	816	831	832	821	803	787	776	51	36	35	46	64	80	91
1940	777	778	779	805	808	820	837	859	861	845	829	816	47	30	8	6	22	38	51
1941	808	808	808	808	808	820	834	859	867	863	850	840	47	33	8	0	4	17	27
1942	808	808	808	808	808	820	838	859	867	860	851	840	47	29	8	0	7	16	27
1943	808	808	808	808	808	820	840	859	864	853	838	828	47	27	8	3	14	29	39
1944	808	808	808	808	808	817	815	838	840	827	810	796	50	52	29	27	40	57	71
1945	794	800	806	808	808	820	833	856	867	856	842	831	47	34	11	0	11	25	36
1946	808	808	808	808	808	818	837	859	857	842	826	813	49	30	8	10	25	41	54
1947	808	808	808	808	808	815	823	836	829	813	798	790	52	44	31	38	54	69	77
1948	788	789	790	792	793	792	796	818	835	820	802	788	75	71	49	32	47	65	79
1949	784	783	784	785	789	798	807	828	826	806	786	771	69	60	39	41	61	81	96
1950	766	765	765	773	786	789	805	823	824	804	784	768	78	62	44	43	63	83	99
1951	764	808	808	808	808	819	827	837	834	816	796	781	48	40	30	33	51	71	86
1952	777	778	791	808	808	820	840	859	867	864	852	840	47	27	8	0	3	15	27
1953	808	808	808	808	808	809	815	816	823	809	790	774	58	52	51	44	58	77	93
1954	771	771	771	774	784	797	814	831	824	803	783	767	70	53	36	43	64	84	100
1955	763	762	765	771	775	777	776	798	807	791	774	764	90	91	69	60	76	93	103
1956	759	759	808	808	808	819	832	859	867	863	850	840	48	35	8	0	4	17	27
1957	808	808	808	808	808	813	813	828	837	821	803	789	54	54	39	30	46	64	78
1958	785	786	790	797	808	820	840	859	867	862	850	840	47	27	8	0	5	17	27
1959	808	808	808	808	808	813	823	825	816	797	780	773	54	44	42	51	70	87	94
1960	771	770	769	770	782	790	804	817	814	799	785	775	77	63	50	53	68	82	92
1961	771	772	774	774	777	778	783	783	775	757	740	728	89	84	84	92	110	127	139
1962	727	727	729	732	774	784	808	822	835	822	804	790	83	59	45	32	45	63	77
1963	786	786	786	795	808	810	819	841	854	844	829	817	57	48	26	13	23	38	50
1964	808	808	808	808	808	808	809	816	813	797	780	771	59	58	51	54	70	87	96
1965	765	769	808	808	808	815	831	854	867	861	850	840	52	36	13	0	6	17	27
1966	808	808	808	808	808	814	827	836	824	801	780	768	53	40	31	43	66	87	99
1967	763	766	791	803	808	820	840	859	867	867	856	840	47	27	8	0	0	11	27
1968	808	808	808	808	808	812	817	821	811	793	776	766	55	50	46	56	74	91	101
1969	761	766	774	808	808	820	840	859	867	867	854	840	47	27	8	0	0	13	27
1970	808	808	808	808	808	820	821	837	837	820	802	788	47	46	30	30	47	65	79
1971	785	788	798	806	808	812	813	824	834	819	801	788	55	54	43	33	48	66	79
1972	783	784	791	796	802	811	812	824	825	808	794	786	56	55	43	42	59	73	81
1973	784	786	792	805	808	820	828	858	867	852	838	828	47	39	9	0	15	29	39
1974	808	808	808	808	808	820	833	859	867	854	839	829	47	34	8	0	13	28	38
1975	808	808	808	808	808	820	823	855	867	856	842	832	47	44	12	0	11	25	35
1976	808	808	808	808	808	809	808	809	798	781	767	759	58	59	58	69	86	100	108
1977	757	756	754	754	754	749	739	724	713	683	652	628	118	128	143	154	184	215	239
1978	626	626	642	693	741	782	815	859	867	867	856	840	85	52	8	0	0	11	27
1979	808	808	808	808	808	820	828	859	863	849	834	823	47	39	8	4	18	33	44
1980	808	808	808	808	808	820	835	859	867	867	855	840	47	32	8	0	0	12	27
1981	808	807	807	808	808	813	823	835	831	816	802	794	54	44	32	36	51	65	73
1982	792	800	808	808	808	820	840	859	867	865	854	840	47	27	8	0	2	13	27
1983	808	808	808	808	808	820	836	859	867	867	864	840	47	31	8	0	0	3	27
1984	808	808	808	808	808	820	827	850	848	832	813	800	47	40	17	19	35	54	67
1985	799	802	806	808	808	814	828	840	834	820	806	797	53	39	27	33	47	61	70
1986	796	798	804	808	808	820	839	859	867	855	841	830	47	28	8	0	12	26	37
1987	808	807	807	807	808	810	818	821	811	795	782	773	57	49	46	56	72	85	94
1988	771	773	775	780	784	790	796	799	792	775	761	751	77	71	68	75	92	106	116
1989	748	748	750	751	756	773	794	803	800	784	770	761	94	73	64	67	83	97	106
1990	763	763	764	766	770	777	787	784	775	759	741	729	90	80	83	92	108	126	138
1991	727	726	726	725	725	746	752	772	787	773	760	748	121	115	95	80	94	107	119
1992	747	748	750	752	766	772	789	791	779	766	751	739	95	78	76	88	101	116	128
1993	737	738	744	790	808	820	837	859	867	861	848	837	47	30	8	0	6	19	30
1994	808	807	808	808	808	810	814	820	812	796	783	773	57	53	47	55	71	84	94

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Fluctuation MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	1	1	1	6	4	1	1	**15**	20	10	56	22	-7	-14	-10	6	6	6	6	4	3	4	**35**	**525**
1923	1	1	2	3	1	1	1	**10**	4	13	26	5	-10	-14	-11	6	6	6	6	4	3	3	**34**	**340**
1924	1	1	1	1	1	1	1	**7**	-1	1	1	-13	-17	-14	-10	5	6	6	3	2	3	4	**29**	**203**
1925	1	1	1	1	1	1	1	**7**	9	18	21	5	-13	-17	-12	6	6	6	6	3	2	3	**32**	**224**
1926	1	1	1	1	1	1	1	**7**	4	19	-5	-1	-4	-8	-8	6	6	5	5	5	4	4	**35**	**245**
1927	1	1	1	3	2	1	1	**10**	7	2	26	10	-5	-4	-4	6	6	6	6	5	5	5	**39**	**390**
1928	1	1	1	1	1	1	1	**7**	1	-1	13	-2	-7	-4	-3	6	5	6	5	4	5	5	**36**	**252**
1929	1	1	1	1	1	1	1	**7**	2	1	3	0	2	3	-7	6	6	6	6	6	6	4	**40**	**280**
1930	1	1	1	1	1	1	1	**7**	-4	3	0	5	3	3	-2	5	6	6	6	6	6	5	**40**	**280**
1931	1	1	1	1	1	1	1	**7**	0	0	-2	-12	-18	-14	-10	6	6	5	3	2	3	4	**29**	**203**
1932	1	1	1	5	3	1	1	**13**	9	9	20	18	-10	-15	-10	6	6	6	6	4	3	4	**35**	**455**
1933	1	1	1	1	1	1	1	**7**	3	2	3	14	-13	-15	-8	6	6	6	6	3	3	4	**34**	**238**
1934	1	1	1	1	1	1	1	**7**	8	6	-8	-10	-17	-13	-10	6	6	4	4	2	3	4	**29**	**203**
1935	1	1	4	6	3	1	1	**17**	10	34	19	8	-13	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1936	1	1	3	4	2	1	1	**13**	12	20	16	5	-12	-15	-11	6	6	6	6	3	3	3	**33**	**429**
1937	1	1	4	6	3	1	1	**17**	12	14	25	8	-14	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1938	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1939	1	1	1	1	1	1	1	**7**	8	15	1	-11	-18	-16	-11	6	6	6	3	2	2	3	**28**	**196**
1940	1	1	4	4	1	1	1	**13**	12	17	22	2	-16	-16	-13	6	6	6	6	2	2	3	**31**	**403**
1941	1	1	4	6	5	2	1	**20**	12	14	25	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1942	1	1	4	6	4	2	1	**19**	12	18	21	8	-7	-9	-11	6	6	6	6	4	4	3	**35**	**665**
1943	1	1	4	5	3	1	1	**16**	12	20	19	5	-11	-15	-10	6	6	6	6	3	3	4	**34**	**544**
1944	1	1	1	1	1	1	1	**7**	9	-2	23	2	-13	-17	-14	6	5	6	6	3	2	3	**31**	**217**
1945	1	1	3	6	3	1	1	**16**	12	13	23	11	-11	-14	-11	6	6	6	6	3	3	3	**33**	**528**
1946	1	1	4	3	1	1	1	**12**	10	19	22	-2	-15	-16	-13	6	6	6	5	3	2	3	**31**	**372**
1947	1	1	1	1	1	1	1	**7**	7	8	13	-7	-16	-15	-8	6	6	6	4	2	3	4	**31**	**217**
1948	1	1	1	1	1	1	1	**7**	-1	4	22	17	-15	-18	-14	5	6	6	6	3	2	3	**31**	**217**
1949	1	1	1	1	1	1	1	**7**	9	9	21	-2	-20	-20	-15	6	6	6	5	2	2	3	**30**	**210**
1950	1	1	1	1	1	1	1	**7**	3	16	18	1	-20	-20	-16	6	6	6	6	2	2	2	**30**	**210**
1951	1	1	1	1	1	1	1	**7**	11	8	10	-3	-18	-20	-15	6	6	6	5	2	2	3	**30**	**210**
1952	1	1	4	6	5	2	1	**20**	12	20	19	8	-3	-12	-12	6	6	6	6	5	3	3	**35**	**700**
1953	1	1	1	1	1	1	1	**7**	1	6	1	7	-14	-19	-16	6	6	6	6	3	2	2	**31**	**217**
1954	1	1	1	1	1	1	1	**7**	13	17	17	-7	-21	-20	-16	6	6	6	4	1	2	2	**27**	**189**
1955	1	1	1	1	1	1	1	**7**	2	-1	22	9	-16	-17	-10	6	5	6	6	2	2	4	**31**	**217**
1956	1	1	4	6	5	2	1	**20**	11	13	27	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1957	1	1	1	1	1	1	1	**7**	5	0	15	9	-16	-18	-14	6	6	6	6	2	2	3	**31**	**217**
1958	1	1	4	6	4	2	1	**19**	12	20	19	8	-5	-12	-10	6	6	6	6	5	3	4	**36**	**684**
1959	1	1	1	1	1	1	1	**7**	5	10	2	-9	-19	-17	-7	6	6	6	4	2	2	4	**30**	**210**
1960	1	1	1	1	1	1	1	**7**	8	14	13	-3	-15	-14	-10	6	6	6	5	3	3	4	**33**	**231**
1961	1	1	1	1	1	1	1	**7**	1	5	0	-8	-18	-17	-12	6	6	6	4	2	2	3	**29**	**203**
1962	1	1	1	1	1	1	1	**7**	10	24	14	13	-13	-18	-14	6	6	6	6	3	2	3	**32**	**224**
1963	1	1	1	3	1	1	1	**9**	2	9	22	13	-10	-15	-12	6	6	6	6	4	3	3	**34**	**306**
1964	1	1	1	1	1	1	1	**7**	0	1	7	-3	-16	-17	-9	6	6	6	5	2	2	4	**31**	**217**
1965	1	1	3	6	4	2	1	**18**	7	16	23	13	-6	-11	-10	6	6	6	6	4	3	4	**35**	**630**
1966	1	1	1	1	1	1	1	**7**	6	13	9	-12	-23	-21	-12	6	6	6	3	1	1	3	**26**	**182**
1967	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1968	1	1	1	1	1	1	1	**7**	4	5	4	-10	-18	-17	-10	6	6	6	4	2	2	4	**30**	**210**
1969	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-13	-14	6	6	6	6	6	3	3	**36**	**792**
1970	1	1	1	1	1	1	1	**7**	12	1	16	0	-17	-18	-14	6	6	6	6	2	2	3	**31**	**217**
1971	1	1	1	1	1	1	1	**7**	4	1	11	10	-15	-18	-13	6	6	6	6	3	2	3	**32**	**224**
1972	1	1	1	1	1	1	1	**7**	9	1	12	1	-17	-14	-8	6	6	6	6	2	3	4	**33**	**231**
1973	1	1	4	6	2	1	1	**16**	12	8	30	9	-15	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1974	1	1	4	6	3	1	1	**17**	12	13	26	8	-13	-15	-10	6	6	6	6	3	3	4	**34**	**578**
1975	1	1	3	6	3	1	1	**16**	12	3	32	12	-11	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1976	1	1	1	1	1	1	1	**7**	1	-1	1	-11	-17	-14	-8	6	5	6	3	2	3	4	**29**	**203**
1977	1	1	1	1	1	1	1	**7**	-5	-10	-15	-11	-30	-31	-24	5	4	3	3	1	1	1	**18**	**126**
1978	1	1	4	6	6	3	1	**22**	41	33	44	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1979	1	1	4	5	2	1	1	**15**	12	8	31	4	-14	-15	-11	6	6	6	6	3	3	3	**33**	**495**
1980	1	1	4	6	6	3	1	**22**	12	15	24	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1981	1	1	1	1	1	1	1	**7**	5	10	12	-4	-15	-14	-8	6	6	6	5	3	3	4	**33**	**231**
1982	1	1	4	6	5	3	1	**21**	12	20	19	8	-2	-11	-14	6	6	6	6	5	3	3	**35**	**735**
1983	1	1	4	6	6	5	1	**24**	12	16	23	8	0	-3	-24	6	6	6	6	6	5	1	**36**	**864**
1984	1	1	2	2	1	1	1	**9**	12	7	23	-2	-16	-19	-13	6	6	6	5	2	2	3	**30**	**270**
1985	1	1	1	1	1	1	1	**7**	6	14	12	-6	-14	-14	-9	6	6	6	4	3	3	4	**32**	**224**
1986	1	1	4	6	3	1	1	**17**	12	19	20	8	-12	-14	-11	6	6	6	6	3	3	3	**33**	**561**
1987	1	1	1	1	1	1	1	**7**	2	8	3	-10	-16	-13	-9	6	6	6	4	2	3	4	**31**	**217**
1988	1	1	1	1	1	1	1	**7**	6	6	3	-7	-17	-14	-10	6	6	6	4	2	3	4	**31**	**217**
1989	1	1	1	1	1	1	1	**7**	17	21	9	-3	-16	-14	-9	6	6	6	5	2	3	4	**32**	**224**
1990	1	1	1	1	1	1	1	**7**	7	10	-3	-9	-16	-18	-12	6	6	5	4	2	2	3	**28**	**196**
1991	1	1	1	1	1	1	1	**7**	21	6	20	15	-14	-13	-12	6	6	6	6	3	3	3	**33**	**231**
1992	1	1	1	1	1	1	1	**7**	6	17	2	-12	-13	-15	-12	6	6	6	3	3	3	3	**30**	**210**
1993	1	1	4	6	4	2	1	**19**	12	17	22	8	-6	-13	-11	6	6	6	6	4	3	3	**34**	**646**
1994	1	1	1	1	1	1	1	**7**	2	4	6	-8	-16	-13	-10	6	6	6	4	2	3	4	**31**	**217**
73 - year Average:								**11**														**73 - year Average:**	**32**	**377.8**
																							1929 - '34 Average:	**276.5**

STUDY: 1995C06F-SWRCB-492 DWRSIM: recirc818-f, 17 Jun 97
CP # 18, CVP MILLERTON LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-492/18/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 576'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	491	505	527	547	549	566	559	576	576	562	518	491	10	17	0	0	14	58	85	3	2	6	6	3	1	1	**22**	17	-7	17	0	-14	-44	-27	6	4	6	6	3	1	1	**27**	**594**
1923	485	495	520	537	531	517	541	549	540	526	463	470	59	35	27	36	50	113	106	1	1	1	1	1	1	1	**7**	-14	24	8	-9	-14	-63	7	3	6	6	4	3	1	6	**29**	**203**
1924	483	494	508	522	516	503	506	511	505	478	464	468	73	70	65	71	98	112	108	1	1	1	1	1	1	1	**7**	-13	3	5	-6	-27	-14	4	3	6	6	4	1	3	6	**29**	**203**
1925	465	474	490	503	508	493	514	532	522	499	483	475	83	62	44	54	77	93	101	1	1	1	1	1	1	1	**7**	-15	21	18	-10	-23	-16	-8	3	6	6	4	1	2	4	**26**	**182**
1926	477	490	505	519	522	508	549	563	535	494	473	485	68	27	13	41	82	103	91	1	1	3	1	1	1	1	**9**	-14	41	14	-28	-41	-21	12	3	6	6	1	1	1	6	**24**	**216**
1927	491	506	528	545	560	561	560	569	576	543	492	482	15	16	7	0	33	84	94	2	2	4	6	1	1	1	**17**	1	-1	9	7	-33	-51	-10	6	5	6	6	1	1	4	**29**	**493**
1928	482	503	525	542	540	543	551	554	522	477	465	477	33	25	22	54	99	111	99	1	1	1	1	1	1	1	**7**	3	8	3	-32	-45	-12	12	6	6	6	1	1	3	6	**29**	**203**
1929	485	499	513	523	517	513	531	531	527	506	466	477	63	45	45	49	70	110	99	1	1	1	1	1	1	1	**7**	-4	18	0	-4	-21	-40	11	5	6	6	5	1	1	6	**30**	**210**
1930	480	495	507	518	514	510	525	534	518	489	466	482	66	51	42	58	87	110	94	1	1	1	1	1	1	1	**7**	-4	15	9	-16	-29	-23	16	5	6	6	2	1	1	6	**27**	**189**
1931	487	501	513	522	517	508	510	516	508	482	466	466	68	66	60	68	94	110	110	1	1	1	1	1	1	1	**7**	-9	2	6	-8	-26	-16	0	4	6	6	4	1	2	6	**29**	**203**
1932	467	476	503	520	543	531	524	532	552	518	492	477	45	52	44	24	58	84	99	1	1	1	1	1	1	1	**7**	-12	-7	8	20	-34	-26	-15	3	4	6	6	1	1	3	**24**	**168**
1933	477	489	501	516	512	501	520	537	526	509	466	467	75	56	39	50	67	110	109	1	1	1	1	1	1	1	**7**	-11	19	17	-11	-17	-43	1	3	6	6	3	2	1	6	**27**	**189**
1934	470	480	500	517	511	503	516	527	523	498	477	486	73	60	49	53	78	99	90	1	1	1	1	1	1	1	**7**	-8	13	11	-4	-25	-21	9	4	6	6	5	1	1	6	**29**	**203**
1935	490	500	515	535	532	509	542	563	574	538	469	479	67	34	13	2	38	107	97	1	1	3	5	1	1	1	**13**	-23	33	21	11	-36	-69	10	1	6	6	6	1	1	6	**27**	**351**
1936	486	502	518	533	560	558	564	576	563	521	472	478	18	12	0	13	55	104	98	2	3	6	3	1	1	1	**17**	-2	6	12	-13	-42	-49	6	5	6	6	3	1	1	6	**28**	**476**
1937	488	497	516	535	560	570	576	576	576	538	484	469	6	0	0	0	38	92	107	4	6	6	6	1	1	1	**25**	10	6	0	0	-38	-54	-15	6	6	6	6	1	1	3	**29**	**725**
1938	472	486	533	560	560	542	529	467	572	576	532	520	34	47	109	4	0	44	56	1	1	1	5	6	1	1	**16**	-18	-13	-62	105	4	-44	-12	2	3	1	6	6	1	3	**22**	**352**
1939	513	514	529	538	532	524	542	560	539	504	473	495	52	34	16	37	72	103	81	1	1	2	1	1	1	1	**8**	-8	18	18	-21	-35	-31	22	4	6	6	1	1	1	6	**25**	**200**
1940	495	504	517	550	550	552	548	561	553	512	466	471	24	28	15	23	64	110	105	1	1	2	1	1	1	1	**8**	2	-4	13	-8	-41	-46	5	6	5	6	4	1	1	6	**29**	**232**
1941	481	494	528	556	560	573	573	569	576	569	527	506	3	3	7	0	7	49	70	5	5	4	6	4	1	1	**26**	13	0	-4	7	-7	-42	-21	6	6	5	6	4	1	1	**29**	**754**
1942	497	507	532	552	549	553	554	562	576	555	509	477	23	22	14	0	21	67	99	1	1	3	6	1	1	1	**14**	4	1	8	14	-21	-46	-32	6	6	6	6	1	1	1	**27**	**378**
1943	477	494	518	557	556	576	574	576	562	526	491	476	0	2	0	14	50	85	100	6	5	6	3	1	1	1	**23**	20	-2	2	-14	-36	-35	-15	6	5	6	3	1	1	3	**25**	**575**
1944	479	491	508	521	524	507	516	517	501	494	490	480	69	60	59	75	82	86	96	1	1	1	1	1	1	1	**7**	-17	9	1	-16	-7	-4	-10	2	6	6	2	4	5	4	**29**	**203**
1945	481	503	523	533	560	568	565	571	576	554	511	491	8	11	5	0	22	65	85	4	3	4	6	1	1	1	**20**	8	-3	6	5	-22	-43	-20	6	5	6	6	1	1	2	**27**	**540**
1946	485	502	531	548	528	524	536	559	546	510	478	480	52	40	17	30	66	98	96	1	1	2	1	1	1	1	**8**	-4	12	23	-13	-36	-32	2	5	6	6	3	1	1	6	**28**	**224**
1947	481	500	526	543	541	530	545	556	535	497	473	481	46	31	20	41	79	103	95	1	1	1	1	1	1	1	**7**	-11	15	11	-21	-38	-24	8	3	6	6	1	1	1	6	**24**	**168**
1948	488	503	518	529	523	530	556	551	541	483	480	484	46	20	25	35	93	96	92	1	1	1	1	1	1	1	**7**	7	26	-5	-10	-58	-3	4	6	6	5	4	1	5	6	**33**	**231**
1949	490	500	513	526	524	511	522	538	521	482	477	489	65	54	38	55	94	99	87	1	1	1	1	1	1	1	**7**	-13	11	16	-17	-39	-5	12	3	6	6	2	1	5	6	**29**	**203**
1950	492	503	519	536	541	524	534	551	539	506	476	482	52	42	25	37	70	100	94	1	1	1	1	1	1	1	**7**	-17	10	17	-12	-33	-30	6	2	6	6	3	1	1	6	**25**	**175**
1951	490	533	560	560	554	546	552	546	514	463	463	481	30	24	30	62	113	113	95	1	1	1	1	1	1	1	**7**	-8	6	-6	-32	-51	0	18	4	6	4	1	1	6	6	**28**	**196**
1952	488	500	530	559	560	567	559	526	576	571	525	508	9	17	50	0	5	51	68	4	2	1	6	4	1	1	**19**	7	-8	-33	50	-5	-46	-17	6	4	1	6	5	1	2	**25**	**475**
1953	501	514	533	549	538	532	541	536	518	497	478	481	44	35	40	58	79	98	95	1	1	1	1	1	1	1	**7**	-6	9	-5	-18	-21	-19	3	4	6	5	2	1	2	6	**26**	**182**
1954	488	497	514	532	532	527	537	560	544	507	465	483	49	39	16	32	69	111	93	1	1	2	1	1	1	1	**8**	-5	10	23	-16	-37	-42	18	5	6	6	2	1	1	6	**27**	**216**
1955	489	502	522	540	537	520	534	545	537	504	481	487	56	42	31	39	72	95	89	1	1	1	1	1	1	1	**7**	-17	14	11	-8	-33	-23	6	2	6	6	4	1	1	6	**26**	**182**
1956	491	499	560	560	560	576	576	561	576	566	524	505	0	0	15	0	10	52	71	6	6	2	6	3	1	1	**25**	16	0	-15	15	-10	-42	-19	6	6	3	6	4	1	2	**28**	**700**
1957	496	504	517	527	525	529	546	561	562	526	471	481	47	30	15	14	50	105	95	1	1	2	3	1	1	1	**10**	4	17	15	1	-36	-55	10	6	6	6	6	1	1	6	**32**	**320**
1958	488	501	525	545	554	565	576	576	576	557	516	498	11	0	0	0	19	60	78	3	6	6	6	2	1	1	**25**	11	11	0	0	-19	-41	-18	6	6	6	6	2	1	2	**29**	**725**
1959	492	507	523	530	536	528	550	566	551	500	470	475	48	26	10	25	76	106	101	1	1	3	1	1	1	1	**9**	-8	22	16	-15	-51	-30	5	4	6	6	3	1	1	6	**27**	**243**
1960	474	475	480	490	503	498	515	525	509	496	483	481	78	61	51	67	80	93	95	1	1	1	1	1	1	1	**7**	-5	17	10	-16	-13	-13	-2	5	6	6	2	3	3	5	**30**	**210**
1961	481	491	505	511	510	511	526	539	527	486	467	467	65	50	37	49	90	109	109	1	1	1	1	1	1	1	**7**	1	15	13	-12	-41	-19	0	6	6	6	3	1	2	6	**30**	**210**
1962	468	471	484	492	538	529	527	555	569	540	489	476	47	49	21	7	36	87	100	1	1	1	4	1	1	1	**10**	-9	-2	28	14	-29	-51	-13	4	5	6	6	1	1	3	**26**	**260**
1963	479	491	501	518	558	558	576	576	576	564	520	503	18	0	0	0	12	56	73	2	6	6	6	3	1	1	**25**	0	18	0	0	-12	-44	-17	6	6	6	6	3	1	2	**30**	**750**
1964	490	517	542	551	547	544	553	561	551	508	476	484	32	23	15	25	68	100	92	1	1	2	1	1	1	1	**8**	-3	9	8	-10	-43	-32	8	5	6	6	4	1	1	6	**29**	**232**
1965	481	496	529	560	556	554	559	551	561	540	512	496	22	17	25	15	36	64	80	1	2	1	2	1	1	1	**9**	-2	5	-8	10	-21	-28	-16	5	6	4	6	1	1	2	**25**	**225**
1966	487	513	546	558	541	526	545	564	550	506	486	486	50	31	12	26	70	90	90	1	1	3	1	1	1	1	**9**	-15	19	19	-14	-44	-20	0	3	6	6	3	1	2	6	**27**	**243**
1967	490	502	539	559	560	571	565	514	570	576	539	522	5	11	62	6	0	37	54	4	3	1	4	6	1	1	**20**	11	-6	-51	56	6	-37	-17	6	4	1	6	6	1	2	**26**	**520**
1968	515	521	539	545	545	539	550	554	539	506	478	482	37	26	22	37	70	98	94	1	1	1	1	1	1	1	**7**	-6	11	4	-15	-33	-28	4	4	6	6	3	1	1	6	**27**	**189**
1969	480	496	513	560	524	521	467	469	576	576	538	513	55	109	107	0	0	38	63	1	1	1	6	6	1	1	**17**	-3	-54	2	107	0	-38	-25	5	1	6	6	6	1	1	**26**	**442**
1970	498	516	540	560	560	554	554	555	544	517	476	477	22	22	21	32	59	100	99	1	1	1	1	1	1	1	**7**	-6	0	1	-11	-27	-41	1	4	6	6	3	1	1	6	**27**	**189**
1971	482	502	534	551	548	533	541	544	520	498	491	478	43	35	32	56	78	85	98	1	1	1	1	1	1	1	**7**	-15	8	3	-24	-22	-7	-13	3	6	6	1	1	4	3	**24**	**168**
1972	479	491	519	536	532	524	537	543	540	497	481	481	52	39	33	36	79	95	95	1	1	1	1	1	1	1	**7**	-8	13	6	-3	-43	-16	0	4	6	6	5	1	2	6	**30**	**210**
1973	489	501	523	545	560	560	550	575	576	542	483	477	16	26	1	0	34	93	99	2	1	5	6	1	1	1	**17**	0	-10	25	1	-34	-59	-6	6	4	6	6	1	1	4	**28**	**476**
1974	487	510	545	560	544	550	559	570	573	537	490	473	26	17	6	3	39	86	103	1	2	4	5	1	1	1	**15**	6	9	11	3	-36	-47	-17	6	6	6	6	1	1	2	**28**	**420**
1975	476	494	515	528	535	526	533	536	567	525	476	482	50	43	40	9	51	100	94	1	1	1	4	1	1	1	**10**	-9	7	3	31	-42	-49	6	4	6	6	6	1	1	6	**30**	**300**
1976	489	511	531	541	539	544	547	542	519	492	479	494	32	29	34	57	84	97	82	1	1	1	1	1	1	1	**7**	5	3	-5	-23	-27	-13	15	6	6	5	1	1	3	6	**28**	**196**
1977	490	496	500	503	501	464	465	464	462	466	461	462	112	111	112	114	110	115	114	1	1	1	1	1	1	1	**7**	-37	1	-1	-2	4	-5	1	1	6	5	5	6	5	6	**34**	**238**
1978	462	462	484	532	560	552	510	498	576	576	548	539	24	66	78	0	0	28	37	1	1	1	6	6	1	1	**17**	-8	-42	-12	78	0	-28	-9	4	1	3	6	6	1	4	**25**	**425**
1979	528	535	549	560	555	562	560	571	563	521	477	482	14	16	5	13	55	99	94	3	2	4	3	1	1	1	**15**	7	-2	11	-8	-42	-44	5	6	5	6	4	1	1	6	**29**	**435**
1980	489	488	508	560	560	558	566	550	576	576	542	513	18	10	26	0	0	34	63	2	3	1	6	6	1	1	**20**	-2	8	-16	26	0	-34	-29	5	6	2	6	6	1	1	**27**	**540**
1981	503	512	520	528	531	533	547	553	543	510	477	488	43	29	23	33	66	99	88	1	1	1	1	1	1	1	**7**	2	14	6	-10	-33	-33	11	6	6	6	4	1	1	6	**30**	**210**
1982	491	504	536	560	560	576	546	561	576	576	546	541	0	30	15	0	0	30	35	6	1	2	6	6	1	1	**23**	16	-30	15	15	0	-30	-5	6	1	6	6	6	1	5	**31**	**713**
1983	531	556	560	560	513	484	467	467	483	564	572	576	92	109	109	93	12	4	0	1	1	1	1	3	5	6	**18**	-29	-17	0	16	81	8	4	1	2	6	6	6	6	6	**33**	**594**
1984	560	560	560	560	560	568	570	570	557	530	487	483	8	6	6	19	46	89	93	4	4	4	2	1	1	1	**17**	8	2	0	-13	-27	-43	-4	6	6	6	3	1	1	5	**28**	**476**
1985	482	492	511	536	533	526	551	563	539	501	483	483	50	25	13	37	75	93	93	1	1	3	1	1	1	1	**9**	-7	25	12	-24	-38	-18	0	4	6	6	1	1	2	6	**26**	**234**
1986	490	508	534	554	550	552	574	565	576	558	503	479	24	2	11	0	18	73	97	1	5	3	6	2	1	1	**19**	2	22	-9	11	-18	-55	-24	6	6	4	6	2	1	1	**26**	**494**
1987	480	489	492	495	496	511	530	551	539	503	473	480	65	46	25	37	73	103	96	1	1	1	1	1	1	1	**7**	15	19	21	-12	-36	-30	7	6	6	6	3	1	1	6	**29**	**203**
1988	482	495	507	526	516	527	539	547	527	498	483	486	49	37	29	49	78	93	90	1	1	1	1	1	1	1	**7**	11	12	8	-20	-29	-15	3	6	6	6	2	1	3	6	**30**	**210**
1989	486	497	505	515	512	516	537	552	540	502	478	484	60	39	24	36	74	98	92	1	1	1	1	1	1	1	**7**	4	21	15	-12	-38	-24	6	6	6	6	3	1	1	6	**29**	**203**
1990	489	495	502	510	510	517	532	544	525	508	479	483	59	44	32	51	68	97	93	1	1	1	1	1	1	1	**7**	7	15	12	-19	-17	-29	4	6	6	6	2	2	1	6	**29**	**203**
1991	480	486	492	499	493	489	501	508	512	506	480	486	87	75	68	64	70	96	90	1	1	1	1	1	1	1	**7**	-4	12	7	4	-6	-26	6	5	6	6	6	4	1	6	**34**	**238**
1992	485	490	494	498	499	490	493	494	480	470	465	466	86	83	82	96	106	111	110	1	1	1	1	1	1	1	**7**	-9	3	1	-14	-10	-5	1	4	6	6	3	4	5	6	**34**	**238**
1993	467	466	476	536	543	556	558	576	576	571	522	499	20	18	0	0	5	54	77	1	2	6	6	4	1	1	**21**	13	2	18	0	-5	-49	-23	6	6	6	6	5	1	1	**31**	**651**
1994	490	497	507	512	508	520	534	548	528	498	478	484	56	42	28	48	78	98	92	1	1	1	1	1	1	1	**7**	12	14	14	-20	-30	-20	6	6	6	6	2	1	2	6	**29**	**203**
																								73 - year Average:			**12**												**73 - year Average:**			**28**	**329.2**
																																									1929 - '34 Average:		**193.7**

STUDY: 1995C06F-SWRCB-492 DWRSIM: recirc818-f, 17 Jun 97
CP # 12, SWP SAN LUIS RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-492/12/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 544'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	413	432	471	523	544	544	532	529	523	458	394	386	0	12	15	21	86	150	158	6	3	2	1	1	1	1	**15**	0	-12	-3	-6	-65	-64	-8	6	3	5	4	1	1	4	**24**	**360**
1923	423	463	487	527	538	536	522	493	443	435	402	392	8	22	51	101	109	142	152	4	1	1	1	1	1	1	**10**	-2	-14	-29	-50	-8	-33	-10	5	3	1	1	4	1	4	**19**	**190**
1924	404	409	416	467	500	500	493	472	446	411	383	388	44	51	72	98	133	161	156	1	1	1	1	1	1	1	**7**	0	-7	-21	-26	-35	-28	5	6	4	1	1	1	1	6	**20**	**140**
1925	396	410	456	486	538	544	535	511	471	446	390	391	0	9	33	73	98	154	153	6	4	1	1	1	1	1	**15**	6	-9	-24	-40	-25	-56	1	6	4	1	1	1	1	6	**20**	**300**
1926	402	413	438	500	542	544	537	517	485	464	395	390	0	7	27	59	80	149	154	6	4	1	1	1	1	1	**15**	2	-7	-20	-32	-21	-69	-5	6	4	2	1	1	1	5	**20**	**300**
1927	403	462	504	540	544	544	536	516	469	455	395	385	0	8	28	75	89	149	159	6	4	1	1	1	1	1	**15**	0	-8	-20	-47	-14	-60	-10	6	4	2	1	3	1	4	**21**	**315**
1928	411	456	487	524	544	544	535	513	466	459	402	393	0	9	31	78	85	142	151	6	4	1	1	1	1	1	**15**	0	-9	-22	-47	-7	-57	-9	6	4	1	1	4	1	4	**21**	**315**
1929	423	447	469	516	544	544	533	518	494	459	426	421	0	11	26	50	85	118	123	6	3	1	1	1	1	1	**14**	0	-11	-15	-24	-35	-33	-5	6	3	3	1	1	1	5	**20**	**280**
1930	417	424	471	535	544	544	524	496	464	464	425	412	0	20	48	80	80	119	132	6	1	1	1	1	1	1	**12**	0	-20	-28	-32	0	-39	-13	6	2	1	1	6	1	3	**20**	**240**
1931	417	423	457	494	504	504	493	480	458	424	374	372	40	51	64	86	120	170	172	1	1	1	1	1	1	1	**7**	0	-11	-13	-22	-34	-50	-2	6	3	3	1	1	1	5	**20**	**140**
1932	383	381	454	521	535	535	526	511	489	461	416	407	9	18	33	55	83	128	137	4	2	1	1	1	1	1	**11**	0	-9	-15	-22	-28	-45	-9	6	4	3	1	1	1	4	**20**	**220**
1933	421	429	433	480	500	506	501	486	460	424	372	370	38	43	58	84	120	172	174	1	1	1	1	1	1	1	**7**	6	-5	-15	-26	-36	-52	-2	6	5	3	1	1	1	5	**22**	**154**
1934	385	381	434	497	510	510	495	473	456	434	370	359	34	49	71	88	110	174	185	1	1	1	1	1	1	1	**7**	0	-15	-22	-17	-22	-64	-11	6	3	1	2	1	1	3	**17**	**119**
1935	370	374	397	477	483	514	523	498	455	429	340	347	30	21	46	89	115	204	197	1	1	1	1	1	1	1	**7**	31	9	-25	-43	-26	-89	7	6	6	1	1	1	1	6	**22**	**154**
1936	367	380	392	463	518	539	527	501	450	427	333	341	5	17	43	94	117	211	203	4	2	1	1	1	1	1	**11**	21	-12	-26	-51	-23	-94	8	6	3	1	1	1	1	6	**19**	**209**
1937	366	391	412	482	534	543	544	527	482	431	381	374	1	0	17	62	113	163	170	5	6	2	1	1	1	1	**17**	9	1	-17	-45	-51	-50	-7	6	6	2	1	1	1	4	**21**	**357**
1938	405	460	506	542	544	544	544	544	534	494	447	467	0	0	0	10	50	97	77	6	6	6	3	1	1	1	**24**	0	0	0	-10	-40	-47	20	6	6	6	4	1	1	6	**30**	**720**
1939	504	512	515	544	544	544	524	495	464	464	425	408	0	20	49	80	80	119	136	6	1	1	1	1	1	1	**12**	0	-20	-29	-31	0	-39	-17	6	2	1	1	6	1	2	**19**	**228**
1940	415	417	411	488	530	544	536	509	454	423	372	359	0	8	35	90	121	172	185	6	4	1	1	1	1	1	**15**	14	-8	-27	-55	-31	-51	-13	6	4	1	1	1	1	3	**17**	**255**
1941	377	399	443	500	529	544	543	539	518	470	410	427	0	1	5	26	74	134	117	6	5	4	1	1	1	1	**19**	15	-1	-4	-21	-48	-60	17	6	5	5	1	1	1	6	**25**	**475**
1942	468	491	513	544	544	544	540	532	521	470	416	424	0	4	12	23	74	128	120	6	5	3	1	1	1	1	**18**	0	-4	-8	-11	-51	-54	8	6	5	4	3	1	1	6	**26**	**468**
1943	466	493	513	544	544	544	544	544	506	462	400	404	0	0	0	38	82	144	140	6	6	6	1	1	1	1	**22**	0	0	0	-38	-44	-62	4	6	6	6	1	1	1	6	**27**	**594**
1944	440	470	492	527	544	544	516	478	432	431	404	381	0	28	66	112	113	140	163	6	1	1	1	1	1	1	**12**	0	-28	-38	-46	-1	-27	-23	6	1	1	1	5	1	1	**16**	**192**
1945	384	420	457	497	539	544	522	485	439	428	382	369	0	22	59	105	116	162	175	6	1	1	1	1	1	1	**12**	5	-22	-37	-46	-11	-46	-13	6	1	1	1	3	1	3	**16**	**192**
1946	395	439	480	517	544	544	518	480	425	414	396	388	0	26	64	119	130	148	156	6	1	1	1	1	1	1	**12**	0	-26	-38	-55	-11	-18	-8	6	1	1	1	3	2	4	**18**	**216**
1947	409	435	472	513	531	541	520	488	451	440	400	381	3	24	56	93	104	144	163	5	1	1	1	1	1	1	**11**	10	-21	-32	-37	-11	-40	-19	6	1	1	1	3	1	2	**15**	**165**
1948	385	394	394	451	468	485	484	467	439	413	352	362	59	60	77	105	131	192	182	1	1	1	1	1	1	1	**7**	17	-1	-17	-28	-26	-61	10	6	5	2	1	1	1	6	**22**	**154**
1949	398	428	459	501	520	544	523	492	450	437	385	384	0	21	52	94	107	159	160	6	1	1	1	1	1	1	**12**	24	-21	-31	-42	-13	-52	-1	6	1	1	1	3	1	5	**18**	**216**
1950	406	420	432	500	541	544	525	496	456	434	387	391	0	19	48	88	110	157	153	6	2	1	1	1	1	1	**13**	3	-19	-29	-40	-22	-47	4	6	2	1	1	1	1	6	**18**	**234**
1951	413	465	504	544	544	544	522	496	437	424	400	394	0	22	48	107	120	144	150	6	1	1	1	1	1	1	**12**	0	-22	-26	-59	-13	-24	-6	6	1	1	1	3	1	4	**17**	**204**
1952	413	448	488	523	544	544	544	544	534	493	459	482	0	0	0	10	51	85	62	6	6	6	3	1	1	1	**24**	0	0	0	-10	-41	-34	23	6	6	6	4	1	1	6	**30**	**720**
1953	501	509	514	544	544	544	521	501	475	465	415	433	0	23	43	69	79	129	111	6	1	1	1	1	1	1	**12**	0	-23	-20	-26	-10	-50	18	6	1	2	1	4	1	6	**21**	**252**
1954	469	493	504	544	544	544	537	517	464	457	399	396	0	7	27	80	87	145	148	6	4	1	1	1	1	1	**15**	0	-7	-20	-53	-7	-58	-3	6	4	2	1	4	1	5	**23**	**345**
1955	421	469	505	544	544	543	522	495	463	441	389	394	1	22	49	81	103	155	150	5	1	1	1	1	1	1	**11**	-1	-21	-27	-32	-22	-52	5	5	1	1	1	1	1	6	**16**	**176**
1956	422	441	496	536	544	544	530	525	502	467	419	438	0	14	19	42	77	125	106	6	3	2	1	1	1	1	**15**	0	-14	-5	-23	-35	-48	19	6	3	5	1	1	1	6	**23**	**345**
1957	476	487	496	532	544	544	528	504	466	459	405	410	0	16	40	78	85	139	134	6	2	1	1	1	1	1	**13**	0	-16	-24	-38	-7	-54	5	6	2	1	1	4	1	6	**21**	**273**
1958	463	493	514	544	544	544	543	542	532	483	457	478	0	1	2	12	61	87	66	6	5	5	3	1	1	1	**22**	0	-1	-1	-10	-49	-26	21	6	5	5	4	1	1	6	**28**	**616**
1959	498	507	513	544	544	544	514	475	427	426	400	400	0	30	69	117	118	144	144	6	1	1	1	1	1	1	**12**	0	-30	-39	-48	-1	-26	0	6	1	1	1	5	1	6	**21**	**252**
1960	428	443	449	498	544	544	523	492	455	442	390	382	0	21	52	89	102	154	162	6	1	1	1	1	1	1	**12**	0	-21	-31	-37	-13	-52	-8	6	1	1	1	3	1	4	**17**	**204**
1961	404	438	483	526	544	544	521	487	455	446	408	401	0	23	57	89	98	136	143	6	1	1	1	1	1	1	**12**	0	-23	-34	-32	-9	-38	-7	6	1	1	1	4	1	4	**18**	**216**
1962	405	418	460	507	544	544	515	476	417	405	333	341	0	29	68	127	139	211	203	6	1	1	1	1	1	1	**12**	0	-29	-39	-59	-12	-72	8	6	1	1	1	3	1	6	**19**	**228**
1963	405	452	490	526	544	544	540	526	488	463	399	399	0	4	18	56	81	145	145	6	5	2	1	1	1	1	**17**	0	-4	-14	-38	-25	-64	0	6	5	3	1	1	1	6	**23**	**391**
1964	442	482	490	530	536	531	500	463	412	414	405	392	13	44	81	132	130	139	152	3	1	1	1	1	1	1	**9**	-5	-31	-37	-51	2	-9	-13	5	1	1	1	6	4	3	**21**	**189**
1965	398	429	478	521	544	544	544	530	498	460	400	415	0	0	14	46	84	144	129	6	6	3	1	1	1	1	**19**	0	0	-14	-32	-38	-60	15	6	6	3	1	1	1	6	**24**	**456**
1966	456	492	514	544	544	544	516	478	417	408	400	390	0	28	66	127	136	144	154	6	1	1	1	1	1	1	**12**	0	-28	-38	-61	-9	-8	-10	6	1	1	1	4	4	4	**21**	**252**
1967	414	445	491	534	544	544	544	544	534	520	485	500	0	0	0	10	24	59	44	6	6	6	3	1	1	1	**24**	0	0	0	-10	-14	-35	15	6	6	6	4	3	1	6	**32**	**768**
1968	507	517	519	544	544	544	523	487	440	441	409	400	0	21	57	104	103	135	144	6	1	1	1	1	1	1	**12**	0	-21	-36	-47	1	-32	-9	6	1	1	1	6	1	4	**20**	**240**
1969	427	456	501	544	544	544	544	544	535	499	454	477	0	0	0	9	45	90	67	6	6	6	4	1	1	1	**25**	0	0	0	-9	-36	-45	23	6	6	6	4	1	1	6	**30**	**750**
1970	509	517	519	544	544	544	526	497	442	436	401	399	0	18	47	102	108	143	145	6	2	1	1	1	1	1	**13**	0	-18	-29	-55	-6	-35	-2	6	2	1	1	4	1	5	**20**	**260**
1971	422	470	510	544	544	544	524	505	473	465	411	431	0	20	39	71	79	133	113	6	1	1	1	1	1	1	**12**	0	-20	-19	-32	-8	-54	20	6	2	2	1	4	1	6	**22**	**264**
1972	465	490	514	544	544	544	522	489	443	447	404	399	0	22	55	101	97	140	145	6	1	1	1	1	1	1	**12**	0	-22	-33	-46	4	-43	-5	6	1	1	1	6	1	5	**21**	**252**
1973	425	477	510	544	544	544	527	498	460	446	397	391	0	17	46	84	98	147	153	6	2	1	1	1	1	1	**13**	0	-17	-29	-38	-14	-49	-6	6	2	1	1	3	1	4	**18**	**234**
1974	421	468	494	534	544	544	541	526	494	462	428	453	0	3	18	50	82	116	91	6	5	2	1	1	1	1	**17**	0	-3	-15	-32	-32	-34	25	6	5	3	1	1	1	6	**23**	**391**
1975	480	502	514	544	544	544	534	518	490	457	418	437	0	10	26	54	87	126	107	6	3	1	1	1	1	1	**14**	0	-10	-16	-28	-33	-39	19	6	4	2	1	1	1	6	**21**	**294**
1976	475	499	514	542	544	544	522	496	470	479	431	425	0	22	48	74	65	113	119	6	1	1	1	1	1	1	**12**	0	-22	-26	-26	9	-48	-6	6	1	1	1	6	1	4	**20**	**240**
1977	425	433	437	453	453	453	455	448	434	412	406	422	91	89	96	110	132	138	122	1	1	1	1	1	1	1	**7**	0	2	-7	-14	-22	-6	16	6	6	4	3	1	4	6	**30**	**210**
1978	426	443	492	541	544	544	544	544	509	450	388	393	0	0	0	35	94	156	151	6	6	6	1	1	1	1	**22**	0	0	0	-35	-59	-62	5	6	6	6	1	1	1	6	**27**	**594**
1979	427	444	456	499	535	544	529	503	468	454	397	401	0	15	41	76	90	147	143	6	2	1	1	1	1	1	**13**	9	-15	-26	-35	-14	-57	4	6	3	1	1	3	1	6	**21**	**273**
1980	429	464	502	544	544	544	544	541	517	484	434	451	0	0	3	27	60	110	93	6	6	5	1	1	1	1	**21**	0	0	-3	-24	-33	-50	17	6	6	5	1	1	1	6	**26**	**546**
1981	492	511	524	544	544	544	525	488	443	445	407	396	0	19	56	101	99	137	148	6	2	1	1	1	1	1	**13**	0	-19	-37	-45	2	-38	-11	6	2	1	1	6	1	3	**20**	**260**
1982	420	472	515	544	544	544	544	544	531	482	443	466	0	0	0	13	62	101	78	6	6	6	3	1	1	1	**24**	0	0	0	-13	-49	-39	23	6	6	6	3	1	1	6	**29**	**696**
1983	495	507	513	544	544	544	544	544	535	522	507	514	0	0	0	9	22	37	30	6	6	6	4	1	1	1	**25**	0	0	0	-9	-13	-15	7	6	6	6	4	3	3	6	**34**	**850**
1984	529	540	544	544	544	544	524	492	437	425	400	392	0	20	52	107	119	144	152	6	1	1	1	1	1	1	**12**	0	-20	-32	-55	-12	-25	-8	6	2	1	1	3	1	4	**18**	**216**
1985	429	474	497	529	544	544	513	474	416	413	398	377	0	31	70	128	131	146	167	6	1	1	1	1	1	1	**12**	0	-31	-39	-58	-3	-15	-21	6	1	1	1	5	3	1	**18**	**216**
1986	381	384	422	493	535	544	544	543	528	464	432	439	0	0	1	16	80	112	105	6	6	5	2	1	1	1	**22**	9	0	-1	-15	-64	-32	7	6	6	5	3	1	1	6	**28**	**616**
1987	466	479	501	541	544	544	521	487	455	453	412	397	0	23	57	89	91	132	147	6	1	1	1	1	1	1	**12**	0	-23	-34	-32	-2	-41	-15	6	1	1	1	5	1	3	**18**	**216**
1988	407	405	450	515	515	515	500	482	469	453	419	414	29	44	62	75	91	125	130	1	1	1	1	1	1	1	**7**	0	-15	-18	-13	-16	-34	-5	6	3	2	3	2	1	5	**22**	**154**
1989	414	435	459	498	498	538	521	490	448	444	387	397	6	23	54	96	100	157	147	4	1	1	1	1	1	1	**10**	40	-17	-31	-42	-4	-57	10	6	2	1	1	5	1	6	**22**	**220**
1990	410	427	452	511	528	529	512	486	464	459	406	396	15	32	58	80	85	138	148	2	1	1	1	1	1	1	**8**	1	-17	-26	-22	-5	-53	-10	6	2	1	1	5	1	4	**20**	**160**
1991	396	400	402	417	417	480	478	467	443	419	402	407	64	66	77	101	125	142	137	1	1	1	1	1	1	1	**7**	63	-2	-11	-24	-24	-17	5	6	5	3	1	1	2	6	**24**	**168**
1992	410	423	438	482	524	544	530	509	491	459	411	404	0	14	35	53	85	133	140	6	3	1	1	1	1	1	**14**	20	-14	-21	-18	-32	-48	-7	6	3	1	2	1	1	4	**18**	**252**
1993	404	411	456	521	536	544	537	523	503	462	396	389	0	7	21	41	82	148	155	6	4	1	1	1	1	1	**15**	8	-7	-14	-20	-41	-66	-7	6	4	3	2	1	1	4	**21**	**315**
1994	408	452	475	503	537	535	504	463	420	427	414	408	9	40	81	124	117	130	136	4	1	1	1	1	1	1	**10**	-2	-31	-41	-43	7	-13	-6	5	1	1	1	6	3	4	**21**	**210**
																								73 - year Average:			**14**												**73 - year Average:**			**22**	**313.5**
																																							1929 - '34 Average:				**192.2**

Joint Point Alternative 2

STUDY: 1995C06F-SWRCB-469 DWRSIM: recirc818-f, 17 Jun 97
CP # 4, SHASTA LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-469/4/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 1067'

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	989	993	999	1,003	1,019	1,038	1,060	1,067	1,062	1,048	1,031	1,025
1923	1,023	1,017	1,019	1,023	1,020	1,021	1,033	1,029	1,015	996	978	976
1924	978	978	978	978	986	986	975	961	944	921	903	888
1925	892	905	914	924	996	1,012	1,043	1,054	1,045	1,027	1,012	1,008
1926	1,005	1,003	1,000	996	1,023	1,024	1,038	1,032	1,011	988	968	961
1927	960	988	1,010	1,035	1,026	1,052	1,067	1,067	1,058	1,044	1,027	1,022
1928	1,020	1,017	1,020	1,028	1,044	1,046	1,066	1,062	1,048	1,022	1,000	994
1929	993	993	993	993	999	1,001	1,004	997	989	972	954	947
1930	945	943	974	986	1,003	1,025	1,036	1,037	1,018	998	985	983
1931	981	980	978	980	984	990	982	973	962	942	929	915
1932	910	910	925	937	945	970	973	981	973	959	945	939
1933	938	933	934	936	939	973	984	987	984	964	950	944
1934	943	941	949	966	986	997	997	992	984	952	926	911
1935	905	917	921	943	962	986	1,030	1,037	1,030	1,011	998	992
1936	990	987	985	1,009	1,032	1,044	1,053	1,051	1,043	1,023	1,003	998
1937	993	988	983	976	977	1,004	1,032	1,041	1,037	1,016	997	990
1938	988	1,010	1,020	1,035	1,030	1,024	1,049	1,067	1,067	1,058	1,045	1,036
1939	1,023	1,017	1,020	1,022	1,024	1,039	1,031	1,024	999	977	949	945
1940	942	937	945	993	1,017	1,025	1,059	1,064	1,054	1,034	1,017	1,015
1941	1,014	1,013	1,019	1,020	1,024	1,045	1,064	1,067	1,067	1,058	1,047	1,036
1942	1,023	1,017	1,020	1,023	1,028	1,042	1,067	1,067	1,067	1,058	1,046	1,036
1943	1,023	1,017	1,022	1,030	1,042	1,051	1,067	1,067	1,059	1,045	1,030	1,024
1944	1,023	1,017	1,015	1,014	1,023	1,033	1,038	1,038	1,019	995	974	967
1945	969	981	996	1,005	1,039	1,053	1,065	1,067	1,062	1,040	1,023	1,018
1946	1,017	1,017	1,018	1,033	1,039	1,050	1,062	1,064	1,054	1,036	1,020	1,017
1947	1,014	1,014	1,015	1,011	1,018	1,038	1,044	1,034	1,019	995	977	971
1948	977	980	982	1,007	1,006	1,018	1,056	1,067	1,067	1,052	1,037	1,036
1949	1,023	1,017	1,016	1,012	1,016	1,050	1,063	1,064	1,048	1,026	1,008	1,004
1950	1,000	997	994	1,002	1,016	1,033	1,047	1,046	1,034	1,012	995	993
1951	1,006	1,017	1,020	1,033	1,040	1,057	1,064	1,067	1,051	1,030	1,012	1,010
1952	1,008	1,013	1,019	1,032	1,038	1,048	1,058	1,067	1,067	1,058	1,046	1,036
1953	1,023	1,017	1,021	1,022	1,033	1,051	1,065	1,067	1,067	1,058	1,046	1,036
1954	1,023	1,017	1,021	1,030	1,035	1,051	1,067	1,064	1,059	1,042	1,029	1,029
1955	1,023	1,017	1,022	1,024	1,027	1,025	1,039	1,047	1,028	1,004	987	986
1956	984	987	1,017	1,017	1,019	1,048	1,067	1,067	1,067	1,058	1,047	1,036
1957	1,023	1,017	1,016	1,017	1,035	1,052	1,058	1,067	1,060	1,043	1,029	1,031
1958	1,023	1,017	1,021	1,029	1,067	1,024	1,053	1,067	1,067	1,058	1,047	1,036
1959	1,023	1,017	1,017	1,034	1,039	1,050	1,054	1,054	1,035	1,010	994	998
1960	995	993	990	996	1,024	1,051	1,058	1,066	1,048	1,028	1,009	1,007
1961	1,004	1,006	1,021	1,026	1,044	1,057	1,064	1,067	1,048	1,024	1,003	1,001
1962	998	1,002	1,014	1,016	1,035	1,051	1,062	1,063	1,051	1,031	1,013	1,011
1963	1,023	1,017	1,021	1,025	1,045	1,055	1,052	1,067	1,063	1,052	1,040	1,036
1964	1,023	1,017	1,018	1,033	1,034	1,037	1,031	1,026	1,011	989	969	968
1965	967	977	1,017	1,022	1,040	1,052	1,065	1,066	1,057	1,042	1,032	1,030
1966	1,023	1,017	1,021	1,037	1,049	1,055	1,067	1,064	1,049	1,029	1,013	1,010
1967	1,006	1,017	1,021	1,030	1,044	1,048	1,064	1,067	1,067	1,058	1,047	1,036
1968	1,023	1,017	1,019	1,025	1,034	1,054	1,056	1,058	1,042	1,021	1,013	1,011
1969	1,010	1,011	1,021	1,022	1,027	1,048	1,063	1,067	1,067	1,058	1,047	1,036
1970	1,023	1,017	1,020	1,017	1,025	1,052	1,055	1,055	1,043	1,023	1,010	1,008
1971	1,009	1,017	1,020	1,028	1,040	1,043	1,063	1,067	1,067	1,058	1,047	1,036
1972	1,023	1,017	1,022	1,033	1,045	1,056	1,067	1,067	1,050	1,029	1,015	1,015
1973	1,016	1,017	1,021	1,030	1,034	1,053	1,065	1,067	1,059	1,041	1,029	1,028
1974	1,023	1,017	1,018	1,017	1,036	1,025	1,058	1,067	1,067	1,058	1,047	1,036
1975	1,023	1,017	1,021	1,024	1,045	1,039	1,061	1,067	1,067	1,058	1,047	1,036
1976	1,023	1,017	1,018	1,017	1,012	1,017	1,024	1,020	995	973	969	970
1977	973	974	974	976	966	966	948	942	920	901	882	878
1978	867	866	911	1,016	1,031	1,047	1,067	1,067	1,064	1,054	1,044	1,036
1979	1,023	1,017	1,015	1,018	1,029	1,046	1,053	1,062	1,048	1,030	1,018	1,016
1980	1,016	1,017	1,020	1,029	1,019	1,046	1,059	1,064	1,056	1,045	1,035	1,035
1981	1,023	1,017	1,020	1,029	1,042	1,056	1,064	1,062	1,042	1,018	1,002	999
1982	998	1,017	1,018	1,033	1,029	1,046	1,051	1,067	1,067	1,058	1,047	1,036
1983	1,023	1,017	1,020	1,022	1,017	1,045	1,050	1,067	1,067	1,058	1,047	1,036
1984	1,023	1,017	1,018	1,034	1,047	1,056	1,064	1,067	1,059	1,043	1,036	1,036
1985	1,023	1,017	1,022	1,023	1,027	1,034	1,042	1,033	1,010	989	972	974
1986	976	980	990	1,014	1,017	1,029	1,047	1,049	1,038	1,022	1,006	1,009
1987	1,009	1,009	1,008	1,009	1,019	1,046	1,046	1,040	1,008	984	956	949
1988	945	947	978	1,000	1,001	1,004	1,010	1,009	991	959	944	942
1989	942	955	961	968	975	1,038	1,058	1,054	1,038	1,018	1,006	1,007
1990	1,009	1,007	1,003	1,008	1,008	1,015	1,007	1,013	998	973	956	953
1991	949	947	946	947	943	969	980	980	970	957	943	935
1992	934	933	934	938	976	999	1,011	1,003	989	974	961	955
1993	951	948	962	996	1,028	1,031	1,059	1,067	1,067	1,054	1,046	1,045
1994	1,043	1,017	1,019	1,020	1,026	1,027	1,027	1,026	999	978	956	953

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**
1922	29	7	0	5	19	36	42	1	4	6	4	2	1	1	**19**
1923	46	34	38	52	71	89	91	1	1	1	1	1	1	1	**7**
1924	81	92	106	123	146	164	179	1	1	1	1	1	1	1	**7**
1925	55	24	13	22	40	55	59	1	1	3	1	1	1	1	**9**
1926	43	29	35	56	79	99	106	1	1	1	1	1	1	1	**7**
1927	15	0	0	9	23	40	45	2	6	6	4	1	1	1	**21**
1928	21	1	5	19	45	67	73	1	5	4	2	1	1	1	**15**
1929	66	63	70	78	95	113	120	1	1	1	1	1	1	1	**7**
1930	42	31	30	49	69	82	84	1	1	1	1	1	1	1	**7**
1931	77	85	94	105	125	138	152	1	1	1	1	1	1	1	**7**
1932	97	94	86	94	108	122	128	1	1	1	1	1	1	1	**7**
1933	94	83	80	83	103	117	123	1	1	1	1	1	1	1	**7**
1934	70	70	75	83	115	141	156	1	1	1	1	1	1	1	**7**
1935	81	37	30	37	56	69	75	1	1	1	1	1	1	1	**7**
1936	23	14	16	24	44	64	69	1	3	2	1	1	1	1	**10**
1937	63	35	26	30	51	70	77	1	1	1	1	1	1	1	**7**
1938	43	18	0	0	9	22	31	1	2	6	6	4	1	1	**21**
1939	28	36	43	68	90	118	122	1	1	1	1	1	1	1	**7**
1940	42	8	3	13	33	50	52	1	4	5	3	1	1	1	**16**
1941	22	3	0	0	9	20	31	1	5	6	6	4	1	1	**24**
1942	25	0	0	0	9	21	31	1	6	6	6	4	1	1	**25**
1943	16	0	0	8	22	37	43	2	6	6	4	1	1	1	**21**
1944	34	29	29	48	72	93	100	1	1	1	1	1	1	1	**7**
1945	14	2	0	5	27	44	49	3	5	6	4	1	1	1	**21**
1946	17	5	3	13	31	47	50	2	4	5	3	1	1	1	**17**
1947	29	23	33	48	72	90	96	1	1	1	1	1	1	1	**7**
1948	49	11	0	0	15	30	31	1	3	6	6	2	1	1	**20**
1949	17	4	3	19	41	59	63	2	5	5	2	1	1	1	**17**
1950	34	20	21	33	55	72	74	1	1	1	1	1	1	1	**7**
1951	10	3	0	16	37	55	57	3	5	6	2	1	1	1	**19**
1952	19	9	0	0	9	21	31	2	4	6	6	4	1	1	**24**
1953	16	2	0	0	9	21	31	2	5	6	6	4	1	1	**25**
1954	16	0	3	8	25	38	38	2	6	5	4	1	1	1	**20**
1955	42	28	20	39	63	80	81	1	1	1	1	1	1	1	**7**
1956	19	0	0	0	9	20	31	2	6	6	6	4	1	1	**26**
1957	15	9	0	7	24	38	36	2	4	6	4	1	1	1	**19**
1958	43	14	0	0	9	20	31	1	3	6	6	4	1	1	**22**
1959	17	13	13	32	57	73	69	2	3	3	1	1	1	1	**12**
1960	16	9	1	19	39	58	60	2	4	5	2	1	1	1	**16**
1961	10	3	0	19	43	64	66	3	5	6	2	1	1	1	**19**
1962	16	5	4	16	36	54	56	2	4	5	2	1	1	1	**16**
1963	12	15	0	4	15	27	31	3	2	6	5	2	1	1	**20**
1964	30	36	41	56	78	98	99	1	1	1	1	1	1	1	**7**
1965	15	2	1	10	25	35	37	2	5	5	3	1	1	1	**18**
1966	12	0	3	18	38	54	57	3	6	5	2	1	1	1	**19**
1967	19	3	0	0	9	20	31	2	5	6	6	4	1	1	**25**
1968	13	11	9	25	46	54	56	3	3	4	1	1	1	1	**14**
1969	19	4	0	0	9	20	31	2	5	6	6	4	1	1	**25**
1970	15	12	12	24	44	57	59	2	3	3	1	1	1	1	**12**
1971	24	4	0	0	9	20	31	1	5	6	6	4	1	1	**24**
1972	11	0	0	17	38	52	52	3	6	6	2	1	1	1	**20**
1973	14	2	0	8	26	38	39	3	5	6	4	1	1	1	**21**
1974	42	9	0	0	9	20	31	1	4	6	6	4	1	1	**23**
1975	28	6	0	0	9	20	31	1	4	6	6	4	1	1	**23**
1976	50	43	47	72	94	98	97	1	1	1	1	1	1	1	**7**
1977	101	119	125	147	166	185	189	1	1	1	1	1	1	1	**7**
1978	20	0	0	3	13	23	31	1	6	6	5	3	1	1	**23**
1979	21	14	5	19	37	49	51	1	3	4	2	1	1	1	**13**
1980	21	8	3	11	22	32	32	1	4	5	3	1	1	1	**16**
1981	11	3	5	25	49	65	68	3	5	4	1	1	1	1	**16**
1982	21	16	0	0	9	20	31	1	2	6	6	4	1	1	**21**
1983	22	17	0	0	9	20	31	1	2	6	6	4	1	1	**21**
1984	11	3	0	8	24	31	31	3	5	6	4	1	1	1	**21**
1985	33	25	34	57	78	95	93	1	1	1	1	1	1	1	**7**
1986	38	20	18	29	45	61	58	1	1	2	1	1	1	1	**8**
1987	21	21	27	59	83	111	118	1	1	1	1	1	1	1	**7**
1988	63	57	58	76	108	123	125	1	1	1	1	1	1	1	**7**
1989	29	9	13	29	49	61	60	1	4	3	1	1	1	1	**12**
1990	52	60	54	69	94	111	114	1	1	1	1	1	1	1	**7**
1991	98	87	87	97	110	124	132	1	1	1	1	1	1	1	**7**
1992	68	56	64	78	93	106	112	1	1	1	1	1	1	1	**7**
1993	36	8	0	0	13	21	22	1	4	6	6	3	1	1	**22**
1994	40	40	41	68	89	111	114	1	1	1	1	1	1	1	**7**
													73 - year Average:		**15**

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	Fluctuation MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	19	22	7	-5	-14	-17	-6	6	6	6	5	3	2	4	**32**	**608**
1923	1	12	-4	-14	-19	-18	-2	6	6	5	3	2	2	5	**29**	**203**
1924	0	-11	-14	-17	-23	-18	-15	6	3	3	2	1	2	3	**20**	**140**
1925	16	31	11	-9	-18	-15	-4	6	6	6	4	2	3	5	**32**	**288**
1926	1	14	-6	-21	-23	-20	-7	6	6	4	1	1	2	4	**24**	**168**
1927	26	15	0	-9	-14	-17	-5	6	6	6	4	3	2	5	**32**	**672**
1928	2	20	-4	-14	-26	-22	-6	6	6	5	3	1	1	4	**26**	**390**
1929	2	3	-7	-8	-17	-18	-7	6	6	4	4	2	2	4	**28**	**196**
1930	22	11	1	-19	-20	-13	-2	6	6	6	2	2	3	5	**30**	**210**
1931	6	-8	-9	-11	-20	-13	-14	6	4	4	3	2	3	3	**25**	**175**
1932	25	3	8	-8	-14	-14	-6	6	6	6	4	3	3	4	**32**	**224**
1933	34	11	3	-3	-20	-14	-6	6	6	6	5	2	3	4	**32**	**224**
1934	11	0	-5	-8	-32	-26	-15	6	6	5	4	1	1	3	**26**	**182**
1935	24	44	7	-7	-19	-13	-6	6	6	6	4	2	3	4	**31**	**217**
1936	12	9	-2	-8	-20	-20	-5	6	6	5	4	2	2	5	**30**	**300**
1937	27	28	9	-4	-21	-19	-7	6	6	6	5	1	2	4	**30**	**210**
1938	-6	25	18	0	-9	-13	-9	4	6	6	6	4	3	4	**33**	**693**
1939	15	-8	-7	-25	-22	-28	-4	6	4	4	1	1	1	5	**22**	**154**
1940	8	34	5	-10	-20	-17	-2	6	6	6	4	2	2	5	**31**	**496**
1941	21	19	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1942	14	25	0	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**875**
1943	9	16	0	-8	-14	-15	-6	6	6	6	4	3	3	4	**32**	**672**
1944	10	5	0	-19	-24	-21	-7	6	6	6	2	1	1	4	**26**	**182**
1945	14	12	2	-5	-22	-17	-5	6	6	6	5	1	2	5	**31**	**651**
1946	11	12	2	-10	-18	-16	-3	6	6	6	4	2	2	5	**31**	**527**
1947	20	6	-10	-15	-24	-18	-6	6	6	4	3	1	2	4	**26**	**182**
1948	12	38	11	0	-15	-15	-1	6	6	6	6	3	3	5	**35**	**700**
1949	34	13	1	-16	-22	-18	-4	6	6	6	2	1	2	5	**28**	**476**
1950	17	14	-1	-12	-22	-17	-2	6	6	5	3	1	2	5	**28**	**196**
1951	17	7	3	-16	-21	-18	-2	6	6	6	2	1	2	5	**28**	**532**
1952	10	10	9	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**840**
1953	18	14	2	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**875**
1954	16	16	-3	-5	-17	-13	0	6	6	5	5	2	3	6	**33**	**660**
1955	-2	14	8	-19	-24	-17	-1	5	6	6	2	1	2	5	**27**	**189**
1956	29	19	0	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**884**
1957	17	6	9	-7	-17	-14	2	6	6	6	4	2	3	6	**33**	**627**
1958	-43	29	14	0	-9	-11	-11	1	6	6	6	4	3	3	**29**	**638**
1959	11	4	0	-19	-25	-16	4	6	6	6	2	1	2	6	**29**	**348**
1960	27	7	8	-18	-20	-19	-2	6	6	6	2	2	2	5	**29**	**464**
1961	13	7	3	-19	-24	-21	-2	6	6	6	2	1	1	5	**27**	**513**
1962	16	11	1	-12	-20	-18	-2	6	6	6	3	2	2	5	**30**	**480**
1963	10	-3	15	-4	-11	-12	-4	6	5	6	5	3	3	5	**33**	**660**
1964	3	-6	-5	-15	-22	-20	-1	6	4	5	3	1	2	5	**26**	**182**
1965	12	13	1	-9	-15	-10	-2	6	6	6	4	3	4	5	**34**	**612**
1966	6	12	-3	-15	-20	-16	-3	6	6	5	3	2	2	5	**29**	**551**
1967	4	16	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1968	20	2	2	-16	-21	-8	-2	6	6	6	2	1	4	5	**30**	**420**
1969	21	15	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1970	27	3	0	-12	-20	-13	-2	6	6	6	3	2	3	5	**31**	**372**
1971	3	20	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1972	11	11	0	-17	-21	-14	0	6	6	6	2	1	3	6	**30**	**600**
1973	19	12	2	-8	-18	-12	-1	6	6	6	4	2	3	5	**32**	**672**
1974	-11	33	9	0	-9	-11	-11	3	6	6	6	4	3	3	**31**	**713**
1975	-6	22	6	0	-9	-11	-11	4	6	6	6	4	3	3	**32**	**736**
1976	5	7	-4	-25	-22	-4	1	6	6	5	1	1	5	6	**30**	**210**
1977	0	-18	-6	-22	-19	-19	-4	6	2	4	1	2	2	5	**22**	**154**
1978	16	20	0	-3	-10	-10	-8	6	6	6	5	4	4	4	**35**	**805**
1979	17	7	9	-14	-18	-12	-2	6	6	6	3	2	3	5	**31**	**403**
1980	27	13	5	-8	-11	-10	0	6	6	6	4	3	4	6	**35**	**560**
1981	14	8	-2	-20	-24	-16	-3	6	6	5	2	1	2	5	**27**	**432**
1982	17	5	16	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1983	28	5	17	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1984	9	8	3	-8	-16	-7	0	6	6	6	4	2	4	6	**34**	**714**
1985	7	8	-9	-23	-21	-17	2	6	6	4	1	1	2	6	**26**	**182**
1986	12	18	2	-11	-16	-16	3	6	6	6	3	2	2	6	**31**	**248**
1987	27	0	-6	-32	-24	-28	-7	6	6	4	1	1	1	4	**23**	**161**
1988	3	6	-1	-18	-32	-15	-2	6	6	5	2	1	3	5	**28**	**196**
1989	63	20	-4	-16	-20	-12	1	6	6	5	2	2	3	6	**30**	**360**
1990	7	-8	6	-15	-25	-17	-3	6	4	6	3	1	2	5	**27**	**189**
1991	26	11	0	-10	-13	-14	-8	6	6	6	4	3	3	4	**32**	**224**
1992	23	12	-8	-14	-15	-13	-6	6	6	4	3	3	3	4	**29**	**203**
1993	3	28	8	0	-13	-8	-1	6	6	6	6	3	4	5	**36**	**792**
1994	1	0	-1	-27	-21	-22	-3	6	6	5	1	1	1	5	**25**	**175**
													73 - year Average:		**30**	**459.5**
														1929 - '34 Average:		**201.8**

STUDY: 1995C06F-SWRCB-469 DWRSIM: recirc818-f, 17 Jun 97
CP # 6, LAKE OROVILLE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-469/6/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 900'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	833	833	835	844	850	858	893	900	900	880	876	876	42	7	0	0	20	24	24	1	4	6	6	1	1	1	**20**	8	35	7	0	-20	-4	0	6	6	6	6	2	5	6	**37**	**740**
1923	874	874	858	862	859	868	891	897	878	839	805	808	32	9	3	22	61	95	92	1	4	5	1	1	1	1	**14**	9	23	6	-19	-39	-34	3	6	6	6	2	1	1	6	**28**	**392**
1924	800	788	761	766	784	774	761	750	728	708	699	693	126	139	150	172	192	201	207	1	1	1	1	1	1	1	**7**	-10	-13	-11	-22	-20	-9	-6	4	3	3	1	2	4	4	**21**	**147**
1925	694	698	705	721	789	817	836	843	825	793	782	781	83	64	57	75	107	118	119	1	1	1	1	1	1	1	**7**	28	19	7	-18	-32	-11	-1	6	6	6	2	1	3	5	**29**	**203**
1926	777	779	781	795	837	857	887	874	853	810	797	779	43	13	26	47	90	103	121	1	3	1	1	1	1	1	**9**	20	30	-13	-21	-43	-13	-18	6	6	3	1	1	3	2	**22**	**198**
1927	775	807	807	831	849	863	890	900	900	865	854	851	37	10	0	0	35	46	49	1	3	6	6	1	1	1	**19**	14	27	10	0	-35	-11	-3	6	6	6	6	1	3	5	**33**	**627**
1928	849	859	860	868	871	849	878	863	843	789	737	730	51	22	37	57	111	163	170	1	1	1	1	1	1	1	**7**	-22	29	-15	-20	-54	-52	-7	1	6	3	2	1	1	4	**18**	**126**
1929	717	712	710	715	729	746	749	752	745	727	718	711	154	151	148	155	173	182	189	1	1	1	1	1	1	1	**7**	17	3	3	-7	-18	-9	-7	6	6	6	4	2	4	4	**32**	**224**
1930	703	700	761	790	817	849	871	875	856	817	779	776	51	29	25	44	83	121	124	1	1	1	1	1	1	1	**7**	32	22	4	-19	-39	-38	-3	6	6	6	2	1	1	5	**27**	**189**
1931	765	758	749	762	775	792	778	765	743	723	713	706	108	122	135	157	177	187	194	1	1	1	1	1	1	1	**7**	17	-14	-13	-22	-20	-10	-7	6	3	3	1	2	4	4	**23**	**161**
1932	700	692	697	722	744	777	782	806	777	753	743	736	123	118	94	123	147	157	164	1	1	1	1	1	1	1	**7**	33	5	24	-29	-24	-10	-7	6	6	6	1	1	4	4	**28**	**196**
1933	727	715	714	726	735	740	743	758	752	735	724	717	160	157	142	148	165	176	183	1	1	1	1	1	1	1	**7**	5	3	15	-6	-17	-11	-7	6	6	6	4	2	3	4	**31**	**217**
1934	713	705	707	734	756	777	770	760	737	712	702	689	123	130	140	163	188	198	211	1	1	1	1	1	1	1	**7**	21	-7	-10	-23	-25	-10	-13	6	4	4	1	1	4	3	**23**	**161**
1935	675	680	686	714	737	768	854	864	848	824	814	796	132	46	36	52	76	86	104	1	1	1	1	1	1	1	**7**	31	86	10	-16	-24	-10	-18	6	6	6	2	1	4	2	**27**	**189**
1936	787	777	775	824	849	860	886	897	886	846	827	823	40	14	3	14	54	73	77	1	3	5	3	1	1	1	**15**	11	26	11	-11	-40	-19	-4	6	6	6	3	1	2	5	**29**	**435**
1937	816	804	800	803	820	844	869	882	859	833	820	814	56	31	18	41	67	80	86	1	1	2	1	1	1	1	**8**	24	25	13	-23	-26	-13	-6	6	6	6	1	1	3	4	**27**	**216**
1938	810	824	854	858	849	849	882	900	900	899	896	887	51	18	0	0	1	4	13	1	2	6	6	5	5	3	**28**	0	33	18	0	-1	-3	-9	6	6	6	6	5	5	4	**38**	**1064**
1939	874	864	854	845	837	833	822	813	778	713	655	650	67	78	87	122	187	245	250	1	1	1	1	1	1	1	**7**	-4	-11	-9	-35	-65	-58	-5	5	3	4	1	1	1	5	**20**	**140**
1940	639	628	631	704	813	849	879	883	867	829	821	809	51	21	17	33	71	79	91	1	1	2	1	1	1	1	**8**	36	30	4	-16	-38	-8	-12	6	6	6	2	1	4	3	**28**	**224**
1941	801	801	842	849	849	858	886	900	900	890	886	887	42	14	0	0	10	14	13	1	3	6	6	3	3	3	**25**	9	28	14	0	-10	-4	1	6	6	6	6	4	5	6	**39**	**975**
1942	874	874	849	849	850	867	882	900	900	885	882	882	33	18	0	0	15	18	18	1	2	6	6	2	2	2	**21**	17	15	18	0	-15	-3	0	6	6	6	6	3	5	6	**38**	**798**
1943	874	869	861	849	856	859	887	893	892	860	849	850	41	13	7	8	40	51	50	1	3	4	4	1	1	1	**15**	3	28	6	-1	-32	-11	1	6	6	6	5	1	3	6	**33**	**495**
1944	851	853	853	859	857	868	879	895	875	835	797	791	32	21	5	25	65	103	109	1	1	4	1	1	1	1	**10**	11	11	16	-20	-40	-38	-6	6	6	6	2	1	1	4	**26**	**260**
1945	786	793	809	823	862	865	880	896	877	837	813	808	35	20	4	23	63	87	92	1	1	5	1	1	1	1	**11**	3	15	16	-19	-40	-24	-5	6	6	6	2	1	1	5	**27**	**297**
1946	808	816	849	864	868	868	887	892	870	831	788	785	32	13	8	30	69	112	115	1	3	4	1	1	1	1	**12**	0	19	5	-22	-39	-43	-3	6	6	6	1	1	1	5	**26**	**312**
1947	777	783	791	797	823	845	855	850	832	777	730	723	55	45	50	68	123	170	177	1	1	1	1	1	1	1	**7**	22	10	-5	-18	-55	-47	-7	6	6	5	2	1	1	4	**25**	**175**
1948	726	728	724	760	763	783	842	871	877	844	827	821	117	58	29	23	56	73	79	1	1	1	1	1	1	1	**7**	20	59	29	6	-33	-17	-6	6	6	6	6	1	2	4	**31**	**217**
1949	814	812	812	817	823	843	862	866	844	796	759	754	57	38	34	56	104	141	146	1	1	1	1	1	1	1	**7**	20	19	4	-22	-48	-37	-5	6	6	6	1	1	1	5	**26**	**182**
1950	741	740	741	771	818	848	881	900	886	848	820	819	52	19	0	14	52	80	81	1	2	6	3	1	1	1	**15**	30	33	19	-14	-38	-28	-1	6	6	6	3	1	1	5	**28**	**420**
1951	823	849	854	853	858	870	886	900	889	848	820	820	30	14	0	11	52	80	80	1	3	6	3	1	1	1	**16**	12	16	14	-11	-41	-28	0	6	6	6	3	1	1	6	**29**	**464**
1952	824	827	849	849	852	862	894	900	900	900	899	887	38	6	0	0	0	1	13	1	4	6	6	6	5	3	**31**	10	32	6	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1178**
1953	874	874	858	850	867	867	883	900	900	870	869	870	33	17	0	0	30	31	30	1	2	6	6	1	1	1	**18**	0	16	17	0	-30	-1	1	6	6	6	6	1	5	6	**36**	**648**
1954	872	871	874	858	857	859	883	863	847	800	753	753	41	17	37	53	100	147	147	1	2	1	1	1	1	1	**8**	2	24	-20	-16	-47	-47	0	6	6	2	2	1	1	6	**24**	**192**
1955	754	756	764	777	786	799	808	822	794	730	706	703	101	92	78	106	170	194	197	1	1	1	1	1	1	1	**7**	13	9	14	-28	-64	-24	-3	6	6	6	1	1	1	5	**26**	**182**
1956	694	690	845	849	849	864	892	900	900	873	870	874	36	8	0	0	27	30	26	1	4	6	6	1	1	1	**20**	15	28	8	0	-27	-3	4	6	6	6	6	1	5	6	**36**	**720**
1957	869	874	874	871	853	863	863	881	866	827	795	800	37	37	19	34	73	105	100	1	1	2	1	1	1	1	**8**	10	0	18	-15	-39	-32	5	6	6	6	3	1	1	6	**29**	**232**
1958	802	806	825	845	849	849	879	900	900	898	894	887	51	21	0	0	2	6	13	1	1	6	6	5	4	3	**26**	0	30	21	0	-2	-4	-7	6	6	6	6	5	5	4	**38**	**988**
1959	874	874	874	862	852	867	871	874	853	807	757	761	33	29	26	47	93	143	139	1	1	1	1	1	1	1	**7**	15	4	3	-21	-46	-50	4	6	6	6	1	1	1	6	**27**	**189**
1960	754	742	737	752	813	853	853	859	840	800	788	782	47	47	41	60	100	112	118	1	1	1	1	1	1	1	**7**	40	0	6	-19	-40	-12	-6	6	6	6	2	1	3	4	**28**	**196**
1961	771	774	783	794	823	841	840	846	826	768	725	721	59	60	54	74	132	175	179	1	1	1	1	1	1	1	**7**	18	-1	6	-20	-58	-43	-4	6	5	6	2	1	1	5	**26**	**182**
1962	705	701	710	725	787	821	843	842	827	770	744	722	79	57	58	73	130	156	178	1	1	1	1	1	1	1	**7**	34	22	-1	-15	-57	-26	-22	6	6	5	3	1	1	1	**23**	**161**
1963	796	808	837	859	867	858	876	900	893	857	845	846	42	24	0	7	43	55	54	1	1	6	4	1	1	1	**15**	-9	18	24	-7	-36	-12	1	4	6	6	4	1	3	6	**30**	**450**
1964	847	859	861	866	874	874	880	884	867	826	779	753	26	20	16	33	74	121	147	1	1	2	1	1	1	1	**8**	0	6	4	-17	-41	-47	-26	6	6	6	2	1	1	1	**23**	**184**
1965	739	740	849	849	863	870	887	882	884	855	850	852	30	13	18	16	45	50	48	1	3	2	2	1	1	1	**11**	7	17	-5	2	-29	-5	2	6	6	5	6	1	5	6	**35**	**385**
1966	856	859	860	864	870	874	894	882	862	821	772	767	26	6	18	38	79	128	133	1	4	2	1	1	1	1	**11**	4	20	-12	-20	-41	-49	-5	6	6	3	2	1	1	5	**24**	**264**
1967	753	764	802	849	860	853	879	900	900	900	896	887	47	21	0	0	0	4	13	1	1	6	6	6	5	3	**28**	-7	26	21	0	0	-4	-9	4	6	6	6	6	5	4	**37**	**1036**
1968	874	874	873	858	861	866	863	867	848	802	764	761	34	37	33	52	98	136	139	1	1	1	1	1	1	1	**7**	5	-3	4	-19	-46	-38	-3	6	5	6	2	1	1	5	**26**	**182**
1969	762	768	790	849	849	865	895	900	900	895	893	874	35	5	0	0	5	7	26	1	4	6	6	4	4	1	**26**	16	30	5	0	-5	-2	-19	6	6	6	6	5	5	2	**36**	**936**
1970	874	874	850	849	849	874	869	871	857	818	787	789	26	31	29	43	82	113	111	1	1	1	1	1	1	1	**7**	25	-5	2	-14	-39	-31	2	6	5	6	3	1	1	6	**28**	**196**
1971	792	818	846	864	874	874	893	900	900	871	853	855	26	7	0	0	29	47	45	1	4	6	6	1	1	1	**20**	0	19	7	0	-29	-18	2	6	6	6	6	1	2	6	**33**	**660**
1972	860	866	865	869	867	874	884	886	867	826	781	782	26	16	14	33	74	119	118	1	2	3	1	1	1	1	**10**	7	10	2	-19	-41	-45	1	6	6	6	2	1	1	6	**28**	**280**
1973	778	793	820	849	849	860	882	900	869	829	810	806	40	18	0	31	71	90	94	1	2	6	1	1	1	1	**13**	11	22	18	-31	-40	-19	-4	6	6	6	1	1	2	5	**27**	**351**
1974	810	849	850	854	864	849	883	900	900	889	888	886	51	17	0	0	11	12	14	1	2	6	6	3	3	3	**24**	-15	34	17	0	-11	-1	-2	3	6	6	6	3	5	5	**34**	**816**
1975	874	874	874	874	855	852	881	900	900	877	876	877	48	19	0	0	23	24	23	1	2	6	6	1	1	1	**18**	-3	29	19	0	-23	-1	1	5	6	6	6	1	5	6	**35**	**630**
1976	873	874	874	874	874	874	871	862	840	794	758	757	26	29	38	60	106	142	143	1	1	1	1	1	1	1	**7**	0	-3	-9	-22	-46	-36	-1	6	5	4	1	1	1	5	**23**	**161**
1977	748	738	721	717	702	697	672	664	635	611	603	600	203	228	236	265	289	297	300	1	1	1	1	1	1	1	**7**	-5	-25	-8	-29	-24	-8	-3	5	1	4	1	1	4	5	**21**	**147**
1978	589	589	626	750	802	859	878	897	891	871	861	869	41	22	3	9	29	39	31	1	1	5	4	1	1	1	**14**	57	19	19	-6	-20	-10	8	6	6	6	4	2	4	6	**34**	**476**
1979	871	874	874	871	853	863	878	896	862	828	819	816	37	22	4	38	72	81	84	1	1	5	1	1	1	1	**11**	10	15	18	-34	-34	-9	-3	6	6	6	1	1	4	5	**29**	**319**
1980	822	825	833	850	849	865	881	893	888	873	866	865	35	19	7	12	27	34	35	1	2	4	3	1	1	1	**13**	16	16	12	-5	-15	-7	-1	6	6	6	5	3	4	5	**35**	**455**
1981	864	865	873	860	868	865	875	872	851	806	762	762	35	25	28	49	94	138	138	1	1	1	1	1	1	1	**7**	-3	10	-3	-21	-45	-44	0	5	6	5	1	1	1	6	**25**	**175**
1982	770	849	849	859	862	859	884	900	900	889	886	887	41	16	0	0	11	14	13	1	2	6	6	3	3	3	**24**	-3	25	16	0	-11	-3	1	5	6	6	6	3	5	6	**37**	**888**
1983	873	862	858	853	849	849	877	900	900	900	899	887	51	23	0	0	0	1	13	1	1	6	6	6	5	3	**28**	0	28	23	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1064**
1984	874	860	849	869	869	871	885	894	878	840	830	832	29	15	6	22	60	70	68	1	2	4	1	1	1	1	**11**	2	14	9	-16	-38	-10	2	6	6	6	2	1	4	6	**31**	**341**
1985	836	850	860	866	874	871	886	872	849	804	754	736	29	14	28	51	96	146	164	1	3	1	1	1	1	1	**9**	-3	15	-14	-23	-45	-50	-18	5	6	3	1	1	1	2	**19**	**171**
1986	727	723	730	766	849	849	871	875	871	842	831	842	51	29	25	29	58	69	58	1	1	1	1	1	1	1	**7**	0	22	4	-4	-29	-11	11	6	6	6	5	1	3	6	**33**	**231**
1987	844	850	846	847	858	867	855	845	817	756	716	711	33	45	55	83	144	184	189	1	1	1	1	1	1	1	**7**	9	-12	-10	-28	-61	-40	-5	6	3	4	1	1	1	5	**21**	**147**
1988	699	702	741	768	770	770	769	758	734	713	701	698	130	131	142	166	187	199	202	1	1	1	1	1	1	1	**7**	0	-1	-11	-24	-21	-12	-3	6	5	3	1	1	3	5	**24**	**168**
1989	692	710	721	728	731	844	869	860	843	796	780	777	56	31	40	57	104	120	123	1	1	1	1	1	1	1	**7**	113	25	-9	-17	-47	-16	-3	6	6	4	2	1	2	5	**26**	**182**
1990	788	789	774	787	795	821	808	809	783	727	713	705	79	92	91	117	173	187	195	1	1	1	1	1	1	1	**7**	26	-13	1	-26	-56	-14	-8	6	3	6	1	1	3	4	**24**	**168**
1991	686	678	659	656	644	699	722	736	720	698	693	692	201	178	164	180	202	207	208	1	1	1	1	1	1	1	**7**	55	23	14	-16	-22	-5	-1	6	6	6	2	1	5	5	**31**	**217**
1992	688	684	685	688	720	750	765	754	729	704	693	687	150	135	146	171	196	207	213	1	1	1	1	1	1	1	**7**	30	15	-11	-25	-25	-11	-6	6	6	3	1	1	3	4	**24**	**168**
1993	679	673	692	759	812	861	894	900	900	881	876	875	39	6	0	0	19	24	25	1	4	6	6	2	1	1	**21**	49	33	6	0	-19	-5	-1	6	6	6	6	2	5	5	**36**	**756**
1994	874	874	874	871	862	874	872	866	845	802	754	749	26	28	34	55	98	146	151	1	1	1	1	1	1	1	**7**	12	-2	-6	-21	-43	-48	-5	6	5	4	1	1	1	5	**23**	**161**

73 - year Average: 12

73 - year Average: 29 **384.6**

1929 - '34 Average: 191.3

STUDY: 1995C06F-SWRCB-469 DWRSIM: recirc818-f, 17 Jun 97
CP # 8, FOLSOM LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-469/8/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 466'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	414	409	414	414	424	428	443	466	466	463	449	434	38	23	0	0	3	17	32	1	1	6	6	5	2	1	22	4	15	23	0	-3	-14	-15	6	6	6	6	5	3	3	35	770
1923	425	423	424	424	419	420	449	466	451	431	424	422	46	17	0	15	35	42	44	1	2	6	2	1	1	1	14	1	29	17	-15	-20	-7	-2	6	6	6	3	2	4	5	32	448
1924	416	408	398	386	384	365	367	366	334	334	337	334	101	99	100	132	132	129	132	1	1	1	1	1	1	1	7	-19	2	-1	-32	0	3	-3	2	6	5	1	6	6	5	31	217
1925	349	363	380	390	424	437	449	466	449	433	421	417	29	17	0	17	33	45	49	1	2	6	2	1	1	1	14	13	12	17	-17	-16	-12	-4	6	6	6	2	2	3	5	30	420
1926	413	406	401	392	412	413	444	442	416	373	335	348	53	22	24	50	93	131	118	1	1	1	1	1	1	1	7	1	31	-2	-26	-43	-38	13	6	6	5	1	1	1	6	26	182
1927	356	398	419	424	424	437	449	466	461	456	449	434	29	17	0	5	10	17	32	1	2	6	4	3	2	1	19	13	12	17	-5	-5	-7	-15	6	6	6	5	5	4	3	35	665
1928	425	424	424	424	424	437	449	453	442	417	409	410	29	17	13	24	49	57	56	1	2	3	1	1	1	1	10	13	12	4	-11	-25	-8	1	6	6	6	3	1	4	6	32	320
1929	403	397	392	381	379	378	391	396	381	335	347	351	88	75	70	85	131	119	115	1	1	1	1	1	1	1	7	-1	13	5	-15	-46	12	4	5	6	6	3	1	6	6	33	231
1930	334	334	384	406	421	437	443	442	417	385	351	350	29	23	24	49	81	115	116	1	1	1	1	1	1	1	7	16	6	-1	-25	-32	-34	-1	6	6	5	1	1	1	5	25	175
1931	337	351	363	378	386	400	394	389	334	334	335	334	66	72	77	132	132	131	132	1	1	1	1	1	1	1	7	14	-6	-5	-55	0	1	-1	6	4	5	1	6	6	5	33	231
1932	334	334	380	402	424	424	432	450	435	392	368	372	42	34	16	31	74	98	94	1	1	2	1	1	1	1	8	0	8	18	-15	-43	-24	4	6	6	6	3	1	1	6	29	232
1933	345	334	355	366	369	382	344	371	338	334	352	347	84	122	95	128	132	114	119	1	1	1	1	1	1	1	7	13	-38	27	-33	-4	18	-5	6	1	6	1	5	6	5	30	210
1934	335	334	375	402	420	426	418	413	335	324	313	327	40	48	53	131	142	153	139	1	1	1	1	1	1	1	7	6	-8	-5	-78	-11	-11	14	6	4	5	1	3	3	6	28	196
1935	334	361	378	402	415	417	449	453	452	433	419	414	49	17	13	14	33	47	52	1	2	3	3	1	1	1	12	2	32	4	-1	-19	-14	-5	6	6	6	5	2	3	5	33	396
1936	410	406	404	424	424	437	449	461	455	448	441	434	29	17	5	11	18	25	32	1	2	4	3	2	1	1	14	13	12	12	-6	-7	-7	-7	6	6	6	4	4	4	4	34	476
1937	425	417	411	404	424	437	449	466	454	441	433	430	29	17	0	12	25	33	36	1	2	6	3	1	1	1	15	13	12	17	-12	-13	-8	-3	6	6	6	3	3	4	5	33	495
1938	422	419	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	23	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1939	426	420	415	409	402	409	415	418	390	334	334	335	57	51	48	76	132	132	131	1	1	1	1	1	1	1	7	7	6	3	-28	-56	0	1	6	6	6	1	1	6	6	32	224
1940	334	334	334	420	424	437	449	461	448	431	424	425	29	17	5	18	35	42	41	1	2	4	2	1	1	1	12	13	12	12	-13	-17	-7	1	6	6	6	3	2	4	6	33	396
1941	420	416	424	424	424	437	449	466	458	455	449	434	29	17	0	8	11	17	32	1	2	6	4	3	2	1	19	13	12	17	-8	-3	-6	-15	6	6	6	4	5	4	3	34	646
1942	426	422	424	424	424	430	449	466	466	463	449	434	36	17	0	0	3	17	32	1	2	6	6	5	2	1	23	6	19	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1943	425	424	423	422	422	434	449	459	451	447	442	434	32	17	7	15	19	24	32	1	2	4	2	2	1	1	13	12	15	10	-8	-4	-5	-8	6	6	6	4	5	5	4	36	468
1944	425	419	413	405	407	419	420	433	413	392	377	370	47	46	33	53	74	89	96	1	1	1	1	1	1	1	7	12	1	13	-20	-21	-15	-7	6	6	6	2	1	3	4	28	196
1945	363	392	412	424	424	437	449	466	455	444	438	434	29	17	0	11	22	28	32	1	2	6	3	1	1	1	15	13	12	17	-11	-11	-6	-4	6	6	6	3	3	4	5	33	495
1946	427	424	424	424	423	437	449	466	451	438	431	430	29	17	0	15	28	35	36	1	2	6	2	1	1	1	14	14	12	17	-15	-13	-7	-1	6	6	6	3	3	4	5	33	462
1947	421	422	421	412	414	431	440	443	416	385	357	360	35	26	23	50	81	109	106	1	1	1	1	1	1	1	7	17	9	3	-27	-31	-28	3	6	6	6	1	1	1	6	27	189
1948	377	389	395	415	411	407	442	463	459	453	448	434	59	24	3	7	13	18	32	1	1	5	4	3	2	1	17	-4	35	21	-4	-6	-5	-14	5	6	6	5	4	5	3	34	578
1949	425	419	416	406	400	422	443	459	442	426	417	416	44	23	7	24	40	49	50	1	1	4	1	1	1	1	10	22	21	16	-17	-16	-9	-1	6	6	6	2	2	4	5	31	310
1950	410	404	395	421	424	437	449	466	455	443	439	434	29	17	0	11	23	27	32	1	2	6	3	1	1	1	15	13	12	17	-11	-12	-4	-5	6	6	6	3	3	5	5	34	510
1951	428	393	388	388	388	426	449	466	450	436	430	431	40	17	0	16	30	36	35	1	2	6	2	1	1	1	14	38	23	17	-16	-14	-6	1	6	6	6	2	3	4	6	33	462
1952	425	424	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	23	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1953	428	423	424	424	424	430	446	458	464	463	449	434	36	20	8	2	3	17	32	1	1	4	5	5	2	1	19	6	16	12	6	-1	-14	-15	6	6	6	6	5	3	3	35	665
1954	425	423	421	422	424	437	449	452	441	422	417	420	29	17	14	25	44	49	46	1	2	3	1	1	1	1	10	13	12	3	-11	-19	-5	3	6	6	6	3	2	5	6	34	340
1955	414	408	411	417	418	413	424	434	417	394	379	376	53	42	32	49	72	87	90	1	1	1	1	1	1	1	7	-5	11	10	-17	-23	-15	-3	5	6	6	2	1	3	5	28	196
1956	361	364	420	402	406	425	441	466	466	463	449	434	41	25	0	0	3	17	32	1	1	6	6	5	2	1	22	19	16	25	0	-3	-14	-15	6	6	6	6	5	3	3	35	770
1957	428	422	417	412	424	437	433	459	448	436	429	428	29	33	7	18	30	37	38	1	1	4	2	1	1	1	11	13	-4	26	-11	-12	-7	-1	6	5	6	3	3	4	5	32	352
1958	421	416	417	422	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	23	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1959	425	419	412	417	424	425	433	433	411	388	376	385	41	33	33	55	78	90	81	1	1	1	1	1	1	1	7	1	8	0	-22	-23	-12	9	6	6	6	1	1	3	6	29	203
1960	385	380	378	387	424	437	448	446	427	404	393	398	29	18	20	39	62	73	68	1	2	1	1	1	1	1	8	13	11	-2	-19	-23	-11	5	6	6	5	2	1	3	6	29	232
1961	394	391	390	383	389	398	408	421	405	387	377	381	68	58	45	61	79	89	85	1	1	1	1	1	1	1	7	9	10	13	-16	-18	-10	4	6	6	6	2	2	4	6	32	224
1962	382	384	391	392	424	431	447	454	447	427	419	417	35	19	12	19	39	47	49	1	2	3	2	1	1	1	11	7	16	7	-7	-20	-8	-2	6	6	6	4	2	4	5	33	363
1963	441	424	424	424	419	430	449	466	459	454	449	434	36	17	0	7	12	17	32	1	2	6	4	3	2	1	19	11	19	17	-7	-5	-5	-15	6	6	6	4	5	5	3	35	665
1964	427	424	424	424	418	414	425	438	417	382	352	335	52	41	28	49	84	114	131	1	1	1	1	1	1	1	7	-4	11	13	-21	-35	-30	-17	5	6	6	1	1	1	2	22	154
1965	335	367	393	392	395	414	449	464	454	448	445	434	52	17	2	12	18	21	32	1	2	5	3	2	1	1	15	19	35	15	-10	-6	-3	-11	6	6	6	4	4	5	3	34	510
1966	426	424	424	424	422	430	448	447	427	404	393	394	36	18	19	39	62	73	72	1	2	2	1	1	1	1	9	8	18	-1	-20	-23	-11	1	6	6	5	2	1	3	6	29	261
1967	394	402	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	23	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1968	427	424	423	424	424	437	439	441	419	395	393	396	29	27	25	47	71	73	70	1	1	1	1	1	1	1	7	13	2	2	-22	-24	-2	3	6	6	6	1	1	5	6	31	217
1969	394	399	408	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	23	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1970	427	424	423	393	396	426	431	440	429	413	412	415	40	35	26	37	53	54	51	1	1	1	1	1	1	1	7	30	5	9	-11	-16	-1	3	6	6	6	3	2	5	6	34	238
1971	409	419	424	424	423	437	447	461	461	460	449	434	29	19	5	5	6	17	32	1	2	4	4	4	2	1	18	14	10	14	0	-1	-11	-15	6	6	6	6	5	3	3	35	630
1972	425	422	424	424	424	437	444	451	432	410	403	403	29	22	15	34	56	63	63	1	1	2	1	1	1	1	8	13	7	7	-19	-22	-7	0	6	6	6	2	1	4	6	31	248
1973	402	407	422	424	424	437	449	466	451	434	428	429	29	17	0	15	32	38	37	1	2	6	2	1	1	1	14	13	12	17	-15	-17	-6	1	6	6	6	3	2	4	6	33	462
1974	422	423	422	409	417	433	449	466	463	463	449	434	33	17	0	3	3	17	32	1	2	6	5	5	2	1	22	16	16	17	-3	0	-14	-15	6	6	6	5	6	3	3	35	770
1975	426	419	417	415	424	437	441	466	466	463	449	434	29	25	0	0	3	17	32	1	1	6	6	5	2	1	22	13	4	25	0	-3	-14	-15	6	6	6	6	5	3	3	35	770
1976	431	423	419	410	402	392	397	401	366	334	340	341	74	69	65	100	132	126	125	1	1	1	1	1	1	1	7	-10	5	4	-35	-32	6	1	4	6	6	1	1	6	6	30	210
1977	335	334	330	325	321	323	334	341	334	319	305	291	143	132	125	132	147	161	175	1	1	1	1	1	1	1	7	2	11	7	-7	-15	-14	-14	6	6	6	4	3	3	3	31	217
1978	286	304	358	424	424	437	449	466	459	453	444	434	29	17	0	7	13	22	32	1	2	6	4	3	1	1	18	13	12	17	-7	-6	-9	-10	6	6	6	4	4	4	4	34	612
1979	423	417	411	418	424	437	447	466	449	433	426	425	29	19	0	17	33	40	41	1	2	6	2	1	1	1	14	13	10	19	-17	-16	-7	-1	6	6	6	2	2	4	5	31	434
1980	421	419	420	405	399	430	449	464	453	453	449	434	36	17	2	13	13	17	32	1	2	5	3	3	2	1	17	31	19	15	-11	0	-4	-15	6	6	6	3	6	5	3	35	595
1981	425	419	415	413	412	422	433	435	411	390	384	385	44	33	31	55	76	82	81	1	1	1	1	1	1	1	7	10	11	2	-24	-21	-6	1	6	6	6	1	1	4	6	30	210
1982	395	420	392	396	388	424	449	466	466	463	449	434	42	17	0	0	3	17	32	1	2	6	6	5	2	1	23	36	25	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1983	438	415	417	418	418	433	449	466	466	463	449	434	33	17	0	0	3	17	32	1	2	6	6	5	2	1	23	15	16	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1984	435	392	388	388	392	424	441	464	453	440	435	434	42	25	2	13	26	31	32	1	1	5	3	1	1	1	13	32	17	23	-11	-13	-5	-1	6	6	6	3	3	5	5	34	442
1985	427	424	424	420	422	428	443	442	413	373	335	336	38	23	24	53	93	131	130	1	1	1	1	1	1	1	7	6	15	-1	-29	-40	-38	1	6	6	5	1	1	1	6	26	182
1986	335	366	396	424	396	424	449	464	457	452	448	434	42	17	2	9	14	18	32	1	2	5	4	3	2	1	18	28	25	15	-7	-5	-4	-14	6	6	6	4	5	5	3	35	630
1987	427	420	413	405	404	410	416	418	386	336	323	334	56	50	48	80	130	143	132	1	1	1	1	1	1	1	7	6	6	2	-32	-50	-13	11	6	6	6	1	1	3	6	29	203
1988	334	334	369	396	387	385	393	390	352	325	309	374	81	73	76	114	141	157	92	1	1	1	1	1	1	1	7	-2	8	-3	-38	-27	-16	65	5	6	5	1	1	2	6	26	182
1989	358	378	394	403	401	437	449	452	433	410	404	408	29	17	14	33	56	62	58	1	2	3	1	1	1	1	10	36	12	3	-19	-23	-6	4	6	6	6	2	1	4	6	31	310
1990	405	404	400	400	398	410	413	414	379	334	343	344	56	53	52	87	132	123	122	1	1	1	1	1	1	1	7	12	3	1	-35	-45	9	1	6	6	6	1	1	6	6	32	224
1991	334	334	335	332	332	383	407	425	420	415	411	409	83	59	41	46	51	55	57	1	1	1	1	1	1	1	7	51	24	18	-5	-5	-4	-2	6	6	6	5	5	5	5	38	266
1992	402	390	381	366	388	403	411	406	368	334	323	316	63	55	60	98	132	143	150	1	1	1	1	1	1	1	7	15	8	-5	-38	-34	-11	-7	6	6	5	1	1	3	4	26	182
1993	316	315	357	424	427	434	449	466	466	455	449	434	32	17	0	0	11	17	32	1	2	6	6	3	2	1	21	7	15	17	0	-11	-6	-15	6	6	6	6	3	4	3	34	714
1994	423	413	407	395	390	388	396	401	376	334	334	332	78	70	65	90	132	132	134	1	1	1	1	1	1	1	7	-2	8	5	-25	-42	0	-2	5	6	6	1	1	6	5	30	210

73 - year Average: 13

73 - year Average: 32 **426.5**

1929 - '34 Average: 212.5

STUDY: 1995C06F-SWRCB-469 DWRSIM: recirc818-f, 17 Jun 97
CP # 10, NEW MELONES RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-469/10/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 1088'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	940	943	948	954	968	978	973	990	1012	1004	991	981	120	110	115	98	76	84	97	1	1	1	1	1	1	1	**7**	10	-5	17	22	-8	-13	-10	6	5	6	6	4	3	4	**34**	**238**
1923	980	984	994	1002	1008	1007	1004	1008	1008	999	984	975	80	81	84	80	80	89	104	1	1	1	1	1	1	1	**7**	-1	-3	4	0	-9	-15	-9	5	5	6	6	4	3	4	**33**	**231**
1924	975	977	980	984	988	988	979	967	954	942	930	926	100	100	109	121	134	146	158	1	1	1	1	1	1	1	**7**	0	-9	-12	-13	-12	-12	-4	6	4	3	3	3	3	5	**27**	**189**
1925	925	928	931	935	953	964	966	982	986	977	963	956	135	124	122	106	102	111	125	1	1	1	1	1	1	1	**7**	11	2	16	4	-9	-14	-7	6	6	6	6	4	3	4	**35**	**245**
1926	955	956	959	961	971	975	975	965	951	936	922	912	117	113	113	123	137	152	166	1	1	1	1	1	1	1	**7**	4	0	-10	-14	-15	-14	-10	6	6	4	3	3	3	4	**29**	**203**
1927	912	917	927	934	953	964	972	983	986	975	962	956	135	124	116	105	102	113	126	1	1	1	1	1	1	1	**7**	11	8	11	3	-11	-13	-6	6	6	6	6	3	3	4	**34**	**238**
1928	957	963	968	972	980	1001	999	1001	993	978	964	956	108	87	89	87	95	110	124	1	1	1	1	1	1	1	**7**	21	-2	2	-8	-15	-14	-8	6	5	6	4	3	3	4	**31**	**217**
1929	955	958	961	963	967	968	964	960	949	937	925	917	121	120	124	128	139	151	163	1	1	1	1	1	1	1	**7**	1	-4	-4	-11	-12	-12	-8	6	5	5	3	3	3	4	**29**	**203**
1930	918	920	923	926	932	940	940	935	931	916	895	882	156	148	148	153	157	172	193	1	1	1	1	1	1	1	**7**	8	0	-5	-4	-15	-21	-13	6	6	5	5	3	1	3	**29**	**203**
1931	883	888	892	895	900	903	895	882	864	846	827	818	188	185	193	206	224	242	261	1	1	1	1	1	1	1	**7**	3	-8	-13	-18	-18	-19	-9	6	4	3	2	2	2	4	**23**	**161**
1932	817	820	831	840	863	874	874	910	929	922	904	892	225	214	214	178	159	166	184	1	1	1	1	1	1	1	**7**	11	0	36	19	-7	-18	-12	6	6	6	6	4	2	3	**33**	**231**
1933	893	895	901	906	910	913	905	901	898	877	855	843	178	175	183	187	190	211	233	1	1	1	1	1	1	1	**7**	3	-8	-4	-3	-21	-22	-12	6	4	5	5	1	1	3	**25**	**175**
1934	844	848	854	860	869	879	870	856	836	817	790	772	219	209	218	232	252	271	298	1	1	1	1	1	1	1	**7**	10	-9	-14	-20	-19	-27	-18	6	4	3	2	2	1	2	**20**	**140**
1935	769	771	778	792	803	815	833	876	897	882	862	850	285	273	255	212	191	206	226	1	1	1	1	1	1	1	**7**	12	18	43	21	-15	-20	-12	6	6	6	6	3	2	3	**32**	**224**
1936	850	854	859	876	913	927	939	962	970	959	946	939	175	161	149	126	118	129	142	1	1	1	1	1	1	1	**7**	14	12	23	8	-11	-13	-7	6	6	6	6	3	3	4	**34**	**238**
1937	939	942	945	950	963	977	978	1002	1006	997	986	978	125	111	110	86	82	91	102	1	1	1	1	1	1	1	**7**	14	1	24	4	-9	-11	-8	6	6	6	6	4	3	4	**35**	**245**
1938	979	982	994	1003	1022	1043	1052	1078	1088	1084	1075	1069	66	45	36	10	0'	4	13	1	1	1	3	6	5	3	**20**	21	9	26	10	-4	-9	-6	6	6	6	6	5	4	4	**37**	**740**
1939	1050	1050	1050	1050	1050	1052	1050	1038	1025	1012	999	992	38	36	38	50	63	76	89	1	1	1	1	1	1	1	**7**	2	-2	-12	-13	-13	-13	-7	6	5	3	3	3	3	4	**27**	**189**
1940	988	989	992	1004	1018	1035	1044	1055	1046	1033	1021	1014	70	53	44	33	42	55	67	1	1	1	1	1	1	1	**7**	17	9	11	-9	-13	-12	-7	6	6	6	4	3	3	4	**32**	**224**
1941	1013	1015	1020	1027	1037	1047	1043	1058	1064	1058	1047	1040	51	41	45	30	24	30	41	1	1	1	1	1	1	1	**7**	10	-4	15	6	-6	-11	-7	6	5	6	6	4	3	4	**34**	**238**
1942	1038	1039	1045	1050	1050	1055	1055	1067	1081	1078	1067	1062	38	33	33	21	7	10	21	1	1	1	1	4	3	1	**12**	5	0	12	14	-3	-11	-5	6	6	6	6	5	3	5	**37**	**444**
1943	1050	1050	1050	1050	1050	1055	1061	1068	1067	1059	1048	1041	38	33	27	20	21	29	40	1	1	1	1	1	1	1	**7**	5	6	7	-1	-8	-11	-7	6	6	6	5	4	3	4	**34**	**238**
1944	1039	1040	1042	1043	1046	1050	1045	1041	1034	1021	1008	1000	42	38	43	47	54	67	80	1	1	1	1	1	1	1	**7**	4	-5	-4	-7	-13	-13	-8	6	5	5	4	3	3	4	**30**	**210**
1945	998	1003	1007	1012	1026	1035	1035	1048	1054	1045	1033	1026	62	53	53	40	34	43	55	1	1	1	1	1	1	1	**7**	9	0	13	6	-9	-12	-7	6	6	6	6	4	3	4	**35**	**245**
1946	1025	1030	1040	1048	1050	1054	1052	1060	1057	1046	1034	1027	38	34	36	28	31	42	54	1	1	1	1	1	1	1	**7**	4	-2	8	-3	-11	-12	-7	6	5	6	5	3	3	4	**32**	**224**
1947	1026	1029	1031	1033	1037	1040	1028	1019	1010	999	988	981	51	48	60	69	78	89	100	1	1	1	1	1	1	1	**7**	3	-12	-9	-9	-11	-11	-7	6	3	4	4	3	3	4	**27**	**189**
1948	979	981	983	985	986	990	989	991	999	990	978	971	102	98	99	97	89	98	110	1	1	1	1	1	1	1	**7**	4	-1	2	8	-9	-12	-7	6	5	6	6	4	3	4	**34**	**238**
1949	969	972	975	978	982	988	981	985	979	966	953	946	106	100	107	103	109	122	135	1	1	1	1	1	1	1	**7**	6	-7	4	-6	-13	-13	-7	6	4	6	4	3	3	4	**30**	**210**
1950	944	945	947	955	965	974	973	986	991	979	967	959	123	114	115	102	97	109	121	1	1	1	1	1	1	1	**7**	9	-1	13	5	-12	-12	-8	6	5	6	6	3	3	4	**33**	**231**
1951	958	994	1034	1046	1050	1055	1048	1041	1033	1020	1007	999	38	33	40	47	55	68	81	1	1	1	1	1	1	1	**7**	5	-7	-7	-8	-13	-13	-8	6	4	4	4	3	3	4	**28**	**196**
1952	998	1001	1008	1022	1033	1045	1048	1077	1088	1086	1076	1070	55	43	40	11	0	2	12	1	1	1	3	6	5	3	**20**	12	3	29	11	-2	-10	-6	6	6	6	6	5	4	4	**37**	**740**
1953	1050	1050	1050	1050	1050	1054	1046	1036	1037	1028	1016	1008	38	34	42	52	51	60	72	1	1	1	1	1	1	1	**7**	4	-8	-10	1	-9	-12	-8	6	4	4	6	4	3	4	**31**	**217**
1954	1005	1007	1010	1013	1015	1023	1025	1028	1018	1005	992	982	73	65	63	60	70	83	96	1	1	1	1	1	1	1	**7**	8	2	3	-10	-13	-13	-10	6	6	6	4	3	3	4	**32**	**224**
1955	979	982	986	992	993	993	985	979	975	962	948	940	95	95	103	109	113	126	140	1	1	1	1	1	1	1	**7**	0	-8	-6	-4	-13	-14	-8	6	4	4	5	3	3	4	**29**	**203**
1956	940	943	976	1006	1020	1029	1020	1037	1050	1043	1031	1024	68	59	68	51	38	45	57	1	1	1	1	1	1	1	**7**	9	-9	17	13	-7	-12	-7	6	4	6	6	4	3	4	**33**	**231**
1957	1022	1024	1027	1029	1034	1041	1029	1026	1024	1011	999	991	54	47	59	62	64	77	89	1	1	1	1	1	1	1	**7**	7	-12	-3	-2	-13	-12	-8	6	3	5	5	3	3	4	**29**	**203**
1958	985	988	991	998	1006	1021	1028	1058	1072	1066	1056	1049	82	67	60	30	16	22	32	1	1	1	1	2	1	1	**8**	15	7	30	14	-6	-10	-7	6	6	6	6	4	4	4	**36**	**288**
1959	1048	1050	1050	1050	1050	1053	1046	1030	1018	1005	992	983	38	35	42	58	70	83	96	1	1	1	1	1	1	1	**7**	3	-7	-16	-12	-13	-13	-9	6	4	2	3	3	3	4	**25**	**175**
1960	979	981	984	987	994	999	996	991	980	966	953	943	94	89	92	97	108	122	135	1	1	1	1	1	1	1	**7**	5	-3	-5	-11	-14	-13	-10	6	5	5	3	3	3	4	**29**	**203**
1961	939	942	946	949	951	954	950	943	931	918	899	889	137	134	138	145	157	170	189	1	1	1	1	1	1	1	**7**	3	-4	-7	-12	-13	-19	-10	6	5	4	3	3	2	4	**27**	**189**
1962	889	892	896	899	916	924	926	934	937	927	909	896	172	164	162	154	151	161	179	1	1	1	1	1	1	1	**7**	8	2	8	3	-10	-18	-13	6	6	6	6	4	2	3	**33**	**231**
1963	896	901	907	920	939	945	946	976	983	975	962	956	149	143	142	112	105	113	126	1	1	1	1	1	1	1	**7**	6	1	30	7	-8	-13	-6	6	6	6	6	4	3	4	**35**	**245**
1964	956	961	965	971	974	976	969	961	953	940	927	916	114	112	119	127	135	148	161	1	1	1	1	1	1	1	**7**	2	-7	-8	-8	-13	-13	-11	6	4	4	4	3	3	3	**27**	**189**
1965	915	921	952	979	994	1002	1010	1011	1016	1008	997	990	94	86	78	77	72	80	91	1	1	1	1	1	1	1	**7**	8	8	1	5	-8	-11	-7	6	6	6	6	4	3	4	**35**	**245**
1966	989	994	999	1004	1009	1015	1004	1002	991	977	964	954	79	73	84	86	97	111	124	1	1	1	1	1	1	1	**7**	6	-11	-2	-11	-14	-13	-10	6	3	5	3	3	3	4	**27**	**189**
1967	954	957	969	984	994	1005	1007	1030	1058	1062	1052	1046	94	83	81	58	30	26	36	1	1	1	1	1	1	1	**7**	11	2	23	28	4	-10	-6	6	6	6	6	6	4	4	**38**	**266**
1968	1044	1046	1048	1050	1050	1054	1042	1033	1022	1008	994	984	38	34	46	55	66	80	94	1	1	1	1	1	1	1	**7**	4	-12	-9	-11	-14	-14	-10	6	3	4	3	3	3	4	**26**	**182**
1969	982	987	990	1020	1041	1055	1066	1088	1088	1084	1074	1066	47	33	22	0	0	4	14	1	1	1	6	6	5	3	**23**	14	11	22	0	-4	-10	-8	6	6	6	6	5	4	4	**37**	**851**
1970	1050	1050	1050	1050	1050	1055	1047	1041	1039	1025	1012	1005	38	33	41	47	49	63	76	1	1	1	1	1	1	1	**7**	5	-8	-6	-2	-14	-13	-7	6	4	4	5	3	3	4	**29**	**203**
1971	1003	1007	1015	1022	1029	1035	1026	1021	1021	1010	997	989	59	53	62	67	67	78	91	1	1	1	1	1	1	1	**7**	6	-9	-5	0	-11	-13	-8	6	4	5	6	3	3	4	**31**	**217**
1972	985	989	996	1002	1002	1006	992	991	981	967	953	946	86	82	96	97	107	121	135	1	1	1	1	1	1	1	**7**	4	-14	-1	-10	-14	-14	-7	6	3	5	4	3	3	4	**28**	**196**
1973	946	949	955	971	990	1002	1004	1022	1026	1016	1005	1000	98	86	84	66	62	72	83	1	1	1	1	1	1	1	**7**	12	2	18	4	-10	-11	-5	6	6	6	6	4	3	5	**36**	**252**
1974	1000	1006	1016	1029	1039	1052	1056	1067	1067	1058	1046	1039	49	36	32	21	21	30	42	1	1	1	1	1	1	1	**7**	13	4	11	0	-9	-12	-7	6	6	6	6	4	3	4	**35**	**245**
1975	1038	1040	1043	1047	1050	1055	1050	1049	1061	1053	1042	1034	38	33	38	39	27	35	46	1	1	1	1	1	1	1	**7**	5	-5	-1	12	-8	-11	-8	6	5	5	6	4	3	4	**33**	**231**
1976	1033	1036	1038	1040	1043	1045	1039	1030	1019	1009	1000	994	45	43	49	58	69	79	88	1	1	1	1	1	1	1	**7**	2	-6	-9	-11	-10	-9	-6	6	4	4	3	4	4	4	**29**	**203**
1977	994	995	997	997	997	997	988	977	968	955	943	937	91	91	100	111	120	133	145	1	1	1	1	1	1	1	**7**	0	-9	-11	-9	-13	-12	-6	6	4	3	4	3	3	4	**27**	**189**
1978	936	936	940	950	963	983	993	1010	1021	1019	1010	1006	125	105	95	78	67	69	78	1	1	1	1	1	1	1	**7**	20	10	17	11	-2	-9	-4	6	6	6	6	5	4	5	**38**	**266**
1979	1006	1009	1013	1021	1034	1047	1048	1057	1052	1038	1024	1017	54	41	40	31	36	50	64	1	1	1	1	1	1	1	**7**	13	1	9	-5	-14	-14	-7	6	6	6	5	3	3	4	**33**	**231**
1980	1018	1021	1024	1050	1050	1055	1056	1063	1070	1068	1057	1051	38	33	32	25	18	20	31	1	1	1	1	2	1	1	**8**	5	1	7	7	-2	-11	-6	6	6	6	6	5	3	4	**36**	**288**
1981	1050	1050	1050	1050	1050	1053	1045	1034	1019	1005	992	984	38	35	43	54	69	83	96	1	1	1	1	1	1	1	**7**	3	-8	-11	-15	-14	-13	-8	6	4	3	3	3	3	4	**26**	**182**
1982	982	991	1006	1027	1050	1055	1071	1086	1088	1084	1075	1071	38	33	17	2	0	4	13	1	1	2	5	6	5	3	**23**	5	16	15	2	-4	-9	-4	6	6	6	6	5	4	5	**38**	**874**
1983	1050	1050	1050	1050	1050	1055	1056	1070	1088	1088	1082	1075	38	33	32	18	0	0	6	1	1	1	2	6	6	4	**21**	5	1	14	18	0	-6	-7	6	6	6	6	6	4	4	**38**	**798**
1984	1050	1050	1050	1050	1050	1055	1044	1037	1033	1022	1011	1006	38	33	44	51	55	66	77	1	1	1	1	1	1	1	**7**	5	-11	-7	-4	-11	-11	-5	6	3	4	5	3	3	5	**29**	**203**
1985	1005	1010	1015	1018	1023	1029	1026	1020	1010	1000	989	984	65	59	62	68	78	88	99	1	1	1	1	1	1	1	**7**	6	-3	-6	-10	-10	-11	-5	6	5	4	4	4	3	5	**31**	**217**
1986	983	986	991	1001	1049	1055	1056	1061	1065	1055	1045	1040	39	33	32	27	23	33	43	1	1	1	1	1	1	1	**7**	6	1	5	4	-10	-10	-5	6	6	6	6	4	4	5	**37**	**259**
1987	1039	1041	1044	1044	1046	1049	1044	1034	1023	1014	1006	1002	42	39	44	54	65	74	82	1	1	1	1	1	1	1	**7**	3	-5	-10	-11	-9	-8	-4	6	5	4	3	4	4	5	**31**	**217**
1988	998	998	999	1000	1002	1004	998	988	978	968	959	953	86	84	90	100	110	120	129	1	1	1	1	1	1	1	**7**	2	-6	-10	-10	-10	-9	-6	6	4	4	4	4	4	4	**30**	**210**
1989	952	952	953	954	956	968	964	960	952	940	929	924	132	120	124	128	136	148	159	1	1	1	1	1	1	1	**7**	12	-4	-4	-8	-12	-11	-5	6	5	5	4	3	3	5	**31**	**217**
1990	927	930	934	937	940	944	937	926	911	891	875	866	148	144	151	162	177	197	213	1	1	1	1	1	1	1	**7**	4	-7	-11	-15	-20	-16	-9	6	4	3	3	2	2	4	**24**	**168**
1991	865	866	871	871	871	879	874	869	853	834	817	810	217	209	214	219	235	254	271	1	1	1	1	1	1	1	**7**	8	-5	-5	-16	-19	-17	-7	6	5	5	2	2	2	4	**26**	**182**
1992	811	813	819	822	833	842	834	818	792	762	727	715	255	246	254	270	296	326	361	1	1	1	1	1	1	1	**7**	9	-8	-16	-26	-30	-35	-12	6	4	2	1	1	1	3	**18**	**126**
1993	723	737	755	789	887	941	929	934	945	935	925	921	201	147	159	154	143	153	163	1	1	1	1	1	1	1	**7**	54	-12	5	11	-10	-10	-4	6	3	6	6	4	4	5	**34**	**238**
1994	920	921	925	925	927	932	928	925	912	893	876	868	161	156	160	163	176	195	212	1	1	1	1	1	1	1	**7**	5	-4	-3	-13	-19	-17	-8	6	5	5	3	2	2	4	**27**	**189**

73 - year Average: 8

73 - year Average: 31 **258.5**
1929 - '34 Average: 185.5

Joint Point Alternative 2

STUDY: 1995C06F-SWRCB-469 DWRSIM: recirc818-f, 17 Jun 97
CP # 81, DON PEDRO RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-469/81/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 832'

Difference from Maximum Reservoir Elevation [DFMRE]

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	599	581	579	600	656	690	698	724	781	778	763	752	142	134	108	51	54	69	80
1923	746	745	748	760	775	784	788	792	801	794	779	770	48	44	40	31	38	53	62
1924	764	761	756	755	756	754	748	742	734	722	708	700	78	84	90	98	110	124	132
1925	695	695	696	700	722	739	751	762	780	771	755	744	93	81	70	52	61	77	88
1926	737	734	730	729	738	742	756	768	765	749	734	725	90	76	64	67	83	98	107
1927	717	717	721	729	758	773	783	782	800	793	778	768	59	49	50	32	39	54	64
1928	762	762	762	765	773	792	801	818	818	803	788	779	40	31	14	14	29	44	53
1929	772	767	763	762	766	767	767	770	778	768	759	751	65	65	62	54	64	73	81
1930	747	744	741	742	747	755	756	758	772	763	753	747	77	76	74	60	69	79	85
1931	745	744	743	745	748	747	739	727	714	700	687	679	85	93	105	118	132	145	153
1932	675	671	683	698	736	751	752	756	772	767	752	741	81	80	76	60	65	80	91
1933	734	727	721	720	727	730	726	719	736	725	708	697	102	106	113	96	107	124	135
1934	688	686	684	687	698	707	705	698	694	676	658	647	125	127	134	138	156	174	185
1935	640	639	641	655	682	697	723	734	764	751	734	721	135	109	98	68	81	98	111
1936	713	711	705	711	753	770	779	796	814	804	789	778	62	53	36	18	28	43	54
1937	772	767	762	765	793	800	802	815	832	819	805	795	32	30	17	0	13	27	37
1938	789	784	800	800	800	800	800	804	831	832	819	808	32	32	28	1	0	13	24
1939	800	799	799	800	800	800	802	804	799	787	774	766	32	30	28	33	45	58	66
1940	764	763	761	773	800	800	802	816	829	814	799	789	32	30	16	3	18	33	43
1941	783	781	783	798	800	800	800	812	832	831	817	808	32	32	20	0	1	15	24
1942	800	798	800	800	800	800	802	807	831	832	818	808	32	30	25	1	0	14	24
1943	800	800	800	800	800	800	802	821	832	824	810	799	32	30	11	0	8	22	33
1944	794	792	788	787	793	800	801	808	814	802	787	777	32	31	24	18	30	45	55
1945	772	773	776	781	800	800	802	807	831	825	810	799	32	30	25	1	7	22	33
1946	796	797	800	800	800	800	802	806	812	796	780	769	32	30	26	20	36	52	63
1947	763	763	765	768	776	781	778	782	776	764	750	742	51	54	50	56	68	82	90
1948	739	738	737	738	739	740	735	743	769	758	740	730	92	97	89	63	74	92	102
1949	723	717	711	710	717	728	735	744	752	734	714	702	104	97	88	80	98	118	130
1950	693	687	681	686	706	718	727	737	754	738	720	707	114	105	95	78	94	112	125
1951	700	749	797	800	800	800	798	794	798	783	769	759	32	34	38	34	49	63	73
1952	752	750	757	782	800	800	800	820	832	832	819	808	32	32	12	0	0	13	24
1953	800	795	793	800	800	800	802	804	814	810	796	787	32	30	28	18	22	36	45
1954	782	778	775	776	785	797	802	819	820	805	789	780	35	30	13	12	27	43	52
1955	774	770	768	774	780	784	780	783	790	777	765	758	48	52	49	42	55	67	74
1956	752	748	797	800	800	800	802	818	832	832	818	808	32	30	14	0	0	14	24
1957	800	798	793	793	799	800	800	806	827	814	800	791	32	32	26	5	18	32	41
1958	786	781	779	783	800	800	800	821	832	832	819	808	32	32	11	0	0	13	24
1959	800	794	789	793	800	800	802	800	794	782	770	763	32	30	32	38	50	62	69
1960	760	758	755	755	763	768	770	775	778	768	758	752	64	62	57	54	64	74	80
1961	748	746	746	747	750	749	742	733	726	713	700	694	83	90	99	106	119	132	138
1962	691	688	686	687	712	732	742	742	768	760	746	736	100	90	90	64	72	86	96
1963	729	724	720	725	751	762	770	781	806	801	788	778	70	62	51	26	31	44	54
1964	773	774	775	779	786	788	784	780	783	771	760	753	44	48	52	49	61	72	79
1965	749	749	783	800	800	800	802	807	827	827	816	807	32	30	25	5	5	16	25
1966	800	800	800	800	800	800	801	798	791	776	761	752	32	31	34	41	56	71	80
1967	747	744	755	770	788	800	800	817	832	832	820	808	32	32	15	0	0	12	24
1968	800	795	791	792	800	800	802	805	803	791	779	771	32	30	27	29	41	53	61
1969	766	767	770	800	800	800	800	823	832	832	819	808	32	32	9	0	0	13	24
1970	800	799	800	800	800	800	799	799	807	795	780	771	32	33	33	25	37	52	61
1971	765	766	772	788	800	800	801	801	807	798	786	778	32	31	31	25	34	46	54
1972	773	769	772	778	792	800	800	798	795	783	772	766	32	32	34	37	49	60	66
1973	762	761	763	774	800	800	802	812	827	812	797	788	32	30	20	5	20	35	44
1974	783	787	798	800	800	800	800	806	828	819	805	796	32	32	26	4	13	27	36
1975	791	789	786	786	798	800	802	812	832	825	812	803	32	30	20	0	7	20	29
1976	800	800	799	799	800	799	794	787	777	767	757	751	33	38	45	55	65	75	81
1977	748	745	742	741	741	737	728	715	701	687	671	662	95	104	117	131	145	161	170
1978	658	653	657	683	716	748	761	776	813	821	808	802	84	71	56	19	11	24	30
1979	797	793	790	800	800	800	802	822	832	818	803	794	32	30	10	0	14	29	38
1980	789	788	787	800	800	800	800	817	832	832	819	808	32	32	15	0	0	13	24
1981	800	797	794	795	799	800	802	806	805	793	782	774	32	30	26	27	39	50	58
1982	770	776	795	800	800	800	800	820	832	832	820	808	32	32	12	0	0	12	24
1983	800	800	800	800	800	800	800	819	832	832	832	808	32	32	13	0	0	0	24
1984	800	800	800	800	800	800	797	803	814	801	786	776	32	35	29	18	31	46	56
1985	773	773	779	786	794	800	801	799	795	784	772	766	32	31	33	37	48	60	66
1986	763	764	767	774	800	800	802	827	832	825	811	802	32	30	5	0	7	21	30
1987	796	791	786	784	786	788	786	783	779	769	759	752	44	46	49	53	63	73	80
1988	750	749	749	754	759	761	756	747	740	728	716	709	71	76	85	92	104	116	123
1989	705	702	702	705	708	722	733	747	754	743	732	727	110	99	85	78	89	100	105
1990	725	725	725	727	730	733	730	726	724	709	695	688	99	102	106	108	123	137	144
1991	684	680	676	675	675	684	683	698	709	699	689	683	148	149	134	123	133	143	149
1992	681	682	681	684	693	698	700	707	706	692	677	666	134	132	125	126	140	155	166
1993	660	654	654	689	721	750	758	772	803	802	788	778	82	74	60	29	30	44	54
1994	772	766	762	761	765	768	765	768	766	756	745	740	64	67	64	66	76	87	92

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Fluct. MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	1	1	1	1	1	1	1	7	34	8	26	57	-3	-15	-11	6	6	6	6	5	3	3	35	245
1923	1	1	1	1	1	1	1	7	9	4	4	9	-7	-15	-9	6	6	6	6	4	3	4	35	245
1924	1	1	1	1	1	1	1	7	-2	-6	-6	-8	-12	-14	-8	5	4	4	4	3	3	4	27	189
1925	1	1	1	1	1	1	1	7	17	12	11	18	-9	-16	-11	6	6	6	6	4	2	3	33	231
1926	1	1	1	1	1	1	1	7	4	14	12	-3	-16	-15	-9	6	6	6	5	2	3	4	32	224
1927	1	1	1	1	1	1	1	7	15	10	-1	18	-7	-15	-10	6	6	5	6	4	3	4	34	238
1928	1	1	3	3	1	1	1	11	19	9	17	0	-15	-15	-9	6	6	6	6	3	3	4	34	374
1929	1	1	1	1	1	1	1	7	1	0	3	8	-10	-9	-8	6	6	6	6	4	4	4	36	252
1930	1	1	1	1	1	1	1	7	8	1	2	14	-9	-10	-6	6	6	6	6	4	4	4	36	252
1931	1	1	1	1	1	1	1	7	-1	-8	-12	-13	-14	-13	-8	5	4	3	3	3	3	4	25	175
1932	1	1	1	1	1	1	1	7	15	1	4	16	-5	-15	-11	6	6	6	6	5	3	3	35	245
1933	1	1	1	1	1	1	1	7	3	-4	-7	17	-11	-17	-11	6	5	4	6	3	2	3	29	203
1934	1	1	1	1	1	1	1	7	9	-2	-7	-4	-18	-18	-11	6	5	4	5	2	2	3	27	189
1935	1	1	1	1	1	1	1	7	15	26	11	30	-13	-17	-13	6	6	6	6	3	2	3	32	224
1936	1	1	1	2	1	1	1	8	17	9	17	18	-10	-15	-11	6	6	6	6	4	3	3	34	272
1937	1	1	2	6	3	1	1	15	7	2	13	17	-13	-14	-10	6	6	6	6	3	3	4	34	510
1938	1	1	1	5	6	3	1	18	0	0	4	27	1	-13	-11	6	6	6	6	6	3	3	36	648
1939	1	1	1	1	1	1	1	7	0	2	2	-5	-12	-13	-8	6	6	6	5	3	3	4	33	231
1940	1	1	2	5	2	1	1	13	0	2	14	13	-15	-15	-10	6	6	6	6	3	3	4	34	442
1941	1	1	1	6	5	2	1	17	0	0	12	20	-1	-14	-9	6	6	6	6	5	3	4	36	612
1942	1	1	1	5	6	3	1	18	0	2	5	24	1	-14	-10	6	6	6	6	6	3	4	37	666
1943	1	1	3	6	4	1	1	17	0	2	19	11	-8	-14	-11	6	6	6	6	4	3	3	34	578
1944	1	1	1	2	1	1	1	8	7	1	7	6	-12	-15	-10	6	6	6	6	3	3	4	34	272
1945	1	1	1	5	4	1	1	14	0	2	5	24	-6	-15	-11	6	6	6	6	4	3	3	34	476
1946	1	1	1	1	1	1	1	7	0	2	4	6	-16	-16	-11	6	6	6	6	2	2	3	31	217
1947	1	1	1	1	1	1	1	7	5	-3	4	-6	-12	-14	-8	6	5	6	4	3	3	4	31	217
1948	1	1	1	1	1	1	1	7	1	-5	8	26	-11	-18	-10	6	5	6	6	3	2	4	32	224
1949	1	1	1	1	1	1	1	7	11	7	9	8	-18	-20	-12	6	6	6	6	2	2	3	31	217
1950	1	1	1	1	1	1	1	7	12	9	10	17	-16	-18	-13	6	6	6	6	2	2	3	31	217
1951	1	1	1	1	1	1	1	7	0	-2	-4	4	-15	-14	-10	6	5	5	6	3	3	4	32	224
1952	1	1	3	6	6	3	1	21	0	0	20	12	0	-13	-11	6	6	6	6	6	3	3	36	756
1953	1	1	1	2	1	1	1	8	0	2	2	10	-4	-14	-9	6	6	6	6	5	3	4	36	288
1954	1	1	3	3	1	1	1	11	12	5	17	1	-15	-16	-9	6	6	6	6	3	2	4	33	363
1955	1	1	1	1	1	1	1	7	4	-4	3	7	-13	-12	-7	6	5	6	6	3	3	4	33	231
1956	1	1	3	6	6	3	1	21	0	2	16	14	0	-14	-10	6	6	6	6	6	3	4	37	777
1957	1	1	1	4	2	1	1	11	1	0	6	21	-13	-14	-9	6	6	6	6	3	3	4	34	374
1958	1	1	3	6	6	3	1	21	0	0	21	11	0	-13	-11	6	6	6	6	6	3	3	36	756
1959	1	1	1	1	1	1	1	7	0	2	-2	-6	-12	-12	-7	6	6	5	4	3	3	4	31	217
1960	1	1	1	1	1	1	1	7	5	2	5	3	-10	-10	-6	6	6	6	6	4	4	4	36	252
1961	1	1	1	1	1	1	1	7	-1	-7	-9	-7	-13	-13	-6	5	4	4	4	3	3	4	27	189
1962	1	1	1	1	1	1	1	7	20	10	0	26	-8	-14	-10	6	6	6	6	4	3	4	35	245
1963	1	1	1	1	1	1	1	7	11	8	11	25	-5	-13	-10	6	6	6	6	5	3	4	36	252
1964	1	1	1	1	1	1	1	7	2	-4	-4	3	-12	-11	-7	6	5	5	6	3	3	4	32	224
1965	1	1	1	4	4	2	1	14	0	2	5	20	0	-11	-9	6	6	6	6	6	3	4	37	518
1966	1	1	1	1	1	1	1	7	0	1	-3	-7	-15	-15	-9	6	6	5	4	3	3	4	31	217
1967	1	1	2	6	6	3	1	20	12	0	17	15	0	-12	-12	6	6	6	6	6	3	3	36	720
1968	1	1	1	1	1	1	1	7	0	2	3	-2	-12	-12	-8	6	6	6	5	3	3	4	33	231
1969	1	1	4	6	6	3	1	22	0	0	23	9	0	-13	-11	6	6	6	6	6	3	3	36	792
1970	1	1	1	1	1	1	1	7	0	-1	0	8	-12	-15	-9	6	5	6	6	3	3	4	33	231
1971	1	1	1	1	1	1	1	7	0	1	0	6	-9	-12	-8	6	6	6	6	4	3	4	35	245
1972	1	1	1	1	1	1	1	7	8	0	-2	-3	-12	-11	-6	6	6	5	5	3	3	4	32	224
1973	1	1	1	4	1	1	1	10	0	2	10	15	-15	-15	-9	6	6	6	6	3	3	4	34	340
1974	1	1	1	5	3	1	1	13	0	0	6	22	-9	-14	-9	6	6	6	6	4	3	4	35	455
1975	1	1	1	6	4	1	1	15	2	2	10	20	-7	-13	-9	6	6	6	6	4	3	4	35	525
1976	1	1	1	1	1	1	1	7	-1	-5	-7	-10	-10	-10	-6	5	5	4	4	4	4	4	30	210
1977	1	1	1	1	1	1	1	7	-4	-9	-13	-14	-14	-16	-9	5	4	3	3	3	2	4	24	168
1978	1	1	1	2	3	1	1	10	32	13	15	37	8	-13	-6	6	6	6	6	6	3	4	37	370
1979	1	1	3	6	3	1	1	16	0	2	20	10	-14	-15	-9	6	6	6	6	3	3	4	34	544
1980	1	1	2	6	6	3	1	20	0	0	17	15	0	-13	-11	6	6	6	6	6	3	3	36	720
1981	1	1	1	1	1	1	1	7	1	2	4	-1	-12	-11	-8	6	6	6	5	3	3	4	33	231
1982	1	1	3	6	6	3	1	21	0	0	20	12	0	-12	-12	6	6	6	6	6	3	3	36	756
1983	1	1	3	6	6	6	1	24	0	0	19	13	0	0	-24	6	6	6	6	6	6	1	37	888
1984	1	1	1	2	1	1	1	8	0	-3	6	11	-13	-15	-10	6	5	6	6	3	3	4	33	264
1985	1	1	1	1	1	1	1	7	6	1	-2	-4	-11	-12	-6	6	6	5	5	3	3	4	32	224
1986	1	1	4	6	4	1	1	18	0	2	25	5	-7	-14	-9	6	6	6	6	4	3	4	35	630
1987	1	1	1	1	1	1	1	7	2	-2	-3	-4	-10	-10	-7	6	5	5	5	4	4	4	33	231
1988	1	1	1	1	1	1	1	7	2	-5	-9	-7	-12	-12	-7	6	5	4	4	3	3	4	29	203
1989	1	1	1	1	1	1	1	7	14	11	14	7	-11	-11	-5	6	6	6	6	3	3	5	35	245
1990	1	1	1	1	1	1	1	7	3	-3	-4	-2	-15	-14	-7	6	5	5	5	3	3	4	31	217
1991	1	1	1	1	1	1	1	7	9	-1	15	11	-10	-10	-6	6	5	6	6	4	4	4	35	245
1992	1	1	1	1	1	1	1	7	5	2	7	-1	-14	-15	-11	6	6	6	5	3	3	3	32	224
1993	1	1	1	1	1	1	1	7	29	8	14	31	-1	-14	-10	6	6	6	6	5	3	4	36	252
1994	1	1	1	1	1	1	1	7	3	-3	3	-2	-10	-11	-5	6	5	6	5	4	3	5	34	238
73 - year Average:								**10**								**73 - year Average:**							**33**	**350.6**
1929 - '34 Average:																								**219.3**

STUDY: 1995C06F-SWRCB-469 DWRSIM: recirc818-f, 17 Jun 97
CP # 20, LAKE McCLURE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-469/20/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 867'

Difference from Maximum Reservoir Elevation [DFMRE]

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	679	679	695	711	759	779	789	845	867	860	846	836	88	78	22	0	7	21	31
1923	808	808	808	808	808	813	827	854	859	850	835	825	54	40	13	8	17	32	42
1924	808	808	808	808	808	807	809	809	797	779	766	756	60	58	58	70	88	101	111
1925	752	758	763	767	792	801	819	840	844	831	815	803	66	48	27	23	36	52	64
1926	801	801	802	804	808	812	831	827	826	822	814	806	55	36	40	41	45	53	61
1927	802	802	806	807	808	815	817	844	854	849	845	840	52	50	23	13	18	22	27
1928	808	808	808	808	808	809	808	823	821	815	810	807	58	59	44	46	52	57	60
1929	805	804	804	803	805	807	808	811	811	813	816	809	60	59	56	56	54	51	58
1930	806	804	804	804	804	800	802	803	807	810	813	811	67	65	64	60	57	54	56
1931	808	808	808	808	808	808	808	806	794	776	762	752	59	59	61	73	91	105	115
1932	750	751	770	782	808	817	826	847	864	854	839	829	50	41	20	3	13	28	38
1933	808	807	806	808	808	811	813	816	830	817	802	794	56	54	51	37	50	65	73
1934	789	788	792	797	805	813	819	810	801	784	770	761	54	48	57	66	83	97	106
1935	757	761	766	784	796	806	840	859	867	854	839	828	61	27	8	0	13	28	39
1936	808	808	808	808	808	820	840	855	861	849	834	823	47	27	12	6	18	33	44
1937	808	808	808	808	808	820	834	859	867	853	838	827	47	33	8	0	14	29	40
1938	808	808	808	808	808	820	840	859	867	867	855	840	47	27	8	0	0	12	27
1939	808	808	808	808	808	816	831	832	821	803	787	776	51	36	35	46	64	80	91
1940	777	778	779	806	808	820	837	859	861	845	829	816	47	30	8	6	22	38	51
1941	808	808	808	808	808	820	834	859	867	863	850	840	47	33	8	0	4	17	27
1942	808	808	808	808	808	820	838	859	867	860	851	840	47	29	8	0	7	16	27
1943	808	808	808	808	808	820	840	859	864	853	838	828	47	27	8	3	14	29	39
1944	808	808	808	808	808	817	815	838	840	827	810	796	50	52	29	27	40	57	71
1945	794	800	806	808	808	820	833	856	867	856	842	831	47	34	11	0	11	25	36
1946	808	808	808	808	808	818	837	859	857	842	826	813	49	30	8	10	25	41	54
1947	808	808	808	808	808	815	823	836	830	814	799	791	52	44	31	37	53	68	76
1948	789	790	791	793	794	794	798	820	837	823	804	791	73	69	47	30	44	63	76
1949	786	786	787	788	792	800	810	830	829	809	790	774	67	57	37	38	58	77	93
1950	769	769	769	776	789	793	808	826	827	807	788	772	74	59	41	40	60	79	95
1951	768	808	808	808	808	819	827	837	834	816	796	781	48	40	30	33	51	71	86
1952	777	778	791	808	808	820	840	859	867	864	852	840	47	27	8	0	3	15	27
1953	808	808	808	808	808	809	815	816	823	809	790	775	58	52	51	44	58	77	92
1954	772	771	772	775	785	798	815	833	826	805	785	770	69	52	34	41	62	82	97
1955	766	765	768	774	778	780	780	801	810	795	778	768	87	87	66	57	72	89	99
1956	763	762	808	808	808	819	832	859	867	863	850	840	48	35	8	0	4	17	27
1957	808	808	808	808	808	813	813	828	838	822	804	790	54	54	39	29	45	63	77
1958	786	787	792	798	808	820	840	859	867	862	850	840	47	27	8	0	5	17	27
1959	808	808	808	808	808	813	823	826	817	797	780	773	54	44	41	50	70	87	94
1960	772	770	770	771	783	791	805	818	815	800	786	776	76	62	49	52	67	81	91
1961	773	773	775	775	778	779	784	785	776	758	742	730	88	83	82	91	109	125	137
1962	729	729	731	734	776	785	809	818	832	818	800	786	82	58	49	35	49	67	81
1963	781	781	782	791	808	810	819	841	854	845	830	818	57	48	26	13	22	37	49
1964	808	808	808	808	807	806	807	814	811	795	778	769	61	60	53	56	72	89	98
1965	763	767	808	808	808	815	831	854	867	861	850	840	52	36	13	0	6	17	27
1966	808	808	808	808	808	814	828	838	826	804	784	771	53	39	29	41	63	83	96
1967	767	769	794	806	808	820	840	859	867	867	856	840	47	27	8	0	0	11	27
1968	808	808	808	808	808	812	817	821	812	793	777	766	55	50	46	55	74	90	101
1969	762	766	774	808	808	820	840	859	867	867	854	840	47	27	8	0	0	13	27
1970	808	808	808	808	808	820	821	837	837	821	802	789	47	46	30	30	46	65	78
1971	786	788	798	807	808	812	814	826	836	822	804	790	55	53	41	31	45	63	77
1972	787	787	794	799	805	816	818	831	831	816	801	795	51	49	36	36	51	66	72
1973	793	794	800	808	808	820	828	859	867	852	838	828	47	39	8	0	15	29	39
1974	808	808	808	808	808	820	833	859	867	854	839	829	47	34	8	0	13	28	38
1975	808	808	808	808	808	820	823	855	867	856	842	832	47	44	12	0	11	25	35
1976	808	808	808	808	808	809	808	809	798	781	768	759	58	59	58	69	86	99	108
1977	758	756	754	754	754	749	740	727	715	686	656	632	118	127	140	152	181	211	235
1978	626	626	642	693	741	782	815	859	867	867	856	840	85	52	8	0	0	11	27
1979	808	808	808	808	808	820	828	859	863	849	834	823	47	39	8	4	18	33	44
1980	808	808	808	808	808	820	835	859	867	867	855	840	47	32	8	0	0	12	27
1981	808	807	807	808	808	813	823	835	831	816	802	794	54	44	32	36	51	65	73
1982	792	801	808	808	808	820	840	859	867	865	854	840	47	27	8	0	2	13	27
1983	808	808	808	808	808	820	836	859	867	867	864	840	47	31	8	0	0	3	27
1984	808	808	808	808	808	820	827	850	848	832	814	801	47	40	17	19	35	53	66
1985	800	803	807	808	808	814	828	841	835	821	807	797	53	39	26	32	46	60	70
1986	797	799	806	808	808	820	839	859	867	855	841	830	47	28	8	0	12	26	37
1987	808	807	807	807	808	810	818	821	811	795	782	773	57	49	46	56	72	85	94
1988	772	773	775	781	785	791	797	801	794	777	763	753	76	70	66	73	90	104	114
1989	751	750	753	753	759	775	796	805	802	786	772	763	92	71	62	65	81	95	104
1990	765	766	766	769	772	779	789	786	777	761	744	732	88	78	81	90	106	123	135
1991	730	729	728	728	727	748	755	774	789	775	762	751	119	112	93	78	92	105	116
1992	750	751	752	754	768	774	791	793	781	768	753	741	93	76	74	86	99	114	126
1993	740	741	747	792	808	820	837	859	867	861	848	837	47	30	8	0	6	19	30
1994	808	807	808	808	808	810	814	820	812	796	782	773	57	53	47	55	71	85	94

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	1	1	1	6	4	1	1	**15**	20	10	56	22	-7	-14	-10	6	6	6	6	4	3	4	**35**	**525**
1923	1	1	3	4	2	1	1	**13**	5	14	27	5	-9	-15	-10	6	6	6	6	4	3	4	**35**	**455**
1924	1	1	1	1	1	1	1	**7**	-1	2	0	-12	-18	-13	-10	5	6	6	3	2	3	4	**29**	**203**
1925	1	1	1	1	1	1	1	**7**	9	18	21	4	-13	-16	-12	6	6	6	6	3	2	3	**32**	**224**
1926	1	1	1	1	1	1	1	**7**	4	19	-4	-1	-4	-8	-8	6	6	5	5	5	4	4	**35**	**245**
1927	1	1	1	3	2	1	1	**10**	7	2	27	10	-5	-4	-5	6	6	6	6	5	5	5	**39**	**390**
1928	1	1	1	1	1	1	1	**7**	1	-1	15	-2	-6	-5	-3	6	5	6	5	4	5	5	**36**	**252**
1929	1	1	1	1	1	1	1	**7**	2	1	3	0	2	3	-7	6	6	6	6	6	6	4	**40**	**280**
1930	1	1	1	1	1	1	1	**7**	-4	2	1	4	3	3	-2	5	6	6	6	6	6	5	**40**	**280**
1931	1	1	1	1	1	1	1	**7**	0	0	-2	-12	-18	-14	-10	6	6	5	3	2	3	4	**29**	**203**
1932	1	1	1	5	3	1	1	**13**	9	9	21	17	-10	-15	-10	6	6	6	6	4	3	4	**35**	**455**
1933	1	1	1	1	1	1	1	**7**	3	2	3	14	-13	-15	-8	6	6	6	6	3	3	4	**34**	**238**
1934	1	1	1	1	1	1	1	**7**	8	6	-9	-9	-17	-14	-9	6	6	4	4	2	3	4	**29**	**203**
1935	1	1	4	6	3	1	1	**17**	10	34	19	8	-13	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1936	1	1	3	4	2	1	1	**13**	12	20	15	6	-12	-15	-11	6	6	6	6	3	3	3	**33**	**429**
1937	1	1	4	6	3	1	1	**17**	12	14	25	8	-14	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1938	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1939	1	1	1	1	1	1	1	**7**	8	15	1	-11	-18	-16	-11	6	6	6	3	2	2	3	**28**	**196**
1940	1	1	4	4	1	1	1	**13**	12	17	22	2	-16	-16	-13	6	6	6	6	2	2	3	**31**	**403**
1941	1	1	4	6	5	2	1	**20**	12	14	25	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1942	1	1	4	6	4	2	1	**19**	12	18	21	8	-7	-9	-11	6	6	6	6	4	4	3	**35**	**665**
1943	1	1	4	5	3	1	1	**16**	12	20	19	5	-11	-15	-10	6	6	6	6	3	3	4	**34**	**544**
1944	1	1	1	1	1	1	1	**7**	9	-2	23	2	-13	-17	-14	6	5	6	6	3	2	3	**31**	**217**
1945	1	1	3	6	3	1	1	**16**	12	13	23	11	-11	-14	-11	6	6	6	6	3	3	3	**33**	**528**
1946	1	1	4	3	1	1	1	**12**	10	19	22	-2	-15	-16	-13	6	6	6	5	3	2	3	**31**	**372**
1947	1	1	1	1	1	1	1	**7**	7	8	13	-6	-16	-15	-8	6	6	6	4	2	3	4	**31**	**217**
1948	1	1	1	1	1	1	1	**7**	0	4	22	17	-14	-19	-13	6	6	6	6	3	2	3	**32**	**224**
1949	1	1	1	1	1	1	1	**7**	8	10	20	-1	-20	-19	-16	6	6	6	5	2	2	2	**29**	**203**
1950	1	1	1	1	1	1	1	**7**	4	15	18	1	-20	-19	-16	6	6	6	6	2	2	2	**30**	**210**
1951	1	1	1	1	1	1	1	**7**	11	8	10	-3	-18	-20	-15	6	6	6	5	2	2	3	**30**	**210**
1952	1	1	4	6	5	2	1	**20**	12	20	19	8	-3	-12	-12	6	6	6	6	5	3	3	**35**	**700**
1953	1	1	1	1	1	1	1	**7**	1	6	1	7	-14	-19	-15	6	6	6	6	3	2	3	**32**	**224**
1954	1	1	1	1	1	1	1	**7**	13	17	18	-7	-21	-20	-15	6	6	6	4	1	2	3	**28**	**196**
1955	1	1	1	1	1	1	1	**7**	2	0	21	9	-15	-17	-10	6	6	6	6	3	2	4	**33**	**231**
1956	1	1	4	6	5	2	1	**20**	11	13	27	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1957	1	1	1	1	1	1	1	**7**	5	0	15	10	-16	-18	-14	6	6	6	6	2	2	3	**31**	**217**
1958	1	1	4	6	4	2	1	**19**	12	20	19	8	-5	-12	-10	6	6	6	6	5	3	4	**36**	**684**
1959	1	1	1	1	1	1	1	**7**	5	10	3	-9	-20	-17	-7	6	6	6	4	2	2	4	**30**	**210**
1960	1	1	1	1	1	1	1	**7**	8	14	13	-3	-15	-14	-10	6	6	6	5	3	3	4	**33**	**231**
1961	1	1	1	1	1	1	1	**7**	1	5	1	-9	-18	-16	-12	6	6	6	4	2	2	3	**29**	**203**
1962	1	1	1	1	1	1	1	**7**	9	24	9	14	-14	-18	-14	6	6	6	6	3	2	3	**32**	**224**
1963	1	1	1	3	1	1	1	**9**	2	9	22	13	-9	-15	-12	6	6	6	6	4	3	3	**34**	**306**
1964	1	1	1	1	1	1	1	**7**	-1	1	7	-3	-16	-17	-9	5	6	6	5	2	2	4	**30**	**210**
1965	1	1	3	6	4	2	1	**18**	7	16	23	13	-6	-11	-10	6	6	6	6	4	3	4	**35**	**630**
1966	1	1	1	1	1	1	1	**7**	6	14	10	-12	-22	-20	-13	6	6	6	3	1	2	3	**27**	**189**
1967	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1968	1	1	1	1	1	1	1	**7**	4	5	4	-9	-19	-16	-11	6	6	6	4	2	2	3	**29**	**203**
1969	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-13	-14	6	6	6	6	6	3	3	**36**	**792**
1970	1	1	1	1	1	1	1	**7**	12	1	16	0	-16	-19	-13	6	6	6	6	2	2	3	**31**	**217**
1971	1	1	1	1	1	1	1	**7**	4	2	12	10	-14	-18	-14	6	6	6	6	3	2	3	**32**	**224**
1972	1	1	1	1	1	1	1	**7**	11	2	13	0	-15	-15	-6	6	6	6	6	3	3	4	**34**	**238**
1973	1	1	4	6	2	1	1	**16**	12	8	31	8	-15	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1974	1	1	4	6	3	1	1	**17**	12	13	26	8	-13	-15	-10	6	6	6	6	3	3	4	**34**	**578**
1975	1	1	3	6	3	1	1	**16**	12	3	32	12	-11	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1976	1	1	1	1	1	1	1	**7**	1	-1	1	-11	-17	-13	-9	6	5	6	3	2	3	4	**29**	**203**
1977	1	1	1	1	1	1	1	**7**	-5	-9	-13	-12	-29	-30	-24	5	4	3	3	1	1	1	**18**	**126**
1978	1	1	4	6	6	3	1	**22**	41	33	44	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1979	1	1	4	5	2	1	1	**15**	12	8	31	4	-14	-15	-11	6	6	6	6	3	3	3	**33**	**495**
1980	1	1	4	6	6	3	1	**22**	12	15	24	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1981	1	1	1	1	1	1	1	**7**	5	10	12	-4	-15	-14	-8	6	6	6	5	3	3	4	**33**	**231**
1982	1	1	4	6	5	3	1	**21**	12	20	19	8	-2	-11	-14	6	6	6	6	5	3	3	**35**	**735**
1983	1	1	4	6	6	5	1	**24**	12	16	23	8	0	-3	-24	6	6	6	6	6	5	1	**36**	**864**
1984	1	1	2	2	1	1	1	**9**	12	7	23	-2	-16	-18	-13	6	6	6	5	2	2	3	**30**	**270**
1985	1	1	1	1	1	1	1	**7**	6	14	13	-6	-14	-14	-10	6	6	6	4	3	3	4	**32**	**224**
1986	1	1	4	6	3	1	1	**17**	12	19	20	8	-12	-14	-11	6	6	6	6	3	3	3	**33**	**561**
1987	1	1	1	1	1	1	1	**7**	2	8	3	-10	-16	-13	-9	6	6	6	4	2	3	4	**31**	**217**
1988	1	1	1	1	1	1	1	**7**	6	6	4	-7	-17	-14	-10	6	6	6	4	2	3	4	**31**	**217**
1989	1	1	1	1	1	1	1	**7**	16	21	9	-3	-16	-14	-9	6	6	6	5	2	3	4	**32**	**224**
1990	1	1	1	1	1	1	1	**7**	7	10	-3	-9	-16	-17	-12	6	6	5	4	2	2	3	**28**	**196**
1991	1	1	1	1	1	1	1	**7**	21	7	19	15	-14	-13	-11	6	6	6	6	3	3	3	**33**	**231**
1992	1	1	1	1	1	1	1	**7**	6	17	2	-12	-13	-15	-12	6	6	6	3	3	3	3	**30**	**210**
1993	1	1	4	6	4	2	1	**19**	12	17	22	8	-6	-13	-11	6	6	6	6	4	3	3	**34**	**646**
1994	1	1	1	1	1	1	1	**7**	2	4	6	-8	-16	-14	-9	6	6	6	4	2	3	4	**31**	**217**
						73 - year Average:		**11**												**73 - year Average:**			**33**	**379.7**
																					1929 - '34 Average:			**276.5**

STUDY: 1995C06F-SWRCB-469 DWRSIM: recirc818-f, 17 Jun 97
CP # 18, MILLERTON LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-469/18/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 576'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	491	505	527	547	549	566	559	576	576	562	518	491	10	17	0	0	14	58	85
1923	485	495	520	537	531	517	541	549	540	526	463	470	59	35	27	36	50	113	106
1924	483	494	508	522	516	503	506	511	505	478	464	468	73	70	65	71	98	112	108
1925	462	471	487	500	506	491	512	530	520	497	481	472	85	64	46	56	79	95	104
1926	475	487	503	517	520	506	548	562	533	492	471	482	70	28	14	43	84	105	94
1927	488	504	525	543	560	561	560	569	576	543	492	482	15	16	7	0	33	84	94
1928	482	503	525	542	540	543	551	554	522	477	465	477	33	25	22	54	99	111	99
1929	484	499	513	523	517	513	531	531	527	506	466	477	63	45	45	49	70	110	99
1930	478	494	506	517	514	509	524	534	518	488	465	482	67	52	42	58	88	111	94
1931	486	501	513	522	517	508	510	515	508	482	466	466	68	66	61	68	94	110	110
1932	467	476	503	520	543	531	524	532	552	518	492	477	45	52	44	24	58	84	99
1933	477	489	501	516	512	501	520	537	526	509	466	467	75	56	39	50	67	110	109
1934	469	479	499	517	511	503	516	527	523	498	477	486	73	60	49	53	78	99	90
1935	490	500	515	535	532	509	542	563	574	538	469	479	67	34	13	2	38	107	97
1936	486	502	518	533	560	558	564	576	563	521	472	478	18	12	0	13	55	104	98
1937	488	497	516	535	560	570	576	576	576	538	484	469	6	0	0	0	38	92	107
1938	472	486	533	560	560	542	529	467	572	576	532	520	34	47	109	4	0	44	56
1939	513	514	529	538	532	524	542	560	539	504	473	495	52	34	16	37	72	103	81
1940	494	503	517	549	550	551	548	561	553	512	465	470	25	28	15	23	64	111	106
1941	481	493	528	556	560	573	573	569	576	569	527	506	3	3	7	0	7	49	70
1942	497	507	532	552	549	553	554	562	576	555	509	477	23	22	14	0	21	67	99
1943	477	494	518	557	556	576	574	576	562	526	491	476	0	2	0	14	50	85	100
1944	479	491	508	521	524	507	516	517	501	494	490	480	69	60	59	75	82	86	96
1945	481	503	523	533	560	568	565	571	576	554	511	491	8	11	5	0	22	65	85
1946	485	502	531	548	528	524	536	559	546	510	478	480	52	40	17	30	66	98	96
1947	481	500	526	543	541	530	545	556	535	497	473	481	46	31	20	41	79	103	95
1948	487	503	517	529	523	530	556	551	541	483	480	484	46	20	25	35	93	96	92
1949	490	500	513	526	524	511	522	538	521	482	477	489	65	54	38	55	94	99	87
1950	492	503	519	536	541	524	534	551	539	506	476	482	52	42	25	37	70	100	94
1951	490	532	560	560	554	546	552	546	514	463	463	481	30	24	30	62	113	113	95
1952	488	500	530	559	560	567	559	526	576	571	525	508	9	17	50	0	5	51	68
1953	501	514	533	549	538	532	541	536	518	497	478	481	44	35	40	58	79	98	95
1954	488	497	514	532	532	527	537	560	544	507	465	483	49	39	16	32	69	111	93
1955	489	502	522	540	537	519	534	545	537	504	481	487	57	42	31	39	72	95	89
1956	491	499	560	560	560	576	576	561	576	566	524	505	0	0	15	0	10	52	71
1957	496	504	517	527	525	529	546	561	562	526	471	481	47	30	15	14	50	105	95
1958	488	501	524	545	554	565	576	576	576	557	516	498	11	0	0	0	19	60	78
1959	492	507	523	530	536	528	550	566	551	500	470	475	48	26	10	25	76	106	101
1960	473	475	480	490	503	498	515	525	509	496	483	481	78	61	51	67	80	93	95
1961	481	491	505	511	510	511	526	539	527	486	467	467	65	50	37	49	90	109	109
1962	468	471	484	492	538	529	527	555	569	540	489	476	47	49	21	7	36	87	100
1963	479	491	501	518	558	558	576	576	576	564	520	503	18	0	0	0	12	56	73
1964	490	517	542	551	547	544	553	561	551	508	476	484	32	23	15	25	68	100	92
1965	481	496	529	560	556	554	559	551	561	540	512	496	22	17	25	15	36	64	80
1966	487	513	546	558	541	526	545	564	550	506	486	486	50	31	12	26	70	90	90
1967	490	501	539	559	560	571	565	514	570	576	539	522	5	11	62	6	0	37	54
1968	515	521	539	545	545	539	550	554	539	506	478	482	37	26	22	37	70	98	94
1969	479	495	513	560	524	521	467	469	576	576	538	513	55	109	107	0	0	38	63
1970	498	516	540	560	560	554	554	555	544	517	476	477	22	22	21	32	59	100	99
1971	482	502	534	551	548	533	541	544	520	498	491	478	43	35	32	56	78	85	98
1972	478	491	519	536	532	524	537	543	540	497	481	481	52	39	33	36	79	95	95
1973	489	501	523	545	560	560	550	575	576	542	483	477	16	26	1	0	34	93	99
1974	487	510	545	560	544	550	559	570	573	537	490	473	26	17	6	3	39	86	103
1975	476	494	515	528	535	526	533	536	567	525	476	482	50	43	40	9	51	100	94
1976	489	511	531	541	539	544	547	542	519	492	479	494	32	29	34	57	84	97	82
1977	490	496	500	503	501	464	465	464	462	466	461	462	112	111	112	114	110	115	114
1978	462	462	484	532	560	552	510	498	576	576	548	539	24	66	78	0	0	28	37
1979	528	535	549	560	555	562	560	571	563	521	477	482	14	16	5	13	55	99	94
1980	489	488	508	560	560	558	566	550	576	576	542	513	18	10	26	0	0	34	63
1981	503	512	520	528	531	533	547	553	543	510	477	488	43	29	23	33	66	99	88
1982	491	504	536	560	560	576	546	561	576	576	546	541	0	30	15	0	0	30	35
1983	531	556	560	560	513	484	467	467	483	564	572	576	92	109	109	93	12	4	0
1984	560	560	560	560	560	568	570	570	557	530	487	483	8	6	6	19	46	89	93
1985	482	492	511	536	533	526	551	563	539	501	483	483	50	25	13	37	75	93	93
1986	490	507	534	553	550	552	574	565	576	558	503	479	24	2	11	0	18	73	97
1987	480	489	492	495	496	511	530	551	539	503	473	480	65	46	25	37	73	103	96
1988	482	495	507	526	516	527	539	547	527	498	483	486	49	37	29	49	78	93	90
1989	486	497	505	515	512	516	537	552	540	502	478	484	60	39	24	36	74	98	92
1990	489	495	502	510	510	517	532	544	525	508	479	483	59	44	32	51	68	97	93
1991	480	486	492	499	493	489	501	508	512	506	480	486	87	75	68	64	70	96	90
1992	485	490	494	498	499	490	493	494	480	470	465	466	86	83	82	96	106	111	110
1993	467	466	476	536	543	556	558	576	576	571	522	499	20	18	0	0	5	54	77
1994	490	497	507	512	508	520	534	548	528	498	478	484	56	42	28	48	78	98	92

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	Change MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	3	2	6	6	3	1	1	**22**	17	-7	17	0	-14	-44	-27	6	4	6	6	3	1	1	**27**	**594**
1923	1	1	1	1	1	1	1	**7**	-14	24	8	-9	-14	-63	7	3	6	6	4	3	1	6	**29**	**203**
1924	1	1	1	1	1	1	1	**7**	-13	3	5	-6	-27	-14	4	3	6	6	4	1	3	6	**29**	**203**
1925	1	1	1	1	1	1	1	**7**	-15	21	18	-10	-23	-16	-9	3	6	6	4	1	2	4	**26**	**182**
1926	1	1	3	1	1	1	1	**9**	-14	42	14	-29	-41	-21	11	3	6	6	1	1	1	6	**24**	**216**
1927	2	2	4	6	1	1	1	**17**	1	-1	9	7	-33	-51	-10	6	5	6	6	1	1	4	**29**	**493**
1928	1	1	1	1	1	1	1	**7**	3	8	3	-32	-45	-12	12	6	6	6	1	1	3	6	**29**	**203**
1929	1	1	1	1	1	1	1	**7**	-4	18	0	-4	-21	-40	11	5	6	6	5	1	1	6	**30**	**210**
1930	1	1	1	1	1	1	1	**7**	-5	15	10	-16	-30	-23	17	5	6	6	2	1	1	6	**27**	**189**
1931	1	1	1	1	1	1	1	**7**	-9	2	5	-7	-26	-16	0	4	6	6	4	1	2	6	**29**	**203**
1932	1	1	1	1	1	1	1	**7**	-12	-7	8	20	-34	-26	-15	3	4	6	6	1	1	3	**24**	**168**
1933	1	1	1	1	1	1	1	**7**	-11	19	17	-11	-17	-43	1	3	6	6	3	2	1	6	**27**	**189**
1934	1	1	1	1	1	1	1	**7**	-8	13	11	-4	-25	-21	9	4	6	6	5	1	1	6	**29**	**203**
1935	1	1	3	5	1	1	1	**13**	-23	33	21	11	-36	-69	10	1	6	6	6	1	1	6	**27**	**351**
1936	2	3	6	3	1	1	1	**17**	-2	6	12	-13	-42	-49	6	5	6	6	3	1	1	6	**28**	**476**
1937	4	6	6	6	1	1	1	**25**	10	6	0	0	-38	-54	-15	6	6	6	6	1	1	3	**29**	**725**
1938	1	1	1	5	6	1	1	**16**	-18	-13	-62	105	4	-44	-12	2	3	1	6	6	1	3	**22**	**352**
1939	1	1	2	1	1	1	1	**8**	-8	18	18	-21	-35	-31	22	4	6	6	1	1	1	6	**25**	**200**
1940	1	1	2	1	1	1	1	**8**	1	-3	13	-8	-41	-47	5	6	5	6	4	1	1	6	**29**	**232**
1941	5	5	4	6	4	1	1	**26**	13	0	-4	7	-7	-42	-21	6	6	5	6	4	1	1	**29**	**754**
1942	1	1	3	6	1	1	1	**14**	4	1	8	14	-21	-46	-32	6	6	6	6	1	1	1	**27**	**378**
1943	6	5	6	3	1	1	1	**23**	20	-2	2	-14	-36	-35	-15	6	5	6	3	1	1	3	**25**	**575**
1944	1	1	1	1	1	1	1	**7**	-17	9	1	-16	-7	-4	-10	2	6	6	2	4	5	4	**29**	**203**
1945	4	3	4	6	1	1	1	**20**	8	-3	6	5	-22	-43	-20	6	5	6	6	1	1	2	**27**	**540**
1946	1	1	2	1	1	1	1	**8**	-4	12	23	-13	-36	-32	2	5	6	6	3	1	1	6	**28**	**224**
1947	1	1	1	1	1	1	1	**7**	-11	15	11	-21	-38	-24	8	3	6	6	1	1	1	6	**24**	**168**
1948	1	1	1	1	1	1	1	**7**	7	26	-5	-10	-58	-3	4	6	6	5	4	1	5	6	**33**	**231**
1949	1	1	1	1	1	1	1	**7**	-13	11	16	-17	-39	-5	12	3	6	6	2	1	5	6	**29**	**203**
1950	1	1	1	1	1	1	1	**7**	-17	10	17	-12	-33	-30	6	2	6	6	3	1	1	6	**25**	**175**
1951	1	1	1	1	1	1	1	**7**	-8	6	-6	-32	-51	0	18	4	6	4	1	1	6	6	**28**	**196**
1952	4	2	1	6	4	1	1	**19**	7	-8	-33	50	-5	-46	-17	6	4	1	6	5	1	2	**25**	**475**
1953	1	1	1	1	1	1	1	**7**	-6	9	-5	-18	-21	-19	3	4	6	5	2	1	2	6	**26**	**182**
1954	1	1	2	1	1	1	1	**8**	-5	10	23	-16	-37	-42	18	5	6	6	2	1	1	6	**27**	**216**
1955	1	1	1	1	1	1	1	**7**	-18	15	11	-8	-33	-23	6	2	6	6	4	1	1	6	**26**	**182**
1956	6	6	2	6	3	1	1	**25**	16	0	-15	15	-10	-42	-19	6	6	3	6	4	1	2	**28**	**700**
1957	1	1	2	3	1	1	1	**10**	4	17	15	1	-36	-55	10	6	6	6	6	1	1	6	**32**	**320**
1958	3	6	6	6	2	1	1	**25**	11	11	0	0	-19	-41	-18	6	6	6	6	2	1	2	**29**	**725**
1959	1	1	3	1	1	1	1	**9**	-8	22	16	-15	-51	-30	5	4	6	6	3	1	1	6	**27**	**243**
1960	1	1	1	1	1	1	1	**7**	-5	17	10	-16	-13	-13	-2	5	6	6	2	3	3	5	**30**	**210**
1961	1	1	1	1	1	1	1	**7**	1	15	13	-12	-41	-19	0	6	6	6	3	1	2	6	**30**	**210**
1962	1	1	1	4	1	1	1	**10**	-9	-2	28	14	-29	-51	-13	4	5	6	6	1	1	3	**26**	**260**
1963	2	6	6	6	3	1	1	**25**	0	18	0	0	-12	-44	-17	6	6	6	6	3	1	2	**30**	**750**
1964	1	1	2	1	1	1	1	**8**	-3	9	8	-10	-43	-32	8	5	6	6	4	1	1	6	**29**	**232**
1965	1	2	1	2	1	1	1	**9**	-2	5	-8	10	-21	-28	-16	5	6	4	6	1	1	2	**25**	**225**
1966	1	1	3	1	1	1	1	**9**	-15	19	19	-14	-44	-20	0	3	6	6	3	1	2	6	**27**	**243**
1967	4	3	1	4	6	1	1	**20**	11	-6	-51	56	6	-37	-17	6	4	1	6	6	1	2	**26**	**520**
1968	1	1	1	1	1	1	1	**7**	-6	11	4	-15	-33	-28	4	4	6	6	3	1	1	6	**27**	**189**
1969	1	1	1	6	6	1	1	**17**	-3	-54	2	107	0	-38	-25	5	1	6	6	6	1	1	**26**	**442**
1970	1	1	1	1	1	1	1	**7**	-6	0	1	-11	-27	-41	1	4	6	6	3	1	1	6	**27**	**189**
1971	1	1	1	1	1	1	1	**7**	-15	8	3	-24	-22	-7	-13	3	6	6	1	1	4	3	**24**	**168**
1972	1	1	1	1	1	1	1	**7**	-8	13	6	-3	-43	-16	0	4	6	6	5	1	2	6	**30**	**210**
1973	2	1	5	6	1	1	1	**17**	0	-10	25	1	-34	-59	-6	6	4	6	6	1	1	4	**28**	**476**
1974	1	2	4	5	1	1	1	**15**	6	9	11	3	-36	-47	-17	6	6	6	6	1	1	2	**28**	**420**
1975	1	1	1	4	1	1	1	**10**	-9	7	3	31	-42	-49	6	4	6	6	6	1	1	6	**30**	**300**
1976	1	1	1	1	1	1	1	**7**	5	3	-5	-23	-27	-13	15	6	6	5	1	1	3	6	**28**	**196**
1977	1	1	1	1	1	1	1	**7**	-37	1	-1	-2	4	-5	1	1	6	5	5	6	5	6	**34**	**238**
1978	1	1	1	6	6	1	1	**17**	-8	-42	-12	78	0	-28	-9	4	1	3	6	6	1	4	**25**	**425**
1979	3	2	4	3	1	1	1	**15**	7	-2	11	-8	-42	-44	5	6	5	6	4	1	1	6	**29**	**435**
1980	2	3	1	6	6	1	1	**20**	-2	8	-16	26	0	-34	-29	5	6	2	6	6	1	1	**27**	**540**
1981	1	1	1	1	1	1	1	**7**	2	14	6	-10	-33	-33	11	6	6	6	4	1	1	6	**30**	**210**
1982	6	1	2	6	6	1	1	**23**	16	-30	15	15	0	-30	-5	6	1	6	6	6	1	5	**31**	**713**
1983	1	1	1	1	3	5	6	**18**	-29	-17	0	16	81	8	4	1	2	6	6	6	6	6	**33**	**594**
1984	4	4	4	2	1	1	1	**17**	8	2	0	-13	-27	-43	-4	6	6	6	3	1	1	5	**28**	**476**
1985	1	1	3	1	1	1	1	**9**	-7	25	12	-24	-38	-18	0	4	6	6	1	1	2	6	**26**	**234**
1986	1	5	3	6	2	1	1	**19**	2	22	-9	11	-18	-55	-24	6	6	4	6	2	1	1	**26**	**494**
1987	1	1	1	1	1	1	1	**7**	15	19	21	-12	-36	-30	7	6	6	6	3	1	1	6	**29**	**203**
1988	1	1	1	1	1	1	1	**7**	11	12	8	-20	-29	-15	3	6	6	6	2	1	3	6	**30**	**210**
1989	1	1	1	1	1	1	1	**7**	4	21	15	-12	-38	-24	6	6	6	6	3	1	1	6	**29**	**203**
1990	1	1	1	1	1	1	1	**7**	7	15	12	-19	-17	-29	4	6	6	6	2	2	1	6	**29**	**203**
1991	1	1	1	1	1	1	1	**7**	-4	12	7	4	-6	-26	6	5	6	6	6	4	1	6	**34**	**238**
1992	1	1	1	1	1	1	1	**7**	-9	3	1	-14	-10	-5	1	4	6	6	3	4	5	6	**34**	**238**
1993	1	2	6	6	4	1	1	**21**	13	2	18	0	-5	-49	-23	6	6	6	6	5	1	1	**31**	**651**
1994	1	1	1	1	1	1	1	**7**	12	14	14	-20	-30	-20	6	6	6	6	2	1	2	6	**29**	**203**

73 - year Average: 12 (elevation score SUM)

73 - year Average: 28 (fluctuation score SUM) **329.2** (Product)

1929 - '34 Average: 193.7

Joint Point Alternative 2

STUDY: 1995C06F-SWRCB-469 DWRSIM: recirc818-f, 17 Jun 97
CP # 12, SWP SAN LUIS RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCB-469/12/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 544'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	DFMRE APR	DFMRE MAY	DFMRE JUN	DFMRE JUL	DFMRE AUG	DFMRE SEP
1922	419	441	475	520	539	544	543	539	524	475	430	440	0	1	5	20	69	114	104
1923	471	496	500	516	526	532	528	506	470	448	418	405	12	16	38	74	96	126	139
1924	424	436	465	511	532	532	523	499	466	428	392	388	12	21	45	78	116	152	156
1925	389	400	443	474	521	532	524	498	457	415	358	339	12	20	46	87	129	186	205
1926	361	379	397	456	500	511	508	486	453	446	393	384	33	36	58	91	98	151	160
1927	393	434	473	520	544	544	540	529	498	464	413	424	0	4	15	46	80	131	120
1928	457	488	499	514	526	532	526	505	458	437	416	402	12	18	39	86	107	128	142
1929	414	441	469	517	532	542	532	520	497	468	437	434	2	12	24	47	76	107	110
1930	434	440	485	533	542	544	526	497	467	459	444	422	0	18	47	77	85	100	122
1931	427	431	432	473	487	487	479	468	451	419	371	371	57	65	76	93	125	173	173
1932	384	383	446	504	533	533	525	506	487	457	415	399	11	19	38	57	87	129	145
1933	415	422	423	471	492	501	498	485	458	423	373	372	43	46	59	86	121	171	172
1934	389	389	439	494	509	509	496	473	449	425	392	386	35	48	71	95	119	152	158
1935	383	404	424	484	494	527	531	506	471	427	353	354	17	13	38	73	117	191	190
1936	394	410	424	480	524	541	541	525	492	457	416	410	3	3	19	52	87	128	134
1937	427	443	468	517	536	544	544	539	510	463	412	401	0	0	5	34	81	132	143
1938	431	465	499	515	530	541	544	544	537	504	470	486	3	0	0	7	40	74	58
1939	513	522	526	539	544	544	526	495	464	452	437	418	0	18	49	80	92	107	126
1940	423	420	414	479	519	526	524	501	460	434	352	350	18	20	43	84	110	192	194
1941	389	422	460	512	536	540	537	534	519	468	428	447	4	7	10	25	76	116	97
1942	479	492	498	513	525	529	526	517	509	461	420	438	15	18	27	35	83	124	106
1943	470	485	490	505	517	529	532	535	507	464	415	421	15	12	9	37	80	129	123
1944	454	485	501	516	530	537	519	488	455	441	424	413	7	25	56	89	103	120	131
1945	419	456	492	519	535	540	530	503	466	445	409	400	4	14	41	78	99	135	144
1946	437	470	495	510	521	528	516	489	448	428	411	399	16	28	55	96	116	133	145
1947	421	454	487	516	529	538	523	490	458	445	429	409	6	21	54	86	99	115	135
1948	413	422	422	474	490	512	511	491	457	418	349	359	32	33	53	87	126	195	185
1949	390	416	448	493	515	542	524	495	453	431	407	395	2	20	49	91	113	137	149
1950	407	420	431	484	522	530	518	490	455	433	415	405	14	26	54	89	111	129	139
1951	428	459	495	525	535	540	527	507	464	434	410	405	4	17	37	80	110	134	139
1952	431	460	490	519	532	537	541	544	536	510	492	499	7	3	0	8	34	52	45
1953	506	515	519	532	543	544	529	515	493	468	430	446	0	15	29	51	76	114	98
1954	478	494	500	515	527	533	526	508	460	436	415	403	11	18	36	84	108	129	141
1955	435	464	494	518	530	538	520	493	465	459	425	418	6	24	51	79	85	119	126
1956	431	453	494	528	542	544	538	528	507	475	434	444	0	6	16	37	69	110	100
1957	470	495	500	514	527	533	524	501	468	450	429	420	11	20	43	76	94	115	124
1958	452	482	506	522	534	537	538	538	530	494	474	488	7	6	6	14	50	70	56
1959	496	504	509	522	534	541	521	488	453	437	426	421	3	23	56	91	107	118	123
1960	432	446	457	504	539	544	525	493	460	439	384	360	0	19	51	84	105	160	184
1961	377	416	454	502	536	544	524	490	460	451	430	409	0	20	54	84	93	114	135
1962	414	419	457	490	528	534	516	484	433	402	326	336	10	28	60	111	142	218	208
1963	377	412	444	490	523	529	529	520	496	464	429	444	15	15	24	48	80	115	100
1964	473	502	514	529	540	544	519	482	438	415	395	397	0	25	62	106	129	149	147
1965	402	433	468	518	532	539	540	526	495	465	420	429	5	4	18	49	79	124	115
1966	460	489	498	513	523	530	512	482	435	413	397	387	14	32	62	109	131	147	157
1967	401	437	475	515	528	533	538	541	534	522	502	505	11	6	3	10	22	42	39
1968	512	523	527	540	544	544	529	496	458	440	423	417	0	15	48	86	104	121	127
1969	437	468	501	523	536	544	544	544	537	517	489	503	0	0	0	7	27	55	41
1970	517	526	530	544	544	544	534	511	470	449	414	409	0	10	33	74	95	130	135
1971	431	464	496	514	524	530	520	503	476	454	435	447	14	24	41	68	90	109	97
1972	475	502	513	528	540	544	526	494	455	437	423	409	0	18	50	89	107	121	135
1973	434	465	496	523	534	540	533	512	481	459	420	419	4	11	32	63	85	124	125
1974	451	480	502	518	530	535	533	521	492	462	438	450	9	11	23	52	82	106	94
1975	474	483	488	502	516	520	517	502	477	444	429	440	24	27	42	67	100	115	104
1976	467	485	491	506	520	532	515	489	472	469	447	430	12	29	55	72	75	97	114
1977	431	439	441	458	458	458	460	449	429	406	399	413	86	84	95	115	138	145	131
1978	418	434	484	532	544	544	544	544	526	469	413	433	0	0	0	18	75	131	111
1979	466	488	492	507	521	528	522	504	474	455	409	405	16	22	40	70	89	135	139
1980	441	475	502	519	534	544	544	544	527	492	452	468	0	0	0	17	52	92	76
1981	499	519	525	539	544	544	530	496	459	441	423	411	0	14	48	85	103	121	133
1982	423	458	492	523	536	543	544	544	531	494	462	472	1	0	0	13	50	82	72
1983	496	515	521	535	544	544	544	544	537	527	514	521	0	0	0	7	17	30	23
1984	536	544	544	544	544	544	536	514	478	458	412	413	0	8	30	66	86	132	131
1985	450	482	497	512	525	532	512	478	434	414	398	397	12	32	66	110	130	146	147
1986	402	408	446	499	529	543	544	544	532	490	458	467	1	0	0	12	54	86	77
1987	496	508	534	544	544	544	523	488	460	450	425	411	0	21	56	84	94	119	133
1988	420	416	455	505	518	518	507	493	482	463	425	422	26	37	51	62	81	119	122
1989	422	438	455	493	493	527	517	486	450	440	386	395	17	27	58	94	104	158	149
1990	410	427	456	499	519	524	508	480	463	456	400	384	20	36	64	81	88	144	160
1991	384	391	391	406	406	470	471	461	443	422	407	409	74	73	83	101	122	137	135
1992	412	426	440	485	517	540	531	513	495	461	418	410	4	13	31	49	83	126	134
1993	410	417	464	519	529	533	528	522	506	459	404	409	11	16	22	38	85	140	135
1994	445	476	488	502	516	526	505	473	449	446	445	432	18	39	71	95	98	99	112

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Fluctuation MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	6	5	4	1	1	1	1	**19**	5	-1	-4	-15	-49	-45	10	6	5	5	3	1	1	6	**27**	**513**
1923	3	2	1	1	1	1	1	**10**	6	-4	-22	-36	-22	-30	-13	6	5	1	1	1	1	3	**18**	**180**
1924	3	1	1	1	1	1	1	**9**	0	-9	-24	-33	-38	-36	-4	6	4	1	1	1	1	5	**19**	**171**
1925	3	1	1	1	1	1	1	**9**	11	-8	-26	-41	-42	-57	-19	6	4	1	1	1	1	2	**16**	**144**
1926	1	1	1	1	1	1	1	**7**	11	-3	-22	-33	-7	-53	-9	6	5	1	1	4	1	4	**22**	**154**
1927	6	5	2	1	1	1	1	**17**	0	-4	-11	-31	-34	-51	11	6	5	3	1	1	1	6	**23**	**391**
1928	3	2	1	1	1	1	1	**10**	6	-6	-21	-47	-21	-21	-14	6	4	1	1	1	1	3	**17**	**170**
1929	5	3	1	1	1	1	1	**13**	10	-10	-12	-23	-29	-31	-3	6	4	3	1	1	1	5	**21**	**273**
1930	6	2	1	1	1	1	1	**13**	2	-18	-29	-30	-8	-15	-22	6	2	1	1	4	3	1	**18**	**234**
1931	1	1	1	1	1	1	1	**7**	0	-8	-11	-17	-32	-48	0	6	4	3	2	1	1	6	**23**	**161**
1932	3	2	1	1	1	1	1	**10**	0	-8	-19	-19	-30	-42	-16	6	4	2	2	1	1	2	**18**	**180**
1933	1	1	1	1	1	1	1	**7**	9	-3	-13	-27	-35	-50	-1	6	5	3	1	1	1	5	**22**	**154**
1934	1	1	1	1	1	1	1	**7**	0	-13	-23	-24	-24	-33	-6	6	3	1	1	1	1	4	**17**	**119**
1935	2	3	1	1	1	1	1	**10**	33	4	-25	-35	-44	-74	1	6	6	1	1	1	1	6	**22**	**220**
1936	5	5	2	1	1	1	1	**16**	17	0	-16	-33	-35	-41	-6	6	6	2	1	1	1	4	**21**	**336**
1937	6	6	4	1	1	1	1	**20**	8	0	-5	-29	-47	-51	-11	6	6	5	1	1	1	3	**23**	**460**
1938	5	6	6	4	1	1	1	**24**	11	3	0	-7	-33	-34	16	6	6	6	4	1	1	6	**30**	**720**
1939	6	2	1	1	1	1	1	**13**	0	-18	-31	-31	-12	-15	-19	6	2	1	1	3	3	2	**18**	**234**
1940	2	1	1	1	1	1	1	**8**	7	-2	-23	-41	-26	-82	-2	6	5	1	1	1	1	5	**20**	**160**
1941	5	4	3	1	1	1	1	**16**	4	-3	-3	-15	-51	-40	19	6	5	5	3	1	1	6	**27**	**432**
1942	2	2	1	1	1	1	1	**9**	4	-3	-9	-8	-48	-41	18	6	5	4	4	1	1	6	**27**	**243**
1943	2	3	4	1	1	1	1	**13**	12	3	3	-28	-43	-49	6	6	6	6	1	1	1	6	**27**	**351**
1944	4	1	1	1	1	1	1	**10**	7	-18	-31	-33	-14	-17	-11	6	2	1	1	3	2	3	**18**	**180**
1945	5	3	1	1	1	1	1	**13**	5	-10	-27	-37	-21	-36	-9	6	4	1	1	1	1	4	**18**	**234**
1946	2	1	1	1	1	1	1	**8**	7	-12	-27	-41	-20	-17	-12	6	3	1	1	2	2	3	**18**	**144**
1947	4	1	1	1	1	1	1	**10**	9	-15	-33	-32	-13	-16	-20	6	3	1	1	3	2	2	**18**	**180**
1948	1	1	1	1	1	1	1	**7**	22	-1	-20	-34	-39	-69	10	6	5	2	1	1	1	6	**22**	**154**
1949	5	1	1	1	1	1	1	**11**	27	-18	-29	-42	-22	-24	-12	6	2	1	1	1	1	3	**15**	**165**
1950	3	1	1	1	1	1	1	**9**	8	-12	-28	-35	-22	-18	-10	6	3	1	1	1	2	4	**18**	**162**
1951	5	2	1	1	1	1	1	**12**	5	-13	-20	-43	-30	-24	-5	6	3	2	1	1	1	5	**19**	**228**
1952	4	5	6	4	1	1	1	**22**	5	4	3	-8	-26	-18	7	6	6	6	4	1	2	6	**31**	**682**
1953	6	2	1	1	1	1	1	**13**	1	-15	-14	-22	-25	-38	16	6	3	3	1	1	1	6	**21**	**273**
1954	3	2	1	1	1	1	1	**10**	6	-7	-18	-48	-24	-21	-12	6	4	2	1	1	1	3	**18**	**180**
1955	4	1	1	1	1	1	1	**10**	8	-18	-27	-28	-6	-34	-7	6	2	1	1	4	1	4	**19**	**190**
1956	6	4	2	1	1	1	1	**16**	2	-6	-10	-21	-32	-41	10	6	4	4	1	1	1	6	**23**	**368**
1957	3	1	1	1	1	1	1	**9**	6	-9	-23	-33	-18	-21	-9	6	4	1	1	2	1	4	**19**	**171**
1958	4	4	4	3	1	1	1	**18**	3	1	0	-8	-36	-20	14	6	6	6	4	1	2	6	**31**	**558**
1959	5	1	1	1	1	1	1	**11**	7	-20	-33	-35	-16	-11	-5	6	2	1	1	2	3	5	**20**	**220**
1960	6	2	1	1	1	1	1	**13**	5	-19	-32	-33	-21	-55	-24	6	2	1	1	1	1	1	**13**	**169**
1961	6	1	1	1	1	1	1	**12**	8	-20	-34	-30	-9	-21	-21	6	2	1	1	4	1	1	**16**	**192**
1962	3	1	1	1	1	1	1	**9**	6	-18	-32	-51	-31	-76	10	6	2	1	1	1	1	6	**18**	**162**
1963	2	2	1	1	1	1	1	**9**	6	0	-9	-24	-32	-35	15	6	6	4	1	1	1	6	**25**	**225**
1964	6	1	1	1	1	1	1	**12**	4	-25	-37	-44	-23	-20	2	6	1	1	1	1	2	6	**18**	**216**
1965	4	5	2	1	1	1	1	**15**	7	1	-14	-31	-30	-45	9	6	6	3	1	1	1	6	**24**	**360**
1966	3	1	1	1	1	1	1	**9**	7	-18	-30	-47	-22	-16	-10	6	2	1	1	1	2	4	**17**	**153**
1967	3	4	5	3	1	1	1	**18**	5	5	3	-7	-12	-20	3	6	6	6	4	3	2	6	**33**	**594**
1968	6	2	1	1	1	1	1	**13**	0	-15	-33	-38	-18	-17	-6	6	3	1	1	2	2	4	**19**	**247**
1969	6	6	6	4	1	1	1	**25**	8	0	0	-7	-20	-28	14	6	6	6	4	2	1	6	**31**	**775**
1970	6	3	1	1	1	1	1	**14**	0	-10	-23	-41	-21	-35	-5	6	4	1	1	1	1	5	**19**	**266**
1971	3	1	1	1	1	1	1	**9**	6	-10	-17	-27	-22	-19	12	6	4	2	1	1	2	6	**22**	**198**
1972	6	2	1	1	1	1	1	**13**	4	-18	-32	-39	-18	-14	-14	6	2	1	1	2	3	3	**18**	**234**
1973	5	3	1	1	1	1	1	**13**	6	-7	-21	-31	-22	-39	-1	6	4	1	1	1	1	5	**19**	**247**
1974	4	3	1	1	1	1	1	**12**	5	-2	-12	-29	-30	-24	12	6	5	3	1	1	1	6	**23**	**276**
1975	1	1	1	1	1	1	1	**7**	4	-3	-15	-25	-33	-15	11	6	5	3	1	1	3	6	**25**	**175**
1976	3	1	1	1	1	1	1	**9**	12	-17	-26	-17	-3	-22	-17	6	2	1	2	5	1	2	**19**	**171**
1977	1	1	1	1	1	1	1	**7**	0	2	-11	-20	-23	-7	14	6	6	3	2	1	4	6	**28**	**196**
1978	6	6	6	2	1	1	1	**23**	0	0	0	-18	-57	-56	20	6	6	6	2	1	1	6	**28**	**644**
1979	2	1	1	1	1	1	1	**8**	7	-6	-18	-30	-19	-46	-4	6	4	2	1	2	1	5	**21**	**168**
1980	6	6	6	2	1	1	1	**23**	10	0	0	-17	-35	-40	16	6	6	6	2	1	1	6	**28**	**644**
1981	6	3	1	1	1	1	1	**14**	0	-14	-34	-37	-18	-18	-12	6	3	1	1	2	2	3	**18**	**252**
1982	5	6	6	3	1	1	1	**23**	7	1	0	-13	-37	-32	10	6	6	6	3	1	1	6	**29**	**667**
1983	6	6	6	4	2	1	1	**26**	0	0	0	-7	-10	-13	7	6	6	6	4	4	3	6	**35**	**910**
1984	6	4	1	1	1	1	1	**15**	0	-8	-22	-36	-20	-46	1	6	4	1	1	2	1	6	**21**	**315**
1985	3	1	1	1	1	1	1	**9**	7	-20	-34	-44	-20	-16	-1	6	2	1	1	2	2	5	**19**	**171**
1986	5	6	6	3	1	1	1	**23**	14	1	0	-12	-42	-32	9	6	6	6	3	1	1	6	**29**	**667**
1987	6	1	1	1	1	1	1	**12**	0	-21	-35	-28	-10	-25	-14	6	1	1	1	4	1	3	**17**	**204**
1988	1	1	1	1	1	1	1	**7**	0	-11	-14	-11	-19	-38	-3	6	3	3	3	2	1	5	**23**	**161**
1989	2	1	1	1	1	1	1	**8**	34	-10	-31	-36	-10	-54	9	6	4	1	1	4	1	6	**23**	**184**
1990	1	1	1	1	1	1	1	**7**	5	-16	-28	-17	-7	-56	-16	6	2	1	2	4	1	2	**18**	**126**
1991	1	1	1	1	1	1	1	**7**	64	1	-10	-18	-21	-15	2	6	6	4	2	1	3	6	**28**	**196**
1992	5	3	1	1	1	1	1	**13**	23	-9	-18	-18	-34	-43	-8	6	4	2	2	1	1	4	**20**	**260**
1993	3	2	1	1	1	1	1	**10**	4	-5	-6	-16	-47	-55	5	6	5	4	2	1	1	6	**25**	**250**
1994	2	1	1	1	1	1	1	**8**	10	-21	-32	-24	-3	-1	-13	6	1	1	1	5	5	3	**22**	**176**

73 - year Average: 12

73 - year Average: 22 **286.8**

1929 - '34 Average: 186.8

STUDY: **501**

CP # 4, SHASTA LAKE, EOP SURFACE ELEVATION

73-year maximum March - September Reservoir Elevation = 1067'

Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	989	993	999	1003	1019	1038	1060	1067	1062	1048	1029	1023	29	7	0	5	19	38	44	1	4	6	4	2	1	1	**19**	19	22	7	-5	-14	-19	-6	6	6	6	5	3	2	4	**32**	**608**
1923	1020	1017	1019	1023	1023	1022	1034	1029	1016	996	978	977	45	33	38	51	71	89	90	1	1	1	1	1	1	1	**7**	-1	12	-5	-13	-20	-18	-1	5	6	5	3	2	2	5	**28**	**196**
1924	978	978	978	979	986	986	975	961	941	918	900	884	81	92	106	126	149	167	183	1	1	1	1	1	1	1	**7**	0	-11	-14	-20	-23	-18	-16	6	3	3	2	1	2	2	**19**	**133**
1925	888	903	911	921	995	1010	1042	1052	1044	1022	1007	1003	57	25	15	23	45	60	64	1	1	2	1	1	1	1	**8**	15	32	10	-8	-22	-15	-4	6	6	6	4	1	3	5	**31**	**248**
1926	1001	997	994	991	1018	1020	1034	1028	1007	986	966	958	47	33	39	60	81	101	109	1	1	1	1	1	1	1	**7**	2	14	-6	-21	-21	-20	-8	6	6	4	1	1	2	4	**24**	**168**
1927	957	986	1008	1033	1026	1052	1067	1067	1058	1041	1021	1016	15	0	0	9	26	46	51	2	6	6	4	1	1	1	**21**	26	15	0	-9	-17	-20	-5	6	6	6	4	2	2	5	**31**	**651**
1928	1014	1017	1020	1028	1044	1046	1066	1062	1048	1022	1000	993	21	1	5	19	45	67	74	1	5	4	2	1	1	1	**15**	2	20	-4	-14	-26	-22	-7	6	6	5	3	1	1	4	**26**	**390**
1929	989	990	990	990	996	1002	1003	997	988	971	953	945	65	64	70	79	96	114	122	1	1	1	1	1	1	1	**7**	6	1	-6	-9	-17	-18	-8	6	6	4	4	2	2	4	**28**	**196**
1930	943	942	973	985	1002	1024	1035	1035	1016	997	985	982	43	32	32	51	70	82	85	1	1	1	1	1	1	1	**7**	22	11	0	-19	-19	-12	-3	6	6	6	2	2	3	5	**30**	**210**
1931	980	979	976	979	982	989	981	971	960	937	922	909	78	86	96	107	130	145	158	1	1	1	1	1	1	1	**7**	7	-8	-10	-11	-23	-15	-13	6	4	4	3	1	3	3	**24**	**168**
1932	904	903	919	930	940	965	968	976	968	954	940	933	102	99	91	99	113	127	134	1	1	1	1	1	1	1	**7**	25	3	8	-8	-14	-14	-7	6	6	6	4	3	3	4	**32**	**224**
1933	931	931	931	934	937	971	975	981	977	959	945	939	96	92	86	90	108	122	128	1	1	1	1	1	1	1	**7**	34	4	6	-4	-18	-14	-6	6	6	6	5	2	3	4	**32**	**224**
1934	938	937	945	963	982	994	995	990	981	946	921	906	73	72	77	86	121	146	161	1	1	1	1	1	1	1	**7**	12	1	-5	-9	-35	-25	-15	6	6	5	4	1	1	3	**26**	**182**
1935	900	912	916	939	958	982	1027	1035	1027	1005	992	987	85	40	32	40	62	75	80	1	1	1	1	1	1	1	**7**	24	45	8	-8	-22	-13	-5	6	6	6	4	1	3	5	**31**	**217**
1936	985	983	981	1007	1032	1044	1054	1052	1044	1020	999	994	23	13	15	23	47	68	73	1	3	2	1	1	1	1	**10**	12	10	-2	-8	-24	-21	-5	6	6	5	4	1	1	5	**28**	**280**
1937	990	986	980	975	976	1004	1033	1042	1038	1014	995	988	63	34	25	29	53	72	79	1	1	1	1	1	1	1	**7**	28	29	9	-4	-24	-19	-7	6	6	6	5	1	2	4	**30**	**210**
1938	986	1009	1020	1035	1030	1024	1049	1067	1067	1058	1045	1036	43	18	0	0	9	22	31	1	2	6	6	4	1	1	**21**	-6	25	18	0	-9	-13	-9	4	6	6	6	4	3	4	**33**	**693**
1939	1023	1017	1020	1022	1024	1039	1031	1024	999	977	947	943	28	36	43	68	90	120	124	1	1	1	1	1	1	1	**7**	15	-8	-7	-25	-22	-30	-4	6	4	4	1	1	1	5	**22**	**154**
1940	939	934	943	992	1017	1025	1059	1064	1054	1034	1017	1015	42	8	3	13	33	50	52	1	4	5	3	1	1	1	**16**	8	34	5	-10	-20	-17	-2	6	6	6	4	2	2	5	**31**	**496**
1941	1014	1014	1019	1020	1024	1045	1064	1067	1067	1058	1046	1036	22	3	0	0	9	21	31	1	5	6	6	4	1	1	**24**	21	19	3	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**840**
1942	1023	1017	1020	1023	1028	1042	1067	1067	1067	1058	1045	1036	25	0	0	0	9	22	31	1	6	6	6	4	1	1	**25**	14	25	0	0	-9	-13	-9	6	6	6	6	4	3	4	**35**	**875**
1943	1023	1017	1022	1030	1042	1051	1067	1067	1059	1045	1029	1023	16	0	0	8	22	38	44	2	6	6	4	1	1	1	**21**	9	16	0	-8	-14	-16	-6	6	6	6	4	3	2	4	**31**	**651**
1944	1022	1017	1015	1014	1023	1033	1038	1038	1019	995	974	967	34	29	29	48	72	93	100	1	1	1	1	1	1	1	**7**	10	5	0	-19	-24	-21	-7	6	6	6	2	1	1	4	**26**	**182**
1945	969	981	996	1004	1038	1052	1064	1067	1062	1040	1021	1016	15	3	0	5	27	46	51	2	5	6	4	1	1	1	**20**	14	12	3	-5	-22	-19	-5	6	6	6	5	1	2	5	**31**	**620**
1946	1015	1017	1018	1033	1038	1050	1062	1064	1054	1036	1020	1017	17	5	3	13	31	47	50	2	4	5	3	1	1	1	**17**	12	12	2	-10	-18	-16	-3	6	6	6	4	2	2	5	**31**	**527**
1947	1011	1012	1012	1009	1016	1035	1042	1032	1016	993	973	967	32	25	35	51	74	94	100	1	1	1	1	1	1	1	**7**	19	7	-10	-16	-23	-20	-6	6	6	4	2	1	2	4	**25**	**175**
1948	974	977	979	1004	1003	1015	1054	1067	1066	1049	1032	1031	52	13	0	1	18	35	36	1	3	6	5	2	1	1	**19**	12	39	13	-1	-17	-17	-1	6	6	6	5	2	2	5	**32**	**608**
1949	1023	1017	1016	1012	1016	1050	1063	1064	1048	1026	1005	1000	17	4	3	19	41	62	67	2	5	5	2	1	1	1	**17**	34	13	1	-16	-22	-21	-5	6	6	6	2	1	1	5	**27**	**459**
1950	995	992	990	999	1013	1031	1046	1045	1032	1011	994	992	36	21	22	35	56	73	75	1	1	1	1	1	1	1	**7**	18	15	-1	-13	-21	-17	-2	6	6	5	3	1	2	5	**28**	**196**
1951	1004	1017	1020	1033	1040	1057	1064	1067	1051	1029	1011	1008	10	3	0	16	38	56	59	3	5	6	2	1	1	1	**19**	17	7	3	-16	-22	-18	-3	6	6	6	2	1	2	5	**28**	**532**
1952	1006	1011	1019	1032	1038	1048	1058	1067	1067	1058	1046	1036	19	9	0	0	9	21	31	2	4	6	6	4	1	1	**24**	10	10	9	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**840**
1953	1023	1017	1021	1022	1033	1051	1065	1067	1067	1057	1043	1036	16	2	0	0	10	24	31	2	5	6	6	3	1	1	**24**	18	14	2	0	-10	-14	-7	6	6	6	6	4	3	4	**35**	**840**
1954	1023	1017	1021	1030	1035	1051	1067	1064	1059	1042	1029	1027	16	0	3	8	25	38	40	2	6	5	4	1	1	1	**20**	16	16	-3	-5	-17	-13	-2	6	6	5	5	2	3	5	**32**	**640**
1955	1023	1017	1022	1024	1027	1025	1039	1046	1028	1004	985	985	42	28	21	39	63	82	82	1	1	1	1	1	1	1	**7**	-2	14	7	-18	-24	-19	0	5	6	6	2	1	2	6	**28**	**196**
1956	979	984	1017	1017	1019	1048	1067	1067	1067	1058	1047	1036	19	0	0	0	9	20	31	2	6	6	6	4	1	1	**26**	29	19	0	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**884**
1957	1023	1017	1016	1017	1035	1052	1058	1067	1060	1043	1028	1031	15	9	0	7	24	39	36	2	4	6	4	1	1	1	**19**	17	6	9	-7	-17	-15	3	6	6	6	4	2	3	6	**33**	**627**
1958	1023	1017	1021	1029	1067	1024	1053	1067	1067	1058	1047	1036	43	14	0	0	9	20	31	1	3	6	6	4	1	1	**22**	-43	29	14	0	-9	-11	-11	1	6	6	6	4	3	3	**29**	**638**
1959	1023	1017	1017	1034	1039	1051	1055	1055	1036	1011	995	997	16	12	12	31	56	72	70	2	3	3	1	1	1	1	**12**	12	4	0	-19	-25	-16	2	6	6	6	2	1	2	6	**29**	**348**
1960	992	989	988	993	1021	1048	1056	1064	1046	1025	1006	1003	19	11	3	21	42	61	64	2	3	5	1	1	1	1	**14**	27	8	8	-18	-21	-19	-3	6	6	6	2	1	2	5	**28**	**392**
1961	997	1000	1016	1022	1044	1057	1062	1067	1048	1024	1003	1003	10	5	0	19	43	64	64	3	4	6	2	1	1	1	**18**	13	5	5	-19	-24	-21	0	6	6	6	2	1	1	6	**28**	**504**
1962	996	997	1008	1010	1035	1052	1063	1064	1053	1032	1012	1009	15	4	3	14	35	55	58	2	5	5	3	1	1	1	**18**	17	11	1	-11	-21	-20	-3	6	6	6	3	1	2	5	**29**	**522**
1963	1023	1017	1021	1025	1045	1055	1052	1067	1063	1052	1040	1036	12	15	0	4	15	27	31	3	2	6	5	2	1	1	**20**	10	-3	15	-4	-11	-12	-4	6	5	6	5	3	3	5	**33**	**660**
1964	1023	1017	1018	1033	1034	1038	1033	1028	1012	990	970	967	29	34	39	55	77	97	100	1	1	1	1	1	1	1	**7**	4	-5	-5	-16	-22	-20	-3	6	5	5	2	1	2	5	**26**	**182**
1965	966	976	1017	1022	1041	1050	1065	1066	1057	1041	1030	1029	17	2	1	10	26	37	38	2	5	5	3	1	1	1	**18**	9	15	1	-9	-16	-11	-1	6	6	6	4	2	3	5	**32**	**576**
1966	1023	1017	1021	1037	1049	1055	1067	1064	1049	1029	1013	1009	12	0	3	18	38	54	58	3	6	5	2	1	1	1	**19**	6	12	-3	-15	-20	-16	-4	6	6	5	3	2	2	5	**29**	**551**
1967	1000	1014	1021	1030	1044	1048	1064	1067	1067	1058	1047	1036	19	3	0	0	9	20	31	2	5	6	6	4	1	1	**25**	4	16	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1968	1023	1017	1019	1025	1034	1054	1056	1058	1042	1021	1012	1010	13	11	9	25	46	55	57	3	3	4	1	1	1	1	**14**	20	2	2	-16	-21	-9	-2	6	6	6	2	1	4	5	**30**	**420**
1969	1006	1007	1018	1022	1027	1048	1063	1067	1067	1058	1047	1036	19	4	0	0	9	20	31	2	5	6	6	4	1	1	**25**	21	15	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1970	1023	1017	1020	1017	1025	1052	1055	1055	1043	1023	1007	1005	15	12	12	24	44	60	62	2	3	3	1	1	1	1	**12**	27	3	0	-12	-20	-16	-2	6	6	6	3	2	2	5	**30**	**360**
1971	1004	1017	1020	1028	1042	1043	1064	1067	1067	1058	1047	1036	24	3	0	0	9	20	31	1	5	6	6	4	1	1	**24**	1	21	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1972	1023	1017	1022	1033	1045	1056	1067	1067	1050	1029	1015	1015	11	0	0	17	38	52	52	3	6	6	2	1	1	1	**20**	11	11	0	-17	-21	-14	0	6	6	6	2	1	3	6	**30**	**600**
1973	1016	1017	1021	1030	1034	1053	1065	1067	1059	1041	1027	1026	14	2	0	8	26	40	41	3	5	6	4	1	1	1	**21**	19	12	2	-8	-18	-14	-1	6	6	6	4	2	3	5	**32**	**672**
1974	1023	1017	1018	1017	1036	1025	1058	1067	1067	1058	1047	1036	42	9	0	0	9	20	31	1	4	6	6	4	1	1	**23**	-11	33	9	0	-9	-11	-11	3	6	6	6	4	3	3	**31**	**713**
1975	1023	1017	1021	1024	1045	1039	1061	1067	1067	1058	1047	1036	28	6	0	0	9	20	31	1	4	6	6	4	1	1	**23**	-6	22	6	0	-9	-11	-11	4	6	6	6	4	3	3	**32**	**736**
1976	1023	1017	1018	1017	1012	1017	1024	1020	995	974	970	972	50	43	47	72	93	97	95	1	1	1	1	1	1	1	**7**	5	7	-4	-25	-21	-4	2	6	6	5	1	1	5	6	**30**	**210**
1977	975	976	976	977	967	967	949	943	921	902	883	880	100	118	124	146	165	184	187	1	1	1	1	1	1	1	**7**	0	-18	-6	-22	-19	-19	-3	6	2	4	1	2	2	5	**22**	**154**
1978	869	867	913	1017	1031	1047	1067	1067	1064	1053	1040	1036	20	0	0	3	14	27	31	1	6	6	5	3	1	1	**23**	16	20	0	-3	-11	-13	-4	6	6	6	5	3	3	5	**34**	**782**
1979	1023	1017	1014	1017	1028	1045	1053	1061	1047	1028	1016	1014	22	14	6	20	39	51	53	1	3	4	1	1	1	1	**12**	17	8	8	-14	-19	-12	-2	6	6	6	3	2	3	5	**31**	**372**
1980	1014	1017	1019	1029	1019	1046	1059	1064	1056	1045	1035	1035	21	8	3	11	22	32	32	1	4	5	3	1	1	1	**16**	27	13	5	-8	-11	-10	0	6	6	6	4	3	4	6	**35**	**560**
1981	1023	1017	1020	1029	1042	1056	1064	1062	1042	1018	1001	998	11	3	5	25	49	66	69	3	5	4	1	1	1	1	**16**	14	8	-2	-20	-24	-17	-3	6	6	5	2	1	2	5	**27**	**432**
1982	994	1017	1018	1033	1029	1046	1051	1067	1067	1058	1047	1036	21	16	0	0	9	20	31	1	2	6	6	4	1	1	**21**	17	5	16	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1983	1023	1017	1020	1022	1017	1045	1050	1067	1067	1058	1047	1036	22	17	0	0	9	20	31	1	2	6	6	4	1	1	**21**	28	5	17	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1984	1023	1017	1018	1034	1047	1056	1064	1067	1059	1043	1033	1034	11	3	0	8	24	34	33	3	5	6	4	1	1	1	**21**	9	8	3	-8	-16	-10	1	6	6	6	4	2	4	6	**34**	**714**
1985	1023	1017	1022	1023	1027	1034	1042	1033	1010	989	972	972	33	25	34	57	78	95	95	1	1	1	1	1	1	1	**7**	7	8	-9	-23	-21	-17	0	6	6	4	1	1	2	6	**26**	**182**
1986	974	978	989	1014	1017	1029	1048	1050	1038	1022	1006	1009	38	19	17	29	45	61	58	1	2	2	1	1	1	1	**9**	12	19	2	-12	-16	-16	3	6	6	6	3	2	2	6	**31**	**279**
1987	1009	1008	1008	1009	1019	1046	1046	1040	1008	984	949	947	21	21	27	59	83	118	120	1	1	1	1	1	1	1	**7**	27	0	-6	-32	-24	-35	-2	6	6	4	1	1	1	5	**24**	**168**
1988	943	945	976	998	1001	1004	1011	1010	992	959	944	942	63	56	57	75	108	123	125	1	1	1	1	1	1	1	**7**	3	7	-1	-18	-33	-15	-2	6	6	5	2	1	3	5	**28**	**196**
1989	942	955	961	968	975	1038	1058	1054	1038	1017	1006	1007	29	9	13	29	50	61	60	1	4	3	1	1	1	1	**12**	63	20	-4	-16	-21	-11	1	6	6	5	2	1	3	6	**29**	**348**
1990	1009	1006	1003	1008	1008	1015	1007	1013	998	971	955	951	52	60	54	69	96	112	116	1	1	1	1	1	1	1	**7**	7	-8	6	-15	-27	-16	-4	6	4	6	3	1	2	5	**27**	**189**
1991	947	945	944	945	941	967	978	978	968	955	941	933	100	89	89	99	112	126	134	1	1	1	1	1	1	1	**7**	26	11	0	-10	-13	-14	-8	6	6	6	4	3	3	4	**32**	**224**
1992	932	930	931	936	975	998	1009	1001	987	971	958	951	69	58	66	80	96	109	116	1	1	1	1	1	1	1	**7**	23	11	-8	-14	-16	-13	-7	6	6	4	3	2	3	4	**28**	**196**
1993	947	945	959	994	1026	1031	1059	1067	1067	1054	1046	1045	36	8	0	0	13	21	22	1	4	6	6	3	1	1	**22**	5	28	8	0	-13	-8	-1	6	6	6	6	3	4	5	**36**	**792**
1994	1043	1017	1019	1020	1026	1028	1028	1026	999	978	956	953	39	39	41	68	89	111	114	1	1	1	1	1	1	1	**7**	2	0	-2	-27	-21	-22	-3	6	6	5	1	1	1	5	**25**	**175**
																								73 - year Average:			**15**												**73 - year Average:**			**30**	**454**
																																								1929 - '34 Average:		**201**

STUDY: **501**

CP # 6, LAKE OROVILLE, EOP SURFACE ELEVATION

73-year maximum March - September Reservoir Elevation = 900'

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

	Elevation in feet												Difference from Maximum Reservoir Elevation [DFMRE]						
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	833	833	835	844	850	858	893	900	900	880	876	876	42	7	0	0	20	24	24
1923	874	874	858	862	859	872	894	900	881	842	812	814	28	6	0	19	58	88	86
1924	806	794	763	768	787	776	763	752	730	710	702	695	124	137	148	170	190	198	205
1925	696	700	707	723	790	818	837	844	827	797	786	783	82	63	56	73	103	114	117
1926	779	777	779	793	835	855	887	874	853	810	796	774	45	13	26	47	90	104	126
1927	771	803	803	828	849	863	890	900	900	865	853	850	37	10	0	0	35	47	50
1928	847	858	859	868	871	849	878	863	843	789	737	730	51	22	37	57	111	163	170
1929	717	712	710	715	729	746	752	754	747	730	720	714	154	148	146	153	170	180	186
1930	705	702	763	792	819	851	873	876	858	819	783	780	49	27	24	42	81	117	120
1931	770	762	754	767	779	796	783	768	747	726	716	709	104	117	132	153	174	184	191
1932	703	695	700	724	747	780	785	809	779	728	711	705	120	115	91	121	172	189	195
1933	696	684	683	694	703	708	717	734	728	712	702	695	192	183	166	172	188	198	205
1934	691	682	685	712	735	762	754	745	720	696	687	680	138	146	155	180	204	213	220
1935	666	671	677	705	729	760	850	860	846	822	811	794	140	50	40	54	78	89	106
1936	784	774	771	822	849	860	886	897	886	846	827	823	40	14	3	14	54	73	77
1937	810	799	795	798	815	841	866	878	856	830	815	808	59	34	22	44	70	85	92
1938	804	821	854	858	849	849	882	900	900	899	896	887	51	18	0	0	1	4	13
1939	874	864	854	845	837	833	822	813	778	713	655	649	67	78	87	122	187	245	251
1940	639	628	631	704	813	849	879	883	867	829	822	810	51	21	17	33	71	78	90
1941	802	802	843	849	849	858	886	900	900	890	886	887	42	14	0	0	10	14	13
1942	874	874	849	849	850	867	882	900	900	885	882	882	33	18	0	0	15	18	18
1943	874	869	861	849	856	859	887	896	895	863	852	853	41	13	4	5	37	48	47
1944	854	857	856	862	857	868	879	895	875	835	797	791	32	21	5	25	65	103	109
1945	786	793	809	823	862	865	880	896	877	837	813	808	35	20	4	23	63	87	92
1946	807	816	849	864	868	868	887	892	870	831	788	785	32	13	8	30	69	112	115
1947	777	783	791	797	823	845	855	850	832	777	725	718	55	45	50	68	123	175	182
1948	721	722	718	755	758	778	839	868	874	842	825	809	122	61	32	26	58	75	91
1949	802	799	800	805	813	834	854	858	836	784	750	744	66	46	42	64	116	150	156
1950	730	723	721	754	801	837	870	889	875	837	820	819	63	30	11	25	63	80	81
1951	823	849	854	853	858	870	886	900	889	848	820	820	30	14	0	11	52	80	80
1952	823	826	849	849	852	862	894	900	900	900	899	887	38	6	0	0	0	1	13
1953	874	874	858	850	867	867	883	900	900	870	868	870	33	17	0	0	30	32	30
1954	872	871	874	858	857	859	883	863	847	800	753	753	41	17	37	53	100	147	147
1955	754	756	764	777	786	799	808	823	794	730	708	705	101	92	77	106	170	192	195
1956	696	692	846	849	849	864	892	900	900	873	870	874	36	8	0	0	27	30	26
1957	869	874	874	871	853	863	863	881	866	827	792	798	37	37	19	34	73	108	102
1958	800	804	823	843	849	849	879	900	900	898	894	887	51	21	0	0	2	6	13
1959	874	874	874	862	852	867	871	874	853	807	757	761	33	29	26	47	93	143	139
1960	754	742	737	752	813	853	853	859	840	799	787	780	47	47	41	60	101	113	120
1961	769	772	781	792	821	839	845	850	829	773	716	712	61	55	50	71	127	184	188
1962	695	690	700	714	778	814	837	836	821	762	735	715	86	63	64	79	138	165	185
1963	790	802	833	856	867	858	876	900	893	857	845	846	42	24	0	7	43	55	54
1964	847	859	861	866	874	874	880	885	869	828	781	756	26	20	15	31	72	119	144
1965	744	745	849	849	863	870	887	881	883	853	848	849	30	13	19	17	47	52	51
1966	853	859	860	864	870	874	894	882	862	821	773	767	26	6	18	38	79	127	133
1967	754	764	802	849	860	853	879	900	900	900	896	887	47	21	0	0	0	4	13
1968	874	874	873	858	861	866	863	867	848	802	764	761	34	37	33	52	98	136	139
1969	762	768	790	849	849	865	895	900	900	895	893	874	35	5	0	0	5	7	26
1970	874	874	850	849	849	874	869	871	857	818	787	789	26	31	29	43	82	113	111
1971	792	818	846	864	874	874	893	900	900	871	853	855	26	7	0	0	29	47	45
1972	860	866	865	869	867	874	884	886	867	826	781	782	26	16	14	33	74	119	118
1973	778	793	820	849	849	860	882	900	869	829	810	806	40	18	0	31	71	90	94
1974	810	849	850	854	864	849	883	900	900	889	888	886	51	17	0	0	11	12	14
1975	874	874	874	874	855	852	881	900	900	877	876	877	48	19	0	0	23	24	23
1976	873	874	874	874	874	874	871	862	840	794	753	753	26	29	38	60	106	147	147
1977	742	731	714	711	695	690	665	655	625	602	594	591	210	235	245	275	298	306	309
1978	580	580	616	744	797	859	878	897	891	871	861	869	41	22	3	9	29	39	31
1979	871	874	874	871	853	863	878	896	863	828	819	816	37	22	4	37	72	81	84
1980	822	825	833	850	849	865	881	893	888	873	866	865	35	19	7	12	27	34	35
1981	864	865	873	860	868	865	875	872	851	806	762	762	35	25	28	49	94	138	138
1982	770	849	849	859	862	859	884	900	900	889	886	887	41	16	0	0	11	14	13
1983	873	862	858	853	849	849	877	900	900	900	899	887	51	23	0	0	0	1	13
1984	874	860	849	869	869	871	885	894	878	840	830	832	29	15	6	22	60	70	68
1985	836	850	860	866	874	871	886	872	849	804	754	737	29	14	28	51	96	146	163
1986	727	724	731	767	849	849	871	875	871	842	831	842	51	29	25	29	58	69	58
1987	844	850	846	847	858	867	855	845	817	756	713	708	33	45	55	83	144	187	192
1988	695	698	738	765	767	768	767	756	733	712	700	698	132	133	144	167	188	200	202
1989	689	708	718	725	724	840	866	856	839	790	778	776	60	34	44	61	110	122	124
1990	787	788	772	786	793	820	807	807	782	726	713	705	80	93	93	118	174	187	195
1991	686	678	659	656	645	699	722	736	720	697	692	692	201	178	164	180	203	208	208
1992	687	682	684	687	718	748	763	753	728	705	693	687	152	137	147	172	195	207	213
1993	679	674	692	760	812	861	894	900	900	881	876	875	39	6	0	0	19	24	25
1994	874	874	874	871	862	873	871	866	844	801	754	748	27	29	34	56	99	146	152

	Reservoir Elevation Score								Reservoir Change from Previous Month [fluctuation]							Reservoir Fluctuation Score								Largemouth Bass Reservoir Habitat Index =
YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	1	4	6	6	1	1	1	**20**	8	35	7	0	-20	-4	0	6	6	6	6	2	5	6	**37**	**740**
1923	1	4	6	2	1	1	1	**16**	13	22	6	-19	-39	-30	2	6	6	6	2	1	1	6	**28**	**448**
1924	1	1	1	1	1	1	1	**7**	-11	-13	-11	-22	-20	-8	-7	3	3	3	1	2	4	4	**20**	**140**
1925	1	1	1	1	1	1	1	**7**	28	19	7	-17	-30	-11	-3	6	6	6	2	1	3	5	**29**	**203**
1926	1	3	1	1	1	1	1	**9**	20	32	-13	-21	-43	-14	-22	6	6	3	1	1	3	1	**21**	**189**
1927	1	3	6	6	1	1	1	**19**	14	27	10	0	-35	-12	-3	6	6	6	6	1	3	5	**33**	**627**
1928	1	1	1	1	1	1	1	**7**	-22	29	-15	-20	-54	-52	-7	1	6	3	2	1	1	4	**18**	**126**
1929	1	1	1	1	1	1	1	**7**	17	6	2	-7	-17	-10	-6	6	6	6	4	2	4	4	**32**	**224**
1930	1	1	1	1	1	1	1	**7**	32	22	3	-18	-39	-36	-3	6	6	6	2	1	1	5	**27**	**189**
1931	1	1	1	1	1	1	1	**7**	17	-13	-15	-21	-21	-10	-7	6	3	3	1	1	4	4	**22**	**154**
1932	1	1	1	1	1	1	1	**7**	33	5	24	-30	-51	-17	-6	6	6	6	1	1	2	4	**26**	**182**
1933	1	1	1	1	1	1	1	**7**	5	9	17	-6	-16	-10	-7	6	6	6	4	2	4	4	**32**	**224**
1934	1	1	1	1	1	1	1	**7**	27	-8	-9	-25	-24	-9	-7	6	4	4	1	1	4	4	**24**	**168**
1935	1	1	1	1	1	1	1	**7**	31	90	10	-14	-24	-11	-17	6	6	6	3	1	3	2	**27**	**189**
1936	1	3	5	3	1	1	1	**15**	11	26	11	-11	-40	-19	-4	6	6	6	3	1	2	5	**29**	**435**
1937	1	1	1	1	1	1	1	**7**	26	25	12	-22	-26	-15	-7	6	6	6	1	1	3	4	**27**	**189**
1938	1	2	6	6	5	5	3	**28**	0	33	18	0	-1	-3	-9	6	6	6	6	5	5	4	**38**	**1064**
1939	1	1	1	1	1	1	1	**7**	-4	-11	-9	-35	-65	-58	-6	5	3	4	1	1	1	4	**19**	**133**
1940	1	1	2	1	1	1	1	**8**	36	30	4	-16	-38	-7	-12	6	6	6	2	1	4	3	**28**	**224**
1941	1	3	6	6	3	3	3	**25**	9	28	14	0	-10	-4	1	6	6	6	6	4	5	6	**39**	**975**
1942	1	2	6	6	2	2	2	**21**	17	15	18	0	-15	-3	0	6	6	6	6	3	5	6	**38**	**798**
1943	1	3	5	4	1	1	1	**16**	3	28	9	-1	-32	-11	1	6	6	6	5	1	3	6	**33**	**528**
1944	1	1	4	1	1	1	1	**10**	11	11	16	-20	-40	-38	-6	6	6	6	2	1	1	4	**26**	**260**
1945	1	1	5	1	1	1	1	**11**	3	15	16	-19	-40	-24	-5	6	6	6	2	1	1	5	**27**	**297**
1946	1	3	4	1	1	1	1	**12**	0	19	5	-22	-39	-43	-3	6	6	6	1	1	1	5	**26**	**312**
1947	1	1	1	1	1	1	1	**7**	22	10	-5	-18	-55	-52	-7	6	6	5	2	1	1	4	**25**	**175**
1948	1	1	1	1	1	1	1	**7**	20	61	29	6	-32	-17	-16	6	6	6	6	1	2	2	**29**	**203**
1949	1	1	1	1	1	1	1	**7**	21	20	4	-22	-52	-34	-6	6	6	6	1	1	1	4	**25**	**175**
1950	1	1	3	1	1	1	1	**9**	36	33	19	-14	-38	-17	-1	6	6	6	3	1	2	5	**29**	**261**
1951	1	3	6	3	1	1	1	**16**	12	16	14	-11	-41	-28	0	6	6	6	3	1	1	6	**29**	**464**
1952	1	4	6	6	6	5	3	**31**	10	32	6	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1178**
1953	1	2	6	6	1	1	1	**18**	0	16	17	0	-30	-2	2	6	6	6	6	1	5	6	**36**	**648**
1954	1	2	1	1	1	1	1	**8**	2	24	-20	-16	-47	-47	0	6	6	2	2	1	1	6	**24**	**192**
1955	1	1	1	1	1	1	1	**7**	13	9	15	-29	-64	-22	-3	6	6	6	1	1	1	5	**26**	**182**
1956	1	4	6	6	1	1	1	**20**	15	28	8	0	-27	-3	4	6	6	6	6	1	5	6	**36**	**720**
1957	1	1	2	1	1	1	1	**8**	10	0	18	-15	-39	-35	6	6	6	6	3	1	1	6	**29**	**232**
1958	1	1	6	6	5	4	3	**26**	0	30	21	0	-2	-4	-7	6	6	6	6	5	5	4	**38**	**988**
1959	1	1	1	1	1	1	1	**7**	15	4	3	-21	-46	-50	4	6	6	6	1	1	1	6	**27**	**189**
1960	1	1	1	1	1	1	1	**7**	40	0	6	-19	-41	-12	-7	6	6	6	2	1	3	4	**28**	**196**
1961	1	1	1	1	1	1	1	**7**	18	6	5	-21	-56	-57	-4	6	6	6	1	1	1	5	**26**	**182**
1962	1	1	1	1	1	1	1	**7**	36	23	-1	-15	-59	-27	-20	6	6	5	3	1	1	2	**24**	**168**
1963	1	1	6	4	1	1	1	**15**	-9	18	24	-7	-36	-12	1	4	6	6	4	1	3	6	**30**	**450**
1964	1	1	2	1	1	1	1	**8**	0	6	5	-16	-41	-47	-25	6	6	6	2	1	1	1	**23**	**184**
1965	1	3	2	2	1	1	1	**11**	7	17	-6	2	-30	-5	1	6	6	4	6	1	5	6	**34**	**374**
1966	1	4	2	1	1	1	1	**11**	4	20	-12	-20	-41	-48	-6	6	6	3	2	1	1	4	**23**	**253**
1967	1	1	6	6	6	5	3	**28**	-7	26	21	0	0	-4	-9	4	6	6	6	6	5	4	**37**	**1036**
1968	1	1	1	1	1	1	1	**7**	5	-3	4	-19	-46	-38	-3	6	5	6	2	1	1	5	**26**	**182**
1969	1	4	6	6	4	4	1	**26**	16	30	5	0	-5	-2	-19	6	6	6	6	5	5	2	**36**	**936**
1970	1	1	1	1	1	1	1	**7**	25	-5	2	-14	-39	-31	2	6	5	6	3	1	1	6	**28**	**196**
1971	1	4	6	6	1	1	1	**20**	0	19	7	0	-29	-18	2	6	6	6	6	1	2	6	**33**	**660**
1972	1	2	3	1	1	1	1	**10**	7	10	2	-19	-41	-45	1	6	6	6	2	1	1	6	**28**	**280**
1973	1	2	6	1	1	1	1	**13**	11	22	18	-31	-40	-19	-4	6	6	6	1	1	2	5	**27**	**351**
1974	1	2	6	6	3	3	3	**24**	-15	34	17	0	-11	-1	-2	3	6	6	6	3	5	5	**34**	**816**
1975	1	2	6	6	1	1	1	**18**	-3	29	19	0	-23	-1	1	5	6	6	6	1	5	6	**35**	**630**
1976	1	1	1	1	1	1	1	**7**	0	-3	-9	-22	-46	-41	0	6	5	4	1	1	1	6	**24**	**168**
1977	1	1	1	1	1	1	1	**7**	-5	-25	-10	-30	-23	-8	-3	5	1	4	1	1	4	5	**21**	**147**
1978	1	1	5	4	1	1	1	**14**	62	19	19	-6	-20	-10	8	6	6	6	4	2	4	6	**34**	**476**
1979	1	1	5	1	1	1	1	**11**	10	15	18	-33	-35	-9	-3	6	6	6	1	1	4	5	**29**	**319**
1980	1	2	4	3	1	1	1	**13**	16	16	12	-5	-15	-7	-1	6	6	6	5	3	4	5	**35**	**455**
1981	1	1	1	1	1	1	1	**7**	-3	10	-3	-21	-45	-44	0	5	6	5	1	1	1	6	**25**	**175**
1982	1	2	6	6	3	3	3	**24**	-3	25	16	0	-11	-3	1	5	6	6	6	3	5	6	**37**	**888**
1983	1	1	6	6	6	5	3	**28**	0	28	23	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1064**
1984	1	2	4	1	1	1	1	**11**	2	14	9	-16	-38	-10	2	6	6	6	2	1	4	6	**31**	**341**
1985	1	3	1	1	1	1	1	**9**	-3	15	-14	-23	-45	-50	-17	5	6	3	1	1	1	2	**19**	**171**
1986	1	1	1	1	1	1	1	**7**	0	22	4	-4	-29	-11	11	6	6	6	5	1	3	6	**33**	**231**
1987	1	1	1	1	1	1	1	**7**	9	-12	-10	-28	-61	-43	-5	6	3	4	1	1	1	5	**21**	**147**
1988	1	1	1	1	1	1	1	**7**	1	-1	-11	-23	-21	-12	-2	6	5	3	1	1	3	5	**24**	**168**
1989	1	1	1	1	1	1	1	**7**	116	26	-10	-17	-49	-12	-2	6	6	4	2	1	3	5	**27**	**189**
1990	1	1	1	1	1	1	1	**7**	27	-13	0	-25	-56	-13	-8	6	3	6	1	1	3	4	**24**	**168**
1991	1	1	1	1	1	1	1	**7**	54	23	14	-16	-23	-5	0	6	6	6	2	1	5	6	**32**	**224**
1992	1	1	1	1	1	1	1	**7**	30	15	-10	-25	-23	-12	-6	6	6	4	1	1	3	4	**25**	**175**
1993	1	4	6	6	2	1	1	**21**	49	33	6	0	-19	-5	-1	6	6	6	6	2	5	5	**36**	**756**
1994	1	1	1	1	1	1	1	**7**	11	-2	-5	-22	-43	-47	-6	6	5	5	1	1	1	4	**23**	**161**
					73 - year Average:			**12**												**73 - year Average:**			**29**	**383**
																					1929 - '34 Average:			**190**

STUDY: **501**
CP # 8, FOLSOM LAKE, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 466'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Change MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	414	408	413	413	424	428	443	466	466	463	446	434	38	23	0	0	3	20	32	1	1	6	6	5	1	1	**21**	4	15	23	0	-3	-17	-12	6	6	6	6	5	2	3	**34**	**714**
1923	425	423	424	424	423	421	449	466	451	430	410	407	45	17	0	15	36	56	59	1	2	6	2	1	1	1	**14**	-2	28	17	-15	-21	-20	-3	5	6	6	3	1	2	5	**28**	**392**
1924	402	396	389	379	376	356	358	354	334	334	337	334	110	108	112	132	132	129	132	1	1	1	1	1	1	1	**7**	-20	2	-4	-20	0	3	-3	2	6	5	2	6	6	5	**32**	**224**
1925	349	363	380	390	424	437	449	466	449	426	415	411	29	17	0	17	40	51	55	1	2	6	2	1	1	1	**14**	13	12	17	-17	-23	-11	-4	6	6	6	2	1	3	5	**29**	**406**
1926	406	397	392	385	407	407	440	438	411	358	338	351	59	26	28	55	108	128	115	1	1	1	1	1	1	1	**7**	0	33	-2	-27	-53	-20	13	6	6	5	1	1	2	6	**27**	**189**
1927	358	399	420	424	424	437	449	466	461	451	442	434	29	17	0	5	15	24	32	1	2	6	4	2	1	1	**17**	13	12	17	-5	-10	-9	-8	6	6	6	5	4	4	4	**35**	**595**
1928	425	424	424	424	424	437	449	453	442	417	407	406	29	17	13	24	49	59	60	1	2	3	1	1	1	1	**10**	13	12	4	-11	-25	-10	-1	6	6	6	3	1	4	5	**31**	**310**
1929	386	378	372	355	352	363	378	386	371	335	347	351	103	88	80	95	131	119	115	1	1	1	1	1	1	1	**7**	11	15	8	-15	-36	12	4	6	6	6	3	1	6	6	**34**	**238**
1930	334	334	384	406	421	437	443	442	416	384	343	342	29	23	24	50	82	123	124	1	1	1	1	1	1	1	**7**	16	6	-1	-26	-32	-41	-1	6	6	5	1	1	1	5	**25**	**175**
1931	335	349	362	376	385	399	393	389	334	334	335	334	67	73	77	132	132	131	132	1	1	1	1	1	1	1	**7**	14	-6	-4	-55	0	1	-1	6	4	5	1	6	6	5	**33**	**231**
1932	334	334	380	402	424	436	442	458	444	406	379	382	30	24	8	22	60	87	84	1	1	4	1	1	1	1	**10**	12	6	16	-14	-38	-27	3	6	6	6	3	1	1	6	**29**	**290**
1933	361	334	347	350	335	364	334	367	344	334	352	347	102	132	99	122	132	114	119	1	1	1	1	1	1	1	**7**	29	-30	33	-23	-10	18	-5	6	1	6	1	4	6	5	**29**	**203**
1934	335	335	375	402	420	425	417	411	334	324	313	326	41	49	55	132	142	153	140	1	1	1	1	1	1	1	**7**	5	-8	-6	-77	-10	-11	13	6	4	4	1	4	3	6	**28**	**196**
1935	334	361	378	402	418	421	449	453	452	423	406	404	45	17	13	14	43	60	62	1	2	3	3	1	1	1	**12**	3	28	4	-1	-29	-17	-2	6	6	6	5	1	2	5	**31**	**372**
1936	401	388	386	424	424	437	449	461	455	442	428	429	29	17	5	11	24	38	37	1	2	4	3	1	1	1	**13**	13	12	12	-6	-13	-14	1	6	6	6	4	3	3	6	**34**	**442**
1937	417	409	402	393	419	437	449	466	454	437	423	426	29	17	0	12	29	43	40	1	2	6	3	1	1	1	**15**	18	12	17	-12	-17	-14	3	6	6	6	3	2	3	6	**32**	**480**
1938	415	412	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1939	426	420	415	409	402	409	415	418	390	334	334	335	57	51	48	76	132	132	131	1	1	1	1	1	1	1	**7**	7	6	3	-28	-56	0	1	6	6	6	1	1	6	6	**32**	**224**
1940	334	334	334	420	424	437	449	461	448	431	423	426	29	17	5	18	35	43	40	1	2	4	2	1	1	1	**12**	13	12	12	-13	-17	-8	3	6	6	6	3	2	4	6	**33**	**396**
1941	421	416	424	424	424	437	449	466	458	455	447	434	29	17	0	8	11	19	32	1	2	6	4	3	2	1	**19**	13	12	17	-8	-3	-8	-13	6	6	6	4	5	4	3	**34**	**646**
1942	426	422	424	424	424	430	449	466	466	463	448	434	36	17	0	0	3	18	32	1	2	6	6	5	2	1	**23**	6	19	17	0	-3	-15	-14	6	6	6	6	5	3	3	**35**	**805**
1943	425	424	423	422	422	434	449	459	451	447	441	434	32	17	7	15	19	25	32	1	2	4	2	2	1	1	**13**	12	15	10	-8	-4	-6	-7	6	6	6	4	5	4	4	**35**	**455**
1944	425	419	413	405	407	419	420	433	413	391	363	364	47	46	33	53	75	103	102	1	1	1	1	1	1	1	**7**	12	1	13	-20	-22	-28	1	6	6	6	2	1	1	6	**28**	**196**
1945	356	388	409	418	424	437	449	466	455	444	436	433	29	17	0	11	22	30	33	1	2	6	3	1	1	1	**15**	13	12	17	-11	-11	-8	-3	6	6	6	3	3	4	5	**33**	**495**
1946	427	424	424	424	423	437	449	466	451	438	431	429	29	17	0	15	28	35	37	1	2	6	2	1	1	1	**14**	14	12	17	-15	-13	-7	-2	6	6	6	3	3	4	5	**33**	**462**
1947	417	418	417	408	410	427	437	440	412	378	347	336	39	29	26	54	88	119	130	1	1	1	1	1	1	1	**7**	17	10	3	-28	-34	-31	-11	6	6	6	1	1	1	3	**24**	**168**
1948	359	376	380	405	402	396	434	455	456	447	440	434	70	32	11	10	19	26	32	1	1	3	3	2	1	1	**12**	-6	38	21	1	-9	-7	-6	4	6	6	6	4	4	4	**34**	**408**
1949	425	419	416	406	400	422	444	459	442	426	411	409	44	22	7	24	40	55	57	1	1	4	1	1	1	1	**10**	22	22	15	-17	-16	-15	-2	6	6	6	2	2	3	5	**30**	**300**
1950	393	389	384	415	424	437	449	466	455	443	438	434	29	17	0	11	23	28	32	1	2	6	3	1	1	1	**15**	13	12	17	-11	-12	-5	-4	6	6	6	3	3	5	5	**34**	**510**
1951	428	393	388	388	388	426	449	466	450	434	429	426	40	17	0	16	32	37	40	1	2	6	2	1	1	1	**14**	38	23	17	-16	-16	-5	-3	6	6	6	2	2	5	5	**32**	**448**
1952	424	424	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1953	428	423	424	424	424	430	446	458	464	462	446	434	36	20	8	2	4	20	32	1	1	4	5	5	1	1	**18**	6	16	12	6	-2	-16	-12	6	6	6	6	5	2	3	**34**	**612**
1954	425	423	421	422	424	437	449	452	441	422	417	417	29	17	14	25	44	49	49	1	2	3	1	1	1	1	**10**	13	12	3	-11	-19	-5	0	6	6	6	3	2	5	6	**34**	**340**
1955	412	405	409	415	415	411	421	431	415	391	358	365	55	45	35	51	75	108	101	1	1	1	1	1	1	1	**7**	-4	10	10	-16	-24	-33	7	5	6	6	2	1	1	6	**27**	**189**
1956	334	356	420	402	406	425	441	466	466	463	448	434	41	25	0	0	3	18	32	1	1	6	6	5	2	1	**22**	19	16	25	0	-3	-15	-14	6	6	6	6	5	3	3	**35**	**770**
1957	428	422	417	412	424	437	433	459	448	436	429	428	29	33	7	18	30	37	38	1	1	4	2	1	1	1	**11**	13	-4	26	-11	-12	-7	-1	6	5	6	3	3	4	5	**32**	**352**
1958	421	415	416	421	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1959	425	419	412	417	424	426	434	434	412	389	377	384	40	32	32	54	77	89	82	1	1	1	1	1	1	1	**7**	2	8	0	-22	-23	-12	7	6	6	6	1	1	3	6	**29**	**203**
1960	373	367	367	378	419	437	448	446	426	404	392	394	29	18	20	40	62	74	72	1	2	1	1	1	1	1	**8**	18	11	-2	-20	-22	-12	2	6	6	5	2	1	3	6	**29**	**232**
1961	388	391	394	393	401	409	413	425	409	390	379	385	57	53	41	57	76	87	81	1	1	1	1	1	1	1	**7**	8	4	12	-16	-19	-11	6	6	6	6	2	2	3	6	**31**	**217**
1962	380	377	385	387	424	433	448	455	448	428	415	413	33	18	11	18	38	51	53	1	2	3	2	1	1	1	**11**	9	15	7	-7	-20	-13	-2	6	6	6	4	2	3	5	**32**	**352**
1963	441	424	424	424	419	430	449	466	459	453	448	434	36	17	0	7	13	18	32	1	2	6	4	3	2	1	**19**	11	19	17	-7	-6	-5	-14	6	6	6	4	4	5	3	**34**	**646**
1964	427	424	424	424	418	415	426	433	413	379	347	334	51	40	33	53	87	119	132	1	1	1	1	1	1	1	**7**	-3	11	7	-20	-34	-32	-13	5	6	6	2	1	1	3	**24**	**168**
1965	335	367	393	392	395	412	449	464	447	443	443	434	54	17	2	19	23	23	32	1	2	5	3	2	1	1	**15**	17	37	15	-10	-7	-4	-9	6	6	6	4	4	5	4	**35**	**525**
1966	426	424	424	424	422	430	448	447	427	404	393	392	36	18	19	39	62	73	74	1	2	2	1	1	1	1	**9**	8	18	-1	-20	-23	-11	-1	6	6	5	2	1	3	5	**28**	**252**
1967	384	393	421	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1968	427	424	423	424	424	437	439	441	419	395	392	395	29	27	25	47	71	74	71	1	1	1	1	1	1	1	**7**	13	2	2	-22	-24	-3	3	6	6	6	1	1	5	6	**31**	**217**
1969	393	402	415	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1970	427	424	423	393	396	426	431	440	429	413	406	409	40	35	26	37	53	60	57	1	1	1	1	1	1	1	**7**	30	5	9	-11	-16	-7	3	6	6	6	3	2	4	6	**33**	**231**
1971	400	414	424	424	424	437	447	461	461	459	449	434	29	19	5	5	7	17	32	1	2	4	4	4	2	1	**18**	13	10	14	0	-2	-10	-15	6	6	6	6	5	4	3	**36**	**648**
1972	425	422	424	424	424	437	444	451	432	410	403	403	29	22	15	34	56	63	63	1	1	2	1	1	1	1	**8**	13	7	7	-19	-22	-7	0	6	6	6	2	1	4	6	**31**	**248**
1973	402	407	422	424	424	437	449	466	451	434	425	426	29	17	0	15	32	41	40	1	2	6	2	1	1	1	**14**	13	12	17	-15	-17	-9	1	6	6	6	3	2	4	6	**33**	**462**
1974	423	423	422	409	417	433	449	466	463	463	449	434	33	17	0	3	3	17	32	1	2	6	5	5	2	1	**22**	16	16	17	-3	0	-14	-15	6	6	6	5	6	3	3	**35**	**770**
1975	426	419	417	415	424	437	441	466	466	463	449	434	29	25	0	0	3	17	32	1	1	6	6	5	2	1	**22**	13	4	25	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**770**
1976	431	423	419	410	402	392	397	401	365	334	341	342	74	69	65	101	132	125	124	1	1	1	1	1	1	1	**7**	-10	5	4	-36	-31	7	1	4	6	6	1	1	6	6	**30**	**210**
1977	335	334	330	325	321	323	333	341	334	319	305	291	143	133	125	132	147	161	175	1	1	1	1	1	1	1	**7**	2	10	8	-7	-15	-14	-14	6	6	6	4	3	3	3	**31**	**217**
1978	286	304	358	424	424	437	449	466	459	452	439	434	29	17	0	7	14	27	32	1	2	6	4	3	1	1	**18**	13	12	17	-7	-7	-13	-5	6	6	6	4	4	3	5	**34**	**612**
1979	423	417	409	416	424	437	447	466	449	431	423	422	29	19	0	17	35	43	44	1	2	6	2	1	1	1	**14**	13	10	19	-17	-18	-8	-1	6	6	6	2	2	4	5	**31**	**434**
1980	419	417	417	405	399	430	449	464	453	453	449	434	36	17	2	13	13	17	32	1	2	5	3	3	2	1	**17**	31	19	15	-11	0	-4	-15	6	6	6	3	6	5	3	**35**	**595**
1981	425	419	415	413	412	422	433	435	411	390	382	383	44	33	31	55	76	84	83	1	1	1	1	1	1	1	**7**	10	11	2	-24	-21	-8	1	6	6	6	1	1	4	6	**30**	**210**
1982	385	420	392	396	388	424	449	466	466	463	449	434	42	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	36	25	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1983	438	415	417	418	418	433	449	466	466	463	449	434	33	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	15	16	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1984	435	392	388	388	392	424	441	464	453	440	430	430	42	25	2	13	26	36	36	1	1	5	3	1	1	1	**13**	32	17	23	-11	-13	-10	0	6	6	6	3	3	4	6	**34**	**442**
1985	424	424	424	420	422	428	443	442	413	373	335	334	38	23	24	53	93	131	132	1	1	1	1	1	1	1	**7**	6	15	-1	-29	-40	-38	-1	6	6	5	1	1	1	5	**25**	**175**
1986	335	366	396	424	396	424	449	464	456	451	447	434	42	17	2	10	15	19	32	1	2	5	3	2	2	1	**16**	28	25	15	-8	-5	-4	-13	6	6	6	4	5	5	3	**35**	**560**
1987	427	420	413	405	404	410	416	418	386	335	322	334	56	50	48	80	131	144	132	1	1	1	1	1	1	1	**7**	6	6	2	-32	-51	-13	12	6	6	6	1	1	3	6	**29**	**203**
1988	334	334	369	396	390	388	396	392	356	330	314	376	78	70	74	110	136	152	90	1	1	1	1	1	1	1	**7**	-2	8	-4	-36	-26	-16	62	5	6	5	1	1	2	6	**26**	**182**
1989	353	374	391	401	393	437	449	452	433	410	404	408	29	17	14	33	56	62	58	1	2	3	1	1	1	1	**10**	44	12	3	-19	-23	-6	4	6	6	6	2	1	4	6	**31**	**310**
1990	405	404	400	400	398	410	413	414	379	334	343	344	56	53	52	87	132	123	122	1	1	1	1	1	1	1	**7**	12	3	1	-35	-45	9	1	6	6	6	1	1	6	6	**32**	**224**
1991	334	334	334	332	332	383	407	425	421	412	407	405	83	59	41	45	54	59	61	1	1	1	1	1	1	1	**7**	51	24	18	-4	-9	-5	-2	6	6	6	5	4	5	5	**37**	**259**
1992	398	386	376	359	383	399	409	404	361	334	323	316	67	57	62	105	132	143	150	1	1	1	1	1	1	1	**7**	16	10	-5	-43	-27	-11	-7	6	6	5	1	1	3	4	**26**	**182**
1993	315	315	357	424	427	434	449	466	466	455	449	434	32	17	0	0	11	17	32	1	2	6	6	3	2	1	**21**	7	15	17	0	-11	-6	-15	6	6	6	6	3	4	3	**34**	**714**
1994	423	413	407	395	390	389	397	402	376	334	334	332	77	69	64	90	132	132	134	1	1	1	1	1	1	1	**7**	-1	8	5	-26	-42	0	-2	5	6	6	1	1	6	5	**30**	**210**
																										73 - year Average:	**13**												**73 - year Average:**			**32**	**418**
																																							1929 - '34 Average:				**222**

Elevation in feet (OCT–SEP columns; OCT–FEB highlighted)

STUDY: **501**

CP # 10, NEW MELONES RESERVOIR, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 1088'

Elevation in feet

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	940	943	948	954	968	978	973	990	1012	1004	991	981
1923	980	984	994	1002	1008	1007	1004	1008	1008	999	985	976
1924	975	977	981	985	988	988	979	967	954	942	930	926
1925	926	928	931	935	953	965	966	982	986	977	964	957
1926	955	957	959	961	972	975	975	965	952	937	923	912
1927	913	918	927	934	953	964	973	984	986	976	963	956
1928	957	963	968	972	980	1001	999	1001	993	979	964	957
1929	956	958	961	964	968	969	964	961	950	938	925	918
1930	919	921	923	927	933	941	941	936	931	917	896	883
1931	884	889	892	896	901	904	896	883	865	847	828	819
1932	818	821	832	841	864	874	875	911	930	922	905	893
1933	894	896	902	906	911	913	906	902	898	878	856	844
1934	844	849	855	861	870	879	871	857	837	818	791	773
1935	770	772	779	793	804	816	834	877	897	882	863	851
1936	850	855	860	877	914	927	940	963	970	960	947	939
1937	940	942	946	950	963	977	979	1003	1007	998	987	979
1938	979	982	994	1004	1022	1044	1052	1079	1088	1084	1075	1069
1939	1050	1050	1050	1050	1050	1052	1050	1038	1025	1012	999	992
1940	988	990	992	1004	1018	1035	1044	1055	1046	1033	1021	1014
1941	1013	1015	1021	1027	1037	1047	1043	1058	1064	1058	1048	1040
1942	1038	1040	1045	1050	1050	1055	1055	1067	1081	1078	1067	1062
1943	1050	1050	1050	1050	1050	1055	1061	1068	1067	1059	1048	1041
1944	1039	1040	1042	1043	1046	1050	1045	1041	1035	1022	1008	1000
1945	998	1003	1007	1012	1026	1035	1035	1048	1054	1046	1033	1026
1946	1026	1030	1040	1048	1050	1054	1052	1061	1057	1046	1034	1027
1947	1026	1029	1031	1033	1037	1040	1028	1019	1010	999	988	981
1948	979	981	983	985	987	990	989	991	999	990	978	971
1949	969	972	975	978	982	988	981	985	979	966	954	946
1950	945	945	948	956	966	974	974	986	991	980	967	960
1951	958	994	1034	1046	1050	1055	1048	1041	1033	1020	1007	1000
1952	998	1001	1008	1022	1033	1046	1048	1077	1088	1086	1076	1070
1953	1050	1050	1050	1050	1050	1054	1046	1036	1037	1028	1016	1009
1954	1005	1008	1010	1013	1015	1023	1025	1028	1019	1005	992	982
1955	979	982	986	992	996	999	993	986	982	969	955	947
1956	947	950	983	1011	1025	1034	1025	1042	1053	1047	1035	1028
1957	1026	1028	1030	1033	1037	1044	1032	1029	1028	1015	1002	994
1958	989	992	994	1001	1009	1024	1031	1061	1075	1069	1059	1052
1959	1050	1050	1050	1050	1050	1053	1046	1030	1018	1005	992	983
1960	979	981	984	987	994	999	996	991	980	966	953	943
1961	939	943	946	949	951	955	950	943	931	919	900	890
1962	889	892	896	899	916	924	926	934	937	927	910	896
1963	896	901	908	921	939	946	947	976	983	975	962	956
1964	956	961	965	972	975	979	972	964	956	942	929	920
1965	919	924	955	982	996	1004	1012	1013	1018	1010	999	992
1966	991	996	1001	1006	1011	1016	1006	1004	993	980	966	957
1967	956	959	972	986	996	1007	1009	1032	1060	1064	1054	1048
1968	1046	1048	1050	1050	1050	1054	1042	1033	1022	1008	994	984
1969	982	987	990	1020	1041	1055	1066	1088	1088	1084	1074	1066
1970	1050	1050	1050	1050	1050	1055	1047	1041	1039	1025	1012	1005
1971	1003	1007	1015	1022	1029	1035	1026	1021	1021	1010	997	990
1972	986	990	997	1002	1003	1007	992	992	981	968	954	947
1973	947	950	955	971	990	1003	1004	1022	1026	1016	1005	1000
1974	1001	1007	1016	1029	1039	1053	1057	1067	1067	1058	1047	1039
1975	1038	1040	1043	1047	1050	1055	1050	1049	1061	1053	1042	1034
1976	1033	1036	1039	1040	1043	1045	1040	1031	1019	1010	1000	994
1977	994	996	997	997	997	997	988	977	968	956	943	938
1978	936	936	940	951	963	983	993	1010	1021	1019	1010	1007
1979	1007	1009	1013	1021	1034	1047	1048	1057	1052	1038	1025	1018
1980	1019	1022	1025	1050	1050	1055	1056	1063	1070	1068	1057	1051
1981	1050	1050	1050	1050	1050	1053	1045	1034	1019	1005	992	984
1982	982	991	1006	1027	1050	1055	1071	1086	1088	1084	1075	1071
1983	1050	1050	1050	1050	1050	1055	1056	1070	1088	1088	1082	1075
1984	1050	1050	1050	1050	1050	1055	1044	1037	1033	1022	1012	1006
1985	1005	1010	1015	1018	1023	1029	1026	1020	1010	1000	990	984
1986	984	987	991	1001	1049	1055	1056	1061	1065	1055	1045	1040
1987	1039	1041	1044	1044	1046	1049	1044	1034	1023	1014	1006	1002
1988	998	998	999	1000	1002	1004	998	988	978	968	959	953
1989	952	952	953	954	956	968	964	960	952	940	929	924
1990	927	930	934	937	940	945	937	926	911	891	875	866
1991	865	867	871	871	871	880	874	869	854	835	817	810
1992	811	813	819	822	833	842	834	818	793	762	727	715
1993	723	737	755	789	887	941	929	934	945	935	925	921
1994	920	921	925	925	927	932	929	925	913	894	876	869

Difference from Maximum Reservoir Elevation [DFMRE]

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	120	110	115	98	76	84	97
1923	80	81	84	80	80	89	103
1924	100	100	109	121	134	146	158
1925	135	123	122	106	102	111	124
1926	116	113	113	123	136	151	165
1927	135	124	115	104	102	112	125
1928	108	87	89	87	95	109	124
1929	120	119	124	127	138	150	163
1930	155	147	147	152	157	171	192
1931	187	184	192	205	223	241	260
1932	224	214	213	177	158	166	183
1933	177	175	182	186	190	210	232
1934	218	209	217	231	251	270	297
1935	284	272	254	211	191	206	225
1936	174	161	148	125	118	128	141
1937	125	111	109	85	81	90	101
1938	66	44	36	9	0	4	13
1939	38	36	38	50	63	76	89
1940	70	53	44	33	42	55	67
1941	51	41	45	30	24	30	40
1942	38	33	33	21	7	10	21
1943	38	33	27	20	21	29	40
1944	42	38	43	47	53	66	80
1945	62	53	53	40	34	42	55
1946	38	34	36	27	31	42	54
1947	51	48	60	69	78	89	100
1948	101	98	99	97	89	98	110
1949	106	100	107	103	109	122	134
1950	122	114	114	102	97	108	121
1951	38	33	40	47	55	68	81
1952	55	42	40	11	0	2	12
1953	38	34	42	52	51	60	72
1954	73	65	63	60	69	83	96
1955	92	89	95	102	106	119	133
1956	63	54	63	46	35	41	53
1957	51	44	56	59	60	73	86
1958	79	64	57	27	13	19	29
1959	38	35	42	58	70	83	96
1960	94	89	92	97	108	122	135
1961	137	133	138	145	157	169	188
1962	172	164	162	154	151	161	178
1963	149	142	141	112	105	113	126
1964	113	109	116	124	132	146	159
1965	92	84	76	75	70	78	89
1966	77	72	82	84	95	108	122
1967	92	81	79	56	28	24	34
1968	38	34	46	55	66	80	94
1969	47	33	22	0	0	4	14
1970	38	33	41	47	49	63	76
1971	59	53	62	67	67	78	91
1972	85	81	96	96	107	120	134
1973	98	85	84	66	62	72	83
1974	49	35	31	21	21	30	41
1975	38	33	38	39	27	35	46
1976	45	43	48	57	69	78	88
1977	91	91	100	111	120	132	145
1978	125	105	95	78	67	69	78
1979	54	41	40	31	36	50	63
1980	38	33	32	25	18	20	31
1981	38	35	43	54	69	83	96
1982	38	33	17	2	0	4	13
1983	38	33	32	18	0	0	6
1984	38	33	44	51	55	66	76
1985	65	59	62	68	78	88	98
1986	39	33	32	27	23	33	43
1987	42	39	44	54	65	74	82
1988	86	84	90	100	110	120	129
1989	132	120	124	128	136	148	159
1990	148	143	151	162	177	197	213
1991	217	208	214	219	234	253	271
1992	255	246	254	270	295	326	361
1993	201	147	159	154	143	153	163
1994	161	156	159	163	175	194	212

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	1	1	1	1	1	1	1	**7**
1923	1	1	1	1	1	1	1	**7**
1924	1	1	1	1	1	1	1	**7**
1925	1	1	1	1	1	1	1	**7**
1926	1	1	1	1	1	1	1	**7**
1927	1	1	1	1	1	1	1	**7**
1928	1	1	1	1	1	1	1	**7**
1929	1	1	1	1	1	1	1	**7**
1930	1	1	1	1	1	1	1	**7**
1931	1	1	1	1	1	1	1	**7**
1932	1	1	1	1	1	1	1	**7**
1933	1	1	1	1	1	1	1	**7**
1934	1	1	1	1	1	1	1	**7**
1935	1	1	1	1	1	1	1	**7**
1936	1	1	1	1	1	1	1	**7**
1937	1	1	1	1	1	1	1	**7**
1938	1	1	1	4	6	5	3	**21**
1939	1	1	1	1	1	1	1	**7**
1940	1	1	1	1	1	1	1	**7**
1941	1	1	1	1	1	1	1	**7**
1942	1	1	1	1	4	3	1	**12**
1943	1	1	1	1	1	1	1	**7**
1944	1	1	1	1	1	1	1	**7**
1945	1	1	1	1	1	1	1	**7**
1946	1	1	1	1	1	1	1	**7**
1947	1	1	1	1	1	1	1	**7**
1948	1	1	1	1	1	1	1	**7**
1949	1	1	1	1	1	1	1	**7**
1950	1	1	1	1	1	1	1	**7**
1951	1	1	1	1	1	1	1	**7**
1952	1	1	1	3	6	5	3	**20**
1953	1	1	1	1	1	1	1	**7**
1954	1	1	1	1	1	1	1	**7**
1955	1	1	1	1	1	1	1	**7**
1956	1	1	1	1	1	1	1	**7**
1957	1	1	1	1	1	1	1	**7**
1958	1	1	1	1	3	2	1	**10**
1959	1	1	1	1	1	1	1	**7**
1960	1	1	1	1	1	1	1	**7**
1961	1	1	1	1	1	1	1	**7**
1962	1	1	1	1	1	1	1	**7**
1963	1	1	1	1	1	1	1	**7**
1964	1	1	1	1	1	1	1	**7**
1965	1	1	1	1	1	1	1	**7**
1966	1	1	1	1	1	1	1	**7**
1967	1	1	1	1	1	1	1	**7**
1968	1	1	1	1	1	1	1	**7**
1969	1	1	1	6	6	5	3	**23**
1970	1	1	1	1	1	1	1	**7**
1971	1	1	1	1	1	1	1	**7**
1972	1	1	1	1	1	1	1	**7**
1973	1	1	1	1	1	1	1	**7**
1974	1	1	1	1	1	1	1	**7**
1975	1	1	1	1	1	1	1	**7**
1976	1	1	1	1	1	1	1	**7**
1977	1	1	1	1	1	1	1	**7**
1978	1	1	1	1	1	1	1	**7**
1979	1	1	1	1	1	1	1	**7**
1980	1	1	1	1	2	1	1	**8**
1981	1	1	1	1	1	1	1	**7**
1982	1	1	2	5	6	5	3	**23**
1983	1	1	1	2	6	6	4	**21**
1984	1	1	1	1	1	1	1	**7**
1985	1	1	1	1	1	1	1	**7**
1986	1	1	1	1	1	1	1	**7**
1987	1	1	1	1	1	1	1	**7**
1988	1	1	1	1	1	1	1	**7**
1989	1	1	1	1	1	1	1	**7**
1990	1	1	1	1	1	1	1	**7**
1991	1	1	1	1	1	1	1	**7**
1992	1	1	1	1	1	1	1	**7**
1993	1	1	1	1	1	1	1	**7**
1994	1	1	1	1	1	1	1	**7**
				73 - year Average:				**8**

Reservoir Change from Previous Month [fluctuation]

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	10	-5	17	22	-8	-13	-10
1923	-1	-3	4	0	-9	-14	-9
1924	0	-9	-12	-13	-12	-12	-4
1925	12	1	16	4	-9	-13	-7
1926	3	0	-10	-13	-15	-14	-11
1927	11	9	11	2	-10	-13	-7
1928	21	-2	2	-8	-14	-15	-7
1929	1	-5	-3	-11	-12	-13	-7
1930	8	0	-5	-5	-14	-21	-13
1931	3	-8	-13	-18	-18	-19	-9
1932	10	1	36	19	-8	-17	-12
1933	2	-7	-4	-4	-20	-22	-12
1934	9	-8	-14	-20	-19	-27	-18
1935	12	18	43	20	-15	-19	-12
1936	13	13	23	7	-10	-13	-8
1937	14	2	24	4	-9	-11	-8
1938	22	8	27	9	-4	-9	-6
1939	2	-2	-12	-13	-13	-13	-7
1940	17	9	11	-9	-13	-12	-7
1941	10	-4	15	6	-6	-10	-8
1942	5	0	12	14	-3	-11	-5
1943	5	6	7	-1	-8	-11	-7
1944	4	-5	-4	-6	-13	-14	-8
1945	9	0	13	6	-8	-13	-7
1946	4	-2	9	-4	-11	-12	-7
1947	3	-12	-9	-9	-11	-11	-7
1948	3	-1	2	8	-9	-12	-7
1949	6	-7	4	-6	-13	-12	-8
1950	8	0	12	5	-11	-13	-7
1951	5	-7	-7	-8	-13	-13	-7
1952	13	2	29	11	-2	-10	-6
1953	4	-8	-10	1	-9	-12	-7
1954	8	2	3	-9	-14	-13	-10
1955	3	-6	-7	-4	-13	-14	-8
1956	9	-9	17	11	-6	-12	-7
1957	7	-12	-3	-1	-13	-13	-8
1958	15	7	30	14	-6	-10	-7
1959	3	-7	-16	-12	-13	-13	-9
1960	5	-3	-5	-11	-14	-13	-10
1961	4	-5	-7	-12	-12	-19	-10
1962	8	2	8	3	-10	-17	-14
1963	7	1	29	7	-8	-13	-6
1964	4	-7	-8	-8	-14	-13	-9
1965	8	8	1	5	-8	-11	-7
1966	5	-10	-2	-11	-13	-14	-9
1967	11	2	23	28	4	-10	-6
1968	4	-12	-9	-11	-14	-14	-10
1969	14	11	22	0	-4	-10	-8
1970	5	-8	-6	-2	-14	-13	-7
1971	6	-9	-5	0	-11	-13	-7
1972	4	-15	0	-11	-13	-14	-7
1973	13	1	18	4	-10	-11	-5
1974	14	4	10	0	-9	-11	-8
1975	5	-5	-1	12	-8	-11	-8
1976	2	-5	-9	-12	-9	-10	-6
1977	0	-9	-11	-9	-12	-13	-5
1978	20	10	17	11	-2	-9	-3
1979	13	1	9	-5	-14	-13	-7
1980	5	1	7	7	-2	-11	-6
1981	3	-8	-11	-15	-14	-13	-8
1982	5	16	15	2	-4	-9	-4
1983	5	1	14	18	0	-6	-7
1984	5	-11	-7	-4	-11	-10	-6
1985	6	-3	-6	-10	-10	-10	-6
1986	6	1	5	4	-10	-10	-5
1987	3	-5	-10	-11	-9	-8	-4
1988	2	-6	-10	-10	-10	-9	-6
1989	12	-4	-4	-8	-12	-11	-5
1990	5	-8	-11	-15	-20	-16	-9
1991	9	-6	-5	-15	-19	-18	-7
1992	9	-8	-16	-25	-31	-35	-12
1993	54	-12	5	11	-10	-10	-4
1994	5	-3	-4	-12	-19	-18	-7

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	6	5	6	6	4	3	4	**34**	**238**
1923	5	5	6	6	4	3	4	**33**	**231**
1924	6	4	3	3	3	3	5	**27**	**189**
1925	6	6	6	6	4	3	4	**35**	**245**
1926	6	6	4	3	3	3	3	**28**	**196**
1927	6	6	6	6	4	3	4	**35**	**245**
1928	6	5	6	4	3	3	4	**31**	**217**
1929	6	5	5	3	3	3	4	**29**	**203**
1930	6	6	5	5	3	1	3	**29**	**203**
1931	6	4	3	2	2	2	4	**23**	**161**
1932	6	6	6	6	4	2	3	**33**	**231**
1933	6	4	5	5	2	1	3	**26**	**182**
1934	6	4	3	2	2	1	2	**20**	**140**
1935	6	6	6	6	3	2	3	**32**	**224**
1936	6	6	6	6	4	3	4	**35**	**245**
1937	6	6	6	6	4	3	4	**35**	**245**
1938	6	6	6	6	5	4	4	**37**	**777**
1939	6	5	3	3	3	3	4	**27**	**189**
1940	6	6	6	4	3	3	4	**32**	**224**
1941	6	5	6	6	4	4	4	**35**	**245**
1942	6	6	6	6	5	3	5	**37**	**444**
1943	6	6	6	5	4	3	4	**34**	**238**
1944	6	5	5	4	3	3	4	**30**	**210**
1945	6	6	6	6	4	3	4	**35**	**245**
1946	6	5	6	5	3	3	4	**32**	**224**
1947	6	3	4	4	3	3	4	**27**	**189**
1948	6	5	6	6	4	3	4	**34**	**238**
1949	6	4	6	4	3	3	4	**30**	**210**
1950	6	6	6	6	3	3	4	**34**	**238**
1951	6	4	4	4	3	3	4	**28**	**196**
1952	6	6	6	6	5	4	4	**37**	**740**
1953	6	4	4	6	4	3	4	**31**	**217**
1954	6	6	6	4	3	3	4	**32**	**224**
1955	6	4	4	5	3	3	4	**29**	**203**
1956	6	4	6	6	4	3	4	**33**	**231**
1957	6	3	5	5	3	3	4	**29**	**203**
1958	6	6	6	6	4	4	4	**36**	**360**
1959	6	4	2	3	3	3	4	**25**	**175**
1960	6	5	5	3	3	3	4	**29**	**203**
1961	6	5	4	3	3	2	4	**27**	**189**
1962	6	6	6	6	4	2	3	**33**	**231**
1963	6	6	6	6	4	3	4	**35**	**245**
1964	6	4	4	4	3	3	4	**28**	**196**
1965	6	6	6	6	4	3	4	**35**	**245**
1966	6	4	5	3	3	3	4	**28**	**196**
1967	6	6	6	6	6	4	4	**38**	**266**
1968	6	3	4	3	3	3	4	**26**	**182**
1969	6	6	6	6	5	4	4	**37**	**851**
1970	6	4	4	5	3	3	4	**29**	**203**
1971	6	4	5	6	3	3	4	**31**	**217**
1972	6	3	6	3	3	3	4	**28**	**196**
1973	6	6	6	6	4	3	5	**36**	**252**
1974	6	6	6	6	4	3	4	**35**	**245**
1975	6	5	5	6	4	3	4	**33**	**231**
1976	6	5	4	3	4	4	4	**30**	**210**
1977	6	4	3	4	3	3	5	**28**	**196**
1978	6	6	6	6	5	4	5	**38**	**266**
1979	6	6	6	5	3	3	4	**33**	**231**
1980	6	6	6	6	5	3	4	**36**	**288**
1981	6	4	3	3	3	3	4	**26**	**182**
1982	6	6	6	6	5	4	5	**38**	**874**
1983	6	6	6	6	6	4	4	**38**	**798**
1984	6	3	4	5	3	4	4	**29**	**203**
1985	6	5	4	4	4	4	4	**31**	**217**
1986	6	6	6	6	4	4	5	**37**	**259**
1987	6	5	4	3	4	4	5	**31**	**217**
1988	6	4	4	4	4	4	4	**30**	**210**
1989	6	5	5	4	3	3	5	**31**	**217**
1990	6	4	3	3	2	2	4	**24**	**168**
1991	6	4	5	3	2	2	4	**26**	**182**
1992	6	4	2	1	1	1	3	**18**	**126**
1993	6	3	6	6	4	4	5	**34**	**238**
1994	6	5	5	3	2	2	4	**27**	**189**
				73 - year Average:				**31**	**261**
				1929 - '34 Average:					**187**

STUDY: **501**

CP # 81, DON PEDRO RESERVOIR, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 832'

Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Elevation in feet												DFMRE							Elevation Score								Fluctuation							Fluctuation Score								
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	599	581	579	600	656	690	698	724	781	778	763	752	142	134	108	51	54	69	80	1	1	1	1	1	1	1	**7**	34	8	26	57	-3	-15	-11	6	6	6	6	5	3	3	**35**	**245**
1923	746	745	748	760	775	784	788	792	801	794	779	770	48	44	40	31	38	53	62	1	1	1	1	1	1	1	**7**	9	4	4	9	-7	-15	-9	6	6	6	6	4	3	4	**35**	**245**
1924	764	761	756	755	756	754	748	743	734	722	708	700	78	84	89	98	110	124	132	1	1	1	1	1	1	1	**7**	-2	-6	-5	-9	-12	-14	-8	5	4	5	4	3	3	4	**28**	**196**
1925	695	695	696	700	722	739	751	762	780	771	755	744	93	81	70	52	61	77	88	1	1	1	1	1	1	1	**7**	17	12	11	18	-9	-16	-11	6	6	6	6	4	2	3	**33**	**231**
1926	737	734	730	729	738	742	756	768	765	750	734	725	90	76	64	67	82	98	107	1	1	1	1	1	1	1	**7**	4	14	12	-3	-15	-16	-9	6	6	6	5	3	2	4	**32**	**224**
1927	717	717	721	729	758	773	784	782	800	793	778	768	59	48	50	32	39	54	64	1	1	1	1	1	1	1	**7**	15	11	-2	18	-7	-15	-10	6	6	5	6	4	3	4	**34**	**238**
1928	762	762	762	766	774	792	801	818	818	803	788	779	40	31	14	14	29	44	53	1	1	3	3	1	1	1	**11**	18	9	17	0	-15	-15	-9	6	6	6	6	3	3	4	**34**	**374**
1929	772	767	763	762	766	767	767	770	778	769	759	752	65	65	62	54	63	73	80	1	1	1	1	1	1	1	**7**	1	0	3	8	-9	-10	-7	6	6	6	6	4	4	4	**36**	**252**
1930	747	744	741	742	748	755	756	759	772	763	754	747	77	76	73	60	69	78	85	1	1	1	1	1	1	1	**7**	7	1	3	13	-9	-9	-7	6	6	6	6	4	4	4	**36**	**252**
1931	745	744	743	745	748	747	739	727	714	700	687	680	85	93	105	118	132	145	152	1	1	1	1	1	1	1	**7**	-1	-8	-12	-13	-14	-13	-7	5	4	3	3	3	3	4	**25**	**175**
1932	676	671	683	699	736	751	752	756	773	768	752	741	81	80	76	59	64	80	91	1	1	1	1	1	1	1	**7**	15	1	4	17	-5	-16	-11	6	6	6	6	5	2	3	**34**	**238**
1933	734	727	721	720	727	730	726	719	736	725	708	697	102	106	113	96	107	124	135	1	1	1	1	1	1	1	**7**	3	-4	-7	17	-11	-17	-11	6	5	4	6	3	2	3	**29**	**203**
1934	688	687	684	687	698	707	706	698	694	676	658	648	125	126	134	138	156	174	184	1	1	1	1	1	1	1	**7**	9	-1	-8	-4	-18	-18	-10	6	5	4	5	2	2	4	**28**	**196**
1935	640	639	641	655	682	697	723	734	764	751	734	721	135	109	98	68	81	98	111	1	1	1	1	1	1	1	**7**	15	26	11	30	-13	-17	-13	6	6	6	6	3	2	3	**32**	**224**
1936	713	711	705	711	753	770	779	796	814	804	789	778	62	53	36	18	28	43	54	1	1	1	2	1	1	1	**8**	17	9	17	18	-10	-15	-11	6	6	6	6	4	3	3	**34**	**272**
1937	772	767	763	765	793	800	802	815	832	819	805	795	32	30	17	0	13	27	37	1	1	2	6	3	1	1	**15**	7	2	13	17	-13	-14	-10	6	6	6	6	3	3	4	**34**	**510**
1938	789	784	800	800	800	800	800	804	831	832	819	808	32	32	28	1	0	13	24	1	1	1	5	6	3	1	**18**	0	0	4	27	1	-13	-11	6	6	6	6	6	3	3	**36**	**648**
1939	800	799	799	800	800	800	802	804	799	787	774	766	32	30	28	33	45	58	66	1	1	1	1	1	1	1	**7**	0	2	2	-5	-12	-13	-8	6	6	6	5	3	3	4	**33**	**231**
1940	764	763	761	773	800	800	802	816	829	814	799	789	32	30	16	3	18	33	43	1	1	2	5	2	1	1	**13**	0	2	14	13	-15	-15	-10	6	6	6	6	3	3	4	**34**	**442**
1941	783	781	783	798	800	800	800	812	832	831	817	808	32	32	20	0	1	15	24	1	1	1	6	5	2	1	**17**	0	0	12	20	-1	-14	-9	6	6	6	6	5	3	4	**36**	**612**
1942	800	798	800	800	800	800	802	807	831	832	818	808	32	30	25	1	0	14	24	1	1	1	5	6	3	1	**18**	0	2	5	24	1	-14	-10	6	6	6	6	6	3	4	**37**	**666**
1943	800	800	800	800	800	800	802	821	832	824	810	799	32	30	11	0	8	22	33	1	1	3	6	4	1	1	**17**	0	2	19	11	-8	-14	-11	6	6	6	6	4	3	3	**34**	**578**
1944	794	792	788	787	793	800	801	808	814	802	787	777	32	31	24	18	30	45	55	1	1	1	2	1	1	1	**8**	7	1	7	6	-12	-15	-10	6	6	6	6	3	3	4	**34**	**272**
1945	772	773	776	781	800	800	802	807	831	825	810	799	32	30	25	1	7	22	33	1	1	1	5	4	1	1	**14**	0	2	5	24	-6	-15	-11	6	6	6	6	4	3	3	**34**	**476**
1946	796	797	800	800	800	800	802	806	812	796	780	769	32	30	26	20	36	52	63	1	1	1	1	1	1	1	**7**	0	2	4	6	-16	-16	-11	6	6	6	6	2	2	3	**31**	**217**
1947	763	763	765	768	776	781	778	782	776	764	750	742	51	54	50	56	68	82	90	1	1	1	1	1	1	1	**7**	5	-3	4	-6	-12	-14	-8	6	5	6	4	3	3	4	**31**	**217**
1948	739	738	737	738	739	740	735	743	769	758	740	730	92	97	89	63	74	92	102	1	1	1	1	1	1	1	**7**	1	-5	8	26	-11	-18	-10	6	5	6	6	3	2	4	**32**	**224**
1949	723	717	712	711	717	729	735	744	752	734	714	702	103	97	88	80	98	118	130	1	1	1	1	1	1	1	**7**	12	6	9	8	-18	-20	-12	6	6	6	6	2	2	3	**31**	**217**
1950	693	687	681	687	706	719	727	737	754	738	720	707	113	105	95	78	94	112	125	1	1	1	1	1	1	1	**7**	13	8	10	17	-16	-18	-13	6	6	6	6	2	2	3	**31**	**217**
1951	700	749	797	800	800	800	798	794	798	783	769	759	32	34	38	34	49	63	73	1	1	1	1	1	1	1	**7**	0	-2	-4	4	-15	-14	-10	6	5	5	6	3	3	4	**32**	**224**
1952	752	750	757	782	800	800	800	820	832	832	819	808	32	32	12	0	0	13	24	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1953	800	795	793	800	800	800	802	804	814	810	796	787	32	30	28	18	22	36	45	1	1	1	2	1	1	1	**8**	0	2	2	10	-4	-14	-9	6	6	6	6	5	3	4	**36**	**288**
1954	782	778	775	776	785	797	802	819	820	805	789	780	35	30	13	12	27	43	52	1	1	3	3	1	1	1	**11**	12	5	17	1	-15	-16	-9	6	6	6	6	3	2	4	**33**	**363**
1955	774	770	768	774	781	784	780	784	791	778	766	759	48	52	48	41	54	66	73	1	1	1	1	1	1	1	**7**	3	-4	4	7	-13	-12	-7	6	5	6	6	3	3	4	**33**	**231**
1956	753	749	798	800	800	800	802	818	832	832	818	808	32	30	14	0	0	14	24	1	1	3	6	6	3	1	**21**	0	2	16	14	0	-14	-10	6	6	6	6	6	3	4	**37**	**777**
1957	800	798	793	793	799	800	800	806	827	814	800	791	32	32	26	5	18	32	41	1	1	1	4	2	1	1	**11**	1	0	6	21	-13	-14	-9	6	6	6	6	3	3	4	**34**	**374**
1958	786	781	779	783	800	800	800	821	832	832	819	808	32	32	11	0	0	13	24	1	1	3	6	6	3	1	**21**	0	0	21	11	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1959	800	794	789	793	800	800	802	800	794	782	770	763	32	30	32	38	50	62	69	1	1	1	1	1	1	1	**7**	0	2	-2	-6	-12	-12	-7	6	6	5	4	3	3	4	**31**	**217**
1960	760	758	755	755	763	768	770	775	778	768	758	752	64	62	57	54	64	74	80	1	1	1	1	1	1	1	**7**	5	2	5	3	-10	-10	-6	6	6	6	6	4	4	4	**36**	**252**
1961	748	746	746	747	750	749	742	733	726	713	700	694	83	90	99	106	119	132	138	1	1	1	1	1	1	1	**7**	-1	-7	-9	-7	-13	-13	-6	5	4	4	4	3	3	4	**27**	**189**
1962	691	688	686	687	712	732	742	742	768	760	746	736	100	90	90	64	72	86	96	1	1	1	1	1	1	1	**7**	20	10	0	26	-8	-14	-10	6	6	6	6	4	3	4	**35**	**245**
1963	729	724	720	725	751	762	770	781	806	802	788	778	70	62	51	26	30	44	54	1	1	1	1	1	1	1	**7**	11	8	11	25	-4	-14	-10	6	6	6	6	5	3	4	**36**	**252**
1964	773	774	775	780	786	788	785	781	784	772	761	754	44	47	51	48	60	71	78	1	1	1	1	1	1	1	**7**	2	-3	-4	3	-12	-11	-7	6	5	5	6	3	3	4	**32**	**224**
1965	750	750	783	800	800	800	802	807	827	827	816	807	32	30	25	5	5	16	25	1	1	1	4	4	2	1	**14**	0	2	5	20	0	-11	-9	6	6	6	6	6	3	4	**37**	**518**
1966	800	800	800	800	800	800	801	798	791	776	761	752	32	31	34	41	56	71	80	1	1	1	1	1	1	1	**7**	0	1	-3	-7	-15	-15	-9	6	6	5	4	3	3	4	**31**	**217**
1967	747	744	755	770	788	800	800	817	832	832	820	808	32	32	15	0	0	12	24	1	1	2	6	6	3	1	**20**	12	0	17	15	0	-12	-12	6	6	6	6	6	3	3	**36**	**720**
1968	800	795	791	792	800	800	802	805	803	791	779	771	32	30	27	29	41	53	61	1	1	1	1	1	1	1	**7**	0	2	3	-2	-12	-12	-8	6	6	6	5	3	3	4	**33**	**231**
1969	766	767	770	800	800	800	800	823	832	832	819	808	32	32	9	0	0	13	24	1	1	4	6	6	3	1	**22**	0	0	23	9	0	-13	-11	6	6	6	6	6	3	3	**36**	**792**
1970	800	799	800	800	800	800	799	799	807	795	780	771	32	33	33	25	37	52	61	1	1	1	1	1	1	1	**7**	0	-1	0	8	-12	-15	-9	6	5	6	6	3	3	4	**33**	**231**
1971	765	766	772	788	800	800	801	801	807	798	786	778	32	31	31	25	34	46	54	1	1	1	1	1	1	1	**7**	0	1	0	6	-9	-12	-8	6	6	6	6	4	3	4	**35**	**245**
1972	773	769	772	778	792	800	800	798	795	783	772	766	32	32	34	37	49	60	66	1	1	1	1	1	1	1	**7**	8	0	-2	-3	-12	-11	-6	6	6	5	5	3	3	4	**32**	**224**
1973	762	761	763	774	800	800	802	812	827	812	797	788	32	30	20	5	20	35	44	1	1	1	4	1	1	1	**10**	0	2	10	15	-15	-15	-9	6	6	6	6	3	3	4	**34**	**340**
1974	783	787	798	800	800	800	800	806	828	819	805	796	32	32	26	4	13	27	36	1	1	1	5	3	1	1	**13**	0	0	6	22	-9	-14	-9	6	6	6	6	4	3	4	**35**	**455**
1975	791	789	786	786	798	800	802	812	832	825	812	803	32	30	20	0	7	20	29	1	1	1	6	4	1	1	**15**	2	2	10	20	-7	-13	-9	6	6	6	6	4	3	4	**35**	**525**
1976	800	800	799	799	800	799	794	787	777	767	757	751	33	38	45	55	65	75	81	1	1	1	1	1	1	1	**7**	-1	-5	-7	-10	-10	-10	-6	5	5	4	4	4	4	4	**30**	**210**
1977	748	745	742	741	741	737	728	715	701	687	671	662	95	104	117	131	145	161	170	1	1	1	1	1	1	1	**7**	-4	-9	-13	-14	-14	-16	-9	5	4	3	3	3	2	4	**24**	**168**
1978	658	654	657	683	716	748	761	776	813	821	808	802	84	71	56	19	11	24	30	1	1	1	2	3	1	1	**10**	32	13	15	37	8	-13	-6	6	6	6	6	6	3	4	**37**	**370**
1979	797	794	790	800	800	800	802	822	832	818	803	794	32	30	10	0	14	29	38	1	1	3	6	3	1	1	**16**	0	2	20	10	-14	-15	-9	6	6	6	6	3	3	4	**34**	**544**
1980	789	788	787	800	800	800	800	817	832	832	819	808	32	32	15	0	0	13	24	1	1	2	6	6	3	1	**20**	0	0	17	15	0	-13	-11	6	6	6	6	6	3	3	**36**	**720**
1981	800	797	794	795	799	800	802	806	805	793	782	774	32	30	26	27	39	50	58	1	1	1	1	1	1	1	**7**	1	2	4	-1	-12	-11	-8	6	6	6	5	3	3	4	**33**	**231**
1982	770	776	795	800	800	800	800	820	832	832	820	808	32	32	12	0	0	12	24	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-12	-12	6	6	6	6	6	3	3	**36**	**756**
1983	800	800	800	800	800	800	800	819	832	832	832	808	32	32	13	0	0	0	24	1	1	3	6	6	6	1	**24**	0	0	19	13	0	0	-24	6	6	6	6	6	6	1	**37**	**888**
1984	800	800	800	800	800	800	797	803	814	801	786	776	32	35	29	18	31	46	56	1	1	1	2	1	1	1	**8**	0	-3	6	11	-13	-15	-10	6	5	6	6	3	3	4	**33**	**264**
1985	773	773	779	786	794	800	801	799	795	784	772	766	32	31	33	37	48	60	66	1	1	1	1	1	1	1	**7**	6	1	-2	-4	-11	-12	-6	6	6	5	5	3	3	4	**32**	**224**
1986	763	764	767	774	800	800	802	827	832	825	811	802	32	30	5	0	7	21	30	1	1	4	6	4	1	1	**18**	0	2	25	5	-7	-14	-9	6	6	6	6	4	3	4	**35**	**630**
1987	796	791	786	784	786	788	786	783	779	769	759	752	44	46	49	53	63	73	80	1	1	1	1	1	1	1	**7**	2	-2	-3	-4	-10	-10	-7	6	5	5	5	4	4	4	**33**	**231**
1988	750	749	749	754	759	761	756	747	740	728	716	709	71	76	85	92	104	116	123	1	1	1	1	1	1	1	**7**	2	-5	-9	-7	-12	-12	-7	6	5	4	4	3	3	4	**29**	**203**
1989	705	702	702	705	708	722	733	747	754	743	732	727	110	99	85	78	89	100	105	1	1	1	1	1	1	1	**7**	14	11	14	7	-11	-11	-5	6	6	6	6	3	3	5	**35**	**245**
1990	725	725	725	727	730	733	730	726	724	709	695	688	99	102	106	108	123	137	144	1	1	1	1	1	1	1	**7**	3	-3	-4	-2	-15	-14	-7	6	5	5	5	3	3	4	**31**	**217**
1991	684	680	676	675	675	684	683	698	709	699	689	683	148	149	134	123	133	143	149	1	1	1	1	1	1	1	**7**	9	-1	15	11	-10	-10	-6	6	5	6	6	4	4	4	**35**	**245**
1992	681	682	681	684	693	698	700	707	706	692	677	666	134	132	125	126	140	155	166	1	1	1	1	1	1	1	**7**	5	2	7	-1	-14	-15	-11	6	6	6	5	3	3	3	**32**	**224**
1993	660	654	654	689	721	750	758	772	803	802	788	778	82	74	60	29	30	44	54	1	1	1	1	1	1	1	**7**	29	8	14	31	-1	-14	-10	6	6	6	6	5	3	4	**36**	**252**
1994	772	766	762	761	765	768	765	768	766	756	746	740	64	67	64	66	76	86	92	1	1	1	1	1	1	1	**7**	3	-3	3	-2	-10	-10	-6	6	5	6	5	4	4	4	**34**	**238**
																						73 - year Average:					**10**												**73 - year Average:**			**33**	**351**
																																								1929 - '34 Average:			**219**

STUDY: **501**

CP # 20, LAKE McCLURE, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 867'

Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	679	679	695	711	759	779	789	845	867	860	846	836	88	78	22	0	7	21	31	1	1	1	6	4	1	1	15	20	10	56	22	-7	-14	-10	6	6	6	6	4	3	4	35	525
1923	808	808	808	808	808	813	827	854	859	850	835	825	54	40	13	8	17	32	42	1	1	3	4	2	1	1	13	5	14	27	5	-9	-15	-10	6	6	6	6	4	3	4	35	455
1924	808	808	808	808	808	807	809	810	797	779	766	756	60	58	57	70	88	101	111	1	1	1	1	1	1	1	7	-1	2	1	-13	-18	-13	-10	5	6	6	3	2	3	4	29	203
1925	752	758	763	767	792	801	819	840	844	831	815	803	66	48	27	23	36	52	64	1	1	1	1	1	1	1	7	9	18	21	4	-13	-16	-12	6	6	6	6	3	2	3	32	224
1926	802	801	802	804	808	812	831	827	826	822	814	806	55	36	40	41	45	53	61	1	1	1	1	1	1	1	7	4	19	-4	-1	-4	-8	-8	6	6	5	5	5	4	4	35	245
1927	802	803	807	807	808	815	817	844	854	849	845	840	52	50	23	13	18	22	27	1	1	1	3	2	1	1	10	7	2	27	10	-5	-4	-5	6	6	6	6	5	5	5	39	390
1928	808	808	808	808	808	809	808	823	821	815	810	807	58	59	44	46	52	57	60	1	1	1	1	1	1	1	7	1	-1	15	-2	-6	-5	-3	6	5	6	5	4	5	5	36	252
1929	805	804	804	803	805	807	808	811	811	813	816	809	60	59	56	56	54	51	58	1	1	1	1	1	1	1	7	2	1	3	0	2	3	-7	6	6	6	6	6	6	4	40	280
1930	806	804	804	804	804	800	803	803	807	810	813	811	67	64	64	60	57	54	56	1	1	1	1	1	1	1	7	-4	3	0	4	3	3	-2	5	6	6	6	6	6	5	40	280
1931	808	808	808	808	808	808	808	806	794	776	762	752	59	59	61	73	91	105	115	1	1	1	1	1	1	1	7	0	0	-2	-12	-18	-14	-10	6	6	5	3	2	3	4	29	203
1932	750	751	770	782	808	817	826	847	864	854	839	829	50	41	20	3	13	28	38	1	1	1	5	3	1	1	13	9	9	21	17	-10	-15	-10	6	6	6	6	4	3	4	35	455
1933	808	807	806	808	808	811	813	816	830	817	802	794	56	54	51	37	50	65	73	1	1	1	1	1	1	1	7	3	2	3	14	-13	-15	-8	6	6	6	6	3	3	4	34	238
1934	789	788	792	797	805	813	819	810	801	784	770	761	54	48	57	66	83	97	106	1	1	1	1	1	1	1	7	8	6	-9	-9	-17	-14	-9	6	6	4	4	2	3	4	29	203
1935	757	761	766	784	796	806	840	859	867	854	839	828	61	27	8	0	13	28	39	1	1	4	6	3	1	1	17	10	34	19	8	-13	-15	-11	6	6	6	6	3	3	3	33	561
1936	808	808	808	808	808	820	840	855	861	849	834	823	47	27	12	6	18	33	44	1	1	3	4	2	1	1	13	12	20	15	6	-12	-15	-11	6	6	6	6	3	3	3	33	429
1937	808	808	808	808	808	820	834	859	867	853	838	827	47	33	8	0	14	29	40	1	1	4	6	3	1	1	17	12	14	25	8	-14	-15	-11	6	6	6	6	3	3	3	33	561
clure	808	808	808	808	808	820	840	859	867	867	855	840	47	27	8	0	0	12	27	1	1	4	6	6	3	1	22	12	20	19	8	0	-12	-15	6	6	6	6	6	3	3	36	792
1939	808	808	808	808	808	816	831	832	821	803	787	776	51	36	35	46	64	80	91	1	1	1	1	1	1	1	7	8	15	1	-11	-18	-16	-11	6	6	6	3	2	2	3	28	196
1940	777	778	779	806	808	820	837	859	861	845	829	816	47	30	8	6	22	38	51	1	1	4	4	1	1	1	13	12	17	22	2	-16	-16	-13	6	6	6	6	2	2	3	31	403
1941	808	808	808	808	808	820	834	859	867	863	850	840	47	33	8	0	4	17	27	1	1	4	6	5	2	1	20	12	14	25	8	-4	-13	-10	6	6	6	6	5	3	4	36	720
1942	808	808	808	808	808	820	838	859	867	860	851	840	47	29	8	0	7	16	27	1	1	4	6	4	2	1	19	12	18	21	8	-7	-9	-11	6	6	6	6	4	4	3	35	665
1943	808	808	808	808	808	820	840	859	864	853	838	828	47	27	8	3	14	29	39	1	1	4	5	3	1	1	16	12	20	19	5	-11	-15	-10	6	6	6	6	3	3	4	34	544
1944	808	808	808	808	808	817	815	838	840	827	810	796	50	52	29	27	40	57	71	1	1	1	1	1	1	1	7	9	-2	23	2	-13	-17	-14	6	5	6	6	3	2	3	31	217
1945	794	800	806	808	808	820	833	856	867	856	842	831	47	34	11	0	11	25	36	1	1	3	6	3	1	1	16	12	13	23	11	-11	-14	-11	6	6	6	6	3	3	3	33	528
1946	808	808	808	808	808	818	837	859	857	842	826	813	49	30	8	10	25	41	54	1	1	4	3	1	1	1	12	10	19	22	-2	-15	-16	-13	6	6	6	5	3	2	3	31	372
1947	808	808	808	808	808	815	823	836	830	814	799	791	52	44	31	37	53	68	76	1	1	1	1	1	1	1	7	7	8	13	-6	-16	-15	-8	6	6	6	4	2	3	4	31	217
1948	789	790	791	793	794	794	798	820	837	823	804	791	73	69	47	30	44	63	76	1	1	1	1	1	1	1	7	0	4	22	17	-14	-19	-13	6	6	6	6	3	2	3	32	224
1949	787	786	787	788	792	800	810	830	829	809	790	775	67	57	37	38	58	77	92	1	1	1	1	1	1	1	7	8	10	20	-1	-20	-19	-15	6	6	6	5	2	2	3	30	210
1950	769	769	769	777	789	793	808	826	827	807	788	772	74	59	41	40	60	79	95	1	1	1	1	1	1	1	7	4	15	18	1	-20	-19	-16	6	6	6	6	2	2	2	30	210
1951	768	808	808	808	808	819	827	837	834	816	796	781	48	40	30	33	51	71	86	1	1	1	1	1	1	1	7	11	8	10	-3	-18	-20	-15	6	6	6	5	2	2	3	30	210
1952	777	778	791	808	808	820	840	859	867	864	852	840	47	27	8	0	3	15	27	1	1	4	6	5	2	1	20	12	20	19	8	-3	-12	-12	6	6	6	6	5	3	3	35	700
1953	808	808	808	808	808	809	815	816	823	809	790	775	58	52	51	44	58	77	92	1	1	1	1	1	1	1	7	1	6	1	7	-14	-19	-15	6	6	6	6	3	2	3	32	224
1954	772	771	772	775	785	798	815	833	826	805	785	770	69	52	34	41	62	82	97	1	1	1	1	1	1	1	7	13	17	18	-7	-21	-20	-15	6	6	6	4	1	2	3	28	196
1955	766	765	768	774	779	781	781	803	812	797	780	770	86	86	64	55	70	87	97	1	1	1	1	1	1	1	7	2	0	22	9	-15	-17	-10	6	6	6	6	3	2	4	33	231
1956	765	765	808	808	808	819	832	859	867	863	850	840	48	35	8	0	4	17	27	1	1	4	6	5	2	1	20	11	13	27	8	-4	-13	-10	6	6	6	6	5	3	4	36	720
1957	808	808	808	808	808	813	813	828	838	822	804	790	54	54	39	29	45	63	77	1	1	1	1	1	1	1	7	5	0	15	10	-16	-18	-14	6	6	6	6	2	2	3	31	217
1958	786	787	792	798	808	820	840	859	867	862	850	840	47	27	8	0	5	17	27	1	1	4	6	4	2	1	19	12	20	19	8	-5	-12	-10	6	6	6	6	5	3	4	36	684
1959	808	808	808	808	808	813	823	826	817	797	780	773	54	44	41	50	70	87	94	1	1	1	1	1	1	1	7	5	10	3	-9	-20	-17	-7	6	6	6	4	2	2	4	30	210
1960	772	770	770	771	783	791	805	818	815	800	786	776	76	62	49	52	67	81	91	1	1	1	1	1	1	1	7	8	14	13	-3	-15	-14	-10	6	6	6	5	3	3	4	33	231
1961	773	773	775	775	778	779	784	785	776	758	742	730	88	83	82	91	109	125	137	1	1	1	1	1	1	1	7	1	5	1	-9	-18	-16	-12	6	6	6	4	2	2	3	29	203
1962	729	729	731	734	776	785	809	818	832	819	800	786	82	58	49	35	48	67	81	1	1	1	1	1	1	1	7	9	24	9	14	-13	-19	-14	6	6	6	6	3	2	3	32	224
1963	781	781	782	791	808	810	819	841	854	845	830	818	57	48	26	13	22	37	49	1	1	1	3	1	1	1	9	2	9	22	13	-9	-15	-12	6	6	6	6	4	3	3	34	306
1964	808	808	808	808	807	808	809	816	813	797	780	771	59	58	51	54	70	87	96	1	1	1	1	1	1	1	7	1	1	7	-3	-16	-17	-9	6	6	6	5	2	2	4	31	217
1965	765	769	808	808	808	815	831	854	867	861	850	840	52	36	13	0	6	17	27	1	1	3	6	4	2	1	18	7	16	23	13	-6	-11	-10	6	6	6	6	4	3	4	35	630
1966	808	808	808	808	808	814	828	838	826	804	784	771	53	39	29	41	63	83	96	1	1	1	1	1	1	1	7	6	14	10	-12	-22	-20	-13	6	6	6	3	1	2	3	27	189
1967	767	769	794	806	808	820	840	859	867	867	856	840	47	27	8	0	0	11	27	1	1	4	6	6	3	1	22	12	20	19	8	0	-11	-16	6	6	6	6	6	3	2	35	770
1968	808	808	808	808	808	812	817	821	812	793	777	766	55	50	46	55	74	90	101	1	1	1	1	1	1	1	7	4	5	4	-9	-19	-16	-11	6	6	6	4	2	2	3	29	203
1969	762	766	774	808	808	820	840	859	867	867	854	840	47	27	8	0	0	13	27	1	1	4	6	6	3	1	22	12	20	19	8	0	-13	-14	6	6	6	6	6	3	3	36	792
1970	808	808	808	808	808	820	821	837	837	821	802	789	47	46	30	30	46	65	78	1	1	1	1	1	1	1	7	12	1	16	0	-16	-19	-13	6	6	6	6	2	2	3	31	217
1971	786	788	798	807	808	812	814	826	836	822	804	790	55	53	41	31	45	63	77	1	1	1	1	1	1	1	7	4	2	12	10	-14	-18	-14	6	6	6	6	3	2	3	32	224
1972	787	787	794	799	805	816	818	831	831	816	801	795	51	49	36	36	51	66	72	1	1	1	1	1	1	1	7	11	2	13	0	-15	-15	-6	6	6	6	6	3	3	4	34	238
1973	793	794	800	808	808	820	828	859	867	852	838	828	47	39	8	0	15	29	39	1	1	4	6	2	1	1	16	12	8	31	8	-15	-14	-10	6	6	6	6	3	3	4	34	544
1974	808	808	808	808	808	820	833	859	867	854	839	829	47	34	8	0	13	28	38	1	1	4	6	3	1	1	17	12	13	26	8	-13	-15	-10	6	6	6	6	3	3	4	34	578
1975	808	808	808	808	808	820	823	855	867	856	842	832	47	44	12	0	11	25	35	1	1	3	6	3	1	1	16	12	3	32	12	-11	-14	-10	6	6	6	6	3	3	4	34	544
1976	808	808	808	808	808	809	808	809	798	781	768	759	58	59	58	69	86	99	108	1	1	1	1	1	1	1	7	1	-1	1	-11	-17	-13	-9	6	5	6	3	2	3	4	29	203
1977	758	756	754	754	754	749	740	727	716	686	656	632	118	127	140	151	181	211	235	1	1	1	1	1	1	1	7	-5	-9	-13	-11	-30	-30	-24	5	4	3	3	1	1	1	18	126
1978	626	626	642	693	741	782	815	859	867	867	856	840	85	52	8	0	0	11	27	1	1	4	6	6	3	1	22	41	33	44	8	0	-11	-16	6	6	6	6	6	3	2	35	770
1979	808	808	808	808	808	820	828	859	863	849	834	823	47	39	8	4	18	33	44	1	1	4	5	2	1	1	15	12	8	31	4	-14	-15	-11	6	6	6	6	3	3	3	33	495
1980	808	808	808	808	808	820	835	859	867	867	855	840	47	32	8	0	0	12	27	1	1	4	6	6	3	1	22	12	15	24	8	0	-12	-15	6	6	6	6	6	3	3	36	792
1981	808	807	807	808	808	813	823	835	831	816	802	794	54	44	32	36	51	65	73	1	1	1	1	1	1	1	7	5	10	12	-4	-15	-14	-8	6	6	6	5	3	3	4	33	231
1982	792	801	808	808	808	820	840	859	867	865	854	840	47	27	8	0	2	13	27	1	1	4	6	5	3	1	21	12	20	19	8	-2	-11	-14	6	6	6	6	5	3	3	35	735
1983	808	808	808	808	808	820	836	859	867	867	864	840	47	31	8	0	0	3	27	1	1	4	6	6	5	1	24	12	16	23	8	0	-3	-24	6	6	6	6	6	5	1	36	864
1984	808	808	808	808	808	820	827	850	848	832	814	801	47	40	17	19	35	53	66	1	1	2	2	1	1	1	9	12	7	23	-2	-16	-18	-13	6	6	6	5	2	2	3	30	270
1985	800	803	807	808	808	814	828	841	835	821	807	797	53	39	26	32	46	60	70	1	1	1	1	1	1	1	7	6	14	13	-6	-14	-14	-10	6	6	6	4	3	3	4	32	224
1986	797	799	806	808	808	820	839	859	867	855	841	830	47	28	8	0	12	26	37	1	1	4	6	3	1	1	17	12	19	20	8	-12	-14	-11	6	6	6	6	3	3	3	33	561
1987	808	807	807	807	808	810	818	821	811	795	782	773	57	49	46	56	72	85	94	1	1	1	1	1	1	1	7	2	8	3	-10	-16	-13	-9	6	6	6	4	2	3	4	31	217
1988	772	773	775	781	785	791	797	801	794	777	763	753	76	70	66	73	90	104	114	1	1	1	1	1	1	1	7	6	6	4	-7	-17	-14	-10	6	6	6	4	2	3	4	31	217
1989	751	750	753	753	759	775	796	805	802	786	772	763	92	71	62	65	81	95	104	1	1	1	1	1	1	1	7	16	21	9	-3	-16	-14	-9	6	6	6	5	2	3	4	32	224
1990	765	766	766	769	772	779	789	786	777	761	744	732	88	78	81	90	106	123	135	1	1	1	1	1	1	1	7	7	10	-3	-9	-16	-17	-12	6	6	5	4	2	2	3	28	196
1991	730	729	728	728	727	748	755	774	789	775	762	751	119	112	93	78	92	105	116	1	1	1	1	1	1	1	7	21	7	19	15	-14	-13	-11	6	6	6	6	3	3	3	33	231
1992	750	751	752	754	768	774	791	793	781	768	753	741	93	76	74	86	99	114	126	1	1	1	1	1	1	1	7	6	17	2	-12	-13	-15	-12	6	6	6	3	3	3	3	30	210
1993	740	741	747	792	808	820	837	859	867	861	848	837	47	30	8	0	6	19	30	1	1	4	6	4	2	1	19	12	17	22	8	-6	-13	-11	6	6	6	6	4	3	3	34	646
1994	808	807	808	808	808	810	814	820	812	796	783	773	57	53	47	55	71	84	94	1	1	1	1	1	1	1	7	2	4	6	-8	-16	-13	-10	6	6	6	4	2	3	4	31	217
																							73 - year Average:				**11**												**73 - year Average:**			**33**	**380**
																																							1929 - '34 Average:				**277**

STUDY: **501**
CP # 18, MILLERTON LAKE, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 576'

Elevation in feet

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	491	505	527	547	549	566	559	576	576	562	518	491
1923	485	495	520	537	531	517	541	549	540	526	463	470
1924	483	494	508	522	516	503	506	511	505	478	464	468
1925	461	471	486	500	506	490	512	530	520	497	480	472
1926	474	487	503	517	520	506	548	562	533	492	471	482
1927	488	503	525	543	560	561	560	569	576	543	492	482
1928	482	503	525	542	540	543	551	554	522	477	465	477
1929	484	499	513	523	517	513	531	531	527	506	466	477
1930	478	494	506	517	514	509	524	534	517	488	465	482
1931	486	501	512	522	517	508	510	515	508	482	466	466
1932	467	476	503	520	543	531	524	532	552	518	492	477
1933	477	489	501	516	512	501	520	537	526	509	466	467
1934	469	479	499	517	511	503	516	527	523	498	477	486
1935	490	500	515	535	532	509	542	563	574	538	469	479
1936	486	502	518	533	560	558	564	576	563	521	472	478
1937	488	497	516	535	560	570	576	576	576	538	484	469
1938	472	486	533	560	560	542	529	467	572	576	532	520
1939	513	514	529	538	532	524	542	560	539	504	473	495
1940	494	503	517	549	550	551	548	561	553	512	465	470
1941	481	493	528	556	560	573	573	569	576	569	527	506
1942	497	507	532	552	549	553	554	562	576	555	509	477
1943	477	494	518	557	556	576	574	576	562	526	491	476
1944	479	491	508	521	524	507	516	517	501	494	490	480
1945	481	503	523	533	560	568	565	571	576	554	511	491
1946	485	502	531	548	528	524	536	559	546	510	478	480
1947	481	500	526	543	541	530	545	556	535	497	473	481
1948	487	503	517	529	523	530	556	551	541	483	480	484
1949	490	500	513	526	524	511	522	538	521	482	477	489
1950	492	503	519	536	541	524	534	551	539	506	476	482
1951	490	533	560	560	554	546	552	546	514	463	463	481
1952	488	500	530	559	560	567	559	526	576	571	525	508
1953	501	514	533	549	538	532	541	536	518	497	478	481
1954	488	497	514	532	532	527	537	560	544	507	465	483
1955	489	502	522	540	537	520	534	545	537	504	481	487
1956	491	499	560	560	560	576	576	561	576	566	524	505
1957	496	504	517	527	525	529	546	561	562	526	471	481
1958	488	501	525	545	554	565	576	576	576	557	516	498
1959	492	507	523	530	536	528	550	566	551	500	470	475
1960	473	475	480	490	503	498	515	525	509	496	483	481
1961	481	491	505	511	510	511	526	539	527	486	467	467
1962	468	471	484	492	538	529	527	555	569	540	489	476
1963	479	491	501	518	558	558	576	576	576	564	520	503
1964	490	517	542	551	547	544	553	561	551	508	476	484
1965	481	496	529	560	556	554	559	551	561	540	512	496
1966	487	513	546	558	541	526	545	564	550	506	486	486
1967	490	502	539	559	560	571	565	514	570	576	539	522
1968	515	521	539	545	545	539	550	554	539	506	478	482
1969	479	495	513	560	524	521	467	469	576	576	538	513
1970	498	516	540	560	560	554	554	555	544	517	476	477
1971	482	502	534	551	548	533	541	544	520	498	491	478
1972	479	491	519	536	532	524	537	543	540	497	481	481
1973	489	501	523	545	560	560	550	575	576	542	483	477
1974	487	510	545	560	544	550	559	570	573	537	490	473
1975	476	494	515	528	535	526	533	536	567	525	476	482
1976	489	511	531	541	539	544	547	542	519	492	479	494
1977	490	496	500	503	501	464	465	464	462	466	461	462
1978	462	462	484	532	560	552	510	498	576	576	548	539
1979	528	535	549	560	555	562	560	571	563	521	477	482
1980	489	488	508	560	560	558	566	550	576	576	542	513
1981	503	512	520	528	531	533	547	553	543	510	477	488
1982	491	504	536	560	560	576	546	561	576	576	546	541
1983	531	556	560	560	513	484	467	467	483	564	572	576
1984	560	560	560	560	560	568	570	570	557	530	487	483
1985	482	492	511	536	533	526	551	563	539	501	483	483
1986	490	507	534	553	550	552	574	565	576	558	503	479
1987	480	489	492	495	496	511	530	551	539	503	473	480
1988	482	495	507	526	516	527	539	547	527	498	483	486
1989	486	497	505	515	512	516	537	552	540	502	478	484
1990	489	495	502	510	510	517	532	544	525	508	479	483
1991	480	486	492	499	493	489	501	508	512	506	480	486
1992	485	490	494	498	499	490	493	494	480	470	465	466
1993	467	466	476	536	543	556	558	576	576	571	522	499
1994	490	497	507	512	508	520	534	548	528	498	478	484

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**
1922	10	17	0	0	14	58	85	3	2	6	6	3	1	1	**22**
1923	59	35	27	36	50	113	106	1	1	1	1	1	1	1	**7**
1924	73	70	65	71	98	112	108	1	1	1	1	1	1	1	**7**
1925	86	64	46	56	79	96	104	1	1	1	1	1	1	1	**7**
1926	70	28	14	43	84	105	94	1	1	3	1	1	1	1	**9**
1927	15	16	7	0	33	84	94	2	2	4	6	1	1	1	**17**
1928	33	25	22	54	99	111	99	1	1	1	1	1	1	1	**7**
1929	63	45	45	49	70	110	99	1	1	1	1	1	1	1	**7**
1930	67	52	42	59	88	111	94	1	1	1	1	1	1	1	**7**
1931	68	66	61	68	94	110	110	1	1	1	1	1	1	1	**7**
1932	45	52	44	24	58	84	99	1	1	1	1	1	1	1	**7**
1933	75	56	39	50	67	110	109	1	1	1	1	1	1	1	**7**
1934	73	60	49	53	78	99	90	1	1	1	1	1	1	1	**7**
1935	67	34	13	2	38	107	97	1	1	3	5	1	1	1	**13**
1936	18	12	0	13	55	104	98	2	3	6	3	1	1	1	**17**
1937	6	0	0	0	38	92	107	4	6	6	6	1	1	1	**25**
1938	34	47	109	4	0	44	56	1	1	1	5	6	1	1	**16**
1939	52	34	16	37	72	103	81	1	1	2	1	1	1	1	**8**
1940	25	28	15	23	64	111	106	1	1	2	1	1	1	1	**8**
1941	3	3	7	0	7	49	70	5	5	4	6	4	1	1	**26**
1942	23	22	14	0	21	67	99	1	1	3	6	1	1	1	**14**
1943	0	2	0	14	50	85	100	6	5	6	3	1	1	1	**23**
1944	69	60	59	75	82	86	96	1	1	1	1	1	1	1	**7**
1945	8	11	5	0	22	65	85	4	3	4	6	1	1	1	**20**
1946	52	40	17	30	66	98	96	1	1	2	1	1	1	1	**8**
1947	46	31	20	41	79	103	95	1	1	1	1	1	1	1	**7**
1948	46	20	25	35	93	96	92	1	1	1	1	1	1	1	**7**
1949	65	54	38	55	94	99	87	1	1	1	1	1	1	1	**7**
1950	52	42	25	37	70	100	94	1	1	1	1	1	1	1	**7**
1951	30	24	30	62	113	113	95	1	1	1	1	1	1	1	**7**
1952	9	17	50	0	5	51	68	4	2	1	6	4	1	1	**19**
1953	44	35	40	58	79	98	95	1	1	1	1	1	1	1	**7**
1954	49	39	16	32	69	111	93	1	1	2	1	1	1	1	**8**
1955	56	42	31	39	72	95	89	1	1	1	1	1	1	1	**7**
1956	0	0	15	0	10	52	71	6	6	2	6	3	1	1	**25**
1957	47	30	15	14	50	105	95	1	1	2	3	1	1	1	**10**
1958	11	0	0	0	19	60	78	3	6	6	6	2	1	1	**25**
1959	48	26	10	25	76	106	101	1	1	3	1	1	1	1	**9**
1960	78	61	51	67	80	93	95	1	1	1	1	1	1	1	**7**
1961	65	50	37	49	90	109	109	1	1	1	1	1	1	1	**7**
1962	47	49	21	7	36	87	100	1	1	1	4	1	1	1	**10**
1963	18	0	0	0	12	56	73	2	6	6	6	3	1	1	**25**
1964	32	23	15	25	68	100	92	1	1	2	1	1	1	1	**8**
1965	22	17	25	15	36	64	80	1	2	1	2	1	1	1	**9**
1966	50	31	12	26	70	90	90	1	1	3	1	1	1	1	**9**
1967	5	11	62	6	0	37	54	4	3	1	4	6	1	1	**20**
1968	37	26	22	37	70	98	94	1	1	1	1	1	1	1	**7**
1969	55	109	107	0	0	38	63	1	1	1	6	6	1	1	**17**
1970	22	22	21	32	59	100	99	1	1	1	1	1	1	1	**7**
1971	43	35	32	56	78	85	98	1	1	1	1	1	1	1	**7**
1972	52	39	33	36	79	95	95	1	1	1	1	1	1	1	**7**
1973	16	26	1	0	34	93	99	2	1	5	6	1	1	1	**17**
1974	26	17	6	3	39	86	103	1	2	4	5	1	1	1	**15**
1975	50	43	40	9	51	100	94	1	1	1	4	1	1	1	**10**
1976	32	29	34	57	84	97	82	1	1	1	1	1	1	1	**7**
1977	112	111	112	114	110	115	114	1	1	1	1	1	1	1	**7**
1978	24	66	78	0	0	28	37	1	1	1	6	6	1	1	**17**
1979	14	16	5	13	55	99	94	3	2	4	3	1	1	1	**15**
1980	18	10	26	0	0	34	63	2	3	1	6	6	1	1	**20**
1981	43	29	23	33	66	99	88	1	1	1	1	1	1	1	**7**
1982	0	30	15	0	0	30	35	6	1	2	6	6	1	1	**23**
1983	92	109	109	93	12	4	0	1	1	1	1	3	5	6	**18**
1984	8	6	6	19	46	89	93	4	4	4	2	1	1	1	**17**
1985	50	25	13	37	75	93	93	1	1	3	1	1	1	1	**9**
1986	24	2	11	0	18	73	97	1	5	3	6	2	1	1	**19**
1987	65	46	25	37	73	103	96	1	1	1	1	1	1	1	**7**
1988	49	37	29	49	78	93	90	1	1	1	1	1	1	1	**7**
1989	60	39	24	36	74	98	92	1	1	1	1	1	1	1	**7**
1990	59	44	32	51	68	97	93	1	1	1	1	1	1	1	**7**
1991	87	75	68	64	70	96	90	1	1	1	1	1	1	1	**7**
1992	86	83	82	96	106	111	110	1	1	1	1	1	1	1	**7**
1993	20	18	0	0	5	54	77	1	2	6	6	4	1	1	**21**
1994	56	42	28	48	78	98	92	1	1	1	1	1	1	1	**7**
												73 - year Average:			**12**

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	Fluctuation MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	17	-7	17	0	-14	-44	-27	6	4	6	6	3	1	1	**27**	**594**
1923	-14	24	8	-9	-14	-63	7	3	6	6	4	3	1	6	**29**	**203**
1924	-13	3	5	-6	-27	-14	4	3	6	6	4	1	3	6	**29**	**203**
1925	-16	22	18	-10	-23	-17	-8	2	6	6	4	1	2	4	**25**	**175**
1926	-14	42	14	-29	-41	-21	11	3	6	6	1	1	1	6	**24**	**216**
1927	1	-1	9	7	-33	-51	-10	6	5	6	6	1	1	4	**29**	**493**
1928	3	8	3	-32	-45	-12	12	6	6	6	1	1	3	6	**29**	**203**
1929	-4	18	0	-4	-21	-40	11	5	6	6	5	1	1	6	**30**	**210**
1930	-5	15	10	-17	-29	-23	17	5	6	6	2	1	1	6	**27**	**189**
1931	-9	2	5	-7	-26	-16	0	4	6	6	4	1	2	6	**29**	**203**
1932	-12	-7	8	20	-34	-26	-15	3	4	6	6	1	1	3	**24**	**168**
1933	-11	19	17	-11	-17	-43	1	3	6	6	3	2	1	6	**27**	**189**
1934	-8	13	11	-4	-25	-21	9	4	6	6	5	1	1	6	**29**	**203**
1935	-23	33	21	11	-36	-69	10	1	6	6	6	1	1	6	**27**	**351**
1936	-2	6	12	-13	-42	-49	6	5	6	6	3	1	1	6	**28**	**476**
1937	10	6	0	0	-38	-54	-15	6	6	6	6	1	1	3	**29**	**725**
1938	-18	-13	-62	105	4	-44	-12	2	3	1	6	6	1	3	**22**	**352**
1939	-8	18	18	-21	-35	-31	22	4	6	6	1	1	1	6	**25**	**200**
1940	1	-3	13	-8	-41	-47	5	6	5	6	4	1	1	6	**29**	**232**
1941	13	0	-4	7	-7	-42	-21	6	6	5	6	4	1	1	**29**	**754**
1942	4	1	8	14	-21	-46	-32	6	6	6	6	1	1	1	**27**	**378**
1943	20	-2	2	-14	-36	-35	-15	6	5	6	3	1	1	3	**25**	**575**
1944	-17	9	1	-16	-7	-4	-10	2	6	6	2	4	5	4	**29**	**203**
1945	8	-3	6	5	-22	-43	-20	6	5	6	6	1	1	2	**27**	**540**
1946	-4	12	23	-13	-36	-32	2	5	6	6	3	1	1	6	**28**	**224**
1947	-11	15	11	-21	-38	-24	8	3	6	6	1	1	1	6	**24**	**168**
1948	7	26	-5	-10	-58	-3	4	6	6	5	4	1	5	6	**33**	**231**
1949	-13	11	16	-17	-39	-5	12	3	6	6	2	1	5	6	**29**	**203**
1950	-17	10	17	-12	-33	-30	6	2	6	6	3	1	1	6	**25**	**175**
1951	-8	6	-6	-32	-51	0	18	4	6	4	1	1	6	6	**28**	**196**
1952	7	-8	-33	50	-5	-46	-17	6	4	1	6	5	1	2	**25**	**475**
1953	-6	9	-5	-18	-21	-19	3	4	6	5	2	1	2	6	**26**	**182**
1954	-5	10	23	-16	-37	-42	18	5	6	6	2	1	1	6	**27**	**216**
1955	-17	14	11	-8	-33	-23	6	2	6	6	4	1	1	6	**26**	**182**
1956	16	0	-15	15	-10	-42	-19	6	6	3	6	4	1	2	**28**	**700**
1957	4	17	15	1	-36	-55	10	6	6	6	6	1	1	6	**32**	**320**
1958	11	11	0	0	-19	-41	-18	6	6	6	6	2	1	2	**29**	**725**
1959	-8	22	16	-15	-51	-30	5	4	6	6	3	1	1	6	**27**	**243**
1960	-5	17	10	-16	-13	-13	-2	5	6	6	2	3	3	5	**30**	**210**
1961	1	15	13	-12	-41	-19	0	6	6	6	3	1	2	6	**30**	**210**
1962	-9	-2	28	14	-29	-51	-13	4	5	6	6	1	1	3	**26**	**260**
1963	0	18	0	0	-12	-44	-17	6	6	6	6	3	1	2	**30**	**750**
1964	-3	9	8	-10	-43	-32	8	5	6	6	4	1	1	6	**29**	**232**
1965	-2	5	-8	10	-21	-28	-16	5	6	4	6	1	1	2	**25**	**225**
1966	-15	19	19	-14	-44	-20	0	3	6	6	3	1	2	6	**27**	**243**
1967	11	-6	-51	56	6	-37	-17	6	4	1	6	6	1	2	**26**	**520**
1968	-6	11	4	-15	-33	-28	4	4	6	6	3	1	1	6	**27**	**189**
1969	-3	-54	2	107	0	-38	-25	5	1	6	6	6	1	1	**26**	**442**
1970	-6	0	1	-11	-27	-41	1	4	6	6	3	1	1	6	**27**	**189**
1971	-15	8	3	-24	-22	-7	-13	3	6	6	1	1	4	3	**24**	**168**
1972	-8	13	6	-3	-43	-16	0	4	6	6	5	1	2	6	**30**	**210**
1973	0	-10	25	1	-34	-59	-6	6	4	6	6	1	1	4	**28**	**476**
1974	6	9	11	3	-36	-47	-17	6	6	6	6	1	1	2	**28**	**420**
1975	-9	7	3	31	-42	-49	6	4	6	6	6	1	1	6	**30**	**300**
1976	5	3	-5	-23	-27	-13	15	6	6	5	1	1	3	6	**28**	**196**
1977	-37	1	-1	-2	4	-5	1	1	6	5	5	6	5	6	**34**	**238**
1978	-8	-42	-12	78	0	-28	-9	4	1	3	6	6	1	4	**25**	**425**
1979	7	-2	11	-8	-42	-44	5	6	5	6	4	1	1	6	**29**	**435**
1980	-2	8	-16	26	0	-34	-29	5	6	2	6	6	1	1	**27**	**540**
1981	2	14	6	-10	-33	-33	11	6	6	6	4	1	1	6	**30**	**210**
1982	16	-30	15	15	0	-30	-5	6	1	6	6	6	1	5	**31**	**713**
1983	-29	-17	0	16	81	8	4	1	2	6	6	6	6	6	**33**	**594**
1984	8	2	0	-13	-27	-43	-4	6	6	6	3	1	1	5	**28**	**476**
1985	-7	25	12	-24	-38	-18	0	4	6	6	1	1	2	6	**26**	**234**
1986	2	22	-9	11	-18	-55	-24	6	6	4	6	2	1	1	**26**	**494**
1987	15	19	21	-12	-36	-30	7	6	6	6	3	1	1	6	**29**	**203**
1988	11	12	8	-20	-29	-15	3	6	6	6	2	1	3	6	**30**	**210**
1989	4	21	15	-12	-38	-24	6	6	6	6	3	1	1	6	**29**	**203**
1990	7	15	12	-19	-17	-29	4	6	6	6	2	2	1	6	**29**	**203**
1991	-4	12	7	4	-6	-26	6	5	6	6	6	4	1	6	**34**	**238**
1992	-9	3	1	-14	-10	-5	1	4	6	6	3	4	5	6	**34**	**238**
1993	13	2	18	0	-5	-49	-23	6	6	6	6	5	1	1	**31**	**651**
1994	12	14	14	-20	-30	-20	6	6	6	6	2	1	2	6	**29**	**203**
												73 - year Average:			**28**	**329**
														1929 - '34 Average:		**194**

STUDY: **501**

CP # 12, SWP SAN LUIS RESERVOIR, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 544'

Elevation in feet

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	419	442	477	521	540	544	543	539	524	475	439	446
1923	476	503	514	528	530	535	531	507	468	444	420	406
1924	425	433	461	505	525	525	516	493	462	422	384	380
1925	381	392	438	469	517	528	521	494	451	421	352	336
1926	355	386	402	459	504	516	512	491	458	452	388	384
1927	393	434	473	520	544	544	539	526	493	469	427	430
1928	462	492	508	522	534	544	537	515	465	441	421	409
1929	435	459	484	530	544	544	536	522	499	467	435	432
1930	432	437	482	531	542	544	526	496	466	458	441	419
1931	424	428	429	470	484	484	476	465	450	425	377	377
1932	390	389	451	508	537	529	521	502	482	474	444	429
1933	443	450	453	498	520	528	525	510	481	444	400	399
1934	413	410	456	508	519	519	506	484	459	440	407	395
1935	393	413	432	492	498	530	533	506	467	435	370	358
1936	396	414	425	480	524	544	543	525	489	465	432	417
1937	440	453	476	523	544	544	544	540	511	472	432	415
1938	445	478	513	531	544	544	544	544	537	504	471	486
1939	513	522	526	539	544	544	526	494	462	450	439	419
1940	424	421	415	480	519	536	533	509	467	438	365	358
1941	394	426	462	513	537	544	543	540	525	476	441	459
1942	491	505	513	528	540	544	540	532	524	478	443	459
1943	490	504	514	528	538	544	544	544	516	473	432	435
1944	466	496	514	528	541	544	525	493	458	441	429	413
1945	418	455	489	522	538	544	532	503	462	437	408	396
1946	433	465	491	517	528	533	519	491	446	420	410	397
1947	427	459	490	521	535	543	527	492	457	440	425	408
1948	411	419	419	471	488	510	510	490	455	426	373	378
1949	406	433	462	507	527	544	526	496	453	430	407	395
1950	422	434	441	493	531	539	528	501	468	449	416	407
1951	430	462	498	526	536	544	530	508	463	433	406	406
1952	430	459	487	522	535	544	544	544	536	510	492	499
1953	506	515	519	533	543	544	529	514	492	470	438	454
1954	485	502	514	528	538	544	535	515	464	436	410	405
1955	432	461	489	519	531	538	520	493	464	458	431	418
1956	442	454	495	529	542	544	538	528	507	476	437	447
1957	473	498	506	522	534	544	533	509	473	452	432	421
1958	452	481	504	522	534	544	544	544	536	500	481	495
1959	502	511	515	528	540	544	522	489	451	433	419	418
1960	443	455	462	508	543	544	525	491	456	434	375	358
1961	385	418	455	501	534	544	523	487	456	444	435	409
1962	424	438	473	506	543	544	524	489	434	397	327	335
1963	375	407	437	482	518	534	533	524	500	469	433	448
1964	477	505	517	532	542	544	518	482	437	412	390	395
1965	401	430	465	516	530	544	544	530	499	472	432	439
1966	468	497	514	528	538	544	525	493	442	415	397	392
1967	419	452	487	524	537	542	544	544	537	525	505	509
1968	516	526	531	544	544	544	529	495	456	437	422	417
1969	446	474	506	533	544	544	544	544	537	517	488	503
1970	517	526	530	544	544	544	534	512	471	450	431	426
1971	451	482	512	531	536	544	531	513	483	457	434	445
1972	472	498	512	526	538	544	526	493	454	435	421	406
1973	431	463	494	523	534	544	536	514	481	456	422	420
1974	452	480	501	522	533	544	542	530	502	473	448	460
1975	483	499	508	522	534	538	533	518	492	457	429	439
1976	466	483	500	514	528	539	521	494	475	468	448	430
1977	431	438	440	456	456	456	459	447	428	405	397	412
1978	417	434	483	534	544	544	544	544	526	472	432	447
1979	478	502	514	528	541	544	536	515	481	459	408	402
1980	437	471	495	522	537	544	544	544	527	492	453	470
1981	501	520	527	541	544	544	530	496	457	439	424	411
1982	435	468	501	531	544	544	544	544	531	494	462	471
1983	496	515	521	535	544	544	544	544	537	527	514	521
1984	536	544	544	544	544	544	535	512	475	452	418	413
1985	449	480	500	522	534	540	519	484	438	414	393	396
1986	401	406	442	495	530	544	544	544	532	489	457	465
1987	494	505	531	544	544	544	523	488	459	448	438	415
1988	423	420	457	507	518	518	506	492	479	461	426	423
1989	423	438	459	496	496	528	518	488	453	443	386	395
1990	411	427	458	500	520	525	509	480	462	457	400	384
1991	384	390	390	405	405	469	470	460	442	425	410	411
1992	415	428	443	488	517	540	531	514	495	461	418	410
1993	410	417	464	519	529	543	538	532	517	471	416	421
1994	455	485	500	521	534	542	520	486	458	450	444	430

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	0	1	5	20	69	105	98	6	5	4	1	1	1	1	**19**
1923	9	13	37	76	100	124	138	4	3	1	1	1	1	1	**12**
1924	19	28	51	82	122	160	164	2	1	1	1	1	1	1	**8**
1925	16	23	50	93	123	192	208	2	1	1	1	1	1	1	**8**
1926	28	32	53	86	92	156	160	1	1	1	1	1	1	1	**7**
1927	0	5	18	51	75	117	114	6	4	2	1	1	1	1	**16**
1928	0	7	29	79	103	123	135	6	4	1	1	1	1	1	**15**
1929	0	8	22	45	77	109	112	6	4	1	1	1	1	1	**15**
1930	0	18	48	78	86	103	125	6	2	1	1	1	1	1	**13**
1931	60	68	79	94	119	167	167	1	1	1	1	1	1	1	**7**
1932	15	23	42	62	70	100	115	2	1	1	1	1	1	1	**8**
1933	16	19	34	63	100	144	145	2	2	1	1	1	1	1	**9**
1934	25	38	60	85	104	137	149	1	1	1	1	1	1	1	**7**
1935	14	11	38	77	109	174	186	3	3	1	1	1	1	1	**11**
1936	0	1	19	55	79	112	127	6	5	2	1	1	1	1	**17**
1937	0	0	4	33	72	112	129	6	6	5	1	1	1	1	**21**
1938	0	0	0	7	40	73	58	6	6	6	4	1	1	1	**25**
1939	0	18	50	82	94	105	125	6	2	1	1	1	1	1	**13**
1940	8	11	35	77	106	179	186	4	3	1	1	1	1	1	**12**
1941	0	1	4	19	68	103	85	6	5	5	2	1	1	1	**21**
1942	0	4	12	20	66	101	85	6	5	3	1	1	1	1	**18**
1943	0	0	0	28	71	112	109	6	6	6	1	1	1	1	**22**
1944	0	19	51	86	103	115	131	6	2	1	1	1	1	1	**13**
1945	0	12	41	82	107	136	148	6	3	1	1	1	1	1	**14**
1946	11	25	53	98	124	134	147	3	1	1	1	1	1	1	**9**
1947	1	17	52	87	104	119	136	5	2	1	1	1	1	1	**12**
1948	34	34	54	89	118	171	166	1	1	1	1	1	1	1	**7**
1949	0	18	48	91	114	137	149	6	2	1	1	1	1	1	**13**
1950	5	16	43	76	95	128	137	4	2	1	1	1	1	1	**11**
1951	0	14	36	81	111	138	138	6	3	1	1	1	1	1	**14**
1952	0	0	0	8	34	52	45	6	6	6	4	1	1	1	**25**
1953	0	15	30	52	74	106	90	6	2	1	1	1	1	1	**13**
1954	0	9	29	80	108	134	139	6	4	1	1	1	1	1	**15**
1955	6	24	51	80	86	113	126	4	1	1	1	1	1	1	**10**
1956	0	6	16	37	68	107	97	6	4	2	1	1	1	1	**16**
1957	0	11	35	71	92	112	123	6	3	1	1	1	1	1	**14**
1958	0	0	0	8	44	63	49	6	6	6	4	1	1	1	**25**
1959	0	22	55	93	111	125	126	6	1	1	1	1	1	1	**12**
1960	0	19	53	88	110	169	186	6	2	1	1	1	1	1	**13**
1961	0	21	57	88	100	109	135	6	1	1	1	1	1	1	**12**
1962	0	20	55	110	147	217	209	6	1	1	1	1	1	1	**12**
1963	10	11	20	44	75	111	96	3	3	1	1	1	1	1	**11**
1964	0	26	62	107	132	154	149	6	1	1	1	1	1	1	**12**
1965	0	0	14	45	72	112	105	6	6	3	1	1	1	1	**19**
1966	0	19	51	102	129	147	152	6	2	1	1	1	1	1	**13**
1967	2	0	0	7	19	39	35	5	6	6	4	2	1	1	**25**
1968	0	15	49	88	107	122	127	6	2	1	1	1	1	1	**13**
1969	0	0	0	7	27	56	41	6	6	6	4	1	1	1	**25**
1970	0	10	32	73	94	113	118	6	3	1	1	1	1	1	**14**
1971	0	13	31	61	87	110	99	6	3	1	1	1	1	1	**14**
1972	0	18	51	90	109	123	138	6	2	1	1	1	1	1	**13**
1973	0	8	30	63	88	122	124	6	4	1	1	1	1	1	**15**
1974	0	2	14	42	71	96	84	6	5	3	1	1	1	1	**18**
1975	6	11	26	52	87	115	105	4	3	1	1	1	1	1	**12**
1976	5	23	50	69	76	96	114	4	1	1	1	1	1	1	**10**
1977	88	85	97	116	139	147	132	1	1	1	1	1	1	1	**7**
1978	0	0	0	18	72	112	97	6	6	6	2	1	1	1	**23**
1979	0	8	29	63	85	136	142	6	4	1	1	1	1	1	**15**
1980	0	0	0	17	52	91	74	6	6	6	2	1	1	1	**23**
1981	0	14	48	87	105	120	133	6	3	1	1	1	1	1	**14**
1982	0	0	0	13	50	82	73	6	6	6	3	1	1	1	**24**
1983	0	0	0	7	17	30	23	6	6	6	4	2	1	1	**26**
1984	0	9	32	69	92	126	131	6	4	1	1	1	1	1	**15**
1985	4	25	60	106	130	151	148	5	1	1	1	1	1	1	**11**
1986	0	0	0	12	55	87	79	6	6	6	3	1	1	1	**24**
1987	0	21	56	85	96	106	129	6	1	1	1	1	1	1	**12**
1988	26	38	52	65	83	118	121	1	1	1	1	1	1	1	**7**
1989	16	26	56	91	101	158	149	2	1	1	1	1	1	1	**8**
1990	19	35	64	82	87	144	160	2	1	1	1	1	1	1	**8**
1991	75	74	84	102	119	134	133	1	1	1	1	1	1	1	**7**
1992	4	13	30	49	83	126	134	5	3	1	1	1	1	1	**13**
1993	1	6	12	27	73	128	123	5	4	3	1	1	1	1	**16**
1994	2	24	58	86	94	100	114	5	1	1	1	1	1	1	**11**
											73 - year Average:				**14**

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	4	-1	-4	-15	-49	-36	7	6	5	5	3	1	1	6	**27**	**513**
1923	5	-4	-24	-39	-24	-24	-14	6	5	1	1	1	1	3	**18**	**216**
1924	0	-9	-23	-31	-40	-38	-4	6	4	1	1	1	1	5	**19**	**152**
1925	11	-7	-27	-43	-30	-69	-16	6	4	1	1	1	1	2	**16**	**128**
1926	12	-4	-21	-33	-6	-64	-4	6	5	1	1	4	1	5	**23**	**161**
1927	0	-5	-13	-33	-24	-42	3	6	5	3	1	1	1	6	**23**	**368**
1928	10	-7	-22	-50	-24	-20	-12	6	4	1	1	1	2	3	**18**	**270**
1929	0	-8	-14	-23	-32	-32	-3	6	4	3	1	1	1	5	**21**	**315**
1930	2	-18	-30	-30	-8	-17	-22	6	2	1	1	4	2	1	**17**	**221**
1931	0	-8	-11	-15	-25	-48	0	6	4	3	3	1	1	6	**24**	**168**
1932	-8	-8	-19	-20	-8	-30	-15	4	4	2	2	4	1	3	**20**	**160**
1933	8	-3	-15	-29	-37	-44	-1	6	5	3	1	1	1	5	**22**	**198**
1934	0	-13	-22	-25	-19	-33	-12	6	3	1	1	2	1	3	**17**	**119**
1935	32	3	-27	-39	-32	-65	-12	6	6	1	1	1	1	3	**19**	**209**
1936	20	-1	-18	-36	-24	-33	-15	6	5	2	1	1	1	3	**19**	**323**
1937	0	0	-4	-29	-39	-40	-17	6	6	5	1	1	1	2	**22**	**462**
1938	0	0	0	-7	-33	-33	15	6	6	6	4	1	1	6	**30**	**750**
1939	0	-18	-32	-32	-12	-11	-20	6	2	1	1	3	3	2	**18**	**234**
1940	17	-3	-24	-42	-29	-73	-7	6	5	1	1	1	1	4	**19**	**228**
1941	7	-1	-3	-15	-49	-35	18	6	5	5	3	1	1	6	**27**	**567**
1942	4	-4	-8	-8	-46	-35	16	6	5	4	4	1	1	6	**27**	**486**
1943	6	0	0	-28	-43	-41	3	6	6	6	1	1	1	6	**27**	**594**
1944	3	-19	-32	-35	-17	-12	-16	6	2	1	1	2	3	2	**17**	**221**
1945	6	-12	-29	-41	-25	-29	-12	6	3	1	1	1	1	3	**16**	**224**
1946	5	-14	-28	-45	-26	-10	-13	6	3	1	1	1	4	3	**19**	**171**
1947	8	-16	-35	-35	-17	-15	-17	6	2	1	1	2	3	2	**17**	**204**
1948	22	0	-20	-35	-29	-53	5	6	6	2	1	1	1	6	**23**	**161**
1949	17	-18	-30	-43	-23	-23	-12	6	2	1	1	1	1	3	**15**	**195**
1950	8	-11	-27	-33	-19	-33	-9	6	3	1	1	2	1	4	**18**	**198**
1951	8	-14	-22	-45	-30	-27	0	6	3	1	1	1	1	6	**19**	**266**
1952	9	0	0	-8	-26	-18	7	6	6	6	4	1	2	6	**31**	**775**
1953	1	-15	-15	-22	-22	-32	16	6	3	3	1	1	1	6	**21**	**273**
1954	6	-9	-20	-51	-28	-26	-5	6	4	2	1	1	1	5	**20**	**300**
1955	7	-18	-27	-29	-6	-27	-13	6	2	1	1	4	1	3	**18**	**180**
1956	2	-6	-10	-21	-31	-39	10	6	4	4	1	1	1	6	**23**	**368**
1957	10	-11	-24	-36	-21	-20	-11	6	3	1	1	1	2	3	**17**	**238**
1958	10	0	0	-8	-36	-19	14	6	6	6	4	1	2	6	**31**	**775**
1959	4	-22	-33	-38	-18	-14	-1	6	1	1	1	2	3	5	**19**	**228**
1960	1	-19	-34	-35	-22	-59	-17	6	2	1	1	1	1	2	**14**	**182**
1961	10	-21	-36	-31	-12	-9	-26	6	1	1	1	3	4	1	**17**	**204**
1962	1	-20	-35	-55	-37	-70	8	6	2	1	1	1	1	6	**18**	**216**
1963	16	-1	-9	-24	-31	-36	15	6	5	4	1	1	1	6	**24**	**264**
1964	2	-26	-36	-45	-25	-22	5	6	1	1	1	1	1	6	**17**	**204**
1965	14	0	-14	-31	-27	-40	7	6	6	3	1	1	1	6	**24**	**456**
1966	6	-19	-32	-51	-27	-18	-5	6	2	1	1	1	2	5	**18**	**234**
1967	5	2	0	-7	-12	-20	4	6	6	6	4	3	2	6	**33**	**825**
1968	0	-15	-34	-39	-19	-15	-5	6	3	1	1	2	3	5	**21**	**273**
1969	0	0	0	-7	-20	-29	15	6	6	6	4	2	1	6	**31**	**775**
1970	0	-10	-22	-41	-21	-19	-5	6	4	1	1	1	2	5	**20**	**280**
1971	8	-13	-18	-30	-26	-23	11	6	3	2	1	1	1	6	**20**	**280**
1972	6	-18	-33	-39	-19	-14	-15	6	2	1	1	2	3	3	**18**	**234**
1973	10	-8	-22	-33	-25	-34	-2	6	4	1	1	1	1	5	**19**	**285**
1974	11	-2	-12	-28	-29	-25	12	6	5	3	1	1	1	6	**23**	**414**
1975	4	-5	-15	-26	-35	-28	10	6	5	3	1	1	1	6	**23**	**276**
1976	11	-18	-27	-19	-7	-20	-18	6	2	1	2	4	2	2	**19**	**190**
1977	0	3	-12	-19	-23	-8	15	6	6	3	2	1	4	6	**28**	**196**
1978	0	0	0	-18	-54	-40	15	6	6	6	2	1	1	6	**28**	**644**
1979	3	-8	-21	-34	-22	-51	-6	6	4	1	1	1	1	4	**18**	**270**
1980	7	0	0	-17	-35	-39	17	6	6	6	2	1	1	6	**28**	**644**
1981	0	-14	-34	-39	-18	-15	-13	6	3	1	1	2	3	3	**19**	**266**
1982	0	0	0	-13	-37	-32	9	6	6	6	3	1	1	6	**29**	**696**
1983	0	0	0	-7	-10	-13	7	6	6	6	4	4	3	6	**35**	**910**
1984	0	-9	-23	-37	-23	-34	-5	6	4	1	1	1	1	5	**19**	**285**
1985	6	-21	-35	-46	-24	-21	3	6	1	1	1	1	1	6	**17**	**187**
1986	14	0	0	-12	-43	-32	8	6	6	6	3	1	1	6	**29**	**696**
1987	0	-21	-35	-29	-11	-10	-23	6	1	1	1	3	4	1	**17**	**204**
1988	0	-12	-14	-13	-18	-35	-3	6	3	3	3	2	1	5	**23**	**161**
1989	32	-10	-30	-35	-10	-57	9	6	4	1	1	4	1	6	**23**	**184**
1990	5	-16	-29	-18	-5	-57	-16	6	2	1	2	5	1	2	**19**	**152**
1991	64	1	-10	-18	-17	-15	1	6	6	4	2	2	3	6	**29**	**203**
1992	23	-9	-17	-19	-34	-43	-8	6	4	2	2	1	1	4	**20**	**260**
1993	14	-5	-6	-15	-46	-55	5	6	5	4	3	1	1	6	**26**	**416**
1994	8	-22	-34	-28	-8	-6	-14	6	1	1	1	4	4	3	**20**	**220**
											73 - year Average:				**22**	**326**
													1929 - '34 Average:			**197**

STUDY: **501a**

CP # 4, SHASTA LAKE, EOP SURFACE ELEVATION

73-year maximum March - September Reservoir Elevation = 1067'

Elevation in feet

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	989	993	999	1003	1019	1038	1060	1067	1062	1046	1026	1020
1923	1018	1017	1019	1023	1024	1026	1038	1033	1019	999	982	981
1924	981	981	980	979	986	986	974	960	942	912	892	875
1925	879	895	905	915	991	998	1030	1042	1032	1007	991	989
1926	989	988	985	984	1013	1021	1037	1032	1008	986	966	958
1927	957	986	1008	1033	1026	1052	1067	1067	1058	1041	1019	1014
1928	1011	1017	1020	1028	1044	1046	1066	1062	1047	1021	999	992
1929	988	988	989	990	997	1004	1005	998	989	973	955	947
1930	945	944	975	986	1003	1025	1036	1037	1017	998	985	983
1931	981	979	977	979	983	990	982	972	960	936	921	908
1932	903	902	918	929	939	964	967	975	968	954	940	932
1933	930	927	927	930	933	968	978	984	979	958	944	938
1934	937	936	945	962	982	994	994	989	981	946	921	906
1935	900	911	916	939	958	982	1027	1034	1027	1004	990	986
1936	983	980	979	1005	1032	1044	1054	1052	1044	1021	998	993
1937	988	985	980	976	978	1006	1035	1044	1040	1017	997	990
1938	987	1009	1020	1035	1030	1024	1049	1067	1067	1058	1045	1036
1939	1023	1017	1020	1022	1024	1039	1032	1025	999	976	947	944
1940	940	934	944	992	1017	1025	1059	1064	1055	1033	1014	1013
1941	1012	1012	1019	1020	1024	1045	1064	1067	1067	1058	1044	1036
1942	1023	1017	1020	1023	1028	1042	1067	1067	1067	1058	1042	1036
1943	1023	1017	1022	1030	1042	1051	1067	1067	1059	1044	1027	1022
1944	1020	1017	1015	1014	1023	1033	1038	1038	1017	994	972	965
1945	967	979	995	1002	1037	1050	1063	1067	1062	1040	1020	1012
1946	1011	1017	1018	1033	1039	1051	1063	1065	1053	1035	1019	1012
1947	1008	1009	1009	1006	1013	1032	1040	1029	1013	991	970	957
1948	964	968	971	999	998	1010	1051	1067	1066	1049	1030	1029
1949	1023	1017	1016	1012	1016	1050	1063	1064	1047	1024	1003	996
1950	991	990	987	996	1012	1030	1046	1045	1032	1009	991	989
1951	1002	1017	1020	1033	1040	1057	1064	1067	1051	1029	1011	1008
1952	1006	1011	1019	1032	1038	1048	1058	1067	1067	1058	1046	1036
1953	1023	1017	1021	1022	1033	1051	1065	1067	1067	1058	1041	1036
1954	1023	1017	1021	1030	1035	1051	1067	1064	1060	1042	1030	1025
1955	1022	1017	1022	1024	1027	1025	1038	1046	1026	1002	983	983
1956	982	987	1017	1017	1019	1048	1067	1067	1067	1058	1046	1036
1957	1023	1017	1016	1017	1035	1052	1059	1067	1060	1042	1028	1027
1958	1023	1017	1021	1029	1067	1024	1053	1067	1067	1058	1047	1036
1959	1023	1017	1017	1034	1039	1052	1057	1057	1037	1012	996	998
1960	991	988	986	992	1020	1047	1055	1063	1044	1021	1001	1000
1961	996	999	1016	1022	1044	1057	1062	1067	1048	1024	1003	1003
1962	996	997	1008	1009	1035	1052	1065	1067	1053	1032	1010	1007
1963	1023	1017	1021	1025	1045	1055	1052	1067	1062	1050	1038	1036
1964	1023	1017	1018	1033	1037	1041	1036	1031	1014	992	972	968
1965	967	977	1017	1022	1040	1049	1065	1066	1057	1041	1028	1026
1966	1023	1017	1021	1037	1049	1055	1064	1063	1045	1025	1008	1002
1967	994	1008	1021	1030	1044	1048	1064	1067	1067	1058	1047	1036
1968	1023	1017	1019	1025	1034	1054	1057	1059	1042	1021	1013	1008
1969	1004	1005	1016	1022	1027	1048	1063	1067	1067	1058	1047	1036
1970	1023	1017	1020	1017	1025	1052	1056	1056	1044	1025	1011	1007
1971	1005	1017	1020	1028	1041	1043	1065	1067	1067	1058	1047	1036
1972	1023	1017	1022	1033	1045	1056	1067	1067	1049	1028	1014	1010
1973	1011	1017	1021	1030	1034	1053	1065	1067	1059	1041	1029	1026
1974	1023	1017	1018	1017	1036	1025	1058	1067	1067	1058	1047	1036
1975	1023	1017	1021	1024	1045	1039	1061	1067	1067	1058	1046	1036
1976	1023	1017	1018	1017	1012	1020	1027	1024	998	979	975	977
1977	980	981	981	981	971	971	953	947	926	907	890	887
1978	875	874	917	1020	1031	1047	1067	1067	1064	1053	1040	1036
1979	1023	1017	1013	1015	1026	1044	1052	1060	1045	1027	1009	1008
1980	1008	1011	1014	1029	1019	1046	1059	1064	1056	1045	1035	1035
1981	1023	1017	1020	1029	1042	1056	1064	1062	1041	1017	1000	996
1982	993	1017	1018	1033	1029	1046	1051	1067	1067	1058	1047	1036
1983	1023	1017	1020	1022	1017	1045	1050	1067	1067	1058	1047	1036
1984	1023	1017	1018	1034	1047	1056	1067	1067	1059	1042	1032	1031
1985	1023	1017	1022	1023	1027	1034	1042	1035	1010	990	973	971
1986	973	977	988	1013	1017	1029	1048	1050	1038	1022	1006	1009
1987	1009	1008	1008	1009	1019	1046	1046	1040	1008	984	950	947
1988	943	945	977	999	1001	1004	1011	1010	992	959	943	941
1989	941	954	961	968	975	1038	1058	1054	1038	1017	1006	1006
1990	1008	1006	1002	1008	1008	1015	1006	1012	998	971	955	952
1991	947	945	944	945	941	967	979	979	969	955	941	933
1992	932	930	931	936	975	998	1010	1002	988	971	958	952
1993	948	945	959	994	1026	1031	1059	1067	1067	1052	1041	1040
1994	1039	1017	1019	1020	1026	1030	1030	1029	1002	982	960	957

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**
1922	29	7	0	5	21	41	47	1	4	6	4	1	1	1	**18**
1923	41	29	34	48	68	85	86	1	1	1	1	1	1	1	**7**
1924	81	93	107	125	155	175	192	1	1	1	1	1	1	1	**7**
1925	69	37	25	35	60	76	78	1	1	1	1	1	1	1	**7**
1926	46	30	35	59	81	101	109	1	1	1	1	1	1	1	**7**
1927	15	0	0	9	26	48	53	2	6	6	4	1	1	1	**21**
1928	21	1	5	20	46	68	75	1	5	4	1	1	1	1	**14**
1929	63	62	69	78	94	112	120	1	1	1	1	1	1	1	**7**
1930	42	31	30	50	69	82	84	1	1	1	1	1	1	1	**7**
1931	77	85	95	107	131	146	159	1	1	1	1	1	1	1	**7**
1932	103	100	92	99	113	127	135	1	1	1	1	1	1	1	**7**
1933	99	89	83	88	109	123	129	1	1	1	1	1	1	1	**7**
1934	73	73	78	86	121	146	161	1	1	1	1	1	1	1	**7**
1935	85	40	33	40	63	77	81	1	1	1	1	1	1	1	**7**
1936	23	13	15	23	46	69	74	1	3	2	1	1	1	1	**10**
1937	61	32	23	27	50	70	77	1	1	1	1	1	1	1	**7**
1938	43	18	0	0	9	22	31	1	2	6	6	4	1	1	**21**
1939	28	35	42	68	91	120	123	1	1	1	1	1	1	1	**7**
1940	42	8	3	12	34	53	54	1	4	5	3	1	1	1	**16**
1941	22	3	0	0	9	23	31	1	5	6	6	4	1	1	**24**
1942	25	0	0	0	9	25	31	1	6	6	6	4	1	1	**25**
1943	16	0	0	8	23	40	45	2	6	6	4	1	1	1	**21**
1944	34	29	29	50	73	95	102	1	1	1	1	1	1	1	**7**
1945	17	4	0	5	27	47	55	2	5	6	4	1	1	1	**20**
1946	16	4	2	14	32	48	55	2	5	5	3	1	1	1	**18**
1947	35	27	38	54	76	97	110	1	1	1	1	1	1	1	**7**
1948	57	16	0	1	18	37	38	1	2	6	5	2	1	1	**18**
1949	17	4	3	20	43	64	71	2	5	5	1	1	1	1	**16**
1950	37	21	22	35	58	76	78	1	1	1	1	1	1	1	**7**
1951	10	3	0	16	38	56	59	3	5	6	2	1	1	1	**19**
1952	19	9	0	0	9	21	31	2	4	6	6	4	1	1	**24**
1953	16	2	0	0	9	26	31	2	5	6	6	4	1	1	**25**
1954	16	0	3	7	25	37	42	2	6	5	4	1	1	1	**20**
1955	42	29	21	41	65	84	84	1	1	1	1	1	1	1	**7**
1956	19	0	0	0	9	21	31	2	6	6	6	4	1	1	**26**
1957	15	8	0	7	25	39	40	2	4	6	4	1	1	1	**19**
1958	43	14	0	0	9	20	31	1	3	6	6	4	1	1	**22**
1959	15	10	10	30	55	71	69	2	3	3	1	1	1	1	**12**
1960	20	12	4	23	46	66	67	1	3	5	1	1	1	1	**13**
1961	10	5	0	19	43	64	64	3	4	6	2	1	1	1	**18**
1962	15	2	0	14	35	57	60	2	5	6	3	1	1	1	**19**
1963	12	15	0	5	17	29	31	3	2	6	4	2	1	1	**19**
1964	26	31	36	53	75	95	99	1	1	1	1	1	1	1	**7**
1965	18	2	1	10	26	39	41	2	5	5	3	1	1	1	**18**
1966	12	3	4	22	42	59	65	3	5	5	1	1	1	1	**17**
1967	19	3	0	0	9	20	31	2	5	6	6	4	1	1	**25**
1968	13	10	8	25	46	54	59	3	3	4	1	1	1	1	**14**
1969	19	4	0	0	9	20	31	2	5	6	6	4	1	1	**25**
1970	15	11	11	23	42	56	60	2	3	3	1	1	1	1	**12**
1971	24	2	0	0	9	20	31	1	5	6	6	4	1	1	**24**
1972	11	0	0	18	39	53	57	3	6	6	2	1	1	1	**20**
1973	14	2	0	8	26	38	41	3	5	6	4	1	1	1	**21**
1974	42	9	0	0	9	20	31	1	4	6	6	4	1	1	**23**
1975	28	6	0	0	9	21	31	1	4	6	6	4	1	1	**23**
1976	47	40	43	69	88	92	90	1	1	1	1	1	1	1	**7**
1977	96	114	120	141	160	177	180	1	1	1	1	1	1	1	**7**
1978	20	0	0	3	14	27	31	1	6	6	5	3	1	1	**23**
1979	23	15	7	22	40	58	59	1	2	4	1	1	1	1	**11**
1980	21	8	3	11	22	32	32	1	4	5	3	1	1	1	**16**
1981	11	3	5	26	50	67	71	3	5	4	1	1	1	1	**16**
1982	21	16	0	0	9	20	31	1	2	6	6	4	1	1	**21**
1983	22	17	0	0	9	20	31	1	2	6	6	4	1	1	**21**
1984	11	0	0	8	25	35	36	3	6	6	4	1	1	1	**22**
1985	33	25	32	57	77	94	96	1	1	1	1	1	1	1	**7**
1986	38	19	17	29	45	61	58	1	2	2	1	1	1	1	**9**
1987	21	21	27	59	83	117	120	1	1	1	1	1	1	1	**7**
1988	63	56	57	75	108	124	126	1	1	1	1	1	1	1	**7**
1989	29	9	13	29	50	61	61	1	4	3	1	1	1	1	**12**
1990	52	61	55	69	96	112	115	1	1	1	1	1	1	1	**7**
1991	100	88	88	98	112	126	134	1	1	1	1	1	1	1	**7**
1992	69	57	65	79	96	109	115	1	1	1	1	1	1	1	**7**
1993	36	8	0	0	15	26	27	1	4	6	6	2	1	1	**21**
1994	37	37	38	65	85	107	110	1	1	1	1	1	1	1	**7**
												73 - year Average:			**15**

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	19	22	7	-5	-16	-20	-6	6	6	6	5	2	2	4	**31**	**558**
1923	2	12	-5	-14	-20	-17	-1	6	6	5	3	2	2	5	**29**	**203**
1924	0	-12	-14	-18	-30	-20	-17	6	3	3	2	1	2	2	**19**	**133**
1925	7	32	12	-10	-25	-16	-2	6	6	6	4	1	2	5	**30**	**210**
1926	8	16	-5	-24	-22	-20	-8	6	6	5	1	1	2	4	**25**	**175**
1927	26	15	0	-9	-17	-22	-5	6	6	6	4	2	1	5	**30**	**630**
1928	2	20	-4	-15	-26	-22	-7	6	6	5	3	1	1	4	**26**	**364**
1929	7	1	-7	-9	-16	-18	-8	6	6	4	4	2	2	4	**28**	**196**
1930	22	11	1	-20	-19	-13	-2	6	6	6	2	2	3	5	**30**	**210**
1931	7	-8	-10	-12	-24	-15	-13	6	4	4	3	1	3	3	**24**	**168**
1932	25	3	8	-7	-14	-14	-8	6	6	6	4	3	3	4	**32**	**224**
1933	35	10	6	-5	-21	-14	-6	6	6	6	5	1	3	4	**31**	**217**
1934	12	0	-5	-8	-35	-25	-15	6	6	5	4	1	1	3	**26**	**182**
1935	24	45	7	-7	-23	-14	-4	6	6	6	4	1	3	5	**31**	**217**
1936	12	10	-2	-8	-23	-23	-5	6	6	5	4	1	1	5	**28**	**280**
1937	28	29	9	-4	-23	-20	-7	6	6	6	5	1	2	4	**30**	**210**
1938	-6	25	18	0	-9	-13	-9	4	6	6	6	4	3	4	**33**	**693**
1939	15	-7	-7	-26	-23	-29	-3	6	4	4	1	1	1	5	**22**	**154**
1940	8	34	5	-9	-22	-19	-1	6	6	6	4	1	2	5	**30**	**480**
1941	21	19	3	0	-9	-14	-8	6	6	6	6	4	3	4	**35**	**840**
1942	14	25	0	0	-9	-16	-6	6	6	6	6	4	2	4	**34**	**850**
1943	9	16	0	-8	-15	-17	-5	6	6	6	4	3	2	5	**32**	**672**
1944	10	5	0	-21	-23	-22	-7	6	6	6	1	1	1	4	**25**	**175**
1945	13	13	4	-5	-22	-20	-8	6	6	6	5	1	2	4	**30**	**600**
1946	12	12	2	-12	-18	-16	-7	6	6	6	3	2	2	4	**29**	**522**
1947	19	8	-11	-16	-22	-21	-13	6	6	3	2	1	1	3	**22**	**154**
1948	12	41	16	-1	-17	-19	-1	6	6	6	5	2	2	5	**32**	**576**
1949	34	13	1	-17	-23	-21	-7	6	6	6	2	1	1	4	**26**	**416**
1950	18	16	-1	-13	-23	-18	-2	6	6	5	3	1	2	5	**28**	**196**
1951	17	7	3	-16	-22	-18	-3	6	6	6	2	1	2	5	**28**	**532**
1952	10	10	9	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**840**
1953	18	14	2	0	-9	-17	-5	6	6	6	6	4	2	5	**35**	**875**
1954	16	16	-3	-4	-18	-12	-5	6	6	5	5	2	3	5	**32**	**640**
1955	-2	13	8	-20	-24	-19	0	5	6	6	2	1	2	6	**28**	**196**
1956	29	19	0	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**910**
1957	17	7	8	-7	-18	-14	-1	6	6	6	4	2	3	5	**32**	**608**
1958	-43	29	14	0	-9	-11	-11	1	6	6	6	4	3	3	**29**	**638**
1959	13	5	0	-20	-25	-16	2	6	6	6	2	1	2	6	**29**	**348**
1960	27	8	8	-19	-23	-20	-1	6	6	6	2	1	2	5	**28**	**364**
1961	13	5	5	-19	-24	-21	0	6	6	6	2	1	1	6	**28**	**504**
1962	17	13	2	-14	-21	-22	-3	6	6	6	3	1	1	5	**28**	**532**
1963	10	-3	15	-5	-12	-12	-2	6	5	6	5	3	3	5	**33**	**627**
1964	4	-5	-5	-17	-22	-20	-4	6	5	5	2	1	2	5	**26**	**182**
1965	9	16	1	-9	-16	-13	-2	6	6	6	4	2	3	5	**32**	**576**
1966	6	9	-1	-18	-20	-17	-6	6	6	5	2	2	2	4	**27**	**459**
1967	4	16	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1968	20	3	2	-17	-21	-8	-5	6	6	6	2	1	4	5	**30**	**420**
1969	21	15	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1970	27	4	0	-12	-19	-14	-4	6	6	6	3	2	3	5	**31**	**372**
1971	2	22	2	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1972	11	11	0	-18	-21	-14	-4	6	6	6	2	1	3	5	**29**	**580**
1973	19	12	2	-8	-18	-12	-3	6	6	6	4	2	3	5	**32**	**672**
1974	-11	33	9	0	-9	-11	-11	3	6	6	6	4	3	3	**31**	**713**
1975	-6	22	6	0	-9	-12	-10	4	6	6	6	4	3	4	**33**	**759**
1976	8	7	-3	-26	-19	-4	2	6	6	5	1	2	5	6	**31**	**217**
1977	0	-18	-6	-21	-19	-17	-3	6	2	4	1	2	2	5	**22**	**154**
1978	16	20	0	-3	-11	-13	-4	6	6	6	5	3	3	5	**34**	**782**
1979	18	8	8	-15	-18	-18	-1	6	6	6	3	2	2	5	**30**	**330**
1980	27	13	5	-8	-11	-10	0	6	6	6	4	3	4	6	**35**	**560**
1981	14	8	-2	-21	-24	-17	-4	6	6	5	1	1	2	5	**26**	**416**
1982	17	5	16	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1983	28	5	17	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1984	9	11	0	-8	-17	-10	-1	6	6	6	4	2	4	5	**33**	**726**
1985	7	8	-7	-25	-20	-17	-2	6	6	4	1	2	2	5	**26**	**182**
1986	12	19	2	-12	-16	-16	3	6	6	6	3	2	2	6	**31**	**279**
1987	27	0	-6	-32	-24	-34	-3	6	6	4	1	1	1	5	**24**	**168**
1988	3	7	-1	-18	-33	-16	-2	6	6	5	2	1	2	5	**27**	**189**
1989	63	20	-4	-16	-21	-11	0	6	6	5	2	1	3	6	**29**	**348**
1990	7	-9	6	-14	-27	-16	-3	6	4	6	3	1	2	5	**27**	**189**
1991	26	12	0	-10	-14	-14	-8	6	6	6	4	3	3	4	**32**	**224**
1992	23	12	-8	-14	-17	-13	-6	6	6	4	3	2	3	4	**28**	**196**
1993	5	28	8	0	-15	-11	-1	6	6	6	6	3	3	5	**35**	**735**
1994	4	0	-1	-27	-20	-22	-3	6	6	5	1	2	1	5	**26**	**182**
											73 - year Average:				**30**	**448**
													1929 - '34 Average:			**200**

STUDY: **501a**

CP # 6, LAKE OROVILLE, EOP SURFACE ELEVATION

73-year maximum March - September Reservoir Elevation = 900'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Elevation in feet												Difference from Maximum Reservoir Elevation [DFMRE]						
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	833	833	835	844	850	858	893	900	900	873	870	870	42	7	0	0	27	30	30
1923	874	874	858	862	859	871	894	900	881	842	803	806	29	6	0	19	58	97	94
1924	798	786	757	762	781	771	759	747	725	706	697	691	129	141	153	175	194	203	209
1925	692	696	703	719	787	785	813	822	805	778	767	766	115	87	78	95	122	133	134
1926	762	762	764	778	826	846	887	876	855	815	801	778	54	13	24	45	85	99	122
1927	774	806	806	831	849	863	890	900	900	862	848	845	37	10	0	0	38	52	55
1928	843	853	854	866	871	849	878	866	846	795	740	733	51	22	34	54	105	160	167
1929	720	715	713	718	732	749	755	757	751	733	724	717	151	145	143	149	167	176	183
1930	709	706	766	795	821	853	875	879	861	822	785	782	47	25	21	39	78	115	118
1931	771	763	755	768	780	797	785	771	748	727	717	710	103	115	129	152	173	183	190
1932	704	696	701	725	747	780	791	821	794	737	716	709	120	109	79	106	163	184	191
1933	700	688	687	699	708	713	720	735	729	713	703	696	187	180	165	171	187	197	204
1934	692	683	686	713	735	763	756	747	722	698	689	681	137	144	153	178	202	211	219
1935	668	672	679	707	730	762	850	860	845	820	809	791	138	50	40	55	80	91	109
1936	777	768	766	818	849	860	886	880	875	835	809	804	40	14	20	25	65	91	96
1937	787	776	772	774	792	825	850	863	841	812	790	783	75	50	37	59	88	110	117
1938	779	797	854	858	849	849	882	900	900	899	896	887	51	18	0	0	1	4	13
1939	874	864	854	845	837	833	824	820	785	721	659	653	67	76	80	115	179	241	247
1940	642	632	634	706	815	849	879	885	869	830	822	806	51	21	15	31	70	78	94
1941	798	798	840	849	849	858	886	900	900	890	886	887	42	14	0	0	10	14	13
1942	874	874	849	849	850	867	882	900	900	881	877	878	33	18	0	0	19	23	22
1943	874	869	861	849	856	859	887	897	896	860	850	850	41	13	3	4	40	50	50
1944	851	854	853	859	857	868	879	895	875	835	793	787	32	21	5	25	65	107	113
1945	782	789	805	820	861	865	880	896	877	837	805	800	35	20	4	23	63	95	100
1946	800	808	849	864	868	868	887	896	874	836	795	792	32	13	4	26	64	105	108
1947	774	780	788	795	822	844	853	849	832	776	720	713	56	47	51	68	124	180	187
1948	717	718	714	751	755	775	837	866	872	837	820	798	125	63	34	28	63	80	102
1949	791	789	789	794	802	827	847	853	830	776	738	733	73	53	47	70	124	162	167
1950	719	711	707	741	789	829	862	881	868	844	840	833	71	38	19	32	56	60	67
1951	837	849	854	853	858	870	886	900	889	848	820	820	30	14	0	11	52	80	80
1952	823	827	849	849	852	862	894	900	900	900	899	887	38	6	0	0	0	1	13
1953	874	874	858	850	867	867	883	900	900	868	866	867	33	17	0	0	32	34	33
1954	870	871	874	858	857	859	883	868	853	807	761	760	41	17	32	47	93	139	140
1955	761	763	771	784	793	806	815	827	801	739	708	705	94	85	73	99	161	192	195
1956	696	692	846	849	849	864	892	900	900	872	864	868	36	8	0	0	28	36	32
1957	869	874	874	871	853	863	865	883	869	831	794	799	37	35	17	31	69	106	101
1958	801	805	824	844	849	849	879	900	900	898	894	887	51	21	0	0	2	6	13
1959	874	874	874	862	852	867	873	876	855	811	761	764	33	27	24	45	89	139	136
1960	758	747	742	756	817	856	858	864	845	804	792	781	44	42	36	55	96	108	119
1961	770	773	782	793	822	840	846	852	832	776	719	715	60	54	48	68	124	181	185
1962	698	693	703	717	781	816	841	843	828	772	738	717	84	59	57	72	128	162	183
1963	792	804	834	857	867	858	876	900	893	857	837	838	42	24	0	7	43	63	62
1964	839	851	853	863	872	874	880	885	870	829	783	760	26	20	15	30	71	117	140
1965	749	749	849	849	863	870	887	884	886	852	845	847	30	13	16	14	48	55	53
1966	851	859	860	864	870	874	890	881	860	820	770	763	26	10	19	40	80	130	137
1967	750	761	799	849	860	853	879	900	900	900	896	887	47	21	0	0	0	4	13
1968	874	874	873	858	861	866	866	869	851	806	766	763	34	34	31	49	94	134	137
1969	764	770	792	849	849	865	895	900	900	895	893	874	35	5	0	0	5	7	26
1970	874	874	850	849	849	874	872	874	860	822	780	782	26	28	26	40	78	120	118
1971	785	811	841	864	874	874	893	900	900	871	854	856	26	7	0	0	29	46	44
1972	861	867	865	869	867	874	884	887	868	827	783	784	26	16	13	32	73	117	116
1973	780	796	822	849	849	860	882	900	871	832	797	793	40	18	0	29	68	103	107
1974	797	849	850	854	864	849	883	900	900	889	888	886	51	17	0	0	11	12	14
1975	874	874	874	874	855	852	881	900	900	875	874	875	48	19	0	0	25	26	25
1976	873	874	874	874	874	874	871	862	841	795	752	751	26	29	38	59	105	148	149
1977	740	729	713	709	693	688	667	655	626	603	595	592	212	233	245	274	297	305	308
1978	581	581	617	744	798	859	878	897	891	871	861	869	41	22	3	9	29	39	31
1979	871	874	874	871	853	863	878	896	865	827	808	806	37	22	4	35	73	92	94
1980	812	817	826	850	849	865	881	893	888	870	863	862	35	19	7	12	30	37	38
1981	860	862	870	860	868	865	875	872	851	807	759	760	35	25	28	49	93	141	140
1982	766	847	849	859	862	859	884	900	900	889	885	887	41	16	0	0	11	15	13
1983	873	862	858	853	849	849	877	900	900	900	899	887	51	23	0	0	0	1	13
1984	874	860	849	869	869	871	886	895	879	841	826	827	29	14	5	21	59	74	73
1985	831	845	855	861	874	871	886	873	851	806	757	742	29	14	27	49	94	143	158
1986	733	729	736	771	849	849	871	875	871	835	824	835	51	29	25	29	65	76	65
1987	838	843	839	840	851	867	856	846	819	758	710	705	33	44	54	81	142	190	195
1988	693	695	735	762	765	766	764	754	731	711	699	696	134	136	146	169	189	201	204
1989	688	706	716	724	723	839	865	856	839	790	777	774	61	35	44	61	110	123	126
1990	785	786	771	784	792	818	806	807	781	725	711	703	82	94	93	119	175	189	197
1991	685	676	656	654	649	702	725	739	723	700	695	693	198	175	161	177	200	205	207
1992	689	684	686	689	721	750	765	755	731	708	697	691	150	135	145	169	192	203	209
1993	683	679	697	764	816	861	894	900	900	875	870	868	39	6	0	0	25	30	32
1994	874	874	874	871	862	874	873	868	846	804	757	752	26	27	32	54	96	143	148

	Reservoir Elevation Score								Reservoir Change from Previous Month [fluctuation]							Reservoir Fluctuation Score								Habitat Index
YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	1	4	6	6	1	1	1	**20**	8	35	7	0	-27	-3	0	6	6	6	6	1	5	6	**36**	**720**
1923	1	4	6	2	1	1	1	**16**	12	23	6	-19	-39	-39	3	6	6	6	2	1	1	6	**28**	**448**
1924	1	1	1	1	1	1	1	**7**	-10	-12	-12	-22	-19	-9	-6	4	3	3	1	2	4	4	**21**	**147**
1925	1	1	1	1	1	1	1	**7**	-2	28	9	-17	-27	-11	-1	5	6	6	2	1	3	5	**28**	**196**
1926	1	3	1	1	1	1	1	**9**	20	41	-11	-21	-40	-14	-23	6	6	3	1	1	3	1	**21**	**189**
1927	1	3	6	6	1	1	1	**19**	14	27	10	0	-38	-14	-3	6	6	6	6	1	3	5	**33**	**627**
1928	1	1	1	1	1	1	1	**7**	-22	29	-12	-20	-51	-55	-7	1	6	3	2	1	1	4	**18**	**126**
1929	1	1	1	1	1	1	1	**7**	17	6	2	-6	-18	-9	-7	6	6	6	4	2	4	4	**32**	**224**
1930	1	1	1	1	1	1	1	**7**	32	22	4	-18	-39	-37	-3	6	6	6	2	1	1	5	**27**	**189**
1931	1	1	1	1	1	1	1	**7**	17	-12	-14	-23	-21	-10	-7	6	3	3	1	1	4	4	**22**	**154**
1932	1	1	1	1	1	1	1	**7**	33	11	30	-27	-57	-21	-7	6	6	6	1	1	1	4	**25**	**175**
1933	1	1	1	1	1	1	1	**7**	5	7	15	-6	-16	-10	-7	6	6	6	4	2	4	4	**32**	**224**
1934	1	1	1	1	1	1	1	**7**	28	-7	-9	-25	-24	-9	-8	6	4	4	1	1	4	4	**24**	**168**
1935	1	1	1	1	1	1	1	**7**	32	88	10	-15	-25	-11	-18	6	6	6	3	1	3	2	**27**	**189**
1936	1	3	1	1	1	1	1	**9**	11	26	-6	-5	-40	-26	-5	6	6	4	5	1	1	5	**28**	**252**
1937	1	1	1	1	1	1	1	**7**	33	25	13	-22	-29	-22	-7	6	6	6	1	1	1	4	**25**	**175**
1938	1	2	6	6	5	5	3	**28**	0	33	18	0	-1	-3	-9	6	6	6	6	5	5	4	**38**	**1064**
1939	1	1	1	1	1	1	1	**7**	-4	-9	-4	-35	-64	-62	-6	5	4	5	1	1	1	4	**21**	**147**
1940	1	1	2	1	1	1	1	**8**	34	30	6	-16	-39	-8	-16	6	6	6	2	1	4	2	**27**	**216**
1941	1	3	6	6	3	3	3	**25**	9	28	14	0	-10	-4	1	6	6	6	6	4	5	6	**39**	**975**
1942	1	2	6	6	2	1	1	**19**	17	15	18	0	-19	-4	1	6	6	6	6	2	5	6	**37**	**703**
1943	1	3	5	5	1	1	1	**17**	3	28	10	-1	-36	-10	0	6	6	6	5	1	4	6	**34**	**578**
1944	1	1	4	1	1	1	1	**10**	11	11	16	-20	-40	-42	-6	6	6	6	2	1	1	4	**26**	**260**
1945	1	1	5	1	1	1	1	**11**	4	15	16	-19	-40	-32	-5	6	6	6	2	1	1	5	**27**	**297**
1946	1	3	5	1	1	1	1	**13**	0	19	9	-22	-38	-41	-3	6	6	6	1	1	1	5	**26**	**338**
1947	1	1	1	1	1	1	1	**7**	22	9	-4	-17	-56	-56	-7	6	6	5	2	1	1	4	**25**	**175**
1948	1	1	1	1	1	1	1	**7**	20	62	29	6	-35	-17	-22	6	6	6	6	1	2	1	**28**	**196**
1949	1	1	1	1	1	1	1	**7**	25	20	6	-23	-54	-38	-5	6	6	6	1	1	1	5	**26**	**182**
1950	1	1	2	1	1	1	1	**8**	40	33	19	-13	-24	-4	-7	6	6	6	3	1	5	4	**31**	**248**
1951	1	3	6	3	1	1	1	**16**	12	16	14	-11	-41	-28	0	6	6	6	3	1	1	6	**29**	**464**
1952	1	4	6	6	6	5	3	**31**	10	32	6	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1178**
1953	1	2	6	6	1	1	1	**18**	0	16	17	0	-32	-2	1	6	6	6	6	1	5	6	**36**	**648**
1954	1	2	1	1	1	1	1	**8**	2	24	-15	-15	-46	-46	-1	6	6	3	3	1	1	5	**25**	**200**
1955	1	1	1	1	1	1	1	**7**	13	9	12	-26	-62	-31	-3	6	6	6	1	1	1	5	**26**	**182**
1956	1	4	6	6	1	1	1	**20**	15	28	8	0	-28	-8	4	6	6	6	6	1	4	6	**35**	**700**
1957	1	1	2	1	1	1	1	**8**	10	2	18	-14	-38	-37	5	6	6	6	3	1	1	6	**29**	**232**
1958	1	1	6	6	5	4	3	**26**	0	30	21	0	-2	-4	-7	6	6	6	6	5	5	4	**38**	**988**
1959	1	1	1	1	1	1	1	**7**	15	6	3	-21	-44	-50	3	6	6	6	1	1	1	6	**27**	**189**
1960	1	1	1	1	1	1	1	**7**	39	2	6	-19	-41	-12	-11	6	6	6	2	1	3	3	**27**	**189**
1961	1	1	1	1	1	1	1	**7**	18	6	6	-20	-56	-57	-4	6	6	6	2	1	1	5	**27**	**189**
1962	1	1	1	1	1	1	1	**7**	35	25	2	-15	-56	-34	-21	6	6	6	3	1	1	1	**24**	**168**
1963	1	1	6	4	1	1	1	**15**	-9	18	24	-7	-36	-20	1	4	6	6	4	1	2	6	**29**	**435**
1964	1	1	2	1	1	1	1	**8**	2	6	5	-15	-41	-46	-23	6	6	6	3	1	1	1	**24**	**192**
1965	1	3	2	3	1	1	1	**12**	7	17	-3	2	-34	-7	2	6	6	5	6	1	4	6	**34**	**408**
1966	1	3	2	1	1	1	1	**10**	4	16	-9	-21	-40	-50	-7	6	6	4	1	1	1	4	**23**	**230**
1967	1	1	6	6	6	5	3	**28**	-7	26	21	0	0	-4	-9	4	6	6	6	6	5	4	**37**	**1036**
1968	1	1	1	1	1	1	1	**7**	5	0	3	-18	-45	-40	-3	6	6	6	2	1	1	5	**27**	**189**
1969	1	4	6	6	4	4	1	**26**	16	30	5	0	-5	-2	-19	6	6	6	6	5	5	2	**36**	**936**
1970	1	1	1	1	1	1	1	**7**	25	-2	2	-14	-38	-42	2	6	5	6	3	1	1	6	**28**	**196**
1971	1	4	6	6	1	1	1	**20**	0	19	7	0	-29	-17	2	6	6	6	6	1	2	6	**33**	**660**
1972	1	2	3	1	1	1	1	**10**	7	10	3	-19	-41	-44	1	6	6	6	2	1	1	6	**28**	**280**
1973	1	2	6	1	1	1	1	**13**	11	22	18	-29	-39	-35	-4	6	6	6	1	1	1	5	**26**	**338**
1974	1	2	6	6	3	3	3	**24**	-15	34	17	0	-11	-1	-2	3	6	6	6	3	5	5	**34**	**816**
1975	1	2	6	6	1	1	1	**18**	-3	29	19	0	-25	-1	1	5	6	6	6	1	5	6	**35**	**630**
1976	1	1	1	1	1	1	1	**7**	0	-3	-9	-21	-46	-43	-1	6	5	4	1	1	1	5	**23**	**161**
1977	1	1	1	1	1	1	1	**7**	-5	-21	-12	-29	-23	-8	-3	5	1	3	1	1	4	5	**20**	**140**
1978	1	1	5	4	1	1	1	**14**	61	19	19	-6	-20	-10	8	6	6	6	4	2	4	6	**34**	**476**
1979	1	1	5	1	1	1	1	**11**	10	15	18	-31	-38	-19	-2	6	6	6	1	1	2	5	**27**	**297**
1980	1	2	4	3	1	1	1	**13**	16	16	12	-5	-18	-7	-1	6	6	6	5	2	4	5	**34**	**442**
1981	1	1	1	1	1	1	1	**7**	-3	10	-3	-21	-44	-48	1	5	6	5	1	1	1	6	**25**	**175**
1982	1	2	6	6	3	2	3	**23**	-3	25	16	0	-11	-4	2	5	6	6	6	3	5	6	**37**	**851**
1983	1	1	6	6	6	5	3	**28**	0	28	23	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1064**
1984	1	3	4	1	1	1	1	**12**	2	15	9	-16	-38	-15	1	6	6	6	2	1	3	6	**30**	**360**
1985	1	3	1	1	1	1	1	**9**	-3	15	-13	-22	-45	-49	-15	5	6	3	1	1	1	3	**20**	**180**
1986	1	1	1	1	1	1	1	**7**	0	22	4	-4	-36	-11	11	6	6	6	5	1	3	6	**33**	**231**
1987	1	1	1	1	1	1	1	**7**	16	-11	-10	-27	-61	-48	-5	6	3	4	1	1	1	5	**21**	**147**
1988	1	1	1	1	1	1	1	**7**	1	-2	-10	-23	-20	-12	-3	6	5	4	1	2	3	5	**26**	**182**
1989	1	1	1	1	1	1	1	**7**	116	26	-9	-17	-49	-13	-3	6	6	4	2	1	3	5	**27**	**189**
1990	1	1	1	1	1	1	1	**7**	26	-12	1	-26	-56	-14	-8	6	3	6	1	1	3	4	**24**	**168**
1991	1	1	1	1	1	1	1	**7**	53	23	14	-16	-23	-5	-2	6	6	6	2	1	5	5	**31**	**217**
1992	1	1	1	1	1	1	1	**7**	29	15	-10	-24	-23	-11	-6	6	6	4	1	1	3	4	**25**	**175**
1993	1	4	6	6	1	1	1	**20**	45	33	6	0	-25	-5	-2	6	6	6	6	1	5	5	**35**	**700**
1994	1	1	1	1	1	1	1	**7**	12	-1	-5	-22	-42	-47	-5	6	5	5	1	1	1	5	**24**	**168**
					73 - year Average:			**12**												**73 - year Average:**			**29**	**378**
																					1929 - '34 Average:			**189**

STUDY: **501a**
CP # 8, FOLSOM LAKE, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 466'

Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	414	408	413	413	424	428	443	466	466	462	444	434	38	23	0	0	4	22	32
1923	425	423	424	424	423	428	449	466	451	432	419	401	38	17	0	15	34	47	65
1924	400	393	387	378	381	365	369	365	334	334	336	334	101	97	101	132	132	130	132
1925	349	363	380	390	424	409	440	464	445	413	390	392	57	26	2	21	53	76	74
1926	394	385	358	360	396	405	440	438	408	355	342	354	61	26	28	58	111	124	112
1927	362	401	421	424	424	437	449	466	461	452	438	434	29	17	0	5	14	28	32
1928	425	424	424	424	424	437	449	454	440	416	407	399	29	17	12	26	50	59	67
1929	374	364	356	339	346	365	380	388	374	335	347	351	101	86	78	92	131	119	115
1930	334	334	384	406	421	437	443	442	416	383	346	345	29	23	24	50	83	120	121
1931	335	349	362	376	385	399	395	393	334	334	335	334	67	71	73	132	132	131	132
1932	334	334	380	402	424	436	445	461	440	400	370	374	30	21	5	26	66	96	92
1933	349	334	355	366	369	382	351	377	335	334	352	347	84	115	89	131	132	114	119
1934	335	335	375	402	420	425	417	413	334	324	313	326	41	49	53	132	142	153	140
1935	334	361	378	402	418	421	449	453	452	420	396	401	45	17	13	14	46	70	65
1936	401	399	396	424	424	437	449	461	456	442	422	426	29	17	5	10	24	44	40
1937	412	404	395	388	418	437	449	466	454	437	423	427	29	17	0	12	29	43	39
1938	417	415	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1939	426	420	415	409	402	409	416	419	388	334	334	335	57	50	47	78	132	132	131
1940	334	334	334	420	424	437	449	461	449	430	419	423	29	17	5	17	36	47	43
1941	418	413	424	424	424	437	449	466	458	454	445	434	29	17	0	8	12	21	32
1942	426	422	424	424	424	430	449	466	466	463	445	434	36	17	0	0	3	21	32
1943	425	424	423	422	422	434	449	459	450	445	439	434	32	17	7	16	21	27	32
1944	425	419	413	405	407	419	420	433	411	388	368	346	47	46	33	55	78	98	120
1945	335	377	402	411	424	437	449	466	455	444	434	426	29	17	0	11	22	32	40
1946	424	424	424	424	424	437	449	466	449	436	429	421	29	17	0	17	30	37	45
1947	415	415	415	407	413	432	442	444	414	377	346	334	34	24	22	52	89	120	132
1948	352	370	369	397	391	386	426	452	453	444	435	434	80	40	14	13	22	31	32
1949	425	419	416	406	400	422	443	459	441	424	408	398	44	23	7	25	42	58	68
1950	384	378	366	407	424	437	449	466	455	439	428	428	29	17	0	11	27	38	38
1951	423	393	388	388	388	426	449	466	450	434	429	425	40	17	0	16	32	37	41
1952	423	424	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1953	428	423	424	424	424	430	446	458	464	463	442	434	36	20	8	2	3	24	32
1954	425	423	421	422	424	437	449	452	441	422	417	416	29	17	14	25	44	49	50
1955	409	402	406	412	412	408	418	436	417	392	335	355	58	48	30	49	74	131	111
1956	359	374	420	402	406	425	441	466	466	463	447	434	41	25	0	0	3	19	32
1957	428	422	417	412	424	437	434	460	448	436	430	424	29	32	6	18	30	36	42
1958	421	415	416	423	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1959	425	419	412	417	424	428	436	436	412	390	379	386	38	30	30	54	76	87	80
1960	368	359	361	373	416	437	448	446	425	401	386	393	29	18	20	41	65	80	73
1961	386	389	392	391	399	408	415	423	407	388	377	383	58	51	43	59	78	89	83
1962	378	375	383	384	424	434	449	457	444	427	410	408	32	17	9	22	39	56	58
1963	439	424	424	424	419	430	449	466	459	451	445	434	36	17	0	7	15	21	32
1964	427	424	424	424	421	419	430	436	415	383	354	334	47	36	30	51	83	112	132
1965	335	367	393	392	395	412	449	464	454	447	440	434	54	17	2	12	19	26	32
1966	426	424	424	424	422	430	445	445	422	398	390	384	36	21	21	44	68	76	82
1967	376	391	423	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1968	427	424	423	424	424	437	440	442	418	395	393	393	29	26	24	48	71	73	73
1969	390	400	413	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1970	427	424	423	393	396	426	432	441	430	415	412	411	40	34	25	36	51	54	55
1971	401	414	424	424	424	437	449	463	463	461	449	434	29	17	3	3	5	17	32
1972	425	422	424	424	424	437	444	451	431	409	402	399	29	22	15	35	57	64	67
1973	399	404	419	424	424	437	449	466	451	435	427	426	29	17	0	15	31	39	40
1974	423	423	422	409	417	433	449	466	463	463	449	434	33	17	0	3	3	17	32
1975	426	419	417	415	424	437	441	466	466	463	447	434	29	25	0	0	3	19	32
1976	431	423	419	410	402	396	401	404	372	334	341	342	70	65	62	94	132	125	124
1977	335	334	330	325	321	323	334	341	334	319	305	291	143	132	125	132	147	161	175
1978	287	304	358	424	424	437	449	466	459	452	439	434	29	17	0	7	14	27	32
1979	423	417	407	414	424	437	447	466	448	431	413	414	29	19	0	18	35	53	52
1980	411	412	416	405	399	430	449	464	453	453	449	434	36	17	2	13	13	17	32
1981	425	419	415	413	412	422	433	435	410	389	382	379	44	33	31	56	77	84	87
1982	381	420	392	396	388	424	449	466	466	463	449	434	42	17	0	0	3	17	32
1983	438	415	417	418	418	433	449	466	466	463	449	434	33	17	0	0	3	17	32
1984	435	392	388	388	392	424	443	463	452	439	428	425	42	23	3	14	27	38	41
1985	423	424	424	422	424	426	447	444	413	373	335	334	40	19	22	53	93	131	132
1986	335	366	396	424	396	424	449	464	456	451	447	434	42	17	2	10	15	19	32
1987	427	420	413	405	404	410	416	418	386	335	322	334	56	50	48	80	131	144	132
1988	334	334	369	396	389	387	395	392	355	330	314	376	79	71	74	111	136	152	90
1989	362	380	396	405	398	437	449	452	432	410	404	408	29	17	14	34	56	62	58
1990	405	404	400	400	398	409	415	416	382	334	343	344	57	51	50	84	132	123	122
1991	334	334	334	332	332	383	407	425	419	409	404	404	83	59	41	47	57	62	62
1992	396	383	373	355	380	397	409	405	362	334	323	316	69	57	61	104	132	143	150
1993	315	315	357	424	427	434	449	466	466	453	444	434	32	17	0	0	13	22	32
1994	423	413	407	395	390	390	399	403	379	334	334	332	76	67	63	87	132	132	134

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Fluct. MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	1	1	6	6	5	1	1	**21**	4	15	23	0	-4	-18	-10	6	6	6	6	5	2	4	**35**	**735**
1923	1	2	6	2	1	1	1	**14**	5	21	17	-15	-19	-13	-18	6	6	6	3	2	3	2	**28**	**392**
1924	1	1	1	1	1	1	1	**7**	-16	4	-4	-31	0	2	-2	2	6	5	1	6	6	5	**31**	**217**
1925	1	1	5	1	1	1	1	**11**	-15	31	24	-19	-32	-23	2	3	6	6	2	1	1	6	**25**	**275**
1926	1	1	1	1	1	1	1	**7**	9	35	-2	-30	-53	-13	12	6	6	5	1	1	3	6	**28**	**196**
1927	1	2	6	4	3	1	1	**18**	13	12	17	-5	-9	-14	-4	6	6	6	5	4	3	5	**35**	**630**
1928	1	2	3	1	1	1	1	**10**	13	12	5	-14	-24	-9	-8	6	6	6	3	1	4	4	**30**	**300**
1929	1	1	1	1	1	1	1	**7**	19	15	8	-14	-39	12	4	6	6	6	3	1	6	6	**34**	**238**
1930	1	1	1	1	1	1	1	**7**	16	6	-1	-26	-33	-37	-1	6	6	5	1	1	1	5	**25**	**175**
1931	1	1	1	1	1	1	1	**7**	14	-4	-2	-59	0	1	-1	6	5	5	1	6	6	5	**34**	**238**
1932	1	1	4	1	1	1	1	**10**	12	9	16	-21	-40	-30	4	6	6	6	1	1	1	6	**27**	**270**
1933	1	1	1	1	1	1	1	**7**	13	-31	26	-42	-1	18	-5	6	1	6	1	5	6	5	**30**	**210**
1934	1	1	1	1	1	1	1	**7**	5	-8	-4	-79	-10	-11	13	6	4	5	1	4	3	6	**29**	**203**
1935	1	2	3	3	1	1	1	**12**	3	28	4	-1	-32	-24	5	6	6	6	5	1	1	6	**31**	**372**
1936	1	2	4	3	1	1	1	**13**	13	12	12	-5	-14	-20	4	6	6	6	5	3	2	6	**34**	**442**
1937	1	2	6	3	1	1	1	**15**	19	12	17	-12	-17	-14	4	6	6	6	3	2	3	6	**32**	**480**
1938	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1939	1	1	1	1	1	1	1	**7**	7	7	3	-31	-54	0	1	6	6	6	1	1	6	6	**32**	**224**
1940	1	2	4	2	1	1	1	**12**	13	12	12	-12	-19	-11	4	6	6	6	3	2	3	6	**32**	**384**
1941	1	2	6	4	3	1	1	**18**	13	12	17	-8	-4	-9	-11	6	6	6	4	5	4	3	**34**	**612**
1942	1	2	6	6	5	1	1	**22**	6	19	17	0	-3	-18	-11	6	6	6	6	5	2	3	**34**	**748**
1943	1	2	4	2	1	1	1	**12**	12	15	10	-9	-5	-6	-5	6	6	6	4	5	4	5	**36**	**432**
1944	1	1	1	1	1	1	1	**7**	12	1	13	-22	-23	-20	-22	6	6	6	1	1	2	1	**23**	**161**
1945	1	2	6	3	1	1	1	**15**	13	12	17	-11	-11	-10	-8	6	6	6	3	3	4	4	**32**	**480**
1946	1	2	6	2	1	1	1	**14**	13	12	17	-17	-13	-7	-8	6	6	6	2	3	4	4	**31**	**434**
1947	1	1	1	1	1	1	1	**7**	19	10	2	-30	-37	-31	-12	6	6	6	1	1	1	3	**24**	**168**
1948	1	1	3	3	1	1	1	**11**	-5	40	26	1	-9	-9	-1	5	6	6	6	4	4	5	**36**	**396**
1949	1	1	4	1	1	1	1	**10**	22	21	16	-18	-17	-16	-10	6	6	6	2	2	2	4	**28**	**280**
1950	1	2	6	3	1	1	1	**15**	13	12	17	-11	-16	-11	0	6	6	6	3	2	3	6	**32**	**480**
1951	1	2	6	2	1	1	1	**14**	38	23	17	-16	-16	-5	-4	6	6	6	2	2	5	5	**32**	**448**
1952	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1953	1	1	4	5	5	1	1	**18**	6	16	12	6	-1	-21	-8	6	6	6	6	5	1	4	**34**	**612**
1954	1	2	3	1	1	1	1	**10**	13	12	3	-11	-19	-5	-1	6	6	6	3	2	5	5	**33**	**330**
1955	1	1	1	1	1	1	1	**7**	-4	10	18	-19	-25	-57	20	5	6	6	2	1	1	6	**27**	**189**
1956	1	1	6	6	5	2	1	**22**	19	16	25	0	-3	-16	-13	6	6	6	6	5	2	3	**34**	**748**
1957	1	1	4	2	1	1	1	**11**	13	-3	26	-12	-12	-6	-6	6	5	6	3	3	4	4	**31**	**341**
1958	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1959	1	1	1	1	1	1	1	**7**	4	8	0	-24	-22	-11	7	6	6	6	1	1	3	6	**29**	**203**
1960	1	2	1	1	1	1	1	**8**	21	11	-2	-21	-24	-15	7	6	6	5	1	1	3	6	**28**	**224**
1961	1	1	1	1	1	1	1	**7**	9	7	8	-16	-19	-11	6	6	6	6	2	2	3	6	**31**	**217**
1962	1	2	4	1	1	1	1	**11**	10	15	8	-13	-17	-17	-2	6	6	6	3	2	2	5	**30**	**330**
1963	1	2	6	4	2	1	1	**17**	11	19	17	-7	-8	-6	-11	6	6	6	4	4	4	3	**33**	**561**
1964	1	1	1	1	1	1	1	**7**	-2	11	6	-21	-32	-29	-20	5	6	6	1	1	1	2	**22**	**154**
1965	1	2	5	3	2	1	1	**15**	17	37	15	-10	-7	-7	-6	6	6	6	4	4	4	4	**34**	**510**
1966	1	1	1	1	1	1	1	**7**	8	15	0	-23	-24	-8	-6	6	6	6	1	1	4	4	**28**	**196**
1967	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1968	1	1	1	1	1	1	1	**7**	13	3	2	-24	-23	-2	0	6	6	6	1	1	5	6	**31**	**217**
1969	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1970	1	1	1	1	1	1	1	**7**	30	6	9	-11	-15	-3	-1	6	6	6	3	3	5	5	**34**	**238**
1971	1	2	5	5	4	2	1	**20**	13	12	14	0	-2	-12	-15	6	6	6	6	5	3	3	**35**	**700**
1972	1	1	2	1	1	1	1	**8**	13	7	7	-20	-22	-7	-3	6	6	6	2	1	4	5	**30**	**240**
1973	1	2	6	2	1	1	1	**14**	13	12	17	-15	-16	-8	-1	6	6	6	3	2	4	5	**32**	**448**
1974	1	2	6	5	5	2	1	**22**	16	16	17	-3	0	-14	-15	6	6	6	5	6	3	3	**35**	**770**
1975	1	1	6	6	5	2	1	**22**	13	4	25	0	-3	-16	-13	6	6	6	6	5	2	3	**34**	**748**
1976	1	1	1	1	1	1	1	**7**	-6	5	3	-32	-38	7	1	4	6	6	1	1	6	6	**30**	**210**
1977	1	1	1	1	1	1	1	**7**	2	11	7	-7	-15	-14	-14	6	6	6	4	3	3	3	**31**	**217**
1978	1	2	6	4	3	1	1	**18**	13	12	17	-7	-7	-13	-5	6	6	6	4	4	3	5	**34**	**612**
1979	1	2	6	2	1	1	1	**14**	13	10	19	-18	-17	-18	1	6	6	6	2	2	2	6	**30**	**420**
1980	1	2	5	3	3	2	1	**17**	31	19	15	-11	0	-4	-15	6	6	6	3	6	5	3	**35**	**595**
1981	1	1	1	1	1	1	1	**7**	10	11	2	-25	-21	-7	-3	6	6	6	1	1	4	5	**29**	**203**
1982	1	2	6	6	5	2	1	**23**	36	25	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1983	1	2	6	6	5	2	1	**23**	15	16	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1984	1	1	5	3	1	1	1	**13**	32	19	20	-11	-13	-11	-3	6	6	6	3	3	3	5	**32**	**416**
1985	1	2	1	1	1	1	1	**8**	2	21	-3	-31	-40	-38	-1	6	6	5	1	1	1	5	**25**	**200**
1986	1	2	5	3	2	2	1	**16**	28	25	15	-8	-5	-4	-13	6	6	6	4	5	5	3	**35**	**560**
1987	1	1	1	1	1	1	1	**7**	6	6	2	-32	-51	-13	12	6	6	6	1	1	3	6	**29**	**203**
1988	1	1	1	1	1	1	1	**7**	-2	8	-3	-37	-25	-16	62	5	6	5	1	1	2	6	**26**	**182**
1989	1	2	3	1	1	1	1	**10**	39	12	3	-20	-22	-6	4	6	6	6	2	1	4	6	**31**	**310**
1990	1	1	1	1	1	1	1	**7**	11	6	1	-34	-48	9	1	6	6	6	1	1	6	6	**32**	**224**
1991	1	1	1	1	1	1	1	**7**	51	24	18	-6	-10	-5	0	6	6	6	4	4	5	6	**37**	**259**
1992	1	1	1	1	1	1	1	**7**	17	12	-4	-43	-28	-11	-7	6	6	5	1	1	3	4	**26**	**182**
1993	1	2	6	6	3	1	1	**20**	7	15	17	0	-13	-9	-10	6	6	6	6	3	4	4	**35**	**700**
1994	1	1	1	1	1	1	1	**7**	0	9	4	-24	-45	0	-2	6	6	6	1	1	6	5	**31**	**217**
							73 - year Average:	**13**													**73 - year Average:**		**31**	**410**
																					1929 - '34 Average:			**222**

STUDY: **501a**
CP # 10, NEW MELONES RESERVOIR, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 1088'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Elevation in feet												DFMRE						
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	940	943	948	954	968	978	973	990	1012	1004	991	981	120	110	115	98	76	84	97
1923	980	984	994	1002	1008	1007	1004	1008	1009	999	985	976	80	81	84	80	79	89	103
1924	975	977	981	985	988	989	979	967	954	942	930	926	100	99	109	121	134	146	158
1925	926	928	932	935	953	965	966	982	986	978	964	957	135	123	122	106	102	110	124
1926	955	957	959	962	972	975	975	965	952	937	923	912	116	113	113	123	136	151	165
1927	913	918	927	934	953	964	973	984	986	976	963	956	135	124	115	104	102	112	125
1928	957	963	968	972	980	1001	999	1001	993	979	964	957	108	87	89	87	95	109	124
1929	956	958	961	964	968	969	964	961	950	938	925	918	120	119	124	127	138	150	163
1930	919	921	923	927	933	941	941	936	931	917	896	883	155	147	147	152	157	171	192
1931	884	889	892	896	901	904	896	883	865	847	828	819	187	184	192	205	223	241	260
1932	818	821	832	841	864	875	875	911	930	923	905	893	224	213	213	177	158	165	183
1933	894	896	902	907	911	914	906	902	899	878	856	844	177	174	182	186	189	210	232
1934	845	849	855	861	870	880	871	857	837	818	791	773	218	208	217	231	251	270	297
1935	770	773	779	793	805	816	834	877	898	883	863	851	283	272	254	211	190	205	225
1936	851	855	860	877	914	927	940	963	966	955	942	935	174	161	148	125	122	133	146
1937	935	938	942	946	959	973	975	1000	1003	994	982	975	129	115	113	88	85	94	106
1938	975	978	991	1000	1019	1040	1049	1076	1088	1084	1075	1069	69	48	39	12	0	4	13
1939	1050	1050	1050	1050	1050	1052	1050	1038	1025	1012	999	992	38	36	38	50	63	76	89
1940	988	990	992	1004	1018	1035	1044	1055	1046	1033	1021	1014	70	53	44	33	42	55	67
1941	1013	1015	1020	1027	1037	1047	1043	1058	1064	1058	1047	1040	51	41	45	30	24	30	41
1942	1038	1039	1045	1050	1050	1055	1055	1067	1081	1078	1067	1062	38	33	33	21	7	10	21
1943	1050	1050	1050	1050	1050	1055	1061	1068	1067	1059	1048	1041	38	33	27	20	21	29	40
1944	1039	1040	1042	1043	1046	1050	1041	1038	1031	1018	1005	997	42	38	47	50	57	70	83
1945	995	1000	1004	1009	1023	1032	1032	1037	1044	1035	1022	1015	65	56	56	51	44	53	66
1946	1015	1019	1029	1037	1044	1050	1048	1057	1053	1042	1029	1022	44	38	40	31	35	46	59
1947	1022	1025	1028	1031	1035	1038	1026	1017	1008	997	985	978	53	50	62	71	80	91	103
1948	977	978	981	983	984	988	987	989	998	988	976	969	104	100	101	99	90	100	112
1949	967	970	973	976	980	986	979	984	978	965	952	945	108	102	109	104	110	123	136
1950	943	944	946	954	964	973	972	985	990	978	966	958	124	115	116	103	98	110	122
1951	957	994	1033	1045	1050	1055	1048	1041	1033	1020	1007	1000	38	33	40	47	55	68	81
1952	998	1001	1008	1022	1033	1046	1048	1077	1088	1086	1076	1070	55	42	40	11	0	2	12
1953	1050	1050	1050	1050	1050	1054	1046	1036	1037	1028	1016	1009	38	34	42	52	51	60	72
1954	1006	1008	1010	1013	1016	1023	1026	1028	1019	1005	992	982	72	65	62	60	69	83	96
1955	979	982	986	992	996	999	993	986	982	969	955	947	92	89	95	102	106	119	133
1956	947	950	983	1011	1025	1034	1025	1042	1053	1047	1035	1028	63	54	63	46	35	41	53
1957	1026	1028	1030	1033	1037	1044	1032	1029	1028	1015	1002	994	51	44	56	59	60	73	86
1958	989	992	994	1001	1009	1024	1031	1061	1075	1069	1059	1052	79	64	57	27	13	19	29
1959	1050	1050	1050	1050	1050	1053	1046	1030	1018	1005	992	983	38	35	42	58	70	83	96
1960	979	981	984	987	994	999	996	991	980	966	953	943	94	89	92	97	108	122	135
1961	939	942	946	949	951	954	950	943	931	918	900	889	137	134	138	145	157	170	188
1962	889	892	896	899	916	924	926	934	937	927	910	896	172	164	162	154	151	161	178
1963	896	901	908	921	939	946	947	976	983	975	962	956	149	142	141	112	105	113	126
1964	956	961	965	972	975	979	972	964	956	942	929	920	113	109	116	124	132	146	159
1965	920	924	955	982	996	1004	1012	1013	1018	1010	999	992	92	84	76	75	70	78	89
1966	991	996	1001	1006	1011	1016	1006	1004	994	980	966	957	77	72	82	84	94	108	122
1967	956	959	971	986	996	1007	1009	1032	1060	1064	1054	1048	92	81	79	56	28	24	34
1968	1046	1048	1050	1050	1050	1054	1042	1033	1022	1008	994	984	38	34	46	55	66	80	94
1969	982	987	990	1020	1041	1055	1066	1088	1088	1084	1074	1066	47	33	22	0	0	4	14
1970	1050	1050	1050	1050	1050	1055	1047	1041	1039	1025	1012	1005	38	33	41	47	49	63	76
1971	1003	1007	1015	1022	1029	1035	1026	1021	1021	1010	998	990	59	53	62	67	67	78	90
1972	986	990	997	1002	1003	1007	993	992	981	968	954	947	85	81	95	96	107	120	134
1973	947	950	956	971	990	1003	1004	1022	1026	1016	1005	1000	98	85	84	66	62	72	83
1974	1001	1007	1016	1029	1039	1053	1057	1067	1067	1058	1047	1039	49	35	31	21	21	30	41
1975	1038	1040	1043	1047	1050	1055	1050	1049	1061	1053	1042	1034	38	33	38	39	27	35	46
1976	1033	1036	1039	1040	1043	1045	1040	1031	1020	1010	1000	995	45	43	48	57	68	78	88
1977	994	996	997	997	998	998	989	977	968	956	944	938	90	90	99	111	120	132	144
1978	936	936	940	951	963	983	993	1010	1021	1019	1010	1007	125	105	95	78	67	69	78
1979	1007	1009	1013	1021	1034	1048	1048	1057	1052	1039	1025	1018	54	40	40	31	36	49	63
1980	1019	1022	1025	1050	1050	1055	1056	1063	1070	1068	1057	1051	38	33	32	25	18	20	31
1981	1050	1050	1050	1050	1050	1053	1045	1034	1019	1005	992	984	38	35	43	54	69	83	96
1982	982	991	1006	1027	1050	1055	1071	1086	1088	1084	1075	1071	38	33	17	2	0	4	13
1983	1050	1050	1050	1050	1050	1055	1056	1070	1088	1088	1082	1075	38	33	32	18	0	0	6
1984	1050	1050	1050	1050	1050	1055	1044	1037	1033	1022	1012	1006	38	33	44	51	55	66	76
1985	1005	1010	1015	1018	1023	1029	1021	1015	1005	995	983	977	65	59	67	73	83	93	105
1986	977	981	985	996	1044	1055	1056	1061	1065	1055	1045	1040	44	33	32	27	23	33	43
1987	1039	1041	1044	1044	1046	1049	1044	1034	1023	1014	1006	1002	42	39	44	54	65	74	82
1988	998	998	999	1000	1002	1004	998	988	978	968	959	953	86	84	90	100	110	120	129
1989	952	952	953	954	956	968	964	960	952	940	929	924	132	120	124	128	136	148	159
1990	927	930	934	937	940	944	937	926	911	891	875	866	148	144	151	162	177	197	213
1991	865	867	871	871	871	879	874	869	853	834	817	810	217	209	214	219	235	254	271
1992	811	813	819	822	833	842	834	818	792	762	727	715	255	246	254	270	296	326	361
1993	723	737	755	789	887	941	929	934	945	935	925	921	201	147	159	154	143	153	163
1994	920	921	925	925	927	932	929	925	913	894	876	869	161	156	159	163	175	194	212

	Elevation score								Fluctuation							Fluctuation score								
YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	1	1	1	1	1	1	1	**7**	10	-5	17	22	-8	-13	-10	6	5	6	6	4	3	4	**34**	**238**
1923	1	1	1	1	1	1	1	**7**	-1	-3	4	1	-10	-14	-9	5	5	6	6	4	3	4	**33**	**231**
1924	1	1	1	1	1	1	1	**7**	1	-10	-12	-13	-12	-12	-4	6	4	3	3	3	3	5	**27**	**189**
1925	1	1	1	1	1	1	1	**7**	12	1	16	4	-8	-14	-7	6	6	6	6	4	3	4	**35**	**245**
1926	1	1	1	1	1	1	1	**7**	3	0	-10	-13	-15	-14	-11	6	6	4	3	3	3	3	**28**	**196**
1927	1	1	1	1	1	1	1	**7**	11	9	11	2	-10	-13	-7	6	6	6	6	4	3	4	**35**	**245**
1928	1	1	1	1	1	1	1	**7**	21	-2	2	-8	-14	-15	-7	6	5	6	4	3	3	4	**31**	**217**
1929	1	1	1	1	1	1	1	**7**	1	-5	-3	-11	-12	-13	-7	6	5	5	3	3	3	4	**29**	**203**
1930	1	1	1	1	1	1	1	**7**	8	0	-5	-5	-14	-21	-13	6	6	5	5	3	1	3	**29**	**203**
1931	1	1	1	1	1	1	1	**7**	3	-8	-13	-18	-18	-19	-9	6	4	3	2	2	2	4	**23**	**161**
1932	1	1	1	1	1	1	1	**7**	11	0	36	19	-7	-18	-12	6	6	6	6	4	2	3	**33**	**231**
1933	1	1	1	1	1	1	1	**7**	3	-8	-4	-3	-21	-22	-12	6	4	5	5	1	1	3	**25**	**175**
1934	1	1	1	1	1	1	1	**7**	10	-9	-14	-20	-19	-27	-18	6	4	3	2	2	1	2	**20**	**140**
1935	1	1	1	1	1	1	1	**7**	11	18	43	21	-15	-20	-12	6	6	6	6	3	2	3	**32**	**224**
1936	1	1	1	1	1	1	1	**7**	13	13	23	3	-11	-13	-7	6	6	6	6	3	3	4	**34**	**238**
1937	1	1	1	1	1	1	1	**7**	14	2	25	3	-9	-12	-7	6	6	6	6	4	3	4	**35**	**245**
1938	1	1	1	3	6	5	3	**20**	21	9	27	12	-4	-9	-6	6	6	6	6	5	4	4	**37**	**740**
1939	1	1	1	1	1	1	1	**7**	2	-2	-12	-13	-13	-13	-7	6	5	3	3	3	3	4	**27**	**189**
1940	1	1	1	1	1	1	1	**7**	17	9	11	-9	-13	-12	-7	6	6	6	4	3	3	4	**32**	**224**
1941	1	1	1	1	1	1	1	**7**	10	-4	15	6	-6	-11	-7	6	5	6	6	4	3	4	**34**	**238**
1942	1	1	1	1	4	3	1	**12**	5	0	12	14	-3	-11	-5	6	6	6	6	5	3	5	**37**	**444**
1943	1	1	1	1	1	1	1	**7**	5	6	7	-1	-8	-11	-7	6	6	6	5	4	3	4	**34**	**238**
1944	1	1	1	1	1	1	1	**7**	4	-9	-3	-7	-13	-13	-8	6	4	5	4	3	3	4	**29**	**203**
1945	1	1	1	1	1	1	1	**7**	9	0	5	7	-9	-13	-7	6	6	6	6	4	3	4	**35**	**245**
1946	1	1	1	1	1	1	1	**7**	6	-2	9	-4	-11	-13	-7	6	5	6	5	3	3	4	**32**	**224**
1947	1	1	1	1	1	1	1	**7**	3	-12	-9	-9	-11	-12	-7	6	3	4	4	3	3	4	**27**	**189**
1948	1	1	1	1	1	1	1	**7**	4	-1	2	9	-10	-12	-7	6	5	6	6	4	3	4	**34**	**238**
1949	1	1	1	1	1	1	1	**7**	6	-7	5	-6	-13	-13	-7	6	4	6	4	3	3	4	**30**	**210**
1950	1	1	1	1	1	1	1	**7**	9	-1	13	5	-12	-12	-8	6	5	6	6	3	3	4	**33**	**231**
1951	1	1	1	1	1	1	1	**7**	5	-7	-7	-8	-13	-13	-7	6	4	4	4	3	3	4	**28**	**196**
1952	1	1	1	3	6	5	3	**20**	13	2	29	11	-2	-10	-6	6	6	6	6	5	4	4	**37**	**740**
1953	1	1	1	1	1	1	1	**7**	4	-8	-10	1	-9	-12	-7	6	4	4	6	4	3	4	**31**	**217**
1954	1	1	1	1	1	1	1	**7**	7	3	2	-9	-14	-13	-10	6	6	6	4	3	3	4	**32**	**224**
1955	1	1	1	1	1	1	1	**7**	3	-6	-7	-4	-13	-14	-8	6	4	4	5	3	3	4	**29**	**203**
1956	1	1	1	1	1	1	1	**7**	9	-9	17	11	-6	-12	-7	6	4	6	6	4	3	4	**33**	**231**
1957	1	1	1	1	1	1	1	**7**	7	-12	-3	-1	-13	-13	-8	6	3	5	5	3	3	4	**29**	**203**
1958	1	1	1	1	3	2	1	**10**	15	7	30	14	-6	-10	-7	6	6	6	6	4	4	4	**36**	**360**
1959	1	1	1	1	1	1	1	**7**	3	-7	-16	-12	-13	-13	-9	6	4	2	3	3	3	4	**25**	**175**
1960	1	1	1	1	1	1	1	**7**	5	-3	-5	-11	-14	-13	-10	6	5	5	3	3	3	4	**29**	**203**
1961	1	1	1	1	1	1	1	**7**	3	-4	-7	-12	-13	-18	-11	6	5	4	3	3	2	3	**26**	**182**
1962	1	1	1	1	1	1	1	**7**	8	2	8	3	-10	-17	-14	6	6	6	6	4	2	3	**33**	**231**
1963	1	1	1	1	1	1	1	**7**	7	1	29	7	-8	-13	-6	6	6	6	6	4	3	4	**35**	**245**
1964	1	1	1	1	1	1	1	**7**	4	-7	-8	-8	-14	-13	-9	6	4	4	4	3	3	4	**28**	**196**
1965	1	1	1	1	1	1	1	**7**	8	8	1	5	-8	-11	-7	6	6	6	6	4	3	4	**35**	**245**
1966	1	1	1	1	1	1	1	**7**	5	-10	-2	-10	-14	-14	-9	6	4	5	4	3	3	4	**29**	**203**
1967	1	1	1	1	1	1	1	**7**	11	2	23	28	4	-10	-6	6	6	6	6	6	4	4	**38**	**266**
1968	1	1	1	1	1	1	1	**7**	4	-12	-9	-11	-14	-14	-10	6	3	4	3	3	3	4	**26**	**182**
1969	1	1	1	6	6	5	3	**23**	14	11	22	0	-4	-10	-8	6	6	6	6	5	4	4	**37**	**851**
1970	1	1	1	1	1	1	1	**7**	5	-8	-6	-2	-14	-13	-7	6	4	4	5	3	3	4	**29**	**203**
1971	1	1	1	1	1	1	1	**7**	6	-9	-5	0	-11	-12	-8	6	4	5	6	3	3	4	**31**	**217**
1972	1	1	1	1	1	1	1	**7**	4	-14	-1	-11	-13	-14	-7	6	3	5	3	3	3	4	**27**	**189**
1973	1	1	1	1	1	1	1	**7**	13	1	18	4	-10	-11	-5	6	6	6	6	4	3	5	**36**	**252**
1974	1	1	1	1	1	1	1	**7**	14	4	10	0	-9	-11	-8	6	6	6	6	4	3	4	**35**	**245**
1975	1	1	1	1	1	1	1	**7**	5	-5	-1	12	-8	-11	-8	6	5	5	6	4	3	4	**33**	**231**
1976	1	1	1	1	1	1	1	**7**	2	-5	-9	-11	-10	-10	-5	6	5	4	3	4	4	5	**31**	**217**
1977	1	1	1	1	1	1	1	**7**	0	-9	-12	-9	-12	-12	-6	6	4	3	4	3	3	4	**27**	**189**
1978	1	1	1	1	1	1	1	**7**	20	10	17	11	-2	-9	-3	6	6	6	6	5	4	5	**38**	**266**
1979	1	1	1	1	1	1	1	**7**	14	0	9	-5	-13	-14	-7	6	6	6	5	3	3	4	**33**	**231**
1980	1	1	1	1	2	1	1	**8**	5	1	7	7	-2	-11	-6	6	6	6	6	5	3	4	**36**	**288**
1981	1	1	1	1	1	1	1	**7**	3	-8	-11	-15	-14	-13	-8	6	4	3	3	3	3	4	**26**	**182**
1982	1	1	2	5	6	5	3	**23**	5	16	15	2	-4	-9	-4	6	6	6	6	5	4	5	**38**	**874**
1983	1	1	1	2	6	6	4	**21**	5	1	14	18	0	-6	-7	6	6	6	6	6	4	4	**38**	**798**
1984	1	1	1	1	1	1	1	**7**	5	-11	-7	-4	-11	-10	-6	6	3	4	5	3	4	4	**29**	**203**
1985	1	1	1	1	1	1	1	**7**	6	-8	-6	-10	-10	-12	-6	6	4	4	4	4	3	4	**29**	**203**
1986	1	1	1	1	1	1	1	**7**	11	1	5	4	-10	-10	-5	6	6	6	6	4	4	5	**37**	**259**
1987	1	1	1	1	1	1	1	**7**	3	-5	-10	-11	-9	-8	-4	6	5	4	3	4	4	5	**31**	**217**
1988	1	1	1	1	1	1	1	**7**	2	-6	-10	-10	-10	-9	-6	6	4	4	4	4	4	4	**30**	**210**
1989	1	1	1	1	1	1	1	**7**	12	-4	-4	-8	-12	-11	-5	6	5	5	4	3	3	5	**31**	**217**
1990	1	1	1	1	1	1	1	**7**	4	-7	-11	-15	-20	-16	-9	6	4	3	3	2	2	4	**24**	**168**
1991	1	1	1	1	1	1	1	**7**	8	-5	-5	-16	-19	-17	-7	6	5	5	2	2	2	4	**26**	**182**
1992	1	1	1	1	1	1	1	**7**	9	-8	-16	-26	-30	-35	-12	6	4	2	1	1	1	3	**18**	**126**
1993	1	1	1	1	1	1	1	**7**	54	-12	5	11	-10	-10	-4	6	3	6	6	4	4	5	**34**	**238**
1994	1	1	1	1	1	1	1	**7**	5	-3	-4	-12	-19	-18	-7	6	5	5	3	2	2	4	**27**	**189**
					73 - year Average:			**8**												**73 - year Average:**			**31**	**259**
																					1929 - '34 Average:			**186**

STUDY: **501a**

CP # 81, DON PEDRO RESERVOIR, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 832'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Elevation in feet												Difference from Maximum Reservoir Elevation [DFMRE]							Reservoir Elevation Score								Reservoir Change from Previous Month [fluctuation]							Reservoir Fluctuation Score								
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	599	581	579	600	656	690	698	724	781	778	763	752	142	134	108	51	54	69	80	1	1	1	1	1	1	1	**7**	34	8	26	57	-3	-15	-11	6	6	6	6	5	3	3	**35**	**245**
1923	746	745	748	760	775	784	788	792	801	794	779	770	48	44	40	31	38	53	62	1	1	1	1	1	1	1	**7**	9	4	4	9	-7	-15	-9	6	6	6	6	4	3	4	**35**	**245**
1924	764	761	756	755	756	754	748	743	734	722	708	700	78	84	89	98	110	124	132	1	1	1	1	1	1	1	**7**	-2	-6	-5	-9	-12	-14	-8	5	4	5	4	3	3	4	**28**	**196**
1925	695	695	696	700	722	739	751	762	780	771	755	744	93	81	70	52	61	77	88	1	1	1	1	1	1	1	**7**	17	12	11	18	-9	-16	-11	6	6	6	6	4	2	3	**33**	**231**
1926	737	734	730	729	738	742	756	768	765	750	734	725	90	76	64	67	82	98	107	1	1	1	1	1	1	1	**7**	4	14	12	-3	-15	-16	-9	6	6	6	5	3	2	4	**32**	**224**
1927	717	717	721	729	758	773	784	782	800	793	778	768	59	48	50	32	39	54	64	1	1	1	1	1	1	1	**7**	15	11	-2	18	-7	-15	-10	6	6	5	6	4	3	4	**34**	**238**
1928	762	762	762	766	774	792	801	818	818	803	788	779	40	31	14	14	29	44	53	1	1	3	3	1	1	1	**11**	18	9	17	0	-15	-15	-9	6	6	6	6	3	3	4	**34**	**374**
1929	772	767	763	762	766	767	767	770	778	769	759	752	65	65	62	54	63	73	80	1	1	1	1	1	1	1	**7**	1	0	3	8	-9	-10	-7	6	6	6	6	4	4	4	**36**	**252**
1930	747	744	741	742	748	755	756	759	772	763	754	747	77	76	73	60	69	78	85	1	1	1	1	1	1	1	**7**	7	1	3	13	-9	-9	-7	6	6	6	6	4	4	4	**36**	**252**
1931	745	744	743	745	748	747	739	727	714	700	687	679	85	93	105	118	132	145	153	1	1	1	1	1	1	1	**7**	-1	-8	-12	-13	-14	-13	-8	5	4	3	3	3	3	4	**25**	**175**
1932	676	671	683	699	736	751	752	756	772	767	752	741	81	80	76	60	65	80	91	1	1	1	1	1	1	1	**7**	15	1	4	16	-5	-15	-11	6	6	6	6	5	3	3	**35**	**245**
1933	734	727	721	720	727	730	726	719	736	725	708	697	102	106	113	96	107	124	135	1	1	1	1	1	1	1	**7**	3	-4	-7	17	-11	-17	-11	6	5	4	6	3	2	3	**29**	**203**
1934	688	687	684	687	698	707	706	698	694	676	658	648	125	126	134	138	156	174	184	1	1	1	1	1	1	1	**7**	9	-1	-8	-4	-18	-18	-10	6	5	4	5	2	2	4	**28**	**196**
1935	640	639	641	655	682	697	723	734	764	751	734	721	135	109	98	68	81	98	111	1	1	1	1	1	1	1	**7**	15	26	11	30	-13	-17	-13	6	6	6	6	3	2	3	**32**	**224**
1936	713	711	705	711	753	770	779	796	812	802	787	776	62	53	36	20	30	45	56	1	1	1	1	1	1	1	**7**	17	9	17	16	-10	-15	-11	6	6	6	6	4	3	3	**34**	**238**
1937	770	765	760	763	791	800	802	815	832	819	805	795	32	30	17	0	13	27	37	1	1	2	6	3	1	1	**15**	9	2	13	17	-13	-14	-10	6	6	6	6	3	3	4	**34**	**510**
1938	789	784	800	800	800	800	800	804	831	832	819	808	32	32	28	1	0	13	24	1	1	1	5	6	3	1	**18**	0	0	4	27	1	-13	-11	6	6	6	6	6	3	3	**36**	**648**
1939	800	799	799	800	800	800	802	804	799	787	774	766	32	30	28	33	45	58	66	1	1	1	1	1	1	1	**7**	0	2	2	-5	-12	-13	-8	6	6	6	5	3	3	4	**33**	**231**
1940	764	763	761	773	800	800	802	816	829	814	799	789	32	30	16	3	18	33	43	1	1	2	5	2	1	1	**13**	0	2	14	13	-15	-15	-10	6	6	6	6	3	3	4	**34**	**442**
1941	783	781	783	798	800	800	800	812	832	831	817	808	32	32	20	0	1	15	24	1	1	1	6	5	2	1	**17**	0	0	12	20	-1	-14	-9	6	6	6	6	5	3	4	**36**	**612**
1942	800	798	800	800	800	800	802	807	831	832	818	808	32	30	25	1	0	14	24	1	1	1	5	6	3	1	**18**	0	2	5	24	1	-14	-10	6	6	6	6	6	3	4	**37**	**666**
1943	800	800	800	800	800	800	802	821	832	824	810	799	32	30	11	0	8	22	33	1	1	3	6	4	1	1	**17**	0	2	19	11	-8	-14	-11	6	6	6	6	4	3	3	**34**	**578**
1944	794	792	788	787	793	800	801	808	814	802	787	777	32	31	24	18	30	45	55	1	1	1	2	1	1	1	**8**	7	1	7	6	-12	-15	-10	6	6	6	6	3	3	4	**34**	**272**
1945	772	772	776	781	800	800	802	807	831	825	810	799	32	30	25	1	7	22	33	1	1	1	5	4	1	1	**14**	0	2	5	24	-6	-15	-11	6	6	6	6	4	3	3	**34**	**476**
1946	796	797	800	800	800	800	802	806	812	796	780	769	32	30	26	20	36	52	63	1	1	1	1	1	1	1	**7**	0	2	4	6	-16	-16	-11	6	6	6	6	2	2	3	**31**	**217**
1947	763	763	765	768	776	781	778	782	776	764	750	742	51	54	50	56	68	82	90	1	1	1	1	1	1	1	**7**	5	-3	4	-6	-12	-14	-8	6	5	6	4	3	3	4	**31**	**217**
1948	739	738	737	738	739	740	735	743	768	758	740	730	92	97	89	64	74	92	102	1	1	1	1	1	1	1	**7**	1	-5	8	25	-10	-18	-10	6	5	6	6	4	2	4	**33**	**231**
1949	723	716	711	710	717	728	735	744	751	734	714	701	104	97	88	81	98	118	131	1	1	1	1	1	1	1	**7**	11	7	9	7	-17	-20	-13	6	6	6	6	2	2	3	**31**	**217**
1950	693	687	680	686	705	718	727	737	753	737	719	706	114	105	95	79	95	113	126	1	1	1	1	1	1	1	**7**	13	9	10	16	-16	-18	-13	6	6	6	6	2	2	3	**31**	**217**
1951	700	749	797	800	800	800	798	794	798	783	769	759	32	34	38	34	49	63	73	1	1	1	1	1	1	1	**7**	0	-2	-4	4	-15	-14	-10	6	5	5	6	3	3	4	**32**	**224**
1952	752	750	757	782	800	800	800	820	832	832	819	808	32	32	12	0	0	13	24	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1953	800	795	793	800	800	800	802	804	814	810	796	787	32	30	28	18	22	36	45	1	1	1	2	1	1	1	**8**	0	2	2	10	-4	-14	-9	6	6	6	6	5	3	4	**36**	**288**
1954	782	778	775	776	785	797	802	819	820	805	789	780	35	30	13	12	27	43	52	1	1	3	3	1	1	1	**11**	12	5	17	1	-15	-16	-9	6	6	6	6	3	2	4	**33**	**363**
1955	774	770	768	774	781	784	780	784	791	778	766	759	48	52	48	41	54	66	73	1	1	1	1	1	1	1	**7**	3	-4	4	7	-13	-12	-7	6	5	6	6	3	3	4	**33**	**231**
1956	753	749	798	800	800	800	802	818	832	832	818	808	32	30	14	0	0	14	24	1	1	3	6	6	3	1	**21**	0	2	16	14	0	-14	-10	6	6	6	6	6	3	4	**37**	**777**
1957	800	798	793	793	799	800	800	806	827	814	800	791	32	32	26	5	18	32	41	1	1	1	4	2	1	1	**11**	1	0	6	21	-13	-14	-9	6	6	6	6	3	3	4	**34**	**374**
1958	786	781	779	783	800	800	800	821	832	832	819	808	32	32	11	0	0	13	24	1	1	3	6	6	3	1	**21**	0	0	21	11	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1959	800	794	789	793	800	800	802	800	794	782	770	763	32	30	32	38	50	62	69	1	1	1	1	1	1	1	**7**	0	2	-2	-6	-12	-12	-7	6	6	5	4	3	3	4	**31**	**217**
1960	760	758	755	756	763	769	770	775	778	768	758	752	63	62	57	54	64	74	80	1	1	1	1	1	1	1	**7**	6	1	5	3	-10	-10	-6	6	6	6	6	4	4	4	**36**	**252**
1961	748	746	746	748	750	749	743	733	726	713	701	694	83	89	99	106	119	131	138	1	1	1	1	1	1	1	**7**	-1	-6	-10	-7	-13	-12	-7	5	4	4	4	3	3	4	**27**	**189**
1962	691	688	686	687	712	732	742	742	768	760	746	736	100	90	90	64	72	86	96	1	1	1	1	1	1	1	**7**	20	10	0	26	-8	-14	-10	6	6	6	6	4	3	4	**35**	**245**
1963	729	724	720	725	751	762	770	781	806	802	788	778	70	62	51	26	30	44	54	1	1	1	1	1	1	1	**7**	11	8	11	25	-4	-14	-10	6	6	6	6	5	3	4	**36**	**252**
1964	773	774	775	780	786	789	785	781	784	772	761	754	43	47	51	48	60	71	78	1	1	1	1	1	1	1	**7**	3	-4	-4	3	-12	-11	-7	6	5	5	6	3	3	4	**32**	**224**
1965	750	750	784	800	800	800	802	807	827	827	816	807	32	30	25	5	5	16	25	1	1	1	4	4	2	1	**14**	0	2	5	20	0	-11	-9	6	6	6	6	6	3	4	**37**	**518**
1966	800	800	800	800	800	800	801	798	791	776	761	752	32	31	34	41	56	71	80	1	1	1	1	1	1	1	**7**	0	1	-3	-7	-15	-15	-9	6	6	5	4	3	3	4	**31**	**217**
1967	747	744	755	770	788	800	800	817	832	832	820	808	32	32	15	0	0	12	24	1	1	2	6	6	3	1	**20**	12	0	17	15	0	-12	-12	6	6	6	6	6	3	3	**36**	**720**
1968	800	795	791	792	800	800	802	805	803	791	779	771	32	30	27	29	41	53	61	1	1	1	1	1	1	1	**7**	0	2	3	-2	-12	-12	-8	6	6	6	5	3	3	4	**33**	**231**
1969	766	767	770	800	800	800	800	823	832	832	819	808	32	32	9	0	0	13	24	1	1	4	6	6	3	1	**22**	0	0	23	9	0	-13	-11	6	6	6	6	6	3	3	**36**	**792**
1970	800	799	800	800	800	800	799	799	807	795	780	771	32	33	33	25	37	52	61	1	1	1	1	1	1	1	**7**	0	-1	0	8	-12	-15	-9	6	5	6	6	3	3	4	**33**	**231**
1971	765	766	772	788	800	800	801	801	807	798	786	778	32	31	31	25	34	46	54	1	1	1	1	1	1	1	**7**	0	1	0	6	-9	-12	-8	6	6	6	6	4	3	4	**35**	**245**
1972	773	769	772	778	792	800	800	798	795	783	772	766	32	32	34	37	49	60	66	1	1	1	1	1	1	1	**7**	8	0	-2	-3	-12	-11	-6	6	6	5	5	3	3	4	**32**	**224**
1973	762	761	763	774	800	800	802	812	827	812	797	788	32	30	20	5	20	35	44	1	1	1	4	1	1	1	**10**	0	2	10	15	-15	-15	-9	6	6	6	6	3	3	4	**34**	**340**
1974	783	787	798	800	800	800	800	806	828	819	805	796	32	32	26	4	13	27	36	1	1	1	5	3	1	1	**13**	0	0	6	22	-9	-14	-9	6	6	6	6	4	3	4	**35**	**455**
1975	791	789	786	786	798	800	802	812	832	825	812	803	32	30	20	0	7	20	29	1	1	1	6	4	1	1	**15**	2	2	10	20	-7	-13	-9	6	6	6	6	4	3	4	**35**	**525**
1976	800	800	799	799	800	799	794	787	777	767	757	751	33	38	45	55	65	75	81	1	1	1	1	1	1	1	**7**	-1	-5	-7	-10	-10	-10	-6	5	5	4	4	4	4	4	**30**	**210**
1977	748	745	742	741	741	737	728	715	701	687	671	662	95	104	117	131	145	161	170	1	1	1	1	1	1	1	**7**	-4	-9	-13	-14	-14	-16	-9	5	4	3	3	3	2	4	**24**	**168**
1978	658	654	657	683	716	748	761	776	813	821	808	802	84	71	56	19	11	24	30	1	1	1	2	3	1	1	**10**	32	13	15	37	8	-13	-6	6	6	6	6	6	3	4	**37**	**370**
1979	797	794	790	800	800	800	802	822	832	818	803	794	32	30	10	0	14	29	38	1	1	3	6	3	1	1	**16**	0	2	20	10	-14	-15	-9	6	6	6	6	3	3	4	**34**	**544**
1980	789	788	787	800	800	800	800	817	832	832	819	808	32	32	15	0	0	13	24	1	1	2	6	6	3	1	**20**	0	0	17	15	0	-13	-11	6	6	6	6	6	3	3	**36**	**720**
1981	800	797	794	795	799	800	802	806	805	793	782	774	32	30	26	27	39	50	58	1	1	1	1	1	1	1	**7**	1	2	4	-1	-12	-11	-8	6	6	6	5	3	3	4	**33**	**231**
1982	770	776	795	800	800	800	800	820	832	832	820	808	32	32	12	0	0	12	24	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-12	-12	6	6	6	6	6	3	3	**36**	**756**
1983	800	800	800	800	800	800	800	819	832	832	832	808	32	32	13	0	0	0	24	1	1	3	6	6	6	1	**24**	0	0	19	13	0	0	-24	6	6	6	6	6	6	1	**37**	**888**
1984	800	800	800	800	800	800	797	803	814	801	786	776	32	35	29	18	31	46	56	1	1	1	2	1	1	1	**8**	0	-3	6	11	-13	-15	-10	6	5	6	6	3	3	4	**33**	**264**
1985	773	773	779	786	794	800	801	799	795	784	772	766	32	31	33	37	48	60	66	1	1	1	1	1	1	1	**7**	6	1	-2	-4	-11	-12	-6	6	6	5	5	3	3	4	**32**	**224**
1986	763	764	767	774	800	800	802	827	832	825	811	802	32	30	5	0	7	21	30	1	1	4	6	4	1	1	**18**	0	2	25	5	-7	-14	-9	6	6	6	6	4	3	4	**35**	**630**
1987	796	791	786	784	786	788	786	783	779	769	759	752	44	46	49	53	63	73	80	1	1	1	1	1	1	1	**7**	2	-2	-3	-4	-10	-10	-7	6	5	5	5	4	4	4	**33**	**231**
1988	750	749	749	754	759	761	756	747	740	728	716	709	71	76	85	92	104	116	123	1	1	1	1	1	1	1	**7**	2	-5	-9	-7	-12	-12	-7	6	5	4	4	3	3	4	**29**	**203**
1989	705	702	702	705	708	722	733	747	754	743	732	727	110	99	85	78	89	100	105	1	1	1	1	1	1	1	**7**	14	11	14	7	-11	-11	-5	6	6	6	6	3	3	5	**35**	**245**
1990	725	725	725	727	730	733	730	726	724	709	695	688	99	102	106	108	123	137	144	1	1	1	1	1	1	1	**7**	3	-3	-4	-2	-15	-14	-7	6	5	5	5	3	3	4	**31**	**217**
1991	684	680	676	675	675	684	683	698	709	699	689	683	148	149	134	123	133	143	149	1	1	1	1	1	1	1	**7**	9	-1	15	11	-10	-10	-6	6	5	6	6	4	4	4	**35**	**245**
1992	681	682	681	684	693	698	700	707	706	692	677	666	134	132	125	126	140	155	166	1	1	1	1	1	1	1	**7**	5	2	7	-1	-14	-15	-11	6	6	6	5	3	3	3	**32**	**224**
1993	660	654	654	689	721	750	758	772	803	802	788	778	82	74	60	29	30	44	54	1	1	1	1	1	1	1	**7**	29	8	14	31	-1	-14	-10	6	6	6	6	5	3	4	**36**	**252**
1994	772	766	762	761	765	768	765	768	766	756	746	740	64	67	64	66	76	86	92	1	1	1	1	1	1	1	**7**	3	-3	3	-2	-10	-10	-6	6	5	6	5	4	4	4	**34**	**238**
																								73 - year Average:			**10**												**73 - year Average:**			**33**	**350**
																																								1929 - '34 Average:			**221**

STUDY: **501a**

CP # 20, LAKE McCLURE, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 867'

Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	679	679	695	711	759	779	789	845	867	860	846	836	88	78	22	0	7	21	31	1	1	1	6	4	1	1	**15**	20	10	56	22	-7	-14	-10	6	6	6	6	4	3	4	**35**	**525**
1923	808	808	808	808	808	813	827	854	859	850	835	825	54	40	13	8	17	32	42	1	1	3	4	2	1	1	**13**	5	14	27	5	-9	-15	-10	6	6	6	6	4	3	4	**35**	**455**
1924	808	808	808	808	808	807	809	810	797	779	766	756	60	58	57	70	88	101	111	1	1	1	1	1	1	1	**7**	-1	2	1	-13	-18	-13	-10	5	6	6	3	2	3	4	**29**	**203**
1925	752	758	763	767	792	801	819	840	844	831	815	803	66	48	27	23	36	52	64	1	1	1	1	1	1	1	**7**	9	18	21	4	-13	-16	-12	6	6	6	6	3	2	3	**32**	**224**
1926	801	801	802	804	808	812	831	827	826	822	814	806	55	36	40	41	45	53	61	1	1	1	1	1	1	1	**7**	4	19	-4	-1	-4	-8	-8	6	6	5	5	5	4	4	**35**	**245**
1927	802	803	807	807	808	815	817	844	854	849	845	840	52	50	23	13	18	22	27	1	1	1	3	2	1	1	**10**	7	2	27	10	-5	-4	-5	6	6	6	6	5	5	5	**39**	**390**
1928	808	808	808	808	808	809	808	823	821	815	810	807	58	59	44	46	52	57	60	1	1	1	1	1	1	1	**7**	1	-1	15	-2	-6	-5	-3	6	5	6	5	4	5	5	**36**	**252**
1929	805	804	804	803	805	807	808	811	811	813	816	809	60	59	56	56	54	51	58	1	1	1	1	1	1	1	**7**	2	1	3	0	2	3	-7	6	6	6	6	6	6	4	**40**	**280**
1930	806	804	804	804	804	800	803	803	807	810	813	811	67	64	64	60	57	54	56	1	1	1	1	1	1	1	**7**	-4	3	0	4	3	3	-2	5	6	6	6	6	6	5	**40**	**280**
1931	808	808	808	808	808	808	808	806	794	776	762	752	59	59	61	73	91	105	115	1	1	1	1	1	1	1	**7**	0	0	-2	-12	-18	-14	-10	6	6	5	3	2	3	4	**29**	**203**
1932	750	751	770	782	808	817	826	847	864	854	839	829	50	41	20	3	13	28	38	1	1	1	5	3	1	1	**13**	9	9	21	17	-10	-15	-10	6	6	6	6	4	3	4	**35**	**455**
1933	808	807	806	808	808	811	813	816	830	817	802	794	56	54	51	37	50	65	73	1	1	1	1	1	1	1	**7**	3	2	3	14	-13	-15	-8	6	6	6	6	3	3	4	**34**	**238**
1934	789	788	792	797	805	813	819	810	801	784	770	761	54	48	57	66	83	97	106	1	1	1	1	1	1	1	**7**	8	6	-9	-9	-17	-14	-9	6	6	4	4	2	3	4	**29**	**203**
1935	757	761	766	784	796	806	840	859	867	854	839	828	61	27	8	0	13	28	39	1	1	4	6	3	1	1	**17**	10	34	19	8	-13	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1936	808	808	808	808	808	820	840	855	858	845	830	818	47	27	12	9	22	37	49	1	1	3	4	1	1	1	**12**	12	20	15	3	-13	-15	-12	6	6	6	6	3	3	3	**33**	**396**
1937	808	808	808	808	808	820	834	859	867	853	838	827	47	33	8	0	14	29	40	1	1	4	6	3	1	1	**17**	12	14	25	8	-14	-15	-11	6	6	6	6	3	3	3	**33**	**561**
clure	808	808	808	808	808	820	840	859	867	867	855	840	47	27	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1939	808	808	808	808	808	816	831	832	821	803	787	776	51	36	35	46	64	80	91	1	1	1	1	1	1	1	**7**	8	15	1	-11	-18	-16	-11	6	6	6	3	2	2	3	**28**	**196**
1940	777	778	779	806	808	820	837	859	861	845	829	816	47	30	8	6	22	38	51	1	1	4	4	1	1	1	**13**	12	17	22	2	-16	-16	-13	6	6	6	6	2	2	3	**31**	**403**
1941	808	808	808	808	808	820	834	859	867	863	850	840	47	33	8	0	4	17	27	1	1	4	6	5	2	1	**20**	12	14	25	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1942	808	808	808	808	808	820	838	859	867	860	851	840	47	29	8	0	7	16	27	1	1	4	6	4	2	1	**19**	12	18	21	8	-7	-9	-11	6	6	6	6	4	4	3	**35**	**665**
1943	808	808	808	808	808	820	840	859	864	853	838	828	47	27	8	3	14	29	39	1	1	4	5	3	1	1	**16**	12	20	19	5	-11	-15	-10	6	6	6	6	3	3	4	**34**	**544**
1944	808	808	808	808	808	817	815	838	840	827	810	796	50	52	29	27	40	57	71	1	1	1	1	1	1	1	**7**	9	-2	23	2	-13	-17	-14	6	5	6	6	3	2	3	**31**	**217**
1945	794	800	806	808	808	820	833	856	867	856	842	831	47	34	11	0	11	25	36	1	1	3	6	3	1	1	**16**	12	13	23	11	-11	-14	-11	6	6	6	6	3	3	3	**33**	**528**
1946	808	808	808	808	808	818	837	859	857	842	826	813	49	30	8	10	25	41	54	1	1	4	3	1	1	1	**12**	10	19	22	-2	-15	-16	-13	6	6	6	5	3	2	3	**31**	**372**
1947	808	808	808	808	808	815	823	836	830	814	799	791	52	44	31	37	53	68	76	1	1	1	1	1	1	1	**7**	7	8	13	-6	-16	-15	-8	6	6	6	4	2	3	4	**31**	**217**
1948	789	790	791	793	794	794	798	820	837	822	804	790	73	69	47	30	45	63	77	1	1	1	1	1	1	1	**7**	0	4	22	17	-15	-18	-14	6	6	6	6	3	2	3	**32**	**224**
1949	786	785	786	788	792	800	809	830	828	808	789	774	67	58	37	39	59	78	93	1	1	1	1	1	1	1	**7**	8	9	21	-2	-20	-19	-15	6	6	6	5	2	2	3	**30**	**210**
1950	768	768	768	776	788	792	807	825	826	806	787	771	75	60	42	41	61	80	96	1	1	1	1	1	1	1	**7**	4	15	18	1	-20	-19	-16	6	6	6	6	2	2	2	**30**	**210**
1951	767	808	808	808	808	819	827	837	834	816	796	781	48	40	30	33	51	71	86	1	1	1	1	1	1	1	**7**	11	8	10	-3	-18	-20	-15	6	6	6	5	2	2	3	**30**	**210**
1952	777	778	791	808	808	820	840	859	867	864	852	840	47	27	8	0	3	15	27	1	1	4	6	5	2	1	**20**	12	20	19	8	-3	-12	-12	6	6	6	6	5	3	3	**35**	**700**
1953	808	808	808	808	808	809	815	816	823	809	790	775	58	52	51	44	58	77	92	1	1	1	1	1	1	1	**7**	1	6	1	7	-14	-19	-15	6	6	6	6	3	2	3	**32**	**224**
1954	772	771	772	775	785	798	815	833	826	805	785	770	69	52	34	41	62	82	97	1	1	1	1	1	1	1	**7**	13	17	18	-7	-21	-20	-15	6	6	6	4	1	2	3	**28**	**196**
1955	766	765	768	774	779	781	781	803	812	797	780	770	86	86	64	55	70	87	97	1	1	1	1	1	1	1	**7**	2	0	22	9	-15	-17	-10	6	6	6	6	3	2	4	**33**	**231**
1956	765	765	808	808	808	819	832	859	867	863	850	840	48	35	8	0	4	17	27	1	1	4	6	5	2	1	**20**	11	13	27	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1957	808	808	808	808	808	813	813	828	838	822	804	790	54	54	39	29	45	63	77	1	1	1	1	1	1	1	**7**	5	0	15	10	-16	-18	-14	6	6	6	6	2	2	3	**31**	**217**
1958	786	787	792	798	808	820	840	859	867	862	850	840	47	27	8	0	5	17	27	1	1	4	6	4	2	1	**19**	12	20	19	8	-5	-12	-10	6	6	6	6	5	3	4	**36**	**684**
1959	808	808	808	808	808	813	823	826	817	797	780	773	54	44	41	50	70	87	94	1	1	1	1	1	1	1	**7**	5	10	3	-9	-20	-17	-7	6	6	6	4	2	2	4	**30**	**210**
1960	772	771	770	771	783	791	805	818	815	800	786	776	76	62	49	52	67	81	91	1	1	1	1	1	1	1	**7**	8	14	13	-3	-15	-14	-10	6	6	6	5	3	3	4	**33**	**231**
1961	773	773	775	776	778	779	784	785	777	759	742	730	88	83	82	90	108	125	137	1	1	1	1	1	1	1	**7**	1	5	1	-8	-18	-17	-12	6	6	6	4	2	2	3	**29**	**203**
1962	729	729	731	734	776	786	809	818	832	819	800	786	81	58	49	35	48	67	81	1	1	1	1	1	1	1	**7**	10	23	9	14	-13	-19	-14	6	6	6	6	3	2	3	**32**	**224**
1963	782	781	782	791	808	810	819	841	854	845	830	818	57	48	26	13	22	37	49	1	1	1	3	1	1	1	**9**	2	9	22	13	-9	-15	-12	6	6	6	6	4	3	3	**34**	**306**
1964	808	808	808	808	807	808	809	816	813	797	780	771	59	58	51	54	70	87	96	1	1	1	1	1	1	1	**7**	1	1	7	-3	-16	-17	-9	6	6	6	5	2	2	4	**31**	**217**
1965	765	769	808	808	808	815	831	854	867	861	850	840	52	36	13	0	6	17	27	1	1	3	6	4	2	1	**18**	7	16	23	13	-6	-11	-10	6	6	6	6	4	3	4	**35**	**630**
1966	808	808	808	808	808	814	828	838	826	804	784	771	53	39	29	41	63	83	96	1	1	1	1	1	1	1	**7**	6	14	10	-12	-22	-20	-13	6	6	6	3	1	2	3	**27**	**189**
1967	767	769	794	806	808	820	840	859	867	867	856	840	47	27	8	0	0	11	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1968	808	808	808	808	808	812	817	821	812	793	777	766	55	50	46	55	74	90	101	1	1	1	1	1	1	1	**7**	4	5	4	-9	-19	-16	-11	6	6	6	4	2	2	3	**29**	**203**
1969	762	766	774	808	808	820	840	859	867	867	854	840	47	27	8	0	0	13	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-13	-14	6	6	6	6	6	3	3	**36**	**792**
1970	808	808	808	808	808	820	821	837	837	821	802	789	47	46	30	30	46	65	78	1	1	1	1	1	1	1	**7**	12	1	16	0	-16	-19	-13	6	6	6	6	2	2	3	**31**	**217**
1971	786	788	798	807	808	812	814	826	836	822	804	790	55	53	41	31	45	63	77	1	1	1	1	1	1	1	**7**	4	2	12	10	-14	-18	-14	6	6	6	6	3	2	3	**32**	**224**
1972	787	787	794	799	805	816	819	831	831	816	802	795	51	48	36	36	51	65	72	1	1	1	1	1	1	1	**7**	11	3	12	0	-15	-14	-7	6	6	6	6	3	3	4	**34**	**238**
1973	793	794	800	808	808	820	828	859	867	852	838	828	47	39	8	0	15	29	39	1	1	4	6	2	1	1	**16**	12	8	31	8	-15	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1974	808	808	808	808	808	820	833	859	867	854	839	829	47	34	8	0	13	28	38	1	1	4	6	3	1	1	**17**	12	13	26	8	-13	-15	-10	6	6	6	6	3	3	4	**34**	**578**
1975	808	808	808	808	808	820	823	855	867	856	842	832	47	44	12	0	11	25	35	1	1	3	6	3	1	1	**16**	12	3	32	12	-11	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1976	808	808	808	808	808	809	808	809	798	781	768	759	58	59	58	69	86	99	108	1	1	1	1	1	1	1	**7**	1	-1	1	-11	-17	-13	-9	6	5	6	3	2	3	4	**29**	**203**
1977	758	756	754	754	754	749	740	727	716	686	656	632	118	127	140	151	181	211	235	1	1	1	1	1	1	1	**7**	-5	-9	-13	-11	-30	-30	-24	5	4	3	3	1	1	1	**18**	**126**
1978	626	626	642	693	741	782	815	859	867	867	856	840	85	52	8	0	0	11	27	1	1	4	6	6	3	1	**22**	41	33	44	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1979	808	808	808	808	808	820	828	859	863	849	834	823	47	39	8	4	18	33	44	1	1	4	5	2	1	1	**15**	12	8	31	4	-14	-15	-11	6	6	6	6	3	3	3	**33**	**495**
1980	808	808	808	808	808	820	835	859	867	867	855	840	47	32	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	15	24	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1981	808	807	807	808	808	813	823	835	831	816	802	794	54	44	32	36	51	65	73	1	1	1	1	1	1	1	**7**	5	10	12	-4	-15	-14	-8	6	6	6	5	3	3	4	**33**	**231**
1982	792	801	808	808	808	820	840	859	867	865	854	840	47	27	8	0	2	13	27	1	1	4	6	5	3	1	**21**	12	20	19	8	-2	-11	-14	6	6	6	6	5	3	3	**35**	**735**
1983	808	808	808	808	808	820	836	859	867	867	864	840	47	31	8	0	0	3	27	1	1	4	6	6	5	1	**24**	12	16	23	8	0	-3	-24	6	6	6	6	6	5	1	**36**	**864**
1984	808	808	808	808	808	820	827	850	848	832	814	801	47	40	17	19	35	53	66	1	1	2	2	1	1	1	**9**	12	7	23	-2	-16	-18	-13	6	6	6	5	2	2	3	**30**	**270**
1985	800	803	807	808	808	814	828	841	835	821	807	797	53	39	26	32	46	60	70	1	1	1	1	1	1	1	**7**	6	14	13	-6	-14	-14	-10	6	6	6	4	3	3	4	**32**	**224**
1986	797	799	805	808	808	820	839	859	867	855	841	830	47	28	8	0	12	26	37	1	1	4	6	3	1	1	**17**	12	19	20	8	-12	-14	-11	6	6	6	6	3	3	3	**33**	**561**
1987	808	807	807	807	808	810	818	821	811	796	782	773	57	49	46	56	72	85	94	1	1	1	1	1	1	1	**7**	2	8	3	-10	-16	-13	-9	6	6	6	4	2	3	4	**31**	**217**
1988	772	773	775	781	785	791	797	801	794	777	763	753	76	70	66	73	90	104	114	1	1	1	1	1	1	1	**7**	6	6	4	-7	-17	-14	-10	6	6	6	4	2	3	4	**31**	**217**
1989	751	750	753	753	759	775	796	805	802	786	772	763	92	71	62	65	81	95	104	1	1	1	1	1	1	1	**7**	16	21	9	-3	-16	-14	-9	6	6	6	5	2	3	4	**32**	**224**
1990	765	766	766	769	772	779	789	786	777	761	744	732	88	78	81	90	106	123	135	1	1	1	1	1	1	1	**7**	7	10	-3	-9	-16	-17	-12	6	6	5	4	2	2	3	**28**	**196**
1991	730	729	728	728	727	748	755	774	789	775	762	751	119	112	93	78	92	105	116	1	1	1	1	1	1	1	**7**	21	7	19	15	-14	-13	-11	6	6	6	6	3	3	3	**33**	**231**
1992	750	751	752	754	768	774	791	793	781	768	753	741	93	76	74	86	99	114	126	1	1	1	1	1	1	1	**7**	6	17	2	-12	-13	-15	-12	6	6	6	3	3	3	3	**30**	**210**
1993	740	741	747	792	808	820	837	859	867	861	848	837	47	30	8	0	6	19	30	1	1	4	6	4	2	1	**19**	12	17	22	8	-6	-13	-11	6	6	6	6	4	3	3	**34**	**646**
1994	808	807	808	808	808	810	814	820	812	796	783	773	57	53	47	55	71	84	94	1	1	1	1	1	1	1	**7**	2	4	6	-8	-16	-13	-10	6	6	6	4	2	3	4	**31**	**217**

73 - year Average: 11

73 - year Average: 33 — **379**

1929 - '34 Average: 277

STUDY: **501a**

CP # 18, MILLERTON LAKE, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 576'

Elevation in feet

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	491	505	527	547	549	566	559	576	576	562	518	491
1923	485	495	520	537	531	517	541	549	540	526	463	470
1924	483	494	508	522	516	503	506	511	505	478	464	468
1925	461	471	486	500	506	490	512	530	520	497	480	472
1926	474	487	503	517	520	506	548	562	533	492	471	482
1927	488	503	525	543	560	561	560	569	576	543	492	482
1928	482	503	525	542	540	543	551	554	522	477	465	477
1929	485	499	513	523	517	513	531	531	527	506	466	477
1930	478	494	506	517	514	509	524	534	517	488	465	482
1931	486	501	512	522	517	508	510	515	508	482	466	466
1932	467	476	503	520	543	531	524	532	552	518	492	477
1933	477	489	501	516	512	501	520	537	526	509	466	467
1934	469	479	499	517	511	503	516	527	523	498	477	486
1935	490	500	515	535	532	509	542	563	574	538	469	479
1936	486	502	518	533	560	558	564	576	563	521	472	478
1937	488	497	516	535	560	570	576	576	576	538	484	469
1938	472	486	533	560	560	542	529	467	572	576	532	520
1939	513	514	529	538	532	524	542	560	539	504	473	495
1940	494	503	517	549	550	551	548	561	553	512	465	470
1941	481	493	528	556	560	573	573	569	576	569	527	506
1942	497	507	532	552	549	553	554	562	576	555	509	477
1943	477	494	518	557	556	576	574	576	562	526	491	476
1944	479	491	508	521	524	507	516	517	501	494	490	480
1945	481	503	523	533	560	568	565	571	576	554	511	491
1946	485	502	531	548	528	524	536	559	546	510	478	480
1947	481	500	526	543	541	530	545	556	535	497	473	481
1948	487	503	517	529	523	530	556	551	541	483	480	484
1949	490	500	513	526	524	511	522	538	521	482	477	489
1950	492	503	519	536	541	524	534	551	539	506	476	482
1951	490	533	560	560	554	546	552	546	514	463	463	481
1952	488	500	530	559	560	567	559	526	576	571	525	508
1953	501	514	533	549	538	532	541	536	518	497	478	481
1954	488	497	514	532	532	527	537	560	544	507	465	483
1955	489	502	522	540	537	520	534	545	537	504	481	487
1956	491	499	560	560	560	576	576	561	576	566	524	505
1957	496	504	517	527	525	529	546	561	562	526	471	481
1958	488	501	525	545	554	565	576	576	576	557	516	498
1959	492	507	523	530	536	528	550	566	551	500	470	475
1960	473	475	480	490	503	498	515	525	509	496	483	481
1961	481	491	505	511	510	511	526	539	527	486	467	467
1962	468	471	484	492	538	529	527	555	569	540	489	476
1963	479	491	501	518	558	558	576	576	576	564	520	503
1964	490	517	542	551	547	544	553	561	551	508	476	484
1965	481	496	529	560	556	554	559	551	561	540	512	496
1966	487	513	546	558	541	526	545	564	550	506	486	486
1967	490	502	539	559	560	571	565	514	570	576	539	522
1968	515	521	539	545	545	539	550	554	539	506	478	482
1969	479	495	513	560	524	521	467	469	576	576	538	513
1970	498	516	540	560	560	554	554	555	544	517	476	477
1971	482	502	534	551	548	533	541	544	520	498	491	478
1972	479	491	519	536	532	524	537	543	540	497	481	481
1973	489	501	523	545	560	560	550	575	576	542	483	477
1974	487	510	545	560	544	550	559	570	573	537	490	473
1975	476	494	515	528	535	526	533	536	567	525	476	482
1976	489	511	531	541	539	544	547	542	519	492	479	494
1977	490	496	500	503	501	464	465	464	462	466	461	462
1978	462	462	484	532	560	552	510	498	576	576	548	539
1979	528	535	549	560	555	562	560	571	563	521	477	482
1980	489	488	508	560	560	558	566	550	576	576	542	513
1981	503	512	520	528	531	533	547	553	543	510	477	488
1982	491	504	536	560	560	576	546	561	576	576	546	541
1983	531	556	560	560	513	484	467	467	483	564	572	576
1984	560	560	560	560	560	568	570	570	557	530	487	483
1985	482	492	511	536	533	526	551	563	539	501	483	483
1986	490	507	534	553	550	552	574	565	576	558	503	479
1987	480	489	492	495	496	511	530	551	539	503	473	480
1988	482	495	507	526	516	527	539	547	527	498	483	486
1989	486	497	505	515	512	516	537	552	540	502	478	484
1990	489	495	502	510	510	517	532	544	525	508	479	483
1991	480	486	492	499	493	489	501	508	512	506	480	486
1992	485	490	494	498	499	490	493	494	480	470	465	466
1993	467	466	476	536	543	556	558	576	576	571	522	499
1994	490	497	507	512	508	520	534	548	528	498	478	484

Difference from Maximum Reservoir Elevation [DFMRE]

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	10	17	0	0	14	58	85
1923	59	35	27	36	50	113	106
1924	73	70	65	71	98	112	108
1925	86	64	46	56	79	96	104
1926	70	28	14	43	84	105	94
1927	15	16	7	0	33	84	94
1928	33	25	22	54	99	111	99
1929	63	45	45	49	70	110	99
1930	67	52	42	59	88	111	94
1931	68	66	61	68	94	110	110
1932	45	52	44	24	58	84	99
1933	75	56	39	50	67	110	109
1934	73	60	49	53	78	99	90
1935	67	34	13	2	38	107	97
1936	18	12	0	13	55	104	98
1937	6	0	0	0	38	92	107
1938	34	47	109	4	0	44	56
1939	52	34	16	37	72	103	81
1940	25	28	15	23	64	111	106
1941	3	3	7	0	7	49	70
1942	23	22	14	0	21	67	99
1943	0	2	0	14	50	85	100
1944	69	60	59	75	82	86	96
1945	8	11	5	0	22	65	85
1946	52	40	17	30	66	98	96
1947	46	31	20	41	79	103	95
1948	46	20	25	35	93	96	92
1949	65	54	38	55	94	99	87
1950	52	42	25	37	70	100	94
1951	30	24	30	62	113	113	95
1952	9	17	50	0	5	51	68
1953	44	35	40	58	79	98	95
1954	49	39	16	32	69	111	93
1955	56	42	31	39	72	95	89
1956	0	0	15	0	10	52	71
1957	47	30	15	14	50	105	95
1958	11	0	0	0	19	60	78
1959	48	26	10	25	76	106	101
1960	78	61	51	67	80	93	95
1961	65	50	37	49	90	109	109
1962	47	49	21	7	36	87	100
1963	18	0	0	0	12	56	73
1964	32	23	15	25	68	100	92
1965	22	17	25	15	36	64	80
1966	50	31	12	26	70	90	90
1967	5	11	62	6	0	37	54
1968	37	26	22	37	70	98	94
1969	55	109	107	0	0	38	63
1970	22	22	21	32	59	100	99
1971	43	35	32	56	78	85	98
1972	52	39	33	36	79	95	95
1973	16	26	1	0	34	93	99
1974	26	17	6	3	39	86	103
1975	50	43	40	9	51	100	94
1976	32	29	34	57	84	97	82
1977	112	111	112	114	110	115	114
1978	24	66	78	0	0	28	37
1979	14	16	5	13	55	99	94
1980	18	10	26	0	0	34	63
1981	43	29	23	33	66	99	88
1982	0	30	15	0	0	30	35
1983	92	109	109	93	12	4	0
1984	8	6	6	19	46	89	93
1985	50	25	13	37	75	93	93
1986	24	2	11	0	18	73	97
1987	65	46	25	37	73	103	96
1988	49	37	29	49	78	93	90
1989	60	39	24	36	74	98	92
1990	59	44	32	51	68	97	93
1991	87	75	68	64	70	96	90
1992	86	83	82	96	106	111	110
1993	20	18	0	0	5	54	77
1994	56	42	28	48	78	98	92

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	3	2	6	6	3	1	1	**22**
1923	1	1	1	1	1	1	1	**7**
1924	1	1	1	1	1	1	1	**7**
1925	1	1	1	1	1	1	1	**7**
1926	1	1	3	1	1	1	1	**9**
1927	2	2	4	6	1	1	1	**17**
1928	1	1	1	1	1	1	1	**7**
1929	1	1	1	1	1	1	1	**7**
1930	1	1	1	1	1	1	1	**7**
1931	1	1	1	1	1	1	1	**7**
1932	1	1	1	1	1	1	1	**7**
1933	1	1	1	1	1	1	1	**7**
1934	1	1	1	1	1	1	1	**7**
1935	1	1	3	5	1	1	1	**13**
1936	2	3	6	3	1	1	1	**17**
1937	4	6	6	6	1	1	1	**25**
1938	1	1	1	5	6	1	1	**16**
1939	1	1	2	1	1	1	1	**8**
1940	1	1	2	1	1	1	1	**8**
1941	5	5	4	6	4	1	1	**26**
1942	1	1	3	6	1	1	1	**14**
1943	6	5	6	3	1	1	1	**23**
1944	1	1	1	1	1	1	1	**7**
1945	4	3	4	6	1	1	1	**20**
1946	1	1	2	1	1	1	1	**8**
1947	1	1	1	1	1	1	1	**7**
1948	1	1	1	1	1	1	1	**7**
1949	1	1	1	1	1	1	1	**7**
1950	1	1	1	1	1	1	1	**7**
1951	1	1	1	1	1	1	1	**7**
1952	4	2	1	6	4	1	1	**19**
1953	1	1	1	1	1	1	1	**7**
1954	1	1	2	1	1	1	1	**8**
1955	1	1	1	1	1	1	1	**7**
1956	6	6	2	6	3	1	1	**25**
1957	1	1	2	3	1	1	1	**10**
1958	3	6	6	6	2	1	1	**25**
1959	1	1	3	1	1	1	1	**9**
1960	1	1	1	1	1	1	1	**7**
1961	1	1	1	1	1	1	1	**7**
1962	1	1	1	4	1	1	1	**10**
1963	2	6	6	6	3	1	1	**25**
1964	1	1	2	1	1	1	1	**8**
1965	1	2	1	2	1	1	1	**9**
1966	1	1	3	1	1	1	1	**9**
1967	4	3	1	4	6	1	1	**20**
1968	1	1	1	1	1	1	1	**7**
1969	1	1	1	6	6	1	1	**17**
1970	1	1	1	1	1	1	1	**7**
1971	1	1	1	1	1	1	1	**7**
1972	1	1	1	1	1	1	1	**7**
1973	2	1	5	6	1	1	1	**17**
1974	1	2	4	5	1	1	1	**15**
1975	1	1	1	4	1	1	1	**10**
1976	1	1	1	1	1	1	1	**7**
1977	1	1	1	1	1	1	1	**7**
1978	1	1	1	6	6	1	1	**17**
1979	3	2	4	3	1	1	1	**15**
1980	2	3	1	6	6	1	1	**20**
1981	1	1	1	1	1	1	1	**7**
1982	6	1	2	6	6	1	1	**23**
1983	1	1	1	1	3	5	6	**18**
1984	4	4	4	2	1	1	1	**17**
1985	1	1	3	1	1	1	1	**9**
1986	1	5	3	6	2	1	1	**19**
1987	1	1	1	1	1	1	1	**7**
1988	1	1	1	1	1	1	1	**7**
1989	1	1	1	1	1	1	1	**7**
1990	1	1	1	1	1	1	1	**7**
1991	1	1	1	1	1	1	1	**7**
1992	1	1	1	1	1	1	1	**7**
1993	1	2	6	6	4	1	1	**21**
1994	1	1	1	1	1	1	1	**7**
				73 - year Average:				**12**

Reservoir Change from Previous Month [fluctuation]

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	17	-7	17	0	-14	-44	-27
1923	-14	24	8	-9	-14	-63	7
1924	-13	3	5	-6	-27	-14	4
1925	-16	22	18	-10	-23	-17	-8
1926	-14	42	14	-29	-41	-21	11
1927	1	-1	9	7	-33	-51	-10
1928	3	8	3	-32	-45	-12	12
1929	-4	18	0	-4	-21	-40	11
1930	-5	15	10	-17	-29	-23	17
1931	-9	2	5	-7	-26	-16	0
1932	-12	-7	8	20	-34	-26	-15
1933	-11	19	17	-11	-17	-43	1
1934	-8	13	11	-4	-25	-21	9
1935	-23	33	21	11	-36	-69	10
1936	-2	6	12	-13	-42	-49	6
1937	10	6	0	0	-38	-54	-15
1938	-18	-13	-62	105	4	-44	-12
1939	-8	18	18	-21	-35	-31	22
1940	1	-3	13	-8	-41	-47	5
1941	13	0	-4	7	-7	-42	-21
1942	4	1	8	14	-21	-46	-32
1943	20	-2	2	-14	-36	-35	-15
1944	-17	9	1	-16	-7	-4	-10
1945	8	-3	6	5	-22	-43	-20
1946	-4	12	23	-13	-36	-32	2
1947	-11	15	11	-21	-38	-24	8
1948	7	26	-5	-10	-58	-3	4
1949	-13	11	16	-17	-39	-5	12
1950	-17	10	17	-12	-33	-30	6
1951	-8	6	-6	-32	-51	0	18
1952	7	-8	-33	50	-5	-46	-17
1953	-6	9	-5	-18	-21	-19	3
1954	-5	10	23	-16	-37	-42	18
1955	-17	14	11	-8	-33	-23	6
1956	16	0	-15	15	-10	-42	-19
1957	4	17	15	1	-36	-55	10
1958	11	11	0	0	-19	-41	-18
1959	-8	22	16	-15	-51	-30	5
1960	-5	17	10	-16	-13	-13	-2
1961	1	15	13	-12	-41	-19	0
1962	-9	-2	28	14	-29	-51	-13
1963	0	18	0	0	-12	-44	-17
1964	-3	9	8	-10	-43	-32	8
1965	-2	5	-8	10	-21	-28	-16
1966	-15	19	19	-14	-44	-20	0
1967	11	-6	-51	56	6	-37	-17
1968	-6	11	4	-15	-33	-28	4
1969	-3	-54	2	107	0	-38	-25
1970	-6	0	1	-11	-27	-41	1
1971	-15	8	3	-24	-22	-7	-13
1972	-8	13	6	-3	-43	-16	0
1973	0	-10	25	1	-34	-59	-6
1974	6	9	11	3	-36	-47	-17
1975	-9	7	3	31	-42	-49	6
1976	5	3	-5	-23	-27	-13	15
1977	-37	1	-1	-2	4	-5	1
1978	-8	-42	-12	78	0	-28	-9
1979	7	-2	11	-8	-42	-44	5
1980	-2	8	-16	26	0	-34	-29
1981	2	14	6	-10	-33	-33	11
1982	16	-30	15	15	0	-30	-5
1983	-29	-17	0	16	81	8	4
1984	8	2	0	-13	-27	-43	-4
1985	-7	25	12	-24	-38	-18	0
1986	2	22	-9	11	-18	-55	-24
1987	15	19	21	-12	-36	-30	7
1988	11	12	8	-20	-29	-15	3
1989	4	21	15	-12	-38	-24	6
1990	7	15	12	-19	-17	-29	4
1991	-4	12	7	4	-6	-26	6
1992	-9	3	1	-14	-10	-5	1
1993	13	2	18	0	-5	-49	-23
1994	12	14	14	-20	-30	-20	6

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	6	4	6	6	3	1	1	**27**
1923	3	6	6	4	3	1	6	**29**
1924	3	6	6	4	1	3	6	**29**
1925	2	6	6	4	1	2	4	**25**
1926	3	6	6	1	1	1	6	**24**
1927	6	5	6	6	1	1	4	**29**
1928	6	6	6	1	1	3	6	**29**
1929	5	6	6	5	1	1	6	**30**
1930	5	6	6	2	1	1	6	**27**
1931	4	6	6	4	1	2	6	**29**
1932	3	4	6	6	1	1	3	**24**
1933	3	6	6	3	2	1	6	**27**
1934	4	6	6	5	1	1	6	**29**
1935	1	6	6	6	1	1	6	**27**
1936	5	6	6	3	1	1	6	**28**
1937	6	6	6	6	1	1	3	**29**
1938	2	3	1	6	6	1	3	**22**
1939	4	6	6	1	1	1	6	**25**
1940	6	5	6	4	1	1	6	**29**
1941	6	6	5	6	4	1	1	**29**
1942	6	6	6	6	1	1	1	**27**
1943	6	5	6	3	1	1	3	**25**
1944	2	6	6	2	4	5	4	**29**
1945	6	5	6	6	1	1	2	**27**
1946	5	6	6	3	1	1	6	**28**
1947	3	6	6	1	1	1	6	**24**
1948	6	6	5	4	1	5	6	**33**
1949	3	6	6	2	1	5	6	**29**
1950	2	6	6	3	1	1	6	**25**
1951	4	6	4	1	1	6	6	**28**
1952	6	4	1	6	5	1	2	**25**
1953	4	6	5	2	1	2	6	**26**
1954	5	6	6	2	1	1	6	**27**
1955	2	6	6	4	1	1	6	**26**
1956	6	6	3	6	4	1	2	**28**
1957	6	6	6	6	1	1	6	**32**
1958	6	6	6	6	2	1	2	**29**
1959	4	6	6	3	1	1	6	**27**
1960	5	6	6	2	3	3	5	**30**
1961	6	6	6	3	1	2	6	**30**
1962	4	5	6	6	1	1	3	**26**
1963	6	6	6	6	3	1	2	**30**
1964	5	6	6	4	1	1	6	**29**
1965	5	6	4	6	1	1	2	**25**
1966	3	6	6	3	1	2	6	**27**
1967	6	4	1	6	6	1	2	**26**
1968	4	6	6	3	1	1	6	**27**
1969	5	1	6	6	6	1	1	**26**
1970	4	6	6	3	1	1	6	**27**
1971	3	6	6	1	1	4	3	**24**
1972	4	6	6	5	1	2	6	**30**
1973	6	4	6	6	1	1	4	**28**
1974	6	6	6	6	1	1	2	**28**
1975	4	6	6	6	1	1	6	**30**
1976	6	6	5	1	1	3	6	**28**
1977	1	6	5	5	6	5	6	**34**
1978	4	1	3	6	6	1	4	**25**
1979	6	5	6	4	1	1	6	**29**
1980	5	6	2	6	6	1	1	**27**
1981	6	6	6	4	1	1	6	**30**
1982	6	1	6	6	6	1	5	**31**
1983	1	2	6	6	6	6	6	**33**
1984	6	6	6	3	1	1	5	**28**
1985	4	6	6	1	1	2	6	**26**
1986	6	6	4	6	2	1	1	**26**
1987	6	6	6	3	1	1	6	**29**
1988	6	6	6	2	1	3	6	**30**
1989	6	6	6	3	1	1	6	**29**
1990	6	6	6	2	2	1	6	**29**
1991	5	6	6	6	4	1	6	**34**
1992	4	6	6	3	4	5	6	**34**
1993	6	6	6	6	5	1	1	**31**
1994	6	6	6	2	1	2	6	**29**
				73 - year Average:				**28**

Largemouth Bass Reservoir Habitat Index =

YEAR	Sum Total
1922	**594**
1923	**203**
1924	**203**
1925	**175**
1926	**216**
1927	**493**
1928	**203**
1929	**210**
1930	**189**
1931	**203**
1932	**168**
1933	**189**
1934	**203**
1935	**351**
1936	**476**
1937	**725**
1938	**352**
1939	**200**
1940	**232**
1941	**754**
1942	**378**
1943	**575**
1944	**203**
1945	**540**
1946	**224**
1947	**168**
1948	**231**
1949	**203**
1950	**175**
1951	**196**
1952	**475**
1953	**182**
1954	**216**
1955	**182**
1956	**700**
1957	**320**
1958	**725**
1959	**243**
1960	**210**
1961	**210**
1962	**260**
1963	**750**
1964	**232**
1965	**225**
1966	**243**
1967	**520**
1968	**189**
1969	**442**
1970	**189**
1971	**168**
1972	**210**
1973	**476**
1974	**420**
1975	**300**
1976	**196**
1977	**238**
1978	**425**
1979	**435**
1980	**540**
1981	**210**
1982	**713**
1983	**594**
1984	**476**
1985	**234**
1986	**494**
1987	**203**
1988	**210**
1989	**203**
1990	**203**
1991	**238**
1992	**238**
1993	**651**
1994	**203**
73 - year Average:	**329**
1929 - '34 Average:	**194**

STUDY: **501a**

CP # 12, SWP SAN LUIS RESERVOIR, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 544'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Elevation in feet												DFMRE							Elevation score								Fluctuation							Fluctuation score								
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	419	442	477	521	544	544	537	526	510	473	439	444	0	7	18	34	71	105	100	6	4	2	1	1	1	1	**16**	0	-7	-11	-16	-37	-34	5	6	4	3	2	1	1	6	**23**	**368**
1923	475	503	519	544	544	544	532	501	459	432	410	409	0	12	43	85	112	134	135	6	3	1	1	1	1	1	**14**	0	-12	-31	-42	-27	-22	-1	6	3	1	1	1	1	5	**18**	**252**
1924	425	434	461	505	526	526	516	494	464	437	405	403	18	28	50	80	107	139	141	2	1	1	1	1	1	1	**8**	0	-10	-22	-30	-27	-32	-2	6	4	1	1	1	1	5	**19**	**152**
1925	404	414	457	486	527	530	519	492	451	435	397	378	14	25	52	93	109	147	166	3	1	1	1	1	1	1	**9**	3	-11	-27	-41	-16	-38	-19	6	3	1	1	2	1	2	**16**	**144**
1926	384	403	430	482	525	530	520	494	463	453	387	384	14	24	50	81	91	157	160	3	1	1	1	1	1	1	**9**	5	-10	-26	-31	-10	-66	-3	6	4	1	1	4	1	5	**22**	**198**
1927	393	434	473	520	544	544	533	514	479	455	433	431	0	11	30	65	89	111	113	6	3	1	1	1	1	1	**14**	0	-11	-19	-35	-24	-22	-2	6	3	2	1	1	1	5	**19**	**266**
1928	463	493	510	542	544	544	531	502	453	428	405	404	0	13	42	91	116	139	140	6	3	1	1	1	1	1	**14**	0	-13	-29	-49	-25	-23	-1	6	3	1	1	1	1	5	**18**	**252**
1929	431	453	478	523	544	544	534	520	498	465	433	430	0	10	24	46	79	111	114	6	3	1	1	1	1	1	**14**	0	-10	-14	-22	-33	-32	-3	6	4	3	1	1	1	5	**21**	**294**
1930	430	435	481	530	541	544	524	492	461	453	438	415	0	20	52	83	91	106	129	6	1	1	1	1	1	1	**12**	3	-20	-32	-31	-8	-15	-23	6	2	1	1	4	3	1	**18**	**216**
1931	420	424	425	467	481	481	471	459	448	425	378	377	63	73	85	96	119	166	167	1	1	1	1	1	1	1	**7**	0	-10	-12	-11	-23	-47	-1	6	4	3	3	1	1	5	**23**	**161**
1932	390	389	451	509	537	530	514	489	470	468	441	427	14	30	55	74	76	103	117	3	1	1	1	1	1	1	**9**	-7	-16	-25	-19	-2	-27	-14	4	2	1	2	5	1	3	**18**	**162**
1933	441	447	448	492	512	521	514	500	478	444	400	400	23	30	44	66	100	144	144	1	1	1	1	1	1	1	**7**	9	-7	-14	-22	-34	-44	0	6	4	3	1	1	1	6	**22**	**154**
1934	414	411	456	509	518	518	504	480	457	439	405	393	26	40	64	87	105	139	151	1	1	1	1	1	1	1	**7**	0	-14	-24	-23	-18	-34	-12	6	3	1	1	2	1	3	**17**	**119**
1935	390	411	430	490	496	530	525	499	461	434	378	360	14	19	45	83	110	166	184	3	2	1	1	1	1	1	**10**	34	-5	-26	-38	-27	-56	-18	6	5	1	1	1	1	2	**17**	**170**
1936	397	408	419	475	520	540	532	512	475	452	432	414	4	12	32	69	92	112	130	5	3	1	1	1	1	1	**13**	20	-8	-20	-37	-23	-20	-18	6	4	2	1	1	2	2	**18**	**234**
1937	440	452	474	524	544	544	544	539	510	471	432	415	0	0	5	34	73	112	129	6	6	4	1	1	1	1	**20**	0	0	-5	-29	-39	-39	-17	6	6	5	1	1	1	2	**22**	**440**
1938	445	477	512	544	544	544	544	544	537	504	471	486	0	0	0	7	40	73	58	6	6	6	4	1	1	1	**25**	0	0	0	-7	-33	-33	15	6	6	6	4	1	1	6	**30**	**750**
1939	513	529	544	544	544	544	522	486	455	442	432	412	0	22	58	89	102	112	132	6	1	1	1	1	1	1	**12**	0	-22	-36	-31	-13	-10	-20	6	1	1	1	3	4	2	**18**	**216**
1940	417	414	408	474	514	536	526	500	459	435	374	373	8	18	44	85	109	170	171	4	2	1	1	1	1	1	**11**	22	-10	-26	-41	-24	-61	-1	6	4	1	1	1	1	5	**19**	**209**
1941	405	435	471	522	544	544	538	533	517	468	438	457	0	6	11	27	76	106	87	6	4	3	1	1	1	1	**17**	0	-6	-5	-16	-49	-30	19	6	4	5	2	1	1	6	**25**	**425**
1942	488	504	529	544	544	544	535	519	511	470	444	457	0	9	25	33	74	100	87	6	4	1	1	1	1	1	**15**	0	-9	-16	-8	-41	-26	13	6	4	2	4	1	1	6	**24**	**360**
1943	487	503	526	544	544	544	541	536	508	474	432	434	0	3	8	36	70	112	110	6	5	4	1	1	1	1	**19**	0	-3	-5	-28	-34	-42	2	6	5	5	1	1	1	6	**25**	**475**
1944	465	493	513	544	544	544	522	485	451	433	419	413	0	22	59	93	111	125	131	6	1	1	1	1	1	1	**12**	0	-22	-37	-34	-18	-14	-6	6	1	1	1	2	3	4	**18**	**216**
1945	418	455	489	522	544	544	524	493	452	427	410	413	0	20	51	92	117	134	131	6	1	1	1	1	1	1	**12**	0	-20	-31	-41	-25	-17	3	6	2	1	1	1	2	6	**19**	**228**
1946	445	477	502	541	544	544	521	483	436	403	400	401	0	23	61	108	141	144	143	6	1	1	1	1	1	1	**12**	0	-23	-38	-47	-33	-3	1	6	1	1	1	1	5	6	**21**	**252**
1947	430	459	488	518	544	544	522	483	445	425	409	407	0	22	61	99	119	135	137	6	1	1	1	1	1	1	**12**	0	-22	-39	-38	-20	-16	-2	6	1	1	1	2	2	5	**18**	**216**
1948	411	416	416	467	485	507	503	477	443	417	373	372	37	41	67	101	127	171	172	1	1	1	1	1	1	1	**7**	22	-4	-26	-34	-26	-44	-1	6	5	1	1	1	1	5	**20**	**140**
1949	403	432	463	508	529	544	522	486	445	423	405	409	0	22	58	99	121	139	135	6	1	1	1	1	1	1	**12**	15	-22	-36	-41	-22	-18	4	6	1	1	1	1	2	6	**18**	**216**
1950	428	441	452	502	540	544	528	496	463	432	378	376	0	16	48	81	112	166	168	6	2	1	1	1	1	1	**13**	4	-16	-32	-33	-31	-54	-2	6	2	1	1	1	1	5	**17**	**221**
1951	404	439	477	525	544	544	522	492	443	408	387	388	0	22	52	101	136	157	156	6	1	1	1	1	1	1	**12**	0	-22	-30	-49	-35	-21	1	6	1	1	1	1	1	6	**17**	**204**
1952	414	444	472	511	544	544	544	544	536	510	492	499	0	0	0	8	34	52	45	6	6	6	4	1	1	1	**25**	0	0	0	-8	-26	-18	7	6	6	6	4	1	2	6	**31**	**775**
1953	518	539	544	544	544	544	524	504	480	458	439	453	0	20	40	64	86	105	91	6	1	1	1	1	1	1	**12**	0	-20	-20	-24	-22	-19	14	6	2	2	1	1	2	6	**20**	**240**
1954	483	502	523	544	544	544	529	502	448	415	395	397	0	15	42	96	129	149	147	6	2	1	1	1	1	1	**13**	0	-15	-27	-54	-33	-20	2	6	3	1	1	1	2	6	**20**	**260**
1955	425	455	481	520	532	538	517	485	458	450	436	420	6	27	59	86	94	108	124	4	1	1	1	1	1	1	**10**	6	-21	-32	-27	-8	-14	-16	6	1	1	1	4	3	2	**18**	**180**
1956	423	435	478	516	544	544	530	512	491	459	430	440	0	14	32	53	85	114	104	6	3	1	1	1	1	1	**14**	0	-14	-18	-21	-32	-29	10	6	3	2	1	1	1	6	**20**	**280**
1957	467	492	500	531	544	544	526	497	459	435	415	417	0	18	47	85	109	129	127	6	2	1	1	1	1	1	**13**	0	-18	-29	-38	-24	-20	2	6	2	1	1	1	2	6	**19**	**247**
1958	449	478	503	535	544	544	544	543	536	500	481	495	0	0	1	8	44	63	49	6	6	5	4	1	1	1	**24**	0	0	-1	-7	-36	-19	14	6	6	5	4	1	2	6	**30**	**720**
1959	508	529	544	544	544	544	518	480	441	421	405	404	0	26	64	103	123	139	140	6	1	1	1	1	1	1	**12**	0	-26	-38	-39	-20	-16	-1	6	1	1	1	2	2	5	**18**	**216**
1960	437	453	458	504	543	544	522	486	452	438	385	362	0	22	58	92	106	159	182	6	1	1	1	1	1	1	**12**	1	-22	-36	-34	-14	-53	-23	6	1	1	1	3	1	1	**14**	**168**
1961	386	418	455	500	533	544	520	483	452	439	430	405	0	24	61	92	105	114	139	6	1	1	1	1	1	1	**12**	11	-24	-37	-31	-13	-9	-25	6	1	1	1	3	4	1	**17**	**204**
1962	421	436	470	504	543	544	517	475	422	382	334	342	0	27	69	122	162	210	202	6	1	1	1	1	1	1	**12**	1	-27	-42	-53	-40	-48	8	6	1	1	1	1	1	6	**17**	**204**
1963	379	411	440	485	520	538	530	514	488	461	440	451	6	14	30	56	83	104	93	4	3	1	1	1	1	1	**12**	18	-8	-16	-26	-27	-21	11	6	4	2	1	1	1	6	**21**	**252**
1964	480	507	523	544	544	544	514	473	426	398	372	376	0	30	71	118	146	172	168	6	1	1	1	1	1	1	**12**	0	-30	-41	-47	-28	-26	4	6	1	1	1	1	1	6	**17**	**204**
1965	382	415	452	504	530	544	539	522	490	469	441	445	0	5	22	54	75	103	99	6	4	1	1	1	1	1	**15**	14	-5	-17	-32	-21	-28	4	6	5	2	1	1	1	6	**22**	**330**
1966	473	501	518	544	544	544	521	482	432	401	391	396	0	23	62	112	143	153	148	6	1	1	1	1	1	1	**12**	0	-23	-39	-50	-31	-10	5	6	1	1	1	1	4	6	**20**	**240**
1967	422	454	488	527	544	544	544	544	537	525	506	509	0	0	0	7	19	38	35	6	6	6	4	2	1	1	**26**	0	0	0	-7	-12	-19	3	6	6	6	4	3	2	6	**33**	**858**
1968	528	544	544	544	544	544	523	486	447	428	411	413	0	21	58	97	116	133	131	6	1	1	1	1	1	1	**12**	0	-21	-37	-39	-19	-17	2	6	1	1	1	2	2	6	**19**	**228**
1969	444	473	505	542	544	544	544	544	537	517	489	503	0	0	0	7	27	55	41	6	6	6	4	1	1	1	**25**	0	0	0	-7	-20	-28	14	6	6	6	4	2	1	6	**31**	**775**
1970	517	538	544	544	544	544	526	496	454	432	413	419	0	18	48	90	112	131	125	6	2	1	1	1	1	1	**13**	0	-18	-30	-42	-22	-19	6	6	2	1	1	1	2	6	**19**	**247**
1971	449	480	511	538	542	544	525	500	467	438	411	423	0	19	44	77	106	133	121	6	2	1	1	1	1	1	**13**	2	-19	-25	-33	-29	-27	12	6	2	1	1	1	1	6	**18**	**234**
1972	453	479	494	526	544	544	521	482	441	420	403	400	0	23	62	103	124	141	144	6	1	1	1	1	1	1	**12**	0	-23	-39	-41	-21	-17	-3	6	1	1	1	1	2	5	**17**	**204**
1973	425	457	488	521	544	544	528	496	458	428	416	419	0	16	48	86	116	128	125	6	2	1	1	1	1	1	**13**	0	-16	-32	-38	-30	-12	3	6	2	1	1	1	3	6	**20**	**260**
1974	450	478	494	535	544	544	535	516	487	458	432	445	0	9	28	57	86	112	99	6	4	1	1	1	1	1	**15**	0	-9	-19	-29	-29	-26	13	6	4	2	1	1	1	6	**21**	**315**
1975	473	486	505	537	544	544	531	508	481	448	422	433	0	13	36	63	96	122	111	6	3	1	1	1	1	1	**14**	0	-13	-23	-27	-33	-26	11	6	3	1	1	1	1	6	**19**	**266**
1976	460	483	497	528	544	544	524	495	475	468	449	430	0	20	49	69	76	95	114	6	1	1	1	1	1	1	**12**	0	-20	-29	-20	-7	-19	-19	6	2	1	2	4	2	2	**19**	**228**
1977	431	437	439	457	457	457	458	446	426	403	395	410	87	86	98	118	141	149	134	1	1	1	1	1	1	1	**7**	0	1	-12	-20	-23	-8	15	6	6	3	2	1	4	6	**28**	**196**
1978	414	432	482	534	544	544	544	544	526	472	432	447	0	0	0	18	72	112	97	6	6	6	2	1	1	1	**23**	0	0	0	-18	-54	-40	15	6	6	6	2	1	1	6	**28**	**644**
1979	478	502	517	544	544	544	529	501	466	445	428	417	0	15	43	78	99	116	127	6	2	1	1	1	1	1	**13**	0	-15	-28	-35	-21	-17	-11	6	3	1	1	1	2	3	**17**	**221**
1980	451	482	503	544	544	544	544	538	520	489	450	467	0	0	6	24	55	94	77	6	6	4	1	1	1	1	**20**	0	0	-6	-18	-31	-39	17	6	6	4	2	1	1	6	**26**	**520**
1981	498	518	539	544	544	544	525	487	449	430	414	409	0	19	57	95	114	130	135	6	2	1	1	1	1	1	**13**	0	-19	-38	-38	-19	-16	-5	6	2	1	1	2	2	5	**19**	**247**
1982	432	466	498	533	544	544	544	544	530	494	462	472	0	0	0	14	50	82	72	6	6	6	3	1	1	1	**24**	0	0	0	-14	-36	-32	10	6	6	6	3	1	1	6	**29**	**696**
1983	496	515	536	544	544	544	544	544	542	541	528	541	0	0	0	2	3	16	3	6	6	6	5	5	2	5	**35**	0	0	0	-2	-1	-13	13	6	6	6	5	5	3	6	**37**	**1295**
1984	544	544	544	544	544	544	527	498	460	435	415	419	0	17	46	84	109	129	125	6	2	1	1	1	1	1	**13**	0	-17	-29	-38	-25	-20	4	6	2	1	1	1	2	6	**19**	**247**
1985	454	486	502	533	544	544	518	478	430	402	375	377	0	26	66	114	142	169	167	6	1	1	1	1	1	1	**12**	0	-26	-40	-48	-28	-27	2	6	1	1	1	1	1	6	**17**	**204**
1986	381	386	425	480	517	544	544	536	523	489	456	464	0	0	8	21	55	88	80	6	6	4	1	1	1	1	**20**	27	0	-8	-13	-34	-33	8	6	6	4	3	1	1	6	**27**	**540**
1987	494	505	531	544	544	544	522	485	456	445	437	414	0	22	59	88	99	107	130	6	1	1	1	1	1	1	**12**	0	-22	-37	-29	-11	-8	-23	6	1	1	1	3	4	1	**17**	**204**
1988	422	419	456	506	518	518	506	490	478	460	425	422	26	38	54	66	84	119	122	1	1	1	1	1	1	1	**7**	0	-12	-16	-12	-18	-35	-3	6	3	2	3	2	1	5	**22**	**154**
1989	418	435	456	493	493	526	514	483	450	441	385	395	18	30	61	94	103	159	149	2	1	1	1	1	1	1	**8**	33	-12	-31	-33	-9	-56	10	6	3	1	1	4	1	6	**22**	**176**
1990	411	427	459	500	521	525	508	478	460	456	399	383	19	36	66	84	88	145	161	2	1	1	1	1	1	1	**8**	4	-17	-30	-18	-4	-57	-16	6	2	1	2	5	1	2	**19**	**152**
1991	383	390	390	405	400	465	463	452	436	419	403	405	79	81	92	108	125	141	139	1	1	1	1	1	1	1	**7**	65	-2	-11	-16	-17	-16	2	6	5	3	2	2	2	6	**26**	**182**
1992	409	422	437	483	513	536	526	506	490	457	414	406	8	18	38	54	87	130	138	4	2	1	1	1	1	1	**11**	23	-10	-20	-16	-33	-43	-8	6	4	2	2	1	1	4	**20**	**220**
1993	406	413	462	519	543	544	534	520	504	471	432	431	0	10	24	40	73	112	113	6	3	1	1	1	1	1	**14**	1	-10	-14	-16	-33	-39	-1	6	4	3	2	1	1	5	**22**	**308**
1994	462	492	507	540	544	544	520	483	453	440	432	416	0	24	61	91	104	112	128	6	1	1	1	1	1	1	**12**	0	-24	-37	-30	-13	-8	-16	6	1	1	1	3	4	2	**18**	**216**
																							73 - year Average:				**14**											**73 - year Average:**				**21**	**305**
																																						1929 - '34 Average:					**184**

STUDY: **524**

CP # 4, SHASTA LAKE, EOP SURFACE ELEVATION

73-year maximum March - September Reservoir Elevation = 1067'

Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	989	993	999	1003	1019	1038	1060	1067	1062	1048	1029	1023
1923	1020	1017	1019	1023	1024	1026	1038	1033	1020	1000	982	981
1924	981	981	980	979	986	986	975	961	943	914	894	877
1925	881	897	906	916	992	999	1031	1043	1033	1009	993	991
1926	991	990	987	986	1015	1023	1039	1032	1011	988	968	961
1927	960	987	1010	1035	1026	1052	1067	1067	1058	1041	1019	1014
1928	1012	1017	1020	1028	1044	1046	1066	1062	1048	1022	1000	993
1929	989	989	990	991	998	1005	1006	999	990	974	956	948
1930	946	945	976	987	1004	1026	1037	1038	1019	999	986	984
1931	982	981	978	981	984	991	983	973	961	938	923	910
1932	905	904	920	931	941	965	968	977	969	955	941	934
1933	932	932	932	935	938	971	976	981	978	959	945	938
1934	937	937	945	963	982	994	995	990	981	945	921	906
1935	900	911	916	939	958	982	1027	1035	1027	1003	988	983
1936	982	980	979	1006	1032	1045	1055	1053	1045	1022	998	993
1937	988	985	980	976	978	1006	1035	1044	1040	1017	997	990
1938	987	1009	1020	1035	1030	1024	1049	1067	1067	1058	1045	1036
1939	1023	1017	1020	1022	1024	1039	1031	1024	999	977	947	943
1940	939	933	943	991	1017	1025	1059	1064	1054	1033	1005	1005
1941	1004	1004	1019	1020	1024	1045	1064	1067	1067	1058	1047	1036
1942	1023	1017	1020	1023	1028	1042	1067	1067	1067	1058	1045	1036
1943	1023	1017	1022	1030	1042	1051	1067	1067	1059	1045	1029	1023
1944	1022	1017	1015	1014	1023	1033	1038	1038	1019	995	974	967
1945	969	981	996	1003	1038	1051	1063	1067	1062	1040	1018	1013
1946	1012	1017	1018	1033	1039	1051	1063	1065	1055	1037	1021	1015
1947	1008	1009	1010	1006	1013	1032	1040	1029	1014	991	971	960
1948	968	971	974	1002	1000	1012	1053	1067	1066	1048	1025	1023
1949	1020	1017	1015	1011	1015	1050	1063	1064	1048	1019	997	994
1950	989	988	986	995	1011	1029	1045	1044	1031	1009	992	990
1951	1002	1017	1020	1033	1040	1057	1064	1067	1051	1029	1011	1008
1952	1006	1011	1019	1032	1038	1048	1058	1067	1067	1058	1046	1036
1953	1023	1017	1021	1022	1033	1051	1065	1067	1067	1057	1040	1036
1954	1023	1017	1021	1030	1035	1051	1067	1064	1059	1042	1029	1025
1955	1022	1017	1022	1024	1027	1025	1038	1046	1027	1003	985	985
1956	978	983	1017	1017	1019	1048	1067	1067	1067	1058	1045	1036
1957	1023	1017	1016	1017	1035	1052	1058	1067	1060	1043	1028	1030
1958	1023	1017	1021	1029	1067	1024	1053	1067	1067	1058	1047	1036
1959	1023	1017	1017	1034	1039	1052	1057	1056	1038	1013	997	999
1960	991	989	987	993	1021	1048	1055	1064	1046	1022	1003	1002
1961	997	1000	1017	1023	1044	1057	1063	1067	1048	1024	1003	1003
1962	997	997	1009	1005	1035	1052	1064	1065	1053	1033	1009	1006
1963	1023	1017	1021	1025	1045	1055	1052	1067	1063	1049	1031	1029
1964	1023	1017	1018	1033	1034	1037	1031	1026	1011	989	969	967
1965	966	977	1017	1022	1041	1053	1065	1066	1057	1042	1029	1028
1966	1023	1017	1021	1037	1049	1055	1063	1061	1046	1026	1009	1002
1967	994	1008	1021	1030	1044	1048	1064	1067	1067	1058	1047	1036
1968	1023	1017	1019	1025	1034	1054	1056	1058	1042	1021	1012	1010
1969	1005	1006	1017	1022	1027	1048	1063	1067	1067	1058	1047	1036
1970	1023	1017	1020	1017	1025	1052	1055	1055	1043	1023	1006	1004
1971	1004	1017	1020	1028	1042	1043	1064	1067	1067	1058	1047	1036
1972	1023	1017	1022	1033	1045	1056	1067	1067	1050	1029	1015	1013
1973	1014	1017	1021	1030	1034	1053	1065	1067	1059	1041	1024	1020
1974	1023	1017	1018	1017	1036	1025	1058	1067	1067	1058	1047	1036
1975	1023	1017	1021	1024	1045	1039	1061	1067	1067	1057	1045	1036
1976	1023	1017	1018	1017	1012	1020	1027	1023	998	978	974	976
1977	978	980	980	980	970	970	952	946	924	906	888	885
1978	873	872	916	1019	1031	1047	1067	1067	1064	1053	1040	1036
1979	1023	1017	1013	1015	1026	1044	1052	1060	1046	1026	1010	1009
1980	1009	1012	1015	1029	1019	1046	1059	1064	1056	1045	1035	1035
1981	1023	1017	1020	1029	1042	1056	1064	1062	1042	1018	1001	998
1982	994	1017	1018	1033	1029	1046	1051	1067	1067	1058	1047	1036
1983	1023	1017	1020	1022	1017	1045	1050	1067	1067	1058	1047	1036
1984	1023	1017	1018	1034	1047	1056	1064	1067	1059	1043	1030	1032
1985	1023	1017	1022	1023	1027	1034	1042	1034	1011	991	975	973
1986	975	979	989	1014	1017	1029	1047	1049	1037	1021	1005	1009
1987	1009	1008	1007	1008	1018	1045	1046	1040	1007	983	948	946
1988	942	944	975	998	998	1001	1007	1007	989	956	941	939
1989	939	952	958	965	972	1036	1056	1052	1036	1015	1005	1005
1990	1008	1006	1003	1009	1010	1017	1011	1017	1002	977	957	954
1991	948	946	945	946	942	968	979	979	969	956	942	934
1992	933	931	932	937	975	998	1009	1002	987	962	949	943
1993	939	935	950	987	1019	1031	1059	1067	1067	1054	1044	1045
1994	1043	1017	1019	1020	1026	1030	1030	1028	1001	981	959	956

YEAR	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**
1922	29	7	0	5	19	38	44	1	4	6	4	2	1	1	**19**
1923	41	29	34	47	67	85	86	1	1	1	1	1	1	1	**7**
1924	81	92	106	124	153	173	190	1	1	1	1	1	1	1	**7**
1925	68	36	24	34	58	74	76	1	1	1	1	1	1	1	**7**
1926	44	28	35	56	79	99	106	1	1	1	1	1	1	1	**7**
1927	15	0	0	9	26	48	53	2	6	6	4	1	1	1	**21**
1928	21	1	5	19	45	67	74	1	5	4	2	1	1	1	**15**
1929	62	61	68	77	93	111	119	1	1	1	1	1	1	1	**7**
1930	41	30	29	48	68	81	83	1	1	1	1	1	1	1	**7**
1931	76	84	94	106	129	144	157	1	1	1	1	1	1	1	**7**
1932	102	99	90	98	112	126	133	1	1	1	1	1	1	1	**7**
1933	96	91	86	89	108	122	129	1	1	1	1	1	1	1	**7**
1934	73	72	77	86	122	146	161	1	1	1	1	1	1	1	**7**
1935	85	40	32	40	64	79	84	1	1	1	1	1	1	1	**7**
1936	22	12	14	22	45	69	74	1	3	3	1	1	1	1	**11**
1937	61	32	23	27	50	70	77	1	1	1	1	1	1	1	**7**
1938	43	18	0	0	9	22	31	1	2	6	6	4	1	1	**21**
1939	28	36	43	68	90	120	124	1	1	1	1	1	1	1	**7**
1940	42	8	3	13	34	62	62	1	4	5	3	1	1	1	**16**
1941	22	3	0	0	9	20	31	1	5	6	6	4	1	1	**24**
1942	25	0	0	0	9	22	31	1	6	6	6	4	1	1	**25**
1943	16	0	0	8	22	38	44	2	6	6	4	1	1	1	**21**
1944	34	29	29	48	72	93	100	1	1	1	1	1	1	1	**7**
1945	16	4	0	5	27	49	54	2	5	6	4	1	1	1	**20**
1946	16	4	2	12	30	46	52	2	5	5	3	1	1	1	**18**
1947	35	27	38	53	76	96	107	1	1	1	1	1	1	1	**7**
1948	55	14	0	1	19	42	44	1	3	6	5	2	1	1	**19**
1949	17	4	3	19	48	70	73	2	5	5	2	1	1	1	**17**
1950	38	22	23	36	58	75	77	1	1	1	1	1	1	1	**7**
1951	10	3	0	16	38	56	59	3	5	6	2	1	1	1	**19**
1952	19	9	0	0	9	21	31	2	4	6	6	4	1	1	**24**
1953	16	2	0	0	10	27	31	2	5	6	6	3	1	1	**24**
1954	16	0	3	8	25	38	42	2	6	5	4	1	1	1	**20**
1955	42	29	21	40	64	82	82	1	1	1	1	1	1	1	**7**
1956	19	0	0	0	9	22	31	2	6	6	6	4	1	1	**26**
1957	15	9	0	7	24	39	37	2	4	6	4	1	1	1	**19**
1958	43	14	0	0	9	20	31	1	3	6	6	4	1	1	**22**
1959	15	10	11	29	54	70	68	2	3	3	1	1	1	1	**12**
1960	19	12	3	21	45	64	65	2	3	5	1	1	1	1	**14**
1961	10	4	0	19	43	64	64	3	5	6	2	1	1	1	**19**
1962	15	3	2	14	34	58	61	2	5	5	3	1	1	1	**18**
1963	12	15	0	4	18	36	38	3	2	6	5	2	1	1	**20**
1964	30	36	41	56	78	98	100	1	1	1	1	1	1	1	**7**
1965	14	2	1	10	25	38	39	3	5	5	3	1	1	1	**19**
1966	12	4	6	21	41	58	65	3	5	4	1	1	1	1	**16**
1967	19	3	0	0	9	20	31	2	5	6	6	4	1	1	**25**
1968	13	11	9	25	46	55	57	3	3	4	1	1	1	1	**14**
1969	19	4	0	0	9	20	31	2	5	6	6	4	1	1	**25**
1970	15	12	12	24	44	61	63	2	3	3	1	1	1	1	**12**
1971	24	3	0	0	9	20	31	1	5	6	6	4	1	1	**24**
1972	11	0	0	17	38	52	54	3	6	6	2	1	1	1	**20**
1973	14	2	0	8	26	43	47	3	5	6	4	1	1	1	**21**
1974	42	9	0	0	9	20	31	1	4	6	6	4	1	1	**23**
1975	28	6	0	0	10	22	31	1	4	6	6	3	1	1	**22**
1976	47	40	44	69	89	93	91	1	1	1	1	1	1	1	**7**
1977	97	115	121	143	161	179	182	1	1	1	1	1	1	1	**7**
1978	20	0	0	3	14	27	31	1	6	6	5	3	1	1	**23**
1979	23	15	7	21	41	57	58	1	2	4	1	1	1	1	**11**
1980	21	8	3	11	22	32	32	1	4	5	3	1	1	1	**16**
1981	11	3	5	25	49	66	69	3	5	4	1	1	1	1	**16**
1982	21	16	0	0	9	20	31	1	2	6	6	4	1	1	**21**
1983	22	17	0	0	9	20	31	1	2	6	6	4	1	1	**21**
1984	11	3	0	8	24	37	35	3	5	6	4	1	1	1	**21**
1985	33	25	33	56	76	92	94	1	1	1	1	1	1	1	**7**
1986	38	20	18	30	46	62	58	1	1	2	1	1	1	1	**8**
1987	22	21	27	60	84	119	121	1	1	1	1	1	1	1	**7**
1988	66	60	60	78	111	126	128	1	1	1	1	1	1	1	**7**
1989	31	11	15	31	52	62	62	1	3	2	1	1	1	1	**10**
1990	50	56	50	65	90	110	113	1	1	1	1	1	1	1	**7**
1991	99	88	88	98	111	125	133	1	1	1	1	1	1	1	**7**
1992	69	58	65	80	105	118	124	1	1	1	1	1	1	1	**7**
1993	36	8	0	0	13	23	22	1	4	6	6	3	1	1	**22**
1994	37	37	39	66	86	108	111	1	1	1	1	1	1	1	**7**
												73 - year Average:			**15**

YEAR	Change MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	19	22	7	-5	-14	-19	-6	6	6	6	5	3	2	4	**32**	**608**
1923	2	12	-5	-13	-20	-18	-1	6	6	5	3	2	2	5	**29**	**203**
1924	0	-11	-14	-18	-29	-20	-17	6	3	3	2	1	2	2	**19**	**133**
1925	7	32	12	-10	-24	-16	-2	6	6	6	4	1	2	5	**30**	**210**
1926	8	16	-7	-21	-23	-20	-7	6	6	4	1	1	2	4	**24**	**168**
1927	26	15	0	-9	-17	-22	-5	6	6	6	4	2	1	5	**30**	**630**
1928	2	20	-4	-14	-26	-22	-7	6	6	5	3	1	1	4	**26**	**390**
1929	7	1	-7	-9	-16	-18	-8	6	6	4	4	2	2	4	**28**	**196**
1930	22	11	1	-19	-20	-13	-2	6	6	6	2	2	3	5	**30**	**210**
1931	7	-8	-10	-12	-23	-15	-13	6	4	4	3	1	3	3	**24**	**168**
1932	24	3	9	-8	-14	-14	-7	6	6	6	4	3	3	4	**32**	**224**
1933	33	5	5	-3	-19	-14	-7	6	6	6	5	2	3	4	**32**	**224**
1934	12	1	-5	-9	-36	-24	-15	6	6	5	4	1	1	3	**26**	**182**
1935	24	45	8	-8	-24	-15	-5	6	6	6	4	1	3	5	**31**	**217**
1936	13	10	-2	-8	-23	-24	-5	6	6	5	4	1	1	5	**28**	**308**
1937	28	29	9	-4	-23	-20	-7	6	6	6	5	1	2	4	**30**	**210**
1938	-6	25	18	0	-9	-13	-9	4	6	6	6	4	3	4	**33**	**693**
1939	15	-8	-7	-25	-22	-30	-4	6	4	4	1	1	1	5	**22**	**154**
1940	8	34	5	-10	-21	-28	0	6	6	6	4	1	1	6	**30**	**480**
1941	21	19	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1942	14	25	0	0	-9	-13	-9	6	6	6	6	4	3	4	**35**	**875**
1943	9	16	0	-8	-14	-16	-6	6	6	6	4	3	2	4	**31**	**651**
1944	10	5	0	-19	-24	-21	-7	6	6	6	2	1	1	4	**26**	**182**
1945	13	12	4	-5	-22	-22	-5	6	6	6	5	1	1	5	**30**	**600**
1946	12	12	2	-10	-18	-16	-6	6	6	6	4	2	2	4	**30**	**540**
1947	19	8	-11	-15	-23	-20	-11	6	6	3	3	1	2	3	**24**	**168**
1948	12	41	14	-1	-18	-23	-2	6	6	6	5	2	1	5	**31**	**589**
1949	35	13	1	-16	-29	-22	-3	6	6	6	2	1	1	5	**27**	**459**
1950	18	16	-1	-13	-22	-17	-2	6	6	5	3	1	2	5	**28**	**196**
1951	17	7	3	-16	-22	-18	-3	6	6	6	2	1	2	5	**28**	**532**
1952	10	10	9	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**840**
1953	18	14	2	0	-10	-17	-4	6	6	6	6	4	2	5	**35**	**840**
1954	16	16	-3	-5	-17	-13	-4	6	6	5	5	2	3	5	**32**	**640**
1955	-2	13	8	-19	-24	-18	0	5	6	6	2	1	2	6	**28**	**196**
1956	29	19	0	0	-9	-13	-9	6	6	6	6	4	3	4	**35**	**910**
1957	17	6	9	-7	-17	-15	2	6	6	6	4	2	3	6	**33**	**627**
1958	-43	29	14	0	-9	-11	-11	1	6	6	6	4	3	3	**29**	**638**
1959	13	5	-1	-18	-25	-16	2	6	6	5	2	1	2	6	**28**	**336**
1960	27	7	9	-18	-24	-19	-1	6	6	6	2	1	2	5	**28**	**392**
1961	13	6	4	-19	-24	-21	0	6	6	6	2	1	1	6	**28**	**532**
1962	17	12	1	-12	-20	-24	-3	6	6	6	3	2	1	5	**29**	**522**
1963	10	-3	15	-4	-14	-18	-2	6	5	6	5	3	2	5	**32**	**640**
1964	3	-6	-5	-15	-22	-20	-2	6	4	5	3	1	2	5	**26**	**182**
1965	12	12	1	-9	-15	-13	-1	6	6	6	4	3	3	5	**33**	**627**
1966	6	8	-2	-15	-20	-17	-7	6	6	5	3	2	2	4	**28**	**448**
1967	4	16	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1968	20	2	2	-16	-21	-9	-2	6	6	6	2	1	4	5	**30**	**420**
1969	21	15	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1970	27	3	0	-12	-20	-17	-2	6	6	6	3	2	2	5	**30**	**360**
1971	1	21	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1972	11	11	0	-17	-21	-14	-2	6	6	6	2	1	3	5	**29**	**580**
1973	19	12	2	-8	-18	-17	-4	6	6	6	4	2	2	5	**31**	**651**
1974	-11	33	9	0	-9	-11	-11	3	6	6	6	4	3	3	**31**	**713**
1975	-6	22	6	0	-10	-12	-9	4	6	6	6	4	3	4	**33**	**726**
1976	8	7	-4	-25	-20	-4	2	6	6	5	1	2	5	6	**31**	**217**
1977	0	-18	-6	-22	-18	-18	-3	6	2	4	1	2	2	5	**22**	**154**
1978	16	20	0	-3	-11	-13	-4	6	6	6	5	3	3	5	**34**	**782**
1979	18	8	8	-14	-20	-16	-1	6	6	6	3	2	2	5	**30**	**330**
1980	27	13	5	-8	-11	-10	0	6	6	6	4	3	4	6	**35**	**560**
1981	14	8	-2	-20	-24	-17	-3	6	6	5	2	1	2	5	**27**	**432**
1982	17	5	16	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1983	28	5	17	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1984	9	8	3	-8	-16	-13	2	6	6	6	4	2	3	6	**33**	**693**
1985	7	8	-8	-23	-20	-16	-2	6	6	4	1	2	2	5	**26**	**182**
1986	12	18	2	-12	-16	-16	4	6	6	6	3	2	2	6	**31**	**248**
1987	27	1	-6	-33	-24	-35	-2	6	6	4	1	1	1	5	**24**	**168**
1988	3	6	0	-18	-33	-15	-2	6	6	6	2	1	3	5	**29**	**203**
1989	64	20	-4	-16	-21	-10	0	6	6	5	2	1	4	6	**30**	**300**
1990	7	-6	6	-15	-25	-20	-3	6	4	6	3	1	2	5	**27**	**189**
1991	26	11	0	-10	-13	-14	-8	6	6	6	4	3	3	4	**32**	**224**
1992	23	11	-7	-15	-25	-13	-6	6	6	4	3	1	3	4	**27**	**189**
1993	12	28	8	0	-13	-10	1	6	6	6	6	3	4	6	**37**	**814**
1994	4	0	-2	-27	-20	-22	-3	6	6	5	1	2	1	5	**26**	**182**
										73 - year Average:					**30**	**450**
													1929 - '34 Average:			**201**

STUDY: **524**

CP # 6, LAKE OROVILLE, EOP SURFACE ELEVATION

73-year maximum March - September Reservoir Elevation = 900'

Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	833	833	835	844	850	858	893	900	900	880	876	876	42	7	0	0	20	24	24
1923	874	874	858	862	859	871	894	900	881	842	813	816	29	6	0	19	58	87	84
1924	808	796	767	772	791	780	767	753	730	709	700	694	120	133	147	170	191	200	206
1925	694	698	704	721	788	777	805	816	804	779	767	766	123	95	84	96	121	133	134
1926	763	764	766	780	827	847	887	873	852	820	806	788	53	13	27	48	80	94	112
1927	769	800	800	827	849	863	890	900	900	865	853	850	37	10	0	0	35	47	50
1928	848	858	859	868	871	849	878	863	843	790	737	730	51	22	37	57	110	163	170
1929	717	712	710	716	729	746	752	754	747	729	720	714	154	148	146	153	171	180	186
1930	705	702	763	792	819	851	873	876	858	819	785	782	49	27	24	42	81	115	118
1931	771	764	756	769	782	798	785	771	750	730	719	713	102	115	129	150	170	181	187
1932	707	698	704	728	750	782	787	812	782	729	712	705	118	113	88	118	171	188	195
1933	696	684	682	694	703	708	717	733	728	712	702	695	192	183	167	172	188	198	205
1934	691	682	685	712	735	762	754	744	719	695	685	678	138	146	156	181	205	215	222
1935	663	669	676	703	727	759	849	859	845	822	810	792	141	51	41	55	78	90	108
1936	773	764	762	814	849	860	886	897	886	846	826	823	40	14	3	14	54	74	77
1937	806	795	790	793	811	837	862	875	852	827	810	803	63	38	25	48	73	90	97
1938	799	816	854	858	849	849	882	900	900	899	896	887	51	18	0	0	1	4	13
1939	874	864	854	845	837	833	822	813	778	713	658	653	67	78	87	122	187	242	247
1940	642	632	634	706	814	849	879	883	867	829	821	811	51	21	17	33	71	79	89
1941	800	797	838	849	849	858	886	900	900	890	886	887	42	14	0	0	10	14	13
1942	874	874	849	849	850	867	882	900	900	885	882	882	33	18	0	0	15	18	18
1943	874	869	861	849	856	859	887	897	895	863	853	853	41	13	3	5	37	47	47
1944	854	857	856	862	857	868	879	895	875	835	797	791	32	21	5	25	65	103	109
1945	786	793	809	823	862	865	880	896	877	837	812	807	35	20	4	23	63	88	93
1946	807	815	849	864	868	868	887	892	870	831	788	785	32	13	8	30	69	112	115
1947	777	782	791	797	823	845	855	850	832	777	728	721	55	45	50	68	123	172	179
1948	724	725	721	757	761	781	841	870	876	843	826	810	119	59	30	24	57	74	90
1949	796	788	786	788	794	820	840	844	821	786	776	766	80	60	56	79	114	124	134
1950	755	748	745	774	821	851	883	900	886	853	848	837	49	17	0	14	47	52	63
1951	841	849	854	853	858	870	886	900	889	848	820	820	30	14	0	11	52	80	80
1952	823	826	849	849	852	862	894	900	900	900	899	887	38	6	0	0	0	1	13
1953	874	874	858	850	867	867	883	900	900	870	869	870	33	17	0	0	30	31	30
1954	872	871	874	858	857	859	883	863	847	800	753	753	41	17	37	53	100	147	147
1955	755	756	764	777	782	795	804	820	790	726	704	700	105	96	80	110	174	196	200
1956	691	688	843	849	849	864	892	900	900	873	870	874	36	8	0	0	27	30	26
1957	869	874	874	871	853	863	863	881	866	828	793	798	37	37	19	34	72	107	102
1958	800	804	823	844	849	849	879	900	900	898	894	887	51	21	0	0	2	6	13
1959	874	874	874	862	852	867	871	874	853	808	757	761	33	29	26	47	92	143	139
1960	754	742	737	752	813	853	853	859	840	799	788	782	47	47	41	60	101	112	118
1961	771	774	783	794	823	840	846	851	831	775	721	717	60	54	49	69	125	179	183
1962	700	696	705	720	783	819	840	839	824	766	741	720	81	60	61	76	134	159	180
1963	794	807	836	859	867	858	876	900	893	857	845	846	42	24	0	7	43	55	54
1964	847	859	861	866	874	874	880	884	867	826	779	753	26	20	16	33	74	121	147
1965	739	740	849	849	863	870	887	882	884	855	849	851	30	13	18	16	45	51	49
1966	855	859	860	864	870	874	887	876	856	814	764	758	26	13	24	44	86	136	142
1967	744	755	793	845	860	853	879	900	900	900	896	887	47	21	0	0	0	4	13
1968	874	874	873	858	861	866	863	867	848	802	764	761	34	37	33	52	98	136	139
1969	762	768	791	849	849	865	895	900	900	895	893	874	35	5	0	0	5	7	26
1970	874	874	850	849	849	874	869	871	857	818	787	789	26	31	29	43	82	113	111
1971	792	818	846	864	874	874	893	900	900	871	853	855	26	7	0	0	29	47	45
1972	860	866	865	869	867	874	884	886	867	826	781	782	26	16	14	33	74	119	118
1973	778	793	820	849	849	860	882	900	869	829	810	806	40	18	0	31	71	90	94
1974	810	849	850	854	864	849	883	900	900	889	888	886	51	17	0	0	11	12	14
1975	874	874	874	874	855	852	881	900	900	877	876	877	48	19	0	0	23	24	23
1976	873	874	874	874	874	874	871	862	840	794	756	756	26	29	38	60	106	144	144
1977	746	735	718	715	699	694	670	661	632	608	600	597	206	230	239	268	292	300	303
1978	586	586	622	748	801	859	878	897	891	871	861	869	41	22	3	9	29	39	31
1979	871	874	874	871	853	863	878	896	863	828	819	816	37	22	4	37	72	81	84
1980	822	825	833	850	849	865	881	893	888	873	866	865	35	19	7	12	27	34	35
1981	864	865	873	860	868	865	875	872	851	806	762	762	35	25	28	49	94	138	138
1982	770	849	849	859	862	859	884	900	900	889	886	887	41	16	0	0	11	14	13
1983	873	862	858	853	849	849	877	900	900	900	899	887	51	23	0	0	0	1	13
1984	874	860	849	869	869	871	885	894	878	840	830	832	29	15	6	22	60	70	68
1985	836	850	860	866	874	871	886	872	849	804	754	739	29	14	28	51	96	146	161
1986	730	726	733	769	849	849	871	875	871	842	831	842	51	29	25	29	58	69	58
1987	844	850	846	847	858	867	855	845	817	756	716	710	33	45	55	83	144	184	190
1988	698	701	741	767	769	770	769	758	734	713	701	698	130	131	142	166	187	199	202
1989	693	711	721	729	732	844	870	860	843	796	778	775	56	30	40	57	104	122	125
1990	785	786	768	782	789	816	793	794	768	721	707	697	84	107	106	132	179	193	203
1991	679	671	649	646	642	697	720	734	717	695	689	688	203	180	166	183	205	211	212
1992	683	679	680	683	715	745	761	751	726	703	692	686	155	139	149	174	197	208	214
1993	679	675	693	760	813	861	894	900	900	881	874	873	39	6	0	0	19	26	27
1994	874	874	874	871	862	874	872	867	845	803	755	750	26	28	33	55	97	145	150

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Fluctuation MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	1	4	6	6	1	1	1	**20**	8	35	7	0	-20	-4	0	6	6	6	6	2	5	6	**37**	**740**
1923	1	4	6	2	1	1	1	**16**	12	23	6	-19	-39	-29	3	6	6	6	2	1	1	6	**28**	**448**
1924	1	1	1	1	1	1	1	**7**	-11	-13	-14	-23	-21	-9	-6	3	3	3	1	1	4	4	**19**	**133**
1925	1	1	1	1	1	1	1	**7**	-11	28	11	-12	-25	-12	-1	3	6	6	3	1	3	5	**27**	**189**
1926	1	3	1	1	1	1	1	**9**	20	40	-14	-21	-32	-14	-18	6	6	3	1	1	3	2	**22**	**198**
1927	1	3	6	6	1	1	1	**19**	14	27	10	0	-35	-12	-3	6	6	6	6	1	3	5	**33**	**627**
1928	1	1	1	1	1	1	1	**7**	-22	29	-15	-20	-53	-53	-7	1	6	3	2	1	1	4	**18**	**126**
1929	1	1	1	1	1	1	1	**7**	17	6	2	-7	-18	-9	-6	6	6	6	4	2	4	4	**32**	**224**
1930	1	1	1	1	1	1	1	**7**	32	22	3	-18	-39	-34	-3	6	6	6	2	1	1	5	**27**	**189**
1931	1	1	1	1	1	1	1	**7**	16	-13	-14	-21	-20	-11	-6	6	3	3	1	2	3	4	**22**	**154**
1932	1	1	1	1	1	1	1	**7**	32	5	25	-30	-53	-17	-7	6	6	6	1	1	2	4	**26**	**182**
1933	1	1	1	1	1	1	1	**7**	5	9	16	-5	-16	-10	-7	6	6	6	5	2	4	4	**33**	**231**
1934	1	1	1	1	1	1	1	**7**	27	-8	-10	-25	-24	-10	-7	6	4	4	1	1	4	4	**24**	**168**
1935	1	1	1	1	1	1	1	**7**	32	90	10	-14	-23	-12	-18	6	6	6	3	1	3	2	**27**	**189**
1936	1	3	5	3	1	1	1	**15**	11	26	11	-11	-40	-20	-3	6	6	6	3	1	2	5	**29**	**435**
1937	1	1	1	1	1	1	1	**7**	26	25	13	-23	-25	-17	-7	6	6	6	1	1	2	4	**26**	**182**
1938	1	2	6	6	5	5	3	**28**	0	33	18	0	-1	-3	-9	6	6	6	6	5	5	4	**38**	**1064**
1939	1	1	1	1	1	1	1	**7**	-4	-11	-9	-35	-65	-55	-5	5	3	4	1	1	1	5	**20**	**140**
1940	1	1	2	1	1	1	1	**8**	35	30	4	-16	-38	-8	-10	6	6	6	2	1	4	4	**29**	**232**
1941	1	3	6	6	3	3	3	**25**	9	28	14	0	-10	-4	1	6	6	6	6	4	5	6	**39**	**975**
1942	1	2	6	6	2	2	2	**21**	17	15	18	0	-15	-3	0	6	6	6	6	3	5	6	**38**	**798**
1943	1	3	5	4	1	1	1	**16**	3	28	10	-2	-32	-10	0	6	6	6	5	1	4	6	**34**	**544**
1944	1	1	4	1	1	1	1	**10**	11	11	16	-20	-40	-38	-6	6	6	6	2	1	1	4	**26**	**260**
1945	1	1	5	1	1	1	1	**11**	3	15	16	-19	-40	-25	-5	6	6	6	2	1	1	5	**27**	**297**
1946	1	3	4	1	1	1	1	**12**	0	19	5	-22	-39	-43	-3	6	6	6	1	1	1	5	**26**	**312**
1947	1	1	1	1	1	1	1	**7**	22	10	-5	-18	-55	-49	-7	6	6	5	2	1	1	4	**25**	**175**
1948	1	1	1	1	1	1	1	**7**	20	60	29	6	-33	-17	-16	6	6	6	6	1	2	2	**29**	**203**
1949	1	1	1	1	1	1	1	**7**	26	20	4	-23	-35	-10	-10	6	6	6	1	1	4	4	**28**	**196**
1950	1	2	6	3	1	1	1	**15**	30	32	17	-14	-33	-5	-11	6	6	6	3	1	5	3	**30**	**450**
1951	1	3	6	3	1	1	1	**16**	12	16	14	-11	-41	-28	0	6	6	6	3	1	1	6	**29**	**464**
1952	1	4	6	6	6	5	3	**31**	10	32	6	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1178**
1953	1	2	6	6	1	1	1	**18**	0	16	17	0	-30	-1	1	6	6	6	6	1	5	6	**36**	**648**
1954	1	2	1	1	1	1	1	**8**	2	24	-20	-16	-47	-47	0	6	6	2	2	1	1	6	**24**	**192**
1955	1	1	1	1	1	1	1	**7**	13	9	16	-30	-64	-22	-4	6	6	6	1	1	1	5	**26**	**182**
1956	1	4	6	6	1	1	1	**20**	15	28	8	0	-27	-3	4	6	6	6	6	1	5	6	**36**	**720**
1957	1	1	2	1	1	1	1	**8**	10	0	18	-15	-38	-35	5	6	6	6	3	1	1	6	**29**	**232**
1958	1	1	6	6	5	4	3	**26**	0	30	21	0	-2	-4	-7	6	6	6	6	5	5	4	**38**	**988**
1959	1	1	1	1	1	1	1	**7**	15	4	3	-21	-45	-51	4	6	6	6	1	1	1	6	**27**	**189**
1960	1	1	1	1	1	1	1	**7**	40	0	6	-19	-41	-11	-6	6	6	6	2	1	3	4	**28**	**196**
1961	1	1	1	1	1	1	1	**7**	17	6	5	-20	-56	-54	-4	6	6	6	2	1	1	5	**27**	**189**
1962	1	1	1	1	1	1	1	**7**	36	21	-1	-15	-58	-25	-21	6	6	5	3	1	1	1	**23**	**161**
1963	1	1	6	4	1	1	1	**15**	-9	18	24	-7	-36	-12	1	4	6	6	4	1	3	6	**30**	**450**
1964	1	1	2	1	1	1	1	**8**	0	6	4	-17	-41	-47	-26	6	6	6	2	1	1	1	**23**	**184**
1965	1	3	2	2	1	1	1	**11**	7	17	-5	2	-29	-6	2	6	6	5	6	1	4	6	**34**	**374**
1966	1	3	1	1	1	1	1	**9**	4	13	-11	-20	-42	-50	-6	6	6	3	2	1	1	4	**23**	**207**
1967	1	1	6	6	6	5	3	**28**	-7	26	21	0	0	-4	-9	4	6	6	6	6	5	4	**37**	**1036**
1968	1	1	1	1	1	1	1	**7**	5	-3	4	-19	-46	-38	-3	6	5	6	2	1	1	5	**26**	**182**
1969	1	4	6	6	4	4	1	**26**	16	30	5	0	-5	-2	-19	6	6	6	6	5	5	2	**36**	**936**
1970	1	1	1	1	1	1	1	**7**	25	-5	2	-14	-39	-31	2	6	5	6	3	1	1	6	**28**	**196**
1971	1	4	6	6	1	1	1	**20**	0	19	7	0	-29	-18	2	6	6	6	6	1	2	6	**33**	**660**
1972	1	2	3	1	1	1	1	**10**	7	10	2	-19	-41	-45	1	6	6	6	2	1	1	6	**28**	**280**
1973	1	2	6	1	1	1	1	**13**	11	22	18	-31	-40	-19	-4	6	6	6	1	1	2	5	**27**	**351**
1974	1	2	6	6	3	3	3	**24**	-15	34	17	0	-11	-1	-2	3	6	6	6	3	5	5	**34**	**816**
1975	1	2	6	6	1	1	1	**18**	-3	29	19	0	-23	-1	1	5	6	6	6	1	5	6	**35**	**630**
1976	1	1	1	1	1	1	1	**7**	0	-3	-9	-22	-46	-38	0	6	5	4	1	1	1	6	**24**	**168**
1977	1	1	1	1	1	1	1	**7**	-5	-24	-9	-29	-24	-8	-3	5	1	4	1	1	4	5	**21**	**147**
1978	1	1	5	4	1	1	1	**14**	58	19	19	-6	-20	-10	8	6	6	6	4	2	4	6	**34**	**476**
1979	1	1	5	1	1	1	1	**11**	10	15	18	-33	-35	-9	-3	6	6	6	1	1	4	5	**29**	**319**
1980	1	2	4	3	1	1	1	**13**	16	16	12	-5	-15	-7	-1	6	6	6	5	3	4	5	**35**	**455**
1981	1	1	1	1	1	1	1	**7**	-3	10	-3	-21	-45	-44	0	5	6	5	1	1	1	6	**25**	**175**
1982	1	2	6	6	3	3	3	**24**	-3	25	16	0	-11	-3	1	5	6	6	6	3	5	6	**37**	**888**
1983	1	1	6	6	6	5	3	**28**	0	28	23	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1064**
1984	1	2	4	1	1	1	1	**11**	2	14	9	-16	-38	-10	2	6	6	6	2	1	4	6	**31**	**341**
1985	1	3	1	1	1	1	1	**9**	-3	15	-14	-23	-45	-50	-15	5	6	3	1	1	1	3	**20**	**180**
1986	1	1	1	1	1	1	1	**7**	0	22	4	-4	-29	-11	11	6	6	6	5	1	3	6	**33**	**231**
1987	1	1	1	1	1	1	1	**7**	9	-12	-10	-28	-61	-40	-6	6	3	4	1	1	1	4	**20**	**140**
1988	1	1	1	1	1	1	1	**7**	1	-1	-11	-24	-21	-12	-3	6	5	3	1	1	3	5	**24**	**168**
1989	1	1	1	1	1	1	1	**7**	112	26	-10	-17	-47	-18	-3	6	6	4	2	1	2	5	**26**	**182**
1990	1	1	1	1	1	1	1	**7**	27	-23	1	-26	-47	-14	-10	6	1	6	1	1	3	4	**22**	**154**
1991	1	1	1	1	1	1	1	**7**	55	23	14	-17	-22	-6	-1	6	6	6	2	1	4	5	**30**	**210**
1992	1	1	1	1	1	1	1	**7**	30	16	-10	-25	-23	-11	-6	6	6	4	1	1	3	4	**25**	**175**
1993	1	4	6	6	2	1	1	**21**	48	33	6	0	-19	-7	-1	6	6	6	6	2	4	5	**35**	**735**
1994	1	1	1	1	1	1	1	**7**	12	-2	-5	-22	-42	-48	-5	6	5	5	1	1	1	5	**24**	**168**
							73 - year Average:	**12**														**73 - year Average:**	**29**	**385**
																							1929 - '34 Average:	**191**

Joint Point Alternative 5

STUDY: **524**

CP # 8, FOLSOM LAKE, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 466'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Elevation in feet												DFMRE							Elevation Score								Fluctuation							Fluctuation Score								
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	414	408	413	413	424	428	443	466	466	463	446	434	38	23	0	0	3	20	32	1	1	6	6	5	1	1	**21**	4	15	23	0	-3	-17	-12	6	6	6	6	5	2	3	**34**	**714**
1923	425	423	424	424	423	428	449	466	451	432	407	411	38	17	0	15	34	59	55	1	2	6	2	1	1	1	**14**	5	21	17	-15	-19	-25	4	6	6	6	3	2	1	6	**30**	**420**
1924	406	400	394	384	382	365	367	364	334	334	336	334	101	99	102	132	132	130	132	1	1	1	1	1	1	1	**7**	-17	2	-3	-30	0	2	-2	2	6	5	1	6	6	5	**31**	**217**
1925	349	363	380	390	424	409	441	464	446	416	396	398	57	25	2	20	50	70	68	1	1	5	1	1	1	1	**11**	-15	32	23	-18	-30	-20	2	3	6	6	2	1	2	6	**26**	**286**
1926	397	388	367	360	394	404	438	435	410	366	352	362	62	28	31	56	100	114	104	1	1	1	1	1	1	1	**7**	10	34	-3	-25	-44	-14	10	6	6	5	1	1	3	6	**28**	**196**
1927	369	405	424	424	424	437	449	466	461	451	438	434	29	17	0	5	15	28	32	1	2	6	4	2	1	1	**17**	13	12	17	-5	-10	-13	-4	6	6	6	5	4	3	5	**35**	**595**
1928	425	424	424	424	424	437	449	453	442	417	407	404	29	17	13	24	49	59	62	1	2	3	1	1	1	1	**10**	13	12	4	-11	-25	-10	-3	6	6	6	3	1	4	5	**31**	**310**
1929	380	371	365	350	356	372	385	391	378	336	349	352	94	81	75	88	130	117	114	1	1	1	1	1	1	1	**7**	16	13	6	-13	-42	13	3	6	6	6	3	1	6	6	**34**	**238**
1930	334	334	384	406	421	437	443	442	417	386	355	354	29	23	24	49	80	111	112	1	1	1	1	1	1	1	**7**	16	6	-1	-25	-31	-31	-1	6	6	5	1	1	1	5	**25**	**175**
1931	342	355	367	380	388	400	394	389	334	334	335	334	66	72	77	132	132	131	132	1	1	1	1	1	1	1	**7**	12	-6	-5	-55	0	1	-1	6	4	5	1	6	6	5	**33**	**231**
1932	334	334	380	402	424	436	442	459	444	406	379	382	30	24	7	22	60	87	84	1	1	4	1	1	1	1	**10**	12	6	17	-15	-38	-27	3	6	6	6	3	1	1	6	**29**	**290**
1933	362	334	347	350	335	364	334	366	339	334	352	347	102	132	100	127	132	114	119	1	1	1	1	1	1	1	**7**	29	-30	32	-27	-5	18	-5	6	1	6	1	5	6	5	**30**	**210**
1934	335	335	375	402	420	425	417	411	334	324	313	326	41	49	55	132	142	153	140	1	1	1	1	1	1	1	**7**	5	-8	-6	-77	-10	-11	13	6	4	4	1	4	3	6	**28**	**196**
1935	334	361	378	402	418	421	449	453	452	417	385	389	45	17	13	14	49	81	77	1	2	3	3	1	1	1	**12**	3	28	4	-1	-35	-32	4	6	6	6	5	1	1	6	**31**	**372**
1936	396	398	401	424	424	437	449	461	455	442	419	423	29	17	5	11	24	47	43	1	2	4	3	1	1	1	**13**	13	12	12	-6	-13	-23	4	6	6	6	4	3	1	6	**32**	**416**
1937	410	397	388	381	413	437	449	466	454	437	423	426	29	17	0	12	29	43	40	1	2	6	3	1	1	1	**15**	24	12	17	-12	-17	-14	3	6	6	6	3	2	3	6	**32**	**480**
1938	417	415	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1939	426	420	415	409	402	409	415	418	390	334	334	335	57	51	48	76	132	132	131	1	1	1	1	1	1	1	**7**	7	6	3	-28	-56	0	1	6	6	6	1	1	6	6	**32**	**224**
1940	334	334	334	420	424	437	449	461	448	430	403	407	29	17	5	18	36	63	59	1	2	4	2	1	1	1	**12**	13	12	12	-13	-18	-27	4	6	6	6	3	2	1	6	**30**	**360**
1941	402	401	424	424	424	437	449	466	458	455	448	434	29	17	0	8	11	18	32	1	2	6	4	3	2	1	**19**	13	12	17	-8	-3	-7	-14	6	6	6	4	5	4	3	**34**	**646**
1942	426	422	424	424	424	430	449	466	466	463	448	434	36	17	0	0	3	18	32	1	2	6	6	5	2	1	**23**	6	19	17	0	-3	-15	-14	6	6	6	6	5	3	3	**35**	**805**
1943	425	424	423	422	422	434	449	459	451	447	441	434	32	17	7	15	19	25	32	1	2	4	2	2	1	1	**13**	12	15	10	-8	-4	-6	-7	6	6	6	4	5	4	4	**35**	**455**
1944	425	419	413	405	407	419	420	433	413	392	363	358	47	46	33	53	74	103	108	1	1	1	1	1	1	1	**7**	12	1	13	-20	-21	-29	-5	6	6	6	2	1	1	5	**27**	**189**
1945	349	384	407	414	424	437	449	466	455	444	430	428	29	17	0	11	22	36	38	1	2	6	3	1	1	1	**15**	13	12	17	-11	-11	-14	-2	6	6	6	3	3	3	5	**32**	**480**
1946	421	424	424	424	424	437	449	466	451	438	432	423	29	17	0	15	28	34	43	1	2	6	2	1	1	1	**14**	13	12	17	-15	-13	-6	-9	6	6	6	3	3	4	4	**32**	**448**
1947	413	414	413	406	412	431	441	443	415	380	335	334	35	25	23	51	86	131	132	1	1	1	1	1	1	1	**7**	19	10	2	-28	-35	-45	-1	6	6	6	1	1	1	5	**26**	**182**
1948	352	370	369	397	393	388	427	453	453	444	429	426	78	39	13	13	22	37	40	1	1	3	3	1	1	1	**11**	-5	39	26	0	-9	-15	-3	5	6	6	6	4	3	5	**35**	**385**
1949	421	415	412	404	401	423	444	460	443	417	399	406	43	22	6	23	49	67	60	1	1	4	1	1	1	1	**10**	22	21	16	-17	-26	-18	7	6	6	6	2	1	2	6	**29**	**290**
1950	384	379	373	409	424	437	449	466	455	442	432	432	29	17	0	11	24	34	34	1	2	6	3	1	1	1	**15**	13	12	17	-11	-13	-10	0	6	6	6	3	3	4	6	**34**	**510**
1951	427	393	388	388	388	426	449	466	450	434	429	425	40	17	0	16	32	37	41	1	2	6	2	1	1	1	**14**	38	23	17	-16	-16	-5	-4	6	6	6	2	2	5	5	**32**	**448**
1952	423	424	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1953	428	423	424	424	424	430	446	458	464	462	442	434	36	20	8	2	4	24	32	1	1	4	5	5	1	1	**18**	6	16	12	6	-2	-20	-8	6	6	6	6	5	2	4	**35**	**630**
1954	425	423	421	422	424	437	449	452	441	422	417	415	29	17	14	25	44	49	51	1	2	3	1	1	1	1	**10**	13	12	3	-11	-19	-5	-2	6	6	6	3	2	5	5	**33**	**330**
1955	408	402	405	411	411	407	418	435	418	394	348	365	59	48	31	48	72	118	101	1	1	1	1	1	1	1	**7**	-4	11	17	-17	-24	-46	17	5	6	6	2	1	1	6	**27**	**189**
1956	334	356	420	402	406	425	441	466	466	463	446	434	41	25	0	0	3	20	32	1	1	6	6	5	1	1	**21**	19	16	25	0	-3	-17	-12	6	6	6	6	5	2	3	**34**	**714**
1957	428	422	417	412	424	437	433	459	448	436	428	426	29	33	7	18	30	38	40	1	1	4	2	1	1	1	**11**	13	-4	26	-11	-12	-8	-2	6	5	6	3	3	4	5	**32**	**352**
1958	423	417	419	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1959	425	419	412	417	424	428	435	435	413	391	380	386	38	31	31	53	75	86	80	1	1	1	1	1	1	1	**7**	4	7	0	-22	-22	-11	6	6	6	6	1	1	3	6	**29**	**203**
1960	370	364	366	377	418	437	448	446	426	401	387	394	29	18	20	40	65	79	72	1	2	1	1	1	1	1	**8**	19	11	-2	-20	-25	-14	7	6	6	5	2	1	3	6	**29**	**232**
1961	388	391	394	393	401	409	413	425	409	390	379	385	57	53	41	57	76	87	81	1	1	1	1	1	1	1	**7**	8	4	12	-16	-19	-11	6	6	6	6	2	2	3	6	**31**	**217**
1962	380	377	386	379	424	434	448	455	448	429	408	406	32	18	11	18	37	58	60	1	2	3	2	1	1	1	**11**	10	14	7	-7	-19	-21	-2	6	6	6	4	2	1	5	**30**	**330**
1963	437	424	424	424	419	430	449	466	459	449	438	434	36	17	0	7	17	28	32	1	2	6	4	2	1	1	**17**	11	19	17	-7	-10	-11	-4	6	6	6	4	4	3	5	**34**	**578**
1964	427	424	424	424	418	414	425	438	417	382	352	334	52	41	28	49	84	114	132	1	1	1	1	1	1	1	**7**	-4	11	13	-21	-35	-30	-18	5	6	6	1	1	1	2	**22**	**154**
1965	335	367	393	392	395	414	449	464	454	448	442	434	52	17	2	12	18	24	32	1	2	5	3	2	1	1	**15**	19	35	15	-10	-6	-6	-8	6	6	6	4	4	4	4	**34**	**510**
1966	426	424	424	424	422	430	444	443	422	399	391	384	36	22	23	44	67	75	82	1	1	1	1	1	1	1	**7**	8	14	-1	-21	-23	-8	-7	6	6	5	1	1	4	4	**27**	**189**
1967	376	391	423	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1968	427	424	423	424	424	437	439	441	419	395	392	395	29	27	25	47	71	74	71	1	1	1	1	1	1	1	**7**	13	2	2	-22	-24	-3	3	6	6	6	1	1	5	6	**31**	**217**
1969	392	402	414	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1970	427	424	423	393	396	426	431	440	429	413	405	408	40	35	26	37	53	61	58	1	1	1	1	1	1	1	**7**	30	5	9	-11	-16	-8	3	6	6	6	3	2	4	6	**33**	**231**
1971	400	414	424	424	424	437	447	461	461	460	449	434	29	19	5	5	6	17	32	1	2	4	4	4	2	1	**18**	13	10	14	0	-1	-11	-15	6	6	6	6	5	3	3	**35**	**630**
1972	425	422	424	424	424	437	444	451	432	410	403	401	29	22	15	34	56	63	65	1	1	2	1	1	1	1	**8**	13	7	7	-19	-22	-7	-2	6	6	6	2	1	4	5	**30**	**240**
1973	400	405	420	424	424	437	449	466	451	435	420	422	29	17	0	15	31	46	44	1	2	6	2	1	1	1	**14**	13	12	17	-15	-16	-15	2	6	6	6	3	2	3	6	**32**	**448**
1974	419	423	422	409	417	433	449	466	463	463	449	434	33	17	0	3	3	17	32	1	2	6	5	5	2	1	**22**	16	16	17	-3	0	-14	-15	6	6	6	5	6	3	3	**35**	**770**
1975	426	419	417	415	424	437	441	466	466	462	447	434	29	25	0	0	4	19	32	1	1	6	6	5	2	1	**22**	13	4	25	0	-4	-15	-13	6	6	6	6	5	3	3	**35**	**770**
1976	431	423	419	410	402	396	401	404	371	334	340	341	70	65	62	95	132	126	125	1	1	1	1	1	1	1	**7**	-6	5	3	-33	-37	6	1	4	6	6	1	1	6	6	**30**	**210**
1977	335	334	330	325	321	323	334	341	334	319	305	291	143	132	125	132	147	161	175	1	1	1	1	1	1	1	**7**	2	11	7	-7	-15	-14	-14	6	6	6	4	3	3	3	**31**	**217**
1978	287	304	358	424	424	437	449	466	459	439	439	434	29	17	0	7	14	27	32	1	2	6	4	3	1	1	**18**	13	12	17	-7	-7	-13	-5	6	6	6	4	4	3	5	**34**	**612**
1979	423	417	407	414	424	437	447	466	449	430	413	416	29	19	0	17	36	53	50	1	2	6	2	1	1	1	**14**	13	10	19	-17	-19	-17	3	6	6	6	2	2	2	6	**30**	**420**
1980	413	410	411	405	399	430	449	464	453	453	449	434	36	17	2	13	13	17	32	1	2	5	3	3	2	1	**17**	31	19	15	-11	0	-4	-15	6	6	6	3	6	5	3	**35**	**595**
1981	425	419	415	413	412	422	433	435	411	390	382	383	44	33	31	55	76	84	83	1	1	1	1	1	1	1	**7**	10	11	2	-24	-21	-8	1	6	6	6	1	1	4	6	**30**	**210**
1982	385	420	392	396	388	424	449	466	466	463	449	434	42	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	36	25	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1983	438	415	417	418	418	433	449	466	466	463	449	434	33	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	15	16	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1984	435	392	388	388	392	424	441	464	453	440	427	427	42	25	2	13	26	39	39	1	1	5	3	1	1	1	**13**	32	17	23	-11	-13	-13	0	6	6	6	3	3	3	6	**33**	**429**
1985	425	424	424	422	424	426	447	443	415	377	335	334	40	19	23	51	89	131	132	1	2	1	1	1	1	1	**8**	2	21	-4	-28	-38	-42	-1	6	6	5	1	1	1	5	**25**	**200**
1986	335	366	396	424	396	424	449	464	456	451	447	434	42	17	2	10	15	19	32	1	2	5	3	2	2	1	**16**	28	25	15	-8	-5	-4	-13	6	6	6	4	5	5	3	**35**	**560**
1987	427	420	413	405	404	410	416	417	385	335	321	334	56	50	49	81	131	145	132	1	1	1	1	1	1	1	**7**	6	6	1	-32	-50	-14	13	6	6	6	1	1	3	6	**29**	**203**
1988	334	334	369	396	384	381	390	387	347	317	294	371	85	76	79	119	149	172	95	1	1	1	1	1	1	1	**7**	-3	9	-3	-40	-30	-23	77	5	6	5	1	1	1	6	**25**	**175**
1989	356	376	392	402	401	437	449	452	432	409	404	407	29	17	14	34	57	62	59	1	2	3	1	1	1	1	**10**	36	12	3	-20	-23	-5	3	6	6	6	2	1	5	6	**32**	**320**
1990	404	403	399	399	397	409	419	418	386	334	334	335	57	47	48	80	132	132	131	1	1	1	1	1	1	1	**7**	12	10	-1	-32	-52	0	1	6	6	5	1	1	6	6	**31**	**217**
1991	334	334	334	332	332	383	407	425	420	410	406	405	83	59	41	46	56	60	61	1	1	1	1	1	1	1	**7**	51	24	18	-5	-10	-4	-1	6	6	6	5	4	5	5	**37**	**259**
1992	398	385	376	358	382	399	409	404	361	334	322	315	67	57	62	105	132	144	151	1	1	1	1	1	1	1	**7**	17	10	-5	-43	-27	-12	-7	6	6	5	1	1	3	4	**26**	**182**
1993	315	314	357	424	427	434	449	466	466	454	445	434	32	17	0	0	12	21	32	1	2	6	6	3	1	1	**20**	7	15	17	0	-12	-9	-11	6	6	6	6	3	4	3	**34**	**680**
1994	423	413	407	395	390	390	398	403	378	334	334	332	76	68	63	88	132	132	134	1	1	1	1	1	1	1	**7**	0	8	5	-25	-44	0	-2	6	6	6	1	1	6	5	**31**	**217**
																									73 - year Average:		**13**													**73 - year Average:**		**32**	**412**
																																								1929 - '34 Average:			**223**

STUDY: **524**

CP # 10, NEW MELONES RESERVOIR, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 1088'

Elevation in feet

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	940	943	948	954	968	978	973	990	1012	1004	991	981
1923	980	984	994	1002	1008	1007	1004	1008	1009	999	985	976
1924	975	977	981	985	988	989	979	967	954	942	931	926
1925	926	928	932	935	953	965	966	982	986	978	964	957
1926	955	957	959	962	972	975	976	965	952	937	923	912
1927	913	918	927	934	953	964	973	984	987	976	963	957
1928	958	963	969	973	981	1001	999	1001	993	979	965	957
1929	956	958	961	964	968	969	964	961	950	938	926	918
1930	919	921	923	927	933	941	941	936	931	917	896	883
1931	884	889	892	896	901	904	896	883	865	847	828	819
1932	818	821	832	841	864	875	875	911	930	923	905	893
1933	894	896	902	907	911	914	906	902	899	878	856	844
1934	844	849	855	861	870	880	871	857	837	818	791	773
1935	770	773	779	793	805	816	834	877	898	883	863	851
1936	851	855	860	877	914	927	940	963	971	960	947	940
1937	940	943	946	951	964	977	979	1003	1007	998	987	979
1938	980	982	995	1004	1023	1044	1052	1079	1088	1084	1075	1069
1939	1050	1050	1050	1050	1050	1052	1050	1038	1025	1012	999	992
1940	988	990	992	1004	1018	1035	1044	1055	1047	1034	1022	1014
1941	1014	1016	1021	1028	1038	1048	1043	1059	1065	1058	1048	1040
1942	1039	1040	1045	1050	1050	1055	1055	1067	1081	1078	1067	1062
1943	1050	1050	1050	1050	1050	1055	1061	1068	1067	1059	1048	1041
1944	1039	1040	1042	1043	1046	1050	1045	1041	1035	1022	1008	1000
1945	998	1003	1007	1012	1026	1035	1036	1048	1054	1046	1033	1026
1946	1026	1030	1040	1048	1050	1054	1053	1061	1058	1046	1034	1027
1947	1026	1029	1031	1034	1037	1040	1029	1020	1010	1000	988	981
1948	980	981	984	986	987	991	990	992	1000	991	979	972
1949	970	973	976	979	982	989	982	986	980	967	954	947
1950	945	946	948	956	966	975	974	986	992	980	967	960
1951	959	995	1035	1046	1050	1055	1048	1041	1033	1020	1007	1000
1952	998	1001	1008	1022	1033	1046	1048	1077	1088	1086	1076	1070
1953	1050	1050	1050	1050	1050	1054	1046	1036	1038	1029	1016	1009
1954	1006	1008	1011	1014	1016	1023	1026	1028	1019	1006	992	982
1955	980	982	987	992	996	1000	993	986	982	969	956	947
1956	947	950	983	1011	1025	1034	1025	1042	1053	1047	1035	1028
1957	1026	1028	1030	1033	1037	1045	1032	1029	1028	1015	1002	994
1958	989	992	994	1001	1009	1024	1031	1061	1075	1069	1059	1052
1959	1050	1050	1050	1050	1050	1053	1046	1030	1018	1005	992	983
1960	979	981	984	987	994	999	996	991	980	966	953	943
1961	939	942	946	949	951	954	950	943	931	918	900	889
1962	889	892	896	899	916	924	926	934	937	927	910	896
1963	896	901	908	921	939	946	947	976	984	975	963	956
1964	957	962	966	972	975	979	972	964	956	942	929	921
1965	920	924	955	982	996	1004	1012	1013	1018	1011	999	993
1966	992	996	1001	1007	1012	1017	1006	1004	994	980	966	957
1967	957	959	972	986	996	1007	1009	1032	1060	1064	1054	1048
1968	1046	1048	1050	1050	1050	1054	1042	1033	1022	1008	994	984
1969	982	987	990	1020	1041	1055	1066	1088	1088	1084	1074	1066
1970	1050	1050	1050	1050	1050	1055	1047	1041	1039	1025	1012	1005
1971	1003	1007	1015	1022	1029	1035	1026	1021	1021	1011	998	990
1972	986	990	997	1002	1003	1007	993	992	982	968	954	947
1973	947	950	956	971	991	1003	1004	1022	1026	1016	1006	1001
1974	1001	1007	1017	1030	1039	1053	1057	1068	1067	1058	1047	1040
1975	1039	1041	1044	1047	1050	1055	1050	1049	1061	1053	1042	1035
1976	1033	1036	1039	1041	1043	1046	1040	1031	1020	1010	1000	995
1977	995	996	997	998	998	998	989	977	968	956	944	938
1978	937	936	940	951	963	984	993	1011	1021	1020	1010	1007
1979	1007	1010	1013	1022	1034	1048	1048	1057	1052	1039	1025	1018
1980	1019	1022	1025	1050	1050	1055	1056	1063	1070	1068	1057	1051
1981	1050	1050	1050	1050	1050	1053	1045	1034	1019	1005	992	984
1982	982	991	1006	1027	1050	1055	1071	1086	1088	1084	1075	1071
1983	1050	1050	1050	1050	1050	1055	1056	1070	1088	1088	1082	1075
1984	1050	1050	1050	1050	1050	1055	1044	1037	1033	1022	1011	1006
1985	1005	1010	1015	1018	1023	1029	1026	1020	1010	1000	990	984
1986	984	987	991	1001	1049	1055	1056	1061	1065	1055	1045	1040
1987	1039	1041	1044	1044	1046	1049	1044	1034	1023	1014	1006	1002
1988	998	998	999	1000	1002	1004	998	988	978	968	959	953
1989	952	952	953	954	956	968	964	960	952	940	929	924
1990	927	930	934	937	940	945	937	926	911	891	875	866
1991	865	866	871	871	871	879	874	869	853	834	817	810
1992	811	813	819	822	833	842	834	818	792	762	727	715
1993	723	737	755	789	887	941	930	935	945	936	925	921
1994	920	921	925	926	927	932	929	926	913	894	877	869

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	120	110	115	98	76	84	97	1	1	1	1	1	1	1	**7**
1923	80	81	84	80	79	89	103	1	1	1	1	1	1	1	**7**
1924	100	99	109	121	134	146	157	1	1	1	1	1	1	1	**7**
1925	135	123	122	106	102	110	124	1	1	1	1	1	1	1	**7**
1926	116	113	112	123	136	151	165	1	1	1	1	1	1	1	**7**
1927	135	124	115	104	101	112	125	1	1	1	1	1	1	1	**7**
1928	107	87	89	87	95	109	123	1	1	1	1	1	1	1	**7**
1929	120	119	124	127	138	150	162	1	1	1	1	1	1	1	**7**
1930	155	147	147	152	157	171	192	1	1	1	1	1	1	1	**7**
1931	187	184	192	205	223	241	260	1	1	1	1	1	1	1	**7**
1932	224	213	213	177	158	165	183	1	1	1	1	1	1	1	**7**
1933	177	174	182	186	189	210	232	1	1	1	1	1	1	1	**7**
1934	218	208	217	231	251	270	297	1	1	1	1	1	1	1	**7**
1935	283	272	254	211	190	205	225	1	1	1	1	1	1	1	**7**
1936	174	161	148	125	117	128	141	1	1	1	1	1	1	1	**7**
1937	124	111	109	85	81	90	101	1	1	1	1	1	1	1	**7**
1938	65	44	36	9	0	4	13	1	1	1	4	6	5	3	**21**
1939	38	36	38	50	63	76	89	1	1	1	1	1	1	1	**7**
1940	70	53	44	33	41	54	66	1	1	1	1	1	1	1	**7**
1941	50	40	45	29	23	30	40	1	1	1	1	1	1	1	**7**
1942	38	33	33	21	7	10	21	1	1	1	1	4	3	1	**12**
1943	38	33	27	20	21	29	40	1	1	1	1	1	1	1	**7**
1944	42	38	43	47	53	66	80	1	1	1	1	1	1	1	**7**
1945	62	53	52	40	34	42	55	1	1	1	1	1	1	1	**7**
1946	38	34	35	27	30	42	54	1	1	1	1	1	1	1	**7**
1947	51	48	59	68	78	88	100	1	1	1	1	1	1	1	**7**
1948	101	97	98	96	88	97	109	1	1	1	1	1	1	1	**7**
1949	106	99	106	102	108	121	134	1	1	1	1	1	1	1	**7**
1950	122	113	114	102	96	108	121	1	1	1	1	1	1	1	**7**
1951	38	33	40	47	55	68	81	1	1	1	1	1	1	1	**7**
1952	55	42	40	11	0	2	12	1	1	1	3	6	5	3	**20**
1953	38	34	42	52	50	59	72	1	1	1	1	1	1	1	**7**
1954	72	65	62	60	69	82	96	1	1	1	1	1	1	1	**7**
1955	92	88	95	102	106	119	132	1	1	1	1	1	1	1	**7**
1956	63	54	63	46	35	41	53	1	1	1	1	1	1	1	**7**
1957	51	43	56	59	60	73	86	1	1	1	1	1	1	1	**7**
1958	79	64	57	27	13	19	29	1	1	1	1	3	2	1	**10**
1959	38	35	42	58	70	83	96	1	1	1	1	1	1	1	**7**
1960	94	89	92	97	108	122	135	1	1	1	1	1	1	1	**7**
1961	137	134	138	145	157	170	188	1	1	1	1	1	1	1	**7**
1962	172	164	162	154	151	161	178	1	1	1	1	1	1	1	**7**
1963	149	142	141	112	104	113	125	1	1	1	1	1	1	1	**7**
1964	113	109	116	124	132	146	159	1	1	1	1	1	1	1	**7**
1965	92	84	76	75	70	77	89	1	1	1	1	1	1	1	**7**
1966	76	71	82	84	94	108	122	1	1	1	1	1	1	1	**7**
1967	92	81	79	56	28	24	34	1	1	1	1	1	1	1	**7**
1968	38	34	46	55	66	80	94	1	1	1	1	1	1	1	**7**
1969	47	33	22	0	0	4	14	1	1	1	6	6	5	3	**23**
1970	38	33	41	47	49	63	76	1	1	1	1	1	1	1	**7**
1971	59	53	62	67	67	77	90	1	1	1	1	1	1	1	**7**
1972	85	81	95	96	106	120	134	1	1	1	1	1	1	1	**7**
1973	97	85	84	66	62	72	82	1	1	1	1	1	1	1	**7**
1974	49	35	31	20	21	30	41	1	1	1	1	1	1	1	**7**
1975	38	33	38	39	27	35	46	1	1	1	1	1	1	1	**7**
1976	45	42	48	57	68	78	88	1	1	1	1	1	1	1	**7**
1977	90	90	99	111	120	132	144	1	1	1	1	1	1	1	**7**
1978	125	104	95	77	67	68	78	1	1	1	1	1	1	1	**7**
1979	54	40	40	31	36	49	63	1	1	1	1	1	1	1	**7**
1980	38	33	32	25	18	20	31	1	1	1	1	2	1	1	**8**
1981	38	35	43	54	69	83	96	1	1	1	1	1	1	1	**7**
1982	38	33	17	2	0	4	13	1	1	2	5	6	5	3	**23**
1983	38	33	32	18	0	0	6	1	1	1	2	6	6	4	**21**
1984	38	33	44	51	55	66	77	1	1	1	1	1	1	1	**7**
1985	65	59	62	68	78	88	98	1	1	1	1	1	1	1	**7**
1986	39	33	32	27	23	33	43	1	1	1	1	1	1	1	**7**
1987	42	39	44	54	65	74	82	1	1	1	1	1	1	1	**7**
1988	86	84	90	100	110	120	129	1	1	1	1	1	1	1	**7**
1989	132	120	124	128	136	148	159	1	1	1	1	1	1	1	**7**
1990	148	143	151	162	177	197	213	1	1	1	1	1	1	1	**7**
1991	217	209	214	219	235	254	271	1	1	1	1	1	1	1	**7**
1992	255	246	254	270	296	326	361	1	1	1	1	1	1	1	**7**
1993	201	147	158	153	143	152	163	1	1	1	1	1	1	1	**7**
1994	161	156	159	162	175	194	211	1	1	1	1	1	1	1	**7**
											73 - year Average:				**8**

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	10	-5	17	22	-8	-13	-10	6	5	6	6	4	3	4	**34**	**238**
1923	-1	-3	4	1	-10	-14	-9	5	5	6	6	4	3	4	**33**	**231**
1924	1	-10	-12	-13	-12	-11	-5	6	4	3	3	3	3	5	**27**	**189**
1925	12	1	16	4	-8	-14	-7	6	6	6	6	4	3	4	**35**	**245**
1926	3	1	-11	-13	-15	-14	-11	6	6	3	3	3	3	3	**27**	**189**
1927	11	9	11	3	-11	-13	-6	6	6	6	6	3	3	4	**34**	**238**
1928	20	-2	2	-8	-14	-14	-8	6	5	6	4	3	3	4	**31**	**217**
1929	1	-5	-3	-11	-12	-12	-8	6	5	5	3	3	3	4	**29**	**203**
1930	8	0	-5	-5	-14	-21	-13	6	6	5	5	3	1	3	**29**	**203**
1931	3	-8	-13	-18	-18	-19	-9	6	4	3	2	2	2	4	**23**	**161**
1932	11	0	36	19	-7	-18	-12	6	6	6	6	4	2	3	**33**	**231**
1933	3	-8	-4	-3	-21	-22	-12	6	4	5	5	1	1	3	**25**	**175**
1934	10	-9	-14	-20	-19	-27	-18	6	4	3	2	2	1	2	**20**	**140**
1935	11	18	43	21	-15	-20	-12	6	6	6	6	3	2	3	**32**	**224**
1936	13	13	23	8	-11	-13	-7	6	6	6	6	3	3	4	**34**	**238**
1937	13	2	24	4	-9	-11	-8	6	6	6	6	4	3	4	**35**	**245**
1938	21	8	27	9	-4	-9	-6	6	6	6	6	5	4	4	**37**	**777**
1939	2	-2	-12	-13	-13	-13	-7	6	5	3	3	3	3	4	**27**	**189**
1940	17	9	11	-8	-13	-12	-8	6	6	6	4	3	3	4	**32**	**224**
1941	10	-5	16	6	-7	-10	-8	6	5	6	6	4	4	4	**35**	**245**
1942	5	0	12	14	-3	-11	-5	6	6	6	6	5	3	5	**37**	**444**
1943	5	6	7	-1	-8	-11	-7	6	6	6	5	4	3	4	**34**	**238**
1944	4	-5	-4	-6	-13	-14	-8	6	5	5	4	3	3	4	**30**	**210**
1945	9	1	12	6	-8	-13	-7	6	6	6	6	4	3	4	**35**	**245**
1946	4	-1	8	-3	-12	-12	-7	6	5	6	5	3	3	4	**32**	**224**
1947	3	-11	-9	-10	-10	-12	-7	6	3	4	4	4	3	4	**28**	**196**
1948	4	-1	2	8	-9	-12	-7	6	5	6	6	4	3	4	**34**	**238**
1949	7	-7	4	-6	-13	-13	-7	6	4	6	4	3	3	4	**30**	**210**
1950	9	-1	12	6	-12	-13	-7	6	5	6	6	3	3	4	**33**	**231**
1951	5	-7	-7	-8	-13	-13	-7	6	4	4	4	3	3	4	**28**	**196**
1952	13	2	29	11	-2	-10	-6	6	6	6	6	5	4	4	**37**	**740**
1953	4	-8	-10	2	-9	-13	-7	6	4	4	6	4	3	4	**31**	**217**
1954	7	3	2	-9	-13	-14	-10	6	6	6	4	3	3	4	**32**	**224**
1955	4	-7	-7	-4	-13	-13	-9	6	4	4	5	3	3	4	**29**	**203**
1956	9	-9	17	11	-6	-12	-7	6	4	6	6	4	3	4	**33**	**231**
1957	8	-13	-3	-1	-13	-13	-8	6	3	5	5	3	3	4	**29**	**203**
1958	15	7	30	14	-6	-10	-7	6	6	6	6	4	4	4	**36**	**360**
1959	3	-7	-16	-12	-13	-13	-9	6	4	2	3	3	3	4	**25**	**175**
1960	5	-3	-5	-11	-14	-13	-10	6	5	5	3	3	3	4	**29**	**203**
1961	3	-4	-7	-12	-13	-18	-11	6	5	4	3	3	2	3	**26**	**182**
1962	8	2	8	3	-10	-17	-14	6	6	6	6	4	2	3	**33**	**231**
1963	7	1	29	8	-9	-12	-7	6	6	6	6	4	3	4	**35**	**245**
1964	4	-7	-8	-8	-14	-13	-8	6	4	4	4	3	3	4	**28**	**196**
1965	8	8	1	5	-7	-12	-6	6	6	6	6	4	3	4	**35**	**245**
1966	5	-11	-2	-10	-14	-14	-9	6	3	5	4	3	3	4	**28**	**196**
1967	11	2	23	28	4	-10	-6	6	6	6	6	6	4	4	**38**	**266**
1968	4	-12	-9	-11	-14	-14	-10	6	3	4	3	3	3	4	**26**	**182**
1969	14	11	22	0	-4	-10	-8	6	6	6	6	5	4	4	**37**	**851**
1970	5	-8	-6	-2	-14	-13	-7	6	4	4	5	3	3	4	**29**	**203**
1971	6	-9	-5	0	-10	-13	-8	6	4	5	6	4	3	4	**32**	**224**
1972	4	-14	-1	-10	-14	-14	-7	6	3	5	4	3	3	4	**28**	**196**
1973	12	1	18	4	-10	-10	-5	6	6	6	6	4	4	5	**37**	**259**
1974	14	4	11	-1	-9	-11	-7	6	6	6	5	4	3	4	**34**	**238**
1975	5	-5	-1	12	-8	-11	-7	6	5	5	6	4	3	4	**33**	**231**
1976	3	-6	-9	-11	-10	-10	-5	6	4	4	3	4	4	5	**30**	**210**
1977	0	-9	-12	-9	-12	-12	-6	6	4	3	4	3	3	4	**27**	**189**
1978	21	9	18	10	-1	-10	-3	6	6	6	6	5	4	5	**38**	**266**
1979	14	0	9	-5	-13	-14	-7	6	6	6	5	3	3	4	**33**	**231**
1980	5	1	7	7	-2	-11	-6	6	6	6	6	5	3	4	**36**	**288**
1981	3	-8	-11	-15	-14	-13	-8	6	4	3	3	3	3	4	**26**	**182**
1982	5	16	15	2	-4	-9	-4	6	6	6	6	5	4	5	**38**	**874**
1983	5	1	14	18	0	-6	-7	6	6	6	6	6	4	4	**38**	**798**
1984	5	-11	-7	-4	-11	-11	-5	6	3	4	5	3	3	5	**29**	**203**
1985	6	-3	-6	-10	-10	-10	-6	6	5	4	4	4	4	4	**31**	**217**
1986	6	1	5	4	-10	-10	-5	6	6	6	6	4	4	5	**37**	**259**
1987	3	-5	-10	-11	-9	-8	-4	6	5	4	3	4	4	5	**31**	**217**
1988	2	-6	-10	-10	-10	-9	-6	6	4	4	4	4	4	4	**30**	**210**
1989	12	-4	-4	-8	-12	-11	-5	6	5	5	4	3	3	5	**31**	**217**
1990	5	-8	-11	-15	-20	-16	-9	6	4	3	3	2	2	4	**24**	**168**
1991	8	-5	-5	-16	-19	-17	-7	6	5	5	2	2	2	4	**26**	**182**
1992	9	-8	-16	-26	-30	-35	-12	6	4	2	1	1	1	3	**18**	**126**
1993	54	-11	5	10	-9	-11	-4	6	3	6	6	4	3	5	**33**	**231**
1994	5	-3	-3	-13	-19	-17	-8	6	5	5	3	2	2	4	**27**	**189**
											73 - year Average:				**31**	**260**
													1929 - '34 Average:			**186**

STUDY: **524**

CP # 81, DON PEDRO RESERVOIR, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 832'

Elevation in feet

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	599	581	579	600	656	690	698	724	781	778	763	752
1923	746	745	748	760	775	784	788	792	801	794	779	770
1924	764	761	756	755	756	754	748	743	734	722	708	700
1925	695	695	696	700	722	739	751	762	780	771	755	744
1926	737	734	730	729	738	742	756	768	765	750	734	725
1927	717	717	721	729	758	773	784	782	800	793	778	768
1928	762	762	762	766	774	792	801	818	818	804	788	779
1929	772	767	763	762	766	767	767	770	778	769	759	752
1930	747	744	741	742	748	755	756	759	772	763	754	747
1931	745	744	743	745	748	747	739	727	715	701	688	680
1932	676	671	683	699	736	751	752	756	773	768	752	741
1933	734	727	721	720	727	730	726	719	736	725	708	697
1934	688	687	684	687	698	707	706	698	694	677	658	648
1935	640	640	641	655	682	698	723	734	764	751	734	721
1936	713	711	705	711	753	770	779	796	814	804	789	778
1937	772	767	763	765	793	800	802	815	832	819	805	795
1938	789	784	800	800	800	800	800	804	831	832	819	808
1939	800	799	799	800	800	800	802	804	799	787	774	766
1940	764	763	761	773	800	800	802	816	829	814	799	789
1941	783	781	783	798	800	800	800	812	832	831	817	808
1942	800	798	800	800	800	800	802	807	831	832	818	808
1943	800	800	800	800	800	800	802	821	832	824	810	799
1944	794	792	788	787	793	800	801	808	814	802	787	777
1945	772	773	776	781	800	800	802	807	831	825	810	799
1946	796	797	800	800	800	800	802	806	812	796	780	769
1947	763	763	765	768	776	781	778	782	776	764	750	742
1948	739	738	737	738	739	740	735	743	769	758	740	730
1949	723	717	712	711	718	729	735	745	752	734	715	702
1950	694	687	681	687	706	719	727	737	754	738	720	707
1951	701	750	798	800	800	800	798	794	798	783	769	759
1952	752	750	757	782	800	800	800	820	832	832	819	808
1953	800	795	793	800	800	800	802	804	814	810	796	787
1954	782	778	775	776	785	797	802	819	820	805	789	780
1955	774	770	768	774	781	784	780	784	791	778	766	759
1956	753	749	798	800	800	800	802	818	832	832	818	808
1957	800	798	793	793	799	800	800	806	827	814	800	791
1958	786	781	779	783	800	800	800	821	832	832	819	808
1959	800	794	789	793	800	800	802	800	794	782	770	763
1960	760	758	755	756	763	769	770	775	778	768	758	752
1961	748	746	746	748	750	749	743	733	726	713	701	694
1962	691	688	686	687	712	732	742	742	768	761	746	736
1963	729	724	720	725	751	762	771	781	806	802	788	779
1964	773	774	775	780	786	789	785	781	784	772	761	754
1965	750	751	784	800	800	800	802	807	827	827	816	807
1966	800	800	800	800	800	800	801	798	791	776	761	752
1967	747	744	755	771	788	800	800	817	832	832	820	808
1968	800	795	791	792	800	800	802	805	803	791	779	771
1969	766	767	770	800	800	800	800	823	832	832	819	808
1970	800	799	800	800	800	800	799	799	807	795	780	771
1971	765	766	772	788	800	800	801	801	807	798	786	778
1972	773	769	772	778	792	800	800	798	795	783	772	766
1973	762	761	763	774	800	800	802	812	827	812	797	788
1974	783	787	798	800	800	800	800	806	828	819	805	796
1975	791	789	786	786	798	800	802	812	832	825	812	803
1976	800	800	799	799	800	799	794	787	777	767	757	751
1977	748	745	742	741	741	737	728	715	701	687	671	662
1978	658	654	657	683	716	748	761	776	813	821	808	802
1979	797	794	790	800	800	800	802	822	832	818	803	794
1980	789	788	787	800	800	800	802	817	832	832	819	808
1981	800	797	794	795	799	800	802	806	805	793	782	774
1982	770	776	795	800	800	800	800	820	832	832	820	808
1983	800	800	800	800	800	800	800	819	832	832	832	808
1984	800	800	800	800	800	800	797	803	814	801	786	776
1985	773	773	779	786	794	800	801	799	795	784	772	766
1986	763	764	767	774	800	800	802	827	832	825	811	802
1987	796	791	786	784	786	788	786	783	779	769	759	752
1988	750	749	749	754	759	761	756	747	740	728	716	709
1989	705	702	702	705	708	722	733	747	754	743	732	727
1990	725	725	725	727	730	733	730	726	724	709	695	688
1991	684	681	676	675	675	684	683	698	709	699	689	683
1992	682	682	681	684	693	698	701	707	706	692	677	666
1993	660	655	654	689	721	750	758	772	803	802	788	778
1994	772	767	762	762	765	768	765	768	766	756	746	740

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	142	134	108	51	54	69	80	1	1	1	1	1	1	1	**7**
1923	48	44	40	31	38	53	62	1	1	1	1	1	1	1	**7**
1924	78	84	89	98	110	124	132	1	1	1	1	1	1	1	**7**
1925	93	81	70	52	61	77	88	1	1	1	1	1	1	1	**7**
1926	90	76	64	67	82	98	107	1	1	1	1	1	1	1	**7**
1927	59	48	50	32	39	54	64	1	1	1	1	1	1	1	**7**
1928	40	31	14	14	28	44	53	1	1	3	3	1	1	1	**11**
1929	65	65	62	54	63	73	80	1	1	1	1	1	1	1	**7**
1930	77	76	73	60	69	78	85	1	1	1	1	1	1	1	**7**
1931	85	93	105	117	131	144	152	1	1	1	1	1	1	1	**7**
1932	81	80	76	59	64	80	91	1	1	1	1	1	1	1	**7**
1933	102	106	113	96	107	124	135	1	1	1	1	1	1	1	**7**
1934	125	126	134	138	155	174	184	1	1	1	1	1	1	1	**7**
1935	134	109	98	68	81	98	111	1	1	1	1	1	1	1	**7**
1936	62	53	36	18	28	43	54	1	1	1	2	1	1	1	**8**
1937	32	30	17	0	13	27	37	1	1	2	6	3	1	1	**15**
1938	32	32	28	1	0	13	24	1	1	1	5	6	3	1	**18**
1939	32	30	28	33	45	58	66	1	1	1	1	1	1	1	**7**
1940	32	30	16	3	18	33	43	1	1	2	5	2	1	1	**13**
1941	32	32	20	0	1	15	24	1	1	1	6	5	2	1	**17**
1942	32	30	25	1	0	14	24	1	1	1	5	6	3	1	**18**
1943	32	30	11	0	8	22	33	1	1	3	6	4	1	1	**17**
1944	32	31	24	18	30	45	55	1	1	1	2	1	1	1	**8**
1945	32	30	25	1	7	22	33	1	1	1	5	4	1	1	**14**
1946	32	30	26	20	36	52	63	1	1	1	1	1	1	1	**7**
1947	51	54	50	56	68	82	90	1	1	1	1	1	1	1	**7**
1948	92	97	89	63	74	92	102	1	1	1	1	1	1	1	**7**
1949	103	97	87	80	98	117	130	1	1	1	1	1	1	1	**7**
1950	113	105	95	78	94	112	125	1	1	1	1	1	1	1	**7**
1951	32	34	38	34	49	63	73	1	1	1	1	1	1	1	**7**
1952	32	32	12	0	0	13	24	1	1	3	6	6	3	1	**21**
1953	32	30	28	18	22	36	45	1	1	1	2	1	1	1	**8**
1954	35	30	13	12	27	43	52	1	1	3	3	1	1	1	**11**
1955	48	52	48	41	54	66	73	1	1	1	1	1	1	1	**7**
1956	32	30	14	0	0	14	24	1	1	3	6	6	3	1	**21**
1957	32	32	26	5	18	32	41	1	1	1	4	2	1	1	**11**
1958	32	32	11	0	0	13	24	1	1	3	6	6	3	1	**21**
1959	32	30	32	38	50	62	69	1	1	1	1	1	1	1	**7**
1960	63	62	57	54	64	74	80	1	1	1	1	1	1	1	**7**
1961	83	89	99	106	119	131	138	1	1	1	1	1	1	1	**7**
1962	100	90	90	64	71	86	96	1	1	1	1	1	1	1	**7**
1963	70	61	51	26	30	44	53	1	1	1	1	1	1	1	**7**
1964	43	47	51	48	60	71	78	1	1	1	1	1	1	1	**7**
1965	32	30	25	5	5	16	25	1	1	1	4	4	2	1	**14**
1966	32	31	34	41	56	71	80	1	1	1	1	1	1	1	**7**
1967	32	32	15	0	0	12	24	1	1	2	6	6	3	1	**20**
1968	32	30	27	29	41	53	61	1	1	1	1	1	1	1	**7**
1969	32	32	9	0	0	13	24	1	1	4	6	6	3	1	**22**
1970	32	33	33	25	37	52	61	1	1	1	1	1	1	1	**7**
1971	32	31	31	25	34	46	54	1	1	1	1	1	1	1	**7**
1972	32	32	34	37	49	60	66	1	1	1	1	1	1	1	**7**
1973	32	30	20	5	20	35	44	1	1	1	4	1	1	1	**10**
1974	32	32	26	4	13	27	36	1	1	1	5	3	1	1	**13**
1975	32	30	20	0	7	20	29	1	1	1	6	4	1	1	**15**
1976	33	38	45	55	65	75	81	1	1	1	1	1	1	1	**7**
1977	95	104	117	131	145	161	170	1	1	1	1	1	1	1	**7**
1978	84	71	56	19	11	24	30	1	1	1	2	3	1	1	**10**
1979	32	30	10	0	14	29	38	1	1	3	6	3	1	1	**16**
1980	32	32	15	0	0	13	24	1	1	2	6	6	3	1	**20**
1981	32	30	26	27	39	50	58	1	1	1	1	1	1	1	**7**
1982	32	32	12	0	0	12	24	1	1	3	6	6	3	1	**21**
1983	32	32	13	0	0	0	24	1	1	3	6	6	6	1	**24**
1984	32	35	29	18	31	46	56	1	1	1	2	1	1	1	**8**
1985	32	31	33	37	48	60	66	1	1	1	1	1	1	1	**7**
1986	32	30	5	0	7	21	30	1	1	4	6	4	1	1	**18**
1987	44	46	49	53	63	73	80	1	1	1	1	1	1	1	**7**
1988	71	76	85	92	104	116	123	1	1	1	1	1	1	1	**7**
1989	110	99	85	78	89	100	105	1	1	1	1	1	1	1	**7**
1990	99	102	106	108	123	137	144	1	1	1	1	1	1	1	**7**
1991	148	149	134	123	133	143	149	1	1	1	1	1	1	1	**7**
1992	134	131	125	126	140	155	166	1	1	1	1	1	1	1	**7**
1993	82	74	60	29	30	44	54	1	1	1	1	1	1	1	**7**
1994	64	67	64	66	76	86	92	1	1	1	1	1	1	1	**7**
												73 - year Average:			**10**

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	34	8	26	57	-3	-15	-11	6	6	6	6	5	3	3	**35**	**245**
1923	9	4	4	9	-7	-15	-9	6	6	6	6	4	3	4	**35**	**245**
1924	-2	-6	-5	-9	-12	-14	-8	5	4	5	4	3	3	4	**28**	**196**
1925	17	12	11	18	-9	-16	-11	6	6	6	6	4	2	3	**33**	**231**
1926	4	14	12	-3	-15	-16	-9	6	6	6	5	3	2	4	**32**	**224**
1927	15	11	-2	18	-7	-15	-10	6	6	5	6	4	3	4	**34**	**238**
1928	18	9	17	0	-14	-16	-9	6	6	6	6	3	2	4	**33**	**363**
1929	1	0	3	8	-9	-10	-7	6	6	6	6	4	4	4	**36**	**252**
1930	7	1	3	13	-9	-9	-7	6	6	6	6	4	4	4	**36**	**252**
1931	-1	-8	-12	-12	-14	-13	-8	5	4	3	3	3	3	4	**25**	**175**
1932	15	1	4	17	-5	-16	-11	6	6	6	6	5	2	3	**34**	**238**
1933	3	-4	-7	17	-11	-17	-11	6	5	4	6	3	2	3	**29**	**203**
1934	9	-1	-8	-4	-17	-19	-10	6	5	4	5	2	2	4	**28**	**196**
1935	16	25	11	30	-13	-17	-13	6	6	6	6	3	2	3	**32**	**224**
1936	17	9	17	18	-10	-15	-11	6	6	6	6	4	3	3	**34**	**272**
1937	7	2	13	17	-13	-14	-10	6	6	6	6	3	3	4	**34**	**510**
1938	0	0	4	27	1	-13	-11	6	6	6	6	6	3	3	**36**	**648**
1939	0	2	2	-5	-12	-13	-8	6	6	6	5	3	3	4	**33**	**231**
1940	0	2	14	13	-15	-15	-10	6	6	6	6	3	3	4	**34**	**442**
1941	0	0	12	20	-1	-14	-9	6	6	6	6	5	3	4	**36**	**612**
1942	0	2	5	24	1	-14	-10	6	6	6	6	6	3	4	**37**	**666**
1943	0	2	19	11	-8	-14	-11	6	6	6	6	4	3	3	**34**	**578**
1944	7	1	7	6	-12	-15	-10	6	6	6	6	3	3	4	**34**	**272**
1945	0	2	5	24	-6	-15	-11	6	6	6	6	4	3	3	**34**	**476**
1946	0	2	4	6	-16	-16	-11	6	6	6	6	2	2	3	**31**	**217**
1947	5	-3	4	-6	-12	-14	-8	6	5	6	4	3	3	4	**31**	**217**
1948	1	-5	8	26	-11	-18	-10	6	5	6	6	3	2	4	**32**	**224**
1949	11	6	10	7	-18	-19	-13	6	6	6	6	2	2	3	**31**	**217**
1950	13	8	10	17	-16	-18	-13	6	6	6	6	2	2	3	**31**	**217**
1951	0	-2	-4	4	-15	-14	-10	6	5	5	6	3	3	4	**32**	**224**
1952	0	0	20	12	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1953	0	2	2	10	-4	-14	-9	6	6	6	6	5	3	4	**36**	**288**
1954	12	5	17	1	-15	-16	-9	6	6	6	6	3	2	4	**33**	**363**
1955	3	-4	4	7	-13	-12	-7	6	5	6	6	3	3	4	**33**	**231**
1956	0	2	16	14	0	-14	-10	6	6	6	6	6	3	4	**37**	**777**
1957	1	0	6	21	-13	-14	-9	6	6	6	6	3	3	4	**34**	**374**
1958	0	0	21	11	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1959	0	2	-2	-6	-12	-12	-7	6	6	5	4	3	3	4	**31**	**217**
1960	6	1	5	3	-10	-10	-6	6	6	6	6	4	4	4	**36**	**252**
1961	-1	-6	-10	-7	-13	-12	-7	5	4	4	4	3	3	4	**27**	**189**
1962	20	10	0	26	-7	-15	-10	6	6	6	6	4	3	4	**35**	**245**
1963	11	9	10	25	-4	-14	-9	6	6	6	6	5	3	4	**36**	**252**
1964	3	-4	-4	3	-12	-11	-7	6	5	5	6	3	3	4	**32**	**224**
1965	0	2	5	20	0	-11	-9	6	6	6	6	6	3	4	**37**	**518**
1966	0	1	-3	-7	-15	-15	-9	6	6	5	4	3	3	4	**31**	**217**
1967	12	0	17	15	0	-12	-12	6	6	6	6	6	3	3	**36**	**720**
1968	0	2	3	-2	-12	-12	-8	6	6	6	5	3	3	4	**33**	**231**
1969	0	0	23	9	0	-13	-11	6	6	6	6	6	3	3	**36**	**792**
1970	0	-1	0	8	-12	-15	-9	6	5	6	6	3	3	4	**33**	**231**
1971	0	1	0	6	-9	-12	-8	6	6	6	6	4	3	4	**35**	**245**
1972	8	0	-2	-3	-12	-11	-6	6	6	5	5	3	3	4	**32**	**224**
1973	0	2	10	15	-15	-15	-9	6	6	6	6	3	3	4	**34**	**340**
1974	0	0	6	22	-9	-14	-9	6	6	6	6	4	3	4	**35**	**455**
1975	2	2	10	20	-7	-13	-9	6	6	6	6	4	3	4	**35**	**525**
1976	-1	-5	-7	-10	-10	-10	-6	5	5	4	4	4	4	4	**30**	**210**
1977	-4	-9	-13	-14	-14	-16	-9	5	4	3	3	3	2	4	**24**	**168**
1978	32	13	15	37	8	-13	-6	6	6	6	6	6	3	4	**37**	**370**
1979	0	2	20	10	-14	-15	-9	6	6	6	6	3	3	4	**34**	**544**
1980	0	0	17	15	0	-13	-11	6	6	6	6	6	3	3	**36**	**720**
1981	1	2	4	-1	-12	-11	-8	6	6	6	5	3	3	4	**33**	**231**
1982	0	0	20	12	0	-12	-12	6	6	6	6	6	3	3	**36**	**756**
1983	0	0	19	13	0	0	-24	6	6	6	6	6	6	1	**37**	**888**
1984	0	-3	6	11	-13	-15	-10	6	5	6	6	3	3	4	**33**	**264**
1985	6	1	-2	-4	-11	-12	-6	6	6	5	5	3	3	4	**32**	**224**
1986	0	2	25	5	-7	-14	-9	6	6	6	6	4	3	4	**35**	**630**
1987	2	-2	-3	-4	-10	-10	-7	6	5	5	5	4	4	4	**33**	**231**
1988	2	-5	-9	-7	-12	-12	-7	6	5	4	4	3	3	4	**29**	**203**
1989	14	11	14	7	-11	-11	-5	6	6	6	6	3	3	5	**35**	**245**
1990	3	-3	-4	-2	-15	-14	-7	6	5	5	5	3	3	4	**31**	**217**
1991	9	-1	15	11	-10	-10	-6	6	5	6	6	4	4	4	**35**	**245**
1992	5	3	6	-1	-14	-15	-11	6	6	6	5	3	3	3	**32**	**224**
1993	29	8	14	31	-1	-14	-10	6	6	6	6	5	3	4	**36**	**252**
1994	3	-3	3	-2	-10	-10	-6	6	5	6	5	4	4	4	**34**	**238**
											73 - year Average:				**33**	**351**
													1929 - '34 Average:			**219**

Joint Point Alternative 5

STUDY: **524**
CP # 20, LAKE McCLURE, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 867'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Elevation in feet												Difference from Maximum Reservoir Elevation [DFMRE]						
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	679	679	695	711	759	779	789	845	867	860	846	836	88	78	22	0	7	21	31
1923	808	808	808	808	808	813	827	854	859	850	835	825	54	40	13	8	17	32	42
1924	808	808	808	808	808	807	809	810	797	779	766	756	60	58	57	70	88	101	111
1925	752	758	763	767	792	801	819	840	844	831	815	803	66	48	27	23	36	52	64
1926	801	801	802	804	808	812	831	827	826	822	814	806	55	36	40	41	45	53	61
1927	802	803	807	807	808	815	817	844	854	849	845	840	52	50	23	13	18	22	27
1928	808	808	808	808	808	809	808	824	821	815	810	807	58	59	43	46	52	57	60
1929	805	804	804	803	805	807	808	811	811	813	816	810	60	59	56	56	54	51	57
1930	806	804	804	804	804	800	803	803	807	810	813	811	67	64	64	60	57	54	56
1931	808	808	808	808	808	808	808	806	794	776	762	752	59	59	61	73	91	105	115
1932	750	751	770	782	808	817	826	847	864	854	839	829	50	41	20	3	13	28	38
1933	808	807	806	808	808	811	813	816	830	817	802	794	56	54	51	37	50	65	73
1934	789	788	792	797	805	813	819	810	801	784	770	761	54	48	57	66	83	97	106
1935	757	761	766	784	796	806	840	859	867	854	839	828	61	27	8	0	13	28	39
1936	808	808	808	808	808	820	840	855	861	849	834	823	47	27	12	6	18	33	44
1937	808	808	808	808	808	820	834	859	867	853	838	827	47	33	8	0	14	29	40
clure	808	808	808	808	808	820	840	859	867	867	855	840	47	27	8	0	0	12	27
1939	808	808	808	808	808	816	831	832	821	803	787	776	51	36	35	46	64	80	91
1940	777	778	779	806	808	820	837	859	861	845	829	816	47	30	8	6	22	38	51
1941	808	808	808	808	808	820	834	859	867	863	850	840	47	33	8	0	4	17	27
1942	808	808	808	808	808	820	838	859	867	860	851	840	47	29	8	0	7	16	27
1943	808	808	808	808	808	820	840	859	864	853	838	828	47	27	8	3	14	29	39
1944	808	808	808	808	808	817	815	838	840	827	810	796	50	52	29	27	40	57	71
1945	794	800	806	808	808	820	833	856	867	856	842	831	47	34	11	0	11	25	36
1946	808	808	808	808	808	818	837	859	857	842	826	813	49	30	8	10	25	41	54
1947	808	808	808	808	808	815	823	836	830	814	799	791	52	44	31	37	53	68	76
1948	789	790	791	793	794	794	798	820	837	823	804	791	73	69	47	30	44	63	76
1949	787	786	787	789	793	801	810	831	829	810	790	775	66	57	36	38	57	77	92
1950	770	769	769	777	790	793	808	826	827	808	788	773	74	59	41	40	59	79	94
1951	769	808	808	808	808	819	827	837	834	816	796	781	48	40	30	33	51	71	86
1952	777	778	791	808	808	820	840	859	867	864	852	840	47	27	8	0	3	15	27
1953	808	808	808	808	808	809	815	816	823	809	790	775	58	52	51	44	58	77	92
1954	772	771	772	775	785	798	815	833	826	805	785	770	69	52	34	41	62	82	97
1955	766	765	768	774	779	781	781	803	812	797	780	770	86	86	64	55	70	87	97
1956	765	765	808	808	808	819	832	859	867	863	850	840	48	35	8	0	4	17	27
1957	808	808	808	808	808	813	813	828	838	822	804	790	54	54	39	29	45	63	77
1958	786	787	792	798	808	820	840	859	867	862	850	840	47	27	8	0	5	17	27
1959	808	808	808	808	808	813	823	826	817	797	780	773	54	44	41	50	70	87	94
1960	772	771	770	771	783	791	805	818	815	800	786	776	76	62	49	52	67	81	91
1961	773	773	775	776	778	779	784	785	777	759	742	730	88	83	82	90	108	125	137
1962	729	729	731	734	776	786	809	818	832	819	801	786	81	58	49	35	48	66	81
1963	782	782	783	792	808	810	819	841	854	845	830	818	57	48	26	13	22	37	49
1964	808	808	808	808	807	808	809	816	813	797	780	771	59	58	51	54	70	87	96
1965	765	769	808	808	808	815	831	854	867	861	850	840	52	36	13	0	6	17	27
1966	808	808	808	808	808	814	828	838	826	804	784	771	53	39	29	41	63	83	96
1967	767	769	794	806	808	820	840	859	867	867	856	840	47	27	8	0	0	11	27
1968	808	808	808	808	808	812	817	821	812	793	777	766	55	50	46	55	74	90	101
1969	762	766	774	808	808	820	840	859	867	867	854	840	47	27	8	0	0	13	27
1970	808	808	808	808	808	820	821	837	837	821	802	789	47	46	30	30	46	65	78
1971	786	788	798	807	808	812	814	826	836	822	804	790	55	53	41	31	45	63	77
1972	787	787	794	799	805	816	819	831	831	816	802	795	51	48	36	36	51	65	72
1973	793	794	800	808	808	820	828	859	867	852	838	828	47	39	8	0	15	29	39
1974	808	808	808	808	808	820	833	859	867	854	839	829	47	34	8	0	13	28	38
1975	808	808	808	808	808	820	823	855	867	856	842	832	47	44	12	0	11	25	35
1976	808	808	808	808	808	809	808	809	798	781	768	759	58	59	58	69	86	99	108
1977	758	756	754	754	754	749	740	727	716	686	656	632	118	127	140	151	181	211	235
1978	626	626	642	693	741	782	815	859	867	867	856	840	85	52	8	0	0	11	27
1979	808	808	808	808	808	820	828	859	863	849	834	823	47	39	8	4	18	33	44
1980	808	808	808	808	808	820	835	859	867	867	855	840	47	32	8	0	0	12	27
1981	808	807	807	808	808	813	823	835	831	816	802	794	54	44	32	36	51	65	73
1982	792	801	808	808	808	820	840	859	867	865	854	840	47	27	8	0	2	13	27
1983	808	808	808	808	808	820	836	859	867	867	864	840	47	31	8	0	0	3	27
1984	808	808	808	808	808	820	827	850	848	832	814	801	47	40	17	19	35	53	66
1985	800	803	807	808	808	814	828	841	835	821	807	797	53	39	26	32	46	60	70
1986	797	799	806	808	808	820	839	859	867	855	841	830	47	28	8	0	12	26	37
1987	808	807	807	807	808	810	818	821	811	795	782	773	57	49	46	56	72	85	94
1988	772	773	775	781	785	791	797	801	794	777	763	753	76	70	66	73	90	104	114
1989	751	750	753	753	759	775	796	805	802	786	772	763	92	71	62	65	81	95	104
1990	765	766	766	769	772	779	789	786	777	761	744	732	88	78	81	90	106	123	135
1991	730	729	729	728	728	748	755	775	789	775	762	751	119	112	92	78	92	105	116
1992	750	751	752	754	768	774	791	793	781	768	753	742	93	76	74	86	99	114	125
1993	740	741	747	792	808	820	837	859	867	861	848	837	47	30	8	0	6	19	30
1994	808	807	808	808	808	810	814	820	812	796	783	773	57	53	47	55	71	84	94

	Reservoir Elevation Score								Reservoir Change from Previous Month [fluctuation]							Reservoir Fluctuation Score								Largemouth Bass Reservoir Habitat Index =
YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	1	1	1	6	4	1	1	**15**	20	10	56	22	-7	-14	-10	6	6	6	6	4	3	4	**35**	**525**
1923	1	1	3	4	2	1	1	**13**	5	14	27	5	-9	-15	-10	6	6	6	6	4	3	4	**35**	**455**
1924	1	1	1	1	1	1	1	**7**	-1	2	1	-13	-18	-13	-10	5	6	6	3	2	3	4	**29**	**203**
1925	1	1	1	1	1	1	1	**7**	9	18	21	4	-13	-16	-12	6	6	6	6	3	2	3	**32**	**224**
1926	1	1	1	1	1	1	1	**7**	4	19	-4	-1	-4	-8	-8	6	6	5	5	5	4	4	**35**	**245**
1927	1	1	1	3	2	1	1	**10**	7	2	27	10	-5	-4	-5	6	6	6	6	5	5	5	**39**	**390**
1928	1	1	1	1	1	1	1	**7**	1	-1	16	-3	-6	-5	-3	6	5	6	5	4	5	5	**36**	**252**
1929	1	1	1	1	1	1	1	**7**	2	1	3	0	2	3	-6	6	6	6	6	6	6	4	**40**	**280**
1930	1	1	1	1	1	1	1	**7**	-4	3	0	4	3	3	-2	5	6	6	6	6	6	5	**40**	**280**
1931	1	1	1	1	1	1	1	**7**	0	0	-2	-12	-18	-14	-10	6	6	5	3	2	3	4	**29**	**203**
1932	1	1	1	5	3	1	1	**13**	9	9	21	17	-10	-15	-10	6	6	6	6	4	3	4	**35**	**455**
1933	1	1	1	1	1	1	1	**7**	3	2	3	14	-13	-15	-8	6	6	6	6	3	3	4	**34**	**238**
1934	1	1	1	1	1	1	1	**7**	8	6	-9	-9	-17	-14	-9	6	6	4	4	2	3	4	**29**	**203**
1935	1	1	4	6	3	1	1	**17**	10	34	19	8	-13	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1936	1	1	3	4	2	1	1	**13**	12	20	15	6	-12	-15	-11	6	6	6	6	3	3	3	**33**	**429**
1937	1	1	4	6	3	1	1	**17**	12	14	25	8	-14	-15	-11	6	6	6	6	3	3	3	**33**	**561**
clure	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1939	1	1	1	1	1	1	1	**7**	8	15	1	-11	-18	-16	-11	6	6	6	3	2	2	3	**28**	**196**
1940	1	1	4	4	1	1	1	**13**	12	17	22	2	-16	-16	-13	6	6	6	6	2	2	3	**31**	**403**
1941	1	1	4	6	5	2	1	**20**	12	14	25	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1942	1	1	4	6	4	2	1	**19**	12	18	21	8	-7	-9	-11	6	6	6	6	4	4	3	**35**	**665**
1943	1	1	4	5	3	1	1	**16**	12	20	19	5	-11	-15	-10	6	6	6	6	3	3	4	**34**	**544**
1944	1	1	1	1	1	1	1	**7**	9	-2	23	2	-13	-17	-14	6	5	6	6	3	2	3	**31**	**217**
1945	1	1	3	6	3	1	1	**16**	12	13	23	11	-11	-14	-11	6	6	6	6	3	3	3	**33**	**528**
1946	1	1	4	3	1	1	1	**12**	10	19	22	-2	-15	-16	-13	6	6	6	5	3	2	3	**31**	**372**
1947	1	1	1	1	1	1	1	**7**	7	8	13	-6	-16	-15	-8	6	6	6	4	2	3	4	**31**	**217**
1948	1	1	1	1	1	1	1	**7**	0	4	22	17	-14	-19	-13	6	6	6	6	3	2	3	**32**	**224**
1949	1	1	1	1	1	1	1	**7**	8	9	21	-2	-19	-20	-15	6	6	6	5	2	2	3	**30**	**210**
1950	1	1	1	1	1	1	1	**7**	3	15	18	1	-19	-20	-15	6	6	6	6	2	2	3	**31**	**217**
1951	1	1	1	1	1	1	1	**7**	11	8	10	-3	-18	-20	-15	6	6	6	5	2	2	3	**30**	**210**
1952	1	1	4	6	5	2	1	**20**	12	20	19	8	-3	-12	-12	6	6	6	6	5	3	3	**35**	**700**
1953	1	1	1	1	1	1	1	**7**	1	6	1	7	-14	-19	-15	6	6	6	6	3	2	3	**32**	**224**
1954	1	1	1	1	1	1	1	**7**	13	17	18	-7	-21	-20	-15	6	6	6	4	1	2	3	**28**	**196**
1955	1	1	1	1	1	1	1	**7**	2	0	22	9	-15	-17	-10	6	6	6	6	3	2	4	**33**	**231**
1956	1	1	4	6	5	2	1	**20**	11	13	27	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1957	1	1	1	1	1	1	1	**7**	5	0	15	10	-16	-18	-14	6	6	6	6	2	2	3	**31**	**217**
1958	1	1	4	6	4	2	1	**19**	12	20	19	8	-5	-12	-10	6	6	6	6	5	3	4	**36**	**684**
1959	1	1	1	1	1	1	1	**7**	5	10	3	-9	-20	-17	-7	6	6	6	4	2	2	4	**30**	**210**
1960	1	1	1	1	1	1	1	**7**	8	14	13	-3	-15	-14	-10	6	6	6	5	3	3	4	**33**	**231**
1961	1	1	1	1	1	1	1	**7**	1	5	1	-8	-18	-17	-12	6	6	6	4	2	2	3	**29**	**203**
1962	1	1	1	1	1	1	1	**7**	10	23	9	14	-13	-18	-15	6	6	6	6	3	2	3	**32**	**224**
1963	1	1	1	3	1	1	1	**9**	2	9	22	13	-9	-15	-12	6	6	6	6	4	3	3	**34**	**306**
1964	1	1	1	1	1	1	1	**7**	1	1	7	-3	-16	-17	-9	6	6	6	5	2	2	4	**31**	**217**
1965	1	1	3	6	4	2	1	**18**	7	16	23	13	-6	-11	-10	6	6	6	6	4	3	4	**35**	**630**
1966	1	1	1	1	1	1	1	**7**	6	14	10	-12	-22	-20	-13	6	6	6	3	1	2	3	**27**	**189**
1967	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1968	1	1	1	1	1	1	1	**7**	4	5	4	-9	-19	-16	-11	6	6	6	4	2	2	3	**29**	**203**
1969	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-13	-14	6	6	6	6	6	3	3	**36**	**792**
1970	1	1	1	1	1	1	1	**7**	12	1	16	0	-16	-19	-13	6	6	6	6	2	2	3	**31**	**217**
1971	1	1	1	1	1	1	1	**7**	4	2	12	10	-14	-18	-14	6	6	6	6	3	2	3	**32**	**224**
1972	1	1	1	1	1	1	1	**7**	11	3	12	0	-15	-14	-7	6	6	6	6	3	3	4	**34**	**238**
1973	1	1	4	6	2	1	1	**16**	12	8	31	8	-15	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1974	1	1	4	6	3	1	1	**17**	12	13	26	8	-13	-15	-10	6	6	6	6	3	3	4	**34**	**578**
1975	1	1	3	6	3	1	1	**16**	12	3	32	12	-11	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1976	1	1	1	1	1	1	1	**7**	1	-1	1	-11	-17	-13	-9	6	5	6	3	2	3	4	**29**	**203**
1977	1	1	1	1	1	1	1	**7**	-5	-9	-13	-11	-30	-30	-24	5	4	3	3	1	1	1	**18**	**126**
1978	1	1	4	6	6	3	1	**22**	41	33	44	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1979	1	1	4	5	2	1	1	**15**	12	8	31	4	-14	-15	-11	6	6	6	6	3	3	3	**33**	**495**
1980	1	1	4	6	6	3	1	**22**	12	15	24	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1981	1	1	1	1	1	1	1	**7**	5	10	12	-4	-15	-14	-8	6	6	6	5	3	3	4	**33**	**231**
1982	1	1	4	6	5	3	1	**21**	12	20	19	8	-2	-11	-14	6	6	6	6	5	3	3	**35**	**735**
1983	1	1	4	6	6	5	1	**24**	12	16	23	8	0	-3	-24	6	6	6	6	6	5	1	**36**	**864**
1984	1	1	2	2	1	1	1	**9**	12	7	23	-2	-16	-18	-13	6	6	6	5	2	2	3	**30**	**270**
1985	1	1	1	1	1	1	1	**7**	6	14	13	-6	-14	-14	-10	6	6	6	4	3	3	4	**32**	**224**
1986	1	1	4	6	3	1	1	**17**	12	19	20	8	-12	-14	-11	6	6	6	6	3	3	3	**33**	**561**
1987	1	1	1	1	1	1	1	**7**	2	8	3	-10	-16	-13	-9	6	6	6	4	2	3	4	**31**	**217**
1988	1	1	1	1	1	1	1	**7**	6	6	4	-7	-17	-14	-10	6	6	6	4	2	3	4	**31**	**217**
1989	1	1	1	1	1	1	1	**7**	16	21	9	-3	-16	-14	-9	6	6	6	5	2	3	4	**32**	**224**
1990	1	1	1	1	1	1	1	**7**	7	10	-3	-9	-16	-17	-12	6	6	5	4	2	2	3	**28**	**196**
1991	1	1	1	1	1	1	1	**7**	20	7	20	14	-14	-13	-11	6	6	6	6	3	3	3	**33**	**231**
1992	1	1	1	1	1	1	1	**7**	6	17	2	-12	-13	-15	-11	6	6	6	3	3	3	3	**30**	**210**
1993	1	1	4	6	4	2	1	**19**	12	17	22	8	-6	-13	-11	6	6	6	6	4	3	3	**34**	**646**
1994	1	1	1	1	1	1	1	**7**	2	4	6	-8	-16	-13	-10	6	6	6	4	2	3	4	**31**	**217**
					73 - year Average:			**11**												**73 - year Average:**			**33**	**380**
																				1929 - '34 Average:				**277**

Joint Point Alternative 5

STUDY: **524**

CP # 18, MILLERTON LAKE, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 576'

Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	491	505	527	547	549	566	559	576	576	562	518	491	10	17	0	0	14	58	85	3	2	6	6	3	1	1	**22**	17	-7	17	0	-14	-44	-27	6	4	6	6	3	1	1	**27**	**594**
1923	485	495	520	537	531	517	541	549	540	526	463	470	59	35	27	36	50	113	106	1	1	1	1	1	1	1	**7**	-14	24	8	-9	-14	-63	7	3	6	6	4	3	1	6	**29**	**203**
1924	483	494	508	522	516	503	506	511	505	478	464	468	73	70	65	71	98	112	108	1	1	1	1	1	1	1	**7**	-13	3	5	-6	-27	-14	4	3	6	6	4	1	3	6	**29**	**203**
1925	461	471	487	500	506	490	512	530	520	497	480	472	86	64	46	56	79	96	104	1	1	1	1	1	1	1	**7**	-16	22	18	-10	-23	-17	-8	2	6	6	4	1	2	4	**25**	**175**
1926	474	487	503	517	520	506	548	562	533	492	471	482	70	28	14	43	84	105	94	1	1	3	1	1	1	1	**9**	-14	42	14	-29	-41	-21	11	3	6	6	1	1	1	6	**24**	**216**
1927	488	504	525	543	560	561	560	569	576	543	492	482	15	16	7	0	33	84	94	2	2	4	6	1	1	1	**17**	1	-1	9	7	-33	-51	-10	6	5	6	6	1	1	4	**29**	**493**
1928	482	503	525	542	540	543	551	554	522	477	465	477	33	25	22	54	99	111	99	1	1	1	1	1	1	1	**7**	3	8	3	-32	-45	-12	12	6	6	6	1	1	3	6	**29**	**203**
1929	484	499	513	523	517	513	531	531	527	506	466	477	63	45	45	49	70	110	99	1	1	1	1	1	1	1	**7**	-4	18	0	-4	-21	-40	11	5	6	6	5	1	1	6	**30**	**210**
1930	478	494	506	517	514	509	524	534	518	488	465	482	67	52	42	58	88	111	94	1	1	1	1	1	1	1	**7**	-5	15	10	-16	-30	-23	17	5	6	6	2	1	1	6	**27**	**189**
1931	486	501	512	522	517	508	510	515	508	482	466	466	68	66	61	68	94	110	110	1	1	1	1	1	1	1	**7**	-9	2	5	-7	-26	-16	0	4	6	6	4	1	2	6	**29**	**203**
1932	467	476	503	520	543	531	524	532	552	518	492	477	45	52	44	24	58	84	99	1	1	1	1	1	1	1	**7**	-12	-7	8	20	-34	-26	-15	3	4	6	6	1	1	3	**24**	**168**
1933	477	489	501	516	512	501	520	537	526	509	466	467	75	56	39	50	67	110	109	1	1	1	1	1	1	1	**7**	-11	19	17	-11	-17	-43	1	3	6	6	3	2	1	6	**27**	**189**
1934	469	479	499	517	511	503	516	527	523	498	477	486	73	60	49	53	78	99	90	1	1	1	1	1	1	1	**7**	-8	13	11	-4	-25	-21	9	4	6	6	5	1	1	6	**29**	**203**
1935	490	500	515	535	532	509	542	563	574	538	469	479	67	34	13	2	38	107	97	1	1	3	5	1	1	1	**13**	-23	33	21	11	-36	-69	10	1	6	6	6	1	1	6	**27**	**351**
1936	486	502	518	533	560	558	564	576	563	521	472	478	18	12	0	13	55	104	98	2	3	6	3	1	1	1	**17**	-2	6	12	-13	-42	-49	6	5	6	6	3	1	1	6	**28**	**476**
1937	488	497	516	535	560	570	576	576	576	538	484	469	6	0	0	0	38	92	107	4	6	6	6	1	1	1	**25**	10	6	0	0	-38	-54	-15	6	6	6	6	1	1	3	**29**	**725**
1938	472	486	533	560	560	542	529	467	572	576	532	520	34	47	109	4	0	44	56	1	1	1	5	6	1	1	**16**	-18	-13	-62	105	4	-44	-12	2	3	1	6	6	1	3	**22**	**352**
1939	513	514	529	538	532	524	542	560	539	504	473	495	52	34	16	37	72	103	81	1	1	2	1	1	1	1	**8**	-8	18	18	-21	-35	-31	22	4	6	6	1	1	1	6	**25**	**200**
1940	494	503	517	549	550	551	548	561	553	512	465	471	25	28	15	23	64	111	105	1	1	2	1	1	1	1	**8**	1	-3	13	-8	-41	-47	6	6	5	6	4	1	1	6	**29**	**232**
1941	481	493	528	556	560	573	573	569	576	569	527	506	3	3	7	0	7	49	70	5	5	4	6	4	1	1	**26**	13	0	-4	7	-7	-42	-21	6	6	5	6	4	1	1	**29**	**754**
1942	497	507	532	552	549	553	554	562	576	555	509	477	23	22	14	0	21	67	99	1	1	3	6	1	1	1	**14**	4	1	8	14	-21	-46	-32	6	6	6	6	1	1	1	**27**	**378**
1943	477	494	518	557	556	576	574	576	562	526	491	476	0	2	0	14	50	85	100	6	5	6	3	1	1	1	**23**	20	-2	2	-14	-36	-35	-15	6	5	6	3	1	1	3	**25**	**575**
1944	479	491	508	521	524	507	516	517	501	494	490	480	69	60	59	75	82	86	96	1	1	1	1	1	1	1	**7**	-17	9	1	-16	-7	-4	-10	2	6	6	2	4	5	4	**29**	**203**
1945	481	503	523	533	560	568	565	571	576	554	511	491	8	11	5	0	22	65	85	4	3	4	6	1	1	1	**20**	8	-3	6	5	-22	-43	-20	6	5	6	6	1	1	2	**27**	**540**
1946	485	502	531	548	528	524	536	559	546	510	478	480	52	40	17	30	66	98	96	1	1	2	1	1	1	1	**8**	-4	12	23	-13	-36	-32	2	5	6	6	3	1	1	6	**28**	**224**
1947	481	500	526	543	541	530	545	556	535	497	473	481	46	31	20	41	79	103	95	1	1	1	1	1	1	1	**7**	-11	15	11	-21	-38	-24	8	3	6	6	1	1	1	6	**24**	**168**
1948	487	503	517	529	523	530	556	551	541	483	480	484	46	20	25	35	93	96	92	1	1	1	1	1	1	1	**7**	7	26	-5	-10	-58	-3	4	6	6	5	4	1	5	6	**33**	**231**
1949	490	500	513	526	524	511	522	538	521	482	477	489	65	54	38	55	94	99	87	1	1	1	1	1	1	1	**7**	-13	11	16	-17	-39	-5	12	3	6	6	2	1	5	6	**29**	**203**
1950	492	503	519	535	541	523	534	551	538	505	476	482	53	42	25	38	71	100	94	1	1	1	1	1	1	1	**7**	-18	11	17	-13	-33	-29	6	2	6	6	3	1	1	6	**25**	**175**
1951	490	532	560	560	554	546	552	546	514	463	463	481	30	24	30	62	113	113	95	1	1	1	1	1	1	1	**7**	-8	6	-6	-32	-51	0	18	4	6	4	1	1	6	6	**28**	**196**
1952	488	500	530	559	560	567	559	526	576	571	525	508	9	17	50	0	5	51	68	4	2	1	6	4	1	1	**19**	7	-8	-33	50	-5	-46	-17	6	4	1	6	5	1	2	**25**	**475**
1953	501	514	533	549	538	532	541	536	518	497	478	481	44	35	40	58	79	98	95	1	1	1	1	1	1	1	**7**	-6	9	-5	-18	-21	-19	3	4	6	5	2	1	2	6	**26**	**182**
1954	488	497	514	532	532	527	537	560	544	507	465	483	49	39	16	32	69	111	93	1	1	2	1	1	1	1	**8**	-5	10	23	-16	-37	-42	18	5	6	6	2	1	1	6	**27**	**216**
1955	489	502	522	540	537	520	534	545	537	504	481	487	56	42	31	39	72	95	89	1	1	1	1	1	1	1	**7**	-17	14	11	-8	-33	-23	6	2	6	6	4	1	1	6	**26**	**182**
1956	490	499	560	560	560	576	576	561	576	566	524	505	0	0	15	0	10	52	71	6	6	2	6	3	1	1	**25**	16	0	-15	15	-10	-42	-19	6	6	3	6	4	1	2	**28**	**700**
1957	496	504	517	527	525	529	546	561	562	526	471	481	47	30	15	14	50	105	95	1	1	2	3	1	1	1	**10**	4	17	15	1	-36	-55	10	6	6	6	6	1	1	6	**32**	**320**
1958	488	501	525	545	554	565	576	576	576	557	516	498	11	0	0	0	19	60	78	3	6	6	6	2	1	1	**25**	11	11	0	0	-19	-41	-18	6	6	6	6	2	1	2	**29**	**725**
1959	492	507	523	530	536	528	550	566	551	500	470	475	48	26	10	25	76	106	101	1	1	3	1	1	1	1	**9**	-8	22	16	-15	-51	-30	5	4	6	6	3	1	1	6	**27**	**243**
1960	473	475	480	490	503	498	515	525	509	496	483	481	78	61	51	67	80	93	95	1	1	1	1	1	1	1	**7**	-5	17	10	-16	-13	-13	-2	5	6	6	2	3	3	5	**30**	**210**
1961	481	491	505	511	510	511	526	539	527	486	467	467	65	50	37	49	90	109	109	1	1	1	1	1	1	1	**7**	1	15	13	-12	-41	-19	0	6	6	6	3	1	2	6	**30**	**210**
1962	468	471	484	492	538	529	527	555	569	540	489	476	47	49	21	7	36	87	100	1	1	1	4	1	1	1	**10**	-9	-2	28	14	-29	-51	-13	4	5	6	6	1	1	3	**26**	**260**
1963	479	491	501	518	558	558	576	576	576	564	520	503	18	0	0	0	12	56	73	2	6	6	6	3	1	1	**25**	0	18	0	0	-12	-44	-17	6	6	6	6	3	1	2	**30**	**750**
1964	490	517	542	551	547	544	553	561	551	508	476	484	32	23	15	25	68	100	92	1	1	2	1	1	1	1	**8**	-3	9	8	-10	-43	-32	8	5	6	6	4	1	1	6	**29**	**232**
1965	481	496	528	560	556	554	559	551	561	540	512	496	22	17	25	15	36	64	80	1	2	1	2	1	1	1	**9**	-2	5	-8	10	-21	-28	-16	5	6	4	6	1	1	2	**25**	**225**
1966	487	513	546	558	541	526	545	564	550	506	486	486	50	31	12	26	70	90	90	1	1	3	1	1	1	1	**9**	-15	19	19	-14	-44	-20	0	3	6	6	3	1	2	6	**27**	**243**
1967	490	502	539	559	560	571	565	514	570	576	539	522	5	11	62	6	0	37	54	4	3	1	4	6	1	1	**20**	11	-6	-51	56	6	-37	-17	6	4	1	6	6	1	2	**26**	**520**
1968	515	521	539	545	545	539	550	554	539	506	478	482	37	26	22	37	70	98	94	1	1	1	1	1	1	1	**7**	-6	11	4	-15	-33	-28	4	4	6	6	3	1	1	6	**27**	**189**
1969	479	495	513	560	524	521	467	469	576	576	538	513	55	109	107	0	0	38	63	1	1	1	6	6	1	1	**17**	-3	-54	2	107	0	-38	-25	5	1	6	6	6	1	1	**26**	**442**
1970	498	516	540	560	560	554	554	555	544	517	476	477	22	22	21	32	59	100	99	1	1	1	1	1	1	1	**7**	-6	0	1	-11	-27	-41	1	4	6	6	3	1	1	6	**27**	**189**
1971	482	502	534	551	548	533	541	544	520	498	491	478	43	35	32	56	78	85	98	1	1	1	1	1	1	1	**7**	-15	8	3	-24	-22	-7	-13	3	6	6	1	1	4	3	**24**	**168**
1972	479	491	519	536	532	524	537	543	540	497	481	481	52	39	33	36	79	95	95	1	1	1	1	1	1	1	**7**	-8	13	6	-3	-43	-16	0	4	6	6	5	1	2	6	**30**	**210**
1973	489	500	523	545	560	560	550	575	576	542	483	477	16	26	1	0	34	93	99	2	1	5	6	1	1	1	**17**	0	-10	25	1	-34	-59	-6	6	4	6	6	1	1	4	**28**	**476**
1974	487	510	545	560	544	550	559	570	573	537	490	473	26	17	6	3	39	86	103	1	2	4	5	1	1	1	**15**	6	9	11	3	-36	-47	-17	6	6	6	6	1	1	2	**28**	**420**
1975	476	494	515	528	535	526	533	536	567	525	476	482	50	43	40	9	51	100	94	1	1	1	4	1	1	1	**10**	-9	7	3	31	-42	-49	6	4	6	6	6	1	1	6	**30**	**300**
1976	489	511	531	541	539	544	547	542	519	492	479	494	32	29	34	57	84	97	82	1	1	1	1	1	1	1	**7**	5	3	-5	-23	-27	-13	15	6	6	5	1	1	3	6	**28**	**196**
1977	490	496	500	503	501	464	465	464	462	466	461	462	112	111	112	114	110	115	114	1	1	1	1	1	1	1	**7**	-37	1	-1	-2	4	-5	1	1	6	5	5	6	5	6	**34**	**238**
1978	462	462	484	532	560	552	510	498	576	576	548	539	24	66	78	0	0	28	37	1	1	1	6	6	1	1	**17**	-8	-42	-12	78	0	-28	-9	4	1	3	6	6	1	4	**25**	**425**
1979	528	535	549	560	555	562	560	571	563	521	477	482	14	16	5	13	55	99	94	3	2	4	3	1	1	1	**15**	7	-2	11	-8	-42	-44	5	6	5	6	4	1	1	6	**29**	**435**
1980	489	488	508	560	560	558	566	550	576	576	542	513	18	10	26	0	0	34	63	2	3	1	6	6	1	1	**20**	-2	8	-16	26	0	-34	-29	5	6	2	6	6	1	1	**27**	**540**
1981	503	512	520	528	531	533	547	553	543	510	477	488	43	29	23	33	66	99	88	1	1	1	1	1	1	1	**7**	2	14	6	-10	-33	-33	11	6	6	6	4	1	1	6	**30**	**210**
1982	491	504	536	546	560	576	546	561	576	576	546	541	0	30	15	0	0	30	35	6	1	2	6	6	1	1	**23**	16	-30	15	15	0	-30	-5	6	1	6	6	6	1	5	**31**	**713**
1983	531	556	560	560	513	484	467	467	483	564	572	576	92	109	109	93	12	4	0	1	1	1	1	3	5	6	**18**	-29	-17	0	16	81	8	4	1	2	6	6	6	6	6	**33**	**594**
1984	560	560	560	560	560	568	570	570	557	530	487	483	8	6	6	19	46	89	93	4	4	4	2	1	1	1	**17**	8	2	0	-13	-27	-43	-4	6	6	6	3	1	1	5	**28**	**476**
1985	482	492	511	536	533	526	551	563	539	501	483	483	50	25	13	37	75	93	93	1	1	3	1	1	1	1	**9**	-7	25	12	-24	-38	-18	0	4	6	6	1	1	2	6	**26**	**234**
1986	490	508	534	553	550	552	574	565	576	558	503	479	24	2	11	0	18	73	97	1	5	3	6	2	1	1	**19**	2	22	-9	11	-18	-55	-24	6	6	4	6	2	1	1	**26**	**494**
1987	480	489	492	495	496	511	530	551	539	503	473	480	65	46	25	37	73	103	96	1	1	1	1	1	1	1	**7**	15	19	21	-12	-36	-30	7	6	6	6	3	1	1	6	**29**	**203**
1988	482	495	507	526	516	527	539	547	527	498	483	486	49	37	29	49	78	93	90	1	1	1	1	1	1	1	**7**	11	12	8	-20	-29	-15	3	6	6	6	2	1	3	6	**30**	**210**
1989	486	497	505	515	512	516	537	552	540	502	478	484	60	39	24	36	74	98	92	1	1	1	1	1	1	1	**7**	4	21	15	-12	-38	-24	6	6	6	6	3	1	1	6	**29**	**203**
1990	489	495	502	510	510	517	532	544	525	508	479	483	59	44	32	51	68	97	93	1	1	1	1	1	1	1	**7**	7	15	12	-19	-17	-29	4	6	6	6	2	2	1	6	**29**	**203**
1991	480	486	492	499	493	489	501	508	512	506	480	486	87	75	68	64	70	96	90	1	1	1	1	1	1	1	**7**	-4	12	7	4	-6	-26	6	5	6	6	6	4	1	6	**34**	**238**
1992	485	490	494	498	499	490	493	494	480	470	465	466	86	83	82	96	106	111	110	1	1	1	1	1	1	1	**7**	-9	3	1	-14	-10	-5	1	4	6	6	3	4	5	6	**34**	**238**
1993	467	466	476	536	543	556	558	576	576	571	522	499	20	18	0	0	5	54	77	1	2	6	6	4	1	1	**21**	13	2	18	0	-5	-49	-23	6	6	6	6	5	1	1	**31**	**651**
1994	490	497	507	512	508	520	534	548	528	498	478	484	56	42	28	48	78	98	92	1	1	1	1	1	1	1	**7**	12	14	14	-20	-30	-20	6	6	6	6	2	1	2	6	**29**	**203**
																				73 - year Average:							**12**								**73 - year Average:**							**28**	**329**
																																								1929 - '34 Average:			**194**

Joint Point Alternative 5

STUDY: **524**

CP # 12, SWP SAN LUIS RESERVOIR, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 544'

Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	419	442	477	521	544	544	543	539	524	475	439	446	0	1	5	20	69	105	98	6	5	4	1	1	1	1	**19**	0	-1	-4	-15	-49	-36	7	6	5	5	3	1	1	6	**27**	**513**
1923	476	503	520	544	544	544	539	516	475	450	428	408	0	5	28	69	94	116	136	6	4	1	1	1	1	1	**15**	0	-5	-23	-41	-25	-22	-20	6	5	1	1	1	1	2	**17**	**255**
1924	427	436	463	508	527	527	518	496	464	434	398	392	17	26	48	80	110	146	152	2	1	1	1	1	1	1	**8**	0	-9	-22	-32	-30	-36	-6	6	4	1	1	1	1	4	**18**	**144**
1925	393	402	445	476	518	530	526	505	459	441	407	392	14	18	39	85	103	137	152	3	2	1	1	1	1	1	**10**	12	-4	-21	-46	-18	-34	-15	6	5	1	1	2	1	3	**19**	**190**
1926	401	416	443	493	533	539	533	512	479	460	394	384	5	11	32	65	84	150	160	4	3	1	1	1	1	1	**12**	6	-6	-21	-33	-19	-66	-10	6	4	1	1	2	1	4	**19**	**228**
1927	412	450	487	531	544	544	538	525	490	464	431	428	0	6	19	54	80	113	116	6	4	2	1	1	1	1	**16**	0	-6	-13	-35	-26	-33	-3	6	4	3	1	1	1	5	**21**	**336**
1928	460	490	507	540	544	544	536	514	464	439	418	410	0	8	30	80	105	126	134	6	4	1	1	1	1	1	**15**	0	-8	-22	-50	-25	-21	-8	6	4	1	1	1	1	4	**18**	**270**
1929	437	459	484	528	544	544	535	522	500	468	436	433	0	9	22	44	76	108	111	6	4	1	1	1	1	1	**15**	0	-9	-13	-22	-32	-32	-3	6	4	3	1	1	1	5	**21**	**315**
1930	433	439	483	532	541	544	526	496	466	458	438	416	0	18	48	78	86	106	128	6	2	1	1	1	1	1	**13**	3	-18	-30	-30	-8	-20	-22	6	2	1	1	4	2	1	**17**	**221**
1931	420	425	425	467	481	482	474	463	449	424	377	377	62	70	81	95	120	167	167	1	1	1	1	1	1	1	**7**	1	-8	-11	-14	-25	-47	0	6	4	3	3	1	1	6	**24**	**168**
1932	389	388	450	508	536	528	520	500	479	472	442	427	16	24	44	65	72	102	117	2	1	1	1	1	1	1	**8**	-8	-8	-20	-21	-7	-30	-15	4	4	2	1	4	1	3	**19**	**152**
1933	440	447	450	496	518	526	523	509	480	444	401	400	18	21	35	64	100	143	144	2	1	1	1	1	1	1	**8**	8	-3	-14	-29	-36	-43	-1	6	5	3	1	1	1	5	**22**	**176**
1934	414	411	457	509	519	519	506	483	459	441	406	394	25	38	61	85	103	138	150	1	1	1	1	1	1	1	**7**	0	-13	-23	-24	-18	-35	-12	6	3	1	1	2	1	3	**17**	**119**
1935	391	411	430	490	496	529	531	502	459	431	377	358	15	13	42	85	113	167	186	2	3	1	1	1	1	1	**10**	33	2	-29	-43	-28	-54	-19	6	6	1	1	1	1	2	**18**	**180**
1936	394	399	402	461	508	528	527	509	472	448	428	410	16	17	35	72	96	116	134	2	2	1	1	1	1	1	**9**	20	-1	-18	-37	-24	-20	-18	6	5	2	1	1	2	2	**19**	**171**
1937	439	454	476	524	544	544	544	539	511	472	432	415	0	0	5	33	72	112	129	6	6	4	1	1	1	1	**20**	0	0	-5	-28	-39	-40	-17	6	6	5	1	1	1	2	**22**	**440**
1938	445	477	513	544	544	544	544	544	537	504	471	486	0	0	0	7	40	73	58	6	6	6	4	1	1	1	**25**	0	0	0	-7	-33	-33	15	6	6	6	4	1	1	6	**30**	**750**
1939	513	529	544	544	544	544	526	495	463	451	439	419	0	18	49	81	93	105	125	6	2	1	1	1	1	1	**13**	0	-18	-31	-32	-12	-12	-20	6	2	1	1	3	3	2	**18**	**234**
1940	424	422	415	480	519	538	531	502	451	413	376	362	6	13	42	93	131	168	182	4	3	1	1	1	1	1	**12**	19	-7	-29	-51	-38	-37	-14	6	4	1	1	1	1	3	**17**	**204**
1941	394	423	455	505	536	544	543	543	528	479	441	460	0	1	1	16	65	103	84	6	5	5	2	1	1	1	**21**	8	-1	0	-15	-49	-38	19	6	5	6	3	1	1	6	**28**	**588**
1942	491	506	531	544	544	544	540	532	524	478	443	459	0	4	12	20	66	101	85	6	5	3	1	1	1	1	**18**	0	-4	-8	-8	-46	-35	16	6	5	4	4	1	1	6	**27**	**486**
1943	490	504	527	544	544	544	544	544	516	473	432	435	0	0	0	28	71	112	109	6	6	6	1	1	1	1	**22**	0	0	0	-28	-43	-41	3	6	6	6	1	1	1	6	**27**	**594**
1944	466	496	514	544	544	544	525	493	457	440	427	413	0	19	51	87	104	117	131	6	2	1	1	1	1	1	**13**	0	-19	-32	-36	-17	-13	-14	6	2	1	1	2	3	3	**18**	**234**
1945	418	455	489	524	544	544	532	503	464	440	420	411	0	12	41	80	104	124	133	6	3	1	1	1	1	1	**14**	0	-12	-29	-39	-24	-20	-9	6	3	1	1	1	2	4	**18**	**252**
1946	446	477	502	541	544	544	527	495	445	413	410	410	0	17	49	99	131	134	134	6	2	1	1	1	1	1	**13**	0	-17	-32	-50	-32	-3	0	6	2	1	1	1	5	6	**22**	**286**
1947	438	467	494	524	544	544	527	492	454	435	420	408	0	17	52	90	109	124	136	6	2	1	1	1	1	1	**13**	0	-17	-35	-38	-19	-15	-12	6	2	1	1	2	3	3	**18**	**234**
1948	412	417	417	468	485	508	507	482	438	399	356	358	36	37	62	106	145	188	186	1	1	1	1	1	1	1	**7**	23	-1	-25	-44	-39	-43	2	6	5	1	1	1	1	6	**21**	**147**
1949	379	404	432	481	505	537	519	490	447	426	381	359	7	25	54	97	118	163	185	4	1	1	1	1	1	1	**10**	32	-18	-29	-43	-21	-45	-22	6	2	1	1	1	1	1	**13**	**130**
1950	394	408	416	472	514	531	518	491	456	428	372	376	13	26	53	88	116	172	168	3	1	1	1	1	1	1	**9**	17	-13	-27	-35	-28	-56	4	6	3	1	1	1	1	6	**19**	**171**
1951	403	438	476	524	544	544	529	507	461	431	402	403	0	15	37	83	113	142	141	6	2	1	1	1	1	1	**13**	0	-15	-22	-46	-30	-29	1	6	3	1	1	1	1	6	**19**	**247**
1952	427	456	484	522	544	544	544	544	536	510	492	499	0	0	0	8	34	52	45	6	6	6	4	1	1	1	**25**	0	0	0	-8	-26	-18	7	6	6	6	4	1	2	6	**31**	**775**
1953	518	539	544	544	544	544	527	511	484	458	436	446	0	17	33	60	86	108	98	6	2	1	1	1	1	1	**13**	0	-17	-16	-27	-26	-22	10	6	2	2	1	1	1	6	**19**	**247**
1954	476	498	517	544	544	544	533	510	454	418	407	408	0	11	34	90	126	137	136	6	3	1	1	1	1	1	**14**	0	-11	-23	-56	-36	-11	1	6	3	1	1	1	3	6	**21**	**294**
1955	434	462	487	517	529	536	518	491	463	457	436	420	8	26	53	81	87	108	124	4	1	1	1	1	1	1	**10**	7	-18	-27	-28	-6	-21	-16	6	2	1	1	4	1	2	**17**	**170**
1956	446	458	499	535	544	544	538	528	507	476	444	453	0	6	16	37	68	100	91	6	4	2	1	1	1	1	**16**	0	-6	-10	-21	-31	-32	9	6	4	4	1	1	1	6	**23**	**368**
1957	479	503	511	541	544	544	532	508	471	449	430	421	0	12	36	73	95	114	123	6	3	1	1	1	1	1	**14**	0	-12	-24	-37	-22	-19	-9	6	3	1	1	1	2	4	**18**	**252**
1958	452	481	503	537	544	544	544	544	536	500	481	495	0	0	0	8	44	63	49	6	6	6	4	1	1	1	**25**	0	0	0	-8	-36	-19	14	6	6	6	4	1	2	6	**31**	**775**
1959	508	529	544	544	544	544	522	488	449	430	413	412	0	22	56	95	114	131	132	6	1	1	1	1	1	1	**12**	0	-22	-34	-39	-19	-17	-1	6	1	1	1	2	2	5	**18**	**216**
1960	445	457	462	508	543	544	525	492	458	446	393	365	0	19	52	86	98	151	179	6	2	1	1	1	1	1	**13**	1	-19	-33	-34	-12	-53	-28	6	2	1	1	3	1	1	**15**	**195**
1961	388	420	457	501	534	544	523	487	457	446	436	410	0	21	57	87	98	108	134	6	1	1	1	1	1	1	**12**	10	-21	-36	-30	-11	-10	-26	6	1	1	1	3	4	1	**17**	**204**
1962	425	439	473	520	544	544	522	485	426	384	331	337	0	22	59	118	160	213	207	6	1	1	1	1	1	1	**12**	0	-22	-37	-59	-42	-53	6	6	1	1	1	1	1	6	**17**	**204**
1963	375	405	432	478	514	531	526	512	478	448	421	425	13	18	32	66	96	123	119	3	2	1	1	1	1	1	**10**	17	-5	-14	-34	-30	-27	4	6	5	3	1	1	1	6	**23**	**230**
1964	456	483	498	530	540	544	518	481	437	413	391	396	0	26	63	107	131	153	148	6	1	1	1	1	1	1	**12**	4	-26	-37	-44	-24	-22	5	6	1	1	1	1	1	6	**17**	**204**
1965	401	431	466	517	542	544	543	530	499	472	438	444	0	1	14	45	72	106	100	6	5	3	1	1	1	1	**18**	2	-1	-13	-31	-27	-34	6	6	5	3	1	1	1	6	**23**	**414**
1966	474	502	519	544	544	544	526	491	435	402	400	403	0	18	53	109	142	144	141	6	2	1	1	1	1	1	**13**	0	-18	-35	-56	-33	-2	3	6	2	1	1	1	5	6	**22**	**286**
1967	428	458	490	524	544	544	544	544	537	525	506	509	0	0	0	7	19	38	35	6	6	6	4	2	1	1	**26**	0	0	0	-7	-12	-19	3	6	6	6	4	3	2	6	**33**	**858**
1968	528	544	544	544	544	544	529	495	456	437	422	417	0	15	49	88	107	122	127	6	2	1	1	1	1	1	**13**	0	-15	-34	-39	-19	-15	-5	6	3	1	1	2	3	5	**21**	**273**
1969	447	476	507	544	544	544	544	544	537	517	489	503	0	0	0	7	27	55	41	6	6	6	4	1	1	1	**25**	0	0	0	-7	-20	-28	14	6	6	6	4	2	1	6	**31**	**775**
1970	517	538	544	544	544	544	534	512	471	450	433	428	0	10	32	73	94	111	116	6	3	1	1	1	1	1	**14**	0	-10	-22	-41	-21	-17	-5	6	4	1	1	1	2	5	**20**	**280**
1971	451	482	512	539	544	544	529	508	472	439	416	427	0	15	36	72	105	128	117	6	2	1	1	1	1	1	**13**	0	-15	-21	-36	-33	-23	11	6	3	1	1	1	1	6	**19**	**247**
1972	455	481	493	524	543	544	526	492	451	431	415	407	0	18	52	93	113	129	137	6	2	1	1	1	1	1	**13**	1	-18	-34	-41	-20	-16	-8	6	2	1	1	2	2	4	**18**	**234**
1973	431	463	493	525	544	544	534	509	472	441	413	415	0	10	35	72	103	131	129	6	3	1	1	1	1	1	**14**	0	-10	-25	-37	-31	-28	2	6	4	1	1	1	1	6	**20**	**280**
1974	447	475	497	536	544	544	542	531	503	475	451	462	0	2	13	41	69	93	82	6	5	3	1	1	1	1	**18**	0	-2	-11	-28	-28	-24	11	6	5	3	1	1	1	6	**23**	**414**
1975	486	501	520	544	544	544	539	524	498	467	439	449	0	5	20	46	77	105	95	6	4	1	1	1	1	1	**15**	0	-5	-15	-26	-31	-28	10	6	5	3	1	1	1	6	**23**	**345**
1976	475	494	510	541	544	544	526	498	478	472	449	431	0	18	46	66	72	95	113	6	2	1	1	1	1	1	**13**	0	-18	-28	-20	-6	-23	-18	6	2	1	2	4	1	2	**18**	**234**
1977	431	437	438	456	456	456	459	446	426	402	394	408	88	85	98	118	142	150	136	1	1	1	1	1	1	1	**7**	0	3	-13	-20	-24	-8	14	6	6	3	2	1	4	6	**28**	**196**
1978	413	430	480	533	544	544	544	544	526	472	432	447	0	0	0	18	72	112	97	6	6	6	2	1	1	1	**23**	0	0	0	-18	-54	-40	15	6	6	6	2	1	1	6	**28**	**644**
1979	478	502	517	544	544	544	536	515	481	461	433	419	0	8	29	63	83	111	125	6	4	1	1	1	1	1	**15**	0	-8	-21	-34	-20	-28	-14	6	4	1	1	2	1	3	**18**	**270**
1980	452	484	507	544	544	544	544	544	527	493	454	470	0	0	0	17	51	90	74	6	6	6	2	1	1	1	**23**	0	0	0	-17	-34	-39	16	6	6	6	2	1	1	6	**28**	**644**
1981	501	521	542	544	544	544	530	496	457	439	424	411	0	14	48	87	105	120	133	6	3	1	1	1	1	1	**14**	0	-14	-34	-39	-18	-15	-13	6	3	1	1	2	3	3	**19**	**266**
1982	435	468	500	535	544	544	544	544	531	494	462	471	0	0	0	13	50	82	73	6	6	6	3	1	1	1	**24**	0	0	0	-13	-37	-32	9	6	6	6	3	1	1	6	**29**	**696**
1983	496	515	536	544	544	544	544	544	542	541	528	541	0	0	0	2	3	16	3	6	6	6	5	5	2	5	**35**	0	0	0	-2	-1	-13	13	6	6	6	5	5	3	6	**37**	**1295**
1984	544	544	544	544	544	544	535	513	477	455	432	428	0	9	31	67	89	112	116	6	4	1	1	1	1	1	**15**	0	-9	-22	-36	-22	-23	-4	6	4	1	1	1	1	5	**19**	**285**
1985	462	493	512	542	544	544	520	484	435	407	381	383	0	24	60	109	137	163	161	6	1	1	1	1	1	1	**12**	0	-24	-36	-49	-28	-26	2	6	1	1	1	1	1	6	**17**	**204**
1986	387	392	430	484	520	544	544	544	532	489	457	465	0	0	0	12	55	87	79	6	6	6	3	1	1	1	**24**	24	0	0	-12	-43	-32	8	6	6	6	3	1	1	6	**29**	**696**
1987	494	505	531	544	544	544	523	488	460	450	438	415	0	21	56	84	94	106	129	6	1	1	1	1	1	1	**12**	0	-21	-35	-28	-10	-12	-23	6	1	1	1	4	3	1	**17**	**204**
1988	424	420	458	508	521	521	511	496	485	465	427	424	23	33	48	59	79	117	120	1	1	1	1	1	1	1	**7**	0	-10	-15	-11	-20	-38	-3	6	4	3	3	2	1	5	**24**	**168**
1989	424	439	456	494	494	526	516	485	449	438	385	395	18	28	59	95	106	159	149	2	1	1	1	1	1	1	**8**	32	-10	-31	-36	-11	-53	10	6	4	1	1	3	1	6	**22**	**176**
1990	410	427	455	497	518	522	506	476	458	446	397	383	22	38	68	86	98	147	161	1	1	1	1	1	1	1	**7**	4	-16	-30	-18	-12	-49	-14	6	2	1	2	3	1	3	**18**	**126**
1991	383	389	389	404	399	465	466	456	439	423	408	410	79	78	88	105	121	136	134	1	1	1	1	1	1	1	**7**	66	1	-10	-17	-16	-15	2	6	6	4	2	2	3	6	**29**	**203**
1992	413	427	442	487	517	540	531	514	496	477	438	431	4	13	30	48	67	106	113	5	3	1	1	1	1	1	**13**	23	-9	-17	-18	-19	-39	-7	6	4	2	2	2	1	4	**21**	**273**
1993	431	437	482	530	544	544	539	533	518	471	430	428	0	5	11	26	73	114	116	6	4	3	1	1	1	1	**17**	0	-5	-6	-15	-47	-41	-2	6	5	4	3	1	1	5	**25**	**425**
1994	461	491	507	540	544	544	521	487	456	444	436	420	0	23	57	88	100	108	124	6	1	1	1	1	1	1	**12**	0	-23	-34	-31	-12	-8	-16	6	1	1	1	3	4	2	**18**	**216**
																										73 - year Average:	**14**														**73 - year Average:**	**22**	**331**
																																										1929 - '34 Average:	**192**

STUDY: **525**

CP # 4, SHASTA LAKE, EOP SURFACE ELEVATION

73-year maximum March - September Reservoir Elevation = 1067'

Elevation in feet

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	989	993	999	1003	1019	1038	1060	1067	1062	1046	1025	1019
1923	1017	1016	1017	1022	1023	1025	1037	1032	1019	998	981	980
1924	980	979	978	978	985	985	973	960	941	919	901	884
1925	889	903	912	921	995	1000	1032	1044	1033	1010	994	992
1926	992	991	988	987	1016	1024	1039	1033	1007	986	966	959
1927	958	986	1009	1034	1026	1052	1067	1067	1058	1041	1020	1014
1928	1012	1017	1020	1028	1044	1046	1066	1063	1042	1016	994	988
1929	985	987	988	990	997	1004	1002	997	989	972	954	947
1930	945	944	975	987	1003	1026	1037	1037	1017	997	984	982
1931	979	978	976	978	981	989	980	970	961	941	927	914
1932	908	908	923	935	944	968	971	980	972	958	944	938
1933	936	937	937	939	942	975	981	986	983	966	952	946
1934	945	944	952	970	988	999	998	993	983	949	930	915
1935	909	920	925	945	965	988	1032	1039	1032	1010	994	989
1936	987	984	981	1006	1032	1044	1053	1051	1044	1020	998	992
1937	988	984	980	975	977	1005	1035	1043	1040	1017	997	991
1938	988	1010	1020	1035	1030	1024	1049	1067	1067	1058	1045	1036
1939	1023	1017	1020	1022	1024	1039	1029	1022	995	968	936	931
1940	926	920	931	984	1017	1025	1059	1064	1054	1033	1006	1005
1941	1004	1004	1019	1020	1024	1045	1064	1067	1067	1058	1046	1036
1942	1023	1017	1020	1023	1028	1042	1067	1067	1067	1058	1043	1036
1943	1023	1017	1022	1030	1042	1051	1067	1067	1059	1044	1028	1022
1944	1021	1017	1015	1014	1023	1033	1038	1038	1017	993	969	962
1945	964	977	992	999	1034	1048	1059	1066	1060	1038	1016	1011
1946	1010	1017	1018	1033	1039	1051	1063	1065	1051	1032	1016	1009
1947	1004	1005	1005	1002	1009	1028	1036	1025	1009	987	954	948
1948	956	959	962	992	992	1004	1046	1067	1066	1050	1030	1030
1949	1023	1017	1016	1012	1016	1050	1063	1065	1044	1015	993	991
1950	987	986	984	995	1011	1030	1046	1045	1032	1011	994	991
1951	1004	1017	1020	1033	1040	1057	1062	1067	1051	1029	1011	1007
1952	1005	1010	1019	1032	1038	1048	1058	1067	1067	1058	1046	1036
1953	1023	1017	1021	1022	1033	1051	1065	1067	1067	1057	1040	1036
1954	1023	1017	1021	1030	1035	1051	1067	1064	1053	1034	1019	1016
1955	1012	1017	1022	1024	1026	1024	1038	1046	1024	1001	981	981
1956	980	986	1017	1017	1019	1048	1067	1067	1067	1058	1044	1036
1957	1023	1017	1016	1017	1035	1052	1054	1067	1058	1040	1022	1024
1958	1023	1017	1021	1029	1067	1024	1053	1067	1067	1058	1047	1036
1959	1023	1017	1017	1034	1039	1052	1055	1054	1033	1008	990	992
1960	985	983	983	990	1020	1048	1055	1063	1044	1022	1001	1000
1961	995	998	1015	1021	1044	1057	1059	1065	1046	1020	998	998
1962	994	995	1007	1003	1035	1053	1066	1067	1053	1032	1010	1008
1963	1023	1017	1021	1025	1045	1055	1052	1067	1062	1049	1034	1032
1964	1023	1017	1018	1033	1034	1034	1029	1024	1007	986	963	962
1965	961	972	1017	1022	1041	1053	1065	1066	1056	1040	1026	1024
1966	1023	1017	1021	1037	1049	1055	1060	1059	1040	1018	1000	994
1967	987	1002	1021	1030	1044	1048	1064	1067	1067	1058	1047	1036
1968	1023	1017	1019	1025	1034	1054	1053	1055	1036	1013	1001	1002
1969	998	1000	1012	1022	1027	1048	1063	1067	1067	1058	1047	1036
1970	1023	1017	1020	1017	1025	1052	1052	1052	1039	1018	1001	999
1971	999	1017	1020	1028	1041	1043	1058	1067	1067	1058	1047	1036
1972	1023	1017	1022	1033	1045	1056	1064	1066	1047	1026	1010	1008
1973	1009	1017	1021	1030	1034	1053	1065	1067	1059	1042	1024	1021
1974	1023	1017	1018	1017	1036	1025	1058	1067	1067	1058	1047	1036
1975	1023	1017	1021	1024	1045	1039	1061	1067	1067	1058	1046	1036
1976	1023	1017	1018	1017	1012	1020	1024	1022	997	984	980	982
1977	984	985	985	985	975	975	957	952	932	913	898	895
1978	884	883	923	1020	1031	1047	1067	1067	1064	1053	1041	1036
1979	1023	1017	1013	1016	1027	1044	1051	1060	1044	1025	1008	1008
1980	1008	1011	1013	1029	1019	1046	1059	1064	1055	1045	1034	1035
1981	1023	1017	1020	1029	1042	1056	1061	1059	1037	1011	992	991
1982	990	1017	1018	1033	1029	1046	1051	1067	1067	1058	1047	1036
1983	1023	1017	1020	1022	1017	1045	1050	1067	1067	1058	1047	1036
1984	1023	1017	1018	1034	1047	1056	1061	1066	1057	1041	1028	1029
1985	1023	1017	1022	1023	1027	1034	1042	1035	1009	988	968	966
1986	968	972	985	1011	1017	1029	1048	1050	1039	1023	1008	1011
1987	1011	1010	1009	1010	1021	1047	1043	1038	1006	980	948	946
1988	942	943	975	998	999	1002	1005	1005	987	959	944	942
1989	942	955	962	969	975	1039	1058	1055	1037	1016	1005	1006
1990	1009	1007	1004	1010	1010	1018	1007	1014	999	979	963	960
1991	955	953	953	954	950	976	986	986	977	964	949	943
1992	941	940	941	945	983	1004	1012	1005	990	978	965	959
1993	955	952	967	999	1032	1031	1059	1067	1067	1053	1041	1041
1994	1040	1017	1019	1020	1026	1030	1028	1027	1000	979	954	951

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	29	7	0	5	21	42	48	1	4	6	4	1	1	1	**18**
1923	42	30	35	48	69	86	87	1	1	1	1	1	1	1	**7**
1924	82	94	107	126	148	166	183	1	1	1	1	1	1	1	**7**
1925	67	35	23	34	57	73	75	1	1	1	1	1	1	1	**7**
1926	43	28	34	60	81	101	108	1	1	1	1	1	1	1	**7**
1927	15	0	0	9	26	47	53	2	6	6	4	1	1	1	**21**
1928	21	1	4	25	51	73	79	1	5	5	1	1	1	1	**15**
1929	63	65	70	78	95	113	120	1	1	1	1	1	1	1	**7**
1930	41	30	30	50	70	83	85	1	1	1	1	1	1	1	**7**
1931	78	87	97	106	126	140	153	1	1	1	1	1	1	1	**7**
1932	99	96	87	95	109	123	129	1	1	1	1	1	1	1	**7**
1933	92	86	81	84	101	115	121	1	1	1	1	1	1	1	**7**
1934	68	69	74	84	118	137	152	1	1	1	1	1	1	1	**7**
1935	79	35	28	35	57	73	78	1	1	1	1	1	1	1	**7**
1936	23	14	16	23	47	69	75	1	3	2	1	1	1	1	**10**
1937	62	32	24	27	50	70	76	1	1	1	1	1	1	1	**7**
1938	43	18	0	0	9	22	31	1	2	6	6	4	1	1	**21**
1939	28	38	45	72	99	131	136	1	1	1	1	1	1	1	**7**
1940	42	8	3	13	34	61	62	1	4	5	3	1	1	1	**16**
1941	22	3	0	0	9	21	31	1	5	6	6	4	1	1	**24**
1942	25	0	0	0	9	24	31	1	6	6	6	4	1	1	**25**
1943	16	0	0	8	23	39	45	2	6	6	4	1	1	1	**21**
1944	34	29	29	50	74	98	105	1	1	1	1	1	1	1	**7**
1945	19	8	1	7	29	51	56	2	4	5	4	1	1	1	**18**
1946	16	4	2	16	35	51	58	2	5	5	2	1	1	1	**17**
1947	39	31	42	58	80	113	119	1	1	1	1	1	1	1	**7**
1948	63	21	0	1	17	37	37	1	1	6	5	2	1	1	**17**
1949	17	4	2	23	52	74	76	2	5	5	1	1	1	1	**16**
1950	37	21	22	35	56	73	76	1	1	1	1	1	1	1	**7**
1951	10	5	0	16	38	56	60	3	4	6	2	1	1	1	**18**
1952	19	9	0	0	9	21	31	2	4	6	6	4	1	1	**24**
1953	16	2	0	0	10	27	31	2	5	6	6	3	1	1	**24**
1954	16	0	3	14	33	48	51	2	6	5	3	1	1	1	**19**
1955	43	29	21	43	66	86	86	1	1	1	1	1	1	1	**7**
1956	19	0	0	0	9	23	31	2	6	6	6	4	1	1	**26**
1957	15	13	0	9	27	45	43	2	3	6	4	1	1	1	**18**
1958	43	14	0	0	9	20	31	1	3	6	6	4	1	1	**22**
1959	15	12	13	34	59	77	75	2	3	3	1	1	1	1	**12**
1960	19	12	4	23	45	66	67	2	3	5	1	1	1	1	**14**
1961	10	8	2	21	47	69	69	3	4	5	1	1	1	1	**16**
1962	14	1	0	14	35	57	59	3	5	6	3	1	1	1	**20**
1963	12	15	0	5	18	33	35	3	2	6	4	2	1	1	**19**
1964	33	38	43	60	81	104	105	1	1	1	1	1	1	1	**7**
1965	14	2	1	11	27	41	43	3	5	5	3	1	1	1	**19**
1966	12	7	8	27	49	67	73	3	4	4	1	1	1	1	**15**
1967	19	3	0	0	9	20	31	2	5	6	6	4	1	1	**25**
1968	13	14	12	31	54	66	65	3	3	3	1	1	1	1	**13**
1969	19	4	0	0	9	20	31	2	5	6	6	4	1	1	**25**
1970	15	15	15	28	49	66	68	2	2	2	1	1	1	1	**10**
1971	24	9	0	0	9	20	31	1	4	6	6	4	1	1	**23**
1972	11	3	1	20	41	57	59	3	5	5	1	1	1	1	**17**
1973	14	2	0	8	25	43	46	3	5	6	4	1	1	1	**21**
1974	42	9	0	0	9	20	31	1	4	6	6	4	1	1	**23**
1975	28	6	0	0	9	21	31	1	4	6	6	4	1	1	**23**
1976	47	43	45	70	83	87	85	1	1	1	1	1	1	1	**7**
1977	92	110	115	135	154	169	172	1	1	1	1	1	1	1	**7**
1978	20	0	0	3	14	26	31	1	6	6	5	3	1	1	**23**
1979	23	16	7	23	42	59	59	1	2	4	1	1	1	1	**11**
1980	21	8	3	12	22	33	32	1	4	5	3	1	1	1	**16**
1981	11	6	8	30	56	75	76	3	4	4	1	1	1	1	**15**
1982	21	16	0	0	9	20	31	1	2	6	6	4	1	1	**21**
1983	22	17	0	0	9	20	31	1	2	6	6	4	1	1	**21**
1984	11	6	1	10	26	39	38	3	4	5	3	1	1	1	**18**
1985	33	25	32	58	79	99	101	1	1	1	1	1	1	1	**7**
1986	38	19	17	28	44	59	56	1	2	2	1	1	1	1	**9**
1987	20	24	29	61	87	119	121	1	1	1	1	1	1	1	**7**
1988	65	62	62	80	108	123	125	1	1	1	1	1	1	1	**7**
1989	28	9	12	30	51	62	61	1	4	3	1	1	1	1	**12**
1990	49	60	53	68	88	104	107	1	1	1	1	1	1	1	**7**
1991	91	81	81	90	103	118	124	1	1	1	1	1	1	1	**7**
1992	63	55	62	77	89	102	108	1	1	1	1	1	1	1	**7**
1993	36	8	0	0	14	26	26	1	4	6	6	3	1	1	**22**
1994	37	39	40	67	88	113	116	1	1	1	1	1	1	1	**7**
												73 - year Average:			**14**

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	19	22	7	-5	-16	-21	-6	6	6	6	5	2	1	4	**30**	**540**
1923	2	12	-5	-13	-21	-17	-1	6	6	5	3	1	2	5	**28**	**196**
1924	0	-12	-13	-19	-22	-18	-17	6	3	3	2	1	2	2	**19**	**133**
1925	5	32	12	-11	-23	-16	-2	6	6	6	3	1	2	5	**29**	**203**
1926	8	15	-6	-26	-21	-20	-7	6	6	4	1	1	2	4	**24**	**168**
1927	26	15	0	-9	-17	-21	-6	6	6	6	4	2	1	4	**29**	**609**
1928	2	20	-3	-21	-26	-22	-6	6	6	5	1	1	1	4	**24**	**360**
1929	7	-2	-5	-8	-17	-18	-7	6	5	5	4	2	2	4	**28**	**196**
1930	23	11	0	-20	-20	-13	-2	6	6	6	2	2	3	5	**30**	**210**
1931	8	-9	-10	-9	-20	-14	-13	6	4	4	4	2	3	3	**26**	**182**
1932	24	3	9	-8	-14	-14	-6	6	6	6	4	3	3	4	**32**	**224**
1933	33	6	5	-3	-17	-14	-6	6	6	6	5	2	3	4	**32**	**224**
1934	11	-1	-5	-10	-34	-19	-15	6	5	5	4	1	2	3	**26**	**182**
1935	23	44	7	-7	-22	-16	-5	6	6	6	4	1	2	5	**30**	**210**
1936	12	9	-2	-7	-24	-22	-6	6	6	5	4	1	1	4	**27**	**270**
1937	28	30	8	-3	-23	-20	-6	6	6	6	5	1	2	4	**30**	**210**
1938	-6	25	18	0	-9	-13	-9	4	6	6	6	4	3	4	**33**	**693**
1939	15	-10	-7	-27	-27	-32	-5	6	4	4	1	1	1	5	**22**	**154**
1940	8	34	5	-10	-21	-27	-1	6	6	6	4	1	1	5	**29**	**464**
1941	21	19	3	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**840**
1942	14	25	0	0	-9	-15	-7	6	6	6	6	4	3	4	**35**	**875**
1943	9	16	0	-8	-15	-16	-6	6	6	6	4	3	2	4	**31**	**651**
1944	10	5	0	-21	-24	-24	-7	6	6	6	1	1	1	4	**25**	**175**
1945	14	11	7	-6	-22	-22	-5	6	6	6	4	1	1	5	**29**	**522**
1946	12	12	2	-14	-19	-16	-7	6	6	6	3	2	2	4	**29**	**493**
1947	19	8	-11	-16	-22	-33	-6	6	6	3	2	1	1	4	**23**	**161**
1948	12	42	21	-1	-16	-20	0	6	6	6	5	2	2	6	**33**	**561**
1949	34	13	2	-21	-29	-22	-2	6	6	6	1	1	1	5	**26**	**416**
1950	19	16	-1	-13	-21	-17	-3	6	6	5	3	1	2	5	**28**	**196**
1951	17	5	5	-16	-22	-18	-4	6	6	6	2	1	2	5	**28**	**504**
1952	10	10	9	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**840**
1953	18	14	2	0	-10	-17	-4	6	6	6	6	4	2	5	**35**	**840**
1954	16	16	-3	-11	-19	-15	-3	6	6	5	3	2	3	5	**30**	**570**
1955	-2	14	8	-22	-23	-20	0	5	6	6	1	1	2	6	**27**	**189**
1956	29	19	0	0	-9	-14	-8	6	6	6	6	4	3	4	**35**	**910**
1957	17	2	13	-9	-18	-18	2	6	6	6	4	2	2	6	**32**	**576**
1958	-43	29	14	0	-9	-11	-11	1	6	6	6	4	3	3	**29**	**638**
1959	13	3	-1	-21	-25	-18	2	6	6	5	1	1	2	6	**27**	**324**
1960	28	7	8	-19	-22	-21	-1	6	6	6	2	1	1	5	**27**	**378**
1961	13	2	6	-19	-26	-22	0	6	6	6	2	1	1	6	**28**	**448**
1962	18	13	1	-14	-21	-22	-2	6	6	6	3	1	1	5	**28**	**560**
1963	10	-3	15	-5	-13	-15	-2	6	5	6	5	3	3	5	**33**	**627**
1964	0	-5	-5	-17	-21	-23	-1	6	5	5	2	1	1	5	**25**	**175**
1965	12	12	1	-10	-16	-14	-2	6	6	6	4	2	3	5	**32**	**608**
1966	6	5	-1	-19	-22	-18	-6	6	6	5	2	1	2	4	**26**	**390**
1967	4	16	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1968	20	-1	2	-19	-23	-12	1	6	5	6	2	1	3	6	**29**	**377**
1969	21	15	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1970	27	0	0	-13	-21	-17	-2	6	6	6	3	1	2	5	**29**	**290**
1971	2	15	9	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**782**
1972	11	8	2	-19	-21	-16	-2	6	6	6	2	1	2	5	**28**	**476**
1973	19	12	2	-8	-17	-18	-3	6	6	6	4	2	2	5	**31**	**651**
1974	-11	33	9	0	-9	-11	-11	3	6	6	6	4	3	3	**31**	**713**
1975	-6	22	6	0	-9	-12	-10	4	6	6	6	4	3	4	**33**	**759**
1976	8	4	-2	-25	-13	-4	2	6	6	5	1	3	5	6	**32**	**224**
1977	0	-18	-5	-20	-19	-15	-3	6	2	5	2	2	3	5	**25**	**175**
1978	16	20	0	-3	-11	-12	-5	6	6	6	5	3	3	5	**34**	**782**
1979	17	7	9	-16	-19	-17	0	6	6	6	2	2	2	6	**30**	**330**
1980	27	13	5	-9	-10	-11	1	6	6	6	4	4	3	6	**35**	**560**
1981	14	5	-2	-22	-26	-19	-1	6	6	5	1	1	2	5	**26**	**390**
1982	17	5	16	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1983	28	5	17	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1984	9	5	5	-9	-16	-13	1	6	6	6	4	2	3	6	**33**	**594**
1985	7	8	-7	-26	-21	-20	-2	6	6	4	1	1	2	5	**25**	**175**
1986	12	19	2	-11	-16	-15	3	6	6	6	3	2	3	6	**32**	**288**
1987	26	-4	-5	-32	-26	-32	-2	6	5	5	1	1	1	5	**24**	**168**
1988	3	3	0	-18	-28	-15	-2	6	6	6	2	1	3	5	**29**	**203**
1989	64	19	-3	-18	-21	-11	1	6	6	5	2	1	3	6	**29**	**348**
1990	8	-11	7	-15	-20	-16	-3	6	3	6	3	2	2	5	**27**	**189**
1991	26	10	0	-9	-13	-15	-6	6	6	6	4	3	3	4	**32**	**224**
1992	21	8	-7	-15	-12	-13	-6	6	6	4	3	3	3	4	**29**	**203**
1993	-1	28	8	0	-14	-12	0	5	6	6	6	3	3	6	**35**	**770**
1994	4	-2	-1	-27	-21	-25	-3	6	5	5	1	1	1	5	**24**	**168**
										73 - year Average:					**29**	**436**
													1929 - '34 Average:			**203**

STUDY: **525**

CP # 6, LAKE OROVILLE, EOP SURFACE ELEVATION

73-year maximum March - September Reservoir Elevation = 900'

Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	833	833	835	844	850	858	893	900	900	871	866	867	42	7	0	0	29	34	33
1923	871	874	858	862	859	872	895	900	881	841	806	809	28	5	0	19	59	94	91
1924	797	785	757	762	781	771	752	740	719	701	691	685	129	148	160	181	199	209	215
1925	685	689	696	712	781	785	813	822	803	776	765	764	115	87	78	97	124	135	136
1926	760	761	763	776	825	845	887	877	856	825	813	795	55	13	23	44	75	87	105
1927	776	807	807	832	849	863	890	900	898	861	843	841	37	10	0	2	39	57	59
1928	838	848	850	861	871	849	878	870	849	800	745	738	51	22	30	51	100	155	162
1929	724	719	717	723	736	753	754	756	749	732	721	714	147	146	144	151	168	179	186
1930	705	701	763	791	819	850	865	872	854	813	773	770	50	35	28	46	87	127	130
1931	761	753	743	757	770	787	768	758	733	714	703	697	113	132	142	167	186	197	203
1932	691	685	690	715	737	773	776	804	782	762	751	745	127	124	96	118	138	149	155
1933	736	724	724	736	746	751	741	756	751	735	725	718	149	159	144	149	165	175	182
1934	714	707	709	736	757	780	766	757	735	713	702	692	120	134	143	165	187	198	208
1935	678	683	689	717	741	770	856	867	853	830	821	806	130	44	33	47	70	79	94
1936	798	788	771	822	849	860	886	897	888	849	826	823	40	14	3	12	51	74	77
1937	809	797	793	796	814	839	864	878	855	830	815	808	61	36	22	45	70	85	92
1938	804	821	854	858	849	849	882	900	900	898	895	887	51	18	0	0	2	5	13
1939	874	864	854	845	837	833	816	809	773	706	654	648	67	84	91	127	194	246	252
1940	637	627	629	703	812	849	879	886	867	826	818	805	51	21	14	33	74	82	95
1941	797	795	838	849	849	858	886	900	900	890	885	887	42	14	0	0	10	15	13
1942	874	874	849	849	850	867	882	900	900	878	874	875	33	18	0	0	22	26	25
1943	874	869	861	849	856	859	887	897	892	854	843	843	41	13	3	8	46	57	57
1944	845	847	846	853	857	868	876	892	871	830	792	786	32	24	8	29	70	108	114
1945	778	785	801	817	859	865	880	896	877	836	811	806	35	20	4	23	64	89	94
1946	806	814	849	864	868	868	887	896	874	834	793	790	32	13	4	26	66	107	110
1947	775	781	789	795	822	844	847	843	826	767	727	720	56	53	57	74	133	173	180
1948	723	725	722	758	761	781	841	870	876	840	822	796	119	59	30	24	60	78	104
1949	789	786	787	792	800	826	845	853	831	797	786	776	74	55	47	69	103	114	124
1950	764	756	753	781	825	855	888	900	886	848	818	814	45	12	0	14	52	82	86
1951	820	849	854	853	858	870	880	894	881	839	803	804	30	20	6	19	61	97	96
1952	808	813	847	849	852	862	894	900	900	900	899	887	38	6	0	0	0	1	13
1953	874	874	858	850	867	867	883	900	900	867	864	865	33	17	0	0	33	36	35
1954	867	871	874	858	857	859	883	874	858	814	766	761	41	17	26	42	86	134	139
1955	763	764	773	785	794	807	816	828	802	740	709	705	93	84	72	98	160	191	195
1956	696	693	846	849	849	864	892	900	900	871	867	871	36	8	0	0	29	33	29
1957	869	874	874	871	853	863	858	876	860	821	782	787	37	42	24	40	79	118	113
1958	790	793	815	836	849	849	879	900	900	898	894	887	51	21	0	0	2	6	13
1959	874	874	874	862	852	867	867	870	849	801	749	753	33	33	30	51	99	151	147
1960	743	732	727	741	804	847	846	852	833	783	771	765	53	54	48	67	117	129	135
1961	754	756	765	777	807	829	829	834	812	762	748	738	71	71	66	88	138	152	162
1962	722	719	728	743	802	831	865	869	854	811	773	755	69	35	31	46	89	127	145
1963	823	831	856	859	867	858	876	900	891	855	838	839	42	24	0	9	45	62	61
1964	840	851	854	864	873	874	879	879	864	823	772	741	26	21	21	36	77	128	159
1965	727	728	849	849	863	870	887	889	892	856	847	848	30	13	11	8	44	53	52
1966	852	859	860	864	870	874	880	873	853	809	758	752	26	20	27	47	91	142	148
1967	737	749	787	841	860	853	879	900	900	900	896	887	47	21	0	0	0	4	13
1968	874	874	873	858	861	866	856	860	841	790	757	754	34	44	40	59	110	143	146
1969	755	760	783	849	849	865	895	900	900	895	893	874	35	5	0	0	5	7	26
1970	874	874	850	849	849	874	864	866	852	810	777	779	26	36	34	48	90	123	121
1971	781	808	839	864	874	874	892	900	900	869	846	848	26	8	0	0	31	54	52
1972	853	859	865	869	867	874	882	886	866	826	780	781	26	18	14	34	74	120	119
1973	777	792	819	849	849	860	882	900	870	830	814	810	40	18	0	30	70	86	90
1974	814	849	850	854	864	849	883	900	900	887	886	886	51	17	0	0	13	14	14
1975	874	874	874	874	855	852	881	900	900	874	873	874	48	19	0	0	26	27	26
1976	873	874	874	874	874	874	871	864	842	797	758	757	26	29	36	58	103	142	143
1977	749	739	723	719	704	699	656	645	616	592	583	580	201	244	255	284	308	317	320
1978	568	568	605	736	791	859	878	897	892	871	862	869	41	22	3	8	29	38	31
1979	872	874	874	871	853	863	876	894	864	825	814	811	37	24	6	36	75	86	89
1980	817	821	830	850	849	865	881	893	888	870	863	862	35	19	7	12	30	37	38
1981	861	862	870	860	868	865	869	867	845	797	758	758	35	31	33	55	103	142	142
1982	763	845	849	859	862	859	884	900	900	887	884	887	41	16	0	0	13	16	13
1983	873	862	858	853	849	849	877	900	900	900	899	887	51	23	0	0	0	1	13
1984	874	860	849	869	869	871	881	890	873	835	822	823	29	19	10	27	65	78	77
1985	827	841	851	857	870	871	886	875	852	809	758	744	29	14	25	48	91	142	156
1986	734	730	737	772	849	849	871	875	871	843	830	841	51	29	25	29	57	70	59
1987	843	849	847	848	859	867	856	846	819	758	713	708	33	44	54	81	142	187	192
1988	695	698	737	765	768	768	767	760	738	718	705	703	132	133	140	162	182	195	197
1989	694	713	723	730	730	843	869	863	846	800	791	788	57	31	37	54	100	109	112
1990	794	795	779	792	800	824	804	804	779	730	717	711	76	96	96	121	170	183	189
1991	693	685	669	667	654	706	717	732	717	698	692	690	194	183	168	183	202	208	210
1992	686	683	684	687	719	749	764	754	726	701	689	683	151	136	146	174	199	211	217
1993	675	669	688	756	808	861	894	900	900	873	869	867	39	6	0	0	27	31	33
1994	873	874	874	871	862	874	868	865	843	799	753	748	26	32	35	57	101	147	152

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Fluct. MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	1	4	6	6	1	1	1	**20**	8	35	7	0	-29	-5	1	6	6	6	6	1	5	6	**36**	**720**
1923	1	4	6	2	1	1	1	**16**	13	23	5	-19	-40	-35	3	6	6	6	2	1	1	6	**28**	**448**
1924	1	1	1	1	1	1	1	**7**	-10	-19	-12	-21	-18	-10	-6	4	2	3	1	2	4	4	**20**	**140**
1925	1	1	1	1	1	1	1	**7**	4	28	9	-19	-27	-11	-1	6	6	6	2	1	3	5	**29**	**203**
1926	1	3	1	1	1	1	1	**9**	20	42	-10	-21	-31	-12	-18	6	6	4	1	1	3	2	**23**	**207**
1927	1	3	6	5	1	1	1	**18**	14	27	10	-2	-37	-18	-2	6	6	6	5	1	2	5	**31**	**558**
1928	1	1	1	1	1	1	1	**7**	-22	29	-8	-21	-49	-55	-7	1	6	4	1	1	1	4	**18**	**126**
1929	1	1	1	1	1	1	1	**7**	17	1	2	-7	-17	-11	-7	6	6	6	4	2	3	4	**31**	**217**
1930	1	1	1	1	1	1	1	**7**	31	15	7	-18	-41	-40	-3	6	6	6	2	1	1	5	**27**	**189**
1931	1	1	1	1	1	1	1	**7**	17	-19	-10	-25	-19	-11	-6	6	2	4	1	2	3	4	**22**	**154**
1932	1	1	1	1	1	1	1	**7**	36	3	28	-22	-20	-11	-6	6	6	6	1	2	3	4	**28**	**196**
1933	1	1	1	1	1	1	1	**7**	5	-10	15	-5	-16	-10	-7	6	4	6	5	2	4	4	**31**	**217**
1934	1	1	1	1	1	1	1	**7**	23	-14	-9	-22	-22	-11	-10	6	3	4	1	1	3	4	**22**	**154**
1935	1	1	1	1	1	1	1	**7**	29	86	11	-14	-23	-9	-15	6	6	6	3	1	4	3	**29**	**203**
1936	1	3	5	3	1	1	1	**15**	11	26	11	-9	-39	-23	-3	6	6	6	4	1	1	5	**29**	**435**
1937	1	1	1	1	1	1	1	**7**	25	25	14	-23	-25	-15	-7	6	6	6	1	1	3	4	**27**	**189**
1938	1	2	6	6	5	4	3	**27**	0	33	18	0	-2	-3	-8	6	6	6	6	5	5	4	**38**	**1026**
1939	1	1	1	1	1	1	1	**7**	-4	-17	-7	-36	-67	-52	-6	5	2	4	1	1	1	4	**18**	**126**
1940	1	1	3	1	1	1	1	**9**	37	30	7	-19	-41	-8	-13	6	6	6	2	1	4	3	**28**	**252**
1941	1	3	6	6	3	2	3	**24**	9	28	14	0	-10	-5	2	6	6	6	6	4	5	6	**39**	**936**
1942	1	2	6	6	1	1	1	**18**	17	15	18	0	-22	-4	1	6	6	6	6	1	5	6	**36**	**648**
1943	1	3	5	4	1	1	1	**16**	3	28	10	-5	-38	-11	0	6	6	6	5	1	3	6	**33**	**528**
1944	1	1	4	1	1	1	1	**10**	11	8	16	-21	-41	-38	-6	6	6	6	1	1	1	4	**25**	**250**
1945	1	1	5	1	1	1	1	**11**	6	15	16	-19	-41	-25	-5	6	6	6	2	1	1	5	**27**	**297**
1946	1	3	5	1	1	1	1	**13**	0	19	9	-22	-40	-41	-3	6	6	6	1	1	1	5	**26**	**338**
1947	1	1	1	1	1	1	1	**7**	22	3	-4	-17	-59	-40	-7	6	6	5	2	1	1	4	**25**	**175**
1948	1	1	1	1	1	1	1	**7**	20	60	29	6	-36	-18	-26	6	6	6	6	1	2	1	**28**	**196**
1949	1	1	1	1	1	1	1	**7**	26	19	8	-22	-34	-11	-10	6	6	6	1	1	3	4	**27**	**189**
1950	1	3	6	3	1	1	1	**16**	30	33	12	-14	-38	-30	-4	6	6	6	3	1	1	5	**28**	**448**
1951	1	1	4	2	1	1	1	**11**	12	10	14	-13	-42	-36	1	6	6	6	3	1	1	6	**29**	**319**
1952	1	4	6	6	6	5	3	**31**	10	32	6	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1178**
1953	1	2	6	6	1	1	1	**18**	0	16	17	0	-33	-3	1	6	6	6	6	1	5	6	**36**	**648**
1954	1	2	1	1	1	1	1	**8**	2	24	-9	-16	-44	-48	-5	6	6	4	2	1	1	5	**25**	**200**
1955	1	1	1	1	1	1	1	**7**	13	9	12	-26	-62	-31	-4	6	6	6	1	1	1	5	**26**	**182**
1956	1	4	6	6	1	1	1	**20**	15	28	8	0	-29	-4	4	6	6	6	6	1	5	6	**36**	**720**
1957	1	1	1	1	1	1	1	**7**	10	-5	18	-16	-39	-39	5	6	5	6	2	1	1	6	**27**	**189**
1958	1	1	6	6	5	4	3	**26**	0	30	21	0	-2	-4	-7	6	6	6	6	5	5	4	**38**	**988**
1959	1	1	1	1	1	1	1	**7**	15	0	3	-21	-48	-52	4	6	6	6	1	1	1	6	**27**	**189**
1960	1	1	1	1	1	1	1	**7**	43	-1	6	-19	-50	-12	-6	6	5	6	2	1	3	4	**27**	**189**
1961	1	1	1	1	1	1	1	**7**	22	0	5	-22	-50	-14	-10	6	6	6	1	1	3	4	**27**	**189**
1962	1	1	1	1	1	1	1	**7**	29	34	4	-15	-43	-38	-18	6	6	6	3	1	1	2	**25**	**175**
1963	1	1	6	4	1	1	1	**15**	-9	18	24	-9	-36	-17	1	4	6	6	4	1	2	6	**29**	**435**
1964	1	1	1	1	1	1	1	**7**	1	5	0	-15	-41	-51	-31	6	6	6	3	1	1	1	**24**	**168**
1965	1	3	3	4	1	1	1	**14**	7	17	2	3	-36	-9	1	6	6	6	6	1	4	6	**35**	**490**
1966	1	1	1	1	1	1	1	**7**	4	6	-7	-20	-44	-51	-6	6	6	4	2	1	1	4	**24**	**168**
1967	1	1	6	6	6	5	3	**28**	-7	26	21	0	0	-4	-9	4	6	6	6	6	5	4	**37**	**1036**
1968	1	1	1	1	1	1	1	**7**	5	-10	4	-19	-51	-33	-3	6	4	6	2	1	1	5	**25**	**175**
1969	1	4	6	6	4	4	1	**26**	16	30	5	0	-5	-2	-19	6	6	6	6	5	5	2	**36**	**936**
1970	1	1	1	1	1	1	1	**7**	25	-10	2	-14	-42	-33	2	6	4	6	3	1	1	6	**27**	**189**
1971	1	4	6	6	1	1	1	**20**	0	18	8	0	-31	-23	2	6	6	6	6	1	1	6	**32**	**640**
1972	1	2	3	1	1	1	1	**10**	7	8	4	-20	-40	-46	1	6	6	6	2	1	1	6	**28**	**280**
1973	1	2	6	1	1	1	1	**13**	11	22	18	-30	-40	-16	-4	6	6	6	1	1	2	5	**27**	**351**
1974	1	2	6	6	3	3	3	**24**	-15	34	17	0	-13	-1	0	3	6	6	6	3	5	6	**35**	**840**
1975	1	2	6	6	1	1	1	**18**	-3	29	19	0	-26	-1	1	5	6	6	6	1	5	6	**35**	**630**
1976	1	1	1	1	1	1	1	**7**	0	-3	-7	-22	-45	-39	-1	6	5	4	1	1	1	5	**23**	**161**
1977	1	1	1	1	1	1	1	**7**	-5	-43	-11	-29	-24	-9	-3	5	1	3	1	1	4	5	**20**	**140**
1978	1	1	5	4	1	1	1	**14**	68	19	19	-5	-21	-9	7	6	6	6	5	1	4	6	**34**	**476**
1979	1	1	4	1	1	1	1	**10**	10	13	18	-30	-39	-11	-3	6	6	6	1	1	3	5	**28**	**280**
1980	1	2	4	3	1	1	1	**13**	16	16	12	-5	-18	-7	-1	6	6	6	5	2	4	5	**34**	**442**
1981	1	1	1	1	1	1	1	**7**	-3	4	-2	-22	-48	-39	0	5	6	5	1	1	1	6	**25**	**175**
1982	1	2	6	6	3	2	3	**23**	-3	25	16	0	-13	-3	3	5	6	6	6	3	5	6	**37**	**851**
1983	1	1	6	6	6	5	3	**28**	0	28	23	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1064**
1984	1	2	3	1	1	1	1	**10**	2	10	9	-17	-38	-13	1	6	6	6	2	1	3	6	**30**	**300**
1985	1	3	1	1	1	1	1	**9**	1	15	-11	-23	-43	-51	-14	6	6	3	1	1	1	3	**21**	**189**
1986	1	1	1	1	1	1	1	**7**	0	22	4	-4	-28	-13	11	6	6	6	5	1	3	6	**33**	**231**
1987	1	1	1	1	1	1	1	**7**	8	-11	-10	-27	-61	-45	-5	6	3	4	1	1	1	5	**21**	**147**
1988	1	1	1	1	1	1	1	**7**	0	-1	-7	-22	-20	-13	-2	6	5	4	1	2	3	5	**26**	**182**
1989	1	1	1	1	1	1	1	**7**	113	26	-6	-17	-46	-9	-3	6	6	4	2	1	4	5	**28**	**196**
1990	1	1	1	1	1	1	1	**7**	24	-20	0	-25	-49	-13	-6	6	2	6	1	1	3	4	**23**	**161**
1991	1	1	1	1	1	1	1	**7**	52	11	15	-15	-19	-6	-2	6	6	6	3	2	4	5	**32**	**224**
1992	1	1	1	1	1	1	1	**7**	30	15	-10	-28	-25	-12	-6	6	6	4	1	1	3	4	**25**	**175**
1993	1	4	6	6	1	1	1	**20**	53	33	6	0	-27	-4	-2	6	6	6	6	1	5	5	**35**	**700**
1994	1	1	1	1	1	1	1	**7**	12	-6	-3	-22	-44	-46	-5	6	4	5	1	1	1	5	**23**	**161**
					73 - year Average:			**12**												**73 - year Average:**			**29**	**377**
																				1929 - '34 Average:				**188**

STUDY: **525**

CP # 8, FOLSOM LAKE, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 466'

Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	414	408	413	413	424	428	443	466	466	461	443	434	38	23	0	0	5	23	32	1	1	6	6	4	1	1	**20**	4	15	23	0	-5	-18	-9	6	6	6	6	5	2	4	**35**	**700**
1923	425	423	424	424	424	428	449	466	451	430	410	403	38	17	0	15	36	56	63	1	2	6	2	1	1	1	**14**	4	21	17	-15	-21	-20	-7	6	6	6	3	1	2	4	**28**	**392**
1924	402	395	389	381	383	368	360	358	334	334	337	334	98	106	108	132	132	129	132	1	1	1	1	1	1	1	**7**	-15	-8	-2	-24	0	3	-3	3	4	5	1	6	6	5	**30**	**210**
1925	349	363	380	390	424	408	440	463	443	417	396	399	58	26	3	23	49	70	67	1	1	5	1	1	1	1	**11**	-16	32	23	-20	-26	-21	3	2	6	6	2	1	1	6	**24**	**264**
1926	398	388	368	361	395	405	439	436	403	360	354	364	61	27	30	63	106	112	102	1	1	1	1	1	1	1	**7**	10	34	-3	-33	-43	-6	10	6	6	5	1	1	4	6	**29**	**203**
1927	370	405	424	424	424	437	449	466	461	452	440	432	29	17	0	5	14	26	34	1	2	6	4	3	1	1	**18**	13	12	17	-5	-9	-12	-8	6	6	6	5	4	3	4	**34**	**612**
1928	424	424	424	424	424	437	449	454	435	409	399	397	29	17	12	31	57	67	69	1	2	3	1	1	1	1	**10**	13	12	5	-19	-26	-10	-2	6	6	6	2	1	4	5	**30**	**300**
1929	357	342	331	296	313	343	364	381	372	343	354	357	123	102	85	94	123	112	109	1	1	1	1	1	1	1	**7**	30	21	17	-9	-29	11	3	6	6	6	4	1	6	6	**35**	**245**
1930	334	334	384	406	421	437	443	442	414	382	339	338	29	23	24	52	84	127	128	1	1	1	1	1	1	1	**7**	16	6	-1	-28	-32	-43	-1	6	6	5	1	1	1	5	**25**	**175**
1931	334	349	362	376	385	399	383	386	335	334	335	334	67	83	80	131	132	131	132	1	1	1	1	1	1	1	**7**	14	-16	3	-51	-1	1	-1	6	2	6	1	5	6	5	**31**	**217**
1932	334	334	380	402	424	426	429	450	430	389	384	387	40	37	16	36	77	82	79	1	1	2	1	1	1	1	**8**	2	3	21	-20	-41	-5	3	6	6	6	2	1	5	6	**32**	**256**
1933	368	337	350	352	342	368	334	370	351	334	351	346	98	132	96	115	132	115	120	1	1	1	1	1	1	1	**7**	26	-34	36	-19	-17	17	-5	6	1	6	2	2	6	5	**28**	**196**
1934	335	334	375	402	420	427	414	414	335	324	313	326	39	52	52	131	142	153	140	1	1	1	1	1	1	1	**7**	7	-13	0	-79	-11	-11	13	6	3	6	1	3	3	6	**28**	**196**
1935	334	361	378	402	416	418	449	454	453	426	403	406	48	17	12	13	40	63	60	1	2	3	3	1	1	1	**12**	2	31	5	-1	-27	-23	3	6	6	6	5	1	1	6	**31**	**372**
1936	402	390	387	424	424	437	449	461	457	443	423	423	29	17	5	9	23	43	43	1	2	4	4	1	1	1	**14**	13	12	12	-4	-14	-20	0	6	6	6	5	3	2	6	**34**	**476**
1937	411	392	383	374	409	436	449	466	455	439	426	429	30	17	0	11	27	40	37	1	2	6	3	1	1	1	**15**	27	13	17	-11	-16	-13	3	6	6	6	3	2	3	6	**32**	**480**
1938	421	418	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1939	426	420	415	409	402	409	412	416	381	334	334	335	57	54	50	85	132	132	131	1	1	1	1	1	1	1	**7**	7	3	4	-35	-47	0	1	6	6	6	1	1	6	6	**32**	**224**
1940	334	334	334	419	424	437	449	461	448	430	404	407	29	17	5	18	36	62	59	1	2	4	2	1	1	1	**12**	13	12	12	-13	-18	-26	3	6	6	6	3	2	1	6	**30**	**360**
1941	403	402	424	424	424	437	449	466	458	455	447	434	29	17	0	8	11	19	32	1	2	6	4	3	2	1	**19**	13	12	17	-8	-3	-8	-13	6	6	6	4	5	4	3	**34**	**646**
1942	426	422	424	424	424	430	449	466	466	463	446	434	36	17	0	0	3	20	32	1	2	6	6	5	1	1	**22**	6	19	17	0	-3	-17	-12	6	6	6	6	5	2	3	**34**	**748**
1943	425	424	423	422	422	434	449	459	451	445	440	434	32	17	7	15	21	26	32	1	2	4	2	1	1	1	**12**	12	15	10	-8	-6	-5	-6	6	6	6	4	4	5	4	**35**	**420**
1944	425	419	413	405	407	419	420	433	410	384	335	352	47	46	33	56	82	131	114	1	1	1	1	1	1	1	**7**	12	1	13	-23	-26	-49	17	6	6	6	1	1	1	6	**27**	**189**
1945	341	380	404	411	424	437	448	465	454	442	427	425	29	18	1	12	24	39	41	1	2	5	3	1	1	1	**14**	13	11	17	-11	-12	-15	-2	6	6	6	3	3	3	5	**32**	**448**
1946	422	424	424	424	424	437	449	466	447	433	425	418	29	17	0	19	33	41	48	1	2	6	2	1	1	1	**14**	13	12	17	-19	-14	-8	-7	6	6	6	2	3	4	4	**31**	**434**
1947	410	411	410	403	409	428	438	441	409	366	334	336	38	28	25	57	100	132	130	1	1	1	1	1	1	1	**7**	19	10	3	-32	-43	-32	2	6	6	6	1	1	1	6	**27**	**189**
1948	351	369	370	398	386	380	422	449	449	441	428	428	86	44	17	17	25	38	38	1	1	2	2	1	1	1	**9**	-6	42	27	0	-8	-13	0	4	6	6	6	4	3	6	**35**	**315**
1949	419	413	410	400	393	416	439	456	438	411	391	399	50	27	10	28	55	75	67	1	1	3	1	1	1	1	**9**	23	23	17	-18	-27	-20	8	6	6	6	2	1	2	6	**29**	**261**
1950	377	368	353	401	424	437	449	466	455	443	438	434	29	17	0	11	23	28	32	1	2	6	3	1	1	1	**15**	13	12	17	-11	-12	-5	-4	6	6	6	3	3	5	5	**34**	**510**
1951	427	393	388	388	388	426	446	466	450	434	428	424	40	20	0	16	32	38	42	1	1	6	2	1	1	1	**13**	38	20	20	-16	-16	-6	-4	6	6	6	2	2	4	5	**31**	**403**
1952	422	424	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1953	428	423	424	424	424	430	446	458	464	463	441	434	36	20	8	2	3	25	32	1	1	4	5	5	1	1	**18**	6	16	12	6	-1	-22	-7	6	6	6	6	5	1	4	**34**	**612**
1954	425	423	421	422	424	437	449	452	435	414	410	409	29	17	14	31	52	56	57	1	2	3	1	1	1	1	**10**	13	12	3	-17	-21	-4	-1	6	6	6	2	1	5	5	**31**	**310**
1955	400	397	405	413	413	408	419	436	416	391	334	355	58	47	30	50	75	132	111	1	1	1	1	1	1	1	**7**	-5	11	17	-20	-25	-57	21	5	6	6	2	1	1	6	**27**	**189**
1956	359	374	420	402	406	425	441	466	466	463	445	434	41	25	0	0	3	21	32	1	1	6	6	5	1	1	**21**	19	16	25	0	-3	-18	-11	6	6	6	6	5	2	3	**34**	**714**
1957	428	422	417	412	424	437	429	456	447	433	425	427	29	37	10	19	33	41	39	1	1	3	2	1	1	1	**10**	13	-8	27	-9	-14	-8	2	6	4	6	4	3	4	6	**33**	**330**
1958	423	418	419	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1959	425	419	412	417	424	428	433	433	409	384	365	371	38	33	33	57	82	101	95	1	1	1	1	1	1	1	**7**	4	5	0	-24	-25	-19	6	6	6	6	1	1	2	6	**28**	**196**
1960	341	335	345	368	417	437	447	446	424	400	383	390	29	19	20	42	66	83	76	1	2	1	1	1	1	1	**8**	20	10	-1	-22	-24	-17	7	6	6	5	1	1	2	6	**27**	**216**
1961	383	386	389	388	396	405	411	423	406	388	373	380	61	55	43	60	78	93	86	1	1	1	1	1	1	1	**7**	9	6	12	-17	-18	-15	7	6	6	6	2	2	3	6	**31**	**217**
1962	379	374	383	376	424	434	449	457	444	427	411	409	32	17	9	22	39	55	57	1	2	4	1	1	1	1	**11**	10	15	8	-13	-17	-16	-2	6	6	6	3	2	2	5	**30**	**330**
1963	439	424	424	424	419	430	449	466	459	449	441	434	36	17	0	7	17	25	32	1	2	6	4	2	1	1	**17**	11	19	17	-7	-10	-8	-7	6	6	6	4	4	4	4	**34**	**578**
1964	427	424	424	424	418	412	423	437	411	367	334	335	54	43	29	55	99	132	131	1	1	1	1	1	1	1	**7**	-6	11	14	-26	-44	-33	1	4	6	6	1	1	1	6	**25**	**175**
1965	335	368	393	392	395	414	449	463	453	446	438	434	52	17	3	13	20	28	32	1	2	5	3	1	1	1	**14**	19	35	14	-10	-7	-8	-4	6	6	6	4	4	4	5	**35**	**490**
1966	426	424	424	424	422	430	442	442	415	390	383	372	36	24	24	51	76	83	94	1	1	1	1	1	1	1	**7**	8	12	0	-27	-25	-7	-11	6	6	6	1	1	4	3	**27**	**189**
1967	355	380	419	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1968	427	424	423	424	424	437	436	437	412	386	381	389	29	30	29	54	80	85	77	1	1	1	1	1	1	1	**7**	13	-1	1	-25	-26	-5	8	6	5	6	1	1	5	6	**30**	**210**
1969	386	395	409	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1970	427	424	423	393	396	426	427	437	424	408	398	406	40	39	29	42	58	68	60	1	1	1	1	1	1	1	**7**	30	1	10	-13	-16	-10	8	6	6	6	3	2	4	6	**33**	**231**
1971	396	410	424	424	423	437	441	459	459	458	449	434	29	25	7	7	8	17	32	1	1	4	4	4	2	1	**17**	14	4	18	0	-1	-9	-15	6	6	6	6	5	4	3	**36**	**612**
1972	425	422	424	424	424	437	441	448	427	405	396	395	29	25	18	39	61	70	71	1	1	2	1	1	1	1	**8**	13	4	7	-21	-22	-9	-1	6	6	6	1	1	4	5	**29**	**232**
1973	395	401	416	424	424	437	449	466	452	436	420	422	29	17	0	14	30	46	44	1	2	6	3	1	1	1	**15**	13	12	17	-14	-16	-16	2	6	6	6	3	2	2	6	**31**	**465**
1974	419	423	422	409	417	433	449	466	463	463	448	434	33	17	0	3	3	18	32	1	2	6	5	5	2	1	**22**	16	16	17	-3	0	-15	-14	6	6	6	5	6	3	3	**35**	**770**
1975	426	419	417	415	424	437	441	466	466	463	447	434	29	25	0	0	3	19	32	1	1	6	6	5	2	1	**22**	13	4	25	0	-3	-16	-13	6	6	6	6	5	2	3	**34**	**748**
1976	431	423	419	410	402	396	398	403	371	335	338	339	70	68	63	95	131	128	127	1	1	1	1	1	1	1	**7**	-6	2	5	-32	-36	3	1	4	6	6	1	1	6	6	**30**	**210**
1977	335	336	332	328	323	326	334	342	334	319	305	291	140	132	124	132	147	161	175	1	1	1	1	1	1	1	**7**	3	8	8	-8	-15	-14	-14	6	6	6	4	3	3	3	**31**	**217**
1978	287	304	359	424	424	437	449	466	459	452	439	434	29	17	0	7	14	27	32	1	2	6	4	3	1	1	**18**	13	12	17	-7	-7	-13	-5	6	6	6	4	4	3	5	**34**	**612**
1979	423	417	408	415	424	437	446	466	447	429	412	415	29	20	0	19	37	54	51	1	1	6	2	1	1	1	**13**	13	9	20	-19	-18	-17	3	6	6	6	2	2	2	6	**30**	**390**
1980	412	413	417	405	399	430	449	466	453	453	449	434	36	17	2	13	13	17	32	1	2	5	3	3	2	1	**17**	31	19	15	-11	0	-4	-15	6	6	6	3	6	5	3	**35**	**595**
1981	425	419	415	413	412	422	430	432	406	383	365	374	44	36	34	60	83	101	92	1	1	1	1	1	1	1	**7**	10	8	2	-26	-23	-18	9	6	6	6	1	1	2	6	**28**	**196**
1982	375	420	392	396	388	424	449	466	466	463	449	434	42	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	36	25	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1983	438	415	417	418	418	433	449	466	466	463	449	434	33	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	15	16	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1984	435	392	388	388	392	424	438	461	449	436	422	426	42	28	5	17	30	44	40	1	1	4	2	1	1	1	**11**	32	14	23	-12	-13	-14	4	6	6	6	3	3	3	6	**33**	**363**
1985	424	424	424	422	424	426	447	444	410	367	334	334	40	19	22	56	99	132	132	1	2	1	1	1	1	1	**8**	2	21	-3	-34	-43	-33	0	6	6	5	1	1	1	6	**26**	**208**
1986	335	366	396	424	396	424	449	464	458	453	448	434	42	17	2	8	13	18	32	1	2	5	4	3	2	1	**18**	28	25	15	-6	-5	-5	-14	6	6	6	4	5	5	3	**35**	**630**
1987	427	420	413	405	404	410	412	415	382	334	321	334	56	54	51	84	132	145	132	1	1	1	1	1	1	1	**7**	6	2	3	-33	-48	-13	13	6	6	6	1	1	3	6	**29**	**203**
1988	334	334	369	396	386	383	387	385	342	309	268	368	83	79	81	124	157	198	98	1	1	1	1	1	1	1	**7**	-3	4	-2	-43	-33	-41	100	5	6	5	1	1	1	6	**25**	**175**
1989	344	368	387	397	389	437	449	453	431	408	403	407	29	17	13	35	58	63	59	1	2	3	1	1	1	1	**10**	48	12	4	-22	-23	-5	4	6	6	6	1	1	5	6	**31**	**310**
1990	404	403	399	399	397	409	410	413	380	334	343	344	57	56	53	86	132	123	122	1	1	1	1	1	1	1	**7**	12	1	3	-33	-46	9	1	6	6	6	1	1	6	6	**32**	**224**
1991	334	334	335	332	332	383	407	425	414	404	399	399	83	59	41	52	62	67	67	1	1	1	1	1	1	1	**7**	51	24	18	-11	-10	-5	0	6	6	6	3	4	5	6	**36**	**252**
1992	392	378	367	351	383	403	405	406	372	334	323	317	63	61	60	94	132	143	149	1	1	1	1	1	1	1	**7**	20	2	1	-34	-38	-11	-6	6	6	6	1	1	3	4	**27**	**189**
1993	316	315	357	424	427	434	449	466	466	454	444	434	32	17	0	0	12	22	32	1	2	6	6	3	1	1	**20**	7	15	17	0	-12	-10	-10	6	6	6	6	3	4	4	**35**	**700**
1994	423	413	407	395	390	390	396	402	376	334	334	331	76	70	64	90	132	132	135	1	1	1	1	1	1	1	**7**	0	6	6	-26	-42	0	-3	6	6	6	1	1	6	5	**31**	**217**
																							73 - year Average:				**12**											**73 - year Average:**				**31**	**405**
																																							1929 - '34 Average:				**214**

STUDY: **525**

CP # 10, NEW MELONES RESERVOIR, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 1088'

Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	939	941	945	949	962	971	970	998	1022	1015	1005	999	126	117	118	90	66	73	83
1923	998	1000	1006	1013	1018	1021	1023	1038	1040	1033	1022	1016	70	67	65	50	48	55	66
1924	1016	1017	1019	1022	1024	1023	1018	1010	1000	990	984	981	64	65	70	78	88	98	104
1925	979	981	984	986	1000	1008	1010	1024	1026	1020	1011	1007	88	80	78	64	62	68	77
1926	1005	1006	1008	1009	1015	1020	1021	1016	1006	994	985	978	73	68	67	72	82	94	103
1927	977	979	987	992	1005	1013	1019	1031	1038	1028	1018	1013	83	75	69	57	50	60	70
1928	1013	1017	1020	1022	1028	1045	1046	1054	1047	1035	1027	1022	60	43	42	34	41	53	61
1929	1022	1023	1025	1026	1029	1029	1026	1023	1015	1005	999	994	59	59	62	65	73	83	89
1930	994	995	997	999	1003	1008	1009	1004	1000	990	980	973	85	80	79	84	88	98	108
1931	973	975	977	979	981	983	978	969	957	946	938	934	107	105	110	119	131	142	150
1932	932	933	939	943	955	961	959	979	992	984	971	964	133	127	129	109	96	104	117
1933	963	964	967	969	970	971	966	961	958	944	935	928	118	117	122	127	130	144	153
1934	927	930	932	935	940	945	939	928	913	896	884	875	148	143	149	160	175	192	204
1935	871	872	874	879	884	891	906	934	946	935	922	912	204	197	182	154	142	153	166
1936	909	912	915	926	947	957	967	987	994	983	969	962	141	131	121	101	94	105	119
1937	960	962	965	968	979	991	991	1009	1012	1002	991	984	109	97	97	79	76	86	97
1938	983	985	995	1003	1020	1041	1055	1084	1088	1087	1079	1075	68	47	33	4	0	1	9
1939	1050	1050	1050	1050	1050	1052	1050	1043	1033	1024	1017	1012	38	36	38	45	55	64	71
1940	1011	1011	1012	1022	1036	1052	1059	1074	1074	1065	1056	1052	52	36	29	14	14	23	32
1941	1050	1050	1050	1050	1050	1055	1056	1073	1081	1076	1068	1063	38	33	32	15	7	12	20
1942	1050	1050	1050	1050	1050	1055	1060	1076	1088	1087	1079	1074	38	33	28	12	0	1	9
1943	1050	1050	1050	1050	1050	1055	1066	1075	1080	1074	1065	1060	38	33	22	13	8	14	23
1944	1050	1050	1050	1050	1050	1053	1049	1049	1045	1035	1027	1021	38	35	39	39	43	53	61
1945	1021	1025	1028	1032	1045	1052	1052	1063	1071	1065	1056	1051	43	36	36	25	17	23	32
1946	1050	1050	1050	1050	1050	1054	1060	1071	1070	1061	1052	1048	38	34	28	17	18	27	36
1947	1047	1050	1050	1050	1050	1054	1050	1045	1036	1025	1018	1014	38	34	38	43	52	63	70
1948	1014	1015	1016	1017	1019	1021	1021	1025	1034	1025	1017	1013	69	67	67	63	54	63	71
1949	1012	1014	1016	1017	1019	1023	1023	1027	1023	1012	1005	1001	69	65	65	61	65	76	83
1950	999	999	1001	1005	1012	1018	1021	1035	1038	1029	1022	1018	76	70	67	53	50	59	66
1951	1017	1044	1050	1050	1050	1055	1058	1064	1060	1050	1041	1036	38	33	30	24	28	38	47
1952	1034	1037	1042	1050	1050	1055	1062	1088	1088	1088	1080	1075	38	33	26	0	0	0	8
1953	1050	1050	1050	1050	1050	1054	1054	1054	1061	1056	1049	1045	38	34	34	34	27	32	39
1954	1044	1046	1048	1050	1050	1055	1059	1068	1063	1054	1047	1042	38	33	29	20	25	34	41
1955	1041	1043	1045	1049	1050	1052	1048	1044	1041	1031	1023	1018	38	36	40	44	47	57	65
1956	1017	1019	1043	1050	1050	1055	1059	1076	1088	1084	1075	1071	38	33	29	12	0	4	13
1957	1050	1050	1050	1050	1050	1055	1053	1058	1061	1053	1046	1040	38	33	35	30	27	35	42
1958	1037	1039	1040	1046	1050	1055	1066	1088	1088	1084	1076	1071	38	33	22	0	0	4	12
1959	1050	1050	1050	1050	1050	1053	1050	1041	1032	1022	1015	1011	38	35	38	47	56	66	73
1960	1010	1012	1013	1015	1019	1025	1023	1017	1009	998	991	983	69	63	65	71	79	90	97
1961	978	982	985	986	989	991	987	980	968	956	949	944	99	97	101	108	120	132	139
1962	943	944	946	947	957	962	964	970	973	963	953	946	131	126	124	118	115	125	135
1963	945	947	950	957	974	980	979	1003	1011	1003	993	987	114	108	109	85	77	85	95
1964	986	990	993	997	1000	1002	999	994	986	972	963	956	88	86	89	94	102	116	125
1965	954	957	986	1007	1018	1025	1034	1048	1057	1053	1044	1039	70	63	54	40	31	35	44
1966	1037	1042	1046	1050	1050	1053	1052	1055	1045	1034	1027	1021	38	35	36	33	43	54	61
1967	1020	1021	1030	1039	1046	1055	1062	1084	1088	1088	1080	1075	42	33	26	4	0	0	8
1968	1050	1050	1050	1050	1050	1054	1051	1048	1039	1029	1021	1015	38	34	37	40	49	59	67
1969	1015	1018	1020	1048	1050	1055	1071	1088	1088	1087	1078	1072	38	33	17	0	0	1	10
1970	1050	1050	1050	1050	1050	1055	1054	1060	1061	1051	1042	1037	38	33	34	28	27	37	46
1971	1036	1040	1046	1050	1050	1055	1055	1061	1065	1059	1052	1048	38	33	33	27	23	29	36
1972	1047	1050	1050	1050	1050	1055	1051	1055	1047	1036	1029	1024	38	33	37	33	41	52	59
1973	1024	1026	1029	1040	1050	1055	1055	1069	1072	1062	1052	1048	38	33	33	19	16	26	36
1974	1047	1050	1050	1050	1050	1055	1064	1080	1086	1079	1069	1065	38	33	24	8	2	9	19
1975	1050	1050	1050	1050	1050	1055	1055	1063	1077	1071	1063	1058	38	33	35	25	11	17	25
1976	1050	1050	1050	1050	1050	1051	1046	1039	1028	1019	1013	1008	38	37	42	49	60	69	75
1977	1007	1008	1009	1009	1009	1008	1003	997	989	977	970	965	79	80	85	91	99	111	118
1978	962	962	964	973	983	1000	1006	1020	1030	1028	1018	1015	105	88	82	68	58	60	70
1979	1014	1016	1019	1026	1037	1050	1050	1064	1061	1051	1041	1036	51	38	38	24	27	37	47
1980	1036	1038	1040	1050	1050	1055	1061	1070	1080	1080	1071	1066	38	33	27	18	8	8	17
1981	1050	1050	1050	1050	1050	1053	1051	1045	1033	1022	1016	1012	38	35	37	43	55	66	72
1982	1012	1018	1032	1050	1050	1055	1071	1088	1088	1087	1079	1075	38	33	17	0	0	1	9
1983	1050	1050	1050	1050	1050	1055	1061	1077	1088	1088	1083	1075	38	33	27	11	0	0	5
1984	1050	1050	1050	1050	1050	1055	1055	1061	1060	1053	1046	1042	38	33	33	27	28	35	42
1985	1042	1046	1050	1050	1050	1054	1052	1050	1040	1030	1024	1020	38	34	36	38	48	58	64
1986	1020	1022	1025	1033	1050	1055	1060	1068	1074	1066	1058	1056	38	33	28	20	14	22	30
1987	1050	1050	1050	1050	1050	1052	1047	1038	1027	1019	1015	1012	38	36	41	50	61	69	73
1988	1010	1010	1010	1011	1012	1014	1009	1002	994	986	982	977	76	74	79	86	94	102	106
1989	975	974	975	975	977	988	986	981	973	961	955	952	111	100	102	107	115	127	133
1990	953	956	959	961	964	968	961	949	937	925	919	912	124	120	127	139	151	163	169
1991	909	910	914	914	915	922	917	911	895	876	866	861	173	166	171	177	193	212	222
1992	861	862	867	870	878	886	878	860	841	823	813	805	210	202	210	228	247	265	275
1993	806	810	815	832	924	969	977	989	997	987	976	972	164	119	111	99	91	101	112
1994	969	970	973	973	974	978	975	970	960	948	942	939	114	110	113	118	128	140	146

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Fluct. MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	1	1	1	1	1	1	1	**7**	9	-1	28	24	-7	-10	-6	6	5	6	6	4	4	4	**35**	**245**
1923	1	1	1	1	1	1	1	**7**	3	2	15	2	-7	-11	-6	6	6	6	6	4	3	4	**35**	**245**
1924	1	1	1	1	1	1	1	**7**	-1	-5	-8	-10	-10	-6	-3	5	5	4	4	4	4	5	**31**	**217**
1925	1	1	1	1	1	1	1	**7**	8	2	14	2	-6	-9	-4	6	6	6	6	4	4	5	**37**	**259**
1926	1	1	1	1	1	1	1	**7**	5	1	-5	-10	-12	-9	-7	6	6	5	4	3	4	4	**32**	**224**
1927	1	1	1	1	1	1	1	**7**	8	6	12	7	-10	-10	-5	6	6	6	6	4	4	5	**37**	**259**
1928	1	1	1	1	1	1	1	**7**	17	1	8	-7	-12	-8	-5	6	6	6	4	3	4	5	**34**	**238**
1929	1	1	1	1	1	1	1	**7**	0	-3	-3	-8	-10	-6	-5	6	5	5	4	4	4	5	**33**	**231**
1930	1	1	1	1	1	1	1	**7**	5	1	-5	-4	-10	-10	-7	6	6	5	5	4	4	4	**34**	**238**
1931	1	1	1	1	1	1	1	**7**	2	-5	-9	-12	-11	-8	-4	6	5	4	3	3	4	5	**30**	**210**
1932	1	1	1	1	1	1	1	**7**	6	-2	20	13	-8	-13	-7	6	5	6	6	4	3	4	**34**	**238**
1933	1	1	1	1	1	1	1	**7**	1	-5	-5	-3	-14	-9	-7	6	5	5	5	3	4	4	**32**	**224**
1934	1	1	1	1	1	1	1	**7**	5	-6	-11	-15	-17	-12	-9	6	4	3	3	2	3	4	**25**	**175**
1935	1	1	1	1	1	1	1	**7**	7	15	28	12	-11	-13	-10	6	6	6	6	3	3	4	**34**	**238**
1936	1	1	1	1	1	1	1	**7**	10	10	20	7	-11	-14	-7	6	6	6	6	3	3	4	**34**	**238**
1937	1	1	1	1	1	1	1	**7**	12	0	18	3	-10	-11	-7	6	6	6	6	4	3	4	**35**	**245**
1938	1	1	1	5	6	5	4	**23**	21	14	29	4	-1	-8	-4	6	6	6	6	5	4	5	**38**	**874**
1939	1	1	1	1	1	1	1	**7**	2	-2	-7	-10	-9	-7	-5	6	5	4	4	4	4	5	**32**	**224**
1940	1	1	1	3	3	1	1	**11**	16	7	15	0	-9	-9	-4	6	6	6	6	4	4	5	**37**	**407**
1941	1	1	1	2	4	3	1	**13**	5	1	17	8	-5	-8	-5	6	6	6	6	5	4	5	**38**	**494**
1942	1	1	1	3	6	5	4	**21**	5	5	16	12	-1	-8	-5	6	6	6	6	5	4	5	**38**	**798**
1943	1	1	1	3	4	3	1	**14**	5	11	9	5	-6	-9	-5	6	6	6	6	4	4	5	**37**	**518**
1944	1	1	1	1	1	1	1	**7**	3	-4	0	-4	-10	-8	-6	6	5	6	5	4	4	4	**34**	**238**
1945	1	1	1	1	2	1	1	**8**	7	0	11	8	-6	-9	-5	6	6	6	6	4	4	5	**37**	**296**
1946	1	1	1	2	2	1	1	**9**	4	6	11	-1	-9	-9	-4	6	6	6	5	4	4	5	**36**	**324**
1947	1	1	1	1	1	1	1	**7**	4	-4	-5	-9	-11	-7	-4	6	5	5	4	3	4	5	**32**	**224**
1948	1	1	1	1	1	1	1	**7**	2	0	4	9	-9	-8	-4	6	6	6	6	4	4	5	**37**	**259**
1949	1	1	1	1	1	1	1	**7**	4	0	4	-4	-11	-7	-4	6	6	6	5	3	4	5	**35**	**245**
1950	1	1	1	1	1	1	1	**7**	6	3	14	3	-9	-7	-4	6	6	6	6	4	4	5	**37**	**259**
1951	1	1	1	1	1	1	1	**7**	5	3	6	-4	-10	-9	-5	6	6	6	5	4	4	5	**36**	**252**
1952	1	1	1	6	6	6	4	**25**	5	7	26	0	0	-8	-5	6	6	6	6	6	4	5	**39**	**975**
1953	1	1	1	1	1	1	1	**7**	4	0	0	7	-5	-7	-4	6	6	6	6	5	4	5	**38**	**266**
1954	1	1	1	1	1	1	1	**7**	5	4	9	-5	-9	-7	-5	6	6	6	5	4	4	5	**36**	**252**
1955	1	1	1	1	1	1	1	**7**	2	-4	-4	-3	-10	-8	-5	6	5	5	5	4	4	5	**34**	**238**
1956	1	1	1	3	6	5	3	**20**	5	4	17	12	-4	-9	-4	6	6	6	6	5	4	5	**38**	**760**
1957	1	1	1	1	1	1	1	**7**	5	-2	5	3	-8	-7	-6	6	5	6	6	4	4	4	**35**	**245**
1958	1	1	1	6	6	5	3	**23**	5	11	22	0	-4	-8	-5	6	6	6	6	5	4	5	**38**	**874**
1959	1	1	1	1	1	1	1	**7**	3	-3	-9	-9	-10	-7	-4	6	5	4	4	4	4	5	**32**	**224**
1960	1	1	1	1	1	1	1	**7**	6	-2	-6	-8	-11	-7	-8	6	5	4	4	3	4	4	**30**	**210**
1961	1	1	1	1	1	1	1	**7**	2	-4	-7	-12	-12	-7	-5	6	5	4	3	3	4	5	**30**	**210**
1962	1	1	1	1	1	1	1	**7**	5	2	6	3	-10	-10	-7	6	6	6	6	4	4	4	**36**	**252**
1963	1	1	1	1	1	1	1	**7**	6	-1	24	8	-8	-10	-6	6	5	6	6	4	4	4	**35**	**245**
1964	1	1	1	1	1	1	1	**7**	2	-3	-5	-8	-14	-9	-7	6	5	5	4	3	4	4	**31**	**217**
1965	1	1	1	1	1	1	1	**7**	7	9	14	9	-4	-9	-5	6	6	6	6	5	4	5	**38**	**266**
1966	1	1	1	1	1	1	1	**7**	3	-1	3	-10	-11	-7	-6	6	5	6	4	3	4	4	**32**	**224**
1967	1	1	1	5	6	6	4	**24**	9	7	22	4	0	-8	-5	6	6	6	6	6	4	5	**39**	**936**
1968	1	1	1	1	1	1	1	**7**	4	-3	-3	-9	-10	-8	-6	6	5	5	4	4	4	4	**32**	**224**
1969	1	1	2	6	6	5	3	**24**	5	16	17	0	-1	-9	-6	6	6	6	6	5	4	4	**37**	**888**
1970	1	1	1	1	1	1	1	**7**	5	-1	6	1	-10	-9	-5	6	5	6	6	4	4	5	**36**	**252**
1971	1	1	1	1	1	1	1	**7**	5	0	6	4	-6	-7	-4	6	6	6	6	4	4	5	**37**	**259**
1972	1	1	1	1	1	1	1	**7**	5	-4	4	-8	-11	-7	-5	6	5	6	4	3	4	5	**33**	**231**
1973	1	1	1	2	2	1	1	**9**	5	0	14	3	-10	-10	-4	6	6	6	6	4	4	5	**37**	**333**
1974	1	1	1	4	5	4	2	**18**	5	9	16	6	-7	-10	-4	6	6	6	6	4	4	5	**37**	**666**
1975	1	1	1	1	3	2	1	**10**	5	0	8	14	-6	-8	-5	6	6	6	6	4	4	5	**37**	**370**
1976	1	1	1	1	1	1	1	**7**	1	-5	-7	-11	-9	-6	-5	6	5	4	3	4	4	5	**31**	**217**
1977	1	1	1	1	1	1	1	**7**	-1	-5	-6	-8	-12	-7	-5	5	5	4	4	3	4	5	**30**	**210**
1978	1	1	1	1	1	1	1	**7**	17	6	14	10	-2	-10	-3	6	6	6	6	5	4	5	**38**	**266**
1979	1	1	1	1	1	1	1	**7**	13	0	14	-3	-10	-10	-5	6	6	6	5	4	4	5	**36**	**252**
1980	1	1	1	2	4	4	2	**15**	5	6	9	10	0	-9	-5	6	6	6	6	6	4	5	**39**	**585**
1981	1	1	1	1	1	1	1	**7**	3	-2	-6	-12	-11	-6	-4	6	5	4	3	3	4	5	**30**	**210**
1982	1	1	2	6	6	5	4	**25**	5	16	17	0	-1	-8	-4	6	6	6	6	5	4	5	**38**	**950**
1983	1	1	1	3	6	6	4	**22**	5	6	16	11	0	-5	-8	6	6	6	6	6	5	4	**39**	**858**
1984	1	1	1	1	1	1	1	**7**	5	0	6	-1	-7	-7	-4	6	6	6	5	4	4	5	**36**	**252**
1985	1	1	1	1	1	1	1	**7**	4	-2	-2	-10	-10	-6	-4	6	5	5	4	4	4	5	**33**	**231**
1986	1	1	1	1	3	1	1	**9**	5	5	8	6	-8	-8	-2	6	6	6	6	4	4	5	**37**	**333**
1987	1	1	1	1	1	1	1	**7**	2	-5	-9	-11	-8	-4	-3	6	5	4	3	4	5	5	**32**	**224**
1988	1	1	1	1	1	1	1	**7**	2	-5	-7	-8	-8	-4	-5	6	5	4	4	4	5	5	**33**	**231**
1989	1	1	1	1	1	1	1	**7**	11	-2	-5	-8	-12	-6	-3	6	5	5	4	3	4	5	**32**	**224**
1990	1	1	1	1	1	1	1	**7**	4	-7	-12	-12	-12	-6	-7	6	4	3	3	3	4	4	**27**	**189**
1991	1	1	1	1	1	1	1	**7**	7	-5	-6	-16	-19	-10	-5	6	5	4	2	2	4	5	**28**	**196**
1992	1	1	1	1	1	1	1	**7**	8	-8	-18	-19	-18	-10	-8	6	4	2	2	2	4	4	**24**	**168**
1993	1	1	1	1	1	1	1	**7**	45	8	12	8	-10	-11	-4	6	6	6	6	4	3	5	**36**	**252**
1994	1	1	1	1	1	1	1	**7**	4	-3	-5	-10	-12	-6	-3	6	5	5	4	3	4	5	**32**	**224**
73 - year Average:								**10**														**73 - year Average:**	**34**	**340**
1929 - '34 Average:																								**219**

STUDY: **525**

CP # 81, DON PEDRO RESERVOIR, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 832'

Elevation in feet

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	599	582	580	601	656	690	699	725	782	779	763	752
1923	746	745	749	761	776	784	788	792	801	795	780	770
1924	764	762	757	755	756	754	749	744	736	724	710	701
1925	698	699	699	703	725	741	755	768	786	777	761	751
1926	745	742	738	737	746	751	765	778	775	761	746	736
1927	732	731	735	742	770	785	795	797	815	808	793	783
1928	777	777	778	781	789	800	802	819	819	804	789	779
1929	773	768	765	764	767	769	770	775	782	773	764	757
1930	754	751	748	749	754	761	764	768	782	773	764	758
1931	756	755	754	756	759	757	751	742	731	718	705	697
1932	694	691	700	716	750	764	765	772	790	785	770	760
1933	753	747	741	740	746	749	747	745	762	751	737	727
1934	721	720	717	721	731	738	738	734	730	715	701	693
1935	689	688	689	700	720	734	754	765	792	780	764	753
1936	746	744	739	744	781	797	802	820	832	823	808	798
1937	792	786	782	785	800	800	802	816	832	819	805	795
1938	789	784	800	800	800	800	800	804	831	832	819	808
1939	800	799	799	800	800	800	802	804	800	787	774	766
1940	764	764	761	774	800	800	802	816	829	814	799	789
1941	784	781	783	798	800	800	800	812	832	831	817	808
1942	800	798	800	800	800	800	802	807	831	832	818	808
1943	800	800	800	800	800	800	802	822	832	824	810	799
1944	794	792	788	787	793	800	802	809	816	803	788	778
1945	773	774	778	783	800	800	802	807	831	825	810	799
1946	796	797	800	800	800	800	802	806	812	796	780	769
1947	763	763	765	769	776	781	778	783	777	764	750	743
1948	740	739	738	739	740	741	737	747	772	762	744	734
1949	728	722	717	716	723	733	740	749	756	739	720	707
1950	700	694	688	694	713	725	735	748	764	749	732	720
1951	714	761	800	800	800	800	798	794	798	783	769	759
1952	752	750	757	782	800	800	800	820	832	832	819	808
1953	800	795	793	800	800	800	802	805	814	811	797	788
1954	783	779	776	777	786	798	802	820	820	806	790	780
1955	775	771	769	775	782	785	782	786	792	780	768	761
1956	756	752	800	800	800	800	802	818	832	832	818	808
1957	800	798	793	793	799	800	800	807	828	815	801	792
1958	787	783	780	785	800	800	800	821	832	832	819	808
1959	800	794	789	793	800	800	802	800	794	782	770	764
1960	761	758	755	756	764	769	771	777	780	770	760	754
1961	751	749	749	751	753	752	746	738	731	719	707	700
1962	697	694	692	694	718	737	748	753	779	771	757	747
1963	742	737	734	738	763	775	783	797	822	817	803	795
1964	789	790	791	796	800	800	797	795	797	786	775	769
1965	766	767	798	800	800	800	802	807	828	828	817	807
1966	800	800	800	800	800	800	801	797	790	775	760	751
1967	746	744	754	770	788	800	800	817	832	832	820	808
1968	800	795	791	792	800	800	802	805	803	791	779	771
1969	767	767	770	800	800	800	800	823	832	832	819	808
1970	800	799	800	800	800	800	799	799	807	795	780	771
1971	766	766	772	788	800	800	802	802	808	800	788	779
1972	774	770	773	780	793	800	800	798	795	783	772	766
1973	763	762	764	775	800	800	802	812	827	812	798	788
1974	783	787	798	800	800	800	800	806	828	819	805	796
1975	791	789	786	786	798	800	802	812	832	825	812	803
1976	800	800	799	799	800	799	794	788	778	767	758	752
1977	749	747	743	743	742	738	729	717	703	689	674	665
1978	661	656	659	685	718	750	762	778	815	822	809	803
1979	799	795	792	800	800	800	802	822	832	818	803	794
1980	789	788	787	800	800	800	800	817	832	832	819	808
1981	800	797	794	795	799	800	802	806	805	793	782	775
1982	771	777	796	800	800	800	800	820	832	832	820	808
1983	800	800	800	800	800	800	800	819	832	832	832	808
1984	800	800	800	800	800	800	797	803	814	801	786	776
1985	773	773	779	786	794	800	801	800	796	784	773	766
1986	764	764	768	774	800	800	802	827	832	825	811	802
1987	796	791	786	784	786	788	786	784	780	770	760	754
1988	751	750	750	755	760	762	757	749	742	730	718	711
1989	707	704	705	707	711	725	737	753	760	749	738	733
1990	731	731	731	733	736	739	737	735	733	720	707	699
1991	695	692	689	688	688	695	694	711	722	712	702	696
1992	695	695	694	697	706	711	714	722	722	707	694	685
1993	680	675	674	705	734	762	769	783	813	812	798	789
1994	783	777	773	772	775	778	777	782	780	770	761	755

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**
1922	142	133	107	50	53	69	80	1	1	1	1	1	1	1	**7**
1923	48	44	40	31	37	52	62	1	1	1	1	1	1	1	**7**
1924	78	83	88	96	108	122	131	1	1	1	1	1	1	1	**7**
1925	91	77	64	46	55	71	81	1	1	1	1	1	1	1	**7**
1926	81	67	54	57	71	86	96	1	1	1	1	1	1	1	**7**
1927	47	37	35	17	24	39	49	1	1	1	2	1	1	1	**8**
1928	32	30	13	13	28	43	53	1	1	3	3	1	1	1	**11**
1929	63	62	57	50	59	68	75	1	1	1	1	1	1	1	**7**
1930	71	68	64	50	59	68	74	1	1	1	1	1	1	1	**7**
1931	75	81	90	101	114	127	135	1	1	1	1	1	1	1	**7**
1932	68	67	60	42	47	62	72	1	1	1	1	1	1	1	**7**
1933	83	85	87	70	81	95	105	1	1	1	1	1	1	1	**7**
1934	94	94	98	102	117	131	139	1	1	1	1	1	1	1	**7**
1935	98	78	67	40	52	68	79	1	1	1	1	1	1	1	**7**
1936	35	30	12	0	9	24	34	1	1	3	6	4	1	1	**17**
1937	32	30	16	0	13	27	37	1	1	2	6	3	1	1	**15**
1938	32	32	28	1	0	13	24	1	1	1	5	6	3	1	**18**
1939	32	30	28	32	45	58	66	1	1	1	1	1	1	1	**7**
1940	32	30	16	3	18	33	43	1	1	2	5	2	1	1	**13**
1941	32	32	20	0	1	15	24	1	1	1	6	5	2	1	**17**
1942	32	30	25	1	0	14	24	1	1	1	5	6	3	1	**18**
1943	32	30	10	0	8	22	33	1	1	3	6	4	1	1	**17**
1944	32	30	23	16	29	44	54	1	1	1	2	1	1	1	**8**
1945	32	30	25	1	7	22	33	1	1	1	5	4	1	1	**14**
1946	32	30	26	20	36	52	63	1	1	1	1	1	1	1	**7**
1947	51	54	49	55	68	82	89	1	1	1	1	1	1	1	**7**
1948	91	95	85	60	70	88	98	1	1	1	1	1	1	1	**7**
1949	99	92	83	76	93	112	125	1	1	1	1	1	1	1	**7**
1950	107	97	84	68	83	100	112	1	1	1	1	1	1	1	**7**
1951	32	34	38	34	49	63	73	1	1	1	1	1	1	1	**7**
1952	32	32	12	0	0	13	24	1	1	3	6	6	3	1	**21**
1953	32	30	27	18	21	35	44	1	1	1	2	1	1	1	**8**
1954	34	30	12	12	26	42	52	1	1	3	3	1	1	1	**11**
1955	47	50	46	40	52	64	71	1	1	1	1	1	1	1	**7**
1956	32	30	14	0	0	14	24	1	1	3	6	6	3	1	**21**
1957	32	32	25	4	17	31	40	1	1	1	5	2	1	1	**12**
1958	32	32	11	0	0	13	24	1	1	3	6	6	3	1	**21**
1959	32	30	32	38	50	62	68	1	1	1	1	1	1	1	**7**
1960	63	61	55	52	62	72	78	1	1	1	1	1	1	1	**7**
1961	80	86	94	101	113	125	132	1	1	1	1	1	1	1	**7**
1962	95	84	79	53	61	75	85	1	1	1	1	1	1	1	**7**
1963	57	49	35	10	15	29	37	1	1	1	3	2	1	1	**10**
1964	32	35	37	35	46	57	63	1	1	1	1	1	1	1	**7**
1965	32	30	25	4	4	15	25	1	1	1	5	5	2	1	**16**
1966	32	31	35	42	57	72	81	1	1	1	1	1	1	1	**7**
1967	32	32	15	0	0	12	24	1	1	2	6	6	3	1	**20**
1968	32	30	27	29	41	53	61	1	1	1	1	1	1	1	**7**
1969	32	32	9	0	0	13	24	1	1	4	6	6	3	1	**22**
1970	32	33	33	25	37	52	61	1	1	1	1	1	1	1	**7**
1971	32	30	30	24	32	44	53	1	1	1	1	1	1	1	**7**
1972	32	32	34	37	49	60	66	1	1	1	1	1	1	1	**7**
1973	32	30	20	5	20	34	44	1	1	1	4	1	1	1	**10**
1974	32	32	26	4	13	27	36	1	1	1	5	3	1	1	**13**
1975	32	30	20	0	7	20	29	1	1	1	6	4	1	1	**15**
1976	33	38	44	54	65	74	80	1	1	1	1	1	1	1	**7**
1977	94	103	115	129	143	158	167	1	1	1	1	1	1	1	**7**
1978	82	70	54	17	10	23	29	1	1	1	2	3	1	1	**10**
1979	32	30	10	0	14	29	38	1	1	3	6	3	1	1	**16**
1980	32	32	15	0	0	13	24	1	1	2	6	6	3	1	**20**
1981	32	30	26	27	39	50	57	1	1	1	1	1	1	1	**7**
1982	32	32	12	0	0	12	24	1	1	3	6	6	3	1	**21**
1983	32	32	13	0	0	0	24	1	1	3	6	6	6	1	**24**
1984	32	35	29	18	31	46	56	1	1	1	2	1	1	1	**8**
1985	32	31	32	36	48	59	66	1	1	1	1	1	1	1	**7**
1986	32	30	5	0	7	21	30	1	1	4	6	4	1	1	**18**
1987	44	46	48	52	62	72	78	1	1	1	1	1	1	1	**7**
1988	70	75	83	90	102	114	121	1	1	1	1	1	1	1	**7**
1989	107	95	79	72	83	94	99	1	1	1	1	1	1	1	**7**
1990	93	95	97	99	112	125	133	1	1	1	1	1	1	1	**7**
1991	137	138	121	110	120	130	136	1	1	1	1	1	1	1	**7**
1992	121	118	110	110	125	138	147	1	1	1	1	1	1	1	**7**
1993	70	63	49	19	20	34	43	1	1	1	2	1	1	1	**8**
1994	54	55	50	52	62	71	77	1	1	1	1	1	1	1	**7**
												73 - year Average:			**11**

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	34	9	26	57	-3	-16	-11	6	6	6	6	5	2	3	**34**	**238**
1923	8	4	4	9	-6	-15	-10	6	6	6	6	4	3	4	**35**	**245**
1924	-2	-5	-5	-8	-12	-14	-9	5	5	5	4	3	3	4	**29**	**203**
1925	16	14	13	18	-9	-16	-10	6	6	6	6	4	2	4	**34**	**238**
1926	5	14	13	-3	-14	-15	-10	6	6	6	5	3	3	4	**33**	**231**
1927	15	10	2	18	-7	-15	-10	6	6	6	6	4	3	4	**35**	**280**
1928	11	2	17	0	-15	-15	-10	6	6	6	6	3	3	4	**34**	**374**
1929	2	1	5	7	-9	-9	-7	6	6	6	6	4	4	4	**36**	**252**
1930	7	3	4	14	-9	-9	-6	6	6	6	6	4	4	4	**36**	**252**
1931	-2	-6	-9	-11	-13	-13	-8	5	4	4	3	3	3	4	**26**	**182**
1932	14	1	7	18	-5	-15	-10	6	6	6	6	5	3	4	**36**	**252**
1933	3	-2	-2	17	-11	-14	-10	6	5	5	6	3	3	4	**32**	**224**
1934	7	0	-4	-4	-15	-14	-8	6	6	5	5	3	3	4	**32**	**224**
1935	14	20	11	27	-12	-16	-11	6	6	6	6	3	2	3	**32**	**224**
1936	16	5	18	12	-9	-15	-10	6	6	6	6	4	3	4	**35**	**595**
1937	0	2	14	16	-13	-14	-10	6	6	6	6	3	3	4	**34**	**510**
1938	0	0	4	27	1	-13	-11	6	6	6	6	6	3	3	**36**	**648**
1939	0	2	2	-4	-13	-13	-8	6	6	6	5	3	3	4	**33**	**231**
1940	0	2	14	13	-15	-15	-10	6	6	6	6	3	3	4	**34**	**442**
1941	0	0	12	20	-1	-14	-9	6	6	6	6	5	3	4	**36**	**612**
1942	0	2	5	24	1	-14	-10	6	6	6	6	6	3	4	**37**	**666**
1943	0	2	20	10	-8	-14	-11	6	6	6	6	4	3	3	**34**	**578**
1944	7	2	7	7	-13	-15	-10	6	6	6	6	3	3	4	**34**	**272**
1945	0	2	5	24	-6	-15	-11	6	6	6	6	4	3	3	**34**	**476**
1946	0	2	4	6	-16	-16	-11	6	6	6	6	2	2	3	**31**	**217**
1947	5	-3	5	-6	-13	-14	-7	6	5	6	4	3	3	4	**31**	**217**
1948	1	-4	10	25	-10	-18	-10	6	5	6	6	4	2	4	**33**	**231**
1949	10	7	9	7	-17	-19	-13	6	6	6	6	2	2	3	**31**	**217**
1950	12	10	13	16	-15	-17	-12	6	6	6	6	3	2	3	**32**	**224**
1951	0	-2	-4	4	-15	-14	-10	6	5	5	6	3	3	4	**32**	**224**
1952	0	0	20	12	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1953	0	2	3	9	-3	-14	-9	6	6	6	6	5	3	4	**36**	**288**
1954	12	4	18	0	-14	-16	-10	6	6	6	6	3	2	4	**33**	**363**
1955	3	-3	4	6	-12	-12	-7	6	5	6	6	3	3	4	**33**	**231**
1956	0	2	16	14	0	-14	-10	6	6	6	6	6	3	4	**37**	**777**
1957	1	0	7	21	-13	-14	-9	6	6	6	6	3	3	4	**34**	**408**
1958	0	0	21	11	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1959	0	2	-2	-6	-12	-12	-6	6	6	5	4	3	3	4	**31**	**217**
1960	5	2	6	3	-10	-10	-6	6	6	6	6	4	4	4	**36**	**252**
1961	-1	-6	-8	-7	-12	-12	-7	5	4	4	4	3	3	4	**27**	**189**
1962	19	11	5	26	-8	-14	-10	6	6	6	6	4	3	4	**35**	**245**
1963	12	8	14	25	-5	-14	-8	6	6	6	6	5	3	4	**36**	**360**
1964	0	-3	-2	2	-11	-11	-6	6	5	5	6	3	3	4	**32**	**224**
1965	0	2	5	21	0	-11	-10	6	6	6	6	6	3	4	**37**	**592**
1966	0	1	-4	-7	-15	-15	-9	6	6	5	4	3	3	4	**31**	**217**
1967	12	0	17	15	0	-12	-12	6	6	6	6	6	3	3	**36**	**720**
1968	0	2	3	-2	-12	-12	-8	6	6	6	5	3	3	4	**33**	**231**
1969	0	0	23	9	0	-13	-11	6	6	6	6	6	3	3	**36**	**792**
1970	0	-1	0	8	-12	-15	-9	6	5	6	6	3	3	4	**33**	**231**
1971	0	2	0	6	-8	-12	-9	6	6	6	6	4	3	4	**35**	**245**
1972	7	0	-2	-3	-12	-11	-6	6	6	5	5	3	3	4	**32**	**224**
1973	0	2	10	15	-15	-14	-10	6	6	6	6	3	3	4	**34**	**340**
1974	0	0	6	22	-9	-14	-9	6	6	6	6	4	3	4	**35**	**455**
1975	2	2	10	20	-7	-13	-9	6	6	6	6	4	3	4	**35**	**525**
1976	-1	-5	-6	-10	-11	-9	-6	5	5	4	4	3	4	4	**29**	**203**
1977	-4	-9	-12	-14	-14	-15	-9	5	4	3	3	3	3	4	**25**	**175**
1978	32	12	16	37	7	-13	-6	6	6	6	6	6	3	4	**37**	**370**
1979	0	2	20	10	-14	-15	-9	6	6	6	6	3	3	4	**34**	**544**
1980	0	0	17	15	0	-13	-11	6	6	6	6	6	3	3	**36**	**720**
1981	1	2	4	-1	-12	-11	-7	6	6	6	5	3	3	4	**33**	**231**
1982	0	0	20	12	0	-12	-12	6	6	6	6	6	3	3	**36**	**756**
1983	0	0	19	13	0	0	-24	6	6	6	6	6	6	1	**37**	**888**
1984	0	-3	6	11	-13	-15	-10	6	5	6	6	3	3	4	**33**	**264**
1985	6	1	-1	-4	-12	-11	-7	6	6	5	5	3	3	4	**32**	**224**
1986	0	2	25	5	-7	-14	-9	6	6	6	6	4	3	4	**35**	**630**
1987	2	-2	-2	-4	-10	-10	-6	6	5	5	5	4	4	4	**33**	**231**
1988	2	-5	-8	-7	-12	-12	-7	6	5	4	4	3	3	4	**29**	**203**
1989	14	12	16	7	-11	-11	-5	6	6	6	6	3	3	5	**35**	**245**
1990	3	-2	-2	-2	-13	-13	-8	6	5	5	5	3	3	4	**31**	**217**
1991	7	-1	17	11	-10	-10	-6	6	5	6	6	4	4	4	**35**	**245**
1992	5	3	8	0	-15	-13	-9	6	6	6	6	3	3	4	**34**	**238**
1993	28	7	14	30	-1	-14	-9	6	6	6	6	5	3	4	**36**	**288**
1994	3	-1	5	-2	-10	-9	-6	6	5	6	5	4	4	4	**34**	**238**
											73 - year Average:				**34**	**361**
													1929 - '34 Average:			**231**

STUDY: **525**

CP # 20, LAKE McCLURE, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 867'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Elevation in feet												DFMRE							Reservoir Elevation Score								Fluctuation							Reservoir Fluctuation Score								
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	680	680	696	712	759	779	789	845	867	860	846	836	88	78	22	0	7	21	31	1	1	1	6	4	1	1	**15**	20	10	56	22	-7	-14	-10	6	6	6	6	4	3	4	**35**	**525**
1923	808	808	808	808	808	813	827	854	859	850	835	825	54	40	13	8	17	32	42	1	1	3	4	2	1	1	**13**	5	14	27	5	-9	-15	-10	6	6	6	6	4	3	4	**35**	**455**
1924	808	808	808	808	808	807	809	811	798	781	767	758	60	58	56	69	86	100	109	1	1	1	1	1	1	1	**7**	-1	2	2	-13	-17	-14	-9	5	6	6	3	2	3	4	**29**	**203**
1925	758	762	767	772	796	804	823	847	851	838	823	811	63	44	20	16	29	44	56	1	1	1	2	1	1	1	**8**	8	19	24	4	-13	-15	-12	6	6	6	6	3	3	3	**33**	**264**
1926	808	808	808	808	808	814	834	832	831	827	820	812	53	33	35	36	40	47	55	1	1	1	1	1	1	1	**7**	6	20	-2	-1	-4	-7	-8	6	6	5	5	5	4	4	**35**	**245**
1927	808	808	808	808	808	815	818	849	860	855	852	840	52	49	18	7	12	15	27	1	1	2	4	3	2	1	**14**	7	3	31	11	-5	-3	-12	6	6	6	6	5	5	3	**37**	**518**
1928	808	808	808	808	808	809	808	823	821	814	810	807	58	59	44	46	53	57	60	1	1	1	1	1	1	1	**7**	1	-1	15	-2	-7	-4	-3	6	5	6	5	4	5	5	**36**	**252**
1929	807	805	805	805	807	808	809	813	813	815	818	812	59	58	54	54	52	49	55	1	1	1	1	1	1	1	**7**	1	1	4	0	2	3	-6	6	6	6	6	6	6	4	**40**	**280**
1930	808	807	807	807	806	802	806	808	812	815	818	816	65	61	59	55	52	49	51	1	1	1	1	1	1	1	**7**	-4	4	2	4	3	3	-2	5	6	6	6	6	6	5	**40**	**280**
1931	808	808	808	808	808	808	810	812	800	783	769	760	59	57	55	67	84	98	107	1	1	1	1	1	1	1	**7**	0	2	2	-12	-17	-14	-9	6	6	6	3	2	3	4	**30**	**210**
1932	759	760	777	789	808	817	826	851	867	857	843	832	50	41	16	0	10	24	35	1	1	2	6	3	1	1	**15**	9	9	25	16	-10	-14	-11	6	6	6	6	4	3	3	**34**	**510**
1933	808	807	806	808	808	811	816	824	839	827	812	804	56	51	43	28	40	55	63	1	1	1	1	1	1	1	**7**	3	5	8	15	-12	-15	-8	6	6	6	6	3	3	4	**34**	**238**
1934	803	802	805	808	808	816	823	818	809	793	780	770	51	44	49	58	74	87	97	1	1	1	1	1	1	1	**7**	8	7	-5	-9	-16	-13	-10	6	6	5	4	2	3	4	**30**	**210**
1935	769	773	778	796	806	816	840	859	867	854	839	828	51	27	8	0	13	28	39	1	1	4	6	3	1	1	**17**	10	24	19	8	-13	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1936	808	808	808	808	808	820	840	859	865	853	838	827	47	27	8	2	14	29	40	1	1	4	5	3	1	1	**16**	12	20	19	6	-12	-15	-11	6	6	6	6	3	3	3	**33**	**528**
1937	808	808	808	808	808	820	834	859	867	853	838	827	47	33	8	0	14	29	40	1	1	4	6	3	1	1	**17**	12	14	25	8	-14	-15	-11	6	6	6	6	3	3	3	**33**	**561**
clure	808	808	808	808	808	820	840	859	867	867	855	840	47	27	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1939	808	808	808	808	808	816	831	832	821	803	787	776	51	36	35	46	64	80	91	1	1	1	1	1	1	1	**7**	8	15	1	-11	-18	-16	-11	6	6	6	3	2	2	3	**28**	**196**
1940	778	778	780	806	808	820	837	859	861	845	829	816	47	30	8	6	22	38	51	1	1	4	4	1	1	1	**13**	12	17	22	2	-16	-16	-13	6	6	6	6	2	2	3	**31**	**403**
1941	808	808	808	808	808	820	834	859	867	863	850	840	47	33	8	0	4	17	27	1	1	4	6	5	2	1	**20**	12	14	25	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1942	808	808	808	808	808	820	838	859	867	860	851	840	47	29	8	0	7	16	27	1	1	4	6	4	2	1	**19**	12	18	21	8	-7	-9	-11	6	6	6	6	4	4	3	**35**	**665**
1943	808	808	808	808	808	820	840	859	864	853	838	828	47	27	8	3	14	29	39	1	1	4	5	3	1	1	**16**	12	20	19	5	-11	-15	-10	6	6	6	6	3	3	4	**34**	**544**
1944	808	808	808	808	808	817	815	837	840	826	809	796	50	52	30	27	41	58	71	1	1	1	1	1	1	1	**7**	9	-2	22	3	-14	-17	-13	6	5	6	6	3	2	3	**31**	**217**
1945	793	800	805	808	808	820	833	856	867	856	842	831	47	34	11	0	11	25	36	1	1	3	6	3	1	1	**16**	12	13	23	11	-11	-14	-11	6	6	6	6	3	3	3	**33**	**528**
1946	808	808	808	808	808	818	837	859	857	842	826	813	49	30	8	10	25	41	54	1	1	4	3	1	1	1	**12**	10	19	22	-2	-15	-16	-13	6	6	6	5	3	2	3	**31**	**372**
1947	808	808	808	808	808	815	823	836	829	814	799	790	52	44	31	38	53	68	77	1	1	1	1	1	1	1	**7**	7	8	13	-7	-15	-15	-9	6	6	6	4	3	3	4	**32**	**224**
1948	789	791	792	793	795	794	799	822	839	825	807	793	73	68	45	28	42	60	74	1	1	1	1	1	1	1	**7**	-1	5	23	17	-14	-18	-14	5	6	6	6	3	2	3	**31**	**217**
1949	791	790	791	792	796	804	814	835	834	815	796	781	63	53	32	33	52	71	86	1	1	1	1	1	1	1	**7**	8	10	21	-1	-19	-19	-15	6	6	6	5	2	2	3	**30**	**210**
1950	778	777	777	785	797	800	817	837	838	820	801	787	67	50	30	29	47	66	80	1	1	1	1	1	1	1	**7**	3	17	20	1	-18	-19	-14	6	6	6	6	2	2	3	**31**	**217**
1951	784	808	808	808	808	819	827	836	833	815	795	780	48	40	31	34	52	72	87	1	1	1	1	1	1	1	**7**	11	8	9	-3	-18	-20	-15	6	6	6	5	2	2	3	**30**	**210**
1952	777	778	791	808	808	820	840	859	867	864	852	840	47	27	8	0	3	15	27	1	1	4	6	5	2	1	**20**	12	20	19	8	-3	-12	-12	6	6	6	6	5	3	3	**35**	**700**
1953	808	808	808	808	808	809	815	815	823	808	789	774	58	52	52	44	59	78	93	1	1	1	1	1	1	1	**7**	1	6	0	8	-15	-19	-15	6	6	6	6	3	2	3	**32**	**224**
1954	771	771	771	774	784	798	814	832	825	804	784	768	69	53	35	42	63	83	99	1	1	1	1	1	1	1	**7**	14	16	18	-7	-21	-20	-16	6	6	6	4	1	2	2	**27**	**189**
1955	765	764	767	773	778	780	781	803	812	797	780	771	87	86	64	55	70	87	96	1	1	1	1	1	1	1	**7**	2	1	22	9	-15	-17	-9	6	6	6	6	3	2	4	**33**	**231**
1956	768	768	808	808	808	819	832	859	867	863	850	840	48	35	8	0	4	17	27	1	1	4	6	5	2	1	**20**	11	13	27	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1957	808	808	808	808	808	813	813	828	837	821	803	789	54	54	39	30	46	64	78	1	1	1	1	1	1	1	**7**	5	0	15	9	-16	-18	-14	6	6	6	6	2	2	3	**31**	**217**
1958	786	786	791	798	808	820	840	859	867	862	850	840	47	27	8	0	5	17	27	1	1	4	6	4	2	1	**19**	12	20	19	8	-5	-12	-10	6	6	6	6	5	3	4	**36**	**684**
1959	808	808	808	808	808	813	823	825	816	797	780	772	54	44	42	51	70	87	95	1	1	1	1	1	1	1	**7**	5	10	2	-9	-19	-17	-8	6	6	6	4	2	2	4	**30**	**210**
1960	772	771	770	771	783	791	805	818	815	800	786	777	76	62	49	52	67	81	90	1	1	1	1	1	1	1	**7**	8	14	13	-3	-15	-14	-9	6	6	6	5	3	3	4	**33**	**231**
1961	775	776	778	778	781	782	788	792	783	765	750	738	85	79	75	84	102	117	129	1	1	1	1	1	1	1	**7**	1	6	4	-9	-18	-15	-12	6	6	6	4	2	3	3	**30**	**210**
1962	737	737	740	742	782	792	814	830	843	830	814	800	75	53	37	24	37	53	67	1	1	1	1	1	1	1	**7**	10	22	16	13	-13	-16	-14	6	6	6	6	3	2	3	**32**	**224**
1963	799	799	799	807	808	814	823	848	861	852	837	826	53	44	19	6	15	30	41	1	1	2	4	2	1	1	**12**	6	9	25	13	-9	-15	-11	6	6	6	6	4	3	3	**34**	**408**
1964	808	808	808	808	808	808	811	820	818	802	786	777	59	56	47	49	65	81	90	1	1	1	1	1	1	1	**7**	0	3	9	-2	-16	-16	-9	6	6	6	5	2	2	4	**31**	**217**
1965	774	778	808	808	808	815	831	854	867	861	850	840	52	36	13	0	6	17	27	1	1	3	6	4	2	1	**18**	7	16	23	13	-6	-11	-10	6	6	6	6	4	3	4	**35**	**630**
1966	808	808	808	808	808	814	827	837	825	803	783	770	53	40	30	42	64	84	97	1	1	1	1	1	1	1	**7**	6	13	10	-12	-22	-20	-13	6	6	6	3	1	2	3	**27**	**189**
1967	767	769	794	806	808	820	840	859	867	867	856	840	47	27	8	0	0	11	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1968	808	808	808	808	808	812	816	821	811	793	776	765	55	51	46	56	74	91	102	1	1	1	1	1	1	1	**7**	4	4	5	-10	-18	-17	-11	6	6	6	4	2	2	3	**29**	**203**
1969	762	766	774	808	808	820	840	859	867	867	854	840	47	27	8	0	0	13	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-13	-14	6	6	6	6	6	3	3	**36**	**792**
1970	808	808	808	808	808	820	820	836	837	820	801	788	47	47	31	30	47	66	79	1	1	1	1	1	1	1	**7**	12	0	16	1	-17	-19	-13	6	6	6	6	2	2	3	**31**	**217**
1971	785	788	798	806	808	812	813	825	835	821	803	789	55	54	42	32	46	64	78	1	1	1	1	1	1	1	**7**	4	1	12	10	-14	-18	-14	6	6	6	6	3	2	3	**32**	**224**
1972	786	787	794	799	805	815	818	831	832	817	802	796	52	49	36	35	50	65	71	1	1	1	1	1	1	1	**7**	10	3	13	1	-15	-15	-6	6	6	6	6	3	3	4	**34**	**238**
1973	796	797	803	808	808	820	828	859	867	852	838	828	47	39	8	0	15	29	39	1	1	4	6	2	1	1	**16**	12	8	31	8	-15	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1974	808	808	808	808	808	820	833	859	867	854	839	829	47	34	8	0	13	28	38	1	1	4	6	3	1	1	**17**	12	13	26	8	-13	-15	-10	6	6	6	6	3	3	4	**34**	**578**
1975	808	808	808	808	808	820	823	855	867	856	842	832	47	44	12	0	11	25	35	1	1	3	6	3	1	1	**16**	12	3	32	12	-11	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1976	808	808	808	808	808	809	807	809	797	780	767	758	58	60	58	70	87	100	109	1	1	1	1	1	1	1	**7**	1	-2	2	-12	-17	-13	-9	6	5	6	3	2	3	4	**29**	**203**
1977	757	755	754	754	753	749	739	727	716	686	656	633	118	128	140	151	181	211	234	1	1	1	1	1	1	1	**7**	-4	-10	-12	-11	-30	-30	-23	5	4	3	3	1	1	1	**18**	**126**
1978	626	626	642	693	741	782	815	859	867	867	856	840	85	52	8	0	0	11	27	1	1	4	6	6	3	1	**22**	41	33	44	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1979	808	808	808	808	808	820	828	859	863	849	834	823	47	39	8	4	18	33	44	1	1	4	5	2	1	1	**15**	12	8	31	4	-14	-15	-11	6	6	6	6	3	3	3	**33**	**495**
1980	808	808	808	808	808	820	835	859	867	867	855	840	47	32	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	15	24	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1981	808	807	807	808	808	813	823	835	831	816	802	794	54	44	32	36	51	65	73	1	1	1	1	1	1	1	**7**	5	10	12	-4	-15	-14	-8	6	6	6	5	3	3	4	**33**	**231**
1982	793	801	808	808	808	820	840	859	867	865	854	840	47	27	8	0	2	13	27	1	1	4	6	5	3	1	**21**	12	20	19	8	-2	-11	-14	6	6	6	6	5	3	3	**35**	**735**
1983	808	808	808	808	808	820	836	859	867	867	864	840	47	31	8	0	0	3	27	1	1	4	6	6	5	1	**24**	12	16	23	8	0	-3	-24	6	6	6	6	6	5	1	**36**	**864**
1984	808	808	808	808	808	820	827	850	848	831	813	800	47	40	17	19	36	54	67	1	1	2	2	1	1	1	**9**	12	7	23	-2	-17	-18	-13	6	6	6	5	2	2	3	**30**	**270**
1985	799	802	806	808	808	814	828	841	835	821	807	797	53	39	26	32	46	60	70	1	1	1	1	1	1	1	**7**	6	14	13	-6	-14	-14	-10	6	6	6	4	3	3	4	**32**	**224**
1986	797	800	806	808	808	820	839	859	867	855	841	830	47	28	8	0	12	26	37	1	1	4	6	3	1	1	**17**	12	19	20	8	-12	-14	-11	6	6	6	6	3	3	3	**33**	**561**
1987	808	807	807	807	808	810	818	821	810	795	781	773	57	49	46	57	72	86	94	1	1	1	1	1	1	1	**7**	2	8	3	-11	-15	-14	-8	6	6	6	3	3	3	4	**31**	**217**
1988	772	773	775	780	785	790	796	800	793	776	762	752	77	71	67	74	91	105	115	1	1	1	1	1	1	1	**7**	5	6	4	-7	-17	-14	-10	6	6	6	4	2	3	4	**31**	**217**
1989	750	749	752	753	758	774	796	807	803	788	774	765	93	71	60	64	79	93	102	1	1	1	1	1	1	1	**7**	16	22	11	-4	-15	-14	-9	6	6	6	5	3	3	4	**33**	**231**
1990	766	767	768	770	774	780	792	792	783	767	752	740	87	75	75	84	100	115	127	1	1	1	1	1	1	1	**7**	6	12	0	-9	-16	-15	-12	6	6	6	4	2	3	3	**30**	**210**
1991	738	736	736	735	735	756	761	782	795	782	769	759	111	106	85	72	85	98	108	1	1	1	1	1	1	1	**7**	21	5	21	13	-13	-13	-10	6	6	6	6	3	3	4	**34**	**238**
1992	759	759	760	762	775	781	797	802	791	777	764	753	86	70	65	76	90	103	114	1	1	1	1	1	1	1	**7**	6	16	5	-11	-14	-13	-11	6	6	6	3	3	3	3	**30**	**210**
1993	752	753	759	800	808	820	837	859	867	861	848	837	47	30	8	0	6	19	30	1	1	4	6	4	2	1	**19**	12	17	22	8	-6	-13	-11	6	6	6	6	4	3	3	**34**	**646**
1994	808	807	808	808	808	810	814	821	813	798	784	775	57	53	46	54	69	83	92	1	1	1	1	1	1	1	**7**	2	4	7	-8	-15	-14	-9	6	6	6	4	3	3	4	**32**	**224**
																								73 - year Average:			**12**												**73 - year Average:**			**33**	**386**
																																									1929 - '34 Average:		**288**

STUDY: **525**

CP # 18, MILLERTON LAKE, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 576'

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

	Elevation in feet												Difference from Maximum Reservoir Elevation [DFMRE]						
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	491	505	527	547	549	566	559	576	576	562	518	491	10	17	0	0	14	58	85
1923	485	495	520	537	531	517	541	549	540	526	463	470	59	35	27	36	50	113	106
1924	483	494	508	522	516	503	506	511	505	478	464	468	73	70	65	71	98	112	108
1925	465	474	490	503	508	493	514	532	522	499	483	475	83	62	44	54	77	93	101
1926	477	490	505	519	522	508	549	563	535	494	473	485	68	27	13	41	82	103	91
1927	491	506	528	545	560	561	560	569	576	543	492	482	15	16	7	0	33	84	94
1928	482	503	525	542	540	543	551	554	522	477	465	477	33	25	22	54	99	111	99
1929	485	499	513	523	517	513	531	531	527	506	466	477	63	45	45	49	70	110	99
1930	480	495	507	518	514	510	525	534	518	489	466	482	66	51	42	58	87	110	94
1931	487	501	513	522	517	508	510	516	508	482	466	466	68	66	60	68	94	110	110
1932	467	476	503	520	543	531	524	532	552	518	492	477	45	52	44	24	58	84	99
1933	477	489	501	516	512	501	520	537	526	509	466	467	75	56	39	50	67	110	109
1934	470	480	500	517	511	503	516	527	523	498	477	486	73	60	49	53	78	99	90
1935	490	500	515	535	532	509	542	563	574	538	469	479	67	34	13	2	38	107	97
1936	486	502	518	533	560	558	564	576	563	521	472	478	18	12	0	13	55	104	98
1937	488	497	516	535	560	570	576	576	576	538	484	469	6	0	0	0	38	92	107
1938	472	486	533	560	560	542	529	467	572	576	532	520	34	47	109	4	0	44	56
1939	513	514	529	538	532	524	542	560	539	504	473	495	52	34	16	37	72	103	81
1940	495	504	517	550	550	552	548	561	553	512	466	471	24	28	15	23	64	110	105
1941	481	494	528	556	560	573	573	569	576	569	527	506	3	3	7	0	7	49	70
1942	497	507	532	552	549	553	554	562	576	555	509	477	23	22	14	0	21	67	99
1943	477	494	518	557	556	576	574	576	562	526	491	476	0	2	0	14	50	85	100
1944	479	491	508	521	524	507	516	517	501	494	490	480	69	60	59	75	82	86	96
1945	481	503	523	533	560	568	565	571	576	554	511	491	8	11	5	0	22	65	85
1946	485	502	531	548	528	524	536	559	546	510	478	480	52	40	17	30	66	98	96
1947	481	500	526	543	541	530	545	556	535	497	473	481	46	31	20	41	79	103	95
1948	488	503	518	529	523	530	556	551	541	483	480	484	46	20	25	35	93	96	92
1949	490	500	513	526	524	511	522	538	521	482	477	489	65	54	38	55	94	99	87
1950	492	503	519	536	541	524	534	551	539	506	476	482	52	42	25	37	70	100	94
1951	490	533	560	560	554	546	552	546	514	463	463	481	30	24	30	62	113	113	95
1952	488	500	530	559	560	567	559	526	576	571	525	508	9	17	50	0	5	51	68
1953	501	514	533	549	538	532	541	536	518	497	478	481	44	35	40	58	79	98	95
1954	488	497	514	532	532	527	537	560	544	507	465	483	49	39	16	32	69	111	93
1955	489	502	522	540	537	520	534	545	537	504	481	487	56	42	31	39	72	95	89
1956	491	499	560	560	560	576	576	561	576	566	524	505	0	0	15	0	10	52	71
1957	496	504	517	527	525	529	546	561	562	526	471	481	47	30	15	14	50	105	95
1958	488	501	525	545	554	565	576	576	576	557	516	498	11	0	0	0	19	60	78
1959	492	507	523	530	536	528	550	566	551	500	470	475	48	26	10	25	76	106	101
1960	474	475	480	490	503	498	515	525	509	496	483	481	78	61	51	67	80	93	95
1961	481	491	505	511	510	511	526	539	527	486	467	467	65	50	37	49	90	109	109
1962	468	471	484	492	538	529	527	555	569	540	489	476	47	49	21	7	36	87	100
1963	479	491	501	518	558	558	576	576	576	564	520	503	18	0	0	0	12	56	73
1964	490	517	542	551	547	544	553	561	551	508	476	484	32	23	15	25	68	100	92
1965	481	496	529	560	556	554	559	551	561	540	512	496	22	17	25	15	36	64	80
1966	487	513	546	558	541	526	545	564	550	506	486	486	50	31	12	26	70	90	90
1967	490	502	539	559	560	571	565	514	570	576	539	522	5	11	62	6	0	37	54
1968	515	521	539	545	545	539	550	554	539	506	478	482	37	26	22	37	70	98	94
1969	480	496	513	560	524	521	467	469	576	576	538	513	55	109	107	0	0	38	63
1970	498	516	540	560	560	554	554	555	544	517	476	477	22	22	21	32	59	100	99
1971	482	502	534	551	548	533	541	544	520	498	491	478	43	35	32	56	78	85	98
1972	479	491	519	536	532	524	537	543	540	497	481	481	52	39	33	36	79	95	95
1973	489	501	523	545	560	560	550	575	576	542	483	477	16	26	1	0	34	93	99
1974	487	510	545	560	544	550	559	570	573	537	490	473	26	17	6	3	39	86	103
1975	476	494	515	528	535	526	533	536	567	525	476	482	50	43	40	9	51	100	94
1976	489	511	531	541	539	544	547	542	519	492	479	494	32	29	34	57	84	97	82
1977	490	496	500	503	501	464	465	464	462	466	461	462	112	111	112	114	110	115	114
1978	462	462	484	532	560	552	510	498	576	576	548	539	24	66	78	0	0	28	37
1979	528	535	549	560	555	562	560	571	563	521	477	482	14	16	5	13	55	99	94
1980	489	488	508	560	560	558	566	550	576	576	542	513	18	10	26	0	0	34	63
1981	503	512	520	528	531	533	547	553	543	510	477	488	43	29	23	33	66	99	88
1982	491	504	536	560	560	576	546	561	576	576	546	541	0	30	15	0	0	30	35
1983	531	556	560	560	513	484	467	467	483	564	572	576	92	109	109	93	12	4	0
1984	560	560	560	560	560	568	570	570	557	530	487	483	8	6	6	19	46	89	93
1985	482	492	511	536	533	526	551	563	539	501	483	483	50	25	13	37	75	93	93
1986	490	508	534	554	550	552	574	565	576	558	503	479	24	2	11	0	18	73	97
1987	480	489	492	495	496	511	530	551	539	503	473	480	65	46	25	37	73	103	96
1988	482	495	507	526	516	527	539	547	527	498	483	486	49	37	29	49	78	93	90
1989	486	497	505	515	512	516	537	552	540	502	478	484	60	39	24	36	74	98	92
1990	489	495	502	510	510	517	532	544	525	508	479	483	59	44	32	51	68	97	93
1991	480	486	492	499	493	489	501	508	512	506	480	486	87	75	68	64	70	96	90
1992	485	490	494	498	499	490	493	494	480	470	465	466	86	83	82	96	106	111	110
1993	467	466	476	536	543	556	558	576	576	571	522	499	20	18	0	0	5	54	77
1994	490	497	507	512	508	520	534	548	528	498	478	484	56	42	28	48	78	98	92

	Reservoir Elevation Score								Reservoir Change from Previous Month [fluctuation]							Reservoir Fluctuation Score								Largemouth Bass Reservoir Habitat Index =
YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	3	2	6	6	3	1	1	**22**	17	-7	17	0	-14	-44	-27	6	4	6	6	3	1	1	**27**	**594**
1923	1	1	1	1	1	1	1	**7**	-14	24	8	-9	-14	-63	7	3	6	6	4	3	1	6	**29**	**203**
1924	1	1	1	1	1	1	1	**7**	-13	3	5	-6	-27	-14	4	3	6	6	4	1	3	6	**29**	**203**
1925	1	1	1	1	1	1	1	**7**	-15	21	18	-10	-23	-16	-8	3	6	6	4	1	2	4	**26**	**182**
1926	1	1	3	1	1	1	1	**9**	-14	41	14	-28	-41	-21	12	3	6	6	1	1	1	6	**24**	**216**
1927	2	2	4	6	1	1	1	**17**	1	-1	9	7	-33	-51	-10	6	5	6	6	1	1	4	**29**	**493**
1928	1	1	1	1	1	1	1	**7**	3	8	3	-32	-45	-12	12	6	6	6	1	1	3	6	**29**	**203**
1929	1	1	1	1	1	1	1	**7**	-4	18	0	-4	-21	-40	11	5	6	6	5	1	1	6	**30**	**210**
1930	1	1	1	1	1	1	1	**7**	-4	15	9	-16	-29	-23	16	5	6	6	2	1	1	6	**27**	**189**
1931	1	1	1	1	1	1	1	**7**	-9	2	6	-8	-26	-16	0	4	6	6	4	1	2	6	**29**	**203**
1932	1	1	1	1	1	1	1	**7**	-12	-7	8	20	-34	-26	-15	3	4	6	6	1	1	3	**24**	**168**
1933	1	1	1	1	1	1	1	**7**	-11	19	17	-11	-17	-43	1	3	6	6	3	2	1	6	**27**	**189**
1934	1	1	1	1	1	1	1	**7**	-8	13	11	-4	-25	-21	9	4	6	6	5	1	1	6	**29**	**203**
1935	1	1	3	5	1	1	1	**13**	-23	33	21	11	-36	-69	10	1	6	6	6	1	1	6	**27**	**351**
1936	2	3	6	3	1	1	1	**17**	-2	6	12	-13	-42	-49	6	5	6	6	3	1	1	6	**28**	**476**
1937	4	6	6	6	1	1	1	**25**	10	6	0	0	-38	-54	-15	6	6	6	6	1	1	3	**29**	**725**
1938	1	1	1	5	6	1	1	**16**	-18	-13	-62	105	4	-44	-12	2	3	1	6	6	1	3	**22**	**352**
1939	1	1	2	1	1	1	1	**8**	-8	18	18	-21	-35	-31	22	4	6	6	1	1	1	6	**25**	**200**
1940	1	1	2	1	1	1	1	**8**	2	-4	13	-8	-41	-46	5	6	5	6	4	1	1	6	**29**	**232**
1941	5	5	4	6	4	1	1	**26**	13	0	-4	7	-7	-42	-21	6	6	5	6	4	1	1	**29**	**754**
1942	1	1	3	6	1	1	1	**14**	4	1	8	14	-21	-46	-32	6	6	6	6	1	1	1	**27**	**378**
1943	6	5	6	3	1	1	1	**23**	20	-2	2	-14	-36	-35	-15	6	5	6	3	1	1	3	**25**	**575**
1944	1	1	1	1	1	1	1	**7**	-17	9	1	-16	-7	-4	-10	2	6	6	2	4	5	4	**29**	**203**
1945	4	3	4	6	1	1	1	**20**	8	-3	6	5	-22	-43	-20	6	5	6	6	1	1	2	**27**	**540**
1946	1	1	2	1	1	1	1	**8**	-4	12	23	-13	-36	-32	2	5	6	6	3	1	1	6	**28**	**224**
1947	1	1	1	1	1	1	1	**7**	-11	15	11	-21	-38	-24	8	3	6	6	1	1	1	6	**24**	**168**
1948	1	1	1	1	1	1	1	**7**	7	26	-5	-10	-58	-3	4	6	6	5	4	1	5	6	**33**	**231**
1949	1	1	1	1	1	1	1	**7**	-13	11	16	-17	-39	-5	12	3	6	6	2	1	5	6	**29**	**203**
1950	1	1	1	1	1	1	1	**7**	-17	10	17	-12	-33	-30	6	2	6	6	3	1	1	6	**25**	**175**
1951	1	1	1	1	1	1	1	**7**	-8	6	-6	-32	-51	0	18	4	6	4	1	1	6	6	**28**	**196**
1952	4	2	1	6	4	1	1	**19**	7	-8	-33	50	-5	-46	-17	6	4	1	6	5	1	2	**25**	**475**
1953	1	1	1	1	1	1	1	**7**	-6	9	-5	-18	-21	-19	3	4	6	5	2	1	2	6	**26**	**182**
1954	1	1	2	1	1	1	1	**8**	-5	10	23	-16	-37	-42	18	5	6	6	2	1	1	6	**27**	**216**
1955	1	1	1	1	1	1	1	**7**	-17	14	11	-8	-33	-23	6	2	6	6	4	1	1	6	**26**	**182**
1956	6	6	2	6	3	1	1	**25**	16	0	-15	15	-10	-42	-19	6	6	3	6	4	1	2	**28**	**700**
1957	1	1	2	3	1	1	1	**10**	4	17	15	1	-36	-55	10	6	6	6	6	1	1	6	**32**	**320**
1958	3	6	6	6	2	1	1	**25**	11	11	0	0	-19	-41	-18	6	6	6	6	2	1	2	**29**	**725**
1959	1	1	3	1	1	1	1	**9**	-8	22	16	-15	-51	-30	5	4	6	6	3	1	1	6	**27**	**243**
1960	1	1	1	1	1	1	1	**7**	-5	17	10	-16	-13	-13	-2	5	6	6	2	3	3	5	**30**	**210**
1961	1	1	1	1	1	1	1	**7**	1	15	13	-12	-41	-19	0	6	6	6	3	1	2	6	**30**	**210**
1962	1	1	1	4	1	1	1	**10**	-9	-2	28	14	-29	-51	-13	4	5	6	6	1	1	3	**26**	**260**
1963	2	6	6	6	3	1	1	**25**	0	18	0	0	-12	-44	-17	6	6	6	6	3	1	2	**30**	**750**
1964	1	1	2	1	1	1	1	**8**	-3	9	8	-10	-43	-32	8	5	6	6	4	1	1	6	**29**	**232**
1965	1	2	1	2	1	1	1	**9**	-2	5	-8	10	-21	-28	-16	5	6	4	6	1	1	2	**25**	**225**
1966	1	1	3	1	1	1	1	**9**	-15	19	19	-14	-44	-20	0	3	6	6	3	1	2	6	**27**	**243**
1967	4	3	1	4	6	1	1	**20**	11	-6	-51	56	6	-37	-17	6	4	1	6	6	1	2	**26**	**520**
1968	1	1	1	1	1	1	1	**7**	-6	11	4	-15	-33	-28	4	4	6	6	3	1	1	6	**27**	**189**
1969	1	1	1	6	6	1	1	**17**	-3	-54	2	107	0	-38	-25	5	1	6	6	6	1	1	**26**	**442**
1970	1	1	1	1	1	1	1	**7**	-6	0	1	-11	-27	-41	1	4	6	6	3	1	1	6	**27**	**189**
1971	1	1	1	1	1	1	1	**7**	-15	8	3	-24	-22	-7	-13	3	6	6	1	1	4	3	**24**	**168**
1972	1	1	1	1	1	1	1	**7**	-8	13	6	-3	-43	-16	0	4	6	6	5	1	2	6	**30**	**210**
1973	2	1	5	6	1	1	1	**17**	0	-10	25	1	-34	-59	-6	6	4	6	6	1	1	4	**28**	**476**
1974	1	2	4	5	1	1	1	**15**	6	9	11	3	-36	-47	-17	6	6	6	6	1	1	2	**28**	**420**
1975	1	1	1	4	1	1	1	**10**	-9	7	3	31	-42	-49	6	4	6	6	6	1	1	6	**30**	**300**
1976	1	1	1	1	1	1	1	**7**	5	3	-5	-23	-27	-13	15	6	6	5	1	1	3	6	**28**	**196**
1977	1	1	1	1	1	1	1	**7**	-37	1	-1	-2	4	-5	1	1	6	5	5	6	5	6	**34**	**238**
1978	1	1	1	6	6	1	1	**17**	-8	-42	-12	78	0	-28	-9	4	1	3	6	6	1	4	**25**	**425**
1979	3	2	4	3	1	1	1	**15**	7	-2	11	-8	-42	-44	5	6	5	6	4	1	1	6	**29**	**435**
1980	2	3	1	6	6	1	1	**20**	-2	8	-16	26	0	-34	-29	5	6	2	6	6	1	1	**27**	**540**
1981	1	1	1	1	1	1	1	**7**	2	14	6	-10	-33	-33	11	6	6	6	4	1	1	6	**30**	**210**
1982	6	1	2	6	6	1	1	**23**	16	-30	15	15	0	-30	-5	6	1	6	6	6	1	5	**31**	**713**
1983	1	1	1	1	3	5	6	**18**	-29	-17	0	16	81	8	4	1	2	6	6	6	6	6	**33**	**594**
1984	4	4	4	2	1	1	1	**17**	8	2	0	-13	-27	-43	-4	6	6	6	3	1	1	5	**28**	**476**
1985	1	1	3	1	1	1	1	**9**	-7	25	12	-24	-38	-18	0	4	6	6	1	1	2	6	**26**	**234**
1986	1	5	3	6	2	1	1	**19**	2	22	-9	11	-18	-55	-24	6	6	4	6	2	1	1	**26**	**494**
1987	1	1	1	1	1	1	1	**7**	15	19	21	-12	-36	-30	7	6	6	6	3	1	1	6	**29**	**203**
1988	1	1	1	1	1	1	1	**7**	11	12	8	-20	-29	-15	3	6	6	6	2	1	3	6	**30**	**210**
1989	1	1	1	1	1	1	1	**7**	4	21	15	-12	-38	-24	6	6	6	6	3	1	1	6	**29**	**203**
1990	1	1	1	1	1	1	1	**7**	7	15	12	-19	-17	-29	4	6	6	6	2	2	1	6	**29**	**203**
1991	1	1	1	1	1	1	1	**7**	-4	12	7	4	-6	-26	6	5	6	6	6	4	1	6	**34**	**238**
1992	1	1	1	1	1	1	1	**7**	-9	3	1	-14	-10	-5	1	4	6	6	3	4	5	6	**34**	**238**
1993	1	2	6	6	4	1	1	**21**	13	2	18	0	-5	-49	-23	6	6	6	6	5	1	1	**31**	**651**
1994	1	1	1	1	1	1	1	**7**	12	14	14	-20	-30	-20	6	6	6	6	2	1	2	6	**29**	**203**
					73 - year Average:			**12**											**73 - year Average:**				**28**	**329**
																				1929 - '34 Average:				**194**

STUDY: **525**

CP # 12, SWP SAN LUIS RESERVOIR, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 544'

Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	419	443	477	522	544	544	544	520	503	470	434	438	0	0	24	41	74	110	106
1923	469	498	514	544	544	544	543	507	466	440	417	405	0	1	37	78	104	127	139
1924	426	435	462	507	527	527	526	502	470	433	397	393	17	18	42	74	111	147	151
1925	392	404	449	480	527	532	540	510	477	452	418	401	12	4	34	67	92	126	143
1926	407	423	449	499	540	544	544	512	487	461	394	383	0	0	32	57	83	150	161
1927	411	450	488	533	544	544	543	506	468	441	416	423	0	1	38	76	103	128	121
1928	456	486	501	534	544	544	544	503	462	437	415	402	0	0	41	82	107	129	142
1929	431	452	476	521	544	544	544	524	500	465	432	427	0	0	20	44	79	112	117
1930	427	433	478	528	541	544	537	498	470	463	447	425	0	7	46	74	81	97	119
1931	431	436	437	479	494	494	495	475	455	425	377	376	50	49	69	89	119	167	168
1932	385	388	450	508	539	539	540	517	498	469	412	398	5	4	27	46	75	132	146
1933	418	427	432	481	503	511	520	501	468	428	378	375	33	24	43	76	116	166	169
1934	383	383	435	491	507	507	507	478	459	440	398	388	37	37	66	85	104	146	156
1935	384	407	429	489	498	533	541	513	471	435	379	358	11	3	31	73	109	165	186
1936	394	414	440	493	535	544	543	516	475	447	423	407	0	1	28	69	97	121	137
1937	436	455	475	523	544	544	544	541	511	472	432	414	0	0	3	33	72	112	130
1938	445	477	510	544	544	544	544	544	537	502	467	482	0	0	0	7	42	77	62
1939	511	525	544	544	544	544	537	501	472	462	445	424	0	7	43	72	82	99	120
1940	426	425	420	485	528	544	543	506	453	416	379	363	0	1	38	91	128	165	181
1941	395	424	456	508	539	544	543	541	526	475	439	458	0	1	3	18	69	105	86
1942	489	505	530	544	544	544	543	519	510	472	441	454	0	1	25	34	72	103	90
1943	485	503	526	544	544	544	544	535	506	473	432	432	0	0	9	38	71	112	112
1944	465	494	514	544	544	544	531	495	463	447	435	412	0	13	49	81	97	109	132
1945	420	456	491	525	544	544	536	503	464	441	421	408	0	8	41	80	103	123	136
1946	443	474	503	541	544	544	529	488	441	407	404	404	0	15	56	103	137	140	140
1947	432	461	490	521	544	544	532	491	457	441	429	408	0	12	53	87	103	115	136
1948	412	418	418	470	489	512	530	485	447	417	372	366	32	14	59	97	127	172	178
1949	391	420	450	498	521	544	532	491	454	432	383	358	0	12	53	90	112	161	186
1950	385	402	414	471	513	530	528	487	452	431	413	405	14	16	57	92	113	131	139
1951	428	460	495	531	544	544	538	496	448	415	389	391	0	6	48	96	129	155	153
1952	416	446	475	513	544	544	544	544	536	508	488	499	0	0	0	8	36	56	45
1953	517	538	544	544	544	544	536	495	469	446	427	435	0	8	49	75	98	117	109
1954	467	497	512	543	544	544	543	500	453	421	391	393	0	1	44	91	123	153	151
1955	422	452	479	521	535	542	527	491	463	454	437	419	2	17	53	81	90	107	125
1956	420	432	474	513	544	544	543	519	498	466	437	447	0	1	25	46	78	107	97
1957	473	498	508	539	544	544	543	504	469	447	430	414	0	1	40	75	97	114	130
1958	447	476	504	535	544	544	544	544	536	498	479	493	0	0	0	8	46	65	51
1959	506	527	544	544	544	544	530	488	451	432	416	414	0	14	56	93	112	128	130
1960	445	455	455	499	539	544	527	485	454	442	396	368	0	17	59	90	102	148	176
1961	390	423	460	506	538	544	536	495	466	447	396	371	0	8	49	78	97	148	173
1962	380	398	439	490	525	544	525	476	423	382	334	342	0	19	68	121	162	210	202
1963	379	410	439	484	520	537	541	508	473	443	415	421	7	3	36	71	101	129	123
1964	452	480	495	527	538	544	523	479	438	417	400	398	0	21	65	106	127	144	146
1965	402	433	470	520	544	544	544	512	480	461	439	439	0	0	32	64	83	105	105
1966	467	496	514	544	544	544	541	497	452	424	402	405	0	3	47	92	120	142	139
1967	429	458	492	527	544	544	544	544	537	525	504	509	0	0	0	7	19	40	35
1968	528	544	544	544	544	544	542	502	465	446	432	411	0	2	42	79	98	112	133
1969	438	467	499	537	544	544	544	544	537	514	484	499	0	0	0	7	30	60	45
1970	517	538	544	544	544	544	544	509	469	448	431	421	0	0	35	75	96	113	123
1971	443	475	506	535	544	544	543	499	463	433	405	417	0	1	45	81	111	139	127
1972	447	474	493	526	544	544	533	490	453	433	418	411	0	11	54	91	111	126	133
1973	434	466	496	528	544	544	541	510	472	441	413	415	0	3	34	72	103	131	129
1974	447	475	499	537	544	544	543	514	482	453	427	440	0	1	30	62	91	117	104
1975	469	488	508	540	544	544	543	506	478	446	417	428	0	1	38	66	98	127	116
1976	456	481	493	525	544	544	535	502	484	469	447	429	0	9	42	60	75	97	115
1977	430	438	440	460	460	460	474	461	444	424	415	428	84	70	83	100	120	129	116
1978	433	450	498	540	544	544	544	544	526	472	432	447	0	0	0	18	72	112	97
1979	478	502	518	544	544	544	543	515	481	461	431	415	0	1	29	63	83	113	129
1980	449	481	506	544	544	544	544	540	523	489	447	463	0	0	4	21	55	97	81
1981	495	518	536	544	544	544	544	503	467	449	432	407	0	0	41	77	95	112	137
1982	428	462	495	531	544	544	544	544	531	494	461	470	0	0	0	13	50	83	74
1983	495	515	536	544	544	544	544	544	542	541	528	541	0	0	0	2	3	16	3
1984	544	544	544	544	544	544	543	507	469	447	428	418	0	1	37	75	97	116	126
1985	453	484	505	537	544	544	527	481	435	408	382	384	0	17	63	109	136	162	160
1986	387	393	430	485	522	544	544	544	531	487	457	465	0	0	0	13	57	87	79
1987	495	508	534	544	544	544	536	496	468	458	441	418	0	8	48	76	86	103	126
1988	426	423	460	510	524	524	521	499	490	461	422	417	20	23	45	54	83	122	127
1989	417	434	455	494	494	529	534	493	461	453	386	394	15	10	51	83	91	158	150
1990	415	427	460	503	523	528	527	494	479	459	401	382	16	17	50	65	85	143	162
1991	383	390	390	405	405	468	484	467	455	436	418	419	76	60	77	89	108	126	125
1992	422	435	450	492	525	544	544	519	502	467	423	415	0	0	25	42	77	121	129
1993	415	422	469	520	544	544	543	518	502	469	430	429	0	1	26	42	75	114	115
1994	461	491	507	540	544	544	531	491	460	449	440	424	0	13	53	84	95	104	120

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Fluct. MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	6	6	1	1	1	1	1	**17**	0	0	-24	-17	-33	-36	4	6	6	1	2	1	1	6	**23**	**391**
1923	6	5	1	1	1	1	1	**16**	0	-1	-36	-41	-26	-23	-12	6	5	1	1	1	1	3	**18**	**288**
1924	2	2	1	1	1	1	1	**9**	0	-1	-24	-32	-37	-36	-4	6	5	1	1	1	1	5	**20**	**180**
1925	3	5	1	1	1	1	1	**13**	5	8	-30	-33	-25	-34	-17	6	6	1	1	1	1	2	**18**	**234**
1926	6	6	1	1	1	1	1	**17**	4	0	-32	-25	-26	-67	-11	6	6	1	1	1	1	3	**19**	**323**
1927	6	5	1	1	1	1	1	**16**	0	-1	-37	-38	-27	-25	7	6	5	1	1	1	1	6	**21**	**336**
1928	6	6	1	1	1	1	1	**17**	0	0	-41	-41	-25	-22	-13	6	6	1	1	1	1	3	**19**	**323**
1929	6	6	1	1	1	1	1	**17**	0	0	-20	-24	-35	-33	-5	6	6	2	1	1	1	5	**22**	**374**
1930	6	4	1	1	1	1	1	**15**	3	-7	-39	-28	-7	-16	-22	6	4	1	1	4	2	1	**19**	**285**
1931	1	1	1	1	1	1	1	**7**	0	1	-20	-20	-30	-48	-1	6	6	2	2	1	1	5	**23**	**161**
1932	4	5	1	1	1	1	1	**14**	0	1	-23	-19	-29	-57	-14	6	6	1	2	1	1	3	**20**	**280**
1933	1	1	1	1	1	1	1	**7**	8	9	-19	-33	-40	-50	-3	6	6	2	1	1	1	5	**22**	**154**
1934	1	1	1	1	1	1	1	**7**	0	0	-29	-19	-19	-42	-10	6	6	1	2	2	1	4	**22**	**154**
1935	3	5	1	1	1	1	1	**13**	35	8	-28	-42	-36	-56	-21	6	6	1	1	1	1	1	**17**	**221**
1936	6	5	1	1	1	1	1	**16**	9	-1	-27	-41	-28	-24	-16	6	5	1	1	1	1	2	**17**	**272**
1937	6	6	5	1	1	1	1	**21**	0	0	-3	-30	-39	-40	-18	6	6	5	1	1	1	2	**22**	**462**
1938	6	6	6	4	1	1	1	**25**	0	0	0	-7	-35	-35	15	6	6	6	4	1	1	6	**30**	**750**
1939	6	4	1	1	1	1	1	**15**	0	-7	-36	-29	-10	-17	-21	6	4	1	1	4	2	1	**19**	**285**
1940	6	5	1	1	1	1	1	**16**	16	-1	-37	-53	-37	-37	-16	6	5	1	1	1	1	2	**17**	**272**
1941	6	5	5	2	1	1	1	**21**	5	-1	-2	-15	-51	-36	19	6	5	5	3	1	1	6	**27**	**567**
1942	6	5	1	1	1	1	1	**16**	0	-1	-24	-9	-38	-31	13	6	5	1	4	1	1	6	**24**	**384**
1943	6	6	4	1	1	1	1	**20**	0	0	-9	-29	-33	-41	0	6	6	4	1	1	1	6	**25**	**500**
1944	6	3	1	1	1	1	1	**14**	0	-13	-36	-32	-16	-12	-23	6	3	1	1	2	3	1	**17**	**238**
1945	6	4	1	1	1	1	1	**15**	0	-8	-33	-39	-23	-20	-13	6	4	1	1	1	2	3	**18**	**270**
1946	6	2	1	1	1	1	1	**13**	0	-15	-41	-47	-34	-3	0	6	3	1	1	1	5	6	**23**	**299**
1947	6	3	1	1	1	1	1	**14**	0	-12	-41	-34	-16	-12	-21	6	3	1	1	2	3	1	**17**	**238**
1948	1	3	1	1	1	1	1	**9**	23	18	-45	-38	-30	-45	-6	6	6	1	1	1	1	4	**20**	**180**
1949	6	3	1	1	1	1	1	**14**	23	-12	-41	-37	-22	-49	-25	6	3	1	1	1	1	1	**14**	**196**
1950	3	2	1	1	1	1	1	**10**	17	-2	-41	-35	-21	-18	-8	6	5	1	1	1	2	4	**20**	**200**
1951	6	4	1	1	1	1	1	**15**	0	-6	-42	-48	-33	-26	2	6	4	1	1	1	1	6	**20**	**300**
1952	6	6	6	4	1	1	1	**25**	0	0	0	-8	-28	-20	11	6	6	6	4	1	2	6	**31**	**775**
1953	6	4	1	1	1	1	1	**15**	0	-8	-41	-26	-23	-19	8	6	4	1	1	1	2	6	**21**	**315**
1954	6	5	1	1	1	1	1	**16**	0	-1	-43	-47	-32	-30	2	6	5	1	1	1	1	6	**21**	**336**
1955	5	2	1	1	1	1	1	**12**	7	-15	-36	-28	-9	-17	-18	6	3	1	1	4	2	2	**19**	**228**
1956	6	5	1	1	1	1	1	**16**	0	-1	-24	-21	-32	-29	10	6	5	1	1	1	1	6	**21**	**336**
1957	6	5	1	1	1	1	1	**16**	0	-1	-39	-35	-22	-17	-16	6	5	1	1	1	2	2	**18**	**288**
1958	6	6	6	4	1	1	1	**25**	0	0	0	-8	-38	-19	14	6	6	6	4	1	2	6	**31**	**775**
1959	6	3	1	1	1	1	1	**14**	0	-14	-42	-37	-19	-16	-2	6	3	1	1	2	2	5	**20**	**280**
1960	6	2	1	1	1	1	1	**13**	5	-17	-42	-31	-12	-46	-28	6	2	1	1	3	1	1	**15**	**195**
1961	6	4	1	1	1	1	1	**15**	6	-8	-41	-29	-19	-51	-25	6	4	1	1	2	1	1	**16**	**240**
1962	6	2	1	1	1	1	1	**13**	19	-19	-49	-53	-41	-48	8	6	2	1	1	1	1	6	**18**	**234**
1963	4	5	1	1	1	1	1	**14**	17	4	-33	-35	-30	-28	6	6	6	1	1	1	1	6	**22**	**308**
1964	6	1	1	1	1	1	1	**12**	6	-21	-44	-41	-21	-17	-2	6	1	1	1	1	2	5	**17**	**204**
1965	6	6	1	1	1	1	1	**17**	0	0	-32	-32	-19	-22	0	6	6	1	1	2	1	6	**23**	**391**
1966	6	5	1	1	1	1	1	**16**	0	-3	-44	-45	-28	-22	3	6	5	1	1	1	1	6	**21**	**336**
1967	6	6	6	4	2	1	1	**26**	0	0	0	-7	-12	-21	5	6	6	6	4	3	1	6	**32**	**832**
1968	6	5	1	1	1	1	1	**16**	0	-2	-40	-37	-19	-14	-21	6	5	1	1	2	3	1	**19**	**304**
1969	6	6	6	4	1	1	1	**25**	0	0	0	-7	-23	-30	15	6	6	6	4	1	1	6	**30**	**750**
1970	6	6	1	1	1	1	1	**17**	0	0	-35	-40	-21	-17	-10	6	6	1	1	1	2	4	**21**	**357**
1971	6	5	1	1	1	1	1	**16**	0	-1	-44	-36	-30	-28	12	6	5	1	1	1	1	6	**21**	**336**
1972	6	3	1	1	1	1	1	**14**	0	-11	-43	-37	-20	-15	-7	6	3	1	1	2	3	4	**20**	**280**
1973	6	5	1	1	1	1	1	**16**	0	-3	-31	-38	-31	-28	2	6	5	1	1	1	1	6	**21**	**336**
1974	6	5	1	1	1	1	1	**16**	0	-1	-29	-32	-29	-26	13	6	5	1	1	1	1	6	**21**	**336**
1975	6	5	1	1	1	1	1	**16**	0	-1	-37	-28	-32	-29	11	6	5	1	1	1	1	6	**21**	**336**
1976	6	4	1	1	1	1	1	**15**	0	-9	-33	-18	-15	-22	-18	6	4	1	2	3	1	2	**19**	**285**
1977	1	1	1	1	1	1	1	**7**	0	14	-13	-17	-20	-9	13	6	6	3	2	2	4	6	**29**	**203**
1978	6	6	6	2	1	1	1	**23**	0	0	0	-18	-54	-40	15	6	6	6	2	1	1	6	**28**	**644**
1979	6	5	1	1	1	1	1	**16**	0	-1	-28	-34	-20	-30	-16	6	5	1	1	2	1	2	**18**	**288**
1980	6	6	5	1	1	1	1	**21**	0	0	-4	-17	-34	-42	16	6	6	5	2	1	1	6	**27**	**567**
1981	6	6	1	1	1	1	1	**17**	0	0	-41	-36	-18	-17	-25	6	6	1	1	2	2	1	**19**	**323**
1982	6	6	6	3	1	1	1	**24**	0	0	0	-13	-37	-33	9	6	6	6	3	1	1	6	**29**	**696**
1983	6	6	6	5	5	2	5	**35**	0	0	0	-2	-1	-13	13	6	6	6	5	5	3	6	**37**	**1295**
1984	6	5	1	1	1	1	1	**16**	0	-1	-36	-38	-22	-19	-10	6	5	1	1	1	2	4	**20**	**320**
1985	6	2	1	1	1	1	1	**13**	0	-17	-46	-46	-27	-26	2	6	2	1	1	1	1	6	**18**	**234**
1986	6	6	6	3	1	1	1	**24**	22	0	0	-13	-44	-30	8	6	6	6	3	1	1	6	**29**	**696**
1987	6	4	1	1	1	1	1	**15**	0	-8	-40	-28	-10	-17	-23	6	4	1	1	4	2	1	**19**	**285**
1988	1	1	1	1	1	1	1	**7**	0	-3	-22	-9	-29	-39	-5	6	5	1	4	1	1	5	**23**	**161**
1989	2	3	1	1	1	1	1	**10**	35	5	-41	-32	-8	-67	8	6	6	1	1	4	1	6	**25**	**250**
1990	2	2	1	1	1	1	1	**9**	5	-1	-33	-15	-20	-58	-19	6	5	1	3	2	1	2	**20**	**180**
1991	1	1	1	1	1	1	1	**7**	63	16	-17	-12	-19	-18	1	6	6	2	3	2	2	6	**27**	**189**
1992	6	6	1	1	1	1	1	**17**	19	0	-25	-17	-35	-44	-8	6	6	1	2	1	1	4	**21**	**357**
1993	6	5	1	1	1	1	1	**16**	0	-1	-25	-16	-33	-39	-1	6	5	1	2	1	1	5	**21**	**336**
1994	6	3	1	1	1	1	1	**14**	0	-13	-40	-31	-11	-9	-16	6	3	1	1	3	4	2	**20**	**280**
					73 - year Average:			**16**										**73 - year Average:**					**22**	**354**
																				1929 - '34 Average:				**235**

STUDY: **526**

CP # 4, SHASTA LAKE, EOP SURFACE ELEVATION

73-year maximum March - September Reservoir Elevation = 1067'

Elevation in feet

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	989	993	999	1003	1019	1038	1060	1067	1062	1048	1031	1025
1923	1023	1017	1019	1023	1024	1026	1038	1033	1020	999	982	980
1924	981	980	979	979	986	986	974	960	942	914	894	878
1925	882	898	907	917	992	1008	1040	1050	1042	1017	1000	998
1926	997	996	992	990	1017	1024	1038	1032	1011	988	968	961
1927	960	988	1010	1035	1026	1052	1067	1067	1058	1040	1020	1015
1928	1013	1017	1020	1028	1044	1046	1066	1062	1048	1022	996	991
1929	988	989	990	991	997	1004	1005	998	989	972	954	947
1930	945	943	974	986	1003	1025	1036	1037	1018	998	985	983
1931	981	980	978	980	983	990	982	972	961	939	924	911
1932	905	905	920	932	941	966	969	977	970	956	942	935
1933	933	934	934	937	939	973	978	983	979	960	946	939
1934	938	938	946	964	983	995	995	990	980	945	920	905
1935	898	910	915	938	957	981	1026	1034	1026	1003	988	984
1936	982	979	977	1004	1032	1044	1054	1052	1044	1020	999	993
1937	989	984	979	973	975	1003	1032	1041	1038	1014	994	987
1938	986	1008	1020	1035	1030	1024	1049	1067	1067	1058	1045	1036
1939	1023	1017	1020	1022	1024	1039	1031	1024	999	977	948	944
1940	940	935	944	992	1017	1025	1059	1064	1054	1028	1007	1006
1941	1004	1004	1019	1020	1024	1045	1064	1067	1067	1058	1047	1036
1942	1023	1017	1020	1023	1028	1042	1067	1067	1067	1058	1046	1036
1943	1023	1017	1022	1030	1042	1051	1067	1067	1059	1045	1029	1023
1944	1022	1017	1015	1014	1023	1033	1038	1038	1019	995	973	966
1945	968	980	995	1002	1037	1050	1062	1067	1062	1038	1015	1010
1946	1009	1017	1018	1033	1039	1051	1063	1065	1055	1037	1011	1008
1947	1002	1002	1003	999	1006	1026	1033	1022	1008	986	954	949
1948	956	959	962	993	993	1006	1047	1067	1066	1044	1024	1024
1949	1021	1016	1014	1010	1014	1050	1063	1063	1049	1020	1000	997
1950	992	991	989	998	1013	1032	1047	1046	1034	1012	994	992
1951	1004	1017	1020	1033	1040	1057	1064	1067	1051	1029	1006	1004
1952	1003	1009	1019	1032	1038	1048	1058	1067	1067	1058	1046	1036
1953	1023	1017	1021	1022	1033	1051	1065	1067	1067	1053	1038	1036
1954	1023	1017	1021	1030	1035	1051	1067	1064	1059	1041	1018	1018
1955	1015	1017	1022	1024	1027	1031	1044	1052	1034	1005	986	986
1956	982	987	1017	1017	1019	1048	1067	1067	1067	1058	1046	1036
1957	1023	1017	1016	1017	1035	1052	1058	1067	1060	1043	1024	1026
1958	1023	1017	1021	1029	1067	1024	1053	1067	1067	1058	1047	1036
1959	1023	1017	1017	1034	1039	1052	1057	1056	1038	1013	991	995
1960	991	989	987	994	1023	1050	1057	1065	1047	1023	1004	1003
1961	999	1002	1018	1023	1044	1057	1061	1066	1046	1021	999	999
1962	993	993	1005	1002	1035	1053	1066	1066	1055	1031	1009	1006
1963	1023	1017	1021	1025	1045	1055	1052	1067	1063	1049	1034	1032
1964	1023	1017	1018	1033	1037	1041	1036	1031	1015	993	974	968
1965	967	977	1017	1022	1040	1052	1065	1066	1057	1042	1029	1028
1966	1023	1017	1021	1037	1049	1055	1063	1061	1046	1026	1000	995
1967	988	1003	1021	1030	1044	1048	1064	1067	1067	1058	1047	1036
1968	1023	1017	1019	1025	1034	1054	1056	1058	1042	1021	1008	1009
1969	1005	1006	1017	1022	1027	1048	1063	1067	1067	1058	1047	1036
1970	1023	1017	1020	1017	1025	1052	1055	1055	1043	1022	1005	1003
1971	1003	1017	1020	1028	1042	1043	1064	1067	1067	1057	1041	1036
1972	1023	1017	1022	1033	1045	1056	1067	1067	1050	1029	1010	1012
1973	1013	1017	1021	1030	1034	1053	1065	1067	1059	1038	1018	1017
1974	1019	1017	1018	1017	1036	1025	1058	1067	1067	1058	1045	1036
1975	1023	1017	1021	1024	1045	1039	1061	1067	1067	1057	1044	1036
1976	1023	1017	1018	1017	1012	1020	1027	1023	998	980	976	977
1977	980	982	981	982	972	971	953	948	927	908	891	888
1978	877	875	918	1020	1031	1047	1067	1067	1064	1053	1041	1036
1979	1023	1017	1013	1016	1027	1044	1052	1061	1047	1024	1010	1009
1980	1009	1012	1015	1029	1019	1046	1059	1064	1056	1045	1035	1035
1981	1023	1017	1020	1029	1042	1056	1064	1062	1042	1018	997	996
1982	995	1017	1018	1033	1029	1046	1051	1067	1067	1058	1047	1036
1983	1023	1017	1020	1022	1017	1045	1050	1067	1067	1058	1047	1036
1984	1023	1017	1018	1034	1047	1056	1064	1067	1059	1040	1029	1031
1985	1023	1017	1022	1023	1027	1034	1042	1034	1011	991	973	970
1986	972	976	987	1012	1017	1029	1048	1050	1037	1020	1005	1008
1987	1008	1007	1006	1008	1018	1045	1045	1039	1007	983	947	945
1988	941	943	975	997	999	1002	1008	1007	990	958	943	941
1989	941	954	960	967	974	1038	1057	1053	1038	1018	1009	1010
1990	1012	1010	1006	1011	1011	1018	1012	1019	1003	981	959	956
1991	950	948	947	948	943	969	981	981	971	957	943	936
1992	934	933	934	938	977	999	1011	1004	988	963	950	944
1993	940	937	952	988	1020	1031	1059	1067	1067	1055	1046	1047
1994	1043	1017	1019	1020	1026	1030	1030	1028	1001	981	958	955

Difference from Maximum Reservoir Elevation [DFMRE]

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	29	7	0	5	19	36	42
1923	41	29	34	47	68	85	87
1924	81	93	107	125	153	173	189
1925	59	27	17	25	50	67	69
1926	43	29	35	56	79	99	106
1927	15	0	0	9	27	47	52
1928	21	1	5	19	45	71	76
1929	63	62	69	78	95	113	120
1930	42	31	30	49	69	82	84
1931	77	85	95	106	128	143	156
1932	101	98	90	97	111	125	132
1933	94	89	84	88	107	121	128
1934	72	72	77	87	122	147	162
1935	86	41	33	41	64	79	83
1936	23	13	15	23	47	68	74
1937	64	35	26	29	53	73	80
1938	43	18	0	0	9	22	31
1939	28	36	43	68	90	119	123
1940	42	8	3	13	39	60	61
1941	22	3	0	0	9	20	31
1942	25	0	0	0	9	21	31
1943	16	0	0	8	22	38	44
1944	34	29	29	48	72	94	101
1945	17	5	0	5	29	52	57
1946	16	4	2	12	30	56	59
1947	41	34	45	59	81	113	118
1948	61	20	0	1	23	43	43
1949	17	4	4	18	47	67	70
1950	35	20	21	33	55	73	75
1951	10	3	0	16	38	61	63
1952	19	9	0	0	9	21	31
1953	16	2	0	0	14	29	31
1954	16	0	3	8	26	49	49
1955	36	23	15	33	62	81	81
1956	19	0	0	0	9	21	31
1957	15	9	0	7	24	43	41
1958	43	14	0	0	9	20	31
1959	15	10	11	29	54	76	72
1960	17	10	2	20	44	63	64
1961	10	6	1	21	46	68	68
1962	14	1	1	12	36	58	61
1963	12	15	0	4	18	33	35
1964	26	31	36	52	74	93	99
1965	15	2	1	10	25	38	39
1966	12	4	6	21	41	67	72
1967	19	3	0	0	9	20	31
1968	13	11	9	25	46	59	58
1969	19	4	0	0	9	20	31
1970	15	12	12	24	45	62	64
1971	24	3	0	0	10	26	31
1972	11	0	0	17	38	57	55
1973	14	2	0	8	29	49	50
1974	42	9	0	0	9	22	31
1975	28	6	0	0	10	23	31
1976	47	40	44	69	87	91	90
1977	96	114	119	140	159	176	179
1978	20	0	0	3	14	26	31
1979	23	15	6	20	43	57	58
1980	21	8	3	11	22	32	32
1981	11	3	5	25	49	70	71
1982	21	16	0	0	9	20	31
1983	22	17	0	0	9	20	31
1984	11	3	0	8	27	38	36
1985	33	25	33	56	76	94	97
1986	38	19	17	30	47	62	59
1987	22	22	28	60	84	120	122
1988	65	59	60	77	109	124	126
1989	29	10	14	29	49	58	57
1990	49	55	48	64	86	108	111
1991	98	86	86	96	110	124	131
1992	68	56	63	79	104	117	123
1993	36	8	0	0	12	21	20
1994	37	37	39	66	86	109	112

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	1	4	6	4	2	1	1	**19**
1923	1	1	1	1	1	1	1	**7**
1924	1	1	1	1	1	1	1	**7**
1925	1	1	2	1	1	1	1	**8**
1926	1	1	1	1	1	1	1	**7**
1927	2	6	6	4	1	1	1	**21**
1928	1	5	4	2	1	1	1	**15**
1929	1	1	1	1	1	1	1	**7**
1930	1	1	1	1	1	1	1	**7**
1931	1	1	1	1	1	1	1	**7**
1932	1	1	1	1	1	1	1	**7**
1933	1	1	1	1	1	1	1	**7**
1934	1	1	1	1	1	1	1	**7**
1935	1	1	1	1	1	1	1	**7**
1936	1	3	2	1	1	1	1	**10**
1937	1	1	1	1	1	1	1	**7**
1938	1	2	6	6	4	1	1	**21**
1939	1	1	1	1	1	1	1	**7**
1940	1	4	5	3	1	1	1	**16**
1941	1	5	6	6	4	1	1	**24**
1942	1	6	6	6	4	1	1	**25**
1943	2	6	6	4	1	1	1	**21**
1944	1	1	1	1	1	1	1	**7**
1945	2	4	6	4	1	1	1	**19**
1946	2	5	5	3	1	1	1	**18**
1947	1	1	1	1	1	1	1	**7**
1948	1	1	6	5	1	1	1	**16**
1949	2	5	5	2	1	1	1	**17**
1950	1	1	1	1	1	1	1	**7**
1951	3	5	6	2	1	1	1	**19**
1952	2	4	6	6	4	1	1	**24**
1953	2	5	6	6	3	1	1	**24**
1954	2	6	5	4	1	1	1	**20**
1955	1	1	2	1	1	1	1	**8**
1956	2	6	6	6	4	1	1	**26**
1957	2	4	6	4	1	1	1	**19**
1958	1	3	6	6	4	1	1	**22**
1959	2	3	3	1	1	1	1	**12**
1960	2	3	5	1	1	1	1	**14**
1961	3	4	5	1	1	1	1	**16**
1962	3	5	5	3	1	1	1	**19**
1963	3	2	6	5	2	1	1	**20**
1964	1	1	1	1	1	1	1	**7**
1965	2	5	5	3	1	1	1	**18**
1966	3	5	4	1	1	1	1	**16**
1967	2	5	6	6	4	1	1	**25**
1968	3	3	4	1	1	1	1	**14**
1969	2	5	6	6	4	1	1	**25**
1970	2	3	3	1	1	1	1	**12**
1971	1	5	6	6	3	1	1	**23**
1972	3	6	6	2	1	1	1	**20**
1973	3	5	6	4	1	1	1	**21**
1974	1	4	6	6	4	1	1	**23**
1975	1	4	6	6	3	1	1	**22**
1976	1	1	1	1	1	1	1	**7**
1977	1	1	1	1	1	1	1	**7**
1978	1	6	6	5	3	1	1	**23**
1979	1	2	4	1	1	1	1	**11**
1980	1	4	5	3	1	1	1	**16**
1981	3	5	4	1	1	1	1	**16**
1982	1	2	6	6	4	1	1	**21**
1983	1	2	6	6	4	1	1	**21**
1984	3	5	6	4	1	1	1	**21**
1985	1	1	1	1	1	1	1	**7**
1986	1	2	2	1	1	1	1	**9**
1987	1	1	1	1	1	1	1	**7**
1988	1	1	1	1	1	1	1	**7**
1989	1	3	3	1	1	1	1	**11**
1990	1	1	1	1	1	1	1	**7**
1991	1	1	1	1	1	1	1	**7**
1992	1	1	1	1	1	1	1	**7**
1993	1	4	6	6	3	1	1	**22**
1994	1	1	1	1	1	1	1	**7**
				73 - year Average:				**14**

Reservoir Change from Previous Month [fluctuation]

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	19	22	7	-5	-14	-17	-6
1923	2	12	-5	-13	-21	-17	-2
1924	0	-12	-14	-18	-28	-20	-16
1925	16	32	10	-8	-25	-17	-2
1926	7	14	-6	-21	-23	-20	-7
1927	26	15	0	-9	-18	-20	-5
1928	2	20	-4	-14	-26	-26	-5
1929	7	1	-7	-9	-17	-18	-7
1930	22	11	1	-19	-20	-13	-2
1931	7	-8	-10	-11	-22	-15	-13
1932	25	3	8	-7	-14	-14	-7
1933	34	5	5	-4	-19	-14	-7
1934	12	0	-5	-10	-35	-25	-15
1935	24	45	8	-8	-23	-15	-4
1936	12	10	-2	-8	-24	-21	-6
1937	28	29	9	-3	-24	-20	-7
1938	-6	25	18	0	-9	-13	-9
1939	15	-8	-7	-25	-22	-29	-4
1940	8	34	5	-10	-26	-21	-1
1941	21	19	3	0	-9	-11	-11
1942	14	25	0	0	-9	-12	-10
1943	9	16	0	-8	-14	-16	-6
1944	10	5	0	-19	-24	-22	-7
1945	13	12	5	-5	-24	-23	-5
1946	12	12	2	-10	-18	-26	-3
1947	20	7	-11	-14	-22	-32	-5
1948	13	41	20	-1	-22	-20	0
1949	36	13	0	-14	-29	-20	-3
1950	19	15	-1	-12	-22	-18	-2
1951	17	7	3	-16	-22	-23	-2
1952	10	10	9	0	-9	-12	-10
1953	18	14	2	0	-14	-15	-2
1954	16	16	-3	-5	-18	-23	0
1955	4	13	8	-18	-29	-19	0
1956	29	19	0	0	-9	-12	-10
1957	17	6	9	-7	-17	-19	2
1958	-43	29	14	0	-9	-11	-11
1959	13	5	-1	-18	-25	-22	4
1960	27	7	8	-18	-24	-19	-1
1961	13	4	5	-20	-25	-22	0
1962	18	13	0	-11	-24	-22	-3
1963	10	-3	15	-4	-14	-15	-2
1964	4	-5	-5	-16	-22	-19	-6
1965	12	13	1	-9	-15	-13	-1
1966	6	8	-2	-15	-20	-26	-5
1967	4	16	3	0	-9	-11	-11
1968	20	2	2	-16	-21	-13	1
1969	21	15	4	0	-9	-11	-11
1970	27	3	0	-12	-21	-17	-2
1971	1	21	3	0	-10	-16	-5
1972	11	11	0	-17	-21	-19	2
1973	19	12	2	-8	-21	-20	-1
1974	-11	33	9	0	-9	-13	-9
1975	-6	22	6	0	-10	-13	-8
1976	8	7	-4	-25	-18	-4	1
1977	-1	-18	-5	-21	-19	-17	-3
1978	16	20	0	-3	-11	-12	-5
1979	17	8	9	-14	-23	-14	-1
1980	27	13	5	-8	-11	-10	0
1981	14	8	-2	-20	-24	-21	-1
1982	17	5	16	0	-9	-11	-11
1983	28	5	17	0	-9	-11	-11
1984	9	8	3	-8	-19	-11	2
1985	7	8	-8	-23	-20	-18	-3
1986	12	19	2	-13	-17	-15	3
1987	27	0	-6	-32	-24	-36	-2
1988	3	6	-1	-17	-32	-15	-2
1989	64	19	-4	-15	-20	-9	1
1990	7	-6	7	-16	-22	-22	-3
1991	26	12	0	-10	-14	-14	-7
1992	22	12	-7	-16	-25	-13	-6
1993	11	28	8	0	-12	-9	1
1994	4	0	-2	-27	-20	-23	-3

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	6	6	6	5	3	2	4	**32**	**608**
1923	6	6	5	3	1	2	5	**28**	**196**
1924	6	3	3	2	1	2	2	**19**	**133**
1925	6	6	6	4	1	2	5	**30**	**240**
1926	6	6	4	1	1	2	4	**24**	**168**
1927	6	6	6	4	2	2	5	**31**	**651**
1928	6	6	5	3	1	1	5	**27**	**405**
1929	6	6	4	4	2	2	4	**28**	**196**
1930	6	6	6	2	2	3	5	**30**	**210**
1931	6	4	4	3	1	3	3	**24**	**168**
1932	6	6	6	4	3	3	4	**32**	**224**
1933	6	6	6	5	2	3	4	**32**	**224**
1934	6	6	5	4	1	1	3	**26**	**182**
1935	6	6	6	4	1	3	5	**31**	**217**
1936	6	6	5	4	1	1	4	**27**	**270**
1937	6	6	6	5	1	2	4	**30**	**210**
1938	4	6	6	6	4	3	4	**33**	**693**
1939	6	4	4	1	1	1	5	**22**	**154**
1940	6	6	6	4	1	1	5	**29**	**464**
1941	6	6	6	6	4	3	3	**34**	**816**
1942	6	6	6	6	4	3	4	**35**	**875**
1943	6	6	6	4	3	2	4	**31**	**651**
1944	6	6	6	2	1	1	4	**26**	**182**
1945	6	6	6	5	1	1	5	**30**	**570**
1946	6	6	6	4	2	1	5	**30**	**540**
1947	6	6	3	3	1	1	5	**25**	**175**
1948	6	6	6	5	1	2	6	**32**	**512**
1949	6	6	6	3	1	2	5	**29**	**493**
1950	6	6	5	3	1	2	5	**28**	**196**
1951	6	6	6	2	1	1	5	**27**	**513**
1952	6	6	6	6	4	3	4	**35**	**840**
1953	6	6	6	6	3	3	5	**35**	**840**
1954	6	6	5	5	2	1	6	**31**	**620**
1955	6	6	6	2	1	2	6	**29**	**232**
1956	6	6	6	6	4	3	4	**35**	**910**
1957	6	6	6	4	2	2	6	**32**	**608**
1958	1	6	6	6	4	3	3	**29**	**638**
1959	6	6	5	2	1	1	6	**27**	**324**
1960	6	6	6	2	1	2	5	**28**	**392**
1961	6	6	6	2	1	1	6	**28**	**448**
1962	6	6	6	3	1	1	5	**28**	**532**
1963	6	5	6	5	3	3	5	**33**	**660**
1964	6	5	5	2	1	2	4	**25**	**175**
1965	6	6	6	4	3	3	5	**33**	**594**
1966	6	6	5	3	2	1	5	**28**	**448**
1967	6	6	6	6	4	3	3	**34**	**850**
1968	6	6	6	2	1	3	6	**30**	**420**
1969	6	6	6	6	4	3	3	**34**	**850**
1970	6	6	6	3	1	2	5	**29**	**348**
1971	6	6	6	6	4	2	5	**35**	**805**
1972	6	6	6	2	1	2	6	**29**	**580**
1973	6	6	6	4	1	2	5	**30**	**630**
1974	3	6	6	6	4	3	4	**32**	**736**
1975	4	6	6	6	4	3	4	**33**	**726**
1976	6	6	5	1	2	5	6	**31**	**217**
1977	5	2	5	1	2	2	5	**22**	**154**
1978	6	6	6	5	3	3	5	**34**	**782**
1979	6	6	6	3	1	3	5	**30**	**330**
1980	6	6	6	4	3	4	6	**35**	**560**
1981	6	6	5	2	1	1	5	**26**	**416**
1982	6	6	6	6	4	3	3	**34**	**714**
1983	6	6	6	6	4	3	3	**34**	**714**
1984	6	6	6	4	2	3	6	**33**	**693**
1985	6	6	4	1	2	2	5	**26**	**182**
1986	6	6	6	3	2	3	6	**32**	**288**
1987	6	6	4	1	1	1	5	**24**	**168**
1988	6	6	5	2	1	3	5	**28**	**196**
1989	6	6	5	3	2	4	6	**32**	**352**
1990	6	4	6	2	1	1	5	**25**	**175**
1991	6	6	6	4	3	3	4	**32**	**224**
1992	6	6	4	2	1	3	4	**26**	**182**
1993	6	6	6	6	3	4	6	**37**	**814**
1994	6	6	5	1	2	1	5	**26**	**182**
				73 - year Average:				**30**	**448**
						1929 - '34 Average:			**201**

Joint Point Alternative 7

STUDY: **526**

CP # 6, LAKE OROVILLE, EOP SURFACE ELEVATION

73-year maximum March - September Reservoir Elevation = 900'

Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	834	837	839	848	850	858	893	900	900	883	879	880	42	7	0	0	17	21	20	1	4	6	6	2	1	1	**21**	8	35	7	0	-17	-4	1	6	6	6	6	2	5	6	**37**	**777**
1923	874	874	858	862	859	872	894	900	881	830	814	817	28	6	0	19	70	86	83	1	4	6	2	1	1	1	**16**	13	22	6	-19	-51	-16	3	6	6	6	2	1	2	6	**29**	**464**
1924	810	798	769	774	793	781	768	755	732	710	701	695	119	132	145	168	190	199	205	1	1	1	1	1	1	1	**7**	-12	-13	-13	-23	-22	-9	-6	3	3	3	1	1	4	4	**19**	**133**
1925	695	699	706	722	789	817	837	844	825	794	783	782	83	63	56	75	106	117	118	1	1	1	1	1	1	1	**7**	28	20	7	-19	-31	-11	-1	6	6	6	2	1	3	5	**29**	**203**
1926	778	774	776	790	834	854	887	874	853	815	801	783	46	13	26	47	85	99	117	1	3	1	1	1	1	1	**9**	20	33	-13	-21	-38	-14	-18	6	6	3	1	1	3	2	**22**	**198**
1927	775	806	807	831	849	863	890	900	900	865	853	851	37	10	0	0	35	47	49	1	3	6	6	1	1	1	**19**	14	27	10	0	-35	-12	-2	6	6	6	6	1	3	5	**33**	**627**
1928	848	858	860	868	871	849	878	863	843	768	743	736	51	22	37	57	132	157	164	1	1	1	1	1	1	1	**7**	-22	29	-15	-20	-75	-25	-7	1	6	3	2	1	1	4	**18**	**126**
1929	723	718	716	722	736	752	757	759	753	736	726	720	148	143	141	147	164	174	180	1	1	1	1	1	1	1	**7**	16	5	2	-6	-17	-10	-6	6	6	6	4	2	4	4	**32**	**224**
1930	712	708	769	797	823	854	876	880	861	811	792	789	46	24	20	39	89	108	111	1	1	1	1	1	1	1	**7**	31	22	4	-19	-50	-19	-3	6	6	6	2	1	2	5	**28**	**196**
1931	779	771	763	776	789	803	789	774	752	730	720	713	97	111	126	148	170	180	187	1	1	1	1	1	1	1	**7**	14	-14	-15	-22	-22	-10	-7	6	3	3	1	1	4	4	**22**	**154**
1932	707	698	703	727	750	785	787	812	782	743	728	722	115	113	88	118	157	172	178	1	1	1	1	1	1	1	**7**	35	2	25	-30	-39	-15	-6	6	6	6	1	1	3	4	**27**	**189**
1933	712	700	699	711	720	725	735	751	745	730	720	713	175	165	149	155	170	180	187	1	1	1	1	1	1	1	**7**	5	10	16	-6	-15	-10	-7	6	6	6	4	3	4	4	**33**	**231**
1934	709	700	702	729	752	775	767	755	728	703	693	683	125	133	145	172	197	207	217	1	1	1	1	1	1	1	**7**	23	-8	-12	-27	-25	-10	-10	6	4	3	1	1	4	4	**23**	**161**
1935	668	673	679	707	731	762	851	860	845	822	811	797	138	49	40	55	78	89	103	1	1	1	1	1	1	1	**7**	31	89	9	-15	-23	-11	-14	6	6	6	3	1	3	3	**28**	**196**
1936	790	780	778	826	849	860	886	897	886	843	826	822	40	14	3	14	57	74	78	1	3	5	3	1	1	1	**15**	11	26	11	-11	-43	-17	-4	6	6	6	3	1	2	5	**29**	**435**
1937	814	803	799	802	819	843	868	881	858	833	817	811	57	32	19	42	67	83	89	1	1	2	1	1	1	1	**8**	24	25	13	-23	-25	-16	-6	6	6	6	1	1	2	4	**26**	**208**
1938	807	822	854	858	849	849	882	900	900	899	896	887	51	18	0	0	1	4	13	1	2	6	6	5	5	3	**28**	0	33	18	0	-1	-3	-9	6	6	6	6	5	5	4	**38**	**1064**
1939	874	864	854	845	837	833	822	813	778	686	656	651	67	78	87	122	214	244	249	1	1	1	1	1	1	1	**7**	-4	-11	-9	-35	-92	-30	-5	5	3	4	1	1	1	5	**20**	**140**
1940	640	629	632	705	813	849	879	883	867	829	821	812	51	21	17	33	71	79	88	1	1	2	1	1	1	1	**8**	36	30	4	-16	-38	-8	-9	6	6	6	2	1	4	4	**29**	**232**
1941	813	811	849	849	849	858	886	900	900	886	886	887	42	14	0	0	10	14	13	1	3	6	6	3	3	3	**25**	9	28	14	0	-10	-4	1	6	6	6	6	4	5	6	**39**	**975**
1942	874	874	849	849	850	867	882	900	900	887	884	885	33	18	0	0	13	16	15	1	2	6	6	3	2	2	**22**	17	15	18	0	-13	-3	1	6	6	6	6	3	5	6	**38**	**836**
1943	874	869	861	849	856	859	887	897	895	863	853	853	41	13	3	5	37	47	47	1	3	5	4	1	1	1	**16**	3	28	10	-2	-32	-10	0	6	6	6	5	1	4	6	**34**	**544**
1944	854	857	856	862	857	868	879	895	875	819	797	791	32	21	5	25	81	103	109	1	1	4	1	1	1	1	**10**	11	11	16	-20	-56	-22	-6	6	6	6	2	1	1	4	**26**	**260**
1945	787	793	810	823	862	865	880	896	877	828	812	807	35	20	4	23	72	88	93	1	1	5	1	1	1	1	**11**	3	15	16	-19	-49	-16	-5	6	6	6	2	1	2	5	**28**	**308**
1946	807	815	849	864	868	868	887	892	870	814	788	785	32	13	8	30	86	112	115	1	3	4	1	1	1	1	**12**	0	19	5	-22	-56	-26	-3	6	6	6	1	1	1	5	**26**	**312**
1947	777	783	791	798	823	846	855	851	833	755	707	700	54	45	49	67	145	193	200	1	1	1	1	1	1	1	**7**	23	9	-4	-18	-78	-48	-7	6	6	5	2	1	1	4	**25**	**175**
1948	703	704	699	736	741	762	829	858	864	832	813	787	138	71	42	36	68	87	113	1	1	1	1	1	1	1	**7**	21	67	29	6	-32	-19	-26	6	6	6	6	1	2	1	**28**	**196**
1949	773	770	771	776	784	813	835	840	821	790	780	773	87	65	60	79	110	120	127	1	1	1	1	1	1	1	**7**	29	22	5	-19	-31	-10	-7	6	6	6	2	1	4	4	**29**	**203**
1950	764	758	757	785	828	858	889	900	886	833	811	810	42	11	0	14	67	89	90	1	3	6	3	1	1	1	**16**	30	31	11	-14	-53	-22	-1	6	6	6	3	1	1	5	**28**	**448**
1951	816	849	854	853	858	870	886	900	889	833	812	813	30	14	0	11	67	88	87	1	3	6	3	1	1	1	**16**	12	16	14	-11	-56	-21	1	6	6	6	3	1	1	6	**29**	**464**
1952	818	822	849	849	852	862	894	900	900	900	899	887	38	6	0	0	0	1	13	1	4	6	6	6	5	3	**31**	10	32	6	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1178**
1953	874	874	858	850	867	867	883	900	900	870	868	869	33	17	0	0	30	32	31	1	2	6	6	1	1	1	**18**	0	16	17	0	-30	-2	1	6	6	6	6	1	5	6	**36**	**648**
1954	872	871	874	858	857	859	883	862	847	777	759	759	41	17	38	53	123	141	141	1	2	1	1	1	1	1	**8**	2	24	-21	-15	-70	-18	0	6	6	1	3	1	2	6	**25**	**200**
1955	760	762	770	783	792	805	814	827	800	745	725	722	95	86	73	100	155	175	178	1	1	1	1	1	1	1	**7**	13	9	13	-27	-55	-20	-3	6	6	6	1	1	2	5	**27**	**189**
1956	713	709	849	849	849	864	892	900	900	878	876	879	36	8	0	0	22	24	21	1	4	6	6	1	1	1	**20**	15	28	8	0	-22	-2	3	6	6	6	6	1	5	6	**36**	**720**
1957	869	874	874	871	853	863	863	881	866	810	796	801	37	37	19	34	90	104	99	1	1	2	1	1	1	1	**8**	10	0	18	-15	-56	-14	5	6	6	6	3	1	3	6	**31**	**248**
1958	804	807	825	846	849	849	879	900	900	898	894	887	51	21	0	0	2	6	13	1	1	6	6	5	4	3	**26**	0	30	21	0	-2	-4	-7	6	6	6	6	5	5	4	**38**	**988**
1959	874	874	874	862	852	867	871	874	853	785	755	758	33	29	26	47	115	145	142	1	1	1	1	1	1	1	**7**	15	4	3	-21	-68	-30	3	6	6	6	1	1	1	6	**27**	**189**
1960	751	739	734	749	811	852	852	857	838	790	779	771	48	48	43	62	110	121	129	1	1	1	1	1	1	1	**7**	41	0	5	-19	-48	-11	-8	6	6	6	2	1	3	4	**28**	**196**
1961	759	762	771	782	813	833	838	843	823	739	700	696	67	62	57	77	161	200	204	1	1	1	1	1	1	1	**7**	20	5	5	-20	-84	-39	-4	6	6	6	2	1	1	5	**27**	**189**
1962	679	674	684	698	765	800	840	838	823	755	744	723	100	60	62	77	145	156	177	1	1	1	1	1	1	1	**7**	35	40	-2	-15	-68	-11	-21	6	6	5	3	1	3	1	**25**	**175**
1963	797	809	837	859	867	858	876	900	893	855	849	850	42	24	0	7	45	51	50	1	1	6	4	1	1	1	**15**	-9	18	24	-7	-38	-6	1	4	6	6	4	1	4	6	**31**	**465**
1964	851	862	865	866	874	874	880	885	869	810	758	755	26	20	15	31	90	142	145	1	1	2	1	1	1	1	**8**	0	6	5	-16	-59	-52	-3	6	6	6	2	1	1	5	**27**	**216**
1965	743	744	849	849	863	870	887	880	882	847	843	845	30	13	20	18	53	57	55	1	3	1	2	1	1	1	**10**	7	17	-7	2	-35	-4	2	6	6	4	6	1	5	6	**34**	**340**
1966	849	859	860	864	870	874	887	876	856	791	755	749	26	13	24	44	109	145	151	1	3	1	1	1	1	1	**9**	4	13	-11	-20	-65	-36	-6	6	6	3	2	1	1	4	**23**	**207**
1967	734	746	785	839	860	853	879	900	900	900	896	887	47	21	0	0	0	4	13	1	1	6	6	6	5	3	**28**	-7	26	21	0	0	-4	-9	4	6	6	6	6	5	4	**37**	**1036**
1968	874	874	873	858	861	866	863	867	848	779	764	761	34	37	33	52	121	136	139	1	1	1	1	1	1	1	**7**	5	-3	4	-19	-69	-15	-3	6	5	6	2	1	3	5	**28**	**196**
1969	762	768	791	849	849	865	895	900	900	895	893	874	35	5	0	0	5	7	26	1	4	6	6	4	4	1	**26**	16	30	5	0	-5	-2	-19	6	6	6	6	5	5	2	**36**	**936**
1970	874	874	850	849	849	874	869	871	857	802	787	788	26	31	29	43	98	113	112	1	1	1	1	1	1	1	**7**	25	-5	2	-14	-55	-15	1	6	5	6	3	1	3	6	**30**	**210**
1971	791	818	846	864	874	874	893	900	900	859	857	859	26	7	0	0	41	43	41	1	4	6	6	1	1	1	**20**	0	19	7	0	-41	-2	2	6	6	6	6	1	5	6	**36**	**720**
1972	864	870	865	869	867	874	884	886	867	807	769	770	26	16	14	33	93	131	130	1	2	3	1	1	1	1	**10**	7	10	2	-19	-60	-38	1	6	6	6	2	1	1	6	**28**	**280**
1973	766	782	809	849	849	860	882	900	869	824	811	807	40	18	0	31	76	89	93	1	2	6	1	1	1	1	**13**	11	22	18	-31	-45	-13	-4	6	6	6	1	1	3	5	**28**	**364**
1974	811	849	850	854	864	849	883	900	900	890	890	886	51	17	0	0	10	10	14	1	2	6	6	3	3	3	**24**	-15	34	17	0	-10	0	-4	3	6	6	6	4	6	5	**36**	**864**
1975	874	874	874	874	855	852	881	900	900	880	879	880	48	19	0	0	20	21	20	1	2	6	6	1	1	1	**18**	-3	29	19	0	-20	-1	1	5	6	6	6	2	5	6	**36**	**648**
1976	873	874	874	874	874	874	871	862	840	772	738	738	26	29	38	60	128	162	162	1	1	1	1	1	1	1	**7**	0	-3	-9	-22	-68	-34	0	6	5	4	1	1	1	6	**24**	**168**
1977	725	714	696	692	678	674	643	632	602	579	571	566	226	257	268	298	321	329	334	1	1	1	1	1	1	1	**7**	-4	-31	-11	-30	-23	-8	-5	5	1	3	1	1	4	5	**20**	**140**
1978	545	545	593	729	785	857	878	897	891	871	861	869	43	22	3	9	29	39	31	1	1	5	4	1	1	1	**14**	72	21	19	-6	-20	-10	8	6	6	6	4	2	4	6	**34**	**476**
1979	871	874	874	871	853	863	878	896	863	828	819	816	37	22	4	37	72	81	84	1	1	5	1	1	1	1	**11**	10	15	18	-33	-35	-9	-3	6	6	6	1	1	4	5	**29**	**319**
1980	822	825	833	850	849	865	881	893	888	873	866	865	35	19	7	12	27	34	35	1	2	4	3	1	1	1	**13**	16	16	12	-5	-15	-7	-1	6	6	6	5	3	4	5	**35**	**455**
1981	864	865	873	860	868	865	875	872	851	783	762	762	35	25	28	49	117	138	138	1	1	1	1	1	1	1	**7**	-3	10	-3	-21	-68	-21	0	5	6	5	1	1	1	6	**25**	**175**
1982	769	848	849	859	862	859	884	900	900	894	890	887	41	16	0	0	6	10	13	1	2	6	6	4	3	3	**25**	-3	25	16	0	-6	-4	-3	5	6	6	6	4	5	5	**37**	**925**
1983	873	862	858	853	849	849	877	900	900	900	899	887	51	23	0	0	0	1	13	1	1	6	6	6	5	3	**28**	0	28	23	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1064**
1984	874	860	849	869	869	871	885	894	878	837	830	831	29	15	6	22	63	70	69	1	2	4	1	1	1	1	**11**	2	14	9	-16	-41	-7	1	6	6	6	2	1	4	6	**31**	**341**
1985	835	849	859	865	874	871	886	872	849	781	722	725	29	14	28	51	119	178	175	1	3	1	1	1	1	1	**9**	-3	15	-14	-23	-68	-59	3	5	6	3	1	1	1	6	**23**	**207**
1986	716	712	719	757	858	849	871	875	871	840	830	840	51	29	25	29	60	70	60	1	1	1	1	1	1	1	**7**	-9	22	4	-4	-31	-10	10	4	6	6	5	1	4	6	**32**	**224**
1987	843	848	845	846	856	867	855	845	816	730	701	696	33	45	55	84	170	199	204	1	1	1	1	1	1	1	**7**	11	-12	-10	-29	-86	-29	-5	6	3	4	1	1	1	5	**21**	**147**
1988	683	686	725	754	761	761	759	752	731	710	698	695	139	141	148	169	190	202	205	1	1	1	1	1	1	1	**7**	0	-2	-7	-21	-21	-12	-3	6	5	4	1	1	3	5	**25**	**175**
1989	689	707	717	725	729	843	868	858	841	782	771	768	57	32	42	59	118	129	132	1	1	1	1	1	1	1	**7**	114	25	-10	-17	-59	-11	-3	6	6	4	2	1	3	5	**27**	**189**
1990	778	779	775	789	796	822	800	801	775	729	716	711	78	100	99	125	171	184	189	1	1	1	1	1	1	1	**7**	26	-22	1	-26	-46	-13	-5	6	1	6	1	1	3	5	**23**	**161**
1991	694	685	671	670	657	708	730	745	729	707	702	700	192	170	155	171	193	198	200	1	1	1	1	1	1	1	**7**	51	22	15	-16	-22	-5	-2	6	6	6	2	1	5	5	**31**	**217**
1992	695	691	692	695	727	756	771	758	730	703	691	685	144	129	142	170	197	209	215	1	1	1	1	1	1	1	**7**	29	15	-13	-28	-27	-12	-6	6	6	3	1	1	3	4	**24**	**168**
1993	676	669	687	756	808	861	894	900	900	883	877	876	39	6	0	0	17	23	24	1	4	6	6	2	1	1	**21**	53	33	6	0	-17	-6	-1	6	6	6	6	2	4	5	**35**	**735**
1994	874	874	874	871	862	874	872	867	845	780	754	749	26	28	33	55	120	146	151	1	1	1	1	1	1	1	**7**	12	-2	-5	-22	-65	-26	-5	6	5	5	1	1	1	5	**24**	**168**
																								73 - year Average:			**12**												**73 - year Average:**			**29**	**391**
																																									1929 - '34 Average:		**193**

STUDY: **526**

CP # 8, FOLSOM LAKE, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 466'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Elevation in feet												DFMRE							Elevation score								Fluctuation							Fluctuation score								
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	414	408	413	413	424	428	443	466	466	463	449	434	38	23	0	0	3	17	32	1	1	6	6	5	2	1	**22**	4	15	23	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**770**
1923	425	423	424	424	423	428	449	466	451	431	401	405	38	17	0	15	35	65	61	1	2	6	2	1	1	1	**14**	5	21	17	-15	-20	-30	4	6	6	6	3	2	1	6	**30**	**420**
1924	400	393	387	375	372	353	355	358	334	334	337	334	113	111	108	132	132	129	132	1	1	1	1	1	1	1	**7**	-19	2	3	-24	0	3	-3	2	6	6	1	6	6	5	**32**	**224**
1925	349	363	380	390	424	437	449	466	449	422	403	404	29	17	0	17	44	63	62	1	2	6	2	1	1	1	**14**	13	12	17	-17	-27	-19	1	6	6	6	2	1	2	6	**29**	**406**
1926	400	396	383	375	400	406	440	437	412	368	353	363	60	26	29	54	98	113	103	1	1	1	1	1	1	1	**7**	6	34	-3	-25	-44	-15	10	6	6	5	1	1	3	6	**28**	**196**
1927	369	405	424	424	424	437	449	466	461	450	440	434	29	17	0	5	16	26	32	1	2	6	4	2	1	1	**17**	13	12	17	-5	-11	-10	-6	6	6	6	5	3	4	4	**34**	**578**
1928	425	424	424	424	424	437	449	453	442	416	396	404	29	17	13	24	50	70	62	1	2	3	1	1	1	1	**10**	13	12	4	-11	-26	-20	8	6	6	6	3	1	2	6	**30**	**300**
1929	384	376	369	352	348	360	377	386	372	335	347	351	106	89	80	94	131	119	115	1	1	1	1	1	1	1	**7**	12	17	9	-14	-37	12	4	6	6	6	3	1	6	6	**34**	**238**
1930	334	334	384	406	421	437	443	442	417	385	351	349	29	23	24	49	81	115	117	1	1	1	1	1	1	1	**7**	16	6	-1	-25	-32	-34	-2	6	6	5	1	1	1	5	**25**	**175**
1931	336	350	363	377	386	400	394	391	334	334	335	334	66	72	75	132	132	131	132	1	1	1	1	1	1	1	**7**	14	-6	-3	-57	0	1	-1	6	4	5	1	6	6	5	**33**	**231**
1932	334	334	380	402	424	436	445	461	447	409	384	387	30	21	5	19	57	82	79	1	1	4	2	1	1	1	**11**	12	9	16	-14	-38	-25	3	6	6	6	3	1	1	6	**29**	**319**
1933	369	338	350	352	337	365	334	364	335	334	352	347	101	132	102	131	132	114	119	1	1	1	1	1	1	1	**7**	28	-31	30	-29	-1	18	-5	6	1	6	1	5	6	5	**30**	**210**
1934	335	335	375	402	420	425	417	414	334	324	313	326	41	49	52	132	142	153	140	1	1	1	1	1	1	1	**7**	5	-8	-3	-80	-10	-11	13	6	4	5	1	4	3	6	**29**	**203**
1935	334	361	378	402	418	421	449	453	452	418	389	392	45	17	13	14	48	77	74	1	2	3	3	1	1	1	**12**	3	28	4	-1	-34	-29	3	6	6	6	5	1	1	6	**31**	**372**
1936	397	399	401	424	424	437	449	461	455	442	426	426	29	17	5	11	24	40	40	1	2	4	3	1	1	1	**13**	13	12	12	-6	-13	-16	0	6	6	6	4	3	2	6	**33**	**429**
1937	414	407	400	393	422	437	449	466	455	438	421	424	29	17	0	11	28	45	42	1	2	6	3	1	1	1	**15**	15	12	17	-11	-17	-17	3	6	6	6	3	2	2	6	**31**	**465**
1938	413	411	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1939	426	420	415	409	402	409	415	418	390	334	334	335	57	51	48	76	132	132	131	1	1	1	1	1	1	1	**7**	7	6	3	-28	-56	0	1	6	6	6	1	1	6	6	**32**	**224**
1940	334	334	334	420	424	437	449	460	448	423	408	412	29	17	6	18	43	58	54	1	2	4	2	1	1	1	**12**	13	12	11	-12	-25	-15	4	6	6	6	3	1	3	6	**31**	**372**
1941	406	405	424	424	424	437	449	466	458	455	448	434	29	17	0	8	11	18	32	1	2	6	4	3	2	1	**19**	13	12	17	-8	-3	-7	-14	6	6	6	4	5	4	3	**34**	**646**
1942	426	422	424	424	424	430	449	466	466	463	449	434	36	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	6	19	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1943	425	424	423	422	422	434	449	459	451	447	441	434	32	17	7	15	19	25	32	1	2	4	2	2	1	1	**13**	12	15	10	-8	-4	-6	-7	6	6	6	4	5	4	4	**35**	**455**
1944	425	419	413	405	407	419	420	433	413	392	334	352	47	46	33	53	74	132	114	1	1	1	1	1	1	1	**7**	12	1	13	-20	-21	-58	18	6	6	6	2	1	1	6	**28**	**196**
1945	341	380	404	411	424	437	449	466	455	441	425	428	29	17	0	11	25	41	38	1	2	6	3	1	1	1	**15**	13	12	17	-11	-14	-16	3	6	6	6	3	3	2	6	**32**	**480**
1946	421	424	424	424	424	437	449	466	451	438	414	415	29	17	0	15	28	52	51	1	2	6	2	1	1	1	**14**	13	12	17	-15	-13	-24	1	6	6	6	3	3	1	6	**31**	**434**
1947	405	406	405	396	403	423	433	437	405	357	334	354	43	33	29	61	109	132	112	1	1	1	1	1	1	1	**7**	20	10	4	-32	-48	-23	20	6	6	6	1	1	1	6	**27**	**189**
1948	368	382	383	406	397	390	429	455	455	439	427	427	76	37	11	11	27	39	39	1	1	3	3	1	1	1	**11**	-7	39	26	0	-16	-12	0	4	6	6	6	2	3	6	**33**	**363**
1949	422	414	410	403	400	422	443	458	446	417	405	408	44	23	8	20	49	61	58	1	1	4	1	1	1	1	**10**	22	21	15	-12	-29	-12	3	6	6	6	3	1	3	6	**31**	**310**
1950	391	387	382	414	424	437	449	466	455	443	430	430	29	17	0	11	23	36	36	1	2	6	3	1	1	1	**15**	13	12	17	-11	-12	-13	0	6	6	6	3	3	3	6	**33**	**495**
1951	425	393	388	388	388	426	449	466	450	434	417	421	40	17	0	16	32	49	45	1	2	6	2	1	1	1	**14**	38	23	17	-16	-16	-17	4	6	6	6	2	2	2	6	**30**	**420**
1952	419	421	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1953	428	423	424	424	424	430	446	458	464	457	444	434	36	20	8	2	9	22	32	1	1	4	5	4	1	1	**17**	6	16	12	6	-7	-13	-10	6	6	6	6	4	3	4	**35**	**595**
1954	425	423	421	422	424	437	449	451	441	421	404	407	29	17	15	25	45	62	59	1	2	2	1	1	1	1	**9**	13	12	2	-10	-20	-17	3	6	6	6	4	2	2	6	**32**	**288**
1955	400	396	405	413	413	415	426	436	420	391	369	380	51	40	30	46	75	97	86	1	1	1	1	1	1	1	**7**	2	11	10	-16	-29	-22	11	6	6	6	2	1	1	6	**28**	**196**
1956	334	349	420	402	406	425	441	466	466	463	447	434	41	25	0	0	3	19	32	1	1	6	6	5	2	1	**22**	19	16	25	0	-3	-16	-13	6	6	6	6	5	2	3	**34**	**748**
1957	428	422	417	412	424	437	433	459	448	436	423	425	29	33	7	18	30	43	41	1	1	4	2	1	1	1	**11**	13	-4	26	-11	-12	-13	2	6	5	6	3	3	3	6	**32**	**352**
1958	422	416	418	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1959	425	419	412	417	424	428	436	436	413	391	364	377	38	30	30	53	75	102	89	1	1	1	1	1	1	1	**7**	4	8	0	-23	-22	-27	13	6	6	6	1	1	1	6	**27**	**189**
1960	369	366	369	385	424	437	448	446	426	401	388	395	29	18	20	40	65	78	71	1	2	1	1	1	1	1	**8**	13	11	-2	-20	-25	-13	7	6	6	5	2	1	3	6	**29**	**232**
1961	386	384	382	374	381	391	401	413	399	381	369	376	75	65	53	67	85	97	90	1	1	1	1	1	1	1	**7**	10	10	12	-14	-18	-12	7	6	6	6	3	2	3	6	**32**	**224**
1962	370	369	383	380	424	434	449	456	450	426	409	407	32	17	10	16	40	57	59	1	2	3	2	1	1	1	**11**	10	15	7	-6	-24	-17	-2	6	6	6	4	1	2	5	**30**	**330**
1963	438	424	424	424	419	430	449	466	459	450	442	434	36	17	0	7	16	24	32	1	2	6	4	2	1	1	**17**	11	19	17	-7	-9	-8	-8	6	6	6	4	4	4	4	**34**	**578**
1964	427	424	424	424	421	419	430	436	417	386	335	334	47	36	30	49	80	131	132	1	1	1	1	1	1	1	**7**	-2	11	6	-19	-31	-51	-1	5	6	6	2	1	1	5	**26**	**182**
1965	335	367	393	392	395	414	449	464	454	448	442	434	52	17	2	12	18	24	32	1	2	5	3	2	1	1	**15**	19	35	15	-10	-6	-6	-8	6	6	6	4	4	4	4	**34**	**510**
1966	426	424	424	424	422	430	444	443	422	399	376	372	36	22	23	44	67	90	94	1	1	1	1	1	1	1	**7**	8	14	-1	-21	-23	-23	-4	6	6	5	1	1	1	5	**25**	**175**
1967	357	381	420	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1968	427	424	423	424	424	437	439	441	419	395	386	394	29	27	25	47	71	80	72	1	1	1	1	1	1	1	**7**	13	2	2	-22	-24	-9	8	6	6	6	1	1	4	6	**30**	**210**
1969	393	402	415	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1970	427	424	423	393	396	426	431	440	429	412	404	407	40	35	26	37	54	62	59	1	1	1	1	1	1	1	**7**	30	5	9	-11	-17	-8	3	6	6	6	3	2	4	6	**33**	**231**
1971	399	413	424	424	424	437	447	461	461	459	441	434	29	19	5	5	7	25	32	1	2	4	4	4	1	1	**17**	13	10	14	0	-2	-18	-7	6	6	6	6	5	2	4	**35**	**595**
1972	425	422	424	424	424	437	444	451	432	410	395	403	29	22	15	34	56	71	63	1	1	2	1	1	1	1	**8**	13	7	7	-19	-22	-15	8	6	6	6	2	1	3	6	**30**	**240**
1973	402	407	421	424	424	437	449	466	451	430	414	419	29	17	0	15	36	52	47	1	2	6	2	1	1	1	**14**	13	12	17	-15	-21	-16	5	6	6	6	3	1	2	6	**30**	**420**
1974	417	423	422	409	417	433	449	466	463	463	446	434	33	17	0	3	3	20	32	1	2	6	5	5	1	1	**21**	16	16	17	-3	0	-17	-12	6	6	6	5	6	2	3	**34**	**714**
1975	426	419	417	415	424	437	441	466	466	462	445	434	29	25	0	0	4	21	32	1	1	6	6	5	1	1	**21**	13	4	25	0	-4	-17	-11	6	6	6	6	5	2	3	**34**	**714**
1976	431	423	419	410	402	396	401	404	371	334	342	342	70	65	62	95	132	124	124	1	1	1	1	1	1	1	**7**	-6	5	3	-33	-37	8	0	4	6	6	1	1	6	6	**30**	**210**
1977	335	334	330	325	321	323	334	341	334	319	305	291	143	132	125	132	147	161	175	1	1	1	1	1	1	1	**7**	2	11	7	-7	-15	-14	-14	6	6	6	4	3	3	3	**31**	**217**
1978	287	304	359	424	424	437	449	466	459	452	439	434	29	17	0	7	14	27	32	1	2	6	4	3	1	1	**18**	13	12	17	-7	-7	-13	-5	6	6	6	4	4	3	5	**34**	**612**
1979	423	417	408	415	424	437	447	466	449	426	414	417	29	19	0	17	40	52	49	1	2	6	2	1	1	1	**14**	13	10	19	-17	-23	-12	3	6	6	6	2	1	3	6	**30**	**420**
1980	414	411	412	405	399	430	449	464	453	453	449	434	36	17	2	13	13	17	32	1	2	5	3	3	2	1	**17**	31	19	15	-11	0	-4	-15	6	6	6	3	6	5	3	**35**	**595**
1981	425	419	415	413	412	422	433	435	411	390	375	382	44	33	31	55	76	91	84	1	1	1	1	1	1	1	**7**	10	11	2	-24	-21	-15	7	6	6	6	1	1	3	6	**29**	**203**
1982	387	420	392	396	388	424	449	466	466	463	449	434	42	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	36	25	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1983	438	415	417	418	418	433	449	466	466	463	449	434	33	17	0	0	3	17	32	1	2	6	6	5	2	1	**23**	15	16	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	**805**
1984	435	392	388	388	392	424	441	464	453	436	426	426	42	25	2	13	30	40	40	1	1	5	3	1	1	1	**13**	32	17	23	-11	-17	-10	0	6	6	6	3	2	4	6	**33**	**429**
1985	424	424	424	422	424	426	447	443	415	377	334	334	40	19	23	51	89	132	132	1	2	1	1	1	1	1	**8**	2	21	-4	-28	-38	-43	0	6	6	5	1	1	1	6	**26**	**208**
1986	335	366	396	424	396	424	449	464	455	450	445	434	42	17	2	11	16	21	32	1	2	5	3	2	1	1	**15**	28	25	15	-9	-5	-5	-11	6	6	6	4	5	5	3	**35**	**525**
1987	427	420	413	405	404	410	416	417	385	334	321	334	56	50	49	81	132	145	132	1	1	1	1	1	1	1	**7**	6	6	1	-32	-51	-13	13	6	6	6	1	1	3	6	**29**	**203**
1988	334	334	369	396	387	385	393	388	352	323	307	373	81	73	78	114	143	159	93	1	1	1	1	1	1	1	**7**	-2	8	-5	-36	-29	-16	66	5	6	5	1	1	2	6	**26**	**182**
1989	359	378	394	404	402	437	449	452	432	414	410	414	29	17	14	34	54	56	52	1	2	3	1	1	1	1	**10**	35	12	3	-20	-20	-2	4	6	6	6	2	2	5	6	**33**	**330**
1990	411	409	406	406	404	415	423	422	391	334	334	335	51	43	44	75	132	132	131	1	1	1	1	1	1	1	**7**	11	8	-1	-31	-57	0	1	6	6	5	1	1	6	6	**31**	**217**
1991	334	334	335	332	332	383	407	425	419	408	404	404	83	59	41	47	58	62	62	1	1	1	1	1	1	1	**7**	51	24	18	-6	-11	-4	0	6	6	6	4	3	5	6	**36**	**252**
1992	397	384	374	361	389	407	415	411	367	334	322	315	59	51	55	99	132	144	151	1	1	1	1	1	1	1	**7**	18	8	-4	-44	-33	-12	-7	6	6	5	1	1	3	4	**26**	**182**
1993	315	314	357	424	427	434	449	466	466	456	446	434	32	17	0	0	10	20	32	1	2	6	6	3	1	1	**20**	7	15	17	0	-10	-10	-12	6	6	6	6	4	4	3	**35**	**700**
1994	423	413	407	395	390	390	398	403	378	334	334	332	76	68	63	88	132	132	134	1	1	1	1	1	1	1	**7**	0	8	5	-25	-44	0	-2	6	6	6	1	1	6	5	**31**	**217**
																							73 - year Average:				**13**												**73 - year Average:**			**32**	**411**
																																									1929 - '34 Average:		**229**

STUDY: **526**

CP # 10, NEW MELONES RESERVOIR, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 1088'

Elevation in feet

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	940	943	948	954	968	978	973	990	1012	1004	991	981
1923	980	984	994	1002	1008	1007	1004	1008	1009	999	985	976
1924	975	977	981	985	988	989	979	967	954	942	930	926
1925	926	928	932	935	953	965	966	982	986	978	964	957
1926	955	957	959	962	972	975	976	965	952	937	923	912
1927	913	918	927	935	953	964	973	984	987	976	963	957
1928	957	963	968	972	980	1001	999	1001	993	979	964	957
1929	956	958	961	964	968	969	964	961	950	938	926	918
1930	919	921	923	927	933	941	941	936	931	917	896	883
1931	884	889	892	896	901	904	896	883	865	847	828	819
1932	818	821	832	841	864	875	875	911	930	923	905	893
1933	894	896	902	907	911	914	906	902	899	878	856	844
1934	845	849	855	861	870	880	871	857	837	818	791	773
1935	770	773	779	793	805	816	834	877	898	883	863	851
1936	851	855	860	877	914	927	940	963	971	960	947	940
1937	940	943	946	951	964	978	979	1003	1007	998	987	979
1938	980	982	995	1004	1023	1044	1052	1079	1088	1084	1075	1069
1939	1050	1050	1050	1050	1050	1052	1050	1038	1025	1012	999	992
1940	988	989	992	1004	1018	1035	1044	1055	1047	1034	1022	1014
1941	1014	1016	1021	1028	1038	1048	1043	1059	1065	1058	1048	1040
1942	1039	1040	1045	1050	1050	1055	1055	1067	1081	1078	1067	1062
1943	1050	1050	1050	1050	1050	1055	1061	1068	1067	1059	1048	1041
1944	1039	1040	1042	1043	1046	1050	1045	1041	1035	1022	1008	1000
1945	998	1003	1007	1012	1026	1035	1036	1048	1054	1046	1033	1026
1946	1026	1030	1040	1048	1050	1054	1053	1061	1058	1046	1035	1028
1947	1026	1029	1032	1034	1037	1041	1029	1020	1011	1000	989	982
1948	980	982	984	986	987	991	990	992	1000	992	979	972
1949	971	973	977	979	983	989	982	986	980	967	955	947
1950	946	946	949	957	967	975	975	987	992	980	968	960
1951	959	995	1035	1046	1050	1055	1048	1041	1033	1020	1007	1000
1952	998	1001	1008	1022	1033	1046	1048	1077	1088	1086	1076	1070
1953	1050	1050	1050	1050	1050	1054	1046	1036	1038	1029	1016	1009
1954	1006	1008	1011	1014	1016	1023	1026	1028	1019	1006	993	983
1955	980	983	987	993	994	997	990	983	980	966	953	945
1956	944	947	980	1009	1023	1032	1023	1040	1052	1045	1033	1026
1957	1024	1026	1028	1031	1036	1043	1031	1027	1026	1013	1001	992
1958	986	989	992	999	1008	1022	1030	1059	1073	1067	1057	1051
1959	1049	1050	1050	1050	1050	1053	1046	1030	1018	1005	992	983
1960	979	981	984	987	994	999	996	991	980	966	953	943
1961	939	942	946	949	951	954	950	943	931	918	900	889
1962	889	892	896	899	916	924	926	935	938	927	910	897
1963	897	902	908	921	939	946	947	976	984	976	963	957
1964	957	962	966	972	975	980	972	965	956	943	930	921
1965	920	924	956	983	997	1004	1012	1013	1018	1011	999	993
1966	992	996	1001	1007	1012	1017	1006	1004	994	980	967	958
1967	957	960	973	987	997	1008	1009	1033	1061	1064	1055	1049
1968	1047	1049	1050	1050	1050	1054	1042	1033	1022	1008	994	984
1969	982	987	990	1020	1041	1055	1066	1088	1088	1084	1074	1066
1970	1050	1050	1050	1050	1050	1055	1047	1041	1039	1025	1012	1005
1971	1003	1007	1015	1022	1029	1035	1026	1022	1021	1011	998	990
1972	986	990	997	1002	1003	1007	993	992	982	968	954	947
1973	947	950	956	971	991	1003	1004	1023	1026	1016	1006	1001
1974	1001	1007	1017	1030	1039	1053	1057	1068	1067	1058	1047	1040
1975	1039	1041	1044	1047	1050	1055	1050	1049	1061	1053	1042	1035
1976	1033	1036	1039	1041	1043	1046	1040	1031	1020	1010	1000	995
1977	995	996	997	998	998	998	989	977	968	956	944	938
1978	937	936	940	951	963	983	993	1010	1021	1020	1010	1007
1979	1007	1010	1013	1022	1034	1048	1048	1057	1052	1039	1025	1018
1980	1019	1022	1025	1050	1050	1055	1056	1063	1070	1068	1057	1051
1981	1050	1050	1050	1050	1050	1053	1045	1034	1019	1005	992	984
1982	982	991	1006	1027	1050	1055	1071	1086	1088	1084	1075	1071
1983	1050	1050	1050	1050	1050	1055	1056	1070	1088	1088	1082	1075
1984	1050	1050	1050	1050	1050	1055	1044	1037	1033	1022	1012	1006
1985	1005	1010	1015	1018	1023	1029	1026	1020	1010	1000	990	984
1986	984	987	991	1001	1049	1055	1056	1061	1065	1055	1045	1040
1987	1039	1041	1044	1044	1046	1049	1044	1034	1023	1014	1006	1002
1988	998	998	999	1000	1002	1004	998	988	978	968	959	953
1989	952	952	953	954	956	968	964	960	952	940	929	924
1990	927	930	934	937	940	945	937	926	911	891	875	866
1991	865	866	871	871	871	879	874	869	853	834	817	810
1992	811	813	819	822	833	842	834	817	792	762	726	715
1993	723	737	755	789	887	941	930	935	945	936	925	921
1994	920	921	925	926	927	932	929	926	913	894	877	869

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**
1922	120	110	115	98	76	84	97	1	1	1	1	1	1	1	**7**
1923	80	81	84	80	79	89	103	1	1	1	1	1	1	1	**7**
1924	100	99	109	121	134	146	158	1	1	1	1	1	1	1	**7**
1925	135	123	122	106	102	110	124	1	1	1	1	1	1	1	**7**
1926	116	113	112	123	136	151	165	1	1	1	1	1	1	1	**7**
1927	135	124	115	104	101	112	125	1	1	1	1	1	1	1	**7**
1928	108	87	89	87	95	109	124	1	1	1	1	1	1	1	**7**
1929	120	119	124	127	138	150	162	1	1	1	1	1	1	1	**7**
1930	155	147	147	152	157	171	192	1	1	1	1	1	1	1	**7**
1931	187	184	192	205	223	241	260	1	1	1	1	1	1	1	**7**
1932	224	213	213	177	158	165	183	1	1	1	1	1	1	1	**7**
1933	177	174	182	186	189	210	232	1	1	1	1	1	1	1	**7**
1934	218	208	217	231	251	270	297	1	1	1	1	1	1	1	**7**
1935	283	272	254	211	190	205	225	1	1	1	1	1	1	1	**7**
1936	174	161	148	125	117	128	141	1	1	1	1	1	1	1	**7**
1937	124	110	109	85	81	90	101	1	1	1	1	1	1	1	**7**
1938	65	44	36	9	0	4	13	1	1	1	4	6	5	3	**21**
1939	38	36	38	50	63	76	89	1	1	1	1	1	1	1	**7**
1940	70	53	44	33	41	54	66	1	1	1	1	1	1	1	**7**
1941	50	40	45	29	23	30	40	1	1	1	1	1	1	1	**7**
1942	38	33	33	21	7	10	21	1	1	1	1	4	3	1	**12**
1943	38	33	27	20	21	29	40	1	1	1	1	1	1	1	**7**
1944	42	38	43	47	53	66	80	1	1	1	1	1	1	1	**7**
1945	62	53	52	40	34	42	55	1	1	1	1	1	1	1	**7**
1946	38	34	35	27	30	42	53	1	1	1	1	1	1	1	**7**
1947	51	47	59	68	77	88	99	1	1	1	1	1	1	1	**7**
1948	101	97	98	96	88	96	109	1	1	1	1	1	1	1	**7**
1949	105	99	106	102	108	121	133	1	1	1	1	1	1	1	**7**
1950	121	113	113	101	96	108	120	1	1	1	1	1	1	1	**7**
1951	38	33	40	47	55	68	81	1	1	1	1	1	1	1	**7**
1952	55	42	40	11	0	2	12	1	1	1	3	6	5	3	**20**
1953	38	34	42	52	50	59	72	1	1	1	1	1	1	1	**7**
1954	72	65	62	60	69	82	95	1	1	1	1	1	1	1	**7**
1955	94	91	98	105	108	122	135	1	1	1	1	1	1	1	**7**
1956	65	56	65	48	36	43	55	1	1	1	1	1	1	1	**7**
1957	52	45	57	61	62	75	87	1	1	1	1	1	1	1	**7**
1958	80	66	58	29	15	21	31	1	1	1	1	2	1	1	**8**
1959	38	35	42	58	70	83	96	1	1	1	1	1	1	1	**7**
1960	94	89	92	97	108	122	135	1	1	1	1	1	1	1	**7**
1961	137	134	138	145	157	170	188	1	1	1	1	1	1	1	**7**
1962	172	164	162	153	150	161	178	1	1	1	1	1	1	1	**7**
1963	149	142	141	112	104	112	125	1	1	1	1	1	1	1	**7**
1964	113	108	116	123	132	145	158	1	1	1	1	1	1	1	**7**
1965	91	84	76	75	70	77	89	1	1	1	1	1	1	1	**7**
1966	76	71	82	84	94	108	121	1	1	1	1	1	1	1	**7**
1967	91	80	79	55	27	24	33	1	1	1	1	1	1	1	**7**
1968	38	34	46	55	66	80	94	1	1	1	1	1	1	1	**7**
1969	47	33	22	0	0	4	14	1	1	1	6	6	5	3	**23**
1970	38	33	41	47	49	63	76	1	1	1	1	1	1	1	**7**
1971	59	53	62	66	67	77	90	1	1	1	1	1	1	1	**7**
1972	85	81	95	96	106	120	134	1	1	1	1	1	1	1	**7**
1973	97	85	84	65	62	72	82	1	1	1	1	1	1	1	**7**
1974	49	35	31	20	21	30	41	1	1	1	1	1	1	1	**7**
1975	38	33	38	39	27	35	46	1	1	1	1	1	1	1	**7**
1976	45	42	48	57	68	78	88	1	1	1	1	1	1	1	**7**
1977	90	90	99	111	120	132	144	1	1	1	1	1	1	1	**7**
1978	125	105	95	78	67	68	78	1	1	1	1	1	1	1	**7**
1979	54	40	40	31	36	49	63	1	1	1	1	1	1	1	**7**
1980	38	33	32	25	18	20	31	1	1	1	1	2	1	1	**8**
1981	38	35	43	54	69	83	96	1	1	1	1	1	1	1	**7**
1982	38	33	17	2	0	4	13	1	1	2	5	6	5	3	**23**
1983	38	33	32	18	0	0	6	1	1	1	2	6	6	4	**21**
1984	38	33	44	51	55	66	76	1	1	1	1	1	1	1	**7**
1985	65	59	62	68	78	88	98	1	1	1	1	1	1	1	**7**
1986	39	33	32	27	23	33	43	1	1	1	1	1	1	1	**7**
1987	42	39	44	54	65	74	82	1	1	1	1	1	1	1	**7**
1988	86	84	90	100	110	120	129	1	1	1	1	1	1	1	**7**
1989	132	120	124	128	136	148	159	1	1	1	1	1	1	1	**7**
1990	148	143	151	162	177	197	213	1	1	1	1	1	1	1	**7**
1991	217	209	214	219	235	254	271	1	1	1	1	1	1	1	**7**
1992	255	246	254	271	296	326	362	1	1	1	1	1	1	1	**7**
1993	201	147	158	153	143	152	163	1	1	1	1	1	1	1	**7**
1994	161	156	159	162	175	194	211	1	1	1	1	1	1	1	**7**
											73 - year Average:				**8**

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Largemouth Bass Reservoir Habitat Index = Sum Total**
1922	10	-5	17	22	-8	-13	-10	6	5	6	6	4	3	4	**34**	**238**
1923	-1	-3	4	1	-10	-14	-9	5	5	6	6	4	3	4	**33**	**231**
1924	1	-10	-12	-13	-12	-12	-4	6	4	3	3	3	3	5	**27**	**189**
1925	12	1	16	4	-8	-14	-7	6	6	6	6	4	3	4	**35**	**245**
1926	3	1	-11	-13	-15	-14	-11	6	6	3	3	3	3	3	**27**	**189**
1927	11	9	11	3	-11	-13	-6	6	6	6	6	3	3	4	**34**	**238**
1928	21	-2	2	-8	-14	-15	-7	6	5	6	4	3	3	4	**31**	**217**
1929	1	-5	-3	-11	-12	-12	-8	6	5	5	3	3	3	4	**29**	**203**
1930	8	0	-5	-5	-14	-21	-13	6	6	5	5	3	1	3	**29**	**203**
1931	3	-8	-13	-18	-18	-19	-9	6	4	3	2	2	2	4	**23**	**161**
1932	11	0	36	19	-7	-18	-12	6	6	6	6	4	2	3	**33**	**231**
1933	3	-8	-4	-3	-21	-22	-12	6	4	5	5	1	1	3	**25**	**175**
1934	10	-9	-14	-20	-19	-27	-18	6	4	3	2	2	1	2	**20**	**140**
1935	11	18	43	21	-15	-20	-12	6	6	6	6	3	2	3	**32**	**224**
1936	13	13	23	8	-11	-13	-7	6	6	6	6	3	3	4	**34**	**238**
1937	14	1	24	4	-9	-11	-8	6	6	6	6	4	3	4	**35**	**245**
1938	21	8	27	9	-4	-9	-6	6	6	6	6	5	4	4	**37**	**777**
1939	2	-2	-12	-13	-13	-13	-7	6	5	3	3	3	3	4	**27**	**189**
1940	17	9	11	-8	-13	-12	-8	6	6	6	4	3	3	4	**32**	**224**
1941	10	-5	16	6	-7	-10	-8	6	5	6	6	4	4	4	**35**	**245**
1942	5	0	12	14	-3	-11	-5	6	6	6	6	5	3	5	**37**	**444**
1943	5	6	7	-1	-8	-11	-7	6	6	6	5	4	3	4	**34**	**238**
1944	4	-5	-4	-6	-13	-14	-8	6	5	5	4	3	3	4	**30**	**210**
1945	9	1	12	6	-8	-13	-7	6	6	6	6	4	3	4	**35**	**245**
1946	4	-1	8	-3	-12	-11	-7	6	5	6	5	3	3	4	**32**	**224**
1947	4	-12	-9	-9	-11	-11	-7	6	3	4	4	3	3	4	**27**	**189**
1948	4	-1	2	8	-8	-13	-7	6	5	6	6	4	3	4	**34**	**238**
1949	6	-7	4	-6	-13	-12	-8	6	4	6	4	3	3	4	**30**	**210**
1950	8	0	12	5	-12	-12	-8	6	6	6	6	3	3	4	**34**	**238**
1951	5	-7	-7	-8	-13	-13	-7	6	4	4	4	3	3	4	**28**	**196**
1952	13	2	29	11	-2	-10	-6	6	6	6	6	5	4	4	**37**	**740**
1953	4	-8	-10	2	-9	-13	-7	6	4	4	6	4	3	4	**31**	**217**
1954	7	3	2	-9	-13	-13	-10	6	6	6	4	3	3	4	**32**	**224**
1955	3	-7	-7	-3	-14	-13	-8	6	4	4	5	3	3	4	**29**	**203**
1956	9	-9	17	12	-7	-12	-7	6	4	6	6	4	3	4	**33**	**231**
1957	7	-12	-4	-1	-13	-12	-9	6	3	5	5	3	3	4	**29**	**203**
1958	14	8	29	14	-6	-10	-6	6	6	6	6	4	4	4	**36**	**288**
1959	3	-7	-16	-12	-13	-13	-9	6	4	2	3	3	3	4	**25**	**175**
1960	5	-3	-5	-11	-14	-13	-10	6	5	5	3	3	3	4	**29**	**203**
1961	3	-4	-7	-12	-13	-18	-11	6	5	4	3	3	2	3	**26**	**182**
1962	8	2	9	3	-11	-17	-13	6	6	6	6	3	2	3	**32**	**224**
1963	7	1	29	8	-8	-13	-6	6	6	6	6	4	3	4	**35**	**245**
1964	5	-8	-7	-9	-13	-13	-9	6	4	4	4	3	3	4	**28**	**196**
1965	7	8	1	5	-7	-12	-6	6	6	6	6	4	3	4	**35**	**245**
1966	5	-11	-2	-10	-14	-13	-9	6	3	5	4	3	3	4	**28**	**196**
1967	11	1	24	28	3	-9	-6	6	6	6	6	6	4	4	**38**	**266**
1968	4	-12	-9	-11	-14	-14	-10	6	3	4	3	3	3	4	**26**	**182**
1969	14	11	22	0	-4	-10	-8	6	6	6	6	5	4	4	**37**	**851**
1970	5	-8	-6	-2	-14	-13	-7	6	4	4	5	3	3	4	**29**	**203**
1971	6	-9	-4	-1	-10	-13	-8	6	4	5	5	4	3	4	**31**	**217**
1972	4	-14	-1	-10	-14	-14	-7	6	3	5	4	3	3	4	**28**	**196**
1973	12	1	19	3	-10	-10	-5	6	6	6	6	4	4	5	**37**	**259**
1974	14	4	11	-1	-9	-11	-7	6	6	6	5	4	3	4	**34**	**238**
1975	5	-5	-1	12	-8	-11	-7	6	5	5	6	4	3	4	**33**	**231**
1976	3	-6	-9	-11	-10	-10	-5	6	4	4	3	4	4	5	**30**	**210**
1977	0	-9	-12	-9	-12	-12	-6	6	4	3	4	3	3	4	**27**	**189**
1978	20	10	17	11	-1	-10	-3	6	6	6	6	5	4	5	**38**	**266**
1979	14	0	9	-5	-13	-14	-7	6	6	6	5	3	3	4	**33**	**231**
1980	5	1	7	7	-2	-11	-6	6	6	6	6	5	3	4	**36**	**288**
1981	3	-8	-11	-15	-14	-13	-8	6	4	3	3	3	3	4	**26**	**182**
1982	5	16	15	2	-4	-9	-4	6	6	6	6	5	4	5	**38**	**874**
1983	5	1	14	18	0	-6	-7	6	6	6	6	6	4	4	**38**	**798**
1984	5	-11	-7	-4	-11	-10	-6	6	3	4	5	3	4	4	**29**	**203**
1985	6	-3	-6	-10	-10	-10	-6	6	5	4	4	4	4	4	**31**	**217**
1986	6	1	5	4	-10	-10	-5	6	6	6	6	4	4	5	**37**	**259**
1987	3	-5	-10	-11	-9	-8	-4	6	5	4	3	4	4	5	**31**	**217**
1988	2	-6	-10	-10	-10	-9	-6	6	4	4	4	4	4	4	**30**	**210**
1989	12	-4	-4	-8	-12	-11	-5	6	5	5	4	3	3	5	**31**	**217**
1990	5	-8	-11	-15	-20	-16	-9	6	4	3	3	2	2	4	**24**	**168**
1991	8	-5	-5	-16	-19	-17	-7	6	5	5	2	2	2	4	**26**	**182**
1992	9	-8	-17	-25	-30	-36	-11	6	4	2	1	1	1	3	**18**	**126**
1993	54	-11	5	10	-9	-11	-4	6	3	6	6	4	3	5	**33**	**231**
1994	5	-3	-3	-13	-19	-17	-8	6	5	5	3	2	2	4	**27**	**189**
											73 - year Average:				**31**	**259**
															1929 - '34 Average:	**186**

STUDY: **526**
CP # 81, DON PEDRO RESERVOIR, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 832'

Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Elevation in feet												DFMRE							Elevation score								Fluctuation							Fluctuation score								
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	599	581	579	600	656	690	698	724	781	778	763	752	142	134	108	51	54	69	80	1	1	1	1	1	1	1	**7**	34	8	26	57	-3	-15	-11	6	6	6	6	5	3	3	**35**	**245**
1923	746	745	748	760	775	784	788	792	801	794	779	770	48	44	40	31	38	53	62	1	1	1	1	1	1	1	**7**	9	4	4	9	-7	-15	-9	6	6	6	6	4	3	4	**35**	**245**
1924	764	761	756	755	756	754	748	743	734	722	708	700	78	84	89	98	110	124	132	1	1	1	1	1	1	1	**7**	-2	-6	-5	-9	-12	-14	-8	5	4	5	4	3	3	4	**28**	**196**
1925	695	695	696	700	722	739	751	762	780	771	755	744	93	81	70	52	61	77	88	1	1	1	1	1	1	1	**7**	17	12	11	18	-9	-16	-11	6	6	6	6	4	2	3	**33**	**231**
1926	737	734	730	729	738	742	756	768	765	750	734	725	90	76	64	67	82	98	107	1	1	1	1	1	1	1	**7**	4	14	12	-3	-15	-16	-9	6	6	6	5	3	2	4	**32**	**224**
1927	717	717	721	729	758	773	784	782	800	793	778	768	59	48	50	32	39	54	64	1	1	1	1	1	1	1	**7**	15	11	-2	18	-7	-15	-10	6	6	5	6	4	3	4	**34**	**238**
1928	762	762	762	766	774	792	801	818	818	804	789	779	40	31	14	14	28	43	53	1	1	3	3	1	1	1	**11**	18	9	17	0	-14	-15	-10	6	6	6	6	3	3	4	**34**	**374**
1929	772	767	763	762	766	767	767	770	778	769	759	752	65	65	62	54	63	73	80	1	1	1	1	1	1	1	**7**	1	0	3	8	-9	-10	-7	6	6	6	6	4	4	4	**36**	**252**
1930	747	744	742	742	748	755	756	759	772	763	754	747	77	76	73	60	69	78	85	1	1	1	1	1	1	1	**7**	7	1	3	13	-9	-9	-7	6	6	6	6	4	4	4	**36**	**252**
1931	745	744	743	745	748	747	739	727	715	701	688	680	85	93	105	117	131	144	152	1	1	1	1	1	1	1	**7**	-1	-8	-12	-12	-14	-13	-8	5	4	3	3	3	3	4	**25**	**175**
1932	676	671	683	699	736	751	752	756	773	768	752	741	81	80	76	59	64	80	91	1	1	1	1	1	1	1	**7**	15	1	4	17	-5	-16	-11	6	6	6	6	5	2	3	**34**	**238**
1933	734	727	721	720	727	730	726	719	736	725	708	697	102	106	113	96	107	124	135	1	1	1	1	1	1	1	**7**	3	-4	-7	17	-11	-17	-11	6	5	4	6	3	2	3	**29**	**203**
1934	688	687	684	687	698	707	706	698	694	677	658	648	125	126	134	138	155	174	184	1	1	1	1	1	1	1	**7**	9	-1	-8	-4	-17	-19	-10	6	5	4	5	2	2	4	**28**	**196**
1935	640	640	641	655	682	698	723	734	764	751	734	721	134	109	98	68	81	98	111	1	1	1	1	1	1	1	**7**	16	25	11	30	-13	-17	-13	6	6	6	6	3	2	3	**32**	**224**
1936	713	711	705	711	753	770	779	796	814	804	789	779	62	53	36	18	28	43	53	1	1	1	2	1	1	1	**8**	17	9	17	18	-10	-15	-10	6	6	6	6	4	3	4	**35**	**280**
1937	772	767	763	765	793	800	802	815	832	819	805	795	32	30	17	0	13	27	37	1	1	2	6	3	1	1	**15**	7	2	13	17	-13	-14	-10	6	6	6	6	3	3	4	**34**	**510**
1938	789	784	800	800	800	800	800	804	831	832	819	808	32	32	28	1	0	13	24	1	1	1	5	6	3	1	**18**	0	0	4	27	1	-13	-11	6	6	6	6	6	3	3	**36**	**648**
1939	800	799	799	800	800	800	802	804	799	787	774	766	32	30	28	33	45	58	66	1	1	1	1	1	1	1	**7**	0	2	2	-5	-12	-13	-8	6	6	6	5	3	3	4	**33**	**231**
1940	764	763	761	773	800	800	802	816	829	814	799	789	32	30	16	3	18	33	43	1	1	2	5	2	1	1	**13**	0	2	14	13	-15	-15	-10	6	6	6	6	3	3	4	**34**	**442**
1941	783	781	783	798	800	800	800	812	832	831	817	808	32	32	20	0	1	15	24	1	1	1	6	5	2	1	**17**	0	0	12	20	-1	-14	-9	6	6	6	6	5	3	4	**36**	**612**
1942	800	798	800	800	800	800	802	807	831	832	818	808	32	30	25	1	0	14	24	1	1	1	5	6	3	1	**18**	0	2	5	24	1	-14	-10	6	6	6	6	6	3	4	**37**	**666**
1943	800	800	800	800	800	800	802	821	832	824	810	799	32	30	11	0	8	22	33	1	1	3	6	4	1	1	**17**	0	2	19	11	-8	-14	-11	6	6	6	6	4	3	3	**34**	**578**
1944	794	792	788	787	793	800	801	808	814	802	787	777	32	31	24	18	30	45	55	1	1	1	2	1	1	1	**8**	7	1	7	6	-12	-15	-10	6	6	6	6	3	3	4	**34**	**272**
1945	772	773	776	781	800	800	802	807	831	825	810	799	32	30	25	1	7	22	33	1	1	1	5	4	1	1	**14**	0	2	5	24	-6	-15	-11	6	6	6	6	4	3	3	**34**	**476**
1946	796	797	800	800	800	800	802	806	812	796	780	769	32	30	26	20	36	52	63	1	1	1	1	1	1	1	**7**	0	2	4	6	-16	-16	-11	6	6	6	6	2	2	3	**31**	**217**
1947	763	763	765	768	776	781	778	782	776	764	750	742	51	54	50	56	68	82	90	1	1	1	1	1	1	1	**7**	5	-3	4	-6	-12	-14	-8	6	5	6	4	3	3	4	**31**	**217**
1948	739	738	737	738	739	740	735	743	769	758	740	730	92	97	89	63	74	92	102	1	1	1	1	1	1	1	**7**	1	-5	8	26	-11	-18	-10	6	5	6	6	3	2	4	**32**	**224**
1949	723	717	712	711	718	729	735	745	752	734	715	702	103	97	87	80	98	117	130	1	1	1	1	1	1	1	**7**	11	6	10	7	-18	-19	-13	6	6	6	6	2	2	3	**31**	**217**
1950	694	687	681	687	706	719	727	738	754	738	720	707	113	105	94	78	94	112	125	1	1	1	1	1	1	1	**7**	13	8	11	16	-16	-18	-13	6	6	6	6	2	2	3	**31**	**217**
1951	701	750	798	800	800	800	798	794	798	783	769	759	32	34	38	34	49	63	73	1	1	1	1	1	1	1	**7**	0	-2	-4	4	-15	-14	-10	6	5	5	6	3	3	4	**32**	**224**
1952	752	750	757	782	800	800	800	820	832	832	819	808	32	32	12	0	0	13	24	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1953	800	795	793	800	800	800	802	804	814	810	796	787	32	30	28	18	22	36	45	1	1	1	2	1	1	1	**8**	0	2	2	10	-4	-14	-9	6	6	6	6	5	3	4	**36**	**288**
1954	782	778	775	776	785	797	802	819	820	805	789	780	35	30	13	12	27	43	52	1	1	3	3	1	1	1	**11**	12	5	17	1	-15	-16	-9	6	6	6	6	3	2	4	**33**	**363**
1955	774	770	768	774	780	784	780	784	790	778	766	759	48	52	48	42	54	66	73	1	1	1	1	1	1	1	**7**	4	-4	4	6	-12	-12	-7	6	5	6	6	3	3	4	**33**	**231**
1956	752	749	798	800	800	800	802	818	832	832	818	808	32	30	14	0	0	14	24	1	1	3	6	6	3	1	**21**	0	2	16	14	0	-14	-10	6	6	6	6	6	3	4	**37**	**777**
1957	800	798	793	793	799	800	800	806	827	814	800	791	32	32	26	5	18	32	41	1	1	1	4	2	1	1	**11**	1	0	6	21	-13	-14	-9	6	6	6	6	3	3	4	**34**	**374**
1958	786	781	779	783	800	800	800	821	832	832	819	808	32	32	11	0	0	13	24	1	1	3	6	6	3	1	**21**	0	0	21	11	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1959	800	794	789	793	800	800	802	800	794	782	770	763	32	30	32	38	50	62	69	1	1	1	1	1	1	1	**7**	0	2	-2	-6	-12	-12	-7	6	6	5	4	3	3	4	**31**	**217**
1960	760	758	755	756	763	769	770	775	778	768	758	752	63	62	57	54	64	74	80	1	1	1	1	1	1	1	**7**	6	1	5	3	-10	-10	-6	6	6	6	6	4	4	4	**36**	**252**
1961	748	746	746	748	750	749	743	733	726	713	701	694	83	89	99	106	119	131	138	1	1	1	1	1	1	1	**7**	-1	-6	-10	-7	-13	-12	-7	5	4	4	4	3	3	4	**27**	**189**
1962	691	688	686	687	712	732	742	745	771	763	749	739	100	90	87	61	69	83	93	1	1	1	1	1	1	1	**7**	20	10	3	26	-8	-14	-10	6	6	6	6	4	3	4	**35**	**245**
1963	732	727	724	728	754	765	773	784	809	804	790	781	67	59	48	23	28	42	51	1	1	1	1	1	1	1	**7**	11	8	11	25	-5	-14	-9	6	6	6	6	5	3	4	**36**	**252**
1964	776	776	777	782	788	791	788	784	786	775	764	757	41	44	48	46	57	68	75	1	1	1	1	1	1	1	**7**	3	-3	-4	2	-11	-11	-7	6	5	5	6	3	3	4	**32**	**224**
1965	753	753	786	800	800	800	802	807	827	827	816	807	32	30	25	5	5	16	25	1	1	1	4	4	2	1	**14**	0	2	5	20	0	-11	-9	6	6	6	6	6	3	4	**37**	**518**
1966	800	800	800	800	800	800	801	798	791	776	761	752	32	31	34	41	56	71	80	1	1	1	1	1	1	1	**7**	0	1	-3	-7	-15	-15	-9	6	6	5	4	3	3	4	**31**	**217**
1967	747	744	755	771	788	800	800	817	832	832	820	808	32	32	15	0	0	12	24	1	1	2	6	6	3	1	**20**	12	0	17	15	0	-12	-12	6	6	6	6	6	3	3	**36**	**720**
1968	800	795	791	792	800	800	802	805	803	791	779	771	32	30	27	29	41	53	61	1	1	1	1	1	1	1	**7**	0	2	3	-2	-12	-12	-8	6	6	6	5	3	3	4	**33**	**231**
1969	766	767	770	800	800	800	800	823	832	832	819	808	32	32	9	0	0	13	24	1	1	4	6	6	3	1	**22**	0	0	23	9	0	-13	-11	6	6	6	6	6	3	3	**36**	**792**
1970	800	799	800	800	800	800	799	799	807	795	780	771	32	33	33	25	37	52	61	1	1	1	1	1	1	1	**7**	0	-1	0	8	-12	-15	-9	6	5	6	6	3	3	4	**33**	**231**
1971	765	766	772	788	800	800	801	801	807	798	786	778	32	31	31	25	34	46	54	1	1	1	1	1	1	1	**7**	0	1	0	6	-9	-12	-8	6	6	6	6	4	3	4	**35**	**245**
1972	773	769	772	778	792	800	800	798	795	783	772	766	32	32	34	37	49	60	66	1	1	1	1	1	1	1	**7**	8	0	-2	-3	-12	-11	-6	6	6	5	5	3	3	4	**32**	**224**
1973	762	761	763	774	800	800	802	812	827	812	797	788	32	30	20	5	20	35	44	1	1	1	4	1	1	1	**10**	0	2	10	15	-15	-15	-9	6	6	6	6	3	3	4	**34**	**340**
1974	783	787	798	800	800	800	800	806	828	819	805	796	32	32	26	4	13	27	36	1	1	1	5	3	1	1	**13**	0	0	6	22	-9	-14	-9	6	6	6	6	4	3	4	**35**	**455**
1975	791	789	786	786	798	800	802	812	832	825	812	803	32	30	20	0	7	20	29	1	1	1	6	4	1	1	**15**	2	2	10	20	-7	-13	-9	6	6	6	6	4	3	4	**35**	**525**
1976	800	800	799	799	800	799	794	787	777	767	757	751	33	38	45	55	65	75	81	1	1	1	1	1	1	1	**7**	-1	-5	-7	-10	-10	-10	-6	5	5	4	4	4	4	4	**30**	**210**
1977	748	745	742	741	741	737	728	715	701	687	671	662	95	104	117	131	145	161	170	1	1	1	1	1	1	1	**7**	-4	-9	-13	-14	-14	-16	-9	5	4	3	3	3	2	4	**24**	**168**
1978	658	654	657	683	716	748	761	776	813	821	808	802	84	71	56	19	11	24	30	1	1	1	2	3	1	1	**10**	32	13	15	37	8	-13	-6	6	6	6	6	6	3	4	**37**	**370**
1979	797	794	790	800	800	800	802	822	832	818	803	794	32	30	10	0	14	29	38	1	1	3	6	3	1	1	**16**	0	2	20	10	-14	-15	-9	6	6	6	6	3	3	4	**34**	**544**
1980	789	788	787	800	800	800	800	817	832	832	819	808	32	32	15	0	0	13	24	1	1	2	6	6	3	1	**20**	0	0	17	15	0	-13	-11	6	6	6	6	6	3	3	**36**	**720**
1981	800	797	794	795	799	800	802	806	805	793	782	774	32	30	26	27	39	50	58	1	1	1	1	1	1	1	**7**	1	2	4	-1	-12	-11	-8	6	6	6	5	3	3	4	**33**	**231**
1982	770	776	795	800	800	800	800	820	832	832	820	808	32	32	12	0	0	12	24	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-12	-12	6	6	6	6	6	3	3	**36**	**756**
1983	800	800	800	800	800	800	800	819	832	832	832	808	32	32	13	0	0	0	24	1	1	3	6	6	6	1	**24**	0	0	19	13	0	0	-24	6	6	6	6	6	6	1	**37**	**888**
1984	800	800	800	800	800	800	797	803	814	801	786	776	32	35	29	18	31	46	56	1	1	1	2	1	1	1	**8**	0	-3	6	11	-13	-15	-10	6	5	6	6	3	3	4	**33**	**264**
1985	773	773	779	786	794	800	801	799	795	784	772	766	32	31	33	37	48	60	66	1	1	1	1	1	1	1	**7**	6	1	-2	-4	-11	-12	-6	6	6	5	5	3	3	4	**32**	**224**
1986	763	764	767	774	800	800	802	827	832	825	811	802	32	30	5	0	7	21	30	1	1	4	6	4	1	1	**18**	0	2	25	5	-7	-14	-9	6	6	6	6	4	3	4	**35**	**630**
1987	796	791	786	784	786	788	786	783	779	769	759	752	44	46	49	53	63	73	80	1	1	1	1	1	1	1	**7**	2	-2	-3	-4	-10	-10	-7	6	5	5	5	4	4	4	**33**	**231**
1988	750	749	749	754	759	761	756	747	740	728	716	709	71	76	85	92	104	116	123	1	1	1	1	1	1	1	**7**	2	-5	-9	-7	-12	-12	-7	6	5	4	4	3	3	4	**29**	**203**
1989	705	702	702	705	708	722	733	747	754	743	732	727	110	99	85	78	89	100	105	1	1	1	1	1	1	1	**7**	14	11	14	7	-11	-11	-5	6	6	6	6	3	3	5	**35**	**245**
1990	725	725	725	727	730	733	730	726	724	709	695	688	99	102	106	108	123	137	144	1	1	1	1	1	1	1	**7**	3	-3	-4	-2	-15	-14	-7	6	5	5	5	3	3	4	**31**	**217**
1991	684	681	676	675	675	684	683	698	709	699	689	683	148	149	134	123	133	143	149	1	1	1	1	1	1	1	**7**	9	-1	15	11	-10	-10	-6	6	5	6	6	4	4	4	**35**	**245**
1992	682	682	681	684	693	698	701	707	706	692	677	666	134	131	125	126	140	155	166	1	1	1	1	1	1	1	**7**	5	3	6	-1	-14	-15	-11	6	6	6	5	3	3	3	**32**	**224**
1993	660	655	654	689	721	750	758	772	803	802	788	778	82	74	60	29	30	44	54	1	1	1	1	1	1	1	**7**	29	8	14	31	-1	-14	-10	6	6	6	6	5	3	4	**36**	**252**
1994	772	767	762	762	765	768	765	768	767	756	746	740	64	67	64	65	76	86	92	1	1	1	1	1	1	1	**7**	3	-3	3	-1	-11	-10	-6	6	5	6	5	3	4	4	**33**	**231**
																								73 - year Average:			**10**												**73 - year Average:**			**33**	**351**
																																								1929 - '34 Average:			**219**

Joint Point Alternative 7

STUDY: **526**

CP # 20, LAKE McCLURE, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 867'

Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	679	679	695	711	759	779	789	845	867	860	846	836	88	78	22	0	7	21	31
1923	808	808	808	808	808	813	827	854	859	850	835	825	54	40	13	8	17	32	42
1924	808	808	808	808	808	807	809	810	797	779	766	756	60	58	57	70	88	101	111
1925	752	758	763	767	792	801	819	840	844	831	815	803	66	48	27	23	36	52	64
1926	801	801	802	804	808	812	831	827	826	822	814	806	55	36	40	41	45	53	61
1927	802	803	807	807	808	815	817	844	854	849	845	840	52	50	23	13	18	22	27
1928	808	808	808	808	808	809	808	824	821	815	810	807	58	59	43	46	52	57	60
1929	805	804	804	803	805	807	808	811	811	813	816	810	60	59	56	56	54	51	57
1930	806	804	804	804	804	800	803	803	807	810	813	811	67	64	64	60	57	54	56
1931	808	808	808	808	808	808	808	806	794	776	762	752	59	59	61	73	91	105	115
1932	750	751	770	782	808	817	826	847	864	854	839	829	50	41	20	3	13	28	38
1933	808	807	806	808	808	811	813	816	830	817	802	794	56	54	51	37	50	65	73
1934	789	788	792	797	805	813	819	810	801	784	770	761	54	48	57	66	83	97	106
1935	757	761	766	784	796	806	840	859	867	854	839	828	61	27	8	0	13	28	39
1936	808	808	808	808	808	820	840	855	861	849	834	823	47	27	12	6	18	33	44
1937	808	808	808	808	808	820	834	859	867	853	838	827	47	33	8	0	14	29	40
1938	808	808	808	808	808	820	840	859	867	867	855	840	47	27	8	0	0	12	27
1939	808	808	808	808	808	816	831	832	821	803	787	776	51	36	35	46	64	80	91
1940	777	778	779	806	808	820	837	859	861	845	829	816	47	30	8	6	22	38	51
1941	808	808	808	808	808	820	834	859	867	863	850	840	47	33	8	0	4	17	27
1942	808	808	808	808	808	820	838	859	867	860	851	840	47	29	8	0	7	16	27
1943	808	808	808	808	808	820	840	859	864	853	838	828	47	27	8	3	14	29	39
1944	808	808	808	808	808	817	815	838	840	827	810	796	50	52	29	27	40	57	71
1945	794	800	806	808	808	820	833	856	867	856	842	831	47	34	11	0	11	25	36
1946	808	808	808	808	808	818	837	859	857	842	826	813	49	30	8	10	25	41	54
1947	808	808	808	808	808	815	823	836	830	814	799	791	52	44	31	37	53	68	76
1948	789	790	791	793	794	794	798	820	837	823	804	791	73	69	47	30	44	63	76
1949	787	786	787	789	793	801	810	831	830	810	791	775	66	57	36	37	57	76	92
1950	770	770	770	777	790	793	809	827	828	808	789	773	74	58	40	39	59	78	94
1951	769	808	808	808	808	819	827	837	834	816	796	781	48	40	30	33	51	71	86
1952	777	778	791	808	808	820	840	859	867	864	852	840	47	27	8	0	3	15	27
1953	808	808	808	808	808	809	815	816	823	809	790	775	58	52	51	44	58	77	92
1954	772	771	772	775	785	798	815	833	826	805	785	770	69	52	34	41	62	82	97
1955	766	765	768	774	778	780	781	802	811	796	779	769	87	86	65	56	71	88	98
1956	764	764	808	808	808	819	832	859	867	863	850	840	48	35	8	0	4	17	27
1957	808	808	808	808	808	813	813	828	838	822	804	790	54	54	39	29	45	63	77
1958	786	787	792	798	808	820	840	859	867	862	850	840	47	27	8	0	5	17	27
1959	808	808	808	808	808	813	823	826	817	797	780	773	54	44	41	50	70	87	94
1960	772	771	770	771	783	791	805	818	815	800	786	776	76	62	49	52	67	81	91
1961	773	773	775	776	778	779	784	785	777	759	742	730	88	83	82	90	108	125	137
1962	729	729	731	734	776	786	809	823	837	824	805	792	81	58	44	30	43	62	75
1963	788	787	788	797	808	810	819	841	855	845	830	818	57	48	26	12	22	37	49
1964	808	808	808	808	807	808	809	816	813	797	780	771	59	58	51	54	70	87	96
1965	765	769	808	808	808	815	831	854	867	861	850	840	52	36	13	0	6	17	27
1966	808	808	808	808	808	814	828	838	826	804	784	771	53	39	29	41	63	83	96
1967	767	769	794	806	808	820	840	859	867	867	856	840	47	27	8	0	0	11	27
1968	808	808	808	808	808	812	817	821	812	793	777	766	55	50	46	55	74	90	101
1969	762	766	774	808	808	820	840	859	867	867	854	840	47	27	8	0	0	13	27
1970	808	808	808	808	808	820	821	837	837	821	802	789	47	46	30	30	46	65	78
1971	786	788	798	807	808	812	814	826	836	822	804	790	55	53	41	31	45	63	77
1972	787	787	794	799	805	816	819	831	831	816	802	795	51	48	36	36	51	65	72
1973	793	795	800	808	808	820	828	859	867	852	838	828	47	39	8	0	15	29	39
1974	808	808	808	808	808	820	833	859	867	854	839	829	47	34	8	0	13	28	38
1975	808	808	808	808	808	820	823	855	867	856	842	832	47	44	12	0	11	25	35
1976	808	808	808	808	808	809	808	809	798	781	768	759	58	59	58	69	86	99	108
1977	758	756	754	754	754	749	740	727	716	686	656	632	118	127	140	151	181	211	235
1978	626	626	642	693	741	782	815	859	867	867	856	840	85	52	8	0	0	11	27
1979	808	808	808	808	808	820	828	859	863	849	834	823	47	39	8	4	18	33	44
1980	808	808	808	808	808	820	835	859	867	867	855	840	47	32	8	0	0	12	27
1981	808	807	807	808	808	813	823	835	831	816	802	794	54	44	32	36	51	65	73
1982	792	801	808	808	808	820	840	859	867	865	854	840	47	27	8	0	2	13	27
1983	808	808	808	808	808	820	836	859	867	867	864	840	47	31	8	0	0	3	27
1984	808	808	808	808	808	820	827	850	848	832	814	801	47	40	17	19	35	53	66
1985	800	803	807	808	808	814	828	841	835	821	807	797	53	39	26	32	46	60	70
1986	797	799	806	808	808	820	839	859	867	855	841	830	47	28	8	0	12	26	37
1987	808	807	807	807	808	810	818	821	811	795	782	773	57	49	46	56	72	85	94
1988	772	773	775	781	785	791	797	801	794	777	763	753	76	70	66	73	90	104	114
1989	751	750	753	753	759	775	796	805	802	786	772	763	92	71	62	65	81	95	104
1990	765	766	766	769	772	779	790	786	778	761	744	732	88	77	81	89	106	123	135
1991	730	729	729	728	728	749	755	775	789	775	762	751	118	112	92	78	92	105	116
1992	750	751	752	754	768	774	791	793	781	768	754	742	93	76	74	86	99	113	125
1993	740	741	747	792	808	820	837	859	867	861	848	837	47	30	8	0	6	19	30
1994	808	807	808	808	808	810	814	820	812	796	783	773	57	53	47	55	71	84	94

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Fluctuation MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	1	1	1	6	4	1	1	**15**	20	10	56	22	-7	-14	-10	6	6	6	6	4	3	4	**35**	**525**
1923	1	1	3	4	2	1	1	**13**	5	14	27	5	-9	-15	-10	6	6	6	6	4	3	4	**35**	**455**
1924	1	1	1	1	1	1	1	**7**	-1	2	1	-13	-18	-13	-10	5	6	6	3	2	3	4	**29**	**203**
1925	1	1	1	1	1	1	1	**7**	9	18	21	4	-13	-16	-12	6	6	6	6	3	2	3	**32**	**224**
1926	1	1	1	1	1	1	1	**7**	4	19	-4	-1	-4	-8	-8	6	6	5	5	5	4	4	**35**	**245**
1927	1	1	1	3	2	1	1	**10**	7	2	27	10	-5	-4	-5	6	6	6	6	5	5	5	**39**	**390**
1928	1	1	1	1	1	1	1	**7**	1	-1	16	-3	-6	-5	-3	6	5	6	5	4	5	5	**36**	**252**
1929	1	1	1	1	1	1	1	**7**	2	1	3	0	2	3	-6	6	6	6	6	6	6	4	**40**	**280**
1930	1	1	1	1	1	1	1	**7**	-4	3	0	4	3	3	-2	5	6	6	6	6	6	5	**40**	**280**
1931	1	1	1	1	1	1	1	**7**	0	0	-2	-12	-18	-14	-10	6	6	5	3	2	3	4	**29**	**203**
1932	1	1	1	5	3	1	1	**13**	9	9	21	17	-10	-15	-10	6	6	6	6	4	3	4	**35**	**455**
1933	1	1	1	1	1	1	1	**7**	3	2	3	14	-13	-15	-8	6	6	6	6	3	3	4	**34**	**238**
1934	1	1	1	1	1	1	1	**7**	8	6	-9	-9	-17	-14	-9	6	6	4	4	2	3	4	**29**	**203**
1935	1	1	4	6	3	1	1	**17**	10	34	19	8	-13	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1936	1	1	3	4	2	1	1	**13**	12	20	15	6	-12	-15	-11	6	6	6	6	3	3	3	**33**	**429**
1937	1	1	4	6	3	1	1	**17**	12	14	25	8	-14	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1938	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1939	1	1	1	1	1	1	1	**7**	8	15	1	-11	-18	-16	-11	6	6	6	3	2	2	3	**28**	**196**
1940	1	1	4	4	1	1	1	**13**	12	17	22	2	-16	-16	-13	6	6	6	6	2	2	3	**31**	**403**
1941	1	1	4	6	5	2	1	**20**	12	14	25	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1942	1	1	4	6	4	2	1	**19**	12	18	21	8	-7	-9	-11	6	6	6	6	4	4	3	**35**	**665**
1943	1	1	4	5	3	1	1	**16**	12	20	19	5	-11	-15	-10	6	6	6	6	3	3	4	**34**	**544**
1944	1	1	1	1	1	1	1	**7**	9	-2	23	2	-13	-17	-14	6	5	6	6	3	2	3	**31**	**217**
1945	1	1	3	6	3	1	1	**16**	12	13	23	11	-11	-14	-11	6	6	6	6	3	3	3	**33**	**528**
1946	1	1	4	3	1	1	1	**12**	10	19	22	-2	-15	-16	-13	6	6	6	5	3	2	3	**31**	**372**
1947	1	1	1	1	1	1	1	**7**	7	8	13	-6	-16	-15	-8	6	6	6	4	2	3	4	**31**	**217**
1948	1	1	1	1	1	1	1	**7**	0	4	22	17	-14	-19	-13	6	6	6	6	3	2	3	**32**	**224**
1949	1	1	1	1	1	1	1	**7**	8	9	21	-1	-20	-19	-16	6	6	6	5	2	2	2	**29**	**203**
1950	1	1	1	1	1	1	1	**7**	3	16	18	1	-20	-19	-16	6	6	6	6	2	2	2	**30**	**210**
1951	1	1	1	1	1	1	1	**7**	11	8	10	-3	-18	-20	-15	6	6	6	5	2	2	3	**30**	**210**
1952	1	1	4	6	5	2	1	**20**	12	20	19	8	-3	-12	-12	6	6	6	6	5	3	3	**35**	**700**
1953	1	1	1	1	1	1	1	**7**	1	6	1	7	-14	-19	-15	6	6	6	6	3	2	3	**32**	**224**
1954	1	1	1	1	1	1	1	**7**	13	17	18	-7	-21	-20	-15	6	6	6	4	1	2	3	**28**	**196**
1955	1	1	1	1	1	1	1	**7**	2	1	21	9	-15	-17	-10	6	6	6	6	3	2	4	**33**	**231**
1956	1	1	4	6	5	2	1	**20**	11	13	27	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1957	1	1	1	1	1	1	1	**7**	5	0	15	10	-16	-18	-14	6	6	6	6	2	2	3	**31**	**217**
1958	1	1	4	6	4	2	1	**19**	12	20	19	8	-5	-12	-10	6	6	6	6	5	3	4	**36**	**684**
1959	1	1	1	1	1	1	1	**7**	5	10	3	-9	-20	-17	-7	6	6	6	4	2	2	4	**30**	**210**
1960	1	1	1	1	1	1	1	**7**	8	14	13	-3	-15	-14	-10	6	6	6	5	3	3	4	**33**	**231**
1961	1	1	1	1	1	1	1	**7**	1	5	1	-8	-18	-17	-12	6	6	6	4	2	2	3	**29**	**203**
1962	1	1	1	1	1	1	1	**7**	10	23	14	14	-13	-19	-13	6	6	6	6	3	2	3	**32**	**224**
1963	1	1	1	3	1	1	1	**9**	2	9	22	14	-10	-15	-12	6	6	6	6	4	3	3	**34**	**306**
1964	1	1	1	1	1	1	1	**7**	1	1	7	-3	-16	-17	-9	6	6	6	5	2	2	4	**31**	**217**
1965	1	1	3	6	4	2	1	**18**	7	16	23	13	-6	-11	-10	6	6	6	6	4	3	4	**35**	**630**
1966	1	1	1	1	1	1	1	**7**	6	14	10	-12	-22	-20	-13	6	6	6	3	1	2	3	**27**	**189**
1967	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1968	1	1	1	1	1	1	1	**7**	4	5	4	-9	-19	-16	-11	6	6	6	4	2	2	3	**29**	**203**
1969	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-13	-14	6	6	6	6	6	3	3	**36**	**792**
1970	1	1	1	1	1	1	1	**7**	12	1	16	0	-16	-19	-13	6	6	6	6	2	2	3	**31**	**217**
1971	1	1	1	1	1	1	1	**7**	4	2	12	10	-14	-18	-14	6	6	6	6	3	2	3	**32**	**224**
1972	1	1	1	1	1	1	1	**7**	11	3	12	0	-15	-14	-7	6	6	6	6	3	3	4	**34**	**238**
1973	1	1	4	6	2	1	1	**16**	12	8	31	8	-15	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1974	1	1	4	6	3	1	1	**17**	12	13	26	8	-13	-15	-10	6	6	6	6	3	3	4	**34**	**578**
1975	1	1	3	6	3	1	1	**16**	12	3	32	12	-11	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1976	1	1	1	1	1	1	1	**7**	1	-1	1	-11	-17	-13	-9	6	5	6	3	2	3	4	**29**	**203**
1977	1	1	1	1	1	1	1	**7**	-5	-9	-13	-11	-30	-30	-24	5	4	3	3	1	1	1	**18**	**126**
1978	1	1	4	6	6	3	1	**22**	41	33	44	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1979	1	1	4	5	2	1	1	**15**	12	8	31	4	-14	-15	-11	6	6	6	6	3	3	3	**33**	**495**
1980	1	1	4	6	6	3	1	**22**	12	15	24	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1981	1	1	1	1	1	1	1	**7**	5	10	12	-4	-15	-14	-8	6	6	6	5	3	3	4	**33**	**231**
1982	1	1	4	6	5	3	1	**21**	12	20	19	8	-2	-11	-14	6	6	6	6	5	3	3	**35**	**735**
1983	1	1	4	6	6	5	1	**24**	12	16	23	8	0	-3	-24	6	6	6	6	6	5	1	**36**	**864**
1984	1	1	2	2	1	1	1	**9**	12	7	23	-2	-16	-18	-13	6	6	6	5	2	2	3	**30**	**270**
1985	1	1	1	1	1	1	1	**7**	6	14	13	-6	-14	-14	-10	6	6	6	4	3	3	4	**32**	**224**
1986	1	1	4	6	3	1	1	**17**	12	19	20	8	-12	-14	-11	6	6	6	6	3	3	3	**33**	**561**
1987	1	1	1	1	1	1	1	**7**	2	8	3	-10	-16	-13	-9	6	6	6	4	2	3	4	**31**	**217**
1988	1	1	1	1	1	1	1	**7**	6	6	4	-7	-17	-14	-10	6	6	6	4	2	3	4	**31**	**217**
1989	1	1	1	1	1	1	1	**7**	16	21	9	-3	-16	-14	-9	6	6	6	5	2	3	4	**32**	**224**
1990	1	1	1	1	1	1	1	**7**	7	11	-4	-8	-17	-17	-12	6	6	5	4	2	2	3	**28**	**196**
1991	1	1	1	1	1	1	1	**7**	21	6	20	14	-14	-13	-11	6	6	6	6	3	3	3	**33**	**231**
1992	1	1	1	1	1	1	1	**7**	6	17	2	-12	-13	-14	-12	6	6	6	3	3	3	3	**30**	**210**
1993	1	1	4	6	4	2	1	**19**	12	17	22	8	-6	-13	-11	6	6	6	6	4	3	3	**34**	**646**
1994	1	1	1	1	1	1	1	**7**	2	4	6	-8	-16	-13	-10	6	6	6	4	2	3	4	**31**	**217**
73 - year Average:								**11**															**33**	**380**
1929 - '34 Average:																								**277**

STUDY: **526**
CP # 18, MILLERTON LAKE, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 576'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Elevation in feet												DFMRE							Elevation score								Fluctuation							Fluctuation score								
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	491	505	527	547	549	566	559	576	576	562	518	491	10	17	0	0	14	58	85	3	2	6	6	3	1	1	**22**	17	-7	17	0	-14	-44	-27	6	4	6	6	3	1	1	**27**	**594**
1923	485	495	520	537	531	517	541	549	540	526	463	470	59	35	27	36	50	113	106	1	1	1	1	1	1	1	**7**	-14	24	8	-9	-14	-63	7	3	6	6	4	3	1	6	**29**	**203**
1924	483	494	508	522	516	503	506	511	505	478	464	468	73	70	65	71	98	112	108	1	1	1	1	1	1	1	**7**	-13	3	5	-6	-27	-14	4	3	6	6	4	1	3	6	**29**	**203**
1925	461	471	486	500	506	490	512	530	520	497	480	472	86	64	46	56	79	96	104	1	1	1	1	1	1	1	**7**	-16	22	18	-10	-23	-17	-8	2	6	6	4	1	2	4	**25**	**175**
1926	474	487	503	517	520	506	548	562	533	492	471	482	70	28	14	43	84	105	94	1	1	3	1	1	1	1	**9**	-14	42	14	-29	-41	-21	11	3	6	6	1	1	1	6	**24**	**216**
1927	488	504	525	543	560	561	560	569	576	543	492	482	15	16	7	0	33	84	94	2	2	4	6	1	1	1	**17**	1	-1	9	7	-33	-51	-10	6	5	6	6	1	1	4	**29**	**493**
1928	482	503	525	542	540	543	551	554	522	477	465	477	33	25	22	54	99	111	99	1	1	1	1	1	1	1	**7**	3	8	3	-32	-45	-12	12	6	6	6	1	1	3	6	**29**	**203**
1929	484	499	513	523	517	513	531	531	527	506	466	477	63	45	45	49	70	110	99	1	1	1	1	1	1	1	**7**	-4	18	0	-4	-21	-40	11	5	6	6	5	1	1	6	**30**	**210**
1930	478	494	506	517	514	509	524	534	517	488	465	482	67	52	42	59	88	111	94	1	1	1	1	1	1	1	**7**	-5	15	10	-17	-29	-23	17	5	6	6	2	1	1	6	**27**	**189**
1931	486	501	512	522	517	508	510	515	508	482	466	466	68	66	61	68	94	110	110	1	1	1	1	1	1	1	**7**	-9	2	5	-7	-26	-16	0	4	6	6	4	1	2	6	**29**	**203**
1932	467	476	503	520	543	531	524	532	552	518	492	477	45	52	44	24	58	84	99	1	1	1	1	1	1	1	**7**	-12	-7	8	20	-34	-26	-15	3	4	6	6	1	1	3	**24**	**168**
1933	477	489	501	516	512	501	520	537	526	509	466	467	75	56	39	50	67	110	109	1	1	1	1	1	1	1	**7**	-11	19	17	-11	-17	-43	1	3	6	6	3	2	1	6	**27**	**189**
1934	469	479	499	517	511	503	516	527	523	498	477	486	73	60	49	53	78	99	90	1	1	1	1	1	1	1	**7**	-8	13	11	-4	-25	-21	9	4	6	6	5	1	1	6	**29**	**203**
1935	490	500	515	535	532	509	542	563	574	538	469	479	67	34	13	2	38	107	97	1	1	3	5	1	1	1	**13**	-23	33	21	11	-36	-69	10	1	6	6	6	1	1	6	**27**	**351**
1936	486	502	518	533	560	558	564	576	563	521	472	478	18	12	0	13	55	104	98	2	3	6	3	1	1	1	**17**	-2	6	12	-13	-42	-49	6	5	6	6	3	1	1	6	**28**	**476**
1937	488	497	516	535	560	570	576	576	576	538	484	469	6	0	0	0	38	92	107	4	6	6	6	1	1	1	**25**	10	6	0	0	-38	-54	-15	6	6	6	6	1	1	3	**29**	**725**
1938	472	486	533	560	560	542	529	467	572	576	532	520	34	47	109	4	0	44	56	1	1	1	5	6	1	1	**16**	-18	-13	-62	105	4	-44	-12	2	3	1	6	6	1	3	**22**	**352**
1939	513	514	529	538	532	524	542	560	539	504	473	495	52	34	16	37	72	103	81	1	1	2	1	1	1	1	**8**	-8	18	18	-21	-35	-31	22	4	6	6	1	1	1	6	**25**	**200**
1940	494	503	517	549	550	551	548	561	553	512	465	470	25	28	15	23	64	111	106	1	1	2	1	1	1	1	**8**	1	-3	13	-8	-41	-47	5	6	5	6	4	1	1	6	**29**	**232**
1941	481	493	528	556	560	573	573	569	576	569	527	506	3	3	7	0	7	49	70	5	5	4	6	4	1	1	**26**	13	0	-4	7	-7	-42	-21	6	6	5	6	4	1	1	**29**	**754**
1942	497	507	532	552	549	553	554	562	576	555	509	477	23	22	14	0	21	67	99	1	1	3	6	1	1	1	**14**	4	1	8	14	-21	-46	-32	6	6	6	6	1	1	1	**27**	**378**
1943	477	494	518	557	556	576	574	576	562	526	491	476	0	2	0	14	50	85	100	6	5	6	3	1	1	1	**23**	20	-2	2	-14	-36	-35	-15	6	5	6	3	1	1	3	**25**	**575**
1944	479	491	508	521	524	507	516	517	501	494	490	480	69	60	59	75	82	86	96	1	1	1	1	1	1	1	**7**	-17	9	1	-16	-7	-4	-10	2	6	6	2	4	5	4	**29**	**203**
1945	481	503	523	533	560	568	565	571	576	554	511	491	8	11	5	0	22	65	85	4	3	4	6	1	1	1	**20**	8	-3	6	5	-22	-43	-20	6	5	6	6	1	1	2	**27**	**540**
1946	485	502	531	548	528	524	536	559	546	510	478	480	52	40	17	30	66	98	96	1	1	2	1	1	1	1	**8**	-4	12	23	-13	-36	-32	2	5	6	6	3	1	1	6	**28**	**224**
1947	481	500	526	543	541	530	545	556	535	497	473	481	46	31	20	41	79	103	95	1	1	1	1	1	1	1	**7**	-11	15	11	-21	-38	-24	8	3	6	6	1	1	1	6	**24**	**168**
1948	487	503	517	529	523	530	556	551	541	483	480	484	46	20	25	35	93	96	92	1	1	1	1	1	1	1	**7**	7	26	-5	-10	-58	-3	4	6	6	5	4	1	5	6	**33**	**231**
1949	490	500	513	526	524	511	522	538	521	482	477	489	65	54	38	55	94	99	87	1	1	1	1	1	1	1	**7**	-13	11	16	-17	-39	-5	12	3	6	6	2	1	5	6	**29**	**203**
1950	492	503	519	535	541	523	534	551	538	505	476	482	53	42	25	38	71	100	94	1	1	1	1	1	1	1	**7**	-18	11	17	-13	-33	-29	6	2	6	6	3	1	1	6	**25**	**175**
1951	490	532	560	560	554	546	552	546	514	463	463	481	30	24	30	62	113	113	95	1	1	1	1	1	1	1	**7**	-8	6	-6	-32	-51	0	18	4	6	4	1	1	6	6	**28**	**196**
1952	488	500	530	559	560	567	559	526	576	571	525	508	9	17	50	0	5	51	68	4	2	1	6	4	1	1	**19**	7	-8	-33	50	-5	-46	-17	6	4	1	6	5	1	2	**25**	**475**
1953	501	514	533	549	538	532	541	536	518	497	478	481	44	35	40	58	79	98	95	1	1	1	1	1	1	1	**7**	-6	9	-5	-18	-21	-19	3	4	6	5	2	1	2	6	**26**	**182**
1954	488	497	514	532	532	527	537	560	544	507	465	483	49	39	16	32	69	111	93	1	1	2	1	1	1	1	**8**	-5	10	23	-16	-37	-42	18	5	6	6	2	1	1	6	**27**	**216**
1955	489	502	522	540	537	520	534	545	537	504	481	487	56	42	31	39	72	95	89	1	1	1	1	1	1	1	**7**	-17	14	11	-8	-33	-23	6	2	6	6	4	1	1	6	**26**	**182**
1956	491	499	560	560	560	576	576	561	576	566	524	505	0	0	15	0	10	52	71	6	6	2	6	3	1	1	**25**	16	0	-15	15	-10	-42	-19	6	6	3	6	4	1	2	**28**	**700**
1957	496	504	517	527	525	529	546	561	562	526	471	481	47	30	15	14	50	105	95	1	1	2	3	1	1	1	**10**	4	17	15	1	-36	-55	10	6	6	6	6	1	1	6	**32**	**320**
1958	488	501	525	545	554	565	576	576	576	557	516	498	11	0	0	0	19	60	78	3	6	6	6	2	1	1	**25**	11	11	0	0	-19	-41	-18	6	6	6	6	2	1	2	**29**	**725**
1959	492	507	523	530	536	528	550	566	551	500	470	475	48	26	10	25	76	106	101	1	1	3	1	1	1	1	**9**	-8	22	16	-15	-51	-30	5	4	6	6	3	1	1	6	**27**	**243**
1960	473	475	480	490	503	498	515	525	509	496	483	481	78	61	51	67	80	93	95	1	1	1	1	1	1	1	**7**	-5	17	10	-16	-13	-13	-2	5	6	6	2	3	3	5	**30**	**210**
1961	481	491	505	511	510	511	526	539	527	486	467	467	65	50	37	49	90	109	109	1	1	1	1	1	1	1	**7**	1	15	13	-12	-41	-19	0	6	6	6	3	1	2	6	**30**	**210**
1962	468	471	484	492	538	529	527	555	569	540	489	476	47	49	21	7	36	87	100	1	1	1	4	1	1	1	**10**	-9	-2	28	14	-29	-51	-13	4	5	6	6	1	1	3	**26**	**260**
1963	479	491	501	518	558	558	576	576	576	564	520	503	18	0	0	0	12	56	73	2	6	6	6	3	1	1	**25**	0	18	0	0	-12	-44	-17	6	6	6	6	3	1	2	**30**	**750**
1964	490	517	542	551	547	544	553	561	551	508	476	484	32	23	15	25	68	100	92	1	1	2	1	1	1	1	**8**	-3	9	8	-10	-43	-32	8	5	6	6	4	1	1	6	**29**	**232**
1965	481	496	528	560	556	554	559	551	561	540	512	496	22	17	25	15	36	64	80	1	2	1	2	1	1	1	**9**	-2	5	-8	10	-21	-28	-16	5	6	4	6	1	1	2	**25**	**225**
1966	487	513	546	558	541	526	545	564	550	506	486	486	50	31	12	26	70	90	90	1	1	3	1	1	1	1	**9**	-15	19	19	-14	-44	-20	0	3	6	6	3	1	2	6	**27**	**243**
1967	490	502	539	559	560	571	565	514	570	576	539	522	5	11	62	6	0	37	54	4	3	1	4	6	1	1	**20**	11	-6	-51	56	6	-37	-17	6	4	1	6	6	1	2	**26**	**520**
1968	515	521	539	545	545	539	550	554	539	506	478	482	37	26	22	37	70	98	94	1	1	1	1	1	1	1	**7**	-6	11	4	-15	-33	-28	4	4	6	6	3	1	1	6	**27**	**189**
1969	479	495	513	560	524	521	467	469	576	576	538	513	55	109	107	0	0	38	63	1	1	1	6	6	1	1	**17**	-3	-54	2	107	0	-38	-25	5	1	6	6	6	1	1	**26**	**442**
1970	498	516	540	560	560	554	554	555	544	517	476	477	22	22	21	32	59	100	99	1	1	1	1	1	1	1	**7**	-6	0	1	-11	-27	-41	1	4	6	6	3	1	1	6	**27**	**189**
1971	482	502	534	551	548	533	541	544	520	498	491	478	43	35	32	56	78	85	98	1	1	1	1	1	1	1	**7**	-15	8	3	-24	-22	-7	-13	3	6	6	1	1	4	3	**24**	**168**
1972	479	491	519	536	532	524	537	543	540	497	481	481	52	39	33	36	79	95	95	1	1	1	1	1	1	1	**7**	-8	13	6	-3	-43	-16	0	4	6	6	5	1	2	6	**30**	**210**
1973	489	501	523	545	560	560	550	575	576	542	483	477	16	26	1	0	34	93	99	2	1	5	6	1	1	1	**17**	0	-10	25	1	-34	-59	-6	6	4	6	6	1	1	4	**28**	**476**
1974	487	510	545	560	544	550	559	570	573	537	490	473	26	17	6	3	39	86	103	1	2	4	5	1	1	1	**15**	6	9	11	3	-36	-47	-17	6	6	6	6	1	1	2	**28**	**420**
1975	476	494	515	528	535	526	533	536	567	525	476	482	50	43	40	9	51	100	94	1	1	1	4	1	1	1	**10**	-9	7	3	31	-42	-49	6	4	6	6	6	1	1	6	**30**	**300**
1976	489	511	531	541	539	544	547	542	519	492	479	494	32	29	34	57	84	97	82	1	1	1	1	1	1	1	**7**	5	3	-5	-23	-27	-13	15	6	6	5	1	1	3	6	**28**	**196**
1977	490	496	500	503	501	464	465	464	462	466	461	462	112	111	112	114	110	115	114	1	1	1	1	1	1	1	**7**	-37	1	-1	-2	4	-5	1	1	6	5	5	6	5	6	**34**	**238**
1978	462	462	484	532	560	552	510	498	576	576	548	539	24	66	78	0	0	28	37	1	1	1	6	6	1	1	**17**	-8	-42	-12	78	0	-28	-9	4	1	3	6	6	1	4	**25**	**425**
1979	528	535	549	560	555	562	560	571	563	521	477	482	14	16	5	13	55	99	94	3	2	4	3	1	1	1	**15**	7	-2	11	-8	-42	-44	5	6	5	6	4	1	1	6	**29**	**435**
1980	489	488	508	560	560	558	566	550	576	576	542	513	18	10	26	0	0	34	63	2	3	1	6	6	1	1	**20**	-2	8	-16	26	0	-34	-29	5	6	2	6	6	1	1	**27**	**540**
1981	503	512	520	528	531	533	547	553	543	510	477	488	43	29	23	33	66	99	88	1	1	1	1	1	1	1	**7**	2	14	6	-10	-33	-33	11	6	6	6	4	1	1	6	**30**	**210**
1982	491	504	536	560	560	576	546	561	576	576	546	541	0	30	15	0	0	30	35	6	1	2	6	6	1	1	**23**	16	-30	15	15	0	-30	-5	6	1	6	6	6	1	5	**31**	**713**
1983	531	556	560	560	513	484	467	467	483	564	572	576	92	109	109	93	12	4	0	1	1	1	1	3	5	6	**18**	-29	-17	0	16	81	8	4	1	2	6	6	6	6	6	**33**	**594**
1984	560	560	560	560	560	568	570	570	557	530	487	483	8	6	6	19	46	89	93	4	4	4	2	1	1	1	**17**	8	2	0	-13	-27	-43	-4	6	6	6	3	1	1	5	**28**	**476**
1985	482	492	511	536	533	526	551	563	539	501	483	483	50	25	13	37	75	93	93	1	1	3	1	1	1	1	**9**	-7	25	12	-24	-38	-18	0	4	6	6	1	1	2	6	**26**	**234**
1986	490	508	534	553	550	552	574	565	576	558	503	479	24	2	11	0	18	73	97	1	5	3	6	2	1	1	**19**	2	22	-9	11	-18	-55	-24	6	6	4	6	2	1	1	**26**	**494**
1987	480	489	492	495	496	511	530	551	539	503	473	480	65	46	25	37	73	103	96	1	1	1	1	1	1	1	**7**	15	19	21	-12	-36	-30	7	6	6	6	3	1	1	6	**29**	**203**
1988	482	495	507	526	516	527	539	547	527	498	483	486	49	37	29	49	78	93	90	1	1	1	1	1	1	1	**7**	11	12	8	-20	-29	-15	3	6	6	6	2	1	3	6	**30**	**210**
1989	486	497	505	515	512	516	537	552	540	502	478	484	60	39	24	36	74	98	92	1	1	1	1	1	1	1	**7**	4	21	15	-12	-38	-24	6	6	6	6	3	1	1	6	**29**	**203**
1990	489	495	502	510	510	517	532	544	525	508	479	483	59	44	32	51	68	97	93	1	1	1	1	1	1	1	**7**	7	15	12	-19	-17	-29	4	6	6	6	2	2	1	6	**29**	**203**
1991	480	486	492	499	493	489	501	508	512	506	480	486	87	75	68	64	70	96	90	1	1	1	1	1	1	1	**7**	-4	12	7	4	-6	-26	6	5	6	6	6	4	1	6	**34**	**238**
1992	485	490	494	498	499	490	493	494	480	470	465	466	86	83	82	96	106	111	110	1	1	1	1	1	1	1	**7**	-9	3	1	-14	-10	-5	1	4	6	6	3	4	5	6	**34**	**238**
1993	467	466	476	536	543	556	558	576	576	571	522	499	20	18	0	0	5	54	77	1	2	6	6	4	1	1	**21**	13	2	18	0	-5	-49	-23	6	6	6	6	5	1	1	**31**	**651**
1994	490	497	507	512	508	520	534	548	528	498	478	484	56	42	28	48	78	98	92	1	1	1	1	1	1	1	**7**	12	14	14	-20	-30	-20	6	6	6	6	2	1	2	6	**29**	**203**
																								73 - year Average:			**12**											**73 - year Average:**				**28**	**329**
																																								1929 - '34 Average:			**194**

Joint Point Alternative 7

STUDY: **526**

CP # 12, SWP SAN LUIS RESERVOIR, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 544'

Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	418	436	487	531	544	544	543	543	538	489	445	454	0	1	1	6	55	99	90
1923	495	523	544	544	544	544	539	515	475	469	433	413	0	5	29	69	75	111	131
1924	431	440	466	511	532	532	522	498	465	434	397	391	12	22	46	79	110	147	153
1925	392	401	444	475	529	539	532	507	467	449	407	382	5	12	37	77	95	137	162
1926	394	407	430	496	542	544	540	517	481	464	398	384	0	4	27	63	80	146	160
1927	397	457	498	544	544	544	541	529	495	470	430	430	0	3	15	49	74	114	114
1928	464	503	534	544	544	544	539	517	467	464	433	412	0	5	27	77	80	111	132
1929	434	456	480	526	544	544	536	522	500	468	437	434	0	8	22	44	76	107	110
1930	434	440	485	537	544	544	526	497	467	472	440	418	0	18	47	77	72	104	126
1931	423	427	427	469	483	486	477	465	450	424	375	373	58	67	79	94	120	169	171
1932	384	383	455	524	543	535	527	508	489	471	440	426	9	17	36	55	73	104	118
1933	440	446	450	495	517	525	522	508	480	444	400	399	19	22	36	64	100	144	145
1934	413	410	456	514	518	518	504	479	458	436	398	385	26	40	65	86	108	146	159
1935	382	402	421	496	502	530	536	509	467	436	381	358	14	8	35	77	108	163	186
1936	382	390	395	471	525	544	542	524	487	468	432	417	0	2	20	57	76	112	127
1937	436	448	471	523	544	544	544	539	508	469	432	415	0	0	5	36	75	112	129
1938	446	497	533	544	544	544	544	544	542	509	477	511	0	0	0	2	35	67	33
1939	541	544	544	544	544	544	526	495	463	472	439	419	0	18	49	81	72	105	125
1940	424	422	415	492	536	544	540	512	462	443	381	365	0	4	32	82	101	163	179
1941	388	417	467	520	544	544	543	543	528	479	441	474	0	1	1	16	65	103	70
1942	508	542	544	544	544	544	543	538	528	483	444	465	0	1	6	16	61	100	79
1943	499	537	544	544	544	544	544	544	516	473	432	435	0	0	0	28	71	112	109
1944	466	496	514	544	544	544	525	493	457	462	438	419	0	19	51	87	82	106	125
1945	423	458	497	527	544	544	532	503	464	461	435	419	0	12	41	80	83	109	125
1946	453	494	527	544	544	544	527	495	445	437	427	410	0	17	49	99	107	117	134
1947	438	466	509	538	544	544	526	488	448	449	434	405	0	18	56	96	95	110	139
1948	407	411	411	464	482	505	508	481	438	421	371	361	39	36	63	106	123	173	183
1949	389	417	447	493	517	544	528	501	456	434	383	364	0	16	43	88	110	161	180
1950	394	408	416	489	535	544	530	501	461	457	431	414	0	14	43	83	87	113	130
1951	434	483	517	544	544	544	529	507	461	453	434	425	0	15	37	83	91	110	119
1952	443	476	511	544	544	544	544	544	542	517	498	518	0	0	0	2	27	46	26
1953	544	544	544	544	544	544	527	511	484	473	436	445	0	17	33	60	71	108	99
1954	485	516	535	544	544	544	541	519	464	452	431	416	0	3	25	80	92	113	128
1955	441	476	511	544	544	544	525	497	467	467	434	418	0	19	47	77	77	110	126
1956	446	460	513	544	544	544	538	538	518	480	446	467	0	6	6	26	64	98	77
1957	495	515	529	544	544	544	532	506	468	465	434	418	0	12	38	76	79	110	126
1958	471	504	538	544	544	544	544	544	542	506	494	512	0	0	0	2	38	50	32
1959	544	544	544	544	544	544	522	488	449	453	439	432	0	22	56	95	91	105	112
1960	450	459	465	507	544	544	524	489	453	446	390	362	0	20	55	91	98	154	182
1961	386	421	467	513	544	544	522	486	454	463	435	409	0	22	58	90	81	109	135
1962	424	438	475	520	544	544	520	482	423	407	328	334	0	24	62	121	137	216	210
1963	407	457	488	531	544	544	542	534	502	476	431	437	0	2	10	42	68	113	107
1964	479	510	529	544	544	544	518	481	436	436	425	405	0	26	63	108	108	119	139
1965	409	439	489	534	544	544	544	530	497	474	432	435	0	0	14	47	70	112	109
1966	465	506	540	544	544	544	526	491	435	428	417	413	0	18	53	109	116	127	131
1967	436	464	510	544	544	544	544	544	542	541	522	540	0	0	0	2	3	22	4
1968	544	544	544	544	544	544	529	495	456	460	437	420	0	15	49	88	84	107	124
1969	448	476	518	544	544	544	544	544	542	522	494	515	0	0	0	2	22	50	29
1970	544	544	544	544	544	544	534	512	470	469	434	429	0	10	32	74	75	110	115
1971	451	501	534	544	544	544	529	511	475	463	433	439	0	15	33	69	81	111	105
1972	478	503	530	544	544	544	525	490	446	447	437	410	0	19	54	98	97	107	134
1973	433	483	517	544	544	544	534	509	472	462	433	427	0	10	35	72	82	111	117
1974	457	503	532	544	544	544	543	534	506	477	460	487	0	1	10	38	67	84	57
1975	520	544	544	544	544	544	541	530	506	473	450	470	0	3	14	38	71	94	74
1976	498	531	544	544	544	544	524	495	471	480	447	427	0	20	49	73	64	97	117
1977	427	433	434	453	453	453	458	447	431	410	406	423	91	86	97	113	134	138	121
1978	429	446	495	544	544	544	544	544	525	472	431	447	0	0	0	19	72	113	97
1979	490	504	520	544	544	544	536	515	481	471	433	418	0	8	29	63	73	111	126
1980	452	490	523	544	544	544	544	544	527	493	453	470	0	0	0	17	51	91	74
1981	511	525	544	544	544	544	530	496	457	461	437	415	0	14	48	87	83	107	129
1982	434	487	523	544	544	544	544	544	534	494	463	493	0	0	0	10	50	81	51
1983	521	544	544	544	544	544	544	544	542	541	541	544	0	0	0	2	3	3	0
1984	544	544	544	544	544	544	535	513	476	471	432	428	0	9	31	68	73	112	116
1985	468	505	543	544	544	544	520	484	435	433	420	407	0	24	60	109	111	124	137
1986	410	414	453	507	544	544	544	544	532	490	454	461	0	0	0	12	54	90	83
1987	491	502	527	544	544	544	522	485	455	463	438	414	0	22	59	89	81	106	130
1988	423	418	460	520	534	534	522	507	490	468	429	425	10	22	37	54	76	115	119
1989	425	439	455	493	493	541	531	500	465	459	392	401	3	13	44	79	85	152	143
1990	415	432	449	504	523	527	510	481	462	449	405	385	17	34	63	82	95	139	159
1991	385	388	388	403	403	471	471	461	444	427	412	413	73	73	83	100	117	132	131
1992	416	429	443	487	529	544	534	513	496	479	434	423	0	10	31	48	65	110	121
1993	423	429	473	529	544	544	543	540	524	473	430	428	0	1	4	20	71	114	116
1994	469	503	534	544	544	544	521	487	456	466	439	423	0	23	57	88	78	105	121

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Fluct. MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	6	5	5	4	1	1	1	**23**	0	-1	0	-5	-49	-44	9	6	5	6	5	1	1	6	**30**	**690**
1923	6	4	1	1	1	1	1	**15**	0	-5	-24	-40	-6	-36	-20	6	5	1	1	4	1	2	**20**	**300**
1924	3	1	1	1	1	1	1	**9**	0	-10	-24	-33	-31	-37	-6	6	4	1	1	1	1	4	**18**	**162**
1925	4	3	1	1	1	1	1	**12**	10	-7	-25	-40	-18	-42	-25	6	4	1	1	2	1	1	**16**	**192**
1926	6	5	1	1	1	1	1	**16**	2	-4	-23	-36	-17	-66	-14	6	5	1	1	2	1	3	**19**	**304**
1927	6	5	2	1	1	1	1	**17**	0	-3	-12	-34	-25	-40	0	6	5	3	1	1	1	6	**23**	**391**
1928	6	4	1	1	1	1	1	**15**	0	-5	-22	-50	-3	-31	-21	6	5	1	1	5	1	1	**20**	**300**
1929	6	4	1	1	1	1	1	**15**	0	-8	-14	-22	-32	-31	-3	6	4	3	1	1	1	5	**21**	**315**
1930	6	2	1	1	1	1	1	**13**	0	-18	-29	-30	5	-32	-22	6	2	1	1	6	1	1	**18**	**234**
1931	1	1	1	1	1	1	1	**7**	3	-9	-12	-15	-26	-49	-2	6	4	3	3	1	1	5	**23**	**161**
1932	4	2	1	1	1	1	1	**11**	-8	-8	-19	-19	-18	-31	-14	4	4	2	2	2	1	3	**18**	**198**
1933	2	1	1	1	1	1	1	**8**	8	-3	-14	-28	-36	-44	-1	6	5	3	1	1	1	5	**22**	**176**
1934	1	1	1	1	1	1	1	**7**	0	-14	-25	-21	-22	-38	-13	6	3	1	1	1	1	3	**16**	**112**
1935	3	4	1	1	1	1	1	**12**	28	6	-27	-42	-31	-55	-23	6	6	1	1	1	1	1	**17**	**204**
1936	6	5	1	1	1	1	1	**16**	19	-2	-18	-37	-19	-36	-15	6	5	2	1	2	1	3	**20**	**320**
1937	6	6	4	1	1	1	1	**20**	0	0	-5	-31	-39	-37	-17	6	6	5	1	1	1	2	**22**	**440**
1938	6	6	6	5	1	1	1	**26**	0	0	0	-2	-33	-32	34	6	6	6	5	1	1	6	**31**	**806**
1939	6	2	1	1	1	1	1	**13**	0	-18	-31	-32	9	-33	-20	6	2	1	1	6	1	2	**19**	**247**
1940	6	5	1	1	1	1	1	**16**	8	-4	-28	-50	-19	-62	-16	6	5	1	1	2	1	2	**18**	**288**
1941	6	5	5	2	1	1	1	**21**	0	-1	0	-15	-49	-38	33	6	5	6	3	1	1	6	**28**	**588**
1942	6	5	4	2	1	1	1	**20**	0	-1	-5	-10	-45	-39	21	6	5	5	4	1	1	6	**28**	**560**
1943	6	6	6	1	1	1	1	**22**	0	0	0	-28	-43	-41	3	6	6	6	1	1	1	6	**27**	**594**
1944	6	2	1	1	1	1	1	**13**	0	-19	-32	-36	5	-24	-19	6	2	1	1	6	1	2	**19**	**247**
1945	6	3	1	1	1	1	1	**14**	0	-12	-29	-39	-3	-26	-16	6	3	1	1	5	1	2	**19**	**266**
1946	6	2	1	1	1	1	1	**13**	0	-17	-32	-50	-8	-10	-17	6	2	1	1	4	4	2	**20**	**260**
1947	6	2	1	1	1	1	1	**13**	0	-18	-38	-40	1	-15	-29	6	2	1	1	6	3	1	**20**	**260**
1948	1	1	1	1	1	1	1	**7**	23	3	-27	-43	-17	-50	-10	6	6	1	1	2	1	4	**21**	**147**
1949	6	2	1	1	1	1	1	**13**	27	-16	-27	-45	-22	-51	-19	6	2	1	1	1	1	2	**14**	**182**
1950	6	3	1	1	1	1	1	**14**	9	-14	-29	-40	-4	-26	-17	6	3	1	1	5	1	2	**19**	**266**
1951	6	2	1	1	1	1	1	**13**	0	-15	-22	-46	-8	-19	-9	6	3	1	1	4	2	4	**21**	**273**
1952	6	6	6	5	1	1	1	**26**	0	0	0	-2	-25	-19	20	6	6	6	5	1	2	6	**32**	**832**
1953	6	2	1	1	1	1	1	**13**	0	-17	-16	-27	-11	-37	9	6	2	2	1	3	1	6	**21**	**273**
1954	6	5	1	1	1	1	1	**16**	0	-3	-22	-55	-12	-21	-15	6	5	1	1	3	1	3	**20**	**320**
1955	6	2	1	1	1	1	1	**13**	0	-19	-28	-30	0	-33	-16	6	2	1	1	6	1	2	**19**	**247**
1956	6	4	4	1	1	1	1	**18**	0	-6	0	-20	-38	-34	21	6	4	6	2	1	1	6	**26**	**468**
1957	6	3	1	1	1	1	1	**14**	0	-12	-26	-38	-3	-31	-16	6	3	1	1	5	1	2	**19**	**266**
1958	6	6	6	5	1	1	1	**26**	0	0	0	-2	-36	-12	18	6	6	6	5	1	3	6	**33**	**858**
1959	6	1	1	1	1	1	1	**12**	0	-22	-34	-39	4	-14	-7	6	1	1	1	6	3	4	**22**	**264**
1960	6	1	1	1	1	1	1	**12**	0	-20	-35	-36	-7	-56	-28	6	2	1	1	4	1	1	**16**	**192**
1961	6	1	1	1	1	1	1	**12**	0	-22	-36	-32	9	-28	-26	6	1	1	1	6	1	1	**17**	**204**
1962	6	1	1	1	1	1	1	**12**	0	-24	-38	-59	-16	-79	6	6	1	1	1	2	1	6	**18**	**216**
1963	6	5	3	1	1	1	1	**18**	0	-2	-8	-32	-26	-45	6	6	5	4	1	1	1	6	**24**	**432**
1964	6	1	1	1	1	1	1	**12**	0	-26	-37	-45	0	-11	-20	6	1	1	1	6	3	2	**20**	**240**
1965	6	6	3	1	1	1	1	**19**	0	0	-14	-33	-23	-42	3	6	6	3	1	1	1	6	**24**	**456**
1966	6	2	1	1	1	1	1	**13**	0	-18	-35	-56	-7	-11	-4	6	2	1	1	4	3	5	**22**	**286**
1967	6	6	6	5	5	1	5	**34**	0	0	0	-2	-1	-19	18	6	6	6	5	5	2	6	**36**	**1224**
1968	6	2	1	1	1	1	1	**13**	0	-15	-34	-39	4	-23	-17	6	3	1	1	6	1	2	**20**	**260**
1969	6	6	6	5	1	1	1	**26**	0	0	0	-2	-20	-28	21	6	6	6	5	2	1	6	**32**	**832**
1970	6	3	1	1	1	1	1	**14**	0	-10	-22	-42	-1	-35	-5	6	4	1	1	5	1	5	**23**	**322**
1971	6	2	1	1	1	1	1	**13**	0	-15	-18	-36	-12	-30	6	6	3	2	1	3	1	6	**22**	**286**
1972	6	2	1	1	1	1	1	**13**	0	-19	-35	-44	1	-10	-27	6	2	1	1	6	4	1	**21**	**273**
1973	6	3	1	1	1	1	1	**14**	0	-10	-25	-37	-10	-29	-6	6	4	1	1	4	1	4	**21**	**294**
1974	6	5	3	1	1	1	1	**18**	0	-1	-9	-28	-29	-17	27	6	5	4	1	1	2	6	**25**	**450**
1975	6	5	3	1	1	1	1	**18**	0	-3	-11	-24	-33	-23	20	6	5	3	1	1	1	6	**23**	**414**
1976	6	1	1	1	1	1	1	**12**	0	-20	-29	-24	9	-33	-20	6	2	1	1	6	1	2	**19**	**228**
1977	1	1	1	1	1	1	1	**7**	0	5	-11	-16	-21	-4	17	6	6	3	2	1	5	6	**29**	**203**
1978	6	6	6	2	1	1	1	**23**	0	0	0	-19	-53	-41	16	6	6	6	2	1	1	6	**28**	**644**
1979	6	4	1	1	1	1	1	**15**	0	-8	-21	-34	-10	-38	-15	6	4	1	1	4	1	3	**20**	**300**
1980	6	6	6	2	1	1	1	**23**	0	0	0	-17	-34	-40	17	6	6	6	2	1	1	6	**28**	**644**
1981	6	3	1	1	1	1	1	**14**	0	-14	-34	-39	4	-24	-22	6	3	1	1	6	1	1	**19**	**266**
1982	6	6	6	3	1	1	1	**24**	0	0	0	-10	-40	-31	30	6	6	6	4	1	1	6	**30**	**720**
1983	6	6	6	5	5	5	6	**39**	0	0	0	-2	-1	0	3	6	6	6	5	5	6	6	**40**	**1560**
1984	6	4	1	1	1	1	1	**15**	0	-9	-22	-37	-5	-39	-4	6	4	1	1	5	1	5	**23**	**345**
1985	6	1	1	1	1	1	1	**12**	0	-24	-36	-49	-2	-13	-13	6	1	1	1	5	3	3	**20**	**240**
1986	6	6	6	3	1	1	1	**24**	0	0	0	-12	-42	-36	7	6	6	6	3	1	1	6	**29**	**696**
1987	6	1	1	1	1	1	1	**12**	0	-22	-37	-30	8	-25	-24	6	1	1	1	6	1	1	**17**	**204**
1988	3	1	1	1	1	1	1	**9**	0	-12	-15	-17	-22	-39	-4	6	3	3	2	1	1	5	**21**	**189**
1989	5	3	1	1	1	1	1	**13**	48	-10	-31	-35	-6	-67	9	6	4	1	1	4	1	6	**23**	**299**
1990	2	1	1	1	1	1	1	**8**	4	-17	-29	-19	-13	-44	-20	6	2	1	2	3	1	2	**17**	**136**
1991	1	1	1	1	1	1	1	**7**	68	0	-10	-17	-17	-15	1	6	6	4	2	2	3	6	**29**	**203**
1992	6	3	1	1	1	1	1	**14**	15	-10	-21	-17	-17	-45	-11	6	4	1	2	2	1	3	**19**	**266**
1993	6	5	5	1	1	1	1	**20**	0	-1	-3	-16	-51	-43	-2	6	5	5	2	1	1	5	**25**	**500**
1994	6	1	1	1	1	1	1	**12**	0	-23	-34	-31	10	-27	-16	6	1	1	1	6	1	2	**18**	**216**
						73 - year Average:		**16**											**73 - year Average:**				**22**	**373**
																					1929 - '34 Average:			**199**

Sum Total

STUDY: **526a**

CP # 4, SHASTA LAKE, EOP SURFACE ELEVATION

73-year maximum March - September Reservoir Elevation = 1067'

Elevation in feet

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	989	992	999	1003	1019	1038	1060	1067	1062	1046	1026	1019
1923	1017	1016	1018	1022	1023	1025	1037	1033	1019	998	981	980
1924	980	979	978	978	985	985	973	960	942	914	894	876
1925	880	896	906	915	991	1007	1039	1050	1041	1016	999	998
1926	996	995	991	988	1016	1023	1037	1031	1010	987	967	960
1927	959	987	1010	1035	1026	1052	1067	1067	1058	1038	1017	1012
1928	1009	1017	1020	1028	1044	1046	1066	1062	1048	1022	997	991
1929	988	988	989	990	997	1004	1005	999	990	974	956	948
1930	946	945	976	987	1004	1026	1037	1038	1019	998	985	983
1931	980	979	976	979	982	989	981	971	960	938	923	910
1932	905	904	920	931	941	965	968	977	969	955	941	934
1933	932	931	932	934	936	970	975	980	977	958	944	937
1934	936	935	944	962	981	993	994	989	977	944	918	903
1935	895	908	912	935	955	979	1024	1032	1025	1002	987	983
1936	981	979	978	1006	1032	1045	1055	1053	1045	1022	1001	996
1937	991	987	983	977	978	1006	1035	1043	1040	1017	996	990
1938	987	1009	1020	1035	1030	1024	1049	1067	1067	1058	1045	1036
1939	1023	1017	1020	1022	1024	1039	1031	1024	999	975	948	944
1940	940	934	943	992	1017	1025	1059	1064	1055	1026	1004	1003
1941	1001	1001	1019	1020	1024	1045	1064	1067	1067	1058	1044	1036
1942	1023	1017	1020	1023	1028	1042	1067	1067	1067	1058	1043	1036
1943	1023	1017	1022	1030	1042	1051	1067	1067	1059	1045	1029	1023
1944	1022	1017	1015	1014	1023	1033	1038	1038	1019	996	972	964
1945	967	979	994	1001	1036	1049	1062	1067	1062	1038	1015	1011
1946	1010	1017	1018	1033	1039	1051	1063	1065	1055	1037	1012	1007
1947	1001	1002	1002	999	1006	1025	1033	1022	1008	986	954	948
1948	955	959	962	992	993	1005	1047	1067	1066	1045	1025	1025
1949	1022	1016	1015	1011	1015	1050	1063	1063	1049	1018	997	995
1950	989	988	986	995	1011	1029	1045	1044	1031	1010	992	990
1951	1003	1017	1020	1033	1040	1057	1064	1067	1051	1029	1007	1005
1952	1003	1009	1019	1032	1038	1048	1058	1067	1067	1058	1046	1036
1953	1023	1017	1021	1022	1033	1051	1065	1067	1067	1051	1034	1033
1954	1023	1017	1021	1030	1035	1051	1067	1064	1059	1042	1015	1014
1955	1011	1015	1022	1024	1027	1031	1044	1052	1034	1005	986	986
1956	978	983	1017	1017	1019	1048	1067	1067	1067	1057	1043	1036
1957	1023	1017	1016	1017	1035	1052	1058	1067	1062	1045	1025	1028
1958	1023	1017	1021	1029	1067	1024	1053	1067	1067	1058	1047	1036
1959	1023	1017	1017	1034	1039	1051	1056	1056	1037	1013	986	988
1960	977	978	976	986	1016	1046	1053	1061	1043	1016	995	994
1961	988	991	1009	1016	1043	1057	1062	1067	1048	1024	993	991
1962	983	988	1001	996	1035	1054	1067	1067	1055	1032	1013	1011
1963	1023	1017	1021	1025	1045	1055	1052	1067	1063	1048	1031	1029
1964	1023	1017	1018	1033	1037	1041	1036	1031	1015	993	972	967
1965	966	977	1017	1022	1041	1053	1065	1066	1057	1042	1030	1028
1966	1023	1017	1021	1037	1049	1055	1064	1062	1047	1026	1000	994
1967	986	1002	1021	1030	1044	1048	1064	1067	1067	1058	1047	1036
1968	1023	1017	1019	1025	1034	1054	1057	1059	1042	1022	1005	1006
1969	1001	1003	1015	1022	1027	1048	1063	1067	1067	1058	1047	1036
1970	1023	1017	1020	1017	1025	1052	1055	1055	1043	1022	1006	1004
1971	1003	1017	1020	1028	1042	1043	1064	1067	1067	1057	1038	1036
1972	1023	1017	1022	1033	1045	1056	1067	1067	1050	1030	1007	1009
1973	1010	1017	1021	1030	1034	1053	1065	1067	1059	1038	1017	1015
1974	1018	1017	1018	1017	1036	1025	1058	1067	1067	1057	1043	1036
1975	1023	1017	1021	1024	1045	1039	1061	1067	1067	1055	1043	1036
1976	1023	1017	1018	1017	1012	1020	1027	1024	998	981	977	978
1977	981	982	982	983	973	972	954	949	927	909	893	890
1978	878	877	920	1020	1031	1047	1067	1067	1064	1052	1038	1036
1979	1023	1017	1014	1016	1027	1044	1052	1061	1047	1024	1010	1010
1980	1010	1013	1016	1029	1019	1046	1059	1064	1056	1045	1035	1035
1981	1023	1017	1020	1029	1042	1056	1064	1062	1041	1017	991	991
1982	989	1017	1018	1033	1029	1046	1051	1067	1067	1058	1047	1036
1983	1023	1017	1020	1022	1017	1045	1050	1067	1067	1058	1047	1036
1984	1023	1017	1018	1034	1047	1056	1065	1067	1059	1040	1030	1031
1985	1023	1017	1022	1023	1027	1034	1042	1035	1011	991	970	963
1986	965	969	982	1008	1017	1029	1048	1050	1037	1021	1006	1009
1987	1009	1008	1007	1008	1019	1045	1046	1040	1007	982	946	943
1988	939	940	972	995	998	1001	1007	1006	988	959	944	942
1989	942	955	962	968	975	1038	1058	1054	1039	1015	991	992
1990	996	994	990	998	999	1008	1003	1009	998	976	960	956
1991	951	949	949	950	943	969	980	980	970	957	943	935
1992	934	933	934	938	976	999	1010	1003	986	967	954	948
1993	945	942	957	992	1024	1031	1059	1067	1067	1054	1042	1043
1994	1042	1017	1019	1020	1026	1030	1030	1029	1001	980	946	941

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**
1922	29	7	0	5	21	41	48	1	4	6	4	1	1	1	**18**
1923	42	30	34	48	69	86	87	1	1	1	1	1	1	1	**7**
1924	82	94	107	125	153	173	191	1	1	1	1	1	1	1	**7**
1925	60	28	17	26	51	68	69	1	1	2	1	1	1	1	**8**
1926	44	30	36	57	80	100	107	1	1	1	1	1	1	1	**7**
1927	15	0	0	9	29	50	55	2	6	6	4	1	1	1	**21**
1928	21	1	5	19	45	70	76	1	5	4	2	1	1	1	**15**
1929	63	62	68	77	93	111	119	1	1	1	1	1	1	1	**7**
1930	41	30	29	48	69	82	84	1	1	1	1	1	1	1	**7**
1931	78	86	96	107	129	144	157	1	1	1	1	1	1	1	**7**
1932	102	99	90	98	112	126	133	1	1	1	1	1	1	1	**7**
1933	97	92	87	90	109	123	130	1	1	1	1	1	1	1	**7**
1934	74	73	78	90	123	149	164	1	1	1	1	1	1	1	**7**
1935	88	43	35	42	65	80	84	1	1	1	1	1	1	1	**7**
1936	22	12	14	22	45	66	71	1	3	3	1	1	1	1	**11**
1937	61	32	24	27	50	71	77	1	1	1	1	1	1	1	**7**
1938	43	18	0	0	9	22	31	1	2	6	6	4	1	1	**21**
1939	28	36	43	68	92	119	123	1	1	1	1	1	1	1	**7**
1940	42	8	3	12	41	63	64	1	4	5	3	1	1	1	**16**
1941	22	3	0	0	9	23	31	1	5	6	6	4	1	1	**24**
1942	25	0	0	0	9	24	31	1	6	6	6	4	1	1	**25**
1943	16	0	0	8	22	38	44	2	6	6	4	1	1	1	**21**
1944	34	29	29	48	71	95	103	1	1	1	1	1	1	1	**7**
1945	18	5	0	5	29	52	56	2	4	6	4	1	1	1	**19**
1946	16	4	2	12	30	55	60	2	5	5	3	1	1	1	**18**
1947	42	34	45	59	81	113	119	1	1	1	1	1	1	1	**7**
1948	62	20	0	1	22	42	42	1	1	6	5	1	1	1	**16**
1949	17	4	4	18	49	70	72	2	5	5	2	1	1	1	**17**
1950	38	22	23	36	57	75	77	1	1	1	1	1	1	1	**7**
1951	10	3	0	16	38	60	62	3	5	6	2	1	1	1	**19**
1952	19	9	0	0	9	21	31	2	4	6	6	4	1	1	**24**
1953	16	2	0	0	16	33	34	2	5	6	6	2	1	1	**23**
1954	16	0	3	8	25	52	53	2	6	5	4	1	1	1	**20**
1955	36	23	15	33	62	81	81	1	1	2	1	1	1	1	**8**
1956	19	0	0	0	10	24	31	2	6	6	6	3	1	1	**25**
1957	15	9	0	5	22	42	39	2	4	6	4	1	1	1	**19**
1958	43	14	0	0	9	20	31	1	3	6	6	4	1	1	**22**
1959	16	11	11	30	54	81	79	2	3	3	1	1	1	1	**12**
1960	21	14	6	24	51	72	73	1	3	4	1	1	1	1	**12**
1961	10	5	0	19	43	74	76	3	4	6	2	1	1	1	**18**
1962	13	0	0	12	35	54	56	3	6	6	3	1	1	1	**21**
1963	12	15	0	4	19	36	38	3	2	6	5	2	1	1	**20**
1964	26	31	36	52	74	95	100	1	1	1	1	1	1	1	**7**
1965	14	2	1	10	25	37	39	3	5	5	3	1	1	1	**19**
1966	12	3	5	20	41	67	73	3	5	4	1	1	1	1	**16**
1967	19	3	0	0	9	20	31	2	5	6	6	4	1	1	**25**
1968	13	10	8	25	45	62	61	3	3	4	1	1	1	1	**14**
1969	19	4	0	0	9	20	31	2	5	6	6	4	1	1	**25**
1970	15	12	12	24	45	61	63	2	3	3	1	1	1	1	**12**
1971	24	3	0	0	10	29	31	1	5	6	6	3	1	1	**23**
1972	11	0	0	17	37	60	58	3	6	6	2	1	1	1	**20**
1973	14	2	0	8	29	50	52	3	5	6	4	1	1	1	**21**
1974	42	9	0	0	10	24	31	1	4	6	6	3	1	1	**22**
1975	28	6	0	0	12	24	31	1	4	6	6	3	1	1	**22**
1976	47	40	43	69	86	90	89	1	1	1	1	1	1	1	**7**
1977	95	113	118	140	158	174	177	1	1	1	1	1	1	1	**7**
1978	20	0	0	3	15	29	31	1	6	6	5	2	1	1	**22**
1979	23	15	6	20	43	57	57	1	2	4	1	1	1	1	**11**
1980	21	8	3	11	22	32	32	1	4	5	3	1	1	1	**16**
1981	11	3	5	26	50	76	76	3	5	4	1	1	1	1	**16**
1982	21	16	0	0	9	20	31	1	2	6	6	4	1	1	**21**
1983	22	17	0	0	9	20	31	1	2	6	6	4	1	1	**21**
1984	11	2	0	8	27	37	36	3	5	6	4	1	1	1	**21**
1985	33	25	32	56	76	97	104	1	1	1	1	1	1	1	**7**
1986	38	19	17	30	46	61	58	1	2	2	1	1	1	1	**9**
1987	22	21	27	60	85	121	124	1	1	1	1	1	1	1	**7**
1988	66	60	61	79	108	123	125	1	1	1	1	1	1	1	**7**
1989	29	9	13	28	52	76	75	1	4	3	1	1	1	1	**12**
1990	59	64	58	69	91	107	111	1	1	1	1	1	1	1	**7**
1991	98	87	87	97	110	124	132	1	1	1	1	1	1	1	**7**
1992	68	57	64	81	100	113	119	1	1	1	1	1	1	1	**7**
1993	36	8	0	0	13	25	24	1	4	6	6	3	1	1	**22**
1994	37	37	38	66	87	121	126	1	1	1	1	1	1	1	**7**
												73 - year Average:			**14**

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	19	22	7	-5	-16	-20	-7	6	6	6	5	2	2	4	**31**	**558**
1923	2	12	-4	-14	-21	-17	-1	6	6	5	3	1	2	5	**28**	**196**
1924	0	-12	-13	-18	-28	-20	-18	6	3	3	2	1	2	2	**19**	**133**
1925	16	32	11	-9	-25	-17	-1	6	6	6	4	1	2	5	**30**	**240**
1926	7	14	-6	-21	-23	-20	-7	6	6	4	1	1	2	4	**24**	**168**
1927	26	15	0	-9	-20	-21	-5	6	6	6	4	2	1	5	**30**	**630**
1928	2	20	-4	-14	-26	-25	-6	6	6	5	3	1	1	4	**26**	**390**
1929	7	1	-6	-9	-16	-18	-8	6	6	4	4	2	2	4	**28**	**196**
1930	22	11	1	-19	-21	-13	-2	6	6	6	2	1	3	5	**29**	**203**
1931	7	-8	-10	-11	-22	-15	-13	6	4	4	3	1	3	3	**24**	**168**
1932	24	3	9	-8	-14	-14	-7	6	6	6	4	3	3	4	**32**	**224**
1933	34	5	5	-3	-19	-14	-7	6	6	6	5	2	3	4	**32**	**224**
1934	12	1	-5	-12	-33	-26	-15	6	6	5	3	1	1	3	**25**	**175**
1935	24	45	8	-7	-23	-15	-4	6	6	6	4	1	3	5	**31**	**217**
1936	13	10	-2	-8	-23	-21	-5	6	6	5	4	1	1	5	**28**	**308**
1937	28	29	8	-3	-23	-21	-6	6	6	6	5	1	1	4	**29**	**203**
1938	-6	25	18	0	-9	-13	-9	4	6	6	6	4	3	4	**33**	**693**
1939	15	-8	-7	-25	-24	-27	-4	6	4	4	1	1	1	5	**22**	**154**
1940	8	34	5	-9	-29	-22	-1	6	6	6	4	1	1	5	**29**	**464**
1941	21	19	3	0	-9	-14	-8	6	6	6	6	4	3	4	**35**	**840**
1942	14	25	0	0	-9	-15	-7	6	6	6	6	4	3	4	**35**	**875**
1943	9	16	0	-8	-14	-16	-6	6	6	6	4	3	2	4	**31**	**651**
1944	10	5	0	-19	-23	-24	-8	6	6	6	2	1	1	4	**26**	**182**
1945	13	13	5	-5	-24	-23	-4	6	6	6	5	1	1	5	**30**	**570**
1946	12	12	2	-10	-18	-25	-5	6	6	6	4	2	1	5	**30**	**540**
1947	19	8	-11	-14	-22	-32	-6	6	6	3	3	1	1	4	**24**	**168**
1948	12	42	20	-1	-21	-20	0	6	6	6	5	1	2	6	**32**	**512**
1949	35	13	0	-14	-31	-21	-2	6	6	6	3	1	1	5	**28**	**476**
1950	18	16	-1	-13	-21	-18	-2	6	6	5	3	1	2	5	**28**	**196**
1951	17	7	3	-16	-22	-22	-2	6	6	6	2	1	1	5	**27**	**513**
1952	10	10	9	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**840**
1953	18	14	2	0	-16	-17	-1	6	6	6	6	2	2	5	**33**	**759**
1954	16	16	-3	-5	-17	-27	-1	6	6	5	5	2	1	5	**30**	**600**
1955	4	13	8	-18	-29	-19	0	6	6	6	2	1	2	6	**29**	**232**
1956	29	19	0	0	-10	-14	-7	6	6	6	6	4	3	4	**35**	**875**
1957	17	6	9	-5	-17	-20	3	6	6	6	5	2	2	6	**33**	**627**
1958	-43	29	14	0	-9	-11	-11	1	6	6	6	4	3	3	**29**	**638**
1959	12	5	0	-19	-24	-27	2	6	6	6	2	1	1	6	**28**	**336**
1960	30	7	8	-18	-27	-21	-1	6	6	6	2	1	1	5	**27**	**324**
1961	14	5	5	-19	-24	-31	-2	6	6	6	2	1	1	5	**27**	**486**
1962	19	13	0	-12	-23	-19	-2	6	6	6	3	1	2	5	**29**	**609**
1963	10	-3	15	-4	-15	-17	-2	6	5	6	5	3	2	5	**32**	**640**
1964	4	-5	-5	-16	-22	-21	-5	6	5	5	2	1	1	5	**25**	**175**
1965	12	12	1	-9	-15	-12	-2	6	6	6	4	3	3	5	**33**	**627**
1966	6	9	-2	-15	-21	-26	-6	6	6	5	3	1	1	4	**26**	**416**
1967	4	16	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1968	20	3	2	-17	-20	-17	1	6	6	6	2	2	2	6	**30**	**420**
1969	21	15	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1970	27	3	0	-12	-21	-16	-2	6	6	6	3	1	2	5	**29**	**348**
1971	1	21	3	0	-10	-19	-2	6	6	6	6	4	2	5	**35**	**805**
1972	11	11	0	-17	-20	-23	2	6	6	6	2	2	1	6	**29**	**580**
1973	19	12	2	-8	-21	-21	-2	6	6	6	4	1	1	5	**29**	**609**
1974	-11	33	9	0	-10	-14	-7	3	6	6	6	4	3	4	**32**	**704**
1975	-6	22	6	0	-12	-12	-7	4	6	6	6	3	3	4	**32**	**704**
1976	8	7	-3	-26	-17	-4	1	6	6	5	1	2	5	6	**31**	**217**
1977	-1	-18	-5	-22	-18	-16	-3	5	2	5	1	2	2	5	**22**	**154**
1978	16	20	0	-3	-12	-14	-2	6	6	6	5	3	3	5	**34**	**748**
1979	17	8	9	-14	-23	-14	0	6	6	6	3	1	3	6	**31**	**341**
1980	27	13	5	-8	-11	-10	0	6	6	6	4	3	4	6	**35**	**560**
1981	14	8	-2	-21	-24	-26	0	6	6	5	1	1	1	6	**26**	**416**
1982	17	5	16	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1983	28	5	17	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1984	9	9	2	-8	-19	-10	1	6	6	6	4	2	4	6	**34**	**714**
1985	7	8	-7	-24	-20	-21	-7	6	6	4	1	2	1	4	**24**	**168**
1986	12	19	2	-13	-16	-15	3	6	6	6	3	2	3	6	**32**	**288**
1987	26	1	-6	-33	-25	-36	-3	6	6	4	1	1	1	5	**24**	**168**
1988	3	6	-1	-18	-29	-15	-2	6	6	5	2	1	3	5	**28**	**196**
1989	63	20	-4	-15	-24	-24	1	6	6	5	3	1	1	6	**28**	**336**
1990	9	-5	6	-11	-22	-16	-4	6	5	6	3	1	2	5	**28**	**196**
1991	26	11	0	-10	-13	-14	-8	6	6	6	4	3	3	4	**32**	**224**
1992	23	11	-7	-17	-19	-13	-6	6	6	4	2	2	3	4	**27**	**189**
1993	7	28	8	0	-13	-12	1	6	6	6	6	3	3	6	**36**	**792**
1994	4	0	-1	-28	-21	-34	-5	6	6	5	1	1	1	5	**25**	**175**
											73 - year Average:				**30**	**444**
													1929 - '34 Average:			**198**

STUDY: **526a**
CP # 6, LAKE OROVILLE, EOP SURFACE ELEVATION

73-year maximum March - September Reservoir Elevation = 900'
Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	834	837	839	848	850	858	893	900	900	883	879	880	42	7	0	0	17	21	20	1	4	6	6	2	1	1	**21**	8	35	7	0	-17	-4	1	6	6	6	6	2	5	6	**37**	**777**
1923	874	874	858	862	859	871	894	900	881	830	815	817	29	6	0	19	70	85	83	1	4	6	2	1	1	1	**16**	12	23	6	-19	-51	-15	2	6	6	6	2	1	3	6	**30**	**480**
1924	810	799	770	775	793	782	769	755	731	710	701	695	118	131	145	169	190	199	205	1	1	1	1	1	1	1	**7**	-11	-13	-14	-24	-21	-9	-6	3	3	3	1	1	4	4	**19**	**133**
1925	694	698	705	722	789	817	836	843	825	794	783	781	83	64	57	75	106	117	119	1	1	1	1	1	1	1	**7**	28	19	7	-18	-31	-11	-2	6	6	6	2	1	3	5	**29**	**203**
1926	777	774	776	790	833	853	887	874	853	815	801	782	47	13	26	47	85	99	118	1	3	1	1	1	1	1	**9**	20	34	-13	-21	-38	-14	-19	6	6	3	1	1	3	2	**22**	**198**
1927	777	809	809	833	849	863	890	900	900	865	854	852	37	10	0	0	35	46	48	1	3	6	6	1	1	1	**19**	14	27	10	0	-35	-11	-2	6	6	6	6	1	3	5	**33**	**627**
1928	849	859	860	868	871	849	878	863	842	768	743	736	51	22	37	58	132	157	164	1	1	1	1	1	1	1	**7**	-22	29	-15	-21	-74	-25	-7	1	6	3	1	1	1	4	**17**	**119**
1929	723	718	716	722	736	752	757	759	753	736	726	720	148	143	141	147	164	174	180	1	1	1	1	1	1	1	**7**	16	5	2	-6	-17	-10	-6	6	6	6	4	2	4	4	**32**	**224**
1930	712	709	769	797	823	854	876	880	862	812	793	790	46	24	20	38	88	107	110	1	1	1	1	1	1	1	**7**	31	22	4	-18	-50	-19	-3	6	6	6	2	1	2	5	**28**	**196**
1931	780	772	764	777	790	804	790	775	752	730	719	713	96	110	125	148	170	181	187	1	1	1	1	1	1	1	**7**	14	-14	-15	-23	-22	-11	-6	6	3	3	1	1	3	4	**21**	**147**
1932	707	697	703	727	749	784	787	812	782	744	728	722	116	113	88	118	156	172	178	1	1	1	1	1	1	1	**7**	35	3	25	-30	-38	-16	-6	6	6	6	1	1	2	4	**26**	**182**
1933	713	701	700	712	721	726	735	752	746	730	720	713	174	165	148	154	170	180	187	1	1	1	1	1	1	1	**7**	5	9	17	-6	-16	-10	-7	6	6	6	4	2	4	4	**32**	**224**
1934	709	700	703	730	752	775	768	755	728	702	693	683	125	132	145	172	198	207	217	1	1	1	1	1	1	1	**7**	23	-7	-13	-27	-26	-9	-10	6	4	3	1	1	4	4	**23**	**161**
1935	668	672	679	707	730	762	850	860	845	822	811	796	138	50	40	55	78	89	104	1	1	1	1	1	1	1	**7**	32	88	10	-15	-23	-11	-15	6	6	6	3	1	3	3	**28**	**196**
1936	790	780	777	826	849	860	886	897	886	843	826	822	40	14	3	14	57	74	78	1	3	5	3	1	1	1	**15**	11	26	11	-11	-43	-17	-4	6	6	6	3	1	2	5	**29**	**435**
1937	814	803	799	802	819	843	868	881	858	833	817	811	57	32	19	42	67	83	89	1	1	2	1	1	1	1	**8**	24	25	13	-23	-25	-16	-6	6	6	6	1	1	2	4	**26**	**208**
1938	807	822	854	858	849	849	882	900	900	899	896	887	51	18	0	0	1	4	13	1	2	6	6	5	5	3	**28**	0	33	18	0	-1	-3	-9	6	6	6	6	5	5	4	**38**	**1064**
1939	874	864	854	845	837	833	822	814	779	687	658	652	67	78	86	121	213	242	248	1	1	1	1	1	1	1	**7**	-4	-11	-8	-35	-92	-29	-6	5	3	4	1	1	1	4	**19**	**133**
1940	642	631	634	706	814	849	879	883	867	829	821	812	51	21	17	33	71	79	88	1	1	2	1	1	1	1	**8**	35	30	4	-16	-38	-8	-9	6	6	6	2	1	4	4	**29**	**232**
1941	813	810	848	849	849	858	886	900	900	890	886	887	42	14	0	0	10	14	13	1	3	6	6	3	3	3	**25**	9	28	14	0	-10	-4	1	6	6	6	6	4	5	6	**39**	**975**
1942	874	874	849	849	850	867	882	900	900	887	884	884	33	18	0	0	13	16	16	1	2	6	6	3	2	2	**22**	17	15	18	0	-13	-3	0	6	6	6	6	3	5	6	**38**	**836**
1943	874	869	861	849	856	859	887	897	896	864	854	855	41	13	3	4	36	46	45	1	3	5	5	1	1	1	**17**	3	28	10	-1	-32	-10	1	6	6	6	5	1	4	6	**34**	**578**
1944	856	858	858	864	857	868	878	895	874	819	797	791	32	22	5	26	81	103	109	1	1	4	1	1	1	1	**10**	11	10	17	-21	-55	-22	-6	6	6	6	1	1	1	4	**25**	**250**
1945	787	793	810	823	862	865	880	896	877	828	812	807	35	20	4	23	72	88	93	1	1	5	1	1	1	1	**11**	3	15	16	-19	-49	-16	-5	6	6	6	2	1	2	5	**28**	**308**
1946	807	815	849	864	868	868	887	892	869	814	788	785	32	13	8	31	86	112	115	1	3	4	1	1	1	1	**12**	0	19	5	-23	-55	-26	-3	6	6	6	1	1	1	5	**26**	**312**
1947	777	783	791	798	823	846	855	851	833	755	708	701	54	45	49	67	145	192	199	1	1	1	1	1	1	1	**7**	23	9	-4	-18	-78	-47	-7	6	6	5	2	1	1	4	**25**	**175**
1948	704	704	699	736	741	762	829	858	864	832	813	787	138	71	42	36	68	87	113	1	1	1	1	1	1	1	**7**	21	67	29	6	-32	-19	-26	6	6	6	6	1	2	1	**28**	**196**
1949	773	771	771	776	784	813	835	840	820	790	780	774	87	65	60	80	110	120	126	1	1	1	1	1	1	1	**7**	29	22	5	-20	-30	-10	-6	6	6	6	2	1	4	4	**29**	**203**
1950	764	760	759	787	829	859	889	900	886	833	811	810	41	11	0	14	67	89	90	1	3	6	3	1	1	1	**16**	30	30	11	-14	-53	-22	-1	6	6	6	3	1	1	5	**28**	**448**
1951	816	849	854	853	858	870	886	900	889	833	813	814	30	14	0	11	67	87	86	1	3	6	3	1	1	1	**16**	12	16	14	-11	-56	-20	1	6	6	6	3	1	2	6	**30**	**480**
1952	819	823	849	849	852	862	894	900	900	900	899	887	38	6	0	0	0	1	13	1	4	6	6	6	5	3	**31**	10	32	6	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1178**
1953	874	874	858	850	867	867	883	900	900	871	867	868	33	17	0	0	29	33	32	1	2	6	6	1	1	1	**18**	0	16	17	0	-29	-4	1	6	6	6	6	1	5	6	**36**	**648**
1954	870	871	874	858	857	859	883	862	847	777	759	759	41	17	38	53	123	141	141	1	2	1	1	1	1	1	**8**	2	24	-21	-15	-70	-18	0	6	6	1	3	1	2	6	**25**	**200**
1955	761	762	771	783	792	805	814	827	800	745	725	722	95	86	73	100	155	175	178	1	1	1	1	1	1	1	**7**	13	9	13	-27	-55	-20	-3	6	6	6	1	1	2	5	**27**	**189**
1956	713	709	849	849	849	864	892	900	900	878	876	879	36	8	0	0	22	24	21	1	4	6	6	1	1	1	**20**	15	28	8	0	-22	-2	3	6	6	6	6	1	5	6	**36**	**720**
1957	869	874	874	871	853	863	863	881	866	809	795	801	37	37	19	34	91	105	99	1	1	2	1	1	1	1	**8**	10	0	18	-15	-57	-14	6	6	6	6	3	1	3	6	**31**	**248**
1958	803	807	825	845	849	849	879	900	900	898	894	887	51	21	0	0	2	6	13	1	1	6	6	5	4	3	**26**	0	30	21	0	-2	-4	-7	6	6	6	6	5	5	4	**38**	**988**
1959	874	874	874	862	852	867	871	874	853	784	755	758	33	29	26	47	116	145	142	1	1	1	1	1	1	1	**7**	15	4	3	-21	-69	-29	3	6	6	6	1	1	1	6	**27**	**189**
1960	751	739	734	749	811	852	852	858	839	791	779	770	48	48	42	61	109	121	130	1	1	1	1	1	1	1	**7**	41	0	6	-19	-48	-12	-9	6	6	6	2	1	3	4	**28**	**196**
1961	759	761	770	782	812	832	838	843	823	738	701	697	68	62	57	77	162	199	203	1	1	1	1	1	1	1	**7**	20	6	5	-20	-85	-37	-4	6	6	6	2	1	1	5	**27**	**189**
1962	680	675	684	699	765	801	840	839	824	756	744	723	99	60	61	76	144	156	177	1	1	1	1	1	1	1	**7**	36	39	-1	-15	-68	-12	-21	6	6	5	3	1	3	1	**25**	**175**
1963	797	809	837	859	867	858	876	900	893	855	849	850	42	24	0	7	45	51	50	1	1	6	4	1	1	1	**15**	-9	18	24	-7	-38	-6	1	4	6	6	4	1	4	6	**31**	**465**
1964	851	862	865	866	874	874	880	885	869	810	758	755	26	20	15	31	90	142	145	1	1	2	1	1	1	1	**8**	0	6	5	-16	-59	-52	-3	6	6	6	2	1	1	5	**27**	**216**
1965	743	744	849	849	863	870	887	880	882	847	844	846	30	13	20	18	53	56	54	1	3	1	2	1	1	1	**10**	7	17	-7	2	-35	-3	2	6	6	4	6	1	5	6	**34**	**340**
1966	850	859	860	864	870	874	887	876	856	791	755	749	26	13	24	44	109	145	151	1	3	1	1	1	1	1	**9**	4	13	-11	-20	-65	-36	-6	6	6	3	2	1	1	4	**23**	**207**
1967	734	746	785	839	860	853	879	900	900	900	896	887	47	21	0	0	0	4	13	1	1	6	6	6	5	3	**28**	-7	26	21	0	0	-4	-9	4	6	6	6	6	5	4	**37**	**1036**
1968	874	874	873	858	861	866	863	867	848	779	764	761	34	37	33	52	121	136	139	1	1	1	1	1	1	1	**7**	5	-3	4	-19	-69	-15	-3	6	5	6	2	1	3	5	**28**	**196**
1969	762	768	790	849	849	865	895	900	900	895	893	874	35	5	0	0	5	7	26	1	4	6	6	4	4	1	**26**	16	30	5	0	-5	-2	-19	6	6	6	6	5	5	2	**36**	**936**
1970	874	874	850	849	849	874	869	871	857	802	787	788	26	31	29	43	98	113	112	1	1	1	1	1	1	1	**7**	25	-5	2	-14	-55	-15	1	6	5	6	3	1	3	6	**30**	**210**
1971	791	818	846	864	874	874	893	900	900	860	856	858	26	7	0	0	40	44	42	1	4	6	6	1	1	1	**20**	0	19	7	0	-40	-4	2	6	6	6	6	1	5	6	**36**	**720**
1972	863	869	865	869	867	874	884	887	867	807	770	771	26	16	13	33	93	130	129	1	2	3	1	1	1	1	**10**	7	10	3	-20	-60	-37	1	6	6	6	2	1	1	6	**28**	**280**
1973	767	783	810	849	849	860	882	900	869	824	812	808	40	18	0	31	76	88	92	1	2	6	1	1	1	1	**13**	11	22	18	-31	-45	-12	-4	6	6	6	1	1	3	5	**28**	**364**
1974	812	849	850	854	864	849	883	900	900	890	890	886	51	17	0	0	10	10	14	1	2	6	6	3	3	3	**24**	-15	34	17	0	-10	0	-4	3	6	6	6	4	6	5	**36**	**864**
1975	874	874	874	874	855	852	881	900	900	880	879	880	48	19	0	0	20	21	20	1	2	6	6	1	1	1	**18**	-3	29	19	0	-20	-1	1	5	6	6	6	2	5	6	**36**	**648**
1976	873	874	874	874	874	874	871	862	840	772	737	736	26	29	38	60	128	163	164	1	1	1	1	1	1	1	**7**	0	-3	-9	-22	-68	-35	-1	6	5	4	1	1	1	5	**23**	**161**
1977	723	712	694	690	676	673	641	630	600	577	568	562	227	259	270	300	323	332	338	1	1	1	1	1	1	1	**7**	-3	-32	-11	-30	-23	-9	-6	5	1	3	1	1	4	4	**19**	**133**
1978	541	541	591	727	784	856	878	897	892	872	862	869	44	22	3	8	28	38	31	1	1	5	4	1	1	1	**14**	72	22	19	-5	-20	-10	7	6	6	6	5	2	4	6	**35**	**490**
1979	872	874	874	871	853	863	878	896	862	828	819	816	37	22	4	38	72	81	84	1	1	5	1	1	1	1	**11**	10	15	18	-34	-34	-9	-3	6	6	6	1	1	4	5	**29**	**319**
1980	822	825	833	850	849	865	881	893	888	873	866	865	35	19	7	12	27	34	35	1	2	4	3	1	1	1	**13**	16	16	12	-5	-15	-7	-1	6	6	6	5	3	4	5	**35**	**455**
1981	864	865	873	860	868	865	875	872	851	784	762	763	35	25	28	49	116	138	137	1	1	1	1	1	1	1	**7**	-3	10	-3	-21	-67	-22	1	5	6	5	1	1	1	6	**25**	**175**
1982	768	848	849	859	862	859	884	900	900	894	890	887	41	16	0	0	6	10	13	1	2	6	6	4	3	3	**25**	-3	25	16	0	-6	-4	-3	5	6	6	6	4	5	5	**37**	**925**
1983	873	862	858	853	849	849	877	900	900	900	899	887	51	23	0	0	0	1	13	1	1	6	6	6	5	3	**28**	0	28	23	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1064**
1984	874	860	849	869	869	871	885	894	878	837	830	832	29	15	6	22	63	70	68	1	2	4	1	1	1	1	**11**	2	14	9	-16	-41	-7	2	6	6	6	2	1	4	6	**31**	**341**
1985	836	849	859	865	874	871	886	872	849	781	726	729	29	14	28	51	119	174	171	1	3	1	1	1	1	1	**9**	-3	15	-14	-23	-68	-55	3	5	6	3	1	1	1	6	**23**	**207**
1986	720	716	723	760	851	849	871	875	871	840	831	841	51	29	25	29	60	69	59	1	1	1	1	1	1	1	**7**	-2	22	4	-4	-31	-9	10	5	6	6	5	1	4	6	**33**	**231**
1987	844	850	846	847	858	867	855	845	816	730	698	696	33	45	55	84	170	198	204	1	1	1	1	1	1	1	**7**	9	-12	-10	-29	-86	-28	-6	6	3	4	1	1	1	4	**20**	**140**
1988	683	686	725	755	761	761	760	752	731	710	698	695	139	140	148	169	190	202	205	1	1	1	1	1	1	1	**7**	0	-1	-8	-21	-21	-12	-3	6	5	4	1	1	3	5	**25**	**175**
1989	690	708	718	726	726	841	867	857	840	782	770	767	59	33	43	60	118	130	133	1	1	1	1	1	1	1	**7**	115	26	-10	-17	-58	-12	-3	6	6	4	2	1	3	5	**27**	**189**
1990	766	767	752	765	773	800	778	779	758	730	717	712	100	122	121	142	170	183	188	1	1	1	1	1	1	1	**7**	27	-22	1	-21	-28	-13	-5	6	1	6	1	1	3	5	**23**	**161**
1991	700	694	689	687	676	724	746	759	743	720	715	713	176	154	141	157	180	185	187	1	1	1	1	1	1	1	**7**	48	22	13	-16	-23	-5	-2	6	6	6	2	1	5	5	**31**	**217**
1992	708	702	704	707	739	765	780	766	737	707	695	690	135	120	134	163	193	205	210	1	1	1	1	1	1	1	**7**	26	15	-14	-29	-30	-12	-5	6	6	3	1	1	3	5	**25**	**175**
1993	679	670	689	757	809	861	894	900	900	883	876	874	39	6	0	0	17	24	26	1	4	6	6	2	1	1	**21**	52	33	6	0	-17	-7	-2	6	6	6	6	2	4	5	**35**	**735**
1994	874	874	874	871	862	874	872	867	845	780	754	749	26	28	33	55	120	146	151	1	1	1	1	1	1	1	**7**	12	-2	-5	-22	-65	-26	-5	6	5	5	1	1	1	5	**24**	**168**
																							73 - year Average:				**12**											**73 - year Average:**				**29**	**391**
																																							1929 - '34 Average:				**189**

STUDY: **526a**

CP # 8, FOLSOM LAKE, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 466'

Elevation in feet

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	414	405	410	410	424	428	442	466	466	461	444	434	38	24	0	0	5	22	32	1	1	6	6	4	1	1	20	4	14	24	0	-5	-17	-10	6	6	6	6	5	2	4	35	700
1923	425	422	424	424	423	427	449	466	450	428	401	407	39	17	0	16	38	65	59	1	2	6	2	1	1	1	14	4	22	17	-16	-22	-27	6	6	6	6	2	1	1	6	28	392
1924	401	393	386	374	370	349	355	358	334	333	331	334	117	111	108	132	133	135	132	1	1	1	1	1	1	1	7	-21	6	3	-24	-1	-2	3	1	6	6	1	5	5	6	30	210
1925	347	361	378	388	424	436	449	466	447	419	400	403	30	17	0	19	47	66	63	1	2	6	2	1	1	1	14	12	13	17	-19	-28	-19	3	6	6	6	2	1	2	6	29	406
1926	401	397	381	375	403	411	442	438	412	365	350	359	55	24	28	54	101	116	107	1	1	1	1	1	1	1	7	8	31	-4	-26	-47	-15	9	6	6	5	1	1	3	6	28	196
1927	366	403	422	424	424	437	449	466	460	445	432	430	29	17	0	6	21	34	36	1	2	6	4	1	1	1	16	13	12	17	-6	-15	-13	-2	6	6	6	4	3	3	5	33	528
1928	422	423	424	423	423	437	449	452	440	414	393	400	29	17	14	26	52	73	66	1	2	3	1	1	1	1	10	14	12	3	-12	-26	-21	7	6	6	6	3	1	1	6	29	290
1929	378	367	359	340	346	364	379	387	374	337	346	349	102	87	79	92	129	120	117	1	1	1	1	1	1	1	7	18	15	8	-13	-37	9	3	6	6	6	3	1	6	6	34	238
1930	334	334	384	405	419	436	441	439	413	380	343	341	30	25	27	53	86	123	125	1	1	1	1	1	1	1	7	17	5	-2	-26	-33	-37	-2	6	6	5	1	1	1	5	25	175
1931	335	349	361	375	383	397	393	390	334	334	336	334	69	73	76	132	132	130	132	1	1	1	1	1	1	1	7	14	-4	-3	-56	0	2	-2	6	5	5	1	6	6	5	34	238
1932	334	334	379	402	424	435	444	460	444	404	378	381	31	22	6	22	62	88	85	1	1	4	1	1	1	1	10	11	9	16	-16	-40	-26	3	6	6	6	2	1	1	6	28	280
1933	360	334	345	347	335	363	334	366	339	334	352	347	103	132	100	127	132	114	119	1	1	1	1	1	1	1	7	28	-29	32	-27	-5	18	-5	6	1	6	1	5	6	5	30	210
1934	335	335	375	402	419	425	416	413	334	318	295	310	41	50	53	132	148	171	156	1	1	1	1	1	1	1	7	6	-9	-3	-79	-16	-23	15	6	4	5	1	2	1	6	25	175
1935	326	355	373	398	415	417	449	452	451	416	384	387	49	17	14	15	50	82	79	1	2	3	2	1	1	1	11	2	32	3	-1	-35	-32	3	6	6	6	5	1	1	6	31	341
1936	396	402	406	424	424	437	449	461	454	441	428	427	29	17	5	12	25	38	39	1	2	4	3	1	1	1	13	13	12	12	-7	-13	-13	-1	6	6	6	4	3	3	5	33	429
1937	417	409	402	394	422	437	449	466	454	436	420	422	29	17	0	12	30	46	44	1	2	6	3	1	1	1	15	15	12	17	-12	-18	-16	2	6	6	6	3	2	2	6	31	465
1938	412	409	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	23	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1939	425	419	413	406	398	406	414	416	387	334	330	334	60	52	50	79	132	136	132	1	1	1	1	1	1	1	7	8	8	2	-29	-53	-4	4	6	6	6	1	1	5	6	31	217
1940	334	334	334	419	424	437	449	460	447	419	399	405	29	17	6	19	47	67	61	1	2	4	2	1	1	1	12	13	12	11	-13	-28	-20	6	6	6	6	3	1	2	6	30	360
1941	396	394	419	424	424	437	449	466	457	452	443	434	29	17	0	9	14	23	32	1	2	6	4	3	1	1	18	13	12	17	-9	-5	-9	-9	6	6	6	4	5	4	4	35	630
1942	425	420	424	424	424	430	449	466	466	463	446	434	36	17	0	0	3	20	32	1	2	6	6	5	1	1	22	6	19	17	0	-3	-17	-12	6	6	6	6	5	2	3	34	748
1943	425	424	423	422	422	434	449	458	449	444	437	434	32	17	8	17	22	29	32	1	2	4	2	1	1	1	12	12	15	9	-9	-5	-7	-3	6	6	6	4	5	4	5	36	432
1944	424	417	411	403	404	415	423	428	408	386	334	351	51	43	38	58	80	132	115	1	1	1	1	1	1	1	7	11	8	5	-20	-22	-52	17	6	6	6	2	1	1	6	28	196
1945	340	379	402	409	424	437	449	465	454	439	422	424	29	17	1	12	27	44	42	1	2	5	3	1	1	1	14	13	12	16	-11	-15	-17	2	6	6	6	3	3	2	6	32	448
1946	420	424	424	424	424	437	449	466	450	436	411	410	29	17	0	16	30	55	56	1	2	6	2	1	1	1	14	13	12	17	-16	-14	-25	-1	6	6	6	2	3	1	5	29	406
1947	399	404	406	399	405	424	434	436	405	355	334	351	42	32	30	61	111	132	115	1	1	1	1	1	1	1	7	19	10	2	-31	-50	-21	17	6	6	6	1	1	1	6	27	189
1948	365	379	379	403	393	386	426	451	450	434	420	423	80	40	15	16	32	46	43	1	1	2	2	1	1	1	9	-7	40	25	-1	-16	-14	3	4	6	6	5	2	3	6	32	288
1949	417	409	405	396	392	415	437	452	440	410	396	403	51	29	14	26	56	70	63	1	1	3	1	1	1	1	9	23	22	15	-12	-30	-14	7	6	6	6	3	1	3	6	31	279
1950	382	377	369	408	424	437	449	466	454	441	430	428	29	17	0	12	25	36	38	1	2	6	3	1	1	1	15	13	12	17	-12	-13	-11	-2	6	6	6	3	3	3	5	32	480
1951	422	393	388	388	388	426	449	466	449	432	414	417	40	17	0	17	34	52	49	1	2	6	2	1	1	1	14	38	23	17	-17	-17	-18	3	6	6	6	2	2	2	6	30	420
1952	414	416	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	23	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1953	427	421	424	424	424	429	445	456	461	454	442	434	37	21	10	5	12	24	32	1	1	3	4	3	1	1	14	5	16	11	5	-7	-12	-8	6	6	6	6	4	3	4	35	490
1954	424	422	419	420	424	437	449	451	439	418	395	403	29	17	15	27	48	71	63	1	2	2	1	1	1	1	9	13	12	2	-12	-21	-23	8	6	6	6	3	1	1	6	29	261
1955	396	391	400	410	413	416	425	434	417	387	360	371	50	41	32	49	79	106	95	1	1	1	1	1	1	1	7	3	9	9	-17	-30	-27	11	6	6	6	2	1	1	6	28	196
1956	334	354	420	402	406	425	440	466	466	463	444	434	41	26	0	0	3	22	32	1	1	6	6	5	1	1	21	19	15	26	0	-3	-19	-10	6	6	6	6	5	2	4	35	735
1957	427	420	416	410	424	437	433	458	452	439	423	425	29	33	8	14	27	43	41	1	1	4	3	1	1	1	12	13	-4	25	-6	-13	-16	2	6	5	6	4	3	2	6	32	384
1958	420	414	415	421	424	437	449	466	466	463	448	434	29	17	0	0	3	18	32	1	2	6	6	5	2	1	23	13	12	17	0	-3	-15	-14	6	6	6	6	5	3	3	35	805
1959	424	417	410	414	422	424	431	432	409	386	341	352	42	35	34	57	80	125	114	1	1	1	1	1	1	1	7	2	7	1	-23	-23	-45	11	6	6	6	1	1	1	6	27	189
1960	334	334	334	360	413	437	447	445	424	392	379	385	29	19	21	42	74	87	81	1	2	1	1	1	1	1	8	24	10	-2	-21	-32	-13	6	6	6	5	1	1	3	6	28	224
1961	364	373	383	384	393	404	411	422	405	386	357	357	62	55	44	61	80	109	109	1	1	1	1	1	1	1	7	11	7	11	-17	-19	-29	0	6	6	6	2	2	1	6	29	203
1962	335	343	364	360	421	430	449	456	449	424	412	409	36	17	10	17	42	54	57	1	2	3	2	1	1	1	11	9	19	7	-7	-25	-12	-3	6	6	6	4	1	3	5	31	341
1963	439	424	424	424	419	430	449	466	458	446	434	433	36	17	0	8	20	32	33	1	2	6	4	1	1	1	16	11	19	17	-8	-12	-12	-1	6	6	6	4	3	3	5	33	528
1964	425	424	423	424	421	418	428	433	413	382	334	334	48	38	33	53	84	132	132	1	1	1	1	1	1	1	7	-3	10	5	-20	-31	-48	0	5	6	6	2	1	1	6	27	189
1965	335	366	393	392	395	414	449	463	453	446	439	434	52	17	3	13	20	27	32	1	2	5	3	1	1	1	14	19	35	14	-10	-7	-7	-5	6	6	6	4	4	4	5	35	490
1966	425	424	423	424	422	429	443	442	419	394	371	365	37	23	24	47	72	95	101	1	1	1	1	1	1	1	7	7	14	-1	-23	-25	-23	-6	6	6	5	1	1	1	4	24	168
1967	347	374	415	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32	1	2	6	6	5	2	1	23	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1968	427	424	422	424	424	437	439	440	416	391	377	384	29	27	26	50	75	89	82	1	1	1	1	1	1	1	7	13	2	1	-24	-25	-14	7	6	6	6	1	1	3	6	29	203
1969	383	397	414	424	424	436	449	466	466	463	449	434	30	17	0	0	3	17	32	1	2	6	6	5	2	1	23	12	13	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1970	427	422	423	393	396	425	430	438	426	408	400	406	41	36	28	40	58	66	60	1	1	1	1	1	1	1	7	29	5	8	-12	-18	-8	6	6	6	6	3	2	4	6	33	231
1971	395	409	424	424	424	437	447	460	459	456	438	434	29	19	6	7	10	28	32	1	2	4	4	3	1	1	16	13	10	13	-1	-3	-18	-4	6	6	6	5	5	2	5	35	560
1972	425	421	424	423	424	437	443	449	430	407	387	393	29	23	17	36	59	79	73	1	1	2	1	1	1	1	8	13	6	6	-19	-23	-20	6	6	6	6	2	1	2	6	29	232
1973	397	406	424	424	424	437	449	466	450	428	409	413	29	17	0	16	38	57	53	1	2	6	2	1	1	1	14	13	12	17	-16	-22	-19	4	6	6	6	2	1	2	6	29	406
1974	409	423	422	409	417	433	449	466	462	461	444	434	33	17	0	4	5	22	32	1	2	6	5	4	1	1	20	16	16	17	-4	-1	-17	-10	6	6	6	5	5	2	4	34	680
1975	425	417	415	412	424	437	440	466	466	459	444	434	29	26	0	0	7	22	32	1	1	6	6	4	1	1	20	13	3	26	0	-7	-15	-10	6	6	6	6	4	3	4	35	700
1976	430	423	418	409	400	394	399	402	369	334	340	341	72	67	64	97	132	126	125	1	1	1	1	1	1	1	7	-6	5	3	-33	-35	6	1	4	6	6	1	1	6	6	30	210
1977	335	334	329	324	319	320	330	337	334	316	289	265	146	136	129	132	150	177	201	1	1	1	1	1	1	1	7	1	10	7	-3	-18	-27	-24	6	6	6	5	2	1	1	27	189
1978	255	269	353	424	424	437	449	466	458	448	432	432	29	17	0	8	18	34	34	1	2	6	4	2	1	1	17	13	12	17	-8	-10	-16	0	6	6	6	4	4	2	6	34	578
1979	420	413	405	411	420	437	447	466	448	424	412	413	29	19	0	18	42	54	53	1	2	6	2	1	1	1	14	17	10	19	-18	-24	-12	1	6	6	6	2	1	3	6	30	420
1980	409	410	414	405	399	430	449	463	452	450	445	434	36	17	3	14	16	21	32	1	2	5	3	2	1	1	15	31	19	14	-11	-2	-5	-11	6	6	6	3	5	5	3	34	510
1981	425	418	413	411	409	419	429	430	409	387	357	365	47	37	36	57	79	109	101	1	1	1	1	1	1	1	7	10	10	1	-21	-22	-30	8	6	6	6	1	1	1	6	27	189
1982	367	420	392	396	388	424	449	466	466	463	449	434	42	17	0	0	3	17	32	1	2	6	6	5	2	1	23	36	25	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1983	437	415	417	418	418	433	449	466	466	463	449	434	33	17	0	0	3	17	32	1	2	6	6	5	2	1	23	15	16	17	0	-3	-14	-15	6	6	6	6	5	3	3	35	805
1984	434	392	388	388	392	424	441	463	450	433	422	424	42	25	3	16	33	44	42	1	1	5	2	1	1	1	12	32	17	22	-13	-17	-11	2	6	6	6	3	2	3	6	32	384
1985	421	424	424	422	424	433	446	441	412	372	334	334	33	20	25	54	94	132	132	1	1	1	1	1	1	1	7	9	13	-5	-29	-40	-38	0	6	6	5	1	1	1	6	26	182
1986	335	364	395	424	396	424	448	462	452	446	440	434	42	18	4	14	20	26	32	1	2	5	3	1	1	1	14	28	24	14	-10	-6	-6	-6	6	6	6	4	4	4	4	34	476
1987	426	419	411	403	401	407	412	413	380	334	314	330	59	54	53	86	132	152	136	1	1	1	1	1	1	1	7	6	5	1	-33	-46	-20	16	6	6	6	1	1	2	6	28	196
1988	333	334	368	394	385	382	389	384	345	306	233	364	84	77	82	121	160	233	102	1	1	1	1	1	1	1	7	-3	7	-5	-39	-39	-73	131	5	6	5	1	1	1	6	25	175
1989	346	368	386	396	388	437	449	451	432	404	363	376	29	17	15	34	62	103	90	1	2	2	1	1	1	1	9	49	12	2	-19	-28	-41	13	6	6	6	2	1	1	6	28	252
1990	387	389	383	397	403	415	422	419	388	334	340	340	51	44	47	78	132	126	126	1	1	1	1	1	1	1	7	12	7	-3	-31	-54	6	0	6	6	5	1	1	6	6	31	217
1991	334	334	335	329	326	380	404	421	419	411	406	405	86	62	45	47	55	60	61	1	1	1	1	1	1	1	7	54	24	17	-2	-8	-5	-1	6	6	6	5	4	5	5	37	259
1992	396	383	371	351	377	393	404	403	348	332	311	280	73	62	63	118	134	155	186	1	1	1	1	1	1	1	7	16	11	-1	-55	-16	-21	-31	6	6	5	1	2	1	1	22	154
1993	275	270	345	424	427	434	449	466	466	453	443	434	32	17	0	0	13	23	32	1	2	6	6	3	1	1	20	7	15	17	0	-13	-10	-9	6	6	6	6	3	4	4	35	700
1994	422	411	405	392	386	386	393	398	374	334	332	323	80	73	68	92	132	134	143	1	1	1	1	1	1	1	7	0	7	5	-24	-40	-2	-9	6	6	6	1	1	5	4	29	203
																							73 - year Average:				12											73 - year Average:				31	393
																																							1929 - '34 Average:				219

Joint Point Alternative 8

STUDY: **526a**

CP # 10, NEW MELONES RESERVOIR, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 1088'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Elevation in feet												DFMRE							Elevation Score								Fluctuation							Fluctuation Score								
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	940	943	948	954	968	978	974	990	1013	1004	992	981	120	110	114	98	75	84	96	1	1	1	1	1	1	1	**7**	10	-4	16	23	-9	-12	-11	6	5	6	6	4	3	3	**33**	**231**
1923	980	984	994	1002	1008	1007	1004	1008	1009	999	985	976	80	81	84	80	79	89	103	1	1	1	1	1	1	1	**7**	-1	-3	4	1	-10	-14	-9	5	5	6	6	4	3	4	**33**	**231**
1924	975	977	981	985	988	989	979	967	954	942	930	926	100	99	109	121	134	146	158	1	1	1	1	1	1	1	**7**	1	-10	-12	-13	-12	-12	-4	6	4	3	3	3	3	5	**27**	**189**
1925	926	928	932	935	953	965	966	982	986	977	964	957	135	123	122	106	102	111	124	1	1	1	1	1	1	1	**7**	12	1	16	4	-9	-13	-7	6	6	6	6	4	3	4	**35**	**245**
1926	955	956	959	961	972	975	975	965	951	937	923	912	116	113	113	123	137	151	165	1	1	1	1	1	1	1	**7**	3	0	-10	-14	-14	-14	-11	6	6	4	3	3	3	3	**28**	**196**
1927	913	918	927	934	953	964	973	984	987	976	963	957	135	124	115	104	101	112	125	1	1	1	1	1	1	1	**7**	11	9	11	3	-11	-13	-6	6	6	6	6	3	3	4	**34**	**238**
1928	957	963	968	972	980	1001	999	1001	993	979	964	957	108	87	89	87	95	109	124	1	1	1	1	1	1	1	**7**	21	-2	2	-8	-14	-15	-7	6	5	6	4	3	3	4	**31**	**217**
1929	956	958	961	964	968	969	964	960	950	938	925	918	120	119	124	128	138	150	163	1	1	1	1	1	1	1	**7**	1	-5	-4	-10	-12	-13	-7	6	5	5	4	3	3	4	**30**	**210**
1930	919	921	923	927	933	941	941	936	931	917	896	883	155	147	147	152	157	171	192	1	1	1	1	1	1	1	**7**	8	0	-5	-5	-14	-21	-13	6	6	5	5	3	1	3	**29**	**203**
1931	884	889	892	896	901	904	897	883	865	847	829	819	187	184	191	205	223	241	259	1	1	1	1	1	1	1	**7**	3	-7	-14	-18	-18	-18	-10	6	4	3	2	2	2	4	**23**	**161**
1932	818	821	833	841	864	875	875	911	930	923	905	893	224	213	213	177	158	165	183	1	1	1	1	1	1	1	**7**	11	0	36	19	-7	-18	-12	6	6	6	6	4	2	3	**33**	**231**
1933	894	896	902	907	911	914	906	902	899	878	856	844	177	174	182	186	189	210	232	1	1	1	1	1	1	1	**7**	3	-8	-4	-3	-21	-22	-12	6	4	5	5	1	1	3	**25**	**175**
1934	845	849	855	861	870	880	871	857	837	818	791	773	218	208	217	231	251	270	297	1	1	1	1	1	1	1	**7**	10	-9	-14	-20	-19	-27	-18	6	4	3	2	2	1	2	**20**	**140**
1935	770	773	780	793	805	816	834	877	898	883	863	851	283	272	254	211	190	205	225	1	1	1	1	1	1	1	**7**	11	18	43	21	-15	-20	-12	6	6	6	6	3	2	3	**32**	**224**
1936	851	855	860	877	914	927	940	963	970	960	947	940	174	161	148	125	118	128	141	1	1	1	1	1	1	1	**7**	13	13	23	7	-10	-13	-7	6	6	6	6	4	3	4	**35**	**245**
1937	940	942	946	951	964	977	979	1003	1007	998	987	979	124	111	109	85	81	90	101	1	1	1	1	1	1	1	**7**	13	2	24	4	-9	-11	-8	6	6	6	6	4	3	4	**35**	**245**
1938	980	982	995	1004	1023	1044	1052	1079	1088	1084	1075	1069	65	44	36	9	0	4	13	1	1	1	4	6	5	3	**21**	21	8	27	9	-4	-9	-6	6	6	6	6	5	4	4	**37**	**777**
1939	1050	1050	1050	1050	1050	1052	1050	1038	1025	1012	999	992	38	36	38	50	63	76	89	1	1	1	1	1	1	1	**7**	2	-2	-12	-13	-13	-13	-7	6	5	3	3	3	3	4	**27**	**189**
1940	988	989	992	1004	1018	1035	1044	1055	1047	1034	1022	1014	70	53	44	33	41	54	66	1	1	1	1	1	1	1	**7**	17	9	11	-8	-13	-12	-8	6	6	6	4	3	3	4	**32**	**224**
1941	1014	1016	1021	1028	1038	1048	1044	1059	1065	1058	1048	1040	50	40	44	29	23	30	40	1	1	1	1	1	1	1	**7**	10	-4	15	6	-7	-10	-8	6	5	6	6	4	4	4	**35**	**245**
1942	1039	1040	1046	1050	1050	1055	1055	1067	1081	1078	1068	1062	38	33	33	21	7	10	20	1	1	1	1	4	3	1	**12**	5	0	12	14	-3	-10	-6	6	6	6	6	5	4	4	**37**	**444**
1943	1050	1050	1050	1050	1050	1055	1061	1068	1067	1058	1048	1041	38	33	27	20	21	30	40	1	1	1	1	1	1	1	**7**	5	6	7	-1	-9	-10	-7	6	6	6	5	4	4	4	**35**	**245**
1944	1039	1040	1042	1043	1046	1050	1044	1041	1034	1021	1008	1000	42	38	44	47	54	67	80	1	1	1	1	1	1	1	**7**	4	-6	-3	-7	-13	-13	-8	6	4	5	4	3	3	4	**29**	**203**
1945	998	1003	1007	1012	1026	1035	1035	1048	1054	1045	1033	1026	62	53	53	40	34	43	55	1	1	1	1	1	1	1	**7**	9	0	13	6	-9	-12	-7	6	6	6	6	4	3	4	**35**	**245**
1946	1025	1030	1040	1048	1050	1054	1053	1061	1058	1046	1034	1028	38	34	35	27	30	42	54	1	1	1	1	1	1	1	**7**	4	-1	8	-3	-12	-12	-6	6	5	6	5	3	3	4	**32**	**224**
1947	1026	1029	1032	1034	1037	1040	1029	1020	1011	1000	988	981	51	48	59	68	77	88	100	1	1	1	1	1	1	1	**7**	3	-11	-9	-9	-11	-12	-7	6	3	4	4	3	3	4	**27**	**189**
1948	980	981	984	986	987	991	990	992	1000	991	979	972	101	97	98	96	88	97	109	1	1	1	1	1	1	1	**7**	4	-1	2	8	-9	-12	-7	6	5	6	6	4	3	4	**34**	**238**
1949	970	973	976	979	982	989	982	986	980	967	954	947	106	99	106	102	108	121	134	1	1	1	1	1	1	1	**7**	7	-7	4	-6	-13	-13	-7	6	4	6	4	3	3	4	**30**	**210**
1950	945	946	948	956	966	975	974	986	992	980	967	960	122	113	114	102	96	108	121	1	1	1	1	1	1	1	**7**	9	-1	12	6	-12	-13	-7	6	5	6	6	3	3	4	**33**	**231**
1951	958	995	1034	1046	1050	1055	1048	1041	1033	1020	1007	1000	38	33	40	47	55	68	81	1	1	1	1	1	1	1	**7**	5	-7	-7	-8	-13	-13	-7	6	4	4	4	3	3	4	**28**	**196**
1952	998	1001	1008	1022	1033	1046	1048	1077	1088	1086	1076	1070	55	42	40	11	0	2	12	1	1	1	3	6	5	3	**20**	13	2	29	11	-2	-10	-6	6	6	6	6	5	4	4	**37**	**740**
1953	1050	1050	1050	1050	1050	1054	1046	1036	1038	1029	1016	1009	38	34	42	52	50	59	72	1	1	1	1	1	1	1	**7**	4	-8	-10	2	-9	-13	-7	6	4	4	6	4	3	4	**31**	**217**
1954	1006	1008	1011	1014	1016	1023	1026	1028	1019	1006	993	983	72	65	62	60	69	82	95	1	1	1	1	1	1	1	**7**	7	3	2	-9	-13	-13	-10	6	6	6	4	3	3	4	**32**	**224**
1955	980	983	987	993	994	997	990	983	980	966	953	945	94	91	98	105	108	122	135	1	1	1	1	1	1	1	**7**	3	-7	-7	-3	-14	-13	-8	6	4	4	5	3	3	4	**29**	**203**
1956	945	947	980	1009	1023	1032	1023	1040	1052	1045	1033	1027	65	56	65	48	36	43	55	1	1	1	1	1	1	1	**7**	9	-9	17	12	-7	-12	-6	6	4	6	6	4	3	4	**33**	**231**
1957	1024	1026	1028	1031	1036	1043	1031	1027	1028	1015	1003	995	52	45	57	61	60	73	85	1	1	1	1	1	1	1	**7**	7	-12	-4	1	-13	-12	-8	6	3	5	6	3	3	4	**30**	**210**
1958	989	992	995	1001	1010	1025	1032	1061	1075	1069	1059	1053	78	63	56	27	13	19	29	1	1	1	1	3	2	1	**10**	15	7	29	14	-6	-10	-6	6	6	6	6	4	4	4	**36**	**360**
1959	1050	1050	1050	1050	1050	1053	1046	1030	1018	1005	992	983	38	35	42	58	70	83	96	1	1	1	1	1	1	1	**7**	3	-7	-16	-12	-13	-13	-9	6	4	2	3	3	3	4	**25**	**175**
1960	979	981	984	987	994	999	997	992	981	967	954	945	94	89	91	96	107	121	134	1	1	1	1	1	1	1	**7**	5	-2	-5	-11	-14	-13	-9	6	5	5	3	3	3	4	**29**	**203**
1961	940	944	948	950	953	956	951	944	932	920	902	891	135	132	137	144	156	168	186	1	1	1	1	1	1	1	**7**	3	-5	-7	-12	-12	-18	-11	6	5	4	3	3	2	3	**26**	**182**
1962	891	894	898	901	918	925	927	936	939	928	911	897	170	163	161	152	149	160	177	1	1	1	1	1	1	1	**7**	7	2	9	3	-11	-17	-14	6	6	6	6	3	2	3	**32**	**224**
1963	898	902	909	922	940	947	948	977	984	976	964	957	148	141	140	111	104	112	124	1	1	1	1	1	1	1	**7**	7	1	29	7	-8	-12	-7	6	6	6	6	4	3	4	**35**	**245**
1964	957	962	967	973	976	980	973	965	957	943	930	921	112	108	115	123	131	145	158	1	1	1	1	1	1	1	**7**	4	-7	-8	-8	-14	-13	-9	6	4	4	4	3	3	4	**28**	**196**
1965	921	924	956	983	997	1005	1013	1013	1018	1011	1000	993	91	83	75	75	70	77	88	1	1	1	1	1	1	1	**7**	8	8	0	5	-7	-11	-7	6	6	6	6	4	3	4	**35**	**245**
1966	992	997	1002	1007	1012	1017	1007	1004	994	980	967	958	76	71	81	84	94	108	121	1	1	1	1	1	1	1	**7**	5	-10	-3	-10	-14	-13	-9	6	4	5	4	3	3	4	**29**	**203**
1967	957	960	972	987	996	1008	1009	1032	1060	1064	1055	1049	92	80	79	56	28	24	33	1	1	1	1	1	1	1	**7**	12	1	23	28	4	-9	-6	6	6	6	6	6	4	4	**38**	**266**
1968	1047	1049	1050	1050	1050	1054	1042	1033	1022	1008	994	984	38	34	46	55	66	80	94	1	1	1	1	1	1	1	**7**	4	-12	-9	-11	-14	-14	-10	6	3	4	3	3	3	4	**26**	**182**
1969	982	987	990	1020	1041	1055	1066	1088	1088	1084	1074	1066	47	33	22	0	0	4	14	1	1	1	6	6	5	3	**23**	14	11	22	0	-4	-10	-8	6	6	6	6	5	4	4	**37**	**851**
1970	1050	1050	1050	1050	1050	1055	1047	1041	1038	1025	1012	1005	38	33	41	47	50	63	76	1	1	1	1	1	1	1	**7**	5	-8	-6	-3	-13	-13	-7	6	4	4	5	3	3	4	**29**	**203**
1971	1003	1007	1015	1022	1028	1035	1026	1021	1021	1011	998	990	60	53	62	67	67	77	90	1	1	1	1	1	1	1	**7**	7	-9	-5	0	-10	-13	-8	6	4	5	6	4	3	4	**32**	**224**
1972	986	990	997	1002	1003	1007	993	992	982	968	954	947	85	81	95	96	106	120	134	1	1	1	1	1	1	1	**7**	4	-14	-1	-10	-14	-14	-7	6	3	5	4	3	3	4	**28**	**196**
1973	947	950	956	971	991	1003	1004	1022	1026	1016	1006	1001	97	85	84	66	62	72	82	1	1	1	1	1	1	1	**7**	12	1	18	4	-10	-10	-5	6	6	6	6	4	4	5	**37**	**259**
1974	1001	1007	1017	1030	1039	1053	1057	1068	1067	1058	1047	1040	49	35	31	20	21	30	41	1	1	1	1	1	1	1	**7**	14	4	11	-1	-9	-11	-7	6	6	6	5	4	3	4	**34**	**238**
1975	1039	1041	1044	1047	1050	1055	1050	1049	1062	1053	1042	1035	38	33	38	39	26	35	46	1	1	1	1	1	1	1	**7**	5	-5	-1	13	-9	-11	-7	6	5	5	6	4	3	4	**33**	**231**
1976	1033	1036	1039	1041	1043	1046	1040	1031	1020	1010	1000	995	45	42	48	57	68	78	88	1	1	1	1	1	1	1	**7**	3	-6	-9	-11	-10	-10	-5	6	4	4	3	4	4	5	**30**	**210**
1977	995	996	997	998	998	998	989	977	968	956	944	938	90	90	99	111	120	132	144	1	1	1	1	1	1	1	**7**	0	-9	-12	-9	-12	-12	-6	6	4	3	4	3	3	4	**27**	**189**
1978	937	936	940	951	963	983	993	1010	1021	1020	1010	1007	125	105	95	78	67	68	78	1	1	1	1	1	1	1	**7**	20	10	17	11	-1	-10	-3	6	6	6	6	5	4	5	**38**	**266**
1979	1007	1010	1013	1022	1034	1048	1048	1057	1052	1039	1025	1018	54	40	40	31	36	49	63	1	1	1	1	1	1	1	**7**	14	0	9	-5	-13	-14	-7	6	6	6	5	3	3	4	**33**	**231**
1980	1019	1022	1025	1050	1050	1055	1056	1063	1070	1068	1057	1051	38	33	32	25	18	20	31	1	1	1	1	2	1	1	**8**	5	1	7	7	-2	-11	-6	6	6	6	6	5	3	4	**36**	**288**
1981	1050	1050	1050	1050	1050	1053	1045	1034	1019	1005	992	984	38	35	43	54	69	83	96	1	1	1	1	1	1	1	**7**	3	-8	-11	-15	-14	-13	-8	6	4	3	3	3	3	4	**26**	**182**
1982	982	991	1006	1027	1050	1055	1071	1086	1088	1084	1075	1071	38	33	17	2	0	4	13	1	1	2	5	6	5	3	**23**	5	16	15	2	-4	-9	-4	6	6	6	6	5	4	5	**38**	**874**
1983	1050	1050	1050	1050	1050	1055	1056	1070	1088	1088	1082	1075	38	33	32	18	0	0	6	1	1	1	2	6	6	4	**21**	5	1	14	18	0	-6	-7	6	6	6	6	6	4	4	**38**	**798**
1984	1050	1050	1050	1050	1050	1055	1044	1037	1033	1022	1011	1006	38	33	44	51	55	66	77	1	1	1	1	1	1	1	**7**	5	-11	-7	-4	-11	-11	-5	6	3	4	5	3	3	5	**29**	**203**
1985	1005	1009	1015	1018	1023	1029	1021	1015	1005	995	983	977	65	59	67	73	83	93	105	1	1	1	1	1	1	1	**7**	6	-8	-6	-10	-10	-12	-6	6	4	4	4	4	3	4	**29**	**203**
1986	977	980	985	996	1044	1055	1056	1061	1065	1055	1045	1040	44	33	32	27	23	33	43	1	1	1	1	1	1	1	**7**	11	1	5	4	-10	-10	-5	6	6	6	6	4	4	5	**37**	**259**
1987	1039	1041	1044	1044	1046	1049	1044	1034	1023	1014	1006	1002	42	39	44	54	65	74	82	1	1	1	1	1	1	1	**7**	3	-5	-10	-11	-9	-8	-4	6	5	4	3	4	4	5	**31**	**217**
1988	998	998	999	1000	1002	1004	998	988	978	968	959	953	86	84	90	100	110	120	129	1	1	1	1	1	1	1	**7**	2	-6	-10	-10	-10	-9	-6	6	4	4	4	4	4	4	**30**	**210**
1989	952	952	953	954	956	968	965	960	952	940	929	924	132	120	123	128	136	148	159	1	1	1	1	1	1	1	**7**	12	-3	-5	-8	-12	-11	-5	6	5	5	4	3	3	5	**31**	**217**
1990	927	930	934	937	940	945	937	926	911	892	876	867	148	143	151	162	177	196	212	1	1	1	1	1	1	1	**7**	5	-8	-11	-15	-19	-16	-9	6	4	3	3	2	2	4	**24**	**168**
1991	866	867	872	872	871	880	875	870	854	835	817	810	217	208	213	218	234	253	271	1	1	1	1	1	1	1	**7**	9	-5	-5	-16	-19	-18	-7	6	5	5	2	2	2	4	**26**	**182**
1992	812	814	819	822	834	842	834	818	793	763	728	715	254	246	254	270	295	325	360	1	1	1	1	1	1	1	**7**	8	-8	-16	-25	-30	-35	-13	6	4	2	1	1	1	3	**18**	**126**
1993	723	737	755	789	887	941	930	935	945	936	925	921	201	147	158	153	143	152	163	1	1	1	1	1	1	1	**7**	54	-11	5	10	-9	-11	-4	6	3	6	6	4	3	5	**33**	**231**
1994	920	921	925	926	927	932	929	926	913	894	877	869	161	156	159	162	175	194	211	1	1	1	1	1	1	1	**7**	5	-3	-3	-13	-19	-17	-8	6	5	5	3	2	2	4	**27**	**189**
																							73 - year Average:				**8**											**73 - year Average:**				**31**	**260**
																																							1929 - '34 Average:				**187**

STUDY: **526a**

CP # 81, DON PEDRO RESERVOIR, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 832'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

Elevation in feet | Difference from Maximum Reservoir Elevation [DFMRE] | Reservoir Elevation Score | Reservoir Change from Previous Month [fluctuation] | Reservoir Fluctuation Score | Sum Total

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	598	581	578	600	655	690	698	724	781	778	763	752	142	134	108	51	54	69	80	1	1	1	1	1	1	1	**7**	35	8	26	57	-3	-15	-11	6	6	6	6	5	3	3	**35**	**245**
1923	746	745	748	760	775	784	788	792	801	794	779	770	48	44	40	31	38	53	62	1	1	1	1	1	1	1	**7**	9	4	4	9	-7	-15	-9	6	6	6	6	4	3	4	**35**	**245**
1924	764	761	756	755	756	754	748	742	734	722	708	700	78	84	90	98	110	124	132	1	1	1	1	1	1	1	**7**	-2	-6	-6	-8	-12	-14	-8	5	4	4	4	3	3	4	**27**	**189**
1925	695	695	696	700	722	739	751	762	780	771	755	744	93	81	70	52	61	77	88	1	1	1	1	1	1	1	**7**	17	12	11	18	-9	-16	-11	6	6	6	6	4	2	3	**33**	**231**
1926	737	734	730	729	738	742	756	768	765	750	734	725	90	76	64	67	82	98	107	1	1	1	1	1	1	1	**7**	4	14	12	-3	-15	-16	-9	6	6	6	5	3	2	4	**32**	**224**
1927	717	717	721	729	758	773	784	782	800	793	778	768	59	48	50	32	39	54	64	1	1	1	1	1	1	1	**7**	15	11	-2	18	-7	-15	-10	6	6	5	6	4	3	4	**34**	**238**
1928	762	762	762	765	774	792	801	818	818	803	788	779	40	31	14	14	29	44	53	1	1	3	3	1	1	1	**11**	18	9	17	0	-15	-15	-9	6	6	6	6	3	3	4	**34**	**374**
1929	772	767	763	762	766	767	767	770	778	769	759	752	65	65	62	54	63	73	80	1	1	1	1	1	1	1	**7**	1	0	3	8	-9	-10	-7	6	6	6	6	4	4	4	**36**	**252**
1930	747	744	741	742	748	755	756	759	772	763	754	747	77	76	73	60	69	78	85	1	1	1	1	1	1	1	**7**	7	1	3	13	-9	-9	-7	6	6	6	6	4	4	4	**36**	**252**
1931	745	744	743	745	748	747	739	727	714	700	687	679	85	93	105	118	132	145	153	1	1	1	1	1	1	1	**7**	-1	-8	-12	-13	-14	-13	-8	5	4	3	3	3	3	4	**25**	**175**
1932	676	671	683	699	736	751	752	756	772	767	752	741	81	80	76	60	65	80	91	1	1	1	1	1	1	1	**7**	15	1	4	16	-5	-15	-11	6	6	6	6	5	3	3	**35**	**245**
1933	734	727	721	720	727	730	726	719	736	725	708	697	102	106	113	96	107	124	135	1	1	1	1	1	1	1	**7**	3	-4	-7	17	-11	-17	-11	6	5	4	6	3	2	3	**29**	**203**
1934	688	686	684	687	698	707	705	698	694	676	658	647	125	127	134	138	156	174	185	1	1	1	1	1	1	1	**7**	9	-2	-7	-4	-18	-18	-11	6	5	4	5	2	2	3	**27**	**189**
1935	640	639	641	655	682	697	723	734	764	751	734	721	135	109	98	68	81	98	111	1	1	1	1	1	1	1	**7**	15	26	11	30	-13	-17	-13	6	6	6	6	3	2	3	**32**	**224**
1936	713	711	705	711	753	770	779	796	814	804	789	778	62	53	36	18	28	43	54	1	1	1	2	1	1	1	**8**	17	9	17	18	-10	-15	-11	6	6	6	6	4	3	3	**34**	**272**
1937	772	767	762	765	793	800	802	815	832	819	805	795	32	30	17	0	13	27	37	1	1	2	6	3	1	1	**15**	7	2	13	17	-13	-14	-10	6	6	6	6	3	3	4	**34**	**510**
1938	789	784	800	800	800	800	800	804	831	832	819	808	32	32	28	1	0	13	24	1	1	1	5	6	3	1	**18**	0	0	4	27	1	-13	-11	6	6	6	6	6	3	3	**36**	**648**
1939	800	799	799	800	800	800	802	804	799	787	774	766	32	30	28	33	45	58	66	1	1	1	1	1	1	1	**7**	0	2	2	-5	-12	-13	-8	6	6	6	5	3	3	4	**33**	**231**
1940	764	763	761	773	800	800	802	816	829	814	799	789	32	30	16	3	18	33	43	1	1	2	5	2	1	1	**13**	0	2	14	13	-15	-15	-10	6	6	6	6	3	3	4	**34**	**442**
1941	783	781	783	798	800	800	800	812	832	831	817	808	32	32	20	0	1	15	24	1	1	1	6	5	2	1	**17**	0	0	12	20	-1	-14	-9	6	6	6	6	5	3	4	**36**	**612**
1942	800	798	800	800	800	800	802	807	831	832	818	808	32	30	25	1	0	14	24	1	1	1	5	6	3	1	**18**	0	2	5	24	1	-14	-10	6	6	6	6	6	3	4	**37**	**666**
1943	800	800	800	800	800	800	800	821	832	824	810	799	32	30	11	0	8	22	33	1	1	3	6	4	1	1	**17**	0	2	19	11	-8	-14	-11	6	6	6	6	4	3	3	**34**	**578**
1944	794	792	788	787	793	800	801	808	814	802	787	777	32	31	24	18	30	45	55	1	1	1	2	1	1	1	**8**	7	1	7	6	-12	-15	-10	6	6	6	6	3	3	4	**34**	**272**
1945	772	773	776	781	800	800	802	807	831	825	810	799	32	30	25	1	7	22	33	1	1	1	5	4	1	1	**14**	0	2	5	24	-6	-15	-11	6	6	6	6	4	3	3	**34**	**476**
1946	796	797	800	800	800	800	802	806	812	796	780	769	32	30	26	20	36	52	63	1	1	1	1	1	1	1	**7**	0	2	4	6	-16	-16	-11	6	6	6	6	2	2	3	**31**	**217**
1947	763	763	765	768	776	781	778	782	776	764	750	742	51	54	50	56	68	82	90	1	1	1	1	1	1	1	**7**	5	-3	4	-6	-12	-14	-8	6	5	6	4	3	3	4	**31**	**217**
1948	739	738	737	738	739	740	735	743	769	758	740	730	92	97	89	63	74	92	102	1	1	1	1	1	1	1	**7**	1	-5	8	26	-11	-18	-10	6	5	6	6	3	2	4	**32**	**224**
1949	723	717	712	711	718	729	735	745	752	734	715	702	103	97	87	80	98	117	130	1	1	1	1	1	1	1	**7**	11	6	10	7	-18	-19	-13	6	6	6	6	2	2	3	**31**	**217**
1950	694	687	681	687	706	719	727	737	754	738	720	707	113	105	95	78	94	112	125	1	1	1	1	1	1	1	**7**	13	8	10	17	-16	-18	-13	6	6	6	6	2	2	3	**31**	**217**
1951	701	749	797	800	800	800	798	794	798	783	769	759	32	34	38	34	49	63	73	1	1	1	1	1	1	1	**7**	0	-2	-4	4	-15	-14	-10	6	5	5	6	3	3	4	**32**	**224**
1952	752	750	757	782	800	800	800	820	832	832	819	808	32	32	12	0	0	13	24	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1953	800	795	793	800	800	800	802	804	814	810	796	787	32	30	28	18	22	36	45	1	1	1	2	1	1	1	**8**	0	2	2	10	-4	-14	-9	6	6	6	6	5	3	4	**36**	**288**
1954	782	778	775	776	785	797	802	819	820	805	789	780	35	30	13	12	27	43	52	1	1	3	3	1	1	1	**11**	12	5	17	1	-15	-16	-9	6	6	6	6	3	2	4	**33**	**363**
1955	774	770	768	774	780	784	780	784	790	778	766	759	48	52	48	42	54	66	73	1	1	1	1	1	1	1	**7**	4	-4	4	6	-12	-12	-7	6	5	6	6	3	3	4	**33**	**231**
1956	752	749	798	800	800	800	802	818	832	832	818	808	32	30	14	0	0	14	24	1	1	3	6	6	3	1	**21**	0	2	16	14	0	-14	-10	6	6	6	6	6	3	4	**37**	**777**
1957	800	798	793	793	799	800	800	806	827	814	800	791	32	32	26	5	18	32	41	1	1	1	4	2	1	1	**11**	1	0	6	21	-13	-14	-9	6	6	6	6	3	3	4	**34**	**374**
1958	786	781	779	783	800	800	800	821	832	832	819	808	32	32	11	0	0	13	24	1	1	3	6	6	3	1	**21**	0	0	21	11	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1959	800	794	789	793	800	800	802	800	794	782	770	763	32	30	32	38	50	62	69	1	1	1	1	1	1	1	**7**	0	2	-2	-6	-12	-12	-7	6	6	5	4	3	3	4	**31**	**217**
1960	760	758	755	756	763	769	770	775	778	768	758	752	63	62	57	54	64	74	80	1	1	1	1	1	1	1	**7**	6	1	5	3	-10	-10	-6	6	6	6	6	4	4	4	**36**	**252**
1961	748	746	746	748	750	749	743	733	726	713	701	694	83	89	99	106	119	131	138	1	1	1	1	1	1	1	**7**	-1	-6	-10	-7	-13	-12	-7	5	4	4	4	3	3	4	**27**	**189**
1962	691	688	686	687	712	732	742	745	771	763	749	739	100	90	87	61	69	83	93	1	1	1	1	1	1	1	**7**	20	10	3	26	-8	-14	-10	6	6	6	6	4	3	4	**35**	**245**
1963	732	727	724	728	754	765	773	784	809	804	791	781	67	59	48	23	28	41	51	1	1	1	1	1	1	1	**7**	11	8	11	25	-5	-13	-10	6	6	6	6	5	3	4	**36**	**252**
1964	776	777	778	782	789	791	788	784	787	775	764	757	41	44	48	45	57	68	75	1	1	1	1	1	1	1	**7**	2	-3	-4	3	-12	-11	-7	6	5	5	6	3	3	4	**32**	**224**
1965	753	754	786	800	800	800	802	807	827	827	816	807	32	30	25	5	5	16	25	1	1	1	4	4	2	1	**14**	0	2	5	20	0	-11	-9	6	6	6	6	6	3	4	**37**	**518**
1966	800	800	800	800	800	800	801	798	791	776	761	752	32	31	34	41	56	71	80	1	1	1	1	1	1	1	**7**	0	1	-3	-7	-15	-15	-9	6	6	5	4	3	3	4	**31**	**217**
1967	747	744	755	771	788	800	800	817	832	832	820	808	32	32	15	0	0	12	24	1	1	2	6	6	3	1	**20**	12	0	17	15	0	-12	-12	6	6	6	6	6	3	3	**36**	**720**
1968	800	795	791	792	800	800	802	805	803	791	779	771	32	30	27	29	41	53	61	1	1	1	1	1	1	1	**7**	0	2	3	-2	-12	-12	-8	6	6	6	5	3	3	4	**33**	**231**
1969	766	767	770	800	800	800	800	823	832	832	819	808	32	32	9	0	0	13	24	1	1	4	6	6	3	1	**22**	0	0	23	9	0	-13	-11	6	6	6	6	6	3	3	**36**	**792**
1970	800	799	800	800	800	800	799	799	807	795	780	771	32	33	33	25	37	52	61	1	1	1	1	1	1	1	**7**	0	-1	0	8	-12	-15	-9	6	5	6	6	3	3	4	**33**	**231**
1971	765	766	772	788	800	800	801	801	807	798	786	778	32	31	31	25	34	46	54	1	1	1	1	1	1	1	**7**	0	1	0	6	-9	-12	-8	6	6	6	6	4	3	4	**35**	**245**
1972	773	769	772	778	792	800	800	798	795	783	772	766	32	32	34	37	49	60	66	1	1	1	1	1	1	1	**7**	8	0	-2	-3	-12	-11	-6	6	6	5	5	3	3	4	**32**	**224**
1973	762	761	763	774	800	800	802	812	827	812	797	788	32	30	20	5	20	35	44	1	1	1	4	1	1	1	**10**	0	2	10	15	-15	-15	-9	6	6	6	6	3	3	4	**34**	**340**
1974	783	787	798	800	800	800	800	806	828	819	805	796	32	32	26	4	13	27	36	1	1	1	5	3	1	1	**13**	0	0	6	22	-9	-14	-9	6	6	6	6	4	3	4	**35**	**455**
1975	791	789	786	786	798	800	802	812	832	825	812	803	32	30	20	0	7	20	29	1	1	1	6	4	1	1	**15**	2	2	10	20	-7	-13	-9	6	6	6	6	4	3	4	**35**	**525**
1976	800	800	799	799	800	799	794	787	777	767	757	751	33	38	45	55	65	75	81	1	1	1	1	1	1	1	**7**	-1	-5	-7	-10	-10	-10	-6	5	5	4	4	4	4	4	**30**	**210**
1977	748	745	742	741	741	737	728	715	701	687	671	662	95	104	117	131	145	161	170	1	1	1	1	1	1	1	**7**	-4	-9	-13	-14	-14	-16	-9	5	4	3	3	3	2	4	**24**	**168**
1978	658	654	657	683	716	748	761	776	813	821	808	802	84	71	56	19	11	24	30	1	1	1	2	3	1	1	**10**	32	13	15	37	8	-13	-6	6	6	6	6	6	3	4	**37**	**370**
1979	797	794	790	800	800	800	802	822	832	818	803	794	32	30	10	0	14	29	38	1	1	3	6	3	1	1	**16**	0	2	20	10	-14	-15	-9	6	6	6	6	3	3	4	**34**	**544**
1980	789	788	787	800	800	800	800	817	832	832	819	808	32	32	15	0	0	13	24	1	1	2	6	6	3	1	**20**	0	0	17	15	0	-13	-11	6	6	6	6	6	3	3	**36**	**720**
1981	800	797	794	795	799	800	802	806	805	793	782	774	32	30	26	27	39	50	58	1	1	1	1	1	1	1	**7**	1	2	4	-1	-12	-11	-8	6	6	6	5	3	3	4	**33**	**231**
1982	770	776	795	800	800	800	800	820	832	832	820	808	32	32	12	0	0	12	24	1	1	3	6	6	3	1	**21**	0	0	20	12	0	-12	-12	6	6	6	6	6	3	3	**36**	**756**
1983	800	800	800	800	800	800	800	819	832	832	832	808	32	32	13	0	0	0	24	1	1	3	6	6	6	1	**24**	0	0	19	13	0	0	-24	6	6	6	6	6	6	1	**37**	**888**
1984	800	800	800	800	800	800	797	803	814	801	786	776	32	35	29	18	31	46	56	1	1	1	2	1	1	1	**8**	0	-3	6	11	-13	-15	-10	6	5	6	6	3	3	4	**33**	**264**
1985	773	773	779	786	794	800	801	799	795	784	772	766	32	31	33	37	48	60	66	1	1	1	1	1	1	1	**7**	6	1	-2	-4	-11	-12	-6	6	6	5	5	3	3	4	**32**	**224**
1986	763	764	767	774	800	800	802	827	832	825	811	802	32	30	5	0	7	21	30	1	1	4	6	4	1	1	**18**	0	2	25	5	-7	-14	-9	6	6	6	6	4	3	4	**35**	**630**
1987	796	791	786	784	786	788	786	783	779	769	759	752	44	46	49	53	63	73	80	1	1	1	1	1	1	1	**7**	2	-2	-3	-4	-10	-10	-7	6	5	5	5	4	4	4	**33**	**231**
1988	750	749	749	754	759	761	756	747	740	728	716	709	71	76	85	92	104	116	123	1	1	1	1	1	1	1	**7**	2	-5	-9	-7	-12	-12	-7	6	5	4	4	3	3	4	**29**	**203**
1989	705	702	702	705	708	722	734	747	755	743	733	727	110	98	85	77	89	99	105	1	1	1	1	1	1	1	**7**	14	12	13	8	-12	-10	-6	6	6	6	6	3	4	4	**35**	**245**
1990	725	725	725	727	730	733	730	726	724	709	696	688	99	102	106	108	123	136	144	1	1	1	1	1	1	1	**7**	3	-3	-4	-2	-15	-13	-8	6	5	5	5	3	3	4	**31**	**217**
1991	684	681	676	675	675	684	683	698	709	699	689	683	148	149	134	123	133	143	149	1	1	1	1	1	1	1	**7**	9	-1	15	11	-10	-10	-6	6	5	6	6	4	4	4	**35**	**245**
1992	682	682	681	684	693	698	701	707	706	692	677	666	134	131	125	126	140	155	166	1	1	1	1	1	1	1	**7**	5	3	6	-1	-14	-15	-11	6	6	6	5	3	3	3	**32**	**224**
1993	660	655	654	689	721	750	758	772	803	802	788	778	82	74	60	29	30	44	54	1	1	1	1	1	1	1	**7**	29	8	14	31	-1	-14	-10	6	6	6	6	5	3	4	**36**	**252**
1994	772	767	762	762	765	768	765	768	767	756	746	740	64	67	64	65	76	86	92	1	1	1	1	1	1	1	**7**	3	-3	3	-1	-11	-10	-6	6	5	6	5	3	4	4	**33**	**231**
																								73 - year Average:			**10**												**73 - year Average:**			**33**	**350**
																																								1929 - '34 Average:			**219**

STUDY: **526a**

CP # 20, LAKE McCLURE, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 867'

Elevation in feet

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	679	679	695	710	759	779	789	845	867	860	846	836
1923	808	808	808	808	808	813	827	854	859	850	835	825
1924	808	808	808	808	808	807	809	810	797	779	766	756
1925	752	758	763	767	792	801	819	840	844	831	815	803
1926	801	801	802	804	808	812	831	827	826	822	814	806
1927	802	803	807	807	808	815	817	844	854	849	845	840
1928	808	808	808	808	808	809	808	824	821	815	810	807
1929	805	804	804	803	805	807	808	811	811	813	816	810
1930	806	804	804	804	804	800	802	803	807	810	813	811
1931	808	808	808	808	808	808	808	806	794	776	762	752
1932	750	751	770	782	808	817	826	847	864	854	839	829
1933	808	807	806	808	808	811	813	816	830	817	802	794
1934	789	788	792	797	805	813	819	810	801	784	770	761
1935	757	761	766	784	796	806	840	859	867	854	839	828
1936	808	808	808	808	808	820	840	855	861	849	834	823
1937	808	808	808	808	808	820	834	859	867	853	838	827
clure	808	808	808	808	808	820	840	859	867	867	855	840
1939	808	808	808	808	808	816	831	832	821	803	787	776
1940	777	778	779	806	808	820	837	859	861	845	829	816
1941	808	808	808	808	808	820	834	859	867	863	850	840
1942	808	808	808	808	808	820	838	859	867	860	851	840
1943	808	808	808	808	808	820	840	859	864	853	838	828
1944	808	808	808	808	808	817	815	838	840	827	810	796
1945	794	800	806	808	808	820	833	856	867	856	842	831
1946	808	808	808	808	808	818	837	859	857	842	826	813
1947	808	808	808	808	808	815	823	836	830	814	799	791
1948	789	790	791	793	794	794	798	820	837	823	804	791
1949	787	786	787	789	793	801	810	831	829	810	790	775
1950	770	769	769	777	790	793	808	826	827	808	788	773
1951	768	808	808	808	808	819	827	837	834	816	796	781
1952	777	778	791	808	808	820	840	859	867	864	852	840
1953	808	808	808	808	808	809	815	816	823	809	790	775
1954	772	771	772	775	785	798	815	833	826	805	785	770
1955	766	765	768	774	778	780	781	802	811	796	779	769
1956	764	764	808	808	808	819	832	859	867	863	850	840
1957	808	808	808	808	808	813	813	828	838	822	804	790
1958	786	787	792	798	808	820	840	859	867	862	850	840
1959	808	808	808	808	808	813	823	826	817	797	780	773
1960	772	771	770	771	783	791	805	818	815	800	786	776
1961	773	773	775	776	778	779	784	785	777	759	742	730
1962	729	729	732	734	776	786	809	823	837	824	806	792
1963	788	788	788	797	808	810	819	841	855	845	830	818
1964	808	808	808	808	807	808	809	816	813	797	781	771
1965	765	769	808	808	808	815	831	854	867	861	850	840
1966	808	808	808	808	808	814	828	838	826	804	784	771
1967	767	769	794	806	808	820	840	859	867	867	856	840
1968	808	808	808	808	808	812	817	821	812	793	777	766
1969	762	766	774	808	808	820	840	859	867	867	854	840
1970	808	808	808	808	808	820	821	837	837	821	802	789
1971	786	788	798	807	808	812	814	826	836	822	804	790
1972	787	787	794	799	805	816	819	831	831	816	802	795
1973	793	794	800	808	808	820	828	859	867	852	838	828
1974	808	808	808	808	808	820	833	859	867	854	839	829
1975	808	808	808	808	808	820	823	855	867	856	842	832
1976	808	808	808	808	808	809	808	809	798	781	768	759
1977	758	756	754	754	754	749	740	727	716	686	656	632
1978	626	626	642	693	741	782	815	859	867	867	856	840
1979	808	808	808	808	808	820	828	859	863	849	834	823
1980	808	808	808	808	808	820	835	859	867	867	855	840
1981	808	807	807	808	808	813	823	835	831	816	802	794
1982	792	801	808	808	808	820	840	859	867	865	854	840
1983	808	808	808	808	808	820	836	859	867	867	864	840
1984	808	808	808	808	808	820	827	850	848	832	814	801
1985	808	803	807	808	808	814	828	841	835	821	807	797
1986	797	799	805	808	808	820	839	859	867	855	841	830
1987	808	807	807	807	808	810	818	821	811	792	782	773
1988	772	773	775	781	785	791	797	801	794	777	763	753
1989	751	750	753	753	759	775	796	805	802	786	772	764
1990	765	766	767	769	773	779	790	787	778	762	745	732
1991	730	729	729	728	728	749	755	775	789	775	762	751
1992	750	751	752	754	768	774	791	793	781	768	754	742
1993	740	741	747	792	808	820	837	859	867	861	848	837
1994	808	807	808	808	808	810	814	820	812	797	783	773

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	88	78	22	0	7	21	31	1	1	1	6	4	1	1	**15**
1923	54	40	13	8	17	32	42	1	1	3	4	2	1	1	**13**
1924	60	58	57	70	88	101	111	1	1	1	1	1	1	1	**7**
1925	66	48	27	23	36	52	64	1	1	1	1	1	1	1	**7**
1926	55	36	40	41	45	53	61	1	1	1	1	1	1	1	**7**
1927	52	50	23	13	18	22	27	1	1	1	3	2	1	1	**10**
1928	58	59	43	46	52	57	60	1	1	1	1	1	1	1	**7**
1929	60	59	56	56	54	51	57	1	1	1	1	1	1	1	**7**
1930	67	65	64	60	57	54	56	1	1	1	1	1	1	1	**7**
1931	59	59	61	73	91	105	115	1	1	1	1	1	1	1	**7**
1932	50	41	20	3	13	28	38	1	1	1	5	3	1	1	**13**
1933	56	54	51	37	50	65	73	1	1	1	1	1	1	1	**7**
1934	54	48	57	66	83	97	106	1	1	1	1	1	1	1	**7**
1935	61	27	8	0	13	28	39	1	1	4	6	3	1	1	**17**
1936	47	27	12	6	18	33	44	1	1	3	4	2	1	1	**13**
1937	47	33	8	0	14	29	40	1	1	4	6	3	1	1	**17**
clure	47	27	8	0	0	12	27	1	1	4	6	6	3	1	**22**
1939	51	36	35	46	64	80	91	1	1	1	1	1	1	1	**7**
1940	47	30	8	6	22	38	51	1	1	4	4	1	1	1	**13**
1941	47	33	8	0	4	17	27	1	1	4	6	5	2	1	**20**
1942	47	29	8	0	7	16	27	1	1	4	6	4	2	1	**19**
1943	47	27	8	3	14	29	39	1	1	4	5	3	1	1	**16**
1944	50	52	29	27	40	57	71	1	1	1	1	1	1	1	**7**
1945	47	34	11	0	11	25	36	1	1	3	6	3	1	1	**16**
1946	49	30	8	10	25	41	54	1	1	4	3	1	1	1	**12**
1947	52	44	31	37	53	68	76	1	1	1	1	1	1	1	**7**
1948	73	69	47	30	44	63	76	1	1	1	1	1	1	1	**7**
1949	66	57	36	38	57	77	92	1	1	1	1	1	1	1	**7**
1950	74	59	41	40	59	79	94	1	1	1	1	1	1	1	**7**
1951	48	40	30	33	51	71	86	1	1	1	1	1	1	1	**7**
1952	47	27	8	0	3	15	27	1	1	4	6	5	2	1	**20**
1953	58	52	51	44	58	77	92	1	1	1	1	1	1	1	**7**
1954	69	52	34	41	62	82	97	1	1	1	1	1	1	1	**7**
1955	87	86	65	56	71	88	98	1	1	1	1	1	1	1	**7**
1956	48	35	8	0	4	17	27	1	1	4	6	5	2	1	**20**
1957	54	54	39	29	45	63	77	1	1	1	1	1	1	1	**7**
1958	47	27	8	0	5	17	27	1	1	4	6	4	2	1	**19**
1959	54	44	41	50	70	87	94	1	1	1	1	1	1	1	**7**
1960	76	62	49	52	67	81	91	1	1	1	1	1	1	1	**7**
1961	88	83	82	90	108	125	137	1	1	1	1	1	1	1	**7**
1962	81	58	44	30	43	61	75	1	1	1	1	1	1	1	**7**
1963	57	48	26	12	22	37	49	1	1	1	3	1	1	1	**9**
1964	59	58	51	54	70	86	96	1	1	1	1	1	1	1	**7**
1965	52	36	13	0	6	17	27	1	1	3	6	4	2	1	**18**
1966	53	39	29	41	63	83	96	1	1	1	1	1	1	1	**7**
1967	47	27	8	0	0	11	27	1	1	4	6	6	3	1	**22**
1968	55	50	46	55	74	90	101	1	1	1	1	1	1	1	**7**
1969	47	27	8	0	0	13	27	1	1	4	6	6	3	1	**22**
1970	47	46	30	30	46	65	78	1	1	1	1	1	1	1	**7**
1971	55	53	41	31	45	63	77	1	1	1	1	1	1	1	**7**
1972	51	48	36	36	51	65	72	1	1	1	1	1	1	1	**7**
1973	47	39	8	0	15	29	39	1	1	4	6	2	1	1	**16**
1974	47	34	8	0	13	28	38	1	1	4	6	3	1	1	**17**
1975	47	44	12	0	11	25	35	1	1	3	6	3	1	1	**16**
1976	58	59	58	69	86	99	108	1	1	1	1	1	1	1	**7**
1977	118	127	140	151	181	211	235	1	1	1	1	1	1	1	**7**
1978	85	52	8	0	0	11	27	1	1	4	6	6	3	1	**22**
1979	47	39	8	4	18	33	44	1	1	4	5	2	1	1	**15**
1980	47	32	8	0	0	12	27	1	1	4	6	6	3	1	**22**
1981	54	44	32	36	51	65	73	1	1	1	1	1	1	1	**7**
1982	47	27	8	0	2	13	27	1	1	4	6	5	3	1	**21**
1983	47	31	8	0	0	3	27	1	1	4	6	6	5	1	**24**
1984	47	40	17	19	35	53	66	1	1	2	2	1	1	1	**9**
1985	53	39	26	32	46	60	70	1	1	1	1	1	1	1	**7**
1986	47	28	8	0	12	26	37	1	1	4	6	3	1	1	**17**
1987	57	49	46	56	75	85	94	1	1	1	1	1	1	1	**7**
1988	76	70	66	73	90	104	114	1	1	1	1	1	1	1	**7**
1989	92	71	62	65	81	95	103	1	1	1	1	1	1	1	**7**
1990	88	77	80	89	105	122	135	1	1	1	1	1	1	1	**7**
1991	118	112	92	78	92	105	116	1	1	1	1	1	1	1	**7**
1992	93	76	74	86	99	113	125	1	1	1	1	1	1	1	**7**
1993	47	30	8	0	6	19	30	1	1	4	6	4	2	1	**19**
1994	57	53	47	55	70	84	94	1	1	1	1	1	1	1	**7**
												73 - year Average:			**11**

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Sum Total
1922	20	10	56	22	-7	-14	-10	6	6	6	6	4	3	4	**35**	**525**
1923	5	14	27	5	-9	-15	-10	6	6	6	6	4	3	4	**35**	**455**
1924	-1	2	1	-13	-18	-13	-10	5	6	6	3	2	3	4	**29**	**203**
1925	9	18	21	4	-13	-16	-12	6	6	6	6	3	2	3	**32**	**224**
1926	4	19	-4	-1	-4	-8	-8	6	6	5	5	5	4	4	**35**	**245**
1927	7	2	27	10	-5	-4	-5	6	6	6	6	5	5	5	**39**	**390**
1928	1	-1	16	-3	-6	-5	-3	6	5	6	5	4	5	5	**36**	**252**
1929	2	1	3	0	2	3	-6	6	6	6	6	6	6	4	**40**	**280**
1930	-4	2	1	4	3	3	-2	5	6	6	6	6	6	5	**40**	**280**
1931	0	0	-2	-12	-18	-14	-10	6	6	5	3	2	3	4	**29**	**203**
1932	9	9	21	17	-10	-15	-10	6	6	6	6	4	3	4	**35**	**455**
1933	3	2	3	14	-13	-15	-8	6	6	6	6	3	3	4	**34**	**238**
1934	8	6	-9	-9	-17	-14	-9	6	6	4	4	2	3	4	**29**	**203**
1935	10	34	19	8	-13	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1936	12	20	15	6	-12	-15	-11	6	6	6	6	3	3	3	**33**	**429**
1937	12	14	25	8	-14	-15	-11	6	6	6	6	3	3	3	**33**	**561**
clure	12	20	19	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1939	8	15	1	-11	-18	-16	-11	6	6	6	3	2	2	3	**28**	**196**
1940	12	17	22	2	-16	-16	-13	6	6	6	6	2	2	3	**31**	**403**
1941	12	14	25	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1942	12	18	21	8	-7	-9	-11	6	6	6	6	4	4	3	**35**	**665**
1943	12	20	19	5	-11	-15	-10	6	6	6	6	3	3	4	**34**	**544**
1944	9	-2	23	2	-13	-17	-14	6	5	6	6	3	2	3	**31**	**217**
1945	12	13	23	11	-11	-14	-11	6	6	6	6	3	3	3	**33**	**528**
1946	10	19	22	-2	-15	-16	-13	6	6	6	5	3	2	3	**31**	**372**
1947	7	8	13	-6	-16	-15	-8	6	6	6	4	2	3	4	**31**	**217**
1948	0	4	22	17	-14	-19	-13	6	6	6	6	3	2	3	**32**	**224**
1949	8	9	21	-2	-19	-20	-15	6	6	6	5	2	2	3	**30**	**210**
1950	3	15	18	1	-19	-20	-15	6	6	6	6	2	2	3	**31**	**217**
1951	11	8	10	-3	-18	-20	-15	6	6	6	5	2	2	3	**30**	**210**
1952	12	20	19	8	-3	-12	-12	6	6	6	6	5	3	3	**35**	**700**
1953	1	6	1	7	-14	-19	-15	6	6	6	6	3	2	3	**32**	**224**
1954	13	17	18	-7	-21	-20	-15	6	6	6	4	1	2	3	**28**	**196**
1955	2	1	21	9	-15	-17	-10	6	6	6	6	3	2	4	**33**	**231**
1956	11	13	27	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1957	5	0	15	10	-16	-18	-14	6	6	6	6	2	2	3	**31**	**217**
1958	12	20	19	8	-5	-12	-10	6	6	6	6	5	3	4	**36**	**684**
1959	5	10	3	-9	-20	-17	-7	6	6	6	4	2	2	4	**30**	**210**
1960	8	14	13	-3	-15	-14	-10	6	6	6	5	3	3	4	**33**	**231**
1961	1	5	1	-8	-18	-17	-12	6	6	6	4	2	2	3	**29**	**203**
1962	10	23	14	14	-13	-18	-14	6	6	6	6	3	2	3	**32**	**224**
1963	2	9	22	14	-10	-15	-12	6	6	6	6	4	3	3	**34**	**306**
1964	1	1	7	-3	-16	-16	-10	6	6	6	5	2	2	4	**31**	**217**
1965	7	16	23	13	-6	-11	-10	6	6	6	6	4	3	4	**35**	**630**
1966	6	14	10	-12	-22	-20	-13	6	6	6	3	1	2	3	**27**	**189**
1967	12	20	19	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1968	4	5	4	-9	-19	-16	-11	6	6	6	4	2	2	3	**29**	**203**
1969	12	20	19	8	0	-13	-14	6	6	6	6	6	3	3	**36**	**792**
1970	12	1	16	0	-16	-19	-13	6	6	6	6	2	2	3	**31**	**217**
1971	4	2	12	10	-14	-18	-14	6	6	6	6	3	2	3	**32**	**224**
1972	11	3	12	0	-15	-14	-7	6	6	6	6	3	3	4	**34**	**238**
1973	12	8	31	8	-15	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1974	12	13	26	8	-13	-15	-10	6	6	6	6	3	3	4	**34**	**578**
1975	12	3	32	12	-11	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1976	1	-1	1	-11	-17	-13	-9	6	5	6	3	2	3	4	**29**	**203**
1977	-5	-9	-13	-11	-30	-30	-24	5	4	3	3	1	1	1	**18**	**126**
1978	41	33	44	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1979	12	8	31	4	-14	-15	-11	6	6	6	6	3	3	3	**33**	**495**
1980	12	15	24	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1981	5	10	12	-4	-15	-14	-8	6	6	6	5	3	3	4	**33**	**231**
1982	12	20	19	8	-2	-11	-14	6	6	6	6	5	3	3	**35**	**735**
1983	12	16	23	8	0	-3	-24	6	6	6	6	6	5	1	**36**	**864**
1984	12	7	23	-2	-16	-18	-13	6	6	6	5	2	2	3	**30**	**270**
1985	6	14	13	-6	-14	-14	-10	6	6	6	4	3	3	4	**32**	**224**
1986	12	19	20	8	-12	-14	-11	6	6	6	6	3	3	3	**33**	**561**
1987	2	8	3	-10	-16	-13	-9	6	6	6	4	2	3	4	**31**	**217**
1988	6	6	4	-7	-17	-14	-10	6	6	6	4	2	3	4	**31**	**217**
1989	16	21	9	-3	-16	-14	-8	6	6	6	5	2	3	4	**32**	**224**
1990	6	11	-3	-9	-16	-17	-13	6	6	5	4	2	2	3	**28**	**196**
1991	21	6	20	14	-14	-13	-11	6	6	6	6	3	3	3	**33**	**231**
1992	6	17	2	-12	-13	-14	-12	6	6	6	3	3	3	3	**30**	**210**
1993	12	17	22	8	-6	-13	-11	6	6	6	6	4	3	3	**34**	**646**
1994	2	4	6	-8	-15	-14	-10	6	6	6	4	3	3	4	**32**	**224**
											73 - year Average:				**33**	**380**
													1929 - '34 Average:			**277**

STUDY: **526a**
CP # 18, MILLERTON LAKE, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 576'

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

	Elevation in feet												Difference from Maximum Reservoir Elevation [DFMRE]							Reservoir Elevation Score								Reservoir Change from Previous Month [fluctuation]							Reservoir Fluctuation Score								**Largemouth Bass Reservoir Habitat Index =**
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	491	505	527	547	549	566	559	576	576	562	518	491	10	17	0	0	14	58	85	3	2	6	6	3	1	1	**22**	17	-7	17	0	-14	-44	-27	6	4	6	6	3	1	1	**27**	**594**
1923	485	495	520	537	531	517	541	549	540	526	463	470	59	35	27	36	50	113	106	1	1	1	1	1	1	1	**7**	-14	24	8	-9	-14	-63	7	3	6	6	4	3	1	6	**29**	**203**
1924	483	494	508	522	516	503	506	511	505	478	464	468	73	70	65	71	98	112	108	1	1	1	1	1	1	1	**7**	-13	3	5	-6	-27	-14	4	3	6	6	4	1	3	6	**29**	**203**
1925	461	471	486	500	506	490	512	530	520	497	480	472	86	64	46	56	79	96	104	1	1	1	1	1	1	1	**7**	-16	22	18	-10	-23	-17	-8	2	6	6	4	1	2	4	**25**	**175**
1926	474	487	503	517	520	506	548	562	533	492	471	482	70	28	14	43	84	105	94	1	1	3	1	1	1	1	**9**	-14	42	14	-29	-41	-21	11	3	6	6	1	1	1	6	**24**	**216**
1927	488	503	525	543	560	561	560	569	576	543	492	482	15	16	7	0	33	84	94	2	2	4	6	1	1	1	**17**	1	-1	9	7	-33	-51	-10	6	5	6	6	1	1	4	**29**	**493**
1928	482	503	525	542	540	543	551	554	522	477	465	477	33	25	22	54	99	111	99	1	1	1	1	1	1	1	**7**	3	8	3	-32	-45	-12	12	6	6	6	1	1	3	6	**29**	**203**
1929	484	499	513	523	517	513	531	531	527	506	466	477	63	45	45	49	70	110	99	1	1	1	1	1	1	1	**7**	-4	18	0	-4	-21	-40	11	5	6	6	5	1	1	6	**30**	**210**
1930	478	494	506	517	514	509	524	534	517	488	465	482	67	52	42	59	88	111	94	1	1	1	1	1	1	1	**7**	-5	15	10	-17	-29	-23	17	5	6	6	2	1	1	6	**27**	**189**
1931	486	501	512	522	517	508	510	515	508	482	466	466	68	66	61	68	94	110	110	1	1	1	1	1	1	1	**7**	-9	2	5	-7	-26	-16	0	4	6	6	4	1	2	6	**29**	**203**
1932	467	476	503	520	543	531	524	532	552	518	492	477	45	52	44	24	58	84	99	1	1	1	1	1	1	1	**7**	-12	-7	8	20	-34	-26	-15	3	4	6	6	1	1	3	**24**	**168**
1933	477	489	501	516	512	501	520	537	526	509	466	467	75	56	39	50	67	110	109	1	1	1	1	1	1	1	**7**	-11	19	17	-11	-17	-43	1	3	6	6	3	2	1	6	**27**	**189**
1934	469	479	499	517	511	503	516	527	523	498	477	486	73	60	49	53	78	99	90	1	1	1	1	1	1	1	**7**	-8	13	11	-4	-25	-21	9	4	6	6	5	1	1	6	**29**	**203**
1935	490	500	515	535	532	509	542	563	574	538	469	479	67	34	13	2	38	107	97	1	1	3	5	1	1	1	**13**	-23	33	21	11	-36	-69	10	1	6	6	6	1	1	6	**27**	**351**
1936	486	502	518	533	560	558	564	576	563	521	472	478	18	12	0	13	55	104	98	2	3	6	3	1	1	1	**17**	-2	6	12	-13	-42	-49	6	5	6	6	3	1	1	6	**28**	**476**
1937	488	497	516	535	560	570	576	576	576	538	484	469	6	0	0	0	38	92	107	4	6	6	6	1	1	1	**25**	10	6	0	0	-38	-54	-15	6	6	6	6	1	1	3	**29**	**725**
1938	472	486	533	560	560	542	529	467	572	576	532	520	34	47	109	4	0	44	56	1	1	1	5	6	1	1	**16**	-18	-13	-62	105	4	-44	-12	2	3	1	6	6	1	3	**22**	**352**
1939	513	514	529	538	532	524	542	560	539	504	473	495	52	34	16	37	72	103	81	1	1	2	1	1	1	1	**8**	-8	18	18	-21	-35	-31	22	4	6	6	1	1	1	6	**25**	**200**
1940	494	503	516	549	550	551	548	561	553	512	465	470	25	28	15	23	64	111	106	1	1	2	1	1	1	1	**8**	1	-3	13	-8	-41	-47	5	6	5	6	4	1	1	6	**29**	**232**
1941	481	493	528	556	560	573	573	569	576	569	527	506	3	3	7	0	7	49	70	5	5	4	6	4	1	1	**26**	13	0	-4	7	-7	-42	-21	6	6	5	6	4	1	1	**29**	**754**
1942	497	507	532	552	549	553	554	562	576	555	509	477	23	22	14	0	21	67	99	1	1	3	6	1	1	1	**14**	4	1	8	14	-21	-46	-32	6	6	6	6	1	1	1	**27**	**378**
1943	477	494	518	557	556	576	574	576	562	526	491	476	0	2	0	14	50	85	100	6	5	6	3	1	1	1	**23**	20	-2	2	-14	-36	-35	-15	6	5	6	3	1	1	3	**25**	**575**
1944	479	491	508	521	524	507	516	517	501	494	490	480	69	60	59	75	82	86	96	1	1	1	1	1	1	1	**7**	-17	9	1	-16	-7	-4	-10	2	6	6	2	4	5	4	**29**	**203**
1945	481	503	523	533	560	568	565	571	576	554	511	491	8	11	5	0	22	65	85	4	3	4	6	1	1	1	**20**	8	-3	6	5	-22	-43	-20	6	5	6	6	1	1	2	**27**	**540**
1946	485	502	531	548	528	524	536	559	546	510	478	480	52	40	17	30	66	98	96	1	1	2	1	1	1	1	**8**	-4	12	23	-13	-36	-32	2	5	6	6	3	1	1	6	**28**	**224**
1947	481	500	526	543	541	530	545	556	535	497	473	481	46	31	20	41	79	103	95	1	1	1	1	1	1	1	**7**	-11	15	11	-21	-38	-24	8	3	6	6	1	1	1	6	**24**	**168**
1948	487	503	517	529	523	530	556	551	541	483	480	484	46	20	25	35	93	96	92	1	1	1	1	1	1	1	**7**	7	26	-5	-10	-58	-3	4	6	6	5	4	1	5	6	**33**	**231**
1949	490	500	513	526	524	511	522	538	521	482	477	489	65	54	38	55	94	99	87	1	1	1	1	1	1	1	**7**	-13	11	16	-17	-39	-5	12	3	6	6	2	1	5	6	**29**	**203**
1950	492	503	519	535	541	523	534	551	538	505	476	482	53	42	25	38	71	100	94	1	1	1	1	1	1	1	**7**	-18	11	17	-13	-33	-29	6	2	6	6	3	1	1	6	**25**	**175**
1951	490	532	560	560	554	546	552	546	514	463	463	481	30	24	30	62	113	113	95	1	1	1	1	1	1	1	**7**	-8	6	-6	-32	-51	0	18	4	6	4	1	1	6	6	**28**	**196**
1952	488	500	530	559	560	567	559	526	576	571	525	508	9	17	50	0	5	51	68	4	2	1	6	4	1	1	**19**	7	-8	-33	50	-5	-46	-17	6	4	1	6	5	1	2	**25**	**475**
1953	501	514	533	549	538	532	541	536	518	497	478	481	44	35	40	58	79	98	95	1	1	1	1	1	1	1	**7**	-6	9	-5	-18	-21	-19	3	4	6	5	2	1	2	6	**26**	**182**
1954	488	497	514	532	532	527	537	560	544	507	465	483	49	39	16	32	69	111	93	1	1	2	1	1	1	1	**8**	-5	10	23	-16	-37	-42	18	5	6	6	2	1	1	6	**27**	**216**
1955	489	502	522	540	537	520	534	545	537	504	481	487	56	42	31	39	72	95	89	1	1	1	1	1	1	1	**7**	-17	14	11	-8	-33	-23	6	2	6	6	4	1	1	6	**26**	**182**
1956	491	499	560	560	560	576	576	561	576	566	524	505	0	0	15	0	10	52	71	6	6	2	6	3	1	1	**25**	16	0	-15	15	-10	-42	-19	6	6	3	6	4	1	2	**28**	**700**
1957	496	504	517	527	525	529	546	561	562	526	471	481	47	30	15	14	50	105	95	1	1	2	3	1	1	1	**10**	4	17	15	1	-36	-55	10	6	6	6	6	1	1	6	**32**	**320**
1958	488	501	524	545	554	565	576	576	576	557	516	498	11	0	0	0	19	60	78	3	6	6	6	2	1	1	**25**	11	11	0	0	-19	-41	-18	6	6	6	6	2	1	2	**29**	**725**
1959	492	507	523	530	536	528	550	566	551	500	470	475	48	26	10	25	76	106	101	1	1	3	1	1	1	1	**9**	-8	22	16	-15	-51	-30	5	4	6	6	3	1	1	6	**27**	**243**
1960	474	475	480	490	503	498	515	525	509	496	483	481	78	61	51	67	80	93	95	1	1	1	1	1	1	1	**7**	-5	17	10	-16	-13	-13	-2	5	6	6	2	3	3	5	**30**	**210**
1961	481	491	505	511	510	511	526	539	527	486	467	467	65	50	37	49	90	109	109	1	1	1	1	1	1	1	**7**	1	15	13	-12	-41	-19	0	6	6	6	3	1	2	6	**30**	**210**
1962	467	471	484	492	538	529	527	555	569	540	489	476	47	49	21	7	36	87	100	1	1	1	4	1	1	1	**10**	-9	-2	28	14	-29	-51	-13	4	5	6	6	1	1	3	**26**	**260**
1963	479	491	501	518	558	558	576	576	576	564	520	503	18	0	0	0	12	56	73	2	6	6	6	3	1	1	**25**	0	18	0	0	-12	-44	-17	6	6	6	6	3	1	2	**30**	**750**
1964	490	517	542	551	547	544	553	561	551	508	476	484	32	23	15	25	68	100	92	1	1	2	1	1	1	1	**8**	-3	9	8	-10	-43	-32	8	5	6	6	4	1	1	6	**29**	**232**
1965	481	496	528	560	556	554	559	551	561	540	512	496	22	17	25	15	36	64	80	1	2	1	2	1	1	1	**9**	-2	5	-8	10	-21	-28	-16	5	6	4	6	1	1	2	**25**	**225**
1966	487	513	546	558	541	526	545	564	550	506	486	486	50	31	12	26	70	90	90	1	1	3	1	1	1	1	**9**	-15	19	19	-14	-44	-20	0	3	6	6	3	1	2	6	**27**	**243**
1967	490	502	539	559	560	571	565	514	570	576	539	522	5	11	62	6	0	37	54	4	3	1	4	6	1	1	**20**	11	-6	-51	56	6	-37	-17	6	4	1	6	6	1	2	**26**	**520**
1968	515	521	539	545	545	539	550	554	539	506	478	482	37	26	22	37	70	98	94	1	1	1	1	1	1	1	**7**	-6	11	4	-15	-33	-28	4	4	6	6	3	1	1	6	**27**	**189**
1969	479	495	513	560	524	521	467	469	576	576	538	513	55	109	107	0	0	38	63	1	1	1	6	6	1	1	**17**	-3	-54	2	107	0	-38	-25	5	1	6	6	6	1	1	**26**	**442**
1970	498	516	540	560	560	554	554	555	544	517	476	477	22	22	21	32	59	100	99	1	1	1	1	1	1	1	**7**	-6	0	1	-11	-27	-41	1	4	6	6	3	1	1	6	**27**	**189**
1971	482	502	534	551	548	533	541	544	520	498	491	478	43	35	32	56	78	85	98	1	1	1	1	1	1	1	**7**	-15	8	3	-24	-22	-7	-13	3	6	6	1	1	4	3	**24**	**168**
1972	479	491	519	536	532	524	537	543	540	497	481	481	52	39	33	36	79	95	95	1	1	1	1	1	1	1	**7**	-8	13	6	-3	-43	-16	0	4	6	6	5	1	2	6	**30**	**210**
1973	489	501	523	545	560	560	550	575	576	542	483	477	16	26	1	0	34	93	99	2	1	5	6	1	1	1	**17**	0	-10	25	1	-34	-59	-6	6	4	6	6	1	1	4	**28**	**476**
1974	487	510	545	560	544	550	559	570	573	537	490	473	26	17	6	3	39	86	103	1	2	4	5	1	1	1	**15**	6	9	11	3	-36	-47	-17	6	6	6	6	1	1	2	**28**	**420**
1975	476	494	515	528	535	526	533	536	567	525	476	482	50	43	40	9	51	100	94	1	1	1	4	1	1	1	**10**	-9	7	3	31	-42	-49	6	4	6	6	6	1	1	6	**30**	**300**
1976	489	511	531	541	539	544	547	542	519	492	479	494	32	29	34	57	84	97	82	1	1	1	1	1	1	1	**7**	5	3	-5	-23	-27	-13	15	6	6	5	1	1	3	6	**28**	**196**
1977	490	496	500	503	501	464	465	464	462	466	461	462	112	111	112	114	110	115	114	1	1	1	1	1	1	1	**7**	-37	1	-1	-2	4	-5	1	1	6	5	5	6	5	6	**34**	**238**
1978	462	462	484	532	560	552	510	498	576	576	548	539	24	66	78	0	0	28	37	1	1	1	6	6	1	1	**17**	-8	-42	-12	78	0	-28	-9	4	1	3	6	6	1	4	**25**	**425**
1979	528	535	549	560	555	562	560	571	563	521	477	482	14	16	5	13	55	99	94	3	2	4	3	1	1	1	**15**	7	-2	11	-8	-42	-44	5	6	5	6	4	1	1	6	**29**	**435**
1980	489	488	508	560	560	558	566	550	576	576	542	513	18	10	26	0	0	34	63	2	3	1	6	6	1	1	**20**	-2	8	-16	26	0	-34	-29	5	6	2	6	6	1	1	**27**	**540**
1981	503	512	520	528	531	533	547	553	543	510	477	488	43	29	23	33	66	99	88	1	1	1	1	1	1	1	**7**	2	14	6	-10	-33	-33	11	6	6	6	4	1	1	6	**30**	**210**
1982	491	504	536	560	560	576	546	561	576	576	546	541	0	30	15	0	0	30	35	6	1	2	6	6	1	1	**23**	16	-30	15	15	0	-30	-5	6	1	6	6	6	1	5	**31**	**713**
1983	531	556	560	560	513	484	467	467	483	564	572	576	92	109	109	93	12	4	0	1	1	1	1	3	5	6	**18**	-29	-17	0	16	81	8	4	1	2	6	6	6	6	6	**33**	**594**
1984	560	560	560	560	560	568	570	570	557	530	487	483	8	6	6	19	46	89	93	4	4	4	2	1	1	1	**17**	8	2	0	-13	-27	-43	-4	6	6	6	3	1	1	5	**28**	**476**
1985	482	492	511	536	533	526	551	563	539	501	483	483	50	25	13	37	75	93	93	1	1	3	1	1	1	1	**9**	-7	25	12	-24	-38	-18	0	4	6	6	1	1	2	6	**26**	**234**
1986	490	508	534	553	550	552	574	565	576	558	503	479	24	2	11	0	18	73	97	1	5	3	6	2	1	1	**19**	2	22	-9	11	-18	-55	-24	6	6	4	6	2	1	1	**26**	**494**
1987	480	489	492	495	496	511	530	551	539	503	473	480	65	46	25	37	73	103	96	1	1	1	1	1	1	1	**7**	15	19	21	-12	-36	-30	7	6	6	6	3	1	1	6	**29**	**203**
1988	482	495	507	526	516	527	539	547	527	498	483	486	49	37	29	49	78	93	90	1	1	1	1	1	1	1	**7**	11	12	8	-20	-29	-15	3	6	6	6	2	1	3	6	**30**	**210**
1989	486	497	505	515	512	516	537	552	540	502	478	484	60	39	24	36	74	98	92	1	1	1	1	1	1	1	**7**	4	21	15	-12	-38	-24	6	6	6	6	3	1	1	6	**29**	**203**
1990	489	495	502	510	510	517	532	544	525	508	479	483	59	44	32	51	68	97	93	1	1	1	1	1	1	1	**7**	7	15	12	-19	-17	-29	4	6	6	6	2	2	1	6	**29**	**203**
1991	480	486	492	499	493	489	501	508	512	506	480	486	87	75	68	64	70	96	90	1	1	1	1	1	1	1	**7**	-4	12	7	4	-6	-26	6	5	6	6	6	4	1	6	**34**	**238**
1992	485	490	494	498	499	490	493	494	480	470	465	466	86	83	82	96	106	111	110	1	1	1	1	1	1	1	**7**	-9	3	1	-14	-10	-5	1	4	6	6	3	4	5	6	**34**	**238**
1993	467	466	476	536	543	556	558	576	576	571	522	499	20	18	0	0	5	54	77	1	2	6	6	4	1	1	**21**	13	2	18	0	-5	-49	-23	6	6	6	6	5	1	1	**31**	**651**
1994	490	497	507	512	508	520	534	548	528	498	478	484	56	42	28	48	78	98	92	1	1	1	1	1	1	1	**7**	12	14	14	-20	-30	-20	6	6	6	6	2	1	2	6	**29**	**203**
																								73 - year Average:			**12**												**73 - year Average:**			**28**	**329**
																																										1929 - '34 Average:	**194**

STUDY: **526a**

CP # 12, SWP SAN LUIS RESERVIOR, EOP SURFACE ELEVATION

73 - year maximum March - September Reservoir Elevation = 544'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

	Elevation in feet												Difference from Maximum Reservoir Elevation [DFMRE]						
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	419	438	488	532	544	544	542	540	522	473	435	440	0	2	4	22	71	109	104
1923	482	505	513	544	544	544	539	516	476	471	433	411	0	5	28	68	73	111	133
1924	430	439	465	510	531	531	521	497	464	434	400	396	13	23	47	80	110	144	148
1925	399	408	450	481	529	539	533	507	467	450	408	383	5	11	37	77	94	136	161
1926	392	406	431	495	542	544	540	517	482	464	397	384	0	4	27	62	80	147	160
1927	393	454	495	531	542	544	540	526	489	470	430	424	0	4	18	55	74	114	120
1928	459	501	513	544	544	544	539	517	467	465	433	414	0	5	27	77	79	111	130
1929	437	460	484	528	544	544	536	522	500	467	438	436	0	8	22	44	77	106	108
1930	436	442	487	537	544	544	527	497	468	472	440	417	0	17	47	76	72	104	127
1931	422	426	426	468	483	486	477	464	449	424	375	373	58	67	80	95	120	169	171
1932	384	383	455	524	539	532	524	506	488	471	439	425	12	20	38	56	73	105	119
1933	439	446	449	495	518	525	523	508	480	444	400	400	19	21	36	64	100	144	144
1934	414	411	457	515	520	520	506	481	460	437	402	389	24	38	63	84	107	142	155
1935	387	407	425	499	505	534	537	510	468	437	381	358	10	7	34	76	107	163	186
1936	375	377	378	459	514	544	543	526	492	471	433	420	0	1	18	52	73	111	124
1937	437	450	473	526	544	544	544	540	508	469	433	417	0	0	4	36	75	111	127
1938	447	499	514	544	544	544	544	544	534	499	462	497	0	0	0	10	45	82	47
1939	505	512	515	544	544	544	526	495	464	474	439	420	0	18	49	80	70	105	124
1940	425	422	416	493	536	544	539	509	457	439	381	362	0	5	35	87	105	163	182
1941	386	415	463	517	544	544	543	539	522	472	440	464	0	1	5	22	72	104	80
1942	498	511	515	544	544	544	543	536	525	475	443	458	0	1	8	19	69	101	86
1943	494	511	514	544	544	544	544	544	516	473	432	432	0	0	0	28	71	112	112
1944	463	494	513	544	544	544	525	494	458	463	438	419	0	19	50	86	81	106	125
1945	424	459	498	528	544	544	532	503	465	463	435	421	0	12	41	79	81	109	123
1946	453	495	513	544	544	544	526	493	439	438	425	410	0	18	51	105	106	119	134
1947	437	463	503	531	544	544	526	489	448	450	435	407	0	18	55	96	94	109	137
1948	409	413	413	466	483	507	510	483	441	422	373	360	37	34	61	103	122	171	184
1949	389	417	446	493	516	539	524	496	452	436	385	362	5	20	48	92	108	159	182
1950	395	408	416	489	534	544	530	502	464	460	432	417	0	14	42	80	84	112	127
1951	437	486	517	544	544	544	529	507	461	454	434	427	0	15	37	83	90	110	117
1952	446	479	511	544	544	544	544	544	534	505	484	491	0	0	0	10	39	60	53
1953	499	508	514	544	544	544	526	508	479	469	435	438	0	18	36	65	75	109	106
1954	474	506	513	544	544	544	539	516	458	442	431	412	0	5	28	86	102	113	132
1955	438	470	508	544	544	544	525	497	467	468	434	419	0	19	47	77	76	110	125
1956	450	461	513	544	544	544	537	535	513	474	445	458	0	7	9	31	70	99	86
1957	494	506	514	544	544	544	532	507	465	463	434	420	0	12	37	79	81	110	124
1958	472	505	514	544	544	544	543	542	532	493	478	486	0	1	2	12	51	66	58
1959	497	507	514	544	544	544	518	478	429	434	426	422	0	26	66	115	110	118	122
1960	452	452	452	492	539	544	522	486	446	445	389	362	0	22	58	98	99	155	182
1961	397	422	460	504	544	544	518	476	435	434	424	404	0	26	68	109	110	120	140
1962	425	425	457	504	544	544	519	478	416	402	327	331	0	25	66	128	142	217	213
1963	405	456	484	526	544	544	541	531	497	472	433	433	0	3	13	47	72	111	111
1964	470	502	514	544	544	544	519	482	437	437	427	405	0	25	62	107	107	117	139
1965	409	438	488	533	544	544	544	531	497	475	432	432	0	0	13	47	69	112	112
1966	465	507	513	544	544	544	524	487	429	428	415	413	0	20	57	115	116	129	131
1967	437	464	508	544	544	544	544	544	535	520	498	501	0	0	0	9	24	46	43
1968	508	518	520	544	544	544	528	493	451	451	437	420	0	16	51	93	93	107	124
1969	448	473	519	544	544	544	544	544	535	512	480	502	0	0	0	9	32	64	42
1970	509	517	519	544	544	544	534	512	471	470	434	428	0	10	32	73	74	110	116
1971	453	503	519	544	544	544	528	508	470	455	433	429	0	16	36	74	89	111	115
1972	469	495	514	544	544	544	524	487	440	438	434	410	0	20	57	104	106	110	134
1973	431	481	513	544	544	544	534	508	470	458	433	428	0	10	36	74	86	111	116
1974	458	502	513	544	544	544	543	533	503	472	456	486	0	1	11	41	72	88	58
1975	502	510	513	544	544	544	540	527	501	473	441	458	0	4	17	43	71	103	86
1976	493	511	514	544	544	544	524	495	472	479	449	428	0	20	49	72	65	95	116
1977	429	435	437	456	456	456	460	450	434	414	410	426	88	84	94	110	130	134	118
1978	432	449	498	544	544	544	544	544	523	472	431	438	0	0	0	21	72	113	106
1979	481	500	513	544	544	544	536	515	483	472	433	420	0	8	29	61	72	111	124
1980	454	490	514	544	544	544	544	544	527	494	455	470	0	0	0	17	50	89	74
1981	513	522	528	544	544	544	528	492	449	448	436	414	0	16	52	95	96	108	130
1982	435	487	514	544	544	544	544	544	531	488	454	483	0	0	0	13	56	90	61
1983	498	510	514	544	544	544	544	544	535	522	507	514	0	0	0	9	22	37	30
1984	529	540	544	544	544	544	535	514	477	471	433	427	0	9	30	67	73	111	117
1985	468	504	513	544	544	544	523	486	434	428	412	406	0	21	58	110	116	132	138
1986	408	412	448	503	544	544	544	544	532	491	456	459	0	0	0	12	53	88	85
1987	490	501	526	544	544	544	522	484	453	461	438	414	0	22	60	91	83	106	130
1988	423	419	460	520	533	533	522	508	491	468	429	426	11	22	36	53	76	115	118
1989	427	438	458	496	496	529	509	467	407	395	364	364	15	35	77	137	149	180	180
1990	373	393	412	478	498	507	497	476	465	444	401	394	37	47	68	79	100	143	150
1991	394	401	403	416	416	481	481	470	451	431	415	415	63	63	74	93	113	129	129
1992	419	432	446	490	531	544	533	512	495	461	412	398	0	11	32	49	83	132	146
1993	399	406	452	520	530	544	542	537	520	469	430	423	0	2	7	24	75	114	121
1994	459	501	514	544	544	544	518	478	439	442	428	415	0	26	66	105	102	116	129

	Reservoir Elevation Score								Reservoir Change from Previous Month [fluctuation]							Reservoir Fluctuation Score								
YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Sum Total**
1922	6	5	5	1	1	1	1	**20**	0	-2	-2	-18	-49	-38	5	6	5	5	2	1	1	6	**26**	**520**
1923	6	4	1	1	1	1	1	**15**	0	-5	-23	-40	-5	-38	-22	6	5	1	1	5	1	1	**20**	**300**
1924	3	1	1	1	1	1	1	**9**	0	-10	-24	-33	-30	-34	-4	6	4	1	1	1	1	5	**19**	**171**
1925	4	3	1	1	1	1	1	**12**	10	-6	-26	-40	-17	-42	-25	6	4	1	1	2	1	1	**16**	**192**
1926	6	5	1	1	1	1	1	**16**	2	-4	-23	-35	-18	-67	-13	6	5	1	1	2	1	3	**19**	**304**
1927	6	5	2	1	1	1	1	**17**	2	-4	-14	-37	-19	-40	-6	6	5	3	1	2	1	4	**22**	**374**
1928	6	4	1	1	1	1	1	**15**	0	-5	-22	-50	-2	-32	-19	6	5	1	1	5	1	2	**21**	**315**
1929	6	4	1	1	1	1	1	**15**	0	-8	-14	-22	-33	-29	-2	6	4	3	1	1	1	5	**21**	**315**
1930	6	2	1	1	1	1	1	**13**	0	-17	-30	-29	4	-32	-23	6	2	1	1	6	1	1	**18**	**234**
1931	1	1	1	1	1	1	1	**7**	3	-9	-13	-15	-25	-49	-2	6	4	3	3	1	1	5	**23**	**161**
1932	3	1	1	1	1	1	1	**9**	-7	-8	-18	-18	-17	-32	-14	4	4	2	2	2	1	3	**18**	**162**
1933	2	1	1	1	1	1	1	**8**	7	-2	-15	-28	-36	-44	0	6	5	3	1	1	1	6	**23**	**184**
1934	1	1	1	1	1	1	1	**7**	0	-14	-25	-21	-23	-35	-13	6	3	1	1	1	1	3	**16**	**112**
1935	3	4	1	1	1	1	1	**12**	29	3	-27	-42	-31	-56	-23	6	6	1	1	1	1	1	**17**	**204**
1936	6	5	2	1	1	1	1	**17**	30	-1	-17	-34	-21	-38	-13	6	5	2	1	1	1	3	**19**	**323**
1937	6	6	5	1	1	1	1	**21**	0	0	-4	-32	-39	-36	-16	6	6	5	1	1	1	2	**22**	**462**
1938	6	6	6	3	1	1	1	**24**	0	0	0	-10	-35	-37	35	6	6	6	4	1	1	6	**30**	**720**
1939	6	2	1	1	1	1	1	**13**	0	-18	-31	-31	10	-35	-19	6	2	1	1	6	1	2	**19**	**247**
1940	6	4	1	1	1	1	1	**15**	8	-5	-30	-52	-18	-58	-19	6	5	1	1	2	1	2	**18**	**270**
1941	6	5	4	1	1	1	1	**19**	0	-1	-4	-17	-50	-32	24	6	5	5	2	1	1	6	**26**	**494**
1942	6	5	4	2	1	1	1	**20**	0	-1	-7	-11	-50	-32	15	6	5	4	3	1	1	6	**26**	**520**
1943	6	6	6	1	1	1	1	**22**	0	0	0	-28	-43	-41	0	6	6	6	1	1	1	6	**27**	**594**
1944	6	2	1	1	1	1	1	**13**	0	-19	-31	-36	5	-25	-19	6	2	1	1	6	1	2	**19**	**247**
1945	6	3	1	1	1	1	1	**14**	0	-12	-29	-38	-2	-28	-14	6	3	1	1	5	1	3	**20**	**280**
1946	6	2	1	1	1	1	1	**13**	0	-18	-33	-54	-1	-13	-15	6	2	1	1	5	3	3	**21**	**273**
1947	6	2	1	1	1	1	1	**13**	0	-18	-37	-41	2	-15	-28	6	2	1	1	6	3	1	**20**	**260**
1948	1	1	1	1	1	1	1	**7**	24	3	-27	-42	-19	-49	-13	6	6	1	1	2	1	3	**20**	**140**
1949	4	1	1	1	1	1	1	**10**	23	-15	-28	-44	-16	-51	-23	6	3	1	1	2	1	1	**15**	**150**
1950	6	3	1	1	1	1	1	**14**	10	-14	-28	-38	-4	-28	-15	6	3	1	1	5	1	3	**20**	**280**
1951	6	2	1	1	1	1	1	**13**	0	-15	-22	-46	-7	-20	-7	6	3	1	1	4	2	4	**21**	**273**
1952	6	6	6	3	1	1	1	**24**	0	0	0	-10	-29	-21	7	6	6	6	4	1	1	6	**30**	**720**
1953	6	2	1	1	1	1	1	**13**	0	-18	-18	-29	-10	-34	3	6	2	2	1	4	1	6	**22**	**286**
1954	6	4	1	1	1	1	1	**15**	0	-5	-23	-58	-16	-11	-19	6	5	1	1	2	3	2	**20**	**300**
1955	6	2	1	1	1	1	1	**13**	0	-19	-28	-30	1	-34	-15	6	2	1	1	6	1	3	**20**	**260**
1956	6	4	4	1	1	1	1	**18**	0	-7	-2	-22	-39	-29	13	6	4	5	1	1	1	6	**24**	**432**
1957	6	3	1	1	1	1	1	**14**	0	-12	-25	-42	-2	-29	-14	6	3	1	1	5	1	3	**20**	**280**
1958	6	5	5	3	1	1	1	**22**	0	-1	-1	-10	-39	-15	8	6	5	5	4	1	3	6	**30**	**660**
1959	6	1	1	1	1	1	1	**12**	0	-26	-40	-49	5	-8	-4	6	1	1	1	6	4	5	**24**	**288**
1960	6	1	1	1	1	1	1	**12**	5	-22	-36	-40	-1	-56	-27	6	1	1	1	5	1	1	**16**	**192**
1961	6	1	1	1	1	1	1	**12**	0	-26	-42	-41	-1	-10	-20	6	1	1	1	5	4	2	**20**	**240**
1962	6	1	1	1	1	1	1	**12**	0	-25	-41	-62	-14	-75	4	6	1	1	1	3	1	6	**19**	**228**
1963	6	5	3	1	1	1	1	**18**	0	-3	-10	-34	-25	-39	0	6	5	4	1	1	1	6	**24**	**432**
1964	6	1	1	1	1	1	1	**12**	0	-25	-37	-45	0	-10	-22	6	1	1	1	6	4	1	**20**	**240**
1965	6	6	3	1	1	1	1	**19**	0	0	-13	-34	-22	-43	0	6	6	3	1	1	1	6	**24**	**456**
1966	6	1	1	1	1	1	1	**12**	0	-20	-37	-58	-1	-13	-2	6	2	1	1	5	3	5	**23**	**276**
1967	6	6	6	4	1	1	1	**25**	0	0	0	-9	-15	-22	3	6	6	6	4	3	1	6	**32**	**800**
1968	6	2	1	1	1	1	1	**13**	0	-16	-35	-42	0	-14	-17	6	2	1	1	6	3	2	**21**	**273**
1969	6	6	6	4	1	1	1	**25**	0	0	0	-9	-23	-32	22	6	6	6	4	1	1	6	**30**	**750**
1970	6	3	1	1	1	1	1	**14**	0	-10	-22	-41	-1	-36	-6	6	4	1	1	5	1	4	**22**	**308**
1971	6	2	1	1	1	1	1	**13**	0	-16	-20	-38	-15	-22	-4	6	2	2	1	3	1	5	**20**	**260**
1972	6	1	1	1	1	1	1	**12**	0	-20	-37	-47	-2	-4	-24	6	2	1	1	5	5	1	**21**	**252**
1973	6	3	1	1	1	1	1	**14**	0	-10	-26	-38	-12	-25	-5	6	4	1	1	3	1	5	**21**	**294**
1974	6	5	3	1	1	1	1	**18**	0	-1	-10	-30	-31	-16	30	6	5	4	1	1	2	6	**25**	**450**
1975	6	5	2	1	1	1	1	**17**	0	-4	-13	-26	-28	-32	17	6	5	3	1	1	1	6	**23**	**391**
1976	6	1	1	1	1	1	1	**12**	0	-20	-29	-23	7	-30	-21	6	2	1	1	6	1	1	**18**	**216**
1977	1	1	1	1	1	1	1	**7**	0	4	-10	-16	-20	-4	16	6	6	4	2	2	5	6	**31**	**217**
1978	6	6	6	1	1	1	1	**22**	0	0	0	-21	-51	-41	7	6	6	6	1	1	1	6	**27**	**594**
1979	6	4	1	1	1	1	1	**15**	0	-8	-21	-32	-11	-39	-13	6	4	1	1	3	1	3	**19**	**285**
1980	6	6	6	2	1	1	1	**23**	0	0	0	-17	-33	-39	15	6	6	6	2	1	1	6	**28**	**644**
1981	6	2	1	1	1	1	1	**13**	0	-16	-36	-43	-1	-12	-22	6	2	1	1	5	3	1	**19**	**247**
1982	6	6	6	3	1	1	1	**24**	0	0	0	-13	-43	-34	29	6	6	6	3	1	1	6	**29**	**696**
1983	6	6	6	4	1	1	1	**25**	0	0	0	-9	-13	-15	7	6	6	6	4	3	3	6	**34**	**850**
1984	6	4	1	1	1	1	1	**15**	0	-9	-21	-37	-6	-38	-6	6	4	1	1	4	1	4	**21**	**315**
1985	6	1	1	1	1	1	1	**12**	0	-21	-37	-52	-6	-16	-6	6	1	1	1	4	2	4	**19**	**228**
1986	6	6	6	3	1	1	1	**24**	0	0	0	-12	-41	-35	3	6	6	6	3	1	1	6	**29**	**696**
1987	6	1	1	1	1	1	1	**12**	0	-22	-38	-31	8	-23	-24	6	1	1	1	6	1	1	**17**	**204**
1988	3	1	1	1	1	1	1	**9**	0	-11	-14	-17	-23	-39	-3	6	3	3	2	1	1	5	**21**	**189**
1989	2	1	1	1	1	1	1	**8**	33	-20	-42	-60	-12	-31	0	6	2	1	1	3	1	6	**20**	**160**
1990	1	1	1	1	1	1	1	**7**	9	-10	-21	-11	-21	-43	-7	6	4	1	3	1	1	4	**20**	**140**
1991	1	1	1	1	1	1	1	**7**	65	0	-11	-19	-20	-16	0	6	6	3	2	2	2	6	**27**	**189**
1992	6	3	1	1	1	1	1	**14**	13	-11	-21	-17	-34	-49	-14	6	3	1	2	1	1	3	**17**	**238**
1993	6	5	4	1	1	1	1	**19**	14	-2	-5	-17	-51	-39	-7	6	5	5	2	1	1	4	**24**	**456**
1994	6	1	1	1	1	1	1	**12**	0	-26	-40	-39	3	-14	-13	6	1	1	1	6	3	3	**21**	**252**
				73 - year Average:				**15**											**73 - year Average:**				**22**	**342**
																					1929 - '34 Average:			**195**

STUDY: 1995C06F-SWRCBJP-634 DWRSIM: recirc818VA, 10 Apr 98
CP # 4, SHASTA LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCBJP-634/4/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 1067'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	989	993	999	1,003	1,019	1,038	1,060	1,067	1,062	1,045	1,025	1,019	29	7	0	5	22	42	48	1	4	6	4	1	1	1	**18**	19	22	7	-5	-17	-20	-6	6	6	6	5	2	2	4	**31**	**558**
1923	1,016	1,015	1,017	1,021	1,022	1,024	1,037	1,032	1,021	1,001	984	983	43	30	35	46	66	83	84	1	1	1	1	1	1	1	**7**	2	13	-5	-11	-20	-17	-1	6	6	5	3	2	2	5	**29**	**203**
1924	983	983	982	981	987	987	976	962	947	920	902	886	80	91	105	120	147	165	181	1	1	1	1	1	1	1	**7**	0	-11	-14	-15	-27	-18	-16	6	3	3	3	1	2	2	**20**	**140**
1925	890	904	913	922	995	1,002	1,034	1,045	1,036	1,011	995	994	65	33	22	31	56	72	73	1	1	1	1	1	1	1	**7**	7	32	11	-9	-25	-16	-1	6	6	6	4	1	2	5	**30**	**210**
1926	993	992	989	987	1,015	1,023	1,038	1,032	1,008	986	966	959	44	29	35	59	81	101	108	1	1	1	1	1	1	1	**7**	8	15	-6	-24	-22	-20	-7	6	6	4	1	1	2	4	**24**	**168**
1927	958	986	1,009	1,033	1,026	1,052	1,067	1,067	1,058	1,041	1,021	1,016	15	0	0	9	26	46	51	2	6	6	4	1	1	1	**21**	26	15	0	-9	-17	-20	-5	6	6	6	4	2	2	5	**31**	**651**
1928	1,014	1,017	1,020	1,028	1,044	1,046	1,066	1,063	1,048	1,022	1,001	993	21	1	4	19	45	66	74	1	5	5	2	1	1	1	**16**	2	20	-3	-15	-26	-21	-8	6	6	5	3	1	1	4	**26**	**416**
1929	989	990	991	992	998	1,005	1,007	1,001	992	976	958	951	62	60	66	75	91	109	116	1	1	1	1	1	1	1	**7**	7	2	-6	-9	-16	-18	-7	6	6	4	4	2	2	4	**28**	**196**
1930	949	949	980	990	1,007	1,029	1,040	1,039	1,019	999	985	982	38	27	28	48	68	82	85	1	1	1	1	1	1	1	**7**	22	11	-1	-20	-20	-14	-3	6	6	5	2	2	3	5	**29**	**203**
1931	980	979	977	979	982	989	981	971	960	935	919	906	78	86	96	107	132	148	161	1	1	1	1	1	1	1	**7**	7	-8	-10	-11	-25	-16	-13	6	4	4	3	1	2	3	**23**	**161**
1932	901	900	915	927	937	962	965	973	966	952	938	930	105	102	94	101	115	129	137	1	1	1	1	1	1	1	**7**	25	3	8	-7	-14	-14	-8	6	6	6	4	3	3	4	**32**	**224**
1933	928	925	926	928	932	967	977	983	979	958	944	938	100	90	84	88	109	123	129	1	1	1	1	1	1	1	**7**	35	10	6	-4	-21	-14	-6	6	6	6	5	1	3	4	**31**	**217**
1934	935	935	944	961	981	993	994	989	981	948	936	921	74	73	78	86	119	131	146	1	1	1	1	1	1	1	**7**	12	1	-5	-8	-33	-12	-15	6	6	5	4	1	3	3	**28**	**196**
1935	915	926	931	950	969	991	1,035	1,042	1,035	1,012	998	994	76	32	25	32	55	69	73	1	1	1	1	1	1	1	**7**	22	44	7	-7	-23	-14	-4	6	6	6	4	1	3	5	**31**	**217**
1936	990	987	984	1,008	1,032	1,043	1,052	1,050	1,043	1,019	998	993	24	15	17	24	48	69	74	1	2	2	1	1	1	1	**9**	11	9	-2	-7	-24	-21	-5	6	6	5	4	1	1	5	**28**	**252**
1937	989	986	981	976	978	1,006	1,036	1,044	1,041	1,018	998	991	61	31	23	26	49	69	76	1	1	1	1	1	1	1	**7**	28	30	8	-3	-23	-20	-7	6	6	6	5	1	2	4	**30**	**210**
1938	989	1,011	1,020	1,035	1,030	1,024	1,049	1,067	1,067	1,058	1,045	1,036	43	18	0	0	9	22	31	1	2	6	6	4	1	1	**21**	-6	25	18	0	-9	-13	-9	4	6	6	6	4	3	4	**33**	**693**
1939	1,023	1,017	1,020	1,022	1,024	1,039	1,033	1,026	1,000	979	949	945	28	34	41	67	88	118	122	1	1	1	1	1	1	1	**7**	15	-6	-7	-26	-21	-30	-4	6	4	4	1	1	1	5	**22**	**154**
1940	942	937	945	993	1,017	1,025	1,059	1,064	1,057	1,037	1,020	1,019	42	8	3	10	30	47	48	1	4	5	3	1	1	1	**16**	8	34	5	-7	-20	-17	-1	6	6	6	4	2	2	5	**31**	**496**
1941	1,018	1,017	1,019	1,020	1,024	1,045	1,064	1,067	1,067	1,058	1,045	1,036	22	3	0	0	9	22	31	1	5	6	6	4	1	1	**24**	21	19	3	0	-9	-13	-9	6	6	6	6	4	3	4	**35**	**840**
1942	1,023	1,017	1,020	1,023	1,028	1,042	1,067	1,067	1,067	1,058	1,042	1,036	25	0	0	0	9	25	31	1	6	6	6	4	1	1	**25**	14	25	0	0	-9	-16	-6	6	6	6	6	4	2	4	**34**	**850**
1943	1,023	1,017	1,022	1,030	1,042	1,051	1,067	1,067	1,058	1,044	1,027	1,022	16	0	0	9	23	40	45	2	6	6	4	1	1	1	**21**	9	16	0	-9	-14	-17	-5	6	6	6	4	3	2	5	**32**	**672**
1944	1,020	1,017	1,015	1,014	1,023	1,033	1,038	1,038	1,018	994	973	966	34	29	29	49	73	94	101	1	1	1	1	1	1	1	**7**	10	5	0	-20	-24	-21	-7	6	6	6	2	1	1	4	**26**	**182**
1945	968	980	995	1,002	1,037	1,050	1,063	1,067	1,061	1,040	1,020	1,012	17	4	0	6	27	47	55	2	5	6	4	1	1	1	**20**	13	13	4	-6	-21	-20	-8	6	6	6	4	1	2	4	**29**	**580**
1946	1,011	1,017	1,018	1,033	1,039	1,051	1,063	1,065	1,054	1,036	1,020	1,014	16	4	2	13	31	47	53	2	5	5	3	1	1	1	**18**	12	12	2	-11	-18	-16	-6	6	6	6	3	2	2	4	**29**	**522**
1947	1,009	1,009	1,010	1,006	1,013	1,033	1,040	1,029	1,014	992	972	966	34	27	38	53	75	95	101	1	1	1	1	1	1	1	**7**	20	7	-11	-15	-22	-20	-6	6	6	3	3	1	2	4	**25**	**175**
1948	973	977	979	1,006	1,004	1,016	1,056	1,067	1,066	1,050	1,032	1,032	51	11	0	1	17	35	35	1	3	6	5	2	1	1	**19**	12	40	11	-1	-16	-18	0	6	6	6	5	2	2	6	**33**	**627**
1949	1,023	1,017	1,016	1,012	1,016	1,050	1,063	1,065	1,047	1,025	1,004	997	17	4	2	20	42	63	70	2	5	5	1	1	1	1	**16**	34	13	2	-18	-22	-21	-7	6	6	6	2	1	1	4	**26**	**416**
1950	992	990	988	997	1,012	1,031	1,046	1,045	1,033	1,011	992	990	36	21	22	34	56	75	77	1	1	1	1	1	1	1	**7**	19	15	-1	-12	-22	-19	-2	6	6	5	3	1	2	5	**28**	**196**
1951	1,002	1,017	1,020	1,033	1,040	1,057	1,064	1,067	1,051	1,029	1,011	1,008	10	3	0	16	38	56	59	3	5	6	2	1	1	1	**19**	17	7	3	-16	-22	-18	-3	6	6	6	2	1	2	5	**28**	**532**
1952	1,006	1,011	1,019	1,032	1,038	1,048	1,058	1,067	1,067	1,058	1,046	1,036	19	9	0	0	9	21	31	2	4	6	6	4	1	1	**24**	10	10	9	0	-9	-12	-10	6	6	6	6	4	3	4	**35**	**840**
1953	1,023	1,017	1,021	1,022	1,033	1,051	1,065	1,067	1,067	1,058	1,042	1,036	16	2	0	0	9	25	31	2	5	6	6	4	1	1	**25**	18	14	2	0	-9	-16	-6	6	6	6	6	4	2	4	**34**	**850**
1954	1,023	1,017	1,021	1,030	1,035	1,051	1,067	1,064	1,060	1,043	1,030	1,026	16	0	3	7	24	37	41	2	6	5	4	1	1	1	**20**	16	16	-3	-4	-17	-13	-4	6	6	5	5	2	3	5	**32**	**640**
1955	1,023	1,017	1,022	1,024	1,026	1,024	1,038	1,045	1,025	1,002	985	985	43	29	22	42	65	82	82	1	1	1	1	1	1	1	**7**	-2	14	7	-20	-23	-17	0	5	6	6	2	1	2	6	**28**	**196**
1956	983	988	1,017	1,017	1,019	1,048	1,067	1,067	1,067	1,058	1,047	1,036	19	0	0	0	9	20	31	2	6	6	6	4	1	1	**26**	29	19	0	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**884**
1957	1,023	1,017	1,016	1,017	1,035	1,052	1,059	1,067	1,061	1,043	1,029	1,028	15	8	0	6	24	38	39	2	4	6	4	1	1	1	**19**	17	7	8	-6	-18	-14	-1	6	6	6	4	2	3	5	**32**	**608**
1958	1,023	1,017	1,021	1,029	1,067	1,024	1,053	1,067	1,067	1,058	1,047	1,036	43	14	0	0	9	20	31	1	3	6	6	4	1	1	**22**	-43	29	14	0	-9	-11	-11	1	6	6	6	4	3	3	**29**	**638**
1959	1,023	1,017	1,017	1,034	1,039	1,052	1,059	1,058	1,038	1,013	996	1,000	15	8	9	29	54	71	67	2	4	4	1	1	1	1	**14**	13	7	-1	-20	-25	-17	4	6	6	5	2	1	2	6	**28**	**392**
1960	994	993	992	997	1,026	1,052	1,059	1,067	1,049	1,026	1,006	1,005	15	8	0	18	41	61	62	2	4	6	2	1	1	1	**17**	26	7	8	-18	-23	-20	-1	6	6	6	2	1	2	5	**28**	**476**
1961	1,001	1,004	1,020	1,025	1,044	1,057	1,062	1,066	1,046	1,020	998	998	10	5	1	21	47	69	69	3	4	5	1	1	1	1	**16**	13	5	4	-20	-26	-22	0	6	6	6	2	1	1	6	**28**	**448**
1962	992	993	1,005	1,001	1,035	1,053	1,066	1,067	1,055	1,035	1,012	1,009	14	1	0	12	32	55	58	3	5	6	3	1	1	1	**20**	18	13	1	-12	-20	-23	-3	6	6	6	3	2	1	5	**29**	**580**
1963	1,023	1,017	1,021	1,025	1,045	1,055	1,052	1,067	1,062	1,052	1,040	1,036	12	15	0	5	15	27	31	3	2	6	4	2	1	1	**19**	10	-3	15	-5	-10	-12	-4	6	5	6	5	4	3	5	**34**	**646**
1964	1,023	1,017	1,018	1,033	1,037	1,041	1,036	1,031	1,014	992	972	969	26	31	36	53	75	95	98	1	1	1	1	1	1	1	**7**	4	-5	-5	-17	-22	-20	-3	6	5	5	2	1	2	5	**26**	**182**
1965	968	978	1,017	1,022	1,040	1,052	1,065	1,066	1,056	1,040	1,026	1,024	15	2	1	11	27	41	43	2	5	5	3	1	1	1	**18**	12	13	1	-10	-16	-14	-2	6	6	6	4	2	3	5	**32**	**576**
1966	1,023	1,017	1,021	1,037	1,049	1,055	1,065	1,064	1,047	1,027	1,011	1,005	12	2	3	20	40	56	62	3	5	5	1	1	1	1	**17**	6	10	-1	-17	-20	-16	-6	6	6	5	2	2	2	4	**27**	**459**
1967	996	1,010	1,021	1,030	1,044	1,048	1,064	1,067	1,067	1,058	1,047	1,036	19	3	0	0	9	20	31	2	5	6	6	4	1	1	**25**	4	16	3	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1968	1,023	1,017	1,019	1,025	1,034	1,054	1,057	1,059	1,042	1,021	1,012	1,012	13	10	8	25	46	55	55	3	3	4	1	1	1	1	**14**	20	3	2	-17	-21	-9	0	6	6	6	2	1	4	6	**31**	**434**
1969	1,009	1,010	1,021	1,022	1,027	1,048	1,063	1,067	1,067	1,058	1,047	1,036	19	4	0	0	9	20	31	2	5	6	6	4	1	1	**25**	21	15	4	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**850**
1970	1,023	1,017	1,020	1,017	1,025	1,052	1,057	1,057	1,046	1,027	1,014	1,009	15	10	10	21	40	53	58	2	3	3	1	1	1	1	**12**	27	5	0	-11	-19	-13	-5	6	6	6	3	2	3	5	**31**	**372**
1971	1,007	1,017	1,020	1,028	1,041	1,043	1,065	1,067	1,067	1,058	1,047	1,036	24	2	0	0	9	20	31	1	5	6	6	4	1	1	**24**	2	22	2	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**816**
1972	1,023	1,017	1,022	1,033	1,045	1,056	1,067	1,067	1,049	1,028	1,014	1,015	11	0	0	18	39	53	52	3	6	6	2	1	1	1	**20**	11	11	0	-18	-21	-14	1	6	6	6	2	1	3	6	**30**	**600**
1973	1,016	1,017	1,021	1,030	1,034	1,053	1,065	1,067	1,060	1,043	1,029	1,027	14	2	0	7	24	38	40	3	5	6	4	1	1	1	**21**	19	12	2	-7	-17	-14	-2	6	6	6	4	2	3	5	**32**	**672**
1974	1,023	1,017	1,018	1,017	1,036	1,025	1,058	1,067	1,067	1,058	1,047	1,036	42	9	0	0	9	20	31	1	4	6	6	4	1	1	**23**	-11	33	9	0	-9	-11	-11	3	6	6	6	4	3	3	**31**	**713**
1975	1,023	1,017	1,021	1,024	1,045	1,039	1,061	1,067	1,067	1,058	1,046	1,036	28	6	0	0	9	21	31	1	4	6	6	4	1	1	**23**	-6	22	6	0	-9	-12	-10	4	6	6	6	4	3	4	**33**	**759**
1976	1,023	1,017	1,018	1,017	1,012	1,020	1,027	1,025	1,000	985	980	982	47	40	42	67	82	87	85	1	1	1	1	1	1	1	**7**	8	7	-2	-25	-15	-5	2	6	6	5	1	3	5	6	**32**	**224**
1977	984	986	986	985	975	975	956	951	931	912	897	894	92	111	116	136	155	170	173	1	1	1	1	1	1	1	**7**	0	-19	-5	-20	-19	-15	-3	6	2	5	2	2	3	5	**25**	**175**
1978	883	881	922	1,020	1,031	1,047	1,067	1,067	1,064	1,053	1,041	1,036	20	0	0	3	14	26	31	1	6	6	5	3	1	1	**23**	16	20	0	-3	-11	-12	-5	6	6	6	5	3	3	5	**34**	**782**
1979	1,023	1,017	1,013	1,016	1,027	1,044	1,052	1,061	1,045	1,027	1,008	1,007	23	15	6	22	40	59	60	1	2	4	1	1	1	1	**11**	17	8	9	-16	-18	-19	-1	6	6	6	2	2	2	5	**29**	**319**
1980	1,007	1,010	1,013	1,029	1,019	1,046	1,059	1,064	1,056	1,046	1,035	1,036	21	8	3	11	21	32	31	1	4	5	3	1	1	1	**16**	27	13	5	-8	-10	-11	1	6	6	6	4	4	3	6	**35**	**560**
1981	1,023	1,017	1,020	1,029	1,042	1,056	1,064	1,062	1,042	1,017	1,001	1,000	11	3	5	25	50	66	67	3	5	4	1	1	1	1	**16**	14	8	-2	-20	-25	-16	-1	6	6	5	2	1	2	5	**27**	**432**
1982	997	1,017	1,018	1,033	1,029	1,046	1,051	1,067	1,067	1,058	1,047	1,036	21	16	0	0	9	20	31	1	2	6	6	4	1	1	**21**	17	5	16	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1983	1,023	1,017	1,020	1,022	1,017	1,045	1,050	1,067	1,067	1,058	1,047	1,036	22	17	0	0	9	20	31	1	2	6	6	4	1	1	**21**	28	5	17	0	-9	-11	-11	6	6	6	6	4	3	3	**34**	**714**
1984	1,023	1,017	1,018	1,034	1,047	1,056	1,067	1,067	1,062	1,045	1,036	1,035	11	0	0	5	22	31	32	3	6	6	4	1	1	1	**22**	9	11	0	-5	-17	-9	-1	6	6	6	5	2	4	5	**34**	**748**
1985	1,023	1,017	1,022	1,023	1,027	1,034	1,042	1,035	1,010	990	974	976	33	25	32	57	77	93	91	1	1	1	1	1	1	1	**7**	7	8	-7	-25	-20	-16	2	6	6	4	1	2	2	6	**27**	**189**
1986	978	982	992	1,016	1,017	1,029	1,047	1,049	1,038	1,022	1,007	1,010	38	20	18	29	45	60	57	1	1	2	1	1	1	1	**8**	12	18	2	-11	-16	-15	3	6	6	6	3	2	3	6	**32**	**256**
1987	1,010	1,009	1,008	1,009	1,020	1,046	1,048	1,043	1,012	988	955	954	21	19	24	55	79	112	113	1	2	1	1	1	1	1	**8**	26	2	-5	-31	-24	-33	-1	6	6	5	1	1	1	5	**25**	**200**
1988	950	952	983	1,004	1,003	1,006	1,011	1,011	991	959	944	941	61	56	56	76	108	123	126	1	1	1	1	1	1	1	**7**	3	5	0	-20	-32	-15	-3	6	6	6	2	1	3	5	**29**	**203**
1989	941	953	960	967	974	1,038	1,057	1,053	1,037	1,016	1,004	1,005	29	10	14	30	51	63	62	1	3	3	1	1	1	1	**11**	64	19	-4	-16	-21	-12	1	6	6	5	2	1	3	6	**29**	**319**
1990	1,007	1,006	1,002	1,008	1,009	1,017	1,008	1,013	998	972	956	952	50	59	54	69	95	111	115	1	1	1	1	1	1	1	**7**	8	-9	5	-15	-26	-16	-4	6	4	6	3	1	2	5	**27**	**189**
1991	948	946	945	946	941	968	979	979	969	955	941	934	99	88	88	98	112	126	133	1	1	1	1	1	1	1	**7**	27	11	0	-10	-14	-14	-7	6	6	6	4	3	3	4	**32**	**224**
1992	932	931	932	936	975	998	1,010	1,002	988	973	959	953	69	57	65	79	94	108	114	1	1	1	1	1	1	1	**7**	23	12	-8	-14	-15	-14	-6	6	6	4	3	3	3	4	**29**	**203**
1993	950	947	961	995	1,028	1,031	1,059	1,067	1,067	1,051	1,040	1,039	36	8	0	0	16	27	28	1	4	6	6	2	1	1	**21**	3	28	8	0	-16	-11	-1	6	6	6	6	2	3	5	**34**	**714**
1994	1,038	1,017	1,019	1,020	1,026	1,030	1,030	1,030	1,002	984	961	958	37	37	37	65	83	106	109	1	1	1	1	1	1	1	**7**	4	0	0	-28	-18	-23	-3	6	6	6	1	2	1	5	**27**	**189**
																									73 - year Average:		**15**													**73 - year Average:**		**30**	**451.95**
																																								1929 - '34 Average:			**199.5**

STUDY: 1995C06F-SWRCBJP-634 DWRSIM: recirc818VA, 10 Apr 98
CP # 6, LAKE OROVILLE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCBJP-634/6/ELEVATION-EOP//1MON/OUTPUT/

73-year maximum March - September Reservoir Elevation = 900'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

	Elevation												DFMRE						
YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	834	834	836	844	850	858	893	900	900	869	865	866	42	7	0	0	31	35	34
1923	870	872	858	862	859	872	894	900	881	842	802	805	28	6	0	19	58	98	95
1924	796	784	756	761	780	770	759	748	727	708	699	693	130	141	152	173	192	201	207
1925	694	698	705	721	788	789	817	825	808	780	769	768	111	83	75	92	120	131	132
1926	764	764	766	780	827	847	887	876	855	814	800	778	53	13	24	45	86	100	122
1927	773	805	805	830	849	863	890	900	898	861	843	841	37	10	0	2	39	57	59
1928	838	848	850	861	871	849	878	867	847	796	741	734	51	22	33	53	104	159	166
1929	721	716	714	720	733	750	758	761	754	738	728	721	150	142	139	146	162	172	179
1930	712	709	769	797	823	854	877	884	866	827	790	787	46	23	16	34	73	110	113
1931	777	769	760	773	786	801	788	773	749	726	714	708	99	112	127	151	174	186	192
1932	702	693	698	722	745	778	791	822	795	738	716	709	122	109	78	105	162	184	191
1933	700	688	687	699	710	715	721	737	731	715	704	697	185	179	163	169	185	196	203
1934	693	685	687	714	737	764	758	749	724	700	688	680	136	142	151	176	200	212	220
1935	672	677	683	711	735	765	853	862	846	821	809	790	135	47	38	54	79	91	110
1936	783	777	775	824	849	860	886	882	874	834	800	795	40	14	18	26	66	100	105
1937	785	774	770	773	790	824	849	863	840	813	791	785	76	51	37	60	87	109	115
1938	780	798	854	858	849	849	882	900	900	899	896	887	51	18	0	0	1	4	13
1939	874	864	854	845	837	833	824	820	785	721	663	658	67	76	80	115	179	237	242
1940	644	634	636	708	816	849	879	885	867	828	820	804	51	21	15	33	72	80	96
1941	799	801	842	849	849	858	886	900	900	890	886	887	42	14	0	0	10	14	13
1942	874	874	849	849	850	867	882	900	900	880	876	877	33	18	0	0	20	24	23
1943	874	869	861	849	856	859	887	897	896	861	851	851	41	13	3	4	39	49	49
1944	852	855	854	860	857	868	879	895	875	835	796	790	32	21	5	25	65	104	110
1945	785	792	808	823	862	865	880	896	877	837	801	796	35	20	4	23	63	99	104
1946	796	804	849	864	868	868	887	897	875	836	795	792	32	13	3	25	64	105	108
1947	777	783	791	797	823	846	855	851	834	780	728	721	54	45	49	66	120	172	179
1948	724	725	722	758	761	781	841	870	876	840	823	806	119	59	30	24	60	77	94
1949	799	796	797	802	810	832	852	858	836	785	747	741	68	48	42	64	115	153	159
1950	727	719	716	750	797	834	867	886	873	836	820	819	66	33	14	27	64	80	81
1951	823	849	854	853	858	870	886	900	888	846	817	815	30	14	0	12	54	83	85
1952	820	824	849	849	852	862	894	900	900	900	899	887	38	6	0	0	0	1	13
1953	874	874	858	850	867	867	883	900	900	867	865	867	33	17	0	0	33	35	33
1954	869	871	874	858	857	859	883	869	853	808	761	758	41	17	31	47	92	139	142
1955	760	761	770	782	791	804	813	826	799	737	705	702	96	87	74	101	163	195	198
1956	693	689	844	849	849	864	892	900	900	871	860	863	36	8	0	0	29	40	37
1957	869	874	874	871	853	863	866	884	869	830	792	797	37	34	16	31	70	108	103
1958	799	803	822	843	849	849	879	900	900	898	894	887	51	21	0	0	2	6	13
1959	874	874	874	862	852	867	874	877	856	813	762	765	33	26	23	44	87	138	135
1960	758	748	743	757	818	857	859	865	846	810	798	789	43	41	35	54	90	102	111
1961	766	769	778	789	819	837	843	848	828	770	717	713	63	57	52	72	130	183	187
1962	698	695	704	718	782	817	843	846	831	776	743	722	83	57	54	69	124	157	178
1963	796	808	837	859	867	858	876	900	890	855	836	837	42	24	0	10	45	64	63
1964	838	850	852	862	871	874	880	885	869	829	782	757	26	20	15	31	71	118	143
1965	744	745	849	849	863	870	887	884	886	853	846	848	30	13	16	14	47	54	52
1966	852	859	860	864	870	874	891	882	862	822	773	766	26	9	18	38	78	127	134
1967	753	764	802	849	860	853	879	900	900	900	896	887	47	21	0	0	0	4	13
1968	874	874	873	858	861	866	866	870	851	806	765	762	34	34	30	49	94	135	138
1969	764	769	792	849	849	865	895	900	900	895	893	874	35	5	0	0	5	7	26
1970	874	874	850	849	849	874	874	876	863	824	781	782	26	26	24	37	76	119	118
1971	785	812	842	864	874	874	893	900	900	870	853	855	26	7	0	0	30	47	45
1972	860	865	865	869	867	874	884	887	868	828	784	785	26	16	13	32	72	116	115
1973	781	796	822	849	849	860	882	900	872	832	804	800	40	18	0	28	68	96	100
1974	804	849	850	854	864	849	883	900	900	888	887	886	51	17	0	0	12	13	14
1975	874	874	874	874	874	852	881	900	900	874	873	874	48	19	0	0	26	27	26
1976	873	874	874	874	874	874	871	864	842	797	759	759	26	29	36	58	103	141	141
1977	751	741	725	721	706	701	680	670	642	618	609	606	199	220	230	258	282	291	294
1978	595	595	631	753	806	859	878	897	892	872	863	870	41	22	3	8	28	37	30
1979	873	874	874	871	853	863	878	896	864	826	810	807	37	22	4	36	74	90	93
1980	813	818	827	850	849	865	881	893	888	874	867	865	35	19	7	12	26	33	35
1981	864	865	874	860	868	865	875	872	851	807	758	759	35	25	28	49	93	142	141
1982	766	847	849	859	862	859	884	900	900	889	885	887	41	16	0	0	11	15	13
1983	873	862	858	853	849	849	877	900	900	900	899	887	51	23	0	0	0	1	13
1984	874	860	849	869	869	871	886	895	879	841	822	824	29	14	5	21	59	78	76
1985	828	841	851	857	870	871	886	874	852	809	759	740	29	14	26	48	91	141	160
1986	731	727	734	769	849	849	871	875	871	843	831	842	51	29	25	29	57	69	58
1987	844	850	848	849	860	867	859	849	822	762	720	715	33	41	51	78	138	180	185
1988	703	706	745	771	773	773	772	763	735	715	703	700	127	128	137	165	185	197	200
1989	693	711	721	729	730	843	869	860	842	796	778	775	57	31	40	58	104	122	125
1990	786	788	771	784	792	818	806	806	781	724	711	700	82	94	94	119	176	189	200
1991	683	675	655	653	648	701	724	738	722	701	695	693	199	176	162	178	199	205	207
1992	690	686	687	691	722	752	767	755	730	705	694	688	148	133	145	170	195	206	212
1993	681	675	694	761	813	861	894	900	900	871	866	864	39	6	0	0	29	34	36
1994	870	874	874	871	862	874	873	869	848	807	759	754	26	27	31	52	93	141	146

	Elevation score								Fluctuation							Fluctuation score								
YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	1	4	6	6	1	1	1	**20**	8	35	7	0	-31	-4	1	6	6	6	6	1	5	6	**36**	**720**
1923	1	4	6	2	1	1	1	**16**	13	22	6	-19	-39	-40	3	6	6	6	2	1	1	6	**28**	**448**
1924	1	1	1	1	1	1	1	**7**	-10	-11	-11	-21	-19	-9	-6	4	3	3	1	2	4	4	**21**	**147**
1925	1	1	1	1	1	1	1	**7**	1	28	8	-17	-28	-11	-1	6	6	6	2	1	3	5	**29**	**203**
1926	1	3	1	1	1	1	1	**9**	20	40	-11	-21	-41	-14	-22	6	6	3	1	1	3	1	**21**	**189**
1927	1	3	6	5	1	1	1	**18**	14	27	10	-2	-37	-18	-2	6	6	6	5	1	2	5	**31**	**558**
1928	1	1	1	1	1	1	1	**7**	-22	29	-11	-20	-51	-55	-7	1	6	3	2	1	1	4	**18**	**126**
1929	1	1	1	1	1	1	1	**7**	17	8	3	-7	-16	-10	-7	6	6	6	4	2	4	4	**32**	**224**
1930	1	1	2	1	1	1	1	**8**	31	23	7	-18	-39	-37	-3	6	6	6	2	1	1	5	**27**	**216**
1931	1	1	1	1	1	1	1	**7**	15	-13	-15	-24	-23	-12	-6	6	3	3	1	1	3	4	**21**	**147**
1932	1	1	1	1	1	1	1	**7**	33	13	31	-27	-57	-22	-7	6	6	6	1	1	1	4	**25**	**175**
1933	1	1	1	1	1	1	1	**7**	5	6	16	-6	-16	-11	-7	6	6	6	4	2	3	4	**31**	**217**
1934	1	1	1	1	1	1	1	**7**	27	-6	-9	-25	-24	-12	-8	6	4	4	1	1	3	4	**23**	**161**
1935	1	1	1	1	1	1	1	**7**	30	88	9	-16	-25	-12	-19	6	6	6	2	1	3	2	**26**	**182**
1936	1	3	2	1	1	1	1	**10**	11	26	-4	-8	-40	-34	-5	6	6	5	4	1	1	5	**28**	**280**
1937	1	1	1	1	1	1	1	**7**	34	25	14	-23	-27	-22	-6	6	6	6	1	1	1	4	**25**	**175**
1938	1	2	6	6	5	5	3	**28**	0	33	18	0	-1	-3	-9	6	6	6	6	5	5	4	**38**	**1064**
1939	1	1	1	1	1	1	1	**7**	-4	-9	-4	-35	-64	-58	-5	5	4	5	1	1	1	5	**22**	**154**
1940	1	1	2	1	1	1	1	**8**	33	30	6	-18	-39	-8	-16	6	6	6	2	1	4	2	**27**	**216**
1941	1	3	6	6	3	3	3	**25**	9	28	14	0	-10	-4	1	6	6	6	6	4	5	6	**39**	**975**
1942	1	2	6	6	1	1	1	**18**	17	15	18	0	-20	-4	1	6	6	6	6	2	5	6	**37**	**666**
1943	1	3	5	5	1	1	1	**17**	3	28	10	-1	-35	-10	0	6	6	6	5	1	4	6	**34**	**578**
1944	1	1	4	1	1	1	1	**10**	11	11	16	-20	-40	-39	-6	6	6	6	2	1	1	4	**26**	**260**
1945	1	1	5	1	1	1	1	**11**	3	15	16	-19	-40	-36	-5	6	6	6	2	1	1	5	**27**	**297**
1946	1	3	5	1	1	1	1	**13**	0	19	10	-22	-39	-41	-3	6	6	6	1	1	1	5	**26**	**338**
1947	1	1	1	1	1	1	1	**7**	23	9	-4	-17	-54	-52	-7	6	6	5	2	1	1	4	**25**	**175**
1948	1	1	1	1	1	1	1	**7**	20	60	29	6	-36	-17	-17	6	6	6	6	1	2	2	**29**	**203**
1949	1	1	1	1	1	1	1	**7**	22	20	6	-22	-51	-38	-6	6	6	6	1	1	1	4	**25**	**175**
1950	1	1	3	1	1	1	1	**9**	37	33	19	-13	-37	-16	-1	6	6	6	3	1	2	5	**29**	**261**
1951	1	3	6	3	1	1	1	**16**	12	16	14	-12	-42	-29	-2	6	6	6	3	1	1	5	**28**	**448**
1952	1	4	6	6	6	5	3	**31**	10	32	6	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1178**
1953	1	2	6	6	1	1	1	**18**	0	16	17	0	-33	-2	2	6	6	6	6	1	5	6	**36**	**648**
1954	1	2	1	1	1	1	1	**8**	2	24	-14	-16	-45	-47	-3	6	6	3	2	1	1	5	**24**	**192**
1955	1	1	1	1	1	1	1	**7**	13	9	13	-27	-62	-32	-3	6	6	6	1	1	1	5	**26**	**182**
1956	1	4	6	6	1	1	1	**20**	15	28	8	0	-29	-11	3	6	6	6	6	1	3	6	**34**	**680**
1957	1	1	2	1	1	1	1	**8**	10	3	18	-15	-39	-38	5	6	6	6	3	1	1	6	**29**	**232**
1958	1	1	6	6	5	4	3	**26**	0	30	21	0	-2	-4	-7	6	6	6	6	5	5	4	**38**	**988**
1959	1	1	1	1	1	1	1	**7**	15	7	3	-21	-43	-51	3	6	6	6	1	1	1	6	**27**	**189**
1960	1	1	1	1	1	1	1	**7**	39	2	6	-19	-36	-12	-9	6	6	6	2	1	3	4	**28**	**196**
1961	1	1	1	1	1	1	1	**7**	18	6	5	-20	-58	-53	-4	6	6	6	2	1	1	5	**27**	**189**
1962	1	1	1	1	1	1	1	**7**	35	26	3	-15	-55	-33	-21	6	6	6	3	1	1	1	**24**	**168**
1963	1	1	6	3	1	1	1	**14**	-9	18	24	-10	-35	-19	1	4	6	6	4	1	2	6	**29**	**406**
1964	1	1	2	1	1	1	1	**8**	3	6	5	-16	-40	-47	-25	6	6	6	2	1	1	1	**23**	**184**
1965	1	3	2	3	1	1	1	**12**	7	17	-3	2	-33	-7	2	6	6	5	6	1	4	6	**34**	**408**
1966	1	4	2	1	1	1	1	**11**	4	17	-9	-20	-40	-49	-7	6	6	4	2	1	1	4	**24**	**264**
1967	1	1	6	6	6	5	3	**28**	-7	26	21	0	0	-4	-9	4	6	6	6	6	5	4	**37**	**1036**
1968	1	1	1	1	1	1	1	**7**	5	0	4	-19	-45	-41	-3	6	6	6	2	1	1	5	**27**	**189**
1969	1	4	6	6	4	4	1	**26**	16	30	5	0	-5	-2	-19	6	6	6	6	5	5	2	**36**	**936**
1970	1	1	1	1	1	1	1	**7**	25	0	2	-13	-39	-43	1	6	6	6	3	1	1	6	**29**	**203**
1971	1	4	6	6	1	1	1	**20**	0	19	7	0	-30	-17	2	6	6	6	6	1	2	6	**33**	**660**
1972	1	2	3	1	1	1	1	**10**	7	10	3	-19	-40	-44	1	6	6	6	2	1	1	6	**28**	**280**
1973	1	2	6	1	1	1	1	**13**	11	22	18	-28	-40	-28	-4	6	6	6	1	1	1	5	**26**	**338**
1974	1	2	6	6	3	3	3	**24**	-15	34	17	0	-12	-1	-1	3	6	6	6	3	5	5	**34**	**816**
1975	1	2	6	6	1	1	1	**18**	-3	29	19	0	-26	-1	1	5	6	6	6	1	5	6	**35**	**630**
1976	1	1	1	1	1	1	1	**7**	0	-3	-7	-22	-45	-38	0	6	5	4	1	1	1	6	**24**	**168**
1977	1	1	1	1	1	1	1	**7**	-5	-21	-10	-28	-24	-9	-3	5	1	4	1	1	4	5	**21**	**147**
1978	1	1	5	4	1	1	1	**14**	53	19	19	-5	-20	-9	7	6	6	6	5	2	4	6	**35**	**490**
1979	1	1	5	1	1	1	1	**11**	10	15	18	-32	-38	-16	-3	6	6	6	1	1	2	5	**27**	**297**
1980	1	2	4	3	1	1	1	**13**	16	16	12	-5	-14	-7	-2	6	6	6	5	3	4	5	**35**	**455**
1981	1	1	1	1	1	1	1	**7**	-3	10	-3	-21	-44	-49	1	5	6	5	1	1	1	6	**25**	**175**
1982	1	2	6	6	3	2	3	**23**	-3	25	16	0	-11	-4	2	5	6	6	6	3	5	6	**37**	**851**
1983	1	1	6	6	6	5	3	**28**	0	28	23	0	0	-1	-12	6	6	6	6	6	5	3	**38**	**1064**
1984	1	3	4	1	1	1	1	**12**	2	15	9	-16	-38	-19	2	6	6	6	2	1	2	6	**29**	**348**
1985	1	3	1	1	1	1	1	**9**	1	15	-12	-22	-43	-50	-19	6	6	3	1	1	1	2	**20**	**180**
1986	1	1	1	1	1	1	1	**7**	0	22	4	-4	-28	-12	11	6	6	6	5	1	3	6	**33**	**231**
1987	1	1	1	1	1	1	1	**7**	7	-8	-10	-27	-60	-42	-5	6	4	4	1	1	1	5	**22**	**154**
1988	1	1	1	1	1	1	1	**7**	0	-1	-9	-28	-20	-12	-3	6	5	4	1	2	3	5	**26**	**182**
1989	1	1	1	1	1	1	1	**7**	113	26	-9	-18	-46	-18	-3	6	6	4	2	1	2	5	**26**	**182**
1990	1	1	1	1	1	1	1	**7**	26	-12	0	-25	-57	-13	-11	6	3	6	1	1	3	3	**23**	**161**
1991	1	1	1	1	1	1	1	**7**	53	23	14	-16	-21	-6	-2	6	6	6	2	1	4	5	**30**	**210**
1992	1	1	1	1	1	1	1	**7**	30	15	-12	-25	-25	-11	-6	6	6	3	1	1	3	4	**24**	**168**
1993	1	4	6	6	1	1	1	**20**	48	33	6	0	-29	-5	-2	6	6	6	6	1	5	5	**35**	**700**
1994	1	1	1	1	1	1	1	**7**	12	-1	-4	-21	-41	-48	-5	6	5	5	1	1	1	5	**24**	**168**
							73 - year Average:	**12**													73 - year Average:		**29**	**376.73**
																					1929 - '34 Average:			**190.0**

STUDY: 1995C06F-SWRCBJP-634 DWRSIM: recirc818VA, 10 Apr 98
CP # 8, FOLSOM LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCBJP-634/8/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 466'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index =

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DFMRE MAR	DFMRE APR	DFMRE MAY	DFMRE JUN	DFMRE JUL	DFMRE AUG	DFMRE SEP
1922	414	408	413	413	424	428	443	466	466	460	443	434	38	23	0	0	6	23	32
1923	425	423	424	424	424	428	449	466	458	439	425	409	38	17	0	8	27	41	57
1924	404	398	392	381	379	362	371	372	334	334	337	334	104	95	94	132	132	129	132
1925	349	363	380	390	424	412	443	466	448	418	399	402	54	23	0	18	48	67	64
1926	401	395	378	372	402	410	442	440	409	357	346	358	56	24	26	57	109	120	108
1927	365	403	422	424	424	437	449	466	461	452	442	434	29	17	0	5	14	24	32
1928	425	424	424	424	424	437	449	454	441	417	409	402	29	17	12	25	49	57	64
1929	382	373	367	353	358	373	387	396	385	356	365	367	93	79	70	81	110	101	99
1930	351	343	388	409	423	437	443	442	417	388	357	362	29	23	24	49	78	109	104
1931	352	362	373	385	393	403	398	393	334	334	334	334	63	68	73	132	132	132	132
1932	334	334	380	402	424	436	445	461	441	401	373	376	30	21	5	25	65	93	90
1933	353	334	355	366	373	385	355	372	335	334	345	340	81	111	94	131	132	121	126
1934	334	335	375	402	420	425	418	414	334	324	313	326	41	48	52	132	142	153	140
1935	334	361	378	402	415	418	449	454	453	426	412	415	48	17	12	13	40	54	51
1936	412	406	400	424	424	437	449	461	456	443	428	428	29	17	5	10	23	38	38
1937	418	407	401	391	417	437	449	466	455	439	425	428	29	17	0	11	27	41	38
1938	419	417	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1939	426	420	415	409	402	409	417	421	391	334	334	335	57	49	45	75	132	132	131
1940	334	334	334	420	424	437	449	461	452	435	425	429	29	17	5	14	31	41	37
1941	420	415	424	424	424	437	449	466	458	455	446	434	29	17	0	8	11	20	32
1942	426	422	424	424	424	430	449	466	466	463	445	434	36	17	0	0	3	21	32
1943	425	424	423	422	422	434	449	459	450	445	439	434	32	17	7	16	21	27	32
1944	425	419	413	405	407	419	420	433	412	389	359	352	47	46	33	54	77	107	114
1945	340	380	404	411	424	437	449	466	455	443	435	427	29	17	0	11	23	31	39
1946	424	424	424	424	424	437	449	466	450	437	430	422	29	17	0	16	29	36	44
1947	415	416	415	407	413	433	442	445	415	381	349	345	33	24	21	51	85	117	121
1948	361	377	380	405	400	395	433	454	454	447	440	434	71	33	12	12	19	26	32
1949	425	419	416	406	400	422	444	460	441	425	409	400	44	22	6	25	41	57	66
1950	387	381	370	409	424	437	449	466	455	443	423	427	29	17	0	11	23	43	39
1951	423	393	388	388	388	426	449	466	450	434	428	426	40	17	0	16	32	38	40
1952	424	424	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1953	428	423	424	424	424	430	446	458	464	463	444	434	36	20	8	2	3	22	32
1954	425	423	421	422	424	437	449	452	442	423	417	417	29	17	14	24	43	49	49
1955	411	404	408	414	413	408	419	436	417	394	369	381	58	47	30	49	72	97	85
1956	344	356	420	402	406	425	441	466	466	463	448	434	41	25	0	0	3	18	32
1957	428	422	417	412	424	437	434	460	450	437	431	426	29	32	6	16	29	35	40
1958	422	417	418	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1959	425	419	412	417	424	428	437	437	414	391	379	389	38	29	29	52	75	87	77
1960	376	371	369	377	416	437	448	447	427	402	389	396	29	18	19	39	64	77	70
1961	388	386	383	377	384	393	403	414	401	381	368	375	73	63	52	65	85	98	91
1962	370	368	383	380	424	434	449	457	446	426	409	407	32	17	9	20	40	57	59
1963	438	424	424	424	419	430	449	466	459	454	449	434	36	17	0	7	12	17	32
1964	427	424	424	424	421	419	430	436	414	383	349	334	47	36	30	52	83	117	132
1965	335	367	393	392	395	414	449	464	453	445	438	434	52	17	2	13	21	28	32
1966	426	424	424	424	422	430	446	446	423	400	389	385	36	20	20	43	66	77	81
1967	379	393	424	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1968	427	424	423	424	424	437	441	442	419	395	393	399	29	25	24	47	71	73	67
1969	392	397	407	424	424	437	449	466	466	463	449	434	29	17	0	0	3	17	32
1970	427	424	423	393	396	426	433	442	433	417	415	413	40	33	24	33	49	51	53
1971	404	417	424	424	424	437	449	463	463	461	449	434	29	17	3	3	5	17	32
1972	425	422	424	424	424	437	444	451	431	409	403	403	29	22	15	35	57	63	63
1973	403	408	422	424	424	437	449	466	453	437	427	427	29	17	0	13	29	39	39
1974	424	423	422	409	417	433	449	466	463	463	448	434	33	17	0	3	3	18	32
1975	426	419	417	415	424	437	441	466	466	463	447	434	29	25	0	0	3	19	32
1976	431	423	419	410	402	396	401	405	375	339	347	348	70	65	61	91	127	119	118
1977	345	344	338	335	331	333	334	342	334	319	305	291	133	132	124	132	147	161	175
1978	287	304	359	424	424	437	449	466	459	452	440	434	29	17	0	7	14	26	32
1979	423	417	408	415	424	437	447	466	447	430	410	412	29	19	0	19	36	56	54
1980	409	410	415	405	399	430	449	464	454	454	449	434	36	17	2	12	12	17	32
1981	425	419	415	413	412	422	433	435	411	390	383	389	44	33	31	55	76	83	77
1982	388	420	392	396	388	424	449	466	466	463	449	434	42	17	0	0	3	17	32
1983	438	415	417	418	418	433	449	466	466	463	449	434	33	17	0	0	3	17	32
1984	435	392	388	388	392	424	444	464	455	443	434	432	42	22	2	11	23	32	34
1985	426	424	424	420	422	428	443	445	414	376	338	338	38	23	21	52	90	128	128
1986	336	366	396	424	396	424	449	464	458	453	449	434	42	17	2	8	13	17	32
1987	427	420	413	405	404	410	417	420	390	351	333	335	56	49	46	76	115	133	131
1988	334	334	369	396	387	386	394	394	354	327	312	381	80	72	72	112	139	154	85
1989	369	381	392	397	392	437	449	452	432	409	402	405	29	17	14	34	57	64	61
1990	402	401	397	396	394	407	412	413	379	334	340	341	59	54	53	87	132	126	125
1991	334	334	335	332	332	383	407	425	420	410	405	405	83	59	41	46	56	61	61
1992	397	385	375	357	382	398	410	406	366	334	323	316	68	56	60	100	132	143	150
1993	316	315	357	424	427	434	449	466	466	452	444	434	32	17	0	0	14	22	32
1994	423	413	407	395	390	390	399	404	380	335	334	332	76	67	62	86	131	132	134

YEAR	Elev. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Change MAR	APR	MAY	JUN	JUL	AUG	SEP	Fluct. score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	1	1	6	6	4	1	1	**20**	4	15	23	0	-6	-17	-9	6	6	6	6	4	2	4	**34**	680
1923	1	2	6	4	1	1	1	**16**	4	21	17	-8	-19	-14	-16	6	6	6	4	2	3	2	**29**	464
1924	1	1	1	1	1	1	1	**7**	-17	9	1	-38	0	3	-3	2	6	6	1	6	6	5	**32**	224
1925	1	1	6	2	1	1	1	**13**	-12	31	23	-18	-30	-19	3	3	6	6	2	1	2	6	**26**	338
1926	1	1	1	1	1	1	1	**7**	8	32	-2	-31	-52	-11	12	6	6	5	1	1	3	6	**28**	196
1927	1	2	6	4	3	1	1	**18**	13	12	17	-5	-9	-10	-8	6	6	6	5	4	4	4	**35**	630
1928	1	2	3	1	1	1	1	**10**	13	12	5	-13	-24	-8	-7	6	6	6	3	1	4	4	**30**	300
1929	1	1	1	1	1	1	1	**7**	15	14	9	-11	-29	9	2	6	6	6	3	1	6	6	**34**	238
1930	1	1	1	1	1	1	1	**7**	14	6	-1	-25	-29	-31	5	6	6	5	1	1	1	6	**26**	182
1931	1	1	1	1	1	1	1	**7**	10	-5	-5	-59	0	0	0	6	5	5	1	6	6	6	**35**	245
1932	1	1	4	1	1	1	1	**10**	12	9	16	-20	-40	-28	3	6	6	6	2	1	1	6	**28**	280
1933	1	1	1	1	1	1	1	**7**	12	-30	17	-37	-1	11	-5	6	1	6	1	5	6	5	**30**	210
1934	1	1	1	1	1	1	1	**7**	5	-7	-4	-80	-10	-11	13	6	4	5	1	4	3	6	**29**	203
1935	1	2	3	3	1	1	1	**12**	3	31	5	-1	-27	-14	3	6	6	6	5	1	3	6	**33**	396
1936	1	2	4	3	1	1	1	**13**	13	12	12	-5	-13	-15	0	6	6	6	5	3	3	6	**35**	455
1937	1	2	6	3	1	1	1	**15**	20	12	17	-11	-16	-14	3	6	6	6	3	2	3	6	**32**	480
1938	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	805
1939	1	1	1	1	1	1	1	**7**	7	8	4	-30	-57	0	1	6	6	6	1	1	6	6	**32**	224
1940	1	2	4	3	1	1	1	**13**	13	12	12	-9	-17	-10	4	6	6	6	4	2	4	6	**34**	442
1941	1	2	6	4	3	1	1	**18**	13	12	17	-8	-3	-9	-12	6	6	6	4	5	4	3	**34**	612
1942	1	2	6	6	5	1	1	**22**	6	19	17	0	-3	-18	-11	6	6	6	6	5	2	3	**34**	748
1943	1	2	4	2	1	1	1	**12**	12	15	10	-9	-5	-6	-5	6	6	6	4	5	4	5	**36**	432
1944	1	1	1	1	1	1	1	**7**	12	1	13	-21	-23	-30	-7	6	6	6	1	1	1	4	**25**	175
1945	1	2	6	3	1	1	1	**15**	13	12	17	-11	-12	-8	-8	6	6	6	3	3	4	4	**32**	480
1946	1	2	6	2	1	1	1	**14**	13	12	17	-16	-13	-7	-8	6	6	6	2	3	4	4	**31**	434
1947	1	1	1	1	1	1	1	**7**	20	9	3	-30	-34	-32	-4	6	6	6	1	1	1	5	**26**	182
1948	1	1	3	3	2	1	1	**12**	-5	38	21	0	-7	-7	-6	5	6	6	6	4	4	4	**35**	420
1949	1	1	4	1	1	1	1	**10**	22	22	16	-19	-16	-16	-9	6	6	6	2	2	2	4	**28**	280
1950	1	2	6	3	1	1	1	**15**	13	12	17	-11	-12	-20	4	6	6	6	3	3	2	6	**32**	480
1951	1	2	6	2	1	1	1	**14**	38	23	17	-16	-16	-6	-2	6	6	6	2	2	4	5	**31**	434
1952	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	805
1953	1	1	4	5	5	1	1	**18**	6	16	12	6	-1	-19	-10	6	6	6	6	5	2	4	**35**	630
1954	1	2	3	1	1	1	1	**10**	13	12	3	-10	-19	-6	0	6	6	6	4	2	4	6	**34**	340
1955	1	1	1	1	1	1	1	**7**	-5	11	17	-19	-23	-25	12	5	6	6	2	1	1	6	**27**	189
1956	1	1	6	6	5	2	1	**22**	19	16	25	0	-3	-15	-14	6	6	6	6	5	3	3	**35**	770
1957	1	1	4	2	1	1	1	**11**	13	-3	26	-10	-13	-6	-5	6	5	6	4	3	4	5	**33**	363
1958	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	805
1959	1	1	1	1	1	1	1	**7**	4	9	0	-23	-23	-12	10	6	6	6	1	1	3	6	**29**	203
1960	1	2	2	1	1	1	1	**9**	21	11	-1	-20	-25	-13	7	6	6	5	2	1	3	6	**29**	261
1961	1	1	1	1	1	1	1	**7**	9	10	11	-13	-20	-13	7	6	6	6	3	2	3	6	**32**	224
1962	1	2	4	1	1	1	1	**11**	10	15	8	-11	-20	-17	-2	6	6	6	3	2	2	5	**30**	330
1963	1	2	6	4	3	2	1	**19**	11	19	17	-7	-5	-5	-15	6	6	6	4	5	5	3	**35**	665
1964	1	1	1	1	1	1	1	**7**	-2	11	6	-22	-31	-34	-15	5	6	6	1	1	1	3	**23**	161
1965	1	2	5	3	1	1	1	**14**	19	35	15	-11	-8	-7	-4	6	6	6	3	4	4	5	**34**	476
1966	1	1	1	1	1	1	1	**7**	8	16	0	-23	-23	-11	-4	6	6	6	1	1	3	5	**28**	196
1967	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	805
1968	1	1	1	1	1	1	1	**7**	13	4	1	-23	-24	-2	6	6	6	6	1	1	5	6	**31**	217
1969	1	2	6	6	5	2	1	**23**	13	12	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	805
1970	1	1	1	1	1	1	1	**7**	30	7	9	-9	-16	-2	-2	6	6	6	4	2	5	5	**34**	238
1971	1	2	5	5	4	2	1	**20**	13	12	14	0	-2	-12	-15	6	6	6	6	5	3	3	**35**	700
1972	1	1	2	1	1	1	1	**8**	13	7	7	-20	-22	-6	0	6	6	6	2	1	4	6	**31**	248
1973	1	2	6	3	1	1	1	**15**	13	12	17	-13	-16	-10	0	6	6	6	3	2	4	6	**33**	495
1974	1	2	6	5	5	2	1	**22**	16	16	17	-3	0	-15	-14	6	6	6	5	6	3	3	**35**	770
1975	1	1	6	6	5	2	1	**22**	13	4	25	0	-3	-16	-13	6	6	6	6	5	2	3	**34**	748
1976	1	1	1	1	1	1	1	**7**	-6	5	4	-30	-36	8	1	4	6	6	1	1	6	6	**30**	210
1977	1	1	1	1	1	1	1	**7**	2	1	8	-8	-15	-14	-14	6	6	6	4	3	3	3	**31**	217
1978	1	2	6	4	3	1	1	**18**	13	12	17	-7	-7	-12	-6	6	6	6	4	4	3	4	**33**	594
1979	1	2	6	2	1	1	1	**14**	13	10	19	-19	-17	-20	2	6	6	6	2	2	2	6	**30**	420
1980	1	2	5	3	3	2	1	**17**	31	19	15	-10	0	-5	-15	6	6	6	4	6	5	3	**36**	612
1981	1	1	1	1	1	1	1	**7**	10	11	2	-24	-21	-7	6	6	6	6	1	1	4	6	**30**	210
1982	1	2	6	6	5	2	1	**23**	36	25	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	805
1983	1	2	6	6	5	2	1	**23**	15	16	17	0	-3	-14	-15	6	6	6	6	5	3	3	**35**	805
1984	1	1	5	3	1	1	1	**13**	32	20	20	-9	-12	-9	-2	6	6	6	4	3	4	5	**34**	442
1985	1	1	1	1	1	1	1	**7**	6	15	2	-31	-38	-38	0	6	6	6	1	1	1	6	**27**	189
1986	1	2	5	4	3	2	1	**18**	28	25	15	-6	-5	-4	-15	6	6	6	4	5	5	3	**35**	630
1987	1	1	1	1	1	1	1	**7**	6	7	3	-30	-39	-18	2	6	6	6	1	1	2	6	**28**	196
1988	1	1	1	1	1	1	1	**7**	-1	8	0	-40	-27	-15	69	5	6	6	1	1	3	6	**28**	196
1989	1	2	3	1	1	1	1	**10**	45	12	3	-20	-23	-7	3	6	6	6	2	1	4	6	**31**	310
1990	1	1	1	1	1	1	1	**7**	13	5	1	-34	-45	6	1	6	6	6	1	1	6	6	**32**	224
1991	1	1	1	1	1	1	1	**7**	51	24	18	-5	-10	-5	0	6	6	6	5	4	5	6	**38**	266
1992	1	1	1	1	1	1	1	**7**	16	12	-4	-40	-32	-11	-7	6	6	5	1	1	3	4	**26**	182
1993	1	2	6	6	3	1	1	**20**	7	15	17	0	-14	-8	-10	6	6	6	6	3	4	4	**35**	700
1994	1	1	1	1	1	1	1	**7**	0	9	5	-24	-45	-1	-2	6	6	6	1	1	5	5	**30**	210

73 - year Average: 13

73 - year Average: 32 **418.23**

1929 - '34 Average: 226.3

STUDY: 1995C06F-SWRCBJP-634 DWRSIM: recirc818VA, 10 Apr 98
CP # 10, NEW MELONES RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCBJP-634/10/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 1088'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	939	942	947	952	967	976	970	994	1018	1012	1001	994	121	112	118	94	70	76	87	1	1	1	1	1	1	1	**7**	9	-6	24	24	-6	-11	-7	6	4	6	6	4	3	4	**33**	**231**
1923	993	995	1003	1010	1015	1019	1016	1025	1026	1019	1008	1001	73	69	72	63	62	69	80	1	1	1	1	1	1	1	**7**	4	-3	9	1	-7	-11	-7	6	5	6	6	4	3	4	**34**	**238**
1924	1001	1001	1003	1005	1007	1007	1000	990	977	966	957	953	81	81	88	98	111	122	131	1	1	1	1	1	1	1	**7**	0	-7	-10	-13	-11	-9	-4	6	4	4	3	3	4	5	**29**	**203**
1925	951	953	956	959	977	988	986	998	1000	993	979	971	111	100	102	90	88	95	109	1	1	1	1	1	1	1	**7**	11	-2	12	2	-7	-14	-8	6	5	6	6	4	3	4	**34**	**238**
1926	970	971	972	973	983	988	990	983	969	954	943	936	105	100	98	105	119	134	145	1	1	1	1	1	1	1	**7**	5	2	-7	-14	-15	-11	-7	6	6	4	3	3	3	4	**29**	**203**
1927	935	938	946	953	972	982	986	997	1004	995	982	976	116	106	102	91	84	93	106	1	1	1	1	1	1	1	**7**	10	4	11	7	-9	-13	-6	6	6	6	6	4	3	4	**35**	**245**
1928	975	980	984	987	993	1011	1008	1014	1006	994	979	971	95	77	80	74	82	94	109	1	1	1	1	1	1	1	**7**	18	-3	6	-8	-12	-15	-8	6	5	6	4	3	3	4	**31**	**217**
1929	970	972	974	975	978	979	973	968	958	946	937	930	110	109	115	120	130	142	151	1	1	1	1	1	1	1	**7**	1	-6	-5	-10	-12	-9	-7	6	4	5	4	3	4	4	**30**	**210**
1930	930	931	933	937	943	950	950	944	940	928	916	904	145	138	138	144	148	160	172	1	1	1	1	1	1	1	**7**	7	0	-6	-4	-12	-12	-12	6	6	4	5	3	3	3	**30**	**210**
1931	905	910	913	917	920	922	915	900	882	871	858	850	168	166	173	188	206	217	230	1	1	1	1	1	1	1	**7**	2	-7	-15	-18	-11	-13	-8	6	4	3	2	3	3	4	**25**	**175**
1932	847	850	860	868	891	902	901	927	941	934	925	917	197	186	187	161	147	154	163	1	1	1	1	1	1	1	**7**	11	-1	26	14	-7	-9	-8	6	5	6	6	4	4	4	**35**	**245**
1933	917	919	922	925	927	929	924	920	917	899	884	872	161	159	164	168	171	189	204	1	1	1	1	1	1	1	**7**	2	-5	-4	-3	-18	-15	-12	6	5	5	5	2	3	3	**29**	**203**
1934	873	877	882	888	897	906	897	881	863	846	832	823	191	182	191	207	225	242	256	1	1	1	1	1	1	1	**7**	9	-9	-16	-18	-17	-14	-9	6	4	2	2	2	3	4	**23**	**161**
1935	820	821	824	832	839	848	867	909	927	916	897	886	249	240	221	179	161	172	191	1	1	1	1	1	1	1	**7**	9	19	42	18	-11	-19	-11	6	6	6	6	3	2	3	**32**	**224**
1936	885	888	893	910	937	948	959	978	985	974	961	954	151	140	129	110	103	114	127	1	1	1	1	1	1	1	**7**	11	11	19	7	-11	-13	-7	6	6	6	6	3	3	4	**34**	**238**
1937	953	955	958	962	976	988	986	1004	1007	997	985	977	112	100	102	84	81	91	103	1	1	1	1	1	1	1	**7**	12	-2	18	3	-10	-12	-8	6	5	6	6	4	3	4	**34**	**238**
1938	976	978	990	999	1018	1039	1048	1073	1088	1086	1077	1072	70	49	40	15	0	2	11	1	1	1	2	6	5	3	**19**	21	9	25	15	-2	-9	-5	6	6	6	6	5	4	5	**38**	**722**
1939	1065	1060	1055	1051	1050	1052	1044	1032	1022	1011	1000	993	38	36	44	56	66	77	88	1	1	1	1	1	1	1	**7**	2	-8	-12	-10	-11	-11	-7	6	4	3	4	3	3	4	**27**	**189**
1940	992	992	993	1004	1018	1034	1038	1050	1049	1038	1027	1020	70	54	50	38	39	50	61	1	1	1	1	1	1	1	**7**	16	4	12	-1	-11	-11	-7	6	6	6	5	3	3	4	**33**	**231**
1941	1018	1020	1024	1030	1039	1049	1044	1057	1061	1056	1047	1039	49	39	44	31	27	32	41	1	1	1	1	1	1	1	**7**	10	-5	13	4	-5	-9	-8	6	5	6	6	5	4	4	**36**	**252**
1942	1038	1039	1043	1050	1051	1055	1056	1067	1077	1074	1066	1060	37	33	32	21	11	14	22	1	1	1	1	3	3	1	**11**	4	1	11	10	-3	-8	-6	6	6	6	6	5	4	4	**37**	**407**
1943	1053	1050	1050	1057	1061	1076	1082	1087	1085	1078	1069	1063	27	12	6	1	3	10	19	1	3	4	5	5	3	2	**23**	15	6	5	-2	-7	-9	-6	6	6	6	5	4	4	4	**35**	**805**
1944	1055	1050	1050	1050	1050	1053	1042	1036	1032	1021	1009	1001	38	35	46	52	56	67	79	1	1	1	1	1	1	1	**7**	3	-11	-6	-4	-11	-12	-8	6	3	4	5	3	3	4	**28**	**196**
1945	1000	1004	1007	1011	1025	1032	1028	1036	1043	1035	1024	1017	63	56	60	52	45	53	64	1	1	1	1	1	1	1	**7**	7	-4	8	7	-8	-11	-7	6	5	6	6	4	3	4	**34**	**238**
1946	1016	1019	1028	1035	1041	1046	1047	1055	1052	1042	1032	1025	47	42	41	33	36	46	56	1	1	1	1	1	1	1	**7**	5	1	8	-3	-10	-10	-7	6	6	6	5	4	4	4	**35**	**245**
1947	1024	1026	1029	1030	1033	1038	1030	1021	1011	1000	987	980	55	50	58	67	77	88	101	1	1	1	1	1	1	1	**7**	5	-8	-9	-10	-11	-13	-7	6	4	4	4	3	3	4	**28**	**196**
1948	979	980	981	982	984	987	985	988	997	987	974	967	104	101	103	100	91	101	114	1	1	1	1	1	1	1	**7**	3	-2	3	9	-10	-13	-7	6	5	6	6	4	3	4	**34**	**238**
1949	966	968	971	973	976	982	979	984	978	964	954	947	112	106	109	104	110	124	134	1	1	1	1	1	1	1	**7**	6	-3	5	-6	-14	-10	-7	6	5	6	4	3	4	4	**32**	**224**
1950	946	946	948	955	965	973	974	990	994	982	971	963	123	115	114	98	94	106	117	1	1	1	1	1	1	1	**7**	8	1	16	4	-12	-11	-8	6	6	6	6	3	3	4	**34**	**238**
1951	963	998	1038	1049	1052	1055	1053	1054	1049	1038	1027	1020	36	33	35	34	39	50	61	1	1	1	1	1	1	1	**7**	3	-2	1	-5	-11	-11	-7	6	5	6	5	3	3	4	**32**	**224**
1952	1018	1020	1026	1040	1050	1055	1058	1085	1088	1087	1079	1073	38	33	30	3	0	1	9	1	1	1	5	6	5	4	**23**	5	3	27	3	-1	-8	-6	6	6	6	6	5	4	4	**37**	**851**
1953	1065	1060	1056	1056	1054	1055	1050	1044	1050	1043	1032	1025	34	33	38	44	38	45	56	1	1	1	1	1	1	1	**7**	1	-5	-6	6	-7	-11	-7	6	5	4	6	4	3	4	**32**	**224**
1954	1023	1024	1026	1028	1031	1038	1036	1041	1034	1022	1010	1003	57	50	52	47	54	66	78	1	1	1	1	1	1	1	**7**	7	-2	5	-7	-12	-12	-7	6	5	6	4	3	3	4	**31**	**217**
1955	1002	1003	1005	1009	1011	1014	1008	1003	1000	988	973	965	77	74	80	85	88	100	115	1	1	1	1	1	1	1	**7**	3	-6	-5	-3	-12	-15	-8	6	4	5	5	3	3	4	**30**	**210**
1956	964	967	998	1024	1038	1047	1046	1059	1066	1062	1052	1047	50	41	42	29	22	26	36	1	1	1	1	1	1	1	**7**	9	-1	13	7	-4	-10	-5	6	5	6	6	5	4	5	**37**	**259**
1957	1045	1046	1047	1049	1050	1055	1046	1045	1048	1037	1026	1018	38	33	42	43	40	51	62	1	1	1	1	1	1	1	**7**	5	-9	-1	3	-11	-11	-8	6	4	5	6	3	3	4	**31**	**217**
1958	1014	1016	1017	1022	1030	1045	1052	1076	1086	1082	1073	1066	58	43	36	12	2	6	15	1	1	1	3	5	4	2	**17**	15	7	24	10	-4	-9	-7	6	6	6	6	5	4	4	**37**	**629**
1959	1058	1054	1050	1050	1050	1053	1043	1030	1020	1009	998	992	38	35	45	58	68	79	90	1	1	1	1	1	1	1	**7**	3	-10	-13	-10	-11	-11	-6	6	4	3	4	3	3	4	**27**	**189**
1960	990	991	992	993	998	1004	1000	994	983	969	959	949	90	84	88	94	105	119	129	1	1	1	1	1	1	1	**7**	6	-4	-6	-11	-14	-10	-10	6	5	4	3	3	4	4	**29**	**203**
1961	945	949	952	954	956	959	955	947	936	927	919	909	132	129	133	141	152	161	169	1	1	1	1	1	1	1	**7**	3	-4	-8	-11	-9	-8	-10	6	5	4	3	4	4	4	**30**	**210**
1962	907	910	913	917	929	935	936	941	945	935	925	914	159	153	152	147	143	153	163	1	1	1	1	1	1	1	**7**	6	1	5	4	-10	-10	-11	6	6	6	6	4	4	3	**35**	**245**
1963	914	918	923	931	949	956	955	981	993	984	971	964	139	132	133	107	95	104	117	1	1	1	1	1	1	1	**7**	7	-1	26	12	-9	-13	-7	6	5	6	6	4	3	4	**34**	**238**
1964	964	969	972	978	982	986	981	974	966	952	942	934	106	102	107	114	122	136	146	1	1	1	1	1	1	1	**7**	4	-5	-7	-8	-14	-10	-8	6	5	4	4	3	4	4	**30**	**210**
1965	933	936	968	994	1006	1013	1017	1026	1034	1029	1019	1012	82	75	71	62	54	59	69	1	1	1	1	1	1	1	**7**	7	4	9	8	-5	-10	-7	6	6	6	6	5	4	4	**37**	**259**
1966	1010	1014	1018	1022	1026	1030	1023	1022	1011	999	987	977	62	58	65	66	77	89	101	1	1	1	1	1	1	1	**7**	4	-7	-1	-11	-12	-12	-10	6	4	5	3	3	3	4	**28**	**196**
1967	976	978	989	1001	1008	1019	1021	1042	1064	1069	1061	1055	80	69	67	46	24	19	27	1	1	1	1	1	2	1	**8**	11	2	21	22	5	-8	-6	6	6	6	6	6	4	4	**38**	**304**
1968	1050	1050	1050	1050	1050	1054	1045	1036	1027	1016	1004	996	38	34	43	52	61	72	84	1	1	1	1	1	1	1	**7**	4	-9	-9	-9	-11	-12	-8	6	4	4	4	3	3	4	**28**	**196**
1969	995	998	1000	1028	1049	1056	1067	1088	1088	1086	1076	1069	39	32	21	0	0	2	12	1	1	1	6	6	5	3	**23**	7	11	21	0	-2	-10	-7	6	6	6	6	5	4	4	**37**	**851**
1970	1062	1058	1057	1075	1080	1083	1078	1079	1075	1065	1055	1049	8	5	10	9	13	23	33	4	4	3	4	3	1	1	**20**	3	-5	1	-4	-10	-10	-6	6	5	6	5	4	4	4	**34**	**680**
1971	1048	1050	1050	1050	1050	1054	1049	1048	1052	1044	1032	1025	38	34	39	40	36	44	56	1	1	1	1	1	1	1	**7**	4	-5	-1	4	-8	-12	-7	6	5	5	6	4	3	4	**33**	**231**
1972	1023	1025	1030	1034	1038	1043	1034	1033	1024	1012	1000	994	50	45	54	55	64	76	88	1	1	1	1	1	1	1	**7**	5	-9	-1	-9	-12	-12	-6	6	4	5	4	3	3	4	**29**	**203**
1973	993	995	998	1010	1025	1035	1030	1041	1042	1031	1019	1012	63	53	58	47	46	57	69	1	1	1	1	1	1	1	**7**	10	-5	11	1	-11	-12	-7	6	5	6	6	3	3	4	**33**	**231**
1974	1011	1017	1025	1036	1045	1055	1060	1071	1070	1063	1053	1047	43	33	28	17	18	25	35	1	1	1	2	2	1	1	**9**	10	5	11	-1	-7	-10	-6	6	6	6	5	4	4	4	**35**	**315**
1975	1046	1047	1050	1050	1050	1055	1051	1054	1063	1057	1047	1040	38	33	37	34	25	31	41	1	1	1	1	1	1	1	**7**	5	-4	3	9	-6	-10	-7	6	5	6	6	4	4	4	**35**	**245**
1976	1039	1042	1044	1045	1047	1048	1039	1028	1016	1006	995	988	41	40	49	60	72	82	93	1	1	1	1	1	1	1	**7**	1	-9	-11	-12	-10	-11	-7	6	4	3	3	4	3	4	**27**	**189**
1977	987	988	989	988	988	987	980	972	964	952	944	939	100	101	108	116	124	136	144	1	1	1	1	1	1	1	**7**	-1	-7	-8	-8	-12	-8	-5	5	4	4	4	3	4	5	**29**	**203**
1978	935	935	938	949	961	980	985	998	1009	1006	995	992	127	108	103	90	79	82	93	1	1	1	1	1	1	1	**7**	19	5	13	11	-3	-11	-3	6	6	6	6	5	3	5	**37**	**259**
1979	990	993	995	1003	1015	1028	1024	1035	1032	1020	1008	1002	73	60	64	53	56	68	80	1	1	1	1	1	1	1	**7**	13	-4	11	-3	-12	-12	-6	6	5	6	5	3	3	4	**32**	**224**
1980	1002	1004	1006	1037	1056	1058	1059	1064	1067	1065	1056	1050	32	30	29	24	21	23	32	1	1	1	1	1	1	1	**7**	2	1	5	3	-2	-9	-6	6	6	6	6	5	4	4	**37**	**259**
1981	1050	1050	1050	1050	1050	1053	1045	1033	1021	1009	998	993	38	35	43	55	67	79	90	1	1	1	1	1	1	1	**7**	3	-8	-12	-12	-12	-11	-5	6	4	3	3	3	3	5	**27**	**189**
1982	992	998	1012	1031	1055	1069	1085	1088	1088	1085	1077	1074	33	19	3	0	0	3	11	1	2	5	6	6	5	3	**28**	14	16	3	0	-3	-8	-3	6	6	6	6	5	4	5	**38**	**1064**
1983	1071	1076	1084	1088	1088	1088	1088	1088	1088	1088	1083	1075	0	0	0	0	0	0	5	6	6	6	6	6	6	4	**40**	0	0	0	0	0	-5	-8	6	6	6	6	6	5	4	**39**	**1560**
1984	1070	1080	1088	1088	1088	1088	1082	1084	1078	1071	1063	1059	0	0	6	4	10	17	25	6	6	4	5	3	2	1	**27**	0	-6	2	-6	-7	-8	-4	6	4	6	4	4	4	5	**33**	**891**
1985	1052	1050	1050	1050	1050	1053	1047	1038	1027	1016	1005	999	38	35	41	50	61	72	83	1	1	1	1	1	1	1	**7**	3	-6	-9	-11	-11	-11	-6	6	4	4	3	3	3	4	**27**	**189**
1986	999	1001	1003	1012	1052	1075	1076	1079	1079	1070	1062	1058	36	13	12	9	9	18	26	1	3	3	4	4	2	1	**18**	23	1	3	0	-9	-8	-4	6	6	6	6	4	4	5	**37**	**666**
1987	1051	1050	1050	1049	1050	1051	1042	1028	1017	1007	998	994	38	37	46	60	71	81	90	1	1	1	1	1	1	1	**7**	1	-9	-14	-11	-10	-9	-4	6	4	3	3	4	4	5	**29**	**203**
1988	991	990	990	991	992	994	987	977	967	958	953	947	96	94	101	111	121	130	135	1	1	1	1	1	1	1	**7**	2	-7	-10	-10	-9	-5	-6	6	4	4	4	4	5	4	**31**	**217**
1989	945	944	944	945	948	959	957	952	944	933	925	920	140	129	131	136	144	155	163	1	1	1	1	1	1	1	**7**	11	-2	-5	-8	-11	-8	-5	6	5	5	4	3	4	5	**32**	**224**
1990	923	926	930	932	936	940	933	921	904	890	879	871	152	148	155	167	184	198	209	1	1	1	1	1	1	1	**7**	4	-7	-12	-17	-14	-11	-8	6	4	3	2	3	3	4	**25**	**175**
1991	870	871	875	876	878	886	882	876	861	846	834	827	210	202	206	212	227	242	254	1	1	1	1	1	1	1	**7**	8	-4	-6	-15	-15	-12	-7	6	5	4	3	3	3	4	**28**	**196**
1992	828	830	835	839	850	859	851	834	816	798	777	772	238	229	237	254	272	290	311	1	1	1	1	1	1	1	**7**	9	-8	-17	-18	-18	-21	-5	6	4	2	2	2	1	5	**22**	**154**
1993	776	784	794	818	916	963	971	984	994	984	972	968	172	125	117	104	94	104	116	1	1	1	1	1	1	1	**7**	47	8	13	10	-10	-12	-4	6	6	6	6	4	3	5	**36**	**252**
1994	966	967	970	970	971	976	971	966	957	945	937	932	117	112	117	122	131	143	151	1	1	1	1	1	1	1	**7**	5	-5	-5	-9	-12	-8	-5	6	5	5	4	3	4	5	**32**	**224**

73 - year Average: 9

73 - year Average: 32 **312.81**

1929 - '34 Average: 200.7

STUDY: 1995C06F-SWRCBJP-634 DWRSIM: recirc818VA, 10 Apr 98
CP # 81, DON PEDRO RESERVOIR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCBJP-634/81/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 832'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	599	582	579	601	656	690	699	723	781	778	762	751
1923	745	744	747	759	774	783	787	789	798	792	776	767
1924	761	758	753	751	753	750	745	739	730	717	703	695
1925	692	692	693	697	719	736	748	761	779	769	753	742
1926	736	734	729	728	737	742	756	769	766	751	736	726
1927	721	720	725	732	761	776	786	786	805	798	783	773
1928	767	767	767	770	779	797	802	818	818	803	788	779
1929	772	767	764	763	766	768	768	770	778	769	759	752
1930	749	746	743	744	749	757	758	761	774	765	756	749
1931	747	746	746	748	750	749	742	734	722	708	695	688
1932	685	681	691	706	742	757	757	763	781	776	762	751
1933	744	737	731	731	736	739	737	733	751	739	725	714
1934	707	706	703	706	717	726	724	718	714	698	684	674
1935	668	668	669	683	704	719	741	752	780	768	751	739
1936	733	731	726	731	769	785	794	811	829	820	805	794
1937	788	783	779	782	800	800	802	815	832	819	805	795
1938	789	784	800	800	800	800	800	804	831	832	819	808
1939	800	799	799	800	800	800	802	803	798	786	773	765
1940	763	762	760	772	800	800	802	815	828	813	798	788
1941	782	780	782	797	800	800	800	812	832	831	817	808
1942	800	798	800	800	800	800	802	807	831	832	818	808
1943	800	800	800	800	800	800	802	821	832	824	810	799
1944	794	792	788	787	793	800	800	805	812	800	785	775
1945	770	770	774	779	800	800	802	806	830	824	809	798
1946	795	796	800	800	800	800	802	805	811	795	779	768
1947	762	762	764	767	775	780	776	780	774	761	747	739
1948	736	736	735	736	737	738	733	742	768	757	739	729
1949	723	716	711	710	717	728	735	744	751	734	714	701
1950	695	688	682	688	707	720	729	740	757	741	723	710
1951	705	753	800	800	800	800	796	792	796	781	767	757
1952	750	748	754	780	800	800	800	820	832	832	819	808
1953	800	795	793	800	800	800	801	802	812	808	794	785
1954	780	776	773	775	783	795	802	819	820	805	789	780
1955	774	770	768	774	781	784	781	785	791	779	767	760
1956	755	751	800	800	800	800	801	816	832	832	818	808
1957	800	798	793	793	799	800	799	804	825	812	798	789
1958	784	779	777	781	800	800	800	821	832	832	819	808
1959	800	794	789	793	800	800	800	798	792	780	767	761
1960	758	756	753	753	761	767	768	773	776	766	756	750
1961	747	745	745	747	749	748	742	734	727	714	702	695
1962	692	689	687	689	713	734	742	745	772	764	749	739
1963	734	729	726	730	756	768	776	788	814	809	795	786
1964	781	782	783	787	794	796	793	790	793	782	770	764
1965	762	762	794	800	800	800	802	806	826	826	815	806
1966	800	800	800	800	800	800	800	796	789	774	759	749
1967	745	742	753	769	787	800	800	817	832	832	820	808
1968	800	795	791	792	800	800	801	804	801	789	777	769
1969	765	765	769	800	800	800	800	823	832	832	819	808
1970	800	799	800	800	800	800	798	797	805	792	778	769
1971	763	763	770	786	798	800	800	799	805	796	784	776
1972	771	767	770	776	790	800	800	798	796	784	773	767
1973	763	762	765	776	800	800	802	812	827	812	797	788
1974	783	787	798	800	800	800	800	806	828	819	805	796
1975	791	789	786	786	798	800	802	811	832	825	812	803
1976	800	800	799	799	800	799	794	787	777	767	757	751
1977	748	745	742	741	741	737	728	715	702	687	672	663
1978	659	655	658	684	717	749	762	777	814	822	808	803
1979	798	794	791	800	800	800	802	821	831	817	803	793
1980	789	787	786	800	800	800	800	817	832	832	819	808
1981	800	797	794	795	799	800	802	805	804	792	781	773
1982	769	775	794	800	800	800	800	820	832	832	820	808
1983	800	800	800	800	800	800	800	819	832	832	832	808
1984	800	800	800	800	800	800	796	801	812	799	784	773
1985	771	771	777	784	792	799	800	797	793	781	770	764
1986	761	762	765	772	800	800	802	827	832	825	811	802
1987	796	791	786	784	786	788	786	783	779	769	759	752
1988	750	749	749	754	759	761	755	746	738	727	714	707
1989	703	700	700	703	707	720	733	746	754	743	732	727
1990	725	725	724	726	730	733	730	728	726	712	698	690
1991	687	684	680	679	678	686	685	702	713	703	692	686
1992	685	685	685	687	697	701	704	712	711	697	684	673
1993	667	661	660	694	726	754	762	776	806	805	791	781
1994	776	770	766	765	768	771	768	771	770	759	749	744

YEAR	DFMRE MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	142	133	109	51	54	70	81	1	1	1	1	1	1	1	**7**
1923	49	45	43	34	40	56	65	1	1	1	1	1	1	1	**7**
1924	82	87	93	102	115	129	137	1	1	1	1	1	1	1	**7**
1925	96	84	71	53	63	79	90	1	1	1	1	1	1	1	**7**
1926	90	76	63	66	81	96	106	1	1	1	1	1	1	1	**7**
1927	56	46	46	27	34	49	59	1	1	1	1	1	1	1	**7**
1928	35	30	14	14	29	44	53	1	1	3	3	1	1	1	**11**
1929	64	64	62	54	63	73	80	1	1	1	1	1	1	1	**7**
1930	75	74	71	58	67	76	83	1	1	1	1	1	1	1	**7**
1931	83	90	98	110	124	137	144	1	1	1	1	1	1	1	**7**
1932	75	75	69	51	56	70	81	1	1	1	1	1	1	1	**7**
1933	93	95	99	81	93	107	118	1	1	1	1	1	1	1	**7**
1934	106	108	114	118	134	148	158	1	1	1	1	1	1	1	**7**
1935	113	91	80	52	64	81	93	1	1	1	1	1	1	1	**7**
1936	47	38	21	3	12	27	38	1	1	1	5	3	1	1	**13**
1937	32	30	17	0	13	27	37	1	1	2	6	3	1	1	**15**
1938	32	32	28	1	0	13	24	1	1	1	5	6	3	1	**18**
1939	32	30	29	34	46	59	67	1	1	1	1	1	1	1	**7**
1940	32	30	17	4	19	34	44	1	1	2	5	2	1	1	**13**
1941	32	32	20	0	1	15	24	1	1	1	6	5	2	1	**17**
1942	32	30	25	1	0	14	24	1	1	1	5	6	3	1	**18**
1943	32	30	11	0	8	22	33	1	1	3	6	4	1	1	**17**
1944	32	32	27	20	32	47	57	1	1	1	1	1	1	1	**7**
1945	32	30	26	2	8	23	34	1	1	1	5	4	1	1	**14**
1946	32	30	27	21	37	53	64	1	1	1	1	1	1	1	**7**
1947	52	56	52	58	71	85	93	1	1	1	1	1	1	1	**7**
1948	94	99	90	64	75	93	103	1	1	1	1	1	1	1	**7**
1949	104	97	88	81	98	118	131	1	1	1	1	1	1	1	**7**
1950	112	103	92	75	91	109	122	1	1	1	1	1	1	1	**7**
1951	32	36	40	36	51	65	75	1	1	1	1	1	1	1	**7**
1952	32	32	12	0	0	13	24	1	1	3	6	6	3	1	**21**
1953	32	31	30	20	24	38	47	1	1	1	1	1	1	1	**7**
1954	37	30	13	12	27	43	52	1	1	3	3	1	1	1	**11**
1955	48	51	47	41	53	65	72	1	1	1	1	1	1	1	**7**
1956	32	31	16	0	0	14	24	1	1	2	6	6	3	1	**20**
1957	32	33	28	7	20	34	43	1	1	1	4	1	1	1	**10**
1958	32	32	11	0	0	13	24	1	1	3	6	6	3	1	**21**
1959	32	32	34	40	52	65	71	1	1	1	1	1	1	1	**7**
1960	65	64	59	56	66	76	82	1	1	1	1	1	1	1	**7**
1961	84	90	98	105	118	130	137	1	1	1	1	1	1	1	**7**
1962	98	90	87	60	68	83	93	1	1	1	1	1	1	1	**7**
1963	64	56	44	18	23	37	46	1	1	1	2	1	1	1	**8**
1964	36	39	42	39	50	62	68	1	1	1	1	1	1	1	**7**
1965	32	30	26	6	6	17	26	1	1	1	4	4	2	1	**14**
1966	32	32	36	43	58	73	83	1	1	1	1	1	1	1	**7**
1967	32	32	15	0	0	12	24	1	1	2	6	6	3	1	**20**
1968	32	31	28	31	43	55	63	1	1	1	1	1	1	1	**7**
1969	32	32	9	0	0	13	24	1	1	4	6	6	3	1	**22**
1970	32	34	35	27	40	54	63	1	1	1	1	1	1	1	**7**
1971	32	32	33	27	36	48	56	1	1	1	1	1	1	1	**7**
1972	32	32	34	36	48	59	65	1	1	1	1	1	1	1	**7**
1973	32	30	20	5	20	35	44	1	1	1	4	1	1	1	**10**
1974	32	32	26	4	13	27	36	1	1	1	5	3	1	1	**13**
1975	32	30	21	0	7	20	29	1	1	1	6	4	1	1	**15**
1976	33	38	45	55	65	75	81	1	1	1	1	1	1	1	**7**
1977	95	104	117	130	145	160	169	1	1	1	1	1	1	1	**7**
1978	83	70	55	18	10	24	29	1	1	1	2	3	1	1	**10**
1979	32	30	11	1	15	29	39	1	1	3	5	2	1	1	**14**
1980	32	32	15	0	0	13	24	1	1	2	6	6	3	1	**20**
1981	32	30	27	28	40	51	59	1	1	1	1	1	1	1	**7**
1982	32	32	12	0	0	12	24	1	1	3	6	6	3	1	**21**
1983	32	32	13	0	0	0	24	1	1	3	6	6	6	1	**24**
1984	32	36	31	20	33	48	59	1	1	1	1	1	1	1	**7**
1985	33	32	35	39	51	62	68	1	1	1	1	1	1	1	**7**
1986	32	30	5	0	7	21	30	1	1	4	6	4	1	1	**18**
1987	44	46	49	53	63	73	80	1	1	1	1	1	1	1	**7**
1988	71	77	86	94	105	118	125	1	1	1	1	1	1	1	**7**
1989	112	99	86	78	89	100	105	1	1	1	1	1	1	1	**7**
1990	99	102	104	106	120	134	142	1	1	1	1	1	1	1	**7**
1991	146	147	130	119	129	140	146	1	1	1	1	1	1	1	**7**
1992	131	128	120	121	135	148	159	1	1	1	1	1	1	1	**7**
1993	78	70	56	26	27	41	51	1	1	1	1	1	1	1	**7**
1994	61	64	61	62	73	83	88	1	1	1	1	1	1	1	**7**
												73 - year Average:			**10**

YEAR	Fluctuation MAR	APR	MAY	JUN	JUL	AUG	SEP	Score MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	34	9	24	58	-3	-16	-11	6	6	6	6	5	2	3	**34**	**238**
1923	9	4	2	9	-6	-16	-9	6	6	6	6	4	2	4	**34**	**238**
1924	-3	-5	-6	-9	-13	-14	-8	5	5	4	4	3	3	4	**28**	**196**
1925	17	12	13	18	-10	-16	-11	6	6	6	6	4	2	3	**33**	**231**
1926	5	14	13	-3	-15	-15	-10	6	6	6	5	3	3	4	**33**	**231**
1927	15	10	0	19	-7	-15	-10	6	6	6	6	4	3	4	**35**	**245**
1928	18	5	16	0	-15	-15	-9	6	6	6	6	3	3	4	**34**	**374**
1929	2	0	2	8	-9	-10	-7	6	6	6	6	4	4	4	**36**	**252**
1930	8	1	3	13	-9	-9	-7	6	6	6	6	4	4	4	**36**	**252**
1931	-1	-7	-8	-12	-14	-13	-7	5	4	4	3	3	3	4	**26**	**182**
1932	15	0	6	18	-5	-14	-11	6	6	6	6	5	3	3	**35**	**245**
1933	3	-2	-4	18	-12	-14	-11	6	5	5	6	3	3	3	**31**	**217**
1934	9	-2	-6	-4	-16	-14	-10	6	5	4	5	2	3	4	**29**	**203**
1935	15	22	11	28	-12	-17	-12	6	6	6	6	3	2	3	**32**	**224**
1936	16	9	17	18	-9	-15	-11	6	6	6	6	4	3	3	**34**	**442**
1937	0	2	13	17	-13	-14	-10	6	6	6	6	3	3	4	**34**	**510**
1938	0	0	4	27	1	-13	-11	6	6	6	6	6	3	3	**36**	**648**
1939	0	2	1	-5	-12	-13	-8	6	6	6	5	3	3	4	**33**	**231**
1940	0	2	13	13	-15	-15	-10	6	6	6	6	3	3	4	**34**	**442**
1941	0	0	12	20	-1	-14	-9	6	6	6	6	5	3	4	**36**	**612**
1942	0	2	5	24	1	-14	-10	6	6	6	6	6	3	4	**37**	**666**
1943	0	2	19	11	-8	-14	-11	6	6	6	6	4	3	3	**34**	**578**
1944	7	0	5	7	-12	-15	-10	6	6	6	6	3	3	4	**34**	**238**
1945	0	2	4	24	-6	-15	-11	6	6	6	6	4	3	3	**34**	**476**
1946	0	2	3	6	-16	-16	-11	6	6	6	6	2	2	3	**31**	**217**
1947	5	-4	4	-6	-13	-14	-8	6	5	6	4	3	3	4	**31**	**217**
1948	1	-5	9	26	-11	-18	-10	6	5	6	6	3	2	4	**32**	**224**
1949	11	7	9	7	-17	-20	-13	6	6	6	6	2	2	3	**31**	**217**
1950	13	9	11	17	-16	-18	-13	6	6	6	6	2	2	3	**31**	**217**
1951	0	-4	-4	4	-15	-14	-10	6	5	5	6	3	3	4	**32**	**224**
1952	0	0	20	12	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1953	0	1	1	10	-4	-14	-9	6	6	6	6	5	3	4	**36**	**252**
1954	12	7	17	1	-15	-16	-9	6	6	6	6	3	2	4	**33**	**363**
1955	3	-3	4	6	-12	-12	-7	6	5	6	6	3	3	4	**33**	**231**
1956	0	1	15	16	0	-14	-10	6	6	6	6	6	3	4	**37**	**740**
1957	1	-1	5	21	-13	-14	-9	6	5	6	6	3	3	4	**33**	**330**
1958	0	0	21	11	0	-13	-11	6	6	6	6	6	3	3	**36**	**756**
1959	0	0	-2	-6	-12	-13	-6	6	6	5	4	3	3	4	**31**	**217**
1960	6	1	5	3	-10	-10	-6	6	6	6	6	4	4	4	**36**	**252**
1961	-1	-6	-8	-7	-13	-12	-7	5	4	4	4	3	3	4	**27**	**189**
1962	21	8	3	27	-8	-15	-10	6	6	6	6	4	3	4	**35**	**245**
1963	12	8	12	26	-5	-14	-9	6	6	6	6	5	3	4	**36**	**288**
1964	2	-3	-3	3	-11	-12	-6	6	5	5	6	3	3	4	**32**	**224**
1965	0	2	4	20	0	-11	-9	6	6	6	6	6	3	4	**37**	**518**
1966	0	0	-4	-7	-15	-15	-10	6	6	5	4	3	3	4	**31**	**217**
1967	13	0	17	15	0	-12	-12	6	6	6	6	6	3	3	**36**	**720**
1968	0	1	3	-3	-12	-12	-8	6	6	6	5	3	3	4	**33**	**231**
1969	0	0	23	9	0	-13	-11	6	6	6	6	6	3	3	**36**	**792**
1970	0	-2	-1	8	-13	-14	-9	6	5	5	6	3	3	4	**32**	**224**
1971	2	0	-1	6	-9	-12	-8	6	6	5	6	4	3	4	**34**	**238**
1972	10	0	-2	-2	-12	-11	-6	6	6	5	5	3	3	4	**32**	**224**
1973	0	2	10	15	-15	-15	-9	6	6	6	6	3	3	4	**34**	**340**
1974	0	0	6	22	-9	-14	-9	6	6	6	6	4	3	4	**35**	**455**
1975	2	2	9	21	-7	-13	-9	6	6	6	6	4	3	4	**35**	**525**
1976	-1	-5	-7	-10	-10	-10	-6	5	5	4	4	4	4	4	**30**	**210**
1977	-4	-9	-13	-13	-15	-15	-9	5	4	3	3	3	3	4	**25**	**175**
1978	32	13	15	37	8	-14	-5	6	6	6	6	6	3	5	**38**	**380**
1979	0	2	19	10	-14	-14	-10	6	6	6	6	3	3	4	**34**	**476**
1980	0	0	17	15	0	-13	-11	6	6	6	6	6	3	3	**36**	**720**
1981	1	2	3	-1	-12	-11	-8	6	6	6	5	3	3	4	**33**	**231**
1982	0	0	20	12	0	-12	-12	6	6	6	6	6	3	3	**36**	**756**
1983	0	0	19	13	0	0	-24	6	6	6	6	6	6	1	**37**	**888**
1984	0	-4	5	11	-13	-15	-11	6	5	6	6	3	3	3	**32**	**224**
1985	7	1	-3	-4	-12	-11	-6	6	6	5	5	3	3	4	**32**	**224**
1986	0	2	25	5	-7	-14	-9	6	6	6	6	4	3	4	**35**	**630**
1987	2	-2	-3	-4	-10	-10	-7	6	5	5	5	4	4	4	**33**	**231**
1988	2	-6	-9	-8	-11	-13	-7	6	4	4	4	3	3	4	**28**	**196**
1989	13	13	13	8	-11	-11	-5	6	6	6	6	3	3	5	**35**	**245**
1990	3	-3	-2	-2	-14	-14	-8	6	5	5	5	3	3	4	**31**	**217**
1991	8	-1	17	11	-10	-11	-6	6	5	6	6	4	3	4	**34**	**238**
1992	4	3	8	-1	-14	-13	-11	6	6	6	5	3	3	3	**32**	**224**
1993	28	8	14	30	-1	-14	-10	6	6	6	6	5	3	4	**36**	**252**
1994	3	-3	3	-1	-11	-10	-5	6	5	6	5	3	4	5	**34**	**238**
												73 - year Average:			**33**	**350.26**
														1929 - '34 Average:		**225.2**

STUDY: 1995C06F-SWRCBJP-634 DWRSIM: recirc818VA, 10 Apr 98
CP # 20, LAKE McCLURE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCBJP-634/20/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 867'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	**SUM**	**Product**
1922	675	675	691	707	756	777	785	837	867	860	846	836	90	82	30	0	7	21	31	1	1	1	6	4	1	1	**15**	21	8	52	30	-7	-14	-10	6	6	6	6	4	3	4	**35**	**525**
1923	808	808	808	808	808	813	823	846	851	841	826	815	54	44	21	16	26	41	52	1	1	1	2	1	1	1	**8**	5	10	23	5	-10	-15	-11	6	6	6	6	4	3	3	**34**	**272**
1924	808	808	808	808	808	807	805	803	790	772	758	746	60	62	64	77	95	109	121	1	1	1	1	1	1	1	**7**	-1	-2	-2	-13	-18	-14	-12	5	5	5	3	2	3	3	**26**	**182**
1925	742	748	755	760	784	794	810	831	835	822	804	792	73	57	36	32	45	63	75	1	1	1	1	1	1	1	**7**	10	16	21	4	-13	-18	-12	6	6	6	6	3	2	3	**32**	**224**
1926	787	787	788	790	803	809	827	820	819	815	807	799	58	40	47	48	52	60	68	1	1	1	1	1	1	1	**7**	6	18	-7	-1	-4	-8	-8	6	6	4	5	5	4	4	**34**	**238**
1927	795	796	800	800	808	814	815	839	852	847	843	840	53	52	28	15	20	24	27	1	1	1	2	1	1	1	**8**	6	1	24	13	-5	-4	-3	6	6	6	6	5	5	5	**39**	**312**
1928	808	808	808	808	808	809	804	813	811	804	800	797	58	63	54	56	63	67	70	1	1	1	1	1	1	1	**7**	1	-5	9	-2	-7	-4	-3	6	5	6	5	4	5	5	**36**	**252**
1929	794	793	792	792	794	796	794	794	794	796	799	793	71	73	73	73	71	68	74	1	1	1	1	1	1	1	**7**	2	-2	0	0	2	3	-6	6	5	6	6	6	6	4	**39**	**273**
1930	789	788	788	787	787	782	784	781	786	789	793	791	85	83	86	81	78	74	76	1	1	1	1	1	1	1	**7**	-5	2	-3	5	3	4	-2	5	6	5	6	6	6	5	**39**	**273**
1931	787	786	786	787	789	789	792	795	781	763	747	735	78	75	72	86	104	120	132	1	1	1	1	1	1	1	**7**	0	3	3	-14	-18	-16	-12	6	6	6	3	2	2	3	**28**	**196**
1932	730	731	753	766	802	811	817	838	859	849	833	823	56	50	29	8	18	34	44	1	1	1	4	2	1	1	**11**	9	6	21	21	-10	-16	-10	6	6	6	6	4	2	4	**34**	**374**
1933	808	807	806	808	808	811	814	819	834	822	807	799	56	53	48	33	45	60	68	1	1	1	1	1	1	1	**7**	3	3	5	15	-12	-15	-8	6	6	6	6	3	3	4	**34**	**238**
1934	795	794	797	803	808	816	819	809	800	783	769	760	51	48	58	67	84	98	107	1	1	1	1	1	1	1	**7**	8	3	-10	-9	-17	-14	-9	6	6	4	4	2	3	4	**29**	**203**
1935	756	760	765	783	795	805	839	859	867	854	839	828	62	28	8	0	13	28	39	1	1	4	6	3	1	1	**17**	10	34	20	8	-13	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1936	808	808	808	808	808	820	840	859	865	853	838	827	47	27	8	2	14	29	40	1	1	4	5	3	1	1	**16**	12	20	19	6	-12	-15	-11	6	6	6	6	3	3	3	**33**	**528**
1937	808	808	808	808	808	820	834	859	867	853	838	827	47	33	8	0	14	29	40	1	1	4	6	3	1	1	**17**	12	14	25	8	-14	-15	-11	6	6	6	6	3	3	3	**33**	**561**
1938	808	808	808	808	808	820	840	859	867	867	855	840	47	27	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1939	808	808	808	808	808	816	826	823	810	792	774	763	51	41	44	57	75	93	104	1	1	1	1	1	1	1	**7**	8	10	-3	-13	-18	-18	-11	6	6	5	3	2	2	3	**27**	**189**
1940	762	763	764	793	808	820	836	859	861	845	829	816	47	31	8	6	22	38	51	1	1	4	4	1	1	1	**13**	12	16	23	2	-16	-16	-13	6	6	6	6	2	2	3	**31**	**403**
1941	808	808	808	808	808	820	834	859	867	863	850	840	47	33	8	0	4	17	27	1	1	4	6	5	2	1	**20**	12	14	25	8	-4	-13	-10	6	6	6	6	5	3	4	**36**	**720**
1942	808	808	808	808	808	820	837	859	867	860	851	840	47	30	8	0	7	16	27	1	1	4	6	4	2	1	**19**	12	17	22	8	-7	-9	-11	6	6	6	6	4	4	3	**35**	**665**
1943	808	808	808	808	808	820	840	859	864	853	838	828	47	27	8	3	14	29	39	1	1	4	5	3	1	1	**16**	12	20	19	5	-11	-15	-10	6	6	6	6	3	3	4	**34**	**544**
1944	808	808	808	808	808	817	807	829	831	817	799	785	50	60	38	36	50	68	82	1	1	1	1	1	1	1	**7**	9	-10	22	2	-14	-18	-14	6	4	6	6	3	2	3	**30**	**210**
1945	779	786	793	797	808	820	832	850	863	853	838	828	47	35	17	4	14	29	39	1	1	2	5	3	1	1	**14**	12	12	18	13	-10	-15	-10	6	6	6	6	4	3	4	**35**	**490**
1946	808	808	808	808	808	818	832	851	850	834	816	803	49	35	16	17	33	51	64	1	1	2	2	1	1	1	**9**	10	14	19	-1	-16	-18	-13	6	6	6	5	2	2	3	**30**	**270**
1947	800	806	808	808	808	815	819	829	822	806	790	780	52	48	38	45	61	77	87	1	1	1	1	1	1	1	**7**	7	4	10	-7	-16	-16	-10	6	6	6	4	2	2	4	**30**	**210**
1948	777	778	779	781	783	782	785	806	826	809	791	776	85	82	61	41	58	76	91	1	1	1	1	1	1	1	**7**	-1	3	21	20	-17	-18	-15	5	6	6	6	2	2	3	**30**	**210**
1949	770	769	770	771	776	785	793	811	810	788	767	749	82	74	56	57	79	100	118	1	1	1	1	1	1	1	**7**	9	8	18	-1	-22	-21	-18	6	6	6	5	1	1	2	**27**	**189**
1950	742	741	741	751	766	769	786	805	806	785	763	745	98	81	62	61	82	104	122	1	1	1	1	1	1	1	**7**	3	17	19	1	-21	-22	-18	6	6	6	6	1	1	2	**28**	**196**
1951	738	800	808	808	808	819	820	828	825	805	784	768	48	47	39	42	62	83	99	1	1	1	1	1	1	1	**7**	11	1	8	-3	-20	-21	-16	6	6	6	5	2	1	2	**28**	**196**
1952	762	763	776	808	808	820	840	859	867	864	852	840	47	27	8	0	3	15	27	1	1	4	6	5	2	1	**20**	12	20	19	8	-3	-12	-12	6	6	6	6	5	3	3	**35**	**700**
1953	808	808	808	808	808	809	809	805	813	798	778	762	58	58	62	54	69	89	105	1	1	1	1	1	1	1	**7**	1	0	-4	8	-15	-20	-16	6	6	5	6	3	2	2	**30**	**210**
1954	756	756	756	760	770	784	801	817	808	787	765	747	83	66	50	59	80	102	120	1	1	1	1	1	1	1	**7**	14	17	16	-9	-21	-22	-18	6	6	6	4	1	1	2	**26**	**182**
1955	740	738	742	750	756	759	756	777	788	771	752	740	108	111	90	79	96	115	127	1	1	1	1	1	1	1	**7**	3	-3	21	11	-17	-19	-12	6	5	6	6	2	2	3	**30**	**210**
1956	733	733	808	808	808	819	826	855	867	863	850	840	48	41	12	0	4	17	27	1	1	3	6	5	2	1	**19**	11	7	29	12	-4	-13	-10	6	6	6	6	5	3	4	**36**	**684**
1957	808	808	808	808	808	813	807	818	829	811	793	777	54	60	49	38	56	74	90	1	1	1	1	1	1	1	**7**	5	-6	11	11	-18	-18	-16	6	4	6	6	2	2	2	**28**	**196**
1958	771	772	777	784	801	820	840	859	867	862	850	840	47	27	8	0	5	17	27	1	1	4	6	4	2	1	**19**	19	20	19	8	-5	-12	-10	6	6	6	6	5	3	4	**36**	**684**
1959	808	808	808	808	808	813	815	815	806	785	768	761	54	52	52	61	82	99	106	1	1	1	1	1	1	1	**7**	5	2	0	-9	-21	-17	-7	6	6	6	4	1	2	4	**29**	**203**
1960	757	755	755	756	769	777	790	801	798	781	767	757	90	77	66	69	86	100	110	1	1	1	1	1	1	1	**7**	8	13	11	-3	-17	-14	-10	6	6	6	5	2	3	4	**32**	**224**
1961	751	752	755	755	759	760	766	770	762	740	723	711	107	101	97	105	127	144	156	1	1	1	1	1	1	1	**7**	1	6	4	-8	-22	-17	-12	6	6	6	4	1	2	3	**28**	**196**
1962	704	705	708	711	759	768	790	800	817	802	782	766	99	77	67	50	65	85	101	1	1	1	1	1	1	1	**7**	9	22	10	17	-15	-20	-16	6	6	6	6	3	2	2	**31**	**217**
1963	762	762	763	772	808	814	819	839	853	844	829	817	53	48	28	14	23	38	50	1	1	1	3	1	1	1	**9**	6	5	20	14	-9	-15	-12	6	6	6	6	4	3	3	**34**	**306**
1964	808	808	808	808	808	808	809	816	814	798	781	772	59	58	51	53	69	86	95	1	1	1	1	1	1	1	**7**	0	1	7	-2	-16	-17	-9	6	6	6	5	2	2	4	**31**	**217**
1965	766	770	808	808	808	815	831	848	867	861	850	840	52	36	19	0	6	17	27	1	1	2	6	4	2	1	**17**	7	16	17	19	-6	-11	-10	6	6	6	6	4	3	4	**35**	**595**
1966	808	808	808	808	808	814	821	829	816	793	771	759	53	46	38	51	74	96	108	1	1	1	1	1	1	1	**7**	6	7	8	-13	-23	-22	-12	6	6	6	3	1	1	3	**26**	**182**
1967	751	754	780	794	804	820	840	859	867	867	856	840	47	27	8	0	0	11	27	1	1	4	6	6	3	1	**22**	16	20	19	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1968	808	808	808	808	808	812	809	810	801	781	764	752	55	58	57	66	86	103	115	1	1	1	1	1	1	1	**7**	4	-3	1	-9	-20	-17	-12	6	5	6	4	2	2	3	**28**	**196**
1969	744	750	760	808	808	820	840	859	867	867	854	840	47	27	8	0	0	13	27	1	1	4	6	6	3	1	**22**	12	20	19	8	0	-13	-14	6	6	6	6	6	3	3	**36**	**792**
1970	808	808	808	808	808	820	814	828	828	810	791	776	47	53	39	39	57	76	91	1	1	1	1	1	1	1	**7**	12	-6	14	0	-18	-19	-15	6	4	6	6	2	2	3	**29**	**203**
1971	770	773	784	794	800	804	799	808	820	803	784	769	63	68	59	47	64	83	98	1	1	1	1	1	1	1	**7**	4	-5	9	12	-17	-19	-15	6	5	6	6	2	2	3	**30**	**210**
1972	763	763	771	776	784	796	797	809	810	794	777	770	71	70	58	57	73	90	97	1	1	1	1	1	1	1	**7**	12	1	12	1	-16	-17	-7	6	6	6	6	2	2	4	**32**	**224**
1973	767	768	775	790	808	820	827	859	867	852	838	828	47	40	8	0	15	29	39	1	1	4	6	2	1	1	**16**	12	7	32	8	-15	-14	-10	6	6	6	6	3	3	4	**34**	**544**
1974	808	808	808	808	808	820	833	859	867	854	839	829	47	34	8	0	13	28	38	1	1	4	6	3	1	1	**17**	12	13	26	8	-13	-15	-10	6	6	6	6	3	3	4	**34**	**578**
1975	808	808	808	808	808	820	822	849	867	856	842	832	47	45	18	0	11	25	35	1	1	2	6	3	1	1	**15**	12	2	27	18	-11	-14	-10	6	6	6	6	3	3	4	**34**	**510**
1976	808	808	808	808	808	809	806	804	793	775	762	752	58	61	63	74	92	105	115	1	1	1	1	1	1	1	**7**	1	-3	-2	-11	-18	-13	-10	6	5	5	3	2	3	4	**28**	**196**
1977	747	745	743	743	743	738	727	711	696	663	628	626	129	140	156	171	204	239	241	1	1	1	1	1	1	1	**7**	-5	-11	-16	-15	-33	-35	-2	5	3	2	3	1	1	5	**20**	**140**
1978	626	626	641	693	741	782	815	859	867	867	856	840	85	52	8	0	0	11	27	1	1	4	6	6	3	1	**22**	41	33	44	8	0	-11	-16	6	6	6	6	6	3	2	**35**	**770**
1979	808	808	808	808	808	820	826	858	862	848	833	822	47	41	9	5	19	34	45	1	1	4	4	2	1	1	**14**	12	6	32	4	-14	-15	-11	6	6	6	6	3	3	3	**33**	**462**
1980	808	808	808	808	808	820	834	859	867	867	855	840	47	33	8	0	0	12	27	1	1	4	6	6	3	1	**22**	12	14	25	8	0	-12	-15	6	6	6	6	6	3	3	**36**	**792**
1981	808	807	807	808	808	813	817	826	822	805	791	782	54	50	41	45	62	76	85	1	1	1	1	1	1	1	**7**	5	4	9	-4	-17	-14	-9	6	6	6	5	2	3	4	**32**	**224**
1982	778	787	801	808	808	820	840	859	867	865	854	840	47	27	8	0	2	13	27	1	1	4	6	5	3	1	**21**	12	20	19	8	-2	-11	-14	6	6	6	6	5	3	3	**35**	**735**
1983	808	808	808	808	808	820	836	859	867	867	864	840	47	31	8	0	0	3	27	1	1	4	6	6	5	1	**24**	12	16	23	8	0	-3	-24	6	6	6	6	6	5	1	**36**	**864**
1984	808	808	808	808	808	820	822	841	839	823	803	789	47	45	26	28	44	64	78	1	1	1	1	1	1	1	**7**	12	2	19	-2	-16	-20	-14	6	6	6	5	2	2	3	**30**	**210**
1985	785	789	793	796	802	807	820	830	824	808	794	783	60	47	37	43	59	73	84	1	1	1	1	1	1	1	**7**	5	13	10	-6	-16	-14	-11	6	6	6	4	2	3	3	**30**	**210**
1986	780	783	790	799	808	820	839	859	867	855	841	830	47	28	8	0	12	26	37	1	1	4	6	3	1	1	**17**	12	19	20	8	-12	-14	-11	6	6	6	6	3	3	3	**33**	**561**
1987	808	807	807	807	808	810	817	817	807	791	777	769	57	50	50	60	76	90	98	1	1	1	1	1	1	1	**7**	2	7	0	-10	-16	-14	-8	6	6	6	4	2	3	4	**31**	**217**
1988	765	766	768	773	778	783	786	786	778	761	744	733	84	81	81	89	106	123	134	1	1	1	1	1	1	1	**7**	5	3	0	-8	-17	-17	-11	6	6	6	4	2	2	3	**29**	**203**
1989	727	727	729	730	735	756	779	792	788	771	757	745	111	88	75	79	96	110	122	1	1	1	1	1	1	1	**7**	21	23	13	-4	-17	-14	-12	6	6	6	5	2	3	3	**31**	**217**
1990	744	745	746	749	754	761	773	774	765	746	728	716	106	94	93	102	121	139	151	1	1	1	1	1	1	1	**7**	7	12	1	-9	-19	-18	-12	6	6	6	4	2	2	3	**29**	**203**
1991	710	709	708	707	707	729	736	761	775	762	746	734	138	131	106	92	105	121	133	1	1	1	1	1	1	1	**7**	22	7	25	14	-13	-16	-12	6	6	6	6	3	2	3	**32**	**224**
1992	729	730	732	734	751	758	775	781	769	754	737	726	109	92	86	98	113	130	141	1	1	1	1	1	1	1	**7**	7	17	6	-12	-15	-17	-11	6	6	6	3	3	2	3	**29**	**203**
1993	721	721	727	777	799	820	834	859	867	861	848	837	47	33	8	0	6	19	30	1	1	4	6	4	2	1	**19**	21	14	25	8	-6	-13	-11	6	6	6	6	4	3	3	**34**	**646**
1994	808	807	808	808	808	810	811	814	806	790	776	767	57	56	53	61	77	91	100	1	1	1	1	1	1	1	**7**	2	1	3	-8	-16	-14	-9	6	6	6	4	2	3	4	**31**	**217**

73 - year Average: 11

73 - year Average: 32 **367.4**

1929 - '34 Average: 259.5

STUDY: 1995C06F-SWRCBJP-634 DWRSIM: recirc818VA, 10 Apr 98
CP # 18, MILLERTON LAKE, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCBJP-634/18/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 576'

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	491	505	527	547	549	566	559	576	576	562	518	491
1923	485	495	520	537	531	517	541	549	540	526	463	470
1924	483	494	508	522	516	503	506	511	505	478	464	468
1925	465	474	490	503	508	493	514	532	522	499	483	475
1926	477	490	505	519	522	508	549	563	535	494	473	485
1927	491	506	528	545	560	561	560	569	576	543	492	482
1928	482	503	525	542	540	543	551	554	522	477	465	477
1929	485	499	513	523	517	513	531	531	527	506	466	477
1930	480	495	507	518	514	510	525	534	518	489	466	482
1931	487	501	513	522	517	508	510	516	508	482	466	466
1932	467	476	503	520	543	531	524	532	552	518	492	477
1933	477	489	501	516	512	501	520	537	526	509	466	467
1934	470	480	500	517	511	503	516	527	523	498	477	486
1935	490	500	515	535	532	509	542	563	574	538	469	479
1936	486	502	518	533	560	558	564	576	563	521	472	478
1937	488	497	516	535	560	570	576	576	576	538	484	469
1938	472	486	533	560	560	542	529	467	572	576	532	520
1939	513	514	529	538	532	524	542	560	539	504	473	495
1940	495	504	517	550	550	552	548	561	553	512	466	471
1941	481	494	528	556	560	573	573	569	576	569	527	506
1942	497	507	532	552	549	553	554	562	576	555	509	477
1943	477	494	518	557	556	576	574	576	562	526	491	476
1944	479	491	508	521	524	507	516	517	501	494	490	480
1945	481	503	523	533	560	568	565	571	576	554	511	491
1946	485	502	531	548	528	524	536	559	546	510	478	480
1947	481	500	526	543	541	530	545	556	535	497	473	481
1948	488	503	518	529	523	530	556	551	541	483	480	484
1949	490	500	513	526	524	511	522	538	521	482	477	489
1950	492	503	519	536	541	524	534	551	539	506	476	482
1951	490	533	560	560	554	546	552	546	514	463	463	481
1952	488	500	530	559	560	567	559	526	576	571	525	508
1953	501	514	533	549	538	532	541	536	518	497	478	481
1954	488	497	514	532	532	527	537	560	544	507	465	483
1955	489	502	522	540	537	520	534	545	537	504	481	487
1956	491	499	560	560	560	576	576	561	576	566	524	505
1957	496	504	517	527	525	529	546	561	562	526	471	481
1958	488	501	525	545	554	565	576	576	576	557	516	498
1959	492	507	523	530	536	528	550	566	551	500	470	475
1960	474	475	480	490	503	498	515	525	509	496	483	481
1961	481	491	505	511	510	511	526	539	527	486	467	467
1962	468	471	484	492	538	529	527	555	569	540	489	476
1963	479	491	501	518	558	558	576	576	576	564	520	503
1964	490	517	542	551	547	544	553	561	551	508	476	484
1965	481	496	529	560	556	554	559	551	561	540	512	496
1966	487	513	546	558	541	526	545	564	550	506	486	486
1967	490	502	539	559	560	571	565	514	570	576	539	522
1968	515	521	539	545	545	539	550	554	539	506	478	482
1969	480	496	513	560	524	521	467	469	576	576	538	513
1970	498	516	540	560	560	554	554	555	544	517	476	477
1971	482	502	534	551	548	533	541	544	520	498	491	478
1972	479	491	519	536	532	524	537	543	540	497	481	481
1973	489	501	523	545	560	560	550	575	576	542	483	477
1974	487	510	545	560	544	550	559	570	573	537	490	473
1975	476	494	515	528	535	526	533	536	567	525	476	482
1976	489	511	531	541	539	544	547	542	519	492	479	494
1977	490	496	500	503	501	464	465	464	462	466	461	462
1978	462	462	484	532	560	552	510	498	576	576	548	539
1979	528	535	549	560	555	562	560	571	563	521	477	482
1980	489	488	508	560	560	558	566	550	576	576	542	513
1981	503	512	520	528	531	533	547	553	543	510	477	488
1982	491	504	536	560	560	576	546	561	576	576	546	541
1983	531	556	560	560	513	484	467	467	483	564	572	576
1984	560	560	560	560	560	568	570	570	557	530	487	483
1985	482	492	511	536	533	526	551	563	539	501	483	483
1986	490	508	534	554	550	552	574	565	576	558	503	479
1987	480	489	492	495	496	511	530	551	539	503	473	480
1988	482	495	507	526	516	527	539	547	527	498	483	486
1989	486	497	505	515	512	516	537	552	540	502	478	484
1990	489	495	502	510	510	517	532	544	525	508	479	483
1991	480	486	492	499	493	489	501	508	512	506	480	486
1992	485	490	494	498	499	490	493	494	480	470	465	466
1993	467	466	476	536	543	556	558	576	576	571	522	499
1994	490	497	507	512	508	520	534	548	528	498	478	484

Difference from Maximum Reservoir Elevation [DFMRE]

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	10	17	0	0	14	58	85
1923	59	35	27	36	50	113	106
1924	73	70	65	71	98	112	108
1925	83	62	44	54	77	93	101
1926	68	27	13	41	82	103	91
1927	15	16	7	0	33	84	94
1928	33	25	22	54	99	111	99
1929	63	45	45	49	70	110	99
1930	66	51	42	58	87	110	94
1931	68	66	60	68	94	110	110
1932	45	52	44	24	58	84	99
1933	75	56	39	50	67	110	109
1934	73	60	49	53	78	99	90
1935	67	34	13	2	38	107	97
1936	18	12	0	13	55	104	98
1937	6	0	0	0	38	92	107
1938	34	47	109	4	0	44	56
1939	52	34	16	37	72	103	81
1940	24	28	15	23	64	110	105
1941	3	3	7	0	7	49	70
1942	23	22	14	0	21	67	99
1943	0	2	0	14	50	85	100
1944	69	60	59	75	82	86	96
1945	8	11	5	0	22	65	85
1946	52	40	17	30	66	98	96
1947	46	31	20	41	79	103	95
1948	46	20	25	35	93	96	92
1949	65	54	38	55	94	99	87
1950	52	42	25	37	70	100	94
1951	30	24	30	62	113	113	95
1952	9	17	50	0	5	51	68
1953	44	35	40	58	79	98	95
1954	49	39	16	32	69	111	93
1955	56	42	31	39	72	95	89
1956	0	0	15	0	10	52	71
1957	47	30	15	14	50	105	95
1958	11	0	0	0	19	60	78
1959	48	26	10	25	76	106	101
1960	78	61	51	67	80	93	95
1961	65	50	37	49	90	109	109
1962	47	49	21	7	36	87	100
1963	18	0	0	0	12	56	73
1964	32	23	15	25	68	100	92
1965	22	17	25	15	36	64	80
1966	50	31	12	26	70	90	90
1967	5	11	62	6	0	37	54
1968	37	26	22	37	70	98	94
1969	55	109	107	0	0	38	63
1970	22	22	21	32	59	100	99
1971	43	35	32	56	78	85	98
1972	52	39	33	36	79	95	95
1973	16	26	1	0	34	93	99
1974	26	17	6	3	39	86	103
1975	50	43	40	9	51	100	94
1976	32	29	34	57	84	97	82
1977	112	111	112	114	110	115	114
1978	24	66	78	0	0	28	37
1979	14	16	5	13	55	99	94
1980	18	10	26	0	0	34	63
1981	43	29	23	33	66	99	88
1982	0	30	15	0	0	30	35
1983	92	109	109	93	12	4	0
1984	8	6	6	19	46	89	93
1985	50	25	13	37	75	93	93
1986	24	2	11	0	18	73	97
1987	65	46	25	37	73	103	96
1988	49	37	29	49	78	93	90
1989	60	39	24	36	74	98	92
1990	59	44	32	51	68	97	93
1991	87	75	68	64	70	96	90
1992	86	83	82	96	106	111	110
1993	20	18	0	0	5	54	77
1994	56	42	28	48	78	98	92

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM
1922	3	2	6	6	3	1	1	**22**
1923	1	1	1	1	1	1	1	**7**
1924	1	1	1	1	1	1	1	**7**
1925	1	1	1	1	1	1	1	**7**
1926	1	1	3	1	1	1	1	**9**
1927	2	2	4	6	1	1	1	**17**
1928	1	1	1	1	1	1	1	**7**
1929	1	1	1	1	1	1	1	**7**
1930	1	1	1	1	1	1	1	**7**
1931	1	1	1	1	1	1	1	**7**
1932	1	1	1	1	1	1	1	**7**
1933	1	1	1	1	1	1	1	**7**
1934	1	1	1	1	1	1	1	**7**
1935	1	1	3	5	1	1	1	**13**
1936	2	3	6	3	1	1	1	**17**
1937	4	6	6	6	1	1	1	**25**
1938	1	1	1	5	6	1	1	**16**
1939	1	1	2	1	1	1	1	**8**
1940	1	1	2	1	1	1	1	**8**
1941	5	5	4	6	4	1	1	**26**
1942	1	1	3	6	1	1	1	**14**
1943	6	5	6	3	1	1	1	**23**
1944	1	1	1	1	1	1	1	**7**
1945	4	3	4	6	1	1	1	**20**
1946	1	1	2	1	1	1	1	**8**
1947	1	1	1	1	1	1	1	**7**
1948	1	1	1	1	1	1	1	**7**
1949	1	1	1	1	1	1	1	**7**
1950	1	1	1	1	1	1	1	**7**
1951	1	1	1	1	1	1	1	**7**
1952	4	2	1	6	4	1	1	**19**
1953	1	1	1	1	1	1	1	**7**
1954	1	1	2	1	1	1	1	**8**
1955	1	1	1	1	1	1	1	**7**
1956	6	6	2	6	3	1	1	**25**
1957	1	1	2	3	1	1	1	**10**
1958	3	6	6	6	2	1	1	**25**
1959	1	1	3	1	1	1	1	**9**
1960	1	1	1	1	1	1	1	**7**
1961	1	1	1	1	1	1	1	**7**
1962	1	1	1	4	1	1	1	**10**
1963	2	6	6	6	3	1	1	**25**
1964	1	1	2	1	1	1	1	**8**
1965	1	2	1	2	1	1	1	**9**
1966	1	1	3	1	1	1	1	**9**
1967	4	3	1	4	6	1	1	**20**
1968	1	1	1	1	1	1	1	**7**
1969	1	1	1	6	6	1	1	**17**
1970	1	1	1	1	1	1	1	**7**
1971	1	1	1	1	1	1	1	**7**
1972	1	1	1	1	1	1	1	**7**
1973	2	1	5	6	1	1	1	**17**
1974	1	2	4	5	1	1	1	**15**
1975	1	1	1	4	1	1	1	**10**
1976	1	1	1	1	1	1	1	**7**
1977	1	1	1	1	1	1	1	**7**
1978	1	1	1	6	6	1	1	**17**
1979	3	2	4	3	1	1	1	**15**
1980	2	3	1	6	6	1	1	**20**
1981	1	1	1	1	1	1	1	**7**
1982	6	1	2	6	6	1	1	**23**
1983	1	1	1	1	3	5	6	**18**
1984	4	4	4	2	1	1	1	**17**
1985	1	1	3	1	1	1	1	**9**
1986	1	5	3	6	2	1	1	**19**
1987	1	1	1	1	1	1	1	**7**
1988	1	1	1	1	1	1	1	**7**
1989	1	1	1	1	1	1	1	**7**
1990	1	1	1	1	1	1	1	**7**
1991	1	1	1	1	1	1	1	**7**
1992	1	1	1	1	1	1	1	**7**
1993	1	2	6	6	4	1	1	**21**
1994	1	1	1	1	1	1	1	**7**

73 - year Average: 12

Reservoir Change from Previous Month [fluctuation]

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	17	-7	17	0	-14	-44	-27
1923	-14	24	8	-9	-14	-63	7
1924	-13	3	5	-6	-27	-14	4
1925	-15	21	18	-10	-23	-16	-8
1926	-14	41	14	-28	-41	-21	12
1927	1	-1	9	7	-33	-51	-10
1928	3	8	3	-32	-45	-12	12
1929	-4	18	0	-4	-21	-40	11
1930	-4	15	9	-16	-29	-23	16
1931	-9	2	6	-8	-26	-16	0
1932	-12	-7	8	20	-34	-26	-15
1933	-11	19	17	-11	-17	-43	1
1934	-8	13	11	-4	-25	-21	9
1935	-23	33	21	11	-36	-69	10
1936	-2	6	12	-13	-42	-49	6
1937	10	6	0	0	-38	-54	-15
1938	-18	-13	-62	105	4	-44	-12
1939	-8	18	18	-21	-35	-31	22
1940	2	-4	13	-8	-41	-46	5
1941	13	0	-4	7	-7	-42	-21
1942	4	1	8	14	-21	-46	-32
1943	20	-2	2	-14	-36	-35	-15
1944	-17	9	1	-16	-7	-4	-10
1945	8	-3	6	5	-22	-43	-20
1946	-4	12	23	-13	-36	-32	2
1947	-11	15	11	-21	-38	-24	8
1948	7	26	-5	-10	-58	-3	4
1949	-13	11	16	-17	-39	-5	12
1950	-17	10	17	-12	-33	-30	6
1951	-8	6	-6	-32	-51	0	18
1952	7	-8	-33	50	-5	-46	-17
1953	-6	9	-5	-18	-21	-19	3
1954	-5	10	23	-16	-37	-42	18
1955	-17	14	11	-8	-33	-23	6
1956	16	0	-15	15	-10	-42	-19
1957	4	17	15	1	-36	-55	10
1958	11	11	0	0	-19	-41	-18
1959	-8	22	16	-15	-51	-30	5
1960	-5	17	10	-16	-13	-13	-2
1961	1	15	13	-12	-41	-19	0
1962	-9	-2	28	14	-29	-51	-13
1963	0	18	0	0	-12	-44	-17
1964	-3	9	8	-10	-43	-32	8
1965	-2	5	-8	10	-21	-28	-16
1966	-15	19	19	-14	-44	-20	0
1967	11	-6	-51	56	6	-37	-17
1968	-6	11	4	-15	-33	-28	4
1969	-3	-54	2	107	0	-38	-25
1970	-6	0	1	-11	-27	-41	1
1971	-15	8	3	-24	-22	-7	-13
1972	-8	13	6	-3	-43	-16	0
1973	0	-10	25	1	-34	-59	-6
1974	6	9	11	3	-36	-47	-17
1975	-9	7	3	31	-42	-49	6
1976	5	3	-5	-23	-27	-13	15
1977	-37	1	-1	-2	4	-5	1
1978	-8	-42	-12	78	0	-28	-9
1979	7	-2	11	-8	-42	-44	5
1980	-2	8	-16	26	0	-34	-29
1981	2	14	6	-10	-33	-33	11
1982	16	-30	15	15	0	-30	-5
1983	-29	-17	0	16	81	8	4
1984	8	2	0	-13	-27	-43	-4
1985	-7	25	12	-24	-38	-18	0
1986	2	22	-9	11	-18	-55	-24
1987	15	19	21	-12	-36	-30	7
1988	11	12	8	-20	-29	-15	3
1989	4	21	15	-12	-38	-24	6
1990	7	15	12	-19	-17	-29	4
1991	-4	12	7	4	-6	-26	6
1992	-9	3	1	-14	-10	-5	1
1993	13	2	18	0	-5	-49	-23
1994	12	14	14	-20	-30	-20	6

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	6	4	6	6	3	1	1	**27**	**594**
1923	3	6	6	4	3	1	6	**29**	**203**
1924	3	6	6	4	1	3	6	**29**	**203**
1925	3	6	6	4	1	2	4	**26**	**182**
1926	3	6	6	1	1	1	6	**24**	**216**
1927	6	5	6	6	1	1	4	**29**	**493**
1928	6	6	6	1	1	3	6	**29**	**203**
1929	5	6	6	5	1	1	6	**30**	**210**
1930	5	6	6	2	1	1	6	**27**	**189**
1931	4	6	6	4	1	2	6	**29**	**203**
1932	3	4	6	6	1	1	3	**24**	**168**
1933	3	6	6	3	2	1	6	**27**	**189**
1934	4	6	6	5	1	1	6	**29**	**203**
1935	1	6	6	6	1	1	6	**27**	**351**
1936	5	6	6	3	1	1	6	**28**	**476**
1937	6	6	6	6	1	1	3	**29**	**725**
1938	2	3	1	6	6	1	3	**22**	**352**
1939	4	6	6	1	1	1	6	**25**	**200**
1940	6	5	6	4	1	1	6	**29**	**232**
1941	6	6	5	6	4	1	1	**29**	**754**
1942	6	6	6	6	1	1	1	**27**	**378**
1943	6	5	6	3	1	1	3	**25**	**575**
1944	2	6	6	2	4	5	4	**29**	**203**
1945	6	5	6	6	1	1	2	**27**	**540**
1946	5	6	6	3	1	1	6	**28**	**224**
1947	3	6	6	1	1	1	6	**24**	**168**
1948	6	6	5	4	1	5	6	**33**	**231**
1949	3	6	6	2	1	5	6	**29**	**203**
1950	2	6	6	3	1	1	6	**25**	**175**
1951	4	6	4	1	1	6	6	**28**	**196**
1952	6	4	1	6	5	1	2	**25**	**475**
1953	4	6	5	2	1	2	6	**26**	**182**
1954	5	6	6	2	1	1	6	**27**	**216**
1955	2	6	6	4	1	1	6	**26**	**182**
1956	6	6	3	6	4	1	2	**28**	**700**
1957	6	6	6	6	1	1	6	**32**	**320**
1958	6	6	6	6	2	1	2	**29**	**725**
1959	4	6	6	3	1	1	6	**27**	**243**
1960	5	6	6	2	3	3	5	**30**	**210**
1961	6	6	6	3	1	2	6	**30**	**210**
1962	4	5	6	6	1	1	3	**26**	**260**
1963	6	6	6	6	3	1	2	**30**	**750**
1964	5	6	6	4	1	1	6	**29**	**232**
1965	5	6	4	6	1	1	2	**25**	**225**
1966	3	6	6	3	1	2	6	**27**	**243**
1967	6	4	1	6	6	1	2	**26**	**520**
1968	4	6	6	3	1	1	6	**27**	**189**
1969	5	1	6	6	6	1	1	**26**	**442**
1970	4	6	6	3	1	1	6	**27**	**189**
1971	3	6	6	1	1	4	3	**24**	**168**
1972	4	6	6	5	1	2	6	**30**	**210**
1973	6	4	6	6	1	1	4	**28**	**476**
1974	6	6	6	6	1	1	2	**28**	**420**
1975	4	6	6	6	1	1	6	**30**	**300**
1976	6	6	5	1	1	3	6	**28**	**196**
1977	1	6	5	5	6	5	6	**34**	**238**
1978	4	1	3	6	6	1	4	**25**	**425**
1979	6	5	6	4	1	1	6	**29**	**435**
1980	5	6	2	6	6	1	1	**27**	**540**
1981	6	6	6	4	1	1	6	**30**	**210**
1982	6	1	6	6	6	1	5	**31**	**713**
1983	1	2	6	6	6	6	6	**33**	**594**
1984	6	6	6	3	1	1	5	**28**	**476**
1985	4	6	6	1	1	2	6	**26**	**234**
1986	6	6	4	6	2	1	1	**26**	**494**
1987	6	6	6	3	1	1	6	**29**	**203**
1988	6	6	6	2	1	3	6	**30**	**210**
1989	6	6	6	3	1	1	6	**29**	**203**
1990	6	6	6	2	2	1	6	**29**	**203**
1991	5	6	6	6	4	1	6	**34**	**238**
1992	4	6	6	3	4	5	6	**34**	**238**
1993	6	6	6	6	5	1	1	**31**	**651**
1994	6	6	6	2	1	2	6	**29**	**203**

73 - year Average: 28 **329.2**
1929 - '34 Average: 193.7

STUDY: 1995C06F-SWRCBJP-634 DWRSIM: recirc818VA, 10 Apr 98
CP # 12, SWP SAN LUIS RESERVIOR, EOP SURFACE ELEVATION (FT)
Project: /1995C06F-SWRCBJP-634/12/ELEVATION-EOP//1MON/OUTPUT/

73 - year maximum March - September Reservoir Elevation = 544'

Difference from Maximum Reservoir Elevation [DFMRE]

Reservoir Elevation Scoring Table:
If [DFMRE] <= 0', then 6, else
If [DFMRE] <= 5', then 5, else
If [DFMRE] <= 10', then 4, else
If [DFMRE] <= 15', then 3, else
If [DFMRE] <= 20', then 2, else 1

Reservoir Change from Previous Month [fluctuation]

Reservoir Fluctuation Scoring Table:
If [fluctuation] >= 0', then 6, else
If [fluctuation] >= -5', then 5, else
If [fluctuation] >= -10', then 4, else
If [fluctuation] >= -15', then 3, else
If [fluctuation] >= -20', then 2, else 1

Largemouth Bass Reservoir Habitat Index

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	MAR	APR	MAY	JUN	JUL	AUG	SEP	MAR	APR	MAY	JUN	JUL	AUG	SEP	SUM	Product
1922	419	442	477	521	544	544	533	519	502	473	437	442	0	11	25	42	71	107	102	6	3	1	1	1	1	1	**14**	0	-11	-14	-17	-29	-36	5	6	3	3	2	1	1	6	**22**	**308**
1923	473	501	517	544	544	544	533	504	459	434	412	410	0	11	40	85	110	132	134	6	3	1	1	1	1	1	**14**	0	-11	-29	-45	-25	-22	-2	6	3	1	1	1	1	5	**18**	**252**
1924	426	436	463	509	531	531	521	498	467	438	403	402	13	23	46	77	106	141	142	3	1	1	1	1	1	1	**9**	0	-10	-23	-31	-29	-35	-1	6	4	1	1	1	1	5	**19**	**171**
1925	401	412	455	485	528	530	522	496	455	438	400	381	14	22	48	89	106	144	163	3	1	1	1	1	1	1	**9**	2	-8	-26	-41	-17	-38	-19	6	4	1	1	2	1	2	**17**	**153**
1926	390	405	433	485	526	531	522	494	464	456	388	384	13	22	50	80	88	156	160	3	1	1	1	1	1	1	**9**	5	-9	-28	-30	-8	-68	-4	6	4	1	1	4	1	5	**22**	**198**
1927	392	433	473	519	544	544	531	512	479	458	435	438	0	13	32	65	86	109	106	6	3	1	1	1	1	1	**14**	0	-13	-19	-33	-21	-23	3	6	3	2	1	1	1	6	**20**	**280**
1928	470	500	517	544	544	544	532	504	454	428	405	405	0	12	40	90	116	139	139	6	3	1	1	1	1	1	**14**	0	-12	-28	-50	-26	-23	0	6	3	1	1	1	1	6	**19**	**266**
1929	429	452	477	523	543	544	534	521	498	465	432	430	0	10	23	46	79	112	114	6	3	1	1	1	1	1	**14**	1	-10	-13	-23	-33	-33	-2	6	4	3	1	1	1	5	**21**	**294**
1930	430	435	481	530	542	544	523	492	461	452	438	415	0	21	52	83	92	106	129	6	1	1	1	1	1	1	**12**	2	-21	-31	-31	-9	-14	-23	6	1	1	1	4	3	1	**17**	**204**
1931	420	425	425	467	480	483	473	460	449	425	376	375	61	71	84	95	119	168	169	1	1	1	1	1	1	1	**7**	3	-10	-13	-11	-24	-49	-1	6	4	3	3	1	1	5	**23**	**161**
1932	389	388	450	508	536	528	513	490	472	472	445	432	16	31	54	72	72	99	112	2	1	1	1	1	1	1	**8**	-8	-15	-23	-18	0	-27	-13	4	3	1	2	6	1	3	**20**	**160**
1933	442	449	451	495	514	523	517	503	476	442	399	398	21	27	41	68	102	145	146	1	1	1	1	1	1	1	**7**	9	-6	-14	-27	-34	-43	-1	6	4	3	1	1	1	5	**21**	**147**
1934	411	408	455	508	519	519	506	482	461	439	377	362	25	38	62	83	105	167	182	1	1	1	1	1	1	1	**7**	0	-13	-24	-21	-22	-62	-15	6	3	1	1	1	1	3	**16**	**112**
1935	369	380	403	468	478	514	508	487	456	436	380	370	30	36	57	88	108	164	174	1	1	1	1	1	1	1	**7**	36	-6	-21	-31	-20	-56	-10	6	4	1	1	2	1	4	**19**	**133**
1936	406	422	443	498	535	544	532	509	470	448	429	415	0	12	35	74	96	115	129	6	3	1	1	1	1	1	**14**	9	-12	-23	-39	-22	-19	-14	6	3	1	1	1	2	3	**17**	**238**
1937	434	448	471	521	544	544	544	540	510	470	432	415	0	0	4	34	74	112	129	6	6	5	1	1	1	1	**21**	0	0	-4	-30	-40	-38	-17	6	6	5	1	1	1	2	**22**	**462**
1938	446	477	510	544	544	544	544	544	537	503	469	484	0	0	0	7	41	75	60	6	6	6	4	1	1	1	**25**	0	0	0	-7	-34	-34	15	6	6	6	4	1	1	6	**30**	**750**
1939	513	527	544	544	544	544	525	492	461	450	439	419	0	19	52	83	94	105	125	6	2	1	1	1	1	1	**13**	0	-19	-33	-31	-11	-11	-20	6	2	1	1	3	3	2	**18**	**234**
1940	425	423	419	483	521	542	534	511	466	442	376	374	2	10	33	78	102	168	170	5	3	1	1	1	1	1	**13**	21	-8	-23	-45	-24	-66	-2	6	4	1	1	1	1	5	**19**	**247**
1941	407	438	474	525	544	544	541	538	523	472	440	459	0	3	6	21	72	104	85	6	5	4	1	1	1	1	**19**	0	-3	-3	-15	-51	-32	19	6	5	5	3	1	1	6	**27**	**513**
1942	490	505	530	544	544	544	534	518	510	470	443	456	0	10	26	34	74	101	88	6	3	1	1	1	1	1	**14**	0	-10	-16	-8	-40	-27	13	6	4	2	4	1	1	6	**24**	**336**
1943	486	503	526	544	544	544	544	539	510	473	432	434	0	0	5	34	71	112	110	6	6	4	1	1	1	1	**20**	0	0	-5	-29	-37	-41	2	6	6	5	1	1	1	6	**26**	**520**
1944	466	497	513	544	544	544	526	492	456	439	426	413	0	18	52	88	105	118	131	6	2	1	1	1	1	1	**13**	0	-18	-34	-36	-17	-13	-13	6	2	1	1	2	3	3	**18**	**234**
1945	419	455	490	524	544	544	522	490	450	426	410	413	0	22	54	94	118	134	131	6	1	1	1	1	1	1	**12**	0	-22	-32	-40	-24	-16	3	6	1	1	1	1	2	6	**18**	**216**
1946	445	477	503	542	544	544	524	492	447	421	403	404	0	20	52	97	123	141	140	6	1	1	1	1	1	1	**12**	0	-20	-32	-45	-26	-18	1	6	2	1	1	1	2	6	**19**	**228**
1947	433	462	492	523	544	544	523	486	452	437	427	410	0	21	58	92	107	117	134	6	1	1	1	1	1	1	**12**	0	-21	-37	-34	-15	-10	-17	6	1	1	1	3	4	2	**18**	**216**
1948	414	420	420	472	491	513	506	481	447	422	373	379	31	38	63	97	122	171	165	1	1	1	1	1	1	1	**7**	22	-7	-25	-34	-25	-49	6	6	4	1	1	1	1	6	**20**	**140**
1949	408	435	465	510	531	544	520	485	445	422	405	409	0	24	59	99	122	139	135	6	1	1	1	1	1	1	**12**	13	-24	-35	-40	-23	-17	4	6	1	1	1	1	2	6	**18**	**216**
1950	427	440	453	503	541	544	527	494	461	442	427	412	0	17	50	83	102	117	132	6	2	1	1	1	1	1	**13**	3	-17	-33	-33	-19	-15	-15	6	2	1	1	2	3	3	**18**	**234**
1951	436	467	502	537	544	544	521	491	445	414	386	389	0	23	53	99	130	158	155	6	1	1	1	1	1	1	**12**	0	-23	-30	-46	-31	-28	3	6	1	1	1	1	1	6	**17**	**204**
1952	415	446	476	515	544	544	544	544	536	509	490	499	0	0	0	8	35	54	45	6	6	6	4	1	1	1	**25**	0	0	0	-8	-27	-19	9	6	6	6	4	1	2	6	**31**	**775**
1953	518	539	544	544	544	544	526	508	485	465	442	458	0	18	36	59	79	102	86	6	2	1	1	1	1	1	**13**	0	-18	-18	-23	-20	-23	16	6	2	2	1	2	1	6	**20**	**260**
1954	489	507	529	544	544	544	529	502	448	418	391	394	0	15	42	96	126	153	150	6	2	1	1	1	1	1	**13**	0	-15	-27	-54	-30	-27	3	6	3	1	1	1	1	6	**19**	**247**
1955	424	454	482	519	534	541	520	491	465	460	437	422	3	24	53	79	84	107	122	5	1	1	1	1	1	1	**11**	7	-21	-29	-26	-5	-23	-15	6	1	1	1	5	1	3	**18**	**198**
1956	441	457	498	534	544	544	526	504	482	449	419	430	0	18	40	62	95	125	114	6	2	1	1	1	1	1	**13**	0	-18	-22	-22	-33	-30	11	6	2	1	1	1	1	6	**18**	**234**
1957	458	483	492	524	544	544	527	500	461	439	420	421	0	17	44	83	105	124	123	6	2	1	1	1	1	1	**13**	0	-17	-27	-39	-22	-19	1	6	2	1	1	1	2	6	**19**	**247**
1958	453	482	504	539	544	544	544	544	536	499	479	494	0	0	0	8	45	65	50	6	6	6	4	1	1	1	**25**	0	0	0	-8	-37	-20	15	6	6	6	4	1	2	6	**31**	**775**
1959	507	528	544	544	544	544	521	486	451	435	422	417	0	23	58	93	109	122	127	6	1	1	1	1	1	1	**12**	0	-23	-35	-35	-16	-13	-5	6	1	1	1	2	3	5	**19**	**228**
1960	443	454	462	509	544	544	522	488	454	441	387	362	0	22	56	90	103	157	182	6	1	1	1	1	1	1	**12**	0	-22	-34	-34	-13	-54	-25	6	1	1	1	3	1	1	**14**	**168**
1961	398	432	467	513	543	544	522	486	457	447	436	411	0	22	58	87	97	108	133	6	1	1	1	1	1	1	**12**	1	-22	-36	-29	-10	-11	-25	6	1	1	1	4	3	1	**17**	**204**
1962	426	440	475	520	544	544	518	479	426	389	347	355	0	26	65	118	155	197	189	6	1	1	1	1	1	1	**12**	0	-26	-39	-53	-37	-42	8	6	1	1	1	1	1	6	**17**	**204**
1963	389	420	449	493	525	543	537	523	499	467	444	458	1	7	21	45	77	100	86	5	4	1	1	1	1	1	**14**	18	-6	-14	-24	-32	-23	14	6	4	3	1	1	1	6	**22**	**308**
1964	487	514	530	544	544	544	515	475	431	407	384	389	0	29	69	113	137	160	155	6	1	1	1	1	1	1	**12**	0	-29	-40	-44	-24	-23	5	6	1	1	1	1	1	6	**17**	**204**
1965	394	426	462	513	539	544	538	522	490	470	441	442	0	6	22	54	74	103	102	6	4	1	1	1	1	1	**15**	5	-6	-16	-32	-20	-29	1	6	4	2	1	2	1	6	**22**	**330**
1966	469	498	515	544	544	544	521	483	435	407	390	396	0	23	61	109	137	154	148	6	1	1	1	1	1	1	**12**	0	-23	-38	-48	-28	-17	6	6	1	1	1	1	2	6	**18**	**216**
1967	422	455	490	529	544	544	544	544	537	525	505	509	0	0	0	7	19	39	35	6	6	6	4	2	1	1	**26**	0	0	0	-7	-12	-20	4	6	6	6	4	3	2	6	**33**	**858**
1968	528	544	544	544	544	544	526	491	455	439	427	414	0	18	53	89	105	117	130	6	2	1	1	1	1	1	**13**	0	-18	-35	-36	-16	-12	-13	6	2	1	1	2	3	3	**18**	**234**
1969	445	477	510	544	544	544	544	544	537	516	486	501	0	0	0	7	28	58	43	6	6	6	4	1	1	1	**25**	0	0	0	-7	-21	-30	15	6	6	6	4	1	1	6	**30**	**750**
1970	517	538	544	544	544	544	522	489	444	421	409	418	0	22	55	100	123	135	126	6	1	1	1	1	1	1	**12**	0	-22	-33	-45	-23	-12	9	6	1	1	1	1	3	6	**19**	**228**
1971	447	479	510	539	544	544	526	504	471	444	420	432	0	18	40	73	100	124	112	6	2	1	1	1	1	1	**13**	0	-18	-22	-33	-27	-24	12	6	2	1	1	1	1	6	**18**	**234**
1972	460	487	502	534	544	544	521	485	448	431	419	404	0	23	59	96	113	125	140	6	1	1	1	1	1	1	**12**	0	-23	-36	-37	-17	-12	-15	6	1	1	1	2	3	3	**17**	**204**
1973	429	461	493	525	544	544	531	504	469	444	423	427	0	13	40	75	100	121	117	6	3	1	1	1	1	1	**14**	0	-13	-27	-35	-25	-21	4	6	3	1	1	1	1	6	**19**	**266**
1974	458	486	503	543	544	544	542	520	491	462	437	449	0	2	24	53	82	107	95	6	5	1	1	1	1	1	**16**	0	-2	-22	-29	-29	-25	12	6	5	1	1	1	1	6	**21**	**336**
1975	477	490	509	541	544	544	530	507	480	447	421	431	0	14	37	64	97	123	113	6	3	1	1	1	1	1	**14**	0	-14	-23	-27	-33	-26	10	6	3	1	1	1	1	6	**19**	**266**
1976	459	483	496	527	544	544	526	498	480	470	449	433	0	18	46	64	74	95	111	6	2	1	1	1	1	1	**13**	0	-18	-28	-18	-10	-21	-16	6	2	1	2	4	1	2	**18**	**234**
1977	434	442	444	465	465	465	465	452	431	406	394	407	79	79	92	113	138	150	137	1	1	1	1	1	1	1	**7**	0	0	-13	-21	-25	-12	13	6	6	3	1	1	3	6	**26**	**182**
1978	410	427	477	529	544	544	544	544	526	472	432	449	0	0	0	18	72	112	95	6	6	6	2	1	1	1	**23**	0	0	0	-18	-54	-40	17	6	6	6	2	1	1	6	**28**	**644**
1979	480	502	519	544	544	544	531	505	471	451	434	420	0	13	39	73	93	110	124	6	3	1	1	1	1	1	**14**	0	-13	-26	-34	-20	-17	-14	6	3	1	1	2	2	3	**18**	**252**
1980	454	485	507	544	544	544	542	544	528	491	451	468	0	2	0	16	53	93	76	6	5	6	2	1	1	1	**22**	0	-2	2	-16	-37	-40	17	6	5	6	2	1	1	6	**27**	**594**
1981	499	519	539	544	544	544	528	495	459	444	432	411	0	16	49	85	100	112	133	6	2	1	1	1	1	1	**13**	0	-16	-33	-36	-15	-12	-21	6	2	1	1	3	3	1	**17**	**221**
1982	437	471	504	539	544	544	544	544	531	494	461	470	0	0	0	13	50	83	74	6	6	6	3	1	1	1	**24**	0	0	0	-13	-37	-33	9	6	6	6	3	1	1	6	**29**	**696**
1983	495	514	536	544	544	544	544	544	542	541	528	541	0	0	0	2	3	16	3	6	6	6	5	5	2	5	**35**	0	0	0	-2	-1	-13	13	6	6	6	5	5	3	6	**37**	**1295**
1984	544	544	544	544	544	544	525	497	457	436	420	425	0	19	47	87	108	124	119	6	2	1	1	1	1	1	**13**	0	-19	-28	-40	-21	-16	5	6	2	1	1	1	2	6	**19**	**247**
1985	459	491	509	541	544	544	520	482	437	413	392	395	0	24	62	107	131	152	149	6	1	1	1	1	1	1	**12**	0	-24	-38	-45	-24	-21	3	6	1	1	1	1	1	6	**17**	**204**
1986	400	406	443	496	531	544	544	544	533	490	458	468	0	0	0	11	54	86	76	6	6	6	3	1	1	1	**24**	13	0	0	-11	-43	-32	10	6	6	6	3	1	1	6	**29**	**696**
1987	497	511	537	544	544	544	522	485	457	447	439	418	0	22	59	87	97	105	126	6	1	1	1	1	1	1	**12**	0	-22	-37	-28	-10	-8	-21	6	1	1	1	4	4	1	**18**	**216**
1988	426	424	461	510	524	524	512	495	486	464	424	420	20	32	49	58	80	120	124	1	1	1	1	1	1	1	**7**	0	-12	-17	-9	-22	-40	-4	6	3	2	4	1	1	5	**22**	**154**
1989	419	437	459	499	499	532	519	486	450	438	386	395	12	25	58	94	106	158	149	3	1	1	1	1	1	1	**9**	33	-13	-33	-36	-12	-52	9	6	3	1	1	3	1	6	**21**	**189**
1990	410	427	455	498	519	523	506	477	460	454	396	382	21	38	67	84	90	148	162	1	1	1	1	1	1	1	**7**	4	-17	-29	-17	-6	-58	-14	6	2	1	2	4	1	3	**19**	**133**
1991	384	391	391	405	400	465	464	453	436	419	403	406	79	80	91	108	125	141	138	1	1	1	1	1	1	1	**7**	65	-1	-11	-17	-17	-16	3	6	5	3	2	2	2	6	**26**	**182**
1992	410	424	440	485	515	538	528	508	491	458	415	408	6	16	36	53	86	129	136	4	2	1	1	1	1	1	**11**	23	-10	-20	-17	-33	-43	-7	6	4	2	2	1	1	4	**20**	**220**
1993	408	416	464	520	544	544	529	512	496	470	433	433	0	15	32	48	74	111	111	6	2	1	1	1	1	1	**13**	0	-15	-17	-16	-26	-37	0	6	3	2	2	1	1	6	**21**	**273**
1994	464	493	508	541	544	544	520	483	453	441	432	416	0	24	61	91	103	112	128	6	1	1	1	1	1	1	**12**	0	-24	-37	-30	-12	-9	-16	6	1	1	1	3	4	2	**18**	**216**

73 - year Average: 14

73 - year Average: 21 **310.3**

1929 - '34 Average: 179.7

STATE WATER RESOURCES CONTROL BOARD

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(707) 576-2220

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(510) 622-2300

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(530) 224-4845

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South Lake Tahoe, CA 96150
(503) 542-5400

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15428 Civic Drive, Ste. 100
Victorville, CA 92392-2383
(760) 241-6583

COLORADO RIVER BASIN REGION (7)
73-720 Fred Waring Dr., Ste. 100
Palm Desert, CA 92260
(760) 346-7491

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California Tower
3737 Main Street, Ste. 500
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(909) 782-4130

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STATE OF CALIFORNIA
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Winston H. Hickox, Secretary

STATE WATER RESOURCES
CONTROL BOARD
James M. Stubchaer, Chairman

3/99