CHAPTER II. PROJECT DESCRIPTION

This chapter describes the project being analyzed in this EIR. The chapter includes the following sections: (A) Project Definition, (B) Statement of Goals, (C) Bay/Delta Plan Objectives, (D) Existing Conditions, and (E) Description of Alternatives.

The project analyzed in this EIR will be implemented under the SWRCB's authority to supervise the exercise of all water rights in California, under the public trust doctrine, and under Water Code section 275. Water Code section 275 implements the reasonableness doctrine set forth at California Constitution Article X, section 2. (See *National Audubon Society* v. *Superior Court* (1983) 33 Cal.3d 419 [189 Cal. Rptr. 346, 357]; *Peabody* v. *Vallejo* (1935) 2 Cal.2d 351 [40 P.2d 486]; *In re Water of Hallett Creek Stream System* (1988) 44 Cal.3d 448 [243 Cal. Rptr. 887, 901], note 16; *Imperial Irrigation District* v. *State Water Resources Control Board* (1986) 186 Cal.App.3d 1160 [231 Cal. Rptr. 283].) Based on these authorities, the SWRCB has continuing authority over all appropriations or other diversions of water for use. (SMPA 1998)

A. PROJECT DEFINITION

The project is a SWRCB decision that: (1) allocates responsibility to implement the objectives in the 1995 Bay/Delta Plan and (2) may authorize the combined use of the DWR and the USBR points of diversion in the Delta.

B. STATEMENT OF GOALS

The SWRCB's goals for the water right decision are to:

1. Implement the 1995 Bay/Delta Plan;
2. Provide meaningful regulatory stability through the administration of water rights;
3. Protect prior water rights;
4. Develop, conserve, and utilize water in the public interest;
5. Provide comprehensive, multi-species protection for the public trust resources of the Bay/Delta Estuary;
6. Equitably distribute the responsibility of meeting the objectives contained in the 1995 Bay/Delta Plan consistent with applicable law.

C. BAY/DELTA PLAN OBJECTIVES

The 1995 Bay/Delta Plan contains a description of the beneficial uses of water in the Bay/Delta Estuary, water quality objectives to protect the beneficial uses, and a program of implementation for the objectives. The following objectives for protection of municipal and industrial beneficial uses (Table II-1), agricultural beneficial uses (Table II-2), and fish and wildlife beneficial uses (Table II-3) are contained in the Plan.

Table II-1
Water Quality Objectives For
Municipal and Industrial Beneficial Uses

COMPLIANCE LOCATION	INTERAGENCY STATION NUMBER (RKI [1])	PARAMETER	YEAR DESCRIPTION (UNIT)	WATER TIME TYPE [2]	PERIOD	VALUE
Contra Cosfa Canal at Pumping Plant #1 ***-or-*** *San Joaquin River at Antioch Water Works Intake*	*C-5 (CHCCC06)* *D-12 (near) (RSAN007)*	*Chloride (Cl^-)*	*Maximum mean daily 150 mg/l Cl^- for at least the number of days shown during the Calendar Year. Must be provided in intervals of not less than two weeks duration. (Percentage of Calendar Year shown in parenthesis)*	*W* *AN* *BN* *D* *C*	*No. of days each Calendar Year £ 150 mg/l Cl^-*	*240 (66%)* *190 (52%)* *175 (48%)* *165 (45%)* *155 (42%)*
Contra Costa Canal at Pumping Plant #1 ***-and-*** *West Canal at mouth of Clifton Court Forebay* ***-and-*** *Delta-Mendota Canal at Tracy Pumping Plant* ***-and-*** *Barker Sbugh at North Bay Aqueduct Intake* ***-and-*** *Cache Slough at City of Vallejo Intake [3]*	*C-5 (CHCCC06)* *C-9 (CHWST0)* *DMC-1 (CHDMC004)* *----- (SLSAR3)* *C-19 (SLCCH16)*	*Chloride (Cl^-)*	*Maximum mean daily (mg/l)*	*All*	*Oct-Sep*	*250*

[1] River Kilometer Index station number.
[2] The Sacramento Valley 40-30-30 water year hydrologic classification index (see Figure II-1) applies for determinations of water year type.
[3] The Cache Slough objective to be effective only when water is being diverted from this location.

Table II-2
Water Quality Objectives For Agricultural Beneficial Uses

COMPLIANCE LOCATION	INTERAGENCY STATION NUMBER (RKI [1])	PARAMETER	DESCRIPTION (UNIT) [2]	WATER YEAR TYPE [3]	TIME PERIOD	& VALUE
WESTERN DELTA						
Sacramento River at Emmaton	*D-22 (RSAC092)*	*Electrical Conductivity (EC)*	*Maximum 14-day running average of mean daily EC (mmhos/cm)*	*W* *AN* *BN* *D* *C*	*0.45 EC April 1 to date shown* *Aug 15* *Jul 1* *Jun 20* *Jun 15* ----	*EC from date shown to Aug 15 [4]* ---- *0.63* *1.14* *1.67* *2.78*
San Joaquin River at Jersey Point	*D-15\ (RSAN018)*	*Electrical Conductivity (EC)*	*Maximum 14-day running average of mean daily EC (mmhos/cm)*	*W* *AN* *BN* *D* *C*	*0.45 EC April 1 to date shown* *Aug 15* *Aug 15* *Jun 20* *Jun 15* ----	*EC from date shown to Aug 15 [4]* ---- ---- *0.74* *1.35* *2.20*
INTERIOR DELTA						
South Fork Mokelumne River at Terminous	*C-13 (RSMKL08)*	*Electrical Conductivity (EC)*	*Maximum 14-day running average of mean daily EC (mmhos/cm)*	*W* *AN* *BN* *D* *C*	*0.45 EC April 1 to date shown* *Aug 15* *Aug 15* *Aug 15* *Aug 15* ----	*EC from date shown to Aug 15 [4]* ---- ---- ---- ---- *0.54*
San Joaquin River at San Andreas Landing	*C-4 (RSAN032)*	*Electrical Con-Ductivity (EC)*	*Maximum 14-day running average of mean daily EC (mmhos/cm)*	*W* *AN* *BN* *D* *C*	*0.45 EC April 1 to date shown* *Aug 15* *Aug 15* *Aug 15* *Jun 25* ----	*EC from date shown to Aug 15 [4]* ---- ---- ---- *0.58* *0.87*
SOUTHERN DELTA						
San Joaquin River at Airport Way Bridge, Vernalis ***-and-*** *San Joaquin River at Brandt Bridge site* ***-and-*** *Old River near Middle River [5]* ***-and-*** *Old River at Tracy Road Bridge [5]*	*C-10 (RSAN112)* *C-6 (RSAN073)* *C-8 (ROLD69)* *P-12 (ROLD59)*	*Electrical Conductivity (EC)*	*Maximum 30-day running average of mean daily EC (mmhos/cm)*	*All*	*Apr-Aug* *Sep-Mar* ***-or-***	*0.7* *1.0*
			If a three-party contract has been implemented among the DWR, USBR, and SDWA, that contract will be reviewed prior to implementation of the above and, after also considering the needs of other beneficial uses, revisions will be made to the objectives and compliance/monitoring locations noted, as appropriate.			
EXPORT AREA						
West Canal at mouth of Clifton Court Forebay ***-and-*** *Delta-Mendota Canal at Tracy Pumping Plant*	*C-9 (CHWST0)* *DMC-1 (CHDMC004)*	*Electrical Conductivity (EC)*	*Maximum monthly average of mean daily EC (mmhos/cm)*	*All*	*Oct-Sep*	*1.0*

[1] River Kilometer Index station number.

[2] Determination of compliance with an objective expressed as a running average begins on the last day of the averaging period. If the objective is not met on the last day of the averaging period, all days in the averaging period are considered out of compliance.

[3] The Sacramento Valley 40-30-30 water year hydrologic classification index (see page 23) applies for determinations of water year type.

[4] When no date is shown, EC limit continues from April 1.

[5] The EC objectives shall be implemented at this location by December 31, 1997.

Table II-3
WATER QUALITY OBJECTIVES FOR FISH AND WILDLIFE BENIFICIAL USES

COMPLIANCE LOCATION	INTERAGENCY STATION NUMBER(RKI 1[])	PARAMETER	DESCRIPTION (UNIT) [2]	WATER YEAR TYPE [3]	TIME PERIOD	VALUE
DISSOLVED OXYGEN						
San Joaquin River between Turner Cut & Stockton	*(RSAN050-RSAN061)*	*Dissolved Oxygen (DO)*	*Minimum DO (mg/l)*	*All*	*Sep-Nov*	*6.0 [4]*
SALMON PROTECTION						
			narrative	*Water quality conditions shall be maintained, together with otehr measures in the watershed, sufficient to achieve a doubling of natural production of chinook salmon from the average production of 1967-1991, consistent with the provisions of State and federal law.*		
SAN JOAQUIN RIVER SALINITY						
San Joaquin River at and between Jersey Point and Prisoners Point [5]	*D-15 (RSAN018)* ***-and-*** *D-29 (RSAN038)*	*Electrical Conductivity (EC)*	*Maximum 14-day running average of mean daily EC(mmhos/cm)*	*W,AN,BN,D*	*Apr-May*	*0.44 [6]*
EASTERN SUISUN MARSH SALINITY						
Sacramento River at Collinsville ***-and-*** *Montezuma Slought at National Steel* ***-and-*** *Montezuma Slough near Beldon Landing*	*C-2 (RSAC081)* *S-64 (SLMZU25)* *S-49 (SLMZU11)*	*Electrical Conductivity (EC)*	*Maximum monthly average of both daily high tide EC values (mmhos/cm), or demonstrate that equivalent or better protection will be provided at the location*	*All*	*Oct* *Nov-Dec* *Jan* *Feb-Mar* *Apr-May*	*19.0* *15.5* *12.5* *8.0* *11.0*
WESTERN SUISUN MARSH SALINITY						
Chadbourne Slough at Sunrise Duck Club ***-and-*** *Suisun Slough, 300 feet south of Volanti Slough* ***-and-*** *Cordelia Slough at Ibis Club* ***-and-*** *Goodyear Slough at Morrow Island Clubhouse* ***-and-*** *Water supply intakes for waterfowl management areas on Van Sickle and Chipps islands*	*S-21 [7] (SLCBN1)* *S-42 [8] (SLSUS12)* *S-97 [8] (SLCRD06)* *S-35 [8] (SLGYR03)* *No locations specified*	*Electrical Conductivity (EC)*	*Maximum monthly average of both daily high tide EC values (mmhos/cm), or demonstrate that equivalent or better protection will be provided at the location*	*All but deficiency period* *Deficiency period [9]*	*Oct* *Nov* *Dec* *Jan* *Feb-Mar* *Apr-May* *Oct* *Nov* *Dec-Mar* *Apr* *May*	*19.0* *16.5* *15.5* *12.5* *8.0* *11.0* *19.0* *16.5* *15.6* *14.0* *12.5*
BRACKISH TIDAL MARSHES OF SUISUN BAY						
			narrative		*[10]*	

[1] River Kilometer Index station number.

[2] Determination of compliance with an objective expressed as a running average begins on the last day of the averaging period. If the objective is not met on the last day of the averaging period, all days in the averaging period are considered out of compliance.

[3] The Sacramento Valley 40-30-30 water year hydrologic classification index (see page 23) applies for determinations of water year type.

[4] When no date is shown, EC limit continues from April 1.

[5] The EC objectives shall be implemented at this location by December 31, 1997.

Table II-3 (continued)
WATER QUALITY OBJECTIVES FOR FISH AND WILDLIFE BENIFICIAL USES

COMPLIANCE LOCATION	INTERAGENCY STATION NUMBER(RKI 1[])	PARAMETER	DESCRIPTION (UNIT) [2]	WATER YEAR TYPE [3]	TIME PERIOD	VALUE
DELTA OUTFLOW						
		Net Delta Outflow Index (NDOI) (11)	*Minimum monthly average (12) NDOI (cfs)*	*All*	*Jan*	*4,500 [13]*
				All	*Feb-Jun*	*[14]*
				W,AN	*Jul*	*8,000*
				BN		*6,500*
				D		*5,000*
				C		*4,000*
				W,AN,BN	*Aug*	*4,000*
				D		*3,500*
				C		*3,000*
				All	*Sep*	*3,000*
				W,AN,BN,D	*Oct*	*4,000*
				C		*3,000*
				W,AN,BN,D	*Nov-Dec*	*4,500*
				C		*3,500*
RIVER FLOWS						
Sacramento River at Rio Vista	*D-24 (RSAC101)*	*Flow rate*	*Minimum monthly average [15] flow rate (cfs)*	*All*	*Sep*	*3,000*
				W,AN,BN,D	*Oct*	*4,000*
				C		*3,000*
				W,AN,BN,D	*Nove-Dec*	*4,500*
				C		*3,500*
San Joaquin River at Airport Way Bridge, Vernalis	*C-10 (RSAN112)*	*Flow rate*	*Minimum monthly average [16] flow rate (cfs) [17]*	*W,AN*	*Feb-Apr 14*	*2,130 or 3,420*
				BN,D	*and*	*1,420 or 2,280*
				C	*May 16-Jun*	*710 or 1,140*
				W	*Apr 15-*	*7,330 or 8,620*
				AN	*May 15 [18]*	*5,730 or 7,020*
				BN		*4,620 or 5,480*
				D		*4,020 or 4,880*
				C		*3,110 or 3,540*
				All	*Oct*	*1,000 [19]*
EXPORT LIMITS						
		Combined export rate [20]	*Maximum 3-day running average (cfs)*	*All*	*Apr 15- May 15 [21]*	*[22]*
			Maximum percent of Delta inflow diverted [23] [24]	*All*	*Feb-Jun*	*35% Delta inflow [25]*
				All	*Jul-Jan*	*65% Delta inflow*
DELTA CROSS CHANNEL GATES CLOSURE						
Delta Cross Channel at Walnut Grove	—	*Closure of gates*	*Closed gates*	*All*	*Nov-Jan*	*[26]*
					Feb-May 20	*----*
					May 21- Jun 15	*[27]*

Table II-3 Footnotes

[1] River Kilometer Index station number.

[2] Determination of compliance with an objective expressed as a running average begins on the last day of the averaging period. If the objective is not met on the last day of the averaging period, all days in the averaging period are considered out of compliance.

[3] The Sacramento Valley 40-30-30 Water Year Hydrologic Classification Index (see Figure II-1) applies unless otherwise specified.

[4] If it is infeasible for a waste discharger to meet this objective immediately, a time extension or schedule of compliance may be granted, but this objective must be met no later than September 1, 2005.

[5] Compliance will be determined at Jersey Point (station D15) and Prisoners Point (station D29).

[6] This standard does not apply in May when the best available May estimate of the Sacramento River Index for the water year is less than 8.1 MAF at the 90% exceedence level. [Note: The Sacramento River Index refers to the sum of the unimpaired runoff in the water year as published in the DWR Bulletin 120 for the following locations: Sacramento River above Bend Bridge, near Red Bluff; Feather River, total unimpaired inflow to Oroville Reservoir; Yuba River at Smartville; and American River, total unimpaired inflow to Folsom Reservoir.]

[7] The effective date for objectives for this station is October 1, 1995.

[8] The effective date for objectives for this station is October 1, 1997.

[9] A deficiency period is: (1) the second consecutive dry water year following a critical year; (2) a dry water year following a year in which the Sacramento River Index (described in footnote 6) was less than 11.35; or (3) a critical water year following a dry or critical water year.

[10] Water quality conditions sufficient to support a natural gradient in species composition and wildlife habitat characteristic of a brackish marsh throughout all elevations of the tidal marshes bordering Suisun Bay shall be maintained. Water quality conditions shall be maintained so that none of the following occurs: (a) loss of diversity; (b) conversion of brackish marsh to salt marsh; (c) for animals, decreased population abundance of those species vulnerable to increased mortality and loss of habitat from increased water salinity; or (d) for plants, significant reduction in stature or percent cover from increased water or soil salinity or other water quality parameters.

[11] Net Delta Outflow Index (NDOI) is defined in Figure II-3.

[12] For the May-January objectives, if the value is less than or equal to 5,000 cfs, the 7-day running average shall not be less than 1,000 cfs below the value; if the value is greater than 5,000 cfs, the 7-day running average shall not be less than 80% of the value.

[13] The objective is increased to 6,000 cfs if the best available estimate of the Eight River Index for December is greater than 800 TAF. [Note: The Eight River Index refers to the sum of the unimpaired runoff as published in the DWR Bulletin 120 for the following locations: Sacramento River flow at Bend Bridge, near Red Bluff; Feather River, total inflow to Oroville Reservoir; Yuba River flow at Smartville; American River, total inflow to Folsom Reservoir; Stanislaus River, total inflow to New Melones Reservoir; Tuolumne River, total inflow to Don Pedro Reservoir; Merced River, total inflow to Exchequer Reservoir; and San Joaquin River, total inflow to Millerton Lake.]

[14] The minimum daily Delta outflow shall be 7,100 cfs for this period, calculated as a 3-day running average. This requirement is also met if either the daily average or 14-day running average EC at the confluence of the Sacramento and the San Joaquin rivers is less than or equal to 2.64 mmhos/cm (Collinsville station C2). If the best available estimate of the Eight River Index (described in footnote 13) for January is more than 900 TAF, the daily average or 14-day running average EC at station C2 shall be less than or equal to 2.64 mmhos/cm for at least one day between February 1 and February 14; however, if the best available estimate of the Eight River Index for January is between 650 TAF and 900 TAF, the operations group established under the Framework Agreement shall decide whether this requirement will apply, with any disputes resolved by the CALFED policy group. If the best available estimate of the Eight River Index for February is less than 500 TAF, the standard may be further relaxed in March upon the recommendation of the operations group established under the Framework Agreement, with any disputes resolved by the CALFED policy group. The standard does not apply in May and June if the best available May estimate of the Sacramento River Index (described in footnote 6) for the water year is less than 8.1 MAF at the 90% exceedence level. Under this circumstance, a minimum 14-day running average flow of 4,000 cfs is required in May and June. Additional Delta outflow objectives are contained in Table II-4.

[15] The 7-day running average shall not be less than 1,000 cfs below the monthly objective.

[16] Partial months are averaged for that period. For example, the flow rate for April 1-14 would be averaged over 14 days. The 7-day running average shall not be less than 20% below the flow rate objective, with the exception of the April 15-May 15 pulse flow period when this restriction does not apply.

[17] The water year classification will be established using the best available estimate of the 60-20-20 San Joaquin Valley Water Year Hydrologic Classification (see Figure II-2) at the 75% exceedence level. The higher flow objective applies when the 2-ppt isohaline (measured as 2.64 mmhos/cm surface salinity) is required to be at or west of Chipps Island.

[18] This time period may be varied based on real-time monitoring. One pulse, or two separate pulses of combined duration equal to the single pulse, should be scheduled to coincide with fish migration in San Joaquin River tributaries and the Delta. The operations group established under the Framework Agreement will determine the time period for this 31-day flow requirement.

[19] Plus up to an additional 28 TAF pulse/attraction flow during all water year types. The amount of additional water will be limited to that amount necessary to provide a monthly average flow of 2,000 cfs. The additional 28 TAF is not required in a critical year following a critical year. The pulse flow will be scheduled by the operations group established under the Framework Agreement.

[20] Combined export rate for this objective is defined as the Clifton Court Forebay inflow rate (minus actual Byron-Bethany Irrigation District diversions from Clifton Court Forebay) and the export rate of the Tracy pumping plant.

[21] This time period may be varied based on real-time monitoring and will coincide with the San Joaquin River pulse flow described in footnote 18. The operations group established under the Framework Agreement will determine the time period for this 31-day export limit.

[22] Maximum export rate is 1,500 cfs or 100% of 3-day running average of San Joaquin River flow at Vernalis, whichever is greater. Variations to this maximum export rate are authorized if agreed to by the operations group established under the Framework Agreement. This flexibility is intended to result in no net water supply cost annually within the limits of the water quality and operational requirements of this plan. Variations may result from recommendations of agencies for protection of fish resources, including actions taken pursuant to the State and federal Endangered Species Act. The CALFED policy group will resolve disputes within the operations group. Any agreement on variations will be effective immediately and will be presented to the Executive Director of the SWRCB. If the Executive Director does not object to the variations within 10 days, the variations will remain in effect.

[23] Percent of Delta inflow diverted is defined in Figure II-3. For the calculation of maximum percent Delta inflow diverted, the export rate is a 3-day running average and the Delta inflow is a 14-day running average, except when the CVP or the SWP is making storage withdrawals for export, in which case both the export rate and the Delta inflow are 3-day running averages.

[24] The percent Delta inflow diverted values can be varied either up or down. Variations are authorized subject to the process described in footnote 22.

[25] If the best available estimate of the Eight River Index (described in footnote 13) for January is less than or equal to 1.0 MAF, the export limit for February is 45% of Delta inflow. If the best available estimate of the Eight River Index for January is greater than 1.5 MAF, the February export limit is 35% of Delta inflow. If the best available estimate of the Eight River Index for January is between 1.0 MAF and 1.5 MAF, the export limit for February will be set by the operations group established under the Framework Agreement within the range of 35% to 45%. The CALFED policy group will resolve disputes within the operations group.

[26] For the November-January period, close Delta Cross Channel gates for a total of 45 days. The operations group established under the Framework Agreement will determine the timing and duration of the gate closure.

[27] For the May 21-June 15 period, close Delta Cross Channel gates for a total of 14 days. The operations group established under the Framework Agreement will determine the timing and duration of the gate closure.

Figure II-1
Sacramento Valley
Water Year Hydrologic Classification

Year classification shall be determined by computation of the following equation:

INDEX = 0.4 * X + 0.3 * Y + 0.3 * Z

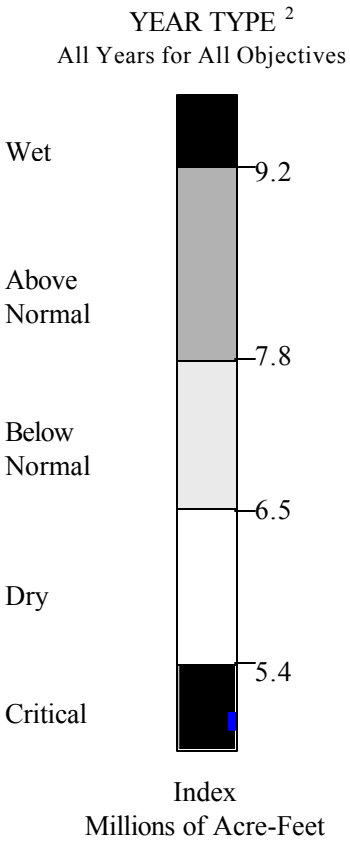
Where: X = Current year's April – July Sacramento Valley unimpaired runoff

Y = Current October – March Sacramento Valley unimpaired runoff

Z = Previous year's index[1]

The Sacramento Valley unimpaired runoff for the current water year (October 1 of the preceding calendar year through September 30 of the current calendar year), as published in California Department of Water Resources Bulletin 120, is a forecast of the sum of the following locations: Sacramento River above Bend Bridge, near Red Bluff; Feather River, total inflow to Oroville Reservoir; Yuba River at Smartville; American River, total inflow to Folsom Reservoir. Preliminary determinations of year classification shall be made in February, March, and April with final determination in May. These preliminary determinations shall be based on hydrologic conditions to date plus forecasts of future runoff assuming normal precipitation for the remainder of the water year.

Classification	Index Millions of Acre-Feet (MAF)
Wet……	Equal to or greater than 9.2
Above Normal…..	Greater than 7.8 and less than 9.2
Below Normal…..	Equal to or less than 7.8 and greater than 6.5
Dry……...	Equal to or less than 6.5 and greater than 5.4
Critical……..…	Equal to or less than 5.4



[1] A cap of 10.0 MAF is put on the previous year's index (Z) to account for required flood control reservoir releases during wet years.

[2] The year type for the preceding water year will remain in effect until the initial forecast of unimpaired runoff for the current water year is available.

Figure II-2
San Joaquin Valley
Water Year Hydrologic Classification

Year classification shall be determined by computation of the following equation:

INDEX = 0.6 * X + 0.2 * Y + 0.2 * Z

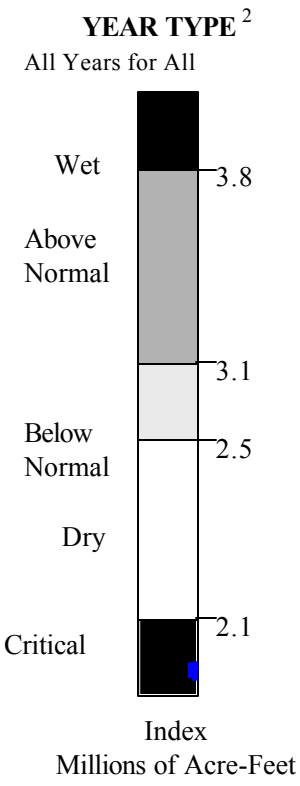
Where: X = Current year's April – July San Joaquin Valley unimpaired runoff

Y = Current October – March San Joaquin Valley unimpaired runoff

Z = Previous year's index[1]

The San Joaquin Valley unimpaired runoff for the current water year (October 1 of the preceding calendar year through September 30 of the current calendar year), as published in California Department of Water Resources Bulletin 120, is a forecast of the sum of the following locations: Stanislaus River, total flow to New Melones Reservoir; Tuolumne River, total inflow to Don Pedro Reservoir; Merced River, total flow to Exchequer Reservoir; San Joaquin River, total inflow to Millerton Lake. Preliminary determinations of year classification shall be made in February, March, and April with final determination in May. These preliminary determinations shall be based on hydrologic conditions to date plus forecasts of future runoff assuming normal precipitation for the remainder of the water year.

Classification	Index Millions of Acre-Feet (MAF)
Wet……	Equal to or greater than 3.8
Above Normal…..	Greater than 3.1 and less than 3.8
Below Normal…..	Equal to or less than 3.1 and greater than 2.5
Dry…….	Equal to or less than 2.5 and greater than 2.1
Critical……..	Equal to or less than 2.1



1 A cap of 4.5 MAF is put on the previous year's index (Z) to account for required flood control reservoir releases during wet years.

2 The year type for the preceding water year will remain in effect until the initial forecast of unimpaired runoff for the current water year is available.

Figure II-3
NDOI and PERCENT INFLOW DIVERTED [1]

The NDOI and the percent inflow diverted, as described in this footnote, shall be computed daily by the DWR and the USBR using the following formulas (all flows are in cfs):

NDOI = DELTA INFLOW - NET DELTA CONSUMPTIVE USE - DELTA EXPORTS

PERCENT INFLOW DIVERTED = (CCF + TPP) ¸ DELTA INFLOW

where *DELTA INFLOW = SAC + SRTP + YOLO + EAST + MISC + SJR*

SAC = Sacramento River at Freeport mean daily flow for the previous day; the 25-hour tidal cycle measurements from 12:00 midnight to 1:00 a.m. may be used instead.
SRTP = Sacramento Regional Treatment Plant average daily discharge for the previous week.
YOLO = Yolo Bypass mean daily flow for the previous day, which is equal to the flows from the Sacramento Weir, Fremont Weir, Cache Creek at Rumsey, and the South Fork of Putah Creek.
EAST = Eastside Streams mean daily flow for the previous day from the Mokelumne River at Woodbridge, Cosumnes River at Michigan Bar, and Calaveras River at Bellota.
MISC = Combined mean daily flow for the previous day of Bear Creek, Dry Creek, Stockton Diverting Canal, French Camp Slough, Marsh Creek, and Morrison Creek.
SJR = San Joaquin River flow at Vernalis, mean daily flow for the previous day.

where *NET DELTA CONSUMPTIVE USE = GDEPL - PREC*

GDEPL = Delta gross channel depletion for the previous day based on water year type using the DWR's latest Delta land use study.[2]
PREC = Real-time Delta precipitation runoff for the previous day estimated from stations within the Delta.

and where *DELTA EXPORTS* [3] *= CCF + TPP + CCC + NBA*

CCF = Clifton Court Forebay inflow for the current day.[4]
TPP = Tracy Pumping Plant pumping for the current day.
CCC = Contra Costa Canal pumping for the current day.
NBA = North Bay Aqueduct pumping for the current day.

---

1 Not all of the Delta tributary streams are gaged and telemetered. When appropriate, other methods of estimating stream flows, such as correlations with precipitation or runoff from nearby streams, may be used instead.

2 The DWR is currently developing new channel depletion estimates. If these new estimates are not available, DAYFLOW channel depletion estimates shall be used.

3 The term "Delta Exports" is used only to calculate the NDOI. It is not intended to distinguish among the listed diversions with respect to eligibility for protection under the area of origin provisions of the California Water Code.

4 Actual Byron-Bethany Irrigation District withdrawals from Clifton Court Forebay shall be subtracted from Clifton Court Forebay inflow. (Byron-Bethany Irrigation District water use is incorporated into the GDEPL term.

Table II-4

Number of Days When Maximumu Daily Average Electrical Conductivity of 2.64 mmhos/cm Must Be Maintained at Specified Location [a]

PMI [b]	Chipps Island (Chipps Island Station D10)					PMI [b]	Port Chicago (Port Chicago Station C14) [d]					PMI [b]	Port Chicago (Port Chicago Station C14) [d]				
(TAF)	FEB	MAR	APR	MAY	JUN	(TAF)	FEB	MAR	APR	MAY	JUN	(TAF)	FEB	MAR	APR	MAY	JUN
≤ 500	0	0	0	0	0	**0**	0	0	0	0	0	**5250**	27	29	25	26	6
750	0	0	0	0	0	**250**	1	0	0	0	0	**5500**	27	29	26	28	9
1000	28 [c]	12	2	0	0	**500**	4	1	0	0	0	**5750**	27	29	27	28	13
1250	28	31	6	0	0	**750**	8	2	0	0	0	**6000**	27	29	27	29	16
1500	28	31	13	0	0	**1000**	12	4	0	0	0	**6250**	27	30	27	29	19
1750	28	31	20	0	0	**1250**	15	6	1	0	0	**6500**	27	30	28	30	22
2000	28	31	25	1	0	**1500**	18	9	1	0	0	**6750**	27	30	28	30	24
2250	28	31	27	3	0	**1750**	20	12	2	0	0	**7000**	27	30	28	30	26
2500	28	31	29	11	1	**2000**	21	15	4	0	0	**7250**	27	30	28	30	27
2750	28	31	29	20	2	**2250**	22	17	5	1	0	**7500**	27	30	29	30	28
3000	28	31	30	27	4	**2500**	23	19	8	1	0	**7750**	27	30	29	31	28
3250	28	31	30	29	8	**2750**	24	21	10	2	0	**8000**	27	30	29	31	29
3500	28	31	30	30	13	**3000**	25	23	12	4	0	**8250**	28	30	29	31	29
3750	28	31	30	31	18	**3250**	25	24	14	6	0	**8500**	28	30	29	31	29
4000	28	31	30	31	23	**3500**	25	25	16	9	0	**8750**	28	30	29	31	30
4250	28	31	30	31	25	**3750**	26	26	18	12	0	**9000**	28	30	29	31	30
4500	28	31	30	31	27	**4000**	26	27	20	15	0	**9250**	28	30	29	31	30
4750	28	31	30	31	28	**4250**	26	27	21	18	1	**9500**	28	31	29	31	30
5000	28	31	30	31	29	**4500**	26	28	23	21	2	**9750**	28	31	29	31	30
5250	28	31	30	31	29	**4750**	27	28	24	23	3	**10000**	28	31	30	31	30
≥5500	28	31	30	31	30	**5000**	27	28	25	25	4	**>10000**	28	31	30	31	30

[a] The requirement for number of days the maximum daily average electrical conductivity (EC) of 2.64 mmhos per centimeter (mmhos/cm) must be maintained at Chipps Island and Port Chicago can also be met with maximum 14-day running average EC of 2.64 mmhos/cm, or 3-day running average NDOIs of 11,400 cfs and 29,200 cfs, respectively. If salinity/flow objectives are met for a greater number of days than the requirements for any month, the excess days shall be applied to meeting the requirements for the following month. The number of days for values of the PMI between those specified in this table shall be determined by linear interpolation.

[b] PMI is the best available estimate of the previous month's Eight River Index. (Refer to Footnote 13 for Table 3 for a description of the Eight River Index.)

[c] When the PMI is between 800 TAF and 1000 TAF, the number of days the maximum daily average EC of 2.64 mmhos/cm (or maximum 14-day running average EC of 2.64 mmhos/cm, or 3-day running average NDOI of 11,400 cfs) must be maintained at Chipps Island in February is determined by linear interpolation between 0 and 28 days.

[d] This standard applies only in months when the average EC at Port Chicago during the 14 days immediately prior to the first day of the month is less than or equal to 2.64 mmhos/cm

D. EXISTING CONDITIONS

CEQA requires an EIR to include "a description of the environment in the vicinity of the project as it exists before the commencement of the project" (Public Resources Code section 15125). The description of the existing conditions is the baseline against which the environmental impacts of a project and alternative actions are assessed. This section discusses the approach used in this EIR to assess the impacts of the various alternative methods of implementing the 1995 Bay/Delta Plan.

The environment of the Bay/Delta Estuary and upstream areas is the result of complex interactions and numerous changing conditions. Defining existing conditions in such a variable environment is problematic; the definition can change depending on the parameter being considered and the range of variability it exhibits. Hydrologic conditions can vary dramatically from year to year, but future conditions will likely be within the range of past events. For purposes of analysis in this EIR, parameters strongly dependent on hydrology, such as water supply, will be modeled to the extent feasible using streamflow and precipitation data from the period of record, 1922-1994, at the present level of development. Where this is not practicable, the SWRCB will model impacts for a shorter period that still exhibits significant variability.

Some parameters, such as aquatic resource conditions, exhibit annual variability, but conditions have changed substantially over time. Conditions that occurred early in the period of record are not likely to be repeated; therefore, it is not appropriate to define these years as representing existing conditions for these parameters. Also, the fluid and variable nature of hydrology does not lend itself to a strictly defined set of circumstances, but rather dictates a consideration of different water-year types together with an estimate of the demands that would be placed on the water resource during those year types. To take into account the natural variability without misstating the current demands, this EIR estimates the existing conditions for aquatic resources using recent historic conditions. The period includes a representative range of hydrology, is well documented, and describes aquatic resource conditions prior to implementation of the 1995 Bay/Delta Plan. The recent historic period used in the analysis differed for each of the aquatic species considered, depending on the availability and suitability of data to represent existing conditions.

Other parameters, such as land use, change over time but do not exhibit significant annual variability. These types of parameters are defined by the conditions in a single, recent year.

Regulatory requirements also change periodically, but show little annual variability. Currently, the SWP and the CVP operate to meet the requirements in the biological opinions for delta smelt and winter-run chinook salmon and SWRCB Order WR 98-09. In combination, these requirements are essentially the same as the objectives in the 1995 Bay/Delta Plan. However, when the SWRCB began reviewing objectives for the Bay/Delta, regulatory requirements in D-1485 and the upstream conditions in the biological opinion for winter-run chinook salmon were in effect. Accordingly, the SWRCB defined the requirements in D-1485 and the upstream conditions in the biological opinion for winter-run chinook salmon as the existing conditions for the purpose of analyzing the effects of

implementing the 1995 Bay/Delta Plan. The ER, Appendix I of the 1995 Bay/Delta Plan, is a programmatic document under CEQA, and it meets the requirements for a Programmatic EIR. As explained in the ER, the project is the review of both the fish and wildlife objectives and the program of implementation for achieving the objectives and protecting the beneficial uses. Because the water right action for which this subsequent EIR is prepared will implement the objectives in the 1995 Bay/Delta Plan, it is part of the overall program that commenced with the review of the fish and wildlife objectives. To be consistent with the earlier part of this program, this EIR uses an existing condition description that varies minimally[1] from the existing condition used in the 1995 Bay/Delta Plan and contains the same regulatory requirements. D-1485 conditions will again go into effect if the SWRCB does not take action by December 31, 1999. Therefore, the existing condition with D-1485 regulatory requirements also constitutes the no-project alternative.

Environmental documents on other current projects, including the CALFED program, the Delta Wetlands Project for which the SWRCB is a lead agency, and the Central Valley Project Improvement Act implementation, are using the 1995 Bay/Delta Plan objectives as their point of reference or existing condition for CEQA analysis. The 1995 objectives describe today's regulatory conditions in the Bay/Delta, even though compliance with these objectives might not be permanent and could be replaced with either weaker or more stringent requirements in the future. The purpose of using an existing condition in a CEQA analysis is to determine the significant impacts of the proposed project. In this case, using the 1995 Bay/Delta Plan objectives as a base for comparison in addition to using the D-1485 requirements may reveal some significant impacts that otherwise would go unnoticed. The purpose of this EIR is to disclose and analyze all the significant impacts so that the SWRCB can make its water right decision knowing all of the potential impacts of the alternatives before it. Accordingly, this EIR uses the current compliance with the 1995 Bay/Delta objectives as a further point of reference against which it compares the other alternatives to determine the significant effects of the alternatives.

E. DESCRIPTION OF ALTERNATIVES

This final EIR analyzes a broad range of alternatives in order to disclose possible impacts. This EIR does not include a preferred alternative. The SWRCB's decision may differ somewhat from any of the alternatives in the EIR. The impacts of the decision, whether it is one of the alternatives in the EIR, a combination of the EIR's alternatives, variants of the EIR's alternatives, or alternatives developed through negotiations by the parties, should be adequately identified and analyzed in this report. The principal assumptions incorporated into the modeling for these alternatives are provided in Chapter IV of this report.

[1] This EIR's existing conditions differ from those in the ER by (1) not including the Cross Valley Canal deliveries since these deliveries will be considered for approval in the water right proceeding; (2) including the new flows required by the Federal Energy Regulatory Commission in the Tuolumne and Mokelumne rivers; (3) not including a 70 TAF annual limitation on deliveries from New Melones Reservoir for salinity control in the southern Delta; (4) using an updated hydrology model.

The alternatives in this report are divided into the following six, separable categories: (1) flow objectives, (2) Suisun Marsh salinity objectives, (3) salinity control actions in the San Joaquin Basin, (4) southern Delta salinity objectives (excluding Vernalis), (5) dissolved oxygen objectives, and (6) combined use of SWP and CVP points of diversion in the Delta. A separate set of alternatives is analyzed for each of these six categories.

The categories described above do not include all of the objectives in the Bay/Delta Plan. The remaining objectives, which include export limits, Delta Cross Channel gates operation, and narrative objectives are treated in the following manner. The Bay/Delta Plan establishes objectives for the operation of the SWP and the CVP export facilities in the Delta and for the Delta Cross Channel gates. Because the DWR and the USBR control the export facilities, and the USBR controls the Delta Cross Channel gates, all of the alternatives, with the exception of the No Project alternative, assume that the DWR and the USBR are responsible for complying with these objectives. In the No Project alternative, the SWP and the CVP are responsible for meeting the D-1485 standards for the operation of the export facilities and the Delta Cross Channel gates.

Alternatives for the two narrative objectives in the Bay/Delta Plan, the narrative salmon objective and the narrative Suisun Marsh objective, are not considered in this EIR. Compliance with the other objectives in the Bay/Delta Plan may be sufficient to achieve these objectives. A period of actual operation to the numerical objectives, coupled with adequate monitoring, is required before a determination can be made whether additional implementation measures are needed. If the narrative objectives are not met, the SWRCB will consider further actions under its water right and water quality authorities to meet these objectives. Such actions could include developing numerical objectives to replace the two narrative objectives. This issue will be considered in the next triennial review of the Bay/Delta Plan, and if appropriate, separate numerical objectives will be developed to replace the narrative objectives. In response to the SWRCB recommendation, the DWR has convened the multi-agency Suisun Ecological Work Group (SEW) to address, among other tasks, the Suisun Marsh narrative objective. The SEW plans to provide its recommendation to the SWRCB in time for the next triennial review.

The Vernalis salinity objectives for the protection of agricultural uses are also treated in a different manner than the other objectives. Actions to achieve these objectives are contained in two categories of alternatives: the flow objectives and the salinity control actions in the San Joaquin Basin. Presently, under the requirements of D-1422, the USBR is responsible for achieving the Vernalis salinity objectives through releases of water from New Melones Reservoir. D-1422 states that the water quality objectives in the decision will be modified to conform with the most up-to-date objectives, implying continuing responsibility of the USBR to achieve the objectives even when the objectives change. Under all of the flow objective alternatives, the USBR continues to be exclusively responsible for the release of water to meet the salinity objectives at Vernalis. This responsibility is based on the language in D-1422 and on the observation that construction of the CVP has substantially increased salinity loads and reduced flows in the San Joaquin River

(WPRS 1980, Grober 1996). However, in order to minimize the need for water releases, this EIR also analyzes alternatives for salinity control actions in the San Joaquin Basin.

1. Flow Objectives Alternatives

For purposes of the analysis in the EIR, the flow objectives include: (1) the Delta outflow objectives, (2) salinity objectives in the Delta that occasionally control Delta outflow, (3) the flow objectives on the Sacramento River at Rio Vista, (4) the flow objectives on the San Joaquin River at Vernalis, and (5) the salinity objectives on the San Joaquin River at Vernalis. Detailed descriptions of the assumptions used in the DWRSIM modeling of the Flow, Joint POD, and Cumulative Impacts alternatives are provided in Volume 2, Appendix 2.

a. Flow Alternative 1 (No Project). CEQA requires that an EIR evaluate a "No Project" alternative. Flow Alternative 1 is the "No Project Alternative." As stated in Section D, above, the existing regulatory requirements could be defined as either D-1485 requirements or as the current compliance with the 1995 Bay/Delta Plan and Order WR 98-09. However, because Order WR 98-09 is an interim document which expires on December 31, 1999, regulatory requirements will revert to those in D-1485 if the SWRCB does not approve the project and issue a decision permanently implementing the 1995 Bay/Delta Plan. Therefore, under this alternative, the SWP and the CVP are solely responsible for meeting the objectives required by D-1485 and the CVP is solely responsible for meeting the objectives required by D-1422. Condition 3 of D-1485 allows limited use of the joint point of diversion to recover pumping foregone in May and June for the protection of striped bass.

b. Flow Alternative 2. Flow Alternative 2 assigns responsibility for meeting the 1995 Bay/Delta Plan flow objectives solely to the SWP and the CVP. Vernalis flow objectives are met by releases from New Melones Reservoir, and are the exclusive responsibility of the CVP.

c. Flow Alternative 3. Flow Alternative 3 assigns responsibility for meeting the 1995 Bay/Delta Plan flow objectives to water right holders based on the water right priority system. Water right holders share responsibility to implement flow objectives; however, the SWP and the CVP are responsible for ensuring that the objectives are achieved. Junior appropriative water right holders are required to cease diversions before senior appropriative water right holders are affected. Under severe drought conditions, however, all water right holders could be directed to cease diversions if no flow is available to satisfy their rights.

In most cases, the priority of post-1914 appropriative rights is determined by the date that an application for a permit is filed, with those filing earliest receiving a more senior priority. The priority of appropriative water right holders who initiated use of water prior to December 19, 1914 is determined by either the date notice of the appropriation was filed under the Civil Code, or by the date water was first put to beneficial use. Pre-1914 appropriative water right holders and riparian water right holders would not be affected until all post-1914 appropriators ceased diversions.

Rediversions of water supplied under contract with operators of upstream storage facilities would not be directly affected by this alternative, but could be indirectly affected when the rights of the upstream provider are affected.

Alternative 3 includes the assumption that water rights for the SWP and the CVP exports of natural and abandoned flows are junior in priority to all inbasin water rights in the Central Valley because of the watershed protection statute which states:

> "In the construction and operation by the department [of Water Resources] of any project under the provisions of this part a watershed or area wherein water originates, or an area immediately adjacent thereto which can conveniently be supplied with water therefrom, shall not be deprived by the department directly or indirectly of the prior right to all of the water reasonably required to adequately supply the beneficial needs of the watershed, area, or any of the inhabitants or property owners therein." (Water Code section 11460)

The CVP serves water to users in the Tulare Lake Basin and the Kern River watershed from the San Joaquin River. Under this alternative the CVP deliveries to the Tulare Lake Basin and the Kern River watershed are assumed to be inbasin deliveries.

The impacts of imposing this alternative on the SWP and the CVP and on those water right holders identified in Table II-5 are evaluated in this report. Table II-5 identifies water right holders with consumptive, post-1914 appropriative water rights with a cumulative face value in excess of 5,000 acre feet per year. This group constitutes approximately 95 percent of the total face value of post-1914 appropriative rights. The face value is an index calculated by multiplying the direct diversion period by the maximum diversion amount and adding this figure to the maximum authorized storage. The resulting quantity is modified, if appropriate, by any maximums for these quantities specified in the permits.

Under this alternative, water right holders in Table II-5 are assigned to groups based on their priority. Groups of appropriators are directed to cease diversions to storage and direct diversions when flow is inadequate to meet outflow objectives and satisfy diversion needs. Tracking SWP and CVP reservoir releases identifies this condition. Because the SWP and the CVP export projects are junior in water right priority, all other water right holders can continue to divert until the SWP and CVP are releasing previously stored water in an amount in excess of their inbasin obligations and exports. When this condition is reached, all water right holders in a group are notified that there is no water available for diversion under their rights. Water right holders receiving such notification are required to cease diverting or to contract for supplemental water supplies. The number of groups of water right holders receiving notification is based on the amount of water necessary to ensure that the SWP and CVP storage releases do not exceed their downstream inbasin and export delivery obligations.

This procedure is similar to a process presently in effect through Standard Water Right Permit Term 91. Term 91 is included in most water right permits for the direct diversion of one cubic foot per second or more or diversion to storage of 100 acre feet per year or more of water in the Central Valley issued after 1968. Term 91 is based on the rationale that, because the SWP and the CVP export projects are junior in priority to all other water users in the basin, the downstream obligations of the projects are their exports plus carriage water. Therefore, water right holders subject to Term 91 must cease diversions when storage releases from the SWP and the CVP exceed exports plus carriage water. Under this alternative, Term 91 would be modified and added to certain post-1914 appropriative water rights. This EIR analyzes the effect of including the modified term in all water right permits in Table II-5. Extension of Term 91 to appropriators with priority dates senior to the SWP and the CVP requires modification of the term because the projects' inbasin contract deliveries become, in some cases, an additional storage release obligation. This methodology could be extended, as part of a future proceeding, to all post-1914 water rights which are presently too small for inclusion in Table II-5.

The CVP has two types of inbasin contractors: water supply contractors and settlement contractors. Settlement contractors have independent water rights and their contracts provide a supplemental supply. Water supply contractors have no independent water rights. Some water supply contracts are limited to interim water supplies. The contract specifies that water is expected to be available for only a limited time. Water supply contractors divert water under the CVP's inbasin rights at all times, and settlement contractors divert under the CVP's water rights when necessary. When uncontrolled flow is inadequate to supply the contractors' diversions and other higher priority diversions, the contractors redivert releases from CVP storage. The CVP, therefore, can have storage release obligations in excess of exports and carriage water at some times, and these obligations must be incorporated into a new water right term that can be extended to water right holders shown in Table II-5. Similar contractual obligations exist for the SWP although in smaller quantities.

Water right holders in the San Joaquin Basin are required to meet the Vernalis flow objective under this alternative. Because this alternative assumes there are no export projects subject to the watershed protection statute in the San Joaquin Basin, these users are required to cease diversion in order of priority when flow is inadequate to meet flow objectives at Vernalis. The impacts of imposing this alternative on the water right holders identified in Table II-6 are evaluated in this report. Table II-6 lists all of the water right holders in Table II-5 that are located in the San Joaquin Basin.

A detailed description of the calculations used to determine water availability under this alternative is provided in Chapter IV section F of this report.

Table II-5
Major Central Valley Water Rights by Priority Group

Priority Group	Appl Id	File Date	Status	DSA	Last Name (Company)	Max Dir Div	Total Storage	Primary DD Season	Secondary DD Season	Storage Season
1	A029471	04/20/89	P	65	KNAGGS	5.5 C	0	4/15-6/30		
1	A028453	05/15/85	P	65	UPPER SWANSTON RANCH INC	45 C	0	5/1-10/1		
1	A027853	08/29/83	P	24	ST SUPERY VINEYARDS & WINERY	11 C	0	4/1-5/31		
1	A027852	08/29/83	P	24	ST SUPERY VINEYARDS & WINERY	11 C	350	5/1-8/15		11/1-5/15
1	A027586	11/17/82	P	49	U S FISH & WILDLIFE SERVICE (Merced NWR)	9 C	0	12/15-5/31		
1	A027546	09/30/82	P	49	NEW STONE WATER DISTRICT	55 C	0	1/1-12/31		
1	A027213	02/18/82	P	12	LEON W ETCHEPARE ESTATE	29.8 C	0	2/15-6/30	9/1-11/1	
1	A027007	09/15/81	P	59	WOODBRIDGE IRRIGATION DISTRICT	3 C	0	2/1-10/31		
1	A026875	06/16/81	L	49	MENEFEE RIVER RANCH COMPANY	15.9 C	0	1/1-10/31		
1	A026757	03/19/81	P	49	MENEFEE HILL RANCH COMPANY	11 C	0	1/1-12/31		
1	A026695	01/27/81	P	65	CONAWAY CONSERVANCY GROUP	100 C	0	4/15-9/30		
1	A026492	08/13/80	P	24	MAGOON ESTATE LIMITED	0	56			11/1-4/30
1	A026098	09/25/79	P	69	GARDEN HIGHWAY MUTUAL WATER CO	0.25 C	0	4/1-6/15	9/1-10/31	
1	A025911	02/01/79	P	24	MAGOON ESTATE LIMITED	0	58			10/1-4/30
1	A025883	12/06/78	L	69	AKIN RANCH, A PARTNERSHIP	6.7 C	0	5/1-6/30	9/1-9/30	
1	A025793	07/20/78	P	12	WALLACE BROTHERS	17 C	0	7/1-8/31		
1	A025792	07/20/78	P	12	WALLACE BROTHERS	17 C	0	7/1-8/31		
1	A025751	05/31/78	P	69	CITY OF YUBA CITY	21 C	0	1/1-6/30	10/1-12/31	
1	A025727	05/01/78	P	70	NATOMAS CENTRAL MUTUAL WATER CO	168 C	0	10/1-4/1		
1	A025717	04/12/78	L	69	GORRILL LAND COMPANY	20 C	0	4/1-9/30		
1	A025616	12/22/77	P	65	CITY OF WEST SACRAMENTO	62 C	0	1/1-6/30	9/1-12/31	
1	A025516A	09/30/77	P	55	CONTRA COSTA WATER DISTRICT	115 C	9,640	1/1-12/31		1/1-12/31
1	A025231	01/04/77	L	61	CROOK	0	50			2/1-6/15
1	A025030	03/26/76	L	17	GRAEAGLE LAND & WATER CO	0.95 C	0	5/1-10/30		
1	A024961	12/29/75	P	55	RECLAMATION DISTRICT #2068	55 C	0	3/1-10/31		
1	A024646	07/19/74	L	24	ST SUPERY VINEYARDS & WINERY	0	30			11/1-4/30
1	A024635	07/03/74	P	24	MAGOON ESTATE LIMITED	0	10,000			10/1-4/30
1	A024590	04/10/74	P	69	CA DEPT OF FISH & GAME	35 C	0	3/1-6/15		
1	A024432	08/06/73	L	24	ST SUPERY VINEYARDS & WINERY	0	31			11/1-5/31
1	A024297	02/01/73	P	24	MAGOON ESTATE LIMITED	0	3,000			10/1-4/30
1	A024296C	02/01/73	P	24	MAGOON ESTATE LIMITED	0	5,350			10/1-4/30
1	A024296B	02/01/73	P	24	MAGOON ESTATE LIMITED	0	200			10/1-4/30
1	A024296A	02/01/73	P	24	MAGOON ESTATE LIMITED	0	1,450			10/1-4/30
1	A023946	12/09/71	P	12	WALLACE BROTHERS	17 C	0	4/1-6/30	9/1-9/30	
1	A023945	12/09/71	P	12	WALLACE BROTHERS	17 C	0	4/1-6/30	9/1-9/30	
1	A023838	08/11/71	L	70	SOUTH SUTTER WATER DISTRICT	1.35 C	0	4/1-6/30	9/1-9/30	
1	A023834	08/02/71	P	24	ST SUPERY VINEYARDS & WINERY	0	1,045			9/15-5/31
1	A023757	04/12/71	P	69	BROWNS VALLEY IRRIGATION DISTRICT	70 C	0	11/1-6/30		
1	A023690	01/25/71	P	70	SOUTH SUTTER WATER DISTRICT	25 C	0	4/1-6/30	9/1-10/31	
1	A023672	01/14/71	P	24	ST SUPERY VINEYARDS & WINERY	0	1,045			9/15-5/31
1	A023416	12/19/69	P	59	RANCHO MURIETA COMMUNITY SERVICES DIST	6 C	4,050	11/1-5/31		11/1-5/31
1	A023280	05/19/69	L	61	S X RANCH INC	0	4,620			10/1-3/31
1	A023249	03/19/69	L	24	ST SUPERY VINEYARDS & WINERY	0	49			11/1-5/1
1	A023248	03/19/69	L	24	ST SUPERY VINEYARDS & WINERY	0	32			11/1-5/1
1	A023247	03/19/69	L	24	ST SUPERY VINEYARDS & WINERY	0	47			11/1-5/1
1	A023246	03/19/69	L	24	ST SUPERY VINEYARDS & WINERY	0	49			11/1-4/30
1	A023201	12/26/68	P	15	RECLAMATION DISTRICT #1004	140 C	0	9/15-1/31	4/1-6/15	
1	A023045	05/15/68	L	69	GARDEN HIGHWAY MUTUAL WATER CO	32.7 C	0	4/1-4/30		
1	A023031	04/18/68	P	49	GRAVELY FORD WATER DISTRICT	0	5,000			10/1-6/1
1	A023005	03/12/68	L	12	GLENN COLUSA IRRIGATION DIST	2 C	0	4/1-6/30	9/1-12/31	
1	A022980	02/07/68	L	40	PINE MOUNTAIN LAKE ASSOCIATION	0	7,650			10/1-5/31
1	A022427	03/17/66	L	61	HOT SPRINGS VALLEY IRRIGATION DIST	0	20,000			10/1-4/30
1	A022333	11/12/65	L	69	FORAKER	40 C	340	4/1-6/15		4/1-6/15
1	A022321	10/25/65	L	69	GORRILL LAND COMPANY	25.8 C	580	4/1-6/15		4/1-6/15
1	A022309	10/08/65	L	70	NATOMAS CENTRAL MUTUAL WATER CO	14 C	0	3/1-6/30		9/1-10/31
1	A022102	04/12/65	L	70	SOUTH SUTTER WATER DISTRICT	40.3 C	0	4/1-6/15	9/1-10/31	
1	A022061	02/25/65	P	14	PARADISE IRRIGATION DIST	0	8,800			10/1-5/31
1	A022039	02/05/65	L	69	RANCHO ESQUON PARTNERS	66 C	0	4/1-6/15		
1	A021945	10/22/64	P	22	U S BUREAU OF RECLAMATION (Sugar Pine Lake)	18 C	15,400	11/1-7/1		11/1-7/1
1	A021443	08/23/63	P	17	CA DEPT OF WATER RESOURCES (Davis Lake)	0	34,000			10/1-6/30
1	A021206	03/26/63	L	69	CREPS	10 C	0	4/15-6/30	9/1-12/15	
1	A020904	08/20/62	L	61	S X RANCH INC	0	1,920			10/15-5/1
1	A020877	07/27/62	L	24	MAGOON ESTATE LIMITED	0	1,287			9/15-6/30
1	A020876	07/27/62	L	24	MAGOON ESTATE LIMITED	0	1,310			9/15-6/30
1	A020698	04/04/62	L	65	MAINE PRAIRIE WATER DIST	96 C	0	3/1-7/1	9/1-11/1	
1	A020376	08/31/61	L	65	SWANSTON	15.7 C	0	5/1-6/30	9/1-9/30	
1	A020245	06/05/61	P	55	CONTRA COSTA WATER DISTRICT	0	95,850			11/1-6/30
1	A020017	03/06/61	P	67	NEVADA IRRIGATION DIST	200 C	18,000	9/1-6/30		11/1-6/30
1	A019934	01/27/61	P	24	U S BUREAU OF RECLAMATION (Lake Berryessa)	0	7,500			11/1-5/31
1	A019890	12/21/60	L	24	MAGOON ESTATE LIMITED	0	1,381			9/15-6/30
1	A019309	03/14/60	L	61	SOUTH FORK IRRIGATION DISTRICT	0	2,240			11/1-4/15
1	A019304	03/11/60	P	39	U S BUREAU OF RECLAMATION (New Melones)	0	1,420,000			11/1-6/30
1	A019229	02/11/60	L	55	RECLAMATION DISTRICT #2068	42 C	0	11/1-3/1		
1	A019149	12/23/59	P	39	CALAVERAS COUNTY WATER DIST	365 C	79,200	3/1-7/1		11/1-6/30
1	A019145	12/23/59	L	62	GEORGE P DENNY III TRUST	0	6,400			11/1-4/1
1	A019087	11/19/59	L	65	SWANSTON	0.92 C	0	5/1-6/30	9/1-9/30	

Table II-5 (cont.)
Major Central Valley Water Rights by Priority Group

Priority Group	Appl Id	File Date	Status	DSA	Last Name (Company)	Max Dir Div	Total Storage	Primary DD Season	Secondary DD Season	Storage Season
1	A019086	11/19/59	L	65	SWANSTON	10 C	0	5/1-6/30	9/1-9/30	
1	A019083	11/16/59	L	69	AGRIVEST CORP	1.2 C	0	5/1-6/30	9/1-10/31	
1	A018844	07/06/59	L	17	CA DEPT OF WATER RESOURCES (Frenchman Lake)	0	4,962			11/1-6/1
1	A018812	06/19/59	P	32	U S BUREAU OF RECLAMATION (New Hogan Lake)	200 C	325,000	11/1-5/1		11/1-5/1
1	A018774	06/08/59	L	49	EL NIDO IRRIGATION DISTRICT	0	5,000			11/1-4/15
1	A018733	05/22/59	P	45	U S BUREAU OF RECLAMATION (Hidden Lake)	0	74,000			12/1-4/30
1	A018714	05/15/59	P	43	U S BUREAU OF RECLAMATION (Eastman Lk)	0	143,000			11/1-5/31
1	A018527	02/11/59	L	65	MAINE PRAIRIE WATER DIST	2.11 C	0	5/1-11/1		
1	A018488	01/26/59	L	69	AKIN RANCH, A PARTNERSHIP	1 C	0	4/15-9/15		
1	A018372	10/15/58	L	12	OLIVE PERCY DAVIS TRUST	7.6 C	0	4/1-6/15	9/1-10/1	
1	A018115	04/30/58	P	11	U S BUREAU OF RECLAMATION (Black Butte Res)	200 C	160,000			11/1-4/30
1	A018087	04/08/58	P	22	PLACER COUNTY WATER AGENCY	800 C	66,000	11/1-7/1		11/1-7/1
1	A018085	04/07/58	P	22	PLACER COUNTY WATER AGENCY	1225 C	249,000	11/1-7/1		11/1-7/1
1	A018075	03/31/58	L	55	GALEN WHITNEY & EST OF H B WHITNEY	3 C	0	6/1-10/1		
1	A018025	03/05/58	P	69	CITY OF YUBA CITY	15.6 C	0	1/1-7/1	9/1-12/31	
1	A018005	02/18/58	L	69	CA DEPT OF FISH & GAME (Gray Lodge Wildlife Area)	15 C	0	9/1-6/30		
1	A017971	02/03/58	L	55	MCCORMACK	2.2 C	0	4/15-10/1		
1	A017966	01/29/58	L	49	MCMULLIN RECL DISTRICT #2075	8.22 C	0	4/1-4/30		
1	A017948	01/17/58	L	55	SAN JOAQUIN RIVER WATER USERS CO, INC	4.75 C	0	3/1-11/15		
1	A017664	06/20/57	L	65	MAINE PRAIRIE WATER DIST	2 C	0	5/1-11/30		
1	A017605	05/14/57	P	59	JACKSON VALLEY IRRIGATION DIST	50 C	30,000	3/1-5/31		11/1-5/31
1	A017493	03/01/57	L	65	MAINE PRAIRIE WATER DIST	2 C	0	4/1-11/30		
1	A017491	03/01/57	L	65	MAINE PRAIRIE WATER DIST	2 C	0	4/1-10/31		
1	A017488	03/01/57	L	65	MAINE PRAIRIE WATER DIST	2 C	0	4/1-10/31		
1	A017487	03/01/57	L	65	MAINE PRAIRIE WATER DIST	2 C	0	4/15-11/15		
1	A017468	02/19/57	L	55	STEPHENS II	5.5 C	0	4/1-10/31		
1	A017376	11/28/56	P	58	U S BUREAU OF RECLAMATION (Whiskeytown)	3,600 C	250,000	11/1-4/1		11/1-4/1
1	A017066	05/02/56	L	12	PRINCETON-CODORA-GLENN IRRIGATION DIST	50 C	0	4/1-6/30	9/1-10/31	
1	A016985	04/03/56	L	15	TISDALE IRRIGATION & DRAINAGE CO	15 C	0	5/1-6/15		
1	A016952	03/20/56	L	17	CA DEPT OF WATER RESOURCES (Frenchman Lake)	0	30,000			11/1-6/1
1	A016950	03/20/56	P	17	CA DEPT OF WATER RESOURCES (Davis lake)	0	49,000			10/1-6/30
1	A016688	10/24/55	P	22	GEORGETOWN DIVIDE PUBLIC UTILTY DIST	30 C	4,000	11/1-8/1		11/1-8/1
1	A016677	10/20/55	L	15	SUTTER MUTUAL WATER COMPANY	7.5 C	0	4/1-6/15	9/1-10/31	
1	A016604	09/15/55	L	49	GALLO CATTLE COMPANY, A PARTNERSHIP	10 C	0	1/1-12/31		
1	A016401	05/31/55	L	69	TUDOR MUTUAL WATER COMPANY	32 C	0	4/1-10/1		
1	A016399	05/27/55	L	69	CA DEPT OF FISH & GAME (Gray Lodge Wildlife Area)	50 C	0	9/1-6/15		
1	A016362	05/05/55	P	12	RIDGE CUT FARMS	14.52 C	0	4/1-6/30	9/1-9/30	
1	A016361	05/05/55	P	12	KNAGGS	65.36 C	0	4/1-6/30	9/1-9/30	
1	A016329	04/21/55	L	49	JOSEPH GALLO FARMS	27 C	0	4/1-11/1	11/1-4/1	
1	A016219	01/26/55	L	62	HAMMOND RESERVOIR IRRIGATION ASSN	0	348			10/1-3/31
1	A016212	01/17/55	P	22	GEORGETOWN DIVIDE PUBLIC UTILTY DIST	75 C	0	11/1-8/1		
1	A016186	12/23/54	L	41	MERCED IRRIGATION DISTRICT	0	605,000			10/1-7/1
1	A016154	11/29/54	L	17	PACIFIC GAS & ELECTRIC COMPANY	0.33 C	0	1/1-12/31		
1	A016142	11/18/54	L	59	RANCHO MURIETA COMMUNITY SERVICES DIST	1.24 C	45	5/1-10/31		10/1-5/1
1	A016136	11/15/54	L	49	MENEFEE RIVER RANCH COMPANY	3.2 C	0	2/1-6/15		
1	A016060	09/22/54	P	70	CITY OF SACRAMENTO	175 C	0	11/1-8/1		
1	A015975	08/02/54	P	16	YOLO COUNTY F C & W C DIST	0	50,000			10/1-5/15
1	A015893	06/04/54	L	69	GARDEN HIGHWAY MUTUAL WATER CO	0.7 C	0	5/1-11/1		
1	A015867	05/10/54	L	69	PARROTT INVESTMENT COMPANY	5.9 C	0	3/1-7/15		
1	A015866	05/10/54	L	15	M & T INCORPORATED	5.9 C	0	3/1-7/15		
1	A015856	04/30/54	L	70	WILLIAM NICHOLAS TRUST	35.3 C	0	3/15-11/15		
1	A015795	03/24/54	L	70	OSTERLI	7.34 C	0	4/1-10/15		
1	A015748	02/25/54	L	17	PACIFIC GAS & ELECTRIC COMPANY	0.0232 C	0	1/1-12/31		
1	A015745	02/23/54	L	70	WILLEY	18.6 C	0	4/1-10/31		
1	A015734	02/18/54	L	70	OSTERLI	8.23 C	0	4/1-9/30		
1	A015710	02/02/54	L	69	MCPHERRIN LAND CO	10 C	0	4/1-6/15	9/1-10/1	
1	A015706	01/28/54	L	24	MAGOON ESTATE LIMITED	0	1,222			10/1-6/1
1	A015698	01/21/54	L	55	CECCARINI	30.2 C	0	4/1-11/1		
1	A015628	12/02/53	L	49	GALLO BEAR CREEK RANCH	38 C	0	4/1-10/31		
1	A015606	11/09/53	L	70	OSTERLI	14.54 C	0	4/1-9/30		
1	A015587	10/27/53	L	69	SUTTER EXTENSION WATER DISTRICT	35 C	0	4/15-6/30	9/1-9/30	
1	A015574	10/09/53	P	67	YUBA COUNTY WATER AGENCY	0	514,000			10/1-6/30
1	A015572	10/08/53	L	70	NATOMAS CENTRAL MUTUAL WATER CO	131 C	0	4/1-6/30		
1	A015468	08/19/53	L	69	MCGOWAN BROTHERS	25 C	0	4/1-6/15	9/1-10/31	
1	A015467	08/19/53	L	69	MCGOWAN RICE RANCH	25 C	0	4/1-6/15	9/1-10/31	
1	A015414	07/16/53	L	62	PACIFIC GAS & ELECTRIC COMPANY	0.039 C	0	1/1-12/31		
1	A015406	07/08/53	L	69	CA DEPT OF FISH & GAME	22.2 C	0	4/1-11/1		
1	A015392	06/29/53	L	65	TUTTLE	21.2 C	0	4/1-9/30		
1	A015250	03/23/53	L	55	A STEFFAN RANCH	22.7 C	0	3/1-11/30	12/1-3/1	
1	A015204	02/20/53	P	67	YUBA COUNTY WATER AGENCY	0	246,000			10/1-6/30
1	A015179	01/29/53	L	69	SUTTER EXTENSION WATER DISTRICT	31 C	0	4/1-6/30	9/1-10/1	
1	A015178	01/29/53	L	69	SUTTER EXTENSION WATER DISTRICT	15 C	0	4/1-6/30	9/1-10/1	
1	A015177	01/29/53	L	69	SUTTER EXTENSION WATER DISTRICT	20 C	0	4/1-6/30	9/1-10/1	
1	A015095	11/25/52	L	69	AKIN RANCH, A PARTNERSHIP	11.6 C	0	4/15-10/1		
1	A015017	09/15/52	L	69	CA DEPT OF FISH & GAME	6 C	0	4/15-9/15		
1	A014907	07/11/52	L	55	RECLAMATION DISTRICT #548	82 C	0	1/1-12/31		
1	A014867	06/19/52	L	69	ETCHEVERRY-IRIGOYEN	15 C	0	4/1-10/1		

Table II-5 (cont.)
Major Central Valley Water Rights by Priority Group

Priority Group	Appl Id	File Date	Status	DSA	Last Name (Company)	Max Dir Div	Total Storage	Primary DD Season	Secondary DD Season	Storage Season
1	A014858A	06/16/52	P	39	U S BUREAU OF RECLAMATION (New Melones Lk)	0	980,000			11/1-6/30
1	A014858B	06/16/52	P	39	U S BUREAU OF RECLAMATION (New Melones Lk)	2250 C	0	11/1-6/30		
1	A014804	05/12/52	L	70	SOUTH SUTTER WATER DISTRICT	330 C	58,370	5/1-9/1		10/1-6/30
1	A014803	05/12/52	P	69	FEATHER WATER DISTRICT	130 C	0	1/1-12/31		
1	A014686	02/21/52	L	69	DAVIS, HELEN	3 C	0	5/1-10/1		
1	A014665	01/31/52	L	69	SUTTER EXTENSION WATER DISTRICT	25 C	0	4/15-11/1		
1	A014649	01/21/52	L	12	CAVE	20.1 C	0	4/1-10/1		
1	A014619	01/14/52	L	12	ZUMWALT MUTUAL WATER CO	0.5 C	0	4/1-10/15		
1	A014588	11/26/51	L	69	SUTTER EXTENSION WATER DISTRICT	29 C	0	5/1-9/15		
1	A014582	11/19/51	L	49	CA DEPT OF FISH & GAME (Los Banos Wildlife Area)	47 C	0	1/1-12/31		
1	A014546	11/02/51	L	69	MCPHERRIN LAND CO	15 C	0	4/1-11/1		
1	A014544	11/01/51	L	55	ZANETTI	13 C	0	4/1-12/31		
1	A014443	08/24/51	P	69	CA DEPT OF WATER RESOURCES (Oroville)	7,545 C	3,542,100	1/1-12/31		9/1-7/31
1	A014430	08/15/51	L	70	SOUTH SUTTER WATER DISTRICT	2 C	0	4/1-11/1		
1	A014415	08/03/51	L	69	GARDEN HIGHWAY MUTUAL WATER CO	23 C	0	5/1-11/1		
1	A014378	06/28/51	L	12	MAXWELL IRRIGATION DIST	3 C	0	3/1-11/30		
1	A014354	06/20/51	L	69	MCGOWAN RICE RANCH	7.4 C	0	4/1-10/1		
1	A014316	05/21/51	L	69	U S FISH & WILDLIFE SERVICE (Butte Sink NWR)	2.4 C	0	5/1-9/1		
1	A014127	01/16/51	L	40	TURLOCK I D & MODESTO I D	0	1,046,800			11/1-7/31
1	A014113	12/28/50	P	17	OROVILLE-WYANDOTTE IRRIGATION DIST	700 C	117,300	1/1-12/31		11/1-7/1
1	A014023	10/28/50	L	55	AUGUSTA BIXLER FARMS	18.5 C	0	1/1-12/31		
1	A014022	10/26/50	L	55	AUGUSTA BIXLER FARMS	9.5 C	0	1/1-12/31		
1	A013976	10/03/50	L	58	IGO ONO COMMUNITY SERVICE DIST	0.8 C	0	4/1-11/1		
1	A013957	09/20/50	P	67	OROVILLE-WYANDOTTE IRRIGATION DIST	300 C	35,000	5/1-11/1		1/1-7/1
1	A013919	08/25/50	L	12	MAXWELL IRRIGATION DIST	11.6 C	0	5/1-12/1		
1	A013873	07/31/50	P	67	BROWNS VALLEY IRRIGATION DISTRICT	0	40,000			10/1-6/1
1	A013846	07/15/50	L	17	PACIFIC GAS & ELECTRIC COMPANY	0	60			10/1-5/1
1	A013769	06/01/50	L	17	PACIFIC GAS & ELECTRIC COMPANY	0.078 C	0	1/1-12/31		
1	A013765	05/31/50	L	17	PACIFIC GAS & ELECTRIC COMPANY	0.056 C	0	1/1-12/31		
1	A013735	05/15/50	L	12	MAXWELL IRRIGATION DIST	7 C	0	4/15-10/1		
1	A013715	05/02/50	L	55	SAN JOAQUIN RIVER WATER USERS CO, INC	22.1 C	0	1/1-12/31		
1	A013710	04/28/50	L	69	CREPS	4.7 C	0	4/15-12/15		
1	A013628	03/10/50	L	49	BROCCHINI	0.75 C	0	3/1-11/1		
1	A013590	02/20/50	L	15	OJI BROTHERS, A CO-PARTNERSHIP	2.87 C	0	4/1-10/1		
1	A013541	01/13/50	L	49	WEAVER	45 C	0	11/1-7/1		
1	A013454	11/09/49	L	15	ANDREOTTI	13.5 C	0	4/1-10/1		
1	A013452	11/09/49	L	12	PROVIDENT IRRIGATION DIST	3.25 C	0	4/1-10/1		
1	A013371	10/01/49	P	22	U S BUREAU OF RECLAMATION (Folsom)	700 C	300,000	11/1-8/1		11/1-7/1
1	A013370	10/01/49	P	22	U S BUREAU OF RECLAMATION (Folsom)	8,000 C	1,000,000	11/1-8/1		11/1-7/1
1	A013349	09/12/49	L	69	SUTTER EXTENSION WATER DISTRICT	2.66 C	0	4/15-10/15		
1	A013323	08/31/49	L	69	MCGOWAN RICE RANCH	7 C	0	4/1-10/1		
2	A013175	06/27/49	L	49	CHOWCHILLA WATER DISTRICT	90 C	50,000	3/1-7/31		11/1-5/1
2	A013156	06/16/49	P	29	EAST BAY MUNICIPAL UTILITY DIST	194 C	353,000	12/1-7/1		12/1-7/1
2	A013148	06/10/49	L	55	PETERSEN ESTATE COMPANY	18 C	0	4/15-10/15		
2	A013130	06/02/49	P	67	BROWNS VALLEY IRRIGATION DISTRICT	0	20,000			10/1-5/1
2	A013093A	05/13/49	P	39	CALAVERAS COUNTY WATER DIST	0	5,000			11/1-7/1
2	A013091	05/13/49	P	39	CALAVERAS COUNTY WATER DIST	0	63,000			11/1-7/1
2	A013031	04/18/49	L	65	KNAGGS	3 C	0	4/15-10/1		
2	A013008	03/30/49	L	69	MCGOWAN BROTHERS	14.2 C	0	4/1-10/1		
2	A013002	03/25/49	L	12	OLIVE PERCY DAVIS TRUST	1 C	0	4/1-10/1		
2	A013001	03/25/49	L	12	OLIVE PERCY DAVIS TRUST	0.27 C	0	4/1-10/1		
2	A013000	03/25/49	L	12	OLIVE PERCY DAVIS TRUST	5 C	0	4/1-10/1		
2	A012997	03/23/49	L	12	KNAGGS	2.98 C	0	4/1-10/1		
2	A012996	03/23/49	L	12	KNAGGS	2.11 C	0	4/1-10/1		
2	A012995	03/23/49	L	12	KNAGGS	1.72 C	0	4/1-10/1		
2	A012926	02/07/49	L	69	DAVIS, HELEN	3 C	0	4/1-10/1		
2	A012912	01/25/49	P	39	CALAVERAS COUNTY WATER DIST	7 C	0	11/1-7/1		
2	A012910	01/25/49	P	39	CALAVERAS COUNTY WATER DIST	400 C	0	3/1-7/1		
2	A012842	12/02/48	P	29	NORTH SAN JOAQUIN WATER CONS DIST	80 C	20,000	12/1-7/1		12/1-7/1
2	A012716	09/27/48	P	24	U S BUREAU OF RECLAMATION (Lake Berryessa)	116 C	320,000	1/1-12/31		11/1-5/31
2	A012648	08/12/48	L	59	WOODBRIDGE IRRIGATION DISTRICT	18.25 C	0	1/1-12/31		
2	A012635	08/06/48	L	49	W P RODUNER CATTLE & FARMING CO	23.4 C	0	3/1-12/1		
2	A012622	07/29/48	P	22	CITY OF SACRAMENTO	1200 C	314,000	11/1-8/1		11/1-8/1
2	A012578	06/30/48	P	24	U S BUREAU OF RECLAMATION (Lake Berryessa)	900 C	600,000	2/1-11/15		11/1-5/31
2	A012490	04/28/48	L	49	OAKDALE I D & SOUTH SAN JOAQUIN I D	0	64,500			10/1-7/1
2	A012470B	04/13/48	L	15	PELGER MUTUAL WATER COMPANY	53.5 C		4/1-11/1		
2	A012470A	04/13/48	L	15	SUTTER MUTUAL WATER COMPANY	35.9 C	0	4/1-11/1		
2	A012437	03/25/48	L	69	U S FISH & WILDLIFE SERVICE (Butte Sink NWR)	4.6 C	0	5/1-9/1		
2	A012421	03/19/48	P	22	GEORGETOWN DIVIDE PUBLIC UTILITY DIST	50 C	20,000	11/1-8/1		11/1-8/1
2	A012412	03/17/48	L	12	OLIVE PERCY DAVIS TRUST	6 C	0	4/1-10/1		
2	A012389	03/08/48	P	16	LAKE COUNTY F C & W C D	0	41,000			10/1-4/1
2	A012371	03/02/48	L	69	CORDUA IRRIGATION DISTRICT	50 C	0	4/1-11/1		
2	A012367	03/01/48	P	70	CARMICHAEL WATER DISTRICT	25 C	0	1/1-12/31		
2	A012342A	02/20/48	P	59	JACKSON VALLEY IRRIGATION DIST	60 C	6,000	11/1-5/31		11/1-5/31
2	A012321	02/13/48	P	22	CITY OF SACRAMENTO	310 C	275,000	11/1-8/1		11/1-8/1
2	A012286	02/02/48	L	55	CITY OF VALLEJO	31.52 C	0	1/1-12/31		

Table II-5 (cont.)
Major Central Valley Water Rights by Priority Group

Priority Group	Appl Id	File Date	Status	DSA	Last Name (Company)	Max Dir Div	Total Storage	Primary DD Season	Secondary DD Season	Storage Season
2	A012263	01/26/48	L	61	U S FISH & WILDLIFE SERVICE (Colusa NWR)	0	1,100			10/1-4/1
2	A012256	01/23/48	L	12	KNAGGS	9 C	0	4/1-10/1		
2	A012230A	01/06/48	L	69	SUTTER EXTENSION WATER DISTRICT	1.92 C	0	4/1-10/1		
2	A012140	10/29/47	P	70	CITY OF SACRAMENTO	500 C	0	11/1-8/1		
2	A012125	10/08/47	L	12	GLENN COLUSA IRRIGATION DIST	11 C	0	4/20-9/30		
2	A012115	09/30/47	L	12	U S FISH & WILDLIFE SERVICE (Colusa NWR)	8 C	0	4/15-11/1		
2	A012074	09/08/47	L	65	CONAWAY CONSERVANCY GROUP	9.4 C	0	4/15-10/31		
2	A012073	09/08/47	L	65	CONAWAY CONSERVANCY GROUP	165.25 C	0	4/1-10/31		
2	A011959	06/24/47	L	12	ZUMWALT MUTUAL WATER CO	15 C	0	4/1-9/15		
2	A011958	06/24/47	L	12	MAXWELL IRRIGATION DIST	13.5 C	0	4/15-10/1		
2	A011957	06/24/47	L	12	MAXWELL IRRIGATION DIST	65.5 C	0	4/15-10/1		
2	A011956	06/24/47	L	12	MAXWELL IRRIGATION DIST	8.5 C	0	4/1-10/1		
2	A011955	06/24/47	L	12	MAXWELL IRRIGATION DIST	14 C	0	4/15-10/1		
2	A011953	06/23/47	L	15	SUTTER MUTUAL WATER COMPANY	7.5 C	0	4/1-10/1		
2	A011926	06/09/47	L	12	STRAIN	22 C	0	4/15-9/15		
2	A011925	06/09/47	L	12	STRAIN	8 C	0	4/15-9/15		
2	A011910	05/29/47	L	65	RIVER GARDEN FARMS COMPANY	19 C	0	4/1-9/15		
2	A011903	05/26/47	L	12	OTTENWALTER	8.1 C	0	4/1-10/1		
2	A011902	05/26/47	L	12	GOETTE FARMS, INC & EST OF	9 C	0	4/1-10/1		
2	A011901	05/26/47	L	12	GOETTE FARMS, INC	8 C	0	4/1-9/15		
2	A011900	05/26/47	L	12	ARCH J CAMPBELL, TRUSTEE	16.4 C	0	4/1-10/1		
2	A011899	05/26/47	L	12	RECLAMATION DISTRICT #108	75 C	0	4/1-10/1		
2	A011888A	05/22/47	L	12	OTTENWALTER	6.7 C	0	4/1-10/1		
2	A011887	05/22/47	L	55	GALEN WHITNEY & EST OF H B WHITNEY	11.7 C	0	3/1-11/15		
2	A011886	05/22/47	L	12	ASH	15 C	0	4/15-10/1		
2	A011881	05/15/47	L	12	WALLACE BROTHERS	13 C	0	4/15-10/1		
2	A011878	05/13/47	L	65	ESTATE OF E L WALLACE	34 C	0	4/15-10/15		
2	A011855	05/05/47	L	12	RIDGE CUT FARMS	13.7 C	0	4/15-9/15		
2	A011854	05/05/47	L	12	RIDGE CUT FARMS	13.7 C	0	4/15-9/15		
2	A011847	04/28/47	L	55	UNION ISLAND MUTUAL WATER CO, INC	14.1 C	0	1/1-12/31		
2	A011792B	03/24/47	P	39	CALAVERAS COUNTY WATER DIST	0	78,500			11/1-7/1
2	A011688	01/08/47	L	49	U S FISH & WILDLIFE SERVICE (San Luis NWR)	20.2 C	0	1/1-12/31		
2	A011687	01/08/47	L	49	U S FISH & WILDLIFE SERVICE (San Luis NWR)	40.9 C	0	1/1-12/31		
2	A011653	12/10/46	L	49	W P RODUNER CATTLE & FARMING CO	40 C	0	12/1-6/1		
2	A011632	11/21/46	L	69	U S FISH & WILDLIFE SERVICE (Sutter NWR)	25 C	0	6/1-10/30		
2	A011618	11/14/46	L	15	ANDREOTTI	5.5 C	0	4/1-10/1		
2	A011389	05/03/46	P	16	YOLO COUNTY F C & W C DIST	0	250,000			10/1-6/30
2	A011349	03/26/46	L	69	U S FISH & WILDLIFE SERVICE (Sutter NWR)	5 C	0	4/15-10/1		
2	A011319	03/15/46	L	69	SUTTER EXTENSION WATER DISTRICT	3 C	0	5/1-10/31		
2	A011314	03/12/46	L	12	ZUMWALT MUTUAL WATER CO	11.7 C	0	4/1-10/15		
2	A011281	02/11/46	L	62	HAMMOND RESERVOIR IRRIGATION ASSN	15 C	0	4/1-10/10		
2	A011274	02/04/46	L	15	A & F BOEGER CORPORATION	15 C	0	4/15-10/15		
2	A011268	01/25/46	L	55	STEPHENS II	21 C	0	3/1-11/1		
2	A011242	12/26/45	L	12	HOLZAPFEL	22 C	0	3/15-11/1		
2	A011199	10/29/45	P	24	U S BUREAU OF RECLAMATION (Lake Berryessa)	0	1,000,000			11/1-5/31
2	A011194	10/26/45	L	55	MCCORMACK	7 C	0	4/15-10/15		
2	A011193	10/25/45	L	17	PACIFIC GAS & ELECTRIC COMPANY	0.25 C	0	1/1-12/31		
2	A011192	10/25/45	L	17	PACIFIC GAS & ELECTRIC COMPANY	0.18 C	0	1/1-12/31		
2	A011141	09/04/45	L	55	SPANOS	6.69 C	0	2/1-11/1		
2	A011105	07/13/45	L	49	OAKDALE I D & SOUTH SAN JOAQUIN I D	0	98,000			10/1-7/1
2	A011058	05/25/45	L	69	CHRISTENSON	15 C	0	4/1-10/1		
2	A011047	05/09/45	L	49	CHOWCHILLA WATER DISTRICT	11.4 C	0	2/1-11/1		
2	A011028	04/12/45	L	12	ZUMWALT MUTUAL WATER CO	96 C	0	4/1-10/15		
2	A011025	04/06/45	L	69	CREPS	2 C	0	5/1-10/1		
2	A011011	03/20/45	L	12	BALSDON RANCH	28 C	0	3/15-10/15		
2	A011003A	03/09/45	L	49	TRIANGLE T RANCH INCORPORATED	17.5 C	0	2/1-7/1		
2	A010978	02/10/45	L	49	OAKDALE I D & SOUTH SAN JOAQUIN I D	0	25,000			12/1-5/1
2	A010951	01/11/45	L	15	OJI BROTHERS, A CO-PARTNERSHIP	7.82 C	0	4/15-10/15		
2	A010905	10/26/44	L	69	DAVIS, HELEN	2.5 C	0	5/1-10/1		
3	A010872	08/30/44	L	49	OAKDALE I D & SOUTH SAN JOAQUIN I D	0	80,000			1/1-12/31
3	A010769	02/16/44	L	69	DAVIS, HELEN	0.55 C	0	4/1-11/1		
3	A010739	12/21/43	L	69	DANNA & DANNA INC	14 C	0	4/1-10/1		
3	A010658	06/16/43	L	15	SUTTER MUTUAL WATER COMPANY	7.52 C	0	3/1-10/31		
3	A010572	12/11/42	L	49	MERCED IRRIGATION DISTRICT	257 C	0	3/30-8/1		
3	A010529	08/22/42	L	69	SUTTER EXTENSION WATER DISTRICT	234 C	0	4/1-10/31		
3	A010417	03/25/42	L	15	WALLACE CONSTRUCTION INC	11 C	0	4/15-10/1		
3	A010407	03/17/42	L	61	BIG VALLEY MUTUAL WATER CO	0	2,865			10/1-6/1
3	A010363	01/16/42	L	15	WESTERMANN FARMS	9.4 C	0	2/1-12/1		
3	A010358	01/12/42	L	69	RUDD FARMING, INC	11.53 C	0	4/1-10/31		
3	A010240	07/17/41	L	59	WOODBRIDGE IRRIGATION DISTRICT	114.4 C	0	5/1-8/31	11/1-1/31	
3	A010221	06/13/41	L	70	SOUTH SUTTER WATER DISTRICT	250 C	40,000	3/1-6/30	9/1-10/31	10/1-6/30
3	A010215	06/03/41	L	55	BANDONI	8 C	0	1/1-12/31		
3	A010190	04/28/41	L	70	CAMP FAR WEST IRRIGATION DIST	0	5,000			5/1-6/1
3	A010068	11/20/40	L	55	CECCARINI	9.65 C	0	3/1-12/1		
3	A010030	10/08/40	L	69	GIUSTI	21.05 C	0	4/1-11/1		
3	A009997	09/06/40	L	49	TURLOCK I D & MODESTO I D	1200 C	0	2/1-11/30		

Table II-5 (cont.)
Major Central Valley Water Rights by Priority Group

Priority Group	Appl Id	File Date	Status	DSA	Last Name (Company)	Max Dir Div	Total Storage	Primary DD Season	Secondary DD Season	Storage Season
3	A009987	08/22/40	L	15	POUNDSTONE	7.1 C	0	4/1-10/15		
3	A009927	06/10/40	L	69	CORDUA IRRIGATION DISTRICT	40 C	0	4/1-11/1		
3	A009899	05/16/40	L	69	HALLWOOD IRRIGATION COMPANY	100 C	0	4/1-11/1		
3	A009886	04/29/40	L	17	PACIFIC GAS & ELECTRIC COMPANY	0.28 C	0	1/1-12/31		
3	A009834	02/21/40	L	49	BROCCHINI	3.89 C	0	3/1-12/1		
3	A009806	01/19/40	L	65	SWANSTON	25.4 C	0	4/1-10/1		
3	A009760	11/03/39	L	15	SUTTER MUTUAL WATER COMPANY	250 C	0	1/1-12/31		
3	A009737	09/22/39	L	15	PREMIERE FARMLAND PARTNERS III LTD PART	100 C	0	4/1-10/1		
3	A009666	07/17/39	L	49	OAKDALE IRRIGATION DISTRICT	1.68 C	0	5/1-11/1		
3	A009625	06/19/39	L	69	MCGOWAN RICE RANCH	15 C	0	4/1-10/1		
3	A009515	03/01/39	L	69	CHRISTENSON	15 C	0	3/1-10/1		
3	A009367	08/02/38	P	51	U S BUREAU OF RECLAMATION (Contra Costa Canal)	250 C	0	1/1-12/31		
3	A009366	08/02/38	P	51	U S BUREAU OF RECLAMATION (Contra Costa Canal)	200 C	0	1/1-12/31		
3	A009364	08/02/38	P	58	U S BUREAU OF RECLAMATION (Shasta)	9,000 C	1,303,000	1/1-12/31		10/1-6/30
3	A009363	08/02/38	P	58	U S BUREAU OF RECLAMATION (Shasta)	1,000 C	310,000	1/1-12/31		10/1-7/1
3	A009325	06/24/38	L	69	WESTROPE RANCHES, LTD	6.7 C	0	4/1-11/1		
3	A009320	06/14/38	L	55	LEONARDO	8.1 C	0	1/1-12/31		
3	A009182	11/20/37	L	55	PARADISE MUTUAL WATER COMPANY	6 C	0	11/1-4/1		
3	A009095	08/24/37	L	12	U S FISH & WILDLIFE SERVICE (Sacramento NWR)	8 C	0	1/1-12/31		
3	A009094	08/24/37	L	12	U S FISH & WILDLIFE SERVICE (Sacramento NWR)	17 C	0	1/1-12/31		
3	A009093	08/24/37	L	12	U S FISH & WILDLIFE SERVICE (Sacramento NWR)	23 C	0	1/1-12/31		
3	A009092	08/24/37	L	12	U S FISH & WILDLIFE SERVICE (Sacramento NWR)	12 C	0	1/1-12/31		
3	A008986	06/04/37	L	69	BROWNS VALLEY IRRIGATION DISTRICT	3 C	0	4/1-10/31		
3	A008931	04/01/37	L	15	ANDREOTTI	3 C	0	4/1-10/1		
3	A008892	02/03/37	L	49	OAKDALE IRRIGATION DISTRICT	4.54 C	0	5/1-11/1		
3	A008830	11/13/36	L	69	ROBERT LEAL & ELYSIAN FARMS, INC	12.54 C	0	4/1-11/1		
3	A008631	04/08/36	L	12	MAXWELL IRRIGATION DIST	63 C	0	3/15-11/1		
3	A008581	03/10/36	L	69	RUDD FARMING, INC	3 C	0	4/15-10/1		
3	A008496	11/14/35	L	17	GRAEAGLE LAND & WATER CO	4 C	0	1/1-12/31		
3	A008495	11/14/35	L	17	GRAEAGLE LAND & WATER CO	13.75 C	1,500	1/1-12/31		11/1-6/1
3	A008489A	11/08/35	L	55	MCCORMACK	1.65 C	0	1/1-12/31		
3	A008338	05/22/35	L	55	CHURCH OF JESUS CHRIST OF L D S (Byron Tract)	14 C	0	1/1-12/31		
3	A008238	02/11/35	L	49	EL NIDO IRRIGATION DISTRICT	0	5,066			11/1-4/15
3	A008213	01/15/35	L	15	M & T INCORPORATED	3 C	0	4/1-12/30		
3	A008188	12/01/34	L	15	M & T INCORPORATED	100 C	0	1/1-12/31		
3	A008187	12/01/34	L	69	PARROTT INVESTMENT COMPANY	100 C	0	1/1-12/31		
3	A008180	11/27/34	P	67	NEVADA IRRIGATION DIST	225 C	45,000	1/1-12/31		11/1-6/30
3	A008177	11/27/34	L	67	NEVADA IRRIGATION DIST	2.7 C	680	1/1-12/31		11/1-6/30
3	A007989	06/22/34	L	69	AGRIVEST CORP	17.82 C	0	5/1-10/1		
3	A007988	06/22/34	L	69	DAVIS, HELEN	18.75 C	0	3/1-10/31		
3	A007886	03/29/34	L	15	SUTTER MUTUAL WATER COMPANY	7.32 C	0	3/1-10/1		
3	A007860	03/05/34	L	61	SOUTH FORK IRRIGATION DISTRICT	0	17,000			11/1-4/15
3	A007641D	08/04/33	L	70	WILLIAM NICHOLAS TRUST	6.3 C	0	4/1-9/30		
3	A007641B	08/04/33	L	70	OSTERLI	9.6 C	0	4/1-9/30		
3	A007641A	08/04/33	L	70	WILLEY	26.4 C	0	4/1-9/30		
3	A007012	07/20/31	L	49	STEVINSON WATER DIST	73 C	0	3/1-11/1		
3	A006963	05/19/31	L	49	BROCCHINI	6.75 C	0	3/1-12/31		
3	A006807	09/27/30	L	49	EL NIDO IRRIGATION DISTRICT	3.8 C	0	11/1-4/15		
3	A006743	07/21/30	L	69	BUTTE SLOUGH IRRIGATION COMPANY	55 C	0	4/1-9/30		
4	A006711	06/25/30	L	49	TURLOCK I D & MODESTO I D	800 C	0	2/1-11/30		
4	A006702	06/16/30	L	67	NEVADA IRRIGATION DIST	20 C	0	4/15-9/30		
4	A006587	03/05/30	L	55	CHURCH OF JESUS CHRIST OF L D S (Byron Tract)	23.7 C	0	1/1-12/31		
4	A006582	03/04/30	L	69	WESTROPE RANCHES, LTD	34 C	0	4/1-10/31		
4	A006529	01/09/30	L	70	NEVADA IRRIGATION DIST	8 C	0	4/1-11/1		
4	A006522	01/03/30	L	59	STOCKTON EAST WATER DISTRICT	13.75 C	11,500	1/1-6/15		11/1-6/1
4	A006486	11/14/29	L	15	PREMIERE FARMLAND PARTNERS III LTD PART	55.5 C	0	4/1-10/1		
4	A006348	06/26/29	L	69	AGRIVEST CORP	12.82 C	0	4/1-10/1		
4	A006316	06/05/29	L	55	NUSS	9.25 C	0	3/1-12/1		
4	A006229	03/26/29	L	68	NEVADA IRRIGATION DIST	120 C	0	4/1-10/31		
4	A006130	12/04/28	L	39	PACIFIC GAS & ELECTRIC COMPANY	0	5,360			11/1-7/1
4	A006114	11/09/28	L	49	W P RODUNER CATTLE & FARMING CO	11 C	0	2/1-6/15		
4	A006111	11/05/28	L	49	STEVINSON WATER DIST	120 C	0	3/1-11/1		
4	A005997	07/27/28	L	17	PACIFIC GAS & ELECTRIC COMPANY	2.25 C	0	1/1-12/31		
4	A005996	07/27/28	L	17	PACIFIC GAS & ELECTRIC COMPANY	0.3 C	0	1/1-12/31		
4	A005916	05/16/28	L	15	POUNDSTONE	6.92 C	0	4/1-10/15		
4	A005807	01/20/28	L	59	WOODBRIDGE IRRIGATION DISTRICT	300 C	0	2/1-10/31		
4	A005754	11/12/27	L	69	AKIN RANCH, A PARTNERSHIP	13.7 C	0	4/1-10/1		
4	A005724	10/17/27	L	49	STEVINSON WATER DIST	163 C	0	3/1-11/1		
4	A005648D	07/30/27	P	29	CALAVERAS COUNTY WATER DIST	4 C	150	1/1-12/31		12/1-5/30
4	A005648B	07/30/27	P	59	JACKSON VALLEY IRRIGATION DIST	50 C	0			1/1-12/31
4	A005648A	07/30/27	L	49	OAKDALE I D & SOUTH SAN JOAQUIN I D	0	60,000			10/1-7/1
4	A005645A	07/30/27	L	25	U S BUREAU OF RECLAMATION (Jenkinson Lake)	32.5 C	14,800	11/1-4/14	6/16-6/30	11/1-6/30
4	A005644A	07/30/27	P	22	GEORGETOWN DIVIDE PUBLIC UTILTY DIST	100 C	20,000	11/1-8/1		11/1-8/1
4	A005638	07/30/27	P	46	U S BUREAU OF RECLAMATION (Friant)	5,000 C	1,210,000	2/1-10/31		11/1-8/1
4	A005632	07/30/27	P	67	YUBA COUNTY WATER AGENCY	1593 C	490,000	9/1-6/30		10/1-6/30
4	A005630	07/30/27	P	69	CA DEPT OF WATER RESOURCES (Oroville)	1,400 C	380,000	1/1-12/31		9/1-7/31

Table II-5 (cont.)
Major Central Valley Water Rights by Priority Group

Priority Group	Appl Id	File Date	Status	DSA	Last Name (Company)	Max Dir Div	Total Storage	Primary DD Season	Secondary DD Season	Storage Season
4	A005626	07/30/27	P	58	U S BUREAU OF RECLAMATION (Shasta)	8000 C	3,190,000	9/1-6/30		10/1-6/30
5	A005386	03/21/27	L	49	BANK OF AMERICA NT & SA	20 C	0	1/1-12/31		
5	A005359	02/17/27	L	65	CHURCH OF JESUS CHRIST OF L D S (Deseret Farms)	4.26 C	0	4/1-10/31		
5	A005316	12/24/26	L	49	MCMULLIN RECL DISTRICT #2075	48.75 C	0	1/1-12/31		
5	A005248	10/29/26	L	55	BANTA-CARBONA IRRIGATION DIST	25.14 C	0	2/1-11/30		
5	A005209B	09/15/26	L	55	CA DEPARTMENT OF CORRECTIONS	4.8 C	0	1/1-12/31		
5	A005209A	09/15/26	L	55	COSE	6.403 C	0	1/1-12/31		
5	A005193	09/08/26	P	67	NEVADA IRRIGATION DIST	0	50,000		1/1-6/30	10/1-6/30
5	A005155	08/13/26	L	55	ISLAND RECLAMATION DIST #2062	49.24 C	0	1/1-12/31		
5	A005153B	08/13/26	L	55	CA DEPARTMENT OF CORRECTIONS	5.1 C	0	1/1-12/31		
5	A005153A	08/13/26	L	55	COSE	7 C	0	1/1-12/31		
5	A005110	07/17/26	L	69	PARROTT INVESTMENT COMPANY	20 C	0	1/1-12/31		
5	A005109	07/17/26	L	15	M & T INCORPORATED	20 C	0	1/1-12/31		
5	A005092	07/10/26	L	55	GIANELLI	13.52 C	0	2/15-12/15		
5	A005047	06/08/26	L	55	GIKAS	16.68 C	0	4/1-11/1		
5	A004991	04/13/26	L	55	PESCADERO RECLAMATION DIST NO 2058	88.37 C	0	10/31-5/1		
5	A004959	03/15/26	L	69	CA DEPT OF FISH & GAME (Gray Lodge Wildlife Area)	15 C	0	4/1-12/15		
5	A004945	03/05/26	L	55	RECLAMATION DISTRICT #2039	78.6 C	0	1/1-12/31		
5	A004944	03/05/26	L	55	RECLAMATION DISTRICT #2038	71.74 C	0	1/1-12/31		
5	A004943	03/05/26	L	55	RECLAMATION DISTRICT #2037	85.45 C	0	1/1-12/31		
5	A004942	03/05/26	L	55	PALM TRACT COMPANY	30.8 C	0	1/1-12/31		
5	A004902	01/28/26	L	65	CHURCH OF JESUS CHRIST OF L D S (Deseret Farms)	8.12 C	0	4/1-10/31		
5	A004901	01/28/26	L	65	CHURCH OF JESUS CHRIST OF L D S (Deseret Farms)	22 C	0	4/1-10/31		
5	A004889	01/15/26	L	24	MAGOON ESTATE LIMITED	0	100			9/15-5/1
5	A004862	12/14/25	L	69	RANCHO ESQUON PARTNERS	18 C	0	4/1-11/30		
5	A004851	11/30/25	L	22	PACIFIC GAS & ELECTRIC COMPANY	0	300			12/1-6/30
5	A004743	08/22/25	L	70	CARMICHAEL WATER DISTRICT	10 C	0	5/1-11/1		
5	A004699	07/15/25	L	15	PREMIERE FARMLAND PARTNERS III LTD PART	2 C	0	4/15-9/30		
5	A004665	06/30/25	L	69	GORRILL LAND COMPANY	15 C	0	4/1-9/30		
5	A004664	06/30/25	L	69	GORRILL LAND COMPANY	21.7 C	0	4/1-9/15		
5	A004663	06/30/25	L	69	RANCHO ESQUON PARTNERS	13.8 C	0	4/1-9/15		
5	A004637	06/15/25	L	55	MORAN	12.44 C	0	3/15-12/1		
5	A004613	06/02/25	L	15	PREMIERE FARMLAND PARTNERS III LTD PART	0.5 C	0	4/1-10/31		
5	A004524	03/31/25	L	62	PACIFIC GAS & ELECTRIC COMPANY	1 C	0	1/1-12/31		
5	A004513	03/20/25	L	55	R & M RANCH, A PARTNERSHIP	12.72 C	0	4/1-12/31		
5	A004512	03/20/25	L	55	R & M RANCH, A PARTNERSHIP	5.79 C	0	4/1-12/31		
5	A004470	02/20/25	L	55	PARADISE MUTUAL WATER COMPANY	14.14 C	0	4/1-11/1		
5	A004460	02/14/25	L	49	RIVER JUNCTION RECL DIST NO 2064	72.29 C	0	3/1-10/1		
5	A004452	02/10/25	L	55	YAMADA BROTHERS	31.69 C	0	4/1-11/15		
5	A004432	01/27/25	L	55	DAL PORTO	16.13 C	0	3/1-11/1		
5	A004364	12/13/24	L	15	WALLACE CONSTRUCTION INC	7.25 C	0	3/1-11/1		
5	A004351	12/04/24	L	65	CHURCH OF JESUS CHRIST OF L D S (Deseret Farms)	0.37 C	0	5/1-10/1		
5	A004276	10/24/24	L	55	GRUNAUER JR	29.87 C	0	3/1-12/1		
5	A004275	10/24/24	L	55	OHLENDORF	17.5 C	0	3/1-12/1		
5	A004237	09/26/24	L	49	TWIN OAKS IRRIGATION COMPANY	21.91 C	0	2/15-10/15		
5	A004228	09/22/24	L	29	EAST BAY MUNICIPAL UTILITY DIST	310 C	209,950	1/1-12/31		10/1-7/15
5	A004124	07/31/24	L	65	SWEETWATER COMPANY	7.12 C	0	1/1-12/31		
5	A004123	07/31/24	L	65	SWEETWATER COMPANY	11.64 C	0	11/1-3/31		
5	A004101	07/18/24	L	55	RECLAMATION DISTRICT #999	12.8 C	0	5/1-10/1		
5	A004100	07/18/24	L	55	RECLAMATION DISTRICT #999	111.88 C	0	5/1-10/1		
5	A004099	07/18/24	L	55	RECLAMATION DISTRICT #999	4.82 C	0	5/1-10/1		
5	A004000	05/23/24	L	69	PACIFIC GAS & ELECTRIC COMPANY	2.5 C	0	9/1-6/1		
5	A003990	05/15/24	L	59	MCGURK	12 C	0	4/1-11/15		
5	A003914	03/21/24	L	55	MCCORMACK WILLIAMSON COMPANY	18.75 C	0	3/1-11/1		
5	A003843	02/11/24	L	70	CAMP FAR WEST IRRIGATION DIST	11.76 C	0	5/1-10/1		
5	A003795	01/10/24	L	17	PACIFIC GAS & ELECTRIC COMPANY	0.0009 C	0	1/1-12/31		
5	A003794	01/10/24	L	17	PACIFIC GAS & ELECTRIC COMPANY	0.5 C	0	1/1-12/31		
5	A003769	12/22/23	L	55	HASTINGS RECLAMATION DISTRICT 2060	45 C	0	3/1-11/1		
5	A003768	12/22/23	L	55	JERSEY ISLAND RECLAMATION DIST 830	40.22 C	0	3/1-11/1		
5	A003648	09/24/23	L	49	TURLOCK I D & MODESTO I D	100 C	0	3/1-10/31		
5	A003613	08/25/23	L	55	BRACK RECLAMATION DISTRICT #2033	49.38 C	0	3/1-11/1		
5	A003550	07/26/23	L	67	PACIFIC GAS & ELECTRIC COMPANY	0	26,662			11/1-6/30
5	A003423	05/17/23	L	65	CHURCH OF JESUS CHRIST OF L D S (Deseret Farms)	7.25 C	0	4/1-10/1		
5	A003353	04/12/23	L	61	HOT SPRINGS VALLEY IRRIGATION DIST	0	48,400			12/1-4/1
5	A003290A	03/12/23	L	15	OJI BROTHERS, A CO-PARTNERSHIP	9.39 C	0	4/1-10/31		
5	A003206	12/27/22	L	15	TAYLOR--SUTTER BYPASS PROPERTIES INC	20.3 C	0	4/1-10/15		
5	A003195	12/27/22	L	15	SUTTER MUTUAL WATER COMPANY	1.38 C	0	4/1-10/31		
5	A003091	10/19/22	L	49	OAKDALE IRRIGATION DISTRICT	0	10,754			10/1-7/1
5	A003069	10/07/22	L	24	MAGOON ESTATE LIMITED	5.35 C	1,100	4/1-6/15		9/15-5/1
5	A002979	08/12/22	P	17	OROVILLE-WYANDOTTE IRRIGATION DIST	185 C	0	1/1-12/31		
5	A002978	08/12/22	L	67	YUBA COUNTY WATER DISTRICT	21.4 C	0	4/1-10/15		
5	A002960	07/28/22	L	55	SPANOS	4.27 C	0	3/1-11/1		
5	A002959	07/28/22	L	55	DELTA FARMS R D #2044	39.18 C	0	3/1-11/1		
5	A002958	07/28/22	L	55	DELTA FARMS R D #2042	25.28 C	0	3/1-11/1		
5	A002957	07/28/22	L	55	DELTA FARMS R D #2041	13.62 C	0	3/1-11/1		
5	A002956	07/28/22	L	55	DELTA FARMS R D #2030	76.36 C	0	3/1-11/1		

Table II-5 (cont.)
Major Central Valley Water Rights by Priority Group

Priority Group	Appl Id	File Date	Status	DSA	Last Name (Company)	Max Dir Div	Total Storage	Primary DD Season	Secondary DD Season	Storage Season
5	A002955	07/28/22	L	55	DELTA FARMS R D #2029	42.83 C	0	3/1-11/1		
5	A002954	07/28/22	L	55	DELTA FARMS R D #2028	60.16 C	0	3/1-11/1		
5	A002953	07/28/22	L	55	DELTA FARMS R D #2027	61.66 C	0	3/1-11/1		
5	A002952	07/28/22	L	55	DELTA FARMS R D #2026	63.94 C	0	3/1-11/1		
5	A002951	07/28/22	L	55	DELTA FARMS R D #2025	49.25 C	0	3/1-11/1		
5	A002950	07/28/22	L	55	DELTA FARMS R D #2024	27 C	0	3/1-11/1		
5	A002949	07/28/22	L	55	FALLMAN	11.75 C	0	3/1-11/1		
6	A002948	07/28/22	L	55	RECLAMATION DISTRICT #756	71.56 C	0	3/1-11/1		
6	A002909	06/27/22	L	69	RANCHO ESQUON PARTNERS	20 C	0	4/1-6/15		
6	A002881	06/13/22	L	70	CAMP FAR WEST IRRIGATION DIST	0	5,000			3/1-5/1
6	A002805	03/24/22	L	69	RANCHO ESQUON PARTNERS	14 C	0	5/1-9/15		
6	A002778	03/06/22	P	17	OROVILLE-WYANDOTTE IRRIGATION DIST	50 C	25,000	4/1-6/1		10/1-6/1
6	A002777	03/06/22	L	69	GORRILL LAND COMPANY	15 C	0	4/1-9/15		
6	A002681A	12/08/21	L	55	MCCORMACK	0.82 C	0	5/1-9/15		
6	A002652B	11/22/21	P	68	NEVADA IRRIGATION DIST	0	65,000			11/30-6/1
6	A002652A	11/22/21	L	68	NEVADA IRRIGATION DIST	0	12,500			11/30-6/1
6	A002576	10/06/21	L	69	RANCHO ESQUON PARTNERS	6 C	0	4/15-9/15		
6	A002524	08/29/21	L	49	SOUTH SAN JOAQUIN IRRIGATION DISTRICT	0	36,000			9/1-5/1
6	A002318	04/22/21	L	55	RECLAMATION DISTRICT #2068	200 C	0	3/1-10/31		
6	A002286	03/31/21	L	55	PESCADERO RECLAMATION DIST NO 2058	88.37 C	0	5/1-10/31		
6	A002276	03/25/21	L	67	NEVADA IRRIGATION DIST	0	60,000			12/1-7/15
6	A002270	03/22/21	L	25	U S BUREAU OF RECLAMATION (Jenkinson Lake)	63.8 C	22,000	4/15-6/15		11/15-6/15
6	A002227	02/23/21	L	61	CROOK	0	5,250			12/1-6/1
6	A002212	02/17/21	L	11	U S BUREAU OF RECLAMATION (Stony Gorge Res)	0	50,200			11/1-5/1
6	A002186	02/01/21	L	17	PACIFIC GAS & ELECTRIC COMPANY	0	70,000			10/1-7/1
6	A002142	12/17/20	P	17	OROVILLE-WYANDOTTE IRRIGATION DIST	0	45,000			10/1-7/1
6	A002093	11/22/20	L	61	BIG VALLEY MUTUAL WATER CO	0	2,635			1/1-5/1
6	A001987	08/27/20	L	49	WEST STANISLAUS IRRIGATION DIST	262.15 C	0	1/1-12/31		
6	A001933	07/23/20	L	55	BANTA-CARBONA IRRIGATION DIST	179.69 C	0	2/1-11/30		
6	A001885	06/28/20	L	49	STEVINSON WATER DIST	34.4 C	0	3/1-10/31		
6	A001853	05/29/20	L	22	CITY OF SACRAMENTO	0.0111 C	0	6/15-9/15		
6	A001838	05/25/20	L	59	RANCHO MURIETA COMMUNITY SERVICES DIST	0.28 C	0	3/15-9/1		
6	A001772	04/09/20	L	15	SUTTER MUTUAL WATER COMPANY	0.31 C	0	5/1-10/1		
6	A001769	04/09/20	L	15	SUTTER MUTUAL WATER COMPANY	7.67 C	0	4/1-10/31		
6	A001765A	04/09/20	L	15	PELGER MUTUAL WATER COMPANY	4 C	0	4/1-10/31		
6	A001763	04/09/20	L	15	SUTTER MUTUAL WATER COMPANY	3 C	0	4/15-9/15		
6	A001758	04/09/20	L	15	SUTTER MUTUAL WATER COMPANY	1.5 C	0	4/1-10/31		
6	A001743	03/30/20	P	59	CITY OF SACRAMENTO	225 C	0	1/1-12/31		
6	A001739	03/25/20	L	17	THERMALITO IRRIGATION DISTRICT	0	8,200			12/1-4/1
6	A001725	03/15/20	L	12	KNAGGS	27.42 C	0	5/1-9/30		
6	A001699	03/02/20	L	69	GARDEN HIGHWAY MUTUAL WATER CO	39 C	0	4/15-10/31		
6	A001666	02/11/20	L	55	RECLAMATION DISTRICT #999	160 C	0	5/1-10/31		
6	A001659	02/09/20	L	12	OLIVE PERCY DAVIS TRUST	108.27 C	0	4/1-10/15		
6	A001656	02/05/20	L	69	RANCHO ESQUON PARTNERS	12 C	0	5/1-10/1		
6	A001651	02/02/20	P	17	OROVILLE-WYANDOTTE IRRIGATION DIST	200 C	109,012	4/1-7/1		10/1-7/1
6	A001624	01/14/20	L	12	GLENN COLUSA IRRIGATION DIST	32.01 C	0	4/15-11/1		
6	A001615	01/08/20	L	67	NEVADA IRRIGATION DIST	100 C	0	4/1-10/1		
6	A001614	01/08/20	P	67	NEVADA IRRIGATION DIST	0	60,000			1/1-12/31
6	A001589	12/26/19	L	12	RECLAMATION DISTRICT #108	255.25 C	0	5/1-10/1		
6	A001588	12/26/19	L	65	CONAWAY CONSERVANCY GROUP	14.75 C	0	4/1-9/30		
6	A001554	12/03/19	L	12	GLENN COLUSA IRRIGATION DIST	83.27 C	0	4/15-10/1		
6	A001476	10/10/19	L	49	EL SOLYO WATER DISTRICT	46.74 C	0	3/1-11/1		
6	A001465	09/26/19	P	46	U S BUREAU OF RECLAMATION (Friant)	3,000 C	500,000	2/1-10/31		11/1-8/1
6	A001413	08/27/19	L	70	NATOMAS CENTRAL MUTUAL WATER CO	120 C	0	5/1-10/1		
6	A001270	05/07/19	L	67	NEVADA IRRIGATION DIST	196 C	65,000	4/15-9/30		1/1-12/31
7	A001233	04/08/19	L	40	TURLOCK I D & MODESTO I D	0	325,000			10/1-8/1
7	A001224	03/26/19	L	49	MERCED IRRIGATION DISTRICT	1500 C	266,400	3/1-10/31		10/1-7/1
7	A001203	03/05/19	L	70	NATOMAS CENTRAL MUTUAL WATER CO	160 C	0	5/1-10/31		
7	A001199	03/01/19	L	65	CONAWAY CONSERVANCY GROUP	120 C	0	4/1-9/30		
7	A001195	02/26/19	L	49	CODDINGTON	35 C	0	3/1-10/15		
7	A001177	02/13/19	L	69	WALTON	13.66 C	0	4/1-10/31		
7	A001160	01/24/19	L	15	SUTTER MUTUAL WATER COMPANY	40.5 C	0	3/1-10/31		
7	A001150	12/31/18	L	65	SWEETWATER COMPANY	23 C	0	4/1-10/31		
7	A001081	09/20/18	L	49	OAKDALE I D & SOUTH SAN JOAQUIN I D	0	96,195			10/1-7/1
8	A001074B	09/10/18	L	15	MERIDIAN FARMS WATER COMPANY	138 C	0	3/1-11/1		
8	A001074A	09/10/18	L	15	PREMIERE FARMLAND PARTNERS III LTD PART	4 C	0	3/1-10/1		
8	A001056	08/22/18	L	70	NATOMAS CENTRAL MUTUAL WATER CO	38 C	0	3/15-10/15		
8	A001042	08/07/18	L	61	U S FISH & WILDLIFE SERVICE (Modoc NWR)	0	1,191			12/1-5/15
8	A000959	04/01/18	L	70	CAMP FAR WEST IRRIGATION DIST	13.24 C	0	4/1-10/1		
8	A000892	01/18/18	L	12	PROVIDENT IRRIGATION DIST	110 C	0	4/1-10/1		
8	A000880C	01/03/18	L	15	OJI BROTHERS, A CO-PARTNERSHIP	3.87 C	0	3/1-10/31		
8	A000880B	01/03/18	L	15	OJI BROTHERS, A CO-PARTNERSHIP	1.31 C	0	3/1-10/31		
8	A000880A	01/03/18	L	15	SUTTER MUTUAL WATER COMPANY	404.82 C	0	3/1-10/31		

Table II-5 (cont.)
Major Central Valley Water Rights by Priority Group

Priority Group	Appl Id	File Date	Status	DSA	Last Name (Company)	Max Dir Div	Total Storage	Primary DD Season	Secondary DD Season	Storage Season
8	A000879	01/03/18	L	15	SUTTER MUTUAL WATER COMPANY	25.25 C	0	3/1-10/31		
8	A000878	01/03/18	L	15	SUTTER MUTUAL WATER COMPANY	116.72 C	0	3/1-10/31		
8	A000784	09/14/17	L	58	IGO ONO COMMUNITY SERVICE DIST	0	4,800			12/1-4/1
8	A000771	09/05/17	L	15	YERXA	20 C	0	3/1-10/15		
8	A000770	09/05/17	L	12	PRINCETON-CODORA-GLENN IRRIGATION DIST	120 C	0	4/1-10/31		
8	A000763	08/27/17	L	12	RECLAMATION DISTRICT #108	500 C	0	2/1-10/31		
8	A000760	08/16/17	L	61	U S FISH & WILDLIFE SERVICE (Modoc NWR)	0	2,709			12/1-5/15
8	A000742	07/26/17	L	15	TISDALE IRRIGATION & DRAINAGE CO	29.25 C	0	3/15-10/15		
8	A000640	04/09/17	L	12	PROVIDENT IRRIGATION DIST	100 C	0	4/1-10/1		
8	A000581	02/01/17	L	15	SUTTER MUTUAL WATER COMPANY	45 C	0	3/1-10/31		
8	A000577	01/25/17	L	65	RIVER GARDEN FARMS COMPANY	35 C	0	4/1-10/15		
8	A000576	01/25/17	L	12	RECLAMATION DISTRICT #108	180 C	0	2/1-10/31		
8	A000575	01/25/17	L	65	RIVER GARDEN FARMS COMPANY	32 C	0	3/1-10/31		
8	A000534	12/13/16	L	70	NATOMAS CENTRAL MUTUAL WATER CO	42.18 C	0	4/1-10/1		
8	A000480	09/23/16	L	69	PLUMAS MUTUAL WATER COMPANY	37.3 C	0	4/1-11/1		
8	A000476	09/21/16	P	14	PARADISE IRRIGATION DIST	0	9,500			1/1-12/31
8	A000462	09/15/16	L	12	PROVIDENT IRRIGATION DIST	250 C	0	4/1-10/1		
8	A000421	08/03/16	L	61	S X RANCH INC	0	1,550			11/15-3/15
8	A000338	05/15/16	L	61	S X RANCH INC	0	550			5/1-10/1
8	A000301	04/17/16	L	55	WEST SIDE IRRIGATION DISTRICT	82.5 C	0	4/1-10/31		
8	A000244	02/03/16	L	12	PRINCETON-CODORA-GLENN IRRIGATION DIST	120 C	0	4/1-10/31		
8	A000234	01/19/16	P	46	U S BUREAU OF RECLAMATION (Friant)	3,000 C	500,000	2/1-10/31		11/1-8/1
8	A000138	09/18/15	L	70	CARMICHAEL WATER DISTRICT	15 C	0	1/1-12/31		
8	A000027	04/02/15	L	15	RECLAMATION DISTRICT #1004	166 C	0	4/1-10/15		
8	A000023	03/27/15	L	46	U S BUREAU OF RECLAMATION (Friant)	373 C	0	4/1-7/1		
8	A000018	03/03/15	L	12	GLENN COLUSA IRRIGATION DIST	110 C	0	3/1-11/1		

d. Flow Alternative 4. This alternative is the same as Alternative 3 except that most of the water deliveries through the Friant-Kern Canal, a component of the Friant Project, are assumed to be CVP exports subject to the watershed protection statute. Madera Canal deliveries, deliveries to areas adjacent to Millerton Lake, and deliveries within the Kings River watershed are treated as inbasin deliveries or deliveries to the area immediately adjacent to and conveniently served from the watershed of origin, and are assigned a priority based on the filing date of the permits for Millerton Lake. Because this alternative assumes that Friant-Kern is the only export facility subject to the watershed protection statutes in the San Joaquin Basin, the Friant-Kern component has a junior priority to all other water rights in the San Joaquin Basin. New Melones Reservoir is an inbasin project, and therefore, the USBR has no obligation under this alternative to release water from New Melones Reservoir to meet Delta or San Joaquin River flow objectives unless junior water right holders have ceased diversions. This alternative assumes, however, that the flow obligations of the Friant Project are met by releases from New Melones Reservoir.

A detailed description of the calculations used to determine water availability under this alternative is provided in Chapter IV section F of this report.

Table II-6
Major San Joaquin Basin Water Rights

Right Number	Appl Id	File Date	Status	DSA	Last Name (Company)	Max Dir Div	Total Storage	Primary DD Season	Secondary DD Season	Storage Season
1	A027586	11/17/82	P	49	U S FISH & WILDLIFE SERVICE (Merced NWR)	9 C	0	12/15-5/31		
2	A027546	09/30/82	P	49	NEW STONE WATER DISTRICT	55 C	0	1/1-12/31		
3	A026875	06/16/81	L	49	MENEFEE RIVER RANCH COMPANY	15.9 C	0	1/1-10/31		
4	A026757	03/19/81	P	49	MENEFEE HILL RANCH COMPANY	11 C	0	1/1-12/31		
5	A023031	04/18/68	P	49	GRAVELY FORD WATER DISTRICT	0	5,000			10/1-6/1
6	A022980	02/07/68	L	40	PINE MOUNTAIN LAKE ASSOCIATION	0	7,650			10/1-5/31
7	A019304	03/11/60	P	39	U S BUREAU OF RECLAMATION (New Melones Lk)	0	1,420,000			11/1-6/30
8	A019149	12/23/59	P	39	CALAVERAS COUNTY WATER DIST	365 C	79,200	3/1-7/1		11/1-6/30
9	A018774	06/08/59	L	49	EL NIDO IRRIGATION DISTRICT	0	5,000			11/1-4/15
10	A018733	05/22/59	P	45	U S BUREAU OF RECLAMATION (Hidden Lake)	0	74,000			12/1-4/30
11	A018714	05/15/59	P	43	U S BUREAU OF RECLAMATION (Eastman Lk)	0	143,000			11/1-5/31
12	A017966	01/29/58	L	49	MCMULLIN RECL DISTRICT #2075	8.22 C	0	4/1-4/30		
13	A016604	09/15/55	L	49	GALLO CATTLE COMPANY, A PARTNERSHIP	10 C	0	1/1-12/31		
14	A016329	04/21/55	L	49	JOSEPH GALLO FARMS	27 C	0	4/1-11/1	11/1-4/1	
15	A016186	12/23/54	L	41	MERCED IRRIGATION DISTRICT	0	605,000			10/1-7/1
16	A016136	11/15/54	L	49	MENEFEE RIVER RANCH COMPANY	3.2 C	0	2/1-6/15		
17	A015628	12/02/53	L	49	GALLO BEAR CREEK RANCH	38 C	0	4/1-10/31		
18	A014858A	06/16/52	P	39	U S BUREAU OF RECLAMATION (New Melones Lk)	0	980,000			11/1-6/30
19	A014858B	06/16/52	P	39	U S BUREAU OF RECLAMATION (New Melones Lk)	2250 C	0	11/1-6/30		
20	A014582	11/19/51	L	49	CA DEPT OF FISH & GAME (Los Banos Wildlife Area)	47 C	0	1/1-12/31		
21	A014127	01/16/51	L	40	TURLOCK I D & MODESTO I D	0	1,046,800			11/1-7/31
22	A013628	03/10/50	L	49	BROCCHINI	0.75 C	0	3/1-11/1		
23	A013541	01/13/50	L	49	WEAVER	45 C	0	11/1-7/1		
24	A013175	06/27/49	L	49	CHOWCHILLA WATER DISTRICT	90 C	50,000	3/1-7/31		11/1-5/1
25	A013091	05/13/49	P	39	CALAVERAS COUNTY WATER DIST	0	63,000			11/1-7/1
26	A013093A	05/13/49	P	39	CALAVERAS COUNTY WATER DIST	0	5,000			11/1-7/1
27	A012912	01/25/49	P	39	CALAVERAS COUNTY WATER DIST	7 C	0	11/1-7/1		
28	A012910	01/25/49	P	39	CALAVERAS COUNTY WATER DIST	400 C	0	3/1-7/1		
29	A012635	08/06/48	L	49	W P RODUNER CATTLE & FARMING CO	23.4 C	0	3/1-12/1		
30	A012490	04/28/48	L	49	OAKDALE I D & SOUTH SAN JOAQUIN I D	0	64,500			10/1-7/1
31	A011792B	03/24/47	P	39	CALAVERAS COUNTY WATER DIST	0	78,500			11/1-7/1
32	A011688	01/08/47	L	49	U S FISH & WILDLIFE SERVICE (San Luis NWR)	20.2 C	0	1/1-12/31		
33	A011687	01/08/47	L	49	U S FISH & WILDLIFE SERVICE (San Luis NWR)	40.9 C	0	1/1-12/31		
34	A011653	12/10/46	L	49	W P RODUNER CATTLE & FARMING CO	40 C	0	12/1-6/1		
35	A011105	07/13/45	L	49	OAKDALE I D & SOUTH SAN JOAQUIN I D	0	98,000			10/1-7/1
36	A011047	05/09/45	L	49	CHOWCHILLA WATER DISTRICT	11.4 C	0	2/1-11/1		
37	A011003A	03/09/45	L	49	TRIANGLE T RANCH INCORPORATED	17.5 C	0	2/1-7/1		
38	A010978	02/10/45	L	49	OAKDALE I D & SOUTH SAN JOAQUIN I D	0	25,000			12/1-5/1
39	A010872	08/30/44	L	49	OAKDALE I D & SOUTH SAN JOAQUIN I D	0	80,000			1/1-12/31
40	A010572	12/11/42	L	49	MERCED IRRIGATION DISTRICT	257 C	0	3/30-8/1		
41	A009997	09/06/40	L	49	TURLOCK I D & MODESTO I D	1200 C	0	2/1-11/30		
42	A009834	02/21/40	L	49	BROCCHINI	3.89 C	0	3/1-12/1		
43	A009666	07/17/39	L	49	OAKDALE IRRIGATION DIST	1.68 C	0	5/1-11/1		
44	A008892	02/03/37	L	49	OAKDALE IRRIGATION DIST	4.54 C	0	5/1-11/1		
45	A008238	02/11/35	L	49	EL NIDO IRRIGATION DISTRICT	0	5,066			11/1-4/15
46	A007012	07/20/31	L	49	STEVINSON WATER DIST	73 C	0	3/1-11/1		
47	A006963	05/19/31	L	49	BROCCHINI	6.75 C	0	3/1-12/31		
48	A006807	09/27/30	L	49	EL NIDO IRRIGATION DISTRICT	3.8 C	0	11/1-4/15		
49	A006711	06/25/30	L	49	TURLOCK I D & MODESTO I D	800 C	0	2/1-11/30		
50	A006130	12/04/28	L	39	PACIFIC GAS & ELECTRIC COMPANY	0	5,360			11/1-7/1
51	A006114	11/09/28	L	49	W P RODUNER CATTLE & FARMING CO	11 C	0	2/1-6/15		
52	A006111	11/05/28	L	49	STEVINSON WATER DIST	120 C	0	3/1-11/1		
53	A005724	10/17/27	L	49	STEVINSON WATER DIST	163 C	0	3/1-11/1		
54	A005638	07/30/27	P	46	U S BUREAU OF RECLAMATION (Friant)	5000 C	1,210,000	2/1-10/31		11/1-8/1
55	A005648A	07/30/27	L	49	OAKDALE I D & SOUTH SAN JOAQUIN I D	0	60,000			10/1-7/1
56	A005386	03/21/27	L	49	BANK OF AMERICA NT & SA	20 C	0	1/1-12/31		
57	A005316	12/24/26	L	49	MCMULLIN RECL DISTRICT #2075	48.75 C	0	1/1-12/31		
58	A004460	02/14/25	L	49	RIVER JUNCTION RECL DIST NO 2064	72.29 C	0	3/1-10/1		
59	A004237	09/26/24	L	49	TWIN OAKS IRRIGATION COMPANY	21.91 C	0	2/15-10/15		
60	A003648	09/24/23	L	49	TURLOCK I D & MODESTO I D	100 C	0	3/1-10/31		
61	A003091	10/19/22	L	49	OAKDALE IRRIGATION DIST	0	10,754			1/1-7/1
62	A002524	08/29/21	L	49	SOUTH SAN JOAQUIN IRRIGATION DIST	0	36,000			9/1-5/1
63	A001987	08/27/20	L	49	WEST STANISLAUS IRRIGATION DIST	262.15 C	0	1/1-12/31		
64	A001885	06/28/20	L	49	STEVINSON WATER DIST	34.4 C	0	3/1-10/31		
65	A001476	10/10/19	L	49	EL SOLYO WATER DISTRICT	46.74 C	0	3/1-11/1		
66	A001465	09/26/19	P	46	U S BUREAU OF RECLAMATION (Friant)	3000 C	500,000	2/1-10/31		11/1-8/1
67	A001233	04/08/19	L	40	TURLOCK I D & MODESTO I D	0	325,000			10/1-8/1
68	A001224	03/26/19	L	49	MERCED IRRIGATION DISTRICT	1500 C	266,400	3/1-10/31		10/1-7/1
69	A001195	02/26/19	L	49	CODDINGTON	35 C	0	3/1-10/15		
70	A001081	09/20/18	L	49	OAKDALE I D & SOUTH SAN JOAQUIN I D	0	96,195			10/1-7/1
71	A000234	01/19/16	P	46	U S BUREAU OF RECLAMATION (Friant)	3000 C	500,000	2/1-10/31		11/1-8/1
72	A000023	03/27/15	L	46	U S BUREAU OF RECLAMATION (Friant)	373 C	0	4/1-7/1		

e. Flow Alternative 5. Under this alternative, monthly average flow requirements are established for each of the major watersheds tributary to the Delta. For the Sacramento Basin and the eastside tributaries, the flow requirements are based on (1) the tributaries' monthly average unimpaired flow; (2) the monthly average inflow to the Delta required to meet the Sacramento Basin's share of the Delta outflow objectives; and (3) the quantity of water needed to satisfy depletions in the Delta. For the San Joaquin Basin, the flow requirements are based on (1) the tributaries' monthly average unimpaired flow; (2) the Vernalis flow objectives from February through June and in October; and (3) the monthly average inflow to the Delta required to meet the San Joaquin Basin's share of the Delta outflow objectives.

Responsibility to achieve the requirements is assigned to (1) water users with storage in foothill reservoirs that control downstream flow and (2) water users with upstream reservoirs that have a cumulative capacity of at least 100 TAF and who use water primarily for consumptive uses. This alternative specifically identifies releases from Friant Dam as a source of water to meet the Vernalis flow and Delta outflow objectives. The tributary systems and reservoirs identified in Tables II-7 and II-8 would be affected by this alternative. If there is insufficient water in the reservoirs both to achieve the flow requirements and to meet all other downstream flow obligations, users of water downstream of the reservoirs would receive reduced deliveries. The SWP and the CVP are responsible for ensuring that the objectives are achieved and may operate the tributaries they control as a unit to meet the objectives.

If more than one party is responsible for meeting the requirements on a tributary, responsibility is shared among the parties based on each party's percentage of the total depletion of the tributary. This situation occurs in the Yuba, Bear, and Tuolumne river watersheds. In these watersheds, responsibility is assigned among parties as shown in Table II-9. The depletions of agencies that export water from these watersheds are calculated as 100 percent of average amount exported. For a more detailed explanation of the methodology used for this alternative, see Chapter 4, section H, and Volume 2, Appendix 4.

Under Alternative 5, Putah Creek and Cache Creek are assigned no obligation to help meet the Sacramento Basin's share of the Delta outflow objectives and they are not included in Tables II-7 and II-8.

f. Flow Alternative 6. Flow Alternative 6 assigns responsibility for meeting the Bay/Delta Plan flow objectives solely to the SWP and the CVP. Vernalis flow objectives are the CVP's responsibility and are met by releases from the Delta-Mendota Canal through the Newman Wasteway into the San Joaquin River. Water is also released from the Newman Wasteway to meet the estimated consumptive use requirements of the South Delta Water Agency as shown in Table II-10 (Alex Hildebrand, personal communication). Vernalis salinity requirements are also the CVP's responsibility and are met by dilution water releases from New Melones Reservoir.

Table II-7

Allocation of Delta Flow Objectives by Watershed and by Water-Year Type (TAF)

Watershed	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Stony Creek												
W	0.7	3.7	6.7	11.5	29.6	22.3	9.6	7.2	4.5	1.0	0.1	0.2
AN	0.7	3.7	6.7	12.3	28.5	24.2	14.1	7.1	3.9	1.0	0.1	0.2
BN	0.7	3.9	7.2	10.3	20.2	22.9	9.2	6.2	3.6	0.9	0.1	0.2
D	0.7	3.8	7.1	10.2	13.7	12.0	8.1	4.6	3.2	0.8	0.1	0.2
C	0.8	3.9	7.3	9.1	17.1	12.1	8.0	4.1	3.4	0.8	0.1	0.2
Sacramento River												
W	120.0	133.2	117.9	150.9	373.7	374.1	194.0	188.6	237.8	275.5	248.6	177.1
AN	129.2	131.8	117.3	161.4	359.4	406.2	285.7	184.9	208.2	275.4	256.6	179.5
BN	128.2	137.3	126.0	135.2	255.2	384.2	185.0	162.4	191.0	247.8	236.5	175.8
D	128.9	136.3	125.0	134.4	173.0	200.9	164.7	118.9	171.0	219.9	221.8	177.0
C	138.4	138.1	128.3	119.8	216.0	203.5	161.3	107.4	179.4	201.4	214.3	178.4
Feather River												
W	43.0	56.9	52.3	63.4	164.6	195.7	136.3	174.6	178.4	139.0	97.3	59.8
AN	46.3	56.4	52.1	67.9	158.4	212.5	200.7	171.3	156.2	139.0	100.4	60.6
BN	45.9	58.7	55.9	56.8	112.4	201.0	129.9	150.4	143.3	125.1	92.5	59.4
D	46.1	58.3	55.4	56.5	76.2	105.1	115.7	110.2	128.3	111.0	86.8	59.8
C	49.6	59.1	56.9	50.4	95.2	106.5	113.3	99.4	134.6	101.7	83.8	60.3
Yuba River at Slate Creek												
W	1.3	2.6	2.6	3.2	8.2	9.4	6.9	10.7	10.9	4.8	2.1	1.3
AN	1.4	2.6	2.6	3.4	7.9	10.2	10.1	10.4	9.5	4.8	2.2	1.3
BN	1.3	2.7	2.8	2.9	5.6	9.6	6.5	9.2	8.7	4.3	2.0	1.3
D	1.4	2.7	2.8	2.9	3.8	5.0	5.8	6.7	7.8	3.8	1.9	1.3
C	1.5	2.7	2.9	2.6	4.8	5.1	5.7	6.1	8.2	3.5	1.8	1.3
Yuba River below Drum Canal												
W	8.7	18.3	18.3	22.3	57.0	64.9	47.5	73.9	75.5	33.4	14.9	9.0
AN	9.4	18.1	18.2	23.9	54.8	70.4	70.0	72.4	66.1	33.4	15.4	9.1
BN	9.3	18.8	19.5	20.0	38.9	66.6	45.3	63.6	60.6	30.0	14.1	9.0
D	9.4	18.7	19.4	19.9	26.4	34.8	40.3	46.6	54.3	26.6	13.3	9.0
C	10.1	19.0	19.9	17.7	32.9	35.3	39.5	42.1	56.9	24.4	12.8	9.1
Yuba River at Mouth												
W	13.3	27.8	27.8	33.9	86.7	98.7	72.3	112.4	114.9	50.8	22.6	13.7
AN	14.3	27.5	27.7	36.3	83.4	107.2	106.6	110.2	100.6	50.8	23.4	13.9
BN	14.2	28.7	29.7	30.4	59.2	101.4	69.0	96.8	92.3	45.7	21.5	13.6
D	14.3	28.5	29.5	30.2	40.2	53.0	61.4	70.9	82.6	40.5	20.2	13.7
C	15.4	28.9	30.3	27.0	50.1	53.7	60.2	64.0	86.7	37.1	19.5	13.8
Bear River Inflow to Camp Far West Reservoir												
W	0.7	1.5	2.0	2.7	7.1	6.5	2.7	1.6	1.1	0.8	0.4	0.3
AN	0.7	1.5	2.0	2.9	6.8	7.0	4.0	1.5	1.0	0.8	0.4	0.4
BN	0.7	1.6	2.1	2.4	4.9	6.6	2.6	1.3	0.9	0.7	0.4	0.3
D	0.7	1.5	2.1	2.4	3.3	3.5	2.3	1.0	0.8	0.7	0.4	0.3
C	0.8	1.6	2.2	2.1	4.1	3.5	2.2	0.9	0.8	0.6	0.4	0.3
Bear River at Mouth												
W	1.9	4.3	5.7	7.8	20.4	18.5	7.7	4.5	3.2	2.3	1.2	1.0
AN	2.0	4.3	5.7	8.3	19.6	20.1	11.4	4.4	2.8	2.3	1.2	1.0
BN	2.0	4.5	6.1	6.9	13.9	19.0	7.4	3.8	2.5	2.1	1.1	1.0
D	2.0	4.4	6.0	6.9	9.4	9.9	6.6	2.8	2.3	1.9	1.0	1.0
C	2.2	4.5	6.2	6.2	11.8	10.1	6.4	2.5	2.4	1.7	1.0	1.0

Table II-7 (Continued)

Allocation of Delta Flow Objectives by Watershed and by Water-Year Type (TAF)

Watershed	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
American River												
W	10.5	26.9	28.2	37.7	95.8	114.7	87.3	137.5	146.3	59.3	15.4	8.1
AN	11.3	26.6	28.0	40.4	92.2	124.6	128.5	134.8	128.1	59.2	15.9	8.2
BN	11.2	27.7	30.1	33.8	65.5	117.9	83.2	118.4	117.5	53.3	14.6	8.0
D	11.3	27.5	29.9	33.6	44.4	61.6	74.1	86.7	105.2	47.3	13.7	8.1
C	12.1	27.9	30.7	30.0	55.4	62.4	72.6	78.3	110.4	43.3	13.3	8.1
Cosumnes River												
W	0.7	2.9	4.3	7.0	19.2	22.2	12.9	11.7	8.2	3.3	1.2	0.5
AN	0.8	2.9	4.3	7.5	18.5	24.1	19.0	11.5	7.2	3.3	1.2	0.5
BN	0.8	3.0	4.6	6.3	13.1	22.8	12.3	10.1	6.6	3.0	1.1	0.5
D	0.8	3.0	4.5	6.3	8.9	11.9	10.9	7.4	5.9	2.6	1.1	0.5
C	0.8	3.0	4.7	5.6	11.1	12.1	10.7	6.7	6.2	2.4	1.0	0.5
Mokelumne River												
W	2.2	5.7	5.4	6.4	17.6	24.0	24.5	52.9	64.3	22.1	4.2	1.8
AN	2.4	5.6	5.4	6.8	17.0	26.1	36.0	51.8	56.3	22.1	4.4	1.8
BN	2.4	5.8	5.8	5.7	12.1	24.7	23.3	45.5	51.6	19.9	4.0	1.8
D	2.4	5.8	5.7	5.7	8.2	12.9	20.8	33.3	46.2	17.6	3.8	1.8
C	2.6	5.9	5.9	5.1	10.2	13.1	20.3	30.1	48.5	16.2	3.6	1.8
Calaveras River												
W	0.2	1.3	2.3	4.0	11.9	10.7	4.2	1.7	1.1	0.7	0.3	0.2
AN	0.2	1.3	2.3	4.3	11.4	11.6	6.2	1.6	1.0	0.7	0.3	0.2
BN	0.2	1.4	2.4	3.6	8.1	11.0	4.0	1.4	0.9	0.6	0.3	0.2
D	0.2	1.4	2.4	3.6	5.5	5.7	3.6	1.1	0.8	0.6	0.3	0.2
C	0.2	1.4	2.5	3.2	6.8	5.8	3.5	1.0	0.8	0.5	0.2	0.2
Stanislaus River												
W	21.4	7.3	7.3	10.0	38.5	44.6	81.0	72.9	31.9	25.6	6.6	2.7
AN	21.5	7.0	6.9	10.7	37.4	43.4	68.6	59.9	24.2	25.6	6.9	2.7
BN	21.4	7.2	7.2	8.9	24.1	28.8	51.1	44.3	16.5	20.8	6.0	2.7
D	22.4	7.1	6.9	8.9	24.8	28.7	41.7	33.9	13.7	16.0	5.3	2.7
C	18.4	7.1	6.9	7.9	9.4	12.5	27.3	23.0	6.8	12.8	5.0	2.7
Tuolumne River Inflow to Don Pedro Reservoir												
W	7.8	2.7	2.6	3.2	12.6	14.0	24.3	24.2	13.5	12.3	2.7	1.0
AN	7.8	2.6	2.5	3.4	12.3	13.6	20.6	19.9	10.2	12.3	2.9	1.0
BN	7.8	2.6	2.6	2.9	7.9	9.0	15.3	14.7	7.0	10.0	2.5	1.0
D	8.2	2.6	2.5	2.9	8.2	9.0	12.5	11.2	5.8	7.7	2.2	1.0
C	6.7	2.6	2.5	2.5	3.1	3.9	8.2	7.6	2.9	6.2	2.0	1.0
Tuolumne River at Mouth												
W	36.9	12.7	12.3	15.2	59.9	66.3	115.1	114.5	63.9	58.5	12.8	4.8
AN	37.1	12.1	11.8	16.3	58.3	64.5	97.4	94.2	48.5	58.5	13.5	4.8
BN	36.9	12.5	12.1	13.6	37.5	42.8	72.6	69.7	33.0	47.6	11.8	4.8
D	38.7	12.4	11.8	13.6	38.6	42.7	59.3	53.3	27.3	36.5	10.3	4.8
C	31.7	12.3	11.8	12.1	14.7	18.5	38.8	36.1	13.7	29.3	9.7	4.8
Merced River												
W	15.6	5.2	6.0	8.0	34.9	35.5	61.9	62.5	31.2	26.0	6.4	2.2
AN	15.7	5.0	5.7	8.6	33.9	34.6	52.4	51.4	23.7	26.0	6.8	2.2
BN	15.6	5.1	5.9	7.2	21.8	22.9	39.1	38.0	16.1	21.1	5.9	2.2
D	16.4	5.1	5.7	7.2	22.5	22.9	31.9	29.1	13.3	16.2	5.2	2.2
C	13.4	5.1	5.7	6.4	8.5	9.9	20.9	19.7	6.7	13.0	4.9	2.2

Table II-7 (Continued)
Allocation of Delta Flow Objectives by Watershed and by Water-Year Type (TAF)

Watershed	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Chowchilla River												
W	0.1	0.4	0.8	1.5	7.5	6.3	4.9	1.0	0.2	0.1	0.0	0.0
AN	0.1	0.4	0.8	1.6	7.3	6.1	4.1	0.8	0.2	0.1	0.0	0.0
BN	0.1	0.4	0.8	1.3	4.7	4.0	3.1	0.6	0.1	0.1	0.0	0.0
D	0.1	0.4	0.8	1.3	4.9	4.0	2.5	0.5	0.1	0.1	0.0	0.0
C	0.1	0.4	0.8	1.2	1.8	1.7	1.7	0.3	0.0	0.1	0.0	0.0
Fresno River												
W	0.9	0.5	0.8	1.4	7.1	6.9	6.6	2.4	0.9	0.9	0.2	0.2
AN	0.9	0.4	0.8	1.5	6.9	6.7	5.6	2.0	0.7	0.9	0.2	0.2
BN	0.9	0.4	0.8	1.2	4.4	4.5	4.2	1.5	0.5	0.7	0.2	0.2
D	1.0	0.4	0.8	1.2	4.6	4.4	3.4	1.1	0.4	0.5	0.2	0.2
C	0.8	0.4	0.8	1.1	1.7	1.9	2.2	0.8	0.2	0.4	0.2	0.2
San Joaquin River												
W	41.8	8.6	8.3	10.3	42.2	50.3	99.5	111.7	68.2	80.6	27.1	10.0
AN	42.0	8.2	7.9	11.0	41.0	49.0	84.3	91.8	51.7	80.6	28.6	10.0
BN	41.8	8.4	8.2	9.2	26.4	32.5	62.8	67.9	35.2	65.5	24.9	10.0
D	43.8	8.4	7.9	9.1	27.2	32.4	51.3	52.0	29.2	50.3	21.7	10.0
C	35.9	8.3	7.9	8.1	10.3	14.1	33.6	35.2	14.6	40.3	20.5	10.0

Note: The 40-30-30 and 60-20-20 indices should be used in applying these objectives to the Sacramento River and the San Joaquin River watersheds respecitively in October and February through June. For the remaining months, use the 40-30-30 index for both watersheds

Combined use of the SWP and the CVP points of diversion in the Delta is allowed under this alternative, limited only by the combined physical capacities of the pumping plants and by each project's annual authorized diversion. Combined use is allowed in order to reduce the water supply impact to the export contractors caused by the use of the export facilities to meet the Vernalis flow objectives.

g. Flow Alternative 7. This alternative is similar to Flow Alternative 2, with the following exceptions. Under this alternative, the flow objectives for the San Joaquin River at Vernalis are replaced by minimum flows at Vernalis identified in the document titled "Letter of Intent among Export Interests and San Joaquin River Interests to Resolve San Joaquin River Issues Related to Protection of Bay/Delta Environmental Resources" (SJRTG 1996). The following minimum flows at Vernalis are identified in the letter of intent: (1) a base flow in all years of 1,000 cfs for the period February 15 through May 31, and 1,000 cfs during the month of October and (2) a pulse flow, inclusive of the base flow, during the April through May period equivalent to 31 days of 2,000 cfs in critically dry years, 3,000 cfs in dry years, 4,000 cfs in below normal years, and 5,000 cfs in above normal and wet years.

Table II-8
Flow Alternative 5 Responsible Parties

Watershed	Reservoir	Entity Responsible for Remaining Deficiencies
Stony Creek	Black Butte Reservoir	Local USBR Contractors
Sacramento River	Shasta Lake	CVP Contractors
Feather River	Lake Oroville	SWP Contractors and Feather River Districts
Yuba River (lower)	New Bullards Bar	Yuba County Water Agency
Yuba River (upper)	Nevada ID reservoirs	Nevada ID and Oroville Wyandotte ID
Bear River (lower)	Camp Far West Lake	South Sutter WD and Camp Far West ID
Bear River (upper)	Combie, Rollins reservoirs	Nevada ID, PG&E
American River	Folsom Lake	CVP Contractors
Cosumnes River	Jenkinson Lake	Local USBR Contractors
Mokelumne River	Camanche and Pardee lakes	East Bay MUD
Calaveras River	New Hogan Reservoir	Local USBR Contractors
Stanislaus River	New Melones Reservoir	Local USBR Contractors
Tuolumne River (lower)	New Don Pedro Reservoir	Modesto and Turlock ID
Tuolumne River (upper)	Hetch Hetchy Complex	San Francisco PUC
Merced River	Lake McClure	Merced ID
Chowchilla River	Eastman Lake	Local USBR Contractors
Fresno River	Hensley Lake	Local USBR Contractors
San Joaquin River	Millerton Lake	Friant Project Contractors

Table II-9
Flow Alternative 5 Responsibility of Parties in the Yuba, Bear and Tuolumne River Watersheds

Agency	Percent of Total Depletion
Yuba River Watershed	
Yuba County WA	24.83
PG&E	56.95
Nevada ID	8.74
Oroville Wyandotte ID	9.48
Bear River Watershed	
Nevada ID	34.90
South Sutter WD	57.55
Camp Far West ID	7.55
Tuolumne River Watershed	
City of San Francisco	21.1
Modesto ID	20.6
Turlock ID	58.3

Table II-10
Flow Alternative 6
Consumptive Use Requirements Within the Southern Delta

Month	Flow (cfs)
June	1,120
July	1,400
August	1,330
September	1,060
November	760
December	720
January	570

Table II-11 identifies the water users in the San Joaquin Basin that will provide any required flows. The table also identifies the priority under which water will be released and the quantity of water under each priority. For example, Merced Irrigation District (Merced ID) is responsible for the first 25 TAF of required water in each year. Due to modeling complexities, the exchange contractors allocated share was not modeled. Obligations of Modesto/Turlock Irrigation Districts (MID/TID) and Merced ID are met directly by reoperation of New Don Pedro Reservoir and Lake McClure.

Minimum fishery flows below Goodwin Dam on the Stanislaus River are maintained at 156 TAF in critical water years, 181 TAF in dry and below normal years, and 206 TAF in above normal and wet years. Up to 49 TAF/year is delivered to CVP contractors on the Stanislaus River above Goodwin Dam in wet and above normal years. No deliveries are made in other water years. Water quality releases from New Melones Reservoir are capped at 70 TAF/year.

h. **Flow Alternative 8**. This alternative is similar to Flow Alternative 2 with the following exceptions. Under this alternative, the April 15 to May 15 pulse flow objectives for the San Joaquin River at Vernalis are replaced by the target flows in the San Joaquin River Agreement (SJRA) (SJRGA 1998). The San Joaquin River Group Authority (SJRGA) agencies[2] will release water to meet the target flows up to a maximum of 110 TAF. In addition, the export limits in the Bay/Delta Plan during the April to May Vernalis pulse flow are replaced by export limits in the SJRA. The modeling of Flow Alternative 8 in this EIR is in accordance with the SJRA, which is similar to, but not identical with, the Vernalis Adaptive Management Plan (VAMP).

2 San Joaquin River Group Authority member agencies are: (1) Modesto Irrigation District, (2) Turlock Irrigation District, (3) Merced Irrigation District, (4) Oakdale Irrigation District, (5) South San Joaquin Irrigation District, (6) the San Joaquin River Exchange Contractors Water Authority on behalf of its member agencies, (7) the Friant Water Users Authority on behalf of its member agencies, and (8) the City and County of San Francisco.

Table II-11
Flow Alternative 7
Responsible Parties in the San Joaquin Basin (Excluding the CVP)

Priority of Release	Responsible Party	Release (TAF)
1	Merced ID	25
2	Oakdale/South San Joaquin ID	10
3	San Joaquin River Exchange Contractors	5
4	Modesto/Turlock ID	10
5	Merced ID	6
6	Oakdale/South San Joaquin ID	2.4
7	San Joaquin River Exchange Contractors	1.2
8	Modesto/Turlock ID	2.4

The SJRA provides a mechanism for conducting the VAMP, an experiment to determine the relative impact of flow in the San Joaquin River and exports in the Delta on chinook salmon in the lower San Joaquin River. The VAMP is designed to assess the effect of export pumping at various specific river flows, which range from 3,200 cfs to 7,000 cfs.

SJRA Vernalis Target Flows. The Vernalis Target Flows are to be provided as specified in Table II-12, based upon "existing flow" at Vernalis. The existing flow is the forecasted San Joaquin River flow at Vernalis that would exist in the absence of the VAMP. It takes into account minimum instream flows required by the Davis-Grundsky Act and the Federal Energy Regulatory Commission (FERC), releases from New Melones Reservoir in accordance with the Interim Operation Plan, upstream flood releases required by the U.S. Army Corps of Engineers (USCOE), and local runoff.

The target flows may be modified depending on forecasts of water-year type, using the San Joaquin Valley "60-20-20" Water Year Hydrologic Classification. Modifications are accomplished by giving each water-year type a numeric indicator as shown in Table II-13. If the sum of the current year's indicator and the previous two years' indicators is four (4) or less, the parties to the SJRGA are not required to provide flows above the existing flow. If the sum of the current year's indicator and the previous year's indicator is seven (7) or greater, the parties must provide a target flow one level higher than they normally would provide (i.e., if the sum of the indicators is 7 and the existing flow is 2,050 cfs, the parties must provide a target flow of 4,450 cfs). This is referred to as a "double step."

Table II-12
Vernalis Target Flows

Existing Flow (cfs)	Target Flow (cfs)
0-1,999	2,000
2,000-3,199	3,200
3,200-4,449	4,450
4,450-5,699	5,700
5,700-6,999	7,000
7,000 or greater	Existing Flow

There are two principal differences in the flow targets between the VAMP and the SJRA. First, the SJRA allows minimum flow targets of 2,000 cfs, but the minimum flow targets under the VAMP are 3,200 cfs. Second, the obligation of the parties to the SJRA to provide water to meet the flow targets is limited to 110 thousand acre feet (TAF) annually. The SJRA calls for the USBR to purchase water, if possible, to meet the VAMP flow targets under these two circumstances.

In addition to the VAMP flows, the SJRA requires flows at other times of the year from individual member agencies. Merced ID must provide 12,500 AF in October to attract returning adult salmon into the tributaries to spawn. Oakdale Irrigation District (OID) has agreed to make up to 15 TAF available annually to the USBR.

Table II-13
VAMP Hydrologic Classification

SJR Basin Classification	Indicator
Wet	5
Above Normal	4
Below Normal	3
Dry	2
Critical	1

Export Limitations Under the VAMP. In addition to the Vernalis flow targets, the VAMP requires reduced levels of export pumping at the SWP and CVP Delta pumping plants. Combined exports during the pulse flow period are set as shown on Table II-14.

The proposed export limitations called for by the SJRA may be lifted in any year if the operations plan for the year is unacceptable to the parties. This might occur if export limitations substantially reduce the amount of water available to export contractors.

The SJRA is based on several assumptions. Some of these assumptions may have direct or indirect effects on conditions in the Delta. The agreement assumes that New Melones Reservoir will be operated consistent with the USBR's Interim Plan of Operation until a long-term plan of operation is developed. The SJRA further assumes that a barrier will be constructed at the head of Old River and operated in conjunction with the flows provided during the April/May pulse flow period.

Table II-14

SJRA Operational Structure

Vernalis Target Flows (cfs)

Export Limits	2,000	3,20	4,450	5,700	7,000
1,500	X	X	X		X
2,250				X	
3,000					X

2. Suisun Marsh Salinity Objectives Alternatives

Existing modeling indicates that the eastern marsh objectives (Stations C-2, S-64, and S-49) and two of the western marsh objectives (Stations S-21 and S-42) will be met, with very limited exceptions, through Suisun Marsh Salinity Control Gates (SMSCG) operation and implementation of the Delta outflow objectives. Therefore, the EIR will not consider separate alternatives to meet these objectives. The SWP and the CVP are responsible for achieving these objectives because they control the SMSCG operation. An exception to this responsibility may be made when: (1) hydrologic conditions are such that even with full-bore gate operation and implementation of the Delta outflow objectives, the Suisun Marsh objectives cannot be achieved; or (2) the SMSCG can not be operated full bore and/or it is physically modified in response to regulatory constraints. This section of the EIR will analyze methods to meet the remaining two western marsh objectives (Stations S-35 and S-97) (see Figure VII-1 for a map of station locations).

a. Suisun Marsh Alternative 1 (No Project a). The SWP and the CVP are responsible for meeting D-1485 Suisun Marsh objectives, as modified by subsequent SWRCB actions. The SMSCG are in place and operated to meet the objectives to the extent possible. The DWR and the USBR take no further action to meet the D-1485 western marsh objectives.

b. Suisun Marsh Alternative 2 (No Project b). The SWP and the CVP are responsible for meeting D-1485 Suisun Marsh objectives, as modified by subsequent SWRCB actions. The SMSCG are in place and operated to meet objectives to the extent possible. In addition, the DWR and the USBR prepare and implement a plan to achieve full compliance with the western marsh objectives. For purposes of analysis, the plan is assumed to consist of flow augmentation up to

80 cfs in Green Valley Creek with water from the North Bay Aqueduct and construction of a Cordelia-Goodyear Ditch and a Goodyear Slough Tide Gate, if necessary to fully comply with the objectives. A preliminary analysis of this action, along with 17 other actions, was undertaken by the DWR and reported in a document titled "Screening Alternative Actions and Describing Remaining Actions for the Proposed Western Suisun Marsh Salinity Control Project" (DWR 1993). The analysis of this alternative will be programmatic only. A subsequent EIR would have to be done by the DWR and the USBR before implementation of this alternative.

c. Suisun Marsh Alternative 3. The SWP and the CVP are responsible for meeting Bay/Delta Plan Suisun Marsh objectives. The SMSCG are in place and operated to meet the objectives to the extent possible. The DWR and the USBR take no further action to meet the Bay/Delta Plan western marsh objectives.

d. Suisun Marsh Alternative 4. The SWP and the CVP are responsible for meeting Bay/Delta Plan Suisun Marsh objectives. The SMSCG are in place and operated to meet objectives to the extent possible. In addition, the DWR and the USBR prepare and implement a plan to achieve full compliance with the western marsh objectives. For purposes of analysis, the plan is assumed to consist of flow augmentation up to 80 cfs in Green Valley Creek with water from the North Bay Aqueduct and construction of a Cordelia-Goodyear Ditch and a Goodyear Slough Tide Gate, if necessary, to fully comply with the objectives. A preliminary analysis of this action, along with 17 other actions, was undertaken by the DWR and reported in a document titled "Screening Alternative Actions and Describing Remaining Actions for the Proposed Western Suisun Marsh Salinity Control Project" (DWR 1993). The analysis of this alternative will be programmatic only. A subsequent EIR would have to be done by the DWR and the USBR before implementation of this alternative.

e. Suisun Marsh Alternative 5. Bay/Delta Plan outflow objectives are in effect and the SMSCG are in place and operated to meet objectives to the extent possible. The parties to the Suisun Marsh Preservation Agreement, Amendment III (DWR, USBR, DFG, and Suisun Resources Conservation District) take management actions to protect the beneficial uses of the managed wetlands of the western marsh, including: (1) meeting channel-water salinity objectives in Order WR 98-09 (2) converting S-35 and S-97 from compliance stations to monitoring stations, (3) September operation of the SMSCG, (4) a water manager program, (5) updating existing land management plans, (6) a joint-use facilities program, (7) establishment of a managed wetland improvement fund, (8) purchase of portable diversion pumps with fish screens, (9) purchase of portable drainage pumps, (10) the realignment and stabilization of the Roaring River distribution system turnouts, and (11) a drought response fund.

Under this alternative, the two western marsh numerical salinity objectives may not always be met, but the intent is to provide approximately equivalent protection to the managed wetlands. The Bay/Delta Plan states that the numerical objectives do not have to be achieved if a demonstration of equivalent or better protection is provided at the location.

f. **Suisun Marsh Alternative 6**. Multiple parties are responsible for full implementation of the 1995 Bay/Delta Plan western marsh objectives through flow augmentation in Green Valley Creek. Water comes from: (1) the Fairfield Treatment Plant, (2) Lake Frey and Lake Madigan, and (3) Lake Berryessa. Lake Berryessa water could be repaid to the Solano Project by the DWR and the USBR through the North Bay Aqueduct unless the Solano Project has an obligation to the Delta under the outflow alternatives in which case that obligation may be met through releases into the western marsh.

3. Salinity Control Alternatives in the San Joaquin Basin

Salinity control measures can be used to achieve the Vernalis salinity objectives either alone or in combination with dilution water releases. The Central Valley Regional Water Quality Control Board (CVRWQCB) is principally responsible for implementing salinity control measures in the San Joaquin Valley. The purpose of the analysis in Chapter VIII of this EIR is to review the existing salinity control actions in the San Joaquin Valley and to analyze any new salinity control alternatives that are not presently being implemented or analyzed in some other forum. The information will be used by the SWRCB to decide whether it should recommend further evaluation and implementation of salinity control measures to the CVRWQCB. An SWRCB decision to recommend evaluation of a salinity control measure by the CVRWQCB does not require CEQA compliance. Nonetheless, the salinity control alternatives are analyzed at the programmatic-level to provide information to the SWRCB and to interested parties.

Most of the possible salinity control actions are being implemented or evaluated in some forum by either the SWRCB, the CVRWQCB, the CALFED program, the DWR, or the USBR. An exception is controlled timing of wetland and tile drain discharges to maximize use of the assimilative capacity of the river. These alternatives are analyzed in this EIR. The SWRCB and the CVRWQCB have authority, under Water Code section 13260, et seq., to require persons discharging waste that could affect the quality of the state's waters to report on the discharges and to obtain waste discharge requirements before continuing the discharges.

a. **Salinity Control Alternative 1**. In this reference case, no salinity control action is taken. The wetland and agricultural tile drain discharges continue to flow into the San Joaquin River in accordance with present practices. Present practices are described in Chapter VIII. The Bay/Delta Plan objectives at Vernalis are achieved through the provision of dilution water from New Melones Reservoir.

b. **Salinity Control Alternative 2**. Under this alternative, the CVRWQCB implements a regulatory program or coordinates a cooperative program in which wetland operators within Grasslands Water District shift their releases during the months of March and April to the month of February. This program is implemented whenever the salinity objectives at Vernalis during the month of March are likely to be exceeded. The shift of all releases from the months of March and April to February can adversely affect the diversity of waterfowl food in the managed wetlands

because different plants are favored depending on when the land is drained. In order to avoid this effect, 10 TAF of additional CVPIA water is provided in both March and April to maintain a flow through system in the wetlands.

c. Salinity Control Alternative 3. Under this alternative, the CVRWQCB implements a regulatory program or coordinates a cooperative program in which parties with tile drainage systems hold the drainage for limited periods when assimilative capacity is not available in the San Joaquin River. The parties would have flexibility in deciding how to temporarily cease their discharge. For illustrative purposes, the assumption in this programmatic analysis is that the parties store their drainage in laterals, submains, sumps, and the soil column for up to three months. To model this alternative, the following criteria are used to simplify the analysis. When the Vernalis salinity objective is exceeded in January, tile drainage is stored in January, February, and March and released in April and May. When the Vernalis salinity objective is exceeded in June, July, or August, tile drainage is also held in June, July, and August and released in September and October. Actual implementation of this alternative would probably be based on real-time data and operations.

d. Salinity Control Alternative 4 (Combination of Alternatives 2 and 3). This alternative combines the operational measures in both Alternative 2 and Alternative 3. The CVRWQCB implements a regulatory program or coordinates a cooperative program in which (1) wetland operators within Grasslands Water District shift their releases during the months of March and April to the month of February, and (2) parties discharging subsurface agricultural drainage hold the drainage when assimilative capacity is not available in the San Joaquin River.

4. Southern Delta Salinity Objectives Alternatives (Excluding Vernalis)

The Bay/Delta Plan establishes agricultural salinity objectives at three locations in the southern Delta (excluding Vernalis). Salinity at these locations is affected principally by the salinity of the San Joaquin River entering the Delta, local agricultural diversions and discharges, and SWP and CVP export operations.

Implementation of the Bay/Delta Plan objectives at Vernalis will change SWP and CVP export operations and will increase flows at Vernalis. These actions will affect salinity in the southern Delta. Also, the DWR and the USBR are evaluating alternatives to implement these salinity objectives, along with other program goals, through the Interim South Delta Program (ISDP). Therefore, the program of implementation for this objective will rely, in part, on construction and operation of the barriers proposed in the ISDP. This EIR will document the effect of barrier operation on flows in the southern Delta, salinity, and minimum water levels. Environmental effects of barrier construction and operation are analyzed in the DWR's draft EIR for the ISDP and are summarized in this report. Because the program of implementation for these objectives depends on construction of a project by another agency that is independently complying with CEQA, the analysis in this EIR is programmatic.

a. Southern Delta Salinity Alternative 1 (No Project). The SWP and the CVP are responsible for meeting D-1485 flow objectives. Existing temporary barriers in the southern Delta are installed and operated to improve salinity conditions in the south Delta. No further action is taken to implement the south Delta salinity objectives.

b. Southern Delta Salinity Alternative 2. The Bay/Delta Plan flow objectives are met by implementation of one of the flow objective alternatives. Existing temporary barriers in the southern Delta are installed and operated by the SWP and the CVP to improve salinity conditions in the southern Delta. No further action is taken to implement the southern Delta salinity objectives.

c. Southern Delta Salinity Alternative 3. The Bay/Delta Plan flow objectives are met by implementation of one of the flow objective alternatives. The barriers proposed in the ISDP are constructed and operated by the SWP and the CVP to achieve the southern Delta salinity objectives to the extent feasible.

5. Dissolved Oxygen Objective Alternatives

The factors affecting dissolved oxygen concentrations in the San Joaquin River between Stockton and Turner Cut that can be controlled are flow and biochemical oxygen demand (BOD) from point and nonpoint sources. Implementation of the Bay/Delta Plan flow and salinity objectives at Vernalis will affect dissolved oxygen concentrations. Further flow augmentation in the San Joaquin River at Vernalis to meet the dissolved oxygen objective is not proposed as an alternative; however, the sensitivity of the flow/dissolved oxygen relationship is evaluated.

Flow augmentation in the San Joaquin River in the vicinity of Stockton will occur if southern Delta channel barriers are constructed through the ISDP. Therefore, the program of implementation for this objective will rely both on flow augmentation through construction and operation of the barriers proposed in the ISDP and on enhanced wastewater treatment at the Stockton Treatment Plan to reduce the BOD loading. The analysis of these alternatives is programmatic because their implementation requires further action by other parties. Environmental effects of barrier construction and operation are analyzed in the DWR's draft EIR for the ISDP, and they are summarized in this report. The analysis of operations to implement dissolved oxygen objectives in the 1995 Bay/Delta Plan is not included in the ISDP draft EIR and has not been evaluated previously. Environmental effects of enhanced wastewater treatment must be analyzed by the City of Stockton and will be reviewed through the CVRWQCB's permitting process. Anticipated effects are summarized in this report.

a. Dissolved Oxygen Alternative 1 (No Project). The SWP and the CVP are responsible for meeting D-1485 flow objectives. The quantity and quality of effluent from the Stockton Wastewater Treatment Plant (WWTP) are at present levels. The head of Old River temporary barrier is installed in September, October, and November. No further water right action is taken to implement the dissolved oxygen objective. This is the existing condition.

b. Dissolved Oxygen Alternative 2. The 1995 Bay/Delta Plan flow objectives are met by implementation of one of the flow alternatives. Effluent quantity and quality from the Stockton WWTP are at present levels. The head of Old River temporary barrier is installed in September, October, and November. No further action is taken to implement the dissolved oxygen objective.

c. Dissolved Oxygen Alternative 3. The 1995 Bay/Delta Plan flow objectives are met by implementation of one of the flow alternatives. Effluent quantity and quality from the Stockton WWTP are at present levels. The permanent barriers proposed in the ISDP are constructed and operated and the barrier at the head of Old River is closed in September, October, and November.

d. Dissolved Oxygen Alternative 4. The 1995 Bay/Delta Plan flow objectives are met by implementation of one of the flow alternatives. The permanent barriers proposed in the ISDP are constructed and operated and the barrier at the head of Old River is closed in September, October, and November. The discharge quantity from the Stockton treatment plant is at the present levels; however, the effluent meets CBOD and ammonia effluent limits as specified in the NPDES permit issued by the CVRWQCB and shown in Table X-6. Stockton complies with the permit limits by constructing enhanced treatment facilities.

6. Combined Use of SWP and CVP Points of Diversion Alternatives

Combined use of SWP and CVP points of diversion was first authorized in 1978 in condition 3 of D-1485. Condition 3 allowed the USBR to use SWP pumps to recover, later in the year, water that could not be exported during May and June because of operational constraints to minimize entrainment of striped bass. On December 7, 1981, the USBR filed a petition requesting that the SWRCB add the DWR's Banks Pumping Plant as a point of diversion and rediversion under the USBR's permits. This request was repeated in a subsequent petition filed on September 24, 1985. The SWRCB notified the USBR that it would defer action on the USBR's request until a Bay/Delta water rights hearing was held. The SWRCB approved short-term combined use of the points of diversion of the SWP and the CVP through Water Right Orders WR 95-6 and WR 98-09, subject to the condition that such use must benefit fish and wildlife and not result in increased average exports.

The following alternatives for combined use of SWP and CVP points of diversion (Joint POD) are considered. In all of the alternatives, the assumption is made that the SWP and the CVP are exclusively responsible for meeting the objectives in the Bay/Delta Plan unless specifically stated otherwise. For Alternatives 1 through 6 and 9, the assumption is made that temporary barriers are installed and operated in the southern Delta.

a. Joint POD Alternative 1 (No Project). D-1485 objectives are in effect. The CVP is authorized to use the SWP's point of diversion in the Delta only to make up deficiencies caused by export restrictions in D-1485 in May and June.

b. Joint POD Alternative 2. The Bay/Delta Plan objectives are in effect. Combined use of points of diversion is not authorized.

c. Joint POD Alternative 3. The Bay/Delta Plan objectives are in effect. The CVP is authorized to use the SWP's point of diversion in the Delta to deliver up to 129 TAF of contract water to the Cross Valley Canal, Musco Olive, Tracy Golf Course, and the VA cemetery. Combined use of the SWP and the CVP points of diversion in the Delta is limited by the terms and conditions in SWP and CVP water right permits that specify permitted diversion rates of the projects in the Delta. USCOE Public Notice 5820-A (PN 5820-A), as amended further limits use of the SWP point of diversion.

The SWP and the CVP water right permits include instantaneous diversion and rediversion rates (10,350 cfs for the SWP at Banks Pumping Plant and 4,600 cfs at Tracy Pumping Plant) as well as rates of diversion to storage in San Luis Reservoir (10,350 cfs for the SWP and 4,200 cfs for the CVP). The SWP's Banks Pumping Plant has capacity to pump up to 10,350 cfs. However, PN 5820-A limits daily diversions into Clifton Court Forebay to 13,870 acre-feet and limits 3-day average diversions to 13,250 AF/day, except in winter when San Joaquin River flow is high. From December 15 to March 15, DWR may divert an additional amount equal to one-third of the total flow at Vernalis when flows at Vernalis exceed 1,000 cfs. The conditions of PN 5820-A effectively limit the operating capacity of Banks Pumping Plant to 6,680 cfs much of the time.

d. Joint POD Alternative 4. The Bay/Delta Plan objectives are in effect. Combined use of the SWP and the CVP points of diversion in the Delta is authorized for the purposes identified in Alternative 3. Additionally, the Joint POD is authorized if the purpose is to provide a net benefit to fish and wildlife. Any pumping losses incurred by either of the projects as a result of reductions to benefit fish will be allowed to be made up within 12 months utilizing either or both pumping plants. Combined use of the SWP and the CVP points of diversion in the Delta is limited by the terms and conditions in SWP and CVP water right permits that specify permitted diversion rates of the projects in the Delta. Use of the SWP point of diversion is further limited by PN 5820-A, as amended.

e. Joint POD Alternative 5. This alternative builds on Alternative 3, however, the use of water authorized under the Joint POD is not restricted to deliveries to the entities specified in that alternative. The Bay/Delta Plan objectives are in effect. Combined use of the SWP and the CVP points of diversion in the Delta is limited by the terms and conditions in SWP and CVP water right permits that specify permitted diversion rates of the projects in the Delta. Use of the SWP point of diversion is further limited by PN 5820-A, as amended.

f. Joint POD Alternative 6. The Bay/Delta Plan objectives are in effect except that minimum San Joaquin River flows at Vernalis are as specified in the Letter of Intent, as in Flow Alternative 7

(see section E.1.g., above). Combined use of the SWP and the CVP points of diversion in the Delta is limited by the terms and conditions in SWP and CVP water right permits that specify diversion rates of the projects in the Delta. Use of the SWP point of diversion is further limited by PN 5820-A, as amended.

g. Joint POD Alternative 7. This alternative builds on Alternative 5. The Bay/Delta Plan objectives are in effect. The purpose of use of the Joint POD is not restricted. Combined use of the SWP and the CVP points of diversion in the Delta is limited by the permitted diversion rates of the projects in the Delta. The SWP and the CVP permits include instantaneous diversion and rediversion rates as well as rates of diversion to storage in San Luis Reservoir. However, the restrictions imposed by PN 5820-A are not in effect. The modeling of the alternative assumes that permanent barriers as proposed in the ISDP are installed and operating in the southern Delta.

h. Joint POD Alternative 8. This alternative builds on Alternative 7. The Bay/Delta Plan objectives are in effect. Combined use of the SWP and the CVP points of diversion in the Delta is limited only by the combined physical capacities of the pumping plants and by each project's annual authorized diversion.

i. Joint POD Alternative 9. The alternative has the same regulatory conditions as Flow Alternative 8 except that combined use of SWP and CVP points of diversion in the Delta is authorized. Combined use of the SWP and the CVP points of diversion in the Delta is limited by the permitted diversion rates of the projects in the Delta. Combined use of points of diversion is further limited by PN 5820-A, as amended. This alternative assumes that temporary barriers are installed and operated in the southern Delta. The alternative further assumes that New Melones Reservoir is operated in accordance with the Interim Operations Plan.

Literature Cited in Chapter II

DWR. 1993. Screening Alternative Actions and Describing Remaining Actions for the Proposed Western Suisun Marsh Salinity Control Project. DWR and USBR. State Clearinghouse Number 90030973. May 1993. 100 pp. Plus appendices.

Grober, Leslie F. 1996. Sources and Circulation of Salt in the San Joaquin River Basin. CVRWQCB. Proceedings of the North American Border and Environmental Congress, ASCE Conference. June 24-26, 1996. Anaheim, California. (Proceedings on CDROM).

SJRGA. 1998. The San Joaquin River Agreement. San Joaquin River Group Authority.

SJRTG. 1996. Letter of Intent Among Export Interests and San Joaquin River Interests to Resolve San Joaquin River Issues Related to Protection of Bay-Delta Environmental Resources. Prepared by the San Joaquin River Tributaries Group. 10 pp.

WPRS. 1980. Report on the Effects of the CVP upon the Southern Delta Water Supply Sacramento-San Joaquin River Delta, California. Prepared Jointly by the Water and Power Resources Service and the South Delta Water Agency. June 1980. 179 pp. plus appendices.

SMPA. 1998. Draft Amendment Number 3 to the Suisun Marsh Preservation Agreement among the USBR, DWR, DFG and Suisun Resource Conservation District. June 20, 1998. 37 pp. plus attachments.

Personal Communication

Hildebrand, Alex. South Delta Water Agency, Stockton, CA. December 19, 1996. Personal Communication.