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STATE WATER RESOURCES CONTROL BOARD
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DIV. OF WATER RIGHTS SACRAMENTO

STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

In the Matter of :

FISHERY RESOURCES AND WATER RIGHT ISSUES OF THE LOWER YUBA RIVER

Water Right Decision 1644

PETITION FOR RECONSIDERATION
(Title 23 California Code of Regulations sections 768 et seq.)

PLEASE TAKE NOTICE that the STATE OF CALIFORNIA DEPARTMENT OF FISH AND GAME, a party in the underlying administrative proceeding as provided in Title 23 California Code of Regulations section 648.1, does hereby petition the State Water Resources Control Board (hereinafter "the Board") to reconsider its Water Rights Decision 1644 adopted on March 1, 2001. The Board should reconsider this Decision upon the following grounds:

(1) one or more irregularities has occurred in the proceedings which has prevented the Department of Fish and Game and other parties from having a fair hearing (23 C.C.R. 768(a)) in that the Board has received, considered, and accepted as evidentiary testimony policy comments made after the close of the evidentiary hearing from both identified parties, and others, without providing an opportunity for cross-examination or rebuttal, without requiring such

comments be provided in writing prior to the start of the evidentiary hearing, and without requiring such testimony be provided under oath;

(2) one or more elements of the Decision are not supported by substantial evidence (23 C.C.R. 768(b)); and

(3) in adopting the Decision the Board has committed several clear errors in law. (23 C.C.R. 768(d).)

Based upon these grounds the Department of Fish and Game requests the Board strike from its Decision the following:

(1) the provisions of the Decision and Order allowing the Yuba County Water Agency to measure its minimum instream flow releases on "5-day running averages, with the instantaneous flow never to be less than 90 percent of the applicable requirement." (Water Right Decision 1644, pp. 76, 77, and 78);

(2) the provisions of the Decision and Order allowing the Yuba County Water Agency to reduce instream flow requirements if the Yuba County Water Agency estimates for any one calendar year that it will have a delivery deficiency "of more than 20 percent of projected demand" (Water Right Decision 1644, pp. 128, 133-136, and 185-187); and

(3) the provisions of the Decision and Order allowing the Yuba County Water Agency to operate with reduced instream flow releases until April 21, 2006 because of a "critical electrical power situation" (Water Right Decision 1644, pp. 34, 131, and 179.)

Copies of this Petition and the attached Memorandum of Points and Authorities will be sent to all interested parties. (See Declaration of Service attached herewith.)

Dated: April 2, 2001

Respectfully submitted,

BILL LOCKYER
Attorney General

By: [signature]
WILLIAM D. CUNNINGHAM
Deputy Attorney General
Attorneys for the State of California
Department of Fish and Game

MEMORANDUM OF POINTS AND AUTHORITIES IN SUPPORT OF PETITION FOR RECONSIDERATION

BACKGROUND

In February of 1988 the Board received a complaint regarding fishery protection and water rights on the lower Yuba River. The complaint was filed by a coalition of fishery groups and alleged that the instream flow requirements in the Yuba County Water Agency's (hereinafter "YCWA") water right permits and the existing fish screening facilities did not provide an adequate level of protection of fishery resources in the lower Yuba River. In May of 1988 the Department of Fish and Game (hereinafter "the Department") formally requested that the Board revise existing streamflow and temperature requirements on the lower Yuba River in accordance with the recommendations set forth in the "Lower Yuba River Fisheries Management Plan" prepared pursuant to Public Resources Code 10000 et seq. Before the Board could convene a hearing to resolve these two related issues the YCWA filed a suit in federal court to enjoin the Board from even considering revisions to the water temperature and instream flow requirements specified in its water rights permits. After considerable delay YCWA's request for an injunction was denied and the first round of Board hearings began on February 10, 1992.

At the 1992 hearings the adequacy of the then existing streamflow and temperature requirements associated with YCWA's Yuba River Project were examined. The minimum flows presently specified in YCWA's Water Rights Permits 15026, 15027 and 15030 are based on a 1962 agreement between YCWA and the Department. Although this agreement was superseded by a 1965 agreement between the two agencies, YCWA's water rights permits for consumptive use were never amended to reflect this 1965 agreement. At the 1992 hearing the Department presented evidence that the production of anadromous fish in the lower Yuba River has been severely limited by the terms of the 1965 agreement (DFG Exhibit 26 (1992); Reporter's Transcript ("RT") Volume I, pp. 40 and 60), other parties presented similar testimony, and no expert testimony from any party was presented that the 1965 agreement would provide suitable protection for lower Yuba River fisheries. (Draft Decision, April 28, 1996; page 39.)

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Following the 1992 hearings a Draft Decision was not generated until April of 1996. No action was taken on that Draft Decision by the Board until 1999 when a copy of the Draft Decision was released to the parties.

Since 1992 the YCWA continues to operate under instream fishery and resource protection constraints put in place over 35 years ago. Since 1992 the YCWA has continued to divert ever increasing amounts of water from the lower Yuba River for delivery to its customer districts, continued its efforts to develop new customers and expand its scope of operations, and done little or nothing to explore water conservation and re-use programs. Since 1992 the California Fish and Game Commission has been forced to list the Spring-Run Chinook Salmon as a threatened species in 1999 under the California Endangered Species Act and the federal government has listed the "Central Valley" Spring-Run Chinook as a threatened species and the "Central Valley" Steelhead Trout as threatened under the federal Endangered Species Act.

On December 21, 1999, the Board noticed a new round of evidentiary hearings in this matter. Concluding that the Board's delay in taking any action in the matter now required a "supplemental" hearing to receive and examine "relevant new information", the Board hearing notice identified nine "key issues" for additional testimony. The hearing notice also clearly spelled out that the supplemental hearing would be conducted pursuant to Article 2 of the Board's rules (beginning with section 648). Each party intending to participate was required to submit a Notice of Intent to Appear, submit written testimony, exhibits, and statements of qualification and subsequently appear and present their witnesses for oral testimony and cross-examination under oath. Policy statements could be submitted pursuant to 23 C.C.R. 648.1(d) by interested persons or parties but were clearly delimited as <u>nonevidentiary statements</u> – "[p]ersons making policy statements must not attempt to use their statements to present evidence of fact either orally or through introduction of written exhibits."

Thirteen additional days of hearings were conducted with the hearing evidentiary record again closed on May 17, 2000 and closing arguments were filed by all parties no later than July 10, 2000.

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On or about, November 7, 2000 a revised draft decision was released by the Board. The Board heard comments on the revised draft in public meetings on December 4, 2000 and January 11, 2001.

Now, "based on the SWRCB's consideration of issues raised in oral and written comments on the draft decision dated November 7, 2000" (Water Right Decision 1644, p. 3), the Board has substantially revised its draft decision and adopted the revised decision on March 1, 2001.

ARGUMENT

I

THE BOARD HAS COMMITTED AT LEAST TWO CLEAR ERRORS IN LAW THAT REQUIRE RECONSIDERATION OF WATER RIGHT DECISION 1644

Pursuant to the Board's own rules the Board may reconsider a decision or order if there has been an "error in law." (23 C.C.R. 768(d).)

A. The Board's Revision of Its November 7, 2000 Draft Decision Based on the Oral and Written Comments Received At Its December 4, 2000 and January 11, 2001Public Meetings Is A Clear Error In Law

The Board has adopted a specific set of procedural rules for the conduct of adjudicatory hearings including the kind of adjudicatory hearing conducted to receive and consider evidence on the matter herein. Section 648 of those rules specifically states that the Board's rules apply to "adjudicative proceedings." (23 C.C.R. 648.) The December 21, 1999 Notice of Public Hearing provided by the Board in this matter also clearly identified the Board's rules as the sole rules of conduct for the evidentiary hearing herein. Only chapter 4.5 of the Administrative Procedure Act (commencing with section 11400 of the Government Code), section 801-805 of the Evidence Code, and section 11517 of the Government Code, are incorporated into the hearing process and, even then, Articles 8, 13, and 14 of Chapter 4.5 of the Administrative Procedure Act are excluded. (23 C.C.R. 648.)

The Board's rules set mandatory requirements for identification of parties (section 648.1), identification of witnesses and presubmission of testimony (section 648.4), and the presentation of <u>nonevidentiary</u> comments or policy statements by non-party interested persons (section 648.1(d).) All testimony and evidentiary presentations must be under oath and subject to cross-examination. (sections 648.4(d), 648.5(a)(b), *see also* Government Code section 11513(a) and (b).) Now, after the hearing record has been closed for more than six months the Board's Decision acknowledges that it has incorporated materials, both oral and written, received at the December 4th and January 11th public meetings – materials never verified under oath, materials and witnesses never available for cross examinations, and materials and testimony never permitted rebuttal. (State Water Decision 1644, p.3.)

The Department believes that portions of these materials received at the recent public meetings were clearly evidentiary in nature and asserts herein that such have been incorporated into Water Right Decision 1644. Specifically such materials appear to have been incorporated into the Board's substantial revisions of the November 7th draft decision which appear in Section 8.4 of the Decision allowing for temporary modification of instream flows to prevent any YCWA delivery deficiency in excess of 20%.

At no time during any of the evidentiary presentations in 1992 or the supplemental evidentiary presentations in 2000 was the subject of a 20% deficiency cap raised, presented, cross examined, or discussed. The record is full of discussions and testimony about water year types and instream flow reductions in certain types or categories of years. The YCWA, the Department of Fish and Game, and other parties testified at length about the impacts dry and critically dry years had on water availability within the Project and instream release flows necessary to keep the fish and other biological resources of the lower Yuba River in good condition during these dry years. The November 7, 2000 draft decision and Decision 1644 already disproportionately reduce instream releases in all below normal water years.[1/] While YCWA presented testimony and argued about delivery deficiencies in some water years no testimony was presented about the

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1. Spring and Summer instream release flows in dry and critically dry years are reduced anywhere from 50% to over 80% in some months from flows available in normal or above normal years.

need to restrict YCWA's deficiency to 20% for any year or year type. Nor was the Department ever allowed to rebut such a proposal – a proposal that requires the instream fishery resources to absorb all of the impacts of such a deficiency cap.

Incorporation of Section 8.4 into the Decision 1644 clearly violates the Board's own rules about evidentiary presentation and is an error in law pursuant to section 768(d) of Title 23, California Code of Regulations.

B. The Board's Use of "Official Notice" of the Governor's State of Emergency Proclamation to Defer Imposition of Instream Flow Requirements Is Clearly Inappropriate And In Violation of the Law

In footnote 45 of the Decision the Board purports to take "official notice of the fact that, on January 17, 2001, Governor Davis proclaimed a State of Emergency to exist due to the energy shortage in California. The SWRCB also takes official notice that on February 8, 2001, the Governor issued several Executive Orders to expedite application processing and construction of new powerplants and to increase electrical generating capacity in California." (Water Right Decision 1644, p. 127.) Based upon this official notice the Board then boldly concludes "that it is appropriate in this instance to defer imposition of the long-term instream flows requirements established by the decision for a period of approximately five years, until April 21, 2006." (Id.) This conclusion is not supported by the documents as identified and reflects a clear misuse of the concept of "official" or "judicial notice."

The Department does not contest that the Board can use the concept of "official" or "judicial notice" to develop or augment an adjudicatory record before the Board. Section 648.2 of the Board's procedural rules allows the Board to "take official notice of such facts as may be judicially noticed by the courts of this state."[2] Evidence Code section 452 establishes those matters which may by judicially noticed by the courts of this state.

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2. Section 648.2 also allows official notice of generally accepted technical or scientific matter within the Board's field of expertise, providing parties appearing at the hearing have been informed of the matters to be noticed. The Governor's proclamation and executive orders do not appear to fall within this second provision as they can hardly be argued to be matters of a generally accepted technical or scientific nature.

> "Judicial notice may be taken of . . .:
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> . . .
> (c) Official acts of the . . . executive . . . departments . . . of any state . . . .
> . . .
> (g) Facts and propositions that are of such common knowledge . . . that they cannot reasonably be the subject of dispute.
> (h) Facts that are not reasonably subject to dispute and are capable of immediate and accurate determination by resort to sources of reasonably indisputable accuracy."
> (Evidence Code section 452)

The Board apparently misunderstands the application of this concept. In taking "official" or "judicial notice" of the Governor's emergency proclamation and executive orders the Board can only use such notice to establish that the document or documents exist or that the Governor has acted to adopt such documents. Judicial notice cannot be used to establish the truthfulness or proper interpretation of the contents of such documents. (*AL Holding Co. v. O'Brien & Hicks Inc.*, (1999) 75 Cal.App.4th 1310, 1313.)

"When judicial notice is taken of a document, however, the truthfulness and proper interpretation of the document are disputable."(*StorMedia, Inc. v. Superior Court* (1999) 20 Cal.4th 449, Fn. 9.)

The Department does not dispute that the Governor has adopted the emergency proclamation and executive orders identified. The Department most strongly disputes that these documents can be interpreted to support the bold conclusion to delay implementation of necessary instream flow releases for five years without additional evidentiary findings or opportunity for rebuttal.[3]

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3. Furthermore, the Board's Decision provides no discussion nor makes any findings showing a factual or evidentiary nexus between the Governor's actions and the Board's conclusion. The Board's Decision itself clearly notes that "virtually all of the water released to provide instream flows in the lower Yuba River passes through the YCWA and PG&E powerplants . . . [all except flood flows going over the spillways and certain minimum seepage flows.] Therefore, variations in the instream flow requirements for protection of fish in the lower Yuba River would be expected to have minimal impact on the net quantity of water produced." (Water Right Decision 1644, p.126.) While YCWA produced some facts showing that the power generated for peak-market sale in mid-summer was salable at a higher price, the recent history of the electrical power market shows that power available in January, February and March can be sold at prices higher than any on record for summer use.

No facts exist in the present hearing record to show that release of the necessary instream fishery flows will have a negative impact on the amount of power available from the YCWA and PG&E powerplants associated with the Yuba River Project. "Official notice" of the Governor's executive actions neither supplies these facts nor allows reasonable inferences to arrive at the Board's conclusion.

The Department understands that judicial notice may also be used to recognize facts of common knowledge, facts not reasonably subject to dispute, facts reasonably capable of immediate and accurate determination. (See Evidence Code 452 (g) and (h).). The fact that there is an energy crisis in California is perhaps common knowledge, but the nature of the problem is clearly the subject of heated public controversy and both the cause or causes and solutions are anything but undisputed. The California Supreme Court, over fifty years ago, clearly enunciated the ground rules for judicial notice of "common knowledge" facts. The fact must be a matter of common and general knowledge, well established and authoritatively settled. (*Communist Party of U.S. of America v. Peek* (1942) 20 Cal.2d 536.) "If there is any doubt, either as to the fact itself or as to its being a matter of common knowledge, evidence should be required." (*Id.*)

The Board has clearly lost sight of these limitation on judicial notice. Both the causes of California's current electrical energy problems and the nature of any solutions are subjects of honest dispute. As demonstrated in the above-cited case, the existence of this dispute argues against any "notice" of the kind asserted by the Board. Its use of official notice (judicial notice) in arriving at a part of its Decision here is clearly erroneous and a violation of law.[4/]

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4. The Board has also completely failed to identify all of the <u>other</u> facts necessarily inherent somewhere in its deliberative process when it makes the not-so-intuitively-obvious jump from "energy shortage" to a five year relaxation on instream release flows - flows which the Board specifically recognizes have no impact on the net electrical power generation of the project. (Water Right Decision 1644, p. 126.)

III

THE BOARD HAS COMMITTED ONE OR MORE IRREGULARITIES IN THIS PROCEEDING WHICH HAVE PREVENTED THE DEPARTMENT OF FISH AND GAME FROM HAVING A FAIR HEARING

Pursuant to the Board's rules the Board may reconsider a decision or order if there has been an "[i]rregularity in the proceedings . . . by which a person was prevented from having a fair hearing." (23 C.C.R. 768(a).) Both subsections a. and b. of the preceding argument identify acts of the Board which have prevented the Department from having a fair hearing in the matter. In making the "substantial revisions" to its November 7, 2000 draft decision reflected in Decision 1644, as adopted, the Board has both relied on evidence and information generated after the close of the evidentiary hearing and incorporated additional disputed facts into the record in a clearly inappropriate use of "official" or "judicial notice". As pointed out in more detail above, in both cases the Department has been denied the rights guaranteed by both the Board's own procedural rules and the provisions of Government Code section 11513. The Department has never had an opportunity to examine (cross examine) the testimony or witnesses providing the factual basis for the Board's adoption of section 8.4 of the Decision. No opportunity was ever provided to rebut any factual basis for the 20% maximum deficiency cap now unilaterally granted to the YCWA. Similarly, no witnesses were ever made available to question, no presubmitted testimony ever provided to allow the Department an opportunity to explore the basis for the Board's decision to postpone necessary instream flow protection for five years.[5]

> "While administrative bodies are not expected to observe meticulously all of rules of evidence applicable to court trial, *common sense and fair play* dictate certain basic requirements for conduct of any hearing at which facts are to be determined. Among those are the following: the evidence must be produced at the hearing by witnesses personally present, or by authenticated documents, maps or photographs; ordinarily, hearsay evidence standing alone can have no weight (citation omitted) and this

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5. Even the "five years" period appears clearly arbitrary and capricious, with no factual basis in the record or the decision. This term is limited by no subsequent review or determination that the existing energy problems facing the state may have resolved themselves at any time prior to April 21, 2006.

> would apply to hearsay evidence concerning someone else's opinion; furthermore, cross-examination within reasonable limits must be allowed. Telephone calls to officials sitting in the case, statements made in letters and arguments made in petitions should not be considered as evidence."

(*Desert Turf Club v. Board of Sup'rs of Riverside County* (App. 1956); 141 Cal.App.2d 446, 455; emphasis added.)

While the conduct of the actual evidentiary hearings in both 1992 and 2000 in this matter were carefully tailored and most scrupulously managed to guarantee a fair hearing process, the Board's subsequent acts have been clearly arbitrary and most certainly have denied the Department, and others, the objective adjudicative process required by law. In actions taken since release of the November 7, 2000 draft decision the Department has been denied the essential elements of a fair hearing, a hearing the Department spent months working on and years awaiting.

IV

<u>THE BOARD'S WATER RIGHT DECISION 1644 HAS SEVERAL PROVISIONS AND FINDINGS CLEARLY UNSUPPORTED BY SUBSTANTIAL EVIDENCE.</u>

The Board may reconsider a decision or order if it finds that the "decision or order is not supported by substantial evidence." (23 C.C.R. 768(b)/)

Both of the issues already discussed in this memorandum - the 20% delivery deficiency cap and the five year suspension of necessary instream flow provisions - suffer as well from a lack of supporting substantial evidence in the record.

Whether these two findings or determinations by the Board are suspect because they are based on evidence received post-hearing or improperly the subject of a failed attempt at judicial notice is immaterial; both are unsupported by substantial evidence in the record.

Substantial evidence is not synonymous with 'any' evidence. Instead, it is "substantial" "proof of the elements which the law requires."(*Toyota Motor Sales U.S.A. v. Superior Court* (1990) 220 Cal.App.3d 864,871-872.) "Substantial evidence" is evidence of ponderable legal significance, evidence that is reasonable, credible and of solid value." (*Roddenberry v. Roddenberry* (1996) 44 Cal.App.4th 634, 651.)

> "Expert opinion testimony constitutes substantial evidence only if based on conclusions or assumptions supported by evidence in the record. Opinion testimony which is conjectural or speculative 'cannot rise to the dignity of substantial evidence.'"

(*Pacific Gas & Electric Co. v. Zuckerman* (1987) 189 Cal.App.3d 1113, 1135.)

The Board's decision allowing YCWA to measure its minimum instream flow releases on "5-day running averages, with the instantaneous flow never to be less than 90 percent of the applicable requirement" (Water Right Decision 1644. pp. 74, 75 and 173) is another finding unsupported by substantial evidence in the Board's record. In an effort to provide some credibility for adoption of this averaging schema, the Board even cites the ostensible factual authority for this finding, "S-YCWA 11, p.5." The Board then goes on to find that "[n]o party presented any evidence that this proposal would adversely affect fish" and therefore concludes that this would be a "reasonable method of measuring compliance with the minimum instream flow requirement." (*Id.* at p.74.)

What the Board fails to acknowledge is that the exhibit cited as unrebutted authority for this conclusion is not the testimony or opinion of an expert fishery biologist. Exhibit S-YCWA-11 is the written testimony of Donn Wilson, the Engineer-Administrator for the Yuba County Water Agency. Mr. Wilson claims to specialize in water resources management (Statement of Qualification attached to YCWA Notice of Intent to Appear) and holds a Bachelor of Science degree in civil engineering from Fresno State College. (See also exhibit S-YCWA-1; Qualification of Donn A. Wilson.) Mr. Wilson's complete testimony on this subject of flow measurement by 5-day averages is contained in two sentences on page 5 of his written testimony:

> "YCWA's proposed new instream-flow requirements are Specified as 5-day running averages, with the instantaneous flow never to be less than 90% of the applicable requirement. These specifications will allow YCWA to maintain the proposed instream flows without having to release substantial amounts of additional water for a new operational buffer."

Mr. Wilson provides no additional discussion for this proposition nor any supporting evidence for his conclusion regarding operational buffers. <u>No</u> testimony was presented by Mr. Wilson or any other YCWA witness that this running average measurement protocol would not harm the instream fishery resources. Mr. Wilson's own testimony is the very kind of "expert testimony" the Court in *Zuckerman* found not to be "substantial evidence" in support of a conclusion or decision - opinion testimony not based on identified conclusions or assumptions supported by evidence in the record. As the agency charged with making the ultimate determination here, including determinations with clear biological impacts, the Board cannot so easily shirk its adjudicative responsibilities. The fact that any unqualified statement goes unchallenged does not make it true.

The hearing record does contain the testimony of a fisheries biologist, a qualified expert, that the uses or means or averages to establish habitat conditions for fish is clearly detrimental to the fish within such habitat. Dr. Alice Rich, a renowned expert on salmon and steelhead trout physiology and intimately familiar with the habitat needs of California's anadromous salmonids did testify as to the problems in using mean or average temperatures in managing a fishery habitat.

> "[F]ish don't respond to mean monthly temperatures any more than you and I respond to mean monthly temperatures. They respond to what happens instantaneously, . . .for any animal that's . . . coldblooded . . . they are dependent upon what's happening around them constantly." (S-R.T. 2453:6-12.)

The use of a 5-day running average for measurement of instream flow releases is biologically suspect for the same reasons Dr. Rich identified with respect to temperatures.[6] Fishery flows need to be assessed on an instantaneous real-time basis because fish and fishery resources do not live in a five-day average world. When habitat conditions approach the bare minimums necessary for survival, one good day of flows above those required by any permit most emphatically does not make up for four days of reduced flows - flows which approach those

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6. The hearing record is replete with evidence showing that instream flows and releases affect instream temperatures, as well as other habitat conditions like area and depth. Use of means or averages to measure any habitat condition eliminates consideration and avoidance of unacceptable and perhaps fatal instantaneous extremes.

recognized as unacceptable for continued survival. Four days when flows can be reduced by up to 10% may be the four days in a dry or critically dry year when such reductions finally destroy the lingering remains of the Yuba River's fishery source.

Mr. Wilson's unqualified conclusory statement cannot in any reasonable fashion be considered to support the conclusion that a five-day running average is appropriate for measuring instream flow releases. Such releases should be measured and monitored on an instantaneous basis. Reconsideration is appropriate to remedy this error.

CONCLUSION

For all of the reasons provided above, the Board should grant the Department's Petition for Reconsideration and correct those errors within its Water Right Decision 1644 inappropriately incorporated without substantial evidentiary support, through irregularities in the Board's proceeding preventing a truly fair hearing, and in violation of the law.

Dated: April 2, 2001

Respectfully submitted.

BILL LOCKYER, Attorney General of the State of California
RICHARD M. THALHAMMER
Supervising Deputy Attorney General

W Cunningham

WILLIAM D. CUNNINGHAM
Deputy Attorney General

STATE WATER RESOURCES
CONTROL BOARD

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DIV. OF WATER RIGHTS
SACRAMENTO

COM 8819

DECLARATION OF SERVICE

Case Name: ***Lower Yuba River Water Right Hearing***

I declare that I am employed in the County of Sacramento, California. I am over the age of 18 years and not a party to the within entitled cause: my business address is 1300 I Street, Sacramento, California 95814. I am readily familiar with the business practice, at my place of business, for the collection and processing of correspondence for mailing with the United States Postal Service. Correspondence so collected and processed is deposited with the postal service in the ordinary course of business on the same day on which it is placed for mailing.

On April 2, 2001, I served the following document:

PETITION FOR RECONSIDERATION; MEMORANDUM OF POINTS AND AUTHORITIES IN SUPPORT OF PETITION FOR RECONSIDERATION

on the parties in said action as follows:

______ **PERSONAL SERVICE through ATTORNEYS DIVERSIFIED SERVICE** by placing a true copy thereof enclosed in a sealed envelope, addressed as shown below.

______ **(OVERNIGHT MAIL through GOLDEN STATE COURIER)** by placing a true copy thereof enclosed in a sealed envelope, addressed as shown below:

______ **(FACSIMILE)** by facsimile, as shown below:

__XX__ **(REGULAR MAIL)** by placing a true copy thereof enclosed in a sealed envelope in the internal mail collection system, addressed as shown below:

SEE ATTACHED LIST

I declare under penalty of perjury the foregoing is true and correct and that this declaration was executed on April 2, 2001, at Sacramento, California.

ROCHELLE UDA-QUILLEN
Typed Name

Rochelle Uda-Quillen
Signature

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Lower Yuba River Water Rights Hearing

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U. S. Department of the Interior
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2 April 2001

Harry M. Schueller
Chief, Division of Water Rights
State Water Resources Control Board
1001 I Street, 14th Floor
Sacramento, CA 95814
Attn: Ernie Mona

Re: Decision 1644, Petition for Reconsideration

Dear Mr. Schueller:

Hand-delivered herewith on behalf of South Yuba River Citizens League, et al. are the original and six copies of the SYRCL's petition for reconsideration of Decision 1644.

On March 12, 2001, I spoke with Mr. Mona via telephone about the deadline for filing the petition. Mr. Mona confirmed that the deadline was today, April 2, 2001, because the thirtieth from the date of decision fell on Saturday, March 31, 2001.

Very truly yours,

Larry Sanders

Lawrence D. Sanders (Calif. Bar No. 173411)
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STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

In the Matter of **FISHERY RESOURCES AND WATER RIGHT ISSUES OF THE LOWER YUBA RIVER**	PETITION FOR RECONSIDERATION OF WATER RIGHT DECISION 1644, AND POINTS AND AUTHORITIES IN SUPPORT THEREOF

Pursuant to 23 Cal. Code of Regulations §§ 768 *et seq*., The South Yuba River Citizens League (SYRCL), Friends of the River, California Trout, Trout Unlimited, and the Bay Institute (hereinafter "Petitioners"), petition the State Water Resources Control Board (hereinafter "Board") to reconsider its Decision Regarding Protection of Fishery Resources and Other Issues Relating to Diversion and Use of Water From the Lower Yuba River (Decision 1644), adopted by the Board on March 1, 2001. (Water Code § 1122.) Petitioners' addresses are attached hereto as Exhibit 1. (23 C.C.R. § 769(a)(1).)

I. STATEMENT OF REASONS

Petitioners request reconsideration of Decision 1644 on the following grounds: (1) The decision is not supported by substantial evidence in the record; (2) Error in law; and (3) There is relevant evidence which could not have been produced at the hearing. (23 C.C.R. § 768.) As discussed in detail below, Petitioners allege the following reasons that adoption of Decision 1644 was inappropriate or improper:

A. The decision is not supported by substantial evidence in the record.

The following aspects of Decision 1644 are not supported by substantial evidence in the record. (23 C.C.R. § 768(b).):

(1) Minimum streamflow requirements insufficient to maintain fishery;

(2) Failure to adopt temperature requirements;

(3) Minimum streamflow requirements are 5-day running averages, rather than instantaneous;

(4) Five-year delay in implementing minimum streamflows; and

(5) Deficiency clause allows reduction in minimum flows in driest years.

B. Error in Law.

The Board made the following errors in law in adopting Decision 1644. (23 C.C.R. § 768(d).)

(1) Failure to "conserve" species listed under the California Endangered Species Act;

(2) Authorizing "take" of species listed under the California and federal Endangered Species Act; and

(3) Improper delegation of Board authority to the Chief of the Division of Water Rights.

C. There is relevant evidence which, in the exercise of reasonable diligence, could not have been produced at the hearing. (23 C.C.R. § 768(c).)

In December 2000, Yuba County Water Agency submitted a document to the Federal Regulatory Commission entitled: *Draft Environmental Evaluation Report: Yuba County Water Agency, Yuba River Development Project (FERC No. 2246)*, attached hereto as Exhibit 2. This report includes evidence that is directly relevant to Decision 1644. Specifically, it contains a statistical analysis of fall-run chinook salmon escapement in the lower Yuba before and after construction of New Bullard's Bar Reservoir. This analysis shows conclusively that there is no "significant difference in the annual fall-run chinook salmon spawning escapement of the lower Yuba River between pre- and post- New Bullards Bar Reservoir." Pursuant to 23 C.C.R § 769(b), Petitioners include with this petition the declaration of Lawrence D. Sanders, stating that additional evidence is available that was not presented to the Board and the reason it was not presented. (Exhibit 3.)

II. STATEMENT OF POINTS AND AUTHORITIES.

A. Decision 1644 Is Not Supported by Substantial Evidence in the Record.

The proceeding at issue herein is and adjudication of a water rights. Such administrative adjudications require a decision in writing, with a statement of the factual and legal basis for the decision that is supported by evidence in the record. (Gov. Code §11425.50.) An administrative agency's findings must "conduce the administrative to draw legally relevant sub-conclusions supportive of its ultimate decision; the intended effect is to facilitate orderly analysis and minimize the likelihood that the agency will randomly leap from evidence to conclusions." (*Topanga Assn. for a Scenic Community v. County of Los Angeles,* 11 Cal.3d 506, 514-516 (1974).) Such administrative findings must be supported by substantial evidence in the record. (Water Code § 1126(c); Code of Civil Procedure § 1094.5.) Likewise, the Board's Rules also require that decisions be supported by substantial evidence. (23 C.C.R. § 768(b).) Substantial evidence is defined in two ways: "First, as evidence of 'ponderable legal significance . . . reasonable in nature, credible and of solid value'; and second, as 'relevant evidence that a reasonable mind might accept as adequate to support a conclusion.'" (*County of San Diego v. Assessment Appeals Bd. No. 2*, 148 Cal.App.3d 548, 555 (1983)(internal citations omitted).)

1. Inadequate Long-Term and Interim Minimum Flows.

Under California law, the Board has a public trust obligation to maintain the Yuba River fishery in good condition. (See *California Trout v. State Water Resources Control Board*, 207 Cal.App.3d 585, 626 (1989); Fish and Game Code § 5937.) It is undisputed that the Yuba River fall-run chinook salmon and steelhead are not in good condition in at least one respect: Their populations are extremely low. (See S-YCWA-19 at 5-2, 5-3; Decision at 48.) Likewise, it is undisputed that the Yuba River Project was expected to increase salmon and steelhead population and that flows and temperatures have in fact improved since construction of New Bullards Bar reservoir. Yet, it cannot be disputed that Yuba River fish populations have not increased significantly and remain at extremely low numbers. YCWA's most recent analysis of fall-run chinook salmon escapement figures concludes that there has not been a statistically significant increase since building New Bullards Bar. (See Exhibit 3, Appendix A.[1]) No evidence in the record supports a conclusion the interim and long-term flows established by Decision 1644 will increase salmon and steelhead populations.

Decision 1644 rejects DFG's recommended flow of 2,000 cfs during May of wet and normal years and adopts a minimum flow of 1,500 instead. (DFG-26 at 82-83; R.T. II, 23:1-23:7.) In its 1995 AFRP Working Paper, the USFWS made the same recommendations as DFG for May, with the objective of improving conditions for juvenile salmonid rearing and emigration. (S-DOI-3 at 3-Xc-16.) Maintaining appropriate rearing and emigration flows would increase annual salmonid production by decreasing juvenile mortality due to thermal stress, predation, and stranding. (*Id.*) Further, USFWS witnesses testified that high, extended spring flows significantly increase the overall success of outmigrating Chinook to return as adults. (S-DOI-9; R.T. 2312:7-2312:19.) Decision 1644 adopts a flow of 1,500 cfs for May, without citing any evidence in the record: "The minimum flow requirements established in this decision for April through June are expected to provide adequate conditions for upstream migrating adult spring-run chinook salmon." (Decision at 62.) Such conclusory statements are inadequate to "bridge the analytical gap between the raw evidence and the ultimate decision. (*Topanga*, 11 Cal.3d at 515-516.)

Decision 1644 contains virtually no discussion of the potential effects of the interim minimum flows on salmon and steelhead. Subsection 6.5.7.1 of Decision 1644 contains a detailed analysis of the long-term flow regime as it relates to the physical habitat requirements of salmon and steelhead. (See Decision at 57-70.) Thus, in discussing the effects of the long-term flow criteria, the Decision recognizes that reduction of May flows from 1,500 cfs to 1,100 cfs in critical and extreme critical years "may result in lower survival of emigrating juvenile chinook salmon and steelhead." (Decision at 69.) However, the Decision fails to analyze the potential effects of the interim May flows, which are 500 cfs in dry years and 270 cfs in critical

1 In its February 26, 2001 comments on the Board' February 16 draft decision, YCWA once again criticizes the failure to mention the apparent increase in average escapement post-Bullards Bar. However, YCWA failed to mention the results of its statistical analysis.

years. If a flow of 1,100 cfs "may result in lower survival," then what will be the result of a 270 cfs flow?

Likewise, Decision 1644 concludes that a flow of 250 cfs should be "sufficient" for salmon and steelhead from July 1 through September 14. (Decision at 67.) As a result, the Decision adopts 250 cfs as the long-term minimum flow for this period in all water years. On the other hand, the interim minimum flow during this period is 100 cfs. If 250 cfs is "sufficient," then what is a 100 cfs flow? Insufficient? Again, there is no analysis in the Decision of the potential impacts of a 100 cfs flow on salmon and steelhead.

Decision 1644 concludes, with little discussion, that a flow of 800 cfs is "expected to provide adequate conditions for upstream migrating adult spring-run chinook salmon" and "adequate for protection of American shad." (Decision at 62-64.) As a result, 800 cfs is the minimum long-term flow requirement for June in all but extreme critical years. Without discussion or citation to the record, Decision 1644 adopts 500 cfs as the long-term minimum for June of extreme critical years. Interim flows and dry and critical years are 400 cfs and 245 cfs respectively.[2] If a flow of 800 cfs in June is "adequate" for salmon and shad, then what is a flow of 400 cfs in dry years, or 245 cfs (or less) in critical years? Once again, without analysis of impacts or citation to the record, Decision 1644 adopts interim June flows in dry and critical years that depart significantly from the long-term flows.

2. Failure to Adopt Temperature Standards.

Decision 1644 fails to establish temperature standards beyond those required in the 1965 agreement between YCWA and DFG. The 1965 agreement, however, does not establish a maximum temperature for the protection of Yuba River salmon and steelhead. (DFG-26 at 190.) Decision 1644 does not establish a numerical temperature standard. Instead, YCWA must: "diligently pursue" installing a new intake at the Narrows II powerhouse; consult with a

2 The interim instream flow requirements for June 1-30 of critical years are 245 cfs pursuant to the provisions of the agreement between Yuba County Water Agency and the Department of Fish and Game dated September 2, 1965, except if a lower flow is allowed under the 1965 agreement. See Decision at 175. The 1965 agreement allows for flow reductions of 15, 20, and 30 percent when flow forecasts are, respectively, 50, 45, and 40 percent or less of normal. DFG-26 at 187-188. Therefore, minimum June flows are between 171.5 and 208.25, depending on total runoff.

"Temperature Advisory Committee"; and install temperature monitoring equipment. Thus, Decision 1644 imposes no criteria to minimize water temperature impacts on anadromous fish.

It is undisputed that maintaining suitable water temperature is an essential element of providing habitat to maintain fish in good condition. DFG presented testimony that water temperature is the primary factor influencing growth and survival of chinook salmon, steelhead, and American shad in the lower Yuba River. (R.T. I, 88:10-90:2.). YCWA presented evidence that average Yuba River temperatures at Marysville frequently exceed the preferred temperature range for salmon and steelhead. (S-YCWA-18 at 3; S-YCWA-19 at 3-24.) Temperatures outside of the preferred temperature range increased mortality, reduced growth, and increased susceptibility to disease. (DFG-26 at 41; R.T. XI, 7:15-8:25). Further, the record established that a physical solution--construction of a new intake at the Narrows 2 powerhouse—is expected to lower temperatures between 2 and 6 degrees Fahrenheit from May through October. (S-YCWA-12; S-R.T. 1520:4-1520:23.)

YCWA presented evidence that maintaining the water temperatures in the Board's 1996 Draft Decision, and those recommended by DFG and NMFS in 2000, would not be feasible through operation of existing project facilities. (See S-YCWA-18 at 3-7, 24-25, 28; S-YCWA-19; S-YCWA-33.) As a result, Decision 1644 concludes that "compliance with requirements to provide suitable water temperatures year-round for all life stages of chinook salmon and steelhead is not feasible." (Decision at 86). Just because it is not feasible to achieve the DFG and NMFS recommended temperatures, it does not follow that the Decision 1644 should not adopt *any* temperature standard. There is no substantial evidence to support rejecting all temperature standards. There is no evidence that suitable temperatures cannot be achieved during critical times of year. The record clearly establishes at least two methods of reducing temperature: through release of water from Englebright Reservoir and through construction of the Narrows 2 intake extension project.

3. <u>Five-day Running Average for Minimum Streamflow Requirement.</u>

Decision 1644 adopts a five-day running average, with the instantaneous flow never to be less than 90 percent of the applicable requirement, for measurement of the minimum streamflow standards. YCWA presented testimony that it would avoid having to release substantial amounts of water to ensure it is meeting the minimum flows wit a five-day running average. However, YCWA did not quantify the potential water savings with a five-day running average. Nor did YCWA present hydrological or biological evidence to support its request. Thus, there is no evidence in the record, substantial or otherwise, to support a conclusion that a five-day running average for measurement of minimum streamflows will protect Yuba River fishery resources.

In support of five-day running averages, Decision 1644 notes that "no party presented any evidence that this proposal would adversely affect fish." (Decision at 74.) Thus, Decision 1644 turns the substantial evidence on its head. Rather than citing evidence in the record to support its decision, Decision 1644 relies on the lack of evidence in opposition. Lack of opposing evidence does not constitute substantial evidence in support of a conclusion. Therefore, the decision to measure minimum flows with five-day running averages, rather than instantaneously, is not supported by substantial evidence in the record.

4. <u>Five-year delay in implementing minimum flows.</u>

Decision 1644 defers implementation of long-term minimum flows for five years because of the "critical power situation in California at the present time." (Decision at 127.) In support of this conclusion, the Board takes official notice of the fact that, on June 17, 2001, Governor Davis proclaimed a state of emergency to exist due to the energy shortage in California. (*Id.*) Further, the Board takes official notice of several Executive Orders issued by the Governor concerning the energy crisis (Executive Orders D-22-01, D-23-01, D-24-01, D-25-01, and D-26-01). The only reason cited for the five-year delay is the California energy crisis, and the only evidence cited in support of the delay are these officially noticed facts.

The Governor's proclamation of a state of emergency and related Executive Orders do not constitute substantial evidence to support the five-year delay. Under the Board's Rules of Practice, the Board may take official notice of facts that may be judicially noticed by courts. (23 C.C.R. § 648.2). However, the officially noticed facts must still constitute substantial evidence in support of the decision. In this case, careful scrutiny of the officially noticed facts does not support the decision to delay implementation of the minimum streamflow requirements.

Attached to this petition as Exhibit 4 are the Governor's January 17, 2001 Proclamation of a State of Emergency and Executive orders cited in Decision 1644. The Proclamation recites, in general terms, the shortage of energy in California and directs all state agencies to "utilize and employ state personnel, equipment and facilities for the performance of any and all activities to alleviate this emergency." (Exhibit 4). Executive Order D-22-01 deals with thermal powerplants. (*Id.*) Executive Order D-23-01 concerns the Independent System Operator protocols and procedure. (*Id.*) Executive Order D-24-01 directs air quality districts to modify emissions limits on power generation facilities. (*Id.*) Executive Order D-25-01 directs the Energy Commission to expedite review and approval of powerplant modifications. (*Id.*) Finally, Executive Order D-26-01 addressed expedited approval of licenses for new powerplants. (*Id.*) Therefore, none of the Executive Orders noticed by the Board in support of Decision 1644 have anything to do with the subject matter of the decision whatsoever.

The energy crisis in California, and the Governor's declaration of a state of emergency, do not support the decision to defer implementation of minimum flows. First, Decision 1644 correctly notes that the flow requirements for the lower Yuba River apply downstream of Englebright Reservoir, and therefore, "would not directly impact on the use of Colgate Powerhouse as a daily peaking facility." (Decision at 126). Further, the Board's analysis reveals that the difference in total power production under the long-term and interim flows is relatively small. (Decision, Appendix 4.) However, Decision 1644 concludes that the lower interim flows "will allow more flexibility in releasing water from power generation during months of high demand." (Decision at 127.) There is no evidence in the record that the lower interim flows will actually produce more electricity. Instead, the lower interim flows allow YCWA to decrease spring flows and hold that water in Bullards Bar Reservoir. YCWA may or may not use that water for production of extra power during times of peak demand. Thus, YCWA has more "flexibility" but California has no additional power it would not have otherwise.

5. Deficiency Clause.

Decision 1644 adopts a deficiency clause whereby the Chief of the Division of Water Rights may waive the minimum flow requirements when projected water demand exceeds projected supply by 20 percent or more. The deficiency clause is not supported by substantial evidence in the record for at least two reasons. First, such a clause was not proposed by any party or the Board until it appeared in the Board's February 16, 2001 Draft Decision. As a result, no party had an opportunity to analyze and present evidence of the affects of such a proposal. Second, the Decision fails to indicate how often deficiencies of 20 percent or greater will occur in the future. As a result, the record does not support a conclusion that the deficiency clause will not harm salmon and steelhead.

In its Fisheries Management Plan, DFG proposed that dry year deficiencies be apportioned "equitably" with the same percentage reductions in instream flows and diversions for offstream uses. (DFG-26 at xiii and113; R.T. II, 176:1-177:13.) The Board's 1996 Draft Decision and YCWA's 2000 flow proposal use water year types to impose instream flow reductions in dry years. Dry year flow criteria are, in effect, deficiency criteria because they address the problem of reduced water supply in dry years by allocating less water to instream uses. Without citation to the record, the Board engrafts additional deficiency criteria onto Decision 1644.

Decision 1644 fails to analyze how often the deficiency criteria will come into play or what its effects on the fishery will be. Computer modeling indicates that in 3 of of the 71-year period of record, YCWA would experience deficiencies in excess of 20 percent of it's *present level of demand*. Decision 1644 acknowledges: "As the demand for water increases, deficiencies in the amount of surface water available to meet offstream demands would be expected to increase." However, Decision 1644 fails to project future levels of demand and, as a result, fails to indicate how often deficiencies will occur in the future.

According to YCWA's modeling, deficiencies of over 20 per will be a regular occurrence in the future. The deficiency clause allows YCWA to propose reduced streamflows in years where deficiencies are greater than 20 percent. The Division Chief may accept

YCWA's proposal or adopt his own, but the required flows may not be less than those proposed by YCWA or set forth as interim flows during the next five years. (Decision at 131.) Thus, Decision 1644 does not reveal: (1) how often deficiencies are likely in the future; (2) what the deficiency flows will be; or (3) whether the deficiency flows will be adequate for salmon and steelhead. As a result, the deficiency clause is not supported by substantial evidence in the record.

B. Errors in Law Require Reversal of Decision 1644.

Decision 1644 must be set aside because it is not supported by law. Specifically, the Board violates its duty to "conserve" species listed under the California Endangered Species Act (CESA). (Fish and Game Code § 2055.) The Decision also authorizes "take" of spring-run chinook salmon and steelhead, in violation of both the California and federal Endangered Species Act (ESA). (16 U.S.C. § 1538; Fish and Game Code § 2080.) Finally, the Decision unlawfully delegates the Board's authority to the Chief of the Division of Water Rights.

1. Decision 1644 Fails to Conserve Listed Species.

Sacramento spring-run chinook salmon, which occur in the lower Yuba River, were listed as a threatened species on February 5, 1999 under the CESA. (S-DFG –1 at1-2; S-DFG-13 at 1; S-R.T. 1944:23-1945:1; S-R.T. 1961:24- 1962:4.) The exercise of authority by state agencies in actions involving threatened or endangered species is governed by CESA:

> The Legislature further finds and declares that it is the policy of this state that all state agencies, boards, and commissions shall seek to conserve endangered species and threatened species and shall utilize their authority in furtherance of the purposes of [CESA].

(Fish and Game Code § 2055.) Thus, in exercising over water rights in the lower Yuba River, CESA requires the Board to seek to "conserve" spring-run chinook salmon. The record contains no substantial evidence that Decision 1644 will "conserve" spring-run chinook on the Yuba River.

Decision 1644 fails describe how it will fulfill the Board's mandate to "conserve" listed species. Under CESA, "conserve" means:

> to use, and the use of, *all methods and procedures* which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary.

(Fish and Game Code § 2061 (emphasis added).) Thus, CESA requires the Board to use "all methods and procedures" to *recover* listed species—to make CESA "no longer necessary." Yet, Decision 1644 contains no finding that it will contribute to recovery of spring-run chinook.

Rather than seeking to "conserve" listed species, Decision 1644 adopts a much lower "protect" standard. Thus, the Decision ultimately concludes:

> The fishery protection measures established in this decision constitute a physically and financially feasible means of protecting public trust resources of the lower Yuba River while continuing to provide sufficient water for other beneficial uses.

Decision at 172. This standard is not consistent with the recovery mandate embodied in CESA. Instead of employing "all methods and procedures" to recover spring-run chinook salmon, the Decision repeatedly rejects measures designed to restore and enhance the lower Yuba fisheries for measures which afford lesser protection.

2. Decision 1644 Permits Take of Listed Species.

Operation of the Yuba River Project and related diversion facilities may constitute "take" of listed Yuba River salmon and steelhead, either directly or indirectly. The term "take" is broadly defined under the ESA to include activities that "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" listed species. (16 U.S.C. § 1532 (19).) NMFS regulations further define the term "harm" in the definition of "take" to include habitat modification or destruction. (50 C.F.R. § 222. See also *Babbitt v. Sweet Home Chapter of Communities for a Greater Oregon*, 515 U.S. 687 (1995)("Congress intended 'take' to apply broadly to cover indirect as well as purposeful actions.").)

NMFS recently issued 4(d) regulations that prohibit "take" of Central Valley steelhead.[3] (65 Fed.Reg. 42422-4248 (July 10, 2000)(Final Rule).) Types of prohibited activities defined in the 4(d) rule that occur on the Yuba River include: (1) constructing or maintaining barriers that eliminate or impede a listed species' access to habitat or ability to migrate; (2) removing water or otherwise altering streamflow when it significantly impairs spawning, migration, feeding or other essential behavior patterns; (3) constructing or operating dams or water

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3 NMFS presented evidence that it intends to issue 4(d) rules for Central Valley spring-run chinook salmon. (S-NMFS-4 at 50413.) Take of spring-run chinook salmon is not prohibited under ESA until NMFS issues 4(d) rules.

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diversion structures with inadequate fish screens or fish passage facilities in a listed species' habitat; and (4) altering lands or waters in a manner that promotes unusual concentrations. To the extent that these impacts are authorized by Decision 1644, then the Board is liable for any ensuing take of steelhead.

At least three federal circuits have held that regulatory acts of government agencies, such as issuing a license to operate a hydroelectric project, can cause take of protected wildlife. (See *Loggerhead Turtle v. County Council of Volusia County, Florida*, 148 F.3d 1231 (11th Cir. 1998) (County beach lighting ordinance allowed residents to take listed turtles); *Strahan v. Coxe*, 127 F.3d 155, 158, 163 (1st Cir. 1997)(state agency caused take of endangered right whale because it "licensed commercial fishing operations to use gillnets and lobster pots in specifically the manner that is likely to result in violation of [the ESA]"); *Defenders of Wildlife v. Administrator, Envtl. Protection Agency*, 882 F.2d 1294, 1300-01 (8th Cir. 1989)(federal agency caused take of endangered black-footed ferret through its "decision to register pesticides" even though other persons actually distributed or used the pesticides). See also *National Wildlife Federation v. Hodel*, No. S-85-0837 EJG (E.D. Cal Aug. 26, 1985)(ordering the Secretary of the Interior to ban lead-shot bird hunting in portions of California, Illinois, Missouri, Oklahoma, and Oregon based on the finding that their continued authorization caused take of threatened bald eagles that ate lead-infested prey).) As in these cases, Decision 1644 enables YCWA, South Yuba, Brophy, Hallwood and Cordua to engage in operations that take steelhead.

Under ESA, only NMFS may issue a permit that authorizes incidental take of listed Yuba River steelhead. (16 U.S.C. § 1539.) Likewise, only DFG may issue incidental take permits for spring-run chinook salmon under CESA. (Fish and Game Code § 2081). NMFS presented testimony that an incidental take permit would include minimum streamflows. (S-R.T. I, 142:1-142:15). Both NMFS and DFG testified that the Decision 1644 minimum streamflows are inadequate to avoid taking salmon and steelhead. Further, Decision 1644 permits take of salmon and steelhead by allowing temperatures outside of the preferred range. Decision 1644 permits take by authorizing flow reductions that allow dewatering of 10 percent of redds in September and October, and dewatering of 5 percent of redds from November through March. (Decision at 73.) Likewise, Decision 1644 permits take through continued use of the North and South diversion canals.

Decision 1644 authorizes take of listed steelhead and salmon. The Board has not obtained incidental take coverage from either DFG or NMFS. Therefore, the Board is liable for any take purportedly authorized by Decision 1644.

3. Decision 1644 unlawfully delegates Board authority to the Chief of the Division of Water Rights.

Decision 1644 includes a deficiency clause that allows the Chief of the Division of Water Rights to waive required instream minimum flows when projected demand for water outstrips supply by more than 20 percent. Under this provision, YCWA may file a request with the Division Chief, along with projected supply and demand figures, and a proposed alternative minimum flows. The Division Chief "may approve a temporary reduction of instream flow requirements, as requested by YCWA or as otherwise justified by the available information." (Decision at 131.) Thus, the Division Chief is granted discretion to either approve or disapprove a waiver. If a waiver is granted, the Division Chief has discretion to set minimum flows requested by YCWA or "as otherwise justified." The Board may not lawfully delegate its authority to set minimum flow requirements in water rights permits to the Division Chief.

The Legislature established the Board to "exercise the adjudicatory and regulatory functions of the state in the field of water resources." (Water Code § 174.) The exclusive method of acquiring rights to appropriate or use water in California is by compliance with the statutory scheme in the Water Code. (Water Code § 1225.) Under this statutory scheme, the Board has exclusive authority to permit appropriation of water in California. (Water Code §§ 1201 *et seq.*) Upon application, the Board issues water rights permits if there is available unappropriated water that the applicant proposed to put to beneficial use. (Water Code § 1375.) The Board may impose terms and conditions in water rights permits to protect beneficial use of water (Water Code § 1391.) Likewise, the Board may retain jurisdiction to amend the terms of a permit. (Water Code § 1394). Finally, water rights permits may be modified upon request of the permittee, "but such change may be made only upon permission of the board." (Water Code § 1701.)

Nonconsumptive or "instream uses" ore expressly included within the category of beneficial uses to be protected in the public interest. (See *United States v. State Water Resources Control Board*, 182 Cal.App.3d 82, 105 (1986).) Thus, the Board must consider the amounts of water required "for recreation and preservation and enhancement of fish and wildlife resources" (Water Code § 1243) and needed "to remain in the source for protection of beneficial uses." (Water Code § 1243.5). Thus, the Board may set minimum flows, maximum temperatures, or water quality standards for the protection of fish and wildlife as conditions in a water rights permit.

The Board may not delegate its authority to grant water rights permits, or set terms and conditions in such permits, to the Chief of the Division of Water Rights. Under the statutory scheme only the Board may issue water right permits, set terms and conditions, and approve changes in permits. The deficiency clause is akin to a petition to temporarily modify a water rights permit, which must be approved by the Board. (Water Code § 1701.) Moreover, the permit application and modification processes require public notice and opportunity for a hearing. The deficiency clause deprives the public due process by failing to provide notice and an opportunity to be heard. The Division Chief must notify and consult with DFG prior to allowing a waiver. However, there is no provision for public notice or a hearing. Instead, the Division Chief is left to exercise his discretion. Therefore< Decision 1644 unlawfully delegates the Board's discretionary authority to the Division Chief.

III. REQUESTED BOARD ACTION.

Petitioners respectfully request that the Board take the following actions:

1. Rescind Decision 1644 in its entirety;
2. Reopen the hearing record to include: *Draft Environmental Evaluation Report: Yuba County Water Agency, Yuba River Development Project (FERC No. 2246)* and any other new information the Board deems proper;

3. Reissue an amended decision that is supported by substantial evidence and complies with all applicable laws.

Dated: 4/2/01

Respectfully submitted,

Lawrence D. Sanders
RIVERLAW

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Petition for Reconsideration of State Water Resources Control Board Decision 1644

South Yuba River Citizen League, et al.

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REGULATORY COMMISSION

Draft
Environmental Evaluation Report
Yuba County Water Agency
Yuba River Development Project (FERC No. 2246)

Submitted to:

Federal Energy Regulatory Commission

Prepared by:

Yuba County Water Agency

and

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ENVIRONMENTAL EVALUATION REPORT
YUBA COUNTY WATER AGENCY
YUBA RIVER DEVELOPMENT PROJECT (FERC NO. 2246)

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1.0 INTRODUCTION

1.1 BACKGROUND

1.1.1 Yuba River Basin

The Yuba River Basin encompasses approximately 1,350 square miles of the western Sierra Nevada slope, including portions of Sierra, Placer, Yuba, and Nevada counties (CALFED 1999). Annual runoff to the Yuba River averages about 2.4 million acre-feet (AF), with recorded extremes for wet- and dry-year annual runoff of 5 million AF in 1983 and 350,000 AF in 1977, respectively. Approximately 55% of the runoff is derived from winter rains, with most of the remaining 45% coming from snowmelt. The Yuba River is tributary to the Feather River which, in turn, is tributary to the Sacramento River (**Figure 1**).

Since the mid-1800s, the Yuba River Basin has been significantly developed for mining and debris control, water supply, power generation, and flood control. As part of this development, upstream hydroelectric diversions by Pacific Gas and Electric Company (PG&E), Nevada Irrigation District (NID) and Oroville-Wyandotte Irrigation District (OWID), and three dams in the lower Yuba River Basin (Daguerre Point Dam, Englebright Dam, and New Bullards Bar Dam) continue to affect the fish resources of the Yuba River.

Daguerre Point Dam was the first dam constructed on the lower Yuba River, and is located about 12.5 miles downstream of the current Englebright Dam. Construction of Daguerre Point Dam by the California Debris Commission was completed in 1906, with diversion of the river over the dam being completed in 1910 (CDFG 1991). Daguerre Point Dam presently is owned and operated by the U.S. Army Corps of Engineers (Corps). Daguerre Point Dam has two fish ladders (north and south ladders) to allow anadromous salmonids to pass the structure. Today, Daguerre Point Dam is the location of the majority of water diversions from the lower Yuba River.

Englebright Dam, the second dam constructed on the lower river, was completed by the California Debris Commission in 1941 to collect placer mining debris that were moving down the Yuba River into the Sacramento Valley. The dam presently is under the ownership and jurisdiction of the Corps. All three branches of the Yuba River flow into Englebright Reservoir. Consequently, construction of Englebright Dam completely blocked anadromous fish migration into the North, Middle, and South Yuba River, and this dam constitutes the upstream extent of anadromous fish migration today (CALFED 1999). The approximately 24-mile reach of the Yuba River between Englebright Dam and its confluence with the Feather River became defined as the lower Yuba River (Figure 1).

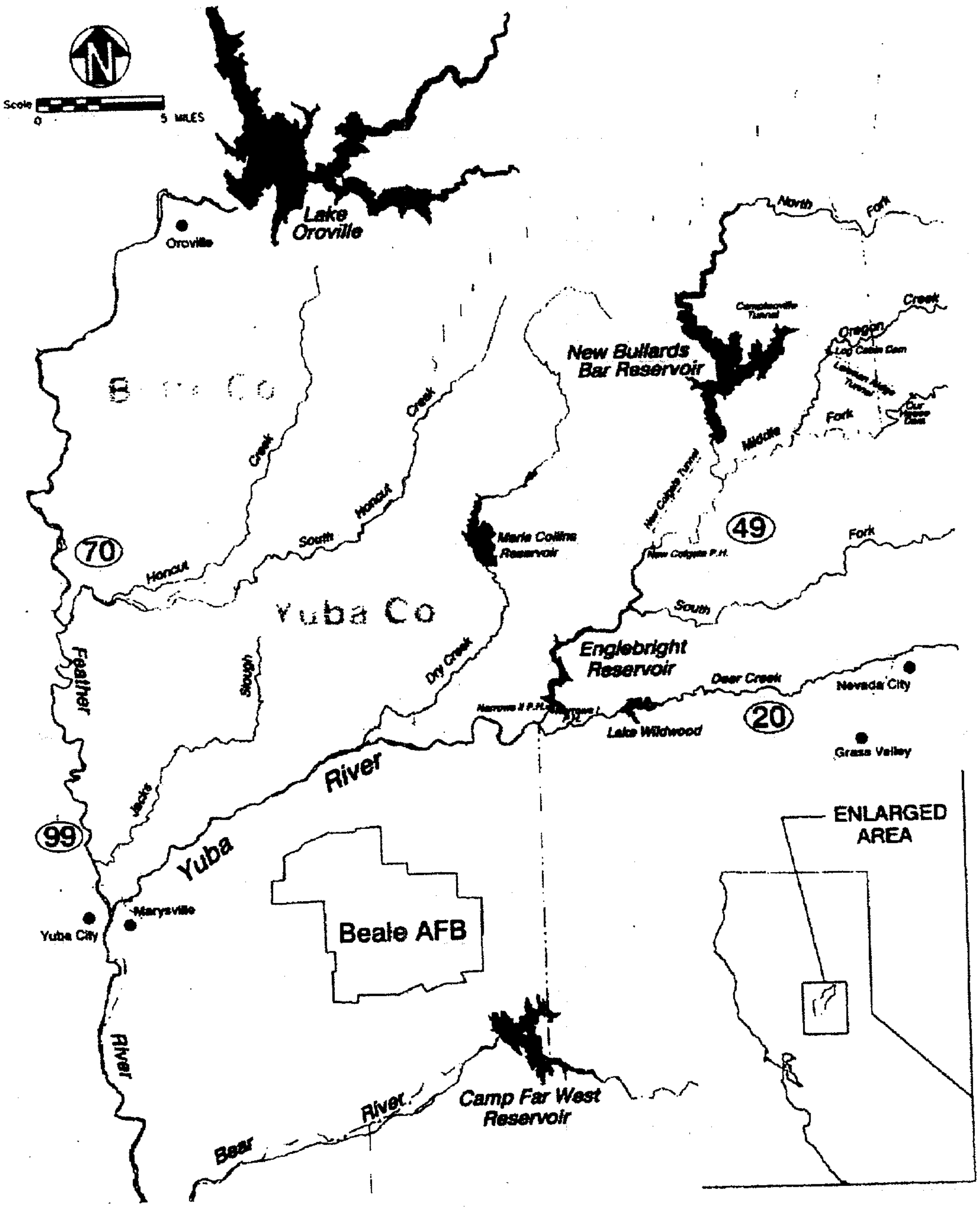

Figure 1. Regional area overview, Yuba River Basin, California. (Source: SWRCB 2000 Hearing Exhibit S-YCWA-18).

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The Yuba County Water Agency (YCWA) began operation of its Yuba River Development Project (YRDP) in 1970. The YRDP includes New Bullards Bar Dam and Reservoir, Our House Diversion Dam, Log Cabin Diversion Dam, Colgate Powerhouse and Narrows II Powerhouse. As part of the YRDP, New Bullards Bar Dam was built on the North Yuba River. The YCWA operates the Colgate and Narrows II powerhouses below New Bullards Bar and Englebright dams, respectively. The release capacity of YCWA's Narrows II Powerhouse is approximately 3,400 cubic feet per second (cfs), which defines YCWA's greatest controlled release capability from Englebright Reservoir into the lower Yuba River.

New Bullards Bar Reservoir, located upstream of Englebright Dam, is the primary storage reservoir within the Yuba River Basin, with a total storage capacity of about 966 thousand acre-feet (TAF). Fifteen other reservoirs have been constructed in the upper portion of the basin, with a combined storage capacity of approximately 400 TAF (CALFED 1999). Power-generation diversions of about 100 cfs are made by OWID from the Yuba River Basin into the Feather River Basin (from Slate Creek to Sly Creek), and about 600 cfs is diverted by PG&E and NID into the American and Bear River and Deer Creek Basins for power and irrigation (from Lake Spaulding to Drum Canal and the South Yuba Canal) (CALFED 1999).

The smaller storage facilities on headwaters of the South and Middle Yuba rivers usually fill with early runoff. Hence, much of the spring and early summer flow to the lower Yuba River is a result of uncontrolled snowmelt within the basin. In the summer and early fall, prior to the precipitation season, most of the flow in the lower Yuba River is regulated by releases from New Bullards Bar Reservoir.

1.1.2 Regulatory Background

Special Status Fish Species

The National Marine Fisheries Service (NMFS) listed the Central Valley Evolutionarily Significant Unit (ESU) of steelhead (*Oncorhynchus mykiss*) as "threatened" on March 19, 1998 (63 FR 13347). NMFS subsequently listed the Central Valley ESU of spring-run chinook salmon as "threatened" on September 16, 1999 (64 FR 50393). Critical habitat for both Central Valley steelhead and spring-run chinook salmon, including the lower Yuba River, was designated on February 11, 2000 (65 FR 7764).

As stated in section 9 of the federal Endangered Species Act (ESA), certain activities affecting or potentially affecting a species listed as "endangered" are prohibited. These section 9 prohibitions do not automatically apply to "threatened" species, but can be applied through section 4(d) protective regulations. On September 8, 2000, the NMFS section 4(d) rule prohibiting the "take" of Central Valley steelhead went into effect (65 FR 42421). NMFS has not yet adopted a section 4(d) rule for Central Valley spring-run chinook salmon.

Fall-run chinook salmon, as a federal candidate species, can be reevaluated periodically as new information becomes available. Although federal candidate species are generally considered in federal environmental documents and may be included in Conservation Plans prepared as part of the application for a section 10 incidental-take permit under the ESA, they are not provided protection, nor are take prohibitions expressed, under the ESA.

FERC Consultation

This document is being prepared to satisfy informational needs preliminary to, and possibly in lieu of, formal ESA consultation. Formal consultation is necessary if a federal action "may affect" listed species (ESA section 7(a)). In a letter dated May 14, 1999, NMFS identified YCWA's Yuba River (FERC No. 2246) and Deadwood Creek (FERC No. 6780) Projects as potentially affecting federally listed (threatened) Central Valley steelhead, and requested that the Federal Energy Regulatory Commission (FERC) initiate consultation under ESA. On May 27, 1999 FERC requested response from YCWA concerning NMFS' May 14 letter and received a response from YCWA on July 9, 1999 indicating its willingness to act as FERC's non-federal representative, but questioning the need for formal consultation in light of the similarity of the subject matter to the ongoing State Water Resources Control Board (SWRCB) hearings. On August 5, 1999, FERC designated YCWA and other licensees as non-federal representatives for conducting consultations with NMFS if necessary and, if appropriate, for preparing a draft biological assessment to assess the effects of project operation on California Central Valley steelhead. In its August 5, 1999 letter designating YCWA as its non-federal representative, FERC identified the need to fill potential biological information gaps and recognized that this information may already be available through YCWA and NMFS involvement in other proceedings (i.e., SWRCB hearing). To date, FERC has not engaged in or proposed any action triggering the formal consultation requirement of section 7 of the ESA. As *Sierra Club v. Babbit*, 65 F.3d 1502 (9th cir. 1995) confirms, there is no requirement to initiate consultation where the federal agency retains no legal authority over day-to-day project operation. Despite these legal limitations on formal consultation requirements, YCWA remains firmly committed to the common goal of reasonable protection of the two threatened species.

As part of the ongoing SWRCB hearings regarding efforts to protect anadromous resources in the lower Yuba River, YCWA and the California Department of Fish and Game (CDFG) formed a Settlement Advisory Group, and invited NMFS to discuss issues related to the two listed anadromous salmonids. In October 1999, YCWA requested that NMFS use this group process to conduct informal consultation between NMFS and YCWA, as authorized by title 50, Code of Federal Regulation section 402.13. NMFS, however, had already rejected alternatives to formal consultation. In a letter to FERC dated September 10, 1999, NMFS stated that the licensee's participation in the Yuba River Technical Work Group (YRTWG) neither supplants nor obviates FERC's obligations under the ESA, and that FERC's independent obligations under the ESA may not be delegated to a third party or deferred to an alternative process.

Also, YCWA, as part of its efforts to coordinate ESA issues under informal consultation with NMFS, and in its March 23, 2000 progress report, requested deletion of the Deadwood Creek Project (FERC No. 6780) from FERC's consideration of federal ESA issues regarding Central Valley steelhead and spring-run chinook salmon. Because the Deadwood Creek Project is a "run of the river" project without any significant storage or out-of-basin exports, and because the project is located upstream of New Bullards Bar Reservoir, it does not affect the flows or fish in the Yuba River downstream of Englebright Dam. In a letter dated October 26, 2000, FERC stated that it would evaluate information concerning the Deadwood Creek Project provided by YCWA in order to determine whether or not it should be considered in the consultation process.

In a letter dated June 6, 2000, NMFS recommended that FERC and its applicants coordinate consultation and preparation of a biological assessment with the Corps and its applicants regarding operation of the projects. FERC responded in a letter dated July 14, 2000, with progress reports on YCWA's information development and evaluations. In a letter dated October 26, 2000 summarizing the September 29, 2000 coordination meeting discussions and responding to NMFS' letter dated October 4, 2000 requesting FERC's intentions regarding formal section 7 consultation, FERC responded that it was not currently able to answer NMFS' request for FERC's intention regarding section 7 consultation. To assist with its decision, FERC asked YCWA (in the October 26, 2000 letter) to prepare by mid-December 2000 a report (Environmental Evaluation Report, EER) on the Yuba River Development Project's (YRDP) project-related impacts to listed steelhead and chinook salmon. Upon receipt of the information in that report, FERC staff will review it to determine whether or not the project's operation may affect listed species and what, if any, action by FERC may be appropriate.

1.2 PURPOSE OF THE ENVIRONMENTAL EVALUATION REPORT

The purpose of this EER is to document the environmental effects associated with the operation of the New Bullards Bar Dam and Reservoir and Narrows II Powerhouse components of the YRDP. This report addresses project effects on anadromous salmonids below Englebright Dam and Reservoir, the upper terminus of available anadromous salmonid habitat in the lower Yuba River. This EER is intended to facilitate FERC's process of evaluating the need to enter into formal consultation, and serves as an additional progress report in the informal consultation process.

2.0 PROJECT DESCRIPTION

2.1 BACKGROUND - YUBA RIVER DEVELOPMENT PROJECT

Throughout history, the Marysville-Yuba City area has experienced devastating floods, especially after hydraulic mining debris substantially raised the bed of the lower Yuba River. A major flood in 1955 which claimed 40 lives, declining groundwater levels, and the lack of State or federal planning for the Yuba River spurred local officials to support a flood control and water conservation project on the Yuba River.

On June 1, 1959 a bill was signed by the California Governor to create the YCWA. In the fall of 1959, YCWA initiated a campaign to construct the YRDP. The YRDP, which became operational in 1970, is a multiple-use facility that is utilized for several different purposes including flood control, generation of hydroelectric power, agricultural irrigation, recreation, and protection of fish and wildlife. A description of the principal facilities comprising the YRDP is provided below. Facility locations are shown in Figure 1.

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2.2 FACILITY DESCRIPTIONS

2.2.1 Our House and Log Cabin Diversion Dams

The 75-foot high Our House Diversion Dam on the Middle Yuba River diverts water through the 3.8-mile Lohman Ridge Tunnel to Oregon Creek near Camptonville. The tunnel capacity is 850 cfs. The small 55-foot high Log Cabin Diversion Dam on Oregon Creek diverts water brought from the Middle Yuba River, as well as Oregon Creek water, through the 1.2-mile Camptonville Tunnel into New Bullards Bar Reservoir. The tunnel capacity is 1,200 cfs.

2.2.2 New Bullards Bar Dam and Power Plant

The 645-foot high and 2,323-foot long, double curvature thin shell, arch dam creates a 966,000 AF reservoir. This is the highest concrete dam in FERC's jurisdiction and, at the time built, the longest thin shell, arch dam ever built. In 1986, YCWA constructed a 235-horsepower (HP) impulse turbine at the base of New Bullards Bar Dam to generate hydroelectric power from the required instream flow release. This generator has a capacity of 150 kilowatts (kw) with an average annual production of 1.2 million kilowatthours (kWh).

2.2.3 Colgate Powerhouse

The Colgate Powerhouse is supplied with up to 3,400 cfs at 1,300-foot head, by a 26-foot diameter, 4.7-mile long tunnel from New Bullards Bar Reservoir. The plant has two impulse turbines producing 212,000 HP each, with a combined generating capacity of 316 megawatts (MW) and an average annual production of 1.3 billion kWh. The 18-foot diameter single cast pelton wheels are the largest ever constructed.

Englebright Dam and Reservoir serves as an afterbay for the Colgate Powerhouse, and as a forebay for Narrows I and Narrows II Powerhouses. The Narrows I Powerhouse, owned and operated by PG&E, is located a short distance downstream and across the river from YCWA's Narrows II Powerhouse. During periods of high peaking generation at the Colgate Powerhouse, the water surface elevation of Englebright Reservoir fluctuates several feet daily. Coordinated operation of the Narrows I and Narrows II Powerhouses allows uniform releases downstream to the Yuba River.

Englebright Reservoir is located north of Smartville. It separates the upper branches of the Yuba River from the lower Yuba River, which runs from Englebright Dam to the confluence with the Feather River near Marysville. Colgate Powerhouse, the release outlet for New Bullards Bar Reservoir, is located just upstream of Englebright Reservoir. Releases from New Bullards Bar Reservoir, through the Colgate Powerhouse, contribute approximately 75% to 90% of the inflow to Englebright Reservoir during the period June through November.

Englebright Reservoir has a gross storage capacity of approximately 70,000 AF, but its operational storage capacity is limited to approximately 45,000 AF with only 10,000 AF of this capacity typically utilized. The reservoir is maintained at an elevation of approximately 520 feet mean sea level (msl), except during spill events of the winter and spring. The spillway at Englebright Dam is at an elevation of 527 feet msl. The reservoir also is drawn down to approximately 60,000 AF in the fall to provide for better management of freshet flows in the Yuba River.

2.2.4 Narrows II Powerhouse

The Narrows II Powerhouse is located at the base of Englebright Dam and consists of a single 70,000 HP, Francis-type turbine with a capacity of 50 MW and producing an average annual 248 million kWh. The release capacity of the YCWA's Narrows II Powerhouse is approximately 3,400 cfs, which defines YCWA's greatest controlled release capability from Englebright Reservoir into the lower Yuba River.

The existing powerhouse intake structure is a "tower" that draws water from the reservoir surface down to an elevation of 439 feet msl, about 80 to 85 feet below the typical reservoir surface elevation (B-E 1998). The bottom of Englebright Reservoir in the vicinity of the intake structure is approximately elevation 333 feet msl, with the bottom of the existing powerhouse intake structure located approximately 100 feet above the bottom of the reservoir. Thus, water from the upper layers of the reservoir is transported through the existing intake and into a tunnel located on the west abutment of the dam. YCWA has been attempting to obtain State grant funds for a temperature control device which would extend the powerhouse intake to extract water about 90 feet lower than the existing elevation (to approximately 350 feet msl), about 10 to 15 feet above the bottom of Englebright Reservoir. Depictions of both the existing and proposed intake structures are presented in **Figure 2**.

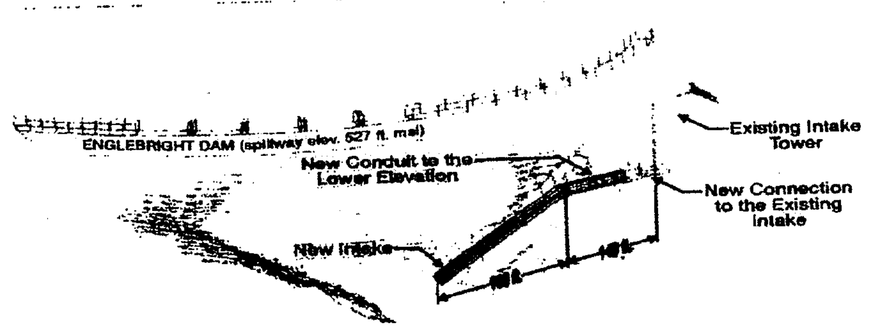

Figure 2. Location in Englebright Reservoir of existing and proposed intake structures to the Narrows II Powerhouse.

There are four general types of potential shutdowns of the Narrows II generator including maintenance, short-term emergency, long-term emergency, and low-flow shutdowns when only Narrows I is operated. Maintenance activities include generator brush replacement which

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capacity typically utilized. The reservoir is maintained at an elevation of approximately 520 feet mean sea level (msl), except during spill events of the winter and spring. The spillway at Englebright Dam is at an elevation of 527 feet msl. The reservoir also is drawn down to approximately 60,000 AF in the fall to provide for better management of freshet flows in the Yuba River.

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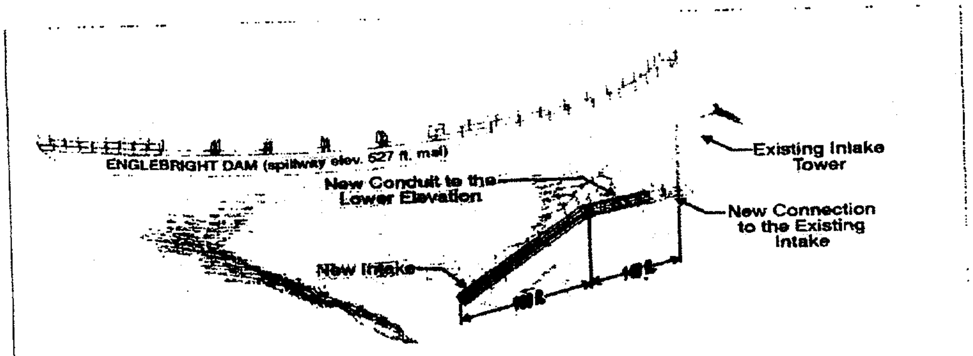

Figure 2. Location in Englebright Reservoir of existing and proposed intake structures to the Narrows II Powerhouse.

There are four general types of potential shutdowns of the Narrows II generator including maintenance, short-term emergency, long-term emergency, and low-flow shutdowns when only Narrows I is operated. Maintenance activities include generator brush replacement which consists of a six-hour shutdown two to three times per year, and annual maintenance which is typically a two to three-week shut-down or longer (months) if major maintenance is performed. During brush replacement, the 650 cfs bypass valve can be opened to maintain river flow. During the annual maintenance period, which is typically scheduled during the fall, the bypass valve usually cannot be operated, resulting in no flow through Narrows II. As a back-up to a Narrows II shutdown, Narrows I has a maximum generation flow capability of about 730 cfs, and a bypass flow (generator not operating) capability of about 650 cfs.

Short-term emergency outages typically result from momentary PG&E transmission line fault outages (caused by birds, trees, lightning strikes, storms) or plant malfunction. Depending on the type of outage, the powerhouse flow will be reduced to somewhere between 0 and 650 cfs for a period of minutes, to one or more hours. The frequency of these types of outages has ranged from none to multiple outages in a year, with an annual average of about two per year. Corrective actions have been taken by both YCWA and PG&E to minimize future outages of this type. The amount of downstream flow impact depends on pre-outage flow conditions and the type of outage, and could result in a maximum flow reduction of 3,400 cfs.

A long-term outage could result from a catastrophic failure of the PG&E transmission system linking the plant to the transmission grid, or major component failure at the powerhouse. Depending on the failure type, there could be no flow through the powerhouse or 650 cfs if the bypass can be operated. These types of outages are very rare, but could last from days to months. Historically, there has been one of these outages in the 30 years since the Narrows II Powerhouse has been in operation, and there was no flow reduction because it occurred during the annual maintenance period when no water flowed through Narrows II.

2.3 YUBA RIVER DEVELOPMENT PROJECT OPERATIONS

Various water districts, irrigation districts, water companies and individuals contract with YCWA for delivery of water. The YCWA water rights include the right to directly divert a total of 1,550 cfs from the Yuba River for irrigation and other uses, and to divert a total of 960,000 AF to storage from October 1 to June 30 in New Bullards Bar Reservoir for subsequent irrigation and other uses (SWRCB 1994).

Under an existing power purchase agreement between PG&E and YCWA, PG&E can require the release of water from New Bullards Bar Reservoir for power generation based on monthly quotas and available storage in the reservoir above an established threshold or "critical level." YCWA and PG&E currently coordinate the operation of Narrows I and Narrows II for hydropower efficiency and flow stability in the lower Yuba River. The penstocks to the two powerhouses are the only outlets from Englebright Dam, and are the only means of discharging water downstream, except for spills over the top of the dam. Both powerhouses are operated as base-load plants and are dependent on available storage in New Bullards Bar and Englebright Reservoirs. Under current operating procedures, only Narrows I is operated when total releases from Englebright Dam are 730 cfs or less. When releases are 730 to 2,560 cfs, generally only Narrows II is operated. When releases exceed 2,560 cfs, both powerhouses generally operate. During water years 1970 through 1990, FERC (1992) estimated that daily average flows of 730 and 2,560 cfs were exceeded 74.4% and 33.4% of the time, respectively. These estimates indicate that Narrows II operates alone up to 41% of the time, and together with Narrows I up to 33.4% of the time, for a total of up to 74.4% of the time.

The operation of the YRDP is subject to provisions of various permits, licenses and contracts, including water right permits and licenses administered by the SWRCB, Federal Power Act License 2246, the 1966 Power Purchase Contract with PG&E, a 1965 contract with CDFG concerning instream flows, and a 1966 contract with the California Department of Water Resources (DWR) under the Davis-Grunsky Act (SWRCB 1992 Hearing Exhibit YCWA 2, pp. 3 and 4). YCWA determines project operations based on a year-to-year analysis (SWRCB 1992 Hearing Transcript VII, 132:13-132:14).

Although YCWA operations typically result in actual flows that exceed specified minimum flow requirements, flow and temperature requirements currently applicable to the YRDP are those specified in the 1965 agreement with CDFG which requires flows in the lower Yuba River immediately below Daguerre Point Dam as follows:

Time Period	Flow Requirements Below Daguerre Point Dam (cfs)
January 1 - June 30	245
July 1 - September 30	70
October 1 - December 31	400

Releases required by the 1965 CDFG/YCWA Agreement are subject to reductions in critical dry years, which are defined as those years for which the DWR April 1 forecast predicts that annual unimpaired flow in the lower Yuba River at Smartville will be 50 percent or less of normal. The water release curtailments for critical dry years are release reductions of 15, 20, and 30 percent when Yuba River unimpaired flow forecasts are, respectively, 50, 45, and 40 percent or less of normal. The critical year provision is effective from the time of the forecast until April 1 of the following year. However, in no event may water releases be reduced to less than 70 cfs (SWRCB 1992 Hearing Exhibit DFG-26, pp. 187-188). YCWA's Federal Power Act license also contains these requirements.

The SWRCB received a complaint filed by a coalition of fishery groups referred to as the United Groups on February 23, 1988 regarding fishery protection and water right issues on the lower Yuba River. In 1992, the SWRCB held 14 days of hearing to receive testimony and other evidence regarding fishery issues in the lower Yuba River and other issues raised in the United Groups complaint. A draft decision was prepared for the SWRCB's consideration, but was not acted upon by the SWRCB. Copies of the draft decision, dated April 28, 1996, were distributed to hearing participants and other interested parties on February 10, 1999.

The SWRCB conducted 13 additional days of hearing from February 22 to May 17, 2000. A revised draft decision was prepared by SWRCB staff and distributed to hearing participants and other interested parties on November 7, 2000. The SWRCB has not yet acted upon the draft

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decision. Therefore, the 1965 CDFG/YCWA Agreement requirements specify the current regulatory compliance standards.

The 1965 CDFG/YCWA Agreement also provides that..."*The AGENCY [YCWA] shall so locate and operate the power intake and outlet works of New Bullards Bar Dam so as to provide water temperatures of the releases from New Bullards Bar Dam comparable to or better than presented values with regard to fishery resources.*" (SWRCB 1992 Hearing Exhibit DFG 26, p. 190). The reservoir control gates at New Bullards Bar Dam provide the ability to release water from different levels at the dam, from near the surface at elevation 1,956 feet msl, to a low-level outlet at elevation 1,638 feet msl (SWRCB 2000 Hearing Exhibit S-YCWA-18, p. 7). For many years, YCWA had operated the multi-level outlet as directed by CDFG--releasing cooler water from the low level outlet beginning in September and warmer water from the high level outlet beginning in April (SWRCB 1992 Hearing Transcript V, 72-9-72:17). However, under current operational procedures which were established in 1993 by a water temperature advisory committee convened by YCWA and consisting of representatives of YCWA, CDFG, and the U.S. Fish and Wildlife Service (USFWS), the low level outlet at New Bullards Bar has been used for all water releases throughout the year since 1993 (SWRCB 2000 Hearing Exhibit S-YCWA 11, pp 2-3).

3.0 FISH RESOURCES

3.1 INTRODUCTION

The lower Yuba River supports a diverse fish community, comprised of native and introduced resident and anadromous species. Each fish species fills a distinct ecological niche, and the variety of ecological niches present is supported by the diversity of quality aquatic habitats that exist. This EER focuses on the threatened steelhead and spring-run chinook salmon, and the candidate fall-/late fall-run chinook salmon, under the federal ESA.

Current State (e.g., CDFG 1991; CDFG 1993; CDFG 1996; CDFG 1996b; CALFED 1999) and federal (USFWS 1995; CALFED 1999) fishery management plans identify the highest management and population-enhancement priority for anadromous salmonids (i.e., steelhead and chinook salmon). In addition, the habitat needs of anadromous salmonids have been extensively studied in California and elsewhere and, therefore, are reasonably well understood relative to the habitat needs of many other fishes occurring in the river (Beak 1989; CDFG 1991). The following fish species descriptions are based on available information specific to the Yuba River, and are augmented with reports from other locations, as appropriate. Much of the information on the fish resources and aquatic habitat of the lower Yuba River is presented for specific reaches. Referenced reaches of the lower Yuba River are presented in **Figure 3**.

3.2 WATERSHED DEVELOPMENT IMPACTS ON ANADROMOUS SALMONIDS

Until the 1900s, chinook salmon and steelhead had access to much of their historic spawning and rearing habitat and, based on anecdotal accounts, ascended considerable distances up the South, Middle, and North Yuba River (Yoshiyama et al. 1996). Although trends in fish abundance during this period were not documented, significant declines in chinook salmon and steelhead abundance probably occurred as a result of extensive habitat destruction resulting from hydraulic mining during the mid- to late-1800s. The massive influx of sediment caused profound changes in the channel and floodplain of the lower Yuba River which has adversely affected fishery resources to the present day (SWRCB 2000 Hearing Exhibit S-YCWA-19, pg. 3-8).

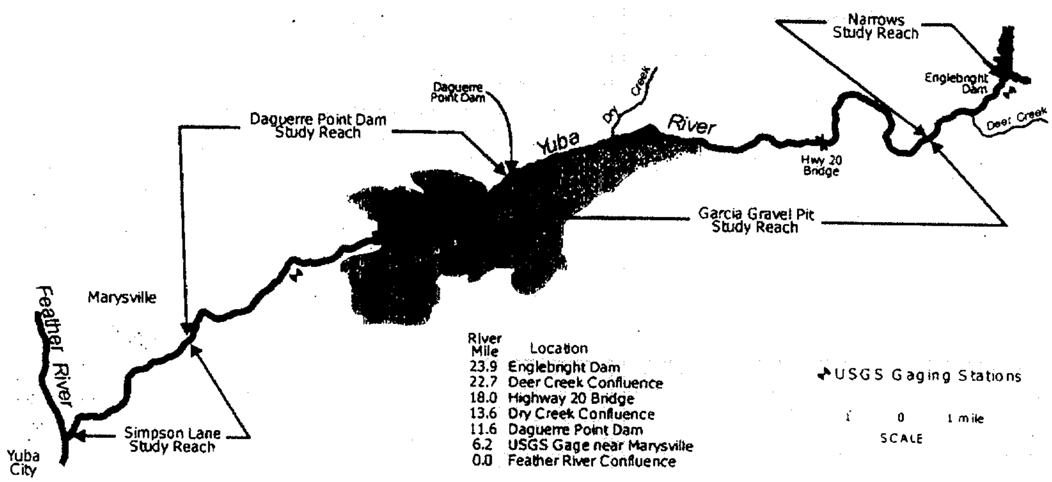

Figure 3. Fish resource and aquatic habitat reaches in the lower Yuba River, California.

From about 1900 until prior to construction of the YRDP (1969), the California Debris Commission constructed a series of dams in the lower Yuba River to capture hydraulic mining debris and prevent their transport to navigable river reaches on the valley floor. These dams resulted in severe, long-term impacts on chinook salmon and steelhead populations in the Yuba River by forming complete or partial barriers to migration and eliminating access to much of the historic spawning and rearing habitat. Spring-run chinook salmon and steelhead probably experienced the largest declines of any species, because of the lack of suitable habitat below the dams resulting from various factors, including high summer water temperatures, coupled with severe drought conditions during 1928-1934. Fall-run chinook salmon also were adversely affected, but population declines were probably less severe because a significant portion of their historic spawning and rearing habitat remained accessible below the dams. Englebright Dam, completed in 1941 and presently owned and operated by the Corps, completely blocked spawning runs of chinook salmon and steelhead from accessing their historical habitats in upper portions of the mainstem Yuba River and its tributaries.

3.3 FALL/LATE FALL-RUN CHINOOK SALMON

Fall-run chinook salmon are the most abundant anadromous fish in the lower Yuba River. Central Valley fall-run chinook salmon support significant sport and commercial fisheries. The Sacramento River system, of which the Yuba River is a part, has historically been an important spawning area for fall-run chinook salmon. In the past, the Yuba River supported up to 15 percent of the annual run of fall-run chinook salmon in the entire Sacramento River system (SWRCB 1992 Hearing Exhibit DFG 26, p.7). Based on this and related information, CDFG testified at the 1992 SWRCB hearing that "*... fall-run chinook salmon are the most important anadromous fish in the lower Yuba River.*" (SWRCB 1994, p. 38).

By contrast, late fall-run chinook salmon populations occur primarily in the upper Sacramento River, although incidental populations of late fall-run chinook salmon might occur in the lower Yuba River (SWRCB 1994, p. 42). Because only incidental populations occur and there is a paucity of information specific to late fall-run chinook salmon in the lower Yuba River, the following discussion focuses on fall-run chinook salmon.

3.3.1 Historic Abundance and Population Trends

Since 1953, Yuba River fall-run chinook salmon escapement has been sustained and, in recent years, has increased to levels exceeding those that occurred prior to the operation of New Bullards Bar Reservoir. The fall-run chinook salmon population in the Yuba River was substantially reduced before the 1950s by extensive mining, agriculture, urbanization, and commercial fishing. However, since 1950 natural production of fall-run chinook salmon in the lower Yuba River has sustained population levels despite continued and increasing out-of-basin stressors that have acted to further limit survival of chinook salmon in the lower Sacramento River, Sacramento-San Joaquin Delta (Delta), and Pacific Ocean.

CDFG began making annual estimates of fall-run chinook salmon spawning escapement (i.e., the number of salmon that "escape" the commercial and sport fisheries and return to spawn in the lower Yuba River) in 1953. From 1953 to 1971, these estimates ranged from 1,000 fish in 1957 to 37,000 fish in 1963 and averaged 12,906 fish (Figure 4).

From 1972 to 1999, fall-run chinook salmon spawning escapement was sustained at higher levels than occurred during the pre-New Bullards Bar Dam period (1953-1971). Two different methodologies have been used to estimate fall-run chinook salmon spawning escapement for the period (1972-1999) potentially influenced by operation of New Bullards Bar Reservoir, as described below.

From 1953 to 1989, CDFG conducted annual spawning escapement surveys on the lower Yuba River to estimate fall-run chinook salmon spawning populations. Spawning escapement surveys were not conducted in 1990, however, and surveys were not planned by CDFG in 1991 (Jones and Stokes 1992). YCWA, after discovering that CDFG would not be conducting chinook salmon spawning escapement surveys in 1991, contracted with Jones and Stokes to conduct the 1991 surveys, and Jones and Stokes has continued conducting the surveys through the present.

An effort was made initially to follow CDFG's survey methods and population estimation techniques to produce a spawning escapement estimates comparable to estimates from 1973 through 1989. Since 1973, CDFG estimated annual chinook salmon spawning escapement in the lower Yuba River using a modified Schaefer method (Schaefer 1951).

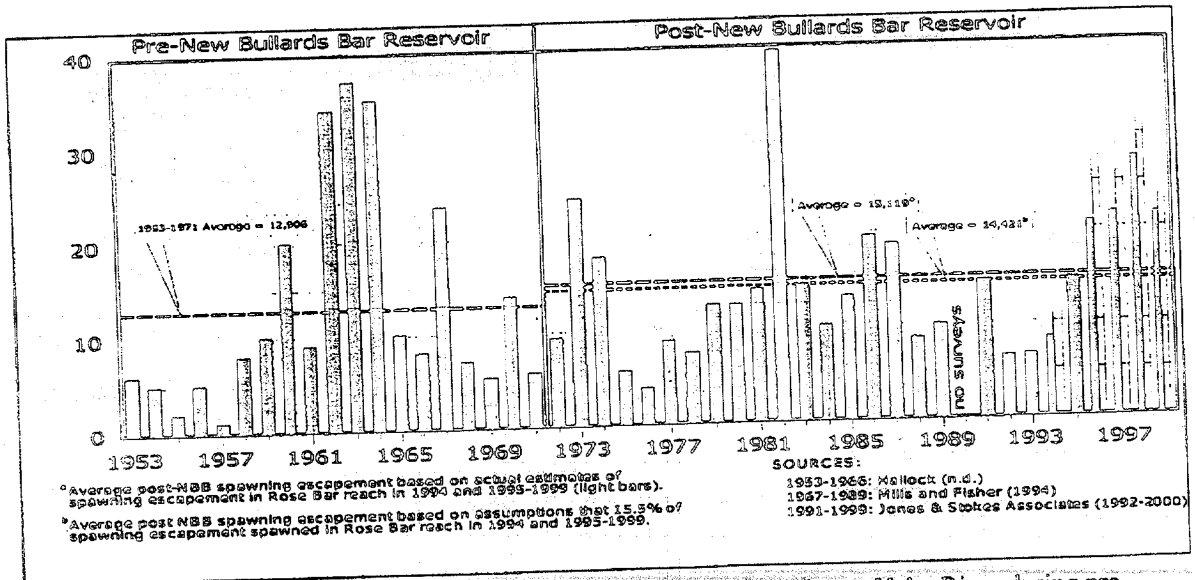

Figure 4. Annual fall-run chinook salmon spawning escapement in the lower Yuba River during pre- (1953-1971) and post- (1972-1999) New Bullards Bar Reservoir periods.

Since 1991, the survey area has been divided into two reaches which were the equivalent of the three reaches traditionally surveyed by CDFG. The first reach extended from the Highway 20 Bridge at Parks Bar to Daguerre Point Dam (CDFG's Section 2), and the second reach extended from Daguerre Point Dam to the E Street Bridge in Marysville (CDFG's Sections 3 and 4). CDFG's Section 1 Reach (Rose Bar) was not surveyed by CDFG from 1973 through 1989, nor by Jones and Stokes thereafter until 1994. Before 1994, CDFG developed total spawning escapement estimate by assuming that 15.5% of the run spawned in the Rose Bar Reach. Evidently, several surveys of the upper reach were done in the 1970s from which the average of 15.5% of the total spawning escapement was obtained (Testimony of William Mitchell, May 2, 2000 SWRCB Hearing). In 1994, salmon carcass surveys included the uppermost spawning reach in the Yuba River (Rose Bar Reach), allowing a more accurate estimate of total spawning escapement than was possible in previous years. The actual estimate of spawners in the Rose Bar Reach in 1994, however, was 37% of the total run (Jones and Stokes 1995). Jones and Stokes decided to continue surveying the Rose Bar reach in years subsequent to 1994. In 1995, the Rose Bar Reach could not be fully surveyed and the 15.5% assumption was used as a default. From 1996 through 1999, surveys and estimates of escapement of the Rose Bar Reach were successfully conducted.

The average estimated spawning escapement from 1953-1971 was 12,906 fish. These early surveys did not include any actual surveys in the Rose Bar Reach, but estimated its contribution to be 15.5% of the total. From 1972-1999 the average annual run was 15,119 fish, which included 5 years of actual survey estimates of the Rose Bar Reach escapement. Using CDFG's traditional 15.5% contribution estimate yield, the average for the 1972-1999 period is 14,421 fish. Results of the different methodologies are illustrated in Figure 4. The graph is divided into two regions, post-New Bullards Bar Reservoir on the right and pre-New Bullards Bar Reservoir on the left. The first year-class of salmon whose in-river lifestage occurred concurrent with the first year of YRDP operation would be represented by the 1972 spawning escapement estimates. Thus, the two horizontal lines on the right (1972-1999) represent average post-New Bullards Bar escapement population estimates. The lower line showing the average at 14,421 are estimates using 15.5% to represent the Rose Bar Reach. The upper line showing the average post-New Bullards Bar Reservoir at 15,119 includes actual estimates of the Rose Bar Reach for years 1994 and 1996 through 1999. Either method supports the same conclusion--that the numbers of adult salmon spawning in the river since the completion of New Bullards Bar Dam has been sustained, and actually has increased in recent years relative to the pre-project level (Testimony of William Mitchell, May 2, 2000 SWRCB Hearing).

Although the average annual spawning escapement of fall-run chinook salmon since operation of New Bullards Bar Reservoir has been higher than the pre-New Bullards Bar Reservoir period, the differences between the two periods are not statistically significant. However, for the entire sampling period (1953-1999), annual fall-run chinook salmon spawning escapement exhibits a weak ($r^2 = 0.14$) but statistically significant ($P \leq 0.01$) increase over time (Appendix A, pg. 9). The statistical analysis in Appendix A uses the actual estimates of the number of adult salmon spawning in the Rose Bar Reach in 1994 and 1996-1999. If the analysis utilized the 15.5% proportional distribution of the total run in the Rose Bar Reach previously assumed by CDFG, the conclusions would not change.

The fall-run chinook salmon population in the lower Yuba River is sustained largely by natural production. Trends in natural production can be masked by large numbers of returning hatchery spawners in rivers with major hatcheries or planting programs, or where significant straying of hatchery fish occurs. No hatchery or long-term planting program exists on the lower Yuba River. Analyses of straying of hatchery chinook salmon in the Sacramento River Basin indicate a relatively low degree of straying hatchery spawners to the lower Yuba River (Cramer 1990).

Fall-run chinook salmon of the lower Yuba River, as with other Central Valley stocks, have been subjected to increasing ocean harvest rates. Recent analyses of commercial and sport fishery data and salmon production estimates indicate that the proportional harvest (i.e., fraction of total production that is harvested) of Central Valley chinook salmon has been increasing by 0.5% per year for the last 40 years, for a total increase of about 20%. Harvest rates have averaged 73% of total production, about twice the levels necessary to sustain wild stocks, but acceptable for hatchery stocks (The Bay Institute 1998). Stable run sizes throughout this period in the lower Yuba River indicate that the lower Yuba River is exceptionally productive and able to withstand current harvest levels while natural stocks in other river systems have declined.

Moreover, between 1996 and 1999, average estimated adult escapement exceeded 20,000 every year (SWRCB 2000 Hearing Exhibit S-YCWA-19, p. 3-0; SWRCB 2000 Hearing Exhibit S-YCWA-43; SWRCB 2000 Hearing Transcript S-R.T. 572:20-573:23). These increases are significant because ocean conditions, droughts, and numerous out-of-basin human activities including commercial and sport fishing, Delta exports and diversions and introductions of exotic species, have adversely affected Central Valley stocks since 1972, and because there is no fish hatchery on the Yuba River (SWRCB 1992 Hearing Exhibit YCWA-20, pp. 2-13 to 2-21; SWRCB 2000 Hearing Exhibit S-YCWA-19, pp. 3-12 to 3-14).

It has been suggested that annual adult fall-run chinook salmon spawning escapement may be positively correlated with spring flows that occurred 2-1/2 years prior in some Central Valley rivers. A USFWS report (SWRCB 2000 Hearing Exhibit S-DOI-9, pp. 113-114) on relationships between adult spawning escapement of fall-run chinook salmon in the San Joaquin River and spring streamflows in that river, and between salmon escapements in the American, Feather, and Sacramento Rivers and Delta outflows during their spring smolt outmigration period shows a relatively high statistical correlation on the San Joaquin River, but much lower statistical correlations for other Central Valley rivers, and for the total Central Valley (SWRCB 2000 Hearing Exhibit S-DOI-9, pp. 113-114). Figure 5 is a plot of the relationship between adult salmon escapement on the Yuba River and May Yuba River flows 2-1/2 years earlier. There is no statistically significant relationship.

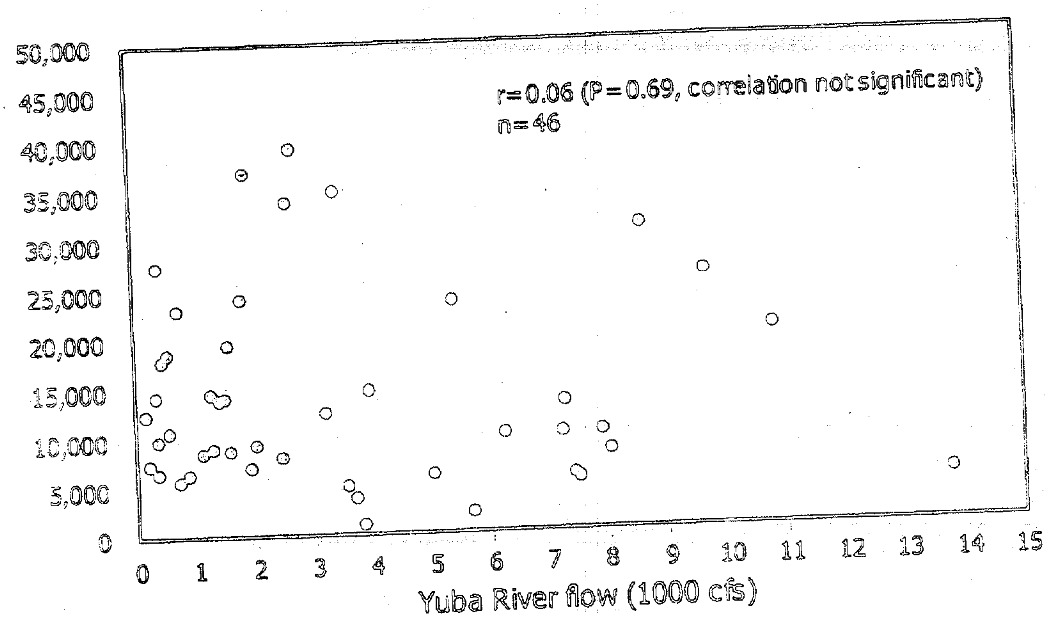

Figure 5. Annual fall-run chinook salmon spawning stock escapement from 1953 - 1999 versus average flow during May at Marysville 2-1/2 years earlier.

3.3.2 Life History and Habitat Utilization

Fall-run chinook salmon adults typically migrate into the lower Yuba River from late September through January, with peak adult migration occurring in late October and November. Spawning can begin as early as October 1 (SWRCB 2000 Hearing Exhibit S-YCWA 51). Normally, spawning begins in mid-October with peak spawning during November and December (SWRCB 1992 Hearing Exhibit DFG 26, pp. 7 and 62). Eggs incubate in the gravel into February, followed by hatching and emergence of fry into March (SWRCB 1992 Hearing Exhibit DFG 26, p. 9.) Fry may emigrate within a few weeks of emergence while others may rear in-river as late as June before emigrating as smolts (SWRCB 1992 Hearing Exhibits DFG 26, p.9; YCWA 20, Fig. 3-4).

Spawning habitat occurs from the lower end of the Narrows Reach downstream to about two and one-half miles below the Marysville gauge (SWRCB 1992 Hearing Exhibit DFG 26, pp. 62, 65-66) Generally, about 60% of the fall-run chinook salmon spawn between the Highway 20 Bridge and Daguerre Point Dam, but from 1975 to 1979, about 60% of the spawning occurred downstream of Daguerre Point Dam (SWRCB 1992 Hearing Exhibits DFG 26, p.7; YCWA 80) Fry utilize all reaches of the lower Yuba River downstream of the Narrows Reach for rearing. The largest concentration appears to be upstream of Daguerre Point Dam in the Garcia Gravel Pit Reach (SWRCB 1992 Hearing Exhibit DFG 26, p. 26)

Late fall-run adult chinook salmon historically migrated into freshwater from January into March. Spawning and egg incubation occur from January into June. Fry emigration, juvenile rearing and juvenile emigration occur from April into December (SWRCB 1992 Hearing Exhibit USFWS 7, p. 5.) Spawning and nursery areas preferred by late fall-run chinook salmon are expected to be similar to steelhead since both species enter the river at about the same time, and rearing occurs through the summer. Some spawning activity reportedly has been observed in the Yuba Goldfields area downstream of Daguerre Point Dam (SWRCB 1992 Hearing Exhibit USFWS 7, p. 5).

3.3.3 Temperature Requirements

Adult Upstream Migration

Because the arrival distribution of fall-run chinook salmon is dictated largely by life history events (i.e., maturation), photoperiod, and other seasonal environmental cues, it tends to be somewhat temporally similar from year-to-year in the lower Yuba River, generally varying not more than a few weeks.

The length of time that fall-run chinook salmon spend in the lower Yuba River prior to spawning is not specifically known. Results of biotelemetry studies conducted on the upper Sacramento River at the Red Bluff Diversion Dam (RBDD) indicate that fall-run chinook salmon may stay in the river for time periods ranging from several days to over one-and-a-half months between arrival in the upper river at RBDD and observed movement onto the spawning grounds.

Historically, fall-run chinook salmon could migrate to the upper reaches of the Yuba River unabated by prohibitive physical obstructions. Under such conditions, they were transiently exposed to the warm water temperatures of the Delta and lower reaches of the Sacramento River before entering and ascending to cooler upstream reaches of the Yuba River. Annual exposure of pre-spawning adults depends upon extant conditions, the time at which they enter the river, and the duration of holding prior to spawning.

Organisms respond to extreme high and low temperatures in a manner similar to the dosage-response pattern that is common to toxicant effects. Each fish species has a maximum upper thermal limit (often defined as the "incipient lethal temperature") that it can tolerate for short periods of time. In general, fish tend to occupy habitats having water temperatures within the species' thermal tolerance range that are somewhat below their upper incipient lethal temperature limit (Baltz et al. 1987; Cech et al. 1990).

The effects of elevated water temperatures on adult chinook salmon are reported in several controlled lab and field studies. For example, Marine (1992) reported that American River chinook salmon broodstock are considered to be thermally stressed and prone to lower handling tolerance when hatchery holding pond temperatures exceed 59°F. Confinement, handling, and thermal stresses can collectively act to effectively reduce the thermal tolerance of chinook salmon broodstock under hatchery holding conditions.

The literature suggests that for chronic exposures, an incipient upper lethal temperature limit for pre-spawning adult chinook salmon probably falls within the range of 62.6°F to 68°F. However, adult chinook salmon have been observed to tolerate short-term and transient exposure to temperatures ranging from 77°F to as high as 80°F during spawning migrations (DWR 1988).

Estimates of energetic costs due to increased stress velocities, delays at dams, and elevated water temperatures indicate potential detrimental effects on reproduction for both sockeye salmon and chinook salmon (Berman 1990; Berman and Quinn 1991). Exposure to elevated temperatures upon entering the river prior to spawning may result in fatty acid complements sequestered in the ova that are inappropriate for proper embryo development under declining temperatures during the late fall months.

The extent to which elevated river temperatures may be bioenergetically affecting the reproduction of early arriving fall-run chinook salmon in the lower Yuba River is unknown. However, bioenergetic optimization through selection of cooler water temperatures when available is clearly important to pre-spawning chinook salmon, as shown by Berman and Quinn (1991). Berman and Quinn (1991) demonstrated a pattern of behavioral thermoregulation for pre-spawning Yakima River spring-run chinook salmon. In this study, adult salmon outfitted with temperature sensitive radio transmitters consistently sought out cooler thermal refuges during the pre-spawning period, and maintained an average internal body temperature that was 4.5°F below ambient river temperature. This behavioral thermoregulation accounted for an estimated energetic savings of 12 to 20 percent. In the lower Yuba River, longitudinal temperature differentials exist for adult fall-run chinook salmon thermoregulation.

During the early portion (i.e., September and October) of the adult fall-run chinook salmon upstream migration period, a longitudinal temperature gradient can occur in the lower Yuba River. Water temperatures downstream in the migration corridor can be somewhat warmer than in upstream areas depending on boundary condition temperatures, flow rates, and ambient conditions.

The most definitive data on the effects of elevated water temperatures on adult chinook salmon are related to critical thresholds affecting acute mortality and disease outbreaks, both in hatcheries and in the wild. The deteriorating physiological condition of Pacific salmon upon their seasonal maturation and upstream spawning migration render them vulnerable to environmental stressors, such as elevated water temperature. Opportunistic pathogens can gain advantage over the salmon's natural immuniological defenses, resulting in disease (Marine 1992).

Elevated water temperatures can impose metabolic and physiological stresses, which can impair immuniological functions in salmonids and increase their susceptibility to disease. The stress that can be caused by exposure to elevated water temperatures in adult chinook salmon may exacerbate the already-compromised immune system that results from the dramatic physiological stresses associated with re-entering freshwater and final sexual maturation (Marine 1997).

Disease occurrence in anadromous salmonids in the lower Yuba River has not been documented. However, in the nearby lower American River, temperature conditions at the Nimbus Hatchery in past years have significantly affected production. When temperatures exceed 60°F and approach 70°F for any significant period, detrimental impacts are evident. Historical catastrophic events are cataloged in the hatchery reports. To summarize, disease outbreaks and high mortalities are coincident with high ambient water temperatures during the early holding and spawning period from September through November. Improved methods of prophylactic vaccination (i.e., iodofore, penicillin) have reduced impacts from temperature and the presence of virulent pathogenic organisms (T. Veek, CDFG, pers. comm., 2000).

Many of the reports of temperature-induced pre-spawning mortality in chinook salmon mention associated pathogenic causes for this mortality (Marine 1992). The disease organisms which are most commonly reported in adult chinook salmon include *Aeromona salmonicida* (Furunculosis), *Ceratomyxa shasta* (Ceratomyxosis), *Flexibacter columbaris* (Columnaris Disease), *Dermatocystidium* spp. and *Saprolegnia* spp. (Fungal Diseases), *Renibacterium salmoninarium* (Bacterial Kidney Disease), and Infectious *Hematopoitic Necrosis* Virus (IHNV) (Marine 1992). With the exception of bacterial kidney disease and IHNV, the pathogenicity of these disease organisms increases as water temperatures rise over the range from 55°F to 81°F. Bacterial kidney disease, IHNV, and Furunculosis can be transmitted to eggs and larvae through ovarian and seminal fluids. Therefore, the diseases that can be carried by adult chinook salmon potentially can be activated by chronic exposure to high river temperatures and passed on through the gametes to affect the subsequent survival of their offspring.

Spawning

Once in the lower Yuba River, the timing of adult chinook salmon spawning activity is strongly influenced by water temperatures. When decreasing water temperatures approach approximately 60°F, female chinook salmon on the spawning grounds begin to construct redds, into which their eggs (simultaneously fertilized by the male) are eventually released (SWRCB 2000 Hearing Exhibit S-YCWA 51). Fertilized eggs are subsequently buried within the streambed gravel. In recent years (1991-1998), spawning activity in the lower Yuba River has begun during early October to late October, and has continued into December in some years.

Groves and Chandler (1999) conducted an actual field experiment on spawning temperatures observed in fall-run chinook salmon of the Snake River and found similar results to those observed on the lower Yuba River. In that study, aerial surveys combined with remote underwater videographs were used to observe fish activity and to monitor water temperatures. Spawning generally began as water temperatures dropped below 60.8°F. The average temperature over the entire sample set of redds averaged only 56.5°F during the week of spawning initiation, indicating that although spawning began at 60.8°F, initial weekly mean temperature was 56.5°F. These results are consistent with observations from other investigations conducted through the Pacific Northwest (Burner 1951; Swan 1989; Dauble and Watson 1997). Spawning activity usually begins as mean water temperatures fall below about 60°F, with the majority of spawning occurring at temperatures approaching 56°F.

In the nearby lower American River, Nimbus Hatchery data also provide insight in identifying ranges of suitable spawning and incubation temperatures. In recent years, it has been Nimbus Hatchery policy to open the gates for fish entrance only when temperatures decrease to about 60°F at the hatchery, in response to high mortality in past lots of fish allowed to spawn at higher temperatures (T. West, CDFG, pers. comm., 2000).

Berman (1990) found trends in subsequent fry size, with fry produced from adult chinook salmon females held at elevated water temperature treatments of 66.2°F being subsequently smaller than fry produced from females held at a control temperature of 57.2°F. A biological consequence of this result is that smaller salmon fry are considered to have lower survival than larger fry due to increased vulnerability to predation, reduced overwinter survival, and alterations in downstream migration timing.

Incubation

The rate of development of poikilothermic animals varies directly with temperature. Logistic and theoretical mathematical expressions have been proposed to describe the relationship of temperature to speed of embryo development. Donaldson (1955) found that exposure to unfavorable temperatures past the pigmenting stage doubled the hatching period. Seymour (1956), in an experiment examining constant and fluctuating temperatures of incubation, found that for Pacific fall-run chinook salmon the hatching period rapidly declines when constant temperatures change from 35°F to 40°F, but, above 40°F, the length of the hatching period was short and without noticeable change with respect to temperature.

Healey (1979) found, in a constant temperature exposure experiment on Sacramento strain fall-run chinook salmon, that mortalities to the fingerling stage were 80% or more when temperatures during incubation of eggs and fry development were 61°F to 61.9°F. These types of experiments utilizing constant temperatures are common, but generally do not provide information concerning the period of highest sensitivity to temperature, and difference between constant, fluctuating and variable thermal gradients, which occur in natural environments.

Donaldson (1955) in his experiment on effects of lethal temperature exposure to eggs for various lengths of time found that a 13-day exposure at 63°F killed 10 percent of the embryos, and a 22-day exposure at 63°F killed 50 percent of the embryos. Both 65°F and 63°F groups, however, showed few mortalities until temperature exposure approached hatching time. Other studies corroborate the sensitivity found by Donaldson (1955) and Seymour (1956) during late embryo (eleutheroembryo) and early fry (pre-emergent alevin) period which, under near optimal early incubation temperatures, will fall between 40 and 100 days after fertilization according to Seymour's relationship between temperature and days to hatching. In a recent experiment conducted by the USFWS (1999), the latent effect of early-life temperature exposure observed in their experiment on fall-run chinook salmon is consistent with previous studies. USFWS (1999) suggests several mechanisms for latent mortality including embryo development and differentiation were altered by elevated temperatures, and yolk coagulation resulting in poor absorption. Heming (1982) reported faster yolk absorption and lower conversion efficiency as temperature increased.

Temperature Fluctuations

Seymour (1956) experimented both at constant and variable temperatures but did not report a difference in mortality. He did find that, at temperatures of 34°F or 65°F, no eggs survived to hatching, and at constant 60°F and 62.5°F eggs hatched but none survived through the yolk-sac stage. Also, at constant temperatures of 55°F and 57.5°F hatching had a high success, but mortality increased to 50 percent or greater during the yolk-sac stage.

Daily water temperature fluctuations on the lower Yuba River occur throughout the year. Variable water temperatures (those temperatures that emulate natural variation), have been shown to have reduced negative impacts at higher temperatures compared to constant temperature incubation. The Environmental Protection Agency (EPA) (1971) found that there was a significantly greater survival in eggs incubated at fluctuating temperatures with peaks above 63°F and a significantly better survival for fry at all temperatures (with one exception) in the fluctuated temperature group, when compared with constant temperature groups. This indicates that there may be significant benefit to eggs and fry from a diurnal temperature fluctuation at all levels within a zone of tolerance of 42°F to 65°F (EPA 1971).

Temporal Temperature Gradient

Temperature gradients, or a general trend in water temperatures over time, occur in the lower Yuba River. Water temperatures show a gradual decline during the late fall period when incubation begins. In the primary spawning areas, water temperatures can decline several degrees over the course of a month. Boles et al. (1998) found that eggs incubated at constant water temperatures greater than 60°F or less than 38°F have suffered high mortalities. Survival increases, however, for eggs taken at high water temperatures but incubated at temperatures that gradually decline to the mid-40°F to mid-50°F range. Mortalities in fry were reduced to low levels when eggs were incubated at constant temperatures of from 50°F to 55°F, or under declining temperatures from initial incubation temperatures ranging up to 60°F.

Rearing and Emigration

The issues associated with identifying and prescribing temperature requirements for a single species, race, and lifestage of fish, particularly juvenile rearing, are complex and heavily debated, as evidenced at the 2000 SWRCB Yuba River hearings. The variety of methodologies used to assess thermal impacts can result in a variety of interpretations of the data. The lack of standardized methodologies and the inappropriate application of laboratory studies to field conditions can lead to erroneous conclusions.

Fall-run chinook salmon are poikilotherms or "cold-blooded." Cold blooded animals do not have the ability to internally thermoregulate. Thus, salmonids respond immediately to environmental temperature changes, either metabolically (by changing their metabolic rate which in turn, affects all organ systems within the body), or behaviorally (e.g. moving to a cooler or warmer area, if such areas are available).

Because the first priority for fish is immediate survival, metabolic requirements are always satisfied before energy is spent on other functions, such as swimming, growth, or reproduction. If there is enough food available and if dissolved oxygen conditions are sufficient, then the fish will grow, within certain thermal ranges. But if either oxygen or ration become limited, the range of thermal tolerance narrows.

Water temperatures can affect rearing juvenile fall-run chinook salmon through acute impacts, or sublethal chronic stress. Indicators of thermal stress on fish include: (1) disease outbreaks; (2) reduction in growth; (3) reduction in food conversion efficiency; (4) loss of appetite; (5) hyperactivity or disorientation; and (6) secretion of stress hormones such as adrenaline. Sublethal acute changes in water temperatures and exposure to seasonal water temperature extremes act as environmental stressors requiring physiological compensation by fishes. While sublethal water temperature extremes may be within a range of temperatures tolerated by a particular species or lifestage, latent deleterious effects may act on ontogenetic events during growth and development, or may negatively affect ecological interactions such as predation or competition.

For the juvenile rearing lifestage of chinook salmon in the lower Yuba River, there is uncertainty in the literature regarding the effects of temperatures between about 60°F and 66°F. This uncertainty has two major elements:

1. Whether food conversion efficiencies and growth rates increase or decrease as temperatures increase. For example, for fish from the nearby lower American River, Rich (1987) observed slight decreases in these factors as temperatures increased from 60°F to 66°F. By contrast, Cech and Myrick (1999) observed slight increases in these factors as temperatures increased in this range.

2. Whether populations of fall-run chinook salmon in the lower Yuba River would be adversely affected by temperature increases within this range. While Rich (1987) observed increases in disease and mortality in this temperature range due to a disease outbreak in her laboratory study, it is uncertain how disease and mortality in fish in the lower Yuba River would be affected by changes in temperature in this range, and whether other factors such as growth rates would predominate over disease and mortality in the overall effect on the population.

Many studies report that survival of outmigrating fall-run chinook salmon smolts decrease with increasing water temperatures between 59°F to 75.2°F. Water temperatures associated with field distributions of fish are commonly observed to differ from laboratory determined thermal preference, and are usually lower than thermal preferences observed in the laboratory experiments. Several plausible explanations exist for these discrepancies, including artifacts of experimental design (e.g., acute thermal tolerance versus chronic field exposure), artifacts of fish behavior in laboratory apparatus, and temperature-affected biases in field sampling. By contrast, laboratory conditions can serve to elevate the effects of temperature on laboratory fish when disease outbreaks occur. Fish in laboratory experiments cannot avoid the constant temperatures by behaviorally thermoregulating, and disease incidence in circulating laboratory water may exacerbate mortality at each temperature.

Marine (1997) conducted an analysis of temperature's impact on migration success, which indicated that both acceleration and inhibition of Sacramento River chinook smolt development may occur at temperatures above 62.6°F, and significant inhibition of gill Na-K ATPase activity and associated reductions of hypo-osmoregulatory capacity may occur with chronic exposure to elevated temperatures exceeding 68°F. Temperature mediates the physiological response to photoperiod inhibiting smoltification at cooler temperatures, and stimulates smoltification at warmer temperatures, up to a limit.

The major consequence of an accelerated or retarded smolt development pattern is a foreshortened or elongated period of smolting and emigration. Such a contraction or extension of the duration of smoltification may result in asynchronous timing of smoltification, emigration, and arrival at the estuary. In the case of accelerated emigration, hypo-osmoregulatory capability may not be at an optimal functional level and juveniles may require additional time in fresh or brackish water to adapt to higher salinities, which could extend the residency period in the Delta. In the case of retarded emigration, asynchronous timing may result in physiologic stress associated with elevated water temperatures in the lower Sacramento River and Delta. Several lines of evidence and explanatory hypotheses have suggested that the specific period for emigration of juvenile salmonids from the freshwater stream environment to the sea is probably adaptive, minimizing predation risks and maximizing growth opportunities (Marine 1997).

Based on daily records of the number of chinook salmon salvaged at the Hallwood-Cordua Canal fish screen, the spring emigration period of juvenile salmon can begin as early as mid-April and continue until mid-June. However, CDFG has not initiated salvage operations early enough in the season to sufficiently address the overall outmigration period. For the sampling that has been conducted, most juvenile chinook salmon emigrate past Daguerre Point Dam in April and May with peak numbers in early to late May. Emigration timing may reflect the effect of spring water temperatures on salmon growth rates and readiness to migrate. It has been suggested that low water temperatures associated with high flows during the spring rearing period result in slower growth rates and later emigration from the lower Yuba River. Conversely, higher water temperatures associated with lower flows result in higher growth rates and earlier emigrations (SWRCB 2000 Hearing Exhibit S-YCWA-19).

NMFS recently recognized this phenomenon in its Draft Biological Opinion on the Potter Valley Project on the Eel River, California (NMFS 2000). NMFS (2000) states..."*Chinook salmon critical habitat in the reach between the dams is not functioning due to cold water releases from Scott Dam which results in slowed growth and delays juvenile chinook salmon emigrations. Salmonids are exposed to adverse thermal conditions, which reduce their survival and outmigration success, when they reach the lower mainstem river during the hot summer months...*".

Additional data obtained from the CDFG Rotary Screw Trap in the lower Yuba River may provide additional information regarding this issue. However, these data were not available during the preparation of this report.

3.4 SPRING-RUN CHINOOK SALMON

3.4.1 Historic Abundance and Population Trends

Spring-run chinook salmon were probably the most abundant salmon in the Central Valley, before dams reduced or eliminated access to much or all of their historical spawning habitat (Campbell and Moyle 1990; Fisher 1994). Early estimates of total population size are not available, but commercial landings of spring-run chinook salmon during the late 1800s ranged from 127,000 to 600,000 (CDFG 1998). The primary holding and spawning areas of spring-run chinook salmon were the middle and headwater reaches of the San Joaquin, Feather, Sacramento, McCloud, and Pit Rivers, and most perennial tributaries that were large and cold enough to support salmon through the summer (USFWS 1995).

Historical records indicate that Central Valley spring-run chinook salmon populations have declined dramatically since the mid- to late 1800s. Major factors that contributed to early declines included over-fishing, habitat destruction from mining and other land uses, and dams that eliminated or reduced access to much of the historical holding and spawning habitat. Declines continued through the early to mid-1900s as a result of the continued construction of

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dams and corresponding loss of habitat on the mainstems and most major tributaries of the Sacramento and San Joaquin rivers (Yoshiyama et al. 1998).

At present, nearly all large spring-run chinook salmon populations in the Central Valley (including the Yuba River) have been extirpated and the remaining populations (in Butte, Big Chico, Deer, and Mill Creeks) have been significantly reduced (Campbell and Moyle 1990). The most consistent, self-sustaining wild populations of spring-run chinook salmon remaining in the Central Valley are in Deer and Mill Creeks, although runs in Butte Creek have increased and remained relatively stable in recent years. Other runs are maintained by hatchery production (e.g., Feather River) or straying.

The decline of spring-run chinook salmon populations in recent decades is poorly understood but is probably related to: (1) poor survival of emigrating juveniles, especially in the Delta; (2) limited access of adults to upstream spawning areas, especially in dry years; (3) commercial and sport harvest and poaching; and (4) adverse interactions between wild and hatchery spring- and fall-run chinook salmon (e.g., hybridization) (USFWS 1995). Extended droughts and poor ocean productivity may also have contributed to reduced abundance in recent decades. Inland habitat conditions currently influencing the survival of spring-run chinook salmon include elevated water temperatures, water diversions and exports, restricted and regulated flows, entrainment of fish into unscreened or poorly-screened diversions, and poor quality and quantity of the remaining habitat (63 FR 11481).

Spring-run chinook salmon had virtually disappeared from the Yuba River by 1959 (Fry 1961; Wooster and Wickwire 1970). Major in-basin factors contributing to the decline were migration barriers, hydraulic mining, and water diversions. Hydraulic mining in the Yuba River watershed from 1850 to 1885 caused extensive habitat destruction. Between 1900 and 1941, debris dams constructed by the California Debris Commission and now owned and operated by the Corps on the lower Yuba River to retain hydraulic mining debris completely or partially blocked the migration of chinook salmon and steelhead to historic spawning and rearing habitats (Wooster and Wickwire 1970; CDFG 1991; Yoshiyama et al. 1996). Spring-run chinook salmon and steelhead populations were probably severely affected because of inadequate flows and high water temperatures below the dams during the summer. It is likely that native spring-run chinook salmon were extirpated during this period. Water diversions also contributed to poor habitat conditions below the dams, especially in dry years. Englebright Dam, completed in 1941 by the California Debris Commission and now owned and operated by the Corps, completely blocked spawning runs of chinook salmon and steelhead, and is the upstream limit of fish migration today.

Since the completion of New Bullards Bar Dam in 1970 by YCWA, higher, colder flows in the lower Yuba River have improved conditions for over-summering and spawning of spring-run chinook salmon in the lower Yuba River. Small numbers of chinook salmon that exhibit spring-run characteristics have been observed (CDFG 1998). Although precise escapement estimates are not available, the USFWS testified at the 1992 SWRCB lower Yuba River hearing that *"...a population of about 1,000 adult spring-run chinook salmon now exists in the lower Yuba River."* (SWRCB 1994, p. 43). The origin of these fish and their genetic relationship with fall-run chinook salmon are unknown. The run may have originated from plants of hatchery-reared spring-run in the lower Yuba River during the 1970s. Limited observations of tagged adults during annual carcass surveys indicate that hatchery strays from the Feather River contribute to the run. The presence of a genetically distinct, naturally sustained population of spring-run chinook salmon has been questioned because of the lack of consistent suitable water temperatures during the early spawning period (September–October) and the high potential for hybridization of spring- and fall-run chinook salmon (CDFG 1998; Brown and Greene 1993; SWRCB 1994).

3.4.2 Life History and Habitat Utilization

No specific information exists on the life history and habitat requirements of spring-run chinook salmon in the lower Yuba River. Spring-run chinook salmon cannot be reliably distinguished from fall-run chinook salmon during spawning and rearing periods because of overlapping spawning periods, juvenile sizes, and other life history traits. Reported information on the life history and habitat requirements of Central Valley spring-run chinook salmon can be found in the *Report to the Fish and Game Commission: A Status Review of the Spring-Run Chinook Salmon* (CDFG 1998) and *Habitat Restoration Actions to Double Natural Production of Anadromous Fish in the Central Valley of California* (USFWS 1995).

Adult spring-run chinook salmon enter spawning streams from mid-February through July; upstream migration generally peaks in May. Adults continue their migration to summer holding areas where they remain until spawning begins (late August through October). Limited observations by CDFG indicate that adult spring-run chinook salmon migrate into the lower Yuba River from March through June and spend the summer in deep pools in the Narrows Reach (Beak 1989). Spring-run chinook salmon typically spawn from late August through October, although spawning occurs later at lower elevations. In the lower Yuba River, the earliest that chinook salmon redds have been observed in the Garcia Gravel Pit Reach (primarily above Parks Bar) has been mid-September (CDFG 2000). Little spawning habitat exists upstream of the major summer holding area (Narrows Reach). Egg incubation and fry emergence generally occur from September through January.

Juvenile chinook salmon display considerable variation in stream residence and migratory behavior. Juvenile spring- and fall-run chinook salmon may leave their natal streams as fry soon after they emerge or rear for several months to a year before migrating as smolts or yearlings (Yoshiyama et al. 1998). Recent fish trapping operations in the lower Yuba River indicate that large numbers of chinook salmon fry leave the river during winter (CDFG 2000). A second, smaller migration peak of smolt-size fish occurs from April through June. In addition, a portion of the juvenile chinook population rears in the lower Yuba River through the summer and may not leave the river until the subsequent fall or winter. These observations generally apply to fall-run chinook salmon but may also apply, to an unknown degree, to spring-run chinook salmon.

3.4.3 Temperature Requirements

The temperature requirements for spring-run chinook salmon are assumed to be similar to those of other runs of chinook salmon from the same geographic region. Spring-run chinook salmon temperature requirements are likely very similar to those of fall- and late fall-run chinook salmon discussed in the previous section.

3.5 STEELHEAD

3.5.1 Historic Abundance and Population Trends

Historical information on Central Valley steelhead populations is limited. Steelhead ranged throughout accessible tributaries and headwaters of the Sacramento and San Joaquin Rivers before major dam construction, water development, and other watershed disturbances. The steelhead sport fishery on the Sacramento River below Redding developed primarily after Shasta Dam was built, either because the flow and temperature changes improved habitat conditions or because the controlled flows simply made steelhead more available to anglers (McEwan and Jackson 1996).

Estimates of steelhead run size have been sporadic and limited to only a few locations over the last 50 years. Annual run size in the Sacramento River above the mouth of the Feather River during 1953–1958 was estimated at 20,540 fish (Hallock 1989). Although an accurate estimate is not available, the present annual run size for the entire Sacramento River Basin, based on RBDD counts, hatchery counts, and available natural spawning escapement estimates, is probably fewer than 10,000 fish (McEwan and Jackson 1996). The most reliable indicators of recent declines in hatchery and wild stocks are trends reflected in RBDD and hatchery counts. Annual counts at RBDD declined from an average of 11,187 adult fish in the late 1960s and 1970s to 2,202 adult fish in the 1990s. Recent counts at Coleman, Feather River, and Nimbus Hatcheries also are well below the historical average. Frank Fisher (CDFG) estimated that currently 10–30% of adults returning to spawn in the Sacramento River system are of hatchery origin (McEwan and Jackson 1996).

CDFG estimated that only about 200 steelhead spawned in the lower Yuba River annually before New Bullards Bar Reservoir was completed in 1969. From 1970 to 1979, CDFG annually stocked 27,270–217,378 fingerlings, yearlings, and subcatchables from Coleman National Fish Hatchery into the lower Yuba River (CDFG 1991). Based on angling data, CDFG estimated a run size of 2,000 steelhead in the lower Yuba River in 1975. The current status of this population is unknown, but it appears to be stable and able to support a significant sport fishery (McEwan and Jackson 1996). The Yuba River is currently managed for natural steelhead production (CDFG 1991).

Many of the freshwater habitat factors cited for declines in spring-run chinook salmon runs generally apply to steelhead as well, because of their need for tributaries and headwater streams where cool, well-oxygenated water is available year round. Historical declines in steelhead abundance have been attributed largely to dams that eliminated access to most of their historic spawning and rearing habitat, and restricted steelhead to unsuitable habitat below the dams. Other factors that have contributed to the decline of steelhead and other salmonids include habitat modification, overfishing, disease and predation, inadequate regulatory mechanisms, climate variation, and artificial propagation (NMFS 1996).

Most wild, indigenous populations of steelhead occur in upper Sacramento River tributaries below RBDD (Antelope, Deer, and Mill Creeks). Naturally spawning populations also occur in the American, Feather, and Yuba Rivers, and possibly the upper Sacramento and Mokelumne Rivers, but these populations have had substantial hatchery influence and their ancestry is not clearly known (Busby et al. 1996). Steelhead runs in the Feather and American Rivers are sustained largely by Feather River and Nimbus (American River) Hatcheries (McEwan and Jackson 1996).

3.5.2 Life History and Habitat Utilization

Historical records indicate that the upstream migration of adult steelhead in the mainstem Sacramento River started in July, peaked in September, and continued through February or March (McEwan and Jackson 1996). Upstream migration in the lower Yuba River occurs from August through March and peaks in October and February (CDFG 1991). Central Valley steelhead spawn mainly from January through March, but spawning has been reported from late December through April (Hallock et al. 1961). In recent years, most spawning adults and redds have been observed from early January through May, but redds have been observed as late as August. Many of the late-spawning fish appear to be resident rainbow trout. Most steelhead/rainbow trout redds and spawning adults have been observed upstream of Daguerre Point Dam with the largest concentrations above Parks Bar (SWRCB 2000 Hearing Exhibit S-YCWA-19). A run of "half-pounders" has been reported in the lower Yuba River (CDFG 1991). Egg incubation occurs from January through May, and fry emerge from February through June (CDFG 1991).

Juvenile steelhead rear throughout the year and may spend from 1 to 3 years in freshwater before emigrating to the ocean. In the lower Yuba River, most rearing occurs upstream of Daguerre Point Dam (SWRCB 2000 Hearing Exhibit S-YCWA-19). In general, juvenile steelhead emigrate as smolts from March through June (CDFG 1991). Detailed descriptions of the life history and reported habitat requirements of steelhead in California can be found in the *Steelhead Restoration and Management Plan for California* (McEwan and Jackson 1996).

3.5.3 Temperature Requirements

The temperature requirements for steelhead are generally assumed to be similar to those of runs of chinook salmon from the same geographic region. Steelhead temperature requirements are likely very similar to those of spring-run chinook salmon discussed in the previous section, with the addition of recent results on juvenile steelhead.

A laboratory thermal tolerance study (Cech and Myrick 1999) was recently conducted on the nearby juvenile Nimbus strain of steelhead, showing that they exhibited a higher level of temperature independence of growth, oxygen consumption, ration, and thermal preference than has been previously reported for other steelhead strains over the range of 51.8°F to 66.2°F. Nimbus steelhead swimming performance and thermal tolerance generally increased with increasing temperatures. Nimbus steelhead used in this study preferred temperatures between 62.6°F and 68°F, irrespective of ration level or rearing temperature. Nimbus steelhead preferred higher temperatures than the 44.6°F to 60.1°F range reported as optimal for California steelhead (McEwan and Jackson 1996).

The lack of any kind of ration effect on thermal preferences is of particular interest, as other studies have reported that fish may behaviorally thermoregulate and seek lower temperatures when rations were restricted to decrease their maintenance metabolic costs. It is likely that the difference between the two ration levels tested by Cech and Myrick was not sufficient to elicit such a response in the Nimbus steelhead (Cech and Myrick 1999). However, reduced ration levels of 82 percent to 92 percent of full ration did result in reduced growth rates, swimming performance, and oxygen consumption rates.

The preferred thermal range for juvenile Nimbus steelhead was found to be 62.6°F to 68°F; thus, their metabolic rates near that temperature range are likely to show thermal-independence (Cech and Myrick 1999). An ecological advantage of this temperature-insensitivity in respiration is that Central Valley steelhead can move to warmer water to take advantage of the higher growth and, possibly, activity rates without incurring a significant maintenance metabolic cost, provided that sufficient food is available (Cech and Myrick 1999).

4.0 ENVIRONMENTAL BASELINE

The environmental baseline section of this EER serves as the basis of comparison to determine whether operation of the New Bullards Bar Dam and Reservoir and Narrows II Powerhouse components of the YRDP may affect anadromous salmonids in the project area. The environmental baseline represents those conditions in the Yuba River which existed prior to the time of initial operation of the YRDP in 1970. To the extent possible, conditions existing during the period proximately prior to 1970 are used to characterize the environmental baseline.

4.1 PROJECT AREA

Englebright Dam, constructed in 1941 by the California Debris Commission and currently under the jurisdiction of the Corps, completely blocked anadromous fish migration and constitutes the upstream limit of available anadromous fish habitat. Thus, the project area in this EER consists of the lower Yuba River downstream of Englebright Dam to the confluence with the Feather River.

4.1.1 General Habitat Characteristics

The lower Yuba River extends approximately 24 miles from Englebright Dam to its confluence with the Feather River (see Figure 1). Two tributaries, Deer Creek and Dry Creek, enter the lower Yuba River at about River Mile (RM) 23 and RM 14, respectively. Based on general differences in hydraulic conditions, channel morphology, geology, water conditions, and fish species distribution, Beak (1989) divided the river into four reaches -- Narrows Reach, Garcia Gravel Pit Reach, Daguerre Point Dam Reach, and Simpson Lane Reach.

The Narrows Reach extends about two miles downstream from Englebright Dam. In this reach the channel is steep and consists of a series of rapids and deep pools confined by a bedrock canyon. Spring- and fall-run chinook salmon and steelhead can migrate as far as Englebright Dam, but spawning gravels are scarce in the Narrows Reach.

Downstream of the Narrows Reach, the channel enters the alluvial valley plain where massive quantities of hydraulic mining debris remain from past gold mining operations. The Garcia Gravel Pit and Daguerre Point Dam Reaches continue 18.5 miles to the downstream end of the Yuba Goldfields (RM 3.5) near Marysville. These reaches, which contain most of the chinook salmon and steelhead spawning and rearing habitat in the lower Yuba River, consist of alternating pools, runs, and riffles with predominantly cobble and gravel substrates. Daguerre Point Dam, located at RM 11.5, marks the boundary between the Garcia Gravel Pit and Daguerre Point Dam Reaches. The Garcia Gravel Pit Reach generally provides greater habitat complexity than the Daguerre Point Dam Reach, including greater development of bar complexes, side channels, and shaded riverine aquatic cover. The channel downstream of Daguerre Point Dam tends to be more uniform with a lower proportion of bar complexes and riffles. The lower 3.5 miles of the lower Yuba River (Simpson Lane Reach) are bordered by levees and are subject to the backwater influence of the Feather River. The streambed in this reach is dominated by finer-grain deposits and lower abundance of gravels and cobbles.

4.2 HYDROLOGY

The unique characteristics of Yuba River Basin hydrology, including unimpaired runoff and proper indicators for hydrologic conditions in the basin (i.e., Yuba River Index), are discussed in detail in *Yuba River Index: Water Year Classifications for the Yuba River* (B-E 2000). The annual estimated unimpaired runoff of Yuba River near Smartville is 2,245,000 AF on average (1921-1994). Annual unimpaired runoff has varied from a low of 369,300 AF to a high of 4,926,000 AF (S-YCWA 2, p. 2). The monthly distribution of Yuba River unimpaired flow near Smartville is presented in Figure 6. Two equally important sources of Yuba River unimpaired flow include: (1) seasonal storm runoff from October to March; and (2) snowmelt runoff from April to July (or to September if base flows in August and September are included). The combined effects of these two sources of runoff characterize Yuba River Basin hydrology.

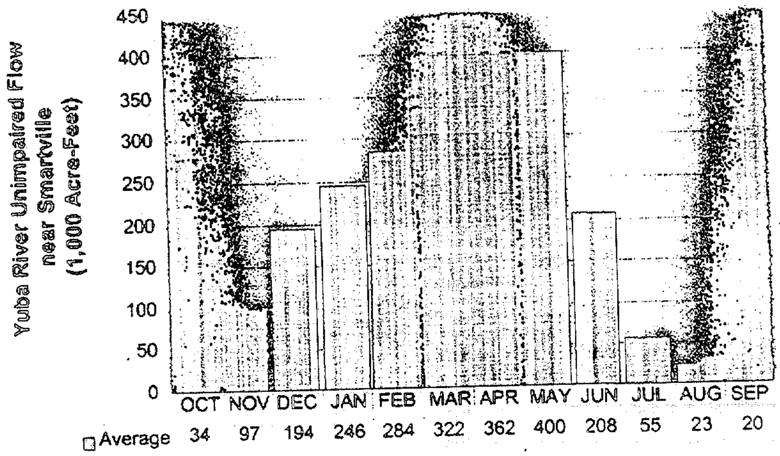

Figure 6. Monthly distribution of Yuba River unimpaired flow near Smartville (source: SWRCB 2000 Hearing Exhibit S-YCWA-19)

The Yuba River Index divides water years into five categories: critical, dry, below normal, above normal, and wet. Figure 7 shows the average Yuba River unimpaired runoff near Smartville by water-year type. The annual average runoff ranges from 3,485,000 AF in wet years to 868,000 AF in critical years with an exponential decline trend. Snowmelt runoff accounts for approximately 50 percent of the annual runoff in all year types, except in wet years, when there is a larger percentage of storm runoff.

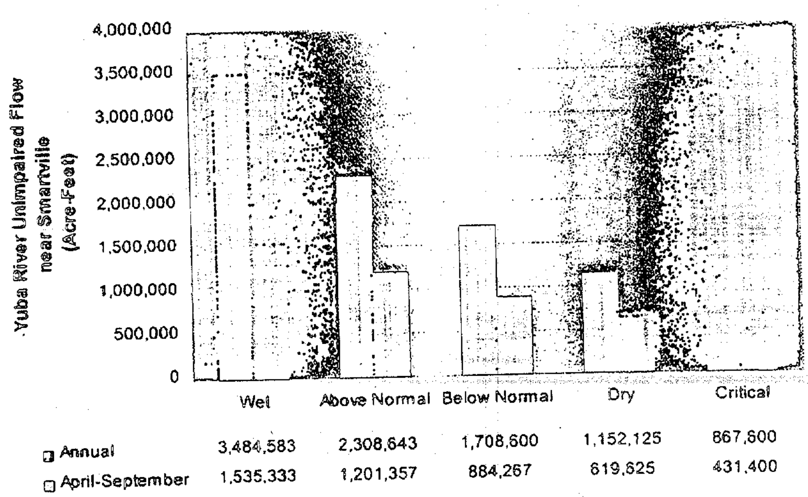

Figure 7. Average Yuba River Unimpaired Flow near Smartville by year types.

4.2.1 Instream Flows

Since the mid-1800s, water development in the Yuba River Basin for flood control, water supply, hydropower generation, and recreation has resulted in significant changes in the magnitude and seasonal pattern of flows and temperatures in the lower Yuba River. These changes have affected the quantity and quality of habitat available to chinook salmon and steelhead. As early as the mid-1800s, runoff patterns were also likely affected by hydraulic mining activities, logging, and other watershed disturbances. After construction of Englebright Dam in 1941, but before operation New Bullards Bar Reservoir in 1970, the hydrograph was characterized by a pattern similar to unimpaired conditions, but with reductions in the magnitude of spring, summer, and fall flows due to diversions and other consumptive uses in the upper basin and lower river.

Flows in the lower Yuba River since completion of Englebright Dam in 1941, but prior to initial operation of the YRDP in 1970, are presented in Figure 8. In general, flows increased from winter to peak flow rates during April and May, and rapidly decreased thereafter to annually low levels during summer. Flows at Smartville were typically somewhat higher than those at Marysville, particularly from June through October. In fact, during Summer (July through September) flows upstream at Smartville were more than twice as high as those at Marysville. For comparative purposes, flows that have occurred since operation of the YRDP also are presented.

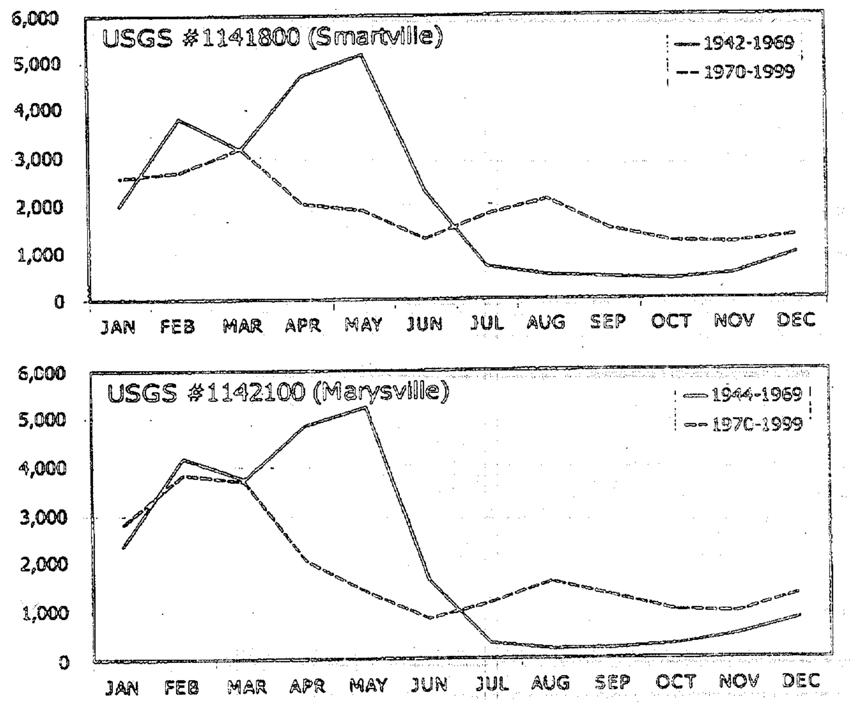

Figure 8. Median flow of historically recorded flows in the lower Yuba River at the Smartville and Marysville USGS gages.

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4.2.2 Flow Fluctuations

The natural hydrograph of the Yuba River is generally characterized by: rapid increases and decreases in flows in late fall through winter (November through March) associated with major rain storms; more gradual, sustained increases and decreases in flow in the spring (April-June) associated with snow melt; and relatively stable, low flows during the dry season in summer and fall (July-October). The magnitude of these seasonal patterns is affected by natural variation in the amount and timing of precipitation and runoff from year to year. Before the operation of New Bullards Bar Reservoir, Englebright Reservoir and other upstream storage and diversion facilities affected the magnitude and rate of natural flow changes. A comparison of the magnitude and frequency of daily flow changes before and after 1970 is presented in Table 1.

4.3 WATER TEMPERATURE

Historically, the lower Yuba River was primarily used by fall-run chinook salmon for spawning and rearing during the fall, winter, and early spring. Before the operation of New Bullards Bar Reservoir, suitable flows and water temperatures for attraction and spawning of fall-run chinook salmon were generally not available until the onset of declining air temperatures and increases in flow associated with the first substantial rains in late October and November. Flows in the lower Yuba River during the summer and early fall were generally too low and water temperatures too high to sustain significant salmonid populations. Fall-run chinook salmon were uniquely adapted to conditions in low-elevation mainstem rivers because of their "ocean-type" life history in which adults spawn soon after entering freshwater and juveniles begin their seaward migration soon after emergence. Consequently, although Englebright Dam eliminated a portion of their historical spawning and rearing habitat, fall-run chinook salmon populations were able to sustain themselves in the remaining habitat below the dam.

By contrast, spring-run chinook salmon and steelhead historically spawned in higher-elevation reaches and tributaries of the Yuba River system. Spring-run chinook salmon and steelhead occurred primarily in the lower Yuba River as migrating adults and juveniles during the winter and spring runoff periods. Spring-run chinook salmon are generally characterized by their "stream-type" life history in which adults spend relatively long periods of time in freshwater before spawning and juveniles may rear for a year or more before migrating to the ocean. Therefore, in contrast to fall-run chinook salmon, spring-run chinook salmon require access to higher elevation reaches of the watershed where suitable water temperatures are available year-round. The lower Yuba River did not provide suitable water temperatures and may have lacked other important physical attributes of habitats used by spring-run chinook salmon and steelhead in higher-elevation reaches and tributaries. Consequently, elimination of access to critical spawning and rearing habitats above Englebright Dam was likely a major cause of the demise of spring-run chinook salmon in the Yuba River. Because of similar life history and water temperature requirements, steelhead were probably affected similarly by the construction of Englebright Dam.

Table 1. Magnitude and Frequency of Daily Flow Changes (Median Values) by Month at the Smartville Gage during Pre- and Post-New Bullards Bar Reservoir Periods (1950–1969 and 1970–1999, respectively).

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept
1950–1969												
Increases (cfs)	12	11	15	17	22	10	6	8	6	4	4	11
Maximum percent increase	90	62	77	207	115	95	44	27	20	8	4	12
Number of days with increases	8	11	11	10	8	12	14	13	7	5	6	6
Decreases (cfs)	-7	-8	-8	-8	-8	-6	-7	-7	-7	-4	-3	-6
Maximum percent decrease	-24	-29	-26	-41	-39	-28	-22	-20	-20	-13	-6	-23
Number of days with decreases	11	9	14	16	19	18	16	16	22	15	10	12
1970–1999												
Increases (cfs)	1	3	3	9	11	12	4	5	3	2	2	3
Maximum percent increase	22	8	18	51	96	79	25	28	27	25	10	20
Number of days with increases	12	10	11	10	9	10	11	12	12	12	9	10
Decreases (cfs)	-2	-2	-2	-5	-5	-5	-3	-3	-4	-2	-2	-2
Maximum percent decrease	-12	-4	-13	-32	-39	-26	-21	-14	-22	-15	-9	-23
Number of days with decreases	11	9	13	14	13	15	12	14	14	13	12	12

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Under natural hydrologic conditions, flows during the summer and early fall were generally too low and water temperatures too high in the lower Yuba River to support viable populations of spring-run chinook salmon and steelhead. Figure 9 shows the annual temperature regime for the only pre-project period when records are available (1965-1968). For comparison purposes, two time periods subsequent to initial operation of the YRDP also are presented.

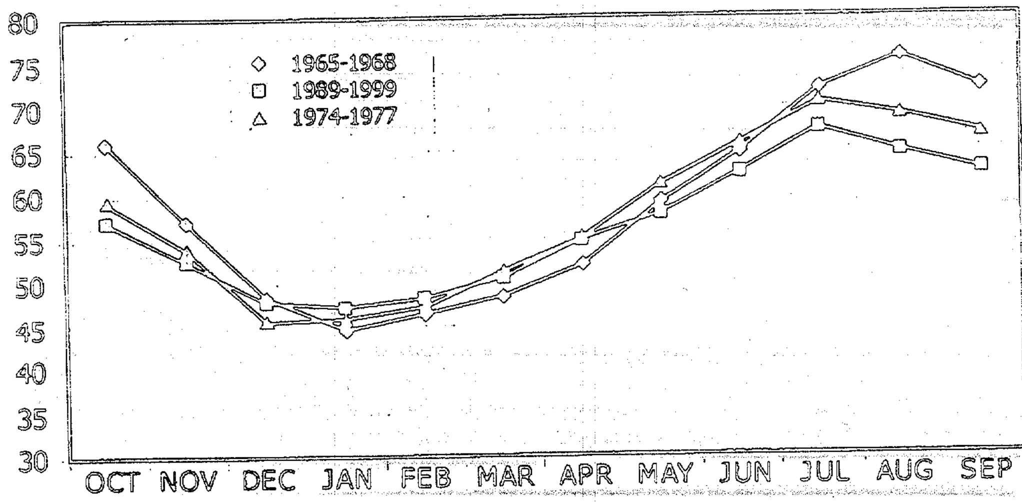

Figure 9. Monthly average of daily Yuba River temperatures at the Marysville gage for periods of pre-and post-Yuba River Development Project (source: SWRCB 2000 Hearing Exhibit S-YCWA 19).

The pre-YRDP temperature regime is characterized by high summer and fall mean monthly temperatures up to the mid-70°F and low mean monthly winter temperatures down to the mid-40°F. Because the water flowed into the lower Yuba River only partially impaired by upstream development and impoundments, water temperatures were strongly dictated by the ambient seasonal conditions, snowmelt, and the fluvial landscape. The lower Yuba River is in the floodplain of the Yuba River Basin and exhibits shallow, relatively warm water temperature conditions in the late summer following late spring snowmelt. Under pre-YRDP conditions, high and cold winter flows, and low and very warm summer flows, dictated lower Yuba River water temperatures.

4.4 GEOMORPHOLOGY AND SPAWNING GRAVEL AVAILABILITY

The massive influx of sediment from hydraulic and dredge mining in the lower Yuba River during the late 1800s and early 1900s caused dramatic changes in channel course, geometry, and bed elevation. Since then, the river has incised into the debris plain downstream of the Narrows Reach and has changed from an unstable, braided channel to a relatively stable, single-thread channel (Beak 1989). However, because the channel and floodplain are dominated by

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unconsolidated cobble and gravel substrates, high winter flows result in active channel migration, especially in the Garcia Gravel Pit Reach. Since 1941, Englebright Dam has been a barrier to downstream transport of coarse and fine sediments to the lower Yuba River. Disruption of this supply has undoubtedly led to channel adjustments which may be reflected in the relatively stable character of the river in recent decades.

Extensive dredger tailings occur along the lower Yuba River in an area known as the Yuba Goldfields (see Figure 3). Past dredging operations in this area have resulted in loss of fine-grained sediments and creation of porous and uniform deposits of cobbles and gravels. The Goldfields confine the surface waters of the lower Yuba River but convey large volumes of underflow that persists through the dry months and contribute to river flows through lateral accretion. The Goldfields contain a network of dredger ponds and channels connected hydraulically by surface and subsurface flows.

Before 1941, when Englebright Dam was constructed, spawning gravels were supplied to the lower Yuba River from upstream sources in addition to local sources, including Deer and Dry Creeks, the Goldfields, and the dredger tailings along the Garcia Gravel Pit and Daguerre Point Dam Reaches. Since 1941, spawning gravels have been supplied to the river largely from local sources of large amounts of hydraulic mining debris deposited in the river bed between the mid-1800s and 1941. Historically, a portion of the chinook salmon and steelhead runs entered and spawned in the Goldfields.

4.5 FISH PASSAGE AND DIVERSIONS

Daguerre Point Dam and the diversions at this location are not part of the YRDP. Nonetheless, discussion of fish passage issues is presented to provide the appropriate context to the Environmental Baseline section of this report.

Daguerre Point Dam, constructed in 1906 by the California Debris Commission and now owned and operated by the Corps, is the diversion point for three major diversion facilities that account for the majority of diversions on the lower Yuba River (North Canal, South Canal, and Pumpline Diversion). Irrigation diversions generally occur from March through October, but diversions may extend to mid-January for flooding of rice fields for waterfowl habitat and rice straw decomposition. The three diversions have a combined capacity of 1,085 cfs. DFG (1991) concluded that cumulative losses of juvenile chinook salmon from impingement, entrainment, and predation are significant.

The dam impeded fish passage for many years because of the lack of functional fish ladders (Wooster and Wickwire 1970; CDFG 1991). Fish passage was improved with the installation of new ladders in 1950, and is currently considered adequate for chinook salmon based on annual spawning escapement surveys (CDFG 1991), although design deficiencies have been identified including inadequate attraction flows, periodic obstruction of the ladder by woody debris, operating criteria that require closure of the ladder at high flows, and the proximity and orientation of the ladder entrances to the spillway (CDFG 1991; USFWS 1994). Adult salmon have been observed leaping at the face of the dam, indicating that migrating adults may not

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readily find the entrances to the fish ladders which may lead to some degree of injury, delayed migration, and/or blockage. Several modifications to the existing fish ladders have been proposed to address these problems and improve fish guidance and overall ladder efficiency (USFWS 1995).

CDFG operates a V-shaped, punched-plate screen in the North Canal about 0.25 mile from the river. This screen is reported to be efficient in preventing the entrainment and impingement of juvenile salmonids. However, significant losses of fish reportedly occur as a result of predation in the intake channel and removal of the screen during the summer when downstream migrating juvenile steelhead are present. The South Canal diversion facility includes a 450-foot long porous rock fish barrier fitted with a fine-mesh screen. A number of studies have been conducted at the South Canal diversion facility to determine the effectiveness of the rock barrier in preventing fish entrainment. These studies have been inconclusive, but indicate that predation may be a problem in the adjoining intake and bypass channels (SWRCB 1996). The Pumpline diversion facility, located about 0.9 mile upstream of Daguerre Point Dam, was effectively unscreened for many years, resulting in small entrainment losses (CDFG 1991). A new fish screen was installed at this facility in 1999.

Predation on emigrating salmonids generally increases at dams and diversions where young fish may be concentrated, disoriented, or unable to avoid predators as they would under natural riverine conditions. The potential exists for increased levels of predation at Daguerre Point Dam, where conditions provide predator habitat and increase the vulnerability of juvenile salmon and steelhead compared to other areas of the river. Predation rates on juvenile salmon and steelhead are likely to be higher downstream of the dam because the dam generally restricts striped bass, American shad, and other predatory species to this reach.

4.6 RIPARIAN HABITAT

Deposition of hydraulic mining debris, subsequent dredge mining, and loss/confinement of the active river corridor and floodplain of the lower Yuba River since the mid-1800s probably eliminated much of the riparian vegetation along the lower Yuba River. In addition, the large quantities of cobble and gravel that remained generally provided poor conditions for re-establishment and growth of riparian vegetation. Englebright Dam also inhibited regeneration of riparian vegetation by preventing the transport of fine sediment, woody debris, and nutrients from upstream sources to the lower river.

4.7 WATER QUALITY

Relatively little information is available regarding water quality specific to the period prior to initial operation of the YRDP. However, human activities are known to have historically impaired the water quality of the Yuba River, including the lower Yuba River. Gold mining, particularly hydraulic mining, introduced vast quantities of silt and sediment to the river and undoubtedly resulted in high turbidities. Gold mining also introduced mercury to the river as a waste product of the gold amalgamation process (Beak 1989). Mercury is extremely toxic in methylated form. A more detailed discussion of water quality relative to the past three decades is presented in Section 5.6 of this EER.

5.0 PROJECT EFFECTS

5.1 OVERVIEW

Spring-run chinook salmon and steelhead, both listed as threatened species under the federal ESA, historically migrated considerable distances up the South, Middle and North Yuba River to spawn and rear (SWRCB 2000 Hearing Exhibit S-YCWA 19, pgs. 3-9). The construction of Daguerre Point Dam in 1906 and Englebright Dam in 1941 by the California Debris Commission, and now owned and operated by the Corps, blocked these migrations and decimated the Yuba River populations of these fish (SWRCB 2000 Hearing Exhibit S-YCWA 19, pgs. 3-9).

In contrast to these two Corps dams, New Bullards Bar Dam and Reservoir, constructed by YCWA on the North Yuba River in 1969, created substantial benefits for Yuba River fisheries. New Bullards Bar Dam and Reservoir was constructed upstream of Englebright Dam, and thus never blocked the migrations or adversely affected the habitat availability of any salmon or steelhead (SWRCB 2000 Hearing Exhibit S-YCWA 19, pgs. 1-2, 3-9).

Since New Bullards Bar Reservoir began operations in 1970, it has significantly increased summer and fall flows in the lower Yuba River, and significantly reduced water temperatures (by up to 10°F) during these times (SWRCB 2000 Hearing Exhibit S-YCWA 18, p. 3). Since 1993, when current procedures for the operation of the multi-level outlet at New Bullards Bar Dam were established (see Section 2.3), average summer water temperatures have dropped by up to 10°F compared to pre-project levels (see Figure 9). Both changes in flows and changes in temperatures have significantly benefited lower Yuba River fisheries. Because of the more-favorable lower Yuba River conditions that were created by operation of New Bullards Bar Reservoir, spring-run chinook salmon and steelhead now can successfully migrate, spawn and rear in the lower Yuba River (SWRCB 2000 Hearing Exhibit S-YCWA 19, pgs. 3-9).

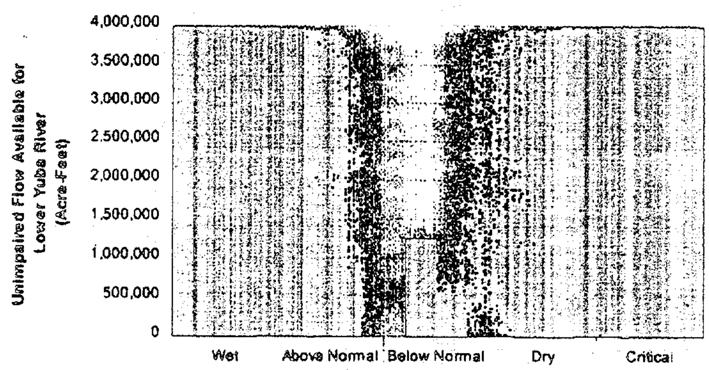
Operation of New Bullards Bar Reservoir also has benefited fall-run chinook salmon. The long-term average of adult chinook salmon populations returning to the lower Yuba River representing the post-YRDP period (1972-1999) of 14,421 fish per year is higher than the pre-YRDP period (1953-1971) of 12,906 fish per year (SWRCB 2000 Hearing Exhibit S-YCWA-43). During the past four years, lower Yuba River salmon runs have numbered between 25,000 and 30,000 adult fish, even though there is no hatchery on the Yuba River (SWRCB 2000 Hearing Exhibit S-YCWA 43). These past four years reflect the period when adult returns represent the year-class whose in-river lifestages were subject to the year-round, colder water releases from the low-level outlet of New Bullards Bar Dam beginning in 1993.

Since 1970, operation of New Bullards Bar Dam and Reservoir has benefited spring-run chinook salmon, steelhead, and fall-run chinook salmon in the lower Yuba River. These benefits have been realized despite numerous adverse factors that have decimated many Central Valley salmon populations during this same time period, including the adverse out-of-basin factors of ocean harvest, ocean conditions, and Delta conditions, and the adverse in-basin factor of reduced runoff to the YRDP and the lower Yuba River (SWRCB 2000 Hearing Exhibit S-YCWA 19).

5.2 HYDROLOGY

The upper basins of the Middle and South Yuba Rivers have been extensively developed for power and consumptive use by Nevada Irrigation District (NID) and PG&E. These entities export an average of approximately 410,000 AF per year from the Yuba River Basin to the Bear and American River Basins. In addition, OWID exports an average of about 71,000 AF per year from Slate Creek (a tributary to the North Yuba River) to the Feather River Basin. These upper basin operations capture the first increment of the available water supply and, thus, can have a substantial impact on the supply remaining for use in the lower Yuba River, particularly during dry and critical years (SWRCB 2000 Hearing Exhibit S-YCWA 13).

North Yuba River inflow to New Bullards Bar Reservoir is augmented by an 850 cfs maximum diversion from the Middle Yuba River to Oregon Creek, and by a 1,200 cfs maximum diversion from Oregon Creek into New Bullards Bar Reservoir. The average combined inflow to New Bullards Bar Reservoir from the North Yuba River and the diversion from the Middle Yuba River and Oregon Creek is about 1.1 million AF per year (SWRCB 2000 Hearing Exhibit S-YCWA 13). Runoff available to the lower Yuba River is the total of the following: (1) inflow to New Bullards Bar Reservoir; (2) inflow to Englebright Reservoir minus the release from New Bullards Bar Reservoir; (3) inflow from Deer Creek near Smartville; and (4) inflow from Dry Creek. Figure 10 shows the runoff available for the lower Yuba River by water-year types.



	Wet	Above Normal	Below Normal	Dry	Critical
Annual	2,895,282	1,745,780	1,238,011	793,615	600,202
April-September	1,230,646	847,875	561,639	371,598	248,266

Figure 10. Average unimpaired flow available for lower Yuba River. (Source: SWRCB 2000 Hearing Exhibit S-YCWA 19)

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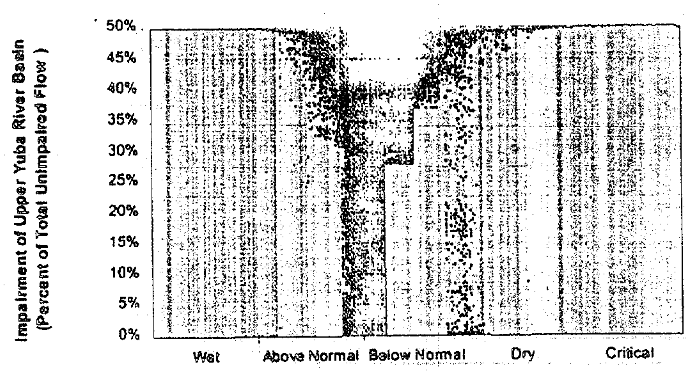
The average upper basin impairment ranges from 589,000 AF in wet years to 267,000 AF in critical years (SWRCB 2000 Hearing Exhibit S-YCWA 19). The amounts of these upstream impairments are dependent upon the available unimpaired flow in the entire Yuba River Basin. Figure 11 shows the average upper basin impairment by year type in percentage of total unimpaired flow. The percentage of annual upper basin impairment increases from 17.3 percent in wet years to 31.1 percent in critical years. The upper basin has even larger percentages of impairment during the period from April to September for snowmelt runoff. The average upper basin impairment from April to September of critical years reaches 43.2 percent (SWRCB 2000 Hearing Exhibit S-YCWA 19).



	Wet	Above Normal	Below Normal	Dry	Critical
Annual	17.3%	24.6%	27.8%	31.2%	31.1%
April-September	21.1%	29.6%	36.8%	40.3%	43.2%

Figure 11. Upper basin impairment by year type in percentage of total unimpaired flow. (Source: SWRCB 2000 Hearing Exhibit S-YCWA 19)

5.2.1 Instream Flows

Flows in the lower Yuba River are significantly affected by the operation of New Bullards Bar Reservoir. New Bullards Bar Reservoir is the primary storage reservoir within the Yuba River Basin with storage capacity of 966,000 AF. Fifteen other reservoirs have been constructed in the upper portion of the basin, with a combined storage capacity of approximately 400,000 AF (CALFED 1999). New Bullards Bar Reservoir stores winter and spring flows and distributes water more evenly, relative to unimpaired flows, throughout the year and from year to year. Summer and fall releases from New Bullards Bar Reservoir result in substantially higher flows throughout the lower Yuba River compared to unimpaired flows (CALFED 1999).

Flows from August through October at the Marysville Gage are typically higher, often substantially higher, than unimpaired flows, whereas flows from March through June at Marysville are often substantially lower (CALFED 1999). These general relationships also are exhibited by the pre-YRDP available USGS gage data (see Figure 8), rather than by unimpaired flows *per se*.

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Flow-Habitat Relationships

During 1986–1988, Beak Consultants, under contract with CDFG, conducted extensive fisheries investigations in the lower Yuba River to evaluate the instream flow needs of fall- and spring-run chinook salmon, steelhead, and American shad (Beak 1989). Based on Instream Flow Incremental Methodology Physical Habitat Simulation (IFIM/PHABSIM) modeling results, several curves relating flow to weighted usable area (WUA - an index of the quantity of physical habitat weighted by habitat quality) were developed for chinook salmon and steelhead spawning, fry, and juvenile lifestages. The habitat-flow relationships for chinook salmon were based on observed patterns of habitat use for fall-run chinook salmon in the lower Yuba River, and were assumed to also apply to spring- and late fall-run chinook salmon. Because inadequate data existed on steelhead habitat use in the lower Yuba River, CDFG (1991) developed habitat-flow relationships for steelhead lifestages based on published habitat-use criteria. Because these criteria were similar to those for chinook salmon, the flows associated with maximum WUA for steelhead spawning and rearing life stages are similar to those for chinook salmon. Data produced from this study (including PHABSIM WUA calculations for chinook salmon and steelhead) served as the technical basis for CDFG's 1991 *Lower Yuba River Fisheries Management Plan*.

Flows that maximize habitat for a particular life stage of chinook salmon have been shown to provide near-maximum WUA for the same life stage of steelhead, due to the similarity in habitat requirements by these species (Beak 1989; CDFG 1991). For example, WUA data averaged for all reaches of the lower Yuba River show that instream flows producing maximum WUA for chinook salmon during the spawning, fry rearing, and juvenile rearing lifestages provide greater than 97, 99, and 93 percent of maximum WUA for steelhead during these same lifestages. Therefore, flows that maximize WUA for a specific lifestage of chinook salmon will also provide near maximal (i.e., ≥93%) WUA for steelhead during that same lifestage. However, the same lifestages for chinook salmon and steelhead occur during different periods of the year.

Jones and Stokes (1992) modified the habitat-flow relationships for chinook salmon spawning, fry rearing, and juvenile rearing to account for tributary inflows (Deer and Dry Creeks) and diversions near Daguerre Point Dam. Table 2 presents the flow ranges associated with near-maximum WUA (≥90% of maximum WUA) for each lifestage and river reach. These results generally apply to similar lifestages of steelhead.

Table 2. Flow ranges (in cfs) associated with near-maximum weighted usable area (≥90% of maximum WUA) for chinook salmon spawning, fry, and juvenile lifestages.

Reach	Spawning	Fry	Juvenile
Garcia Gravel Pit [a]	425-1,050	100-200	100-425
Daguerre Point Dam [b]	250-750	50-175	100-300

[a] Flows measured at the Smartville gage

[b] Flows measured at the Marysville gage

The flow-habitat relationships indicate that in most years since 1970, daily flows in the lower Yuba River have equaled or exceeded flows associated with near maximum weighted usable area for chinook salmon. Based on these relationships, chinook salmon spawning habitat is maximized at flows between approximately 500 and 1,000 cfs in the primary spring-run chinook salmon spawning reach above Daguerre Point Dam (Garcia Gravel Pit Reach) and at flows between approximately 400 and 800 cfs below the dam (Daguerre Point Dam Reach). From 1970 to 1999, daily flows in the Garcia Gravel Pit Reach (measured at the Smartville gage) exceeded 500 cfs 91 percent of the time, and flows between 500 cfs and 1,000 cfs occurred 33 percent of the time during the primary months for spring-run chinook spawning (September–November). (These are minimum estimates of the percentage of time that flows were exceeded because they do not reflect the contribution of tributary inflows [Deer and Dry Creeks] in the reach above Daguerre Point Dam). In the Daguerre Point Dam Reach, daily flows exceeded 400 cfs 87 percent of the time, and flows between 500 cfs and 1,000 cfs occurred 30 percent of the time during this period. By contrast, from 1943 to 1969, daily flows in the Garcia Gravel Pit Reach exceeded 500 cfs 43 percent of the time, and flows between 500 cfs and 1,000 cfs occurred 40 percent of the time during the primary months for spring-run chinook spawning (September-November). From 1943 to 1969 in the Daguerre Point Dam Reach, daily flows exceeded 400 cfs 38 percent of the time, and flows between 500 cfs and 1,000 cfs occurred 18 percent of the time during this period. Thus, flows from September through November have more often been within the range associated with maximum weighted usable spawning area since the YRDP became operational in 1970.

The flow-habitat relationships for juvenile chinook salmon indicate that rearing habitat is maximized at flows between 50 and 400 cfs in both the Garcia Gravel Pit and Daguerre Point Dam Reaches. From 1970 to 1999, daily flows in the Garcia Gravel Pit Reach exceeded 50 cfs 100 percent of the time, and flows between 50 cfs and 400 cfs occurred 3 percent of the time during the primary months for spring-run chinook rearing (December–June). In the Daguerre Point Dam Reach, daily flows exceeded 50 cfs 100 percent of the time, and flows between 50 cfs and 400 cfs occurred 12 percent of the time during this period. By contrast, from 1943 to 1969, daily flows in the Garcia Gravel Pit Reach exceeded 50 cfs 100 percent of the time, and flows between 50 cfs and 400 cfs occurred 2 percent of the time during the primary months for spring-run chinook rearing (December-June). In the Daguerre Point Dam Reach, daily flows exceeded 50 cfs 100 percent of the time, and flows between 50 cfs and 400 cfs occurred 4 percent of the time during this period. Thus, flows from December through June are more often within the range associated with maximum weighted usable juvenile rearing area since 1970 when the YRDP became operational.

Flow-Immigration Relationships

In 1986 and 1987, CDFG performed a study to determine if low flows impaired upstream migration and distribution of spawning fall-run chinook salmon. To assess conditions of upstream migration, surveys were conducted and naturally occurring critical riffles were identified. In the study, CDFG represented critical riffles by transects located at the Simpson Lane and Daguerre Point Dam IFIM transect sites. Depths were measured along two of these

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transects at 70 cfs. PHABSIM was used to simulate water surface elevations related to discharge levels at other flows.

Although minimum depth criteria for upstream migration vary in the literature, CDFG chose criteria based on a minimum depth of 0.8 ft, which must cover continuously 10 percent of the transect, and a total of 25 percent criteria, CDFG concluded that Transect 1 at Simpson Lane, a critical riffle, posed the greatest potential impairment to adult chinook salmon upstream migration. Extrapolation of the Simpson Lane IFIM Transect 1 data indicates that a "minimum of approximately 175 cfs are required" to meet the minimum depth criteria selected by CDFG (SWRCB 1992 Hearing Exhibit CDFG 26, pg. 92-95).

For chinook salmon, the establishment of 175 cfs as the flow rate required for critical riffle passage is overly conservative because of the criteria chosen by CDFG. Moreover, these criteria are not consistent with critical riffle passage criteria more recently established by CDFG, in consultation with federal agencies, to protect anadromous salmonids.

In January 1998 CDFG, NMFS, USFWS, and PG&E collectively referred to as the Potter Valley Project Fishery Review Group, or FRG, reached joint agreement on a recommendation for modifications to the project's flow schedule, operations, and facilities (PG&E 1998). In consideration of anadromous salmonids (including chinook salmon and steelhead), the FRG agreed upon a critical riffle passage "standard" of a water depth of 0.6 feet for a width of four continuous feet in the Eel River, California.

Examination of the lower Yuba River critical riffle passage study (CDFG 1991; Figures 31 and 32) relationships provided by CDFG demonstrate that the criteria used by CDFG for the Eel River would be met at all flows included in the analysis, which were 100, 84, and 50 cfs. Moreover, CDFG's own thalweg analysis (CDFG 1991, pgs. 93-94) demonstrates that a depth of approximately 0.8 ft would be provided for a cross-sectional distance of up to approximately 40 continuous feet at a flow of 84 cfs. Thus, a flow of 175 cfs probably represents several times the flow required to provide critical riffle passage in the lower Yuba River.

Adult upstream migration periods for fall-run chinook salmon, spring-run chinook salmon, and steelhead reportedly occur from late September through January, mid-February through July, and August through March, respectively. Thus, the adult upstream migration period for all three runs/species extends year-round. The period extending from July through November encompasses the low-flow period of the year, and a portion of the adult upstream migration period for all three anadromous salmonids.

Although 175 cfs probably represents several times the flow required for adult anadromous salmonid critical riffle passage in the lower Yuba River, the percent of time that mean daily flows at the USGS Marysville gage exceeded 175 cfs during the months of July through November was used as an index to compare pre-YRDP and post-YRDP upstream migration conditions. Results of this comparison demonstrate that adult upstream migration conditions have improved since operation of the YRDP began in 1970. Table 3 shows the frequency (percent of time) that flows exceeded 175 cfs at the USGS Marysville gage from July through November for the pre- and post-YRDP periods. Flows exceeded 175 cfs more often during every month of the July through November period under post-YRDP conditions. Overall, operation of the YRDP resulted in flows exceeding 175 cfs at the USGS Marysville gage from July through November about 94 percent of the time, relative to only 63 percent of the time under pre-YRDP conditions.

Table 3. Percent of time that flows exceeded 175 cfs at the USGS Marysville gage from July through November for the pre-YRDP period (1943-1969) and post-YRDP period (1970-1999).

	Month					
	July	August	September	October	November	Total
Percent of Time						
1943-1969	67	53	54	52	84	63
1970-1999	85	90	94	100	100	94

Flow-Emigration Relationships

Juvenile spring-and fall-run chinook salmon may leave their natal streams as fry soon after they emerge or rear for several months to a year before migrating as smolts or yearlings (Yoshiyama et al. 1998). Recent fish trapping operations in the lower Yuba River indicate that large numbers of chinook salmon fry leave the river during winter (CDFG 2000). Groot and Margolis (1991; pg. 332) state ..."*A large downstream movement of chinook fry immediately after emergence is typical of most populations.*" This phenomenon also has been observed on the nearby lower American River, where Snider et al. (1998) reported that in two recent survey years, 86 percent or more of emigrating chinook salmon fry were recently emerged.

A second, smaller migration peak of smolt-size fish occurs from April through June in the lower Yuba River (CDFG 2000). In addition, a portion of the juvenile chinook population rears in the lower Yuba River through the summer and may not leave the river until the subsequent fall or winter. These observations generally apply to fall-run chinook salmon but may also apply, to an unknown degree, to spring-run chinook salmon.

Numerous abiotic factors may be associated with juvenile anadromous salmonid emigration, including rapid increases in flow ("pulse flows"), flow reductions, increasing temperature, photoperiod, turbidity, lunar phase, atmospheric pressure, and other factors. As previously demonstrated in this report, no significant relationship has been observed between spring flows and subsequent adult spawning escapement, indicating that spring flows may not be associated with juvenile emigration success for the lower Yuba River. Other available scientific information suggests substantial uncertainty regarding the relationships between juvenile salmonid downstream emigration and daily, weekly and seasonal flow regimes. For example, Groot and Margolis (1991) acknowledge several conflicting reports on the relationship between discharge and juvenile emigration. On the nearby lower American River, recent studies have shown that juvenile chinook salmon emigration was not coincident with peak flow conditions and may have been stimulated by temperature (Snider et al. 1998). Smith and Elwell (1961 as cited in SEC 1998; pg. 2.7-2) state that ..."*Most steelhead smolts move downstream in the early spring on declining flows, increasing photoperiod, and increasing water temperature.*" With regard to juvenile chinook salmon emigration in the Eel River, California, VTN (1982; pg. 311) suggests that . . ."*Water temperature appears to be the primary factor influencing* [salmonid] *emigration*." Water temperatures experienced by annual year-classes of salmonids rearing in the lower Yuba River influence the date at which peak salmonid emigration from the river will occur. Spring flows in the lower Yuba River, therefore, must provide for: 1) adequate rearing habitat; and 2) temperatures that allow for near-maximum growth rates and, therefore, timely emigration from the river. Conversely, suboptimal (i.e., high or cold) spring flows would reduce salmon fry and juvenile habitat availability, limit growth rates, and delay emigration (SWRCB 1992 Hearing Exhibit YCWA 68), thereby likely decreasing overall smolt survival from the lower Yuba River (Cramer 1990).

5.2.2 Flow Fluctuations

Since 1970, the operation of Narrows I and II has resulted in more stable flows in the lower Yuba River during controlled-flow conditions (i.e., when there is no spill over Englebright Dam) than occurred before 1970. A comparison of daily flow changes at the Smartville gage between pre-and post-New Bullards Bar periods (1950-1969 and 1970-1999, respectively) shows that median daily increases and decreases in flow were smaller after 1970 (see Table 1). After 1970, the frequency of flow changes (number of days flow increased or decreased) and the maximum change in daily flows (expressed as a percentage of the previous day's flow) decreased from October through May, while increases and decreases occurred during June through September.

The 1965 CDFG/YCWA Agreement places limits on the magnitude and rate of controlled flow reductions at the Smartville gage during October and November. Under normal operations, these limits have been effective in protecting fall- and spring-run chinook salmon redds from dewatering (SWRCB 1994). However, because chinook salmon spawning may begin earlier, and steelhead/rainbow trout spawning may extend through late summer, year-round protection has been recommended by CDFG, NMFS, and USFWS (SWRCB 1994).

Limits on daily flow fluctuations downstream of Englebright Dam are currently governed by the 1965 CDFG/YCWA Agreement and a 1993 ramping rate plan developed by PG&E in consultation with CDFG and USFWS. Following a review of flow-stage relationships and the results of fish-stranding surveys, the USFWS proposed an interim maximum ramping rate of 200 cfs per hour when Narrows I is operated alone at flows of about 700 cfs or less (provided that such flow changes occur on a infrequent basis) and a maximum ramping rate of 500 cfs per hour when both Narrows I and II are operated conjunctively. Past surveys indicate that daily streamflow reductions within this range are effective in minimizing stranding of juvenile salmonids with direct access to the river (Jones and Stokes 1998, 1999).

General field observations on the lower Yuba River and other rivers indicate that both natural and controlled flow reductions can result in some degree of fish stranding (Jones and Stokes 1998, 1999; Hunter 1992). The magnitude of stranding is site-specific and related to several factors, including species and lifestage, prior flow conditions, time of year, and channel configuration. Chinook salmon and steelhead fry are most vulnerable to stranding because of their limited swimming ability, their tendency to hide in the streambed, and their preference for side channels and shallow river margins. In general, the potential for stranding increases when sustained high flows (natural or regulated) allow young fish to disperse and occupy side channels and other off-channel habitats where they do not have direct access to the main river. Field observations in the lower Yuba River indicate that some stranding of juvenile salmon and steelhead may be unavoidable because of favorable rearing conditions in these habitats and an apparent reluctance of juveniles to move away from protective cover (Jones and Stokes 1999). Under these conditions, factors that may influence the survival of stranded fish include the duration of reduced flows, ambient air temperatures, habitat quality (e.g., water quality, presence of cover), food abundance, and the presence of predators. For example, young salmon appear to survive and grow well in some large, isolated backwaters along the lower Yuba River where significant subsurface flows maintain high-quality rearing habitat throughout the spring and summer (Jones and Stokes 1998, 1999).

Flow reductions resulting from normal maintenance and emergency operations of the Narrows I and II Powerhouses have been a major concern in recent years because of potential adverse flow and temperature effects on listed spring-run chinook salmon and steelhead. The ability to manage releases from Englebright Dam during maintenance and emergency operations is limited by the design of Englebright Dam and the bypass capability of the Narrows I and Narrows II Powerhouses. The only way to pass water from Englebright Reservoir downstream is to discharge water through the Narrows I and Narrows II Powerhouses, or to spill water over the top of the dam. Because Englebright Dam was originally designed as a debris dam, there is no low level outlet on the dam to bypass water. Currently, Narrows I can bypass the maximum generating capacity of the plant (650 cfs) in the event of a shut-down. Narrows II has a maximum generating capacity of 3,400 cfs and a bypass capability of only 650 cfs.

Maintenance activities at Narrows II include generator brush replacement, which requires a 6-hour shut-down 2-3 times per year, and annual maintenance, which typically requires a 2-3-week shut-down but can be longer if major maintenance is needed. During brush replacement, the 650 cfs bypass valve at Narrows II can be opened. During annual maintenance, the Narrows II bypass valve usually cannot be operated, and Narrows I is used to maintain instream flows. Consequently, flows in the river may be reduced to a minimum of 650 cfs for several days to several weeks depending on the type of maintenance. Since 1991, YCWA has scheduled annual maintenance activities during periods when the potential for redd dewatering and fish stranding is lowest (late August to mid-September), as determined by redd and fish stranding surveys. In recent years, YCWA and PG&E have, in cooperation with the resource agencies, modified operations and maintenance schedules to further protect spring-run chinook salmon and steelhead redds and juveniles from flow and temperature impacts associated with planned flow reductions.

Since 1998, there have been nine uncontrolled Narrows II flow events resulting in sustained flow reductions. Seven (or 78 percent) of these events were caused by PG&E-maintained systems. This includes six electric transmission line outages on the PG&E's transmission line connecting the YCWA Narrows II Powerhouse to the electric grid, and one on the transfer trip relay. The two other events were caused by Narrows II plant systems. Three of these nine events were in 1998, five in 1999 and one in 2000. The number of events in 1998 and 1999 are abnormally high, compared to long-term averages.

Before proceeding with these event descriptions, it is helpful to have an understanding of the water flow past Englebright Dam, the two powerhouses and the lower Yuba River. The lower Yuba River starts at Englebright Dam and flows about 24 miles to the Feather River. The California Debris Commission completed construction on the 260-foot high Englebright Dam in 1941. The only ways water flows past Englebright Dam are through the two powerhouses, or from spills over the top of the dam. YCWA's 50 MW Narrows II Powerhouse is located just downstream of the base of the dam. PG&E's 12 MW Narrows I Powerhouse is about one third of a mile downstream from the dam. The total water flow past Englebright Dam is measured below the two powerhouses.

Flow changes out of Englebright Dam are attenuated by the makeup of the lower Yuba River channels. Just below Englebright Dam, there is a large pool called the Narrows pool which naturally attenuates any flow fluctuations past the dam. Also, the majority of the lower Yuba River's bed and banks are formed by cobble that was washed downstream from hydraulic gold mining in the mid-1800's. These cobble banks have significant water storage capacity that releases water when the river level drops, and absorbs water when the river level increases. An example of this attenuation is the May 22, 1999 event, when the flow reduction below the powerhouses was about 1,727 cfs (or 72 percent), while the flow reduction at the Marysville gage 14 miles downstream was only about 152 cfs (or 7 percent) of the total flow at the Marysville gage.

YCWA entered into a Power Purchase Contract with PG&E in 1966. This contract specifies that PG&E receives all of the electric power generated by the YRDP, which includes generation from the Colgate and Narrows II Powerhouses, in exchange for annual fixed payments and operation and maintenance costs. The YCWA Narrows II Powerhouse is dispatched by PG&E and is under the jurisdiction of the PG&E Wise Switching Center. The YCWA Narrows II Powerhouse is connected to the electric grid through the PG&E Narrows-Smartville No. 2 60 KV transmission line. The Narrows II Powerhouse is normally operated remotely through the YCWA Colgate control room for about one-third of each day, and through the PG&E Wise Switching Center for the other two-thirds of each day.

Summary of Recent Flow Reduction Events

April 9, 1998 – Narrows II tripped offline due to an erroneous signal being received by transfer trip equipment, installed and maintained by PG&E, that is designed to protect the PG&E electric transmission line connecting the plant to the electric grid and Narrows II. The Yuba River flow below the powerhouses dropped from about 4,090 cfs to about 654 cfs, and then increased to about 3,880 cfs, with the total event lasting about 1.5 hours. Investigation of the event determined that this was the first and only event of this type and that the most likely cause was noise on the microwave communication line to the transfer trip relay being interpreted by PG&E-maintained equipment as a trip signal. After this event, PG&E reset the transfer trip relay to require both a guard tone and a trip tone, to protect against communication noise tripping Narrows II offline again in the future.

April 14, 1998 – A PG&E transmission line outage, caused by lightning, tripped Narrows II offline. The Yuba River flow below the powerhouses dropped from about 4,910 cfs to about 1,940 cfs, and then increased to about 5,720 cfs with the total event lasting about 1.5 hours.

August 7, 1998 - A PG&E transmission line outage, caused by a bird, tripped Narrows II offline. The Yuba River flow below the powerhouses dropped from about 3,021 cfs to about 57 cfs for less than 10 minutes, and then increased to about 2,916 cfs, with the total event lasting about 3.5 hours.

February 9, 1999 – An excess Narrows II generator bearing temperature indication tripped Narrows II offline. At the time, a rainstorm created substantial spill of about 11,350 cfs at Englebright Dam. The Yuba River flow below the powerhouses dropped from about 15,033 cfs to about 12,954 cfs, and then increased to about 20,474 cfs, with the total event lasting about 4 hours. The higher ending flow was due to the increased spill over Englebright Dam due to the storm event.

February 16, 1999 – A PG&E transmission line outage, caused by a bird, tripped Narrows II offline. At the time, Englebright Dam was spilling and the Yuba River flow below the powerhouses dropped from about 4,292 cfs to about 1,461 cfs and then increased to about 4,824 cfs, with the event lasting about 4 hours.

March 9, 1999 – A PG&E transmission line outage, the cause of which was not identified, caused Narrows II to trip offline. The Yuba River flow below the powerhouses dropped from about 4,577 cfs to about 3,315 cfs, and then increased to about 4,439 cfs, with the event lasting less than 30 minutes.

May 22, 1999 – A PG&E transmission line outage, caused by a bird, tripped Narrows II offline. The Yuba River flow below the powerhouses dropped from about 2,383 cfs to about 656 cfs, and then increased to about 2,354 cfs, with the event lasting less than 30 minutes.

June 25, 1999 – Maintenance activity at Narrows II caused the plant to trip offline. The Yuba River flow below the powerhouses dropped from about 2,634 cfs to about 987 cfs, and then increased to about 2,246 cfs, with the event lasting about 5-¾ hours. The cause was determined to be a poor wiring design when the plant was built. A non-critical circuit breaker was opened to perform maintenance while the plant was running. The poor wiring design shut down power to a governor circuit which tripped the plant offline. After this event, the governor circuit was rewired to prevent this from happening again in the future.

September 12, 2000 – A PG&E transmission line outage, caused by a bird, tripped Narrows II offline. The Yuba River flow below the powerhouses dropped from about 1,060 cfs to about 310 cfs, and then increased to about 1,051 cfs, with the event lasting about 2 hours. At the time of the event, Narrows II was under PG&E Wise Switching Center control and confusion over the Supervisory Control And Data Acquisition data extended the flow reduction by about 1.5 hours.

Alleged flow events – In 1998, the South Yuba River Citizens League (SYRCL) and Friends of the River (FOR) alleged that YCWA violated its' FERC license by exceeding the Narrows II ramping rate of 500 cfs per hour. They filed a complaint with FERC, and FERC issued a letter

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requesting data on 34 alleged flow events. YCWA's investigation documented in its September 11, 1998 response to FERC conclusively demonstrated that SYRCL and FOR improperly used inaccurate flow data that led them to the wrong conclusions. Of the 34 alleged flow events, there were no uncontrolled flow reductions. There was one event where YCWA conducted a necessary test to evaluate the integrity of Narrows II generator stator windings. This test was performed to reduce the probability of a major outage that could have had a long-term flow impact to the Yuba River. The results of the test confirmed a weakness in the generator stator winding insulation, which led to a major stator rewind in the subsequent year. The test required Narrows II to be operated at full load, then shut down. YCWA specifically selected a date with high spill over Englebright Dam so there would be minimal impact to downstream flow. The Yuba River flow below the plants dropped from about 8,108 cfs to about 5,166 cfs, and then increased to 8,329 cfs, over a 20-minute period.

Actions Taken to Avoid/Minimize Future Flow Fluctuations

YCWA has aggressively pursued actions to reduce the number and magnitude of flow reductions from operation of its Narrows II Powerhouse to protect lower Yuba River fish habitat. These actions include the following items:

- YCWA worked with PG&E to troubleshoot the April 9, 1998 trip event. This led to a more reliable transfer trip relay communication system to prevent future trip events of this type.

- After the PG&E transmission line outage events, YCWA requested that PG&E investigate the cause and take corrective actions to prevent future outages. PG&E has installed bird protection on the transmission facilities where there have been past problems. Also, PG&E regularly patrols the transmission lines to identify any areas needing work, and makes necessary repairs to the transmission facilities including tree trimming.

- YCWA installed an optical speed sensor in 1998 on the Narrows II generator to help prevent longer outages and flow reductions. Before the new speed sensor was installed, a transmission line outage often caused the plant to lock out, which caused a flow reduction event that lasted an hour or longer. This is because an operator would have to travel to the remote unmanned plant to restart it and resume the flow. The new optical speed sensor better enables the plant go into a speed-no-load condition where an operator can remotely resume the preexisting flow through the plant in a matter of minutes, once the transmission line is available. This turns a 1.5-plus hour flow reduction event into one that lasts about 10 minutes, thus lessening the flow impact to the lower Yuba River.

- YCWA paid about $200,000 to install six siphons at Englebright Dam to increase the lower Yuba River flow during the 11-week Narrows II stator rewind. The 1998 Partial Discharge Analysis test indicated that Narrows II needed new stator windings. YCWA and PG&E consulted with NMFS, USFWS, and CDFG to develop a flow management plan to perform this work. This resulted in the installation of the six siphons which

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increased the river flow by about 90 cfs (to about 800 cfs) from November 1999 through January 2000. In addition to the stator rewind, other actions were taken to improve the reliability of the generator including installing a new, more reliable SF6 plant breaker, repairing the generator exciter armature, and upgrading the field pole leads.

- The Narrows II governor circuit was rewired by YCWA to prevent another flow reduction like the June 25, 1999 event.

- YCWA worked with NMFS, USFWS, and CDFG to minimize flow impacts to the lower Yuba River caused by ongoing Narrows II maintenance activities. Brush maintenance is now performed in a manner, and at times, where flow reductions are no longer required to change generator brushes. Also, the annual maintenance for Narrows II was rescheduled from September/October to December so that Englebright Dam could be spilled, without increasing river temperatures, to maintain higher flows in the lower Yuba River during the three-week outage.

- Two separate grounding studies were funded by YCWA to identify the cause of grounding problems at the plant that could affect the Narrows II reliability. Actions were taken to reduce the potential for grounding problems to trip Narrows II offline, thus improving downstream flow reliability. This work included installing new aerial cables to the intake gate, isolating the intake gate control system from the existing positive ground and converting the electric system from 48 volts to 125 volts DC to improve reliability.

- YCWA increased the reliability of operating the Narrows II bypass valve which can provide about 650 cfs of flow during emergency conditions. The improved reliability was accomplished by converting the Narrows II bypass valve system from AC power to DC power to allow bypass valve operation from the powerplant's emergency batteries.

- YCWA worked with PG&E to improve PG&E's Supervisor Control and Data Acquisition system data and operating procedures to improve Narrows II flow restoration from the PG&E Wise Switching Center. This was the result of investigation of the September 12, 2000 flow event.

- In December 1998, YCWA started pursuing construction of a 3,000 cfs synchronous bypass at Narrows II to replace the existing manual 650 cfs bypass. This new bypass would be designed to eliminate the flow fluctuations caused by PG&E transmission line outages and most plant failures. On May 4, 1999, YCWA issued a purchase order for preparation of a cost estimate of the synchronous flow bypass. The cost estimate was completed on November 5, 1999 at a cost of $109,568. It estimated that the bypass project would cost about $5.3 million. On May 15, 2000, YCWA submitted a Narrows II Flow Bypass Final Design Grant application to CALFED for $296,000. This grant application was well received by CALFED and is expected to receive formal approval in the near future.

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- YCWA improved the flow meter readouts at the Narrows II Powerhouse control room so that operators would have better information to manage flow changes at Narrows I and Narrows II, and spills. This will be used to reduce flow fluctuations during normal flow change operations between Narrows I and Narrows II.

- YCWA installed remote control capability of the Narrows II bypass valve into the Narrows II control room to improve flow change management during times when the bypass valve is used to maintain a constant flow for certain maintenance needs and river flow changes.

In conclusion, Narrows II Powerhouse operational procedures, including implementation of actions to protect spring-run chinook salmon, and steelhead and fall-run chinook salmon, have been effective in minimizing dewatering and stranding of chinook salmon and steelhead redds and juveniles in the lower Yuba River. Numerous corrective actions also have been taken by YCWA and PG&E to minimize impacts associated with future emergency shut-downs. In addition, YCWA authorized and funded a preliminary design study for a new Narrows II bypass system, and has submitted a proposal to CALFED to prepare final design plans and specifications for this system. The proposed bypass system would provide a means of maintaining discharges of up to 3,000 cfs and, thereby, eliminate or substantially reduce flow fluctuations caused by future scheduled and unscheduled outages.

5.3 WATER TEMPERATURES

Historically, the lower Yuba River primarily served as a migration corridor for spring-run chinook salmon and steelhead during the winter and spring. Under natural hydrologic conditions, flows during the summer and early fall were generally too low and water temperatures too high in the lower Yuba River to support viable populations of spring-run chinook salmon and steelhead. The lower Yuba River may have lacked other important physical attributes that were present in higher-elevation mainstem and tributary habitats. Consequently, the loss of access to much or all of these critical habitats by 1940 decimated the remaining spring-run chinook and steelhead populations, or reduced them to remnant levels.

Since 1970, cold hypolimnetic discharges from New Bullards Bar Reservoir have significantly reduced water temperatures in the lower Yuba River during the summer and fall, improving habitat conditions for fall-run chinook salmon, spring-run chinook salmon, and steelhead. Because Englebright Reservoir is relatively small compared to the flow rate through the reservoir, it provides only a limited cold-water pool. New Bullards Bar Reservoir, however, substantially increased the volume of cold water and the ability to reduce summer and fall temperatures in the lower river. Under current operational conditions, cold water (seldom exceeding 55°F and frequently less than 50°F) is discharged from Colgate Powerhouse year-round, except in some critical dry years when storage in New Bullards Bar Reservoir is low (B-E 2000).

The relatively recent construction of the YRDP, and specifically New Bullards Bar Reservoir in 1970, has played a significant role in reducing water river temperature in the lower Yuba River during the spring, summer and fall. The monthly average of daily mean temperatures of the lower Yuba River at the Marysville gage during three periods that river temperature measurements are available are shown in Figure 9 — the period from 1965 to 1968 (two wet and two below normal years), the period from 1974 to 1977 (two wet and two critically dry years), and the period from 1989 to 1999 (five wet, one above normal, one below normal, one dry, and three critically dry years). The pre-project period, 1965 to 1968, does not have any dry and critical years. Nonetheless, the monthly averages of daily river temperatures were substantially lower during this period, as compared to temperatures during the 1989 through 1999 period from mid-summer into the fall The monthly averages of daily river temperatures during the 1974 to 1977 period also generally demonstrate some reductions in river temperatures, despite the facts that the time period includes the most severe drought (1976 to 1977 drought) that the Yuba River Basin has experienced in recorded history and that, per CDFG's instructions, YCWA was not using the lowest level outlet at New Bullards Bar Dam during the springs and summers of these years.

The effect of New Bullards Bar Reservoir operations on downstream water temperatures is evident from comparison of water temperatures measured at the Marysville gage before and after reservoir operations began in 1970 (see Figure 9). During 1965-1968, water temperatures near Marysville frequently exceeded reported tolerance limits for juvenile and adult steelhead (75°F) in July and August. By contrast, water temperatures during 1974-1977 remained well below this level in summer and fall (August-October), averaging about 6°F cooler in August than temperatures during 1965-1968. Monthly average water temperatures in recent years (1989-1999) show similar, but even greater reductions in water temperatures during summer and fall compared to 1965-1968 levels. These changes have improved conditions in the lower Yuba River for spring-run adults (holding and spawning life stages), fall-run chinook salmon adults (immigrating and spawning life stages), and steelhead adults (immigration stage) and juveniles, especially in the reach above Daguerre Point Dam.

During the springs (March-May) of 1974-1977, daily water temperatures measured at the Marysville gage during the spring were 2°F to 3°F warmer than water temperatures measured during the same months in 1965-1968. In recent years (1989-1999), monthly average water temperatures were 2°F to 3°F higher in March and April but 1°F to 2°F lower in May and June compared to 1965-1968 averages. These differences probably are the result of changes in reservoir operation since the 1976-1977 drought and the continuous use of the low-level outlet at New Bullards Bar Dam since 1993 (B-E 2000).

Whether lower water temperatures during late spring have had positive or negative impacts on the success of the salmonid rearing and emigration population is difficult to determine. While lower temperatures reduce thermal stress and temperature-induced mortality, lower temperatures also slow growth, delaying emigration and subjecting fry to extended emigration hazards (Clarke and Shelbourne 1985). Clarke and Shelbourne (1985) found that fish size was the variable most closely linked to the onset of smoltification and exhibition of migration behavior. A relatively high growth rate during the spring would lead to an faster and more complete smoltification and emigration process (Dickoff et al. 1995, 1997; Beckman et al. 1998). In addition, it is well supported in the literature that larger salmon juveniles are more robust against emigration hazards (Marine 1997; Beckman et al. 1998; Ward and Slaney 1988; Ward et al. 1989). The balance between growth and survival is further complicated because temperature can affect the nature, abundance, and impact of some hazards including pathogens and predators (Rich 1987; Marine 1997; Ordal and Pacha 1963).

Because juvenile salmonids leaving the lower Yuba River must pass through the Feather River, the Sacramento River, and the Delta before reaching the Pacific Ocean, conditions in these environments probably influence overall annual lower Yuba River smolt survival. In general, daily mean water temperatures in the Feather and Sacramento Rivers increase throughout the chinook salmon and steelhead juvenile emigration period. Daily mean water temperatures in these rivers often approach or exceed those that are physiologically acceptable for emigrating salmonids by mid-May to June. For example, daily mean in-river water temperatures measured approximately one mile upstream of the 10th Street Bridge on the Feather River (between Marysville and Yuba City) exceeded 65°F by June 15 and May 20 in 1993 and 1994, respectively. Similarly, Sacramento River water temperature at Freeport typically exceeds 65°F by mid-May (SWRCB 1992 Hearing Exhibit SYWD 21).

Salmonids reaching smolt size and emigrating from the river early in the spring (i.e., April to mid-May) will likely experience better temperature conditions throughout their emigration route and, therefore, probably will experience higher overall survival rates. Conversely, smolts emigrating late (i.e., during June) may encounter temperatures in the Feather River, Sacramento River, and/or Delta that are physiologically stressful and possibly even lethal (Rich 1987; (SWRCB 1992 Hearing Exhibit SYWD 21).

5.3.1 Narrows II Water Temperature Considerations

Water temperature data at various locations along the Yuba River have been collected since 1992. These data were used to develop flow-temperature relationships for the lower Yuba River. The manner in which these flow-temperature relationships were developed, factors affecting lower Yuba River water temperatures, and the probability of achieving specified water temperatures at various river flows and locations is described in a Technical Memorandum titled "*Flow Temperature Study for Lower Yuba River*" (B-E 2000).

For most of the Yuba River below Englebright Dam, the river channel is wide and shallow, with little or no bank shading. Thus, for much of the year, the entire river channel is exposed to the warm Central Valley air, which produces substantial heat transfer to the water surface. In addition, daytime solar radiation heating of the river and river bottom provides a second mechanism for heating of river flows. Many of the Sierra Nevada foothill rivers have well-defined and moderate to highly incised channels, which provide for low surface-area-to-flow-volume relationships. The lower Yuba River, however, has a high surface-area-to-flow-volume relationship, which increases the temperature gain of the river. A substantial portion of the river bottom can be flooded at modest flow. This shallow flow receives substantially more aeration, conductive heating potential, and solar radiant heating than a deep river section (B-E 2000).

In addition to New Bullards Bar Reservoir release temperatures and climatic conditions, the greatest factor that affects water temperatures in the lower Yuba River is the starting release temperature of water from Englebright Dam. Like other reservoirs in the region, Englebright Reservoir thermally stratifies during the warm-weather period of the year (i.e., April-November). Although some heating and mixing of inflows with warmer surface waters occurs, water temperature profiles measured at Englebright Dam typically show a substantial decrease in water temperatures from the surface to about 420 feet in elevation throughout the late spring, summer, and early fall (YCWA 1998). The Narrows I intake at 460 feet typically draws the coldest water available. The Narrows II intake draws water from the surface to 439 feet and, therefore, receives a blend of colder, deeper water and warmer, shallower water. Englebright Dam currently has no physical mechanism by which the depth (and hence temperature) from which water is released into the lower Yuba River can be controlled. As a result, the temperature of water released from Englebright Reservoir during the May-October period is primarily dictated by the temperature profile that exists in the reservoir at the time. Because water released from the Narrows II single outlet is a mixture of water that exists at and above the outlet, the temperature of release water generally correlates well to the temperature of water located approximately 45-50 ft below the reservoir surface at the time of release.

YCWA is investigating structural modifications to the Narrows II facility that would improve downstream temperatures for fish. Initial feasibility and engineering studies indicate that the proposed intake extension would lower Englebright Reservoir release temperatures by up to about 6°F during the spring, summer, and fall months.

5.4 GEOMORPHOLOGY AND SPAWNING GRAVEL AVAILABILITY

The vast amounts of hydraulic mining debris deposited in the lower Yuba River's channel and floodplain a century ago, and the lack of gravel that is captured by Englebright Dam, continue to have a dominant influence on the geomorphic character and processes of the lower Yuba River. Because of large quantities of unconsolidated cobbles and gravels, the lack of extensive riparian forests, and confinement of the active river corridor by dredge tailings, high winter flows continue to cause extensive channel migration and erosion of bars and dredger tailings along the lower Yuba River.

Spawning gravels are scarce in the Narrows Reach because of the lack of upstream gravel recruitment (because of Englebright Dam) and the high-energy nature of this reach. Downstream of the Narrows, spawning gravels are abundant and generally of high quality throughout the Garcia Gravel Pit and Daguerre Point Dam Reaches (Beak 1989). The primary sources of spawning gravel are large volumes of unconsolidated cobbles and gravels in the existing bars and dredge tailings along the river in these two reaches. Most of this material is within the preferred size range for spawning chinook salmon. In general, suitable spawning gravels for steelhead/rainbow trout appear to be more restricted in distribution and less abundant than chinook salmon spawning gravels. Successful spawning and rearing of chinook salmon and steelhead/rainbow trout have been observed in the Goldfields in recent years, but habitat conditions in the Goldfields are considered poor because of high summer temperatures, and the presence of large, deep ponds that may support predatory fish, and the lack of cover.

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5.5 RIPARIAN VEGETATION

The geomorphic conditions caused by hydraulic and dredge mining since the mid-1800s continue to limit the extent of riparian vegetation along the lower Yuba River. However, since completion of New Bullards Bar Reservoir, higher, more stable flows during the growing season appear to have increased the linear extent of riparian vegetation along the lower Yuba River (Beak 1989). Although the ability of the lower Yuba River to support riparian vegetation has been substantially reduced, due to the historic perturbations from mining activities, the dynamic nature of the river channel results in periodic creation of high-value shaded riverine aquatic (SRA) cover for fish and wildlife.

At present, large quantities of unconsolidated cobble and gravel and active channel migration limit the extent of riparian vegetation adjacent to the river. In 1986, riparian vegetation was present along 44 percent of the Garcia Gravel Pit Reach, 72 percent of the Daguerre Point Dam Reach, and 78 percent of the Simpson Lane Reach (Beak 1989). Downstream of Parks Bar, most riparian vegetation occurs as remnant strips along the main channel, side channels, and backwater reaches of the river. SRA cover generally occurs in the lower Yuba River as scattered, short strips of low-growing woody species (*Salix sp.*) adjacent to the shoreline. The most extensive and continuous segments of SRA cover occur along bars where recent channel migrations or avulsions have cut new channels through relatively large, dense stands of riparian vegetation (Beak 1989).

The extent and quality of suitable rearing habitat and cover, including SRA, generally has a strong effect on juvenile salmonid production in rivers (Healey 1991). During spring snorkeling surveys of the lower Yuba River over the last several years, juvenile chinook salmon were observed exhibiting a strong preference for nearshore areas with instream woody cover. Thus, the operation of the YRDP since 1970 has promoted establishment of riparian vegetation and instream cover for fish, relative to pre-YRDP conditions.

5.6 WATER QUALITY

The general water quality of the lower Yuba River is good and has improved in recent decades due to controls on hydraulic and dredge mining operations, and the establishment of minimum instream flows (Beak 1989). Dissolved oxygen concentrations, total dissolved solids, pH, hardness, alkalinity, and turbidity are well within acceptable or preferred ranges for salmonids and other key freshwater biota. Discharges of treated domestic waste have occurred in Deer Creek but no adverse effects on water quality are evident in the lower Yuba River (Beak 1989).

Maintenance activities associated with the Narrows II Powerhouse include transport and storage of oil and other hazardous materials, miscellaneous structural repairs, and vegetation management. However, no spills or adverse water quality effects related to operation and maintenance of Narrows II are known to have occurred during the history of the project.

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Because gas boats are permitted on both Englebright Reservoir and New Bullards Bar Reservoir, pollution to downstream areas could have some minor indirect effects on water quality. However, boating and road runoff are not believed to have caused significant adverse effects to fish resources because the water quality for the lower Yuba River is rated as good (QUAD 1994).

Water quality in the reservoirs and downstream releases from the dams could be causing other indirect effects to fish that reside in the lower Yuba River. Past mining operations in the upper drainage and for gold in the Yuba Goldfields near Daguerre Point Dam have introduced mercury into the Yuba River system (CALFED 1999). The Central Valley Regional Water Quality Control Board surveyed mercury in fish and sediment in the Sacramento River watershed in 1986. Elevated levels of mercury originating from past gold mining activities have been detected in sediments and aquatic organisms in the upper and lower Yuba River (CALFED 1999). Ongoing research by the University of California, Davis has confirmed that the upper reach of the Yuba River above Englebright Reservoir has high levels of bioavailable mercury, as measured with interim bioindicator organisms. Recent sampling for mercury along various reaches of the Yuba River by the U.S. Geological Survey's National Water Quality Assessment Program confirms that elevated concentrations of bioavailable mercury are still present in the sediment of the upper and lower Yuba River (CALFED 1999).

Mercury in the sediment could be re-suspended through bioturbation, wave action, dredging and disposal activities, and flooding of lands. Indirect effects from mercury contamination are possible, because mercury is present in the sediment built up behind the dams and bioaccumlates in the flesh of long-lived fish species such as striped bass or other resident species (CALFED 1999). Due to their migratory behavior and relatively short residency in the lower Yuba River, it is unlikely that the flesh of spring-run chinook salmon and steelhead are significantly contaminated with mercury. However, further investigations of toxic metals are currently being planned as part of the Upper Yuba River Studies Program.

6.0 FISHERIES CONSERVATION AND ENHANCEMENT MEASURES

Since initial planning stages of the YRDP, YCWA has been committed to the long-term health of the fish resources in the lower Yuba River, and has actively sought to maximize environmental benefits of the project while meeting flood control, water supply, recreation, and hydropower obligations. In addition to meeting its regulatory requirements for fisheries protection under its CDFG agreement and FERC license, YCWA has committed a substantial portion of its operating budget to fisheries monitoring and research to better understand the project's effects on fisheries resources and identify measures to further protect and enhance these resources. These measures include the numerous recent modifications of maintenance and operating activities of the Narrows II Powerhouse to avoid or minimize potential flow fluctuation impacts on federally listed spring-run chinook salmon and steelhead, and fall-run chinook salmon. YCWA also has funded preliminary design and feasibility studies for structural modifications of the Narrows II facilities to provide long-term protection and enhancement of fish resources in the lower Yuba River. Currently, YCWA is working closely with the resource agencies and other stakeholders to develop an implementation plan to guide short- and long-term fisheries enhancement efforts on the lower Yuba River to assist in meeting overall ecosystem and species recovery goals for the Central Valley. The following fisheries conservation and enhancement measures are currently being implemented by YCWA either independently or in cooperation with other agencies and stakeholders:

- During the planning of the YRDP, YCWA requested and received a Davis-Grunsky fishery enhancement grant of over $3.2 million to construct the multi-level outlet facility at New Bullards Bar Dam to control release temperatures. Operation of this facility, combined with the increased summer and fall flows that have resulted from the YRDP has significantly improved habitat conditions for fall-run chinook salmon, spring-run chinook salmon, and steelhead in the lower Yuba River.

- To provide additional fisheries benefits, YCWA is pursuing the planning, engineering, and construction of a Narrows II Powerhouse intake extension. Initial feasibility and engineering studies indicate that the proposed intake extension would lower Englebright Reservoir release temperatures by up to about 6°F during the spring, summer, and fall months.

- Water transfers have been planned and scheduled in cooperation with CDFG to maximize benefits and minimize impacts to fish resources in the lower Yuba River, Feather River, Sacramento River, and Delta. During past transfers, YCWA has released additional water above the contract amounts (in excess of 30 percent) to enhance fisheries resources.

- YCWA commissioned a preliminary design study for a new Narrows II bypass system that would prevent flow fluctuations associated with planned and unplanned outages of the unit. In the interim, YCWA and PG&E have taken corrective actions to minimize fisheries impacts associated with future emergency shut-downs. YCWA recently submitted a proposal to CALFED for funding to prepare final design plans and specifications for a full-flow, automatic bypass for Narrows II.

- YCWA committed $1.2 million from water transfer sales for Yuba River fishery enhancement, monitoring, and research activities in the lower Yuba River. These activities include:

  - providing $35,000-$40,000 annually for continuation of surveys to estimate fall-run chinook salmon spawning escapement. Since 1991, YCWA has funded annual escapement surveys after being informed that CDFG no longer would continue these surveys. In 1994, YCWA approved funding to expand the survey and level of effort to include all spawning reaches in the lower Yuba River;

  - providing $37,000 toward construction of the Browns Valley Irrigation District's fish screen on the lower Yuba River;

  - providing $60,000 toward a 3-year study of steelhead life history and stock composition (jointly funded by CALFED, the USFWS's Anadromous Fish Restoration Program, and YCWA);

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- providing a $110,000 research grant to U.C. Davis to study steelhead life history and habitat needs in the lower Yuba River; and

- providing a $50,000 cost share with CALFED to develop a fisheries habitat restoration plan for the lower Yuba River.

- YCWA adjusted its maintenance schedules and practices to eliminate lower Yuba River flow reductions due to generator brush changeout and annual maintenance.

- YCWA conducts and/or funds the following ongoing fisheries monitoring activities:

  - continuous water temperature monitoring stations in the lower Yuba River and Goldfields;

  - adult spring-run chinook salmon and steelhead spawning and redd surveys;

  - snorkeling surveys to monitor seasonal abundance, distribution, and habitat use of adult and juvenile chinook salmon, steelhead, and American shad;

  - analyses of chinook salmon outmigration timing in relation to flow and water temperatures;

  - field surveys to assess redd dewatering and fish stranding risks associated with planned flow reductions.

- YCWA actively participates, and supports additional participation, in the Yuba River Technical Working Group (YRTWG). The YRTWG, formed in 1998, developed a comprehensive approach to anadromous fish restoration and enhancement on the lower Yuba River. Membership includes representatives of USFWS, NMFS, CDFG, YCWA, PG&E, Corps, CALFED, Department of Water Resources, South Yuba River Citizen's League, California Sportfishing Protection Alliance, and Friends of the River. This group is currently providing coordination, planning, and technical assistance for a number of ongoing and proposed fisheries enhancement, monitoring, and research activities on the lower Yuba River including:

  - a watershed-based implementation plan for anadromous fish enhancement on the lower Yuba River;

  - the Corps' Fish Passage Improvement Project at Daguerre Point Dam and associated diversion facilities;

  - fish stranding and redd dewatering studies to evaluate flow ramping requirements and facilitate scheduling of Narrows I and II maintenance activities to avoid impacts;

  - steelhead and chinook salmon research and monitoring activities conducted by CDFG and YCWA, and funded by CALFED, USFWS, CDFG, and YCWA;

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- evaluations of fish screen and barrier designs at the North Canal, Pumpline Canal, and Goldfields outlet; and

- evaluations of preliminary and final designs for a new Narrows II full flow bypass proposed by YCWA.

The YRTWG meets approximately bimonthly to discuss, review, and provide input on ongoing and proposed fisheries restoration and enhancement activities. YCWA is working closely with the YRTWG to coordinate YCWA's fisheries enhancement activities and ensure that these and other activities are consistent with short- and long-term fisheries and ecosystem restoration and enhancement goals in the Yuba River. YCWA is also participating in CALFED's Upper Yuba River Studies Program to evaluate the long-term feasibility of introducing chinook salmon and steelhead to the upper Yuba River watershed above Englebright Dam.

7.0 SUMMARY AND CONCLUSIONS

Spring-run chinook salmon and steelhead, both listed as threatened species under the federal Endangered Species Act, historically migrated considerable distances up the South, Middle and North Yuba River to spawn and rear. The construction of Daguerre Point Dam in 1906 and Englebright Dam in 1941 by the California Debris Commission, which now are owned and operated by the Corps, blocked these migrations and decimated the Yuba River populations of these fish.

In contrast to these two Corps dams, New Bullards Bar Dam and Reservoir, constructed by YCWA on the North Yuba River in 1969, created substantial benefits for Yuba River fisheries. New Bullards Bar Dam and Reservoir was constructed upstream of Englebright Dam, and thus never blocked the migrations or adversely affected the habitat availability of any salmon or steelhead.

Since New Bullards Bar Reservoir began operations in 1970, it has significantly increased summer and fall flows in the lower Yuba River, and significantly reduced water temperatures (by up to 10°F) during these times. Both of these changes have significantly benefited lower Yuba River fisheries. Because of the more-favorable lower Yuba River conditions that were created by operation of New Bullards Bar Reservoir, spring-run chinook salmon and steelhead now can successfully migrate, spawn, and rear in the lower Yuba River. Operation of New Bullards Bar Reservoir also has benefited fall-run chinook salmon. The long-term average of adult chinook salmon populations returning to the lower Yuba River during the post-YRDP period (1972-1999) is higher than the average for the pre-YRDP period (1953-1971), even though there is no hatchery on the Yuba River. These benefits to spring-run chinook salmon, steelhead, and fall-run chinook salmon in the lower Yuba River have been realized despite numerous adverse factors that have decimated many Central Valley salmon populations during this same time period. Adverse factors include the out-of-basin factors of ocean harvest, ocean conditions, and Delta conditions, and the in-basin factor of reduced runoff to the lower Yuba River due to diversions out of the upper Yuba River Basin by other projects.

Since completion of New Bullards Bar Reservoir, higher, more stable flows during the growing season appear to have increased the linear extent of riparian vegetation along the lower Yuba River. Thus, operation of the YRDP since 1970 has promoted establishment of riparian vegetation and instream cover for fish, relative to pre-YRDP conditions. In addition, the general water quality of the lower Yuba River is good and has improved in recent decades due to controls on hydraulic and dredge mining operations, and the establishment of minimum instream flow applicable to operation of the YRDP.

Current operations of the Narrows II Project, in accordance with the amended FERC license and coordinated with PG&E's Narrows I Project, have been effective in minimizing the potential for stranding of spring-run chinook salmon, steelhead, and fall-run chinook salmon juveniles and redds in the lower Yuba River. Potential stranding impacts are expected to be reduced in the future through further modification of project facilities, operations and maintenance schedules, and continued cooperation and planning with the resource agencies. In addition, YCWA has undertaken and continues to pursue numerous enhancement and conservation measures to further improve the habitat and benefit the fish resources, particularly anadromous salmonids, of the lower Yuba River.

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APPENDIX A

Analysis of Annual Fall-run Chinook Salmon Spawning Escapement in the Lower Yuba River Before and After New Bullards Bar Reservoir

OBJECTIVE

The main objective of this analysis is to answer whether there is any statistically significant difference in annual fall-run chinook salmon spawning escapement in the lower Yuba River attributable to the impact of New Bullards Bar (NBB) Reservoir, that was operational since 1969 and would be reflected in annual returns since 1972.

Available Data

Data consists of the time series of annual fall-run chinook salmon spawning escapements, expressed in thousand of fish, from 1953 to 1999. The data series was composed by gathering information from various sources, including Hallock (n.d.) for the period 1953-1966, Mills and Fisher (1994) for the period 1967-1989, and Jones & Stokes, Associates (1992-1999) for the period 1991-1999. No spawning escapement was available for 1990. The original time series was divided into two sets (Fig. A-1, Table A-1): *1)* the 1953-1971 period that consists of counts before the construction of NBB reservoir, hereinafter termed Pre; and *2)* the 1972-1999 period that consists of counts after the construction of NBB reservoir, hereinafter termed Post.

Data Analysis

After transforming the spawning escapement count to natural logarithms to assure the normality of the data, three analyses were performed:

1) T-test for two samples with unequal variances, to compare the averages of $log_e(N_{PRE})$ and $log_e(N_{POST})$

2) F-Test for variances of two-samples, to compare the variances of $log_e(N_{PRE})$ and $log_e(N_{POST})$

3) Regression analysis, to compare the estimated intercepts and slopes of the regression lines fitted to the Pre and Post data sets.

For the T-test for two samples with unequal variances, the hypotheses tested are:

H_o: $\mu_{PRE} = \mu_{POST}$

H_A: $\mu_{PRE} \neq \mu_{POST}$

where μ indicates the corresponding mean of the data set. The test-statistic is:

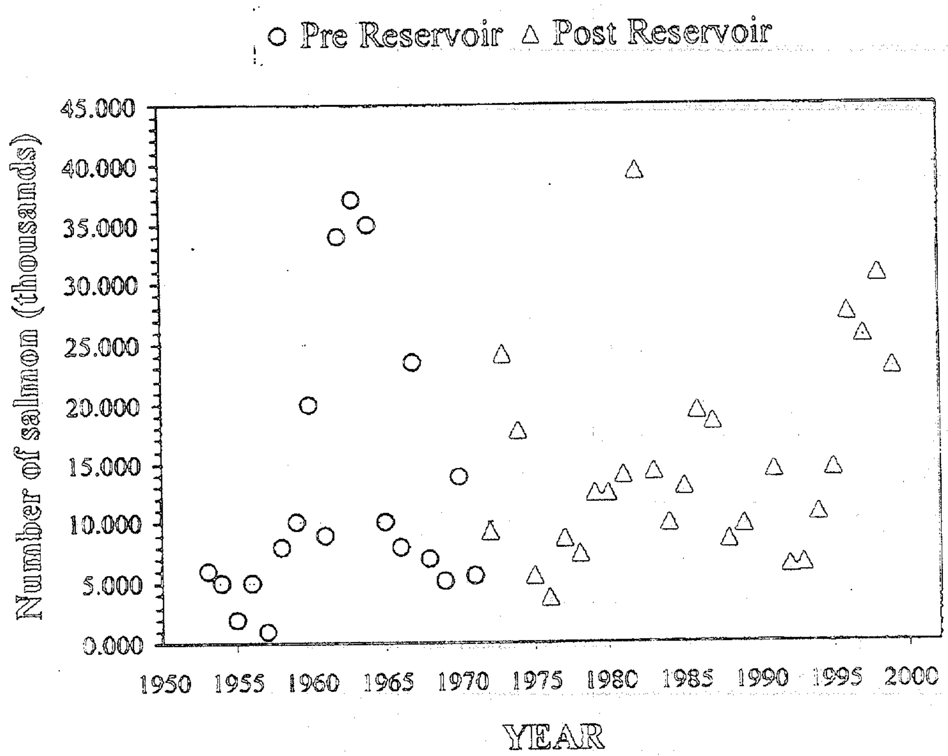

Figure A-1. Annual fall-run chinook salmon spawning escapement in the lower Yuba River before and after the building of New Bullards Bar (NBB) Reservoir.

COM 8916

Table A-1. Annual fall-run chinook salmon spawning escapement in the lower Yuba River before and after the building of New Bullards Bar (NBB) Reservoir.

Pre Reservoir		Post Reservoir	
YEAR	N thousands	YEAR	N thousands
1953	6.000	1972	9.258
1954	5.000	1973	24.119
1955	2.000	1974	17.809
1956	5.000	1975	5.641
1957	1.000	1976	3.779
1958	8.000	1977	8.722
1959	10.000	1978	7.416
1960	20.000	1979	12.430
1961	9.000	1980	12.406
1962	34.000	1981	14.025
1963	37.000	1982	39.367
1964	35.000	1983	14.256
1965	10.000	1984	9.965
1966	8.000	1985	13.066
1967	23.500	1986	19.406
1968	7.000	1987	18.510
1969	5.230	1988	8.501
1970	13.830	1989	9.837
1971	5.650	1991	14.413
		1992	6.361
		1993	6.516
		1994	10.691
		1995	14.561
		1996	27.520
		1997	25.778
		1998	30.802
		1999	23.067
Average	12,906	Average	15,119
Variance	129.843	Variance	74.069
n	19	*n*	27

COM 8917

$$t = \frac{\left(\overline{X}_{\text{PRE}} - \overline{X}_{\text{POST}}\right)}{\sqrt{\left(\frac{S^2_{\text{PRE}}}{n_{\text{PRE}}} + \frac{S^2_{\text{POST}}}{n_{\text{POST}}}\right)}}$$

where $\overline{X}$, S^2 and n are the average, sample variance and sample size of the respective data sets. The hypothesis H_o is rejected whenever $P\left(t_{0.025,\nu} \geq |t|\right) < 0.05$, where ν are the degrees of freedom calculated as: $\nu = \frac{\left(\frac{S^2_{\text{PRE}}}{n_{\text{PRE}}} + \frac{S^2_{\text{POST}}}{n_{\text{POST}}}\right)^2}{\frac{\left(\frac{S^2_{\text{PRE}}}{n_{\text{PRE}}}\right)^2}{n_{\text{PRE}} - 1} + \frac{\left(\frac{S^2_{\text{POST}}}{n_{\text{POST}}}\right)^2}{n_{\text{POST}} - 1}}$.

For the F-Test for variances of two-samples, the hypotheses tested are:

H_o: $\sigma^2_{\text{PRE}} = \sigma^2_{\text{POST}}$

H_A: $\sigma^2_{\text{PRE}} \neq \sigma^2_{\text{POST}}$

where σ^2 indicates the variance of the corresponding data set. For the present samples where the sample variance of the Pre-set is larger than that of the Post-set, the test-statistic is:

$$F = \frac{S^2_{\text{PRE}}}{S^2_{\text{POST}}}.$$

The hypothesis H_o is rejected whenever $P\left(F_{0.025,(n_{\text{PRE}}-1),(n_{\text{POST}}-1)} \geq F\right) < 0.05$.

To assess the statistical significance of a possible impact of the NBB reservoir in the lower Yuba River annual fall-run chinook salmon spawning escapement, a minimum least squares regression analysis was performed by fitting the linear models:

Model 1: $log_e(N_i) = \beta_0 + \beta_1 \text{Year}_i + \beta_2 X_i + \beta_3 (\text{Year}_i \times X_i) + \varepsilon_i$

Model 2: $log_e(N_i) = \beta_0 + \beta_1 \text{Year}_i + \beta_2 X_i + \varepsilon_i$

Model 3: $log_e(N_i) = \beta_0 + \beta_1 \text{Year}_i + \varepsilon_i$

where the variable X is an indicator variable that takes the value 0 whenever $log_e(N_i)$ corresponds to the Pre data set, and value 1 whenever $log_e(N_i)$ corresponds to the Post data set. The error term ε is distributed as a standardized Normal.

The fit to Model 1 implied the simultaneous fit to two linear models one for the Pre data set with response function $E(log_e(N_{\text{PRE}})) = \beta_0 + \beta_1 \text{Year}$, and one for the Post data set with response function $E(log_e(N_{\text{POST}})) = (\beta_0 + \beta_2) + (\beta_1 + \beta_3)\text{Year}$. After fitting Model 1, a T-test was used to test the hypotheses:

COM 8918

$$H_o: \beta_3 = 0$$
$$H_A: \beta_3 \neq 0$$

The rejection of H_o (i.e., $P(t_{0.025,(n_{PRE}+n_{POST}-4)} \geq |t|) < 0.05$) implies that the difference between the slopes of the Pre and Post regression lines is not statistically significant. Consequently, Model 2 generates two regression lines with the same slope, but different intercepts can be fitted. After fitting Model 2, a T-test was used again, this time to test for the hypotheses:

$$H_o: \beta_2 = 0$$
$$H_A: \beta_2 \neq 0$$

In this case, the rejection of H_o implies that the difference between the intercepts of the Pre and Post regression lines is not statistically significant. Consequently, Model 3 is the best model to describe the data as a function of time.

Results

The detailed results of the above mentioned analyses are given in the attached Appendix A-1. Neither the T-test for two samples with unequal variances, nor the regression analysis showed significant differences between the Pre and Post data sets. The only significant difference found was between the variances of the data sets. The variance of Pre was significantly larger than that of Post (i.e., $P(F_{0.025,18,26} \geq 2.768) = 0.0089$).

The T-test for two samples with unequal variances did not show a significant difference between the averages of $log_e(N_{PRE})$ and $log_e(N_{POST})$. With a $P(t_{0.025,27} \geq |-1.586|) = 0.124$, the null hypothesis that $\mu_{PRE} = \mu_{POST}$ could not be rejected.

The minimum least squares fit to Model 3 generated the response functions (Fig. A-2):

$$E(log_e(N_{PRE})) = -110.223 + 0.061 \times Year \text{ (Red line)}$$
$$E(log_e(N_{POST})) = -35.549 + 0.023 \times Year \text{ (Green line)},$$

with $r^2 = 0.181$ and a probability $P(F_{0.95,3,42} \geq 3.089) = 0.037$. However, the difference between the estimated slopes was not significantly different from 0 (i.e., H_o: $\beta_3 = 0$ could not be rejected because $P(t_{0.025,42} \geq |-1.118|) = 0.270$). The fit to Model 2 that generated the response functions:

$$E(log_e(N_{PRE})) = -53.353 + 0.032 \times Year$$
$$E(log_e(N_{POST})) = -35.321 + 0.032 \times Year,$$

with $r^2 = 0.156$ and a probability $P(F_{0.95,2,43} \geq 3.985) = 0.026$, could not be supported either because the difference between the estimated intercepts was not significantly different from 0 (i.e., $P(t_{0.025,43} \geq |-0.894|) = 0.377$). The best fit for the present data was that to Model 3 which generated the response function:

$$E(\log_e(N)) = -31.693 + 0.021 \times \text{Year} \text{ (Fig. 2, dashed line)}$$

with $r^2 = 0.141$ and a probability $P(F_{0.95,1,44} \geq 7.205) = 0.010$.

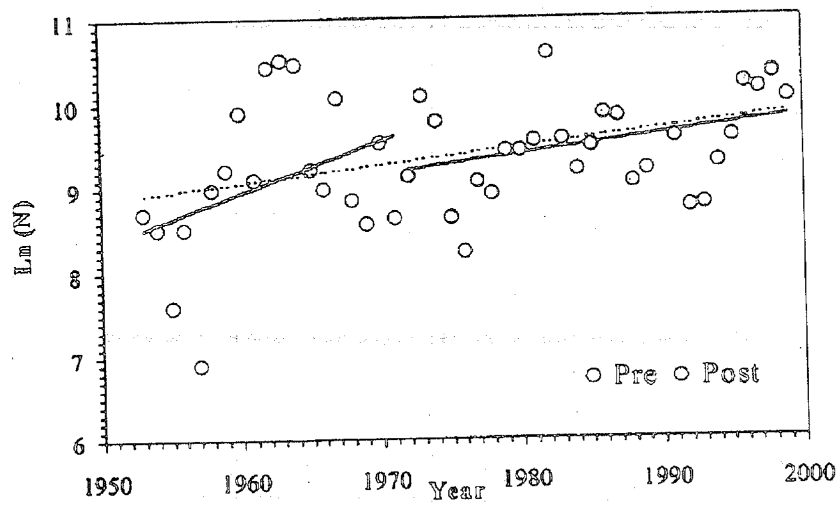

Figure A-2. Annual fall-run chinook salmon spawning escapement in the lower Yuba River before and after NBB Reservoir and minimum least square regression lines for Model 3 (red and green lines) and Model 1 (black dashed line).

Conclusions

The present statistical analysis does not support the hypothesis that there was a significant difference in the annual fall-run chinook salmon spawning escapement of the lower Yuba River between pre- and post- New Bullards Bar Reservoir. In addition, the variance for the pre-NBB period was significantly larger than that for the post-NBB period, and there was a significant increase in fall-run chinook salmon spawning escapement with year of spawning over the entire period (1953-1999).

$$E(\log(N)) = -31.693 + 0.021 \times \text{Year} \text{ (Fig. 2, dashed line)}$$

with $r^2 = 0.141$ and a probability $P(F_{0.95,1,44} \geq 7.205) = 0.010$.

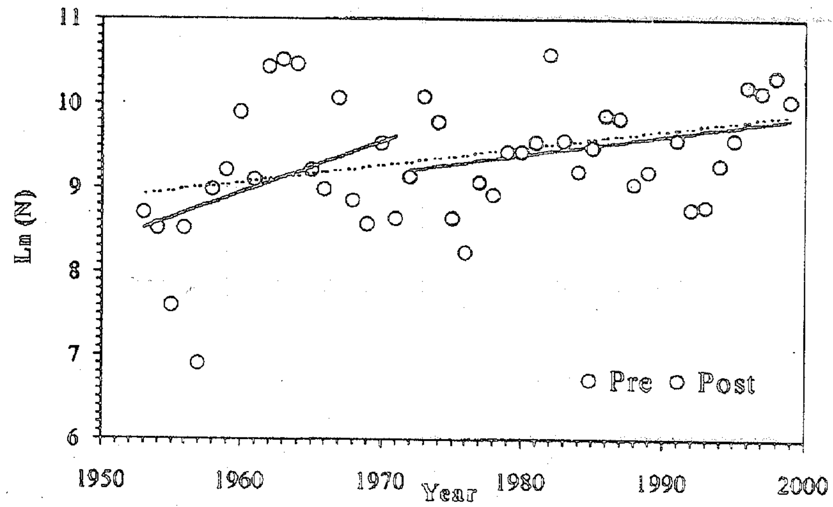

Figure A-2. Annual fall-run chinook salmon spawning escapement in the lower Yuba River before and after NBB Reservoir and minimum least square regression lines for Model 3 (red and green lines) and Model 1 (black dashed line).

Conclusions

The present statistical analysis does not support the hypothesis that there was a significant difference in the annual fall-run chinook salmon spawning escapement of the lower Yuba River between pre- and post- New Bullards Bar Reservoir. In addition, the variance for the pre-NBB period was significantly larger than that for the post-NBB period, and there was a significant increase in fall-run chinook salmon spawning escapement with year of spawning over the entire period (1953-1999).

Appendix A-1

Detailed results of the statistical analyses on annual fall-run chinook salmon spawning escapement of the lower Yuba River

1. T-test for two samples with unequal variances

	Pre	Post
Mean	9.09035	9.47355
Variance	0.88438	0.31955
Observations	19	27
Hypothesized Mean Difference	0	
Degrees of freedom	27	
t Statistic	-1.58597	
P(T ≤ t) two-tail	0.12439	
t Critical two-tail	2.05183	

2. F-Test for variances of two-samples

	Pre	Post
Mean	9.09035	9.47355
Variance	0.88438	0.31955
Observations	19	27
Degrees of freedom	18	26
F	2.76763	
P(F ≤ f) one-tail	0.00890	
F Critical one-tail	2.01780	

COM 8922

3. **Regression analysis**

3.1 Fit to Model 1: $log_e(N_i) = \beta_0 + \beta_1 \text{Year}_i + \beta_2 X_i + \beta_3(\text{Year}_i \times X_i) + \varepsilon_i$

Regression Statistics	
Multiple R	0.4251
R Square	0.1807
Residual Standard Error	0.7103
Observations	46

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	4.6747	1.5582	3.0885	0.0372
Residual	42	21.1898	0.5045		
Total	45	25.8645			

	Coef.	*SE*	*t Stat*	*P-value*
β_0	-110.2234	58.3717	-1.8883	0.0659
β_1	0.0608	0.0298	2.0440	0.0473
β_2	74.6741	67.1444	1.1121	0.2724
β_3	-0.0381	0.0341	-1.1175	0.2701

3.2 Fit to Model 2: $log_e(N_i) = \beta_0 + \beta_1 \text{Year}_i + \beta_2 X_i + \varepsilon_i$

Regression Statistics	
Multiple R	0.3954
R Square	0.1564
Residual Standard Error	0.7123
Observations	46

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	4.0446	2.0223	3.9853	0.0258
Residual	43	21.8199	0.5074		
Total	45	25.8645			

	Coef.	*SE*	*t Stat*	*P-value*
β_0	-53.3526	28.6731	-1.8607	0.0696
β_1	0.0318	0.0146	2.1778	0.0350

COM 8923

β_2	-0.3594	0.4022	-0.8935	0.3766

3.3 Fit to Model 3: $log(N_i) = \beta_0 + \beta_1 Year_i + \varepsilon_i$

Regression Statistics	
Multiple R	0.3751
R Square	0.1407
Residual Standard Error	0.7107
Observations	46

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3.6395	3.6395	7.2054	0.0103
Residual	44	22.2252	0.5051		
Total	45	25.8647			

	Coef.	*SE*	*t Stat*	*P-value*
β_0	-31.6931	15.2776	-2.0745	0.0439
β_1	0.0208	0.0077	2.6843	0.0102

3.4 Fit to Model 3: $log(N_i) = \beta_0 + \beta_1 Year_i + \varepsilon_i$ (Pre data alone)

Regression Statistics	
Multiple R	0.3639
R Square	0.1324
Residual Standard Error	0.9013
Observations	19

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.1080	2.1080	2.5948	0.1256
Residual	17	13.8108	0.8124		
Total	18	15.9189			

	Coef.	*SE*	*t Stat*	*P-value*
β_0	-110.2264	74.0710	-1.4881	0.1550
β_1	0.0608	0.0378	1.6108	0.1256

COM 8924

3.5 Fit to Model 3: $log(N_i) = \beta_0 + \beta_1 \text{Year}_i + \varepsilon_i$ (Post data alone)

Regression Statistics	
Multiple R	0.3344
R Square	0.1118
Residual Standard Error	0.5433
Observations	27

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.9291	0.9291	3.1477	0.0882
Residual	25	7.3791	0.2952		
Total	26	8.3082			

	Coef.	*SE*	*t Stat*	*P-value*
β_0	-35.5566	25.3810	-1.4009	0.1735
β_1	0.0227	0.0128	1.7742	0.0882

3

5. I downloaded a copy of YCWA's *Draft Environmental Evaluation Report: Yuba County Water Agency, Yuba River Development Project (FERC No. 2246)*, which includes the statistical analysis, from the FERC website. A true and correct copy of this report is attached to SYRCL's petition for reconsideration as exhibit 2.

6.It is my understanding that: (1) the statistical analysis of the Yuba River salmon escapement date concludes that there is no statistically significant evidence of increase in fall-run chinook salmon escapement since construction of New Bullards Bar reservoir; and (2) this analysis is relevant to the development of appropriate in-stream flow requirements for the lower Yuba River.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed March 30, 2001 at Nevada City, California.

Lawrence D. Sanders

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COM 8928

Please click here to return to the previous page.

Proclamation

State of Emergency

EXECUTIVE DEPARTMENT

STATE OF CALIFORNIA

PROCLAMATION
by the
Governor of the State of California

WHEREAS, shortages of electricity available to California's utilities have today resulted in blackouts affecting millions of Californians; and

WHEREAS, unanticipated and dramatic increases in the price of electricity have threatened the solvency of California's major public utilities, preventing them from continuing to acquire and provide electricity sufficient to meet California's energy needs; and

WHEREAS, the California Public Utilities Commission, the Independent Systems Operator and the Electricity Oversight Board have advised that the electricity presently available from Californiaâ□™s utilities is insufficient to prevent widespread and prolonged disruption of electric service within California; and

WHEREAS, this energy shortage requires extraordinary measures beyond the authority vested in the California Public Utilities Commission; and

WHEREAS, the imminent threat of widespread and prolonged disruption of electrical power to California's emergency services, law enforcement, schools, hospitals, homes, businesses and agriculture constitutes a condition of extreme peril to the safety of persons and property within the state which, by reason of its magnitude, is likely to be beyond the control of the services, personnel, equipment, and facilities of any single county or city; and

WHEREAS, under the provisions of Section 8558 (b) of the California Government Code, I find that an emergency exists;

NOW, THEREFORE, I, GRAY DAVIS, Governor of the State of California, in accordance with the authority vested in me by the California Emergency Services Act, and in particular, Section 8625 of the California Government Code, HEREBY PROCLAIM A STATE OF EMERGENCY to exist within the State of California; and

IT IS ORDERED that all agencies of the state government utilize and employ state personnel, equipment and facilities for the performance of any and all activities to alleviate this emergency.

IT IS FURTHER ORDERED that the Department of Water Resources, separate and apart from its powers and responsibilities with respect to the State Water Resources Development System, shall enter into contracts and arrangements for the purchase and sale of electric power with public and private entities and individuals as may be necessary to assist in mitigating the effects of this emergency. The Department is hereby directed to enter into these contracts as expeditiously as possible and is hereby authorized to do so notwithstanding the provisions of the Government Code and the Public Contract Code applicable to state contracts, including but not limited to, advertising and competitive bidding requirements, which provisions are suspended pursuant to Government Code section 8571 to the extent that they would prevent, hinder or delay the prompt mitigation of the effects of this emergency. The Department is further directed to maintain as separate and distinct the obligations incurred and the funding of such contracts and arrangements from the funds, monies and obligations of the State Water Resources Development System.

I FURTHER DIRECT that as soon as hereafter possible, this proclamation be filed in the Office of the Secretary of State and that widespread publicity and notice be given to this proclamation.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this the seventeenth day of January 2001.

Gray Davis

Governor of California

ATTEST:

Bill Jones

Secretary of State

Please click here to return to the previous page.

Executive Orders

EXECUTIVE DEPARTMENT

STATE OF CALIFORNIA

EXECUTIVE ORDER D-22-01
by the
Governor of the State of California

WHEREAS, on January 17, 2001, I proclaimed a State of Emergency to exist due to the energy shortage in the State of California; and

WHEREAS, there is a high probability that the electricity supply shortage will continue to cause rolling blackouts throughout California affecting millions of Californians; and

WHEREAS, all reasonable conservation, allocation, and service restriction measures will not alleviate this energy supply emergency; and

WHEREAS, this energy supply emergency poses a threat to public health, safety, and welfare and requires that all existing powerplants increase their generation output and that existing powerplants that are not currently operating, but have the capability to operate, be brought back on-line;

NOW, THEREFORE, I, GRAY DAVIS, Governor of the State of California, by virtue of the power and authority vested in me by the Constitution and statutes of the State of California, do hereby issue this order to become effective immediately:

IT IS ORDERED that the California Energy Resources Conservation and Development Commission (hereinafter "Energy Commission") provide that all existing powerplants that increase their generation output above existing authorized levels by less than 50 megawatts using existing installed capacity, between June 1, 2001, and October 1, 2001, shall not be subject to the Energy Commission's jurisdiction for such actions during that period.

IT IS FURTHER ORDERED that the Energy Commission shall expedite to the extent feasible the processing of applications for certification for existing thermal powerplants that require retooling and a current license to operate. In order to bring such thermal powerplants online as soon as possible, the Energy Commission is authorized to reduce the time in which to conduct a reasonable review of the application, consistent with the objectives of environmental protection and the protection of public health and safety.

IT IS FURTHER ORDERED that all local, regional, and state agencies involved in the licensing of proposed thermal powerplants in California shall work cooperatively and expeditiously with the Energy Commission and within its timeline to review all such Applications for Certification. All agencies shall diligently review such proposed license applications and provide timely comments to the Energy Commission as the Energy Commission requests.

IT IS FURTHER ORDERED that the State Water Resources Control Board (SWRCB) shall take all necessary and immediate action to ensure that powerplants in the State of California are not precluded from operating as a result of thermal limits in waste discharge requirements. The SWRCB shall take all necessary and immediate action to determine whether modification of such requirements is appropriate and, if so, to ensure timely modification to assure facility operation.

IT IS FURTHER ORDERED that the Energy Commission and SWRCB may contract for the services of necessary qualified personnel to perform these functions. Each is authorized to enter into such contracts as expeditiously as possible and for this purpose shall be exempt from the provisions of the Government Code and the Public Contract Code applicable to state contracts, including, but not limited to, advertising and competitive bidding requirements, to the extent that they would prevent, hinder, or delay the prompt mitigation of the effects of this emergency.

IT IS FURTHER ORDERED that the State Department of Water Resources shall contract, at reasonable rates, for power from powerplants using renewable and other resources that may currently have no other market for their power.

IT IS FURTHER ORDERED that this order shall expire on December 31, 2001 unless extended by further executive order responding to the continued need for emergency action to deal with the electricity emergency or unless terminated by proclamation of the Governor or concurrent resolution of the Legislature that the state of emergency has ended.

The activities herein are authorized to be carried out pursuant to the Emergency Services Act, Government Code Sections 8550 et seq.

I FURTHER DIRECT that as soon as hereafter possible, this order be filed in the Office of the Secretary of State and that widespread publicity and notice be given to this order.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this the eighth day of February 2001.

Gray Davis

Governor of California

ATTEST:

Bill Jones

Secretary of State

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Executive Orders

EXECUTIVE DEPARTMENT

STATE OF CALIFORNIA

EXECUTIVE ORDER D-23-01
by the
Governor of the State of California

WHEREAS, on January 17, 2001, I proclaimed a State of Emergency to exist due to the energy shortage in the State of California; and

WHEREAS, there is a high probability that the electricity supply shortage will continue to cause rolling blackouts throughout California, affecting millions of Californians; and

WHEREAS, all reasonable conservation, allocation, and service restriction measures will not alleviate this energy supply emergency; and

WHEREAS, this energy supply emergency poses a threat to public health, safety, and welfare and requires that generating facilities located in California are effectively and appropriately maintained and efficiently operated;

NOW, THEREFORE, I, GRAY DAVIS, Governor of the State of California, by virtue of the power and authority vested in me by the Constitution and the statutes of the State of California, do hereby issue this order to become effective immediately:

IT IS ORDERED that the Independent System Operator shall:

1. Require generators to submit planned outage schedules to the Independent System Operator.
2. Prepare a coordinated outage plan which shall be updated quarterly.
3. Identify generation facility maintenance criteria to be met by generation facilities.
4. Maintain records of any unplanned generation facility outages and to provide those records daily to the Electricity Oversight Board.
5. Conduct independent audits of generation facilities that have fallen below performance benchmarks established by the Independent System Operator.

6. Consider seeking the authority under state law or federal regulation to impose fines on those generation facility owners whose generation facilities have fallen below performance benchmarks established by the Independent System Operator.

IT IS FURTHER ORDERED that the Electricity Oversight Board shall review the Independent System Operator Tariffs and Protocols, in consultation with the Independent System Operator, to identify any necessary revisions to increase the Independent System Operator's ability to ensure adequate availability of generation during periods of peak demand.

IT IS FURTHER ORDERED that the five-member independent governing board of the Independent System Operator shall ensure that all the aforementioned provisions of this order are executed and the Independent System Operator tariffs and protocols are so revised, based on recommendations from the Electricity Oversight Board, and shall make the necessary filings with the Federal Energy Regulatory Commission to implement these revisions.

IT IS FURTHER ORDERED that the California Public Utilities Commission shall ensure that generation facilities still owned by utilities subject to its jurisdiction are operated by the persons or corporations who own or control them in a manner that assures their availability to maintain the reliability of the electric supply system by issuing such orders and directives as it deems necessary and appropriate, after a hearing.

IT IS FURTHER ORDERED that the Electricity Oversight Board shall propose emergency legislation to expand its authority to issue audits of generation facilities that do not meet established benchmarks for availability and performance, and issue fines against those plants, after a hearing.

The activities herein are authorized to be carried out pursuant to the Emergency Services Act, Government Code Sections 8550 et seq.

I FURTHER DIRECT that as soon as hereafter possible, this order be filed in the Office of the Secretary of State and that widespread publicity and notice be given to this order.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this the eighth day of February 2001.

Gray Davis

Governor of California

ATTEST:

Bill Jones

Secretary of State

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Executive Orders

EXECUTIVE DEPARTMENT

STATE OF CALIFORNIA

EXECUTIVE ORDER D-24-01
by the
Governor of the State of California

WHEREAS, on January 17, 2001, I proclaimed a State of Emergency to exist due to the energy shortage in the State of California; and

WHEREAS, there is a high probability that the electricity supply shortage will continue to cause rolling blackouts throughout California affecting millions of Californians; and

WHEREAS, all reasonable conservation, allocation, and service restriction measures will not alleviate this energy supply emergency; and

WHEREAS, the energy supply emergency poses a threat to public health, safety, and welfare;

NOW, THEREFORE, I, GRAY DAVIS, Governor of the State of California, by the virtue of the power and authority vested in me by the Constitution and statutes of the State of California, do hereby issue this order to become effective immediately:

IT IS ORDERED that the local air pollution control and air quality management districts (hereinafter "districts") shall modify emissions limits that limit the hours of operation in air quality permits as necessary to ensure that power generation facilities that provide power under contract to the Department of Water Resources are not restricted in their ability to operate. The districts shall require a mitigation fee for all applicable emissions in excess of the previous limits in the air quality permits. The Board is directed to ensure that appropriate modifications are made in all applicable permits of the districts or other local or regional agencies (hereinafter "agencies"). In the event that such modifications do not occur expeditiously, the Board or the Executive Officer shall immediately exercise the powers of the districts or agencies and modify the permits consistent with this order. In exercising the powers of the districts or agencies, the Board or the

Executive Officer shall not be required to comply with the provisions of the Administrative Procedure Act, or with the normally required notice and hearing procedures specified in Division 26 of the Health and Safety Code.

IT IS FURTHER ORDERED that the Board shall establish an emissions reduction credit bank using emissions reductions from all available sources. Such credits shall be made available through the Board to powerplant peaking sources that need emissions offsets in order to add new or expanded peaking capacity for the summer peak season in 2001. Such credits shall be provided to such facilities at up to the market rate for emissions reduction credits. In the case of a powerplant that agrees to sell its power under contract to the Department of Water Resources, the State of California will make available where necessary and available the required emissions credits at up to a 50 percent reduction. In order to maximize the amount of electrical generating capacity that can be created with available funding, emissions reduction credits for new generation capacity shall be made available to facilities where necessary and available. Proceeds from the sales of these emissions reduction credits shall be made available to fund emissions reduction programs in the air district where the new or expanded facility is located.

IT IS FURTHER ORDERED that the Board shall make its remaining appropriated funds immediately available for the purchase of emissions offset credits for its emissions reduction credit bank or that of any district.

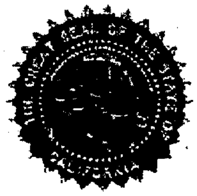
IT IS FURTHER ORDERED that the Board may contract for the services of necessary qualified personnel to perform these functions. Each is authorized to enter into such contracts as expeditiously as possible and for this purpose shall be exempt from the provisions of the Government Code and the Public Contract Code applicable to state contracts, including, but not limited to, advertising and competitive bidding requirements, to the extent that they would prevent, hinder, or delay the prompt mitigation of the effects of this emergency.

IT IS FURTHER ORDERED that this order shall expire on December 31, 2001, unless extended by further executive order responding to the continued need for emergency action to deal with the electricity emergency or unless terminated by proclamation of the Governor or concurrent resolution of the Legislature that the state of emergency has ended.

The activities herein are authorized to be carried out pursuant to the Emergency Services Act, Government Code Sections 8550 et seq.

I FURTHER DIRECT that as soon as hereafter possible, this order be filed in the Office of the Secretary of State and that widespread publicity and notice be given to this order.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this the eighth day of February 2001.



Governor of California

ATTEST:

Secretary of State

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Executive Orders

EXECUTIVE DEPARTMENT

STATE OF CALIFORNIA

EXECUTIVE ORDER D-25-01
by the
Governor of the State of California

WHEREAS, on January 17, 2001, I proclaimed a State of Emergency to exist due to the energy shortage in the State of California; and

WHEREAS, there is a high probability that the electricity supply shortage will continue to cause rolling blackouts throughout California, affecting millions of Californians; and

WHEREAS, all reasonable conservation, allocation, and service restriction measures will not alleviate this energy supply emergency; and

WHEREAS, this energy supply emergency poses a threat to public health, safety, and welfare and requires acceleration of construction and upgrading of approved powerplants;

NOW, THEREFORE, I, GRAY DAVIS, Governor of the State of California, by the virtue of the power and authority vested in me by the Constitution and statutes of the State of California, do hereby issue this order to become effective immediately:

IT IS ORDERED that the California Energy Resources Conservation and Development Commission (hereinafter "Energy Commission") shall expedite review and approval of post-certification amendments regarding thermal powerplants including proposals to convert simple-cycle powerplants to combined cycle or cogeneration powerplants if the permitted simple-cycle powerplant is an integral part of the proposed combined cycle or cogeneration powerplant.

IT IS FURTHER ORDERED that for this purpose, the Energy Commission is authorized to suspend the requirements of the statutes and implementing regulations that normally control its review and approval of post-certification amendments to the extent that they would prevent, hinder, or delay the prompt mitigation of the effects of this emergency. The Energy Commission may take such action by order on a case by case basis or by any other means and is not required to adopt regulations under the Administrative Procedures Act to implement this order.

IT IS FURTHER ORDERED that the Energy Commission shall establish specific performance milestones for both initiation of construction within one year of certification, and for the construction phase of the project. Failure to begin construction by the deadline or failure to perform in accordance with the milestones without prior approval by the Energy Commission based on a showing of good cause shall constitute a forfeiture of the certification.

IT IS FURTHER ORDERED that for this purpose, the Energy Commission is authorized to suspend the implementing regulations that would otherwise regulate the forfeiture of certification.

IT IS FURTHER ORDERED that the Energy Commission and the California Air Resources Board may contract for the services of necessary qualified personnel to perform these functions. Each is authorized to enter into such contracts as expeditiously as possible and for this purpose shall be exempt from the provisions of the Government Code and the Public Contract Code applicable to state contracts, including, but not limited to, advertising and competitive bidding requirements, to the extent that they would prevent, hinder, or delay the prompt mitigation of the effects of this emergency.

IT IS FURTHER ORDERED that this order shall expire on December 31, 2001 unless extended by further executive order responding to the continued need for emergency action to deal with the electricity emergency or unless terminated by proclamation of the Governor or concurrent resolution of the Legislature that the state of emergency has ended.

The activities herein are authorized to be carried out pursuant to the Emergency Services Act, Government Code Sections 8550 et seq.

I FURTHER DIRECT that as soon as hereafter possible, this order be filed in the Office of the Secretary of State and that widespread publicity and notice be given to this order.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this the eighth day of February 2001.

Gray Davis

Governor of California

ATTEST:

Bill Jones

Secretary of State

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Executive Orders

EXECUTIVE DEPARTMENT

STATE OF CALIFORNIA

EXECUTIVE ORDER D-26-01
by the
Governor of the State of California

WHEREAS, on January 17, 2001, I proclaimed a State of Emergency to exist due to the energy shortage in the State of California; and

WHEREAS, there is a high probability that the electricity supply shortage will cause rolling blackouts throughout California affecting millions of Californians; and

WHEREAS, all reasonable conservation, allocation, and service restriction measures will not alleviate this energy supply emergency; and

WHEREAS, this energy supply emergency poses a threat to public health, safety, and welfare and requires the siting of new powerplants that can be on-line to avoid electricity supply shortages this summer and next;

NOW, THEREFORE, I, GRAY DAVIS, Governor of the State of California, by virtue of the power and authority vested in me by the Constitution and statutes of the State of California, do hereby issue this order to become effective immediately:

IT IS ORDERED that local, regional, and state agencies referred to in this Executive Order shall undertake the tasks described herein as expeditiously as possible for the purpose of accelerating the availability of new generation sources to the State.

IT IS FURTHER ORDERED that all state and local agencies are hereby authorized to shorten the review periods to seven (7) days for environmental documents prepared under the California Environmental Quality Act for all powerplants that are not subject to the jurisdiction of the California Energy Resources Conservation and Development Commission (hereinafter "Energy Commission") and that are proposed to be on-line by the summer of 2001.

IT IS FURTHER ORDERED that the Energy Commission shall take immediate steps as directed below and shall expedite its licensing process in the following ways:

1. The Energy Commission shall expedite the processing of Applications for Certification for peaking or renewable powerplants pursuant to Public Resources Code section 25705 for construction and operation by July 31, 2001. Peaking or renewable powerplants that have a current contract with the Independent System Operator and can be on-line by July 2001 may also apply to be permitted by the Energy Commission under the emergency siting process. All such proposals shall be considered emergency projects under Public Resources Code section 21080(b)(4).

2. Public Resources Code section 25552, which provides a license for a simple cycle thermal powerplant within four months, shall apply to any proposed simple-cycle thermal powerplant that can be brought on-line by August 31, 2002, and that has an application for certification accepted by the Energy Commission as complete by December 31, 2001. All restrictions in section 25552 shall be suspended to the extent that they would prevent, hinder, or delay the prompt mitigation of the effects of this emergency.

3. The Energy Commission's regulations for the expedited licensing of powerplants pursuant to Public Resources Code section 25550 shall not require an applicant to secure emission offset credits at the time of filing of an Application for Certification.

4. The Energy Commission shall conduct a study of potential peaking powerplant sites in the state and prepare a report to the Governor by February 21, 2001, identifying those areas of the State that would benefit from the installation of peaking powerplants to augment supplies and ensure reliability through the summer of 2003.

IT IS FURTHER ORDERED that, in the interest of timely review and coordination, all local, regional, and State agencies involved in the licensing of proposed thermal powerplants in California shall participate to implement the State's emergency energy facility siting process in an expeditious manner consistent with the objectives of environmental protection and the protection of the public health and safety. All such agencies shall diligently review proposed license applications and provide timely comments to the Energy Commission as the Energy Commission requests. In addition, any agency that must make a decision subject to the California Environmental Quality Act on a site or related thermal powerplant proposal shall use the final staff report prepared for public hearings in the Energy Commission's licensing process in the same manner as the agency would use an environmental impact report prepared by a lead agency unless the Energy Commission determines another document is more appropriate for a specific site or facility.

IT IS FURTHER ORDERED that the California Public Utilities Commission shall ensure that the investor-owned utilities responsible for interconnecting generation facilities sited pursuant to the process described in this order complete necessary transmission interconnection studies within seven days of receipt of the completed application.

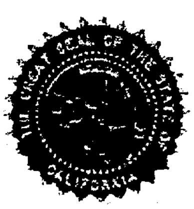
IT IS FURTHER ORDERED that the Energy Commission and California Air Resources Board may contract for the services of necessary qualified personnel to perform these functions. Each is authorized to enter into such contracts as expeditiously as possible and for this purpose shall be exempt from the provisions of the Government Code and the Public Contract Code applicable to state contracts, including, but not limited to, advertising and competitive bidding requirements, to the extent that they would prevent, hinder, or delay the prompt mitigation of the effects of this emergency.

IT IS FURTHER ORDERED that this order shall expire on December 31, 2001 unless extended by further executive order responding to the continued need for emergency action to deal with the electricity emergency or unless terminated by proclamation of the Governor or concurrent resolution of the Legislature that the state of emergency has ended.

The activities herein are authorized to be carried out pursuant to the Emergency Services Act, Government Code section 8550 et seq.

I FURTHER DIRECT that as soon as hereafter possible, this order be filed in the Office of the Secretary of State and that widespread publicity and notice be given to this order.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this the eighth day of February 2001.



Gray Davis

Governor of California

ATTEST:

Bill Jones

Secretary of State

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Lawrence D. Sanders (Calif. Bar No. 173411)
RIVERLAW
c/o SYRCL
Nevada City, CA 95959
Telephone: (530) 265-5961 Ext. 203
Telecopier: (530) 263-6232

Attorney for South Yuba River Citizens League

STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

In the Matter of **FISHERY RESOURCES AND WATER RIGHT ISSUES OF THE LOWER YUBA RIVER**	CERTIFICATE OF SERVICE

I am employed in Nevada City, California and not a party to the within action. I served the **SYRCL's Petition for Reconsideration** in the action on the below-named persons by placing a true and correct copy thereof in a sealed envelope with first class postage thereon fully prepaid in the United States mail at Nevada City, California and addressed to the people on the attached service list.

Dated: 4/2/01

Lawrence Sanders

COM 8946

State Water Resources Control Board
Lower Yuba River Water Rights Hearing

Service list

PARTIES TO THE HEARING

Yuba County Water Agency c/o Mr. Alan B. Lilly Bartkiewicz, Kronick & Shanahan 1011 22nd Street, Suite 100 Sacramento, CA 95816-4907	South Yuba Water District Cordua Water District c/o Paul Minasian Minasian, Spruance, Baber, Meith, Soares & Sexton 1618 Bird Street Oroville, CA 95965-4803
Brophy Water District c/o Mr. Daniel Gallery Attorney at Law 926 J Street, Suite 505 Sacramento, CA 95814	Western Water Company c/o Scott Morris Kronick, Moskovitz, Tiedemann & Girard 400 Capitol Mall, 27th Floor Sacramento, CA 95814-4417
Browns Valley Irrigation District c/o Mr. Paul M. Bartkiewicz Bartkiewicz, Kronick & Shanahan 1011 22nd Street, Suite 100 Sacramento, CA 95816-4907	National Marine Fisheries Service c/o Mr. James Bybee Northern California Habitat Manager 777 Sonoma Ave. Santa Rosa, CA 95404
California Department of Fish & Game c/o Mr. William Cunningham California Department of Justice Office of the Attorney General P.O. Box 944255 Sacramento, CA 94244-2550	Mr. Walter Cook Attorney at Law (Ret.) 42 Northwood Commons Chico, CA 95973-7214
California Dept of Water Resources c/o Mr. David Sandino Staff Counsel 1416 Ninth Street, Room 1138-2 Sacramento, CA 94236-0001	State Water Resources Control Board Staff c/o Mr. Daniel Frink Senior Staff Counsel P.O. Box 2000 Sacramento, CA 95812-2000
California Sportfishing Protection Alliance c/o Mr. Bob Baiocchi PO Box 1790 Graeagle, CA 96103	Western Aggregates, Inc. c/o David Lindgren Downey, Brand, Seymour & Rohwer 555 Capitol Mall, 10th Floor Sacramento, CA 95814
U.S. Department of Interior c/o Mr. Edmund Gee Office of the Solicitor 2800 Cottage Way, Room E-1712 Sacramento, CA 95825-1890	

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of General Counsel
SOUTHWEST REGIONAL OFFICE
Long Beach Federal Building
501 W. Ocean Blvd., Suite 4470
Long Beach, CA 90802
FAX: (562) 980-4084; OFFICE: (562) 980-4075;

FAX TRANSMISSION

NUMBER OF PAGES: 11 DATE: 4/2/01

TO: Ernest Mona
State Water Resources Control Board

FROM: Dawn Andrews McIntosh

ROUTING CODE: NOAA/OFFICE OF GENERAL COUNSEL, GCSW

TELEPHONE: 562-980-4075

MESSAGE:

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Dawn Andrews McIntosh, Ca. Bar No. 162713
Southwest Office of the General Counsel
National Oceanic and Atmospheric
Administration
501 W. Ocean Blvd., Suite 4700
Long Beach, CA 90802
(562) 980-4075 – Telephone
(562) 980-4084 – Facsimile

Attorney for Petitioner, National Marine Fisheries Service

STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

In the Matter of: **FISHERY RESOURCES AND WATER RIGHT ISSUES OF THE LOWER YUBA RIVER.**	PETITION FOR RECONSIDERATION OF WATER RIGHT DECISION 1644, AND POINTS AND AUTHORITIES IN SUPPORT THEREOF

MEMBERS OF THE STATE WATER RESOURCES CONTROL BOARD,

Petitioner, National Marine Fisheries Service (NMFS), 501 W. Ocean Blvd., Suite 4400, Long Beach, CA 90802, requests reconsideration of Water Right Decision 1644 pursuant to sections 768, 769 and 770 of Title 23 of the California Code of Regulations and for the reasons stated below. A copy of this petition has been sent to all interested parties.

I. BACKGROUND

On March 1, 2001 , the State Water Resources Control Board ("SWRCB") adopted Water Right Decision 1644 ("D-1644"). Prior to the adoption of D-1644, the SWRCB issued a draft decision on November 7, 2000 and another draft decision on February 16, 2001.[1] The SWRCB received comments from interested parties and convened public meetings on the November 2000 and the February 2001 Draft Decisions. The NMFS, an agency within the United States

[1] An initial draft decision and staff analysis were released in February 1999, and were based on the 1992 evidentiary hearing of this matter.

Department of Commerce and a party-participant in the 2000 hearings, submitted comments to those draft decisions.

II. POINTS AND AUTHORITIES

D-1644 should be reconsidered and modified as discussed below. Section 768 of Title 23 of the California Code of Regulations provides:

> No later than thirty (30) days after adoption by the board of a decision or order, any person interested in any application, permit or license affected by the decision or order may petition the board for reconsideration of the matter upon any of the following causes:
>
> (a) Irregularity in the proceedings, or any ruling, or abuse of discretion, by which the person was prevented from having a fair hearing;
>
> (b) The decision or order is not supported by substantial evidence;
>
> (c) There is relevant evidence which, in the exercise of reasonable diligence, could not have been produced;
>
> (d) Error in law.

(Barclays 2001.)

Section 769 of Title 23 of the California Code of Regulations provides:

> (a) Any petition for reconsideration of a decision or order shall be submitted in writing and shall contain the following:
>
> (1) Name and address of the petitioner.
>
> (2) The specific board action of which petitioner requests reconsideration.
>
> (3) The date on which the order or decision was made by the board.
>
> (4) The reason the action was inappropriate or improper.
>
> (5) The specific action which petitioner requests.
>
> (6) A statement that copies of the petition and any accompanying materials have been sent to all interested parties.
>
> (b) If reconsideration is requested based in whole or in part on Section 768, the petition shall include an affidavit or declaration under penalty of perjury stating that additional evidence is available that was not presented to the board and the reason it was not presented. A general statement of the nature of the evidence and of the facts to be proved shall also be included.
>
> (c) The petition shall be accompanied by a statement of points and authorities in support of legal issues raised in the petition.

(Barclays 2001.)

Section 770 of the California Code of Regulations provides:

> (a) The board may:
>
> > (1) Refuse to reconsider the decision or order if the petition fails to raise substantial issues related to the causes for reconsideration set our in Section 768; or
> >
> > (2) After review of the records, including any hearing transcript and any material submitted in support of the petition:
> >
> > > (A) Deny the petition upon a finding that the decision or order was appropriate and proper; or
> > >
> > > (B) Set aside or modify the decision or order; or
> > >
> > > (C) Take other appropriate action.
>
> Before taking final action, the board may, in its discretion, hold a hearing for the purpose of oral argument or receipt of additional evidence or both.

(Barclays 2001.)

A. THE HEARING RECORD DOES NOT SUPPORT THE SPECIFIC FLOW REQUIREMENTS IN D-1644.

The SWRCB should reconsider and modify the flow and temperature requirements in D-1644, to reflect the recommendations in the "Lower Yuba River Fisheries Management Plan," dated February 1991 ("the DFG Plan"), proposed by the California Department of Fish and Game ("DFG"). At the very least, the SWRCB should adopt the minimum instream flow requirements in its November 7, 2000 Draft Decision. There is clear and overwhelming evidentiary support for such modifications to D-1644.

D-1644 reduces the minimum instream flow requirements that were proposed in the November 2000 Draft Decision. The reductions in average daily streamflow range from 50 cfs to 500 cfs. (See D-1644 at 174-175.) The reductions were not across the board. Rather, they appear finely-tuned. In particular, D-1644 reduces the minimum instream flows requirements for wet/ above-normal/ below-normal years, as follows:

- May 1 to May 31, from 2,000 cfs to 1,500 cfs;
- June 1, from 1,400 cfs to 1,050 cfs;

- June 2, from 980 cfs to 800 cfs.

(Cf. November 7, 2000 Draft Decision at 161.; D-1644 at 174.) Yet, the SWRCB does not explain the scientific, biological or evidentiary bases for the specific reductions. It is not clear from the hearing record how the SWRCB determined that the specific flows of 1,500 cfs during May; 1050 cfs on June 1; and 800 cfs on June 2 will adequately protect chinook salmon and steelhead in the lower Yuba River, and keep fish in good condition as required by Fish and Game Code section 5937.[2]

The NMFS disagrees with the flow reductions made in D-1644. During the hearings, the United States Fish and Wildlife Service and DFG submitted substantial evidence supporting minimum flows that are necessary simply to maintain fish populations in the lower Yuba River. Such minimum flows are set forth in the DFG Plan and are identified in the Anadromous Fish Restoration Program. The NMFS testified that greater flows are needed to improve habitat conditions for fishery and aquatic resources in the lower Yuba River. The hearing record shows that:

> Peak migration of fall, late-fall, and spring-run chinook salmon and steelhead occurs in May. **The primary benefits of a 2,000 cfs flow in May are to increase survival of emigrating juvenile chinook salmon and steelhead,** [and] to attract adult American shad into the lower Yuba River. . .**[The] record supports adoption of DFG's streamflow recommendation for May. . .** (Emphasis added.)

(See November 7, 2000 Draft Decision at 58-59.) The record for this proceeding clearly supports and documents that the health of the Yuba fall-run chinook population is dependent on the numbers of adults returning from the ocean; escapement is the ultimate criteria to measure the health and success of anadromous fish populations. (RT 2906:14 - 2906:24.) Extended high spring flows have a significant impact on the overall success of the outmigrating fish in returning

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[2]Fish and Game Code § 5937 provides, in pertinent part: "The owner of a dam shall allow sufficient water at all times to pass through a fishway, or in the absence of a fishway, allow sufficient water to pass over, around or through a dam to keep in good condition any fish that may be planted or exist below the dam." The SWRCB recognizes in D-1644 that section 5937 is a legislative expression concerning the public trust doctrine that should be taken into account when the SWRCB acts under its public trust authority. (See D-1644 at 30; see also *California Trout, Inc. v. State Water Resources Control Board* (1989) 207 Cal.App.3d 585, 626, 631 [255 Cal. Rptr. 209, 212].)

as adults to spawn and succeed in their entire life history. (RT 2312:12 - 2312:19.) The flows from April through June that are recommended by DFG provide improved migration flows. (RT 252:5 - 252:12.)

To increase survival of emigrating juvenile chinook salmon and steelhead in the lower Yuba River, the flow requirements in D-1644 do not go far enough. In fact, they are detrimental to salmon and steelhead. D-1644's flow requirements are lower than the minimum flows recommended by either NMFS or DFG, and they are lower than those described in the November 2000 Draft Decision. The specific flow requirements in D-1644 are not supported by the hearing record. D-1644 should be amended to include a detailed explanation of the scientific, biological and evidentiary bases for its specific flow requirements. In the absence of such information, D-1644 must be reconsidered and modified to adopt the flow regime proposed in the November 2000 Draft Decision, if not the flow requirements proposed by the NMFS.

B. THE NOVEMBER 2000 DRAFT DECISION PROVIDES A MORE BALANCED PROTECTION OF COMPETING USES.

For wet/ above normal/ below normal years, the November 2000 Draft Decision's minimum instream flows result in average deficiencies (percent of demand) that are virtually identical to the average deficiencies resulting from the flows prescribed in D-1644 for similar year types. Under either the November 2000 Draft Decision or D-1644, the average deficiencies are less than 1% of demand, in wet/ above normal/ below normal years. According to the November 2000 Draft Decision, the average deficiency is as low as 74 acre-feet in wet year types and not greater than 2,056 acre-feet in above-normal year types. (See November 2000 Draft Decision at 113.) The record indicates that any deficiencies in surface water supplies that may occur due to the instream flow requirements proposed in the November 2000 Draft Decision could be offset through implementation of a groundwater conjunctive use program. (See November 2000 Draft Decision at 115-116.) Moreover, deficiencies under any year type could also be offset through increased water conservation measures. (Id.) Consequently, the flow requirements in D-1644 do not provide a reasonable balance and protection of competing uses, including public trust uses. Under the above circumstances, the balance should tip in favor of restoring threatened anadromous fish populations, not ensuring that water users experience zero delivery impacts.

C. <u>THERE IS NO EVIDENTIARY BASIS TO SUPPORT THE "DEFICIENCY CLAUSE."</u>

The hearing record does not support Condition 10 on pages 180 to 182 of D-1644, which provides for a temporary reduction in the instream flow requirements, if Yuba County Water Agency ("YCWA") estimates that it will have deficiencies of more than 20 percent of projected demand for surface water deliveries within the YCWA service area for the calendar year (the "Deficiency Clause"). The Deficiency Clause is flawed, because it is based on the notion of "projected demand" which includes highly speculative demand for surface deliveries to Dry Creek Mutual Water Company (Dry Creek) and to Wheatland Water District and Wheatland Water District Detachments (Wheatland). Based on evidence in the record, the SWRCB made key findings and conclusions with respect to such projected demand:

- that the need for lower Yuba River water for irrigation in the Wheatland area and for additional municipal and industrial uses in Yuba County has not been established. <u>See</u> D-1644 at 106.
- that the record remains unclear as to when and if the projected demands for surface water in the Wheatland and Dry Creek areas will be reached. <u>See</u> D-1644 at 107.
- that the timing for attaining the full-development of demand is uncertain. (S-YCWA 15, pp. 2, 7.) Wheatland does not yet have a water distribution system and does not presently have a water service contract with YCWA. (S-YCWA 15, p. 7.) Evidence presented in 2000 indicates that the distribution system is still in the planning stages. (S-YCWA 11, p. 13.)
- that YCWA's projected increases in demand for surface water from the lower Yuba River are very speculative. <u>See</u> D-1644 at 111.

- that any deficiencies in surface water supplies that may occur due to the instream flow requirements established in this decision could be offset through implementation of a groundwater conjunctive use program. See D-1644 at 125.
- that deficiencies in surface water supplies could also be offset through increased water conservation. See D-1644 at 125.

In light of such findings and conclusions, there is no basis to support the Deficiency Clause, and it should be stricken. At the very least, the SWRCB should modify the Deficiency Clause to allow the NMFS, United States Fish and Wildlife Service, and the DFG an opportunity to cross-examine or provide information to rebut any data on actual surface deliveries to Dry Creek and Wheatland, and on expected surface water demand to Dry Creek and Wheatland.

D. THERE IS NO EVIDENTIARY BASIS FOR DEFERRING THE LONG-TERM INSTREAM FLOW REQUIREMENTS ESTABLISHED BY D-1644.

The hearing record does not support the SWRCB's conclusion that "in view of the critical electrical power situation in California," there is "the need to maintain flexibility in powerplant operations to avoid serious electricity shortages." (See D-1644 at 127.) On the contrary, the hearing record establishes that:

> In contrast to many other situations where power production is at issue, virtually all of the water released to provide instream flows in the lower Yuba River passes through the YCWA and PG&E powerplants by the time it enters the river downstream of Englebright Dam. Therefore, variations in the instream flow requirements for protection of fish in the lower Yuba River would be expected to have minimal impact on the net quantity of power produced. A change in the release schedule toward greater releases in spring months and reduced releases in July, August, and September, however, would be expected to result in a shift in power production to different periods and a reduction in the value of the power produced. . ." (Emphasis added.)

(See D-1644 at 126.) Thus, there is no basis for deferring the long-term instream flow requirements established by D-1644 for a period of approximately five years, until April 21, 2006.

Furthermore, the SWRCB may not take official notice and make factual findings on the issues of whether new instream flow requirements diminish flexibility of power plant operations in the Yuba River Development Project, and whether maintaining flexibility in powerplant operations would avoid serious electricity shortages. These issues are unresolved and are subject to reasonable dispute.

> The doctrine of judicial notice is an evidentiary doctrine that permits the court to consider *as established* in a case a matter of *law* or *fact* that is relevant to an issue, without the necessity of formal proof of the matter by any party. Judicial notice is a substitute for formal proof. Judicial notice may be taken of either a proposition of *law* or a proposition of *fact*. The fundamental theory of judicial notice is that the matter that is judicially noticed is one of law or fact that *cannot reasonably be disputed*. (Italics in original.)

(See Jefferson, Cal. Evidence Benchbook (1972) Judicial Notice, § 47.1, at 833.) Consequently, the SWRCB may not conclude by judicial notice that there is the need to maintain flexibility in powerplant operations to avoid serious electricity shortages. Moreover, there is no factual basis to conclude that "it is appropriate" to defer imposition of the long-term instream flow requirements established by this decision for a period of approximately five years.

E. D-1644 IS NOT ADEQUATE TO AVOID TAKING SALMON AND STEELHEAD LISTED UNDER THE ENDANGERED SPECIES ACT.

Central Valley spring-run chinook and Central Valley steelhead are listed as threatened under the Endangered Species Act (ESA)[3] [4]. The NMFS published, on July 10, 2000, protective regulations prohibiting "take" of threatened Central Valley steelhead by all persons, including federal, state and local agencies and private entities.[5] These regulations extend section 9 take prohibitions to threatened Central Valley steelhead, including steelhead in the Yuba River System. The ESA defines "take" broadly to mean to "harass, harm, pursue, hunt, shoot, wound,

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[3] 16 U.S.C. §§ 1531 *et seq.*

[4] *See* 64 Fed. Reg. 50,393 (September 16, 1999)(Central Valley spring-run chinook); 63 Fed. Reg. 13,347 (March 18, 1998) (Central Valley steelhead);.

[5] 65 Fed. Reg. 42422

kill, trap, capture, or collect, or attempt to engage in such conduct."[6] The NMFS regulations interpret the term "harm" broadly to mean "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding, and sheltering."[7] The protective regulations describe certain activities that are likely to injure or kill salmonids, or that may injure or kill salmonids, resulting in a violation of the ESA (64 Fed. Reg. at 73,481). These activities include, in part:

> *...Physical disturbance or blockage of the streambed where spawners or redds are present concurrent with the disturbance , ... Blocking fish passage through fills, dams, or impassable culverts , ... Water withdrawals that impact spawning or rearing habitat....*

Authorization to take a listed species is generally obtainable through either section 7 or section 10 of the ESA. Section 7 addresses federal actions while section 10 applies to nonfederal actions. The provisions of D -1644 are inadequate to remedy current impacts to listed salmonids and avoid further harm and "take" of steelhead.

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[6] 16 U.S.C. § 1532(19) (1988).

[7] *See* 64 Fed. Reg. 60,727 (November 9, 1999) (final rule on the definition of the term "harm").

III. CONCLUSION

Based on the foregoing, the SWRCB should reconsider and modify D-1644.

Dated: April 2, 2001

Respectfully submitted,

Dawn Andrews McIntosh

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Staff Attorney

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March 30, 2001

Harry M. Schueller
Chief, Division of Water Rights
State Water Resources Control Board
1001 I Street, 14th Floor
Sacramento, CA 95814
Attn: Ernie Mona

RE: BROPHY WATER DISTRICT PETITION FOR RECONSIDERATION OF LOWER YUBA RIVER DECISION 1644

Dear Mr. Schueller:

Hand-delivered herewith on behalf of Brophy Water District are an original and six copies of the Petition of Brophy Water District for Reconsideration of Decision 1644.

Copies of the Petition have been sent to the parties on the service list attached to the Petition.

Very truly yours,

Daniel F. Gallery

DFG:mb

Enclosure

cc: Parties on Service List
Board of Directors, Brophy Water District

STATE WATER RESOURCES
CONTROL BOARD

2001 MAR 30 AM 11: 51

DIV. OF WATER RIGHTS
SACRAMENTO

COM 8960

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS

In the Matter of:	)
	)
FISHERY RESOURCES AND WATER RIGHT	)
ISSUES OF THE LOWER YUBA RIVER -	)
	)
	)
	)

PETITION OF

BROPHY WATER DISTRICT

FOR RECONSIDERATION OF DECISION 1644

March 30, 2001

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(916) 444-2880

Attorney for
Brophy Water District

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STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS

In the Matter of:	
FISHERY RESOURCES AND WATER RIGHT ISSUES OF THE LOWER YUBA RIVER -	PETITION OF BROPHY WATER DISTRICT FOR RECONSIDERATION OF DECISION 1644

Brophy Water District petitions the State Water Resources to reconsider and revise its Decision 1644, issued on March 1, 2001, upon the following grounds and in the following respects.

1. The Board's Order on page 188 that Brophy, in conjunction with South Yuba and the Agency, consult with DFG, NMFS and USF&WS to develop a plan to "reduce fish losses" at the South Canal, is not supported by the evidence and is an error in law, insofar as it implies that Brophy and South Yuba are obligated, or that the fishery agencies can insist, that the plan must also include provisions to replace the existing rock gabion.

2. The Decision is not supported by substantial evidence in its allocation of water for the Agency needs, in that the Board erred in ignoring future demands on the Agency's water supply. The Decision also did not take into account future increases in water use within Districts now under contract, such as within Brophy Water District.

3. The Decision is not supported by substantial evidence, and is an error in law, in that it does not take into account the major new economic impacts upon growers who, under the new instream flow regimes, will be required to finance the costs of maintaining year-after-year standby groundwater pumping capability, as a result of deficiencies that may be imposed in their surface water supplies from the Agency.

1. The Board's Order on page 188 that Brophy, in conjunction with South Yuba and the Agency, consult with DFG, NMFS and USF&WS to develop a plan to "reduce fish losses" at the South Canal, is not supported by the evidence and is an error in law insofar as it implies that Brophy and South Yuba are obligated, or that the fishery agencies can insist, that the plan must also include provisions to replace the existing rock gabion.

The Board's Order on page 188 requires that Brophy in conjunction with South Yuba and the Agency, consult with DFG, NMFS and USF&WS to develop a plan to "reduce fish losses" at the South Canal.

The evidence in the record before the SWRCB shows that the screen itself is functioning adequately with no demonstrable passage of juvenile salmon *through the screen*. There is no justification for the Board to order the development of plan that would require consideration of replacement of the gabion structure.

The screen was constructed pursuant to a 1984 Agreement between South Yuba and the Department of Fish and Game specifying the design of the screen. South Yuba, 5. Paragraph 1 of that Agreement provided for the entry of a Stipulated Judgement (Exhibit A to the Agreement), which was entered in the Yuba County Superior Court. The Judgment provided that if the river diversion works were constructed under the criteria contained in the South Yuba Agreement, they would adequately mitigate any adverse fishlife impacts on downstream migrant salmon and steelhead in the Yuba River that might result from such river diversion facilities. Paragraph 5.0 of the DFG-South Yuba Agreement further provided that

> "5.0. . . . Fish and Game further agrees that the fish protective devices as set forth in Exhibit D will adequately mitigate any other adverse impacts to fish and wildlife which would have occurred in the absence of such fish protective devices.
> 5.1 DFG agrees that it will hereafter affirm and certify that the project of South Yuba, if installed, constructed and operated in accordance with the project plan as described in the Environmental Assessment and in the Exhibits B-1 and C, prevents any significant environmental impact upon fish and wildlife resources as set forth in paragraph 5.0. DFG agrees to provide upon reasonable request, without cost, the customary testimony, documentation and calculations to support those representations, in connections, with any approvals, permits or other authorizations that are sought by District to carry out and complete the project.
>
> • * *
>
> 14.0 Department of Fish and Game and district each agree to represent to each Federal or State agency having jurisdiction over Districts' Project, that the terms of this Agreement reasonably protect fish and wildlife resources."[1]

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[1] A similar Agreement was entered into between DFG and Brophy containing the same Exhibit D criteria and provisions relative to construction of the screen. South Yuba, 12, 1.

The fish screen was constructed in 1985 under Alternative No. 4 in Exhibit D by the South Yuba and Brophy Water Districts. The Exhibit D criteria provided that the screen would have ninety-five percent or greater effectiveness, as evaluated over a three-year period. In 1998, electrofish surveys were conducted in the pool behind the rock barrier fish screen, and no juvenile salmon were found in the pool behind the screen. DFG, 26, 99, South Yuba, 12, 4. So the screen met design and construction approval and the testing criteria under the DFG Agreement.

Section 6.7 of Decision 1644, on page 88, discussing collectively the North Canal (Hallwood, Cordua and Ramirez) diversion, the South Canal (South Yuba and Brophy) diversion, and the Browns Valley diversion, states that

> "The potential for loss of juvenile chinook salmon and steelhead to impingement, entrainment and predation *at the diversion facilities* is significant." (p 88).

In support of that however, the Decision goes on to discuss only that losses of several thousand fish have been salvaged every year at the DFG operated screen of the North Canal of Hallwood-Cordua. And on page 93, Decision 1644 after discussing some of the evidence, states that:

> Based on these data and information presented at the 1992 hearings, DFG concluded in 2000 that significant entrainment can and does occur at unscreened and inadequately screened diversions, *including the South Yuba-Brophy Diversion.* (S-DFG 1, p.2; S-R.T. 1947:15-1948:23.)

However, the evidence upon which DFG's conclusion was based did not include any real evidence that entrainment was occurring in, on or through the South Canal gabion. The testimony cited on page 93 in support of DFG's conclusion is that of DFG Witness Nelson, who had explained at length from S-R.T, 1945 to 1948, that a large number of juveniles were being entrained at the DFG-operated Hallwood-Cordua diversion on the *north* side of the Yuba River (up to 40,000 fish salvaged in a single day, S-R.T. 1946:3 - 5), but without any specifics about actual entrainment of any fish at all at the South Canal screen of South Yuba and Brophy. DFG's conclusion was inappropriately applied to the South Canal screen. Moreover, this testimony by the DFG witness was in flagrant violation and breach of DFG's 1984 Agreement with South Yuba, in which DFG had agreed that the screen would have no significant impact upon fish, and that DFG would provide supporting testimony to that effect.

The evidence and testimony presented by the South Yuba Water District on behalf of both the South Yuba and Brophy Districts, principally through the testimony and report of biologist Steven P. Cramer (S-SYWD-2 and S-SYWD-2.2), established that the fish screen at the diversion into the South Canal is functioning adequately. Mr. Cramer's testimony pointed out that the evidence in the 1992 hearing, including a careful analysis of the 1988 Konoff study, demonstrated that there was little or no mortality of juvenile chinook passing the rock levee fish screen (S-SYWD-2, 5 & 6). Mr. Cramer's post-1992 hearing field studies in 1993 further evaluated fishery losses in the vicinity of the screen. He conducted continuous sampling from May 7 to July 22, 1993 of the water flowing through the pipe from the diversion pond into the Main Canal which conveys water to the Brophy and South Yuba Districts, and also did snorkeling surveys on both sides of the screen to look for concentrations of predatory fish. Seventeen juvenile chinook and two steelhead fry were captured in the water flowing from the diversion pond into the Main Canal during that period. The size or length of the chinook captured indicated that the probability that they passed through the rock screen or gabion was so small as to not be detectable; leading to his conclusion that the fish probably passed over the top of the screen and into the diversion pond when high flows over-topped the levee on the preceding January 22. (S-SYWD-2, 5 - 11). Two very small steelhead fry were also captured, but his testimony was that fry of that size can pass through even state-of-the-art fish screens.

The evidence discussed in Decision 1644 on page 94 regarding evidence from USFWS 7, PP 10-12, shows only that some relatively large juvenile salmon were apparently washed over the top of the gabion during high water, which was also Mr. Cramer's conclusion. USFWS's report on their inspection behind the gabion by scuba diving on May 11, states:

> "The gabion appeared to be fairly fish tight. The salmon trapped behind the screen most likely became entrained during early March when flows in the Yuba river exceeded 20,000 cfs and over-topped the gabion structure. . . . Previous juvenile sampling surveys have had mixed results in capturing salmon behind the rock gabion fish screen. . . Another CDFG electro fishing survey in May, 1988 produced no chinook salmon in three nights of sampling though nearly 7,500 juvenile salmon were counted entering the area in front of the screen. . . " (USFWS 7, p 12)

As the Board's Decision indicates on page 94, South Yuba's consultant Cramer concluded that the number of fish he collected from May to July in 1993 was a very small number. However, the Decision then notes that DFG's witness testified that the fyke net used in Cramer's 1993 investigation, having 1/8 inch mesh, *may* not have been efficient for small salmonids, citing S-R.T.-2841-15 - 2842:11. However, that DFG witness also conceded that the fyke net had caught two juvenile steelhead in the 25-millimeter range, and could only say that DFG "had no idea of what the efficiency is". S-R.T.2481:7 - 11. Here again the DFG witness was testifying in direct contradiction to the contractual stipulations his Agency had agreed to with South Yuba and Brophy. But even at that, hHe was thus only *speculating* about the efficiency of the fyke net, and had no evidence of his own that the results of the Cramer study and findings were not valid. South Yuba's Exhibit 16 in the 1992 hearings showed the size of the mesh screen placed within the gabion itself, and its spaces are much smaller than 1/8th inch.

The Decision then concludes on page 95 after discussion of the evidence that

> "Regardless of the manner in which fish enter the diversion pond, it appears that fish, included listed species, continue to be lost from the lower Yuba River fishery at the rock gabion. (S-R.T. 1974:20 1974:21)" Page 95 of Decision.

The essential error in the Board's Decision on the South Canal gabion is that the Board is leaving unsettled the question of whether the gabion itself needs to be replaced (which would be at an enormous cost), or whether the Decision is talking only of preparing a plan involving *other* improvements that may reduce fish losses, aside from replacement of the entire gabion, which is a substantially different undertaking. There is no substantial evidence in the record providing a basis for asserting or finding that the gabion is not effectively screening fish (other than those perhaps that may be washed over the top of the gabion during high flows), and so the Decision in that respect is unsupported by any substantial evidence in the record that provides a basis for an order requiring consideration of a plan for replacing the gabion itself. Accordingly, the Decision Order should be clear that its scope is not to require the South Yuba and Brophy Districts to develop a plan to replace the entire gabion.

2. *The Decision is not supported by substantial evidence in its allocation of water for Agency needs, in that the Board erred in ignoring future demands on the Agency's water supply. The Decision also did not take into account future increases in water use within Districts now under contract, such as within Brophy Water District.*

As noted in Section 7.2 of the Decision, beginning on page 104, the evidence of the Yuba County Water Agency showed a substantial increase in future demand beyond present levels, estimated at 347,136 acre feet for irrigation and waterfowl habit purposes. The Agency's estimates of future water demand included 40,855 acre feet for use in the Wheatland Water District and in the Wheatland detachment areas, plus 30,000 acre feet for municipal and industrial uses. Although Agency's Water Project was financed and constructed to provide for these eventual needs in the County, those needs were ignored by the Board's Decision as "uncertain" (pages 104 - 110), and the Board based the Agency's water demands only upon recent historical water use and a reasonable allocation for waterfowl habitat. (Decision, page 107)

> "Based on the evidence, we conclude that need for water for irrigation in the Wheatland area and for additional municipal and industrial uses in Yuba County has not been established . . . we conclude it is more reasonable to use the water demand figures described in Section 7.3 below based on recent historical water use for irrigation and a reasonable allocation for water fowl habitat . . . we believe that a large portion of (new)

uses can be met through more efficient use of existing supplies or with water from other sources" (p 106, 107)

Although the evidence showed that Agency water has just recently been finally extended to the Dry Creek Mutual Water Company through the South Canal/Main Canal system originally constructed by the South Yuba and Brophy Districts (page 14), the Decision takes no cognizance of the time and financial hurdles that must be overcome in extending a water supply to the Wheatland areas further to the south in the County.

With respect to future water needs within Brophy Water District itself, which currently consists of over 16,000 acres (Brophy 1, 2 & 3; Brophy, 4), approximately 3668 acres of land were annexed to the District during the period between 1989 and 2000 (T, 1542:5 - 23). Brophy's Director Bertolini testified in the 1992 hearings that the annexation of approximately 3,100 acres had just recently been completed by Brophy. (Brophy, 1, 3; Brophy, 3) That acreage was previously pumping groundwater, and after annexation those lands began receiving surface water from the Yuba River water. (Testimony of Baggett at T, 1766:2 to 1767:6.). Other entities contracting with the Yuba County Water Agency for a water supply added to their service area during that period as well. (T, 1542:24 to 1544:15). As the Agency has pointed out, those annexations explain in part the increases in deliveries of water by the Agency that occurred during the late 1990s, as shown on Table 13 on page 106 of the Decision.

In addition, there are approximately 5,000 acres of land within the Brophy Water District which are paying assessments within the District that are not now being irrigated, but which are irrigable and which will be developed for pasture when the economy justifies (T, 1767:7 - 1768:2) . This will clearly mean additional uses of water just within Brophy Water District itself, which has not been taken into account by Decision 1644. For this reason also the Decision was in error in considering only historical diversions to date in determining the total Agency water needs.

Also, the Board's assumption that portions of increased demand can be met through more efficient use of existing water supplies would not apply for example to use of water within Brophy Water District. Approximately 90% of the users within the District now pump their water from the laterals and creek channels used to deliver the Agency water supplies. (S-Brophy 1, 3). It can be reasonably assumed that the growers are not pumping more water than is necessary for irrigation of their crops, inasmuch as that would obviously mean incurring unnecessary electricity or fuel costs for pumping.

3. The Decision is not supported by substantial evidence, and is an error in law, in that it does not take into account the major new economic impacts upon growers who, under the new instream flow regimes, will be required to finance the *costs of maintaining year-after-year standby groundwater pumping capability, as a result of deficiencies that may be imposed in their surface water supplies from the Agency.*

The Decision, after ignoring the evidence of future demand by Wheatland and Wheatland exclusions and for municipal and industrial needs, as well as future increases that will occur within Brophy Water District, and basing the Agency's total offstream consumptive water needs instead upon current uses, then concludes that instream flow requirements under the Decision will result in deficiencies in the offstream consumptive water demands "in some years". The Decision includes a mechanism for the Agency to apply for temporary relief from the instream flow requirements when it appears that the deficiency is going to exceed 20%. (Pages 130, 131.) In any event, it is clear that deficiencies will occur in Districts' water supply some of the time.

> "In some years, water users will need to utilize groundwater to offset deficiencies in the surface water supply or employ additional water conservation measures to reduce water use." (Decision, page 133)

The result is that the Brophy landowners will be forced to maintain standby pumping *in every year,* whether or not a deficiency is imposed on the District's contract water supply in any given year.

The reasons for this were explained by Brophy's Director William A. Baggett, in S-Brophy Water District Exh. 1. He described the financial impact that would be forced on rice growers within Brophy Water District (rice being the principal crop in the District), as a result of the adoption of the higher instream flow requirements for fishery by the SWRCB.

> "The new constraints that those instream flow requirements would impose on the Agency diversions, would require farmers in Brophy Water District to go back to pumping groundwater in many years, which could take us back to the prospect of further overdraft. But even beyond that, they would create major new economic burdens on the growers in the District, in the cost of maintaining groundwater producing facilities on standby every year, for use only in the years when deficiencies are imposed. These are hidden costs, and go beyond just the costs of power for pumping the groundwater when pumping is required." (S-Brophy 1, 1)

The point made by the Baggett testimony is that whether deficiencies in the Agency water supplied by the Agency would occur in 10% of the years or in 40% of the years, the Brophy growers will be forced to equip their operations to be on *perpetual standby* for the pumping of groundwater, at a very substantial annual cost to the growers *in all years,* in the event that the Agency's supply is curtailed in that year. He described the various hard costs of maintaining on standby the ability to pump groundwater on pages 3 - 5 of S-

Brophy, 1. His testimony, presented on March 9, 2000, assumed for analysis purposes a 33% deficiency in a given year, and calculated that the additional pumping charges that would be incurred in such a year would increase the water costs from $45 per acre to $70 per acre. In addition, he stated that there will be the *every year* capital and repair costs of maintaining a pump and well, and the added *every year* standby or demand charges of PG&E that must be paid to keep power available if the well pumps must be operated. He calculated those additional costs to be $81.25 per acre, payable every year whether groundwater is pumped or not. There would be added to that the additional costs of pumping in the years when the deficiencies actually occur. (S-Brophy, 1, 3 - 5; and T, 1716:21 - 1717:14). If the deficiency does not exceed 20%, as the Board's Decision assumes, less of the grower's water would need to be pumped groundwater and that water cost portion of $45 would increase to something less than $70 per acre in the years of actual deficiency. However, the *every year* additional standby costs of $81.25 per acre would not be any less. Moreover, in the present circumstances of the California power market, that every year power cost component will evidently be much greater. The Board can take judicial notice of the Public Utilities Commission's recent approval of major increases in electrical costs to consumers, which means that power costs to farmers requiring standby power for pumping groundwater is going to be substantial. Mr. Baggett also testified that groundwater pumping provides much poorer weed control, requiring increased herbicide applications and weeds becoming increasingly resistant to such application. This increases the problem of weed control and the possibility of crop failure. (S-Brophy, 1, 3 - 5).

Nowhere does the Board's Decision, in discussion of the application of the public trust doctrine to the requirements of water for instream uses, take into consideration in the balancing of the various interests, the impacts of these deficiencies upon the Brophy Water District users. Under the public trust doctrine, the needs of all competing uses of water must be considered and balanced. The Board must consider the probable effects of new instream flow releases upon the needs of the offstream water users, and in ignoring the severe financial impacts of forcing farmers to maintain every year standby facilities for groundwater pumping, the Decision is not supported by the evidence, and is an error in law. Nat. Audubon Society v Superior Court (1983) 33 Cal.3rd 419 at 445, 189 Cal. Rptr. 346 at 364. Title 23, CCR, Section 784(c).

Dated: March 30, 2001

Respectfully submitted,

BROPHY WATER DISTRICT

By DFGallery

Daniel F. Gallery

COM 8969

DECLARATION OF SERVICE

Before the State Water Resources Control Board, State of California
Lower Yuba River Hearings

I, **Marisa E. Becerra**, declare:

I am employed by the law firm of Daniel F. Gallery, A Professional Corporation. My business address is 926 J Street, Suite 505, Sacramento, CA 95814. I am over the age of 18 years and not a party to this action.

On March 30, 2001, I served the following document(s) set forth below in the manner indicated:

Service by Mail: By enclosing a copy in an envelope addressed as shown below and depositing the sealed envelope with the United States Postal Service wit the postage fully prepaid.

Document(s) Served:

BROPHY WATER DISTRICT PETITION FOR RECONSIDERATION OF LOWER YUBA RIVER DECISION 1644

Person(s) Served: SEE ATTACHED SERVICE LIST

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that this Declaration of Service was executed on March 30, 2001 at Sacramento, California.

Marisa E. Becerra

Marisa E. Becerra

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California Sportfishing Protection Alliance
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U.S. Department of the Interior
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Regional Solicitors Office
Pacific Southwest Region
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Sacramento, CA 95825-1890

LIST OF PARTIES
(Year 2000 Hearing)
Lower Yuba River Hearing
(revised January 14, 2000)

EM

STATE WATER RESOURCES
CONTROL BOARD

2001 MAR 30 PM 2: 05

DIV. OF WATER RIGHTS
SACRAMENTO

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Attorneys for Browns Valley Irrigation District

BEFORE THE

STATE WATER RESOURCES CONTROL BOARD

In the Matter of **FISHERY RESOURCES AND WATER RIGHTS ISSUES OF THE LOWER YUBA RIVER** **Involving Water Right Permits 15026, 15027 and 15030 Issued on Applications 5632, 15204 and 15574 of Yuba County Water Agency,** **Licenses 3984 and 3985 Issued on Applications 9927 and 12371 of Cordua Irrigation District,** **License 4442 Issued on Application 9899 of Hallwood Irrigation District, and** **Other Water Diversions by Various Parties Under Claim of Riparian Rights, Pre-1914 Appropriative Rights and Contractual Rights**	**PETITION BY BROWNS VALLEY IRRIGATION DISTRICT FOR RECONSIDERATION OF D-1644**

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INTRODUCTION

Browns Valley Irrigation District ("BVID") hereby petitions for reconsideration of the State Water Resources Control Board's March 1, 2001 Decision Regarding Protection of Fishery Resources and Other Issues Relating to Diversion and Use of Water from the Lower Yuba River, Water Right Decision 1644 ("D-1644"), pursuant to Water Code section 1122 through 1123 and title 23, sections 768 and 769, of the California Code of Regulations.

REQUIRED INFORMATION

Pursuant to title 23, section 769, of the California Code of Regulations, BVID states the following:

1. Name and address of the petitioner

Name of petitioner: Browns Valley Irrigation District

Mailing address: Post Office Box 6
Browns Valley, California 95918

Street address: 9370 Browns Valley School Road
Browns Valley, California 95918

All correspondence concerning this Petition should be directed to Ryan S. Bezerra, Bartkiewicz, Kronick & Shanahan, 1011 Twenty-Second Street, Sacramento, California 95816.

2. The specific board action of which petitioner requests reconsideration

The adoption of D-1644 by the State Water Resources Control Board (the "State Board").

3. The date on which the order or decision was made by the board

March 1, 2001.

4. The reason the action was inappropriate or improper

The State Board's adoption of D-1644: (1) denied BVID and other parties a fair hearing due to irregularities in the proceedings (*see* Cal. Code Regs., tit. 23, § 768, subd. (a)); (2) was not supported by substantial evidence (*see* Cal. Code Regs., tit. 23, § 768, subd. (b)); and (3) constituted an error in law (*see* Cal. Code Regs., tit. 23, § 768, subd. (d)). It is also BVID's understanding that there is substantial relevant evidence concerning the Yuba River's populations of anadromous fish and the hydrological impacts of D-1644 that could not have been produced, through the exercise of reasonable diligence, during the hearings in this proceeding. (*See* Cal. Code Regs., tit. 23, § 768, subd. (c).) The grounds supporting this Petition are stated more fully in BVID's Statement of Points and Authorities, which is attached hereto as Exhibit A.

5. The specific action which petitioner requests

In relation to the provisions of D-1664 that apply expressly to BVID, BVID requests that the State Board delete provisions 2 and 3 of D-1644's order concerning BVID (*see* D-1644, pp. 183-184), Table 23 of D-1644 (*see id.* at p. 159) and any related and/or supporting findings contained in D-1644.

In relation to the provisions of D-1644 that apply expressly to Yuba County Water Agency ("YCWA"), BVID requests that the State Board vacate D-1644 and direct the commencement of further proceedings culminating in a new water right decision that is supported by evidence in the record and the applicable legal authorities.

6. A statement that copies of the petition and any accompanying materials have been sent to all interested parties

See Proof of Service attached hereto as Exhibit B.

7. Declaration concerning new evidence

The declaration of Ryan S. Bezerra is attached hereto as Exhibit C. The new evidence is: (1) new data concerning the size and status of the lower Yuba River's anadromous fisheries that derives from the Department of Fish and Game's operation of a rotary screw trap in the lower Yuba River; and (2) hydrological analyses of the impacts of D-1644..

8. Statement of points and authorities

A Statement of Points and Authorities is attached hereto as Exhibit A.

Dated: March 30, 2001

Respectfully submitted,

BARTKIEWICZ, KRONICK & SHANAHAN
A Professional Corporation

By: ______________________
Ryan S. Bezerra

Attorneys for Browns Valley Irrigation District

A

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BEFORE THE

STATE WATER RESOURCES CONTROL BOARD

In the Matter of FISHERY RESOURCES AND WATER RIGHTS ISSUES OF THE LOWER YUBA RIVER Involving Water Right Permits 15026, 15027 and 15030 Issued on Applications 5632, 15204 and 15574 of Yuba County Water Agency, Licenses 3984 and 3985 Issued on Applications 9927 and 12371 of Cordua Irrigation District, License 4442 Issued on Application 9899 of Hallwood Irrigation District, and Other Water Diversions by Various Parties Under Claim of Riparian Rights, Pre-1914 Appropriative Rights and Contractual Rights	**STATEMENT OF POINTS AND AUTHORITIES IN SUPPORT OF PETITION BY BROWNS VALLEY IRRIGATION DISTRICT FOR RECONSIDERATION OF D-1644**

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I. INTRODUCTION

The adoption of Water Right Decision 1644 ("D-1644") by the State Water Resources Control Board (the "State Board") was not supported by substantial evidence in the record, relied on erroneous legal analyses and resulted from proceedings that contained substantial irregularities that denied a fair hearing to Browns Valley Irrigation District ("BVID"), Yuba County Water Agency ("YCWA") and other Yuba County water districts. In addition, it is the understanding of BVID that YCWA is submitting substantial new relevant evidence concerning: (1) the hydrological impacts of D-1644's final in-stream flow requirements; and (2) the Yuba River's anadromous fisheries, which evidence demonstrates that the implementation of D-1644 is not necessary to support those fisheries. There is cause for reconsideration under the State Board's regulations. (*See* Cal. Code Regs., tit. 23, §§ 768-770.) Accordingly, the State Board should grant BVID's petition for reconsideration and modify D-1644 as requested in that Petition. (*See id.* at § 770.)

II. CAUSES FOR RECONSIDERATION

There is sufficient cause under the State Board's regulations for the State Board to reconsider the provisions of D-1644 that apply to both BVID and YCWA.

A. The Relevant Provisions of D-1644 That Apply to BVID Have No Legal or Evidentiary Basis and Resulted from an Irregular Proceeding

BVID objects to the following two provisions of D-1644 that apply to BVID: (1) D-1644's limitation of BVID's pre-1914 right to divert water from the Yuba River during the months of November through March; and (2) D-1644's mandate that BVID file Statements of Water Diversion and Use. (*See* D-1644, pp. 183-184.) There is no legal or evidentiary basis for those provisions, which resulted from a deliberative process that denied BVID a fair hearing. Under section 768, subdivisions (a), (b) and (d), of title 23 of the California Code of Regulations, the State Board thus should reconsider D-1644.

1. The State Board Has No Legal Authority to Modify BVID's Pre-1914 Right Based on the Record Before the Board

D-1644 requires that BVID limit its diversion of water from the Yuba River to the sum of the following: (1) BVID's pre-1914 right as that right is stated in D-1644's findings; (2) BVID's rights under its water supply contract with YCWA; and (3) any new water rights that BVID acquires. (D-1644, pp. 159-160, 183-184.) As defined by the State Water Commission in a 1931 memorandum that followed the Commission's investigation of BVID's pre-1914 right, that right allows BVID to divert 47.2 cfs from the Yuba River *without seasonal limitation*. (A copy of the Commission's memorandum, dated "October 8, 1931" is attached hereto under tab 1.) D-1644's findings, and thus its order, however, limit BVID's pre-1914 right to substantially less than 47.2 cfs during the months of November through March. (*Id.*)

No legal authority supports D-1644's limitation of BVID's pre-1914 right during the months of November through March.

While D-1644 appears to be based generally on the public trust doctrine, D-1644 contains no finding that the full year-round diversion of BVID's pre-1914 right would injure the public trust resources present in the lower Yuba River.

D-1644 makes no finding that full year-round diversion of BVID's pre-1914 right would constitute a waste, unreasonable use, unreasonable method of use or unreasonable method of diversion of water that would trigger the State Board's powers under Article X, section 2 of the California Constitution and Water Code section 275.

BVID does not exercise its pre-1914 right through the operation of any dam owned by BVID, so Fish & Game Code section 5937 could not possibly allow the State Board to modify BVID's right.

This proceeding is not a statutory adjudication under Water Code section 2500 *et seq.* that would allow the State Board greater leeway in dealing with water rights on the Yuba River.

Water Code sections 1243, 1253 and 1257.5, the Streamflow Protection Standards Act (Pub. Res. Code § 10000 *et seq.*) and the Salmon, Steelhead Trout and Anadromous Fisheries Program Act (Fish & Game Code § 6900 *et seq.*) do not authorize the State Board to modify even post-1914 water rights, much less pre-1914 water rights like BVID's right.

Water Code section 1241 does not authorize the State Board to modify pre-1914 rights because it applies only to "permitees" and pre-1914 rights do not rely on any permits. Furthermore, the State Board has never provided any notice to BVID that the State Board would apply Water Code section 1241 in this proceeding.

If none of these authorities allow the State Board to modify BVID's pre-1914 right, then the State Board has no authority to do so. (*Cf. National Audubon Society* v. *Superior Court* (1983) 33 Cal.3d 419, 441-442 (describing the limited powers of the State Board's predecessors before Article X, section 2's predecessor constitutional provision was adopted).) The State Board simply has no general authority to modify pre-1914 rights. There thus is cause to reconsider D-1644 under section 768, subdivision (d), of title 23 of the California Code of Regulations.

2. The Record Does Not Support D-1644's Seasonal Limitation of BVID's Pre-1914 Water Right

D-1644 relies entirely on the water usage reports that BVID filed with the State Water Commission in the 1920's as its basis for limiting BVID's pre-1914 right during the months of November through March. (D-1644, pp. 159-160.) D-1644's interpretation of those reports, however, contradicts the interpretation that the State Water Commission gave them in closing its investigation of BVID's pre-1914 right. After reviewing those reports, the State Water Commission concluded that BVID's pre-1914 right constituted a right to divert 47.2 cfs. The State Water Commission placed no seasonal limitations on that right, *even though the Commission relied on exactly the same evidence as D-1644.* (*See* tab 1.)

D-1644 cites no other evidence to support D-1644's finding that BVID's pre-1914 right comprises less than 47.2 cfs during the months of November through March. The State Board cannot simply reinterpret the evidence upon which the State Water Commission concluded that BVID has the year-round right to divert 47.2 cfs from the Yuba River. Because no evidence supports D-1644's findings concerning the seasonal extent of BVID's pre-1914 right, there is cause for reconsideration under section 768, subdivision (b), of title 23 of the California Code of Regulations.

3. D-1644's Requirement That BVID File Statements of Water Diversion and Use Improperly Expands BVID's Duties Under the Water Code

Water Code sections 5100 through 5107 authorize water right holders to file "statements of water diversion and use" with the State Board. Water Code section 5108, however, states that:

> Statements filed pursuant to this part [Water Code sections 5100 through 5108] shall be for informational purposes only and *neither the failure to file a statement nor any*

error in the information filed shall have any legal consequences whatsoever other than those specified in this part. (Emphasis added).

Nothing in Water Code sections 5100 through 5108 allows the State Board to take any action against the holder of a water right because it does not file a statement of water diversion and use.

D-1644, however, states that BVID "shall provide complete monthly and annual water diversion information on all future triennial Supplemental Statements of Water Diversion and Use submitted pursuant to Water Code section 5103." (D-1644, p. 184.) Under this provision, the State Board could try to claim that BVID would violate Water Code section 1052 if BVID does not: (1) file a statement of water diversion and use every three years; or (2) include monthly and annual diversion data in such a statement.

The State Board has no authority to attach such consequences to the non-filing of or omission of information from a statement of water diversion and use. Water Code section 5108 states that "neither the failure to file a statement nor any error in the information filed shall have any legal consequences whatsoever . . . ." If the State Board interprets D-1644 to require BVID to file triennial statements of water diversion and use that contain certain diversion data, then the State Board will have expanded the legal gravity associated with such statements far beyond that contemplated by the Water Code. There thus is cause for reconsideration of D-1644 under section 768, subdivision (d), of title 23 of the California Code of Regulations.

4. The Participation of Mike Meinz and Alice Low Was a Serious Irregularity in the Proceedings and Denied BVID a Fair Hearing

Under California law, the staff members on whom an agency relies to find facts must be impartial. (*See Gray* v. *City of Gustine* (1990) 224 Cal.App.3d 621, 631-632 ("A biased decision maker conducting either judicial or administrative hearings is constitutionally unacceptable."))

There is substantial evidence that Mike Meinz and Alice Low, the State Board's environmental specialists in this proceeding, had substantial conflicts of interest that constituted serious irregularities and denied BVID a fair hearing.

DFG is a party to this proceeding. Its 1991 publication of its Lower Yuba River Fisheries Management Plan (the "DFG Plan") was a primary factor motivating the State Board to commence this proceeding. (*See* D-1644, pp. 2-3, 22-23.) The DFG Plan viewed BVID's pre-1914 right as limited by season. (*See* Exh. DFG-26, p. 98, Table 20 (describing BVID's pre-1914 right as 0 acre-feet in March and not listing any right for November through February).) In 1993, DFG published a document entitled *Restoring Central Valley Fisheries: A Plan for Action*" (the "*Plan for Action*" (copies of the pertinent pages of this document are attached hereto under tab 2)). The *Plan for Action* tracks the DFG Plan by describing BVID's pre-1914 right as being limited by season.

Mr. Meinz participated in the preparation of the DFG Plan. Page 115 of that Plan, under the heading "ACKNOWLEDGMENTS," states that:

> Department of Fish and Game staff who provided supervision, direction and review include Jerry Mensch, ***Mike Meinz***, John Nelson, John Turner, Bob Orcutt, Gary Smith, Cindy Chadwick, Dan Odenweller, Fred Meyer, and Jim Schuler. (Exh. DFG-26, p. 115 (emphasis added).)

Mr. Meinz's participation in the preparation of the DFG Plan with several of DFG's key witnesses (*see* Exhs. DFG-13 (Mensch testimony); DFG-14 (Chadwick testimony); DFG-15 (Nelson testimony); DFG-17 (Odenweller testimony)), raises a substantial question about his impartiality in evaluating that Plan, those witnesses' testimony and other evidence concerning BVID's pre-1914 right and any need for more water for anadromous fisheries in the Yuba River.

The *Plan for Action* lists Ms. Low as among those who compiled its contents (*Plan for Action*, title page), recommends certain actions concerning the Yuba River and does not state that anyone who participated in its compilation disagreed with any of its recommendations. The *Plan for Action* recommends that "uncommitted water" in the Yuba River be used to restore the Yuba River's anadromous fisheries. (*Id.* at p. VII-76.) The *Plan for Action* apparently defines "uncommitted water" in the Yuba River as water to which DFG believes that no Yuba County water district is entitled. (*Id.*) In so defining "uncommitted water," the *Plan for Action* tracks the DFG Plan's quantification of BVID's pre-1914 right by describing that right as limited by season. (*Id.*)

By putting her name on the *Plan for Action*, Ms. Low advocated the adoption of its recommendations for the "restoration" of the Yuba River's fisheries, including the erroneous quantification of BVID's pre-1914 right. It is irrelevant whether or not Ms. Low actually developed the *Plan for Action*'s recommendations for the Yuba River. By putting her name on the *Plan for Action*, Ms. Low indicated that she *agreed* with those recommendations.

The participation of Mr. Meinz and Ms. Low in this proceeding shows that the State Board staff members who were responsible for evaluating environmental evidence here both agreed with DFG's position concerning the extent of BVID's pre-1914 water right. Mr. Meinz's and Ms. Low's participation constituted a serious irregularity, denied BVID a fair hearing and justifies reconsideration under section 768, subdivision (a), of title 23 of the California Code of Regulations.[1]

B. The Provisions of D-1644's Findings and Order Concerning the Amendment of YCWA's Water Right Permits Are Not Supported by the Record, Misapply the Relevant Legal Authorities and Resulted from an Irregular Deliberative Process

D-1644's findings and order concerning YCWA's water right permits are not supported by substantial evidence in the record, improperly rely on an expanded interpretation of the State Board's powers and resulted from a deliberative process in which the State Board improperly relied on former employees of DFG as the Board's environmental specialists.

1. BVID Is Vitally Interested in What Happens to YCWA's Water Rights

While BVID possesses its own right to divert water from the Yuba River, it has a keen interest in YCWA's continuing exercise of its water rights for at least four major reasons.

First, BVID and YCWA are parties to a water supply contract under which YCWA may supply BVID with Yuba River water over and above the water that BVID can divert under its own right. (*See generally* D-1644, p. 160.) Any deficiencies that D-1644 causes thus will impact BVID.

Second, because more groundwater must be pumped in response to D-1644, BVID will incur significant new pumping costs and may be affected by groundwater pumping in neighboring areas.

Third, BVID will have to implement new water conservation measures on top of its already substantial measures. (*See* D-1644, pp. 109-110.) The law of diminishing returns dictates that the additional measures will be less effective and more expensive than BVID's prior efforts.

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[1]BVID also joins in and incorporates by reference YCWA's objection to the participation of Cliff Lee of the California Attorney General's office in the State Board's March 1, 2001 closed session, immediately following which the State Board adopted D-1644.

Fourth, BVID and the people that it serves are members of the Yuba County community and thus suffer serious direct and indirect harm when members of that community suffer as a result of flooding along the Yuba River. As the record in this proceeding demonstrates, implementation of in-stream flow requirements such as the final requirements adopted by D-1644 will eliminate YCWA's ability to transfer water and thus raise money to fund local flood control measures and local share requirements of federal and state flood control programs. (Exh. S-YCWA-11.) As the Legislature recognized in the Yuba County Water Agency Act, YCWA is the only local agency in Yuba County that can adequately address the County's flood control problems. (Wat. Code App. § 84-26.[2])

2. D-1644's Extensive Reliance on the Idea That Yuba County Farmers Will Pump Groundwater to Remedy Surface Water Deficiencies Is Inconsistent with D-1644's Findings Concerning Groundwater North of the Yuba River

An administrative agency's findings must "conduce the administrative body to draw legally relevant sub-conclusions supportive of its ultimate decision; the intended effect is to facilitate orderly analysis and minimize the likelihood that the agency will randomly leap from evidence to conclusions." (*Topanga Ass'n for a Scenic Community* v. *County of Los Angeles* (1974) 11 Cal.3d 506, 516.) The State Board's findings in D-1644 concerning the groundwater available in Yuba County are internally inconsistent and are not the orderly analysis demanded by California law.

D-1644 asserts that the water supply deficiencies that it will cause will not hurt Yuba County because its farmers can pump groundwater and, in fact, have pumped groundwater in order to convey surface water to the Governor's Water Bank in 1991 and 1994. (D-1644, pp. 11-12, 125.) The

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[2]Water Code Appendix section 84-26 reads in pertinent part:

> The Legislature hereby finds that water problems in the County of Yuba require countywide water conservation, flood control and development of water resources; that all land within the county will be benefited thereby; that the solution of these problems lies within and is peculiar to the area to be included in the Yuba County Water Agency . . . that county water districts, municipalities, irrigation districts and reclamation districts now exist within portions of the county, have acquired property and works, developed a limited water supply, and have incurred indebtedness, but have been and are unable alone to economically develop an adequate water supply and control the floods of said county, and for such reason it is necessary to have a political entity at least coextensive with the geographical limits of the entire county . . . .

assumption underlying this assertion is that groundwater and pumping capacity are distributed throughout Yuba County as evenly as surface water deficiencies caused by D-1644 will be.

D-1644 itself flatly contradicts this assumption. D-1644 states that states that:

> The Yuba Groundwater Basin is hydraulically divided by the lower Yuba River into the Yuba-North Basin and the Yuba-South Basin . . . ***Because of sufficient surface water supplies, significant groundwater pumping capacity has not been developed to meet irrigation demands in the Yuba-North Basin.*** (*Id.* at p. 10 (emphasis added).)

D-1644 thus admits that there is no evidentiary basis for its assumption that all Yuba County farmers have sufficient groundwater pumping capacity available to them to allow them to implement conjunctive use in order to compensate for surface water deficiencies.

The 1991 and 1994 groundwater pumping data on which D-1644 relies further refutes D-1644's assumption that farmers in the Yuba-North Basin can pump enough groundwater to implement conjunctive use. That data demonstrates, for instance, that farmers in BVID pumped only a small part of the groundwater pumped in 1991 and 1994. (*See* Exh. S-YCWA-27.) Nowhere does D-1644 suggest that BVID's water supply deficiencies will be limited to such small amounts after D-1644's final in-stream flow requirements are implemented.

D-1644's statements about groundwater pumping within other water districts in the Yuba-North Basin further undermine its assertion that groundwater is available to replace surface water. D-1644 states that:

> Data developed by DWR indicate that, from 1950 to 1980, excessive pumping of groundwater created localized decreases in the groundwater levels (cones of depression) beneath Ramirez Water District . . . Before surface water deliveries from YCWA began in 1983, [that district] relied entirely on groundwater. (D-1644, p. 11 (citing YCWA 2, fig. 8-E and p. 12.)

Ramirez Water District's groundwater pumping accounted for most of the pumping in the Yuba-North Basin during 1991 and 1994. (Exh. S-YCWA-27.) D-1644 would require Ramirez to repeat that level of pumping in all future droughts. Yet D-1644 also admits that Ramirez has faced overdraft problems in the past. D-1644 thus encourages groundwater overdrafts in the areas of the Yuba-North Basin that may actually have the pumping capacity assumed by D-1644.

Finally, Cordua Irrigation District's witnesses testified that Cordua's experience in pumping groundwater in 1991 and 1994 indicated that large-scale groundwater pumping would have significant negative effects on the water table and Cordua's neighbors. (S-R.T. 1561:7-1564:4.)

D-1644's findings are insufficient to "bridge the analytical gap" from the evidence in the record to its conclusion that conjunctive use will prevent serious consumptive use deficiencies after D-1644's final in-stream flow requirements take effect. There thus is cause for reconsideration under section 768, subdivisions (b) and (d), of title 23 of the California Code of Regulations.

3. D-1644's Finding That New Water Conservation Measures Will Mitigate the Water Supply Deficiencies Caused by D-1644 Contradicts Other Findings in That Decision and the Record

D-1644's findings also fail to "bridge the analytic gap between the raw evidence and ultimate decision or order" (*Topanga*, *supra*, 11 Cal.3d at 515-516), in relation to water conservation. D-1644 asserts that:

> [d]eficiencies in the amount of water available for offstream use could also be offset through increased water conservation measures. Despite successful water conservation measures in some instances, the record establishes that water users in the YCWA service area could adopt additional reasonable but more stringent water conservation measures.[43] (D-1644, p. 125.)

However, the only concrete examples of "additional reasonable but more stringent water conservation measures" that D-1644 suggests are contained in footnote 43. That footnote states that: (1) "the testimony establishes that flooding successive rice fields sequentially would require less water and is more desirable from the standpoint of providing waterfowl habitat. (S-R.T. 1313:15-1314:22; 1320:21-1321:4.)"; and (2) "[a]s discussed in Section 7.3, the record also indicates that rice can be grown with less water per acre when there is an incentive to conserve as was the case when groundwater was used more widely in the YCWA service area." The record does not support D-1644's findings that those water conservation measures can be implemented reasonably.

a. D-1644's Finding That Yuba County Farmers Will Conserve Water Because They Will Use More Groundwater Contradicts D-1644's Other Findings

Section 7.3 of D-1644 finds that Yuba County farmers use less water for irrigating rice when they have to pump groundwater than when they rely on surface water: "The higher cost to pump groundwater may result in more efficient water use." (D-1644, p. 108.) This finding, however, cannot support D-1644's later finding that Yuba County farmers will conserve additional water because they will have to pump groundwater. (D-1644, p. 125, fn. 43.) This latter finding erroneously assumes that groundwater and groundwater pumping capacity are distributed throughout Yuba County as evenly as surface water deficiencies resulting from D-1644's implementation will be. D-1644 itself refutes this assumption in relation to those farmers who farm north of the Yuba River:

> The Yuba Groundwater Basin is hydraulically divided by the lower Yuba River into the Yuba-North Basin and the Yuba-South Basin . . . ***Because of sufficient surface water supplies, significant groundwater pumping capacity has not been developed to meet irrigation demands in the Yuba-North Basin.*** (*Id.* at p. 10 (emphasis added).)

D-1644 can neither logically nor legally find both: (1) that farmers in the Yuba-North Basin do not have adequate groundwater pumping capacity for irrigation; and (2) that they will conserve more water in response to D-1644 because they will irrigate with groundwater. The two findings are inconsistent and D-1644 thus is internally inconsistent. Accordingly, D-1644 violates California administrative law by failing to reveal "the analytic route the administrative agency traveled from evidence to action." (*Topanga, supra*, 11 Cal.3d at 515.) D-1644 thus contains a legal error that justifies reconsideration. (*See* Cal. Code Regs., tit. 23, § 768, subd. (d).)

b. D-1644's Finding that Sequential Rice Flooding Is a Viable Conservation Option Relies Only on Incompetent Evidence and Ignores Crucially Relevant Testimony

D-1644 cites only "(S-R.T. 1313:15-1314:22; 1320:21-1321:4.)" to support its finding that "flooding successive rice fields sequentially would require less water and is more desirable from the standpoint of providing waterfowl habitat." (D-1644, p. 125, fn. 43.) The cited testimony is the testimony of Dr. Frederic Reid. Dr. Reid testified as an expert on the needs of waterfowl. (S.R.T 1268:4-6.) The record contains no evidence that Dr. Reid is an expert on water conservation. D-1644 thus cites only the testimony of an expert who is not competent to testify about water conservation to support its finding that "flooding successive rice fields sequentially would require less water." Incompetent evidence is not substantial evidence.

In addition, D-1644's finding that sequential rice flooding would be a reasonable additional water conservation measure that could be implemented in Yuba County ignores the 2000 testimony of BVID and at least two other Yuba County water districts that they either already do successively flood their rice fields or would be implementing that conservation measure in 2000. (S-R.T. 1623:2-1625:2 (Cordua and South Yuba); 1668:22-1669:24 (same); 1814:15-1815:22 (BVID).) D-1644 does not even acknowledge this testimony, even though it directly contradicts D-1644's finding that "water users in the YCWA service area could adopt additional reasonable but more stringent water conservation measures," including sequential rice flooding. (D-1644, p. 125, *part.* fn. 43.) Section 768, subdivision (b), of title 23 of the California Code of Regulations thus supports reconsideration of D-1644.

4. D-1644 Is An Unauthorized Extension of the State Board's Authority to Modify Water Rights

D-1644 errs in applying the legal authorities on which it relies, namely: (1) the public trust doctrine; (2) Article X, section 2; and (3) the physical solution doctrine.

a. The Public Trust Does Not Authorize the State Board to Require YCWA to Mitigate Injuries to Trust Resources Caused by Pre-Existing Facilities

The public trust is an easement that burdens property rights associated with navigable waters. (*Golden Feather Community Ass'n* v. *Thermalito Irr. Dist.* (1989) 209 Cal.App.3d 1276, 1280-1284; *City of Los Angeles* v. *Venice Peninsula Properties* (1988) 205 Cal.App.3d 1522, 1529-1530.) The owner of a property right that is burdened by an easement generally has a duty to avoid unreasonably interfering with the easement (*Camp Meeker Water System* v. *Public Utilities Comm'n* (1990) 51 Cal.3d 845, 867), but has no duty to restore or improve the easement (*Herzog v. Grosso* (1953) 41 Cal.2d 219, 228). The public trust's nature as an easement thus prevents the state from using the trust as an all-purpose tool to promote trust uses. (*Cf. Venice Peninsula Properties, supra*, 205 Cal.App.3d at 1529-1532 (city has no right to dredge, construct sea walls in and improve tideland property where relevant property was never subject to the public trust).)

To date, the cases and State Board decisions that have applied the public trust to modify water rights have involved situations where the water right holder actually interfered with the public's use of the public trust easement by damaging the relevant resources. (*Nat'l Audubon, supra*, 33 Cal.3d at 424-425; *California Trout, Inc.* v. *Superior Court* (1990) 218 Cal.App.3d 187, 195; *California Trout, Inc.* v. *State Water Resources Control Bd.* (1989) 207 Cal.App.3d 585, 593-598;

In the Matter of Fishery Protection and Water Right Issues of Lagunitas Creek, State Board Order No. WR 95-17, §§ 2.3-2.5; *In the Matter of Amendment of the City of Los Angeles' Water Right Licenses for Diversion of Water From Streams Tributary to Mono Lake*, State Board Decision No. 1631, §§ 1.0, 2.2, 2.3; *see also* cases cited in *Charpentier v. Von Geldern* (1987) 191 Cal.App.3d 101, 109-110.) These cases and decisions are consistent with the law of easements, which requires the owner of property burdened by an easement from unreasonably interfering with the easement.

Until now, no case or State Board decision has contradicted the law of easements by requiring the holder of a water right to enhance the public trust easement. By requiring YCWA to try to enhance the Yuba River's fisheries through habitat enhancement measures, even though YCWA's exercise of its rights already has benefitted those fisheries, D-1644 improperly extends the public trust doctrine in a manner that contradicts the law of easements.

D-1644 also applies the wrong burden of proof in relying on the public trust. D-1644 states that: "[i]n applying the public trust doctrine, the State has the power to reconsider past water allocations even if the State considered public trust impacts in its original water allocation decision . . . The State has the duty of continuing supervision over the taking and use of appropriated water and an affirmative duty to protect public trust uses whenever feasible." (D-1644, p. 31 (citing *Nat'l Audubon, supra*).) This articulation of the State's powers under the public trust confuses *National Audubon*'s statements concerning the trust's application to new water allocation decisions and its separate statements concerning the modification of existing rights.

National Audubon states that:

> The state has an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible . . . As a matter of practical necessity *the state may have to approve appropriations despite foreseeable harm to public trust uses. In so doing, however, the state must bear in mind its duty* as trustee to consider the effect of the taking on the public trust [citation omitted] and *to preserve, so far as consistent with the public interest, the uses protected by the trust.*
>
> Once the state has approved an appropriation, the public trust imposes a duty of continuing supervision . . . In exercising its sovereign power to allocate water resources in the public interest, *the state is not confined by past allocation decisions which may be incorrect* in light of current knowledge or inconsistent with current needs. (33 Cal.3d at 446-447 (emphasis added).)

D-1644 contains no finding that satisfies the burden of proof that applies when the State

Board considers the modification of existing water rights. Instead, D-1644 simply claims for the State Board the power to modify existing water rights to protect trust resources "whenever feasible." That standard defines the *duty* of the State Board in considering *new* appropriations. Applying that standard to *modify existing* rights, however, ignores the literal text of *National Audubon* and subsequent cases that interpret *National Audubon*. (*See Big Bear Mun. Water Dist.* v. *Bear Valley Mutual Water Co.* (1989) 207 Cal.App.3d 363, 380-381.)[3]

Because D-1644 improperly extends and misapplies the public trust doctrine, there is cause to reconsider D-1644 under section 768, subdivision (d), of the California Code of Regulations.

b. D-1644 Ignores the Literal Text of Article X, Section 2

Article X, section 2, of the California Constitution reads in pertinent part:

> The right to water or to the use or flow of water in or from any natural stream or water course in this State is and shall be limited to such water as shall be reasonably required for the beneficial use to be served, and such right does not and shall not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion of water.

This provision serves two functions: (1) it defines the extent of a water right as that "reasonably required for the beneficial use to be served;" and (2) it excludes, from the bundle of sticks that make up a water right, the right to "waste or unreasonable use or unreasonable method of use or unreasonable method of diversion of water."

D-1644 does not acknowledge the first function of Article X, section 2 or the California Supreme Court's most recent discussion of Article X, section 2, which is contained in *City of Barstow* v. *Mojave Water Agency* (2000) 23 Cal.4th 1224 ("*Mojave*"). *Mojave* contains the following passage that is crucially relevant here:

> Respondents unpersuasively argue for imposition of an equitable physical solution that disregards prior legal water rights. *They cite the principle that the Constitution requires the greatest number of beneficial users that the water supply can support, but they omit the requirement that this use be subject to the rights of those with lawful priority to the water.* (*Mojave*, *supra*, 23 Cal.4th at 1250 (emphasis added).)

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[3]D-1644 relies on YCWA's use of Englebright Dam as an afterbay for its hydropower operations to support its application of the public trust. (D-1644, pp. 31-32.) This interpretation of the public trust triggers preemption by the Federal Power Act. (*See California* v. *Fed. Energy Reg. Comm'n* (1990) 495 US. 490, 500-503; *Salyes Hydro Ass'n* v. *Maughan* (9th Cir. 1993) 985 F.2d 451, 453.)

Mojave thus reaffirms the importance of Article X, section 2's first function of defining the extent of a water right as "such water as shall be reasonably required for the beneficial use to be served."[4]

D-1644 effectively repeats the error of the respondents in *Mojave* by relying on "the mandate of article X, section 2 . . . to maximize reasonable and beneficial uses of water" (D-1644, p. 34), but omitting "the requirement that this use be subject to the rights of those with lawful priority to the water" reaffirmed by *Mojave*. Among the rights that D-1644 should have acknowledged under *Mojave* is YCWA's right to have until 2010 to develop full beneficial use of its rights. (Permits for Diversion and Use of Water Nos. 15026, 15027 and 15030 (term 10 in each permit).) D-1644 instead effectively caps consumptive use of Yuba River water and simply dismisses the possibility that any other future activities will require any more water from the Yuba River: "[t]he SWRCB recognizes that there will be new uses of water in Yuba County in the future, but we believe that a large portion of those uses can be met through more efficient use of existing water supplies or with water from other sources." (*Id.* at p. 107; *see also id.* at pp. 124-125.)

D-1644 makes no attempt to reconcile these findings with YCWA's legally-vested right to have until 2010 to develop full beneficial use of the water that it is entitled to divert. D-1644 thus contradicts *Mojave*'s interpretation of Article X, section 2. Accordingly, there is cause for reconsideration under section 768, subdivision (d), of the California Code of Regulations.

c. D-1644's Application of the Physical Solution Doctrine Also Violates *Mojave*

D-1644 relies on the physical solution doctrine to support its requirement that YCWA release water from storage at New Bullards Bar Reservoir. (D-1644, pp. 34-35, fn. 22.) This requirement exceeds the well-settled limits on that doctrine, which *Mojave* reaffirmed.

Mojave states that "although it is clear that a trial court may impose a physical solution to achieve a practical allocation of water to competing interests, the solution's general purpose cannot

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[4]D-1644 relies on none of the special statutory powers that the Legislature has delegated to the State Board. Where Article X, section 2, is at issue, the powers of the State Board are concurrent with those of the courts. (*Environmental Defense Fund* v. *East Bay Mun. Utility Dist.* (1980) 26 Cal.3d 183, 200.)

simply ignore the priority rights of the parties asserting them." (23 Cal.4th at 869.) *Mojave* also cites, without any distinctions, California Supreme Court decisions involving surface water, percolating groundwater and flowing groundwater for the rule that a physical solution cannot require water right holders to suffer substantial detriments. (*See* 23 Cal.4th at 1249-1250 (citing *Peabody* v. *City of Vallejo* (1935) 2 Cal.2d 351, 383-384 (surface water); *City of Lodi* v. *East Bay Mun. Utility Dist.* (1936) 7 Cal. 2d 316, 341 (percolating groundwater); *Hillside Water Co.* v. *Los Angeles* (1938) 10 Cal.2d 677, 685-686 (same); *Rancho Santa Margarita* v. *Vail* (1938) 11 Cal.2d 501, 561 (surface water); and *Allen* v. *California Water & Tel. Co.* (1946) 29 Cal.2d 466, 483-484 (flowing groundwater).) D-1644 exceeds this limit on the physical solution doctrine because, even using the State Board's conservative estimates[5] of the water supply impacts of D-1644's final in-stream flow requirements, D-1644 finds YCWA will be negatively affected by those requirements in at least some years. (D-1644, pp. 120, Table 16 (deficiencies in every water-year type except wet).)[6]

d. The Participation of Mike Meinz and Alice Low Taints D-1644's Provisions Concerning YCWA

As discussed in Section II.A.4, *supra*, the participation of former DFG employees Mike Meinz and Alice Low in this proceeding as the State Board's environmental specialists was a serious irregularity. This irregularity taints D-1644 in relation to not only BVID, but also YCWA.

Mr. Meinz's "supervision, direction and review" of the DFG Plan (*see* Exh. DFG-26, p. 115) and prior collaboration with several of DFG's key witnesses denied BVID and YCWA a fair hearing because Mr. Meinz was primarily responsible for neutrally evaluating the evidence that DFG presented in favor of and YCWA presented in opposition to the DFG Plan during the 1992 hearing.

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[5] Under cross-examination by the State Board's staff, YCWA's witnesses specifically testified that an historical averaging method like that used in D-1644 is not a valid way of calculating current demand. (S-R.T. 1491:12 - 1494:3; 1541:25 - 1543:15.) D-1644 does not cite any contradictory evidence or find that YCWA's testimony was not credible. D-1644 simply ignores this part of YCWA's testimony and instead states, without evidentiary support, that "when data on actual water deliveries is available, examination of that data provides a better understanding of the actual present level of demand." (D-1644, p. 104.)

[6] While D-1644 finds that its "Deficiency Clause" will limit water supply deficiencies in some years and thus D-1644's impact on YCWA, D-1644 only allows, and does not require, the State Board to apply its "Deficiency Clause." (D-1644, pp. 123-125, 180-182.)

Ms. Low's co-authorship of DFG's 1993 *Plan for Action* also denied BVID and YCWA a fair hearing. That *Plan for Action*:

(1) implied that YCWA's New Bullards Bar Dam is responsible for injuring the Yuba River's anadromous fisheries (*Plan for Action*, p. III-3), which even D-1644 admitted is not correct (D-1644, p. 32 ("overall fish populations have stabilized or slightly increased following YCWA's construction of New Bullards Bar Dam"));

(2) stated, without citing any scientific evidence, that anadromous fish in the Central Valley require stream temperatures as low as 56°F (*Plan for Action*, p. III-4), a proposition that YCWA and South Yuba Water District seriously contested during the 2000 hearing, but with which D-1644 essentially agreed (D-1644, pp. 81-82);

(3) recommended the devotion of all "uncommitted water" in the Yuba River system (as defined by DFG) to try to enhance the river's anadromous fisheries (*Plan for Action*, p. VII-76), which ignores the terms in YCWA's permits that give YCWA until 2010 to complete full development of its water rights;

(4) recommended that New Bullards Bar Reservoir's storage will be used to restore the Yuba River's fisheries, an approach that D-1644 adopted (D-1644, p. 31); and

(5) stated as an "A-1 Priority" the State Board's adoption of in-stream flow requirements (pp. VII-78) that are essentially the same as in the DFG Plan (Exh. DFG-26, p. xiii).

By putting her name on DFG's *Plan for Action*, Ms. Low endorsed the positions advocated by that *Plan*. Without any evidence to the contrary, the inference must be that Ms. Low continued to agree with those recommendations while she was evaluating the evidence presented during the 2000 hearing. Ms. Low's participation in the 2000 hearing as the State Board's environmental specialist thus constituted a serious irregularity.

Mr. Meinz's and Ms. Low's participation in this proceeding as the State Board's environmental specialists creates cause for reconsideration under section 768, subdivision (a), of the California Code of Regulations.

C. The State Board Violated CEQA Because There Is Substantial Evidence that D-1644 Will Have Negative Environmental Impacts

The record before the State Board contains the following substantial evidence to support an argument that D-1644 will have negative environmental impacts:

(1) D-1644's findings that: (a) Yuba County farmers will have to rely more on groundwater to irrigate their crops; (b) groundwater recharge in the Yuba-South Basin is about 15,100 to 21,200 acre-feet annually;[7] and (c) that, in some years, surface water supply deficiencies (and thus groundwater pumping) will substantially exceed 21,200 acre-feet. (D-1644, pp. 12-13, 121-125.) The kind of environmental impact indicated by these findings is potentially significant (*see, e.g.*, S-R.T.-1570:16-1572:14), even if it only occurs in one year. (*See* Appendix G to Title 14 of California Code of Regulations (the "CEQA Guidelines"), Environmental Checklist Form, Question VIII.b.)

(2) YCWA's evidence that indicates that high in-stream flow requirements like those in D-1644 will cause surface water deficiencies substantially greater than those stated in D-1644 (*see* Exh. S-YCWA-16), which means that groundwater pumping could substantially exceed that stated in D-1644.

(3) YCWA's 1992 evidence that implementation of the DFG's recommended in-stream flows would cause reduced air quality because implementation of those flows would reduce YCWA's hydroelectric power generation and thus require greater generation through the burning of fossil fuels. (Exh. YCWA-18, pp. 20-29.) Because D-1644 will reduce the amount of electricity that YCWA can generate during the summer in at least dry and critical years (*compare* D-1644, Table A-3 (modeling of YCWA/DFG Agreement), months of June-August 1977, 1987-1992 *with* D-1644, Table C-3

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[7]Although D-1644 finds that the average water supply deficiencies that it will cause will not exceed groundwater recharge in the Yuba-South Basin (D-1644, p. 124), D-1644 ignores: (1) the fact that the record contains no data concerning the recharge rate in the Yuba-North Basin; and (2) the environmental impact that groundwater pumping during a multi-year drought like 1987-1992 will cause in both the Yuba-North and Yuba-South Basins.

(modeling of D-1644), months of June-August 1977, 1987-1992), it similarly will have negative air quality impacts.

(4) D-1644's finding that Yuba County farmers will have to pump more groundwater in response to D-1644 (*see* D-1644, pp. 124-125) indicates that those farmers will have to use more electricity to run their pumps, thus creating additional demand for electricity. Because D-1644's impacts on hydroelectric power generation will be most severe in the summers of dry and critical years (*compare id.*, Table A-3 (modeling of YCWA/DFG Agreement), months of June-August 1977, 1987-1992 *with id.*, Table C-3 (modeling of D-1644), months of June-August 1977, 1987-1992), which would be the exact time period during which Yuba County farmers will have to pump the most groundwater (*see id.*, pp. 123-124, Tables 20-22 (describing "DELIVERY DEFICIENCIES" in dry, critical and extreme critical years)), D-1644 will cause simultaneous decreases in electrical supply and increases in electrical demand. This compounding effect will require more fossil fuel-driven electricity generation, which will reduce air quality.

(5) D-1644's findings that Yuba County water districts will need to implement additional water conservation measures (D-1644, pp. 125, 130) and that major water conservation measures involve physical improvements such as the construction of pipelines (*id.* at pp. 109-110).

(6) the evidence that Yuba County water districts presented that in-stream flow requirements similar to D-1644's final requirements will cause substantial negative economic impacts to Yuba County farmers, which may result in less rice being farmed in the County (S-R.T. 1573:2-1580:6), and thus less habitat for migrating waterflow in an area that is critical for them (S-R.T. 1268:9-1273:6). This sort of chain reaction requires CEQA analysis. (*See Citizens Assn. for Sensible Dev. of Bishop Area* v. *County of Inyo* (1985) 172 Cal.App.3d 151, 169-171; CEQA Guidelines, § 15131.)

(7) the evidence in the record that, if Yuba County farmers need to depend more frequently on groundwater, they then will need to start paying standby charges to

PG&E, which will make rice farming less viable (S-R.T. 1573:9-1574:1; 1716:16-1717:14) and thus reduce waterfowl habitat.[8]

(8) the evidence in the record that the 1.0 acre-foot per acre of water for rice field flooding and waterfowl habitat that D-1644 states is sufficient (D-1644, p. 111), would create a material risk of disease in waterfowl (S-R.T. 1674:4-1675:10).[9]

(9) the scientific evidence in the record that the stream temperatures toward which D-1644 requires YCWA to attempt to operate through its consultations with the "Temperature Advisory Committee" will: (a) retard the growth of juvenile salmonids (S-R.T. 2612:6-2613:26); and (b) cause them to suffer through a mismatch of stream temperatures when they reach the Feather and Sacramento Rivers and the Delta and are subjected to significantly warmer water. (S-R.T. 2091:15-2094:10; 2590:9-2595:19; 2860:23-2875:24.)

(10) the evidence in the record that high in-stream flow requirements like D-1644's final requirements will eliminate YCWA's ability to transfer water, thus eliminating Yuba County's only source of funding for major flood control projects and subjecting Yuba County to a higher risk of substantial flooding. (Exh. S-YCWA-11.) This sort of impact is potentially significant. (*See* CEQA Guidelines, Appendix G, Environmental Checklist Form, Question VIII.i.)[10]

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[8]In addition, the record contains undisputed expert testimony by Dr. Frederic Reid that groundwater is not as useful for waterfowl habitat as surface water. (S-R.T. 1272:9-1273:6.) Although D-1644 relies heavily on Dr. Reid's testimony to support other points (*see, e.g.*, D-1664, p. 111), D-1644 does not acknowledge his testimony concerning groundwater's negative impacts on waterfowl habitat.

[9]Even the hearing officer, John Brown, acknowledged that the record does not show that 1.0 acre-foot per acre is sufficient. (S-R.T. 1500:11-15.)

[10]D-1644 ignores the Legislature's declarations of state policy in favor of water transfers (*see* Wat. Code §§ 109, 475.) In particular, D-1644 ignores the Legislature's following direction to the State Board in Water Code section 109: "The Legislature hereby directs . . . the State Water Resources Control Board . . . to encourage voluntary transfers of water . . . ."

1. The State Board Was Required to Prepare an EIR Before Adopting D-1644

Public Resources Code section 21082.2, subdivision (d), states that: "[i]f there is substantial evidence, in light of the whole record before the lead agency, that a project may have a significant effect on the environment, an environmental impact report shall be prepared." Section 15064, subdivision (a)(1), of the CEQA Guidelines states that: "[i]f there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, the agency shall prepare a draft EIR." In light of the evidence discussed above that indicates that D-1644 may have a significant effect on the environment, the State Board was required to prepare an EIR before adopting D-1644. Because it did not do so, there is cause for reconsideration under section 768, subdivision (d), of the State Board's regulations.

2. The Evidence That D-1644 Will Cause Significant Negative Environmental Impacts Defeats the CEQA Exemptions On Which D-1644 Relies

Section 15300.2, subdivision (c), of the CEQA Guidelines states that: "[a] categorical exemption shall not be used for an activity where there is a reasonable possibility that the activity will have a significant effect on the environment due to unusual circumstances." The Court of Appeal also has held that categorical exemptions from CEQA's environmental documentation requirements are not available when there is a reasonable possibility that an agency decision will have a significant impact on the environment. (*County of Amador* v. *El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 967; *Azuza Land Reclamation Co.* v. *Main San Gabriel Basin Watermaster* (1997) 52 Cal.App.4th 1165, 1192-1199.)

Because the record indicates that there is a reasonable possibility that implementation of D-1644 will cause negative environmental impacts, D-1644 improperly relies on the categorical exemptions established by CEQA Guidelines sections 15301 (existing facilities), 15307 (protection of natural resources) and 15308 (protection of environment). There is cause for reconsideration under section 768, subdivision (d), of the State Board's regulations.

3. The Impacts of D-1644's Modification of the Operation of YCWA's Project Are Not On-Going Project Impacts

CEQA applies to modifications in the use of facilities that predate CEQA. (*See County of Amador*, *supra*, 76 Cal.App.4th at 968-969; *County of Inyo* v. *Yorty* (1973) 32 Cal.App.3d 795, 804-808.) Accordingly, section 15261, subdivision (a), of the CEQA Guidelines states that:

> If a project being carried out by a public agency was approved prior to November 23, 1970, the project shall be exempt from CEQA unless either of the following conditions exists: . . . (2) A public agency proposes to modify the project in such a way that the project might have a new significant effect on the environment.

As discussed above, there is a significant amount of evidence in the record that the State Board's adoption of D-1644 will require YCWA to significantly modify Yuba River Project operations in ways that "might have a new significant effect on the environment." D-1644 thus erroneously relies on the CEQA exemption established by CEQA Guidelines section 15261. Accordingly, there is cause for reconsideration of D-1644 under section 768, subdivision (d), of the State Board's regulations.

D. There Is New Relevant Evidence Concerning the Yuba River's Fisheries and D-1644's Hydrological Impacts That Justifies Reconsideration of D-1644

It is BVID's understanding that YCWA has acquired substantial new information concerning the size and status of the Yuba River's anadromous fisheries as a result of YCWA's Public Records Act requests to DFG. (*See* Declaration of Ryan S. Bezerra ("Bezerra Declaration") attached herewith as Exhibit C.) YCWA has acquired DFG's raw data from DFG's collection of salmon and steelhead in a rotary screw trap in the Yuba River. In addition, it is BVID's understanding that YCWA has conducted hydrological analyses of the impacts of D-1644. To the extent that YCWA petitions for reconsideration of D-1644 based on the new rotary screw trap data that YCWA acquired from DFG and/or YCWA's hydrological analyses of the impacts of D-1644, BVID supports, joins in and incorporates by reference the relevant portions of YCWA's petition.

CONCLUSION

For the reasons set forth above, Browns Valley Irrigation District respectfully requests that the State Water Resources Control Board grant Browns Valley Irrigation District's petition for reconsideration of Decision 1644.

Dated: March 30, 2001

BARTKIEWICZ, KRONICK & SHANAHAN
A Professional Corporation

By: ______________________
Ryan S. Bezerra

Attorneys for Browns Valley Irrigation District

1

Application 12-1986 - Certificate 8

M E M O R A N D U M

PLEASE KEEP THIS MEMORANDUM ON TOP OF ALL CORRESPONDENCE AND PAPERS

The time allowed in Certificate 8 for completion of beneficial use having expired, this project was inspected by Engineer Ingerson on September 27th and October 29, 1927. Mr. Ingerson found that 6,438 acres had been irrigated during 1927 but that the amount of water actually used could not be determined accurately at that time due apparently to growth of weeds in the ditch.

At the time of Mr. Ingerson's inspection in October, Mr. Gurney advised him that he proposed to install a Venturi Flume in the ditch in order to accurately determine the amount of water used. This flume was installed late in 1927 and gage records were made of the discharge of the flume during 1928, and it appears from Mr. Gurney's report dated March 26, 1929, that the amount of water used during the months of June, July and August, approximates very closely 47.2 cubic feet per second. This figure appears to coincide with the data obtained by Mr. Stafford in his report dated March 24, 1923, and may therefore be taken as the extent of the right under this certificate. This matter may therefore be considered closed on the records of the Division of Water Resources.

M S Edson
Office Engineer

MSE:NP

PLEASE KEEP THIS MEMORANDUM ON TOP OF ALL CORRESPONDENCE AND PAPERS

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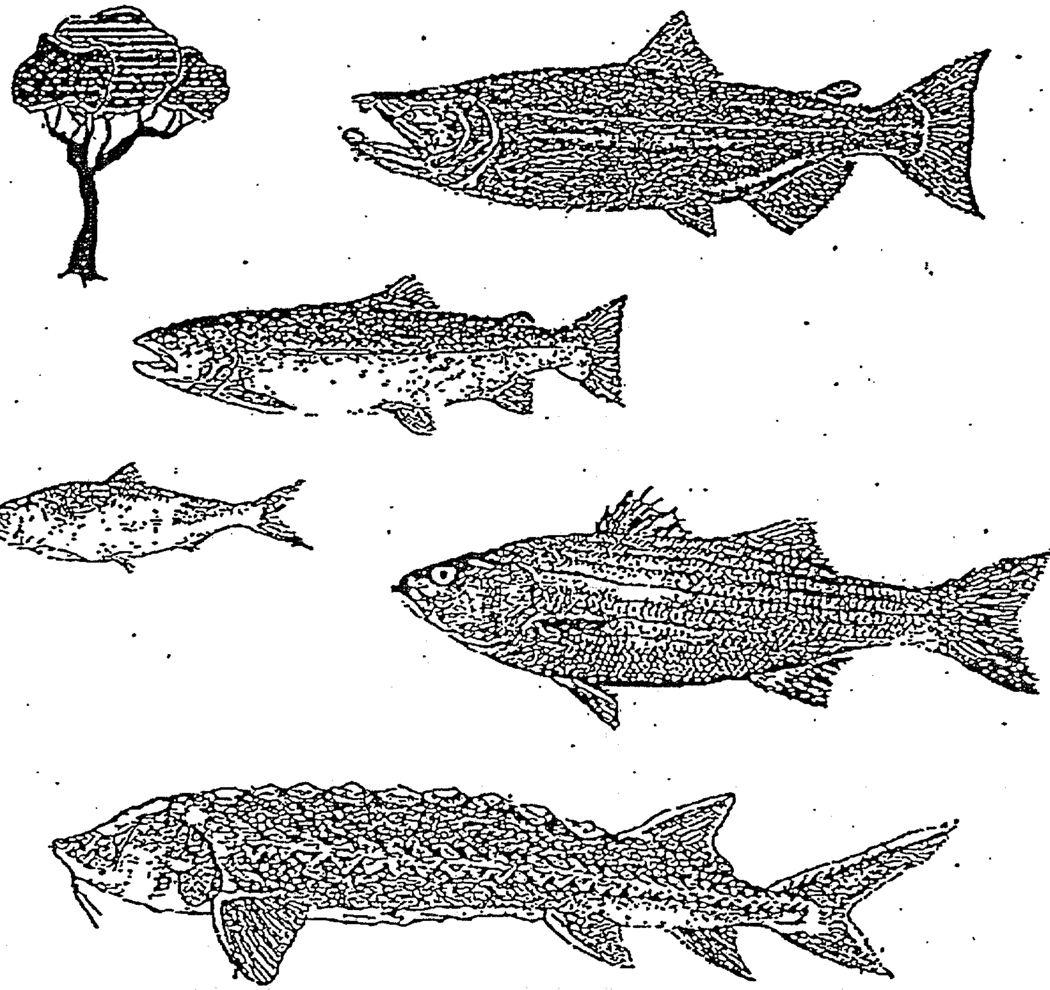
RESTORING CENTRAL VALLEY STREAMS:

A PLAN FOR ACTION



DEPARTMENT OF FISH AND GAME

SPORT FISH RESTORATION

NOVEMBER
1993

RESOURCES AGENCY CALIFORNIA DEPARTMENT FISH & GAME

COM 9009

State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

RESTORING CENTRAL VALLEY STREAMS: A PLAN FOR ACTION

Compiled by:

Forrest L. Reynolds
Fish and Wildlife Manager

Terry J. Mills
Senior Fishery Biologist

Randy Benthin
Associate Fishery Biologist

and

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Associate Fishery Biologist

Under the direction of:

Tim Farley, Chief
Inland Fisheries Division

November 1993

COM 9010

III. HISTORICAL PERSPECTIVE

Habitat of Anadromous Fish

Ninety-five percent of the historic Central Valley salmon habitat has been lost. The streams have either been dammed, blocking migration, or they have been so severely degraded that they are no longer usable by salmon. The most severe damage and loss of habitat began with the discovery of gold in 1849 and culminated in the 1970's with completion of the major water diversion and conveyance facilities.

Hydraulic mining caused sedimentation of spawning grounds, water diversions blocked migrating fish and depleted stream flows, and the sudden human population explosion during the gold rush resulted in significant development and disturbance all along the Central Valley streams and rivers. Then, the need for building materials created a logging industry that added further to the decline in available habitat.

The unrestricted use of hydraulic mining in the river drainages along the eastern edge of the Central Valley was extremely damaging to the stability of the stream systems and habitat for anadromous fish. This belt of hydraulic mining transversed most of the Sierra Nevada west side drainages to the Sacramento and upper San Joaquin valleys. Between 1850 and 1885, hydraulic mining washed tons of silt, sand, and gravel into the Sacramento, Feather, American, San Joaquin, Merced, and Tuolumne rivers. The most intensive hydraulic mining occurred on the Feather, Yuba, and Bear rivers. The mining debris, composed of clay, sand, gravel, and cobbles, rapidly washed downstream during high flows. As early as 1860, a sand bar had formed in the Sacramento River across the mouth of the American River. By 1866, the larger steamboats could no longer reach Sacramento, and by 1876, the channels of the Bear and Yuba rivers had been completely filled resulting in adjacent agricultural lands becoming covered by sand and gravel. The State Supreme Court, in 1884, upheld a suit against the hydraulic mining interests filed on behalf of agricultural interests. That decision was the beginning of the end for hydraulic mining. However, extensive damage had already occurred.

Prior to the construction of levees for reclamation and flood control, the Sacramento River was confined, at normal flows, between its natural river banks. During periods of flood, large areas of the Central Valley were inundated. Flood control in Sacramento Valley had its inception with low levees constructed on the rimlands along streambanks by farmers endeavoring to protect their crops. Until 1850, ownership of the tule, swamp, and overflow lands was vested in the United States government. With the passage of the "Arkansas Act" in 1859, these lands were transferred to the State of California and made available to private

COM 9011

ownership in 1865. By 1868, nearly all the land had been sold with the provision that the owners reclaim the land through the formation of reclamation districts.

By 1894, many miles of levees had been constructed along the stream channels and some of the favorably located lands had been formed into districts with levees of sufficient height to afford some degree of flood protection. By the 1930's only 25% of the land of the Sacramento Valley floor was subject to periodic inundation.

In 1893, the Congress established the California Debris Commission to deal with the loss of navigable river channels and to provide a plan to control flooding in the Valley. The flood control plan was adopted by the State Legislature in 1911 and by Congress in 1917. Adoption of the plan brought together a large number of reclamation districts and allowed reclamation of the greater part of the remaining swamps. Flood control was accomplished using a system of levees to protect farmlands, by establishing areas to bypass flows of flood water, and by constructing dams on the rivers to capture flow. The flood control plan proposed by the Debris Commission was essentially complete in the late 1960's.

Logging was not significantly regulated in California until the second half of the Twentieth Century. This hundred-year period of virtually uncontrolled harvest of trees resulted in streams being choked with sediment and debris making them inaccessible or useless for anadromous fish. During this same time the Central Valley was being developed for agriculture. Water storage and diversion projects were being built, denying anadromous fish access to historic spawning areas.

By 1960, salmon habitat in the Sacramento-San Joaquin river watersheds had been substantially reduced. Shasta Dam on the Sacramento River near Redding, constructed in 1938-44, became a barrier to all salmon in November 1942. This barrier prohibited salmon from reaching their historic spawning areas in the upper Sacramento, Pit, and McCloud rivers. The USFWS estimates that the Sacramento River historically supported an average salmon run of 600,000 fish and, at times, as many as a million salmon a year may have spawned in the river. Many of these fish would have spawned in the area above Shasta Dam. Friant Dam on the San Joaquin River, completed in 1949, resulted in the elimination of a run of spring-run chinook salmon that ranged from 2,000 - 56,000 between 1943-48. As demand for water grew, new dams were built until the Feather River was the only significant river in the Central Valley that was still relatively free-flowing. This changed in 1960 when California voters approved construction of the SWP.

Approval of the SWP resulted in the construction of the Oroville Dam on the Feather River near the town of Oroville, the Harvey O. Banks Pumping Plant in the Delta, the

California Aqueduct, and San Luis Reservoir. Oroville Dam and the other facilities were completed in 1965 which allowed the State to begin delivering water to the San Joaquin Valley and to the cities in southern California. The Oroville Dam blocked most salmon including all wild spring-run chinook salmon, changed the historic flow patterns in the river below the dam, and affected runs of anadromous fish throughout the Central Valley by reducing Delta inflow and outflow.

While the SWP was being completed, the Federal government constructed the Red Bluff Diversion Dam (RBDD) on the Sacramento River near the town of Red Bluff. This gravity diversion feeds the Corning and Tehama-Colusa canals and originally had the capacity to divert over 2,000 cubic feet of water per second (cfs). Since the enlargement of the Tehama-Colusa Canal headworks, diversion capacity at the RBDD is over 3,000 cfs.

During this same period, numerous other projects were constructed that indirectly or directly affected salmon habitat. Among these were New Bullards Bar Dam and New Scotts Flat Reservoir in the Yuba River drainage, New Melones Dam on the Stanislaus River, New Don Pedro Dam on the Tuolumne River, and New Exchequer Dam on the Merced River. The cumulative effect of these projects on anadromous fish populations was enormous. Prior to construction of these projects, flows in the rivers closely resembled historic patterns; even though the fish were blocked by the "old" dams. The new dams, however, provided cooler water during parts of the year due to reservoir stratification. Now the rivers are regulated to the point that high flows below the dams typically occur in late spring and summer during the irrigation season, and low flows occur in the fall, winter, and early spring during the storage season. This is completely inverse to the conditions in which the fish evolved. The natural channel of the San Joaquin River above the mouth of the Merced River cannot be used by salmon since it is no longer used to deliver irrigation water and there are no high flows during the summer.

The SWP's Harvey O. Banks Delta Pumping Plant and the California Aqueduct more than doubled the capacity to export water south. Prior to the installation and operation of the SWP Delta pumps, Delta water exports were limited to the quantities the Federal pumps could deliver. With the addition of the SWP export, the magnitude of reverse flows across the Delta increased, Delta outflow decreased, and the concomitant entrainment of salmon increased. The problems were exacerbated by the increased storage upstream, since less water reached the Delta and, therefore, a larger percentage of Delta inflow was exported.

Reduced instream flows below storage reservoirs affect salmon habitat in several ways. The most obvious impact is to migrating fish. Adult fish must be able to reach the spawning areas and juvenile fish must be able to emigrate to the ocean. Low flows do not flush the fine sediments from salmon spawning gravel, thus the gravel's suitability for spawning is reduced. Low streamflows also permit encroachment of riparian vegetation into spawning gravels which reduces available spawning area. Lower flows in the summer and fall result in higher water temperatures. When water temperatures exceeds 56°F, developing eggs begin to experience mortality. The rate of egg mortality greatly increases when temperatures exceed 57.5°F.

Historic Wetlands and Riparian Habitat

The lack of authentic records prevents determining the precise distribution and abundance of historic wetland and riparian habitat in California. For this reason, substantial differences exist in the estimates of the total wetland acreages in California prior to settlement by Europeans in the 19th Century. A report prepared by the USFWS in 1978 estimates the total historic wetland area at between 4.1 million and 5.0 million acres.

The State originally supported an estimated 500,000 acres of permanent freshwater marshes. The majority of this habitat occurred as tidal and nontidal marshes along the borders of Grizzly and Suisun bays and the Delta, Tulare and Kern lakes, and in basins along the Sacramento and San Joaquin rivers. These vast, permanently flooded marshes consisted primarily of cattails, several species of bulrushes, and pondweeds. These marshes, ponds, and stream channels were generally bordered by dense stands of riparian woodlands in various stages of transitional development from grasses to old growth hardwoods.

Each winter millions of additional acres of seasonal wetland were created as rivers and streams throughout the Central Valley and elsewhere in the State, swollen by rainfall and melting snow, overflowed and inundated adjacent grassland and wetland riparian forests. Vast flocks of waterfowl, which reportedly darkened the sky for several minutes as they passed, eagerly sought the temporary abundance of grass seed and terrestrial insects.

Most recently, there are an estimated 292,000 acres of seasonal or permanent wetland in the Central Valley. Approximately 70% of the existing wetlands, which are primarily duck clubs, are privately owned. State and Federal refuges comprise the other 30% of Central Valley wetlands. In addition to 292,000 acres of seasonal or permanent wetlands, post-harvest flooding of rice, corn, and wheat provides additional habitat for waterfowl and shorebirds. Though still impressive, California's great heritage of waterfowl and migratory water birds is greatly diminished and remains in jeopardy as wetlands continue to decline. Riparian woodlands have been diminished to a few isolated blocks within the flood plain and intermittent strips along the major stream courses.

YUBA RIVER

The Yuba River watershed drains 1,339 square miles of the western slope of the Sierra Nevada Mountain Range, and includes portions of Sierra, Placer, Yuba, and Nevada counties. The Yuba River is tributary to the Feather River, which in turn feeds into the Sacramento River (Figure VII-4).

Most of the water from Englebright Dam, the lowermost dam on the river and the upstream limit of anadromous fish, is released through the Narrows 1 and 2 powerhouses for hydroelectric power generation. The 0.2 miles of river between the dam and the two powerhouses has no flowing water except when the reservoir is spilling. The 0.7 miles of river downstream of the Narrows 1 and 2 powerhouses to the mouth of Deer Creek is characterized by steep rock walls, long deep pools, and short rapids. Below this area the river cuts through 1.3 miles of sheer rock gorge called the Narrows, where the river forms a single large, deep, boulder-strewn pool.

> Fall-run chinook salmon are the most abundant and important fish in the Yuba River. The Yuba is used also by spring-run chinook salmon and American Shad.

The river canyon opens into a wide flood plain at the downstream end of the Narrows where large quantities of hydraulic mining debris remain from past gold mining operations. This 18.5-mile section is typified as open valley plain. Daguerre Point Dam, located 12.5 miles downstream from Englebright Dam, is the major diversion point on the lower river. The open valley plain continues 7.8 miles below Daguerre Point Dam to beyond the downstream terminus of the Yuba Goldfield. This section is composed primarily of alternating pools, runs, and riffles with a gravel and cobble substrate and, by virtue of the quality and size of the substrate, contains most of the suitable chinook salmon spawning habitat found in the lower Yuba River.

The remaining section of the lower Yuba River extends approximately 3.5 miles to the confluence with the Feather River. This section of river is bordered by levees and is subject to backwater influence of the Feather River.

Fall-run chinook salmon are the most abundant and important anadromous fish in the lower Yuba River. Historically, the Yuba River supported up to 15% of the annual run of fall chinook salmon in the Sacramento River system. Run sizes in the Yuba River have varied over the period of record (1953-1989) ranging from 1,000 fish in 1957 to 39,000 fish in 1982. Approximately 60% of those salmon spawned between Daguerre Point Dam and the Highway 20 Bridge. During the 1970's and 1980's, increased chinook salmon and American

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shad populations were anticipated following the completion of the New Bullards Bar Dam, however, these increases were not realized. Presently, fall-run chinook spawning runs average 13,050 fish annually, far below the 38,000 fish anticipated.

A small spring-run chinook population occurred historically in the Yuba River. However, the run virtually disappeared by 1959, presumably due to diversion and hydraulic developments on the river. A remnant population of spring-run chinook salmon persists in the lower Yuba River and is maintained by fish produced in the river, salmon straying from the Feather River, and from infrequent stocking of hatchery-reared fish by the DFG.

The lower Yuba River supports a seasonal shad sport fishery from late April to July. The fishery is generally confined to the area between Daguerre Point Dam and the confluence with the Feather River. Studies have shown that the shad fishery on the Yuba River has declined significantly in the past two decades. In 1968, the run was estimated at 30,000 to 40,000 spawners, and in 1969 at 40,000 adult fish. In recent years, the shad run has only been a fraction of 1968-69 levels. Daguerre Point Dam is believed to affect shad spawning movements. The dam is equipped with two conventional pool and weir type fishways. Shad do not generally enter fish ladders and, therefore, the majority of the population is restricted to the river below the dam.

Since the turn of the century, water development projects and diversions have had significant adverse effects on the river and its anadromous fish populations. Modification of the timing of natural flows, reduction of flows during critical periods, and alteration of spring, summer, and fall stream temperatures have contributed to the decline of the salmon, steelhead, and American shad populations. These factors affect salmon and steelhead migration flows, spawning, and growth. American shad attraction, passage, and spawning activities are also adversely affected.

The three most significant diversions along the lower Yuba River are located at or near Daguerre Point Dam, and water extraction generally occurs from late March through October. The Hallwood Irrigation Company, the Cordua Irrigation District, and the Ramirez Water District share one diversion; Brophy and South Yuba water districts another; and Browns Valley Irrigation District the third. The combined diversions add up to a maximum of 1,085 cubic feet per second (Table VII-6).

Juvenile chinook salmon are lost at all diversion intake structures due to impingement, entrainment, or predation. While losses at individual diversions may not be significant, the cumulative impact from all diversions is substantial.

TABLE VII-6. Summary of Diversion Rates in Acre-feet per Month for the Major Water Districts Supplied by the Yuba County Water Agency (YCWA), Lower Yuba River, California, from DFG Lower Yuba Fisheries Management Plan, 1991.

	Hallwood Irrigation Company	Cordua Irrigation District		Ramirez Water District	Browns Valley Irrigation District		Brophy Water District	South Yuba Water District
Month	WR*	WR	PW+	WR	WR	PW	PW	PW
March	0	0	0	0	0	0	520	300
April	10,000	4,500	900	2,010	2,269	1,667	4,795	1,000
May	14,500	10,600	2,120	3,270	2,345	1,666	6,460	4,000
June	14,100	10,400	2,080	2,745	2,269	1,667	6,670	6,200
July	13,600	11,100	2,620	1,920	2,345	2,500	6,915	4,400
August	12,900	11,000	2,600	1,755	2,345	2,000	5,525	3,400
Sept.	8,000	5,900	1,180	1,500	2,269	0	3,750	2,400
Oct	4,900	6,500	500	700	2,345	0	625	400
Total	78,000	60,000	12,000	13,900	16,187	9,500	35,330	22,100
Max. cfs	275	--	275	75	38.2	42	230	150

* (WR) Basic water right of respective water district.
+ (PW) Purchase water through contract with YCWA.

During planning for the development of the Yuba River Basin in the late 1950's and early 1960's, projections were made of the expected benefits to the Yuba River fishery of construction of New Bullards Bar Dam and Reservoir. The DFG projected that increased streamflow and better water temperature control would result in improving the average fall-run chinook salmon run to over 38,000 fish. The maximum run was expected to exceed 80,000 fish. However, since impoundment of New Bullards Bar Reservoir in 1969, the average fall chinook salmon run has not improved.

The DFG estimated that prior to 1970, approximately 200 steelhead trout spawned in the river annually, and there was a potential for about 2,000 spawners after completion of New Bullards Bar Reservoir. While no definitive population estimates exist, limited information suggests that lower Yuba River steelhead trout populations may have increased.

At present, sufficient quantity of uncommitted water remains in the Yuba River system (New Bullards Bar Reservoir) to restore the river's anadromous fishery. Unless action is taken immediately to obtain increased flows and adequate temperatures for fish, the opportunity to increase anadromous fish populations will be lost. Obtaining the needed streamflow, temperature, and screening for the lower Yuba River will affect storage in Bullards Bar Reservoir and will require changing operations at the existing diversions.

Priority Ranking and Cost of Implementation

Recommendations to improve anadromous fish habitat in the Yuba River:

Priority	Anadromous Fish Habitat Restoration Action	Cost
A-1	Install screen on Browns Valley Irrigation District diversion.	No Estimate
A-1	Replace screens on South Yuba-Brophy and the Hallwood-Cordua diversions.	No Estimate
A-2	Improve spawning and rearing habitat.	$1,000,000
B-3	Protect and manage riparian habitat.	$100,000/yr

Recommendations for administrative actions to improve anadromous fish habitat in the Yuba River:

Priority	Administrative Action to Improve Anadromous Fish Habitat	Agency
A-1	Ensure compliance with fish screening requirements in Fish and Game Code Section 6100.	DFG
A-1	Require the following temperatures and streamflows to protect salmon and steelhead in the Lower Yuba River: Maximum Temperature (F) Period / @Daguerre / @Marysville Oct - Mar / 56 / 57 April / 60 / 60 May / NR / 60 June / NR / 65 Jul - Aug / 65 / NR Sept / NR / 65 Streamflow (cfs) Period / @Marysville Oct-Mar / 700 April / 1,000 May / 2,000 June / 1,500 Jul-Sept / 450	SWRCB
A-2	Develop a plan to increase rearing habitat for juvenile salmon and steelhead.	DFG
B-1	Regulate gravel extraction to protect salmon and steelhead spawning areas.	DFG County

Recommendation for evaluation of anadromous fish habitat in the Yuba River:

Priority	Evaluation Action to Determine Habitat Needs for Anadromous Fish	Cost
A-1	Inventory all water diversions in the drainage from Englebright Dam to the Feather River.	$25,000

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PROOF OF SERVICE BY MAIL

I, Barbara Jean Arteaga, declare:

I am over the age of eighteen and not a party to this action and work in Sacramento County at 1011 Twenty-Second Street, Sacramento, California 95816. On **March 30, 2001**, following ordinary business practices, I placed for collection and mailing with the United States Postal Service, Sacramento, California 95816 copies of the enclosed **PETITION BY BROWNS VALLEY IRRIGATION DISTRICT FOR RECONSIDERATION OF D-1644** in a sealed envelope, with postage fully prepaid, addressed to:

See Attached List of Parties:

I am readily familiar with the business' practice for collection and processing of correspondence for mailing with the United States Postal Service and, in the ordinary course of business, the correspondence would be deposited with the United States Postal Service on the day on which it is collected at the business.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: **March 30, 2001**

Barbara Jean Arteaga

LIST OF PARTIES
Lower Yuba River Hearing
(revised March 30, 2001) (Total of 17)

South Yuba Water District
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Cordua Irrigation District
c/o Mr. Paul R. Minasian
Minasian, Spruance, Baber, Meith,
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California Department of Water Resources
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Calif Sportfishing Protection Alliance
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Brophy Water District
c/o Mr. Daniel F. Gallery
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or Mr. Scott Morris
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National Marine Fisheries Service
c/o Mr. James Bybee
Northern California Habitat Manager
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California Department of Fish and Game
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Sacramento, CA 95814

Pacific Gas & Electric Company
c/o Mr. Richard Moss
P.O. Box 7442
San Francisco, CA 94120-7442

Mr. Arthur G. Baggett, Jr., Chair
State Water Resources Control Board
1001 I Street, 25th Floor
Sacramento, CA 95814

Mr. Richard Katz, Board Member
State Water Resources Control Board
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Mr. Peter S. Silva, Board Member
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1011 I Street, 25th Floor
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RYAN S. BEZERRA, STATE BAR NO. 178048
PAUL M. BARTKIEWICZ, STATE BAR NO. 65143
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TELEPHONE: (916) 446-4254
TELECOPIER: (916) 446-4018

Attorneys for Browns Valley Irrigation District

BEFORE THE

STATE WATER RESOURCES CONTROL BOARD

In the Matter of **FISHERY RESOURCES AND WATER RIGHTS ISSUES OF THE LOWER YUBA RIVER** **Involving Water Right Permits 15026, 15027 and 15030 Issued on Applications 5632, 15204 and 15574 of Yuba County Water Agency,** **Licenses 3984 and 3985 Issued on Applications 9927 and 12371 of Cordua Irrigation District,** **License 4442 Issued on Application 9899 of Hallwood Irrigation District, and** **Other Water Diversions by Various Parties Under Claim of Riparian Rights, Pre-1914 Appropriative Rights and Contractual Rights**	**DECLARATION OF RYAN S. BEZERRA IN SUPPORT PETITION BY BROWNS VALLEY IRRIGATION DISTRICT FOR RECONSIDERATION OF D-1644**

I, Ryan S. Bezerra, declare as follows:

1. I am an associate with the law firm of Bartkiewicz, Kronick & Shanahan and am an attorney of record for Browns Valley Irrigation District in this proceeding.

2. I have personal knowledge of the facts stated in this Declaration and, if called as a witness, could and would testify competently to those facts.

3. It is my understanding that: (1) Yuba County Water Agency ("YCWA") has obtained from the California Department of Fish and Game ("DFG") copies of DFG's data sheets for its collection of anadromous fish in the Yuba River at its rotary screw trap in that River (the "RST

Data"); (2) the RST Data was not reasonably available during the 1992 and 2000 hearings in this proceeding, in part because much of that data was collected after the close of the 2000 hearing; and (3) the RST Data contains significant new information concerning the status of the Yuba River's anadromous fisheries is relevant to the development of appropriate in-stream flow requirements for the lower Yuba River.

4. It is also my understanding that: (1) YCWA has conducted hydrological analyses of the various impacts of Water Right Decision 1644's in-stream flow requirements and that those analyses were not available during the 1992 and 2000 hearings in this proceeding; and (2) these analyses are relevant to the development of appropriate in-stream flow requirements for the lower Yuba River.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed March 30, 2001 at Sacramento, California

Ryan S. Bezerra

262.0 (58-08)

MAR 2001
Received
Office Of The
Chief Counsel

March 28, 2001

Mr. Arthur Baggett, Chairman
State Water Resources Control Board
P. O. Box 2000
Sacramento, CA 95812

Mr. Harry Scheuller, Chief
Division of Water Rights
P. O. Box 2000
Sacramento, CA 95812

Subject: Petition for Reconsideration of March 1, 2001 Yuba River Decision

We, the California Sportfishing Protection Alliance(CSPA), 2553 Stonehaven Drive, Sacramento, CA 95827, hereby petition for reconsideration of the March 1, 2001 State Water Resources Control Board decision on the Yuba River.

This petition for reconsideration is based upon the following causes:

1) Irregularity in the proceedings and abuse of discretion
2) The decision is not supported by substantial evidence, and
3) The Board made numerous errors in law.

The following supporting facts are submitted as part of this petition and as reasons the Board's action was inappropriate and improper:

1) The Board improperly used judicial notice pertaining to hydroelectric power production and impacts of fisheries flows .(Title 23 CCR)

2) The Board improperly considered and based its decision on comments and general information received at meetings not noticed as evidentiary hearings. (Title 23 CCR)

3) The Board acted improperly in failing to base its decision on substantial evidence derived during approximately 30 days of hearings and scientific evidence submitted by CSPA and other parties. (Title 23 CCR)

4) The Board included in its decisions information which was not presented during the hearings and could have only been obtained through ex-parte communications. (Title 23 CCR)

5) The Board's decision improperly deleted substantial evidence presented during the hearings relating to water temperature and disregarded its own Water Quality Basin Plan temperature provisions. (Yuba River Fisheries Management Plan, Central Valley Water Quality Basin Plan)

6) The Board's decision improperly and illegally provides for the take of state and federally listed species. (Fish and Game Code Section 2080, Federal Endangered Species Act)

7) The Board's decision improperly and illegally provides for the take of aquatic life, an action which is beyond the Board's authority and is an authority reserved to the Fish and Game Commission. (Fish and Game Code Section 200-211)

8) The Board's decision improperly delayed implementation and provided flow deficiency criteria(20%) which are not supported by substantial evidence in the record. (Title 23 CCR)

9) The Board's decision improperly disregards substantial evidence contained in the hearing record regarding flows necessary to maintain fish in good condition. (Fish and Game Code Section 5937, Title 23 CCR)

10) The Board's decision improperly disregards substantial evidence in the record pertaining to fish migration, habitat and flow fluctuations. (Yuba River Fisheries Management Plan, Title 23 CCR)

11) The Board's decision improperly prevented CSPA from exercising its due process rights by not following its specified hearing and evidentiary process. (Title 23 CCR)

12) The Board's decision improperly provided for a flow measurement and recording process which is not supported by substantial evidence in the record, provides special privilege to Yuba County Water Agency which is not afforded other water users, and is detrimental to aquatic resources.(Title 23 CCR)

CSPA requests reconsideration of the elements of the decision described above. Specific actions requested are implementation of flows and other protective measures contained in the Yuba River Fisheries Management Plan as modified and amended by testimony of CSPA, The National Marine Fisheries Service, the US Fish and Wildlife Service and the Department of Fish and Game.

Copies of this petition have been sent to all parties on the hearing service list.

Jerry Mensch

Jerry Mensch for
California Sportfishing Protection Alliance

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WALTER COOK
Attorney at Law, (Ret.)
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March 28, 2001

Harry M. Schueller, Chief
Division of Water Rights
State Water Resources Control Board
1001 Eye Street
Sacramento, CA 95812-2000

Via Fax: 916/341-5400, and
Via U.S. Mail

Re: **Petition For Reconsideration**
SWRCB Decision 1644, March 1, 2001

Dear Mr. Schueller:

Enclosed for filing is my attached Petition for Reconsideration of Decision 1644, dated March 1, 2001.

Yours truly,

Walter Cook

WALTER COOK

Petition enclosed

Copy to Parties

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

In the Matter of Fishery Resources and
Water Right Issues of the Lower Yuba River
--o0o--
PETITION FOR RECONSIDERATION
OF
WATER RIGHT DECISION 1644, (Adopted March 1, 2001).

Petitioner:
WALTER COOK
Attorney at Law (Ret.)
42 Northwood Commons
Chico, Ca 95973-7214

Tel: 530/345-5474
Fax: 530/345-5474
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WALTER COOK, a party in this matter, hereby submits the following PETITION FOR RECONSIDERATION OF WATER RIGHT DECISION 1644, (including the Order contained therein). The Decision was adopted March 1, 2001 by the California State Water Resources Control Board, (SWRCB). The Decision will be referred to in this Petition as Decision 1644.

AUTHORITIES:

- Title 23, California Code of Regulations, Sections 768, 768 (a); 768 (b); and 768(d).
- Title 23, California Code of Regulations, Section 648.7
- National Audubon v. Superior Court (1983) 33 Cal. 3rd 419.
- California Fish & Game Code, Section 5937.
- The Salmon, Steelhead Trout and Anadromous Fisheries Program Act, enacted in 1988, (California Fish & Game Code, Section 6900, et seq).
- The Federal Clean Water Act, Section 401.
- Streamflow Protection Standards Act, California Pub Resources Code, Sec. 10001, et seq,
- California Endangered Species Act, California Fish & Game Code, Sections 2050-2068.
- The Federal Endangered Species Act, 16 U.S.C.Section 1532.
- Article X, Section 1, 2, & 3, California Constitution.
- California Water Code, Sections 100, 275, 1243 and 1253.
- National Audubon Society v. State water Resources Control Board, 33 Cal 3rd pp-434-435, 437.
- California Trout, Inc. v. State Water Resources Control Board, (1989) 207 Cal App 3d 585.

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BACKGROUND:

- **February 23, 1988:** WRCB received a complaint from the United Groups, alleging that existing water right permits, river flows, and screening did not provide an adequate level of protection for fishery resources in the lower Yuba River.
- **February 1991:** The California State Department of Fish & Game, (DFG), published its **Lower Yuba River Fisheries Management Plan, dated February 1991,** entered as Exhibit 26 in the 1992 Hearings, (referred to as DFG Plan). Among other things, the plan called for changes in water flows, water temperature, habitat, public use and recreation, necessary for the protection and enhancement of fish & wildlife and for the public needs for the Lower Yuba River. The DFG Plan was prepared in accordance with the **Streamflow Protection Standards Act, (California Pub Resources Code, Sec. 10001, et seq),** and the **Salmon, Steelhead and Anadromous Fisheries Program Act, enacted in 1988, (California Fish & Game Code, Section 6900, et seq).**
- **May 8, 1991:** DFG requested the State Water Resources Control Board, (SWRCB), by letter, to revise stream flow and temperature requirements consistent with the DFG Plan.
- **August 1991:** The Division of Water Rights finalized its report, and a water right hearing was scheduled for November 13, 1991.
- **Fall 1991:** The Yuba County Water Agency (YCWA) sought to enjoin the SWRCB in federal court from considering revisions to the water temperature and instream flow requirement specified in its water right permits. The enjunction was denied, but the suit resulted in a postponement of the water right hearing until February 10, 1992.
- **1992, SWRCB hearings:** Oral testimony and written evidence was presented by Petitioner and the other parties,under oath and subject to cross-examination, during 14 days of hearings in 1992. Following the close of the hearing, parties were allowed to submit legal briefs or closing statements.
- **April 28, 1996:** The First Draft Decision was prepared, but was maintained as an undisclosed in-house document.
- **February 10, 1999:** The First Draft Decision was finally released to the parties and to the public.
- **September 1999:** A new hearing was scheduled to receive relevant new evidence not previously available. The hearing was postponed to permit DFG and YCWA to seek a proposed settlement. The attempt was unsuccessful, and hearings were scheduled to begin on February 22, 2000.
- **February 22 to May 17, 2000:** Oral testimony and documentary evidence, under oath and subject to cross-examination by Petitioner and the other parties to the proceedings, was again presented during an additional 13 days of hearings.
- **November 8, 2000:** A second Draft Decision was distributed to the parties and interested persons, along with a staff discussion sheet and cover letter setting the Second Draft Decision for consideration at 9a public meeting on December 4, 2000. .

- **<u>December 4, 2000:</u>** Unsworn written and oral comments relating to the Second Draft Decision, were presented at public meetings of the WRCB. They were not subject to oath or cross-examination. Written comments had been permitted up to 9:00 a.m. on November 27, 2000. Oral comments at the hearings were limited to 10 minutes.
- **<u>January 11, 2001:</u>** This hearing had been continued from December 4, 2000 for those who were unable to speak at the first hearing.
- **<u>January 31, 2001:</u>** A closed session of the SWRCB was scheduled to consider whether to adopt the Second Draft Decision.
- **<u>February 16, 2001:</u>** A Third Draft Decision was prepared.
  - The following conditions were contained in the SWRCB cover letter of February 16, 2001:
    1. Written comments were permitted until 5:00 p.m. Monday, February 26, 2001, if they were to be fully considered.
    2. The Draft was to be considered for adoption at the SWRCB meeting of March 1, 2001.
    3. The parties to the evidentiary hearing will be given up to 10 minutes for oral comments at the March 1, 2001 meeting, and other interested parties will be given up to 3 minutes.
    4. Comments should be limited to the revisions in the draft decision from the prior draft dated November 7, 2000.
- **<u>February 22, 2001:</u>** The Third Draft Decision was received by Petitioner and the other parties to these proceedings on Thursday, February 22, 2001. Parties were not permitted to introduce new evidence at the meeting. The Third Draft Decision contained substantial changes to the Second Draft Decision, and was based on the comments receceived at the December 4, 2000, and January 11, 2001 public meetings. A major change included a 5 year postponement of flow and temperature changes.

- **<u>February 26, 2001:</u>** Petitioner submitted comments by fax and US Mail to the WRCB, with copies provided to the parties. These comments are adopted as a part of this Petition as if set forth in full herein.
- **<u>March 1, 2001:</u>** Water Right Decision 1644, incorporating the Third Draft Decision, was adopted by the Board on March 1, 2001. A Petition for Reconsideration must be filed within 30 days after the Adoption of Decision 1644. **<u>Title 23, California code of Regulations, Section 768.</u>**

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WATER RIGHT DECISION 1644 IS INAPPROPRIATE, IMPROPER, AND INCONSISTENT WITH LAW; IS NOT SUPPORTED BY SUBSTANTIAL EVIDENCE; IS NOT BASED ON OR SUPPORTED BY THE HEARING RECORD; HAS IGNORED UNDISPUTED RELEVANT EVIDENCE BEARING ON THE ISSUES; AND CONSTITUTES AN ABUSE OF DISCRETION AND A FAILURE TO MEET THE LAWFUL RESPONSIBILITIES OF THE WRCB, IN THE FOLLOWING RESPECTS:

I. THE WRCB RELIANCE ON THE CALIFORNIA ENERGY SHORTAGE TO JUSTIFY ADOPTION OF DECISION 1644, IS NOT SUPPORTED BY ANY EVIDENCE IN THE HEARING RECORD.

1. Decision 1644 improperly and illegally revised the Second Draft Decision, to, among other things, defer the effective date of the new long-term flow requirements applicable to YCWA's permits for a period of five years, without any support whatever in the hearing record.
2. The Decision states that:

   "In order to avoid potential aggravation of the electrical energy crisis in California present in early 2001, the flows specified above in part "a." of this term shall come into effect on April 21, 2006. In the interim period, streamflow shall be maintained at or above the flows specified in the following table as measured at the USGS gaging installations at Marysville and Smartville." (Decision 1644, Page 174, Paragraph (c)).
3. The Boards notice and cover letter of February 16, 2001, enclosing the Third Draft Decision which was to be considered for adoptiion at a Board Meeting scheduled for March 1, 2001, stated that

   "Due to the critical electrical energy situation in California, the proposed decision has been revised to defer the effective date of the new long-term flow requirements applicable to YCWA's permits for a period of five years, until April 21, 2006. For the interim period, the proposed decision establishes instream flow requirements based on the flows recommended by YCWA." (etc).
4. **Title 23, California Code of Regulations, Section 648.7,** reads, as follows:
   - **Any final decision made pursuant to evidence introduced at an evidentiary proceeding shall be based on the record and shall include a statement of the reasons for the decision, and where appropriate, findings and conclusions.**
5. Decision 1644 does not show any basis on which changes in Yuba river flows, or the 5 year extension, would impact electric generation, whatever. To the extent the decision was based on the critical electrical energy situation, it is not supported by the hearing record, or by any valid substantial evidence. Decision 1644 appears to be based solely on pure speculation by the SWRCB, or at best, on off the record unsubstantiated comments presented at the December 4, 2000 and January 11, 2001 meetings. Such action by the SWRCB has effectively prevented cross-examination and the ability of the parties to test the credibility of the non record comments on which the Decision appears to have been based, and of the justification for Decision 1644, thereby constituting an error in law, an irregularity in the proceedings and an abuse of discretion preventing all parties from having a fair hearing. **Title 23, Califonria Code of Regulations, Article 12, Sections 768 (a);768 (b); and 768(d), Due Process of Law, and those legal opinions, statutes, and regulations set forth below.**

II. THE SWRCB ERRED IN ITS RELIANCE ON MATTERS OUTSIDE THE HEARING RECORD AS JUSTIFICATION FOR DECISION 1644:

- The changes incorporated into Decision 1644 are based on oral and written statements, not part of the evidentiary record, not made under oath, nor subject to cross-examination. The February 16, 2000 Notice to the Lower Yuba River Hearing Mailing List from the WRCB which included a copy of the Third Draft Decision, specified the dates for written comments as February 26, 2001, and for a further hearing on March 1, 2001, states that
  - **"The proposed decision also includes several other changes and corrections made in response to written and oral comments on the November 7, 2000 draft decision."**
- Decision 1644, page 3, states that
  - **"This decision includes substantial revisions based on the SWRCB's consideration of issues raised in oral and written comments on the draft decision dated November 7, 2000."**
- The hearing record consists of 27 days of evidentiary hearings, including sworn testimony, documentary evidence, and argument, during the years 1992 and 2000. The record was closed on July 10, 2000, after legal briefs and written closing statements were submitted, (Decision 1644, page 2). Since the complaint was filed thirteen years ago on February 23, 1988, the official hearings have resulted in multiple file drawers full of the official hearing record. As a quasi-judicial body, the WRCB is required to base its decision on the evidence presented, rather than on unsworn, non cross-examined policy statements. **Title 23, California Code of Regulations, Section 648.7**

III. THE SWRCB ERRED IN ITS RELIANCE ON "OFFICIAL NOTICE" OF THE CRITICAL ELECTRICAL ENERGY SITUATION IN CALIFORNIA, (Decision 1644, P-18).

1. The critical electrical energy situation in California was not even known at the time of the 1992 hearings. Nor, could the full extent of the crisis have been known at the time of the 2000 hearings. While it is likely that the Board could take Official Notice of the energy crisis, there is nothing to justify a determination that any changes in flow or a 5 year delay in requiring adequate fish flows will have any impact on this crisis whatever, nor that any such changes will increase the availability or price of electric energy in California.
2. If the WRCB wishes to justify its decision on the energy crisis, it should know more than that a crisis exists. Any such justification needed evidence on at least the following issues:

   a. Will there be any differences in electrical generation at the Colgate, and Narrows I & II power houses between the provisions of the Second Draft Decision of November 7, 2000, and Decision 1644?

   b. If so, what will the differences be, and will they adversely impact the energy crisis, and to what extent?

   c. If any flow or other changes in the Second Draft Decision of November 7, 2000 are shown by the evidence to adversely impact the energy crisis should there be a delay in the adoption of the Second Draft Decision of November 7, 2000?

d. If any delay is indicated by the evidence, should the delay be for a period of 5 years, or for some shorter or longer period of time?
e. Should any delay be made permanent?
f. What will be the impact on fish and wildlife in the lower Yuba River of adopting Decision 1644 over the Second Draft Decision of November 7, 2000?

IV. THE SWRCB DELAY IN PROTECTING FISH & WILDLIFE IS UNREASONABLE:

- This matter has been pending since February 23, 1988, without any action to provide flows, water temperature, or other criteria necessary for a healthy fish and wildlife habitat in the Lower Yuba River. The urgent need for such action was testified to at great length by the federal and state agencies having jurisdiction and responsibility for the preservation and enhancement of such fish and wildlife, and by other parties to these proceedings. Such testimony was fully supported by numerous studies and other documentary evidence presented during the 27 days of hearings. Decision 1644 now seeks to justify another five years of inaction. The urgent need for higher flows shown by the hearing record.are being totally ignored. There is no justification in the record for the past lack of any action to address the issues raised, and for the additional 5 year delay in requiring increased flows.
- It is strange that the WRCB is now acting in haste in adopting Decision 1644 on March 1, 2000, after so many years of delays resulting from the Boards failure to meet its responsibilities. As noted above, this matter was first brought to the attention of the WRCB on February 23, 1988. 14 days of hearings were held in 1992. A Draft Order based on the 1992 hearing record was dated April 28, 1996, but was not released to the parties or the public almost three years later on February 10, 1999. After another 13 days of hearings in 2000, A Second Draft Decision, dated on November 8, 2000, was prepared. Two public meetings were held on December 4, 2000 and January 11, 2001 to consider the Second Draft Decision. A Third Draft Decision, dated February 22, 2001, was adopted as Decision 1644 on March 1, 2001. During the 13 plus years since February 23, 1988, that this matter has been held up by the Board, the flows and temperatures of the Yuba River remained the same as they were before the hearings began, and now the SWRCB is authorizing the additional 5 years of delay.

V. THE DECISION FAILS TO INSURE FLOWS NECESSARY TO PROTECT FISH & WILDLIFE IMMEDIATELY BELOW DAGUERRA POINT DAM:

1. **California Fish & Game Code, Section 5937.** provides as follows:
   - **"The owner of any dam shall allow sufficient water at all times to pass through a fishway, or in the absence of a fishway, allow sufficient water to pass over, around or through the dam, to keep in good condition any fish that may be planted or exist below the dam..." :**

2. Minimum flow requirements across and below Daguerra Point dam are shown by the DFG-YCWA Agreement **(1992 Exhibit 26, DFG Plan Pages 187-88, Section 1.5).** which provides:

- **The Agency shall make releases of water from Englebright Reservoir to maintain in the Yuba River immediately below Daguerre Point Dam the following minimum flows for the maintenance of fishlife:**

  January 1 – June 30----------------------245 cubic feet per second
  July 1 – September 30 --------------------70 cubic feet per second
  October 1 – December 31 ---------------400 cubic feet per second
  These flows shall be in addition to releases needed to satisfy existing downstream water rights and shall be measured over the crest of Daguerre Point Dam and through the fishways at that dam.
  While flows may be reduced in critical dry years, in no event shall water releases for fishlife below Daguerre Point Dam be reduced to less than 70 cubic feet per second.

3. TheFederal Energy Regulatory Commission (FERC) License to YWCA contained the same requirements as those in the YCWA-DFG agreement. **(YCWA 1992 Exhibit 3, Page 11, See Note 3).**

4. Petitioner presented undisputed testimony, **(Cook Testimony, February 24, 2000, Internet transcript, pp-502-503),** as follows:
   - "Yet, there are times during the summer when there is no measurable flow over the crest of the dam and only several cubic feet per second through the fish ladder."
   - "In fact, as there is no guage either at our (sp) near the dam, as required by the Yuba County Water Agency license, it is not possible to determine whether the minimum flow requirements are being met. Instead the Marysville guage is being used for measuring the flows, but the gauge is located about five miles below the dam. By the time the river reaches the gauge, the river includes additional water that has returned to the river from the Goldfields, in general, as well as from the south Canal by-pass watercourse or what is described as diversion channel on the plat."
   - "Canoeing past the area, the Goldfields area, well below Daguerre Point Dam, I personally observed water seeping through the rocks into the river, as well as the water coming out of the diversion channel."
   - "The water returning to the river from the south Canal via the bypass or diversion channel, as shown on the plat, adds substantial turbidity to the otherwise clear river water."
   - "Just about every time I have gone by that area I have found that the water entering the Yuba River is substantially discolored, appearing to be mud or whatever."

5. The required flow passing immediately below Daguerra Pt. Dam is deficient, is not measureable, and results in a virtually dry streambed immedately below the dam on occasion.

6. Failure to measure and ensure adequate fish flows across and below Daguerra Point Dam constitutes a serious violation of **California Fish & Game Code, Section 5937,**

by YCWA,_and the Decision must be rejected for failure to require compliance with the Code, as well as the public trust and the other legal requirements as set forth below.

7. The lower Yuba River Map **(DFG Plan, Figure 2, Page 4),** shows the Marysville Gage in relation to Daguerra Point Dam.

VI. DECISION 1644 FAILS TO ADDRESS THE UNDISPUTED EVIDENCE OF POLLUTED WATER ENTERING THE YUBA RIVER ABOVE THE MARYSVILLE GAGE.

- Decision 1644 utilizes the Marysville guage as a measuring point in establishing flows necessary for fish & wildlife, yet the decision fails to address the fact that inadequacies in operation of the Daguerra Point Dam, the South Canal, and the return flows from the Yuba Goldfields can result in polluted water being measured.
- By the time the river reaches the Marysville guage, the river includes additional water that has returned to the river from the goldfields in general, as well as from the South Canal via the by-pass water course. Water from the goldfields seeps into the river through the rock piles bordering the river below the dam. **(Cook Testimony, February 24, 2000, Internet transcript, pp-502-503).**
- The undisputed evidence has established that, at times, the water returning to the river from the South Canal via the by-pass channel adds a heavy cloud of sedimentation to the otherwise clear waters of the Lower Yuba River. **(Cook 1992 Exhibit M, Photos 4 & 5, and Cook Testimony, February 24, 2000, Internet transcript, pp-502-503).**

VII. THE 500 CFS FLOW FLUCTUATIONS PERMITTED BY DECISION 1644 DO NOT PROVIDE ADEQUATE PROTECTION FOR FISH AND WILDLIFE:

- The Decision, Page 177, Para 3 (a) states that:

  "Project releases or bypasses that increase streamflow downstream of Englebright Dam shall not exceed a rate of change of more than 500 cfs per hour."
- The Decision at Page 70, 6.5.8. citing DFG26, pp.xiii and 113; R,T, 1, 132:3-132:9. states that:

  Fluctuations and reductions in streamflow can caause dewatering of salmonid redds and stranding of fry and juvenile fish.
- Biologist Felix Smith presented the following testimony ________________
  - Rapid changes in flows are extremely detrimental to fish, especially during spawning. .
  - Mr. Smith personally observed dewatering of redds on the lower Yuba River
- YCWA has stated verbally to DFG, (Decision 1644, Page 73), that a 100cfs flow change results in approximately a 2-inch water surface elevation change. At 500 cfs this would amount to a downward ramping rate of 10 inches each hour, which,

in one hour alone, would dewater spring-run redds due to their observed shallow 6 inch depth, (Decision, Page 73). DFG concluded that flow changes of greater than 300 cfs would impact spring-run redds.

VIII. DECISION 1644 FAILED TO COMPLY WITH THE PUBLIC TRUST PRIORITY REQUIREMENTS FOR FISH & WILDLIFE:

- Decision 1644 fails to assign the environmental priority that must be applied to the public trust as spelled out in the Mono Lake and other cases. **(National Audubon v. Superior Court (1983) 33 cal. 3rd 419).**
- The comments on The Third Draft Decision which have been submitted to the WRCB by Felix Smith, the well known biologist with expertise in public trust issues are excellent, and they are incorporated into these comments as if set forth in full herein.
- The 20% deficiency justifying further flow reductions is not justified. The fish, wildlife and habitat should not be the first to suffer from a drought, but, instead, should be the last.

IX. THE WRCB FAILED TO PROVIDE AN ADEQUATE OPPORTUNITY TO THE PARTIES AND THE PUBLIC TO REVIEW AND COMMENT ON ITS DRAFT DECISION OF FEBRUARY 16, 2001:

- The Short Notice for comment was insufficient for a Proper Review of the Third Draft Decision: The cover letter from the WRCB was dated Fedruary 16, 2001. It was received by Petitioner on Thursday, February 22, 2001, with written comments due by 5:pm Monday, February 26, 2001. This provided only two full business days to review and prepare written comments on the document which contained 197 pages plus about 60 pages of Appendices. The short time allocated is insufficient for an in depth comprehensive review, and comparision with the earlier Second Draft Decision.

X. THE FAILURE TO PROVIDE A COPY OF DECISION 1644 IN A TIMELY MANNER REDUCED THE TIME AVAILABLETO THE PARTIES TO CONDUCT AN ADEQUATE REVIEW OF THE DECISION AND TO PREPARE THIS PETITION FOR RECONSIDERATION.

- According to Title 23, California Code of Regulations, Article 12, Section 768. A Petition for Reconsideration of the decision must be submitted to the board no later than 30 days after adoption by the board. Although the decision states that it was adopted March 1, 2001, it was not received by Petitioner, as a party to these proceedings, until March 22, 2001. The boards failure constitutes a violation of due process and of Title 23, Califonrnia Code of Regulations, Article 12, Section 768 (a).

XI. CHANGES IN HEARING OFFICER AND BOARD:

- The 14 days of hearings in 1992, the 13 days of hearings in 2000, the additional days of off the hearing record public meetings, the visits to the sites as well as the deliberations on Decision 1644 were conducted by different SWRCB hearing officers and board members, resulting in a denial of due process to the parties and to the public. The transcript for the hearing of 2000 contains over 3000 pages alone. Documentary evidence presented in 1992 and 2000 fills several file cabinet drawers. To expect all members of the SWRCB to fully have digested and understood , and kept this large amount of data in mind during the short period available for deliberations on Decision 1644 is not reasonable.

XII. ADOPTION OF NCCFFF PETITION:

- I have reviewed, agree with, and therefore adopt as a part of this petition, each and every argument and comment contained in the Petition For Reconsideration submitted in this matter by Robert J. Baiocchi, Consultant, on behalf of the Northern California Council Federation of Fly Fishers. That Petition is incorporated in this Petition by reference as if fully set forth in full herein.

XIII. DECISION 1644 FAILS TO ADEQUATELY ADDRESS THE NEED FOR WATER CONSERVATION BY YUBA COUNTY AGRIBUSINESS:

- Decision 1644 fails to adequately consider the needs for water conservation by present and future Yuba River consumptive water users, including the need to at least reduce the subsidies granted by YCWA to Yuba County agribusiness. YCWA delivers water to them at an average charge of $1.60 per acre foot. (Wilson, Internet transcript, March 7, 2000, page 1422.) On the other hand, YCWA sells water to the state and other governmental agencies for charges of up to $125.00 per acre foot, or perhaps more. (Wilson, Internet transcript, March 7, 2000, page 1424.) These below market value subsidies to the locals eliminate any real monetary benefits to these users from any conservation efforts on their part. Waste and unreasonable use of water is not only a violation of the public trust, it is a violation of the California Constitution and Statutes. SWRCB must take all appropriate proceedings or actions to prevent violation os the reasonable use standard. **Article X, Section 2, California Constitution. California Water Code, Sections, 275, the Public Trust Doctrine, and the other citations set forth below.**
- Despite the evidence in the hearing record, Decision 1644 fails to consider any action which may be necessary to resolve the subsidy question and its bearing on water conservation. (See Decision 1644, page 30).

XIV. DECISION 1644 SHOULD HAVE CONSIDERED THE NEED TO PROVIDE FOR PUBLIC ACCESS TO AND ALONG THE LOWER YUBA RIVER AS A CONDITION FOR APPROVAL OF THE WATER RIGHTS PERMITS IN QUESTION:

- It is state constitutional policy to insure public access to an over its navigable waters. **California Constitution, Article X, Sections 1,2,3, and 4.**
- Public recreation and access is a public trust right in the people of the state, which the SWRCB has the jurisdiction and responsibility to uphold. **National Audubon v. Superior Court (1983) 33 Cal. 3rd 419, and California Water Code, Sections 100, 275, 1243 and 1253.**
- The DFG Plan (1992 Exhibit 26), establishes the major need for such public access for public navigation and other recreational uses of the Yuba. The DFG Plan states at page 105 that:

  "Current recreatinal use and access of the Yuba Rivr is severely limited due to poor access...Public recreation and the fisheries resources of the Yuba River are capable of sustaining additional recreational use. To provide for such use, access sites for boat launching and takeout should be developed.
- The DFG Plans inclusion of public access in its 1992 Exhibit 25 was brought to the attention of the hearing officer. Internet transcript for February 23, 2000, Cook testimony, page 428.

XV. DECISION 1644 FAILS TO COMPLY WITH THE FEDERAL AND STATE ENDANGERED SPECIES ACTS:

- The urgent need to provide flows, water temperature, or other criteria necessary for a healthy fish and wildlife habitat in the Lower Yuba River was testified to at great length by the federal and state agencies having jurisdiction and responsibility for the preservation and enhancement of such fish and wildlife, and by other parties to these proceedings. Such testimony was fully supported by numerous studies and other documentary evidence presented during the 27 days of hearings.
- Decision 1644 states at page 27:

  "Sacramento spring-run chinook salmon, which occur in the lower Yuba River, were listed as a treatened species on February 5, 1999 under the CESA. (S-DFG 1, pp.1-2; S-DFG 13, p.1; S-R.R. 1944:23-1945:1; S-R.T. 1961:24-1962:r.) Thus, in exercising authority over water rights in the lower Yuba River, the California Endangered Species Act Requires the SWRCB to seek to conserve spring-run chinook salmon." (California Endangered Species Act, California Fish & Game Code, Sections 2050-2068.)
- The Unites States National Marine Fisheries Service (NMFS) has made the following listings under the federal ESA. (**The Federal Endangered Species Act, 16 U.S.C.Section 1532.**) (Decision 1644, page 27-29.)
  - Central Valley spring-run chinook salmon have been listed as a threatened species, and their critical habitat designated, which includes the Lower Yuba River.
  - The NMFS has concluded that Central Valley steelhead are in danger of extinction.
  - By final rule, the NMFS defined categories of activities very likely to injure or kill salmonids and result in a violation of the take prohibitions provided in the rule include: (1) constructing or maintaining barriers that eliminate or impede a listed species' access to habitat or ability to migrate: (2) removing water or otherwise altering streamflow when it significantly mpairs spawning, migration, feeding or other essential behaior pattern; (3) constructing or operating dams or water diversion structures with inadequate fish screens or fish passage facilities in a listed species'

habitat; and (4) altering lands or waters in a manner that promotes unusual concentrations of predators.

- **By reason of all the actions of the SWRCB and legal authorities set forth in this Petition, Decision 1644 is in violation of both the State and Federal Endangered Species Acts.**

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BY REASON OF THE CONCLUSIONS NECESSARILLY TO BE DRAWN FROM THIS PETITION AND FROM THE SWRCB HEARING RECORD, DECISION 1644 IS INAPPROPRIATE, IMPROPER, AND INCONSISTENT WITH LAW, IS NOT SUPPORTED BY SUBSTANTIAL EVIDENCE, IS NOT BASED ON, NOR IS IT SUPPORTED BY THE HEARING RECORD, AND DECISION 1644 THEREFORE CONSTITUTES AN ABUSE OF DISCRETION, AND IS CONTRARY TO EACH OF THE FOLLOWING LAWS, LEGAL OPINIONS, AND REGULATIONS, AND SHOULD BE REJECTED:

- **Title 23, California code of Regulations, Section 768, and Sections 768 (a);768 (b); and 768(d).**
- **Title 23, California Code of Regulations, Section 648.7**
- **National Audubon v. Superior Court (1983) 33 Cal. 3rd 419.**
- **California Fish & Game Code, Section 5937.**
- **The Salmon, Steelhead Trout and Anadromous Fisheries Program Act, enacted in 1988, (California Fish & Game Code, Section 6900, et seq).**
- **The Federal Clean Water Act, Section 401..**
- **Streamflow Protection Standards Act, California Pub Resources Code, Sec. 10001, et seq.**
- **California Endangered Species Act, California Fish & Game Code, Sections 2050-2068.**
- **The Federal Endangered Species Act, 16 U.S.C.Section 1532.**
- **Article X, Section 1, 2, and 3, California Constitution.**
- **California Water Code, Sections 100, 275, 1243 and 1253.**
- **National Audubon Society v. State water Resources Control Board, 33 Cal 3rd pp-434-435, 437.**
- **California Trout, Inc. v. State Water Resources Control Board, (1989) 207 Cal App 3d 585.**

--o0o--

SWRCB ACTION REQUESTED:

- **PETITIONER SEEKS A REJECTION OF DECISION 1644 IN ITS ENTIRETY**

COPIES DISTRIBUTED:

Petitioner states that copies of this Petition have been sent to all interested parties, as shown on the attached list.

Respectfully Submitted, March 29, 2001

Walter Cook

WALTER COOK

--o0o—

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March 28, 2001

State Water Resources Control Board
Division of Water Rights
Attn: Ernest Mona
901 P Street, 4th Floor
Sacramento, California 95812-2000

Re: Petition of Cordua Irrigation District and South Yuba Water District for Reconsideration of Decision 1644

Dear Mr. Mona:

Please find enclosed the original and eleven (11) copies of the Petition of Cordua Irrigation District and South Yuba Water District for Reconsideration of Water Right Decision 1644 in the Lower Yuba River Hearings. Kindly date-stamp the additional copy and return it to this office in the envelope enclosed. Thank you.

Very truly yours,

MINASIAN, SPRUANCE, BABER,
MEITH, SOARES & SEXTON, LLP

By: Denise M. Forde
Denise M. Forde, Secretary to
PAUL R. MINASIAN

:df
Enclosures
cc: Cordua Irrigation District
South Yuba Water District

STATE WATER RESOURCES
CONTROL BOARD

2001 MAR 30 PM 2: 17

DIV. OF WATER RIGHTS
SACRAMENTO

COM 9046

BEFORE THE STATE WATER RESOURCES CONTROL BOARD

OF THE

STATE OF CALIFORNIA

DECISION 1644

In the Matter of:

FISHERY RESOURCES AND WATER RIGHT ISSUES OF THE LOWER YUBA RIVER

Involving Water Right Permits 15026, 15027, and 15030 Issued on Applications 5632, 15204, and 15574 of Yuba County Water Agency,

Licenses 3984 and 3985 Issued on Applications 9927 and 12371 of Cordua Irrigation District

License 4443 Issued on Application 9899 of Hallwood Irrigation District, and

Other Water Diversions by Various Parties Under Claim of Riparian Rights, Pre-1914 Appropriative Rights, and Contractual Rights.

PETITION OF THE SOUTH YUBA WATER DISTRICT AND THE CORDUA IRRIGATION DISTRICT FOR RECONSIDERATION OF DECISION 1644

PAUL R. MINASIAN
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Post Office Box 1679
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(530) 533-2885

NOTICE IS HEREBY GIVEN that the South Yuba Water District and the Cordua Irrigation District do hereby request Reconsideration of Decision 1644 pursuant to Water Code Section 1122, *et seq.*, in the following respects and manner:

I. CEQA must be complied with. It has not been addressed.

California Environmental Quality Act requires the compliance with the requirements of that act prior to the determination to take action upon a "project". As set forth in the Closing Brief of these parties, this Decision constitutes a "project" under CEQA and no compliance with California Environmental Quality Act has occurred. The inclusion of the two most recent changes providing the purported five year suspension of the requirements of the Decision (Decision, pg. 172, par. 1.c.) and the provisions of paragraph 10 providing the purported right to petition if deficiencies will be above twenty percent (20%) of projected demand (Decision, pg. 180), each emphasize and evidence that the Board Decision constitutes the implementation of a "project" without examination of an environmental alternatives under CEQA. There is no explanation as to how the Chief of the Division of Water Rights is to balance environmental impact or consider overriding evidence in determining whether or not to permit a deficiency of greater than twenty percent (20%) or to deny the Petition. There is no explanation or analysis of why power capacity lost in the driest years will not cause environmental impacts after 2006, but before 2006 the impacts are so significant that the Order should not be implemented. This Board should immediately suspend its Decision and conduct a proper environmental impact report and analysis, and then re-address the issues of this proceeding with an understanding of the impacts, alternatives, benefits and burdens.

II. The Order regarding the South Yuba/Brophy Gabion structure contradicts the Department of Fish & Game case and a Yuba County Superior Court Order binding on the State of California.

The 1984 Agreement between the Department of Fish & Game and the South Yuba Water District and the 1984 Judgment of Judge Dawson of the Superior Court of the County of Yuba each provided that if the Gabion fish protection method device installed in 1984 and 1985 performed according to the criteria in such agreement for three (3) years and has reasonably maintained thereafter that no additional demands would be made upon the South Yuba Water District or Brophy Water District for additional or different fish protection devices. Fish & Game Code Section 5982 provides for the issuance of an order by the Fish and Game Commission, presumably with an evidentiary basis, with the order to install a screen to be in writing and to specify the dimensions and the character. No such order has been issued. The 1984 Agreement and Court Order and Fish & Game Code Section 5984 provides for payment to the owner of expenses incurred exceeding the estimated expense of the Department upon written notification to install new facilities.

In this instance, the uncontradicted evidence is that the Gabion screen met all of the criteria of the Department of Fish & Game, yet the State Water Resources Control Board purports to place upon South Yuba Water District and Brophy Water District, without a Fish and Game Commission finding or order, the obligation to provide for a plan of alteration of the screen when Section 5984 requires that the Department pay at least one-half of the amount required for such changes. Further, Fish & Game Code Section 5988 provides that the Department of Fish & Game must notify the owner of a screen if the screen deviates from the standards or specifications. The 1984 Agreement extended the 60-days referred to in Section 5988 within the statute to a three-year monitoring program. No notice of deficiency or variance from specifications has ever been received. There is no evidence that the Department of Fish & Game has ever complied with Section 5988 or the terms of the 1984 Agreement. Section 5989 of the Fish & Game Code is explicit that it is the obligation of the Department of Fish & Game and not the water diverters to modify the screen and Gabion structure once constructed in accordance with plans and specifications. It states:

> "After acceptance, should the screen fail to function in an efficient manner, no changes in conditions affecting its operation having occurred subsequent to the acceptance of the screen, the owner shall not be required to install a new screen. However, the Department may install another screen at the sole cost and expense of the Department of a type size mesh and at a location agreed upon by the Department and the owner . . . "

The Order of the SWRCB is purporting to ignore the clear Legislative plan regarding screens which the Department of Fish & Game determines it wishes to reconstruct to a different configuration after agreeing to the specifications for the screen through the 1984 Agreement by adoption of its order which purports to require that South Yuba Water District and Brophy Water District on pages 187 and 188 to ". . . develop a plan to reduce fish loss resulting from diversion of water into the South Yuba/Brophy Canal." (Also see pages 37 and 38 of the Brief of South Yuba Water District.)

It is well known that Petitions for Reconsideration are not favored. This Board should respectfully ask itself that if this Board does not enforce the laws of the State of California and the Legislative framework established for fish screens, and if this Board does not give respect to the requirements of contracts voluntarily entered into with the Department of Fish & Game and Court Orders confirming those contracts as included within judgments and to be enforced under the laws of the State of California, what hope is there for any of us? At least reconsider it from the point of view of attempting to provide reasonable certainty to those investing time, money and effort in attempting to protect fish, reasonably develop water rights and provide for a reasonable food supply for this country. After the recent experience in regard to the chaos that occurs when there is no such reasonable organization and confirmation of rights regarding electric energy, would not 90 days spent considering this Order with a clear mind provide a valuable opportunity to consider the effort of a Decision like this upon the water rights system that this Board is required to administer?

III. <u>The Decision should be reconsidered in regard to the Public Trust Doctrine and Fish and Game Code Section 5937.</u>

Fish & Game Code Section 5937 does not authorize the ex-appropriation of storage facilities or stored water and the Public Trust Doctrine does not authorize the retroactive dedication of storage facilities and storage rights to maintain non-natural or artificial river flow levels or temperatures (see Closing Brief of Cordua/ South Yuba, pg. 18 - 29). The explanation given for the legal authority of the Board to utilize Fish and Game Code Section 5937 and the Public Trust Doctrine seems to ooze the same confidence that most bureaucracies use to explain their actions . . . obfuscating the question of whether it is the correct decision. Here, the explanation contained with the Decision of the SWRCB concluding that the SWRCB has the power to and may effectively expropriate part of the Yuba River Development Project for the benefits of fishery development does not answer the question of who must pay the damages and loss caused by that action.

There is nothing included in the Decision explaining why this is not a regulatory taking requiring compensation of the farmers who depend upon the water from this Dam. At the least, an explanation of why the regulatory taking principles enunciated in recent California Supreme Court cases such as *City of Monterey v. Del Monte Dunes* and United States Supreme Court cases such as *Palazzolo v. Rhode Island* would be helpful. Here, we do have a regulatory taking requiring compensation. The SWRCB has authorized the project and the citizens of Yuba County have relied upon that authorization to build the project and indebt themselves, both on their farms and as taxpayers. The SWRCB retained the right to withdraw or curtail the direct diversion or diversion to storage of water for fishery purposes. However, the SWRCB did not reserve the right to require the appropriator to store water under the appropriative rights and use its facilities to maintain that storage and release water at a later time for a state-wide benefit. The Decision does not explain why only the citizens of Yuba County and the water users of the Yuba County Water Agency should bear the costs of this new State project.

It is similar to granting a license for a restauraunt upon public property but reserving the right to withdraw authority to occupy half of the land to return the area to natural conditions, and then purporting not to withdraw that authority but to make the restaurant operation utilize its building, pay for the cleaning, service and food upon that one-half of the land, and serve a group of customers in one-half of the floor space that the public agency has decided is more deserving . . . with no compensation. The Decision is the SWRCB's opportunity to explain to the Courts its legal theory. This Decision explains why the SWRCB ". . . ought to have the power", but it does not explain why the farmers in Yuba County should not be compensated for the costs of pumping groundwater for wildlife habitat and for farming purposes to replace the lost conserved storage, and why the loss in power revenues and the inability to pass operating costs to the fishery agencies should not be paid by the SWRCB or other arms of the State of California. The purpose of reconsideration is to allow the decision maker to carefully collect and analyze its reasoning. Here, such an analysis, perhaps with independent legal advisors whose careers are not based upon the theory that the SWRCB should have the power, may be helpful.

IV. Reconsideration of the portions of the Decision finding that use in excess of 1 acre foot per acre for waterfowl habitat is unreasonable is essential.

The Board staff has converted (i) a general engineering report containing reconnaissance level estimations of demand for waterfowl habitat based upon one acre foot over some 33,000 acres of rice acreage (not one acre foot per acre of waterfowl habitat), and (ii) cross-examination by the staff counsel of a representative of Ducks Unlimited who submitted qualifications and expertise only in regard to waterfowl habitat and behavior and not as a hydrologist, with the expert having no foundation in water use duties into a conclusion that if 1.1 acre foot of water is diverted at the North Diversion or South Diversion, that it should be sufficient to maintain one acre of waterfowl habitat for the full period of the termination of rice harvest which sometimes occurs in September in the north area and at least occurs by the middle of October in all areas until the termination of waterfowl habitat needs in February or March. There is simply no evidence to support this conclusion (Cordua/South Yuba Brief, Section 11.1. pg. 39-43), but more importantly, it is wrong.

V. Acquaintanceship of the Board Members making the Decision with the evidence and testimony.

As pointed out in the Opening Brief of Cordua and South Yuba, there is no authority for the view that Board Members may rely upon the staff's interpretation of evidence in reaching an adjudicatory decision regarding property rights and determining legal rights, duties or interests (Cordua/South Yuba Brief, pg. 9-10). The Honorable Board Members who were not on the Board at the time of the original hearing in 1992 or even the adjourned hearing in Year 2000 could well hold a brief supplemental hearing and ask parties to summarize from direct evidence and testimony in the record to ensure that the Board does not have to accept the unilateral interpretation of Staff. Two Board Members went to the trouble to visit the site to become acquainted with the features of this project. This Decision uniquely affects the certainty of water, water rights, the investment of money in dams, power houses and the like. Would it not be a good idea to understand the evidence from all parties' point of view through a brief hearing upon reconsideration? One would certainly not allow a Superior Court Judge who did not hear evidence to determine rights between parties, be they property or water rights, without hearing all the evidence himself. In this case, we are dealing not just with the rights of the parties but with basic principles of how we organize water use and water development in California. Having some personal acquaintance with the evidence and the themes that run through the testimony could not do any harm and may well do good in terms of understanding why this adopted Decision should be modified.

VI. <u>Other grounds for reconsideration.</u>

All of the other grounds included within the Closing Brief of Cordua Irrigation District and South Yuba Water District are hereby incorporated by reference as grounds for reconsideration. All evidence and contentions made through evidence submitted during the Yuba River Hearings in 1992 and 2000 are further submitted as grounds for reconsideration.

Respectfully submitted,

MINASIAN, SPRUANCE, BABER,
MEITH, SOARES & SEXTON, LLP

By: ______________________
PAUL R. MINASIAN, Attorneys for
SOUTH YUBA WATER DISTRICT and
CORDUA IRRIGATION DISTRICT

STATE WATER RESOURCES
CONTROL BOARD

2001 MAR 30 PM 2: 17

DIV. OF WATER RIGHTS
SACRAMENTO

DECLARATION OF SERVICE
Before the State Water Resources Control Board, State of California
Fishery Resources and Water Right Issues of the Lower Yuba River

I, **DENISE FORDE,** declare:

I am employed by the law firm of MINASIAN, SPRUANCE, BABER, MEITH, SOARES & SEXTON LLP. My business address is 1681 Bird Street, Post Office Box 1679, Oroville, California 95965-1679. I am over the age of 18 years and not a party to this action.

On March 28, 2001, I served the following document(s) set forth below in the manner indicated:

( ) **Via Facsimile:** By facsimile machine at the fax number(s) shown below. I caused the machine to print a transmission record of the transmission and no error was reported by the machine.

( ) **Personal Service:** By personally delivering to the person named below, at the address indicate.

( ) **Service by Mail (Deposit):** By enclosing a copy in an envelope addressed as shown below and depositing the sealed envelope with the United States Postal Service with the postage fully prepaid.

(X) **Service by Mail (Collection):** By enclosing a copy in an envelope addressed as shown below and placing the envelope for collection and mailing on March 28, 2001, at Oroville, California, following our ordinary business practices. I am readily familiar with this firm's practice for collecting and processing correspondence for mailing. On the same day that correspondence is placed for collection and mailing, it is deposited in the ordinary course of business with the United States Postal Service in a sealed envelope with postage fully prepaid.

Document(s) Served: PETITION OF THE SOUTH YUBA WATER DISTRICT AND CORDUA IRRIGATION DISTRICT FOR RECONSIDERATION OF DECISION 1644

Person(s) Served: **SEE ATTACHED SERVICE LIST**

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that this Declaration of Service was executed on March 28, 2001, at Oroville, California.

Denise Forde
DENISE FORDE

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Attorneys for Petitioner, United States Department of the Interior

STATE WATER RESOURCES CONTROL BOARD
2001 MAR 30 PM 2:15
DIV. OF WATER RIGHTS SACRAMENTO

STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

In the Matter of:

FISHERY RESOURCES AND WATER RIGHT ISSUES OF THE LOWER YUBA RIVER.

PETITION FOR RECONSIDERATION OF WATER RIGHT DECISION 1644, AND POINTS AND AUTHORITIES IN SUPPORT THEREOF

MEMBERS OF THE STATE WATER RESOURCES CONTROL BOARD,

Petitioner, United States Department of the Interior (Interior), requests reconsideration of Water Right Decision 1644, pursuant to sections 768, 769 and 770 of the California Code of Regulations and for the reasons stated below.

I. BACKGROUND

On March 1, 2001, the State Water Resources Control Board ("SWRCB") adopted Water Right Decision 1644 ("D-1644"). Prior to the adoption of D-1644, the SWRCB issued a draft decision on November 7, 2000 and another draft decision on February 16, 2001.[1] The SWRCB received comments from interested parties and convened public meetings on the November 2000 and the February 2001 Draft Decisions. The United States Fish and Wildlife Service ("USFWS"), an agency within Interior and a party-participant in the 1992 and 2000 hearings, submitted comments to those draft decisions.

[1] An initial draft decision and staff analysis were released in February 1999, and were based on the 1992 evidentiary hearing on this matter.

COM 9058

II. POINTS AND AUTHORITIES

D-1644 should be reconsidered and modified as discussed below. Section 768 of Title 23 of the California Code of Regulations provides:

> No later than thirty (30) days after adoption by the board of a decision or order, any person interested in any application, permit or license affected by the decision or order may petition the board for reconsideration of the matter upon any of the following causes:
>
> > (a) Irregularity in the proceedings, or any ruling, or abuse of discretion, by which the person was prevented from having a fair hearing;
> >
> > (b) The decision or order is not supported by substantial evidence;
> >
> > (c) There is relevant evidence which, in the exercise of reasonable diligence, could not have been produced;
> >
> > (d) Error in law.

(Barclays 2001.)

Section 769 of the California Code of Regulations provides:

> (a) Any petition for reconsideration of a decision or order shall be submitted in writing and shall contain the following:
>
> > (1) Name and address of the petitioner.
> >
> > (2) The specific board action of which petitioner requests reconsideration.
> >
> > (3) The date on which the order or decision was made by the board.
> >
> > (4) The reason the action was inappropriate or improper.
> >
> > (5) The specific action which petitioner requests.
> >
> > (6) A statement that copies of the petition and any accompanying materials have been sent to all interested parties.
>
> (b) If reconsideration is requested based in whole or in part on Section 768, the petition shall include an affidavit or declaration under penalty of perjury stating that additional evidence is available that was not presented to the board and the reason it was not presented. A general statement of the nature of the evidence and of the facts to be proved shall also be included.
>
> (c) The petition shall be accompanied by a statement of points and authorities in support of legal issues raised in the petition.

(Barclays 2001.)

Section 770 of the California Code of Regulations provides:

> (a) The board may:
>
> > (1) Refuse to reconsider the decision or order if the petition fails to raise substantial issues related to the causes for reconsideration set our in Section 7668; or
> >
> > (2) After review of the records, including any hearing transcript and any material submitted in support of the petition:
> >
> > > (A) Deny the petition upon a finding that the decision or order was appropriate and proper; or
> > >
> > > (B) Set aside or modify the decision or order; or
> > >
> > > (C) Take other appropriate action.
>
> Before taking final action, the board may, in its discretion, hold a hearing for the purpose of oral argument or receipt of additional evidence or both.

(Barclays 2001.)

A. THE HEARING RECORD DOES NOT SUPPORT THE SPECIFIC FLOW REQUIREMENTS IN D-1644.

The SWRCB should reconsider and modify the flow and temperature requirements in D-1644, and adopt the recommendations in the "Lower Yuba River Fisheries Management Plan," dated February 1991 ("the DFG Plan"), as proposed by the California Department of Fish and Game ("DFG"). At the very least, the SWRCB should adopt the minimum instream flow requirements in its November 7, 2000 Draft Decision. There is clear and overwhelming evidentiary support for such modifications to D-1644.

D-1644 reduces the minimum instream flow requirements that were proposed in the November 2000 Draft Decision. The reductions in average daily streamflow range from 50 cfs to 500 cfs. (See D-1644 at 174-175.) The reductions were not across the board. Rather, they appear finely-tuned. In particular, D-1644 reduces the minimum instream flows requirements for wet/ above-normal/ below-normal years, as follows:

- May 1 to May 31, from 2,000 cfs to 1,500 cfs;
- June 1, from 1,400 cfs to 1,050 cfs;
- June 2, from 980 cfs to 800 cfs.

(Cf. November 7, 2000 Draft Decision at 161.; D-1644 at 174.) Yet, D-1644 does not explain the scientific, biological or evidentiary bases for the specific reductions. It is not clear from the hearing record how the SWRCB determined that the specific flows of 1,500 cfs during May; 1050 cfs on June 1; and 800 cfs on June 2 will adequately protect chinook salmon and steelhead, and attract American shad in the lower Yuba River, and keep fish in good condition as required by Fish and Game Code section 5937.[2]

The USFWS disagrees with the flow reductions made in D-1644. During the hearings, the USFWS and DFG submitted substantial evidence supporting minimum flows that are necessary simply to maintain fish populations in the lower Yuba River. Such minimum flows are set forth in the DFG Plan and are identified in the Anadromous Fish Restoration Program. The USFWS testified that greater flows are needed to improve habitat conditions for fishery and aquatic resources in the lower Yuba River. The hearing record shows that:

> Peak migration of fall, late-fall, and spring-run chinook salmon and steelhead occurs in May. **The primary benefits of a 2,000 cfs flow in May are to increase survival of emigrating juvenile chinook salmon and steelhead,** [and] to attract adult American shad into the lower Yuba River. . .**[The] record supports adoption of DFG's streamflow recommendation for May. . .** (Emphasis added.)

(See November 7, 2000 Draft Decision at 58-59.) USFWS and SYWA biologists agree that the health of the Yuba fall-run chinook population is dependent on the numbers of adults returning from the ocean; escapement is the ultimate criteria in measuring the health and success of anadromous fish populations. (RT 2906:14 - 2906:24.) Extended high spring flows have a significant impact on out-migrating fish successfully returning as adults to spawn. (RT 2312:12 - 2312:19.) The flows from April through June that are recommended by USFWS and DFG provide improved migration flows. (RT 252:5 - 252:12.)

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[2]Fish and Game Code § 5937 provides, in pertinent part: "The owner of a dam shall allow sufficient water at all times to pass through a fishway, or in the absence of a fishway, allow sufficient water to pass over, around or through a dam to keep in good condition any fish that may be planted or exist below the dam." The SWRCB recognizes in D-1644 that section 5937 is a legislative expression concerning the public trust doctrine that should be taken into account when the SWRCB acts under its public trust authority. (See D-1644 at 30; see also California Trout, Inc. v. State Water Resources Control Board (1989) 207 Cal.App.3d 585, 626, 631 [255 Cal. Rptr. 209, 212].)

To increase survival of emigrating juvenile chinook salmon and steelhead in the lower Yuba River, the flow requirements in D-1644 do not go far enough. In fact, they go in the wrong direction. D-1644's flow requirements are lower than the flows recommended by the USFWS and DFG, and they are lower than those described in the November 2000 Draft Decision. The specific flow requirements in D-1644 are not supported by the hearing record. D-1644 should be amended to include a detailed explanation of the scientific, biological and evidentiary bases for its specific flow requirements. In the absence of such information, D-1644 must be reconsidered and modified to adopt the flow regime proposed in the November 2000 Draft Decision, if not the flow requirements proposed by the USFWS and DFG.

B. D-1644 DOES NOT PROVIDE BALANCED PROTECTION OF COMPETING USES.

For wet/ above normal/ below normal years, the November 2000 Draft Decision's minimum instream flows result in average deficiencies (percent of demand) that are virtually identical to the average deficiencies resulting from the flows prescribed in D-1644 for similar year types. Under either the November 2000 Draft Decision or D-1644, the average deficiencies are less than 1% of demand, in wet/ above normal/ below normal years. (See November 2000 Draft Decision at 113; D-1644 at 125-126.) Under D-1644, the average delivery deficiency in wet/ above normal/ below normal years is zero. (See D-1644 at 125.) The record indicates that any deficiencies in surface water supplies that may occur due to the instream flow requirements proposed in the November 2000 Draft Decision or D-1644 could be offset through implementation of a groundwater conjunctive use program. (See November 2000 Draft Decision at 115-116; D-1644 at 125.) Moreover, deficiencies under any year type could also be offset through increased water conservation measures. (See id.)

The flow requirements in D-1644 do not provide a reasonable balance and protection of competing uses, including public trust uses. In light of the close similarities in delivery deficiencies between the November 2000 Draft Decision and D-1644, the balance should tip in favor of restoring threatened anadromous fish populations, not ensuring that water users experience little or no delivery impacts. The SWRCB should reconsider D-1644 and adopt the flow requirements in the November 2000 Draft Decision.

C. THERE IS NO EVIDENTIARY BASIS TO SUPPORT THE "DEFICIENCY CLAUSE."

The hearing record does not support Condition 10 on pages 180 to 182 of D-1644, which provides for a temporary reduction in the instream flow requirements, if Yuba Couty Water Agency ("YCWA") estimates that it will have deficiencies of more than 20 percent of projected demand for surface water deliveries within the YCWA service area for the calendar year (the "Deficiency Clause"). The Deficiency Clause is flawed, because it is based on the notion of "projected demand" which includes highly speculative demand for surface deliveries to Dry Creek Mutual Water Company (Dry Creek) and to Wheatland Water District and Wheatland Water District Detachments (Wheatland). The SWRCB made key findings and conclusions with respect to such projected demand:

- that the need for lower Yuba River water for irrigation in the Wheatland area and for additional municipal and industrial uses in Yuba County has not been established. (See D-1644 at 106.)
- that the record remains unclear as to when and if the projected demands for surface water in the Wheatland and Dry Creek areas will be reached. (See D-1644 at 107.)
- that the timing for attaining the full-development of demand is uncertain. (S-YCWA 15, pp. 2, 7.) Wheatland does not yet have a water distribution system and does not presently have a water service contract with YCWA. (S-YCWA 15, p. 7.) Evidence presented in 2000 indicates that the distribution system is still in the planning stages. (S-YCWA 11, p. 13.)
- that YCWA's projected increases in demand for surface water from the lower Yuba River are very speculative. (See D-1644 at 111.)
- that any deficiencies in surface water supplies that may occur due to the instream flow requirements established in this decision could be offset through

implementation of a groundwater conjunctive use program. (See D-1644 at 125.)

- that deficiencies in surface water supplies could also be offset through increased water conservation. (See D-1644 at 125.)

In light of such findings and conclusions, there is no basis to support the Deficiency Clause, and it should be stricken. At the very least, the SWRCB should modify the Deficiency Clause to allow the USFWS, DFG, and the National Marine Fisheries Service an opportunity to cross-examine or provide information to rebut any data on actual surface deliveries to Dry Creek and Wheatland, and on expected surface water demand to Dry Creek and Wheatland.

D. THERE IS NO EVIDENTIARY BASIS FOR DEFERRING THE LONG-TERM INSTREAM FLOW REQUIREMENTS ESTABLISHED BY D-1644.

The hearing record does not support the SWRCB's conclusion that "in view of the critical electrical power situation in California," there is "the need to maintain flexibility in powerplant operations to avoid serious electricity shortages." (See D-1644 at 127.) On the contrary, the hearing record establishes that:

> In contrast to many other situations where power production is at issue, virtually all of the water released to provide instream flows in the lower Yuba River passes through the YCWA and PG&E powerplants by the time it enters the river downstream of Englebright Dam. Therefore, variations in the instream flow requirements for protection of fish in the lower Yuba River would be expected to have minimal impact on the net quantity of power produced. A change in the release schedule toward greater releases in spring months and reduced releases in July, August, and September, however, would be expected to result in a shift in power production to different periods and a reduction in the value of the power produced. . ." (Emphasis added.)

(See D-1644 at 126.) Thus, there is no basis for deferring the long-term instream flow requirements established by D-1644 for a period of approximately five years, until April 21, 2006.

Furthermore, the SWRCB may not take official notice and make factual findings on the issues of whether new instream flow requirements diminish flexibility of power plant operations in the Yuba River Development Project, and whether maintaining flexibility in powerplant operations would avoid serious electricity shortages. These issues are unresolved and are subject to reasonable dispute.

> The doctrine of judicial notice is an evidentiary doctrine that permits the court to consider *as established* in a case a matter of *law* or *fact* that is relevant to an issue, without the necessity of formal proof of the matter by any party. Judicial notice is a substitute for formal proof. Judicial notice may be taken of either a proposition of *law* or a proposition of *fact*. The fundamental theory of judicial notice is that the matter that is judicially noticed is one of law or fact that *cannot reasonably be disputed*. (Italics in original.)

(See Jefferson, Cal. Evidence Benchbook (1972) Judicial Notice, § 47.1, at 833.) Consequently, the SWRCB may not conclude by judicial notice that there is the need to maintain flexibility in powerplant operations to avoid serious electricity shortages. Moreover, there is no factual basis to conclude that "it is appropriate" to defer imposition of the long-term instream flow requirements established by this decision for a period of approximately five years.

III. CONCLUSION

Based on the foregoing, the SWRCB should reconsider and modify D-1644.

Dated: March 29, 2001

Respectfully submitted,

Clementine Berger
Acting Regional Solicitor

By:
Edmund Gee
Assistant Regional Solicitor

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STATE WATER RESOURCES
CONTROL BOARD

2001 MAR 30 PM 2: 15

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I certify that the foregoing is true under penalty of perjury. Executed this 28rd day of March, 2001 , at Sacramento, California.

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CERTIFICATE OF SERVICE

The forgoing document "Petition for Reconsideration of Water Right Decision 1644, and Points and Authorities in Support Thereof" was sent via regular mail on March 28, 2001 to:

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Browns Valley Irrigation District
c/o Mr. Paul M. Bartkiewicz
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1011 Twenty-Second Street
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California Sportfishing Protection Alliance
c/o Mr. Jim Crenshaw, President
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South Yuba Water District
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et al
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State of California

Before the State Water Resources Control Board

In the Matter of Fishery Resources and Water Right Issues of the Lower Yuba River Involving Water Right Permits 15026, 15027, and 15030 Issued on Applications 5632, 15204, and 15574 of Yuba County Water Agency – Licenses 3984 and 3985 Issued on Applications 9927 and 12371 of Cordua Irrigation District – License 4443 Issued on Application 9899 of Hallwood Irrigation District – and Other Water Diversions by Various Parties Claim of Riparian Rights, Pre-1914 Appropriative Rights, and Contractual Rights

Yuba River Tributary to Feather River thence Sacramento River thence Bay Delta Yuba County, California

Board Decision of March 1, 2001 Regarding Protection of Fishery Resources and Other Issues Relating to Diversion and Use of Water From the Lower Yuba River

Petition for Reconsideration
By the Northern California Council Federation of Fly Fishers

In accordance with Section 768 et seq. of the California Code of Regulations, Title 23, the Northern California Council Federation of Fly Fishers hereby petition the State Water Resources Control Board as follows:

The Decision

On March 1, 2001 the State Water Resources Control Board (hereinafter known as the "Board") adopted the highly controversial revised draft decision of February 16, 2001. Many parties contested the revised draft decision of February 16, 2001.

Standing

The Northern California Council Federation of Fly Fishers (hereinafter known as the "NCCFFF") represents 30 fly fishing organizations in Northern California and also about 3,000 California licensed anglers. The NCCFFF is a regional council of the national and international Federation of Fly Fishers (FFF). The members of the NCCFFF recreate on and fish the waters of the Lower Yuba River. The members of the NCCFFF are users sharing public trust resources along with other members of the public who own the public trust resources and assets of the Lower Yuba River. Those public trust resources includes the steelhead trout species, spring-run chinook salmon species, fall-run chinook salmon species and also the American shad species of the Lower Yuba River. The members of the NCCFFF as citizens of the State of California also own the waters of the Lower Yuba River.

COM 9070

Section 768, California Code of Regulations, Title 23

Section 768 allows any person (interested party) to file a petition for reconsideration. Section 768 states as follows:

Section 768. Reconsideration of Board Decisions and Orders

"No later than thirty (30) days after adoption by the board of a decision or order, any person interested in any application, permit or license affected by the decision or order may petition the board for reconsideration of the matter upon any of the following causes:" See Section 768 (a) (b) (c) and (d), CCR, Title 23.

This petition is timely and within the 30 days required by Section 768.

Board Decision of March 1, 2001 - Irregularity in the Proceeding – Abuse of Discretion by the Board – Violation of Due Process Rights of the Public – The Board Decision is not Supported by Substantial Evidence – Error in Law – The Reasons the Board's Decision was Inappropriate and Improper

In accordance with Sections 768 et seq. and 769 et seq. California Code of Regulations, Title 23, the following are the statements by the NCCFFF with respect to the Board's Decision of March 1, 2001:

Due Process Violation

The unreasonable last minute revised draft decision of February 16, 2001was received by Bob Baiocchi and other parties on Thursday February 22, 2001. The mailing package mailed by the Board's staff was post marked February 20, 2001. Written comments were due by the Board on Monday, February 26, 2001. The time allowed by the Board for written comments from the parties of record and interested parties was highly unreasonable, limited to two working days, and violated the due process rights of the public in a very highly controversial decision which effected the public trust resources of the Lower Yuba River.

For members of the public who did not have fax communications available to them, it was impossible for an interested party to review the revised draft decision of February 16, 2001, prepare their written comments, and mail them and have their written comments in the Board's staff hands by 5:00 pm on February 26, 2001. Further, because of the unreasonable time limit, it was impossible for members of the public and interested parties to review the draft decision of November 7, 2000 and compare the language in the revised draft decision of February 16, 2001. Consequently, the Board violated the due process rights of the public and interested parties when the Board noticed the revised draft decision of February 16, 2001 and adopted the revised draft decision on March 1, 2001.

The Board's Draft Revised Decision of February 16, 2001 and the Board's Final Decision of March 1, 2001 is an Underground Regulation in Violation of the Administrative Procedure Act and must be Rescinded

On February 16, 2001 the Board's staff stated in a last minute public notice the following:

"The SWRCB has heard extensive oral comments on the matter at two previous Board meetings. In response to those comments, the draft decision [November 7, 2000] has been revised in four major respects:"

One of those four major respects is stated as follows:

"Due to the critical electrical energy situation in California, the proposed decision [November 7, 2000] has been revised to defer the effective date of the new long-term requirements applicable to YCWA's permits for a period of five years, until April 21, 2006. For the interim period, the proposed decision establishes instream flow requirements for dry, critical and extremely critical years are lower than the long-term flow requirements specified in the proposed decision. The interim flow requirements will allow for greater flexibility in generation of hydroelectric power at Yuba River facilities."

The California Administrative Procedure Act (APA) (*Government Code* Sections 11340 et seq.) was enacted to ensure that those persons whom a regulation will affect have a voice in its creation. *Tidewater Marine Western, inc. v. Bradshaw* (1996) 14 Cal.4th 557, 568 [59 Cal.Rptr.2d 186, 193]; *Armistead v. State Personnel Board* (1978) 22 Cal.3d 198, 204 [149 Cal.Rptr, 1,4]. With the APA, the California Legislature established minimum procedural requirements for the adoption of administrative regulations. *Government Code* Section 11346. To ensure compliance with the APA, the Legislature further established the Office of Administrative Law (OAL) to act as a central office within the state government with the power and duty to review regulations to ensure that such regulations are necessary, are written in a comprehensive manner, are authorized by statute, and are consistent with other law. *Government Code* Sections 11340, 11340.1.

The APA was enacted to establish certain minimum requirements for the adoption of administrative regulations. *Government Code* Section 11346. The APA prescribes the procedures a state agency must follow to adopt regulations. In accordance with the APA, an agency seeking to adopt a regulation shall (1) give the public notice of its proposed regulatory action (*Government Code* Sections 11346.4, 11346.5), (2) issue a complete text of the proposed regulation, with a statement of the reasons for its creation (*Government Code* Section 11346.2(a), (b)), (3) give interested parties an opportunity to comment on the proposed regulation (*Government Code* Section 11346.8), (4) respond in writing to public comments (*Government Code* Sections 11346.8(a) and 11346.9), and (5) forward a file of all material on which the agency has relied in the regulatory process to the OAL (*Government Code* Section 11347.3(b), (c)). The OAL then must review the proposed regulation for consistency with existing law, for clarity, and for necessity.

Government Code Sections 11349.1, 11349.3. (See also, *Tidewater Marine Western, inc. v. Bradshaw, supra,* 14 Cal.4th, at 568 [59 Cal.Rptr.2d, at 193].)

The APA defines "regulation" very broadly. *Tidewater Marine Western, Inc. v. Bradshaw, supra*, 14 Cal.4th, at 571 [59 Cal.Rptr.2d, at 194]. A 'regulation" includes "every rule, regulation, order, or standard of general application or the amendment, supplement, or revision of any rule, regulation, order or standard adopted by any state agency to implement, interpret, or make specific the law enforced or administered by it, or to govern its procedure, except one that relates only to the internal management of the state agency…."*Id*; *Government Code* Section 11342(g).

A "regulation" subject to the APA has two principal identifying characteristics:

1. The agency must intend its rule to apply generally, rather than in a specific case. The rule need not, however, apply universally. A rule applies generally so long as it declares how a certain class of cases will be decided. *Tidewater Marine Western v. Bradshaw, supra*, 14 Cal.4th, at 571 [59 Cal.Rptr.2d, at 194].
2. The rule must implement, interpret, or make specific the law enforced or administered by the agency or govern the agency's procedure. *Id.*; *Government Code* Section 11342(g).

The APA applies to the exercise of any quasi-legislative power conferred by any statute. *Government Code* Section 11346; *Tidewater Marine Western v. Bradshaw, supra*, 14 Cal.4th, at 570 [59 Cal.Rptr.2d, at 194]. An administrative action is quasi-legislative when, among other things, the administrative agency is creating a new rule for future application. *20th Century Ins. Co. v. Garamendi* (1994) 8 Cal.4th 216, 275 [32 Cal.Rptr.2d. 807, 843]. Quasi-legislative acts are those actions by an administrative agency which implement statutorily granted powers and involve the adoption of rules of general application on the basis of board public policy. *Beck Dev. Co., Inc. v. Southern Pacific Transp. Co.* (1996) 44 Cal.App.4th 1160, 1188 [52 Cal.Rptr.2d. 518, 537].

An important component of the APA is the entitlement of the public to comment on a proposed regulation. The Legislature wisely perceived that the party subject to regulation often is in the best position, and has the greatest incentive, to inform the agency about possible unintended consequences of a proposed regulation. *Tidewater Marine Western v. Bradshaw, supra*, 14 Cal.4th, at 569 [59 Cal.Rptr.2d, at 193]. Moreover, an opponent of a proposed regulation may file long and complex comments, which the agency must address in writing point by point. *Id.*, at 575 [197]; *Government Code* Sections 11346.8(a), 11346.9. Such public participation in the regulatory process directs the attention of agency policymakers to the public they serve, thus providing some security against tyranny. *Id.*, at 569 [193]. If an agency ignores the APA, the agency ceases to be responsive to the public and its regulations are vulnerable to attacks in the courts. *Id.*, at 576 [197].

The Office of Administrative Law (OAL) is charged with the orderly review of proposed regulations. *Government Code* Section 11340.1.

> An agency seeking to adopt a regulation must build a file on the proposed regulation, containing all material on which the agency has relied in creating the regulation, including a statement of reasons for, and justifying the necessity of, the proposed regulation. *Government Code* Sections 11347.3(b), (c), 11349.1; *Tidewater Marine Western v. Bradshaw, supra*, 14 Cal.4th, at 575 [59 Cal.Rptr.2d, at 197]. That agency file must be delivered to the OAL (*Government Code* Section 11347.3(c)), which will review the proposed regulation for its necessity, authority, clarity, consistency, reference and non-duplication. *Government Code* Sections 11349(a)-(f), 11349(a)(1)-(a)(6).
>
> The OAL also will determine whether a proposed regulation is valid and enforceable, having been adopted in accordance with the procedural requirements of APA. *Government Code* Section 11349.1. OAL review of a proposed regulation is a condition of the regulation's validity. *20th Century Ins. Co. v. Garamendi, supra*, 8 Cal.4th, at 248 [32 cal.Rptr.2d, at 826].
>
> The reasons for requiring OAL review is to ensure that proposed regulations are written in a comprehensive manner, authorized by statute, and consistent with other law. *Taye v. Coye* (1994) 29 Cal.App.4th 1339, 1345 [35 Cal.Rptr.2d 27, 31]; *State Water Resources Control Board v. Office of Administrative Law* (1993) 12 Cal.App.4th 697, 702 [16 Cal.Rptr.2d 25, 28]. The OAL has authority over regulatory measures whether or not they are designated "regulations" by the adopting agency. *State Water Resources Control Board v. Office of Administrative Law, Supra* 12 Cal.App.4th 702, 702 [16 Cal.Rptr.2d at 28].
>
> Clearly the Board illegally used an underground regulation to implement the Revised Draft Decision of February 16, 2001 to overturn the Draft Decision of November 7, 2000 when the Board adopted the Decision on March 1, 2001. As described above, the Board in accordance with the Administrative Procedure Act must rescind the Decision of March 1, 2001.

Abuse Of Discretion by the Board – The Board's Decision of March 1, 2001 Was Not Based On The Hearing Record Which Violated Section 648.7, California Code of Regulations, Title 23

The unreasonable last minute revised draft decision of February 16, 2001which led to the Board Decision of March 1, 2001 was based on heresay comments and policy statements following the Board's draft decision of November 7, 2000, when the hearing record was closed , and is not based on the hearing record. The Board's Decision of March 1, 2001 is grossly deficient, unreasonable, unlawful, is not based on the hearing record, and is not based upon substantial evidence in the hearing record.

Twenty seven (27) days of hearing were held by the Board in accordance with Sections 761 (a) (b) (c) (d) (e) (f) (g) (h) (i) (j) and (k), CCR, Title 23. The parties at the hearing complied with Section 761 et seq.

Following the closure of the hearing record, the Board heard extensive public comments on the Board's draft decision of November 7, 2001 at public meetings on December 4, 2000, and January 11, 2001. Based on the Board's consideration of the issues raised in comments at said meetings, the Board's proposed draft decision of November 7, 2000 was revised on February 16, 2001 and adopted on March 1, 2001. The comments from the public and also from parties of record were policy statements at said public meetings. The Board's hearing policy prohibits policy statements from being introduced into the hearing record as evidence. See all Board public notices for hearings before the Board.

Section 648.7, California Code of Regulations, Title 23 states as follows:

Section 648.7 Decision of the Board

"Any final decision made pursuant to evidence introduced at an adjudicatory proceeding shall be based on the record and shall include a statement of the reasons for the decision, and where appropriate, findings and conclusion."

Section 648.7 has the force of law. Authority cited: Sections 185 and 1058, California Water Code. Reference Sections 183, 13263, and 13378, California Water Code.

The Board's Decision of March 1, 2001 Violated the Provisions of the Federal Endangered Species Act

There are two anadromous fish species that are listed and protected by the provisions of the federal Endangered Species Act in the Lower Yuba River. Those species are steelhead trout species that were listed as threatened by the U.S. National Marine Fisheries Service, and also spring-run chinook salmon species that were listed threatened by the U.S. National Marine Fisheries Service (hereinafter known as "USNMFS"). Both steelhead trout species and also spring-run Chinook salmon juvenile fish remain in the Lower Yuba River year round. The Lower Yuba River is critical habitat for steelhead species as adopted by the USNMFS.

The USNMFS testified at the recent Lower Yuba River hearing. The USNMFS also submitted evidence at the subject hearing. Mr. Steve Edmondson, fisheries biologist, testified at the subject hearing on behalf of the USNMFS. We reference the testimony of Mr. Steve Edmondson that is part of the hearing record.

The Board's Decision of March 1, 2001 ignored the daily flow and water temperature recommendations of the USNMFS to protect steelhead trout and spring-run chinook salmon species and their habitat in the Lower Yuba River. Consequently, the

Board's Decision of March 1, 2001 violated the provisions of the federal Endangered Species Act. In fact, the Board's Decision of March 1, 2001 did not even include a condition that required Yuba County Water Agency et al. to comply with the provisions of the federal Endangered Species Act.

The Board's Decision of March 1, 2001 Violated California Fish and Game Code 5937

At the hearing in 1992 the Department of Fish and Game (hereinafter known as "CDFG") presented the Lower Yuba River Fisheries Management Plan. The management plan spelled out the conditions to protect chinook salmon and steelhead trout and their habitat in the Lower Yuba River. At that time steelhead trout and spring-run chinook salmon species were not listed for federal protection by the USNMFS. The CDFG management plan recommendations were made pursuant to California Fish and Game Code 5937. See testimony by Mr. Jerry Mensch, DFG. The CDFG is mandated by the California Fish and Game Code to enforce Fish and Game Code 5937 to keep fish species and their habitat in the Lower Yuba River in good condition at all times. The Board ignored the CDFG recommendations in the management plan and delayed for several years (nine years) any decision in the protection of the fishery resources of the Lower Yuba River. In doing so the Board ignored and failed to comply with California Fish and Game Code 5937 to protect and keep in good condition at all times chinook salmon species and their habitat, and also steelhead species and their habitat in the Lower Yuba River.

The CDFG testified at the recent Lower Yuba River hearing. The CDFG also submitted evidence at the subject hearing. Mr. John Nelson, fisheries biologist, CDFG, and other fisheries biologists representing the CDFG testified at the subject hearing on behalf of the CDFG. We reference the testimony of all members of the CDFG hearing team that is part of the hearing record.

The Board's Decision of March 1, 2001, relies in part on Cal Trout v. State Water Resources Control Board –1989 207 Cal app 3d 585,676 631. However Fish and Game Code Section 5937 (Passage of water for fish below a dam) has a long history. This section of the Fish and Game Code can be traced back to Section 637 of the California Penal Code of 1870 and Section 525 as amend in 1937. Today Section 5937 reads, "The owner of any dam shall allow sufficient water at all times to pass through the fishway, or in the absence of a fishway, allow sufficient water to pass over, around or through the dam, to keep in "good condition" any fish that may be planted or exist below the dam. Fishways (ladders) assist the migration of adult salmon and steelhead to their historic spawning grounds and nursery areas. The flow regimen released is to maintain in "good condition" populations of fish and other components of the aquatic ecosystem that may reside in, are in transit to or are on their out migration or that may be planted below the dam.

Both the Audubon and Cal Trout Courts recognized that stream flow, the stream channel, its invertebrates and algae, riparian vegetation and associated fauna all interact as an integrated ecosystem. The Audubon Court effectively tied the protection of public trust interests to the perpetuation of natural resources (Mono Lake, its inflows, natural resources and ecological aspects) for their innate values, not to private off-site uses of water (Koehler - 1995). Based on the Audubon decision and actions required by the State Board, the State may only transfer those water rights that are not necessary for the fulfillment of its public trust responsibilities.

The operative words of Fish and Game Code Section 5937, as discussed in Cal Trout are, "The owner of any dam shall at all times release sufficient water to keep in "good condition" any fish that may be planted or exist below the dam" are supported by the principles of the public trust doctrine. The clear meaning of Code Section 5937 is to reserve from appropriation the amount of water believed necessary for the preservation and propagation of fish and other aquatic life and maintain the aquatic ecosystem in "good condition". According to Cal Trout the water necessary for the fish and other aquatic life is to be reserved "first" before any use permit, license or appropriation of water is made for instream or out-of-stream purposes. The Fish and Game Code Section 45 definition of "Fish" is wild fish, mollusks, crustaceans, invertebrates, or amphibians, including any part, spawn, or ova thereof.

The guiding principles of in "good condition" are discussed in Cal Trout. A criterion for in "good condition" has been established by case law. It includes, 1) the health of individuals, fish are healthy, free of disease, parasites, and have reasonable growth rates and have adequate habitat; 2) diversity and abundance of aquatic populations, diversity of age class, sufficient habitat to support all life stages and support self-sustaining populations; 3) the community, its overall health including co-evolved species and the health of the aquatic ecosystem at several trophic levels. (Bear Creek - SWRCB Order 95-4 at 18 to 22) 1995, Putah Creek v. Solano Irrigation District, Sacramento Superior Court No. CV515766, April 8, 1996), California Trout, and State Board Order WR 95-17, Lagunitas Creek, October 1995.

We reference law review article by Joel Baiocchi; Use It or Lose It; Fish and Game Code 5937; U.C.D.; 1982.

The NCCFFF firmly believe the Board has a duty and responsibility to comply with and enforce California Fish and Game Code 5937. The Board's Decision of March 1, 2001 failed to comply with and enforce Fish and Game Code Section 5937 because failed to incorporate the flow recommendations, by testimony, of the CDFG fisheries experts. Consequently, the Board's Decision of March 1, 2001 was unlawful.

The Board Decision of March 1, 2001 Violated the Public Trust Doctrine As Determined by the Courts

Central to the final adjudication and Board's Decision of March 1, 2001 of the Lower Yuba River is the definition and application of the public trust doctrine in conjunction with the constitutional requirements under Article 10, Section 2. The Audubon (National Audubon v. Superior Court (1983), 33 Cal.3rd 419) stands for the principle that "protection of the viability of the public trust resources the first priority of the public trust doctrine". Audubon and the United States v. State Water Resources Control Board, 227 Cal. Rpt.161 – 1986, also called Racanelli) decision support the principle"protecting the viability of the public trust resources is the first priority of the public trust doctrine". Judge Hodge in his analysis of the Lower American River in Environmental Defense Fund v. East Bay Municipal Utility District (EBMUD) (No 425955, Superior Court, Alameda County CA Jan.2 1990) stated that the public trust doctrine occupies an exalted position in any judicial or administrative determination of water resource allocation. The public trust is not to be diluted as just another use of the state's waters.

A review of the adopted Board Decision of March 1, 2001 revealed little in depth evaluation of the public trust aspects of the Lower Yuba River. The Board is aware from the hearing record of numerous resources, ecological values and other public trust uses of the Lower Yuba River. Some public trust values and uses include groundwater recharge, small craft navigation (drift boat fishing and canoeing), water contact recreation (wading, swimming), commercial and sport fish resources, warm water fish habitat, cold water fish habitat, preservation of areas of special biological or ecological significance, wildlife habitat (riparian vegetation), preservation of rare and endangered species, fish migration habitat, spawning habitat, fish spawning and rearing and out migration habitat and of course contributing to Bay-Delta inflow and water quality.

There was no examination and evaluation of such public trust uses and interests in the Board's Decision of March 1, 2001. Why? If the Audubon Decision and Judge Hodge (EDF v. EBMUD) can do such an evaluation, surely the Board should have done the same. The Board has an administrative duty to assure protection of the public trust interests and the openness of its review process. Clearly the public trust aspects are far more than just another use such as hydro generation of electrical energy, or growing subsidized crops i.e. rice. To better understand the totality of public trust aspects of the Lower Yuba River, the Board should have conducted a detailed analysis of its public trust aspects. The Board failed to do so which resulted in the unlawful Board Decision of March 1, 2001.

Important public trust resources and interests of the Lower Yuba River include;

1. Public trust properties include all its aquatic resources (all life stages);

2. Public ownership of the bed and bottoms (spawning gravel, pools and riffles) of the river, subject to the public trust for purposes of commerce, navigation and fishery;

3. A public navigational easement over any privately owned lands covered by navigable waters. The incidents of this easement includes boating, swimming, fishing, hunting and all recreational purposes;

4. Public ownership of the banks and shorelands of the river, subject to the public trust for purposes of commerce, navigation and fishery; and

5. Public rights which have arisen through implied dedication may include access points, trails to the bank and along the shore since the days of the gold miners and trappers to today's recreational fisherpersons, hikers, waders, etc.

Some or all the above public trust properties, rights and interests are under the general supervision of the State Lands Commission or the Department of Fish and Game. The Bureau of Land Management also has ownership interests to lands in and adjacent to the Lower Yuba River. There are Endangered Species issues involving the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. This Board should have request the comments and plans of these agencies relative to the Lower Yuba River, adjacent lands, resources, uses and ecological values. However, the Board violated the due process rights of the public and also put the U.S. National Marine Fisheries Service and the U.S. Fish and Wildlife into an unreasonable timeframe box of two (2) days which prevented the agencies from submitting detailed written comments to the revised draft decision of February 16, 2001.

We reference written comments submitted by Mr. Felix Smith to Mr. Harry Schueller, Chief, Division of Water Rights, regarding the revised draft decision of February 16, 2001, and also we reference the written and oral testimony of Felix Smith at the subject hearing.

Clear as church bells ringing at Florence, Italy at high noon, the Board's Decision of March 1, 2001 violated the public trust doctrine and case law as determined by the courts related to the public trust doctrine.

The Board's Decision of March 1, 2001 Failed to Provide Specific Daily Water Temperature Requirements to Sustain and Protect Federally Listed and Protected Threatened Steelhead Trout Species and Also Threatened Spring-Run Chinook Salmon Species, Including Fall-Run Chinook Salmon Species, and other Cold Water Species.

The Board's Decision of March 1, 2001, failed to require mandatory daily water temperature requirements to sustain and keep in good condition federally listed and protected steelhead trout species (all life stages) and also federally listed and protected spring-run chinook salmon species, including fall-run chinook salmon species (all life stages). In said decision the Board set up a "committee" to determine the necessary water temperature requirements for these threatened species, subject to the authority of the Board. As stated beforehand, federally listed and protected steelhead trout and spring-run chinook salmon juvenile fish remain in the river year round. That is also true of fall-run chinook salmon juvenile fish. We reference the hearing record.

YCWA's New Bullards Bar Dam and Reservoir is licensed with the Federal Energy Regulatory Commission. Water quality as well as water quantity in the Lower Yuba River is based on releases of water from New Bullards Bar Reservoir. To protect the federally listed and protected steelhead trout species and also to protect the federally listed and spring-run chinook salmon species, as well as the fall-run chinook salmon species, and other cold water species in the Lower Yuba River, there must be cold water flowing from the reservoir into the Lower Yuba River 24 hours a day.

The USNMFS and the CDFG provided testimony at the subject hearing recommending daily water temperature requirements to sustain and keep in good condition federally listed and protected steelhead trout species and also to protect the federally listed and spring-run chinook salmon species, as well as the fall-run chinook salmon species and other cold water species in the Lower Yuba River

The Board has water quality and quantity authority at FERC licensed hydro projects. In PUD No. 1 v. Washington Department of Ecology (1994) 511 U.S. 70, this case discussed the relationship between water quality and water quantity. States, such as the State of California, have authority under Section 401 of the Clean Water Act to require Federal Energy Regulatory Commission licensed hydropower projects to bypass flows to protect instream beneficial uses. One of the beneficial use of the state's water is the prevention of harmful high water temperatures and to require cold water to protect cold water species such as threatened steelhead trout species (all life stages), threatened spring-run chinook salmon species (all life stages), as well as fall-run chinook salmon species (all life stages) and other cold water species in the Lower Yuba River. Without daily (24 hours a day) water temperature requirements for these cold-water species, the listed species are at risk of being jeopardized and extinguished, and the non listed chinook salmon species are at risk of being degraded and listed for protection under the provisions of the federal Endangered Species Act.

The Board Decision of March 1, 2001 violated its Section 401 of the Clean Water Act authority by not requiring daily (24 hous a day) water temperature requirements to protect and prevent jeopardy to protect federally listed cold water species such as threatened steelhead trout species (all life stages), threatened spring-run chinook salmon species (all life stages), as well as fall-run chinook salmon species (all life stages), American shad species, and also macro invertebrate species (food producing species) in the Lower Yuba River.

The Board's Decision of March 1, 2001 – Claimed Power Production Losses and Reductions in Daily Flows in Contravention of State and Federal Law Regarding the Protection of the People's Public Trust Fishery Resources

In the Board's Decision of March 1, 2001 the following is stated:

8.3.2 "Effects of Different Alternatives on Hydroelectric Power Production"

"In contrast to many other situations where power production is at issue, virtually all of the water released to provide instream flows in the lower Yuba River passes through the YCWA and PG&E powerplants by the time it enters the river downstream of Englebright Dam. Therefore, variations in the instream flow requirements for protection of fish in the lower Yuba River would be expected to have minimal impact on the net quantity of power produced. A change in the release schedule toward greater releases in spring months and reduced releases in July, August, and September, however, would be expected to result in a shift in power production to different periods and a reduction in the value of the power produced. (R.T. VI, 60:16-61:4.) Adherence to the schedule specified in the Power Purchase Agreement [PG&E-YCWA] would also result in higher releases earlier in the year and reduced releases in July,August, and September." See footnote 45 on page 130 of Board's Decision of March 1, 2001.

In the Board's Discussion Paper on March 1, 2001, the following was stated:

"The SWRCB approved distribution of a proposed water right decision dated November 7, 2000, that requires measures to protect fishery resources in the lower Yuba River and to ensure that water diversions from the lower Yuba River are made pursuant to a valid water right. The SWRCB heard extensive public comments on the draft decision at public meetings on December 4, 2000, and January 11, 2001. Based on the SWRCB's consideration of the issues raised in the comments and the consideration of the critical power supply situation in California, the proposed decision has been revised in four major respects:"

One of those four (4) major changes is as follows:

"Due to the critical electric energy situation in California, the proposed decision has been revised to defer the effective date of the new long-term flow requirements applicable to YCWA's permits for a permit of five years, until April 21, 2006. For the interim period, the proposed decision establishes instream flow requirements based on the flows recommended by YCWA. The interim instream flow requirements for dry, critical and extreme critical years are lower than the long-term flow requirements specified in the proposed decision. The interim flow requirements will allow for greater flexibility in generation of hydroelectric power at Yuba River facilities."

We reference Proposed Water Right Decision Regarding Protection Of Fishery Resources And Other Issues Relating To Diversion And Use Of Water From The Lower Yuba River; Item 1; March 1, 2001; SWRCB Meeting.

The use of water for the preservation and enhancement of fishery resources is the beneficial use of the state's water. We reference Section 1243 of the California Water Code.

The beneficial use of the state's water for power production does not supersede nor prevail over water necessary to protect threatened steelhead species and their habitat and also threatened spring-run chinook salmon species and their habitat, including fall-run chinook salmon species and their habitat, and also other cold water species in the Lower Yuba River.

The beneficial use of the state's water for power production does not supersede nor prevail over the provisions of the federal Endangered Species as it applies to the Lower Yuba River.

The beneficial use of the state's water for power production does not supersede nor prevail over the provisions of California Fish and Game Code 5937 as it applies to the Lower Yuba River.

The beneficial use of the state's water for power production does not supersede nor prevail over the Public Trust Doctrine as determined by the courts as it applies to the Lower Yuba River.

The analysis of the effects of different alternatives on hydroelectric power production in the Lower Yuba River as stated in the Board's Decision of March 1, 2001 was not an issue nor considered to any extent at the Lower Yuba River hearing. In fact, the Board's analysis of the effects of different alternatives on hydroelectric power production in the Board's Decision of March 1, 2001 was not based on the hearing record, but was a last minute "underground measure" to reduce flows in the Lower Yuba River at the expense of the people's public trust fishery resources and assets.

The Board's Decision of March 1, 2001 Fails to Protect Chinook Salmon Species, Steelhead Species, and American Shad Species Pursuant to the Salmon, Steelhead Trout and Anadromous Fisheries Program Act of 1988

In the Board's Decision of March 1, 2001, the following is stated:

"Legislative policy with respect to protection of anadromous fisheries is set forth in the Salmon, Steelhead Trout, and Anadromous Fisheries Act enacted in 1988. The Act emphasizes the importance of protecting and increasing the naturally spawning salmon and steelhead in the State in order to provide a viable public resource, a large statewide economic benefit, and employment opportunities not otherwise available. (Fish and Game Code Section 6901). The act establishes state policy to "significantly increase the natural production of salmon and steelhead trout by the end of the century." (Fish and Game Code Section 6902 (a).) The act also declares that "existing natural salmon and steelhead trout habitat shall not be diminished further without offsetting the impacts of the lost habitat." (Fish and Game Code Section 6902 (c).) In establishing fishery protection flows for the lower Yuba River, the SWRCB is obligated to consider the Legislature's policy regarding the importance of protecting salmon and steelhead trout and increasing natural production of those fish."

"DFG presented evidence that the lower Yuba River is one of the most important locations in the state for natural production of chinook salmon. (R.T. I, 53:I – 54:22). The flows in the lower Yuba River have generally been significantly higher than the minimum levels specified in the 1965 agreement between YCWA and DFG. To allow flows to be reduced to the levels specified in the 1965 agreement would be contrary to the Legislature's declared policy of maintaining and improving salmon habitat. (Fish and Game Code Sections 6901 (g) and 6902 (c).)" See footnote 17 at page 26.

"Pursuant to the Salmon, Steelhead Trout and Anadromous Fisheries Program Act, DFG developed the Steelhead Restoration and Management Plan for California in

1996. (S-DFG 29.) That plan recommends management of the Yuba River as a wild trout fishery, with no hatchery stocking. The plan recommends that DFG continue to seek adequate flows, temperature and other restoration measures included in the 1991 Yuba River Fisheries Management Plan (DFG 26.)."

The Board claims in the Board's Decision of March 1, 2001 that it is obligated to consider the provisions of the Salmon, Steelhead Trout and Anadromous Fisheries Program Act of 1988. The NCCFFF disagrees that mere consideration is adequate under the Act. The Board's Decision of March 1, 2001 contravenes the provisions of the Act. The NCCFFF believes that the Board is obligated to comply with the provisions of the Act and not simply consider the policy adopted by the California Legislature. Consequently the Board's Decision of March 1, 2001 violates the provisions of the Salmon, Steelhead Trout and Anadromous Fisheries Program Act of 1988. However, the Board's Draft Decision of November 7, 2000 complies with the provisions of the Salmon, Steelhead Trout and Anadromous Fisheries Program Act of 1988.

Board's Draft Decision of November 7, 2000 v. Board's Decision of March 1, 2001

The Board's Decision of March 1, 2001 was not based on the hearing record as required by Section 648.7, CCR, Title 23. The Board's Draft Decision of November 7, 2001 was based on the hearing record as required by Section 648.7, CCR, Title 23.

Consequently, the Board must rescind its Decision of March 1, 2001 and approve the Board's Draft Decision of November 7, 2001, pursuant to Section 648.7, CCR, Title 23.

Relief Requested by NCCFFF

The following are the specific actions requested by the NCCFFF, petitioner, pursuant to Section 769, (a) (5), California Code of Regulations, Title 23:

1. To satisfy the due process rights of the public and interested parties as stated above, the Board must rescind the Board's Decision of March 1, 2001;

2. The Board must rescind the Decision of March 1, 2001 because it violates the provisions of the California Administrative Procedure Act as stated above;

3. The Board's Decision of March 1, 2001 must be rescinded to comply with Section 648.7, California Code of Regulations, Title 23, as stated above;

4. The Board's Decision of March 1, 2001 must be rescinded to comply with the recommendations of the U.S. National Marine Fisheries Service, as stated above;

5. The Board's Decision of March 1, 2001 must be rescinded to comply with the provisions of the federal Endangered Species Act to protect federally listed

and protected steelhead trout species and their habitat, and also spring-run Chinook salmon species and their habitat in the Lower Yuba River, as stated above;

6. The Board's Decision of March 1, 2001 must be rescinded to comply with Section 5937 of the California Fish and Game Code to protect all anadromous fisheries and their habitat in the Lower Yuba River, as stated above;

7. The Board's Decision of March 1, 2001 must be rescinded to comply with Section 401 of the federal Clean Water Act to provide cold water at all times to protect all anadromous fisheries and other cold water species in the Lower Yuba River, as stated above;

8. The Board's Decision of March 1, 2001 must be rescinded to comply fully with the Public Trust Doctrine as determined by the courts to protect the public trust fishery resources and assets of the Lower Yuba River, as stated above;

9. The Board's Decision of March 1, 2001 must be rescinded to fully comply with the provisions of the Salmon, Steelhead Trout and Anadromous Fisheries Program Act of 1988 to protect and improve anadromous fisheries populations levels and their habitat in the Lower Yuba River;

10. The Board's Decision of March 1, 2001 must be rescinded and Board's Draft Decision of November 7, 2000 adopted because the Decision of March 1, 2001 was not based on the hearing record, but the Board's Draft Decision of November 7, 2000 was based on the hearing record;

11. The NCCFFF formally request the Board to answer this petition for reconsideration and rescind the Board's Decision of March 1, 2001 in accordance with Section 770 (B) and other applicable statutes.

That concludes the petition for reconsideration by the NCCFFF.

Respectfully Submitted

Bob Baiocchi

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STATE WATER RESOURCES
CONTROL BOARD

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DIV. OF WATER RIGHTS
SACRAMENTO

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Dated: March 26, 2001

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Yuba County Water Agency
c/o Mr. Curt Aikens, General Manager
1402 D Street
Marysville, CA 95901

California Department of Fish and Game
Mr. John Nelson, Fisheries Biologist
c/o Mr. Banky Curtis, Regional Manager
1701 Nimbus Road
Rancho Cordova, CA 95670

Interested Parties (By E-Mail)

Certification of Service and Authority

I am authorized to submit the above shown petition of reconsideration on behalf of the NCCFFF. I hereby certify that I submitted to all of the parties on the above shown service list with copies of the petition for reconsideration shown above by first class mail.

Bob Baiocchi

Robert J. Baiocchi, Consultant
For: Northern California Council
Federation of Fly Fishers

March 26, 2001

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Attorneys for Petitioner Yuba County Water Agency

STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

In the Matter of: Fishery Resources and Water Right Issues of the Lower Yuba River, Involving Water Right Permits 15026, 15027, and 15030 Issued on Applications 5632, 15204, and 15574 of Yuba County Water Agency, Licenses 3984 and 3985 Issued on Applications 9927 and 12371 of Cordua Irrigation District License 4443 Issued on Application 9899 of Hallwood Irrigation Company, and Other Water Diversions by Various Parties Under Claim of Riparian Rights, Pre-1914 Appropriative Rights, and Contractual Rights.	**YUBA COUNTY WATER AGENCY'S PETITION FOR RE-CONSIDERATION AND REQUEST FOR STAY; MEMORANDUM OF POINTS AND AUTHORITIES**

STATE WATER RESOURCES
CONTROL BOARD

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DIV. OF WATER RIGHTS
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PETITION FOR RECONSIDERATION

Pursuant to Water Code sections 1122-1123 and title 23, California Code of Regulations ("Cal. Code Regs."), sections 768-769, the Yuba County Water Agency ("YCWA") files this petition for reconsideration of Water Right Decision 1644 ("D-1644"), adopted by the State Water Resources Control Board ("SWRCB") on March 1, 2001.

I. Grounds For Petition

As discussed in detail in the accompanying memorandum of points and authorities, YCWA petitions for reconsideration of D-1644, pursuant to title 23, Cal. Code Regs., section 768, on the following grounds: (a) there were irregularities in the proceedings that led to D-1644, which prevented YCWA from having a fair hearing; (b) D-1644 is not supported by the evidence in the administrative record; (c) there is relevant evidence which, in the exercise of reasonable diligence, could not have been produced during the hearing; and (d) D-1644 contains errors of law.

II. Specific Facts Regarding Petition

Pursuant to title 23, Cal. Code Regs., section 769, subdivision (a), YCWA submits the following information:

(1) Name and address of the petitioner:

Yuba County Water Agency
1402 D Street
Marysville, California 95901-4226

(2) Specific SWRCB action of which petitioner requests reconsideration:

Water Right Decision 1644

(3) Date on which the order or decision was made by SWRCB:

March 1, 2001

(4) Reason action was inappropriate or improper:

See accompanying memorandum of points and authorities.

(5) Specific action that petitioner requests:

SWRCB order vacating Water Right Decision 1644 and directing further proceedings leading to a new decision that is supported by the evidence in the record and the applicable laws.

(6) Statement that copies of the petition and any accompanying materials have been sent to all interested parties.

See attached proof of service.

Dated: March 30, 2001

BARTKIEWICZ, KRONICK & SHANAHAN
A Professional Corporation

By Alan B. Lilly
Alan B. Lilly

Attorneys for Petitioner Yuba County Water Agency

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REQUEST FOR STAY

In the alternative, if the SWRCB does not grant the accompanying petition for reconsideration, then YCWA requests that the SWRCB stay the operation of D-1644 until the courts have completed their review of the decision. Although the interim instream flow requirements in D-1644 are similar to those in YCWA's proposal, there nevertheless is a crucial difference. An essential element of YCWA's proposal is YCWA's retaining the right to divert or transfer, downstream of the Marysville Gage, any additional water that must be bypassed or released to implement the new instream-flow requirements. YCWA made requests in its closing brief and in its November 27, 2000 and February 26, 2001 comments for the SWRCB to include language addressing this essential element. D-1644 does not address this issue.

YCWA also filed a petition to change its water rights to implement this element of YCWA's proposal on February 4, 2000. (See exh. S-YCWA-22.) So far the SWRCB has not taken any action on this petition.

If the SWRCB does not grant the accompanying petition for reconsideration and vacate D-1644, then the SWRCB should stay the operation of D-1644 to allow the courts to complete their review of the decision, and particularly of the decision's failure to address YCWA's right to divert or transfer this water. Otherwise, YCWA may not be able to maintain the right to divert or transfer the additional water that must flow past the Marysville Gage to implement D-1644.

Dated: March 30, 2001

BARTKIEWICZ, KRONICK & SHANAHAN
A Professional Corporation

By Alan B. Lilly
Alan B. Lilly

Attorneys for Petitioner Yuba County Water Agency

MEMORANDUM OF POINTS AND AUTHORITIES

INTRODUCTION

Water-Right Decision 1644 ("D-1644"), which the SWRCB adopted on March 1, 2001, contains extensive amendments to water-right Permits 15026, 15027 and 15030 of the Yuba County Water Agency ("YCWA"). D-1644 provides that, effective April 21, 2006, YCWA must: (1) maintain minimum instream flows on the lower Yuba River at the Smartville and Marysville Gages that are significantly higher than the prior minimum flow requirements in these permits; and (2) take numerous other actions.

If D-1644 remains in effect, then its new requirements will have devastating impacts on YCWA. YCWA's deliveries of water to its customers in Yuba County will have to be significantly curtailed during dry and critically dry years. Hydroelectric power generation by the Yuba River Project (which is the largest net hydroelectric generation facility in the Pacific Gas and Electric Company ("PG&E") system) during critical summer months also will be significantly reduced. These impacts will be substantially greater than the estimated impacts discussed in D-1644 because: (1) the hydrological modeling described in D-1644 does not use the correct estimates of in-County demands; and (2) this modeling completely ignores the fact that PG&E or its successor may require YCWA to release greater amounts of stored water during winter months for hydroelectric power generation.

If D-1644 remains in effect, then YCWA no longer will be able to make the out-of-County water transfers that historically have provided great benefits to water users throughout California and provided revenues for desperately needed flood-control and water-supply facilities in Yuba County. D-1644 does not even discuss this very significant adverse impact.

During the 2000 hearing that led to D-1644, YCWA submitted a detailed proposal for lower Yuba River instream-flow requirements that was designed to keep fish in the lower Yuba River in good condition and continue to contribute to the recoveries of the steelhead and spring-run salmon in the lower Yuba River. However, D-1644 does not seriously consider YCWA's proposal or demonstrate why the significantly higher dry-year and critical-year requirements in D-1644 are necessary. The evidence in the administrative record and the new evidence discussed in this petition demonstrate that there is no quantitative scientific evidence that the higher requirements in D-1644 will provide any significant benefits for fish in the lower Yuba River.

Because the higher requirements in D-1644 will not provide any significant benefits to fish in the lower Yuba River and will have devastating impacts on water users in Yuba County and the rest of California, YCWA asks the SWRCB to grant this petition for reconsideration. The SWRCB should vacate D-1644, amend these requirements, and correct the other defects in D-1644.

ARGUMENT

I. THERE WERE IRREGULARITIES IN THE PROCEEDINGS LEADING TO D-1644 THAT PREVENTED YCWA FROM HAVING A FAIR HEARING

Title 23, California Code of Regulations, section 768, subdivision (a), provides that a petition for reconsideration of an SWRCB decision may granted if there was an:

> (a) Irregularity in the proceedings, or any ruling, or abuse of discretion, by which the person was prevented from having a fair hearing.

There were three critical irregularities in the proceedings that led to D-1644 that prevented YCWA from having a fair hearing.

First, the SWRCB environmental specialist assigned to the 1992 hearing was Michael Meinz, a biologist who previously had worked for many years for the California Department of Fish and Game ("DFG"). While he was at DFG, Mr. Meinz worked on DFG's Lower Yuba River Fisheries Management Plan. Exhibit YCWA-41 is a copy of Mr. Meinz's October 12, 1990 memorandum to DFG, which transmitted detailed comments on the draft DFG Plan, including a request that Mr. Meinz's name be added to the list of people who should be acknowledged for their contributions to the DFG Plan. A copy of exhibit YCWA-41 is attached to this petition at tab 1. Copies of the cover page and page 115 of the final DFG Plan, exhibit DFG-26, which acknowledges Mr. Meinz's participation in the preparation of the plan with many DFG employees who testified for DFG during the 1992 hearing, are attached to this petition at tab 2. This plan formed the basis of DFG's recommended instream-flow and water-temperature requirements at the 1992 hearing. Because Mr. Meinz was involved in detail with most of DFG's witnesses in the preparation of the DFG Plan, he could not be an unbiased evaluator of the fishery issues during the 1992 hearing. This irregularity adversely affected D-1644 because the 2000 hearing was based on the 1996 draft decision, which was prepared after the 1992 hearing.

Second, the SWRCB environmental specialist assigned to the 2000 hearing was Alice Low, another former DFG biologist. A copy of Ms. Low's resume, which we obtained for the first time after the 2000 hearing, is attached at tab 3. This resume was prepared while Ms. Low worked for CH2M Hill, a consulting firm that did work for the United States Fish and Wildlife Service ("USFWS"), which USFWS offered into evidence during the 2000 hearing. This resume indicates that, before working for CH2M Hill, Ms. Low worked for DFG for 11 years. During those 11 years, Ms. Low participated in the preparation of a DFG report entitled, "RESTORING CENTRAL VALLEY STREAMS: *A PLAN FOR ACTION*." Copies of the cover page and several other pages from this report are attached at tab 4. Page VII-78 of this report contains the same proposed maximum water temperatures and minimum instream flows that are in the 1992 DFG Plan. Because Ms. Low was one of the co-authors of a detailed DFG report that contained DFG's temperature and flow recommendations for the lower Yuba River, she could not be an unbiased evaluator of the fishery issues during the 2000 hearing. This irregularity adversely affected D-1644 because Ms. Low was the SWRCB's environmental specialist during the preparation of the 2000 and 2001 draft decisions and D-1644.

Third, as discussed in the Declaration of Alan B. Lilly that is attached to this petition at tab 5, Deputy Attorney General Clifford Lee participated during the closed session that the SWRCB held on March 1, 2001 immediately before it adopted D-1644. Mr. Lee works in the same section of the Attorney General's Office as Deputy Attorney General William Cunningham, who represented DFG during the 2000 hearing, and as former Deputy Attorney General Denis Smaage, who represented DFG during the 1992 hearing.

Because Mr. Meinz, Ms. Low and Mr. Lee all had close connections with DFG and DFG's proposals for the hearings, their participation as confidential advisors to the SWRCB during the processes that led to D-1644 prevented YCWA from having a fair hearing. YCWA therefore requests that its petition for reconsideration be granted, that D-1644 be vacated, and that a new decision be developed by impartial advisors to the SWRCB who do not have such connections with DFG.

II. D-1644 IS NOT SUPPORTED BY THE EVIDENCE IN THE ADMINISTRATIVE RECORD

Title 23, California Code of Regulations, section 768, subdivision (b), provides that a petition for reconsideration of an SWRCB decision may be granted if:

> (b) The decision or order is not supported by substantial evidence.

There are several critical conclusions in D-1644 that are not supported by the evidence in the administrative record.

A. D-1644 Does Not Accurately Estimate The Impacts Of Its Long Term Instream-Flow Requirements On YCWA's Water Users

Section 8.0 of D-1644 discusses its estimated impacts on YCWA's water users. (See D-1644, pp. 114-133.) However, as discussed in the accompanying Declaration of Stephen E. Grinnell, P. E., which is attached to this petition at tab 6, this discussion in D-1644 seriously <u>underestimates</u> the actual impacts of D-1644 for several reasons.

First, the estimated demands of water users in Yuba County for YCWA water in D-1644, which total 273,847 acre-feet per year ("af/yr"), are too low. This estimate does not include YCWA's projected deliveries of water to the Dry Creek Mutual Water Company and the Wheatland area, even though another part of D-1644 recognizes that these additional demands may total as much as 57,598 af/yr. (See D-1644, p. 130 (16,743 + 40,855 = 57,598).) The hydrological analyses that led to Tables 17-22 of D-1644 did not include any of these additional demands. (See D-1644, pp. 117-119.) When these additional demands are included, the estimated deficiencies in deliveries of YCWA water to its water users in Yuba County increase significantly.

Copies of the figures from Mr. Grinnell's analysis for Scenarios 21 and 22, which show the estimated deficiencies with each of these demand levels, are attached to this petition at tab 7. These figures demonstrate that the estimated consumptive-use deficiencies under Scenario 22, which includes all of the demands recognized in D-1644, are much greater than the estimated deficiencies under Scenario 21, which only includes the demands used in the D-1644 hydrological analyses.

Second, the higher estimated demands in D-1644 still do not include the additional amounts of water that are included in YCWA's projected future demands. The difference results from additional water for rice-stubble decomposition and waterfowl habitat, and for future municipal and industrial demands. A figure showing the estimated deficiencies for Scenario 18 in Mr. Grinnell's analysis, which includes these higher projected demands, is attached at tab 8. It shows that, when YCWA's more-accurate estimates of total future demands are used, the estimated consumptive-use deficiencies will be even greater than estimated in D-1644.

Third, D-1644 recognizes that the 1966 YCWA/PG&E Power Purchase Contract specifies certain minimum monthly power-generation quotas, and that, since the mid-1980's, the Yuba River Project has not been operated according to all of the terms of this contract. All of the hydrological modeling that is discussed in D-1644 assumes that the project will continue to be operated according to this same practice. (D-1644, pp. 16-17, 117. A copy of the 1966 YCWA/PG&E contract is exhibit YCWA-6.) However, D-1644 completely ignores the fact that PG&E may, and at any time could, require YCWA to operate to all of the terms of the 1966 Contract. D-1644 also completely ignores the fact that a substantial change in YCWA's instream-flow requirements could prompt PG&E to take such action. (See exh. S-YCWA-11, p. 6.)

If PG&E were to take such action, then the impacts of D-1644 on YCWA's deliveries of water to water users in Yuba County would be devastating. Copies of figures from Scenarios 23, 24, 19 and 20 of Mr. Grinnell's analysis, which are attached at tab 9, show the consumptive-use deficiencies and storage and instream-flow shortages, under different levels of demand, that are predicted to occur if PG&E were to require YCWA to operate the Yuba River Project to all of the terms of the 1966 Contract. Even under Scenario 23, which has the very low levels of demand used in the D-1644 hydrological modeling, there would be substantial consumptive-use deficiencies in many years. Under Scenario 20, which contains YCWA's estimated future demands, the consumptive-use deficiencies would be greater and more frequent.

Fourth, Term 10 of D-1644 (see D-1644, pp. 180-182) authorizes YCWA to ask the Chief of the Division of Water Rights to temporarily reduce the D-1644 instream-flow requirements when projected consumptive-use deficiencies exceed 20 percent, and D-1644 concludes that this provision will prevent the consumptive-use deficiencies of users of YCWA water from ever exceeding 20 percent (see D-1644, p. 130). However, this conclusion is incorrect. As Mr. Grinnell's declaration explains in detail, even if Term 10 were fully implemented, it still would not be sufficient to keep consumptive-use deficiencies under 20 percent. The maximum potential reductions in instream flows and the limited periods over which such reductions could occur simply are not sufficient to achieve the goal of limited deficiencies to 20 percent. The table showing the results of Scenario 26 of Mr. Grinnell's analysis, a copy of which is attached at tab 10, shows that the consumptive-use deficience after full invocation of Term 10, still would exceed 20 percent during several dry and critical years.

The basic defect of the long term instream-flow requirements in D-1644 is that they do not properly recognize the wide variations in hydrological conditions that occur in the Yuba River system. These requirements are exactly the same during springs of wet, above-normal, below-normal and dry years–about 85% of all water years–and exactly the same during summers of all water years. The only reductions from wet years would be the lower October-April flows during dry and critical years (which still would provide over 96% of the maximum salmon and steelhead weighted usable area ("WUA")) and some reductions in spring flows during critical and extreme critical years. Overall, dry-year flows would require only about 9% less water than wet-year flows and critical-year flows would require only about 15% less water than wet-year flows. The only significant reduction would be in extreme critical year flows, which would require about 32% less water. (See accompanying Declaration of Stephen E. Grinnell, attached at tab 6, ¶¶ 9-14.)

The SWRCB should grant this petition for reconsideration, so that it can vacate D-1644 and adopt long-term instream-flow requirements for the lower Yuba River that adequately recognize the wide variations in hydrological conditions in the Yuba River system.

B. There Is No Quantitative Evidence That The Higher Minimum Instream Flows Required By D-1644 Will Provide Any Significant Benefits To Fish In The Lower Yuba River

Beginning in 2006, D-1644 would require substantially higher instream flows than those in YCWA's proposal during dry, critical and extreme critical years. In dry years, the difference is almost 100,000 acre-feet. In critical years, the difference is over 135,000 acre-feet. In extreme critical years, the difference is over 70,000 acre-feet. As previously discussed in this memorandum, the long-term requirements in D-1644 would lead to significant deficiencies in YCWA's deliveries to in-County water users in such water years, and would eliminate future out-of-County water transfers.

Because these differences are so large, the critical question is "Is there any quantitative scientific evidence that the higher long-term minimum flow requirements in D-1644 would result in any significant benefits for fish in the lower Yuba River?"

The answer to this question is "No!"

1. April-June Minimum Flow Requirements

The major differences between D-1644 and YCWA's proposal are for minimum flows during the April 21 through June 30 period during dry, critical and extreme critical years. For this period, D-1644 states:

> The primary fishery consideration during the April through June period is to provide adequate flows for juvenile chinook salmon and steelhead emigration. No specific studies of flows needed for steelhead or chinook salmon emigration have been conducted in the lower Yuba River. (R.T. I, 212:25-215:15.) The results of the IFIM/PHABSIM analysis are not directly applicable to establishing flows during the spring emigration period.

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(D-1644, p. 61.) Although both DFG and USFWS recommended minimum flows for this period, neither DFG or USFWS nor any other party offered any data or analysis to support these recommendations. The only quantitative data on this issue that is cited in D-1644 is exhibit S-DOI-9, which contains some graphs showing the relationships between adult salmon runs and spring flows 2½ years earlier in the Delta and lower San Joaquin River. (See D-1644, p. 66.) However, as discussed in YCWA's November 27 comments (see tab 11 to those comments and accompanying text) and in the accompanying Declaration of Paul M. Bratovich (copy attached at tab 11 to this petition), there is no statistically significant relationship between Yuba River spring flows and subsequent adult salmon runs in the Yuba River.

The remainder of the discussion in D-1644 of this issue (see D-1644, pp. 61-66) concerns the timing of juvenile salmon and steelhead emigration and the effects of various flows on American shad. Much of this discussion attempts to refute YCWA's argument that higher spring flows could adversely impact juvenile salmon emigration. However, there simply is no substantial evidence and no discussion in D-1644 supporting the conclusion in D-1644 that the proposed late-April, May or June flows for dry, critical or extreme critical years are necessary for salmon or steelhead emigration. Thus, although the discussion of spring flows in critical and extreme critical years (D-1644, p. 70) states that YCWA's lower proposed spring flows for these water-year types "may result in lower survival of emigrating juvenile chinook salmon and steelhead," there is no substantial evidence in the administrative record and no discussion in D-1644 supporting these statements. There also is no quantitative evidence regarding how much lower any such survival might be under YCWA's proposal, and thus no evidence that the D-1644 long-term spring flows would provide any tangible benefits to emigrating salmon and steelhead over the corresponding flows in YCWA's proposal.

D-1644 does cite some quantitative evidence that the proposed spring flows for these water-year types may be necessary to attract significant numbers of American shad into the lower Yuba River. However, it would not be reasonable to require YCWA to maintain these flows, which would require almost 100,000 acre-feet of additional water during dry and critical years and over <u>40,000 acre-feet</u> of additional water in extreme critical years, for shad attraction. There is no evidence that such attraction flows would increase shad habitat or shad populations; at most, these flows just would expand the area where fishermen could fish for shad. Expanded fishing opportunities for a non-native, non-listed species do not justify the enormous water-supply impacts on YCWA that would result from these high instream-flow requirements.

D-1644 recognizes that juvenile chinook salmon emigration "is normally complete by the second week in June." (D-1644, p. 62.) The requirement in D-1644 to maintain high flows of 800 cfs throughout June for salmon emigration therefore is not necessary, particularly in dry and critical years. Thus, even if the SWRCB decides to maintain higher spring flows than those in YCWA's proposal, the high June flows should only be required for the first 10 to 14 days in June, and the minimum required flows for the rest of June then should go down to the lower summer values. A reduction from 800 cfs to 250 cfs for 15 days would save over 16,000 acre-feet of water. This change, like the change in October-April flows discussed below, would not fully mitigate the adverse impacts of the high spring flows in D-1644. Still, it would provide some mitigation.

2. July-September Minimum Flow Requirements

D-1644 does not contain any changes in the proposed minimum required flows for the July through mid-September period. These flows are set at 250 cfs during all water-year types. The stated basis for this proposed requirement is that it is the flow at which there is the maximum weighted usable area for juvenile steelhead downstream of Daguerre Point Dam. (See D-1644, pp. 66-67.)

D-1644 does not discuss how juvenile steelhead rearing habitat below Daguerre Point Dam varies with flow, even though DFG's own WUA/flow tables contain quantitative evidence on this point. In particular, table III-3a from the 1991 DFG Plan (exh. DFG-26, p. 152) shows that at the flow of 100 cfs that is contained in YCWA's proposal for critical and extreme critical years, juvenile steelhead rearing WUA still would be over 75% of the maximum amount. Very few, if any, juvenile steelhead over-summer in the lower Yuba River below Daguerre Point Dam (see exh. S-YCWA 19, pp. 3-20, 3-22), and there is no evidence that 75% of maximum WUA would limit these populations. Also, the flows above Daguerre Point Dam would be much higher, even in critical and extreme critical years, because of releases for irrigation diversions at Daguerre Point Dam. Thus, there is no substantial evidence that the lower critical-year summer flows in YCWA's proposal, which would provide Yuba County water users with almost 25,000 acre-feet of desperately needed water, would adversely affect Yuba River steelhead populations.

3. October-April Minimum Flow Requirements

For the reasons already discussed in this memorandum, the SWRCB should amend the high spring flow requirements in D-1644 for dry, critical and extreme critical years and the high summer flow requirements in D-1644 for critical and extreme critical years. However, if the SWRCB nevertheless decides to retain spring or summer flow requirements that are higher than those in YCWA's proposal, then the SWRCB should reduce other instream-flow requirements to compensate for the severe water-supply impacts that would result from these requirements.

For example, the October 15 through April 20 requirements in below-normal, above-normal and wet years should be reduced from 700 cfs at the Smartville Gage and 500 cfs at the Marysville Gage down to 600 cfs at the Smartville Gage and 400 cfs at the Marysville Gage. As D-1644 notes, these lower flows still would provide at least 98 percent of the optimum salmon spawning habitat and at least 94 percent of the optimum steelhead habitat. (See D-1644, pp. 68-69.)

This change would save up to 37,000 acre-feet of water. This change would be significant when a dry or critical year follows a below-normal, above-normal or wet year, because otherwise the higher flow requirements would remain in effect until April 1. (See Decl. Of Stephen E. Grinnell, attached at tab 6, ¶¶ 11-14.) In dry and critical years like 1976, 1987 and 2001, which followed wet and above-normal years, such higher requirements would lead to significant reductions in storage, which then would be exacerbated by high spring instream-flow requirements. While such a change would not fully mitigate the adverse impacts of the high spring flows in D-1644, it would provide some mitigation.

SWRCB staff or some other party may argue that this reduction in October-April minimum flows should not be made, because YCWA proposed the 700 and 500 cfs flows for below-normal, above-normal and wet years. However, such an argument would be incorrect. YCWA's proposal is a "package proposal," based on hydrological analyses over the entire 71 years of record. The hydrological analysis is not valid if just parts of the proposal are adopted. It would not be appropriate for staff or any party to argue that YCWA cannot ask for amendments of parts of its proposal if the SWRCB does not adopt the entire proposal.

The SWRCB therefore should grant this petition for reconsideration, so that it can adopt lower Yuba River instream-flow requirements that will maintain fish in the lower Yuba River in good condition without wasting critical water supplies that are needed for water users in Yuba County that depend on YCWA water.

C. Many Other Critical Findings In D-1644 Are Not Supported By The Evidence In The Record

YCWA's February 26, 2001 comments on the SWRCB staff's February 16, 2001 draft decision described in detail how the discussions in that draft decision about water temperatures, historical Yuba River fish populations, effects of out-of-basin factors, habitat/flow relationships, and estimated future demands in Yuba County for YCWA water were very one-sided and not supported by the evidence in the administrative record. (See YCWA Feb. 26, 2001 written comments, pp. 3-6.)

Unfortunately, D-1644 contains the same one-sided and unsupported discussions of those subjects. The SWRCB should grant this petition for reconsideration, so that these discussions can be edited to be impartial discussions of the evidence in the record.

D. Several Ambiguous Provisions Of D-1644 Need To Be Corrected

YCWA's February 26, 2001 comments on the SWRCB staff's February 16, 2001 draft decision also discussed several uncertain and ambiguous provisions of D-1644.

First, the Yuba River Index specifies that preliminary determinations will be made in February, March and April, with the final determination in May. (See D-1644, App. 1.) On the other hand, the text of D-1644 states that Yuba River Index determinations "shall be made on April

1 of each year." (D-1644, p. 174.) This latter provision would prevent YCWA from shifting to a new water-year type during February, March or May, even though a shift may be appropriate in such months because of hydrological conditions and could save substantial amounts of water during dry and critical years. To eliminate the ambiguity and to correct this defect, page 174 of D-1644 should be edited to be consistent with the Yuba River Index.

Second, during the 2000 hearing, there was undisputed evidence that the only actions that YCWA currently can take to affect lower Yuba River water temperatures are to adjust the multi-level intake at New Bullards Bar Dam and to change lower Yuba River instream flows. While adjusting the multi-level intake at new Bullards Bar Dam can substantially affect lower Yuba River water temperatures, "water temperatures in the lower Yuba River change very little in response to changes in streamflow" (D-1644, p. 65). Thus, there is no indication in D-1644 that the Temperature Advisory Committee is supposed to have any authority to make recommendations regarding instream flows or operations issues besides the multi-level intake at New Bullards Bar Dam.

Unfortunately, paragraphs b. and c. of Term 2 of D-1644 (D-1644, pp. 176-177) contain ambiguous language regarding the role of the "Temperature Advisory Committee." This petition for reconsideration therefore should be granted so that these paragraphs can be edited to confirm that: (a) the "Temperature Advisory Committee" only has authority to consider measures that affect the operations of the multi-level intake at New Bullards Bar Dam and any new multi-level intake at Englebright Dam; and (b) the required operations plans need to address only these devices.

Moreover, even though D-1644 apparently recognizes that the SWRCB is not requiring YCWA to build the Englebright Dam temperature control device unless grant funding is available, paragraph a. of Term 2 is not clear on this point. This petition for reconsideration should be granted so that this paragraph can be edited to confirm this point.

Third, Term 3 of D-1644 contains some new language confirming that YCWA's obligations to avoid flow fluctuations do not extend to matters that YCWA cannot control.

However, the second sentence of this term is unclear. This petition for reconsideration needs to be granted so that this paragraph can edited to confirm that these exceptions also apply to the various quantitative requirements in this paragraph.

III. THERE IS RELEVANT EVIDENCE WHICH, IN THE EXERCISE OF REASONABLE DILIGENCE, COULD NOT HAVE BEEN PRODUCED DURING THE 1992 AND 2000 HEARINGS, AND WHICH NOW JUSTIFIES RECONSIDERATION OF D-1644

Title 23, California Code of Regulations, section 768, subdivision (c), provides that a petition for reconsideration of an SWRCB decision may be granted if:

> (c) There is relevant evidence which, in the exercise of reasonable diligence, could not have been produced.

There is significant evidence relevant to the issues addressed in D-1644 that could not have been produced during the 1992 and 2000 hearing, and that now justifies reconsideration of D-1644.[1]

A. There Is Relevant Hydrological Evidence That Justifies Reconsideration Of D-1644

The accompanying Declaration of Stephen E. Grinnell, attached to this petition at tab 6, contains a detailed discussion of the hydrological impacts of the long-term instream-flow requirements in D-1644. This discussion is similar to Mr. Grinnell's testimony during the 2000 hearing regarding the hydrological impacts of the instream-flow requirements in the 1996 draft decision. (See exhs. S-YCWA-16 & 16A.) Mr. Grinnell could not make the new hydrological analyses that are described in his declaration until after February 16, 2001, when the last draft decision was made available to the public.

These new hydrological analyses are very relevant to the issues addressed in D-1644, and justify reconsideration of D-1644. As discussed in detail in Mr. Grinnell's declaration,

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[1]In addition to the relevant new evidence that is discussed in this section of this memorandum, YCWA's requests that the SWRCB grant YCWA's petition for reconsideration, so that the SWRCB can consider all of the new evidence that is discussed in this memorandum.

reconsideration of D-1644 is justified for several reasons.

First, the hydrological analyses described in D-1644 do not even consider the future demands in Yuba County for YCWA water that are recognized in Term 10 of D-1644. As previously discussed in this petition, when these additional demands, which total over 57,500 af/yr, are included in the hydrological analyses, Mr. Grinnell's analyses show that D-1644 will cause estimated deficiencies in deliveries of YCWA water to water users in Yuba County that will be much higher than the estimated deficiencies discussed in D-1644.

Second, the hydrological analyses described in D-1644 do not consider either the higher future demands that were predicted in YCWA's hearing testimony or the impacts of a possible PG&E decision to require YCWA to operate the Yuba River Project according to all of the terms of the 1966 PG&E/YCWA Power Purchase Contract. When these additional factors are included in the hydrological analyses, the analyses show that D-1644 will cause even greater deficiencies in deliveries of YCWA water to water users in Yuba County.

Third, D-1644 does not analyze whether or not the procedures in Term 10 would be sufficient to limit deficiencies in deliveries of YCWA water to 20 percent. Instead, D-1644 just assumes that they would. Mr. Grinnell's analysis demonstrates that, even if these procedures always were fully carried out, this assumption still would be incorrect.

B. There Is Relevant Biological Evidence That Justifies Reconsideration Of D-1644

During the 2000 hearing, DFG biologists provided some limited testimony and data regarding the rotary screw trap ("RST") that DFG had installed and now operates in the lower Yuba River. (See exhs. S-DFG-1 & 6.) However, those data were limited to the period from November 25, 1999 through January 14, 2000. (See exh. S-DFG-6.)

Since then, after making several informal and formal requests to DFG (see documents attached to this petition at tab 12), YCWA recently obtained the RST data that was collected on various dates after January 14, 2000.

The Declaration of Paul M. Bratovich, attached to this petition at tab 11, discusses these data. In his declaration, Mr. Bratovich explains that the RST data show that, during the 1999-2000 season, over 99 percent of the juvenile chinook salmon migrated past the RST on or before April 21. This conclusion directly refutes the finding in D-1644 that emigration of juvenile chinook salmon for the lower Yuba River occurs from late April through the second week in June. (See D-1644, p. 62.) Mr. Bratovich's analysis also shows that there is no statistically significant correlation between juvenile chinook salmon or steelhead outmigration and lower Yuba River flows.

Because the high mid-April through June long-term flows in D-1644 were included primarily to facilitate chinook salmon and steelhead outmigration (see D-1644, p. 61), these new RST data cast serious doubt on the principal justification for these flows. If almost all juvenile chinook salmon already have outmigrated before this spring period, then these high flows are not needed for them. If juvenile steelhead outmigration is not increased by higher flows, then steelhead outmigration also cannot justify these high flows.

As previously discussed, the high long term spring flows in D-1644 will cause very substantial and serious water-supply impacts on users in Yuba County of YCWA water. No quantitative evidence was offered during either the 1992 or the 2000 hearing that justifies these high spring flows, and the new RST data indicates that these high flows will not provide any significant benefits to juvenile chinook salmon or steelhead. This petition for reconsideration therefore should be granted so that the SWRCB can adjust the spring instream-flow requirements in D-1644 so that they are supported by the relevant evidence.

IV. D-1644 CONTAINS ERRORS OF LAW THAT JUSTIFY RECONSIDERATION OF D-1644

Title 23, California Code of Regulations, section 768, subdivision (d), provides that a petition for reconsideration of an SWRCB decision may be granted if there is an:

(D) Error in law.

D-1644 contains several errors of law that support this petition for reconsideration.

First, D-1644 admits that its instream-flow requirements will require users of YCWA to forgo receiving some YCWA water and instead to pump more groundwater than they would have to if these requirements were not in effect. (D-1644, pp. 125, 133.) Because there is no evidence that YCWA's operation of the Yuba River Project has been unreasonable, D-1644 incorrectly concludes that article X, section 2 of the California Constitution authorizes the SWRCB to adopt these instream-flow requirements. Also, because there is not evidence that the Yuba River Project has had any significant adverse impacts on fish in the lower Yuba River, the public trust doctrine also does not authorize the SWRCB to adopt these instream-flow requirements.

The accompanying Declaration of Stephen E. Grinnell (¶¶ 43-44 & Table 7) shows that the D-1644 long-term instream-flow requirements would require YCWA to release water from storage in New Bullards Bar Reservoir during almost all Septembers and Octobers, about half of all Novembers, and significant numbers of other months, especially during dry and critical years. The public trust doctrine does not authorize the SWRCB to require YCWA to make these storage releases when there is no evidence that the Yuba River Project has created any adverse impacts to lower Yuba River fish that need to be mitigated by such releases.

Second, because the Yuba River Project already has significantly improved water-temperature conditions for fish in the lower Yuba River (see exh. S-YCWA-18, fig. 2), there is no legal basis for the requirements in Term 2 of D-1644 that YCWA: (a) "diligently pursue" development of the Narrows II Powerhouse Intake Extension Project; (b) coordinate operations of temperature control devices with a "Temperature Advisory Committee"; (c) prepare an annual operations plan for temperature control; or (d) install and operate temperature monitoring equipment and record temperatures on an hourly basis at three different locations in the lower Yuba River.

Third, D-1644 improperly ignores YCWA's request that it retain the right to divert or transfer, downstream of the Marysville Gage, any additional water that is required to implement the new instream-flow requirements. D-1644 also improperly ignores the serious impacts that it would have on YCWA's ability to make future out-of-County water transfers. Although D-1644 claims that an evaluation of these impacts would be "very speculative" (D-1644, p. 152), this is incorrect. The actual impacts of D-1644 on future out-of-County water transfers are not speculative at all–no future transfers would be possible. Given the Legislature's specific directive to the SWRCB to encourage voluntary water transfers (Water Code § 109) and the extensive evidence that YCWA submitted during the hearing regarding the benefits of these transfers to Yuba County and California and the extensive public comments on this subject, it was not proper for D-1644 to completely ignore these impacts.

Fourth, D-1644 incorrectly concludes that no environmental impact report (EIR) was required for the decision. (See D-1644, pp. 144-147.) As discussed earlier in this petition, D-1644 will result in significant deficiencies to users of YCWA water. These deficiencies will require these water users either to pump significant amounts of additional groundwater or fallow irrigated farmlands. In addition, D-1644 will require the Yuba River Project to shift significant amounts of hydroelectric power generation from the summer to the spring. (See D-1644, p. 126.) Because of these impacts, D-1644 is incorrect in stating that the "ongoing project" exemption of Public Resources Code section 21169 and title 14, California Code of Regulations, section 15261, applies. Because of these significant environmental effects, the "Class 7" and "Class 8" categorical exemptions cited in D-1644 (D-1644, p. 146) also does not apply. (See tit. 14, Cal. Code Regs., § 15300.2, subd. (c).)[2]

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[2]YCWA's brief and November 27, 2000 and February 26, 2001 comments discuss other errors of law that were carried over from prior draft decisions into D-1644. Browns Valley Irrigation District petition for reconsideration makes other arguments. All of those comments and arguments are incorporated into this memorandum by reference.

CONCLUSION

For the reasons discussed in this memorandum, the Yuba County Water Agency respectfully requests the State Water Resources Control Board to grant this petition for reconsideration, to vacate D-1644, and to conduct further proceedings to adopt lower Yuba River instream-flow requirements that are supported by the evidence in the record and the applicable laws.

Dated: March 30, 2001

BARTKIEWICZ, KRONICK & SHANAHAN
A Professional Corporation

By Alan B. Lilly
Alan B. Lilly

Attorneys for Petitioner Yuba County Water Agency

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COM 9117

State of California

A5632 SURNAME/FILES

YCWA-11

Memorandum

To : Gary Smith
Department of Fish and Game
1416 Ninth Street
Sacramento, CA 95814

Date : OCT 12 1990

From : Mike Meinz
Environmental Section
DIVISION OF WATER QUALITY AND WATER RIGHTS
STATE WATER RESOURCES CONTROL BOARD

Subject: DRAFT YUBA RIVER MANAGMENT PLAN REPORT

I have reviewed the Draft Yuba River Management Plan Report which you submitted to the State Water Resources Control Board on September 15, 1990. My comments are attached.

If you have questions regarding my comments, please call me at (916) 324-5645.

Attachments

bcc: Walt Pettit
Jerry Johns
Ed Dito
Mike Falkenstein
Bert Parkinson

MMEINZ:esekul 10/12/90

eseku300/ellyn/meinz

SURNAME DWR 540 REV. 1/86	M Meinz 10/12/90	[illegible] 10/12/90		

COM 9118

Comments

Acknowledgements. Acknowledgements are incomplete. Lynn Wixom spent nearly a year reviewing and editing this document - he should be acknowledged. Jerry Mensch conceptually developed the study, requested the funding and supervised the study - he should be acknowledged. Mike Meinz worked with Tom Payne scoping the IFIM study plan and reviewed much of the field work - he should be acknowledged.

Table 5, Page 20. There is no page 20.

Figure 8. Spawning depth and frequency - Curve should drop below a preference of 1.00 at water depth 1.60 instead of 1.90.

Figure 16. Distinction between max/min temperatures is near impossible.

Page XIV. Last paragraph refers to conditions "except as listed below", but no conditions are listed below.

Page XV, Paragraph 4. "Salmonid spawning, etc." Paragraph/sentence makes no sense.

Page 2. Last sentence in paragraph 4 - If sentence is referring to the Yuba River below Daguerre, it is an incorrect statement. Spawning stock surveys show that the majority of spawning occurs above Daguerre Pt. Dam. If the sentence refers to Yuba downstream of the Narrows, it needs to be rewritten.

Page 5, Paragraph 2. To be consistent with the description of Deer Creek, the author(s) should also tell the reader if salmon/steelhead enter Dry Creek.

Page 7. Last sentence in paragraph 4 - "High temps low flows during critical life stages, etc." If this is a statement of fact, you will need to add a reference or data. If not, say that is just a theory.

Page 11. Steelhead - This section needs to be expanded to include information on half pounders. According to local fishermen, there can be a large half pounder run starting as early as June. Spawning may also begin as early as October. Call Rich Dehaven (USFWS - 978-4613). He fishes steelhead in Yuba extensively, keeps annual notes and has a very good intuitive feeling for steelhead in Yuba River.

Page 12. Last sentence in paragraph 2 refers to "adverse environmental conditions" but doesn't mention what the adverse conditions are.

Page 13. Last sentence in paragraph 3 - American Shad apparently resist entering mouth of Yuba River when flows drop below 1,500 cfs. See Meinz (1981).

Page 23, Paragraph 5. "...diversions do not occur. Inflow from Deer and Dry Creeks, etc." should be a separate sentence.

Page 24, Paragraph 4. The way I read this is that 36 sites were electrofished (9 sites in each of the four reaches or 9 X 4). Figure 2 does not show 36 electrofishing sites.

Page 24. Electrofishing and snorkel methods should be defined in some detail (i.e., what habitats were electrofished, three-pass method?, daylight vs. night sampling, time of year, etc.) If someone wanted to duplicate the study, it would be impossible based on the methods provided.

Page 29. Lower condition factor of CS at Daguerre in February . . . relating Low K to stress is pushing it. If the low K persisted into May, it is more likely due to lower water temperatures above Daguerre. See Table 13.

Page 35. Paragraph 1. It bothers me that a mean column velocity of 0.0 was measured over a spawning redd. This has to be explained. Chum salmon will spawn in areas with zero column velocities because of upwelling but CS.......

Chinook habitat criteria in general. Much of the comparative data was collected in Alaska (i.e., Kurko, 1977; Vincent-lang, 1984; and Suchanek, 1984). Is this comparative data for CS or other species of salmon?

Table 13. Nice work.

Page 47, Paragraph 4. CS migrations could be delayed if water temperatures exceed 57.5oF (Table 13). September/October Temperature recommendations should reflect the needs of migrating adult CS.

Page 51, American shad, 1st paragraph. Sentence beginning with "In water years 1972-73" makes no sense.

Page 63, bottom of second paragraph. Recommended temperatures are inconsistent with optimum conditions defined in Table 13.

Page 65. Bovee and Milhous, 1978 not identified in Reference section.

Page 76. WUA curve for the overall river shows habitat values exceeding habitat values for any particular study reach, is that reasonable?

Page 81, American shad, paragraph 3. Discussion on attraction flows should give references to Meinz, 1981 and his discussion on what historical flows have attracted A. shad into the Yuba River.

Page 83, Paragraph 4. Here it implies that Salmonids smolts emigration has occurred by March. This contradicts information in Figure 3, Page 10.

Page 10, Figure 3. This figure looks more like a Table.

Page 99, Paragraph 1. "DFG, June 17, 1987 memorandum", needs a better citation, i.e., where can the reader find it?

Page 100, Paragraph 1. "DFG, November 1988 memorandum", same comment as above.

Page 101, Paragraph 1. From which sample (Feb or Mar) was the salmon fry found in the stomach of a squawfish?

Page 108, Paragraph. "SWRCB, 1975" and " Sacramento River Fishery and Riparian Advisory Council, 1989" not listed in references.

Page 108 to 116, Instream Flow and Management Recommendations:

- Water temperature recommendations - Mid October to March - are below optimum range for fry & juvenile CS rearing (Table 13).
- Water temperatures recommended for April, May & June exceed optimum conditions for rearing CS fry and juveniles, exceed optimum conditions for migrating spring-run CS and are at the upper range for American Shad (Table 13). In addition, the recommended temperatures for April, May and June exceed what naturally occurs in the Yuba River (Figure 13). Based on Table 13, 60 degree F would be preferential. You might also look at Alice Rich's temperature data for American River. In her study, 60 degree F was just on the downside of optimal for CS growth (attached).
- Recommendations should discuss the need for attractions flows for fall-run CS.

References. Attached references highlighted in Blue were not located in the text.

DFG-26

LOWER YUBA RIVER FISHERIES MANAGEMENT PLAN

February 1991

Department of Fish and Game
State of California
The Resources Agency

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ACKNOWLEDGMENTS

Funding for the Lower Yuba River Fisheries Investigations came from the Environmental License Plate Fund through appropriations to the Streamflow Requirements Program, California Department of Fish and Game, contained in Assembly Bill No. 723 of 1985, Chapter 1259.

Beak Consultants, Incorporated was the primary contractor but utilized the efforts and technical expertise of several subconsultants who were responsible for the conduct on one or more of the technical studies that comprised the Lower Yuba River Fisheries Investigations. Thomas R. Payne and Associates conducted the water temperature modeling and instream flow studies for chinook salmon. Philip Williams and Associates performed the studies on channel stability and assessed spawning gravels. Beak conducted the other technical studies.

Special thanks are extended to Mike Aceituno of the U.S. Fish and Wildlife Service for the analysis of instream flow using PHABSIM for steelhead trout.

Department of Fish and Game staff who provided supervision, direction, and review include Jerry Mensch, Mike Meinz, John Nelson, John Turner, Bob Orcutt, Gary Smith, Cindy Chadwick, Dan Odenweller, Fred Meyer, and Jim Schuler. Lynn Wixom compiled this report.

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COM 9125

Alice Low
Fishery Biologist

Education

M.S. , Ecology (Aquatic), San Diego State University, 1982
B.A., Biology, Carleton College, Northfield, Minnesota, 1978
(Graduated magna cum laude with distinction in Biology. Elected to Sigma Xi)

Relevant Experience

Ms. Low specializes in fisheries research, management, and impact assessment. She has developed and managed numerous projects involving fishery resources in California. Her experience includes designing research and impact assessment studies, preparing scientific reports, managing field and laboratory staff, and conducting environmental review of CEQA and NEPA documents. She is thoroughly familiar with the FERC licensing and relicensing process.

During 11 years as a fishery biologist with the California Department of Fish and Game, Ms. Low participated in a research project on young-of-the-year striped bass in the Sacramento-San Joaquin estuary, served as environmental services fishery biologist for the San Joaquin Valley and the Central Sierra Nevada region of California, and coordinated a habitat improvement program and an overall restoration program for fall-run chinook salmon in the San Joaquin River basin.

Representative Projects

Central Valley Improvement Project Act (CVPIA), U.S. Fish and Wildlife Service and U.S. Bureau of Reclamation, Sacramento, California. Responsible for developing options for management of CVP-dedicated water for Central Valley anadromous fisheries restoration for Water Management Plan authorized by CVPIA (PL 102-575, Title 34).

CVPIA, U.S. Fish and Wildlife Service and U.S. Bureau of Reclamation, Sacramento, California. Assisted in design of Central Valley-wide anadromous fish monitoring programs for Phase II Implementation Plan as part of the Comprehensive Assessment and Monitoring Program (CAMP), authorized by the CVPIA. Also, coordinated implementation of Central Valley-wide juvenile monitoring and hatchery marking programs in Phase III.

Klamath Project Operations Plan (KPOP), U.S. Bureau of Reclamation. Responsible for developing alternative instream flow schedules for use in the project NEPA document.

Outmigrant Trapping in the Lower Stanislaus River, U.S. Fish and Wildlife Service, California. Project manager for operation of screw traps at Caswell State Park on the Lower Stanislaus River to index numbers of outmigrating fall-run chinook salmon smolts, in 1996 and 1997.

Alice Low

Tributary Production and Enhancement Program (TPEP), CVPIA, U.S. Fish and Wildlife Service and U.S. Bureau of Reclamation, Sacramento, California. Responsible for coordinating engineering and biological evaluation of feasibility, cost, and desirability of developing and implementing measures in the CVPIA to restore Central Valley anadromous fish.

CALFED Bay-Delta Program, California. Participated in preparation of the Ecosystem Restoration Program Plan. Prepared fishery and riparian restoration program components for the San Joaquin River basin and the Delta tributaries. Also, prepared fisheries and aquatic resource impact assessment for the Programmatic Environmental Impact Report/Statement (PEIR/EIS).

Experience Prior to CH2M HILL

Aquatic Ecologist (Senior), Wisconsin Department of Natural Resources Bureau of Research, Fish Research Section, Rivers and Streams Research Group, Monona, Wisconsin (1994-1996)

Research scientist responsible for development of a major project on the effects of hydroelectric project operation on fish and invertebrate communities in Wisconsin's large river systems:

Conducted detailed literature review, designed sampling protocols for large river systems, and prepared research proposal.

Obtained funding from two major Wisconsin power companies to supplement internal study funds.

Developed methodology for estimating the value of direct annual fish losses as a result of turbine mortality at hydroelectric project facilities in Wisconsin.

Analyzed data to determine the appropriate level of sampling effort to use on large warm-water river systems with prepositioned electrofishing grids.

Supervised one temporary employee and technicians in field and laboratory duties.

Calculated parameters of fish community structure from sampling data, including species richness, diversity, evenness, relative abundance and biomass.

Designed computer database for storage of survey data on PC SAS.

Associate Fishery Biologist, California Department of Fish and Game, Inland Fisheries Division, Sacramento, California (1992-1994)

Coordinator for fall-run chinook salmon restoration program in the San Joaquin River basin (Stanislaus, Tuolomne, and Merced rivers):

Prepared detailed management plans to guide salmon restoration activity

Coordinated salmon research program (spawning surveys, juvenile rearing and smolt survival studies) with regional staff and other resource and water development agencies (Turlock, Modesto, and Merced Irrigation Districts, U.S. Bureau of Reclamation)

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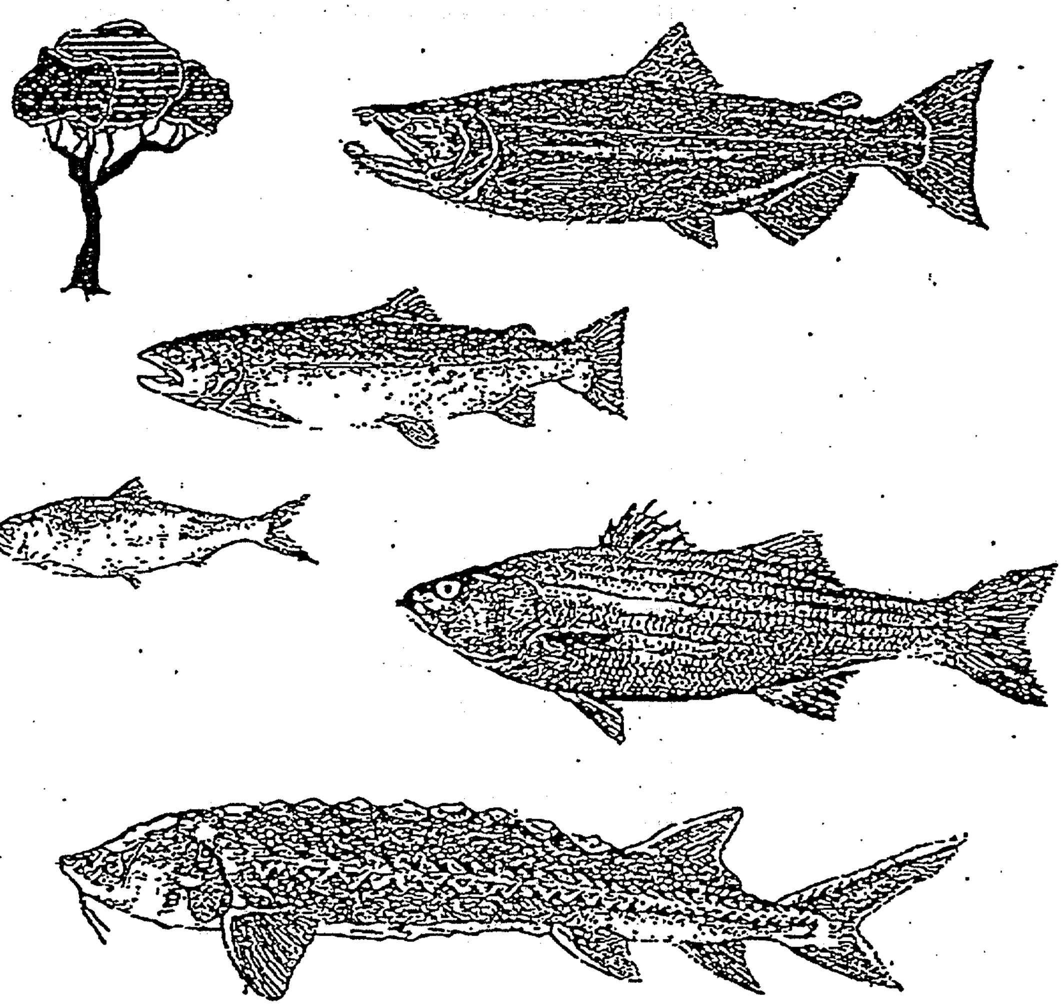
RESTORING CENTRAL VALLEY STREAMS:

A PLAN FOR ACTION



DEPARTMENT OF FISH AND GAME

SPORT FISH RESTORATION

NOVEMBER
1993

RESOURCES AGENCY CALIFORNIA DEPARTMENT FISH & GAME

COM 9129

State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

RESTORING CENTRAL VALLEY STREAMS: A PLAN FOR ACTION

Compiled by:

Forrest L. Reynolds
Fish and Wildlife Manager

Terry J. Mills
Senior Fishery Biologist

Randy Benthin
Associate Fishery Biologist

and

Alice Low
Associate Fishery Biologist

Under the direction of:

Tim Farley, Chief
Inland Fisheries Division

November 1993

III. HISTORICAL PERSPECTIVE

Habitat of Anadromous Fish

Ninety-five percent of the historic Central Valley salmon habitat has been lost. The streams have either been dammed, blocking migration, or they have been so severely degraded that they are no longer usable by salmon. The most severe damage and loss of habitat began with the discovery of gold in 1849 and culminated in the 1970's with completion of the major water diversion and conveyance facilities.

Hydraulic mining caused sedimentation of spawning grounds, water diversions blocked migrating fish and depleted stream flows, and the sudden human population explosion during the gold rush resulted in significant development and disturbance all along the Central Valley streams and rivers. Then, the need for building materials created a logging industry that added further to the decline in available habitat.

The unrestricted use of hydraulic mining in the river drainages along the eastern edge of the Central Valley was extremely damaging to the stability of the stream systems and habitat for anadromous fish. This belt of hydraulic mining transversed most of the Sierra Nevada west side drainages to the Sacramento and upper San Joaquin valleys. Between 1850 and 1885, hydraulic mining washed tons of silt, sand, and gravel into the Sacramento, Feather, American, San Joaquin, Merced, and Tuolumne rivers. The most intensive hydraulic mining occurred on the Feather, Yuba, and Bear rivers. The mining debris, composed of clay, sand, gravel, and cobbles, rapidly washed downstream during high flows. As early as 1860, a sand bar had formed in the Sacramento River across the mouth of the American River. By 1866, the larger steamboats could no longer reach Sacramento, and by 1876, the channels of the Bear and Yuba rivers had been completely filled resulting in adjacent agricultural lands becoming covered by sand and gravel. The State Supreme Court, in 1884, upheld a suit against the hydraulic mining interests filed on behalf of agricultural interests. That decision was the beginning of the end for hydraulic mining. However, extensive damage had already occurred.

Prior to the construction of levees for reclamation and flood control, the Sacramento River was confined, at normal flows, between its natural river banks. During periods of flood, large areas of the Central Valley were inundated. Flood control in Sacramento Valley had its inception with low levees constructed on the rimlands along streambanks by farmers endeavoring to protect their crops. Until 1850, ownership of the tule, swamp, and overflow lands was vested in the United States government. With the passage of the "Arkansas Act" in 1859, these lands were transferred to the State of California and made available to private

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ownership in 1865. By 1868, nearly all the land had been sold with the provision that the owners reclaim the land through the formation of reclamation districts.

By 1894, many miles of levees had been constructed along the stream channels and some of the favorably located lands had been formed into districts with levees of sufficient height to afford some degree of flood protection. By the 1930's only 25% of the land of the Sacramento Valley floor was subject to periodic inundation.

In 1893, the Congress established the California Debris Commission to deal with the loss of navigable river channels and to provide a plan to control flooding in the Valley. The flood control plan was adopted by the State Legislature in 1911 and by Congress in 1917. Adoption of the plan brought together a large number of reclamation districts and allowed reclamation of the greater part of the remaining swamps. Flood control was accomplished using a system of levees to protect farmlands, by establishing areas to bypass flows of flood water, and by constructing dams on the rivers to capture flow. The flood control plan proposed by the Debris Commission was essentially complete in the late 1960's.

Logging was not significantly regulated in California until the second half of the Twentieth Century. This hundred-year period of virtually uncontrolled harvest of trees resulted in streams being choked with sediment and debris making them inaccessible or useless for anadromous fish. During this same time the Central Valley was being developed for agriculture. Water storage and diversion projects were being built, denying anadromous fish access to historic spawning areas.

By 1960, salmon habitat in the Sacramento-San Joaquin river watersheds had been substantially reduced. Shasta Dam on the Sacramento River near Redding, constructed in 1938-44, became a barrier to all salmon in November 1942. This barrier prohibited salmon from reaching their historic spawning areas in the upper Sacramento, Pit, and McCloud rivers. The USFWS estimates that the Sacramento River historically supported an average salmon run of 600,000 fish and, at times, as many as a million salmon a year may have spawned in the river. Many of these fish would have spawned in the area above Shasta Dam. Friant Dam on the San Joaquin River, completed in 1949, resulted in the elimination of a run of spring-run chinook salmon that ranged from 2,000 - 56,000 between 1943-48. As demand for water grew, new dams were built until the Feather River was the only significant river in the Central Valley that was still relatively free-flowing. This changed in 1960 when California voters approved construction of the SWP.

Approval of the SWP resulted in the construction of the Oroville Dam on the Feather River near the town of Oroville, the Harvey O. Banks Pumping Plant in the Delta, the

California Aqueduct, and San Luis Reservoir. Oroville Dam and the other facilities were completed in 1965 which allowed the State to begin delivering water to the San Joaquin Valley and to the cities in southern California. The Oroville Dam blocked most salmon including all wild spring-run chinook salmon, changed the historic flow patterns in the river below the dam, and affected runs of anadromous fish throughout the Central Valley by reducing Delta inflow and outflow.

While the SWP was being completed, the Federal government constructed the Red Bluff Diversion Dam (RBDD) on the Sacramento River near the town of Red Bluff. This gravity diversion feeds the Corning and Tehama-Colusa canals and originally had the capacity to divert over 2,000 cubic feet of water per second (cfs). Since the enlargement of the Tehama-Colusa Canal headworks, diversion capacity at the RBDD is over 3,000 cfs.

During this same period, numerous other projects were constructed that indirectly or directly affected salmon habitat. Among these were New Bullards Bar Dam and New Scotts Flat Reservoir in the Yuba River drainage, New Melones Dam on the Stanislaus River, New Don Pedro Dam on the Tuolumne River, and New Exchequer Dam on the Merced River. The cumulative effect of these projects on anadromous fish populations was enormous. Prior to construction of these projects, flows in the rivers closely resembled historic patterns; even though the fish were blocked by the "old" dams. The new dams, however, provided cooler water during parts of the year due to reservoir stratification. Now the rivers are regulated to the point that high flows below the dams typically occur in late spring and summer during the irrigation season, and low flows occur in the fall, winter, and early spring during the storage season. This is completely inverse to the conditions in which the fish evolved. The natural channel of the San Joaquin River above the mouth of the Merced River cannot be used by salmon since it is no longer used to deliver irrigation water and there are no high flows during the summer.

The SWP's Harvey O. Banks Delta Pumping Plant and the California Aqueduct more than doubled the capacity to export water south. Prior to the installation and operation of the SWP Delta pumps, Delta water exports were limited to the quantities the Federal pumps could deliver. With the addition of the SWP export, the magnitude of reverse flows across the Delta increased, Delta outflow decreased, and the concomitant entrainment of salmon increased. The problems were exacerbated by the increased storage upstream, since less water reached the Delta and, therefore, a larger percentage of Delta inflow was exported.

Reduced instream flows below storage reservoirs affect salmon habitat in several ways. The most obvious impact is to migrating fish. Adult fish must be able to reach the spawning areas and juvenile fish must be able to emigrate to the ocean. Low flows do not flush the fine sediments from salmon spawning gravel, thus the gravel's suitability for spawning is reduced. Low streamflows also permit encroachment of riparian vegetation into spawning gravels which reduces available spawning area. Lower flows in the summer and fall result in higher water temperatures. When water temperatures exceeds 56°F, developing eggs begin to experience mortality. The rate of egg mortality greatly increases when temperatures exceed 57.5°F.

Historic Wetlands and Riparian Habitat

The lack of authentic records prevents determining the precise distribution and abundance of historic wetland and riparian habitat in California. For this reason, substantial differences exist in the estimates of the total wetland acreages in California prior to settlement by Europeans in the 19th Century. A report prepared by the USFWS in 1978 estimates the total historic wetland area at between 4.1 million and 5.0 million acres.

The State originally supported an estimated 500,000 acres of permanent freshwater marshes. The majority of this habitat occurred as tidal and nontidal marshes along the borders of Grizzly and Suisun bays and the Delta, Tulare and Kern lakes, and in basins along the Sacramento and San Joaquin rivers. These vast, permanently flooded marshes consisted primarily of cattails, several species of bulrushes, and pondweeds. These marshes, ponds, and stream channels were generally bordered by dense stands of riparian woodlands in various stages of transitional development from grasses to old growth hardwoods.

Each winter millions of additional acres of seasonal wetland were created as rivers and streams throughout the Central Valley and elsewhere in the State, swollen by rainfall and melting snow, overflowed and inundated adjacent grassland and wetland riparian forests. Vast flocks of waterfowl, which reportedly darkened the sky for several minutes as they passed, eagerly sought the temporary abundance of grass seed and terrestrial insects.

Most recently, there are an estimated 292,000 acres of seasonal or permanent wetland in the Central Valley. Approximately 70% of the existing wetlands, which are primarily duck clubs, are privately owned. State and Federal refuges comprise the other 30% of Central Valley wetlands. In addition to 292,000 acres of seasonal or permanent wetlands, post-harvest flooding of rice, corn, and wheat provides additional habitat for waterfowl and shorebirds. Though still impressive, California's great heritage of waterfowl and migratory water birds is greatly diminished and remains in jeopardy as wetlands continue to decline. Riparian woodlands have been diminished to a few isolated blocks within the flood plain and intermittent strips along the major stream courses.

YUBA RIVER

The Yuba River watershed drains 1,339 square miles of the western slope of the Sierra Nevada Mountain Range, and includes portions of Sierra, Placer, Yuba, and Nevada counties. The Yuba River is tributary to the Feather River, which in turn feeds into the Sacramento River (Figure VII-4).

Most of the water from Englebright Dam, the lowermost dam on the river and the upstream limit of anadromous fish, is released through the Narrows 1 and 2 powerhouses for hydroelectric power generation. The 0.2 miles of river between the dam and the two powerhouses has no flowing water except when the reservoir is spilling. The 0.7 miles of river downstream of the Narrows 1 and 2 powerhouses to the mouth of Deer Creek is characterized by steep rock walls, long deep pools, and short rapids. Below this area the river cuts through 1.3 miles of sheer rock gorge called the Narrows, where the river forms a single large, deep, boulder-strewn pool.

> Fall-run chinook salmon are the most abundant and important fish in the Yuba River. The Yuba is used also by spring-run chinook salmon and American shad.

The river canyon opens into a wide flood plain at the downstream end of the Narrows where large quantities of hydraulic mining debris remain from past gold mining operations. This 18.5-mile section is typified as open valley plain. Daguerre Point Dam, located 12.5 miles downstream from Englebright Dam, is the major diversion point on the lower river. The open valley plain continues 7.8 miles below Daguerre Point Dam to beyond the downstream terminus of the Yuba Goldfield. This section is composed primarily of alternating pools, runs, and riffles with a gravel and cobble substrate and, by virtue of the quality and size of the substrate, contains most of the suitable chinook salmon spawning habitat found in the lower Yuba River.

The remaining section of the lower Yuba River extends approximately 3.5 miles to the confluence with the Feather River. This section of river is bordered by levees and is subject to backwater influence of the Feather River.

Fall-run chinook salmon are the most abundant and important anadromous fish in the lower Yuba River. Historically, the Yuba River supported up to 15% of the annual run of fall chinook salmon in the Sacramento River system. Run sizes in the Yuba River have varied over the period of record (1953-1989) ranging from 1,000 fish in 1957 to 39,000 fish in 1982. Approximately 60% of those salmon spawned between Daguerre Point Dam and the Highway 20 Bridge. During the 1970's and 1980's, increased chinook salmon and American shad populations were anticipated following the completion of the New Bullards Bar Dam, however, these increases were not realized. Presently, fall-run chinook spawning runs average 13,050 fish annually, far below the 38,000 fish anticipated.

A small spring-run chinook population occurred historically in the Yuba River. However, the run virtually disappeared by 1959, presumably due to diversion and hydraulic developments on the river. A remnant population of spring-run chinook salmon persists in the lower Yuba River and is maintained by fish produced in the river, salmon straying from the Feather River, and from infrequent stocking of hatchery-reared fish by the DFG.

The lower Yuba River supports a seasonal shad sport fishery from late April to July. The fishery is generally confined to the area between Daguerre Point Dam and the confluence with the Feather River. Studies have shown that the shad fishery on the Yuba River has declined significantly in the past two decades. In 1968, the run was estimated at 30,000 to 40,000 spawners, and in 1969 at 40,000 adult fish. In recent years, the shad run has only been a fraction of 1968-69 levels. Daguerre Point Dam is believed to affect shad spawning movements. The dam is equipped with two conventional pool and weir type fishways. Shad do not generally enter fish ladders and, therefore, the majority of the population is restricted to the river below the dam.

Since the turn of the century, water development projects and diversions have had significant adverse effects on the river and its anadromous fish populations. Modification of the timing of natural flows, reduction of flows during critical periods, and alteration of spring, summer, and fall stream temperatures have contributed to the decline of the salmon, steelhead, and American shad populations. These factors affect salmon and steelhead migration flows, spawning, and growth. American shad attraction, passage, and spawning activities are also adversely affected.

The three most significant diversions along the lower Yuba River are located at or near Daguerre Point Dam, and water extraction generally occurs from late March through October. The Hallwood Irrigation Company, the Cordua Irrigation District, and the Ramirez Water District share one diversion; Brophy and South Yuba water districts another; and Browns Valley Irrigation District the third. The combined diversions add up to a maximum of 1,085 cubic feet per second (Table VII-6).

Juvenile chinook salmon are lost at all diversion intake structures due to impingement, entrainment, or predation. While losses at individual diversions may not be significant, the cumulative impact from all diversions is substantial.

TABLE VII-6. Summary of Diversion Rates in Acre-feet per Month for the Major Water Districts Supplied by the Yuba County Water Agency (YCWA), Lower Yuba River, California, from DFG Lower Yuba Fisheries Management Plan, 1991.

	Hallwood Irrigation Company	Cordua Irrigation District		Ramirez Water District	Browns Valley Irrigation District		Brophy Water District	South Yuba Water District
Month	WR*	WR	PW+	WR	WR	PW	PW	PW
March	0	0	0	0	0	0	520	300
April	10,000	4,500	900	2,010	2,269	1,667	4,795	3,000
May	14,500	10,600	2,120	3,270	2,345	1,666	6,460	5,000
June	14,100	10,400	2,080	2,745	2,269	1,667	6,670	6,200
July	13,600	11,100	2,620	1,920	2,345	2,500	6,985	4,400
August	12,900	11,000	2,600	1,755	2,345	2,600	5,525	3,400
Sept.	8,000	5,900	1,180	1,500	2,269	0	3,750	2,400
Oct	4,900	6,500	500	700	2,345	0	625	400
Total	78,000	60,000	12,000	13,900	16,187	9,500	35,330	22,100
Max cfs	275	-	275	75	38.2	42	230	150

* (WR) Basic water right of respective water district.
+ (PW) Purchase water through contract with YCWA.

During planning for the development of the Yuba River Basin in the late 1950's and early 1960's, projections were made of the expected benefits to the Yuba River fishery of construction of New Bullards Bar Dam and Reservoir. The DFG projected that increased streamflow and better water temperature control would result in improving the average fall-run chinook salmon run to over 38,000 fish. The maximum run was expected to exceed 80,000 fish. However, since impoundment of New Bullards Bar Reservoir in 1969, the average fall chinook salmon run has not improved.

The DFG estimated that prior to 1970, approximately 200 steelhead trout spawned in the river annually, and there was a potential for about 2,000 spawners after completion of New Bullards Bar Reservoir. While no definitive population estimates exist, limited information suggests that lower Yuba River steelhead trout populations may have increased.

At present, sufficient quantity of uncommitted water remains in the Yuba River system (New Bullards Bar Reservoir) to restore the river's anadromous fishery. Unless

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action is taken immediately to obtain increased flows and adequate temperatures for fish, the opportunity to increase anadromous fish populations will be lost. Obtaining the needed streamflow, temperature, and screening for the lower Yuba River will affect storage in Bullards Bar Reservoir and will require changing operations at the existing diversions.

Priority Ranking and Cost of Implementation

Recommendations to improve anadromous fish habitat in the Yuba River:

Priority	Anadromous Fish Habitat Restoration Action	Cost
A-1	Install screen on Browns Valley Irrigation District diversion.	No Estimate
A-1	Replace screens on South Yuba-Brophy and the Hallwood-Cordua diversions.	No Estimate
A-2	Improve spawning and rearing habitat.	$1,000,000
B-3	Protect and manage riparian habitat.	$100,000/yr

Recommendations for administrative actions to improve anadromous fish habitat in the Yuba River:

Priority	Administrative Action to Improve Anadromous Fish Habitat	Agency
A-1	Ensure compliance with fish screening requirements in Fish and Game Code Section 6100.	DFG
A-1	Require the following temperatures and streamflows to protect salmon and steelhead in the Lower Yuba River: Maximum Temperature (F) Period / @Daguerre / @Marysville Oct - Mar: 56 / 57 April: 60 / 60 May: NR / 60 June: NR / 65 Jul - Aug: 65 / NR Sept: NR / 65 Streamflow (cfs) Period / @Marysville Oct-Mar: 700 April: 1,000 May: 2,000 June: 1,500 Jul-Sept: 450	SWRCB
A-2	Develop a plan to increase rearing habitat for juvenile salmon and steelhead.	DFG
B-1	Regulate gravel extraction to protect salmon and steelhead spawning areas.	DFG County

Recommendation for evaluation of anadromous fish habitat in the Yuba River:

Priority	Evaluation Action to Determine Habitat Needs for Anadromous Fish	Cost
A-1	Inventory all water diversions in the drainage from Englebright Dam to the Feather River.	$25,000

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DECLARATION OF ALAN B. LILLY

I, Alan B. Lilly, declare:

1. I am an attorney of record for the Yuba County Water Agency in this proceeding. The facts stated in this declaration are based on my own personal knowledge. This declaration is being submitted pursuant to title 23, California Code of Regulations, section 768, subdivision (c), to provide relevant evidence that, in the exercise of reasonable diligence, could not have been produced during the 1992 or 2000 hearing in this proceeding, and to satisfy the requirements of title 23, California Code of Regulations, section 769, subdivision (b).

2. On March 1, 2001, I attended the State Water Resources Control Board ("SWRCB") meeting during which Water Right Decision 1644 ultimately was adopted. That meeting began with an SWRCB staff presentation and then the SWRCB received comments from representatives of interested parties and members of the public. SWRCB Chairman Arthur G. Baggett, Jr. then announced that the SWRCB would hold a closed session to consider the draft water right decision. I saw the SWRCB board members, several SWRCB staff members and Deputy Attorney General Clifford T. Lee go into the room where the closed session was held. Then, approximately 45 minutes later, I saw the SWRCB board members, SWRCB staff members and Mr. Lee emerge from the room. The SWRCB board members then made a few public comments and then voted to adopt Decision 1644.

3. My understanding, based on my employment by the California Attorney General's Office from 1985 through 1989 and my review of numerous court pleadings filed by the Attorney General's Office in various court cases, is that Mr. Lee works in the Natural Resources Section of the Public Rights Division of the Attorney General's Office. Deputy Attorney General William Cunningham, who represented the California Department of Fish and Game ("DFG") during the 2000 hearing in this proceeding, presently works in this same section of the Attorney General's Office. Both Mr. Lee and Mr. Cunningham have worked in this section of the Attorney General's Office since some date before 1985. Former Deputy Attorney General Denis Smaage, who represented DFG during the 1992 hearing in this proceeding, also worked in this section of the Attorney General's office continuously from some date before 1985 until his retirement, which was some time after the end of the 1992 hearing.

4. The additional evidence described in and attached to this petition for reconsideration is available now and was not submitted during the 1992 or 2000 hearing in this proceeding because it was not available at those times. Specifically, we had no opportunity to conduct discovery regarding SWRCB environmental specialist Alice Low, only obtained her resume after the end of the 2000 hearing, and only became aware that she was a co-author of the DFG Plan for Action after the end of the 2000 hearing.

5. The accompanying Declaration of Stephen E. Grinnell describes hydrological analyses of the instream-flow requirements in Decision 1644. While Mr. Grinnell prepared hydrological analyses of the instream-flow requirements in earlier draft decisions (and previously testified about the results of these analyses to the SWRCB during the 2000 hearing), he could not perform the analyses that are described in his declaration until February 16, 2001, when the last draft decision in this proceeding was made available to the public. That draft decision contained the long-term instream-flow requirements that were adopted in Decision 1644. Prior draft decisions had different proposed requirements.

6. The accompanying Declaration of Paul M. Bratovich describes the analyses that he and his colleagues made of the DFG lower Yuba River rotary screw trap ("RST") data. Although DFG biologist John Nelson testified under oath during the 2000 hearing on April 4, 2000 that there would be "[n]o problem" in providing copies of the RST data to the Yuba County Water Agency ("YCWA"), DFG then refused to provide the data to YCWA for many months, despite several requests from YCWA. To obtain these data, YCWA sent a Public Records Act request to DFG on November 8, 2000. DFG finally produced some of the RST data on December 21, 2000. Since then, DFG has provided YCWA with copies of additional RST data. These data therefore were not available for Mr. Bratovich to analyze before the 2000 hearing, which ended on May 17, 2000. Copies of the hearing transcript containing Mr. Nelson's testimony on this point and the relevant letters between YCWA and DFG are attached at tab 12.

Executed at Sacramento, California on March 30, 2001.

I declare under penalty of perjury that the foregoing is true and correct.

Alan B. Lilly

Alan B. Lilly

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Declaration of Stephen E. Grinnell, P.E.

I, Stephen E. Grinnell, P.E., declare:

1. I am a licensed Civil Engineer in the State of California and Director of Bookman-Edmonston Engineering, the Water Resources Division of Navigant Consulting, Inc. The facts stated in this declaration are based on my own personal knowledge.

2. For the State Water Resources Control Board (SWRCB) hearings held in 1992 and in 2000 regarding the Lower Yuba River, Bookman-Edmonston Engineering (B-E) submitted testimony on behalf of the Yuba County Water Agency (YCWA) regarding the hydrologic effects of the California Department of Fish and Game's (CDFG) proposed and the 1996 SWRCB draft decision's instream flow and temperature criteria. The effects analyzed included the ability of YCWA to meet the various instream flow and temperature criteria and the resulting impacts on operations of New Bullards Bar Reservoir and its ability to meet consumptive use demands within Yuba County, to provide hydrogeneration from the New Colgate and Narrows II Powerhouses, to provide for fishery flows, and to continue to provide for statewide water needs through out-of-county transfers. Much of this analysis was accomplished using a Corps of Engineers HEC-5 simulation model of the Yuba River Basin. Prior to the 2000 SWRCB hearing, the SWRCB staff requested that B-E provide a copy of the model for analysis by the California Department of Water Resources (DWR), to be performed per the directions of the SWRCB staff. The model was provided, and DWR prepared an analysis of the model, which was submitted as testimony by Dr. Sushil Aurora, P.E. of DWR. Subsequently, the SWRCB utilized the model to analyze draft water right decision flows and present resulting impacts of the final order, Decision 1644 (D-1644).

3. Simulation results of the HEC-5 Yuba River Basin Model are presented herein to assess the instream flow requirements of D-1644 and the impacts on consumptive use demands, New Bullards Bar Reservoir carryover storage levels, power generation, and instream flows. The operations and simulation procedures of the Yuba River Basin Model are described in SWRCB hearing Exhibit S-YCWA-13, *Yuba River Basin Model: Operations and Simulation Procedures* (B-E 2000).

4. D-1644 contains two instream flow schedules for YCWA Water Right Permits 15026, 15027, and 15030 pertaining to the Lower Yuba River. The first schedule contains interim instream flow requirements that are applicable from the date of D-1644 to April 20, 2006. For this declaration, this instream flow requirement schedule is referred to as it is in D-1644, the "interim instream flows." This schedule is similar to the one proposed by YCWA in its Fishery Management Plan that was submitted during the 2000 hearing. The second instream flow requirement schedule is scheduled to go into effect beginning April 21, 2006, and is

referred to herein as it is in D-1644, the "long-term instream flows." Presented herein are simulation results and analysis for the long-term instream flow requirements in D-1644.

5. To prepare this declaration, simulations of the Yuba River Basin Model for the long-term flow requirements for 12 scenarios were developed. Summary results for each of the 12 scenarios are provided in Attachment A. Eight of these scenarios are the resulting combinations of four different consumptive use demand patterns, with and without the D-1644 Term 10 instream flow reductions and with the operational requirements of the current power generation practices of PG&E for New Colgate Powerhouse and Narrows II Powerhouse. The four consumptive use demand patterns are (1) the present level of demands estimated by the SWRCB and used in the D-1644 analysis, which total 273,847 acre-feet per year; (2) the SWRCB present demands plus the additional demands of the Wheatland Water District and the Dry Creek Mutual Water Company as stated in Term 10 of D-1644, totaling 331,445 acre-feet per year, which are labeled for this analysis as the "SWRCB Future Level of Demand," (3) the YCWA estimated present demands, which total 311,081 acre-feet per year; and (4) the YCWA estimated full development level of demands, which total 381,936 acre-feet per year, as presented in hearing Exhibit S-YCWA-15. The two different instream flow criteria used in these scenarios are the D-1644 long-term instream flows with no reductions and the long-term instream flows with the reductions that might be allowed by Term 10 of D-1644. Both scenarios for instream flows are included because it is uncertain whether instream flow reductions described in Term 10 would be permitted by the Division Chief, and to demonstrate that the Term 10 allowed flow reductions would not always reduce demand deficiencies to 20 percent of the total demand as suggested by D-1644.

6. In addition to the eight scenarios described above, four scenario result summaries are presented which incorporate the operations of the system under all of the requirements of the 1966 PG&E Power Purchase contract. The specifics of this contract are described in SWRCB hearing Exhibit S-YCWA-13. D-1644 provides no analysis and no discussion of the impacts of the D-1644 instream flow requirements that would occur if the system were operated to all of the terms of the PG&E Power Purchase Contract. Table 1 is a summary of the 12 scenarios discussed in this declaration.

Table 1
Summary of Scenario Features

Scenario	Power Production		Demand Level				Instream Flow Requirements	
	Current PG&E Practice	PG&E Power Purchase Contract	YCWA Present	YCWA Full Development	SWRCB Present	SWRCB Future	SWRCB 2001 Order	SWRCB 2001 Order with Term 10 Flow Reductions
17	•		•				•	
18	•			•			•	
19		•	•				•	
20		•		•			•	
21	•				•		•	
22	•					•	•	
23		•			•		•	
24		•				•	•	
25	•		•					•
26	•			•				•
29	•				•			•
30	•					•		•

Demands

7. For all of the simulation results presented in D-1644, the SWRCB used an estimated annual consumptive use demand of 273,847 acre-feet per year. By using this estimated demand, the D-1644 analysis does not include any allowance for the continuing development of Yuba County and even fails to include the future demands of the Wheatland Water District and the Dry Creek Mutual Water Company, which even D-1644 recognizes in Term 10 of D-1644. According to D-1644, the estimated demand of 273,847 acre-feet per year is the average of the five highest years of the total "adjusted" historic diversion demands. The adjustment that D-1644 made was to use the historical diversions for crop irrigation but to limit the amount of water for waterfowl habitat and rice stubble decomposition to a calculated amount based on one acre-foot per acre of applied water plus 10 percent for conveyance losses. In addition, the D-1644 analysis did not include any future use of Yuba River water for municipal and industrial demands. YCWA estimated full development level of demand, as described in S-YCWA-15, includes 30,000 acre-feet for municipal and industrial uses. This demand recognizes the projected increase in development in the foothill areas of Yuba County, which generally do not have significant groundwater resources and also recognizes the potential for increase surface water demands for urban uses due to poor groundwater conditions.

8. In order to analyze the full impacts of D-1644, the results presented herein include an analysis of the impacts of the required long-term instream flows on the YCWA estimated present and full development level of consumptive use demands.

Discussion of SWRCB Instream Flows

9. The D-1644 long-term instream flows are defined for six water year types. The six water year types are derived from the water year types defined by B-E as presented in hearing testimony Exhibit S-YCWA-14, *Yuba River Index: Water Year Classifications for the Yuba River.* This testimony presented a methodology and results for the determination of a Yuba River Index and five different water year type classifications based on the hydrologic conditions within the Yuba River watershed. The classification in S-YCWA-14 included five water year types: wet, above normal, below normal, dry, and critical. The principles used to determine the Yuba River Index and the five water year types followed the methodology for the development of the Sacramento Valley Index and the San Joaquin River Index, which were developed for the SWRCB's 1995 Water Quality Control Plan. D-1644 includes a sixth water year type, extreme critical. D-1644 provides no explanation for inclusion of this additional water year type. Table 2 contains the D-1644 long-term instream flow requirements for each of the six water year types at the two required locations, Marysville Gage and Smartville Gage.

Table 2
Summary of D-1644 Long-Term Instream Flow Requirements

Periods	Wet, Above Normal, & Below Normal Years (cfs)		Dry Years (cfs)		Critical Years (cfs)		Extreme Critical Years* (cfs)	
	Smartville Gage	Marysville Gage	Smartville Gage	Marysville Gage	Smartville Gage	Marysville Gage	Smartville Gage	Marysville Gage
Sep 15-Oct 14	700	250	500	250	400	250	400	250
Oct 15-Apr 20	700	500	600	400	600	400	600	400
Apr 21-Apr 30	--	1,000	--	1,000	--	1000	--	500
May 1-May 31	--	1,500	--	1,500	--	1100	--	500
Jun 1	--	1,050	--	1,050	--	800	--	500
Jun 2	--	800	--	800	--	800	--	500
Jun 3-Jun 30	--	800	--	800	--	800	--	500
Jul 1	--	560	--	560	--	560	--	500
Jul 2	--	390	--	390	--	390	--	390
July 3-Sep 14	--	250	--	250	--	250	--	250

*Extreme critical year classification is defined as equal to or less than 540 TAF on the Yuba River Index scale.

10. The water year type classification is used to determine the instream flow requirements. The Marysville Gage is located at the lower reach of the Yuba River, below the major diversions located just upstream of Daguerre Point Dam. Therefore, water required for the instream flows at the Marysville Gage cannot be diverted for the majority of demands within Yuba County and is a separate demand on the available water in the Lower Yuba River. Table 3 lists the D-1644 long-term instream flow total annual requirements at the Marysville Gage. The wet, above normal and below normal total annual flow requirements are 400,066 acre-feet. For dry years, the annual requirement is reduced by about 9 percent, which is due to the reduction of the minimum flow requirement from 500 cubic feet per second (cfs) to 400 cfs for the October 15 to April 20 time period. For critical years, the total annual requirement is

337,686 acre-feet, which is a reduction from the wet, above and below normal year requirement of about 15 percent. For extreme critical years, the total annual flow requirement is 272,906 acre-feet, which is a 32 percent reduction. However, because of the criteria by which the flow requirements are implemented as stipulated in D-1644, the actual reductions often will not result in the reductions listed for a given water year type.

Table 3
Total Annual Instream Flow Requirements of D-1644 for Each Water Year Type

D-1644 Water Year Type					
Wet	**Above Normal**	**Below Normal**	**Dry**	**Critical**	**Extreme Critical**
400,066	400,066	400,066	362,777	337,686	272,906

11. D-1644 requires that instream flows be established using the April 1 forecast of unimpaired flows of the Yuba River at Smartville as determined by the DWR and then are to run from April 1 of the current year to March 30 of the following year. It is well established in California that the water year, which corresponds to the natural hydrologic cycle and which takes into consideration the effects of hydrology on water supply, runs from October 1 to September 30 of the following year. As a practical matter, water supply planning for a given water year cannot begin until some forecast of water supply conditions can be made. DWR begins preparing forecasts as early as January 1. For the Yuba River Index, as described in Exhibit S-YCWA-14 and as included in Appendix 1 of D-1644, water year type classification determinations are first made in February, based on the February 1 DWR forecast.

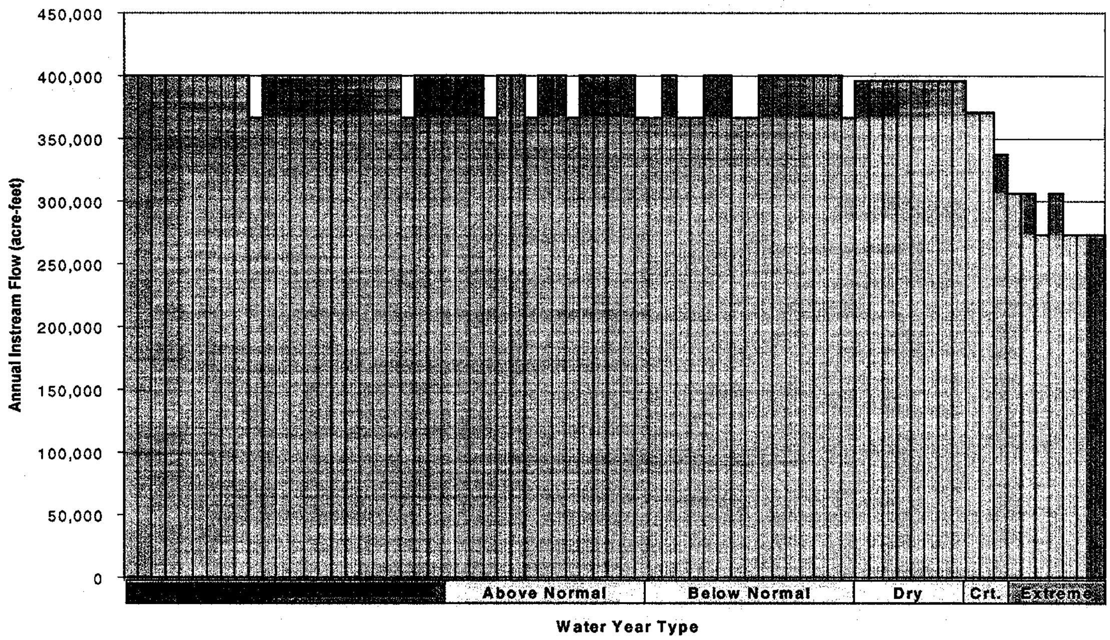
12. For the model simulations, a 71-year period of record from 1922 to 1992 is used. In accordance with D-1644, instream flow requirements are determined for each year and are imposed from April 1 through March 30 of the following year, based on the current water year type. Table 4 lists the calculated instream flow requirements for the 71-year period of record, using the requirements of D-1644 for determining instream flows and using historical unimpaired flows for the Yuba River at Smartville, as determined by DWR to calculate the water year types.

Table 4
Yuba River Required Instream Flows at
Marysville Gate Per D-1644

Year	Year Type	Total (AF)	Year	Year Type	Total (AF)
1922	Wet	400,066	1958	Wet	400,066
1923	Above Normal	400,066	1959	Dry	396,099
1924	Extreme Critical	306,228	1960	Below Normal	366,744
1925	Below Normal	366,744	1961	Critical	371,008
1926	Below Normal	400,066	1962	Below Normal	366,744
1927	Wet	400,066	1963	Wet	400,066
1928	Above Normal	400,066	1964	Below Normal	400,066
1929	Dry	396,099	1965	Wet	400,066
1930	Below Normal	366,744	1966	Below Normal	400,066
1931	Extreme Critical	306,228	1967	Wet	400,066
1932	Below Normal	366,744	1968	Below Normal	400,066
1933	Dry	396,099	1969	Wet	400,066
1934	Extreme Critical	272,906	1970	Wet	400,066
1935	Above Normal	366,744	1971	Wet	400,066
1936	Above Normal	400,066	1972	Below Normal	400,066
1937	Above Normal	400,066	1973	Above Normal	400,066
1938	Wet	400,066	1974	Wet	400,066
1939	Dry	396,099	1975	Wet	400,066
1940	Above Normal	366,744	1976	Extreme Critical	306,228
1941	Wet	400,066	1977	Extreme Critical	272,906
1942	Wet	400,066	1978	Above Normal	366,744
1943	Wet	400,066	1979	Below Normal	400,066
1944	Below Normal	400,066	1980	Wet	400,066
1945	Above Normal	400,066	1981	Dry	396,099
1946	Above Normal	400,066	1982	Wet	366,744
1947	Dry	396,099	1983	Wet	400,066
1948	Above Normal	366,744	1984	Wet	400,066
1949	Below Normal	400,066	1985	Below Normal	400,066
1950	Above Normal	400,066	1986	Wet	400,066
1951	Wet	400,066	1987	Critical	371,008
1952	Wet	400,066	1988	Extreme Critical	272,906
1953	Wet	400,066	1989	Below Normal	366,744
1954	Above Normal	400,066	1990	Dry	396,099
1955	Dry	396,099	1991	Critical	337,686
1956	Wet	366,744	1992	Extreme Critical	272,906
1957	Above Normal	400,066			

13. Figure 1 is a graph of the data in Table 4 and demonstrates the minimal variation of D-1644 instream flow requirements for the six water year types.

Figure 1
D-1644 Calculated Instream Flow
Requirement for the 1922 to 1992 Period of Record



14. Figure 1 shows that for the 71 years, 8 of the years would be classified as dry. For each of these eight years, the previous year is either wet, above normal or below normal and, therefore, the October through March flow is 500 cfs rather than a dry year flow of 400 cfs. This results in a total water year flow requirement of 396,099 acre-feet, which is only 3,967 acre-feet less than the wet year requirement, or a reduction of less than one percent. For the three critical years of the 71 years of record, the annual water year requirements would be 371,008 acre-feet in two years, 1961 and 1987, which is only a 7 percent reduction from the wet year requirement, and 337,686 acre-feet the third year, 1991. For extreme critical years, of which there are seven, four of the seven would have the full reduction from the wet year requirement of about 32 percent; for the other three years, the reduction would be 23 percent. Therefore, for the 71-year period of record, which includes 18 years that are dry, critical or extreme critical, only seven of the years, all of which are extreme critical, would have any significant instream flow reductions, and only four of these seven would receive the full reduction in instream flows that is specified in D-1644 for extreme critical years. This limited reduction in instream flows at times when the unimpaired flow of the Yuba River is significantly reduced is due to two factors, the inadequate variability of the instream flow requirements in D-1644 and the imposition of previous year instream flow requirements until April, even when greatly reduced runoff conditions are in place for the previous six months of the present water year.

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D-1644 Term 10

15. Even with the substantial under-estimation of present demands used in the analysis of D-1644, there still are three years when deficiencies in deliveries resulting from the long-term instream flow would exceed 20 percent. As reported in D-1644, Table C-5, these years are 1939 (30.7 percent), 1977 (40.1 percent) and 1987 (26.3 percent). The level of total annual delivery demand for this analysis is 273,847 acre-feet.

16. Term 10 of D-1644 states that YCWA may file a request with the Division Chief for a temporary reduction of instream flow requirements, if YCWA projects that it will have deficiencies of more than 20 percent of the projected demand for surface water deliveries for the calendar year. However, this calculation of projected demand has several significant limitations. The projected demand may be no greater than 273,847 acre-feet plus the projected demand of the Wheatland area and Dry Creek Mutual Water Company, not to exceed 40,855 acre-feet and 16,743 acre-feet, respectively. The instream flows may be reduced only to the extent that would allow for delivery of 80 percent of the demand, as calculated using the stated demand quantities. Table 5 lists the SWRCB present demand, the SWRCB full development demand, as used herein to represent the addition of the Wheatland area and Dry Creek Mutual Water Company, the maximum demand under which an instream flow reduction can be requested pursuant to Term 10, YCWA estimated present and full development demands and the deficiency percentage if the demand delivery is limited to 80 percent of the SWRCB demands.

Table 5
Demand Deliveries Allowed with D-1644 Term 10 Instream Flow Reductions

Demand	SWRCB Estimated	80% of Delivery of SWRCB Estimated Demand	YCWA Estimated Demand	Percent of YCWA Estimated Demand Delivery Allowed with Term 10
Present	273,847	219,078	311,081	70%
Full Development	331,445	265,156	381,936	69%

17. In addition to the limitations on the projected demands that may be used to determine deficiencies for Term 10, Term 10 also contains limitation on the amount of reduction that may be applied and limitations on the time period for imposing reductions. Term 10 states that the Division Chief shall have the authority to approve a temporary reduction in the instream flow requirements for the period of April 21 through December 31 (or a portion thereof) of the year in which the flow reduction request is submitted. The reduced flows may not be lower than the flows listed in Term 1 as the interim instream flows. This condition effectively limits the time period for which instream flow reductions can be requested to April 21 through September 30 because the interim instream flows required at the Marysville

Gage for October 1 through December 31 are identical to the long-term instream flows. Another limitation to Term 10 is that the interim instream flows for the June time period may not be lower than the flows that would be required under the 1965 YCWA/California Department of Fish and Game (CDFG) Agreement flow. The minimum June flows for the 1965 Agreement are dependent on the estimate of unimpaired flow of the Yuba River at Smartville, with allowed reductions of 15, 20 and 30 percent corresponding to forecasts of 50, 45 and 30 percent of the 50-year average of unimpaired flow. These criteria result in a range of allowed instream flow reductions from none to a maximum reduction in extreme critical years of 66,504 acre-feet (including operational buffers). Because Term 10 is only applicable when deficiencies of greater than 20 percent are projected, and this would only occur in drier years, the instream flows and consumptive use demands are competing for the limited available water supply. Therefore, the maximum reduction amount of 66,504 acre-feet is about the amount of maximum increase of consumptive use demands that could be gained from the imposition of Term 10 instream flow reductions in an extreme critical year.

Simulation Results

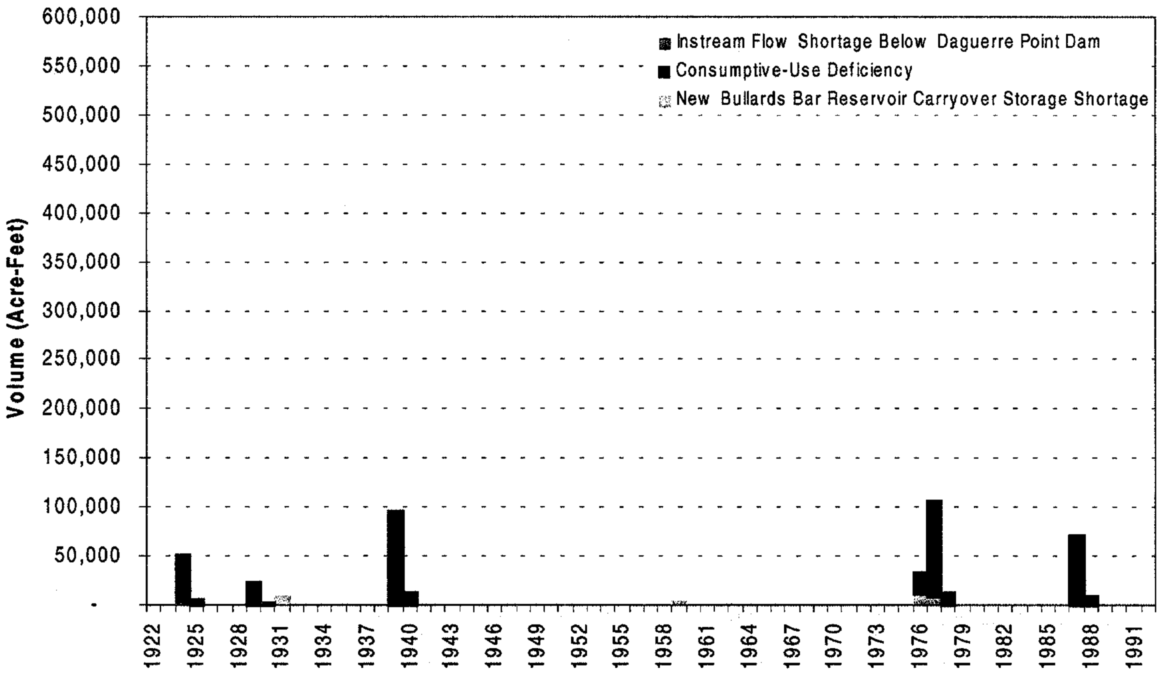
18. The Yuba River Basin Model simulation results are provided for the 12 scenarios listed in Table 1. For Scenarios 17 through 24, a summary table provides simulated annual results, including consumptive use deliveries, delivery deficiencies, instream flow requirements, instream flow shortages, carryover storage requirements, New Bullards Bar Reservoir storage shortages, and additional FERC flow requirements. For Scenarios 25 through 32, which include simulation of the Term 10 instream flow reductions, the summary tables also include the instream flow reduction imposed under Term 10 in acre-feet and the reduction expressed as a percentage of the total required instream flow. The tables list the instream flow requirements as below Daguerre Point Dam, which is used in the model to represent the flow requirements at the Marysville Gage.

Scenarios with Differing Levels of Demands

19. Four varied demand estimates are used in these scenario simulations. These are (1) the SWRCB present demand, which is the demand used in the analysis of D-1644; (2) the SWRCB full development demand; (3) the YCWA estimate of present demands; and (4) the YCWA estimate of full development level of demands. The SWRCB full development demand is the SWRCB present demand plus the addition of 40,855 acre-feet for the Wheatland area and 16,743 acre-feet for Dry Creek Mutual Water Company, which are the maximum demands under which an instream flow reduction can be requested pursuant to Term 10 and are the YCWA estimated demands for these two areas within Yuba County. This total demand is 331,445 acre-feet.

20. Scenario 21 includes the current PG&E power practice, the SWRCB estimated present demand, and D-1644 long-term instream flows. This scenario is the same as the simulation that is presented in D-1644, Tables C-1 through C-10.

Figure 2
Summary of Simulation Results (Scenario 21): Instream Flow Shortages, Delivery Deficiencies, and New Bullards Bar Reservoir Carryover Storage Shortages



21. The simulation results of Scenario 21 are summarized as follows.

- **Consumptive Use Deficiencies:** The consumptive use deficiencies range from zero to 99,000 acre-feet, with an average of 5,786 acre-feet. The maximum deficiency occurs in 1977 and is about 35 percent of the total demand. Most of the deficiencies occur in extreme critical years. Deficiencies are also present in dry and critical years. Deficiencies are imposed in 1939, a dry year, with a deficiency of 96,000 acre-feet, and in 1987, a critical year, with a deficiency of 72,000 acre-feet. These deficiencies occur because the instream flow requirement for these drought years is not significantly reduced from the wet year instream flow requirements, even though water availability in the Lower Yuba River is significantly lower. For above normal and below normal years, some minor deficiencies are present. However, most of the deficiencies are results of the dry conditions in the previous year, because the demand deficiency is imposed uniformly from April of the current year to March of the following year.

- **Instream Flow Requirements**: All instream flow requirements are met. An annual instream flow of about 394,000 acre-feet (after operation allowance) is required under D-1644. For the driest year of record, 1977, the annual instream flow requirement is 283,348 acre-feet (with operational buffer added). The year 1977 was the second year of the 1976-1977 drought. The Yuba River unimpaired flow near Smartville in 1977 was about 370,000 acre-feet, and only about 239,000 acre-feet was available to the Lower Yuba River Basin after the upstream depletions by PG&E, Nevada Irrigation District (NID) and Oroville-Wyandotte Irrigation District (OWID). (See Exhibit S-YCWA-13 for details of upstream impairments.)

- **Carryover Storage Requirements**: The average carryover storage requirement[1] is about 584,000 acre-feet, and the average storage shortage is about 375 acre-feet, with a maximum storage shortage of about 11,000 acre-feet in 1931.

- **Additional FERC Flow Requirements**: The FERC flow requirements are considered an add-on to the existing flow requirements for instream flows and consumptive use diversions. Therefore, the additional requirements have a greater impact in the below normal or drier years. The additional FERC flow requirement for the 1977 water year is 45,000 acre-feet, which when added to demands on New Bullards Bar storage, would increase the demand deficiency for that year.

22. Scenario 17 includes the current PG&E power practice, the YCWA estimated present demand, and D-1644 long-term instream flows.

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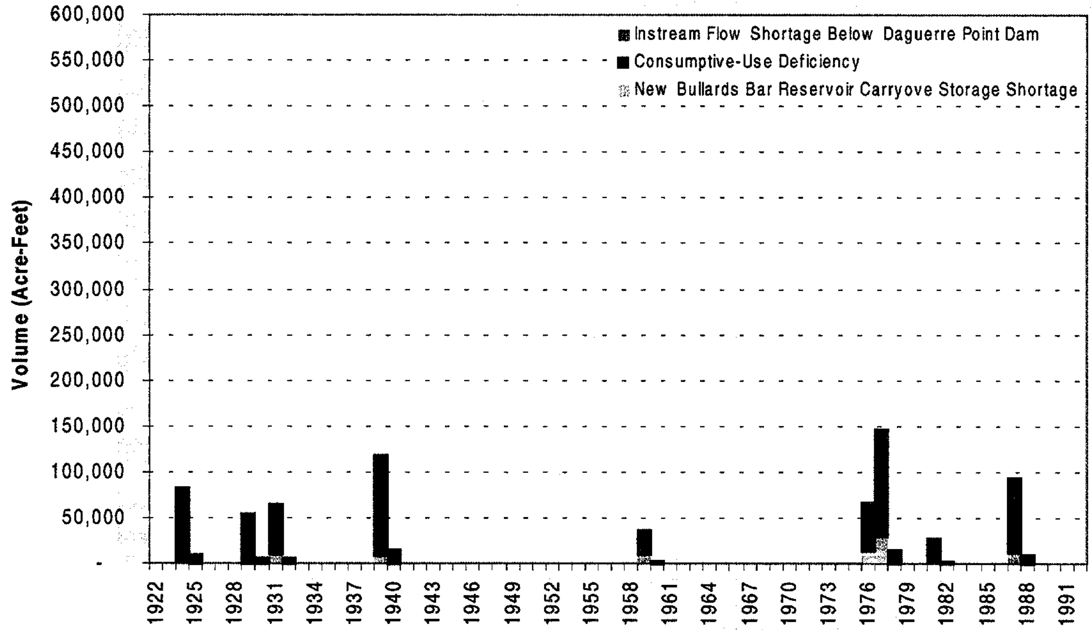
[1] Carryover storage requirement is a function of instream flow requirement, consumptive use deficiencies demand, and the desired drought protection level.

Figure 3
Summary of Simulation Results (Scenario 17): Instream Flow Shortages, Delivery Deficiencies, and New Bullards Bar Reservoir Carryover Storage Shortages



23. The simulation results of Scenario 17 are summarized as follows.

- **Consumptive Use Deficiencies:** The consumptive use deficiencies range from zero to 117,000 acre-feet, with an average of 9,641 acre-feet. The maximum deficiency occurs in 1977 and is about 38 percent of the total demand. Most of the deficiencies occur in extreme critical years. Demand deficiencies are also present in dry and critical years. Deficiencies are imposed in 1939, a dry year, with a deficiency of 109,000 acre-feet and in 1987, a critical year, with a deficiency of 82,000 acre-feet. These deficiencies occur because the instream flow requirement for these drought years are not significantly reduced from the wet year instream flow requirements, even though water availability in the Lower Yuba River is significantly reduced.

- **Instream Flow Requirements**: All instream flow requirements are met.

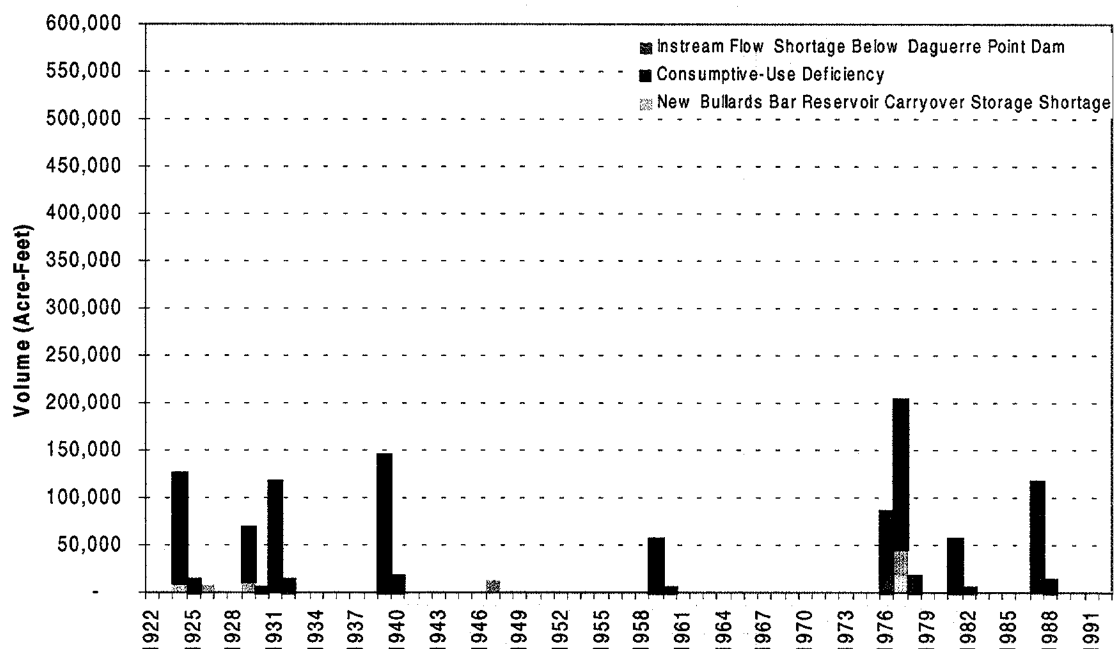
- **Carryover Storage Requirements**: The average carryover storage requirement is about 584,000 acre-feet, and the average storage shortage is about 1300 acre-feet, with a maximum storage shortage of about 30,000 acre-feet in 1977.

24. Comparing the results of Scenario 21 with the results of Scenario 17 demonstrates that the SWRCB underestimation of present demand leads to an underestimation of delivery deficiencies. The average extreme critical year deficiency for Scenario 21, which includes

the SWRCB present demands, is 25,934 acre-feet, while the average extreme critical year deficiency for Scenario 17, with the YCWA present demands, is 45,589 acre-feet, an increase of about 20,000 acre-feet.

25. Scenario 22 includes the current PG&E power practice, the SWRCB estimated full development level of demand, and D-1644 long-term instream flows. D-1644 does not contain an analysis of impacts of the long-term instream flow requirements on future demands. However, D-1644 does acknowledge (in Term 10) the potential addition of Dry Creek Mutual Water Company and Wheatland Water District to the demands on the Lower Yuba River. During the 2000 hearings, YCWA and Dry Creek Mutual Water Company testified that YCWA is already serving portions of Dry Creek Mutual Water Company and that full service to this area is planned in the near future.

Figure 4
Summary of Simulation Results (Scenario 22): Instream Flow Shortages, Delivery Deficiencies, and New Bullards Bar Reservoir Carryover Storage Shortages



26. The simulation results of Scenario 22 are summarized as follows.

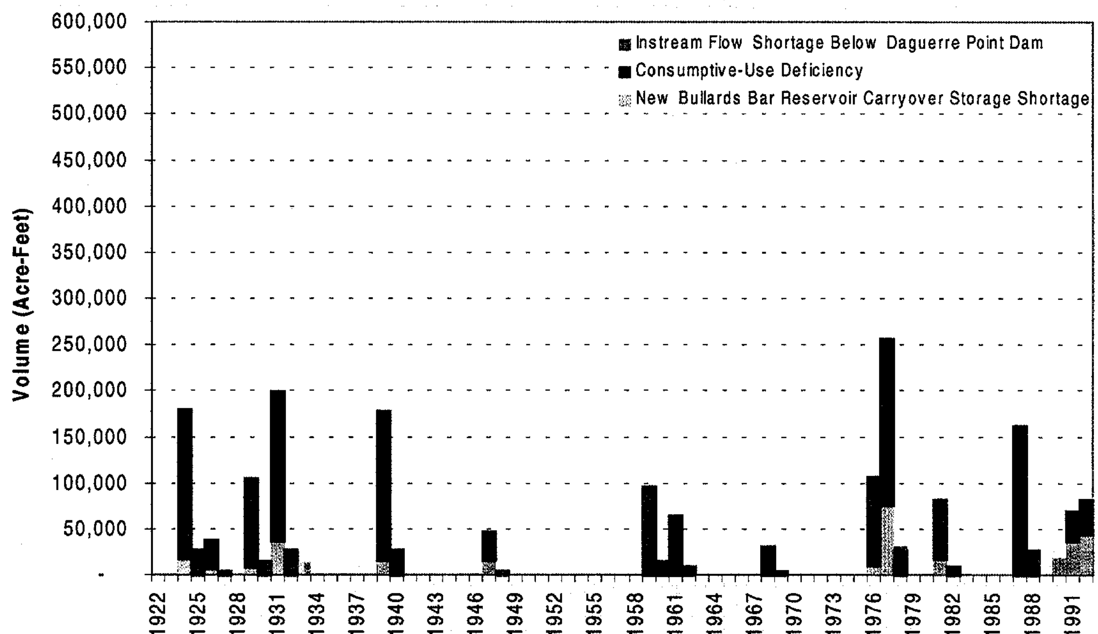
- **Consumptive Use Deficiencies:** The consumptive use deficiencies range from zero to 158,000 acre-feet, with an average of 14,467 acre-feet. The maximum deficiency occurs in 1977 and is almost 50 percent of the total demand. Deficiencies occur in all but two of the extreme critical years. The average extreme critical year deficiency is 70,832 acre-feet. Significant deficiencies are also present in dry and critical years.

- **Instream Flow Requirements**: All instream flow requirements are met.

- **Carryover Storage Requirements**: The average carryover storage requirement is about 584,000 acre-feet, and the average storage shortage is about 1400 acre-feet with a maximum storage shortage of about 50,000 acre-feet in 1977. Storage is completely depleted down to the dead pool in New Bullards Bar Reservoir in the fall of 1977 for the months of October and November.

27. Scenario 18 includes the current PG&E power practice, the YCWA estimated full development level of demand, and D-1644 long-term instream flows.

Figure 5
Summary of Simulation Results (Scenario 18): Instream Flow Shortages, Delivery Deficiencies, and New Bullards Bar Reservoir Carryover Storage Shortages



28. The simulation results of Scenario 18 are summarized as follows.

- **Consumptive Use Deficiencies:** The consumptive use deficiencies range from zero to 180,000 acre-feet, with an average of 23,049 acre-feet. The maximum deficiency occurs in 1977 and is almost 50 percent of the total demand. Deficiencies occur in all but one of the extreme critical years. The average extreme critical year deficiency is 95,745 acre-feet. Substantial deficiencies are also present in below normal, dry and critical years. In 1939, a

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dry year, the deficiency is about 163,000 acre-feet, or 43 percent of the total demand. For this year, the total instream flow requirement is only about one percent lower than the wet year requirement.

- **Instream Flow Requirements**: In 1978, an instream flow shortage of 3,711 acre-feet occurs because New Bullards Bar Reservoir storage is depleted and the available flow in the Yuba River is not sufficient to satisfy the instream flow requirement. During the months of October and November 1977, when this occurs, all flow is going to instream flows and no water is diverted for consumptive use demands.

- **Carryover Storage Requirements**: The average carryover storage requirement is about 585,000 acre-feet, and the average storage shortage is 4,569 acre-feet, with a maximum storage shortage of 77,000 acre-feet in 1977. Storage is completely depleted down to the dead pool in New Bullards Bar Reservoir in the fall of 1977 for the months of October and November.

29. The results of Scenarios 17, 18, and 22 demonstrate that the underestimation of the consumptive use demands in the analysis included in D-1644 results in significant underestimation of the consumptive use deficiencies that actually will occur.

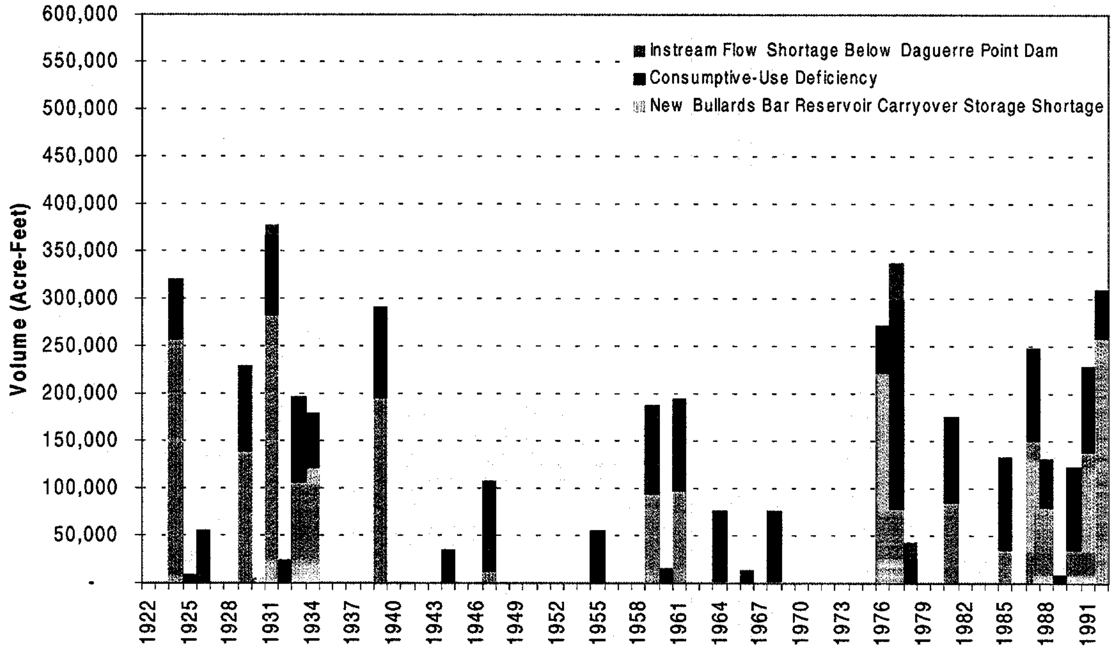
<u>**Simulations of the 1966 PG&E Power Purchase Contract**</u>

30. For the 2000 hearing, YCWA submitted detailed evidence regarding the impacts of increased instream flow requirements when PG&E is operating to the 1966 PG&E Power Purchase Contract. On page 121, D-1644 states that "therefore, in evaluating the effects of alternative instream flow scenarios, the SWRCB assumes that the current operational criteria for power generation would continue." D-1644 contains no analysis of the impacts of the long-term instream flow requirements if PG&E decides to require YCWA to operate to all of the terms of the 1966 PG&E Power Purchase Contract, which PG&E may do at any time.

31. Scenarios 23, 19, 24, and 20 include operational criteria of the 1966 PG&E Power Purchase Contract, and with SWRCB present demands, YCWA present demands, SWRCB full development demands and YCWA full development demands, respectively. All of these four scenarios include the D-1644 long-term instream flow requirements.

32. The simulation results of Scenario 23, PG&E Power Purchase Contract, SWRCB present level of demands and D-1644 long-term instream flows, are summarized as follows.

Figure 6
Summary of Simulation Results (Scenario 23): Instream Flow Shortages, Delivery Deficiencies, and New Bullards Bar Reservoir Carryover Storage Shortages



- **Consumptive Use Deficiencies**: The consumptive use deficiencies range from zero to 222,000 acre-feet, with an average of 28,300 acre-feet. The maximum deficiency (222,000 acre-feet, or 81 percent of total demand) occurs in 1977. New Bullards Bar Reservoir is depleted from January to November 1977 and consumptive use deliveries are totally suspended in June through November of 1977, to reserve all available water for instream flows. The average consumptive use deficiencies in dry, critical and extreme critical years are 32, 35, 31 percent respectively, of the total demand.

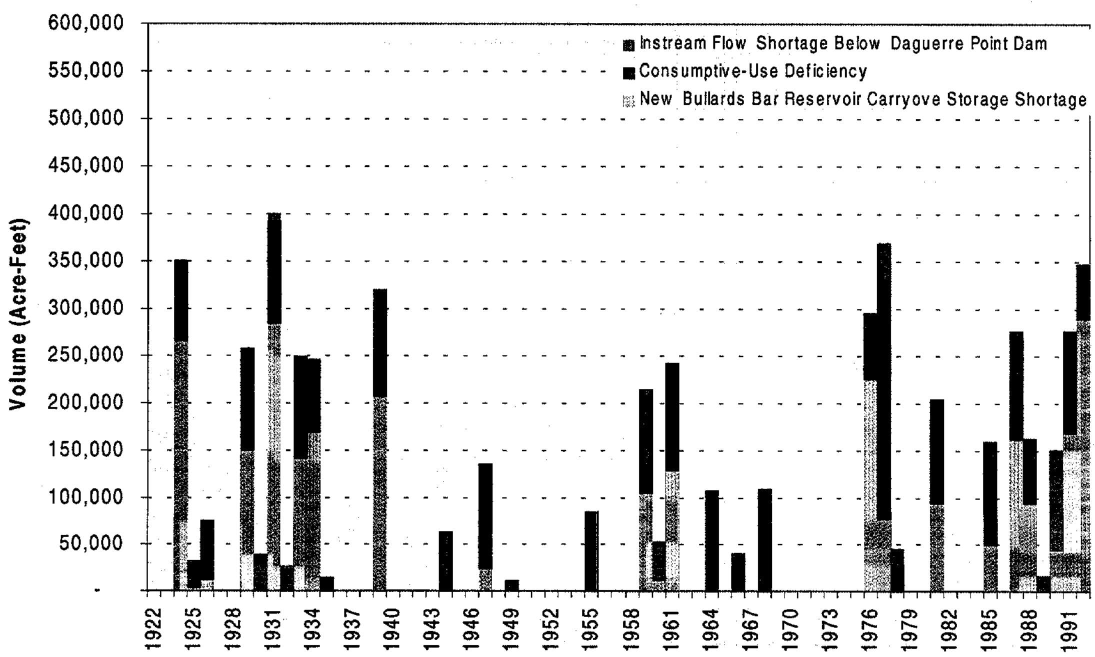
- **Instream Flow Requirements**: The average instream flow shortage is 936 acre-feet because of the shortages in four years. The depletion of New Bullards Bar Reservoir is the reason for the shortage.

- **Carryover Storage Requirements**: The average carryover storage requirement is about 587,000 acre-feet, and the average storage shortage is about 34,000 acre-feet. Shortages in carryover storage are calculated by subtracting the carryover storage requirement from the end of September storage. The average storage shortage in extreme critical years is 185,000 acre-feet, not including the additional FERC flow requirements. In 1977, New Bullards Bar Reservoir is completely depleted from January through November, and the end-of-September storage is 77,000 acre-feet lower than the targeted 311,000 acre-feet, which already is heavily reduced because of the progression of the drought. However, the largest storage shortage (283,000 acre-feet) occurs in 1931. The storage shortage increases the risk that the instream flow requirements and a minimum 50 percent of the consumptive use demand cannot be met in the following year.

- **Additional FERC Flow Requirements**: For extreme critical years, the additional FERC flow is 45,000 acre-feet in all but one year. The additional FERC flow requirements are high in this water year type because of the implementation of the PG&E Power Purchase Contract. Under the Narrows I FERC Order, the FERC flows are an add-on requirement to the existing flow requirements. Therefore, the additional flows have a greater impact in below normal or drier years. For example, the additional FERC flows for the 1977 water year are totaled as 45,000 acre-feet, which would be added to demands on New Bullards Bar Reservoir storage. However, because the storage shortage is already depleted in 1977, the additional FERC flow is likely to be provided by imposing another 45,000 acre-feet of consumptive use deficiency. That is, almost no consumptive use delivery would be made in 1977. It is unlikely that YCWA could impose such a high deficiency on consumptive use deliveries because there are significant senior water right holders in its service area. Therefore, the additional FERC flow requirement, or at least part of it, probably would be translated into additional instream flow shortages.

33. The simulation results of Scenario 19, PG&E Power Purchase Contract, YCWA present level of demands and D-1644 long-term instream flows, are summarized as follows.

Figure 7
Summary of Simulation Results (Scenario 19): Instream Flow Shortages, Delivery Deficiencies, and New Bullards Bar Reservoir Carryover Storage Shortages



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- **Consumptive Use Deficiencies**: The consumptive use deficiencies range from zero to 255,000 acre-feet with an average of about 37,000 acre-feet. The maximum deficiency (255,000 acre-feet, or 82 percent of total demand) occurs in 1977. New Bullards Bar Reservoir is depleted from January to November 1977, and the consumptive use deliveries are totally suspended in June through November of 1977, to reserve all available water for instream flows. The average consumptive use deficiency in dry, critical, and extreme critical years are 35, 36 and 33 percent, respectively, of the total demand. Deficiencies are also frequent in below normal years, with a maximum below normal year deficiency of about 111,000 acre-feet (36 percent of the total demand) in 1985.

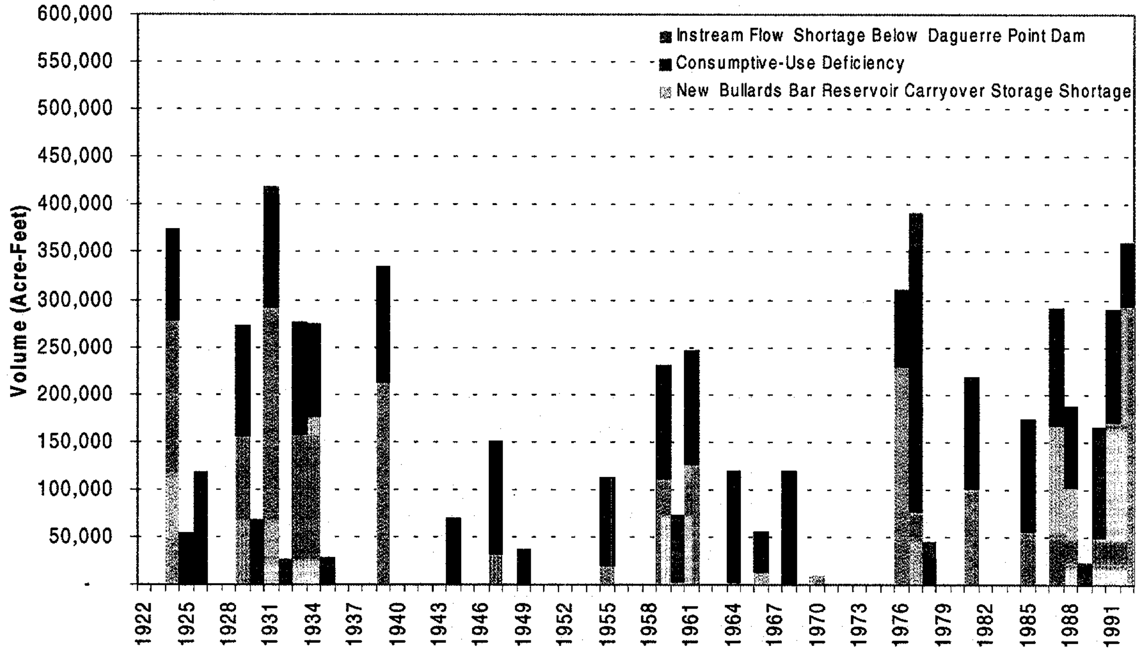
- **Instream Flow Requirements**: The average instream flow shortage is 936 acre-feet because of the shortages in four years. The maximum instream flow shortage occurs in 1977 and is 37,000 acre-feet. The depletion of New Bullards Bar Reservoir is the reason for the shortage.

- **Carryover Storage Requirements**: The average carryover storage requirement is about 587,000 acre-feet, and the average storage shortage is about 38,000 acre-feet. The average storage shortage in extreme critical years is about 201,000 acre-feet, not including the additional FERC flow requirements. In 1977, New Bullards Bar Reservoir is completely depleted from January through November, and the end-of-September storage is 77,000 acre-feet lower than the targeted 311,000 acre-feet, which already is heavily reduced because of the progression of the drought. However, the largest storage shortage (285,000 acre-feet) occurs in 1931.

- **Additional FERC Flow Requirements**: For extreme critical years, the additional FERC flow is 45,000 acre-feet in all but one year and averages 7,717 acre-feet for the 71 year simulation record.

34. The simulation results of Scenario 24, PG&E Power Purchase Contract, SWRCB full development level of demands and D-1644 long-term instream flows, are summarized as follows.

Figure 8
Summary of Simulation Results (Scenario 24): Instream Flow Shortages, Delivery Deficiencies, and New Bullards Bar Reservoir Carryover Storage Shortages



- **Consumptive Use Deficiencies**: The consumptive use deficiencies range from zero to about 278,000 acre-feet, with an average of about 42,000 acre-feet. The maximum deficiency (278,000 acre-feet, or 84 percent of total demand) occurs in 1977. New Bullards Bar Reservoir is depleted from January to November 1977, and the consumptive use delivery is totally suspended in June through November of 1977 to reserve all available water for instream flows. The average consumptive use deficiency in dry, critical, and extreme critical years is 35, 36 and 36 percent, respectively, of the total demand. Deficiencies are also frequent in below normal years with a maximum below normal year deficiency of about 119,000 acre-feet (36 percent of the total demand) in 1926.

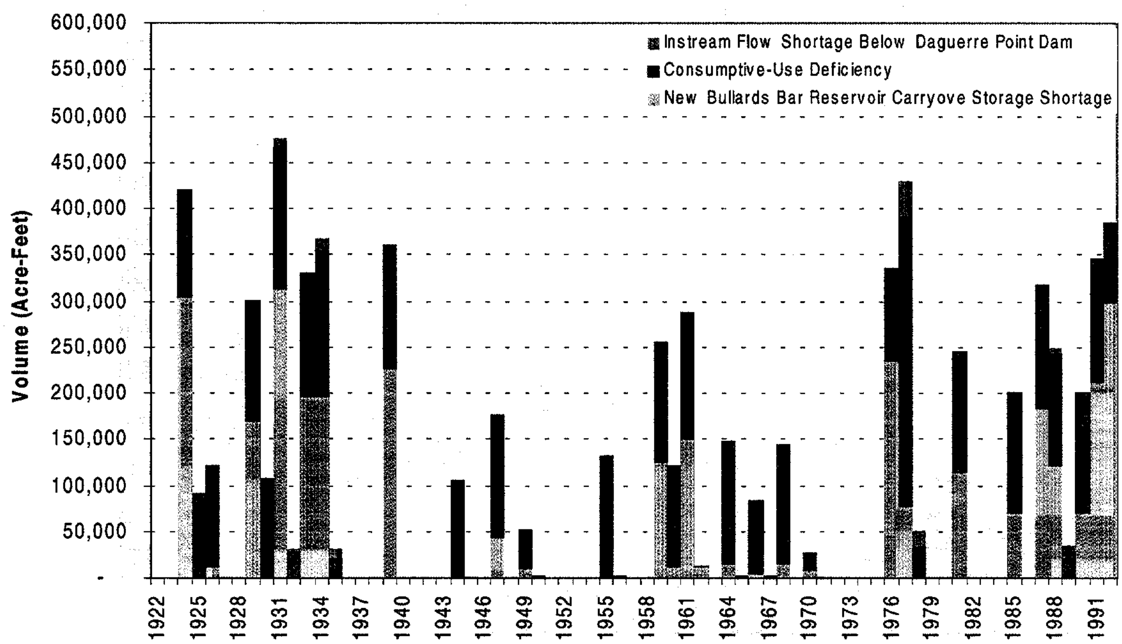
- **Instream Flow Requirements**: The average instream flow shortage is 1,142 acre-feet because of the shortages in six years. The maximum instream flow shortage occurs in 1977 and is about 37,000 acre-feet. The depletion of New Bullards Bar Reservoir is the reason for the shortage.

- **Carryover Storage Requirements**: The average carryover storage requirement is about 588,000 acre-feet, and the average storage shortage is about 40,000 acre-feet. The average storage shortage in extreme critical years is 207,000 acre-feet, not including the additional FERC flow requirements. In 1977, New Bullards Bar Reservoir is completed depleted from January through November, and the end-of-September storage is 77,000 acre-feet lower than the targeted 311,000 acre-feet, which already is heavily reduced because of the progression of the drought. However, the largest storage shortage (293,000 acre-feet) occurs in 1931 at which time New Bullards Bar Reservoir is depleted.

- **Additional FERC Flow Requirements**: For all but one of the extreme critical years, the additional FERC flow is 45,000 acre-feet.

35. The simulation results of Scenario 20, PG&E Power Purchase Contract, YCWA full development level of demands and D-1644 long-term instream flows, are summarized as follows.

Figure 9
Summary of Simulation Results (Scenario 20): Instream Flow Shortages, Delivery Deficiencies, and New Bullards Bar Reservoir Carryover Storage Shortages



- **Consumptive Use Deficiencies**: The consumptive use deficiencies range from zero to about 315,000 acre-feet, with an average of about 52,000 acre-feet. The maximum deficiency (315,000 acre-feet, or 82 percent of total demand) occurs in 1977. New Bullards Bar Reservoir is depleted from January to November 1977, and the consumptive use delivery is totally suspended in June through November of 1977 to reserve all available water for instream flows. The average consumptive use deficiency in dry, critical and extreme critical years are 35, 36 and 40 percent respectively, of the total demand. Deficiencies are also frequent in below normal years with a below normal year deficiency of about 131,000 acre-feet (35 percent of the total demand) in 1964 and 1985 and a deficiency of 130,000 acre-feet in 1968.

- **Instream Flow Requirements**: The average instream flow shortage is 1,481 acre-feet because of the shortages in eight years. The maximum instream flow shortage occurs in 1977 and is about 37,000 acre-feet. The depletion of New Bullards Bar Reservoir is the reason for the shortage.

- **Carryover Storage Requirements**: The average carryover storage requirement is about 589,000 acre-feet, and the average storage shortage is about 45,000 acre-feet. The average storage shortage in extreme critical years is about 221,000 acre-feet, not including the additional FERC flow requirements. In 1977, New Bullards Bar Reservoir is completely depleted from January through November, and the end-of-September storage is 77,000 acre-feet lower than the targeted 311,000 acre-feet, which already is heavily reduced because of the progression of the drought. However, the largest storage shortage (313,000 acre-feet) occurs in 1931, at which time New Bullards Bar Reservoir is depleted.

- **Additional FERC Flow Requirements**: For extreme critical years, the additional FERC flow is 45,000 acre-feet in all but one year and that year is 1977.

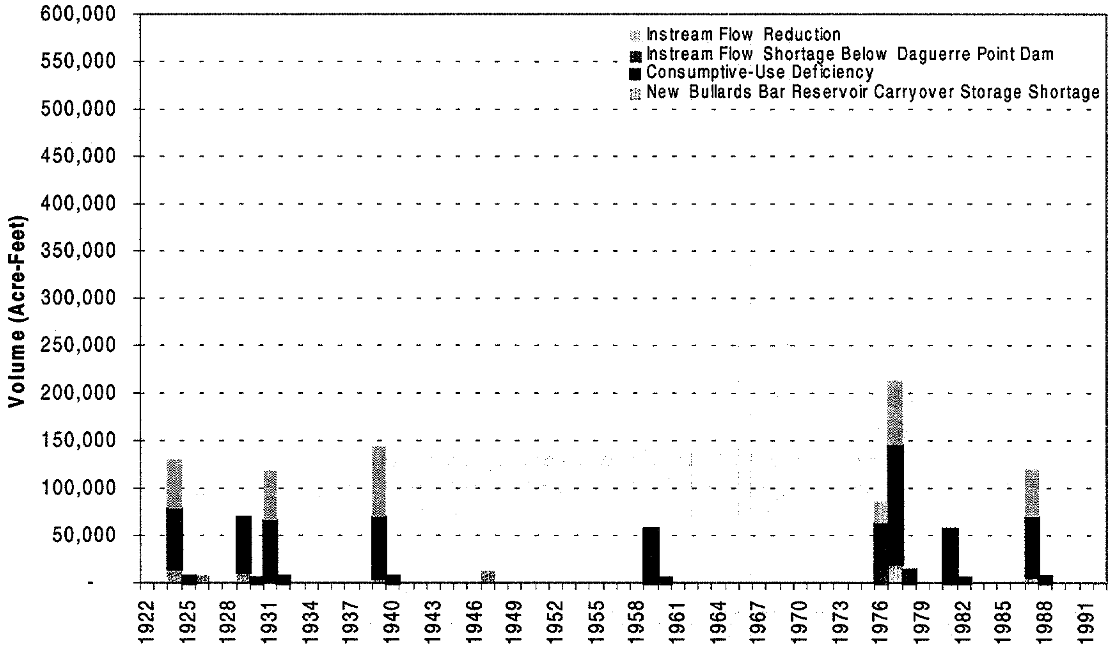
36. The results of Scenarios 23, 19, 24, and 20 demonstrate that, if PG&E ever requires YCWA to operate to all of the terms of the 1966 PG&E/YCWA Power Purchase Contract, then the long-term instream flow requirements in D-1644 will have devastating effects on the consumptive users of water in Yuba County. Significant consumptive use deficiencies would occur during many years.

<u>**Scenarios with Term 10 Instream Flow Reductions**</u>

37. Scenarios 25, 26, 29 and 30 have the same requirements for demands and D-1644 instream flows as Scenarios 17, 18, 21 and 22, with the exception that for Scenarios 25, 26, 29 and 30, the instream flow reductions that may be authorized under Term 10 of D-1644 are imposed. The stated reason in D-1644 for Term 10 instream flow reductions is "...the SWRCB believes that it is reasonable to allow for a temporary reduction in instream flow requirements in order to prevent deficiencies in the amount of water available for offstream uses from exceeding 20 percent of the projected demand for that year." Therefore, the imposition of Term 10 instream flow reductions is intended to reduce consumptive use demand deficiencies to 20 percent. However, because the instream flow reductions under Term 10 are limited by time period to the current year April 21 to December 31 flows and are further limited to the interim flows of D-1644 Term 1, the maximum reduction of instream flow for an extreme critical year is 66,504 acre-feet (with operational buffers added). Therefore, as demonstrated in Scenarios 25, 26 and 30 consumptive use demand deficiencies are not limited to 20 percent in all years where absent Term 10 the deficiencies would be greater than 20 percent.

38. For example, Scenario 30 contains the same SWRCB full development demands PG&E power practice and instream flows as Scenario 22, with the exception that Term 10 instream flow reductions are imposed.

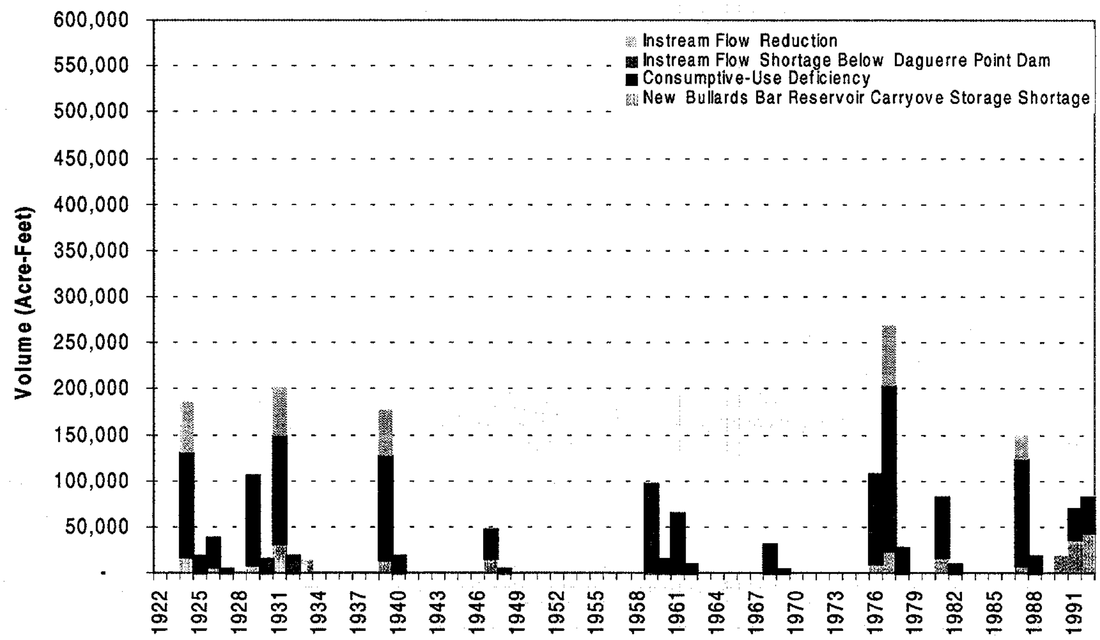
Figure 10
Summary of Simulation Results (Scenario 30): Instream Flow Shortages, Term 10 Instream Flow Reductions, Delivery Deficiencies, and New Bullards Bar Reservoir Carryover Storage Shortages



39. Imposition of the instream flow reductions cannot fully counter the demand deficiencies of 1977, which in Scenario 22 are 48 percent and in Scenario 30 are 38 percent of total demands.

40. For Scenario 26, which includes the YCWA full development level of demands, the Term 10 instream flow reductions are even less effective in reducing demand deficiencies to 20 percent.

Figure 11
Summary of Simulation Results (Scenario 26): Instream Flow Shortages, Term 10 Instream Flow Reductions, Delivery Deficiencies, and New Bullards Bar Reservoir Carryover Storage Shortages



41. For Scenario 26, consumptive use deficiencies of over 20 percent occur in four of the seven extreme critical years. The maximum deficiency of about 180,000 acre-feet (47 percent of the total demand) occurs in 1977. This is the same deficiency that occurs in Scenario 18, the corresponding scenario without instream flow reductions. The Term 10 instream flow reduction of 66,504 acre feet in 1977 increases the storage of New Bullards Bar Reservoir in the spring and summer months so that storage is available to meet instream flows during October and November of this year. Therefore, the Term 10 reduction mainly improves the system ability to meet instream flows and does not reduce consumptive use deficiencies during this year.

42. The results of Scenarios 25, 26, 29, and 30 demonstrate that the temporary reductions in the D-1644 long-term instream flow requirements that might be allowed under Term 10 would have only a limited effect in reducing the consumptive use deficiencies that will result from the D-1644 long-term instream flow requirements. These scenariio results show that even full implementation of Term 10 would not reduce consumptive use demand deficiences to 20 percent in all years. Even with the Term 10 reductions in instream flow requirements, consumptive use deficiencies greater than 20 percent still would occur in many years.

Storage Releases

43. The Yuba River Basin Model simulates the operation of all of the major water management facilities in the Yuba River Basin. These facilities include the upstream diversions and reservoir operations. The model also includes the simulation of in basin depletions. These elements of the model and their effect on flows to the lower Yuba River have been calibrated to historic data. Therefore the model results for the effects of these facilities and depletions accurately reflect the actual upstream impairments to the water supply available to the Lower Yuba River, which is the resulting water supply that is available to meet all of the lower Yuba River demands.

44. If the D-1644 instream flow requirements at Marysville Gage are subtracted from the availible flows to the Lower Yuba River, the monthly impacts on stored water from the D-1644 instream flow requirements can be determined. If the D-1644 Marysville Gage instream flow requirment at any time is greater than the lower Yuba River available flow, than releases of stored water are required to meet the requirement. Table 7 shows the results of this calculation. This table lists the 71-year period of record by month sorted by water year type. For any month where the Marysville Gage long-term instream flow requirement of D-1644 is greater than the available flow, which would require a storage release to meet this requrement, a "YES" in indicated. Table 7 shows that in almost all years storage releases will be required in October and September and in many years November releases are required. Storage releases also would be required often during other months of drier years.

Executed at Sacramento California on March 29, 2001.

I declare under penalty of perjury that the foregoing is true and correct.

Stephen E. Grinnell, P.E.

Table 7
Identification of Periods Where Instream Flow Requirements of D-1644 Are Greater than Available Flows

Year Type (Per 2001 Order)	Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Wet	1982	YES	-	-	-	-	-	-	-	-	-	-	-
Wet	1983	-	-	-	-	-	-	-	-	-	-	-	-
Wet	1952	YES	-	-	-	-	-	-	-	-	-	-	YES
Wet	1938	YES	-	-	-	-	-	-	-	-	-	-	YES
Wet	1974	YES	-	-	-	-	-	-	-	-	-	-	YES
Wet	1956	YES	YES	-	-	-	-	-	-	-	-	-	YES
Wet	1965	YES	-	-	-	-	-	-	-	-	-	-	YES
Wet	1969	YES	-	-	-	-	-	-	-	-	-	-	YES
Wet	1958	YES	-	-	-	-	-	-	-	-	-	-	-
Wet	1986	YES	-	-	-	-	-	-	-	-	-	-	-
Wet	1951	YES	-	-	-	-	-	-	-	-	-	-	YES
Wet	1927	YES	-	-	-	-	-	-	-	-	-	YES	YES
Wet	1942	YES	-	-	-	-	-	-	-	-	-	-	YES
Wet	1967	YES	-	-	-	-	-	-	-	-	-	-	YES
Wet	1963	-	-	-	-	-	-	-	-	-	-	-	YES
Wet	1980	YES	-	-	-	-	-	-	-	-	-	-	YES
Wet	1984	-	-	-	-	-	-	-	-	-	-	-	YES
Wet	1941	YES	-	-	-	-	-	-	-	-	-	-	YES
Wet	1922	YES	YES	-	-	-	-	-	-	-	-	-	YES
Wet	1943	YES	-	-	-	-	-	-	-	-	-	-	YES
Wet	1970	YES	YES	-	-	-	-	-	-	-	-	-	YES
Wet	1971	YES	-	-	-	-	-	-	-	-	-	-	YES
Wet	1953	YES	YES	-	-	-	-	-	-	-	-	-	YES
Wet	1975	YES	YES	-	-	-	-	-	-	-	-	-	-
Above Normal	1978	YES	YES	-	-	-	-	-	-	-	-	-	-
Above Normal	1940	YES	YES	YES	-	-	-	-	-	-	-	-	YES
Above Normal	1973	YES	-	-	-	-	-	-	-	-	-	-	YES
Above Normal	1936	YES	YES	YES	-	-	-	-	-	-	-	-	YES
Above Normal	1928	YES	-	-	-	-	-	-	-	-	-	YES	YES
Above Normal	1946	YES	-	-	-	-	-	-	-	-	-	-	YES
Above Normal	1935	YES	-	-	-	-	-	-	-	-	-	-	YES
Above Normal	1950	YES	YES	YES	-	-	-	-	-	-	-	-	YES
Above Normal	1945	YES	-	-	-	-	-	-	-	-	-	-	YES
Above Normal	1923	YES	-	-	-	-	-	-	-	-	-	-	YES
Above Normal	1948	YES	YES	YES	-	-	-	-	-	-	-	-	YES
Above Normal	1957	YES	YES	YES	-	-	-	-	-	-	-	-	YES
Above Normal	1954	YES	-	-	-	-	-	-	-	-	-	YES	YES
Above Normal	1937	YES	YES	YES	YES	-	-	-	-	-	-	YES	YES
Below Normal	1989	YES	-	-	-	-	-	-	-	-	-	-	YES
Below Normal	1932	YES	YES	-	-	-	-	-	-	-	-	-	YES
Below Normal	1925	YES	YES	-	-	-	-	-	-	-	-	YES	YES
Below Normal	1962	YES	YES	-	-	-	-	-	-	-	-	-	YES
Below Normal	1930	YES	YES	-	-	-	-	-	-	-	-	YES	YES
Below Normal	1979	YES	YES	YES	-	-	-	-	-	-	-	-	YES
Below Normal	1972	YES	YES	-	-	-	-	-	-	-	-	-	YES
Below Normal	1960	YES	YES	YES	-	-	-	-	-	-	-	-	YES
Below Normal	1968	YES	YES	-	-	-	-	-	-	-	-	-	YES
Below Normal	1926	YES	YES	-	-	-	-	-	-	YES	YES	YES	YES
Below Normal	1949	YES	YES	-	YES	-	-	-	-	-	-	YES	YES
Below Normal	1964	YES	-	-	-	-	-	-	-	-	-	-	YES
Below Normal	1966	YES	-	-	-	-	-	-	-	YES	-	YES	YES
Below Normal	1985	YES	-	-	-	-	-	-	-	YES	-	-	YES
Below Normal	1944	YES	YES	YES	-	-	-	-	-	-	-	YES	YES
Dry	1947	YES	-	-	YES	-	-	-	YES	-	-	YES	YES
Dry	1955	YES	YES	-	-	-	-	-	-	-	-	YES	YES
Dry	1990	-	-	YES	-	-	-	-	YES	-	-	-	YES
Dry	1959	YES	YES	YES	-	-	-	-	YES	YES	-	YES	YES
Dry	1981	YES	YES	-	-	-	-	-	-	YES	-	YES	YES
Dry	1933	YES	YES	YES	YES	YES	-	-	-	-	-	YES	YES

Year Type (Per 2001 Order)	Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Dry	1929	YES	YES	-	YES	-	-	-	-	-	YES	YES	YES
Dry	1939	YES	YES	YES	-	-	-	-	YES	YES	YES	YES	YES
Critical	1991	YES	YES	YES	YES	YES	-	-	-	-	-	-	YES
Critical	1961	YES	-	-	YES	-	-	-	-	-	-	YES	YES
Critical	1987	-	YES	YES	-	-	-	-	YES	YES	YES	YES	YES
Extreme Critical	1992	YES	YES	YES	YES	YES	-	-	-	-	-	-	YES
Extreme Critical	1934	YES	YES	-	-	-	-	-	-	YES	YES	YES	YES
Extreme Critical	1988	YES	YES	-	-	-	-	-	-	-	-	YES	YES
Extreme Critical	1976	-	-	-	-	-	-	-	-	YES	-	-	YES
Extreme Critical	1931	YES	-	YES	-	-	-	-	-	YES	YES	YES	YES
Extreme Critical	1924	YES	YES	-	YES	-	-	-	-	YES	YES	YES	YES
Extreme Critical	1977	YES	YES	YES	YES	YES	YES	YES	-	YES	YES	YES	YES

ATTACHMENT A

Water Year	Year Type	Consumptive-Use Demand: Delivery	Consumptive-Use Demand: Deficiency, Percent of Demand	Consumptive-Use Demand: Deficiency, Volume	Instream Flow Below Daguerre Point Dam: Flow Requirement	Instream Flow Below Daguerre Point Dam: Instream Flow Shortage	New Bullards Bar Reservoir: Carryover Storage Requirement	New Bullards Bar Reservoir: End-of-September Storage	New Bullards Bar Reservoir: Carryover Storage Shortage	Additional FERC Flow
		(af)	%	(af)	(af)	(af)	(af)	(af)	(af)	(af)
1922	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1923	Above Normal	305,530	-	-	413,688	-	600,000	705,000	-	0
1924	Extreme Critical	228,034	26%	81,780	317,504	-	476,000	473,811	2,189	45,000
1925	Below Normal	299,724	4%	11,541	379,532	-	600,000	705,000	-	-
1926	Below Normal	311,351	-	-	413,688	-	600,000	608,218	-	-
1927	Wet	307,067	-	-	413,688	-	600,000	705,000	-	0
1928	Above Normal	305,530	-	-	413,688	-	600,000	705,000	-	0
1929	Dry	255,273	18%	54,541	409,621	-	600,000	601,352	-	9,283
1930	Below Normal	303,558	2%	7,700	379,532	-	600,000	682,700	-	0
1931	Extreme Critical	256,810	18%	54,541	317,504	-	450,000	438,596	11,404	45,000
1932	Below Normal	303,558	2%	7,700	379,532	-	600,000	705,000	-	-
1933	Dry	311,351	-	-	409,621	-	600,000	613,341	-	5,593
1934	Extreme Critical	311,351	-	-	283,348	-	334,000	529,935	-	26,792
1935	Above Normal	307,067	-	-	379,532	-	600,000	705,000	-	0
1936	Above Normal	305,530	-	-	413,688	-	600,000	705,000	-	0
1937	Above Normal	305,530	-	-	413,688	-	600,000	705,000	-	0
1938	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1939	Dry	200,793	35%	109,021	409,621	-	600,000	590,343	9,657	9,533
1940	Above Normal	291,608	5%	15,387	379,532	-	600,000	705,000	-	0
1941	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1942	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1943	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1944	Below Normal	309,814	-	-	413,688	-	600,000	705,000	-	1,527
1945	Above Normal	307,067	-	-	413,688	-	600,000	705,000	-	0
1946	Above Normal	305,530	-	-	413,688	-	600,000	705,000	-	0
1947	Dry	309,814	-	-	409,621	-	600,000	604,230	-	5,593
1948	Above Normal	307,067	-	-	379,532	-	600,000	705,000	-	5,665
1949	Below Normal	309,814	-	-	413,688	-	600,000	705,000	-	-
1950	Above Normal	307,067	-	-	413,688	-	600,000	705,000	-	0
1951	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1952	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1953	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1954	Above Normal	305,530	-	-	413,688	-	600,000	705,000	-	0
1955	Dry	309,814	-	-	409,621	-	600,000	705,000	-	5,593
1956	Wet	307,067	-	-	379,532	-	600,000	705,000	-	6,069
1957	Above Normal	305,530	-	-	413,688	-	600,000	705,000	-	5,812
1958	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1959	Dry	282,514	9%	27,300	409,621	-	600,000	589,404	10,596	7,438
1960	Below Normal	307,452	1%	3,853	379,532	-	600,000	682,712	-	-
1961	Critical	311,351	-	-	383,903	-	600,000	645,433	-	5,593
1962	Below Normal	311,351	-	-	379,532	-	600,000	705,000	-	6,272
1963	Wet	307,067	-	-	413,688	-	600,000	705,000	-	0
1964	Below Normal	309,814	-	-	413,688	-	600,000	705,000	-	1,527
1965	Wet	307,067	-	-	413,688	-	600,000	705,000	-	0
1966	Below Normal	309,814	-	-	413,688	-	600,000	664,247	-	-
1967	Wet	307,067	-	-	413,688	-	600,000	705,000	-	0
1968	Below Normal	309,814	-	-	413,688	-	600,000	627,456	-	1,527
1969	Wet	307,067	-	-	413,688	-	600,000	705,000	-	0
1970	Wet	305,530	-	-	413,688	-	600,000	685,875	-	5,812
1971	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1972	Below Normal	309,814	-	-	413,688	-	600,000	705,000	-	-
1973	Above Normal	307,067	-	-	413,688	-	600,000	705,000	-	0
1974	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1975	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1976	Extreme Critical	255,273	18%	54,541	317,504	-	600,000	586,502	13,498	45,000
1977	Extreme Critical	194,519	38%	116,720	283,348	-	311,000	280,709	30,291	45,000
1978	Above Normal	291,602	5%	15,387	379,532	-	600,000	705,000	-	0
1979	Below Normal	309,814	-	-	413,688	-	600,000	705,000	-	-
1980	Wet	307,067	-	-	413,688	-	600,000	705,000	-	0
1981	Dry	282,514	9%	27,300	409,621	-	600,000	598,376	1,625	7,438
1982	Wet	303,168	1%	3,853	379,532	-	600,000	705,000	-	0
1983	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1984	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1985	Below Normal	309,814	-	-	413,688	-	600,000	645,031	-	-
1986	Wet	307,067	-	-	413,688	-	600,000	705,000	-	0
1987	Critical	228,034	26%	81,780	383,903	-	600,000	587,068	12,932	28,265
1988	Extreme Critical	299,724	4%	11,541	283,348	-	311,000	543,880	-	38,728
1989	Below Normal	311,351	-	-	379,532	-	600,000	705,000	-	11,937
1990	Dry	311,351	-	-	409,621	-	600,000	634,248	-	-
1991	Critical	311,351	-	-	349,748	-	600,000	607,135	-	5,593
1992	Extreme Critical	311,351	-	-	283,348	-	600,000	645,594	-	45,000
Average		298,563	3%	9,641	394,310	-	584,254	666,214	1,298	6,008

COM 9171

Water Year	Year Type	Consumptive-Use Demand: Delivery	Consumptive-Use Demand: Deficiency, Percent of Demand	Consumptive-Use Demand: Deficiency, Volume	Instream Flow Below Daguerre Point Dam: Flow Requirement	Instream Flow Below Daguerre Point Dam: Instream Flow Shortage	New Bullards Bar Reservoir: Carryover Storage Requirement	New Bullards Bar Reservoir: End-of-September Storage	New Bullards Bar Reservoir: Carryover Storage Shortage	Additional FERC Flow
		(af)	%	(af)	(af)	(af)	(af)	(af)	(af)	(af)
1922	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1923	Above Normal	375,984	-	-	413,688	-	600,000	705,000	-	0
1924	Extreme Critical	217,345	43%	163,280	317,504	-	504,000	485,562	18,438	45,000
1925	Below Normal	354,636	7%	27,649	379,532	-	600,000	705,000	-	-
1926	Below Normal	349,594	9%	32,691	413,688	-	600,000	593,335	6,665	-
1927	Wet	372,124	1%	5,520	413,688	-	600,000	705,000	-	-
1928	Above Normal	375,984	-	-	413,688	-	600,000	705,000	-	0
1929	Dry	282,669	26%	97,957	409,621	-	600,000	590,905	9,095	4,760
1930	Below Normal	365,728	4%	16,558	379,532	-	600,000	638,105	-	0
1931	Extreme Critical	219,005	43%	163,280	317,504	-	478,000	440,005	37,995	45,000
1932	Below Normal	354,636	7%	27,649	379,532	-	600,000	705,000	-	-
1933	Dry	382,286	-	-	409,621	-	600,000	585,028	14,972	11,937
1934	Extreme Critical	382,286	-	-	283,348	-	362,000	449,054	-	29,928
1935	Above Normal	377,644	-	-	379,532	-	600,000	705,000	-	-
1936	Above Normal	375,984	-	-	413,688	-	600,000	705,000	-	-
1937	Above Normal	375,984	-	-	413,688	-	600,000	705,000	-	-
1938	Wet	375,984	-	-	413,688	-	600,000	705,000	-	0
1939	Dry	217,345	43%	163,280	409,621	-	600,000	584,082	15,919	8,417
1940	Above Normal	349,995	7%	27,649	379,532	-	600,000	705,000	-	-
1941	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1942	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1943	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1944	Below Normal	380,626	-	-	413,688	-	600,000	695,431	-	-
1945	Above Normal	377,644	-	-	413,688	-	600,000	705,000	-	-
1946	Above Normal	375,984	-	-	413,688	-	600,000	705,000	-	0
1947	Dry	347,934	9%	32,691	409,621	-	600,000	584,796	15,204	-
1948	Above Normal	372,124	1%	5,520	379,532	-	600,000	705,000	-	-
1949	Below Normal	380,626	-	-	413,688	-	600,000	694,218	-	-
1950	Above Normal	377,644	-	-	413,688	-	600,000	705,000	-	-
1951	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1952	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1953	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1954	Above Normal	375,984	-	-	413,688	-	600,000	677,185	-	5,319
1955	Dry	380,626	-	-	409,621	-	600,000	680,043	-	-
1956	Wet	377,644	-	-	379,532	-	600,000	705,000	-	-
1957	Above Normal	375,984	-	-	413,688	-	600,000	705,000	-	-
1958	Wet	375,984	-	-	413,688	-	600,000	705,000	-	0
1959	Dry	282,669	26%	97,957	409,621	-	600,000	605,974	-	4,760
1960	Below Normal	365,728	4%	16,558	379,532	-	600,000	638,118	-	-
1961	Critical	316,961	17%	65,325	383,903	-	600,000	609,929	-	2,023
1962	Below Normal	371,248	3%	11,038	379,532	-	600,000	705,000	-	-
1963	Wet	377,644	-	-	413,688	-	600,000	705,000	-	-
1964	Below Normal	380,626	-	-	413,688	-	600,000	651,391	-	-
1965	Wet	377,644	-	-	413,688	-	600,000	705,000	-	-
1966	Below Normal	380,626	-	-	413,688	-	600,000	619,663	-	-
1967	Wet	377,644	-	-	413,688	-	600,000	705,000	-	-
1968	Below Normal	347,934	9%	32,691	413,688	-	600,000	606,335	-	-
1969	Wet	372,124	1%	5,520	413,688	-	600,000	705,000	-	-
1970	Wet	375,984	-	-	413,688	-	600,000	633,401	-	-
1971	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1972	Below Normal	380,626	-	-	413,688	-	600,000	705,000	-	-
1973	Above Normal	377,644	-	-	413,688	-	600,000	705,000	-	-
1974	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1975	Wet	375,984	-	-	413,688	-	600,000	705,000	-	11,590
1976	Extreme Critical	282,669	26%	97,957	317,504	-	600,000	590,076	9,924	39,591
1977	Extreme Critical	202,436	47%	179,838	283,348	-	311,000	234,000	77,000	45,000
1978	Above Normal	332,675	8%	27,649	379,532	3,711	600,000	705,000	-	-
1979	Below Normal	380,626	-	-	413,688	-	600,000	705,000	-	-
1980	Wet	377,644	-	-	413,688	-	600,000	705,000	-	0
1981	Dry	315,300	17%	65,325	409,621	-	600,000	582,550	17,450	2,023
1982	Wet	366,607	3%	11,038	379,532	-	600,000	705,000	-	-
1983	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1984	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1985	Below Normal	380,626	-	-	413,688	-	600,000	600,455	-	-
1986	Wet	377,644	-	-	413,688	-	600,000	705,000	-	0
1987	Critical	217,345	43%	163,280	383,903	-	600,000	610,513	-	33,094
1988	Extreme Critical	354,636	7%	27,649	283,348	-	311,000	479,701	-	29,928
1989	Below Normal	382,286	-	-	379,532	-	600,000	685,440	-	5,665
1990	Dry	382,286	-	-	409,621	-	600,000	580,674	19,326	5,319
1991	Critical	349,594	9%	32,691	349,748	-	600,000	562,232	37,768	-
1992	Extreme Critical	344,074	10%	38,211	283,348	-	600,000	555,336	44,664	40,420
Average		355,597	6%	23,049	394,310	52	585,437	654,205	4,569	5,208

COM 9172

Water Year	Year Type	Consumptive-Use Demand: Delivery	Consumptive-Use Demand: Deficiency, Percent of Demand	Consumptive-Use Demand: Deficiency, Volume	Instream Flow Below Daguerre Point Dam: Flow Requirement	Instream Flow Below Daguerre Point Dam: Instream Flow Shortage	New Bullards Bar Reservoir: Carryover Storage Requirement	New Bullards Bar Reservoir: End-of-September Storage	New Bullards Bar Reservoir: Carryover Storage Shortage	Additional FERC Flow
		(af)	%	(af)	(af)	(af)	(af)	(af)	(af)	(af)
1922	Wet	305,530	-	-	413,688	-	600,000	705,000	-	-
1923	Above Normal	305,530	-	-	413,688	-	600,000	705,000	-	-
1924	Extreme Critical	224,061	28%	85,715	317,504	-	545,000	279,180	265,820	45,000
1925	Below Normal	282,189	9%	29,119	379,532	-	600,000	596,294	3,706	-
1926	Below Normal	246,989	21%	64,318	413,688	-	600,000	587,896	12,104	2,764
1927	Wet	307,006	0%	18	413,688	-	600,000	705,000	-	0
1928	Above Normal	305,530	-	-	413,688	-	600,000	705,000	-	0
1929	Dry	201,303	35%	108,474	409,621	-	600,000	450,669	149,331	13,892
1930	Below Normal	270,883	13%	40,424	379,532	-	600,000	601,165	-	-
1931	Extreme Critical	203,780	35%	107,527	317,504	9,224	519,000	234,000	285,000	45,000
1932	Below Normal	286,839	8%	24,469	379,532	2,950	600,000	637,728	-	-
1933	Dry	203,078	35%	108,229	409,621	-	600,000	458,951	141,049	14,599
1934	Extreme Critical	233,170	25%	78,138	283,348	-	403,000	234,000	169,000	45,000
1935	Above Normal	291,462	5%	15,561	379,532	-	600,000	692,052	-	-
1936	Above Normal	305,530	-	-	413,688	-	600,000	705,000	-	0
1937	Above Normal	305,530	-	-	413,688	-	600,000	705,000	-	-
1938	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1939	Dry	195,670	37%	114,106	409,621	-	600,000	393,863	206,137	13,892
1940	Above Normal	307,123	-	-	379,532	-	600,000	705,000	-	0
1941	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1942	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1943	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1944	Below Normal	245,401	21%	64,375	413,688	-	600,000	608,519	-	2,764
1945	Above Normal	307,006	0%	18	413,688	-	600,000	705,000	-	-
1946	Above Normal	305,530	-	-	413,688	-	600,000	705,000	-	-
1947	Dry	198,670	36%	111,106	409,621	-	600,000	575,741	24,259	14,599
1948	Above Normal	307,123	-	-	379,532	-	600,000	705,000	-	-
1949	Below Normal	298,204	4%	11,573	413,688	-	600,000	599,008	992	-
1950	Above Normal	307,123	0%	-	413,688	-	600,000	705,000	-	-
1951	Wet	305,530	-	-	413,688	-	600,000	705,000	-	-
1952	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1953	Wet	305,530	-	-	413,688	-	600,000	705,000	-	-
1954	Above Normal	305,530	-	-	413,688	-	600,000	656,871	-	-
1955	Dry	223,441	28%	86,335	409,621	-	600,000	603,150	-	8,298
1956	Wet	306,792	0%	231	379,532	-	600,000	705,000	-	-
1957	Above Normal	305,530	-	-	413,688	-	600,000	705,000	-	-
1958	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1959	Dry	197,853	36%	111,923	409,621	-	600,000	495,545	104,455	14,599
1960	Below Normal	269,879	13%	41,428	379,532	-	600,000	587,413	12,587	-
1961	Critical	197,388	37%	113,920	383,903	-	600,000	470,623	129,377	40,317
1962	Below Normal	311,407	0%	-	379,532	-	600,000	654,991	-	-
1963	Wet	307,067	-	-	413,688	-	600,000	705,000	-	0
1964	Below Normal	201,482	35%	108,295	413,688	-	600,000	603,307	-	13,892
1965	Wet	307,123	-	-	413,688	-	600,000	705,000	-	-
1966	Below Normal	269,235	13%	40,542	413,688	-	600,000	599,066	934	-
1967	Wet	307,002	0%	22	413,688	-	600,000	705,000	-	-
1968	Below Normal	200,105	35%	109,671	413,688	-	600,000	605,118	-	14,599
1969	Wet	307,123	-	-	413,688	-	600,000	705,000	-	0
1970	Wet	305,530	-	-	413,688	-	600,000	605,049	-	-
1971	Wet	305,530	-	-	413,688	-	600,000	705,000	-	-
1972	Below Normal	309,814	-	-	413,688	-	600,000	642,394	-	-
1973	Above Normal	307,067	-	-	413,688	-	600,000	705,000	-	-
1974	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1975	Wet	305,530	-	-	413,688	-	600,000	705,000	-	-
1976	Extreme Critical	239,383	23%	70,394	317,504	-	600,000	374,243	225,757	45,000
1977	Extreme Critical	55,361	82%	255,946	283,348	37,104	311,000	234,000	77,000	-
1978	Above Normal	277,589	10%	29,434	379,532	17,171	600,000	705,000	-	-
1979	Below Normal	309,814	-	-	413,688	-	600,000	705,000	-	-
1980	Wet	307,067	-	-	413,688	-	600,000	705,000	-	-
1981	Dry	200,163	35%	109,613	409,621	-	600,000	504,744	95,256	13,892
1982	Wet	307,123	-	-	379,532	-	600,000	705,000	-	0
1983	Wet	305,530	-	-	413,688	-	600,000	705,000	-	0
1984	Wet	305,530	-	-	413,688	-	600,000	705,000	-	-
1985	Below Normal	198,660	36%	111,117	413,688	-	600,000	550,289	49,711	14,599
1986	Wet	307,123	-	-	413,688	-	600,000	705,000	-	-
1987	Critical	194,422	37%	115,354	383,903	-	600,000	438,282	161,718	40,317
1988	Extreme Critical	243,258	22%	68,050	283,348	-	329,000	234,000	95,000	45,000
1989	Below Normal	293,587	6%	17,720	379,532	-	600,000	662,175	-	-
1990	Dry	205,986	34%	105,321	409,621	-	600,000	554,360	45,640	14,599
1991	Critical	203,384	35%	107,924	349,748	-	600,000	431,117	168,883	40,317
1992	Extreme Critical	252,379	19%	58,928	283,348	-	600,000	310,679	289,321	45,000
Average		271,223	12%	36,977	394,310	935.89	587,423	607,697	38,212	7,717

COM 9173

Water Year	Year Type	Consumptive-Use Demand: Delivery	Consumptive-Use Demand: Deficiency, Percent of Demand	Consumptive-Use Demand: Deficiency, Volume	Instream Flow Below Daguerre Point Dam: Flow Requirement	Instream Flow Below Daguerre Point Dam: Instream Flow Shortage	New Bullards Bar Reservoir: Carryover Storage Requirement	New Bullards Bar Reservoir: End-of-September Storage	New Bullards Bar Reservoir: Carryover Storage Shortage	Additional FERC Flow
		(af)	%	(af)	(af)	(af)	(af)	(af)	(af)	(af)
1922	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1923	Above Normal	375,984	-	-	413,688	-	600,000	705,000	-	-
1924	Extreme Critical	263,877	31%	116,749	317,504	-	573,000	269,311	303,689	45,000
1925	Below Normal	290,385	24%	91,901	379,532	-	600,000	608,909	-	1,753
1926	Below Normal	273,002	29%	109,283	413,688	-	600,000	587,012	12,988	-
1927	Wet	376,976	0%	668	413,688	-	600,000	705,000	-	-
1928	Above Normal	375,984	-	-	413,688	-	600,000	705,000	-	-
1929	Dry	249,885	34%	130,741	409,621	-	600,000	430,501	169,499	8,417
1930	Below Normal	274,893	28%	107,393	379,532	-	600,000	601,837	-	1,753
1931	Extreme Critical	228,067	40%	154,218	317,504	9,224	547,000	234,000	313,000	45,000
1932	Below Normal	352,612	8%	29,674	379,532	2,950	600,000	604,546	-	-
1933	Dry	248,140	35%	134,146	409,621	-	600,000	403,283	196,717	8,417
1934	Extreme Critical	222,965	42%	159,321	283,348	10,957	431,000	234,000	197,000	45,000
1935	Above Normal	355,263	6%	22,381	379,532	10,059	600,000	686,541	-	-
1936	Above Normal	375,984	-	-	413,688	-	600,000	705,000	-	-
1937	Above Normal	375,984	-	-	413,688	-	600,000	705,000	-	-
1938	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1939	Dry	246,285	35%	134,340	409,621	-	600,000	373,060	226,940	8,417
1940	Above Normal	377,644	-	-	379,532	-	600,000	705,000	-	-
1941	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1942	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1943	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1944	Below Normal	274,294	28%	106,332	413,688	-	600,000	607,635	-	-
1945	Above Normal	375,545	1%	2,099	413,688	-	600,000	705,000	-	-
1946	Above Normal	375,984	-	-	413,688	-	600,000	705,000	-	-
1947	Dry	247,615	35%	133,011	409,621	-	600,000	555,268	44,732	8,417
1948	Above Normal	377,644	-	-	379,532	-	600,000	705,000	-	-
1949	Below Normal	336,768	12%	43,857	413,688	-	600,000	589,958	10,042	-
1950	Above Normal	374,759	1%	2,885	413,688	-	600,000	705,000	-	-
1951	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1952	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1953	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1954	Above Normal	375,984	-	-	413,688	-	600,000	694,092	-	-
1955	Dry	247,131	35%	133,495	409,621	-	600,000	606,345	-	8,417
1956	Wet	374,015	1%	3,630	379,532	-	600,000	705,000	-	-
1957	Above Normal	375,984	-	-	413,688	-	600,000	705,000	-	-
1958	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1959	Dry	248,343	35%	132,282	409,621	-	600,000	474,978	125,022	8,417
1960	Below Normal	273,182	29%	109,103	379,532	-	600,000	587,376	12,624	1,753
1961	Critical	243,196	36%	139,090	383,903	-	600,000	450,284	149,716	29,678
1962	Below Normal	380,110	1%	2,175	379,532	-	600,000	588,288	11,712	-
1963	Wet	377,644	-	-	413,688	-	600,000	705,000	-	-
1964	Below Normal	249,013	35%	131,613	413,688	-	600,000	583,205	16,795	8,417
1965	Wet	374,760	1%	2,884	413,688	-	600,000	705,000	-	-
1966	Below Normal	302,078	21%	78,548	413,688	-	600,000	594,100	5,900	-
1967	Wet	374,760	1%	2,884	413,688	-	600,000	705,000	-	-
1968	Below Normal	250,561	34%	130,065	413,688	-	600,000	584,713	15,287	8,417
1969	Wet	377,019	0%	626	413,688	-	600,000	705,000	-	-
1970	Wet	355,100	6%	20,884	413,688	-	600,000	591,976	8,024	-
1971	Wet	374,109	0%	1,875	413,688	-	600,000	705,000	-	-
1972	Below Normal	380,626	-	-	413,688	-	600,000	601,631	-	-
1973	Above Normal	377,644	-	-	413,688	-	600,000	705,000	-	-
1974	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1975	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1976	Extreme Critical	279,008	27%	101,617	317,504	-	600,000	364,559	235,441	45,000
1977	Extreme Critical	67,046	82%	315,239	283,348	37,104	311,000	234,000	77,000	-
1978	Above Normal	343,005	9%	34,639	379,532	17,171	600,000	705,000	-	-
1979	Below Normal	380,626	-	-	413,688	-	600,000	705,000	-	-
1980	Wet	377,644	-	-	413,688	-	600,000	705,000	-	-
1981	Dry	248,957	35%	131,669	409,621	-	600,000	485,149	114,852	8,417
1982	Wet	377,644	-	-	379,532	-	600,000	705,000	-	-
1983	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1984	Wet	375,984	-	-	413,688	-	600,000	705,000	-	-
1985	Below Normal	249,115	35%	131,511	413,688	-	600,000	529,786	70,214	8,417
1986	Wet	377,644	-	-	413,688	-	600,000	705,000	-	-
1987	Critical	244,877	36%	135,748	383,903	-	600,000	416,789	183,211	29,678
1988	Extreme Critical	261,901	31%	120,385	283,348	5,495	357,000	234,000	123,000	45,000
1989	Below Normal	359,904	6%	22,381	379,532	12,219	600,000	621,097	-	-
1990	Dry	251,319	34%	130,966	409,621	-	600,000	529,712	70,288	8,417
1991	Critical	248,531	35%	133,755	349,748	-	600,000	387,372	212,628	29,678
1992	Extreme Critical	295,836	23%	86,450	283,348	-	600,000	300,814	299,186	45,000
Average		326,601	13.71%	52,289	394,310	1,481	589,000	600,368	45,148	6,435

COM 9174

Scenario 21: Current PG&E Practice, SWRCB Demands, and 2001 Order Stream Flows

Water Year	Year Type	Consumptive-Use Demand: Delivery	Consumptive-Use Demand: Deficiency, Percent of Demand	Consumptive-Use Demand: Deficiency, Volume	Instream Flow Below Daguerre Point Dam: Flow Requirement	Instream Flow Below Daguerre Point Dam: Instream Flow Shortage	New Bullards Bar Reservoir: Carryover Storage Requirement	New Bullards Bar Reservoir: End-of-September Storage	New Bullards Bar Reservoir: Carryover Storage Shortage	Additional FERC Flow
		(af)	%	(af)	(af)	(af)	(af)	(af)	(af)	(af)
1922	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1923	Above Normal	273,834	-	-	413,688	-	600,000	705,000	-	0
1924	Extreme Critical	225,860	18%	47,998	317,504	-	476,000	472,719	3,281	45,000
1925	Below Normal	267,136	2%	6,771	379,532	-	600,000	705,000	-	0
1926	Below Normal	273,834	-	-	413,688	-	600,000	638,582	-	0
1927	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1928	Above Normal	273,834	-	-	413,688	-	600,000	705,000	-	0
1929	Dry	249,817	9%	23,999	409,621	-	600,000	603,467	-	9,461
1930	Below Normal	270,482	1%	3,386	379,532	-	600,000	705,000	-	0
1931	Extreme Critical	273,834	-	-	317,504	-	450,000	438,912	11,088	45,000
1932	Below Normal	273,834	-	-	379,532	-	600,000	705,000	-	0
1933	Dry	273,834	-	-	409,621	-	600,000	643,697	-	7,855
1934	Extreme Critical	273,834	-	-	283,348	-	334,000	562,443	-	26,792
1935	Above Normal	273,834	-	-	379,532	-	600,000	705,000	-	0
1936	Above Normal	273,834	-	-	413,688	-	600,000	705,000	-	0
1937	Above Normal	273,834	-	-	413,688	-	600,000	705,000	-	0
1938	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1939	Dry	177,765	35%	95,996	409,621	-	600,000	609,517	-	14,948
1940	Above Normal	260,317	5%	13,542	379,532	-	600,000	705,000	-	0
1941	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1942	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1943	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1944	Below Normal	273,834	-	-	413,688	-	600,000	705,000	-	3,788
1945	Above Normal	273,834	-	-	413,688	-	600,000	705,000	-	0
1946	Above Normal	273,834	-	-	413,688	-	600,000	705,000	-	0
1947	Dry	273,834	-	-	409,621	-	600,000	634,589	-	7,855
1948	Above Normal	273,834	-	-	379,532	-	600,000	705,000	-	5,665
1949	Below Normal	273,834	-	-	413,688	-	600,000	705,000	-	0
1950	Above Normal	273,834	-	-	413,688	-	600,000	705,000	-	0
1951	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1952	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1953	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1954	Above Normal	273,834	-	-	413,688	-	600,000	705,000	-	0
1955	Dry	273,834	-	-	409,621	-	600,000	705,000	-	7,855
1956	Wet	273,834	-	-	379,532	-	600,000	705,000	-	6,069
1957	Above Normal	273,834	-	-	413,688	-	600,000	705,000	-	3,788
1958	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1959	Dry	273,834	-	-	409,621	-	600,000	594,896	5,104	7,855
1960	Below Normal	273,834	-	-	379,532	-	600,000	705,000	-	0
1961	Critical	273,834	-	-	383,903	-	600,000	698,738	-	10,898
1962	Below Normal	273,834	-	-	379,532	-	600,000	705,000	-	18,613
1963	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1964	Below Normal	273,834	-	-	413,688	-	600,000	705,000	-	3,788
1965	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1966	Below Normal	273,834	-	-	413,688	-	600,000	694,628	-	0
1967	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1968	Below Normal	273,834	-	-	413,688	-	600,000	660,005	-	3,788
1969	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1970	Wet	273,834	-	-	413,688	-	600,000	705,000	-	3,788
1971	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1972	Below Normal	273,834	-	-	413,688	-	600,000	705,000	-	0
1973	Above Normal	273,834	-	-	413,688	-	600,000	705,000	-	0
1974	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1975	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1976	Extreme Critical	249,817	9%	23,999	317,504	-	600,000	588,673	11,327	45,000
1977	Extreme Critical	174,395	36%	99,382	283,348	-	311,000	302,576	8,424	45,000
1978	Above Normal	260,317	5%	13,542	379,532	-	600,000	705,000	-	0
1979	Below Normal	273,834	-	-	413,688	-	600,000	705,000	-	0
1980	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1981	Dry	273,834	-	-	409,621	-	600,000	603,867	-	7,855
1982	Wet	273,834	-	-	379,532	-	600,000	705,000	-	0
1983	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1984	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1985	Below Normal	273,834	-	-	413,688	-	600,000	675,402	-	0
1986	Wet	273,834	-	-	413,688	-	600,000	705,000	-	0
1987	Critical	201,783	26%	71,997	383,903	-	600,000	609,999	-	40,673
1988	Extreme Critical	263,608	4%	10,157	283,348	-	311,000	582,539	-	33,063
1989	Below Normal	273,834	-	-	379,532	-	600,000	705,000	-	11,937
1990	Dry	273,834	-	-	409,621	-	600,000	666,845	-	-
1991	Critical	273,834	-	-	349,748	-	600,000	673,691	-	10,898
1992	Extreme Critical	273,834	-	-	283,348	-	600,000	705,000	-	38,728
Average		268,047	2%	5,786	394,310	-	584,254	674,800	552	6,563

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Water Year	Year Type	Consumptive-Use Demand: Delivery	Consumptive-Use Demand: Deficiency, Percent of Demand	Consumptive-Use Demand: Deficiency, Volume	Instream Flow Below Daguerre Point Dam: Flow Requirement	Instream Flow Below Daguerre Point Dam: Instream Flow Shortage	New Bullards Bar Reservoir: Carryover Storage Requirement	New Bullards Bar Reservoir: End-of-September Storage	New Bullards Bar Reservoir: Carryover Storage Shortage	Additional FERC Flow
		(af)	%	(af)	(af)	(af)	(af)	(af)	(af)	(af)
1922	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1923	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	2,610
1924	Extreme Critical	214,509	35%	117,302	317,504	-	486,000	475,768	10,232	45,000
1925	Below Normal	316,463	5%	15,348	379,532	-	600,000	705,000	-	-
1926	Below Normal	331,811	-	-	413,688	-	600,000	591,996	8,004	-
1927	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1928	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	260
1929	Dry	273,221	18%	58,589	409,621	-	600,000	587,712	12,288	5,950
1930	Below Normal	324,256	2%	7,555	379,532	-	600,000	666,470	-	0
1931	Extreme Critical	214,509	35%	117,302	317,504	-	460,000	458,220	1,780	45,000
1932	Below Normal	316,463	5%	15,348	379,532	-	600,000	705,000	-	-
1933	Dry	331,811	-	-	409,621	-	600,000	619,066	-	15,715
1934	Extreme Critical	331,811	-	-	283,348	-	344,000	508,872	-	43,598
1935	Above Normal	331,811	-	-	379,532	-	600,000	705,000	-	-
1936	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1937	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1938	Wet	331,811	-	-	413,688	-	600,000	705,000	-	260
1939	Dry	185,275	44%	146,536	409,621	-	600,000	599,270	730	11,333
1940	Above Normal	312,621	6%	19,190	379,532	-	600,000	705,000	-	-
1941	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1942	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1943	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1944	Below Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1945	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1946	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	260
1947	Dry	331,811	-	-	409,621	-	600,000	585,574	14,426	1,428
1948	Above Normal	331,811	-	-	379,532	-	600,000	705,000	-	-
1949	Below Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1950	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1951	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1952	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1953	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1954	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	8,622
1955	Dry	331,811	-	-	409,621	-	600,000	705,000	-	1,428
1956	Wet	331,811	-	-	379,532	-	600,000	705,000	-	-
1957	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1958	Wet	331,811	-	-	413,688	-	600,000	705,000	-	2,610
1959	Dry	273,221	18%	58,589	409,621	-	600,000	600,127	-	5,950
1960	Below Normal	324,256	2%	7,555	379,532	-	600,000	666,483	-	-
1961	Critical	331,811	-	-	383,903	-	600,000	609,036	-	1,428
1962	Below Normal	331,811	-	-	379,532	-	600,000	705,000	-	-
1963	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1964	Below Normal	331,811	-	-	413,688	-	600,000	684,645	-	-
1965	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1966	Below Normal	331,811	-	-	413,688	-	600,000	648,019	-	-
1967	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1968	Below Normal	331,811	-	-	413,688	-	600,000	607,114	-	-
1969	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1970	Wet	331,811	-	-	413,688	-	600,000	662,057	-	-
1971	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1972	Below Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1973	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1974	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1975	Wet	331,811	-	-	413,688	-	600,000	705,000	-	8,622
1976	Extreme Critical	243,864	27%	87,947	317,504	-	600,000	608,018	-	36,028
1977	Extreme Critical	173,884	48%	157,927	283,348	-	311,000	263,718	47,282	45,000
1978	Above Normal	312,621	6%	19,190	379,532	-	600,000	705,000	-	-
1979	Below Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1980	Wet	331,811	-	-	413,688	-	600,000	705,000	-	260
1981	Dry	273,221	18%	58,589	409,621	-	600,000	609,099	-	5,950
1982	Wet	324,256	2%	7,555	379,532	-	600,000	705,000	-	-
1983	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1984	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1985	Below Normal	331,811	-	-	413,688	-	600,000	628,809	-	-
1986	Wet	331,811	-	-	413,688	-	600,000	705,000	-	6,272
1987	Critical	214,509	35%	117,302	383,903	-	600,000	598,421	1,579	32,126
1988	Extreme Critical	316,463	5%	15,348	283,348	-	311,000	501,021	-	43,598
1989	Below Normal	331,811	-	-	379,532	-	600,000	705,000	-	5,665
1990	Dry	331,811	-	-	409,621	-	600,000	613,911	-	2,350
1991	Critical	331,811	-	-	349,748	-	600,000	607,034	-	1,428
1992	Extreme Critical	331,811	-	-	283,348	-	600,000	598,344	1,656	43,598
Average		317,343	4%	14,467	394,310	-	584,676	662,377	1,380	5,949

COM 9176

Water Year	Year Type	Consumptive-Use Demand: Delivery	Consumptive-Use Demand: Deficiency, Percent of Demand	Consumptive-Use Demand: Deficiency, Volume	Instream Flow Below Daguerre Point Dam: Flow Requirement	Instream Flow Below Daguerre Point Dam: Instream Flow Shortage	New Bullards Bar Reservoir: Carryover Storage Requirement	New Bullards Bar Reservoir: End-of-September Storage	New Bullards Bar Reservoir: Carryover Storage Shortage	Additional FERC Flow
		(af)	%	(af)	(af)	(af)	(af)	(af)	(af)	(af)
1922	Wet	274,015	-	-	413,688	-	600,000	705,000	-	-
1923	Above Normal	274,015	-	-	413,688	-	600,000	705,000	-	-
1924	Extreme Critical	209,314	24%	64,669	317,504	-	543,000	286,504	256,496	45,000
1925	Below Normal	264,574	3%	9,409	379,532	-	600,000	606,236	-	-
1926	Below Normal	218,193	20%	55,789	413,688	-	600,000	607,658	-	7,406
1927	Wet	274,011	-	-	413,688	-	600,000	705,000	-	0
1928	Above Normal	274,015	-	-	413,688	-	600,000	705,000	-	0
1929	Dry	182,851	33%	91,131	409,621	-	600,000	461,703	138,297	21,559
1930	Below Normal	273,955	0%	27	379,532	-	600,000	594,485	5,515	-
1931	Extreme Critical	189,387	31%	84,596	317,504	9,224	517,000	234,000	283,000	45,000
1932	Below Normal	252,524	8%	21,459	379,532	2,950	600,000	659,450	-	-
1933	Dry	182,581	33%	91,401	409,621	-	600,000	494,403	105,597	21,559
1934	Extreme Critical	214,748	22%	59,234	283,348	-	401,000	280,387	120,613	45,000
1935	Above Normal	273,955	0%	27	379,532	-	600,000	705,000	-	-
1936	Above Normal	274,015	-	-	413,688	-	600,000	705,000	-	0
1937	Above Normal	274,015	-	-	413,688	-	600,000	705,000	-	-
1938	Wet	274,015	-	-	413,688	-	600,000	705,000	-	0
1939	Dry	177,217	35%	96,765	409,621	-	600,000	404,901	195,099	21,559
1940	Above Normal	273,955	0.00	27	379,532	-	600,000	705,000	-	0
1941	Wet	274,015	-	-	413,688	-	600,000	705,000	-	0
1942	Wet	274,015	-	-	413,688	-	600,000	705,000	-	0
1943	Wet	274,015	-	-	413,688	-	600,000	705,000	-	0
1944	Below Normal	238,885	13%	35,097	413,688	-	600,000	607,544	-	2,526
1945	Above Normal	274,076	-	-	413,688	-	600,000	705,000	-	-
1946	Above Normal	274,015	-	-	413,688	-	600,000	705,000	-	-
1947	Dry	178,872	35%	95,110	409,621	-	600,000	588,082	11,918	21,559
1948	Above Normal	273,955	0.00	27	379,532	-	600,000	705,000	-	-
1949	Below Normal	274,015	0%	-	413,688	-	600,000	603,645	-	-
1950	Above Normal	274,015	0%	-	413,688	-	600,000	705,000	-	-
1951	Wet	274,015	-	-	413,688	-	600,000	705,000	-	-
1952	Wet	274,015	-	-	413,688	-	600,000	705,000	-	0
1953	Wet	274,015	-	-	413,688	-	600,000	705,000	-	-
1954	Above Normal	274,015	-	-	413,688	-	600,000	685,192	-	-
1955	Dry	219,794	20%	54,189	409,621	-	600,000	599,308	692	7,406
1956	Wet	274,011	0%	-	379,532	-	600,000	705,000	-	0
1957	Above Normal	274,015	-	-	413,688	-	600,000	705,000	-	-
1958	Wet	274,015	-	-	413,688	-	600,000	705,000	-	0
1959	Dry	179,421	35%	94,562	409,621	-	600,000	506,551	93,449	21,559
1960	Below Normal	259,028	5%	14,955	379,532	-	600,000	605,931	-	-
1961	Critical	176,977	35%	97,006	383,903	-	600,000	502,676	97,324	45,000
1962	Below Normal	273,955	0%	27	379,532	-	600,000	705,000	-	-
1963	Wet	274,015	-	-	413,688	-	600,000	705,000	-	0
1964	Below Normal	199,120	27%	74,863	413,688	-	600,000	598,178	1,823	12,285
1965	Wet	274,070	0%	-	413,688	-	600,000	705,000	-	-
1966	Below Normal	260,036	5%	13,947	413,688	-	600,000	600,773	-	-
1967	Wet	273,949	0%	33	413,688	-	600,000	705,000	-	-
1968	Below Normal	199,324	27%	74,659	413,688	-	600,000	598,411	1,589	12,285
1969	Wet	274,070	0%	-	413,688	-	600,000	705,000	-	0
1970	Wet	274,015	0%	-	413,688	-	600,000	633,355	-	-
1971	Wet	274,015	-	-	413,688	-	600,000	705,000	-	-
1972	Below Normal	274,015	-	-	413,688	-	600,000	670,700	-	-
1973	Above Normal	274,015	-	-	413,688	-	600,000	705,000	-	-
1974	Wet	274,015	-	-	413,688	-	600,000	705,000	-	0
1975	Wet	274,015	-	-	413,688	-	600,000	705,000	-	-
1976	Extreme Critical	222,555	19%	51,428	317,504	-	600,000	378,259	221,741	45,000
1977	Extreme Critical	50,990	81%	222,993	283,348	37,104	311,000	234,000	77,000	-
1978	Above Normal	248,067	9%	25,915	379,532	17,171	600,000	705,000	-	-
1979	Below Normal	274,015	-	-	413,688	-	600,000	705,000	-	-
1980	Wet	274,015	-	-	413,688	-	600,000	705,000	-	-
1981	Dry	181,732	34%	92,251	409,621	-	600,000	515,749	84,251	21,559
1982	Wet	273,955	0%	27	379,532	-	600,000	705,000	-	0
1983	Wet	274,015	-	-	413,688	-	600,000	705,000	-	0
1984	Wet	274,015	-	-	413,688	-	600,000	705,000	-	-
1985	Below Normal	176,762	35%	97,221	413,688	-	600,000	564,756	35,244	21,559
1986	Wet	273,955	0%	27	413,688	-	600,000	705,000	-	-
1987	Critical	175,210	36%	98,773	383,903	-	600,000	450,433	149,567	45,000
1988	Extreme Critical	221,687	19%	52,296	283,348	-	327,000	247,822	79,178	45,000
1989	Below Normal	265,589	3%	8,394	379,532	-	600,000	690,496	-	-
1990	Dry	186,017	32%	87,965	409,621	-	600,000	565,351	34,649	21,559
1991	Critical	182,860	33%	91,123	349,748	-	600,000	461,940	138,060	45,000
1992	Extreme Critical	222,122	19%	51,861	283,348	-	600,000	341,801	258,200	45,000
Average		245,701	10%	28,300	394,310	935.89	587,310	615,080	33,652	8,724

COM 9177

Water Year	Year Type	Consumptive-Use Demand: Delivery	Consumptive-Use Demand: Deficiency, Percent of Demand	Consumptive-Use Demand: Deficiency, Volume	Instream Flow Below Daguerre Point Dam: Flow Requirement	Instream Flow Below Daguerre Point Dam: Instream Flow Shortage	New Bullards Bar Reservoir: Carryover Storage Requirement	New Bullards Bar Reservoir: End-of-September Storage	New Bullards Bar Reservoir: Carryover Storage Shortage	Additional FERC Flow
		(af)	%	(af)	(af)	(af)	(af)	(af)	(af)	(af)
1922	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1923	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1924	Extreme Critical	235,220	29%	96,591	317,504	-	553,000	274,960	278,040	45,000
1925	Below Normal	277,237	16%	54,574	379,532	-	600,000	604,813	-	-
1926	Below Normal	212,651	36%	119,160	413,688	-	600,000	627,568	-	11,333
1927	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1928	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1929	Dry	215,440	35%	116,371	409,621	-	600,000	443,461	156,539	11,333
1930	Below Normal	263,178	21%	68,633	379,532	-	600,000	606,550	-	-
1931	Extreme Critical	214,022	35%	117,788	317,504	9,224	527,000	234,000	293,000	45,000
1932	Below Normal	307,620	7%	24,190	379,532	2,950	600,000	627,191	-	-
1933	Dry	213,766	36%	118,044	409,621	-	600,000	442,036	157,964	11,333
1934	Extreme Critical	234,143	29%	97,668	283,348	-	411,000	234,000	177,000	45,000
1935	Above Normal	312,565	6%	19,245	379,532	9,788	600,000	675,886	-	-
1936	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1937	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1938	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1939	Dry	210,413	37%	121,398	409,621	-	600,000	386,042	213,958	11,333
1940	Above Normal	331,811	-	-	379,532	-	600,000	705,000	-	-
1941	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1942	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1943	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1944	Below Normal	262,897	21%	68,914	413,688	-	600,000	598,002	1,998	-
1945	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1946	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1947	Dry	213,187	36%	118,624	409,621	-	600,000	568,177	31,823	11,333
1948	Above Normal	331,811	-	-	379,532	-	600,000	705,000	-	-
1949	Below Normal	294,814	11%	36,997	413,688	-	600,000	610,514	-	-
1950	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1951	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1952	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1953	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1954	Above Normal	331,811	-	-	413,688	-	600,000	641,225	-	-
1955	Dry	239,278	28%	92,533	409,621	-	600,000	579,225	20,775	5,264
1956	Wet	331,589	0%	221	379,532	-	600,000	705,000	-	0
1957	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1958	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1959	Dry	212,405	36%	119,406	409,621	-	600,000	487,925	112,076	11,333
1960	Below Normal	261,824	21%	69,987	379,532	-	600,000	596,638	3,362	-
1961	Critical	210,186	37%	121,625	383,903	-	600,000	473,548	126,452	36,959
1962	Below Normal	331,811	0%	-	379,532	-	600,000	642,466	-	-
1963	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1964	Below Normal	215,681	35%	116,129	413,688	-	600,000	596,086	3,914	11,333
1965	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1966	Below Normal	288,314	13%	43,497	413,688	-	600,000	586,963	13,037	-
1967	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1968	Below Normal	214,622	35%	117,188	413,688	-	600,000	597,579	2,421	11,333
1969	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1970	Wet	331,811	-	-	413,688	-	600,000	590,026	9,974	-
1971	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1972	Below Normal	331,811	-	-	413,688	-	600,000	627,372	-	-
1973	Above Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1974	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1975	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1976	Extreme Critical	250,351	25%	81,460	317,504	-	600,000	370,213	229,787	45,000
1977	Extreme Critical	54,290	84%	277,520	283,348	37,104	311,000	234,000	77,000	-
1978	Above Normal	302,926	9%	28,885	379,532	17,171	600,000	705,000	-	-
1979	Below Normal	331,811	-	-	413,688	-	600,000	705,000	-	-
1980	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1981	Dry	213,750	36%	118,061	409,621	-	600,000	498,094	101,906	11,333
1982	Wet	331,811	-	-	379,532	-	600,000	705,000	-	0
1983	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1984	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1985	Below Normal	213,177	36%	118,634	413,688	-	600,000	542,714	57,286	11,333
1986	Wet	331,811	-	-	413,688	-	600,000	705,000	-	-
1987	Critical	208,939	37%	122,872	383,903	-	600,000	431,043	168,957	36,959
1988	Extreme Critical	245,384	26%	86,426	283,348	-	337,000	234,000	103,000	45,000
1989	Below Normal	312,565	6%	19,245	379,532	4,869	600,000	647,148	-	-
1990	Dry	216,420	35%	115,391	409,621	-	600,000	549,338	50,662	11,333
1991	Critical	213,739	36%	118,071	349,748	-	600,000	427,391	172,609	36,959
1992	Extreme Critical	264,256	20%	67,555	283,348	-	600,000	306,461	293,539	45,000
Average		289,375	12.79%	42,435	394,310	1,142	587,873	605,249	40,241	7,194

COM 9178

Scenario 25: Current PG&E Practice, Present Level of Demands, and 2001 Order Flows with Term 10 Flow Reductions

Water Year	Year Type	Consumptive-Use Demand: Delivery (af)	Consumptive-Use Demand: Deficiency, Percent of Demand %	Consumptive-Use Demand: Deficiency, Volume (af)	Instream Flow Below Daguerre Point Dam: Instream Flow Requirement (af)	Instream Flow Below Daguerre Point Dam: Instream Flow Reduction (af)	Instream Flow Below Daguerre Point Dam: Instream Flow Reduction %	Instream Flow Below Daguerre Point Dam: Instream Flow Shortage (af)	New Bullards Bar Reservoir: Carryover Storage Requirement (af)	New Bullards Bar Reservoir: End-of-September Storage (af)	New Bullards Bar Reservoir: Carryover Storage Shortage (af)	Additional FERC Flow (af)
1922	Wet	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1923	Above Normal	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1924	Extreme Critical	233,507	25%	76,308	317,504	4,789	2%	-	476,000	473,184	2,816	45,000
1925	Below Normal	300,518	3%	10,773	379,532	-	-	-	600,000	705,000	-	-
1926	Below Normal	311,351	-	-	413,688	-	-	-	600,000	608,218	-	-
1927	Wet	307,067	-	-	413,688	-	-	-	600,000	705,000	-	0
1928	Above Normal	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1929	Dry	255,273	18%	54,541	409,621	-	-	-	600,000	601,352	-	9,283
1930	Below Normal	303,558	2%	7,700	379,532	-	-	-	600,000	682,700	-	0
1931	Extreme Critical	256,810	18%	54,541	317,504	-	-	-	450,000	438,596	11,404	45,000
1932	Below Normal	303,558	2%	7,700	379,532	-	-	-	600,000	705,000	-	-
1933	Dry	311,351	-	-	409,621	-	-	-	600,000	613,341	-	5,593
1934	Extreme Critical	311,351	-	-	283,348	-	-	-	334,000	529,935	-	26,792
1935	Above Normal	307,067	-	-	379,532	-	-	-	600,000	705,000	-	0
1936	Above Normal	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1937	Above Normal	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1938	Wet	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1939	Dry	233,507	25%	76,308	409,621	33,688	8%	-	600,000	590,218	9,783	12,404
1940	Above Normal	296,233	4%	10,773	379,532	-	-	-	600,000	705,000	-	0
1941	Wet	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1942	Wet	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1943	Wet	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1944	Below Normal	309,814	-	-	413,688	-	-	-	600,000	705,000	-	1,527
1945	Above Normal	307,067	-	-	413,688	-	-	-	600,000	705,000	-	0
1946	Above Normal	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1947	Dry	309,814	-	-	409,621	-	-	-	600,000	604,230	-	5,593
1948	Above Normal	307,067	-	-	379,532	-	-	-	600,000	705,000	-	5,665
1949	Below Normal	309,814	-	-	413,688	-	-	-	600,000	705,000	-	-
1950	Above Normal	307,067	-	-	413,688	-	-	-	600,000	705,000	-	0
1951	Wet	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1952	Wet	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1953	Wet	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1954	Above Normal	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1955	Dry	309,814	-	-	409,621	-	-	-	600,000	705,000	-	5,593
1956	Wet	307,067	-	-	379,532	-	-	-	600,000	705,000	-	6,069
1957	Above Normal	305,530	-	-	413,688	-	-	-	600,000	705,000	-	5,812
1958	Wet	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1959	Dry	282,514	9%	27,300	409,621	-	-	-	600,000	589,404	10,596	7,438
1960	Below Normal	307,452	1%	3,853	379,532	-	-	-	600,000	682,712	-	-
1961	Critical	311,351	-	-	383,903	-	-	-	600,000	645,433	-	5,593
1962	Below Normal	311,351	-	-	379,532	-	-	-	600,000	705,000	-	6,272
1963	Wet	307,067	-	-	413,688	-	-	-	600,000	705,000	-	0
1964	Below Normal	309,814	-	-	413,688	-	-	-	600,000	705,000	-	1,527
1965	Wet	307,067	-	-	413,688	-	-	-	600,000	705,000	-	0
1966	Below Normal	309,814	-	-	413,688	-	-	-	600,000	664,247	-	-
1967	Wet	307,067	-	-	413,688	-	-	-	600,000	705,000	-	0
1968	Below Normal	309,814	-	-	413,688	-	-	-	600,000	627,456	-	1,527
1969	Wet	307,067	-	-	413,688	-	-	-	600,000	705,000	-	0
1970	Wet	305,530	-	-	413,688	-	-	-	600,000	685,875	-	5,812
1971	Wet	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1972	Below Normal	309,814	-	-	413,688	-	-	-	600,000	705,000	-	-
1973	Above Normal	307,067	-	-	413,688	-	-	-	600,000	705,000	-	0
1974	Wet	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1975	Wet	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1976	Extreme Critical	255,273	18%	54,541	317,504	-	-	-	600,000	586,502	13,498	45,000
1977	Extreme Critical	227,233	27%	84,007	283,348	44,299	16%	-	311,000	292,217	18,783	45,000
1978	Above Normal	296,228	4%	10,773	379,532	-	-	-	600,000	705,000	-	0
1979	Below Normal	309,814	-	-	413,688	-	-	-	600,000	705,000	-	-
1980	Wet	307,067	-	-	413,688	-	-	-	600,000	705,000	-	0
1981	Dry	282,514	9%	27,300	409,621	-	-	-	600,000	598,376	1,625	7,438
1982	Wet	303,168	1%	3,853	379,532	-	-	-	600,000	705,000	-	0
1983	Wet	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1984	Wet	305,530	-	-	413,688	-	-	-	600,000	705,000	-	0
1985	Below Normal	309,814	-	-	413,688	-	-	-	600,000	645,031	-	-
1986	Wet	307,067	-	-	413,688	-	-	-	600,000	705,000	-	0
1987	Critical	233,507	25%	76,308	383,903	3,723	1%	-	600,000	585,297	14,703	25,548
1988	Extreme Critical	300,518	3%	10,773	283,348	-	-	-	311,000	541,695	-	38,728
1989	Below Normal	311,351	-	-	379,532	-	-	-	600,000	705,000	-	11,937
1990	Dry	311,351	-	-	409,621	-	-	-	600,000	634,248	-	-
1991	Critical	311,351	-	-	349,748	-	-	-	600,000	607,135	-	5,593
1992	Extreme Critical	311,351	-	-	283,348	-	-	-	600,000	645,594	-	45,000
Average		299,792	3%	8,413	394,310	1,218	0.4%	-	584,254	666,310	1,172	6,010

COM 9179

Water Year	Year Type	Consumptive-Use Demand: Delivery (af)	Consumptive-Use Demand: Deficiency, Percent of Demand %	Consumptive-Use Demand: Deficiency, Volume (af)	Instream Flow Below Daguerre Point Dam: Instream Flow Requirement (af)	Instream Flow Below Daguerre Point Dam: Instream Flow Reduction (af)	Instream Flow Below Daguerre Point Dam: Instream Flow Reduction %	Instream Flow Below Daguerre Point Dam: Instream Flow Shortage (af)	New Bullards Bar Reservoir: Carryover Storage Requirement (af)	New Bullards Bar Reservoir: End-of-September Storage (af)	New Bullards Bar Reservoir: Carryover Storage Shortage (af)	Additional FERC Flow (af)
1922	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1923	Above Normal	375,984	-	-	413,688	-	-	-	600,000	705,000	-	0
1924	Extreme Critical	266,323	30%	114,303	317,504	53,877	17%	-	504,000	486,452	17,548	45,000
1925	Below Normal	363,001	5%	19,285	379,532	-	-	-	600,000	705,000	-	-
1926	Below Normal	349,594	9%	32,691	413,688	-	-	-	600,000	593,335	6,665	-
1927	Wet	372,124	1%	5,520	413,688	-	-	-	600,000	705,000	-	-
1928	Above Normal	375,984	-	-	413,688	-	-	-	600,000	705,000	-	0
1929	Dry	282,669	26%	97,957	409,621	-	-	-	600,000	590,905	9,095	4,760
1930	Below Normal	365,728	4%	16,558	379,532	-	-	-	600,000	638,105	-	0
1931	Extreme Critical	264,702	31%	117,583	317,504	53,877	17%	-	478,000	446,480	31,520	45,000
1932	Below Normal	362,396	5%	19,890	379,532	-	-	-	600,000	705,000	-	-
1933	Dry	382,286	-	-	409,621	-	-	-	600,000	585,028	14,972	11,937
1934	Extreme Critical	382,286	-	-	283,348	-	-	-	362,000	449,054	-	29,928
1935	Above Normal	377,644	-	-	379,532	-	-	-	600,000	705,000	-	-
1936	Above Normal	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1937	Above Normal	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1938	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	0
1939	Dry	266,323	30%	114,303	409,621	50,105	12%	-	600,000	586,492	13,509	6,129
1940	Above Normal	358,359	5%	19,285	379,532	-	-	-	600,000	705,000	-	-
1941	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1942	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1943	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1944	Below Normal	380,626	-	-	413,688	-	-	-	600,000	695,431	-	-
1945	Above Normal	377,644	-	-	413,688	-	-	-	600,000	705,000	-	-
1946	Above Normal	375,984	-	-	413,688	-	-	-	600,000	705,000	-	0
1947	Dry	347,934	9%	32,691	409,621	-	-	-	600,000	584,796	15,204	-
1948	Above Normal	372,124	1%	5,520	379,532	-	-	-	600,000	705,000	-	-
1949	Below Normal	380,626	-	-	413,688	-	-	-	600,000	694,218	-	-
1950	Above Normal	377,644	-	-	413,688	-	-	-	600,000	705,000	-	-
1951	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1952	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1953	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1954	Above Normal	375,984	-	-	413,688	-	-	-	600,000	677,185	-	5,319
1955	Dry	380,626	-	-	409,621	-	-	-	600,000	680,043	-	-
1956	Wet	377,644	-	-	379,532	-	-	-	600,000	705,000	-	-
1957	Above Normal	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1958	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	0
1959	Dry	282,669	26%	97,957	409,621	-	-	-	600,000	605,974	-	4,760
1960	Below Normal	365,728	4%	16,558	379,532	-	-	-	600,000	638,118	-	-
1961	Critical	316,961	17%	65,325	383,903	-	-	-	600,000	609,929	-	2,023
1962	Below Normal	371,248	3%	11,038	379,532	-	-	-	600,000	705,000	-	-
1963	Wet	377,644	-	-	413,688	-	-	-	600,000	705,000	-	-
1964	Below Normal	380,626	-	-	413,688	-	-	-	600,000	651,391	-	-
1965	Wet	377,644	-	-	413,688	-	-	-	600,000	705,000	-	-
1966	Below Normal	380,626	-	-	413,688	-	-	-	600,000	619,663	-	-
1967	Wet	377,644	-	-	413,688	-	-	-	600,000	705,000	-	-
1968	Below Normal	347,934	9%	32,691	413,688	-	-	-	600,000	606,335	-	-
1969	Wet	372,124	1%	5,520	413,688	-	-	-	600,000	705,000	-	-
1970	Wet	375,984	-	-	413,688	-	-	-	600,000	633,401	-	-
1971	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1972	Below Normal	380,626	-	-	413,688	-	-	-	600,000	705,000	-	-
1973	Above Normal	377,644	-	-	413,688	-	-	-	600,000	705,000	-	-
1974	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1975	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	11,590
1976	Extreme Critical	282,669	26%	97,957	317,504	-	-	-	600,000	590,076	9,924	39,591
1977	Extreme Critical	202,436	47%	179,838	283,348	66,504	23%	-	311,000	286,950	24,050	45,000
1978	Above Normal	349,995	7%	27,649	379,532	-	-	-	600,000	705,000	-	-
1979	Below Normal	380,626	-	-	413,688	-	-	-	600,000	705,000	-	-
1980	Wet	377,644	-	-	413,688	-	-	-	600,000	705,000	-	0
1981	Dry	315,300	17%	65,325	409,621	-	-	-	600,000	582,550	17,450	2,023
1982	Wet	366,607	3%	11,038	379,532	-	-	-	600,000	705,000	-	-
1983	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1984	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1985	Below Normal	380,626	-	-	413,688	-	-	-	600,000	600,455	-	-
1986	Wet	377,644	-	-	413,688	-	-	-	600,000	705,000	-	0
1987	Critical	266,323	30%	114,303	383,903	27,919	7%	-	600,000	590,598	9,402	27,896
1988	Extreme Critical	363,001	5%	19,285	283,348	-	-	-	311,000	460,003	-	29,928
1989	Below Normal	382,286	-	-	379,532	-	-	-	600,000	685,440	-	-
1990	Dry	382,286	-	-	409,621	-	-	-	600,000	580,674	19,326	5,319
1991	Critical	349,594	9%	32,691	349,748	-	-	-	600,000	562,232	37,768	-
1992	Extreme Critical	344,074	10%	38,211	283,348	-	-	-	600,000	555,336	44,664	40,420
Average		359,017	5%	19,873	394,310	3,553	1.1%	-	585,437	654,530	3,818	5,023

COM 9180

Scenario 29: Current PG&E Practice, SWRCB Demands, and 2001 Order Flows with Term 10 Flow Reductions

Water Year	Year Type	Consumptive-Use Demand			Instream Flow Below Daguerre Point Dam				New Bullards Bar Reservoir			Additional FERC Flow
		Delivery	Deficiency, Percent of Demand	Deficiency, Volume	Flow Requirement	Instream Flow Reduction	Instream Flow Reduction	Instream Flow Shortage	Carryover Storage Requirement	End-of-September Storage	Carryover Storage Shortage	
		(af)	%	(af)	(af)	(af)	%	(af)	(af)	(af)	(af)	(af)
1922	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1923	Above Normal	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1924	Extreme Critical	225,860	18%	47,998	317,504	-	-	-	476,000	472,842	3,158	45,000
1925	Below Normal	267,136	2%	6,771	379,532	-	-	-	600,000	705,000	-	0
1926	Below Normal	273,834	-	-	413,688	-	-	-	600,000	638,582	-	0
1927	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1928	Above Normal	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1929	Dry	249,817	9%	23,999	409,621	-	-	-	600,000	603,467	-	9,461
1930	Below Normal	270,482	1%	3,386	379,532	-	-	-	600,000	705,000	-	0
1931	Extreme Critical	273,834	-	-	317,504	-	-	-	450,000	439,035	10,965	45,000
1932	Below Normal	273,834	-	-	379,532	-	-	-	600,000	705,000	-	0
1933	Dry	273,834	-	-	409,621	-	-	-	600,000	643,697	-	7,855
1934	Extreme Critical	273,834	-	-	283,348	-	-	-	334,000	562,565	-	26,792
1935	Above Normal	273,834	-	-	379,532	-	-	-	600,000	705,000	-	0
1936	Above Normal	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1937	Above Normal	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1938	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1939	Dry	220,997	19%	52,798	409,621	33,688	8%	-	600,000	598,863	1,137	14,963
1940	Above Normal	266,345	3%	7,448	379,532	-	-	-	600,000	705,000	-	0
1941	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1942	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1943	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1944	Below Normal	273,834	-	-	413,688	-	-	-	600,000	705,000	-	3,788
1945	Above Normal	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1946	Above Normal	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1947	Dry	273,834	-	-	409,621	-	-	-	600,000	634,589	-	7,855
1948	Above Normal	273,834	-	-	379,532	-	-	-	600,000	705,000	-	5,665
1949	Below Normal	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1950	Above Normal	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1951	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1952	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1953	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1954	Above Normal	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1955	Dry	273,834	-	-	409,621	-	-	-	600,000	705,000	-	7,855
1956	Wet	273,834	-	-	379,532	-	-	-	600,000	705,000	-	6,069
1957	Above Normal	273,834	-	-	413,688	-	-	-	600,000	705,000	-	3,788
1958	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1959	Dry	273,834	-	-	409,621	-	-	-	600,000	594,896	5,104	7,855
1960	Below Normal	273,834	-	-	379,532	-	-	-	600,000	705,000	-	0
1961	Critical	273,834	-	-	383,903	-	-	-	600,000	698,738	-	10,898
1962	Below Normal	273,834	-	-	379,532	-	-	-	600,000	705,000	-	18,613
1963	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1964	Below Normal	273,834	-	-	413,688	-	-	-	600,000	705,000	-	3,788
1965	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1966	Below Normal	273,834	-	-	413,688	-	-	-	600,000	694,628	-	0
1967	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1968	Below Normal	273,834	-	-	413,688	-	-	-	600,000	660,063	-	3,788
1969	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1970	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	3,788
1971	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1972	Below Normal	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1973	Above Normal	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1974	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1975	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1976	Extreme Critical	225,860	18%	47,998	317,504	-	-	-	600,000	612,571	-	45,000
1977	Extreme Critical	219,144	20%	54,769	283,348	23,945	8%	-	311,000	303,950	7,050	45,000
1978	Above Normal	267,131	2%	6,771	379,532	-	-	-	600,000	705,000	-	0
1979	Below Normal	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1980	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1981	Dry	273,834	-	-	409,621	-	-	-	600,000	603,867	-	7,855
1982	Wet	273,834	-	-	379,532	-	-	-	600,000	705,000	-	0
1983	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1984	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1985	Below Normal	273,834	-	-	413,688	-	-	-	600,000	675,402	-	0
1986	Wet	273,834	-	-	413,688	-	-	-	600,000	705,000	-	0
1987	Critical	220,997	19%	52,798	383,903	16,751	4%	-	600,000	607,560	-	30,197
1988	Extreme Critical	266,345	3%	7,448	283,348	-	-	-	311,000	582,661	-	33,063
1989	Below Normal	273,834	-	-	379,532	-	-	-	600,000	705,000	-	11,937
1990	Dry	273,834	-	-	409,621	-	-	-	600,000	666,845	-	-
1991	Critical	273,834	-	-	349,748	-	-	-	600,000	673,691	-	10,898
1992	Extreme Critical	273,834	-	-	283,348	-	-	-	600,000	705,000	-	38,728
Average		269,439	2%	4,397	394,310	1,048	0.3%	-	584,254	674,979	386	6,415

COM 9181

Water Year	Year Type	Consumptive-Use Demand: Delivery (af)	Consumptive-Use Demand: Deficiency, Percent of Demand %	Consumptive-Use Demand: Deficiency, Volume (af)	Instream Flow Below Daguerre Point Dam: Flow Requirement (af)	Instream Flow Below Daguerre Point Dam: Instream Flow Reduction (af)	Instream Flow Below Daguerre Point Dam: Instream Flow Reduction %	Instream Flow Below Daguerre Point Dam: Instream Flow Shortage (af)	New Bullards Bar Reservoir: Carryover Storage Requirement (af)	New Bullards Bar Reservoir: End-of-September Storage (af)	New Bullards Bar Reservoir: Carryover Storage Shortage (af)	Additional FERC Flow (af)
1922	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1923	Above Normal	331,811	-	-	413,688	-	-	-	600,000	705,000	-	2,610
1924	Extreme Critical	267,265	19%	64,546	317,504	51,483	16%	-	486,000	471,198	14,802	45,000
1925	Below Normal	323,407	3%	8,404	379,532	-	-	-	600,000	705,000	-	-
1926	Below Normal	331,811	-	-	413,688	-	-	-	600,000	591,996	8,004	-
1927	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1928	Above Normal	331,811	-	-	413,688	-	-	-	600,000	705,000	-	260
1929	Dry	273,221	18%	58,589	409,621	-	-	-	600,000	587,712	12,288	5,950
1930	Below Normal	324,256	2%	7,555	379,532	-	-	-	600,000	666,470	-	0
1931	Extreme Critical	267,265	19%	64,546	317,504	51,483	16%	-	460,000	456,684	3,316	45,000
1932	Below Normal	323,407	3%	8,404	379,532	-	-	-	600,000	705,000	-	-
1933	Dry	331,811	-	-	409,621	-	-	-	600,000	619,066	-	15,715
1934	Extreme Critical	331,811	-	-	283,348	-	-	-	344,000	508,872	-	43,598
1935	Above Normal	331,811	-	-	379,532	-	-	-	600,000	705,000	-	-
1936	Above Normal	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1937	Above Normal	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1938	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	260
1939	Dry	267,265	19%	64,546	409,621	74,730	18%	-	600,000	594,066	5,935	6,426
1940	Above Normal	323,407	3%	8,404	379,532	-	-	-	600,000	705,000	-	-
1941	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1942	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1943	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1944	Below Normal	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1945	Above Normal	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1946	Above Normal	331,811	-	-	413,688	-	-	-	600,000	705,000	-	260
1947	Dry	331,811	-	-	409,621	-	-	-	600,000	585,574	14,426	1,428
1948	Above Normal	331,811	-	-	379,532	-	-	-	600,000	705,000	-	-
1949	Below Normal	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1950	Above Normal	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1951	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1952	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1953	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1954	Above Normal	331,811	-	-	413,688	-	-	-	600,000	705,000	-	8,622
1955	Dry	331,811	-	-	409,621	-	-	-	600,000	705,000	-	1,428
1956	Wet	331,811	-	-	379,532	-	-	-	600,000	705,000	-	-
1957	Above Normal	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1958	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	2,610
1959	Dry	273,221	18%	58,589	409,621	-	-	-	600,000	600,127	-	5,950
1960	Below Normal	324,256	2%	7,555	379,532	-	-	-	600,000	666,483	-	-
1961	Critical	331,811	-	-	383,903	-	-	-	600,000	609,036	-	1,428
1962	Below Normal	331,811	-	-	379,532	-	-	-	600,000	705,000	-	-
1963	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1964	Below Normal	331,811	-	-	413,688	-	-	-	600,000	684,645	-	-
1965	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1966	Below Normal	331,811	-	-	413,688	-	-	-	600,000	648,019	-	-
1967	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1968	Below Normal	331,811	-	-	413,688	-	-	-	600,000	607,114	-	-
1969	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1970	Wet	331,811	-	-	413,688	-	-	-	600,000	662,057	-	-
1971	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1972	Below Normal	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1973	Above Normal	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1974	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1975	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	8,622
1976	Extreme Critical	267,265	19%	64,546	317,504	21,551	7%	-	600,000	604,990	-	36,028
1977	Extreme Critical	206,105	38%	125,706	283,348	66,501	23%	-	311,000	289,539	21,461	45,000
1978	Above Normal	316,463	5%	15,348	379,532	-	-	-	600,000	705,000	-	-
1979	Below Normal	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1980	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	260
1981	Dry	273,221	18%	58,589	409,621	-	-	-	600,000	609,099	-	5,950
1982	Wet	324,256	2%	7,555	379,532	-	-	-	600,000	705,000	-	-
1983	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1984	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	-
1985	Below Normal	331,811	-	-	413,688	-	-	-	600,000	628,809	-	-
1986	Wet	331,811	-	-	413,688	-	-	-	600,000	705,000	-	6,272
1987	Critical	267,265	19%	64,546	383,903	50,254	13%	-	600,000	593,829	6,171	20,798
1988	Extreme Critical	323,407	3%	8,404	283,348	-	-	-	311,000	496,479	-	43,598
1989	Below Normal	331,811	-	-	379,532	-	-	-	600,000	705,000	-	5,665
1990	Dry	331,811	-	-	409,621	-	-	-	600,000	613,911	-	2,350
1991	Critical	331,811	-	-	349,748	-	-	-	600,000	607,034	-	1,428
1992	Extreme Critical	331,811	-	-	283,348	-	-	1	600,000	598,344	1,656	43,598
Average		322,010	3%	9,800	394,310	4,451	1.3%	0.01	584,676	662,411	1,240	5,720

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Figure 2
Summary of Simulation Results (Scenario 21): Instream Flow Shortages, Delivery Deficiencies, and New Bullards Bar Reservoir Carryover Storage Shortages

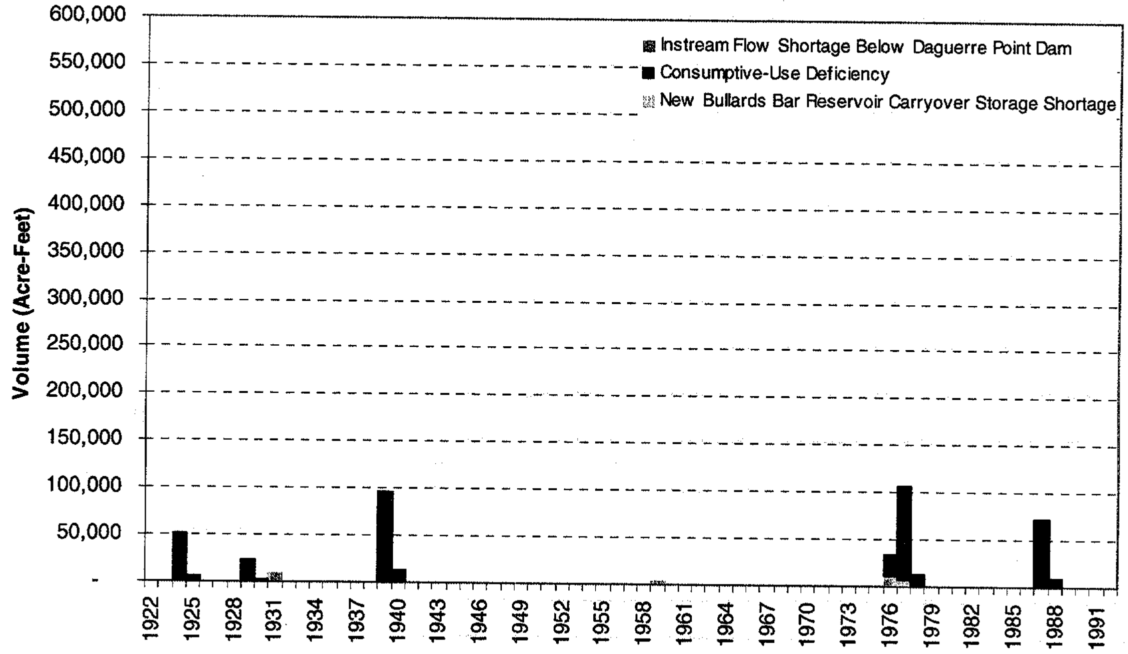

Figure 4
Summary of Simulation Results (Scenario 22): Instream Flow Shortages, Delivery Deficiencies, and New Bullards Bar Reservoir Carryover Storage Shortages

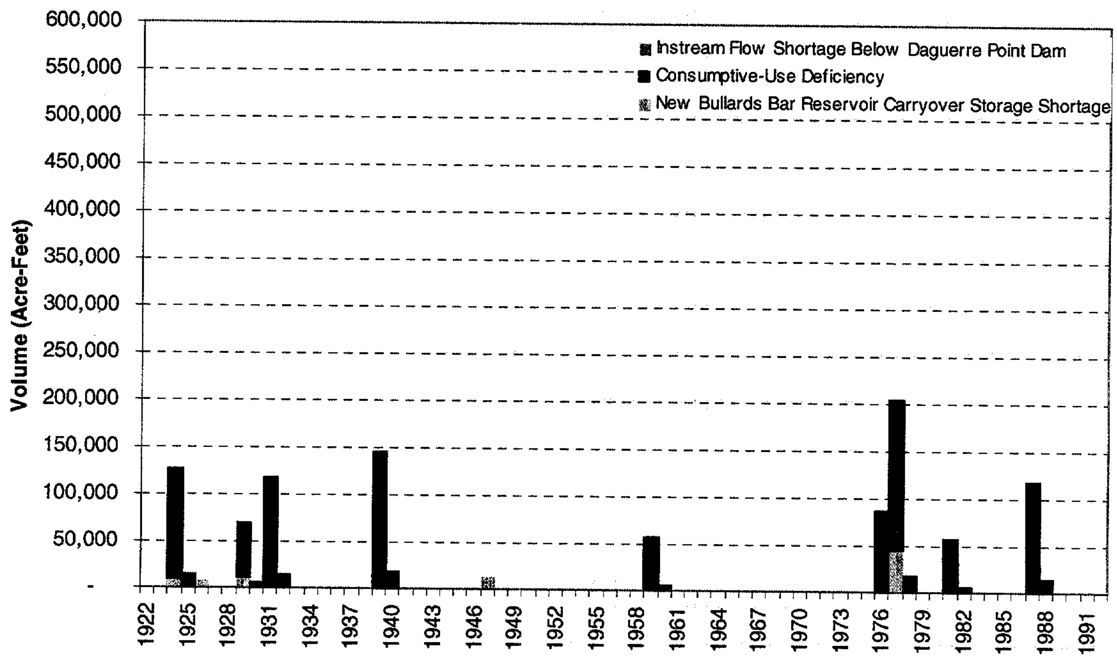

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Figure 5
Summary of Simulation Results (Scenario 18): Instream Flow Shortages, Delivery Deficiencies, and New Bullards Bar Reservoir Carryover Storage Shortages

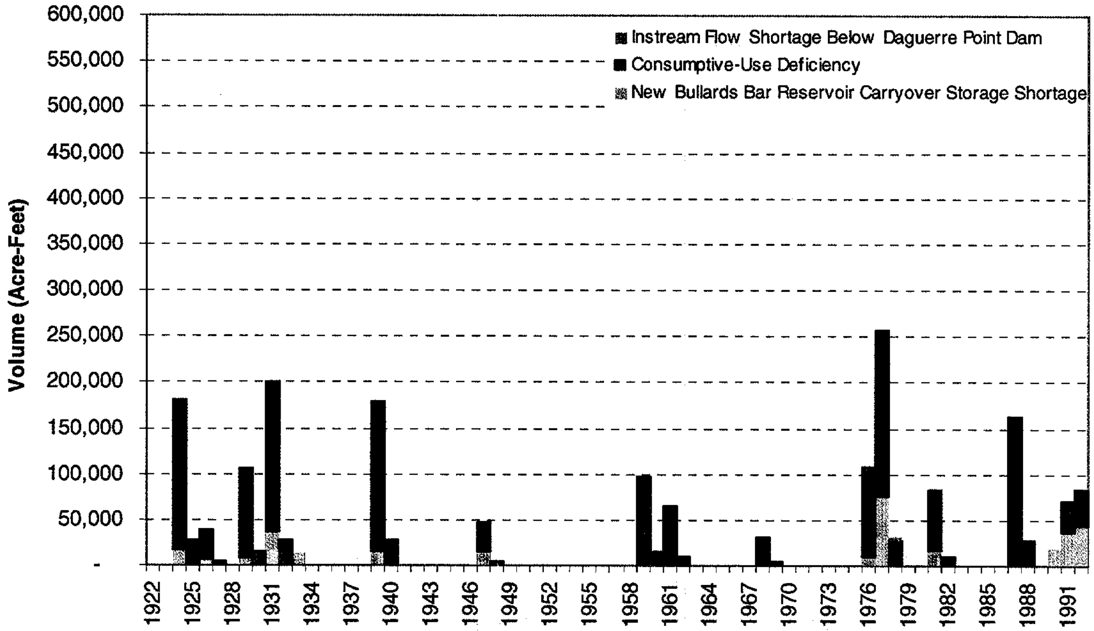

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Figure 6
Summary of Simulation Results (Scenario 23): Instream Flow Shortages, Delivery Deficiencies, and New Bullards Bar Reservoir Carryover Storage Shortages

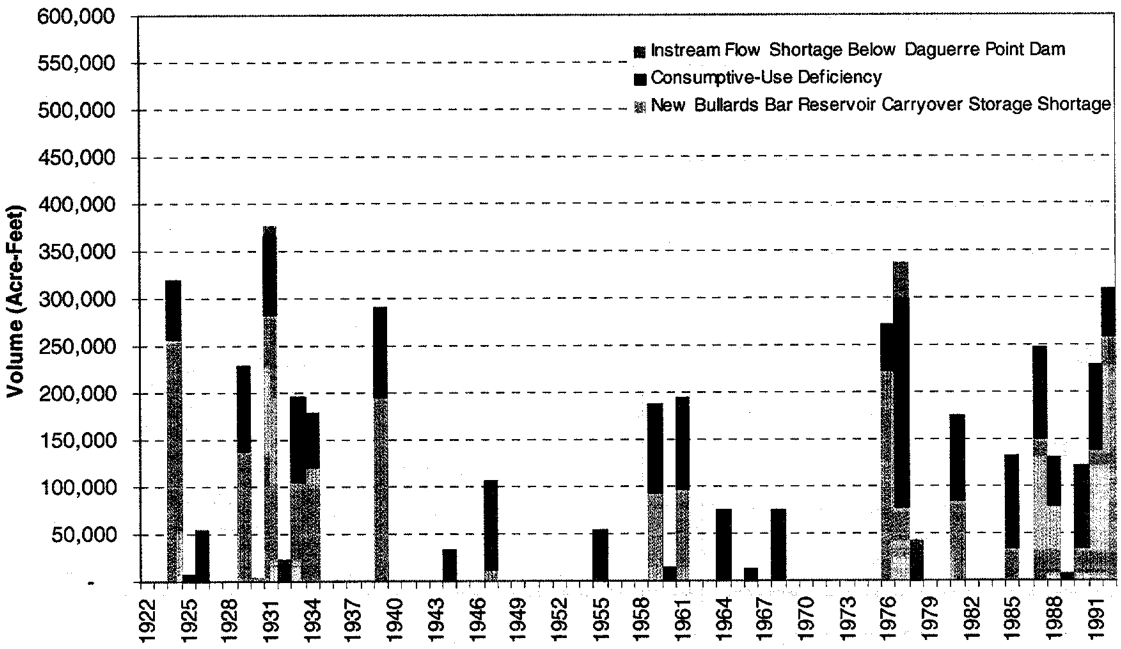


Figure 8
Summary of Simulation Results (Scenario 24): Instream Flow Shortages, Delivery Deficiencies, and New Bullards Bar Reservoir Carryover Storage Shortages

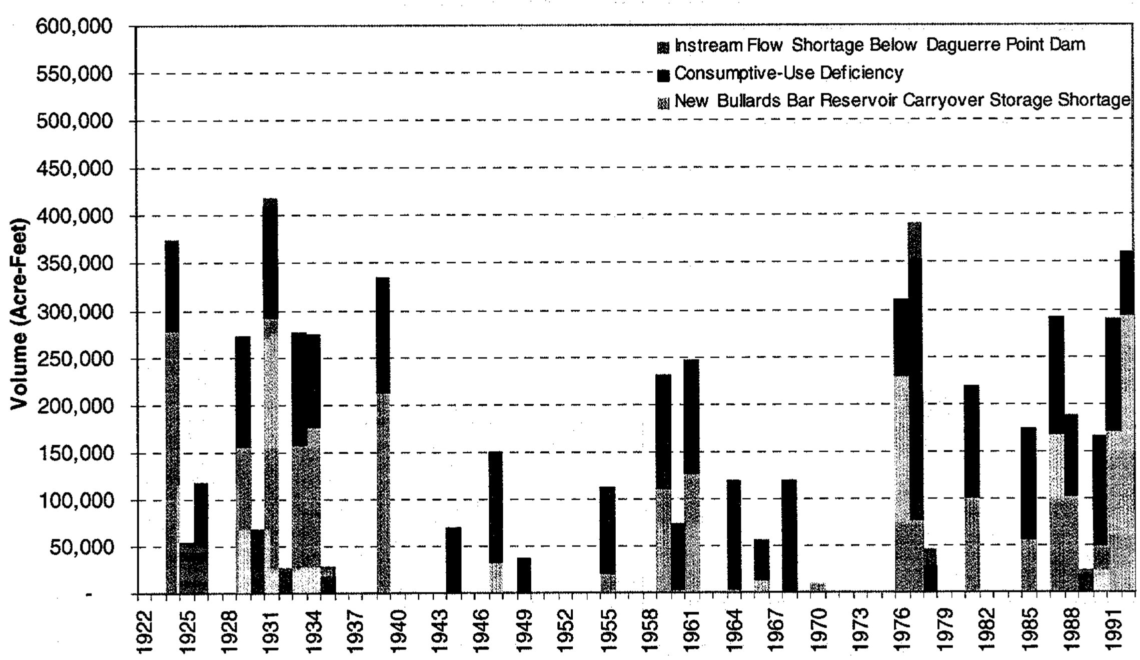


Figure 7
Summary of Simulation Results (Scenario 19): Instream Flow Shortages, Delivery Deficiencies, and New Bullards Bar Reservoir Carryover Storage Shortages

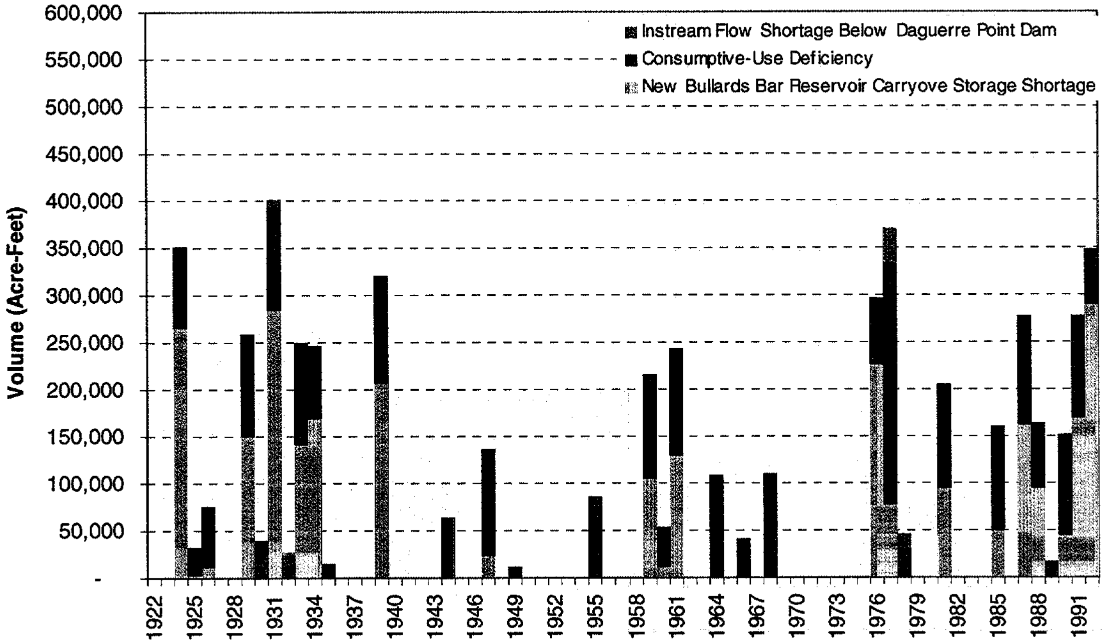
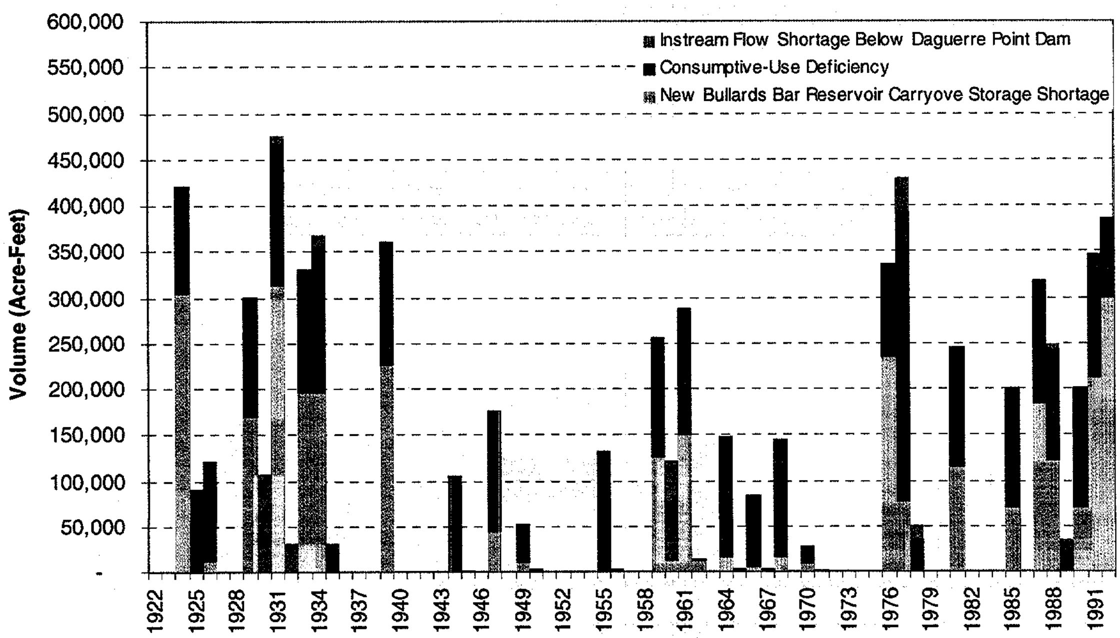


Figure 9
Summary of Simulation Results (Scenario 20): Instream Flow Shortages, Delivery Deficiencies, and New Bullards Bar Reservoir Carryover Storage Shortages



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Water Year	Year Type	Consumptive-Use Demand: Delivery (af)	Consumptive-Use Demand: Deficiency, Percent of Demand %	Consumptive-Use Demand: Deficiency, Volume (af)	Instream Flow Below Daguerre Point Dam: Instream Flow Requirement (af)	Instream Flow Below Daguerre Point Dam: Instream Flow Reduction (af)	Instream Flow Below Daguerre Point Dam: Instream Flow Reduction %	Instream Flow Below Daguerre Point Dam: Instream Flow Shortage (af)	New Bullards Bar Reservoir: Carryover Storage Requirement (af)	New Bullards Bar Reservoir: End-of-September Storage (af)	New Bullards Bar Reservoir: Carryover Storage Shortage (af)	Additional FERC Flow (af)
1922	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1923	Above Normal	375,984	-	-	413,688	-	-	-	600,000	705,000	-	0
1924	Extreme Critical	266,323	30%	114,303	317,504	53,877	17%	-	504,000	486,452	17,548	45,000
1925	Below Normal	363,001	5%	19,285	379,532	-	-	-	600,000	705,000	-	-
1926	Below Normal	349,594	9%	32,691	413,688	-	-	-	600,000	593,335	6,665	-
1927	Wet	372,124	1%	5,520	413,688	-	-	-	600,000	705,000	-	-
1928	Above Normal	375,984	-	-	413,688	-	-	-	600,000	705,000	-	0
1929	Dry	282,669	26%	97,957	409,621	-	-	-	600,000	590,905	9,095	4,760
1930	Below Normal	365,728	4%	16,558	379,532	-	-	-	600,000	638,105	-	0
1931	Extreme Critical	264,702	31%	117,583	317,504	53,877	17%	-	478,000	446,480	31,520	45,000
1932	Below Normal	362,396	5%	19,890	379,532	-	-	-	600,000	705,000	-	-
1933	Dry	382,286	-	-	409,621	-	-	-	600,000	585,028	14,972	11,937
1934	Extreme Critical	382,286	-	-	283,348	-	-	-	362,000	449,054	-	29,928
1935	Above Normal	377,644	-	-	379,532	-	-	-	600,000	705,000	-	-
1936	Above Normal	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1937	Above Normal	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1938	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	0
1939	Dry	266,323	30%	114,303	409,621	50,105	12%	-	600,000	586,492	13,509	6,129
1940	Above Normal	358,359	5%	19,285	379,532	-	-	-	600,000	705,000	-	-
1941	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1942	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1943	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1944	Below Normal	380,626	-	-	413,688	-	-	-	600,000	695,431	-	-
1945	Above Normal	377,644	-	-	413,688	-	-	-	600,000	705,000	-	-
1946	Above Normal	375,984	-	-	413,688	-	-	-	600,000	705,000	-	0
1947	Dry	347,934	9%	32,691	409,621	-	-	-	600,000	584,796	15,204	-
1948	Above Normal	372,124	1%	5,520	379,532	-	-	-	600,000	705,000	-	-
1949	Below Normal	380,626	-	-	413,688	-	-	-	600,000	694,218	-	-
1950	Above Normal	377,644	-	-	413,688	-	-	-	600,000	705,000	-	-
1951	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1952	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1953	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1954	Above Normal	375,984	-	-	413,688	-	-	-	600,000	677,185	-	5,319
1955	Dry	380,626	-	-	409,621	-	-	-	600,000	680,043	-	-
1956	Wet	377,644	-	-	379,532	-	-	-	600,000	705,000	-	-
1957	Above Normal	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1958	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	0
1959	Dry	282,669	26%	97,957	409,621	-	-	-	600,000	605,974	-	4,760
1960	Below Normal	365,728	4%	16,558	379,532	-	-	-	600,000	638,118	-	-
1961	Critical	316,961	17%	65,325	383,903	-	-	-	600,000	609,929	-	2,023
1962	Below Normal	371,248	3%	11,038	379,532	-	-	-	600,000	705,000	-	-
1963	Wet	377,644	-	-	413,688	-	-	-	600,000	705,000	-	-
1964	Below Normal	380,626	-	-	413,688	-	-	-	600,000	651,391	-	-
1965	Wet	377,644	-	-	413,688	-	-	-	600,000	705,000	-	-
1966	Below Normal	380,626	-	-	413,688	-	-	-	600,000	619,663	-	-
1967	Wet	377,644	-	-	413,688	-	-	-	600,000	705,000	-	-
1968	Below Normal	347,934	9%	32,691	413,688	-	-	-	600,000	606,335	-	-
1969	Wet	372,124	1%	5,520	413,688	-	-	-	600,000	705,000	-	-
1970	Wet	375,984	-	-	413,688	-	-	-	600,000	633,401	-	-
1971	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1972	Below Normal	380,626	-	-	413,688	-	-	-	600,000	705,000	-	-
1973	Above Normal	377,644	-	-	413,688	-	-	-	600,000	705,000	-	-
1974	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1975	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	11,590
1976	Extreme Critical	282,669	26%	97,957	317,504	-	-	-	600,000	590,076	9,924	39,591
1977	Extreme Critical	202,436	47%	179,838	283,348	66,504	23%	-	311,000	286,950	24,050	45,000
1978	Above Normal	349,995	7%	27,649	379,532	-	-	-	600,000	705,000	-	-
1979	Below Normal	380,626	-	-	413,688	-	-	-	600,000	705,000	-	-
1980	Wet	377,644	-	-	413,688	-	-	-	600,000	705,000	-	0
1981	Dry	315,300	17%	65,325	409,621	-	-	-	600,000	582,550	17,450	2,023
1982	Wet	366,607	3%	11,038	379,532	-	-	-	600,000	705,000	-	-
1983	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1984	Wet	375,984	-	-	413,688	-	-	-	600,000	705,000	-	-
1985	Below Normal	380,626	-	-	413,688	-	-	-	600,000	600,455	-	-
1986	Wet	377,644	-	-	413,688	-	-	-	600,000	705,000	-	0
1987	Critical	266,323	30%	114,303	383,903	27,919	7%	-	600,000	590,598	9,402	27,896
1988	Extreme Critical	363,001	5%	19,285	283,348	-	-	-	311,000	460,003	-	29,928
1989	Below Normal	382,286	-	-	379,532	-	-	-	600,000	685,440	-	-
1990	Dry	382,286	-	-	409,621	-	-	-	600,000	580,674	19,326	5,319
1991	Critical	349,594	9%	32,691	349,748	-	-	-	600,000	562,232	37,768	-
1992	Extreme Critical	344,074	10%	38,211	283,348	-	-	-	600,000	555,336	44,664	40,420
Average		359,017	5%	19,873	394,310	3,553	1.1%	-	585,437	654,530	3,818	5,023

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I, Paul M. Bratovich, declare:

1. I testified as a witness during the 2000 State Water Resources Control Board ("SWRCB") lower Yuba River hearing. A resume accurately stating my education and experience was submitted during that hearing as exhibit S-YCWA-6. The statements in this declaration are based on my own personal knowledge which was developed through my review of the relevant data and data analyses performed by members of my staff under my supervision.

INTRODUCTION

2. During 1992 the SWRCB held 14 days of hearings to receive testimony and other evidence regarding fishery and other issues in the lower Yuba River. SWRCB staff prepared a draft decision in 1996, and officially released the 1996 draft decision in 1999. The SWRCB then held a supplemental hearing over 13 days during 2000 and, on November 7, released a new draft decision.

3. On March 1, 2001, the SWRCB issued Decision 1644 ("D-1644") regarding the protection of fishery resources and other issues relating to diversion and use of water from the lower Yuba River. Among other requirements, D-1644 specifies minimum flow requirements for the lower Yuba River. Instream flows for protection of fishery resources reportedly were developed (D-1644, pgs. 48-49) to provide habitat for adult attraction and passage, spawning, egg incubation, juvenile rearing and emigration of chinook salmon, steelhead, and American shad in the lower Yuba River. However, the flow requirements in D-1644, particularly during the spring (i.e., late April, May and June) appear to have been based on inaccurate and insufficient information in the hearing record. In addition, juvenile salmonid emigration data collected by rotary screw trapping (RST) conducted by the California Department of Fish and Game (CDFG), which was not available for analysis during the 2000 hearing, draws into question the appropriateness of the spring flow requirements.

4. The following comments regarding flow requirements presented in D-1644 are intended to provide clarification and a better understanding of the information contained in the hearing record, in an effort to assist the SWRCB in its reconsideration of flow requirements, and particularly the spring requirements, in D-1644.

INSTREAM FLOW REQUIREMENTS

5. Minimum instream flow requirements specified in D-1644 include both interim and long-term requirements for specified periods by water-year type (see **Appendix A**). D-1644 specifies that the long-term instream flow requirements will come into effect on April 21, 2006. One important difference between the interim and long-term flow requirements is the minimum flows specified for late April, May and June of

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dry and critical years. During late April, May and June of dry and critical years, minimum flows under the interim requirements would be lower than those under the long-term requirements, but there is no solid evidence that such lower flows would adversely affect emigrating juvenile salmon. The only quantitative evidence cited in D-1644 for the proposition that higher spring flows would help emigrating salmon is a USFWS report regarding correlations between adult salmon escapements and spring flows 2 1/2 years earlier (See D-1644, pg. 66). However, that report, exhibit S-DOI-9, actually just shows statistical correlations between San Joaquin River and Delta flows and subsequent spawning escapements, and does not even address the lower Yuba River. Moreover, no statistically significant relationship exists between May flows in the Yuba River and subsequent adult spawning escapements to the Yuba River (see **Appendix B**). Appendix B also shows that spawning escapements to the Yuba River exceeding 15,000 adult fish frequently occurred 2 1/2 years after May flows in the 270-500 cfs range that is proposed for dry and critical years in the D-1644 interim instream flow schedule.

D-1644 RATIONALE AND EVIDENCE FOR SPRING FLOW REQUIREMENTS

6. D-1644 states that its instream flow requirements were developed in consideration of fish species and lifestages for three specific periods of the year (September 15 through mid-April, mid-April through June, and July through mid-September). According to D-1644 (p. 61) ... "*The primary fishery consideration in the April through June period is to provide adequate flows for juvenile chinook salmon and steelhead emigration. No specific studies of flows needed for steelhead or chinook salmon emigration have been conducted in the lower Yuba River...*". Despite recognizing the need for an emigration study to determine the flow needs for chinook emigration in the spring period (i.e., April through June), D-1644 nevertheless concluded that the available record was sufficient to justify the required minimum spring instream flows. According to D-1644 (pg. 62):

- "*..., the record indicates that emigration of juvenile chinook salmon from the lower Yuba River begins in late April, peaks in May, and is normally complete by the second week in June...*".

Moreover, D-1644 (pg. 62) also states:

- ..."*Since emigration does not normally begin until the last week of April, flows for juvenile salmon migration need not begin until that time....*".

7. However, recent juvenile anadromous salmonid emigration data from CDFG rotary screw trap surveys, which was not available for analysis during the 2000 hearing, demonstrate the inaccuracy of the above statements, and thereby draws into question the logic supporting the relatively high spring long-term flow requirements in D-1644.

CDFG SALMONID EMIGRATION SAMPLING

CDFG Rotary Screw Trap Emigration Surveys

8. CDFG operated a Rotary Screw Trap (RST) in the Yuba River from November 24, 1999 to June 30, 2000, and CDFG has operated this trap from October 29, 2000 to present. The RST is located on the lower Yuba River, approximately seven miles above its confluence with the Feather River. The trap is serviced daily by CDFG staff. Daily sampling records of chinook and steelhead caught in the RST, and trap fishing variables, were used to prepare daily abundance indexes for emigrating chinook salmon and steelhead juveniles. For a detailed discussion of the analytical procedure, see **Appendix C**.

Juvenile Chinook Salmon

9. By the end of the 1999/2000 RST sampling season (i.e., July 1, 2000), the sum of the daily chinook salmon abundance indices was 10,212,269 juveniles, indicating successful survival of these fish from egg deposition through juvenile emigration.

10. The 1999/2000 juvenile chinook salmon emigration season started with low numbers in late November. Abundance appears to have increased steadily until mid-January. From mid-January through mid-February, the abundance indices fluctuated considerably, with alternating values as large as 1,860,000 fish and as low as 45,000 fish. These large daily indices produced large increases in the cumulative distribution, so that by the end of January, 59% of the juvenile chinook salmon appeared to have emigrated.

11. During March, an estimated 207,714 juveniles had passed the Yuba River RST. By April 21, 2000, an estimated total of 10,075,861 juveniles -- 99% of the total for the season -- had emigrated past the RST. Therefore, the distribution of the 1999/2000 juvenile chinook salmon abundance indices does not support the D-1644 finding that juvenile chinook salmon emigration from the Yuba River begins in April and peaks in May. This incorrect finding is the basis of the D-1644 spring flow requirements.

12. The RST data do not indicate a correlation between juvenile chinook salmon emigration abundance and flow. During the 1999/2000 and ongoing RST sampling seasons, daily flows were maintained at 700 cfs until mid-January. This period coincided with the slow but steady increase of juvenile daily abundance indices. From mid-January to mid-February 2000, daily flows had dramatic oscillations between a low of 832 cfs, and a high of 17,044 cfs. For this period, juvenile chinook salmon abundance also displayed dramatic oscillations. Oscillations, both in daily flows and abundance indices, also were present from mid-January to mid-February 2001 (Appendix C, Figure 9).

13. From mid-February through mid-March 2000, when daily juvenile chinook salmon abundance decreased to low levels, flows kept fluctuating over the 4,000 cfs level. From mid-March through the end of June 2000, daily flows decreased towards the

800 cfs level. The regression analysis performed to examine a potential relationship between daily abundance indices and flow (Appendix C, Table 4) exhibited an extremely weak relationship ($r^2 = 0.03$, $P = 0.05$).

Juvenile Steelhead

14. At the end of June 2000, an estimated total of 12,496 steelhead juveniles had emigrated past the Yuba River RST. This number is extremely low compared to the 10,212,269 estimate for juvenile chinook salmon. It is suspected that steelhead juveniles actively avoided the RST, in which case the estimated abundance indices would have substantially underestimated the number of emigrating steelhead juveniles.

15. The temporal pattern displayed by the juvenile steelhead daily abundance indices was different from the pattern displayed by the juvenile chinook salmon indices. The alteration of high and low daily indices started in mid-January and continued through the end of June (see Appendix C, Figure 10). Available steelhead abundance indices suggest that by April 21, 2000, only 44% of the juveniles had emigrated past the RST. By the end of May, 73% of steelhead juveniles might have emigrated from the Yuba River. However, these emigration timing percentages for steelhead juveniles may not be accurate, if steelhead juveniles actively avoided the RST.

16. Available juvenile steelhead abundance and flow data did not show any statistically significant relationship between juvenile steelhead emigration and flow. As with emigrating juvenile chinook salmon, no clear correspondence between flow and steelhead emigration peaks could be found for the mid-January to mid-February period. Moreover, the dramatic fluctuations of the juvenile steelhead abundance indices continued until the end of the 1999/00 season, when the average daily flows steadily decreased towards 800 cfs (see Appendix C, Figure 12). Regression analysis of daily juvenile abundance indices as a linear function of average daily flow, minimum and maximum daily flows, and daily flow variance, did not exhibit a significant relationship between flow and abundance either ($r^2 = 0.01$, $P = 0.46$, see Appendix C, Table 5).

CONCLUSIONS

17. **Juvenile Chinook Salmon**

- An estimated total of 10,075,861 juveniles (99% of season's total) emigrated before April 21, 2000.
- The relationship between juvenile chinook salmon emigration abundance and flow was extremely weak.
- The analysis of the RST emigration surveys, the only quantitative information currently available, draws into question the appropriateness of the spring flow requirements in D-1644.

18. **Juvenile Steelhead**

- The very low numbers of juvenile steelhead trapped in the RST suggest extremely low trapping efficiencies. Consequently, the calculated abundance indices may have grossly underestimated the number of emigrating juveniles.
- The daily juvenile steelhead abundance indices did not exhibit a significant relationship with daily flows.

I declare under penalty of perjury that the foregoing is true and correct.

Executed at Sacramento, California on March 29, 2001.

Paul M Bratovich

Paul M. Bratovich

APPENDIX A

Interim Instream Flow Requirements

Period	Wet & Above Normal Years (cfs)		Below Normal Years (cfs)		Dry Years (cfs)	
	Smartville Gage	Marysville Gage	Smartville Gage	Marysville Gage	Smartville Gage	Marysville Gage
Sep 15-Oct 14	700	250	550	250	500	250
Oct 15-Apr 20	700	500	700	500	600	400
Apr 21-Apr 30	--	1,000	--	900	--	400
May 1-May 31	--	1,500	--	1,500	--	500
Jun 1	--	1,050	--	1,050	--	400
Jun 2-Jun 30	--	800	--	800	--	400
Jul 1	--	560	--	560	--	280
Jul 2	--	390	--	390	--	250
Jul 3-Sep 14	--	250	--	250	--	250
Period	Critical Years (cfs)					
	Smartville Gage	Marysville Gage				
Sep 15-Oct 1	400	150				
Oct 1-Oct 14	400	250				
Oct 15-Apr 20	600	400				
Apr 21	--	280				
Apr 22-Apr 30	--	270				
May 1-May 31	--	270				
Jun 1-July 2	--	(See Note)				
July 3-Sep 14	--	100				

Table Note: The interim instream flow requirements for June 1-30 of critical years shall be 245 cfs pursuant to the provisions of the agreement between Yuba County Water Agency and the Department of Fish and Game dated September 2, 1965, except if a lower flow is allowed pursuant to the provisions of the 1965 agreement. The minimum flow on July 1 shall be 70 percent of the flow on June 30, and the minimum flow on July 2 shall be 70 percent of the flow on July 1.

Source: D-1644, pg. 175

Long-Term Instream Flow Requirments

Periods	Wet, Above Normal & Below Normal Years (cfs)		Dry Years (cfs)		Critical Years (cfs)		Extreme Critical Years* (cfs)	
	Smartville Gage	Marysville Gage	Smartville Gage	Marysville Gage	Smartville Gage	Marysville Gage	Smartville Gage	Marysville Gage
Sept. 15 - Oct 14	700	250	500	250	400	250	400	250
Oct 15 - Apr 20	700	500	600	400	600	400	600	400
Apr 21 - Apr 30	--	1,000	--	1,000	--	1,000	--	500
May 1 - May 31	--	1,500	--	1,500	--	1,100	--	500
Jun 1	--	1,050	--	1,050	--	800	--	500
Jun 2	--	800	--	800	--	800	--	500
Jun 3 - Jun 30	--	800	--	800	--	800	--	500
Jul 1	--	560	--	560	--	560	--	500
Jul 2	--	390	--	390	--	390	--	390
Jul 3 - Sept. 14	--	250	--	250	--	250	--	250

* "Extreme Critical" year classification is defined as: Equal to or less than 540 TAF on the Yuba River Index scale.

Source: D-1644, pg. 174

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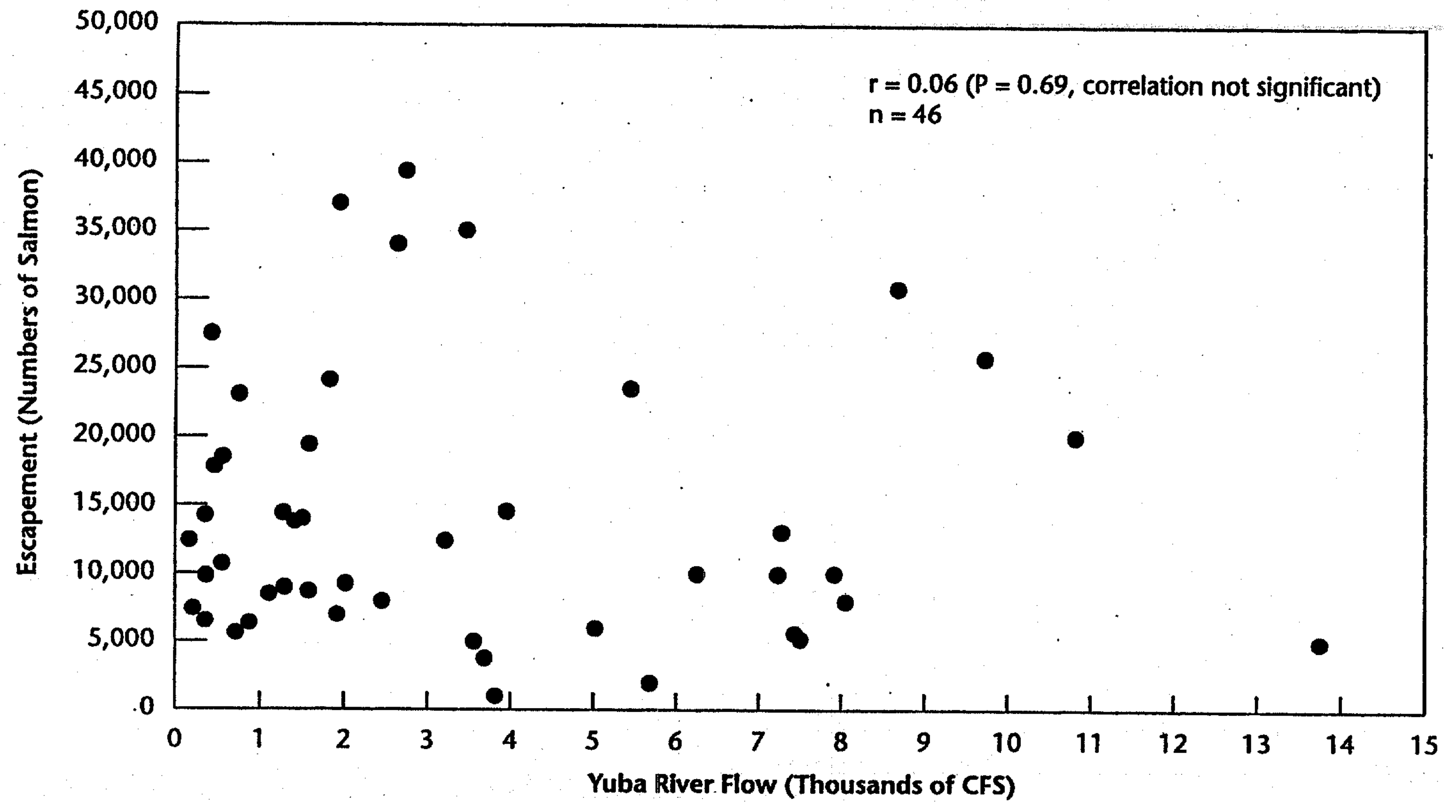
APPENDIX B

Yuba County Water Agency November 27, 2000
General Comments on November 7, 2000 State Water Resources Control Board Draft Lower Yuba River Decision
Figure at Tab 11



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APPENDIX C

CDFG SALMONID EMIGRATION SAMPLING

Methods and Materials

The California Department of Fish and Game (CDFG) recently initiated juvenile salmonid emigration sampling using a rotary screw trap in the lower Yuba River. The Yuba River rotary screw trap (RST) data consists of two sampling seasons: the 1999/2000 season, from 11/24/99 to 6/30/00, and the ongoing 2000/2001 sampling season, from 10/29/00 to 2/28/01. CDFG maintains and services the RST on the Yuba River, and did not operate the sampling device from July through October 2000.

The rotary screw trap used to sample outmigrating Yuba River chinook salmon and steelhead juveniles is an 8-foot diameter conical device located on the Yuba River, near the crossing of Hallwood Blvd, approximately seven miles upstream from the Feather River. During each sampling season, the RST is placed in the main current of the Yuba River closer to the left bank, which is the steepest. At the start of the sampling season, CDFG personnel install the RST, measure the water velocity within the trap, and start the counter that records the number of revolutions of the trap. This counter serves as an index of water velocity. In subsequent sampling days until the end of June, the trap is serviced daily by CDFG personnel who follow the following sampling protocol (Ian Drury, CDFG, *pers. com.* 2000):

1) stop and read revolution counter and record time;
2) inspect trap for damages or malfunction;
3) count chinook salmon caught in the trap;
4) measure up to 200 chinook salmon;
5) weigh and measure up to 40 chinook salmon;
6) count, measure and weigh all steelhead;
7) identify and count other fish caught;
8) reset trap, start revolution counter and record time; and
9) record water velocity, temperature and turbidity.

The 1999/2000 RST sampling season consisted of 220 days, and the 2000/2001 sampling season, through February 28 (the last date for which CDFG has provided data) consisted of 122 days. The RST was operational 322 of the total of 342 days for both seasons combined. During the remaining 20 days, the RST was not operated due to various logistic reasons. For example, from 1/23/00 to 1/28/00 and on 1/30/00 the RST did not operate due to high flows, and from 5/19/00 to 5/21/00 it did not operate due to boat races in the Yuba River. Moreover, during the 322 RST operational days, the RST did not perform equally well. The RST worked normally for 305 days (Gear condition code = 1); during the remaining 17 days the RST did not perform according to standards due to partial (Gear condition code = 2, 6 days) or total blockage (Gear condition code = 3, 6 days) caused by heavy debris or filamentous algae accretion. Sometimes, oversized items were found obstructing the trap (e.g., a 14-foot canoe was found inside the trap on 5/28/00). Finally, the cone was found not rotating (Gear condition code = 4) on 5 days.

Figures 1-4 show the available time series of trap revolutions per minute (RPM), water velocities, and raw chinook salmon and steelhead counts. There were 315 daily records of RPM,

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96.6% of the RST operational days, with an average of 4.1 RPM and standard error of 1.5 (Fig. 1). Water velocity (f/s) was recorded 234 times, 71.8% of the RST operational days, with an average of 3.0 f/s and standard error of 0.5 (Fig. 2). There were 322 records of juvenile chinook salmon counts (Fig. 3) with an average of 2,747 fish per day and standard error of 8,275, fish, and 322 records of steelhead counts (Fig. 4) with an average of 4 fish per day and standard error of 6. Not all of the 322 chinook records were actual counts. On January 16 and 18, 2000 the recorded 85,230 and 100,000 fish were approximations. Similarly, the number of chinook salmon recorded for February 11 and 13, 2000 consisted of an actual count of live fish plus a guessed number of 5,000 dead fish, and 79 juvenile chinook salmon were counted on May 5, 2000, but an unknown number escaped during live well netting. Finally, Figure 5 shows the number of days when the debris found in the RST was light, moderate or heavy.

Flow information for the RST sampling seasons was gathered from CDEC flow event records (California Data Exchange Center, California Department of Water Resources, *http://cdec.water.ca.gov*) for the United States Geological Service (USGS) gage near Marysville, Yuba River mile 6.2. Flow event records are flow measurements (cfs) taken every 15 minutes. The flow event records for both RST sampling seasons were gathered and processed to obtain the average, maximum, minimum and variances of the flow events for each RST daily sampling period. Following CDFG standards, the RST daily sampling period was estimated as the time elapsing between the start of two consecutive sampling days.

As suggested by the summary of RST sampling information mentioned earlier (Figs. 1-4), CDFG personnel did not always follow all nine steps of the monitoring protocol, which caused some information gaps in some of the measurable variables. Of particular interest for the present analysis are the gaps in the water velocity time series. Water velocity was measured on 234 occasions, 71.8% of the RST operational days. In order to obtain a complete series of count expansions (see below), the water-velocity and fish-count time series need to be matched. This task required the estimation of water velocity for 93 sampling periods.

The estimation of the 93 missing water velocities was performed using a linear regression approach in three different ways. First, when a RPM record for the sampling period with the missing water velocity was available, the following regression was applied:

$$v = 5.42 - 3.11RPM + 1.29RPM^2 - 0.22RPM^3 + 0.01RPM^4 - 0.29M + 0.01DoY \quad \textbf{(1)}$$

where v is the predicted water velocity, RPM are the revolutions per minute, M is the month of the missing record ($M = \{1, ..., 12\}$), and DoY is the number of the day in the year for the missing information ($DoY = \{1, ..., 365\}$). The fit to regression model 1 displayed a moderate coefficient of determination ($r^2 = 0.42$), but the fit was highly significant ($\mathrm{P}(F) < 0.00001$) for the standard level of significance ($\alpha = 0.05$). All regression coefficients also were significant at $\alpha = 0.05$ (Table 1). Regression equation 1 was used to estimate 80 out of the 93 missing water velocities.

Second, when a RPM record for the sampling period with the missing water velocity was not available, linear regressions between water velocities and average flows were applied. Since the scatter plot of water velocity versus flow did not display a clear linear relationship (Fig. 6), the set of 233 pairs of average flows and corresponding water velocities was split into two subsets, one corresponding to average flows of less than 1,200 cfs, and the other with average flows larger than 1,200 cfs. Regression lines were fitted to each subset.

For average flows of less than 1,200 cfs the fitted regression line was:

$$v = 2.03 + 0.001\overline{F} \qquad \textbf{(2)}$$

where $\overline{F}$ is the average flow. This regression has an r^2=0.19 and was highly significant ($\mathrm{P}(F) < 0.00001$) for an $\alpha = 0.05$ (Table 2). Regression equation 2 was used to predict 9 of the remaining 13 missing water velocities. For average flows of less than 1,200 cfs, the fitted regression line was:

$$v = 3.75 - 0.0001\overline{F} \qquad \textbf{(3)}$$

This regression ($r^2 = 0.20, \mathrm{P}(F) < 0.00001$) was used to predict only four missing water velocities (Table 3).

The reason for the use of this three-equation procedure to predict the 93 missing water velocities required for the expansion of RST chinook counts was to reduce the number of water velocities predicted using a relationship based upon average flow. Not only were the linear relationships between flow and water velocity less strong than those between RPM and water velocity, but also average flows are involved in the calculation of RST count expansions. The 93 predicted water velocities are displayed together with the 234 field recorded values in Table C-1.

Expansion of RST Juvenile Chinook Salmon Counts

When a trapping or fishing device is utilized to estimate fish abundance, it is common to think of the number of fish caught as a Binomial distribution with parameters N and p, where N is the fish abundance, and p is the probability of catching a fish ($0 < p \leq 1$). Then using the method of moments, and providing p has been estimated through a tagging and capture-recapture experiment, an estimate for the fish abundance $\hat{N}$ can be obtained as: $\hat{N} = \frac{c}{\hat{p}}$, where c is the fishing device catch and $\hat{p}$ is the estimated probability of catching a fish, and $\hat{N}$ is the estimated fish abundance. Assuming that the fish are distributed homogeneously in a known volume V, of which the fishing device sampled a known volume v, then the density of the fish can be estimated as: $\hat{D} = \frac{\hat{N}}{V} = \frac{c}{\hat{p} \times v}$. Then, by multiplying both sides of the equation by V, the expression $\hat{N} = \frac{c}{\hat{p}} \times \frac{V}{v}$ is obtained.

For the present RST count survey, an estimate of $\hat{p}$ is lacking. However, V can be calculated as the average flow ($\overline{F}$) during the RST sampling day. The volume sampled by the RST can be calculated as: $\hat{v} = \frac{1}{2} \times \pi \times \left(\frac{d}{2}\right)^2 \times v_W$, where d is the diameter of the RST ($d = 8$), and v_W is the water velocity within the trap. The $\frac{1}{2}$ in the right hand of the equation accounts for the fact that

RST is normally half full with water (Ian Drury, CDFG, *pers. com.*). Finally, assuming $\hat{p}$ takes the maximum value that a probability can take ($\hat{p}=1$), the RST chinook counts c can be expanded by applying the equation:

$$I = \frac{\overline{F}}{\frac{1}{2} \times \pi \times \left(\frac{d}{2}\right)^2 \times v_W} \times c \qquad \textbf{(4)}$$

I is an abundance index, because no estimate of p was available.

Relationships with Yuba River Flow

Chinook salmon and steelhead daily abundance indices were regressed against daily flow variables including average, minimum and maximum flow, and daily flow variance. In each individual analysis, abundance indices were log-transformed after summing 1 (to incorporate the cases with 0 abundance). Only the abundance indices coming from samples when the RST fished normally (Gear condition code = 1) were included in the regression analyses. Furthermore, the abundance indices coming from the four sampling days when there was no actual count (see above) were also eliminated from the analyses.

All the regression analyses consisted of fitting simple linear models using the least-squares estimation procedure (Neter et al. 1985; Zar 1984).

RESULTS

Juvenile Chinook Salmon

Distribution of Daily Abundance Indices

Table C-1 displays the juvenile chinook salmon daily abundance indices resulting from the application of equation 4. Figure *7a* shows the distribution of the daily indices and Figure *7b* the cumulative distribution (in percentage) for the 1999/2000 CDFG sampling season, while Figure 8 displays the daily indices for the ongoing sampling season.

The 1999/2000 juvenile chinook salmon emigration season started with low numbers in late November. Abundance appears to have increased steadily until mid-January, when 20% of the season's juveniles had passed the trap (Fig. *7b*). From mid-January through mid-February, the daily abundance indices fluctuated considerably with values as large as 1,860,000 fish and as low as 45,000 fish. The large daily indices produced sudden increases in the cumulative distribution, so that by the end of January almost 60% of the juvenile chinook salmon appeared to have outmigrated. The two largest daily indices (1,147,614 and 1,857,803 juveniles on January 16 and 18, 2000, respectively) were based upon estimates and not actual counts. Moreover, those two peaks antedated a somewhat extended period (January 23-28 and January 30, 2000) when the RST was not deployed due to high flows (Fig. *7a*). By mid-February, the daily abundance indices decreased to 42,000 fish and continued to decrease in a steady fashion. By mid-February, more than 91% of the juvenile chinook salmon outmigration appeared to have occurred, and by the end of April 99% of the season's juveniles have passed the trap.

If 2000/2001 displays a similar schedule to that of the previous season, it may be expected that by the end of February most juvenile chinook salmon emigration will have been completed (Fig. 8). Alternating large peaks also started after the first fortnight of January, but they scantly reached 465,000 fish.

Relationship with Flow

Figure 9 displays the available time series of average daily flows (cfs) plotted together with the daily abundance indices for juvenile chinook salmon (Table C-1). During both RST sampling seasons, average daily flows were generally maintained from 700-800 cfs until mid-January. This period coincided with the slow but steady increase of the juvenile daily indices. From mid-January to mid-February, average daily flows showed dramatic oscillations - during the 1999/2000 season, average daily flows oscillated from a low of 832 cfs to a high of 17,044 cfs (Fig. 9*a*); during the 2000/2001 season the lowest average flow was 704 cfs, and the highest average flow was 1,502 cfs (Fig. 9*b*). These periods of fluctuating average daily flows encompassed the period in which dramatic oscillation in the juvenile abundance indices occurred in both seasons. From mid-February though mid-March 2000, when the juvenile chinook salmon indices started to decrease, average daily flows kept fluctuating over the 4,000 cfs level. From mid-March 2000 through the end of the season, average flows decreased toward the 800 cfs level.

The regression analysis of daily juvenile abundance indices as a linear function of average, minimum, and maximum daily flows, and daily flow variance (Table 4), showed an extremely weak and barely significant relationship.

Juvenile Steelhead

Distribution of Daily Abundance Indices

Table C-1 displays the juvenile steelhead abundance indices obtained from the application of equation 4. Figure 10*a* shows the distribution of the daily indices and Figure 10*b* the cumulative distribution (in percentage) for the 1999/2000 CDFG sampling season, while Figure 11 displays the daily indices for the ongoing sampling season. For both seasons, juvenile steelhead abundance indices were extremely low compared to those for juvenile chinook salmon. This extreme difference suggests that the application of equation 4 to juvenile steelhead RST counts may not be appropriate. The assumption that $\hat{p} = 1$ may be inappropriate because, if steelhead juveniles were to actively avoid the RST, or if the steelhead juveniles chose to migrate closer to the right bank away from the Yuba River main current on which the RST is located, p would be considerably smaller than 1.

Besides the difference in the magnitude of the abundance indices, the temporal pattern displayed by the juvenile steelhead daily abundance indices also was different from the pattern displayed by the juvenile chinook salmon indices. The alternation of high and low daily indices started in mid-January and continued through the end of the season (Fig. 10*a*) so that the cumulative distribution of the steelhead indices (Fig. 10*b*) did not display the plateau that characterized the cumulative distribution of the chinook salmon indices.

Relationship with Flow

Figure 12 displays the available time series of average daily flows (cfs) plotted together with the daily abundance indices for juvenile steelhead (Table C-1). During both RST sampling seasons average daily flows were generally maintained from about 700-800 cfs until mid-January. During this period, juvenile steelhead daily indices presented oscillations with peaks rarely surpassing 90 fish. From mid-January to mid-February, average daily flows showed dramatic oscillations (Figs. 12*a*, 12*b*). These periods of fluctuating average daily flows encompassed the period with dramatic oscillation in the juvenile abundance indices in both seasons. However, as with juvenile chinook salmon, no clear correspondence between flow and steelhead peak abundance can be evinced. Moreover, the dramatic fluctuations of the juvenile steelhead abundance indices continued until the end of the 1999/2000 season, when the average daily flows kept decreasing towards the 800-cfs level.

The regression analysis of daily juvenile steelhead abundance indices as function of average, minimum and maximum daily flows, and daily flow variances, did not show a significant linear relationship between the response and explanatory variables (Table 5).

REFERENCES

Neter, J., W. Wasserman and M. H. Kutner, 1985. Applied linear statistical models. Homewood, IL: Irwin Inc., 1127 p.

Zar, J. H., 1984. Biostatistical analysis. Englewood Cliffs, NJ: Prentice-Hall Inc., 718 p.

Table 1: Results from linear multiple regression of water velocity as function of RPM, RPM^2, RPM^3, RPM^4 and month and day-of-year (See equation 1).

	Value	SE	t value	Pr(>|t|)
(Intercept)	5.4164	1.0492	5.1626	0.0000
RPM	-3.1106	1.2708	-2.4478	0.0151
RPM^2	1.2940	0.5411	2.3914	0.0176
RPM^3	-0.2209	0.0959	-2.3037	0.0222
RPM^4	0.0138	0.0060	2.2946	0.0227
Month	-0.2887	0.0961	-3.0040	0.0030
Day-of-year	0.0095	0.0031	3.0476	0.0026

Residual Standard Error (*RSE*): 0.389727

Coefficient of Determination (r^2): 0.423949

ANOVA TABLE

	Degrees of freedom	Sum of Squares	Minimum Squares	F Value	Pr(F)
Regression	6	24.9274	4.1546	27.3530	0.0000
Residuals	223	33.8708	0.1519		
Total	229	58.7983			

Table 2: Results from linear regression of water velocity as function of average daily flows smaller than 1,200 cfs (See equation 2).

	Value	SE	t value	Pr(>|t|)
(Intercept)	2.0331	0.1512	13.4453	0.0000
Flow < 1,200 cfs	0.0010	0.0002	5.3155	0.0000

Residual Standard Error (*RSE*): 0.330355

Coefficient of Determination (r^2): 0.188046

ANOVA TABLE

	Degrees of freedom	Sum of Squares	Minimum Squares	F Value	Pr(F)
Regression	1	3.0836	3.0836	28.2547	0.0000
Residuals	122	13.3144	0.1091		
Total	123	16.3979			

Table 3: Results from linear regression of water velocity as function of average daily flows larger than 1,200 cfs (See equation 3).

	Value	SE	t value	Pr(>|t|)
(Intercept)	3.7523	0.0972	38.5990	0.0000
Flow < 1,200 cfs	-0.0001	0.0000	-5.2139	0.0000

Residual Standard Error (*RSE*): 0.467338

Coefficient of Determination (r^2): 0.202591

ANOVA TABLE

	Degrees of freedom	Sum of Squares	Minimum Squares	F Value	Pr(F)
Regression	1	5.9373	5.9373	27.1846	0.0000
Residuals	107	23.3693	0.2184		
Total	108	29.3066			

Table 4: Results from linear regression of log-transformed abundance indices of juvenile chinook salmon as function of average daily flows, maximum and minimum daily flows and variance of daily flows. Prior to the analysis flows were scaled down by dividing by 1,000.

	Value	SE	t value	Pr(>|t|)
(Intercept)	7.7086	0.2678	28.7811	0.0000
Average Flow	-0.3567	0.9623	-0.3706	0.7112
Minimum Flow	0.1606	0.8775	0.1830	0.8549
Maximum Flow	0.4854	0.6002	0.8088	0.4193
Flow Variance	-0.0004	0.0004	-0.8721	0.3838

Residual Standard Error (*RSE*): 3.182779

Coefficient of Determination (r^2): 0.031292

ANOVA TABLE

	Degrees of freedom	Sum of Squares	Minimum Squares	F Value	Pr(F)
Regression	4	97.5138	24.3784	2.4065	0.0496
Residuals	298	3018.7649	10.1301		
Total	302	3116.2787			

Table 5: Results from linear regression of log-transformed abundance indices of juvenile steelhead as function of average daily flows, maximum and minimum daily flows and variance of daily flows. Prior to the analysis flows were scaled down by dividing by 1,000.

	Value	SE	t value	Pr(>|t|)
(Intercept)	2.9021	0.1734	16.7373	0.0000
Average Flow	0.1921	0.6230	0.3084	0.7580
Minimum Flow	-0.4266	0.5681	-0.7509	0.4533
Maximum Flow	0.1279	0.3885	0.3291	0.7423
Flow Variance	-0.0002	0.0003	-0.8757	0.3819

Residual Standard Error (*RSE*): 2.060500

Coefficient of Determination (r^2): 0.011947

ANOVA TABLE

	Degrees of freedom	Sum of Squares	Minimum Squares	F Value	Pr(F)
Regression	4	15.2981	3.8245	0.9008	0.4638
Residuals	298	1265.2067	4.2457		
Total	302	1280.5047			

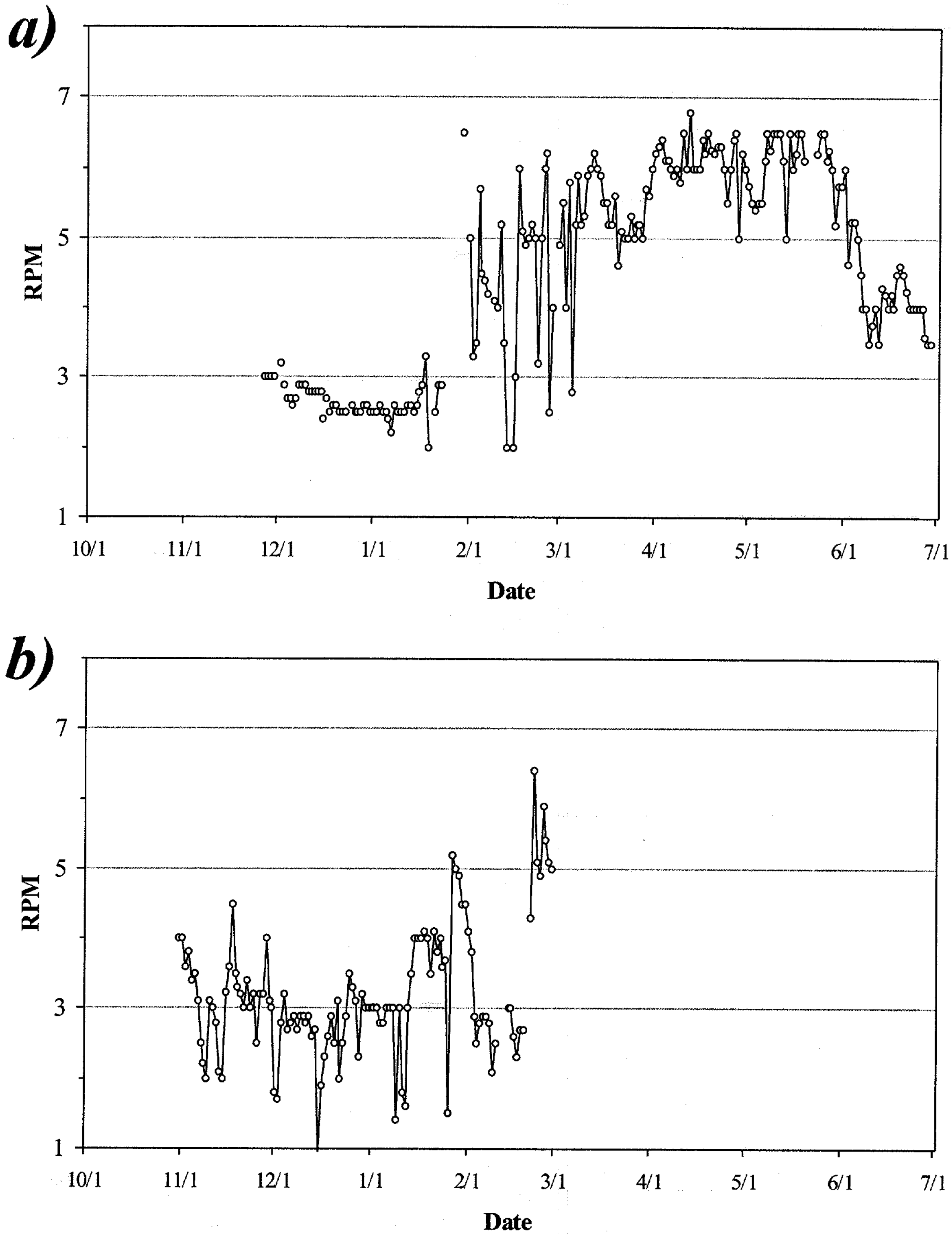

Figure 1: Revolutions per minute (RPM) from CDFG samples of Yuba River rotary screw trap for ***a)*** 1999/00 and ***b)*** 2000/01 sampling seasons.

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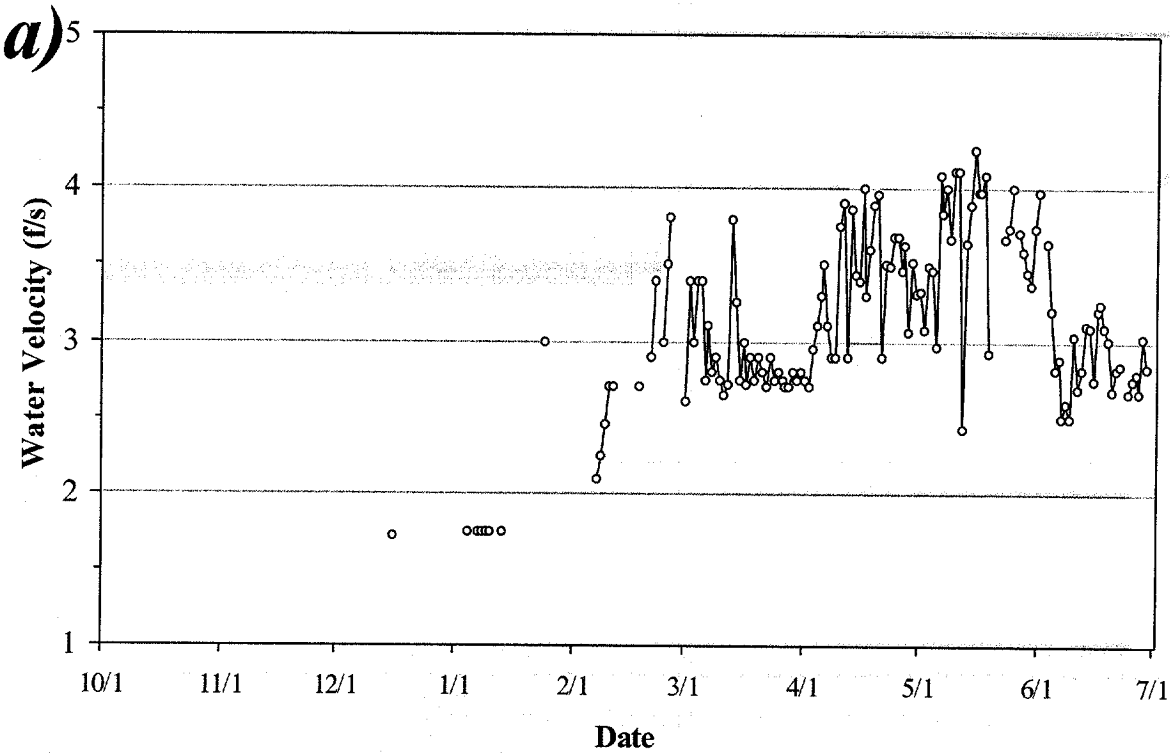
a)



b)

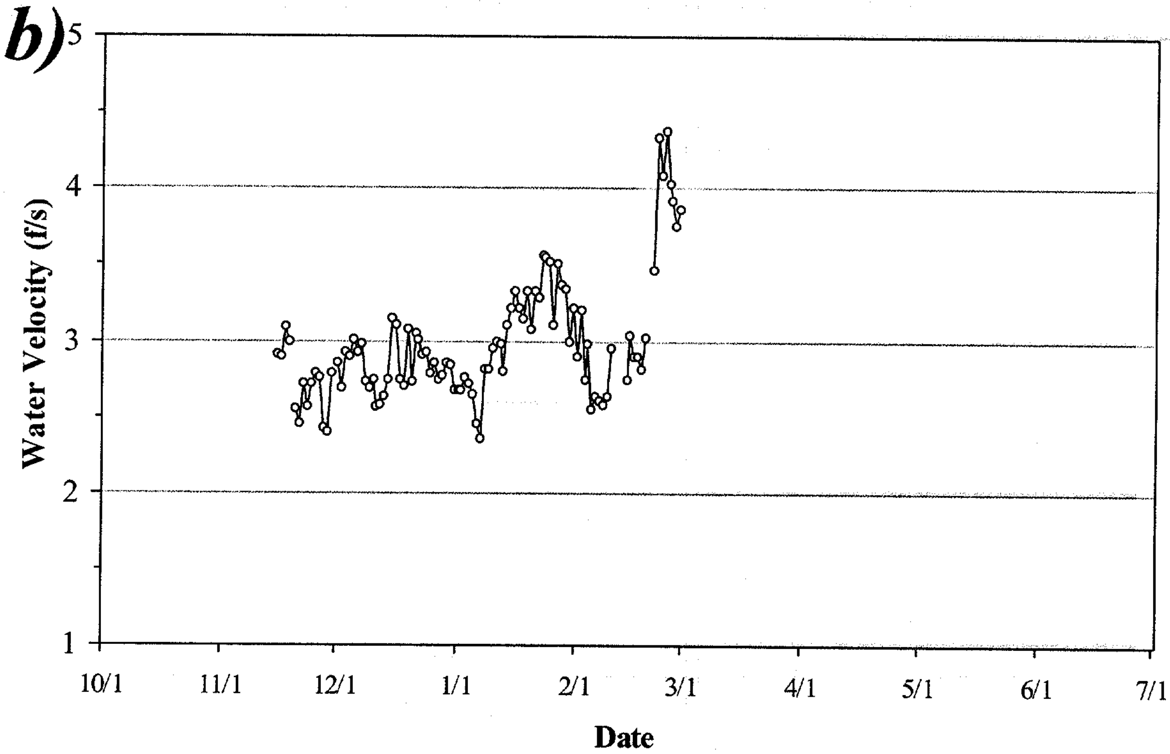
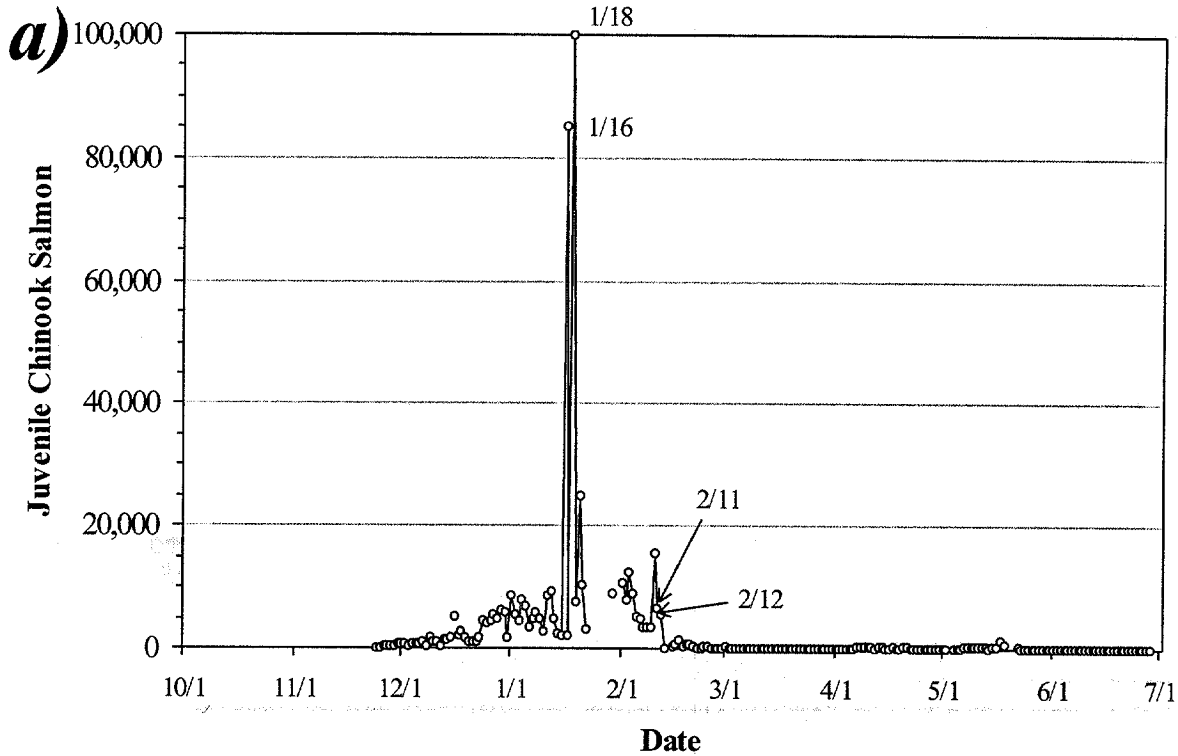


Figure 2: Water velocities (f/s) from CDFG samples of Yuba River rotary screw trap for ***a)*** 1999/00 and ***b)*** 2000/01 sampling seasons.



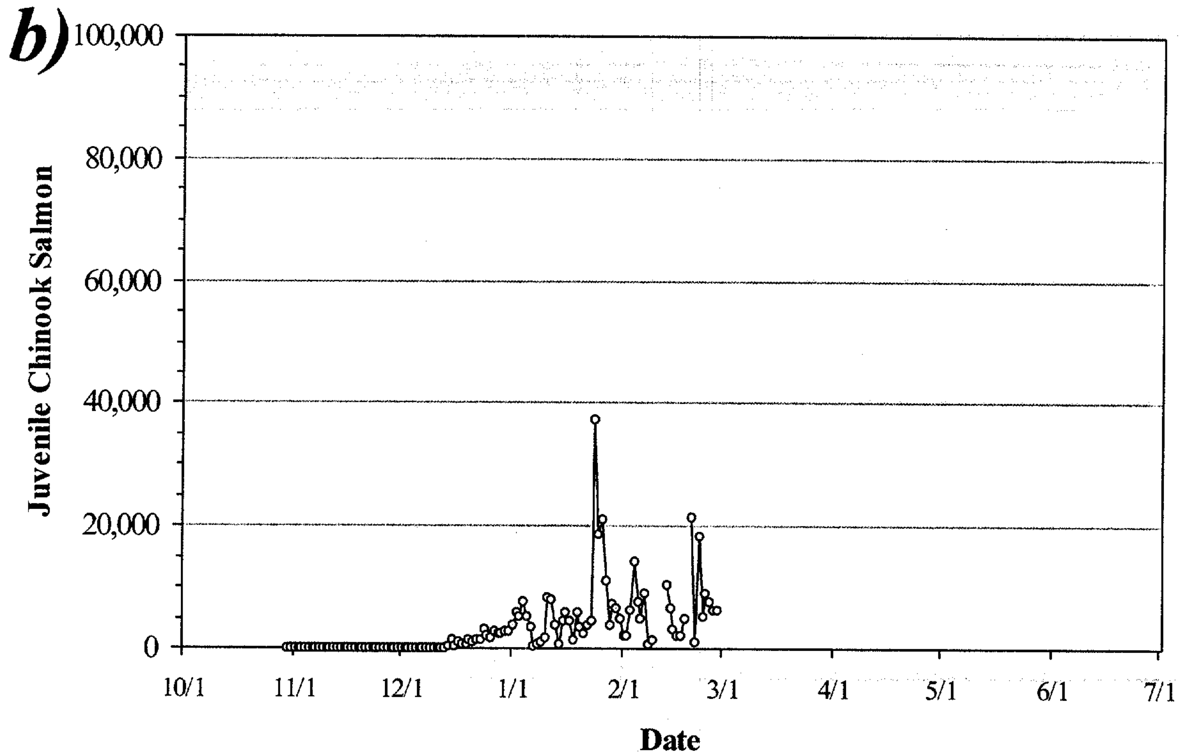
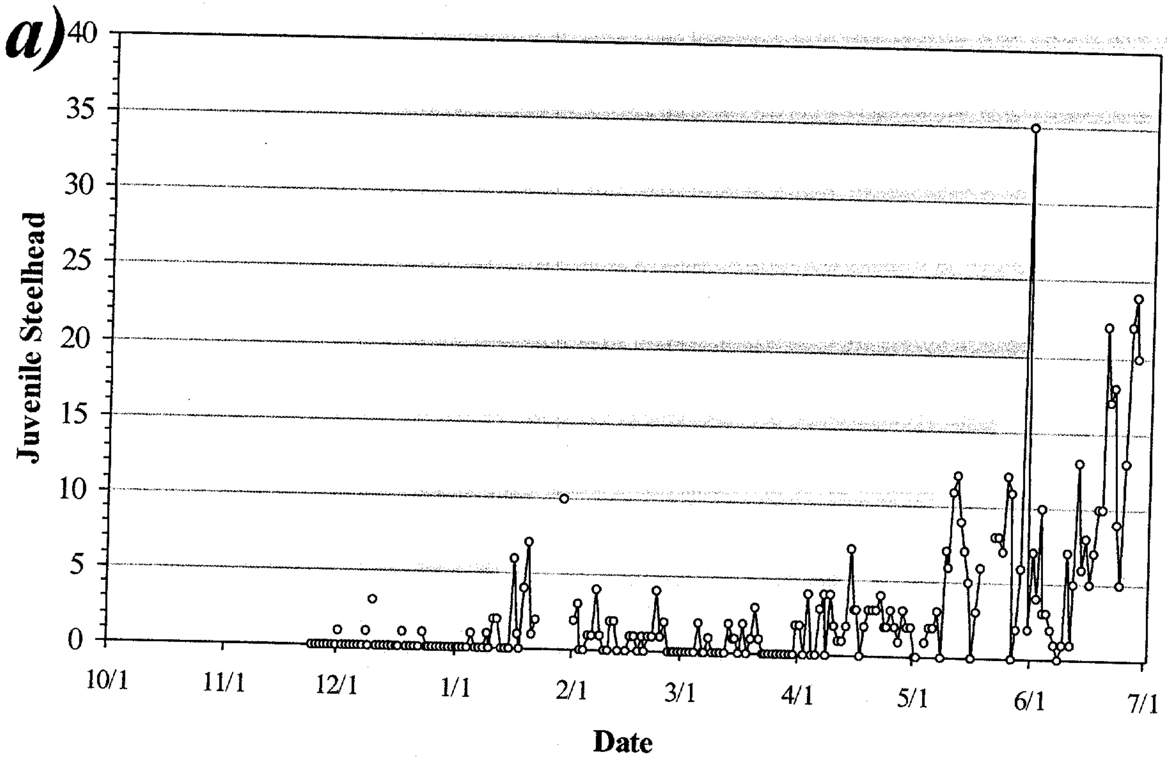


Figure 3: Juvenile chinook salmon counts from CDFG samples of Yuba River rotary screw trap for ***a)*** 1999/00 and ***b)*** 2000/01 sampling seasons.



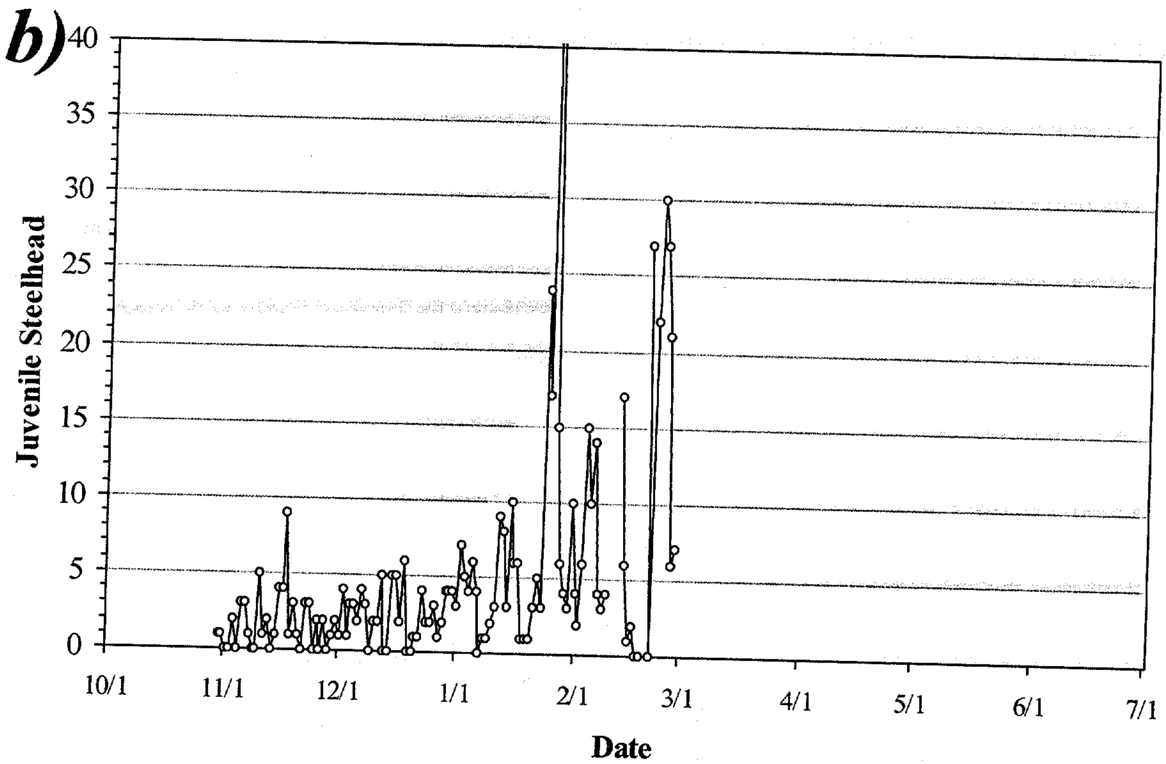


Figure 4: Juvenile steelhead counts from CDFG samples of Yuba River rotary screw trap for ***a)*** 1999/00 and ***b)*** 2000/01 sampling seasons.

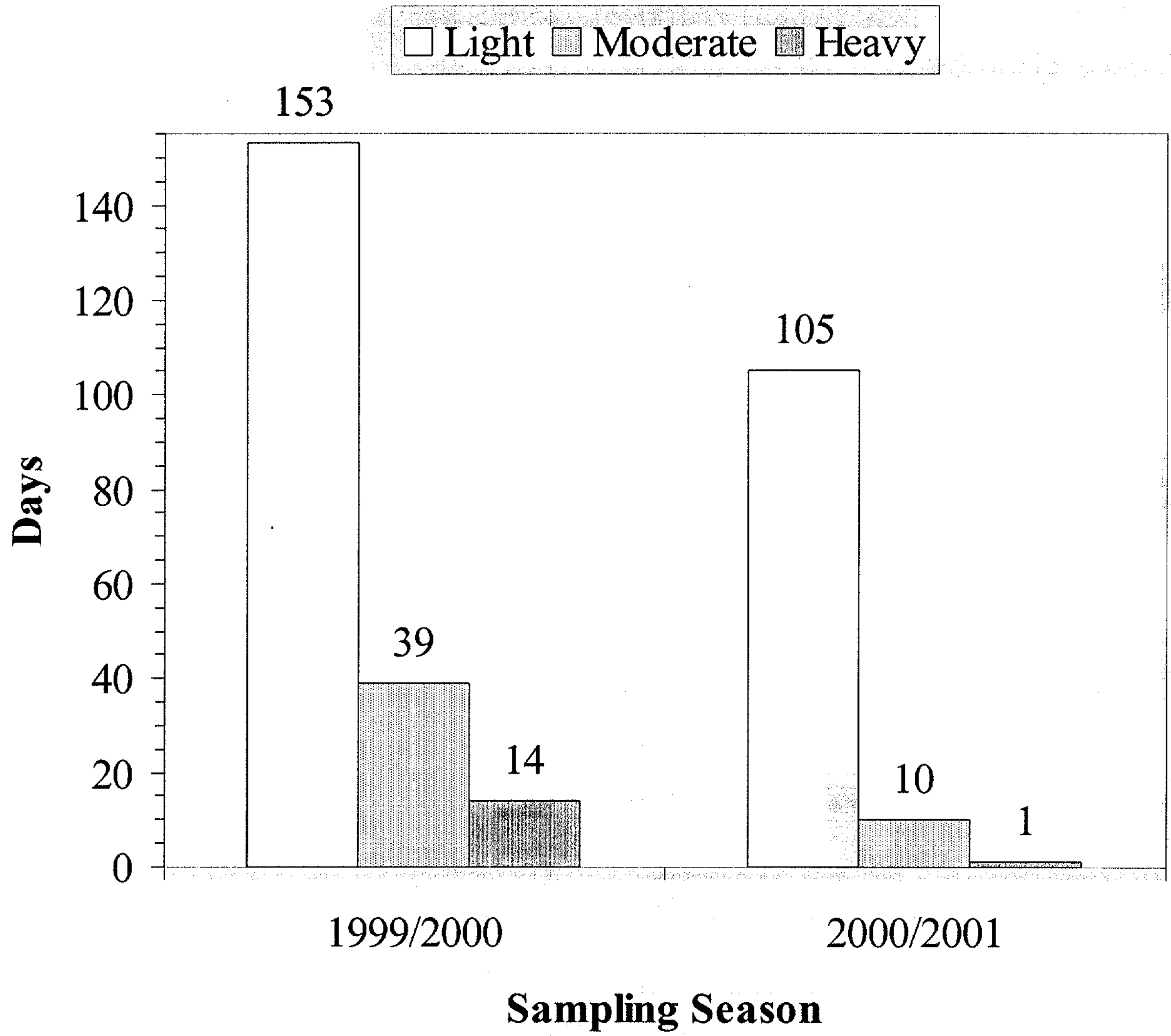


Figure 5: Quantification of debris found in Yuba River rotary screw trap during the 1999/00 and 2000/01 CDFG sampling seasons.

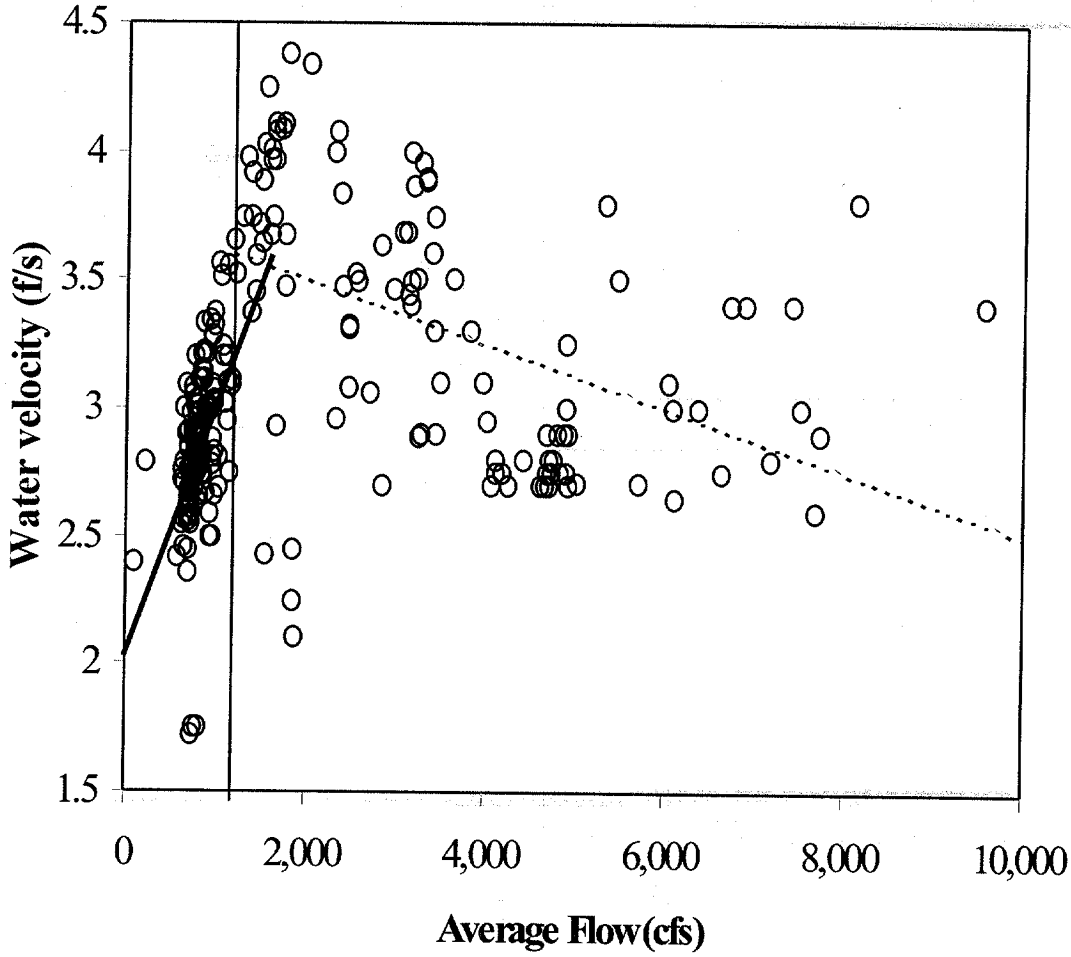
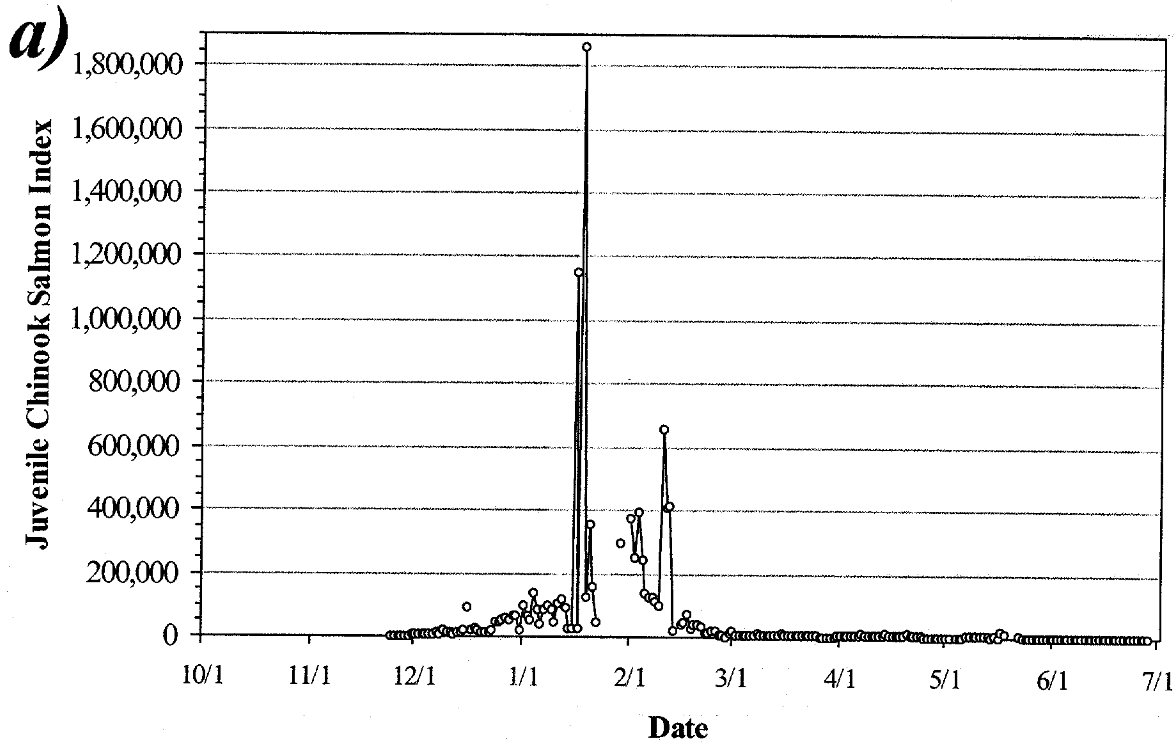


Figure 6: Water velocity (f/s) as function of average flow (cfs). Vertical line separates average flows smaller than 1,200 cfs from larger average flows. The solid line indicates water velocities estimated with regression equation 2, while the dashed line denotes water velocities estimated with regression equation 3.



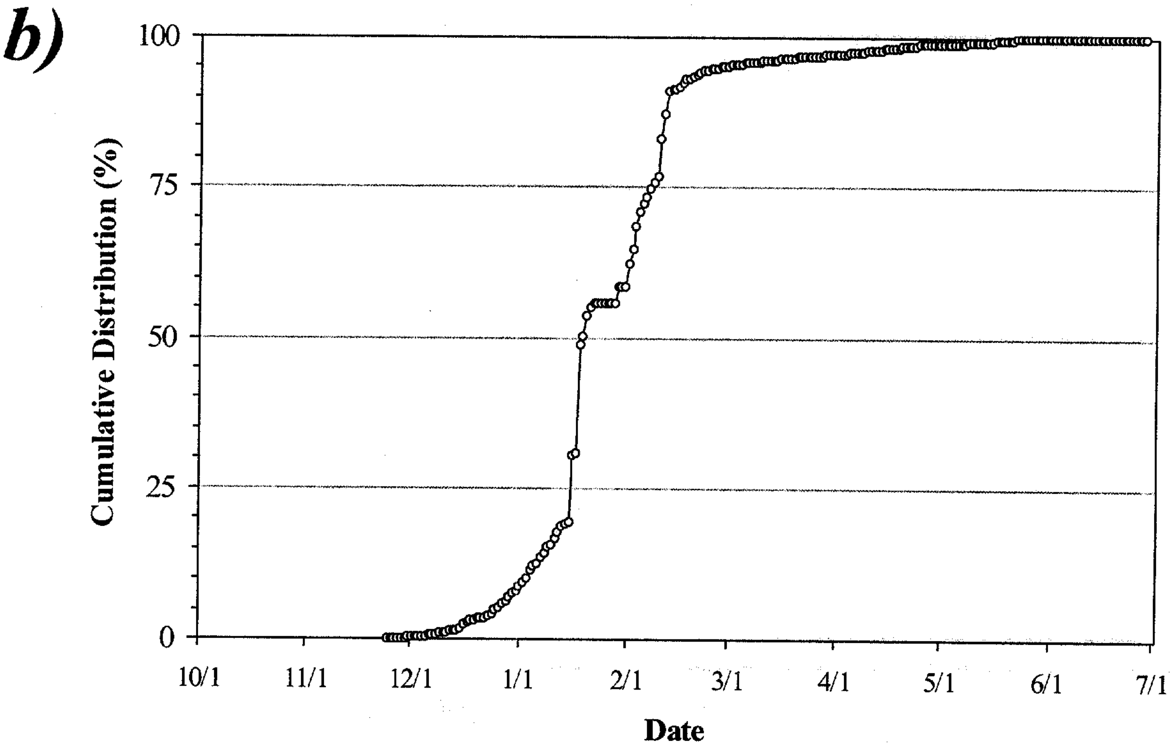


Figure 7: Juvenile chinook salmon abundance indices from Yuba River rotary screw trap during the 1999/00 CDFG sampling season: ***a)*** daily indices, ***b)*** cumulative distribution.

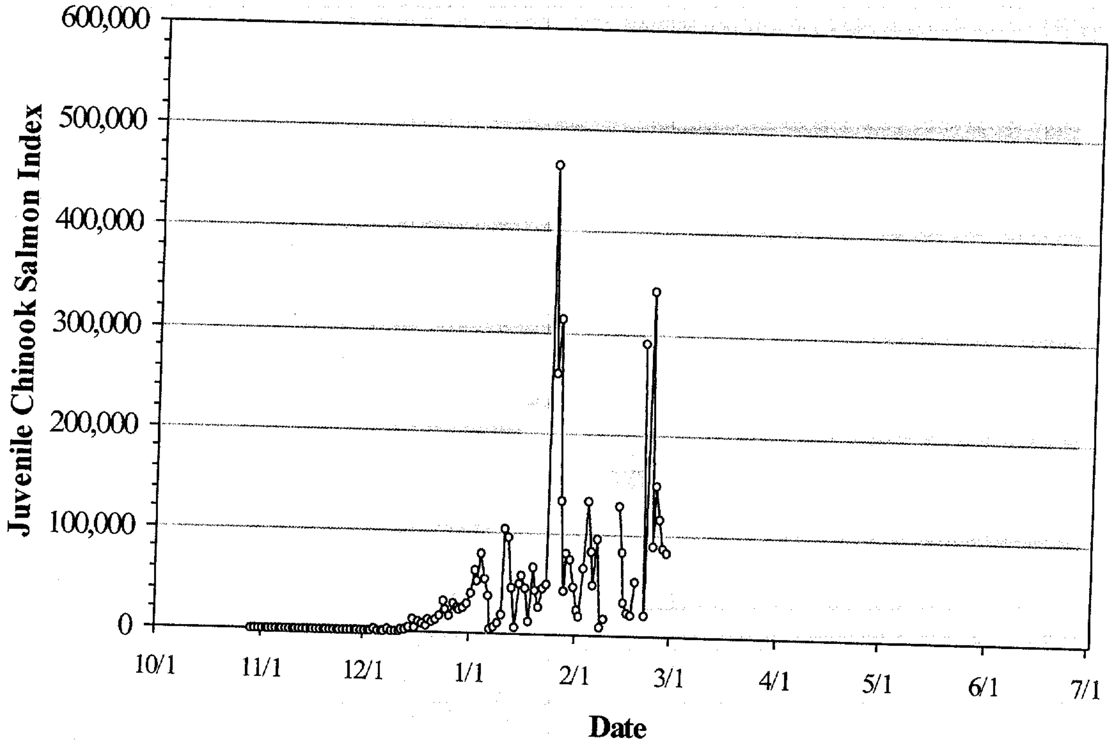


Figure 8: Juvenile chinook salmon daily abundance indices from Yuba River rotary screw trap during the 2000/01CDFG sampling season.

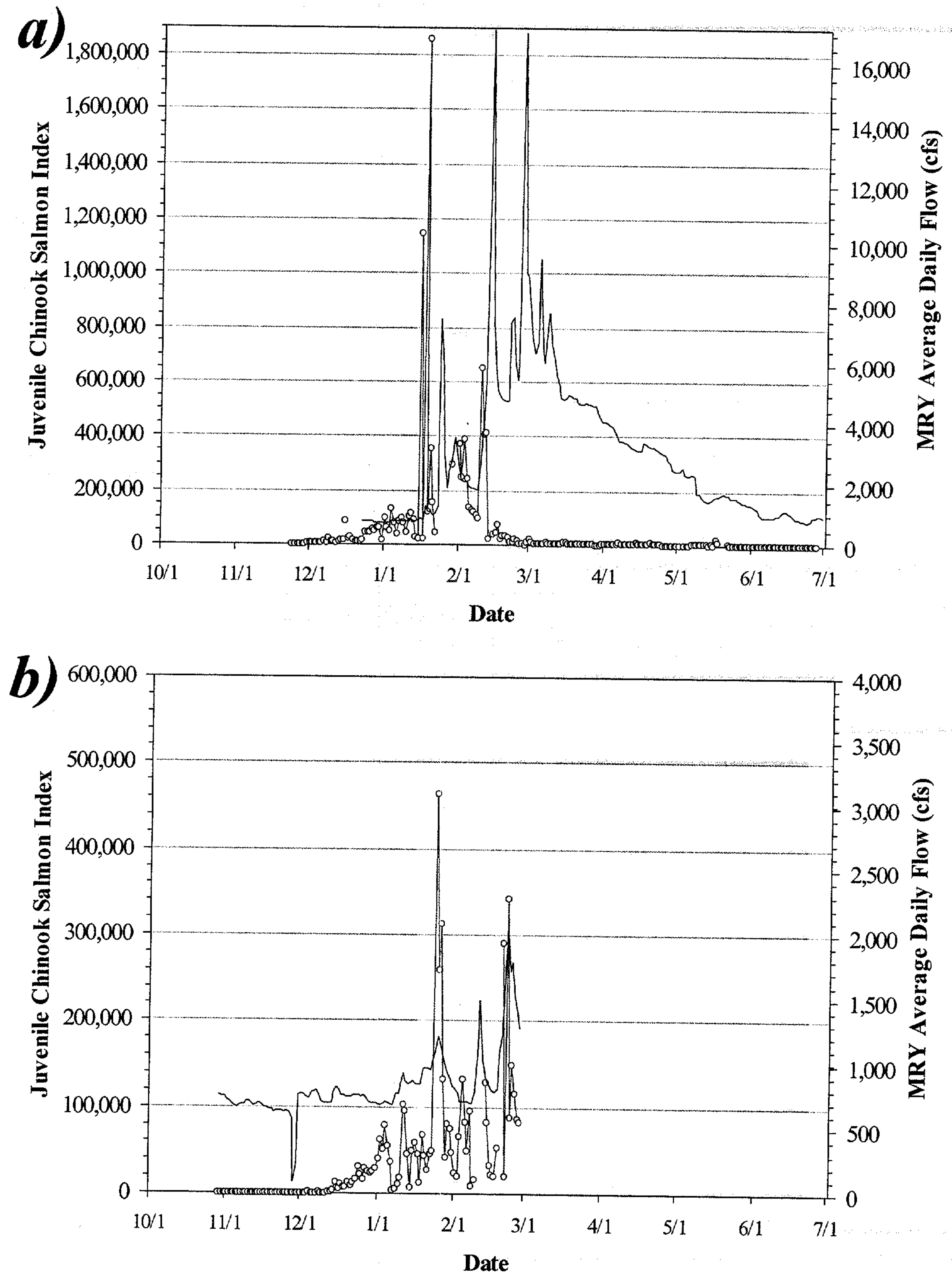
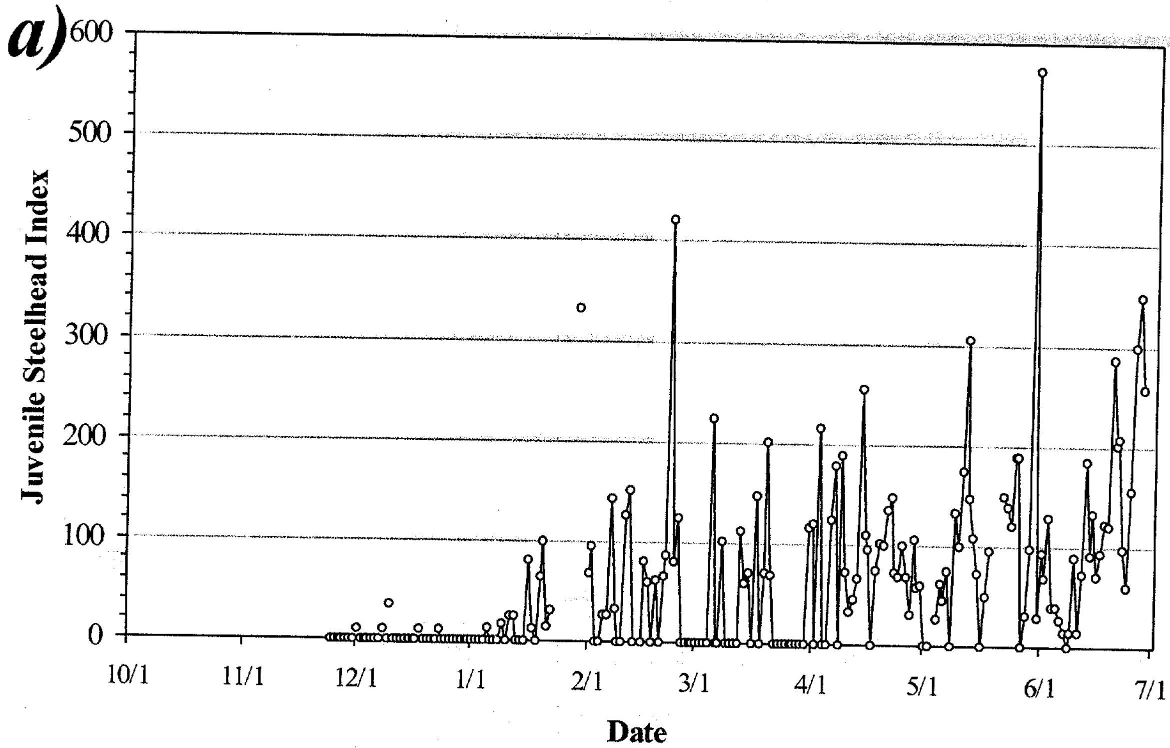


Figure 9: Juvenile chinook salmon abundance indices and average daily flows at Marysville gauge for: ***a)*** the 1999/00 CDFG sampling season and ***b)*** the 2000/01 CDFG sampling season of the Yuba River RST.



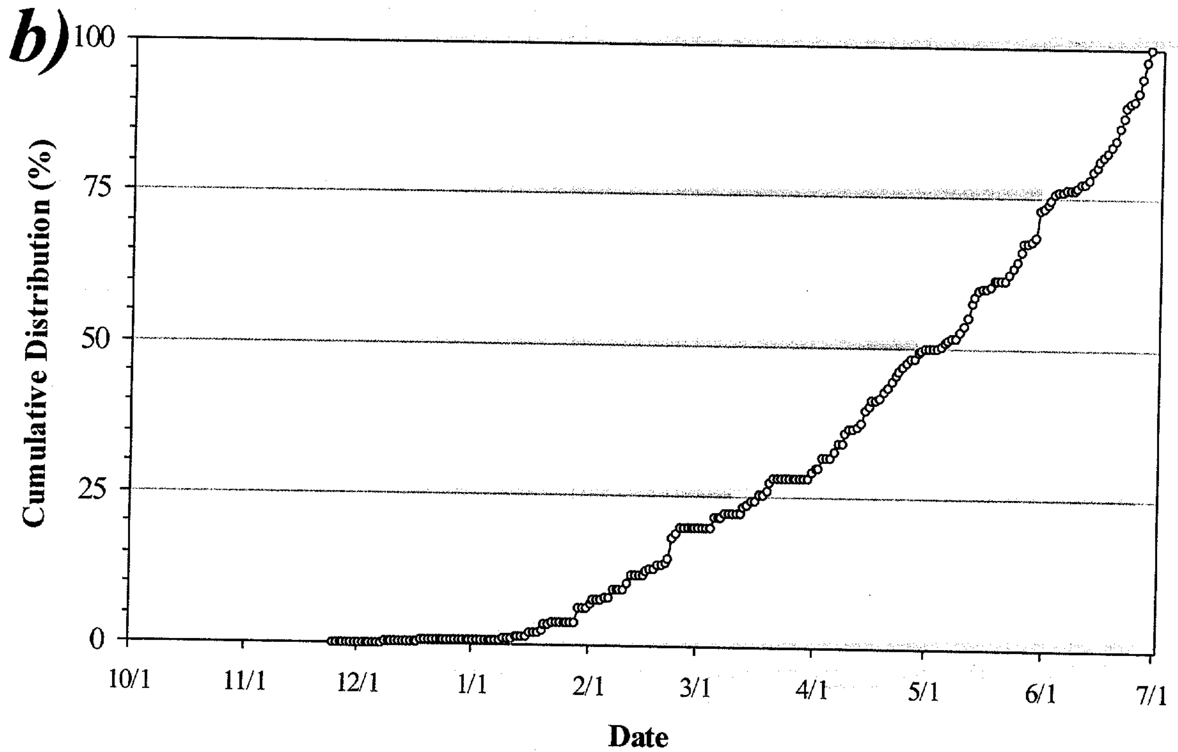


Figure 10: Juvenile steelhead abundance indices from Yuba River rotary screw trap during the 1999/00 CDFG sampling season: ***a)*** daily indices, ***b)*** cumulative distribution.

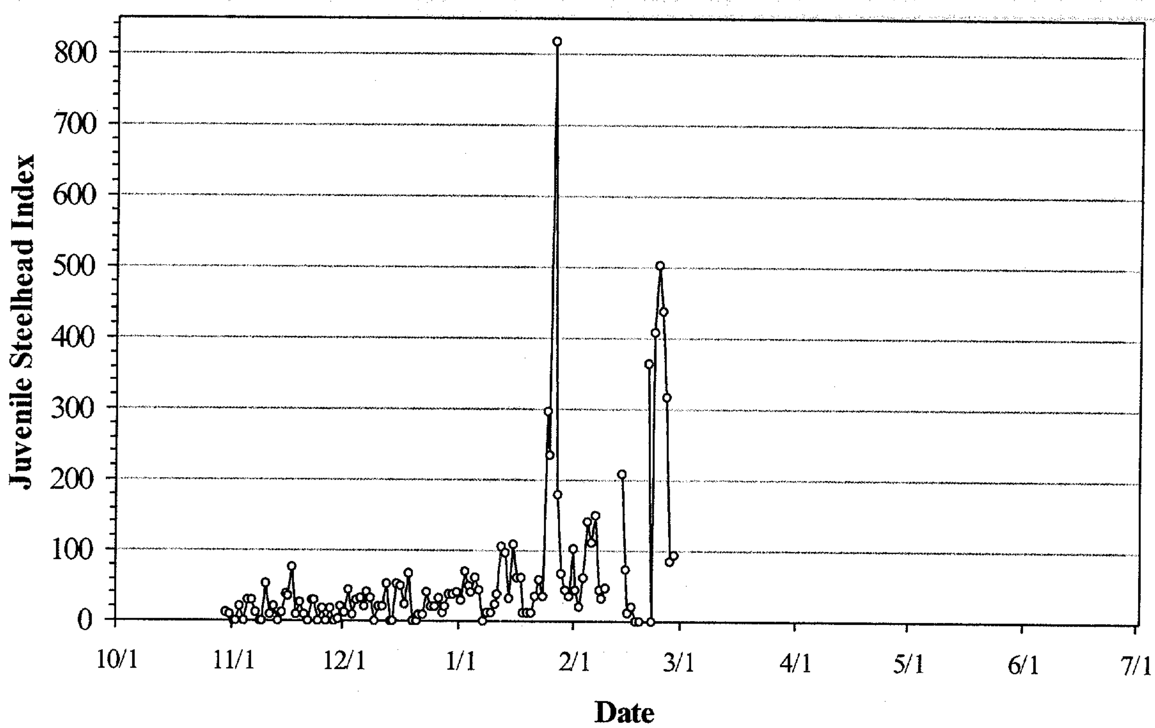


Figure 11: Juvenile steelhead abundance indices from Yuba River rotary screw trap during the 2000/01 CDFG sampling season.

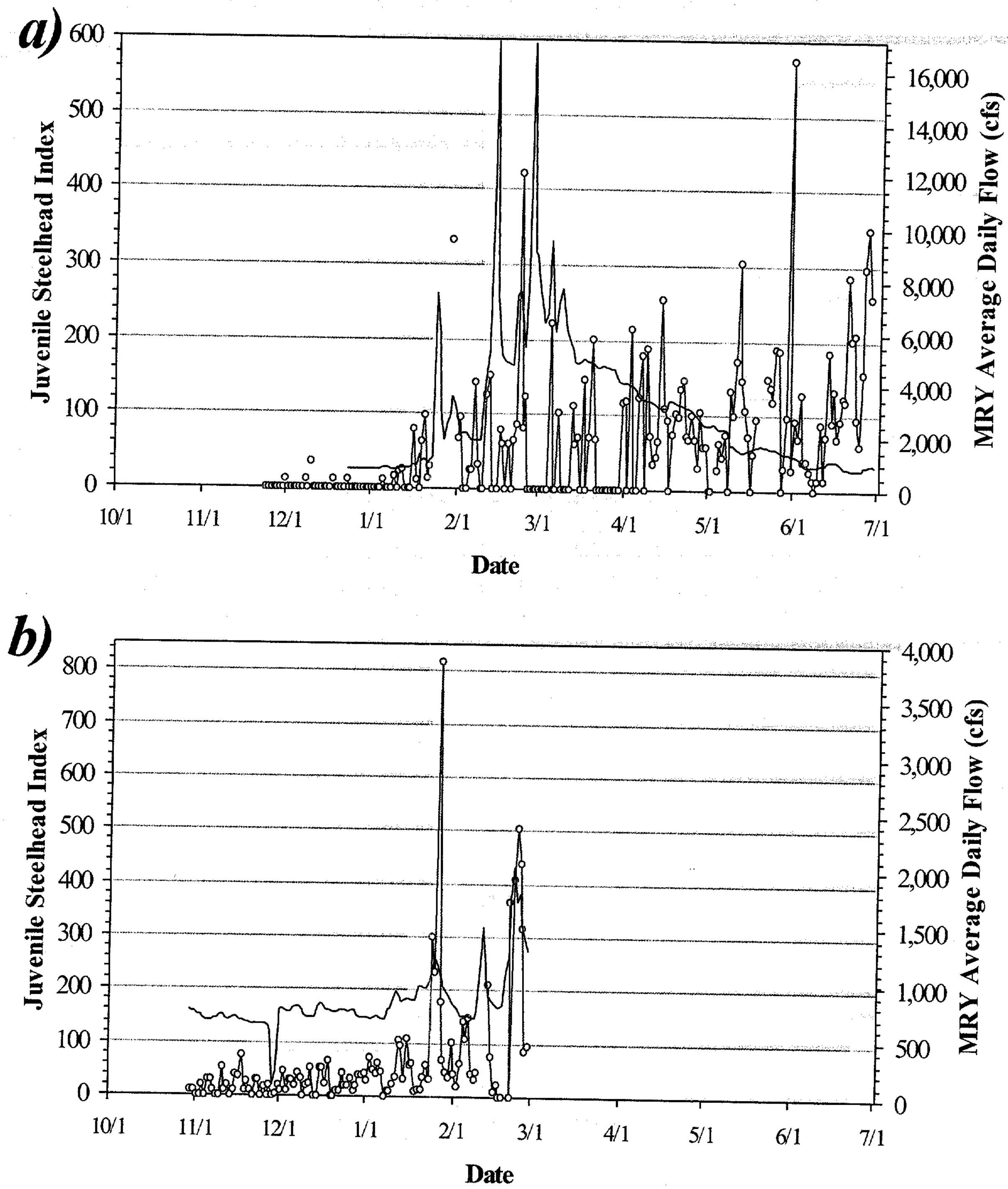


Figure 12: Juvenile steelhead abundance indices and average daily flows at Marysville gauge for: ***a)*** the 1999/00 CDFG sampling season and ***b)*** the 2000/01 CDFG sampling season of the Yuba River RST.

Table C-1: RST chinook and steelhead count expansions (See equation 4). Calculations used average daily flows.

RST Sampling Period		Average Flow	Water Velocity	Volume Sampled	Chinook Expansion	Steelhead Expansion
11/24/99 9:00	11/25/99 9:00	865	2.87 [2]	72.2	132	0
11/25/99 9:00	11/26/99 8:00	878	2.88 [2]	72.5	254	0
11/26/99 8:00	11/27/99 8:00	892	2.90 [2]	72.8	2,732	0
11/27/99 8:00	11/28/99 8:00	912	2.84 [1]	71.3	2,507	0
11/28/99 8:00	11/29/99 7:00	915	2.85 [1]	71.6	2,609	0
11/29/99 7:00	11/30/99 12:00	931	2.86 [1]	71.8	2,504	0
11/30/99 12:00	12/1/99 12:30	936	2.87 [1]	72.0	8,071	0
12/1/99 12:30	12/2/99 12:00	794	2.80 [2]	70.4	7,328	11
12/2/99 12:00	12/3/99 12:00	770	2.63 [1]	66.2	6,418	0
12/3/99 12:00	12/4/99 12:00	737	2.59 [1]	65.1	5,666	0
12/4/99 12:00	12/5/99 12:00	735	2.57 [1]	64.5	6,060	0
12/5/99 12:00	12/6/99 12:00	730	2.58 [1]	64.8	6,931	0
12/6/99 12:00	12/7/99 12:00	740	2.57 [1]	64.7	6,541	0
12/7/99 12:00	12/8/99 12:00	741	2.60 [1]	65.2	11,722	0
12/8/99 12:00	12/9/99 12:00	743	2.64 [1]	66.2	3,510	11
12/9/99 12:00	12/10/99 12:00	757	2.64 [1]	66.5	21,265	0
12/10/99 12:00	12/11/99 12:00	765	2.65 [1]	66.7	13,732	34
12/11/99 12:00	12/12/99 12:00	758	2.65 [1]	66.5	12,771	0
12/12/99 12:00	12/13/99 12:00	759	2.66 [1]	66.8	5,523	0
12/13/99 12:00	12/14/99 9:00	754	2.67 [1]	67.0	14,295	0
12/14/99 9:00	12/15/99 9:00	746	2.68 [1]	67.3	14,676	0
12/15/99 9:00	12/16/99 9:00	738	2.69 [1]	67.5	18,106	0
12/16/99 9:00	12/17/99 9:00	744	1.72	43.2	90,051	0
12/17/99 9:00	12/18/99 9:00	750	2.69 [1]	67.6	22,320	0
12/18/99 9:00	12/19/99 9:00	756	2.68 [1]	67.3	29,233	11
12/19/99 9:00	12/20/99 9:00	759	2.70 [1]	67.8	19,707	0
12/20/99 9:00	12/21/99 9:00	759	2.71 [1]	68.0	11,627	0
12/21/99 9:00	12/22/99 9:00	759	2.71 [1]	68.0	13,457	0
12/22/99 9:00	12/23/99 7:00	759	2.72 [1]	68.3	10,375	0
12/23/99 7:00	12/24/99 9:00	770	2.73 [1]	68.5	20,006	11
12/24/99 9:00	12/25/99 9:00	772	2.78 [2]	69.9	48,710	0
12/25/99 9:00	12/26/99 9:00	772	2.75 [1]	69.2	47,496	0
12/26/99 9:00	12/27/99 9:00	772	2.75 [1]	69.2	49,494	0
12/27/99 9:00	12/28/99 9:00	772	2.76 [1]	69.4	60,719	0
12/28/99 9:00	12/29/99 9:00	762	2.77 [1]	69.7	54,112	0
12/29/99 9:00	12/30/99 10:00	759	2.79 [1]	70.2	65,699	0
12/30/99 10:00	12/31/99 9:00	752	2.80 [1]	70.4	62,669	0

[1] Water velocity calculated using regression equation 1.
[2] Water velocity calculated using regression equation 2.
[3] Water velocity calculated using regression equation 3.

COM 9222

Table C-1 (Cont.)

RST Sampling Period		Average Flow	Water Velocity	Volume Sampled	Chinook Expansion	Steelhead Expansion
12/31/99 9:00	1/1/00 9:00	747	2.80 [1]	70.4	19,398	0
1/1/00 9:00	1/2/00 9:00	747	2.54 [1]	63.7	101,793	0
1/2/00 9:00	1/3/00 9:00	747	2.55 [1]	64.0	62,718	0
1/3/00 9:00	1/4/00 9:00	756	2.56 [1]	64.4	53,868	0
1/4/00 9:00	1/5/00 9:00	769	1.75	44.0	136,271	0
1/5/00 9:00	1/6/00 9:00	777	2.57 [1]	64.7	84,065	12
1/6/00 9:00	1/7/00 9:00	778	2.58 [1]	64.8	40,569	0
1/7/00 9:00	1/8/00 9:15	773	1.75	44.0	86,740	0
1/8/00 9:15	1/9/00 9:20	770	1.75	44.0	101,685	0
1/9/00 9:20	1/10/00 9:20	766	1.75	44.0	83,545	17
1/10/00 9:20	1/11/00 9:00	771	1.75	44.0	47,029	0
1/11/00 9:00	1/12/00 10:35	807	2.63 [1]	66.1	106,447	24
1/12/00 10:35	1/13/00 9:20	825	2.65 [1]	66.6	115,332	25
1/13/00 9:20	1/14/00 8:47	812	1.75	44.0	91,611	0
1/14/00 8:47	1/15/00 9:20	811	2.66 [1]	66.8	28,603	0
1/15/00 9:20	1/16/00 9:20	832	2.68 [1]	67.3	24,474	0
1/16/00 9:20	1/17/00 8:00	918	2.71 [1]	68.2	1,147,614	81
1/17/00 8:00	1/18/00 8:00	868	2.74 [1]	68.8	24,487	13
1/18/00 8:00	1/19/00 10:10	1,318	2.82 [1]	71.0	1,857,803	0
1/19/00 10:10	1/20/00 8:00	1,092	2.72 [1]	68.3	124,356	64
1/20/00 8:00	1/21/00 8:15	1,109	3.11 [2]	78.1	356,167	99
1/21/00 8:15	1/22/00 8:45	1,014	2.72 [1]	68.5	155,526	15
1/22/00 8:45	1/23/00 8:30	1,070	2.79 [1]	70.0	45,477	31
1/23/00 8:30	1/24/00 8:45	1,243				
1/24/00 8:45	1/25/00 7:45	7,523				
1/25/00 7:45	1/26/00 8:45	6,041				
1/26/00 8:45	1/27/00 9:00	2,975				
1/27/00 9:00	1/28/00 9:00	1,894				
1/28/00 9:00	1/29/00 9:15	2,460				
1/29/00 9:15	1/30/00 8:10	2,842	3.40 [3]	85.4	295,900	333
1/30/00 8:10	1/31/00 9:00	3,591				
1/31/00 9:00	2/1/00 8:15	3,241				
2/1/00 8:15	2/2/00 8:50	2,552	2.95 [1]	74.3	373,122	69
2/2/00 8:50	2/3/00 8:45	2,142	2.68 [1]	67.3	253,098	96
2/3/00 8:45	2/4/00 9:15	2,135	2.73 [1]	68.5	392,455	0
2/4/00 9:15	2/5/00 7:45	2,128	3.15 [1]	79.1	246,219	0
2/5/00 7:45	2/6/00 8:00	1,968	2.92 [1]	73.3	137,909	27
2/6/00 8:00	2/7/00 8:45	1,913	2.91 [1]	73.2	127,094	26
2/7/00 8:45	2/8/00 9:00	1,880	2.10	52.8	121,978	142
2/8/00 9:00	2/9/00 9:00	1,867	2.25	56.5	112,230	33
2/9/00 9:00	2/10/00 9:30	1,865	2.45	61.6	100,208	0
2/10/00 9:30	2/11/00 9:00	2,846	2.70	67.9	654,254	0

COM 9223

Table C-1 (Cont.)

RST Sampling Period		Average Flow	Water Velocity	Volume Sampled	Chinook Expansion	Steelhead Expansion
2/11/00 9:00	2/12/00 9:30	4,268	2.70	67.9	410,499	126
2/12/00 9:30	2/13/00 9:30	5,340	2.81 [1]	70.6	411,391	151
2/13/00 9:30	2/14/00 9:00	11,509	2.66 [1]	66.9	21,836	0
2/14/00 9:00	2/15/00 9:00	17,149				
2/15/00 9:00	2/16/00 9:00	7,295	2.68 [1]	67.4	41,988	0
2/16/00 9:00	2/17/00 9:37	5,559	2.75 [1]	69.2	47,185	80
2/17/00 9:37	2/18/00 9:30	5,119	3.39 [1]	85.2	74,717	60
2/18/00 9:30	2/19/00 7:00	4,930	2.70	67.9	23,684	0
2/19/00 7:00	2/20/00 8:20	4,836	3.11 [1]	78.1	36,453	62
2/20/00 8:20	2/21/00 8:45	4,789	3.13 [1]	78.8	36,717	0
2/21/00 8:45	2/22/00 9:15	4,803	2.90	72.9	30,838	66
2/22/00 9:15	2/23/00 9:15	7,439	3.40	85.5	10,533	87
2/23/00 9:15	2/24/00 9:30	7,573	2.86 [1]	71.8	14,457	422
2/24/00 9:30	2/25/00 8:45	6,103	3.00	75.4	20,883	81
2/25/00 8:45	2/26/00 8:20	5,473	3.50	88.0	17,608	124
2/26/00 8:20	2/27/00 8:45	8,138	3.81	95.8	6,374	0
2/27/00 8:45	2/28/00 9:30	17,044	2.79 [1]	70.0	8,519	0
2/28/00 9:30	2/29/00 9:00	9,072	3.06 [1]	76.8	2,363	0
2/29/00 9:00	3/1/00 9:10	8,980	2.63 [3]	66.2	13,437	0
3/1/00 9:10	3/2/00 9:00	7,702	2.60	65.3	21,451	0
3/2/00 9:00	3/3/00 9:00	6,913	3.40	85.5	9,790	0
3/3/00 9:00	3/4/00 8:30	6,378	3.00	75.4	8,120	0
3/4/00 8:30	3/5/00 8:00	6,734	3.40	85.5	8,669	0
3/5/00 8:00	3/6/00 9:15	9,560	3.40	85.5	7,160	224
3/6/00 9:15	3/7/00 9:00	6,651	2.75	69.1	6,832	0
3/7/00 9:00	3/8/00 9:30	6,055	3.10	77.9	5,440	0
3/8/00 9:30	3/9/00 9:15	7,180	2.80	70.4	10,815	102
3/9/00 9:15	3/10/00 9:00	7,741	2.90	72.9	6,267	0
3/10/00 9:00	3/11/00 8:25	6,644	2.75	69.1	8,171	0
3/11/00 8:25	3/12/00 8:00	6,129	2.65	66.6	5,981	0
3/12/00 8:00	3/13/00 9:00	5,706	2.71	68.1	8,211	0
3/13/00 9:00	3/14/00 8:45	5,342	3.80	95.5	5,593	112
3/14/00 8:45	3/15/00 8:30	4,904	3.25	81.7	7,385	60
3/15/00 8:30	3/16/00 9:00	4,843	2.75	69.1	10,230	70
3/16/00 9:00	3/17/00 8:00	4,915	3.00	75.4	9,126	0
3/17/00 8:00	3/18/00 8:00	5,028	2.71	68.1	7,973	148
3/18/00 8:00	3/19/00 7:30	4,938	2.90	72.9	5,420	0
3/19/00 7:30	3/20/00 8:40	4,908	2.75	69.1	4,473	71
3/20/00 8:40	3/21/00 8:50	4,881	2.90	72.9	7,634	201
3/21/00 8:50	3/22/00 9:15	4,759	2.80	70.4	4,531	68
3/22/00 9:15	3/23/00 9:00	4,712	2.70	67.9	4,166	0
3/23/00 9:00	3/24/00 9:15	4,685	2.90	72.9	4,050	0

Table C-1 (Cont.)

RST Sampling Period		Average Flow	Water Velocity	Volume Sampled	Chinook Expansion	Steelhead Expansion
3/24/00 9:15	3/25/00 8:00	4,742	2.75	69.1	5,077	0
3/25/00 8:00	3/26/00 8:00	4,721	2.80	70.4	4,025	0
3/26/00 8:00	3/27/00 8:00	4,687	2.75	69.1	3,187	0
3/27/00 8:00	3/28/00 9:00	4,656	2.70	67.9	3,156	0
3/28/00 9:00	3/29/00 9:15	4,624	2.70	67.9	2,113	0
3/29/00 9:15	3/30/00 9:15	4,440	2.80	70.4	2,713	0
3/30/00 9:15	3/31/00 9:00	4,197	2.75	69.1	2,307	0
3/31/00 9:00	4/1/00 9:30	4,109	2.80	70.4	7,648	117
4/1/00 9:30	4/2/00 9:00	4,126	2.75	69.1	6,507	119
4/2/00 9:00	4/3/00 9:30	4,083	2.70	67.9	5,355	0
4/3/00 9:30	4/4/00 9:45	4,013	2.95	74.1	8,172	216
4/4/00 9:45	4/5/00 9:30	3,975	3.10	77.9	4,387	0
4/5/00 9:30	4/6/00 9:30	3,829	3.30	82.9	4,940	0
4/6/00 9:30	4/7/00 9:00	3,639	3.50	88.0	6,454	124
4/7/00 9:00	4/8/00 9:00	3,496	3.10	77.9	10,858	179
4/8/00 9:00	4/9/00 8:15	3,462	2.90	72.9	8,359	0
4/9/00 8:15	4/10/00 9:20	3,449	2.90	72.9	8,517	189
4/10/00 9:20	4/11/00 8:15	3,426	3.75	94.2	7,380	73
4/11/00 8:15	4/12/00 8:30	3,341	3.90	98.0	6,136	34
4/12/00 8:30	4/13/00 8:30	3,277	2.90	72.9	6,114	45
4/13/00 8:30	4/14/00 7:30	3,193	3.87	97.3	5,974	66
4/14/00 7:30	4/15/00 9:30	3,154	3.44	86.5	14,299	255
4/15/00 9:30	4/16/00 9:30	3,157	3.40	85.5	4,655	111
4/16/00 9:30	4/17/00 9:00	3,172	4.00	100.5	3,723	95
4/17/00 9:00	4/18/00 8:00	3,436	3.30	82.9	8,410	0
4/18/00 8:00	4/19/00 8:00	3,400	3.60	90.5	4,772	75
4/19/00 8:00	4/20/00 9:30	3,339	3.89	97.8	5,875	102
4/20/00 9:30	4/21/00 7:40	3,284	3.96	99.5	10,425	99
4/21/00 7:40	4/22/00 9:30	3,266	2.89	72.6	8,274	135
4/22/00 9:30	4/23/00 10:15	3,227	3.50	88.0	5,136	147
4/23/00 10:15	4/24/00 8:20	3,174	3.49	87.7	4,777	72
4/24/00 8:20	4/25/00 8:00	3,128	3.68	92.5	3,991	68
4/25/00 8:00	4/26/00 8:15	3,080	3.68	92.5	2,631	100
4/26/00 8:15	4/27/00 8:00	2,984	3.46	87.0	2,882	69
4/27/00 8:00	4/28/00 9:30	2,835	3.63	91.2	1,958	31
4/28/00 9:30	4/29/00 9:30	2,725	3.06	76.9	2,551	106
4/29/00 9:30	4/30/00 9:50	2,548	3.52	88.5	1,987	58
4/30/00 9:50	5/1/00 7:30	2,467	3.31	83.2	2,403	59
5/1/00 7:30	5/2/00 8:00	2,483	3.32	83.4	1,577	0
5/2/00 8:00	5/3/00 7:30	2,469	3.08	77.4	0	0
5/3/00 7:30	5/4/00 10:00	2,582	3.49	87.7	0	0
5/4/00 10:00	5/5/00 9:16	2,396	3.47	87.2	1,703	27

Table C-1 (Cont.)

RST Sampling Period		Average Flow	Water Velocity	Volume Sampled	Chinook Expansion	Steelhead Expansion
5/5/00 9:16	5/6/00 8:50	2,334	2.96	74.4	2,478	63
5/6/00 8:50	5/7/00 9:30	2,340	4.08	102.5	2,008	46
5/7/00 9:30	5/8/00 8:00	2,381	3.84	96.5	5,577	74
5/8/00 8:00	5/9/00 7:50	2,306	4.00	100.5	5,850	0
5/9/00 7:50	5/10/00 8:00	1,762	3.67	92.2	5,062	134
5/10/00 8:00	5/11/00 8:00	1,728	4.11	103.3	6,090	100
5/11/00 8:00	5/12/00 7:45	1,638	4.11	103.3	5,755	174
5/12/00 7:45	5/13/00 8:30	1,555	2.43	61.1	4,788	306
5/13/00 8:30	5/14/00 8:30	1,490	3.64	91.5	5,081	147
5/14/00 8:30	5/15/00 8:30	1,498	3.89	97.8	2,619	107
5/15/00 8:30	5/16/00 7:30	1,552	4.25	106.8	3,575	73
5/16/00 7:30	5/17/00 8:00	1,594	3.97	99.8	2,796	0
5/17/00 8:00	5/18/00 8:00	1,638	3.97	99.8	22,227	49
5/18/00 8:00	5/19/00 7:45	1,648	4.08	102.5	11,472	96
5/19/00 7:45	5/20/00 9:00	1,678				
5/20/00 9:00	5/21/00 9:00	1,719				
5/21/00 9:00	5/22/00 9:00	1,708				
5/22/00 9:00	5/23/00 8:30	1,670	3.54 [3]	89.1	3,749	150
5/23/00 8:30	5/24/00 8:15	1,607	3.67	92.2	1,603	139
5/24/00 8:15	5/25/00 8:30	1,609	3.74	94.0	2,345	120
5/25/00 8:30	5/26/00 7:45	1,589	4.01	100.8	1,971	189
5/26/00 7:45	5/27/00 9:00	1,514	3.51 [1]	88.3	2,435	189
5/27/00 9:00	5/28/00 8:00	1,467	3.71	93.2	299	0
5/28/00 8:00	5/29/00 7:45	1,424	3.59	90.2	1,626	32
5/29/00 7:45	5/30/00 8:00	1,423	3.45	86.7	1,854	98
5/30/00 8:00	5/31/00 8:15	1,388	3.37	84.7	574	574
5/31/00 8:15	6/1/00 7:20	1,371	3.74	94.0	102	29
6/1/00 7:20	6/2/00 9:00	1,329	3.98	100.0	359	93
6/2/00 9:00	6/3/00 8:10	1,263	2.90 [1]	72.8	295	69
6/3/00 8:10	6/4/00 9:00	1,190	3.65	91.7	195	130
6/4/00 9:00	6/5/00 8:45	1,071	3.20	80.4	120	40
6/5/00 8:45	6/6/00 8:10	950	2.81	70.6	13	40
6/6/00 8:10	6/7/00 8:45	945	2.88	72.4	13	26
6/7/00 8:45	6/8/00 8:45	940	2.50	62.8	45	15
6/8/00 8:45	6/9/00 0:00	930	2.59	65.1	14	0
6/9/00 0:00	6/10/00 8:30	950	2.50	62.8	106	15
6/10/00 8:30	6/11/00 9:00	975	3.03	76.2	38	90
6/11/00 9:00	6/12/00 8:20	1,016	2.69	67.6	15	15
6/12/00 8:20	6/13/00 8:20	1,017	2.81	70.6	86	72
6/13/00 8:20	6/14/00 8:50	1,110	3.10	77.9	86	185
6/14/00 8:50	6/15/00 8:15	1,171	3.09	77.7	121	90
6/15/00 8:15	6/16/00 7:40	1,153	2.75	69.1	100	134

Table C-1 (Cont.)

RST Sampling Period		Average Flow	Water Velocity	Volume Sampled	Chinook Expansion	Steelhead Expansion
6/16/00 7:40	6/17/00 8:00	1,122	3.20	80.4	0	70
6/17/00 8:00	6/18/00 9:15	1,080	3.24	81.4	13	93
6/18/00 9:15	6/19/00 9:10	959	3.09	77.7	37	123
6/19/00 9:10	6/20/00 9:15	906	3.01	75.6	12	120
6/20/00 9:15	6/21/00 8:00	875	2.67	67.1	39	287
6/21/00 8:00	6/22/00 8:20	836	2.82	70.9	24	200
6/22/00 8:20	6/23/00 9:00	825	2.84	71.4	12	208
6/23/00 9:00	6/24/00 8:10	811	3.00 [1]	75.3	22	97
6/24/00 8:10	6/25/00 8:15	810	2.66	66.9	36	61
6/25/00 8:15	6/26/00 8:45	827	2.74	68.9	0	156
6/26/00 8:45	6/27/00 8:20	949	2.78	69.9	14	299
6/27/00 8:20	6/28/00 9:00	973	2.66	66.9	0	349
6/28/00 9:00	6/29/00 8:45	978	3.02	75.9	13	258
6/29/00 8:45	6/30/00 9:00	985	2.83	71.1	0	0
6/30/00 9:00	7/1/00 9:00	954				
END OF SAMPLING SEASON						
10/29/00 9:00	10/30/00 9:00	755	2.76 [2]	69.5	0	0
10/30/00 9:00	10/31/00 9:00	749	2.76 [2]	69.3	0	11
10/31/00 9:00	11/1/00 9:00	748	3.07 [1]	77.2	0	10
11/1/00 9:00	11/2/00 9:30	719	2.79 [1]	70.2	0	0
11/2/00 9:30	11/3/00 9:00	717	2.73 [1]	68.5	0	0
11/3/00 9:00	11/4/00 9:00	689	2.77 [1]	69.7	0	20
11/4/00 9:00	11/5/00 9:00	672	2.71 [1]	68.0	0	0
11/5/00 9:00	11/6/00 9:00	666	2.74 [1]	68.8	0	29
11/6/00 9:00	11/7/00 9:00	674	2.67 [1]	67.0	0	30
11/7/00 9:00	11/8/00 9:00	682	2.59 [1]	65.1	0	10
11/8/00 9:00	11/9/00 9:52	689	2.59 [1]	65.1	11	0
11/9/00 9:52	11/10/00 9:45	706	2.62 [1]	65.8	11	0
11/10/00 9:45	11/11/00 10:15	709	2.70 [1]	68.0	0	52
11/11/00 10:15	11/12/00 9:15	688	2.70 [1]	67.8	0	10
11/12/00 9:15	11/13/00 9:00	674	2.67 [1]	67.2	0	20
11/13/00 9:00	11/14/00 8:48	688	2.64 [1]	66.4	0	0
11/14/00 8:48	11/15/00 9:30	693	2.66 [1]	67.0	10	10
11/15/00 9:30	11/16/00 9:50	693	2.91	73.1	9	38
11/16/00 9:50	11/17/00 9:42	667	2.90	72.9	55	37
11/17/00 9:42	11/18/00 9:40	659	3.09	77.7	0	76
11/18/00 9:40	11/19/00 9:34	654	3.00	75.4	26	9
11/19/00 9:34	11/20/00 9:50	647	2.83 [1]	71.1	18	27
11/20/00 9:50	11/21/00 9:15	629	2.55	64.1	10	10
11/21/00 9:15	11/22/00 9:30	643	2.46	61.8	10	0
11/22/00 9:30	11/23/00 8:41	641	2.71	68.1	66	28
11/23/00 8:41	11/24/00 8:50	633	2.57	64.6	29	29

Table C-1 (Cont.)

RST Sampling Period		Average Flow	Water Velocity	Volume Sampled	Chinook Expansion	Steelhead Expansion
11/24/00 8:50	11/25/00 9:04	630	2.72	68.4	46	0
11/25/00 9:04	11/26/00 9:22	632	2.79	70.1	261	18
11/26/00 9:22	11/27/00 8:05	620	2.76	69.4	402	0
11/27/00 8:05	11/28/00 9:29	577	2.42	60.8	142	19
11/28/00 9:29	11/29/00 9:25	87	2.40	60.3	19	0
11/29/00 9:25	11/30/00 9:32	216	2.79	70.1	101	3
11/30/00 9:32	12/1/00 9:51	763	2.88	72.3	264	21
12/1/00 9:51	12/2/00 9:50	774	2.85	71.6	195	11
12/2/00 9:50	12/3/00 9:35	759	2.69	67.6	112	45
12/3/00 9:35	12/4/00 10:00	746	2.92	73.4	305	10
12/4/00 10:00	12/5/00 10:11	740	2.90	72.9	1,066	30
12/5/00 10:11	12/6/00 10:00	780	3.01	75.6	773	31
12/6/00 10:00	12/7/00 9:20	785	2.93	73.6	0	21
12/7/00 9:20	12/8/00 10:25	794	2.98	74.9	318	42
12/8/00 10:25	12/9/00 9:50	752	2.73	68.6	1,469	33
12/9/00 9:50	12/10/00 9:50	714	2.69	67.6	306	0
12/10/00 9:50	12/11/00 9:58	705	2.74	68.9	450	20
12/11/00 9:58	12/12/00 10:15	698	2.56	64.3	814	22
12/12/00 10:15	12/13/00 9:53	701	2.58	64.8	1,449	54
12/13/00 9:53	12/14/00 9:47	701	2.63	66.1	1,750	0
12/14/00 9:47	12/15/00 10:03	788	2.75	69.1	3,397	0
12/15/00 10:03	12/16/00 9:50	822	3.15	79.2	13,098	52
12/16/00 9:50	12/17/00 10:08	802	3.11	78.2	4,997	51
12/17/00 10:08	12/18/00 10:09	764	2.75	69.1	10,265	22
12/18/00 10:09	12/19/00 9:55	759	2.70	67.9	7,361	67
12/19/00 9:55	12/20/00 10:20	748	3.08	77.4	6,989	0
12/20/00 10:20	12/21/00 9:27	745	2.73	68.6	13,416	0
12/21/00 9:27	12/22/00 9:47	747	3.05	76.7	9,531	10
12/22/00 9:47	12/23/00 9:55	758	3.01	75.6	13,234	10
12/23/00 9:55	12/24/00 10:32	761	2.91	73.1	16,107	42
12/24/00 10:32	12/25/00 9:12	761	2.92	73.4	30,653	21
12/25/00 9:12	12/26/00 9:50	750	2.79	70.1	22,657	21
12/26/00 9:50	12/27/00 10:30	756	2.85	71.6	16,507	32
12/27/00 10:30	12/28/00 10:35	753	2.75	69.1	30,080	11
12/28/00 10:35	12/29/00 9:55	716	2.77	69.6	25,265	21
12/29/00 9:55	12/30/00 10:00	697	2.85	71.6	23,098	39
12/30/00 10:00	12/31/00 9:45	700	2.84	71.4	25,741	39
12/31/00 9:45	1/1/01 11:22	701	2.68	67.4	28,933	42
1/1/01 11:22	1/2/01 10:10	691	2.68	67.4	40,482	31
1/2/01 10:10	1/3/01 11:23	688	2.67	67.1	62,029	72
1/3/01 11:23	1/4/01 10:20	700	2.76	69.4	51,507	50
1/4/01 10:20	1/5/01 11:15	712	2.72	68.4	78,618	42

Table C-1 (Cont.)

RST Sampling Period		Average Flow	Water Velocity	Volume Sampled	Chinook Expansion	Steelhead Expansion
1/5/01 11:15	1/6/01 9:54	694	2.65	66.6	54,442	62
1/6/01 9:54	1/7/01 10:17	685	2.45	61.6	37,410	44
1/7/01 10:17	1/8/01 10:00	686	2.36	59.3	4,245	0
1/8/01 10:00	1/9/01 10:03	777	2.82	70.9	6,328	11
1/9/01 10:03	1/10/01 9:55	769	2.82	70.9	10,487	11
1/10/01 9:55	1/11/01 10:00	848	2.95	74.1	18,327	23
1/11/01 10:00	1/12/01 11:04	935	2.99	75.1	103,048	37
1/12/01 11:04	1/13/01 11:24	877	2.98	74.9	95,114	105
1/13/01 11:24	1/14/01 9:30	842	2.80	70.4	45,840	96
1/14/01 9:30	1/15/01 12:06	853	3.11	78.2	6,875	33
1/15/01 12:06	1/16/01 11:03	875	3.21	80.7	48,863	108
1/16/01 11:03	1/17/01 11:50	846	3.33	83.7	58,293	61
1/17/01 11:50	1/18/01 11:00	846	3.22	80.9	45,432	63
1/18/01 11:00	1/19/01 10:05	848	3.14	78.9	13,128	11
1/19/01 10:05	1/20/01 11:07	971	3.32	83.4	67,268	12
1/20/01 11:07	1/21/01 9:55	971	3.07	77.2	44,602	13
1/21/01 9:55	1/22/01 9:43	964	3.32	83.4	26,931	35
1/22/01 9:43	1/23/01 11:09	960	3.28	82.4	45,487	58
1/23/01 11:09	1/24/01 10:55	1,023	3.56	89.5	49,694	34
1/24/01 10:55	1/25/01 13:48	1,108	3.55	89.2	464,463	298
1/25/01 13:48	1/26/01 13:45	1,221	3.52	88.5	259,027	235
1/26/01 13:45	1/27/01 14:21	1,162	3.11	78.2	313,529	817
1/27/01 14:21	1/28/01 13:23	1,051	3.51	88.2	131,944	179
1/28/01 13:23	1/29/01 13:13	974	3.37	84.7	43,056	69
1/29/01 13:13	1/30/01 12:26	937	3.34	83.9	80,173	45
1/30/01 12:26	1/31/01 13:00	878	3.00	75.4	74,649	35
1/31/01 13:00	2/1/01 12:00	829	3.21	80.7	48,424	103
2/1/01 12:00	2/2/01 11:18	806	2.89	72.6	24,121	44
2/2/01 11:18	2/3/01 11:10	769	3.20	80.4	19,640	19
2/3/01 11:10	2/4/01 12:55	717	2.74	68.9	65,979	62
2/4/01 12:55	2/5/01 17:29	707	2.98	74.9	132,695	142
2/5/01 17:29	2/6/01 12:40	707	2.55	64.1	82,550	110
2/6/01 12:40	2/7/01 12:03	707	2.64	66.4	50,209	149
2/7/01 12:03	2/8/01 12:20	705	2.61	65.6	94,996	43
2/8/01 12:20	2/9/01 11:09	704	2.58	64.8	8,995	33
2/9/01 11:09	2/10/01 11:33	779	2.64	66.4	16,054	47
2/10/01 11:33	2/11/01 9:00	1,112				
2/11/01 9:00	2/12/01 9:00	1,502				
2/12/01 9:00	2/13/01 9:00	1,041				
2/13/01 9:00	2/14/01 14:43	898	2.90 [2]	72.9	127,955	209
2/14/01 14:43	2/15/01 14:08	853	2.74	68.9	82,656	74
2/15/01 14:08	2/16/01 11:25	816	3.03	76.2	33,677	11

Table C-1 (Cont.)

RST Sampling Period		Average Flow	Water Velocity	Volume Sampled	Chinook Expansion	Steelhead Expansion
2/16/01 11:25	2/17/01 10:56	792	2.89	72.6	22,947	22
2/17/01 10:56	2/18/01 10:37	788	2.90	72.9	21,083	0
2/18/01 10:37	2/19/01 12:35	805	2.82	70.9	53,298	0
2/19/01 12:35	2/20/01 9:00	1,088	3.02	75.9		
2/20/01 9:00	2/21/01 17:11	1,222	3.60 [3]	90.5	291,609	365
2/21/01 17:11	2/22/01 11:36	1,766	3.47	87.2	20,842	0
2/22/01 11:36	2/23/01 14:22	2,031	4.34	109.1	341,632	410
2/23/01 14:22	2/24/01 13:21	1,723	4.09	102.8	88,538	503
2/24/01 13:21	2/25/01 12:11	1,791	4.38	110.1	148,465	439
2/25/01 12:11	2/26/01 12:37	1,527	4.03	101.3	116,278	317
2/26/01 12:37	2/27/01 12:46	1,390	3.92	98.5	86,196	85
2/27/01 12:46	2/28/01 13:19	1,279	3.75	94.2	83,470	95
END OF PRESENT RST RECORDS						

12

STATE WATER RESOURCES CONTROL BOARD

PUBLIC HEARING

CALIFORNIA DEPARTMENT OF FISH AND GAME'S

LOWER YUBA RIVER FISHERIES MANAGEMENT PLAN

AND A COMPLAINT BY

THE UNITED GROUP AGAINST YUBA COUNTY WATER AGENCY

AND OTHER DIVERTERS OF WATER FROM THE LOWER YUBA RIVER

IN YUBA COUNTY

TUESDAY, APRIL 4, 2000

PAUL R. BONDERSON BUILDING

SACRAMENTO, CALIFORNIA

9:00 A.M.

Reported by: MARY R. GALLAGHER, CSR #10749

time frame, yes.

MR. LILLY: So sometime between January 14 and January 20?

MR. NELSON: Yes. I apologize for not entering that data, it was just a matter of time.

MR. LILLY: Okay. And I assume you're still operating that trap through today?

MS. BROWN: Yes.

MR. LILLY: Okay. And are you continuing to collect data from that trap?

MR. NELSON: I'll answer since Julie isn't dealing with it anymore. Yes, we are.

MR. LILLY: Okay. And are you willing to provide copies of the data, that trap data to Yuba County Water Agency and other interested parties?

MR. NELSON: No problem.

MR. LILLY: Okay. We'll send you a request. Thank you. If we can now go to discussing the spawning redd survey, which I believe is discussed in Exhibit S-DFG-1 on Page 2 in the last sentence. Very last sentence on Page 2 it says,

(Reading):

> "Spring-run adults presently oversummer above Daguerre Point Dam and then spawn in later summer."

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RICHARD P. SHANAHAN
ALAN B. LILLY
RYAN S. BEZERRA
JOSHUA M. HOROWITZ

7021-11-9
~~7021-93~~

November 8, 2000

<u>VIA CERTIFIED MAIL, RETURN RECEIPT REQUESTED</u>
(Certified Mail No. Z 559 383 796)

Mr. Banky Curtis
Regional Manager, Region 2
California Department of Fish and Game
1701 Nimbus Road
Rancho Cordova, California 95670

Re: Public Records Act Request

Dear Mr. Curtis:

Donn Wilson, Engineer-Administrator of the Yuba County Water Agency ("YCWA"), has indicated that YCWA has attempted to obtain informally from the Department of Fish and Game ("DFG") data from the rotary screw trap installed and operated by DFG in the Yuba River downstream of Daguerre Point Dam, but has been unable to do so. Accordingly, pursuant to the California Public Records Act (Gov't Code sections 6250 *et seq.*), on behalf of YCWA, I respectfully request the following public records from DFG:

1. All raw data collected at any rotary screw trap installed and/or operated by DFG in the Yuba River.

2. All compilations of any raw data collected at and any other writings related to any data collected at any rotary screw trap installed and/or operated by DFG in the Yuba River.

3. All memoranda, reports, correspondence or other writings related to DFG's operation of any rotary screw trap in the Yuba River.

In addition, YCWA and its agents have attempted to obtain informally from DFG data concerning fish salvaged by DFG since January 1, 1999 pursuant to its operation of a fish screen in the Hallwood-Cordua Diversion Canal near Daguerre Point Dam on the Yuba River, but have been unable to do so. Accordingly, pursuant to the California Public Records Act (Gov't Code sections 6250 *et seq.*), on behalf of YCWA, I respectfully request the following public records from DFG:

1. All raw data concerning fish salvaged by DFG since January 1, 1999 at any fish screen in the Hallwood-Cordua Diversion Canal (including, but not limited to, any data concerning the length or weight of any such fish).

2. All compilations of any raw data collected by DFG concerning fish salvaged by DFG since January 1, 1999 at any fish screen in the Hallwood-Cordua Diversion Canal and any other writing relating to any such raw data.

3. All memoranda, reports, correspondence or other writings related to any data collected by DFG while salvaging fish at the Hallwood-Cordua Diversion Canal on or after January 1, 1999.

For purposes of this request: (1) the term "writing" shall have the meaning stated in Government Code section 6252, subdivision (f); and (2) the term "correspondence" shall mean letters, facsimiles, electronic mail, meeting notes and notes taken during telephone conversations.

If DFG withholds any of the writings requested by this letter from public release, then please indicate: (1) the title and subject matter of the writing; (2) the writing's author; (3) the writing's addressee; (4) the specific reason that the writing is withheld; and (5) the names and titles of each person responsible for its withholding. (*See* Gov't Code § 6253.)

Pursuant to Government Code section 6253, please inform me of DFG's response to this letter within 10 days of your receipt of it and send the requested information to me promptly thereafter at the above address. YCWA will pay all costs associated with this request in accordance with Government Code section 6253.

Thank you for your efforts to compile the writings requested in this letter. If you have any questions, please contact me as soon as possible. I look forward to hearing from you.

Kind regards,

RYAN S. BEZERRA

RSB:
7021\L110600rsb

Z 559 383 796

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail *(See reverse)*

Sent to Mr. Banky Curtis	
Street & Number 1701 NIMBUS ROAD	
Post Office, State, & ZIP Code RANCHO CORDOVA, CA 95670	
Postage	$
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Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date RE: 7021'L110600rsb 11/07/00	

PS Form **3800**, April 1995

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SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. Banky Curtis
Regional Manager, Region 2
California Department of Fish & Game
1701 NIMBUS ROAD
RANCHO CORDOVA, CALIFORNIA 95670

4a. Article Number
Z 559 383 796

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☒ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
11-9-00

5. Received By: *(Print Name)*
Elisabeth Figeroid

8. Addressee's Address *(Only if requested and fee is paid)*

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6. Signature: *(Addressee or Agent)*
X Elisabeth Figeroid

PS Form 3811, December 1994 102595-98-B-0229 Domestic Return Receipt

BKS

Thank you for using Return Receipt Service.

COM 9237

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ALAN B. LILLY
RYAN S. BEZERRA
JOSHUA M. HOROWITZ

7021-11-9
~~7021.93~~

November 22, 2000

VIA CERTIFIED MAIL, RETURN RECEIPT REQUESTED
(Certified Mail No. Z 559 383 797)

Mr. Banky Curtis
Regional Manager, Region 2
California Department of Fish and Game
1701 Nimbus Road
Rancho Cordova, California 95670

Re: Public Records Act Request of Yuba County Water Agency

Dear Mr. Curtis:

As you know, I submitted a Public Records Act request, dated November 8, 2000, to you on behalf of Yuba County Water Agency ("YCWA") in order to obtain copies of various writings related to the Department of Fish and Game's operation of and collection of data from any rotary screw traps that the Department has installed in the Yuba River. Our records demonstrate that the Department received this request on November 9, 2000. Even though Government Code section 6253, subdivision (c), requires that government agencies determine what documents they have that respond to Public Records Act requests within 10 days of their receipt of such requests and then notify the requesting party "promptly," we have yet to receive a response to YCWA's request for copies of writings related to the Department's Yuba River rotary screw trap(s). In order to mitigate the Department's non-compliance with Government Code section 6253, subdivision (c), please respond to my November 8, 2000 Public Records Act request as soon as possible.

Kind regards,

RYAN S. BEZERRA

RSB:
7021\L112200rsb

STATE OF CALIFORNIA-THE RESOURCES AGENCY GRAY DAVIS, *Governor*

DEPARTMENT OF FISH AND GAME
1416 NINTH STREET
P. O. BOX 9442098
SACRAMENTO, CA 94244-2090
(916) 654-3821

28 November 2000

Ryan S. Bezerra
Bartkiewicz, Kronick & Shanahan
1011 22nd Street
Sacramento CA 95816

Re: Public Records Act Request

Dear Mr. Bezerra:

This letter is in response to your November 7, 2000, Public Records Act Request for records relating to the Yuba River rotary screw trap. Your request is governed by the California Public Records Act ("PRA"; Gov. Code § 6250 et seq.) and other applicable statutes.

The Department of Fish and Game ("Department") has determined it will comply with your request by providing you with copies of any responsive, non-exempt documents within the Department's files as soon as possible. Please note that the Department currently charges a photocopying fee of $.15 per page. This fee reflects the Department's direct photocopying costs, which include the cost of running the copy machine and the expense of the person operating it. The Department's fee does not include the cost of retrieving, inspecting, and handling documents, which the PRA does not allow the Department to recover.

Please accept the Department's apologies for failing to respond to your request earlier. The delay was the inadvertent result of staff vacations and holidays, and was unintentional. If you have any questions regarding this matter, please do not hesitate to contact me at the above address or telephone number.

Sincerely,

Deborah R Dyer

DEBORAH R. DYER
Staff Counsel

BARTKIEWICZ, KRONICK & SHANAHAN
A PROFESSIONAL CORPORATION
1011 TWENTY-SECOND STREET
SACRAMENTO, CALIFORNIA 95816-4907
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RYAN S. BEZERRA
JOSHUA M. HOROWITZ

7021-11-9
~~7021-93~~

December 7, 2000

VIA HAND-DELIVERY

Ms. Deborah Dyer
Staff Counsel
Department of Fish and Game
1416 Ninth Street
Sacramento, California 94244-2090

Re: Public Records Act Requests of Yuba County Water Agency

Dear Ms. Dyer:

As you know, Yuba County Water Agency ("YCWA") has two requests under the Public Records Act (Gov't Code § 6250 *et seq.*) pending with the Department of Fish and Game. Those requests generally seek writings related to: (1) the Department's sampling and testing of tissue of fish from the Yuba River that are alleged to be spring-run chinook salmon; and (2) the Department's rotary screw trap in the Yuba River.

The Department's only responses to YCWA's requests have been letters from you that state that the Department will produce responsive, non-exempt documents "as soon as possible," but do not state even a general time when that production will be made. It has been 47 days since the Department's receipt of YCWA's request for the salmon genetic sampling and testing information and 29 days since the Department's receipt of YCWA's request for rotary screw trap documents. The Department's failure to produce the writings requested by YCWA violates the Public Records Act's requirement that state agencies make requested documents "promptly available." (*See* Gov't Code § 6253, subd. (b).) In particular, the Department's failure to produce rotary screw trap data contradicts the sworn testimony that John Nelson, the Department employee responsible for that data, gave last April before the State Water Resources Control Board. In his sworn testimony, Mr. Nelson stated that the Department would make the data available. (I have attached a copy of the relevant portion of Mr. Nelson's testimony.)

Accordingly, if the Department fails to produce the requested writings by 5 p.m. on December 15, 2000, YCWA plans to file suit to obtain the requested writings, as well as the Department's payment of all costs and attorneys' fees incurred by YCWA. (*See* Gov't Code §§ 6258-6259.)

Kind regards,

Ryan S. Bezerra

RSB:bja
7021/L120700rsb.wpd

STATE OF CALIFORNIA-THE RESOURCES AGENCY GRAY DAVIS, *Governor*

DEPARTMENT OF FISH AND GAME
1416 NINTH STREET
P. O. BOX 9442098
SACRAMENTO, CA 94244-2090
(916) 654-3821

11 December 2000

Ryan S. Bezerra
Bartkiewicz, Kronick & Shanahan
1011 22nd Street
Sacramento CA 95816

Re: Public Records Act Request

Dear Mr. Bezerra:

This letter is in response to your December 7, 2000, letter regarding you two requests for public records relating to Department of Fish and Game's ("Department") sampling of fish tissue from the Yuba River, and the Department's rotary screw trap in the Yuba River.

I appreciate your concern for the timeliness of a response. However, please be assured that the Department is acting with due diligence in identifying, collecting, and reviewing the documents you have requested. This process has been complicated by several factors, including the fact that the original request sought records held and compiled by Deborah McKee, a former Department employee who is no longer with the Department. As Ms. McKee was the employee with primary knowledge of the records, your request has necessitated facilitating with Ms. McKee to identify and locate the requested records. Furthermore, due to the sensitive nature of this issue, and the broad-reaching nature of your request, the document review has taken an unusual amount of time.

At this time, the Department has assembled and reviewed a portion of the documents responsive to your request. However, the remainder of the request will not be processed in time to respond by your arbitrary deadline of December 15, 2000. Please be assured that the Department is attempting to provide you with responsive documents at the earliest possible time, and that any delay is not intentional.

If you have any questions regarding this matter, please do not hesitate to contact me at the above address or telephone number.

Sincerely,

Deborah R. Dyer

DEBORAH R. DYER
Staff Counsel

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7021-11-9
~~7021-93~~

December 12, 2000

VIA HAND-DELIVERY

Ms. Deborah Dyer
Staff Counsel
Department of Fish and Game
1416 Ninth Street
Sacramento, California 94244-2090

Re: Public Records Act Requests of Yuba County Water Agency

Dear Ms. Dyer:

Thank you for your letter dated December 11, 2000 concerning the Public Records Act requests that Yuba County Water Agency ("YCWA") has pending before the Department of Fish and Game. Unfortunately, your letter does not resolve YCWA's concerns as expressed in my various letters to you.

I did appreciate the statement in your letter that the Department has assembled "a portion of the documents responsive to your request." (I assume that your letter mistakenly lumped together YCWA's two separate requests – one of which generally related to genetic sampling of fish in the Yuba River that allegedly are spring-run chinook salmon, the other generally related to the Department's rotary screw trap in the Yuba River -- as one "request.") Please inform me as soon as possible what writings responsive to YCWA's requests the Department has assembled to date and please produce those writings by December 15. The Public Records Act requires state agencies to make requested writings "promptly available." (Gov't Code § 6253, subd. (b).) That Act gives a state agency no authority to delay its disclosure of requested writings simply because it has not assembled all of the requested writings.

Your December 11 letter stated that "several factors" are delaying the Department's disclosure of certain writings requested by YCWA. That letter, however, specifically cited only issues related to the departure of Deborah McKee from the Department. Those issues should affect only YCWA's request for writings related to the genetic sampling and testing of fish in the Yuba River that are allegedly spring-run chinook salmon. According to the testimony that the Department presented before the State Water Resources Control Board (the "SWRCB"), John Nelson is the Department employee responsible for the Department's Yuba River rotary screw trap. (*See* copies of relevant pages of Mr. Nelson's testimony attached hereto.) Your December 11 letter thus does not provide an adequate explanation for the Department's delay in producing writings responsive to YCWA's requests. Accordingly, before 5 p.m. on December 15, please provide me with an explanation of the reasons why the Department's disclosure of each category of writings requested by YCWA has been delayed.

In addition, Ms. McKee's departure from the Department is not an adequate reason for the Department's delay. The Public Records Act contemplates that such factors will delay state agencies' responses to requests under that Act (*see* Gov't Code § 6253, subd. (c)), but does not allow an agency to delay its responses for the long time that the Department has delayed its response in this instance. In fact, the Department failed to comply with Government Code section 6253, subdivision (c), because the Department failed to properly notify me under that statute and because the time limits established by that statute have long since passed.

Your December 11 letter also stated that the "sensitive nature of this issue" has caused the Department to delay its production of the requested documents. It is unclear to me what issue's "sensitive nature" has caused the delay. It appears that there are two possibilities: (1) the "sensitive nature"of Ms. McKee's departure from the Department; and (2) the fact that YCWA and the Department have a "sensitive" relationship. Neither "issue" justifies the Department's delay in producing requested writings.

In relation to Ms. McKee's departure, Government Code section 6253, subdivision (c), provides a mechanism for the Department to use when it needs to consult with other agencies in order to respond to a Public Records Act request. The Department has not availed itself of that mechanism.

In relation to the "sensitive" relationship between YCWA and the Department, nothing in the Public Records Act allows the Department to delay its production of requested writings to YCWA merely because the two parties may have adversarial points of view on some issues. Furthermore, in relation to the rotary screw trap information requested by YCWA, YCWA's representatives have attempted unsuccessfully over the course of several months to obtain that information from the Department in the manner suggested by Mr. Nelson during his sworn testimony before the SWRCB. YCWA thus was required to proceed under the Public Records Act. The "sensitive nature" of YCWA's relationship with the Department does not diminish YCWA's rights under that Act.

YCWA continues to intend to file suit under the Public Records Act if the Department does not provide adequate responses to YCWA's requests under that Act (*see* Gov't Code §§ 6258, 6259) by 5 p.m. on December 15.

Kind regards,

Ryan S. Bezerra

RSB:bja
7021/L121200rsb.wpd
Enclosure

YUBA
COUNTY
WATER
AGENCY

1402 D STREET
MARYSVILLE
CALIFORNIA
95901-4226

TELEPHONE
530.741.6278
FACSIMILE
530.741.6541

December 15, 2000

Robert C. Hight
Director
Department of Fish and Game
1416 Ninth Street, 12th Floor
Sacramento, CA 95814

Dear Director Hight:

Yuba County Water Agency (YCWA) has worked hard to collaborate with the Department of Fish and Game. We need your assistance to resolve an issue before we head further down a road that we would rather not go down.

For over a year, we have been unsuccessful in obtaining data for the DF&G rotary screw trap on the Yuba River. John Nelson used data from this fish trap in his State Water Resources Control Board testimony on the Lower Yuba on April 4, 2000. During his testimony, he stated that there would be no problem in providing YCWA with the data. Our biologists have made several unsuccessful attempts to obtain the data from DF&G. I also called Banky Curtis requesting the data , but with no success.

Due to the lack of cooperation from DF&G in delivering the data and out of pure frustration, I asked our attorney to submit a public records request to obtain it. We are now on our third Public Records Act request without a satisfactory response for the rotary screw trap data and other additional data. Additionally, DF&G has not met the response requirements in the Public Records Act. Copies of the correspondence are attached for your information.

We should not have to go to these extreme steps to obtain this data that was offered to us during the Lower Yuba River Hearings. We have made great effort to work cooperatively with the Department. It is very frustrating to us when the flow of information and data is only in one direction. Any assistance you can provide will be greatly appreciated.

Sincerely,

Don Wilson

Donn Wilson
Engineer-Administrator

STATE OF CALIFORNIA-THE RESOURCES AGENCY

GRAY DAVIS, *Governor*

DEPARTMENT OF FISH AND GAME
1416 NINTH STREET
P. O. BOX 9442098
SACRAMENTO, CA 94244-2090
(916) 654-3821

21 December 2000

Ryan S. Bezerra
Bartkiewicz, Kronick & Shanahan
1011 22nd Street
Sacramento CA 95816

Re: Public Records Act Request

Dear Mr. Bezerra:

This letter is pursuant to our telephone conversation of this date. After receiving documents in response to your Public Records Act Request for records relating to the Yuba River rotary screw trap, you inquired as to the whereabouts of data reporting sheets for July 1, 2000, through October 31, 2000. This letter is to confirm that I informed you that the Department of Fish and Game performed no rotary screw trapping on the Yuba River for the months of July, August, September and October of 2000.

If you have any further questions regarding this matter, please do not hesitate to contact me at the above address or telephone number.

Sincerely,

Deborah R. Dyer

DEBORAH R. DYER
Staff Counsel

cc: John Nelson
Department of Fish and Game

…RTKIEWICZ, KRONICK & SHANAH…
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JOSHUA M. HOROWITZ

7021-11-9

January 26, 2001

Ms. Deborah Dyer
Staff Counsel
Department of Fish and Game
1416 Ninth Street
Sacramento, California 94244-2090

Re: Problems with Yuba River Rotary Screw Trap and Hallwood Fish Screen Data

Dear Ms. Dyer:

In December 2000, in response to a Public Records Act request by the Yuba County Water Agency, the Department produced to us, among other things, copies of daily data sheets reflecting the fish that the Department collected at its Yuba River rotary screw trap and Hallwood fish screen. In our review of those documents, we noticed that there were a number of problems with individual data sheets. Those problems are as follows:

1. The February 10, 2000 data sheet for the rotary screw trap is missing.

2. The July 28, 2000 data sheet for the Hallwood fish screen was misaligned when copied, which resulted in the copy not containing certain data contained in the original.

3. The August 18, 2000 data sheet for the Hallwood fish screen is missing. It appears that the August 17, 2000 data sheet for the Hallwood fish screen was copied twice.

Please arrange for the Department to correct these problems by providing us with full copies of: (1) the February 10, 2000 data sheet for the rotary screw trap; (2) the July 28, 2000 data sheet for the Hallwood fish screen; and (3) the August 18, 2000 data sheet for the Hallwood fish screen. Thank you for your attention to this matter.

Kind regards,

Ryan S. Bezerra

RSB:bja
7021/L012601rsb.wpd

STATE OF CALIFORNIA-THE RESOURCES AGENCY GRAY DAVIS, *Governor*

DEPARTMENT OF FISH AND GAME
1416 NINTH STREET
P. O. BOX 9442098
SACRAMENTO, CA 94244-2090
(916) 654-3821

2 February 2001

Ryan S. Bezerra
Bartkiewicz, Kronick & Shanahan
1011 22nd Street
Sacramento CA 95816

Re: Public Records Act Request

Dear Mr. Bezerra:

Thank you for your letter of January 26, 2001. In that letter you inquired after the status of three documents: 1) the February 10, 2000 data sheet for the rotary screw trap; 2) the July 28 2000 data sheet for the Hallwood fish screen; and 3) the August 18 2000 data sheet for the Hallwood fish screen.

I have enclosed the February 10, 2000, data sheet for the rotary screw trap. Please be assured that the record was not intentionally withheld. I have also enclosed a properly aligned copy of the July 28, 2000, data sheet for the Hallwood fish screen. However, there is no August 18, 2000, data sheet for the Hallwood fish screen. The Department of Fish and Game ceased Hallwood fish screen operations on August 17, 2000.

I hope this letter addresses the concerns raised in your January 26, 2001, letter. If you have any further questions regarding this matter, please contact me at the above address or telephone number.

Sincerely,

Deborah R. Dyer

DEBORAH R. DYER
Staff Counsel

Enclosures

DFG Daily Data Sheet - Yuba Screw Trap

TRAP LOCATION	DATE (MM/DD/YY)	TIME (ARRIVAL)	TIME (DEPART)	CHECKMARK/PULL	HOURS FISHED	RPM	REVOLUTIONS
Hallwood	2-10-00	9:30	11:00	X	24	4.0	~~[illegible]~~
PERSON(S) TAKING DATA		**WATER TEMP (C)**	**TURBIDITY (ntu)**	**VELOCITY (m/s)**	**WEATHER**	**DEBRIS**	
Popper / Sherwood		45 F	1.0	2.47	Rain 100%	Light	

Measured Fork Length (mm) & Weight (g) - Salmon > 40mm

1-10	11-20	21-30	31-40	41-50
1) 44 .64	11) 42 .56	21)	31)	41)
2) 53 1.35	12) 61 2.12	22)	32)	42)
3) 42 .59	13) 65 2.43	23)	33)	43)
4) 45 .72	14)	24)	34)	44)
5) 42 .58	15)	25)	35)	45)
6) 43 .61	16)	26)	36)	46)
7) 43 .59	17)	27)	37)	47)
8) 42 .56	18)	28)	38)	卌 卌 |
9) 61 2.23	19)	29)	39)	卌 卌 卌 卌 卌
10) 42 .49	20)	30)	40)	卌 卌

Tally Salmon <40mm

30mm		
31mm		
32mm	||	2
33mm	|||	3
34mm	||	2
35mm	卌 卌 |	11
36mm	卌 卌 卌 ||	17
37mm	卌 卌 卌 卌 卌 卌	41
38mm	卌 卌 卌 卌 卌 卌 卌	60
39mm	卌 卌 卌 卌 卌 卌 卌	45
40m	卌 卌 卌	15
		196

209	Total Juvenile Chinook Salmon (=Measured & Weighed + Measured)
3100	Plus Count Juvenile Chinook Salmon (do not include Measured & Weighed, or Measured fish)
-0-	# of Mortalities # 12 over from plus count

Other Species

	Fork Length (mm; circle mortalities)										Plus Count	Total
RBT ranking (1-5)												
Rainbow Trout (RBT)												
Hardhead (HH)												
Sac. Squawfish (SASQ)	141											
Golden Shiner (GSH)	115	27										
California Roach (CAR)												
Sac Sucker (SASU)												
Largemouth Bass (LMB)												
Smallmouth Bass (SMB)												
Bluegill (BG)												
Green Sunfish (GSF)												
Redear Sunfish (RSF)												
Riffle Sculpin (RSC)	28	29	33									
Brown Bullhead (BB)												
Tule Perch (TP)												
Pacific Lamprey (PL)												
Speckled Dace (SPD)												

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Comments

total = 3309

DFG Daily Data Sheet - HALLWOOD SCREENS ~~Screw Trap~~

TRAP LOCATION	DATE (M/D/Y)	TIME (ARRIVE)	TIME (DEPART)	HOURS FISHED	RPM	REVOLUTIONS
HALLWOOD SCREEN	07-28-00	0900	—	24	—	—
PERSON(S) TAKING DATA		**WATER TEMP**	**TURBIDITY**	**VELOCITY**	**WEATHER**	**DEBRIS**
S. MORGAN		15 °C			cc = 0%	—

KF

Salmon

Measured and Weighed - Length (mm) & Weight (g)

1) 79 5.70	7)	13)	19)	25)
2) 92 9.57	8)	14)	20)	26)
3) 80 5.46	9)	15)	21)	27)
4) 87 7.32	10)	16)	22)	28)
5) 75 4.09	11)	17)	23)	29)
6)	12)	18)	24)	30)

Measured (Tally) - Length (mm)

mm	Tally	mm	Tally	mm	Tally	mm	Tally	mm	Tally	mm	Tally
28		54		80		106		132		158	
29		55		81		107		133		159	
30		56		82		108		134		160	
31		57		83		109		135		161	
32		58		84		110		136		162	
33		59		85		111		137		163	
34		60		86		112		138		164	
35		61		87		113		139		165	
36		62		88		114		140		166	
37		63		89		115		141		167	
38		64		90		116		142		168	
39		65		91		117		143		169	
40		66		92		118		144		170	
41		67		93		119		145		171	
42		68		94		120		146		172	
43		69		95		121		147		173	
44		70		96		122		148			
45		71		97		123		149			
46		72		98		124		150			
47		73		99		125		151			
48		74		100		126		152			
49		75		101		127		153			
50		76		102		128		154			
51		77		103		129		155			
52		78		104		130		156			
53		79		105		131		157			

5	Total Salmon - (Measured & Weighed) + (Measured)
∅	Total Salmon Plus Count - (Do not include Measured & Weighed, or Measured)
∅	Mortalities

TOTAL = 5

Steelhead

Measured and Weighed - Length (mm) / Weight (g) / Rank (1-5)

1) 56 1.76	7) 58 2.09	13) 52 1.39	19) 60 1.84	25) 61 2.21
2) 49 1.19	8) 54 1.73	14) 53 1.37	20) 41 .71	26) 56 1.72
3) 79 4.99	9) 48 1.07	15) 58 1.31	21) 55 1.57	27) 61 2.44
4) 59 1.47	10) 47 1.04	16) 56 1.55	22) 53 1.43	28) 50 1.19
5) 67 3.22	11) 66 2.70	17) 55 1.50	23) 55 1.59	29) 64 2.65
6) 65 2.49	12) 51 1.17	18) 67 2.65	24) 49 1.10	30) 66 3.16

BFS

Measured (Tally) - Length (mm)

COUNT
0
1

mm Tally	mm Tally	mm Tally	mm Tally	mm Tally	mm Tally	mm Tally	mm Tally
40 |	47 |	54 卌 |	61 ||	68	75	82	89
41 |	48 |||	55 |	62 卌	69	76	83	90
42 |	49 |||	56 |	63 ||	70 ||	77 |	84	91
43 |	50 卌 |	57 ||||	64 |	71	78 |	85	92
44	51 |	58 |	65	72 ||	79 |	86	93
45	52 卌 |	59	66 ||	73 |	80 |	87	94
46 ||	53 |||	60 卌 |	67	74	81	88	95

75

100	Total Steelhead - (Measured & Weighed) + (Measured)
~~∅~~ 51	Total Steelhead Plus Count (Do not include Measured & Weighed, or Measured
~~51~~ ∅	Mortalities

TOTAL = 151

COM 9249

Other Species

Species	Fork Length (mm)										Plus Count	Total
Hardhead (HH)												
Sac. Squawfish (SASQ)												
Golden Shiner (GSN)	41	39										
California Roach (CAR)												
Sac. Sucker (SASU)	32	44										
Largemouth Bass (LMB)												
Smallmouth Bass (SMB)												
Bluegill (BGS)												
Green Sunfish (GSF)												
Redear Sunfish (RES)												
Prickle Sculpin (PSC)												
Brown Bullhead (HRB)												
Tule Perch (TP)												
Pacific Lamprey (PL)												
Speckled Dace (SPD)												
Riffle Sculpin (RFS)												

COMMENTS

PROOF OF SERVICE BY MAIL

I, Terry M. Olson, declare:

I am over the age of eighteen and not a party to this action and work in Sacramento County at 1011 Twenty-Second Street, Sacramento, California 95816. On **March 30, 2001**, following ordinary business practices, I placed for collection and mailing with the United States Postal Service, Sacramento, California 95816 copies of the enclosed **Yuba County Water Agency's Petition For Reconsideration And Request For Stay; Memorandum of Points And Authorities, dated March 30, 2001** in sealed envelopes, with postage fully prepaid, addressed to:

See attached mailing list of parties.

I am readily familiar with the business' practice for collection and processing of correspondence for mailing with the United States Postal Service and, in the ordinary course of business, the correspondence would be deposited with the United States Postal Service on the day on which it is collected at the business.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: **March 30, 2001**

Terry M. Olson

Terry M. Olson

LIST OF PARTIES
Lower Yuba River Hearing
(revised March 30, 2001) (Total of 17)

South Yuba Water District
c/o Mr. Paul R. Minasian
Minasian, Spruance, Baber, Meith,
Soares & Sexton, LLP
P.O. Box 1679
Oroville, CA 95965

California Department of Water Resources
c/o Mr. David A. Sandino
Staff Counsel
1416 Ninth Street, Room 1138-2
P.O. Box 942836
Sacramento, CA 94236-0001

Calif Sportfishing Protection Alliance
c/o Mr. Jim Crenshaw, President
1248 East Oak Avenue
Woodland, CA 95695

Brophy Water District
c/o Mr. Daniel F. Gallery
Attorney at Law
926 J Street, Suite 505
Sacramento, CA 95814

Cordua Irrigation District
c/o Mr. Paul R. Minasian
Minasian, Spruance, Baber, Meith,
Soares & Sexton, LLP
P.O. Box 1679
Oroville, CA 95965

South Yuba River Citizens League
c/o Mr. Lawrence D. Sanders
Attorney at Law
216 Main Street
Nevada City, CA 95959

Water Resources Control Board Staff
c/o Mr. Daniel N. Frink
Senior Staff Counsel
P.O. Box 2000
Sacramento, CA 95812-2000

Western Water Company
c/o Mr. Edward J. Tiedemann
or Mr. Scott Morris
Kronick, Moskovitz, Tiedemann & Girard
400 Capitol Mall, 27th Floor
Sacramento, CA 95814-4417

National Marine Fisheries Service
c/o Mr. James Bybee
Northern California Habitat Manager
777 Sonoma Avenue
Santa Rosa, CA 95404

California Department of Fish and Game
c/o William Cunningham, Esq.
Department of Justice
Office of the Attorney General
P.O. Box 944255
Sacramento, CA 94244-2550

Mr. Walter Cook
Attorney at Law (ret)
42 Northwood Commons
Chico, CA 95973-7214

U.S. Department of the Interior
c/o Mr. Edmund Gee
Assistant Regional Solicitor
Regional Solicitors Office
Pacific Southwest Reigon
2800 Cottage Way, E-1712
Sacramento, CA 95825-1890

Western Aggregates, Inc.
c/o Mr. David Lindgren
Downey, Brand, Seymour & Rohwer
555 Capitol Mall, 10th Floor
Sacramento, CA 95814

Pacific Gas & Electric Company
c/o Mr. Richard Moss
P.O. Box 7442
San Francisco, CA 94120-7442

Mr. Arthur G. Baggett, Jr., Chair
State Water Resources Control Board
1001 I Street, 25th Floor
Sacramento, CA 95814

Mr. Richard Katz, Board Member
State Water Resources Control Board
1001 I Street, 25th Floor
Sacramento, CA 95814

Mr. Peter S. Silva, Board Member
State Water Resources Control Board
1011 I Street, 25th Floor
Sacramento, CA 95814

STATE WATER RESOURCES
CONTROL BOARD

2001 MAR 30 PM 1:07

DIV. OF WATER RIGHTS
SACRAMENTO