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May 23, 2011

Jeanine Townsend, Clerk to the Board
State Water Resources Control Board
1001 I Street, 24th Floor
Sacramento, CA 95814

Re: Comments on Revised NOP and Notice of Additional Scoping Meeting

Dear Ms. Townsend:

The San Luis & Delta-Mendota Water Authority (Authority) and Westlands Water District (Westlands) received copies of the State Water Resources Control Board's (State Water Board) revised notice of preparation and notice of additional scoping meeting, dated April 1, 2011 (NOP). The NOP invited interested persons to submit written comments by May 23, 2011. The Authority and Westlands submit this letter pursuant to that invitation.

Since late 2006, when the State Water Board began the current process to consider amendments to the 2006 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin River Delta (Bay-Delta Plan), the Authority and Westlands have submitted numerous comment letters on the subject. The State Water Board must consider each of those comment letters and include them in the administrative record for this proceeding. For that reason, the Authority and Westlands will not repeat the contents of those letters here. Instead, they highlight three key points raised in those prior comment letters and raise the following three additional comments, which are discussed in more detail below.

First, under the Clean Water Act and Porter-Cologne Water Quality Control Act (Porter-Cologne), the State Water Board must set standards and objectives, respectively, for constituents (chemical, i.e., dissolved oxygen, turbidity, nitrogen, phosphorus, heavy metals, and physical, i.e., temperature) in the water that may impair the designated beneficial uses. The State Water Board proposes water quality standards or objectives that are elements of the physical behavior of water – flow, water level, and circulation. The State Water Board must explain how it can regulate flow, circulation, or water levels, as constituents, under the above cited laws.

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Second, the State Water Board will be deciding what changes, if any, it should make to existing water quality standards or objectives and the program of implementation based upon the current, limited state of the science. At a minimum, and irrespective of whether changes are made to the Bay-Delta Plan, the State Water Board should recognize in the program of implementation the scientific uncertainties underlying the water quality standards or objectives. It should also present a plan, built around life cycle modeling, that would reduce over time those uncertainties and, particular to fish and wildlife beneficial uses, increase the likelihood regulatory actions will improve population levels.

Third, the Authority and Westlands remind the State Water Board that, in its substitute environmental document, the State Water Board must define the environmental baseline, consider a reasonable range of alternatives to the proposed project, and consider the potential impacts of the proposed project and its alternatives to the areas served by the Authority's member agencies, including Westlands.

I. Summary Of Key Points Raised In Prior Comments

A. The Scope Of The State Water Board's Inquiry: Before approving the proposed project, maintaining or establishing new water quality standards and objectives, and establishing a program of implementation, the State Water Board must identify each factor affecting water quality and consider the coordinated control of all of those factors. *See* Water Code, § 13241. As an example, if the State Water Board seeks to protect outmigration of salmon at Vernalis, the State Water Board will need to identify each factor that may be impairing outmigration and consider how it can regulate each factor in a comprehensive manner.

B. The State Water Board's Administrative Record: The State Water Board must have in its administrative record information to support its proposed project. The Authority set forth the general scope of needed information in a January 5, 2007 letter to Ms. Gita Kapahi regarding a southern Delta salinity workshop. Most simply put, so the State Water Board can conduct the required balancing before adopting the proposed project, the State Water Board must identify all of the demands made and to be made on waters of the Delta and the value each of those demands provide. *See* Water Code, § 13000. The State Water Board must therefore identify the extent of each lawful, beneficial use at issue and value each use provides under differing level of protection and differing methods of implementation. As an example, if the State Water Board seeks to protect southern Delta agricultural beneficial uses from impacts of salt, the State Water Board must identify the extent of beneficial use within the southern Delta, which is necessarily limited to lawful diversions, and the value the agriculture provides at different levels of protection. The State Water Board would also have to consider the cost of providing those different levels of protection.

C. Efforts By Authority's Member Agencies That Influence Water Quality: The undisputable facts set forth in prior comment letters and summarized in the three paragraphs below are important to the environmental analyses presented in the substitute environmental document and accounted for when the State Water Board presents the program of implementation.

Westlands Water District Does Not Adversely Affect Water Quality In The San Joaquin River Or Delta: The State Water Board has previously recognized that lands within Westlands Water District "do not discharge drainage water, tailwater, or tile water outside the boundary of WWD." *See* D-1641 at 109. That fact remains. However, since the State Water Board made that finding, farmers within Westlands have increased water use efficiency; efficiency rates often exceed 83 percent. They have thereby reduced the quantity of drainage water. In addition, Westlands has retired from irrigated agriculture in excess of 100,000 acres of previously drainage impaired lands.

Those Authority Member Agencies That Discharge Outside Of Their Boundaries Have Substantially Reduced Their Impact On San Joaquin River or Delta Water Quality: Since 1997, members of the Authority that discharge subsurface drainage water to the San Joaquin River (Charleston Drainage District, Firebaugh Canal Water District, Pacheco Water District, Panoche Water District, Panoche Drainage District and the Camp 13 Drainage District (located in part of Central California Irrigation District)), have implemented the Grassland Bypass Project. Comparing drainage in Water Year 1995 and Water Year 2010, the project reduced selenium load by 87%, salt load by 72%, and the boron load by 64%.

In addition, members of the Authority that participate in the Irrigated Lands Regulatory Program (Del Puerto Water District; Patterson Irrigation District; Central California Irrigation District, Firebaugh Canal Water District, Henry Miller Reclamation District No. 2131 and "Friend" Columbia Canal Company participating through the San Joaquin River Exchange Contractors Water Authority; San Luis Water District; Tranquillity Irrigation District; and West Stanislaus Irrigation District) through the Westside San Joaquin River Watershed Coalition (WWC) within the San Joaquin Valley Drainage Authority have reduced their impact through implementation of a general WWC Management Plan and several focused sub-watershed management plans that include intensive monitoring, grants to support best management practices for sediment and return flows, regional return systems, and grower education efforts, among other practices.

II. The Scope Of The NOP

The NOP presents through Attachments 2 and 3 proposed, new water quality standards or objectives and draft amendments to the program of implementation. Specifically, the NOP proposes, in part, (1) February through June and October flow-based water quality objectives for the San Joaquin River at Airport Way Bridge, Vernalis California, and (2) water level and circulation-based objectives for the San Joaquin River from Vernalis to Brandt Bridge, Middle River from Old River to Victoria Canal, and Old River/Grant Line Canal from head of Old River to West Canal. The NOP provides no statement of the State Water Board's authority to do so, however, either under the Clean Water Act or Porter-Cologne. The State Water Board should direct its Chief Counsel to prepare and publish for public review a legal opinion on the State Water Board's authority to establish flow, water level, and circulation-based standards or objectives. An opinion by the Chief Counsel is important. A conclusion that the State Water Board lacks authority to establish such standards or objectives appears consistent with the Clean Water Act and Porter-Cologne. And, the State Water Board answered a similar question in a manner that suggests it does not have that authority to set flow, water level, or circulation-based standards or objections. *See* March 11, 1994 Letter from Walt Pettit to Patrick Wright; Comments from the State of California to the United States Environmental Protection Agency, dated March 11, 1994 (copies of both documents are attached hereto).

Porter-Cologne provides the basis and means for the State Water Board and the regional water boards to develop and enforce water quality objectives. *See* Cal. Water Code § 13001 [law's legislative intent]. Water quality objectives are, as defined under Porter-Cologne, "[t]he limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area." Cal. Water Code § 13050(h) [emphasis added]. The Water Code defines "Quality of the Water" as "chemical, physical, biological, bacteriological, radiological, and other properties and characteristics of water which affect its use." Cal. Water Code § 13050(g). Although that phrase is absent from the definition of "Water Quality Objective," some argue that use of the word "physical" in the definition of "Quality of the Water" allows the State Water Board to set flow, water level or circulation based objectives. That argument, however, is unpersuasive. As one legal commentator explained:

> The policy focus and sense of "*the water*" in "*water* quality," however, is the condition or character of the *substance of the water* in the watercourse, referred to as the "water column." Water quality parameters of the water column are traditionally its chemistry, constituents, and physical character (principally temperature). Flow, on the other hand, its quantity, rate, velocity, direction, etc., are not characteristics of the water column but of the watercourse itself. The physical behavior of the

> watercourse, including flow, depth, stage, and other aspects of riverine hydrodynamics, are certainly of public and regulatory concern: but they are concerns that fall more naturally and fittingly within the policy and legislative frameworks of water rights, flood control, and navigation, and far less so within the sphere of water quality policy interests and concerns, such as "pollution," "contamination," and "degradation."

D. Anderson, Water Rights as Property in Tulare v. United States, 38 McGeorge L. Rev. 461, p. 496, fn 113.[1]

Similar to Porter-Cologne, the Clean Water Act requires each state to institute comprehensive "water quality standards" for all intrastate waters. 33 U.S.C. §§ 1311(b)(1)(C), 1313. Under the Clean Water Act, the term "water quality standards" refers to those "[p]rovisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria for such waters based upon such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water and serve the purposes of the Act." 40 C.F.R. § 130.2(d). "Criteria are elements of State water quality standards, expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular use." 40 C.F.R. § 131.3(b) [emphasis added]. Nothing in the Clean Water Act suggests water quality standards can be set for flow, water levels or circulation.

The State Water Board recognized almost 20 years ago, the reservation of physical behavior or water (i.e., flow, water level and circulation) regulation to the State Water Board, under state law, and, more specifically, under water right authority. In his May 11, 1994 letter to Patrick Wright of the United States Environmental Protection Agency, again a copy of which is attached, Walt Pettit wrote:

> 2. Clean Water Act Section 101(g) Reserves To The States The Authority To Allocate Water Supply Under State Water Laws
>
> Comment: States have the authority to allocate quantities of water under state law, and the provisions of the Clean Water Act may not be applied to

[1] The State Water Board in 2003 clarified the scope and source of its authority to set minimum flow requirements in a water rights proceeding concerning the public trust resources on the Lower Yuba River and opined that it has:

> [B]road authority to establish minimum flows and take other measures needed for protection of fisheries and other public trust resources...[which] authority is provided by article X, section 2 of the California Constitution, Water Code sections 100 and 275, the public trust doctrine as articulated by the California Supreme Court in National Audubon Society v. Superior Court (1983) 33 Cal.3d 419, and Water Code sections 1243 and 1253.

In the Matter of Fishery Resources and Water Right Issues of the Lower Yuba River, State Water Resources Control Board, Revised Water Right Decision 1644, Jul. 16, 2003, p. 30.

undermine this state authority. The proposed criteria have more than an incidental effect on California's water allocation authority and do not accommodate state water allocation authority.

Discussion: Clean Water Act Section 101(g), 33 U.S.C. Section 1251(g) was added in the Clean Water Act of 1977. It provides:

> "It is the policy of Congress that the authority of each state to allocate quantities of water within its jurisdiction shall not be superseded, abrogated or otherwise impaired by this Act. It is the further policy of Congress that nothing is this Act shall be construed to supersede or abrogate rights to quantities of water which have been established by any State. Federal agencies shall co-operate with State and local agencies to develop comprehensive solutions to prevent, reduce and eliminate pollution in concert with programs for managing water resources."

(Emphasis added)

In explaining Section 101(g) to the Senate after the Conference Committee made some changes, the author, Senator Wallop, explained that the purpose of this section was to preserve state authority over water quantity allocation and water rights.

* * *

The fact that preserving state authority over water allocation is set forth as a "policy" in the Clean Water Act does not reduce the force of Section 101(g) in this case. Setting forth that requirement as a general "policy" merely indicates that it was to apply to the entire Clean Water Act, not just certain provisions. EPA's nondegradation policy was based entirely on the general goal of fishable/swimable waters in Section 101(a)(2), yet EPA found that general statutory "goal" capable of sustaining mandatory regulatory requirements.

Moreover, the court in National Wildlife Federation v. Gorsuch (1982) 693 F.2d 156, 178, 18 ERC 1105, 1122 said that "policies", like Section 101(g), have more force than "goals", like the fishable/swimmable goal of Section 101(a)(2). Insofar as the Bay-Delta Estuary issues involve accommodation between the goal in Section 101(a)(2) and the policy in Section 101(g), Section 101(g) is the more compelling and specific statutory command.

EPA's statement in the Federal Register notice at 59 FR 813 that "a general policy statement ... 'cannot nullify a clear and specific grant of jurisdiction'", citing Riverside Irrigation District v. Andrews (1985) 758 F.2d 508, 513, is unavailing because EPA has no "clear and specific" grant of jurisdiction in this case to control salinity intrusion, other pollution caused by reductions in fresh water flow, or operation of water diversion facilities using Section 303 water quality standards. In fact, the only clear and specific grant of jurisdiction applicable in this case is the explicit grant of authority to the States to regulate salt water intrusion under Section 208. See Section 208(b)(2)(I).

* * *

Further, the court in National Wildlife Federation v. Gorsuch, cited above, held that in the area of salt water intrusion state water supply concerns take precedence over water quality concerns. The Gorsuch court stated that Section 101(g) was not intended to take precedence over legitimate and necessary water quality considerations, except with respect to salt water intrusion. The court stated:

> "However, with respect to one area where quality and quantity are in conflict -- salt water intrusion caused by water diversion for drinking or irrigation -- Congress explicitly declined to require the states to control water quality." 693 F.2d at 179, n. 67. (Emphasis added.)

The court went on to say that the adoption of the Section 208(b)(2)(I) provision for salt water intrusion "was intended to prevent water quality goals from interfering with state water allocation plans", citing the colloquy between representatives Johnson and Waldie in the House debates. Id. Therefore, EPA's water quality standards are not "incidental" because they reverse the priority between water supply and water quality mandated by Section 208(b)(2)(I) and Gorsuch.

EPA's concept for implementing the proposed criteria is analogous to setting effluent limitations for water quality standards. In applying effluent limitations a regulatory agency takes a set water quality standard and then "works back" to determine what additional effluent limitations must be imposed on point sources (over and above the technology-based effluent limitations of Section 301) to attain the water quality standards. Here, EPA apparently wants the State to "work back" and cut back diversions to attain the water quality standards. This method is inappropriate for the Bay-Delta Estuary because the pollution EPA seeks to regulate is

> nonpoint source pollution, most of which is from salt water intrusion. With point source pollutants, EPA has authority to directly regulate the discharges. EPA has no such authority here. See Oregon Natural Resouce Council v. U.S. Forest Service, 834 F.2d 842, 849 (9th Cir. 1987) (water quality standards cannot be imposed as effluent limitations against nonpoint sources; Congress made point sources subject to direct federal regulation, but left regulation of nonpoint sources to the states).

Id. at enclosure, *State Water Resources Control Board, Comments on EPA's Draft Standards*, pp. 24-27. The position of the State Water Board appeared clear – the regulation of the physical behavior of the watercourse is certainly of concern, but it is a concern that falls more naturally and fittingly within the policy and legislative frameworks of water rights, flood control, and navigation, which are subject to state, not federal, jurisdiction.

Nonetheless, some proponents of flow, water level and circulation based water quality standards may look to *PUD No. 1 of Jefferson County v. Washington Department of Ecology* (1994) 511 U.S. 700 (*PUD No. 1*) for support. But support is not there. In *PUD No. 1*, the Supreme Court merely held that Washington could, through the Clean Water Act Section 401 certification process, implement a minimum flow requirement on a hydroelectric power project as a means to implement and enforce the Clean Water Act-designated beneficial use of the water in the project area. *PUD No. 1*, 511 U.S. at 714. As later jurisprudence makes clear, however, *PUD No. 1* does not stand for the proposition that flow-based requirements are among the pollution controls required by the Clean Water Act (or, ostensibly, the Porter-Cologne Act). "[I]n the absence of state law to the contrary, water withdrawals are not subject to the requirements of the Clean Water Act." *Great Basin Mine Watch v. Hankins* (9th Cir. 2006) 456 F.3d 955, 963 ("*Great Basin*").

The distinction recognized by the Ninth Circuit in *Great Basin* is important. It reflects a critical tenant of California law. As the State Water Board is well aware, when the State Water Board discharges its regulatory duty of approving water quality objectives, it acts in a legislative capacity; whereas, flow requirements that affect water rights are imposed only after a quasi-adjudicatory proceeding. Thus, the State Water Board should not use the quasi-legislative processes to impose water quality objectives, thereby depriving water rights holders of the due process protections to which they would otherwise be entitled when affecting their water rights.

III. Program Of Implementation And The State Of Science

A. The Draft Southern Delta Agricultural Water Quality Objectives Program of Implementation

The program of implementation attributes elevated salinity in the southern Delta in part to "salts imported to the San Joaquin Basin in irrigation water" and "diversions of water by the SWP, CVP, and local water users." The former attribute is too general and the latter attribute is unsupported by science.

i. Gross Statement That Elevated Salinity In The Southern Delta Is Due In Part To Salts Imported To The San Joaquin Basin In Irrigation Water

The Authority and Westlands do not dispute that, at time, salinity levels in the Delta are elevated, in part, by salts imported to the San Joaquin Basin in irrigation water. However, the proposed program of implementation does not reflect the complexity of the salinity issue. Most important, the program of implementation must reflect the following critical facts:

- The Authority and its member agencies own no dams and do not control upstream diversions. Their primary water supply is the Delta-Mendota Canal, with its burden of imported salt.

- Lands within Westlands Water District, as is the case for lands within certain other members of the Authority, do not discharge drainage water, tailwater, or tile water outside District boundaries.

- Those Authority member agencies that have discharged water into the San Joaquin River through the Grassland Bypass Project (Charleston Drainage District, Firebaugh Canal Water District, Pacheco Water District, Panoche Water District, Panoche Drainage District and the Camp 13 Drainage District (located in part of Central California Irrigation District)) have undertaken significant activities to address their discharges and those efforts and reductions are ongoing.

- Other Authority member agencies that discharge water into the San Joaquin River (Del Puerto Water District; Patterson Irrigation District; Central California Irrigation District, Firebaugh Canal Water District, Henry Miller Reclamation District No. 2131 and "Friend" Columbia Canal Company participating through the San Joaquin River Exchange Contractors Water Authority; San Luis Water District; Tranquillity Irrigation District; and West Stanislaus Irrigation District) are subject to the Irrigated Lands Regulatory Program under the umbrella of the

> WWC of the San Joaquin Valley Drainage Authority. These agencies are subject to a general WWC Management Plan and several focused sub-watershed management plans that include intensive monitoring, grants to support best management practices for sediment and return flows, regional return systems, and grower education efforts, among other practices.

Since 1995, if not before, conditions have changed significantly within areas served by the Authority's member agencies. The Authority and its member agencies have successfully pursued federal grants, state grants, federal appropriations, and/or State Water Board low-interest loans for programs to improve infrastructure; acquire and develop reuse areas; and encourage installation of high-efficiency irrigation systems. Some member agencies have also funded their own revolving loan programs to assist growers with return systems, drip irrigation, and other irrigation improvements.

Moreover, member agencies (1) have engaged their landowners and water users to achieve broad participation in the Regional Board's Irrigated Lands Program through the Westside San Joaquin River Water Quality Coalition, (2) comply with waste discharge requirements for the Grassland Bypass Project, including significant load reductions for both selenium and salt, and/or (3) developed a long-term program for drainage management, known as the Westside Regional Drainage Plan that builds on the Grassland Bypass Project and continues as a permanent drainage solution, with the goal of ultimate in-valley management of drainage from irrigation.

ii. Nothing Supports The Statement That Elevated Salinity In The Southern Delta Is Due In Part To Diversions Of Water By The Central Valley Project

Science does not support the statement that, at time, salinity levels in the Delta are elevated, in part, due to diversions by the Central Valley Project (CVP). DSM2 studies show that conveyance of CVP water through the Delta is either has no effect or decreases salinity concentrations in the southern Delta. The California Department of Water Resources provided the State Water Board with extensive data demonstrating the lack of adverse impact to southern Delta salinity from CVP and SWP pumping. See, e.g., Department of Water Resources Comments to the State Water Resources Control Board Regarding Information on the Southern Delta Salinity and San Joaquin River Flow Objections and Their Program of Implementation (April, 2009), pp. 7-11 (submitted for April 22, 2011 Workshop).

B. Draft San Joaquin River Fish and Wildlife Flow Objectives Program of Implementation

i. General Concern Has Been Expressed With A Flow Based Approach To Protecting Beneficial Uses

The State Water Board should reflect in the program of implementation the state of the science that supports the water quality standards or objectives. Possibly more important, it should also reflect that the focus on flow (as opposed to the mechanisms directly impacting the beneficial use) over the past two or more decades is not supported by the best available science. As the Public Policy Institute of California explained over four years ago:

> For the past 70 years, the state's policy has been to maintain the Delta as a freshwater system through a program of water flow regulation, supported by maintenance of agricultural levees. This strategy improved water quality for Delta agriculture and water exports and was assumed to protect both native and desirable alien species (particularly striped bass). But most such species have not done well under this policy.

Envisioning Futures for the Sacramento–San Joaquin Delta, p. viii (2007). That statement and similar statements made by others are supported by ongoing scientific research. For example, in 2002, Dr. W.J. Kimmerer questioned:

> Can these actions be made more effective with the same quantity of water, or equally effective with less water? The answer to these questions depends on the mechanisms of response and the biology of the species being managed, which determine the location, timing, and duration of the flow effect.

Physical, Biological, and Management Responses to Variable Freshwater Flow into the San Francisco Estuary, p. 1284, Estuaries (December 2002) [emphasis added]. Understanding the mechanisms and the biology is critically important in the Bay-Delta estuary because it is consistently changing. Without that knowledge, fundamental shifts in statistical relationships that supported regulation may occur and, as a result, it is possible that the management actions may not be as efficient as they otherwise could be (actions can be made more effective with the same quantity of water) or may result in the dedication of more water then needed to protect beneficial uses (actions can be equally effective with less water).

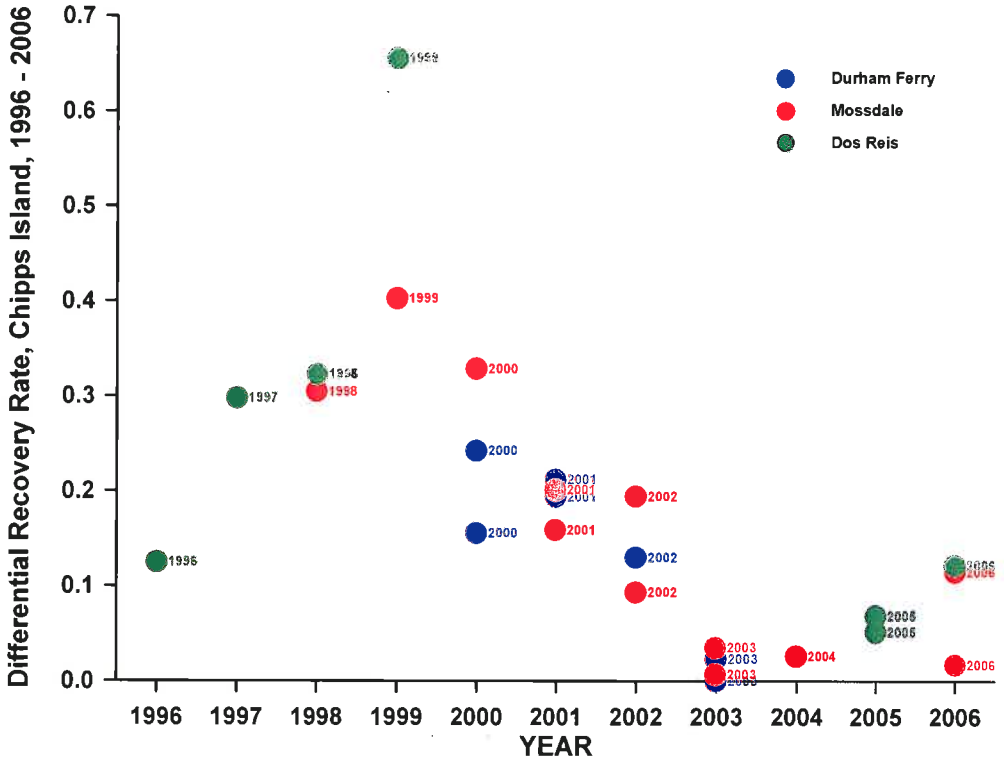
ii. Scientific Reports Specific To The San Joaquin River Have Also Expressed Concern With A Flow Based Approach To Regulation

As the State Water Board is aware, a panel charged with an independent review of data produced from the 12-year Vernalis Adaptive Management Plan prepared a report titled: "The Vernalis Adaptive Management Program (VAMP): Report of the 2010 Review Panel" (VAMP Independent Review Report). The Panel prepared that report after reviewing more then 30 scientific papers. Their reported results cannot be ignored. The Panel concluded:

> Although some positive statistical associations between San Joaquin River flow and salmon survival have been identified, there is also very large variation in the estimated survival rates at specific flow levels and there is a disturbing temporal trend to reduced survival rates at all flows. This large variability and associated temporal decline in survival rates strongly supports a conclusion that survival is a function of a complex set of factors, of which San Joaquin River flow at Vernalis is just one. It does not seem possible to choose a precise flow target that will reliably achieve a certain survival result.

VAMP Independent Review Report, pp. 8-9.

An illuminating depiction of the problem facing out migrating salmon is a plot of the differential salmon recovery rate over time. Those data are some of the data relied upon by the Panel and, for the period 1996 through 2006, are presented in the table immediately below.



The data were obtained in a variety of water year types (including very wet and very dry years) and show, irrespective of the flow-based conditions, recovery rates declined over the 10-year period.

iii. Moving From A Regulatory Approach That Is Flow Centric (Which Attempts To Mimic The Natural Hydrographic Conditions) To An Approach That Considers The Mechanisms Directly Affecting Fish And Wildlife Is Also Warranted By The Significant Changes That Have Occurred To The Bay-Delta

During its flow criteria proceedings, the State Water Board received extensive information on the lack of utility of flow regulation intended to mimic "natural conditions". There, the scientist expressed what appeared to be a consensus view. A subset of experts the State Water Board invited to participate in, and to provide scientific information relevant to the proceeding, titled the UC Davis Delta Solutions Group, distilled the scientific consensus to two important points:

- "*Flows needed to support desirable Delta fishes are likely to have changed from pre-European settlement conditions because of extreme landscape changes.*" Fleenor et al., On Developing Prescriptions for Freshwater Flows to Sustain Desirable Fishes in the Sacramento-San Joaquin Delta, p. 5.4

- "*A more fundamental, mechanistic, and process-based view of how changes in freshwater flow may interact with components of the habitat, ecosystem, and management actions to support desirable fish populations is more likely to provide more reliable insights.*" Fleenor et al., On Developing Prescriptions for Freshwater Flows to Sustain Desirable Fishes in the Sacramento-San Joaquin Delta, p. 16.5

The Authority, along with the State Water Contractors, addressed this point in detail, in its comments submitted during the Flow Criteria Proceeding, which are available at http://www.swrcb.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/ and incorporated herein by this reference.

iv. The Program Of Implementation Must Reflect Existing Scientific Uncertainty And The Need For A Robust Science Program Focused On Synthesizing, Developing And Analyzing Data

California must shift from the flow-based paradigm to one that is based on discovering the mechanisms behind species responses. The state can no longer afford to manage its water system by simply regulating hydrodynamics. Water supply and ecosystem management decisions must be supported by an understanding of what is directly and adversely affecting the ecosystem, and what is needed to improve the health of the Delta ecosystem. A strong science plan built upon life cycle modeling is critical in assisting with that shift.

a. To Help Ensure Water Is Put To Beneficial Use, To The Fullest Extent To Which They Are Capable, Life Cycle Models Are Required

Scientists and the courts have identified the need for life cycle models to inform regulatory decisions within the Bay-Delta. Recently, the Committee on Sustainable Water and Environmental Management in the California Bay-Delta wrote:

> Nonlinear and compensatory relationships between different life history stages are common in many fish species. Moreover, many life-history traits exhibit significant patterns of autocorrelation, such that changes in one life-history trait induce or cause related changes in others. These patterns can most effectively be understood through integrated analyses conducted in a modeling framework that represents the complete life cycle.

Committee on Sustainable Water and Environmental Management in the California Bay-Delta, A Scientific Assessment of Alternatives for Reducing Water Management Effects

on Threatened and Endangered Fishes in California's Bay–Delta, National Research Council of the National Academies, p. 32. The Committee therefore recommended "development of such models be given a high priority." *Id.* p. 33.

> The Panel reviewing the VAMP rendered a similar conclusion. It explained:
>
> [The current VAMP program] ... has no life cycle perspective.... In order for the overall recovery program to be successful, juvenile survival studies need to be integrated with studies of ocean survival, in addition to measures of wild and hatchery adult escapement. Additionally, adult production goals are not likely to be achieved unless tagging and recovery studies accommodate questions broader than the question of juvenile survival as affected by flow modifications and export pumping operations.

VAMP Independent Review Report, p. 29.

The United States District Court echoed the scientists' conclusions. After receiving extensive testimony from numerous experts, the Court concluded:

> Using a quantitative life-cycle model is a recognized (the best) method to evaluate the effects of an action upon a fish population's growth rate. Dr. Richard B. Deriso opined that a population growth rate analysis is the generally accepted method utilized by fisheries biologists to evaluate the impact of a stressor on a fish species' population. Dr. Hilborn explained that a quantitative population dynamics/life cycle model can help distinguish human actions that have a significant impact on population size from those that have little impact on population size, because competition for a resource that is independent of the human activity may cause significant mortality at one stage in the species' life cycle, meaning that human actions that kill fish at that life stage may have little impact on the population level later in the life history.

Delta Smelt Consolidated Cases, Memorandum Decision Re Cross Motions For Summary Judgment, pp. 44-46, a portion of which is attached hereto. The development of life cycle models for each species of concern would begin to uncover the mechanisms for species responses to environmental conditions. They would reduce the likelihood that water quality standards or objectives result in the waste and unreasonable use of water.

b. The Science Program Must Focus On Synthesizing, Developing And Analyzing Data, The Results Of Which Will Allow For Refinement Of Life Cycle Models

The strength of a life cycle model is dependent upon the state of the science. Thus, a science plan should be developed to support life cycle models, which includes four principal components:

> (1) Identification of available life cycle models for each salmon, steelhead, and smelt species dependent on the Delta, with recommendations for development and prioritization of new models;
>
> (2) Identification and synthesis of statistical analyses of existing data, with recommendations for additional data development that will either improve existing life cycle models or assist with the development of new life cycle models;
>
> (3) Identification of hypotheses, which, if tested, will improve existing life cycle models or assist with the development of new life cycle models; and
>
> (4) Description of how the results of analyses from life cycle models and other analytical tools can be integrated to ensure that the effects of actions are considered in context with the many species that are dependent, at least in part, upon the Delta.

A "science plan" developed within that framework should dramatically increase the shared knowledge base necessary to inform meaningful Delta management. More significantly, it will enable retirement of the existing approach to Delta management that is often not focused on the mechanisms directly affecting fish or wildlife, that is not adequately integrated, and that ultimately fails to ensure all beneficial uses are protected, without waste or unreasonable use of water.

c. Proposed Language For The Program Of Implementation

The Authority and Westlands request that the State Water Board insert into the program of implementation a section on life cycle modeling. Proposed language for that section is presented below.

Life Cycle Modeling

In the Delta, the evolving nature of the best available science and adaptive management will benefit from the development of a strong science plan. The science plan should provide for integration and synthesis of existing information; the development of new studies and knowledge; and adequate funding to accomplish these tasks. The plan should incorporate the development of life cycle modeling for each species of concern and will focus on development of the information needed to refine those life cycle models, using, in part, hypothesis testing through adaptive management.

Life cycle models are critical tools in understanding how factors within an ecosystem affect fish and wildlife species by life stage. They also serve as effective tools for assessing how changes in the ecosystem may harm or benefit those fish and wildlife species. As the National Research Council of the National Academies recently wrote:

> *Nonlinear and compensatory relationships between different life-history stages are common in many fish species. Moreover, many life-history traits exhibit significant patterns of autocorrelation, such that changes in one life-history trait induce or cause related changes in others. These patterns can most effectively be understood through integrated analyses conducted in a modeling framework that represents the complete life cycle. (NAS 2010, p. 25. See also Maunder and Deriso 2011).*[2]

The State Water Board recognizes the importance life cycle models can and should play when making management decisions about at-risk species. As a result, the science plan should foster the development of life cycle modeling and use of data analysis, monitoring studies and adaptive management to refine the models.

The Delta Stewardship Council, through its Delta Science Program, in consultation with the State Water Board, National Marine Fisheries Service, U.S. Fish and Wildlife Service, and California Department of Fish and Game, should develop a report which: (1) identifies all life cycle modeling available for each salmon, steelhead, and smelt species that is dependent on the Delta; (2) includes a prioritized list of new life cycle model that should be developed; (3) identifies and synthesizes statistical analyses of

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[2] National Research Council of the National Academies (NAS). 2010. A Scientific Assessment of Alternatives for Reducing Water Management Effects on Threatened and Endangered Fishes in California's Bay Delta, p. 25 (2010).

Maunder and Deriso, A state-space multi-stage lifecycle model to evaluate population impacts in the presence of density dependence: illustrated with application to delta smelt, accepted for publication in Canadian Journal of Fisheries & Aquatic Sciences Journal.

existing data, and make recommendations on the need for additional data that will either improve existing life cycle models or assist with the development of new life cycle models; (4) identifies hypotheses, which, when tested, will improve existing life cycle models or assist with the development of new life cycle models; and (5) describes how the results of analyses from life cycle models and other analytical tools can be integrated to ensure that the effects of actions are considered in context with the many species that are dependent upon the Delta during at least part of their lives. The information produced by the report should be used to refine the science program. The State Water Board will utilize the "life cycle" based information when requiring water quality control plans.

IV. The Substitute Environmental Document

In the substitute environmental document, the State Water Board must identify the environmental baseline, a reasonable range of alternatives and evaluate, for each alternative, impacts to areas served by the Authority's member agencies.

A Defined, Environmental Baseline: To identify the significant effects the proposed project may have on the environment, the State Water Board will have to describe the environmental baseline. Under CEQA, the existing physical environmental conditions at the time environmental review is commenced (such as by issuance of Notice of Preparation) normally constitutes the "baseline" condition against which the potential significance of project impacts should be measured. CEQA Guidelines, section 15125. In applying this guidance, courts have recognized that there may be instances in which using the date of the notice of preparation does not capture true pre-project conditions. By using the term "normally," section 15125 recognizes that in appropriate situations a lead agency has discretion to select a different baseline method that accounts for the circumstances presented. *See, e.g.*, *Fat v. County of Sacramento* (2002) 97 Cal.App.4th 1270, 1278. An alternative method must be supported by "reasoned analysis and evidence in the record." *Save Our Peninsula Committee v. Monterey County Board of Supervisors* (2001) 87 Cal.App.4th 99, 119-120; *Environmental Council of Sacramento v. City of Sacramento* (2006) 142 Cal.App.4th 1018, 1035 [lead agency need not guarantee that assumptions regarding future activities remain correct; it need only support its baseline assumptions with substantial evidence].

A Reasonable Range of Alternatives: The State Water Board will need to consider a reasonable range of alternatives. An alternative should be considered if it "would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." *Watsonville Pilots Ass'n v. City of Watsonville* (2010) 183 Cal. App. 4th 1059, 1086. In the case of the San Joaquin River, the State Water Board will need to consider alternatives protective of beneficial uses that are not flow-centric. It will

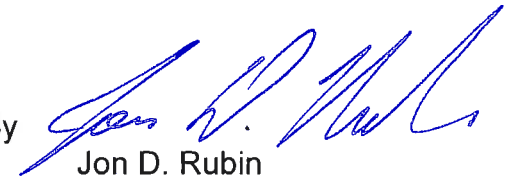
need to evaluate alternatives that have varying degrees of protection and costs (i.e., southern Delta salinity levels not "fully protective").

Evaluation of Specific Project Impacts: In its substitute environmental document, the State Water Board must evaluate direct and indirect effects caused by changes in the water supply that may be available to areas served by the Authority's member agencies, including land fallowing, reduced employment, reduced land value, reduced crop production, increased groundwater, and reduced air quality.

Thank you for your consideration of these comments. The Authority and Westlands look forward to reviewing a draft substitute environmental document and draft modifications to the Bay-Delta Plan, which are consistent with the State Water Board's legal authorities and the Authority and Westlands' comments.

Very truly yours,

DIEPENBROCK HARRISON
A Professional Corporation

By 
Jon D. Rubin
Attorneys for the San Luis & Delta-Mendota
Water Authority and Westlands Water District

JDR:gjc
Enclosures

cc: Daniel Nelson
Thomas Birmingham
Diane Rathmann
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ATTACHMENT 1

STATE OF CALIFORNIA - CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
PETE WILSON, Governor

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MAR 11 1994

Mr. Patrick Wright
Bay/Delta Program Manager
Water Quality Standards Branch, W-3
Water Management Division
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Dear Mr. Wright:

PROPOSED CRITERIA FOR THE BAY-DELTA ESTUARY

Enclosed are the State Water Resources Control Board's (SWRCB) comments regarding the proposed rule published January 6, 1994 at 59 Fed. Reg. 810-852 pertaining to Water Quality Standards for Surface Waters of the Sacramento River, San Joaquin River, and San Francisco Bay and Delta of the State of California.

The SWRCB is planning to commence a triennial review of the 1991 Bay-Delta Plan in April. The SWRCB requests that the proposed rule be withdrawn for the reasons stated in the attached comments and to give the SWRCB time to prepare its triennial review. The proposed rule contains numerous flaws and should either be withdrawn altogether or should be revised and republished. Of the proposed criteria, only the salinity criteria for striped bass spawning fall within EPA's authority to promulgate standards under Section 303 of the Clean Water Act.

The SWRCB has numerous comments, but the primary comments can be summarized as follows:

1. To comply with the Clean Water Act EPA must follow additional procedures and take into consideration economic effects. The criteria substantially exceed EPA's targeted level of protection and exceed the level of protection designated by the SWRCB. Because the proposed criteria change the level of protection afforded to the beneficial uses, compared with the beneficial uses designated by the SWRCB, EPA must either change its criteria in accordance with the beneficial uses or designate its own beneficial uses.

2. The proposed criteria for estuarine habitat and salmon smolt survival are not water quality criteria. They actually regulate water flow and diversions. We believe that EPA lacks authority to regulate these matters and further is not authorized to adopt water quality standards for pollution caused by reductions in fresh water flow.

3. The estuarine habitat and smolt survival beneficial uses are subject to protection by the state, according to Clean Water Act Section 208, and should not be subjected to federal standard-setting.

4. Other alternatives which would provide approximately equivalent protection for fishery resources have less water cost.

5. EPA's water supply impact analysis of its draft standards is unrealistically optimistic.

Also enclosed are documents cited in the SWRCB's comments which may not be in EPA's administrative record. We request that you include these documents in the record.

If you have any questions, you may call Tom Howard, Senior Engineer, at (916) 657-1873 or Barbara J. Leidigh, Senior Staff Counsel, at (916) 657-2102.

Sincerely,

ORIGINAL SIGNED BY

Walt Pettit
Executive Director

Enclosures

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Sacramento, CA 95814

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STATE WATER RESOURCES CONTROL BOARD

COMMENTS ON EPA'S DRAFT STANDARDS

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STATE WATER RESOURCES CONTROL BOARD COMMENTS ON EPA'S DRAFT STANDARDS

I. INTRODUCTION

The State Water Resources Control Board (SWRCB) has numerous legal, regulatory and technical concerns regarding EPA's draft standards for the Bay-Delta Estuary and their accompanying Federal Register text. These concerns are expressed below in a comment/discussion format for EPA's convenience. The analysis is divided into three parts: comments on the draft standards and Federal Register text, comments on the water supply and economic impacts, and responses to specific issues for commenters to address.

A. HISTORY OF THIS PROMULGATION.

Comment: The 1991 water quality control plan adopted by the State Water Resources Control Board (SWRCB) should be approved by EPA. Additional requirements for salinity in the western Delta or for operation of facilities that would help the beneficial uses are not water quality matters within the meaning of the Clean Water Act. Adoption of salinity criteria for striped bass spawning in the San Joaquin River appears to be within EPA's authority, but would not be appropriate at this time. EPA should approve the SWRCB temperature objectives for salmon smolt survival.

Discussion: On May 1, 1991, the SWRCB adopted a Water Quality Control Plan for Salinity for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan) In September 1991, the EPA approved the salinity objectives for municipal/industrial and agricultural uses and the dissolved oxygen objective for fish and wildlife uses of the San Joaquin River. These approvals constituted final agency action by EPA under Section 303(c) of the federal Clean Water Act. EPA disapproved what it construed to be a failure of the water quality objectives to protect the Estuarine Habitat and other designated fish and wildlife uses of the estuary. EPA also disapproved salinity and temperature objectives for fish and wildlife. The disapprovals did not constitute final agency action by EPA.

EPA's basic criticism was that the Bay-Delta Plan did not contain enough objectives to protect fish and wildlife. EPA indicated that additional salinity standards were needed for the Suisun Bay and Marsh area and for the San Joaquin River, and that the temperature objectives for salmon were not adequate.

The SWRCB responded to EPA's disapproval by letter dated February 10, 1992. The response explained that the Bay-Delta Plan is a part of a larger package of protections for the Bay-Delta estuary, that water quality objectives could not protect all the beneficial uses, that instream flow and operational requirements needed to protect these uses are appropriately accomplished through State law, and that the SWRCB was proceeding toward a consideration of water rights to determine what additional

protections should be provided in terms of flow and operational constraints. The SWRCB response explained that additional salinity standards for the Suisun Bay and Marsh area would not restore and protect the habitat because the primary effect on that area is caused by water project operations and their effect on water flow.

The SWRCB response also pointed out that the Clean Water Act extends only to regulation of water quality parameters to protect the beneficial uses, and that where other parameters such as water project operations and water flow affect the beneficial uses, these parameters cannot be the subject of water quality criteria under the Clean Water Act.

The SWRCB response points out that a salinity objective is an appropriate protection for fish spawning in the San Joaquin River, but that entrainment may be a primary cause of declines in striped bass. Therefore, the SWRCB believed it would be more appropriate to revisit the salinity objectives in this area after considering the entrainment problems. Meanwhile, the State is pursuing a program to control the salinity, which is caused by nonpoint source pollution from agricultural return flows.

B. THE AFFECTED AREA

Comment: Most of California would be impacted if the proposed criteria are adopted. The Bay-Delta Estuary is a highly modified area which is important not only for fish and wildlife but also for municipal, industrial, and agricultural uses in California.

Discussion: The San Francisco Bay/Sacramento-San Joaquin Delta Estuary where the proposed criteria would apply is the geographic area of the confluence of the Sacramento and San Joaquin Rivers and the San Francisco Bay. The geographic boundaries of the Delta are described in Water Code Section 12220. It extends roughly in a triangle from Sacramento to Stockton to Chipps Island in Suisun Bay and back to Sacramento. It is an area where several rivers come together to flow to the ocean, and it has many channels through low-lying lands. Much of the land in the Delta is below water level and is protected from flooding by levees, which form islands. The Delta is both a rich agricultural area and one of the most important estuarine areas for fishlife. The Suisun Marsh, downstream from the Delta, is one of the most important brackish water marshes for waterfowl production near the Pacific Coast. The San Francisco Bay includes the area surrounding the Bay and Suisun Marsh.

The Bay-Delta Estuary is highly modified from its natural state. Originally, the Delta was largely marshlands. Before man diverted substantial amounts of water, flows decreased substantially during the late spring and summer dry season, and did not increase until fall rains began. Since the Estuary is essentially at sea level, salt water intruded from the Pacific Ocean into the eastern parts of the Delta during the dry seasons when the river flows decreased. During the 1800's, levees were constructed and the land protected by the levees was dried for farming. Then, water storage and diversions upstream and in the Delta removed some of the flow and changed the times

of year when some of the flow reaches the Delta. With the dams, water was released from storage during the summer, changing the timing of outflows from the Delta and preventing salt water from intruding as far upriver as previously in the dry season. The dams also stored some of the very high flows that naturally would reach the Delta in winter and early spring, allowing salt water to intrude into the western, downstream, part of the Delta during the winter and spring of dry years. To avoid exporting salt water at the water diversion pumps in the southern Delta, the State Water Project and the Central Valley Project release quantities of water from upstream reservoirs whenever necessary to push salt water downstream, away from the pumps.

The purpose of the proposed criteria is to protect beneficial uses by fish and wildlife in the Bay-Delta Estuary. The populations of fish which reside in the Delta or pass through it have been in decline for some time, and they obviously need additional protection. The primary question is whether the proposed criteria are the appropriate way to protect the fish, in light of the many uses of the limited water supply that is produced in the watersheds of the Delta. The proposed criteria are designed to be implemented only by increasing the flow of water into and through the Estuary. This substantially reduces the amount of water remaining for other uses. Another, less water intensive, solution should be developed to ensure balanced protections for all water uses.

The area affected by the criteria includes not only the Estuary but also most of the State, because water from the Delta and its tributaries supports much of California's population and economic activity. The Delta receives water from two major river systems, the Sacramento River and the San Joaquin River, and from several rivers flowing from the western slope of the Sierra Nevada into the Delta. The natural flow of water is through the Estuary to the Pacific Ocean. Water is diverted for consumptive uses including municipal, industrial, and agricultural uses along the length of the tributary rivers and from the Delta itself.

Exports of water from the southern Delta by the State Water Project and the Central Valley Project for uses south of the Delta and in the San Francisco Bay area account for a substantial portion of the water produced in the watersheds of the Delta. While the maximum export to date was 6.1 million acre-feet in 1989, the present demand for exported water in drier years is about 7.1 million acre-feet. With an increasing population in the southern part of California, the demand for water will increase.

A solution is necessary that will provide adequate water and habitat conditions for the fish without depriving other reasonable and beneficial uses of water that they depend upon. Because the major causes of the fishery declines are water project operations and changes in fresh water flows, it is not appropriate for EPA to set water quality criteria. Rather, this is a water supply and facilities operations problem the solution to which Congress has reserved to the states.

II. COMMENTS ON THE DRAFT STANDARDS AND FEDERAL REGISTER TEXT

A. ASSUMING THAT EPA HAS AUTHORITY TO ADOPT THE PROPOSED CRITERIA, THIS PROMULGATION DOES NOT COMPLY WITH THE FEDERAL CLEAN WATER ACT.

Comment: To comply with the federal Clean Water Act, EPA must take into consideration economics and the effects on other beneficial uses that are not addressed in this promulgation. Due to the way that the SWRCB Bay-Delta objectives were adopted, they should not be bifurcated into beneficial uses and criteria. The result is a hybrid standard which fails to take into consideration economic factors and other beneficial uses. Further, the level of protection required by the Clean Water Act should be expressed in quantitative terms and its regulatory basis should be clearly defined. The proposed criteria appear to establish new levels of protection without going through the process at 40 CFR 131.10 for designation of uses, including balancing economic effects of the standards.

Discussion:

1. To Make The Proposed Criteria Adequate Under The Clean Water Act, EPA Must Consider Economic Factors and other Beneficial Uses.

EPA stated in the Federal Register notice, at 59 FR 833, that "water quality criteria must be based solely on science." Consequently, while EPA performed an abbreviated analysis to disclose the effects of its criteria, it did not weigh the economic effects and the effects on the other beneficial uses, and it did not adjust its criteria to minimize the adverse effects of the criteria.

Under Clean Water Act Section 303(c)(2), water quality standards

> "shall be such as to protect the public health or welfare, enhance the quality of water and serve the purposes of this chapter. Such standards shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agriculture, industrial, and other purposes, and also taking into consideration their use and value for navigation." (Emphasis added.)

In other words, adoption of standards must include all of these factors. For purposes of Section 303(c)(2) of the Clean Water Act, EPA in its regulations has divided standards promulgation into designation of uses and establishment of criteria. Under EPA's interpretation, designation of uses includes consideration of economic factors and feasibility of attaining the use. Mississippi Commission on

Natural Resources v. Costle 625 F.2d 1269, 1277 (5th Cir. 1980)[1]; 40 CFR Section 131.10.

EPA says that criteria must be based on sound scientific rationale, and mistakenly goes on to say that criteria do not include consideration of economic factors. See 59 FR 812, citing 40 CFR Section 131.11(a); see also EPA's promulgation of water quality standards for Alabama, at 45 FR 9911 (February 14, 1980)[2]. Notwithstanding EPA's statement in the Federal Register, the statute, regulations, and case law do not preclude EPA from considering economic and other factors when it adopts criteria, for the purpose of choosing among alternative criteria, when all of the alternatives are based on sound scientific rationale.

In the Bay-Delta Estuary, it is possible for protection of one beneficial use to harm another beneficial use. Therefore, criteria for one use should take into account the effects on the other uses. It is obvious that the proposed criteria will adversely affect uses of Bay-Delta water for public water supplies, industry, and agriculture. Other criteria could provide the same protection for the fishery resources with less effect on economics and other beneficial uses. Alternative criteria are discussed in other comments.

The SWRCB in adopting the objectives identified the beneficial uses and considered such factors as attainability of uses, the level of protection to be achieved, the quality of water available in the area, variations in flows, and the economic effects of protecting the beneficial uses at different levels. The result of EPA's dividing these objectives into designation of uses and establishment of criteria for purposes of

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[1] *In adopting the Mississippi criteria, EPA stated that:*

"Consideration of economic factors occurs in a separate step in the water quality standards setting process. EPA's regulations at 40 CFR 130.17(c) provide for consideration of the environmental, technological, social, economic, and institutional factors in designating a particular use for individual waters. Therefore, economic considerations are not relevant in this rulemaking." 44 FR 25226 (April 30, 1979) (Emphasis added.)

[2] *"The designated use component of a water quality standard involves a judgment as to what use is appropriate, given the water body's use and value for various purposes, and attainable, in light of economic, social and other considerations. The Act and EPA's regulations state that water quality standards shall be established taking into consideration the water's 'use and value' for various purposes such as public water supply, propagation of fish and wildlife, recreation, industry, agriculture and navigation [Section 303(c)(2); 40 CFR 35.1550(b)(2)]. In determining whether a standard is attainable, States should consider environmental, technological, social, economic, and institutional factors [40 CFR 35.1550(c)(1)]."*

"The criterion portion of a water quality standard, in contrast, involves a determination of the concentrations of various water constituents that must not be violated in order to support a particular use. Thus, the criterion is founded on scientific, technical considerations. If the criterion for a water constituent necessary to support a water use cannot be attained because of economic, environmental or other factors, the appropriate remedy is to designate the particular water body for a less restrictive use." (Emphasis added.) 45 FR 9911 (February 14, 1980)

review under Clean Water Act Section 303(c) is that there is no consideration of economic factors and the effects on other beneficial uses in the resulting standards.

EPA's action is unauthorized. Because of the manner in which the State's Bay-Delta standards were considered and adopted, the beneficial uses and water quality objectives are not separable. The Bay-Delta objectives are specifically linked to beneficial uses, and the SWRCB's determination that protection of these beneficial uses was attainable was based on its analysis of the objectives. Under the Clean Water Act, EPA has authority to approve or disapprove a state's standards and approve them as modified. Where, as in the case of the Bay-Delta, the State's beneficial uses and objectives are inextricable linked, separating the beneficial uses from the objectives is an impermissible modification of the State's standards.

Nevertheless, EPA is separating parts of the state action which are inextricably linked and approving only one part (i.e. EPA proposes to approve the beneficial uses but not the objectives). Since EPA considers economic considerations irrelevant in establishing criteria, EPA did not consider economic factors in proposing criteria. EPA is completely sidestepping, through a regulatory sleight of hand, consideration of economic factors and feasibility in setting Bay-Delta water quality standards. This is contrary to the Clean Water Act and EPA's regulations at 40 CFR 131.

If EPA does not wish to consider economic factors in connection with the criteria, it should complete these standards by designating beneficial uses. In designating beneficial uses, EPA by its own admission can consider other factors.

2. <u>EPA Should Explain Quantitatively What Level Of Protection Is Required By The Clean Water Act And The Regulatory Basis For This Level</u>

It is important for EPA to clearly identify in quantitative terms what it believes are the minimum Clean Water Act requirements for standards in the Delta. Such an identification process serves the principal purpose of assuring the people of the State of California, who must bear the economic costs of these standards, that EPA's action is not arbitrary.

EPA's water quality standards regulations at 40 CFR 131 specify the minimum requirements for water quality standards. Water quality standards must include, at a minimum, beneficial use designations and water quality criteria sufficient to protect the use designations, and they must be consistent with the antidegradation regulation. The antidegradation regulation requires that existing uses be maintained and protected. Existing uses are defined as uses that existed on or after November 28, 1975. 40 CFR Section 131.3(e).

EPA appears to rely on the requirement that criteria protect the use designations as the bases for its draft standards. There is no discussion of the use of the

antidegradation regulation in the Federal Register notice and, as discussed in other comments, all of EPA's draft standards substantially exceed the level of protection that existed in 1975.

It can be difficult to quantitatively determine the conditions necessary to protect a beneficial use, depending on how the beneficial use designation is expressed. If a beneficial use designation is broadly stated, defining the type or magnitude of the criteria necessary to protect the use can be subjective, especially when dealing with parameters other than toxicity (such as salinity and salmon survival). This type of problem is discussed in EPA's Water Quality Standards Handbook, Second Edition, (page 2-5) and Appendix C of the handbook titled, Biological Criteria: National Program Guidance for Surface Waters which both state that

> "[D]etermination of non-attainment in waters with broad use categories may be difficult and open to alternative interpretations. If a determination of non-attainment is in dispute, regulatory actions will be difficult to accomplish."

The solution to this problem suggested in the handbook is for states to adopt more explicit subcategories of uses.

Full realization of all estuarine habitat and fish migration beneficial uses in the Bay-Delta Estuary has not existed since approximately the mid-1800's. Since that time, wetlands in the Estuary have been filled, levees have been constructed, and water development both upstream and within the Estuary has significantly reduced habitat values throughout the Estuary. The beneficial uses of estuarine habitat and fish migration have existed as declining continuums throughout this period, and the SWRCB never intended its beneficial use designation to encompass the full extent of uses which occurred under natural conditions. The selection of an historical period along these declining continuums to protect these beneficial uses is arbitrary. EPA has selected the late 1960's and early 1970's as its target reference period because EPA believes that this period "generally reflects conditions that occurred in the estuary before fish habitat and populations began to experience the most recent significant declines, and therefore serves as a useful definition of a healthy fishery resource" (page 819-820). However, EPA does not provide any substantiation for this observation, and it is uncertain how EPA measures "the most recent significant declines". (This issue is discussed in more detail in a subsequent comment.)

The problem of defining the use is potentially alleviated if the antidegradation regulation is relied upon for setting standards because the antidegradation regulation applies to uses that existed on or after a specific date. The antidegradation regulation was probably adopted, at least in part, to address this type of problem.

Fundamentally, we are unable to ascertain whether EPA believes that the draft standards represent the minimum Clean Water Act requirements. If EPA believes

that the draft standards are the minimum Clean Water Act requirements, how it arrived at this conclusion is a mystery. EPA's conclusion should be presented in a quantifiable manner.

3. To Change The Proposed Levels Of Protection EPA Must Follow The Process At 40 CFR 131.10 For Designation Of Uses.

In proposing criteria, EPA may be changing the level of protection afforded to the beneficial uses. There is no explanation of the basis for the change or the relationship between the criteria and the beneficial uses to be protected. To change the level of protection, EPA must follow the procedures for designating beneficial uses, including consideration of economic effects and feasibility. 40 CFR Section 131.10.

The SWRCB's objectives protect beneficial uses at levels that the SWRCB believes meet the antidegradation policies of both EPA and the state. The EPA criteria change the level of protection. In explaining the proposed criteria, EPA says that the criteria for estuarine habitat were meant to establish habitat conditions that existed during the late 1960's to early 1970's but that EPA used the 1940-1975 hydrology to estimate these conditions. 59 F.R. 819-820. For salmon smolt survival, the criteria were meant to establish better protection than the late 1960's to early 1970's period. 59 F.R. 824-825. It is not clear what level of protection EPA intends for fish spawning in the specified reach on the San Joaquin River, or how it was estimated. See 59 F.R. 826-827. As is demonstrated elsewhere in these comments, the proposed criteria will at times restrict water diversions and outflows to levels that existed during a much earlier period of development than EPA says it intends to achieve. Presumably, EPA expects these flow changes to support beneficial uses at the levels that existed during these earlier periods.

Under the antidegradation policy EPA adopted for the Clean Water Act, at 40 CFR Section 131.12, existing uses shall be maintained and protected. Existing uses are defined in pertinent part as "those uses actually attained in the water body on or after November 28, 1975." 40 CFR Section 131.3(e). While increased protections can be required, such increases in protection are not necessary to protect the beneficial uses as designated by the State. By changing the target reference period, EPA is redefining the beneficial uses from those adopted by the State. Even assuming the State's beneficial uses can be separated from the objectives, EPA must base its criteria on the beneficial uses as designated by the State unless EPA promulgates its own beneficial use designations. Any beneficial use designations made by EPA, including modifications of the target reference period, must be supported by findings that include consideration of the factors listed at 40 CFR Section 131.10(a). The current promulgation does not include such a consideration.

The levels of protection that EPA intends the proposed criteria to meet differ from those established by the SWRCB in its 1991 objectives. Establishment of a level of

protection is part of designation of uses under the federal Clean Water Act regulations at 40 CFR 131.10. Therefore, the EPA either should establish criteria for protection at the levels established by the State or should complete the process to designate beneficial uses in this promulgation.

B. EPA IS NOT AUTHORIZED TO ADOPT WATER QUALITY STANDARDS FOR POLLUTION[3] CAUSED BY REDUCTIONS IN FRESH WATER FLOW

1. EPA Should Explain In Detail Its Authority To Adopt The 2 PPT Criteria And The Salmon Smolt Survival Criteria

Comment: The Federal Register notice should include a detailed assessment of EPA's authority to regulate flows and diversions.

Discussion: The Federal Register notice states that EPA is

> "attempting to accommodate the State's interest substantively ..[by]..refraining from proposing direct revisions to the flow criteria. Instead, EPA is proposing criteria that describe the habitat conditions necessary to protect the designated uses of the Bay/Delta. The State Board still has full discretion to develop implementation measures attaining those habitat conditions." (page 813)

This statement is disingenuous. As discussed in other comments, the two ppt isohaline standards are outflow standards and the salmon smolt survival standards are flow and export standards. These standards take direct control of the heart of the State's water rights and water distribution system. EPA is well aware of this fact, but the Federal Register notice does not acknowledge it. Instead, the Federal Register notice makes repeated and inaccurate assertions that it is accommodating the State's water rights interests. The fact that EPA does not even acknowledge what it is doing is inexplicable in light of the exceptionally important legal and public policy issues involved. A detailed discussion of EPA's assessment of the limits of its authority under the Clean Water Act would be helpful to all parties.

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[3] *The term "pollution" is defined in the Clean Water Act as meaning the "...man-made or man-induced alteration of the chemical, physical, biolgical, and radiological integrity of water." Clean Water Act §502(19), 33 U.S.C. §1362(19). This is to be distinguished from "pollutant", which is defined in pertinent part in the Clean Water Act as meaning "...dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive material, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water." Clean Water Act §502(6), 33 U.S.C. §1362(6). The difference between these definitions is important, because the Clean Water Act has different methods of regulating pollution and pollutants.*

2. EPA Lacks Authority To Adopt The Proposed Standards For A 2 PPT Isohaline And For Salmon Smolt Survival

Comment: Clean Water Act Section 303(c) regulates pollutants discharged into water. It is not intended to regulate pollution caused by reduction of fresh water flow. Only the state can decide whether it is appropriate to regulate flow-caused pollution including salinity intrusion and establish requirements for its regulation. California can without question adopt such requirements under state law. But EPA has no authority to adopt standards for flow or for pollution caused by reductions of fresh-water flow under its standard-setting authority for water quality planning. Therefore, EPA cannot adopt the proposed criteria for Estuarine Habitat and for Fish Migration and Cold-Water Habitat.

Discussion:

a. Streamflow Matters Are Not To Be Regulated By EPA.

The Clean Water Act makes clear that salt water intrusion, like that in Suisun Bay, is a streamflow matter, not a "water quality" matter, and that the regulation of streamflow is not to be determined by EPA. For purposes of the Clean Water Act the proposed criteria for 2 ppt salinity in Suisun Bay and for salmon smolt survival are streamflow requirements, not water quality criteria.

Section 102(b) of the Act, 33 U.S.C. §1252(b), helps establish the meaning of "water quality" under the Act. Section 102(b)(1) provides that in the survey or planning of any federal reservoir, consideration shall be given to the inclusion of water storage for regulation of streamflow. But this section divides the responsibilities to consider the need for and value of storage. EPA is to recommend to Congress matters regarding water storage for purposes of "water quality" (§102(b)(3)), but the federal dam operating agencies are to regulate streamflow matters, which specifically include "salt water intrusion."[4]

It is unlikely that Congress intended the term "water quality" to have an entirely different meaning in §102(b)(2) than it had in the rest of the Act, particularly when it was discussing "water quality" functions of the federal agency that was to implement the Act. Therefore, the plain language of Section 102(b)(2) establishes that the regulation of streamflow, including salt water intrusion, is not a "water quality" issue.

The language of §102(b)(2) was chosen deliberately. The Senate bill gave EPA authority to determine the need for storage for water quality purposes (see

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[4] *"The need for and value of storage for regulation of streamflow (other than for water quality) including but not limited to navigation, salt water intrusion, recreation, esthetics, and fish and wildlife..." §102(b)(2), 33 U.S.C. §1252(b)(2) (Emphasis added).*

S. 2770, §102(b)(2), reprinted in A Legislative History of the Water Pollution Control Act Amendments of 1972 ("1972 Legislative History"), Vol.2, p. 1537), whereas the House bill gave that authority to the federal dam operating agencies subject only to the "advice" of EPA. See H. R. 11896, §102(b)(2), reprinted in 1972 Legislative History, Vol.1, p.898. The Conference Committee split the difference, and gave EPA authority regarding "water quality" matters, and gave the dam operating agencies authority over streamflow, including salt water intrusion. See 1972 Legislative History, Vol. 1, p. 284.

If EPA cannot, under §102(b)(2), regulate streamflow for salt water intrusion when federal dams are concerned, it follows that EPA also cannot adopt water quality standards regulating streamflow from non-federal dams. The fact that the Conference Committee made §102(b) applicable only to federal dams and not to the broader category of federally-licensed dams (as was proposed in the Senate bill) means that Congress wanted to limit any streamflow regulation to federal facilities.[5]

The only means of meeting EPA's 2 ppt criteria and the salmon smolt survival criteria would be for the State to regulate water project operations and allocate water storage and streamflow for salt water intrusion and for instream flows. EPA was expressly denied such authority for federal dams, and Congress refused to extend federal regulation of streamflow in §102(b) to any entity other than federal developers of federal dams. Since EPA cannot regulate these matters, it cannot adopt criteria for them.

b. The Proposed Standards For Salt Water Intrusion And For Salmon Smolt Survival Would Regulate Changes In Fresh Water Flow In The Bay/Delta Estuary.

As is discussed in more detail in other parts of these comments, the proposed criteria that require 2 parts per thousand (ppt) salinity in Suisun Bay at specified times is a measure to regulate salt water intrusion from the ocean. Likewise, the Fish Migration and Cold-Water Habitat criteria ("smolt survival criteria") regulate temperature, San Joaquin River flow, and water project operations in the Bay-Delta Estuary. It is beyond dispute that outflow and water project

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[5] *The Senate bill made §102(b) applicable to any "reservoir or other impoundment project under other federal law." See S. 2770, §102(b)(1), reprinted in 1972 Legislative History, Vol.2, p. 1537. The House bill limited §102(b) to "any reservoir by the Corps of Engineers, Bureau of Reclamation, or other Federal agency", see H.R. 11896, §102(b)(1), reprinted in 1972 Legislative History, Vol.1, p.898. EPA favored the Senate bill wherein §102(b) was applicable to all reservoirs and impoundments "under other Federal law" because this resolved the ambiguity in the House bill of "whether federally licensed but privately constructed projects are to be covered." Letter of William D. Ruckelshaus, EPA Administrator to Honorable John A. Blatnik, Chairman, House Committee on Public Works, reprinted in 1972 Legislative History, Vol.2, p. 1192. Congress enacted the more limited language of the House bill. See §102(b)(1), 33 U.S.C. §1252(b)(1) ("any reservoir by the Corps of Engineers, Bureau of Reclamation, or other federal agency").*

operations are not water quality matters. Salt water intrusion and temperature, where they are not the result of a discharge to the water body, are included in the definition of pollution under Clean Water Act Section 502(6), at 33 U.S.C. Section 1362(6) (see footnote 3).

The Supplementary Information accompanying the proposed rule avoids discussion of the causes of pollution which these criteria are intended to remedy. Both beneficial uses are constrained primarily because of reductions in freshwater flow and diversions to export pumps causing either salt water intrusion or entrainment of fish. The problem of salt water intrusion and its relationship with outflows that repel it was recognized by the California Supreme Court as early as 1922 in Town of Antioch v. Williams Irrigation District (1922) 188 Cal. 451, 455. In 1986, the Court of Appeal in United States v. State Water Resources Control Board (1986) 182 Cal.App.3d 82,107, described the relationship as follows:

The major factor affecting water quality in the Delta is salt water intrusion. Delta lands, situated at or below sea level, are constantly subject to ocean tidal action. Salt water entering from San Francisco Bay extends well into the Delta, and intrusion of the saline tidal waters is checked only by the natural barrier formed by fresh water flowing out from the Delta (Emphasis added).

EPA itself recognized this relationship in its report on Legal and Institutional Approaches to Water Quality Management Planning and Implementation (March, 1977), stating: "The Delta of the San Joaquin and Sacramento Rivers is a rich agricultural and recreational region depending on the maintenance of adequate fresh water inflows during the low flow months to offset the intrusion of salt water from San Francisco Bay," Id., at VIII-11 (Emphasis added). The report also used the Bay-Delta as an illustration of how flow maintenance was handled as a water right issue.

c. Congress Did Not Intend To Regulate Pollution Caused By Reductions In Freshwater Flows Under Section 303(c).

Pollution caused by reductions in freshwater flows was never considered to be a part of the Section 303(c) water quality standards program. First, in discussing what became Section 208, Senate Report 414 stated that salt water intrusion was not covered by the existing federal water quality regulatory program.[6]

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[6] *"The present Federal water pollution control program does not consider degradation of water caused by reduction in fresh water flows which produce the intrusion of salt or brackish waters into estuaries and rivers. Salt water intrusion, no less than point sources of discharge, alters significantly the character of the water and the life system it supports.*

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Fresh water flows can be reduced from any of a number of causes. The bill requires identification of those causes and establishment of methods to control them so as to minimize the impact of salt water

Significantly, the Section 303(c) water quality standards program merely continued the existing water quality standards program under the prior federal water pollution control legislation. See House Report 911, reprinted in 1972 Legislative History, Vol. 1, p. 791 ("Section 303 continues the use of water quality standards."); Conference Report 1236, 92d Cong., 2d Sess. reprinted in 1972 Legislative History, Vol. 1, p. 305 ("Section 303 of the House amendment continues the use of water quality standards contained in the existing law.").

There is no indication that in enacting the 1972 legislation Congress intended to alter or expand the notion of "water quality standard" from what it had been under pre-1972 legislation. Because pollution caused by reductions of fresh water flows was not covered by the pre-1972 legislation, it also does not come within the Section 303 water quality standards program enacted in 1972. Instead, Congress adopted the Section 208 nonpoint source pollution control program to cover salt water intrusion "[f]or the first time", 1972 Legislative History, Vol. 2, p. 1457.

The Senate bill did not have a Section 303 water quality standards provision. The Senate believed that effluent limitations were a better regulatory strategy than water quality standards. See Senate Report 414, reprinted in 1972 Legislative History, Vol. 2, p. 1425-1426; id. at 1274 (remarks of Sen. Eagleton). The Section 303 water quality standards provision originated in the House bill. See H.R. 11896, §303, reprinted in 1972 Legislative History, Vol. 1, p. 969. Since the Conference Committee adopted a version of the Senate bill, and gave no indication that it was altering this basic assumption of the Senate bill, salt water intrusion apparently is not covered by the water quality standards program of §303. Cf. Bethlehem Steel v. EPA, 538 F.2d 513, 516 (2d Cir. 1976) (where language in Section 509 of the 1972 Clean Water Act was included in the Senate Bill which did not contain Section 303, the language of Section 509 could not have been referring to water quality standards under Section 303).[7]

Not only did Congress specifically provide for regulation of salt water intrusion in the nonpoint source pollution provisions, i.e., Section 208 and Section 304, and not in the water quality standards provision of Section 303, but it required EPA to develop information, not criteria, for salt water intrusion and other pollution resulting from changes in the flow of water. See Section 304(f)(2)(E) and (F). The continuing planning process of Section 303(e) also separates

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intrusion." 1972 Legislative History, Vol. 2, p. 1458 (Emphasis added).

[7] *Since the Senate Bill also contained the §304 provision requiring information and guidelines for salt water intrusion (even though there was no §303 in the Senate Bill), the §304 guidelines for salt water intrusion were obviously not intended to be implemented via water quality standards adopted under §303.*

Section 208 nonpoint pollution control programs -- which are provided for in Section 303(e)(3)(B) -- from implementation of Section 303(c) water quality standards -- which are provided for in Section 303(e)(3)(F). The structure of the Act demonstrates that salt water intrusion is regulated exclusively as pollution, and is not to be regulated under water quality standards.

Finally, water quality standards were intended to serve as a basis for requiring further reductions in pollutants, i.e., water quality based effluent limitations under Section 302, 33 U.S.C. §1312 would supplement technology-based effluent limitations under Section 301, 33 U.S.C. §1311. See Conference Report 1236, reprinted in 1972 Legislative History, Vol. 1, pp. 304-305; House Report 911, reprinted in 1972 Legislative History, Vol. 1, p. 842. See also Clean Water Act Section 301(b)(1)(C), 33 Section 1311(b)(1)(C), which requires point source dischargers to meet water quality standards. There is nothing in the legislative history indicating that water quality standards could be used for salt water intrusion.

d. Adopting Water Quality Standards For Pollution Caused By Reduction Of Fresh Water Flows Is Contrary To EPA's Past Administrative Practice.

Apparently EPA has never before promulgated water quality standards for pollution caused by changes in fresh water flows. Using water quality standards in this fashion is contrary to EPA's past administrative practice.

When it promulgated final water quality standards regulations in 1983, EPA concluded that water quality standards could not be used to require more stringent regulatory controls for pollution. This issue came up in the context of attainability of designated uses in water quality standards. EPA's regulations provide that a state may not change a designated use if it can be attained by implementing effluent limitations and "by implementing cost-effective and reasonable best management practices for nonpoint source control." 40 C.F.R. §131.10(h)(2). Some commenters on this regulation expressed concern that water quality standards could be used to force states to adopt best management practices. EPA denied that this was the intention of the water quality standards regulation.

EPA should not set water quality standards for a level of protection that is better than existing conditions and cannot be attained with current best management practices, and then expect states to upgrade and adopt more stringent best management practices to control pollution caused by changes in fresh water flows..

EPA's 1993 Water Quality Standards Handbook, Second Edition, confirms this administrative interpretation with its discussion of "natural background" and "irreversible" pollution. As the *Handbook* states, "natural background

contaminants to the water body ... may be a legitimate factor which effectively prevents a designated use from being met". Id., p. 2-12. "Natural background" pollution is then a "given" in setting (and determining attainability of) designated uses. In short, after the state has applied best management practices to pollution caused by changes in freshwater flows, any further pollution is considered for water quality standards purposes to be "irreversible", i.e.., also a "given" like natural background contaminants. Based on the Water Quality Standards Handbook, water quality standards cannot be used to further ratchet up best management practices for pollution caused by changes in fresh water flows.

Finally, EPA's guidance documents on salt water intrusion all indicate that salt water intrusion is handled by the States as an instream flow/water rights issue. For example, EPA's 1973 Salt Water Intrusion Report -- which EPA adopted pursuant to Section 304(f)(2)(E) -- nowhere states that water quality standards under Section 303 can or should be used to control salt water intrusion into estuaries. Instead, the Salt Water Intrusion Report stresses stream flow regulation through comprehensive water allocation management and planning as the control method for salt water intrusion, see id., pp. 48-50. The Report also notes that any such controls on diversion and water allocation "will probably involve vested water rights and usually will be in conflict with these water rights", id., p. 73, and that the federal government traditionally defers to the States in the area of water rights and water allocation, id., p. 75.

EPA's Report on Legal and Institutional Approaches to Water Quality Management Planning and Implementation also discussed salt water intrusion as a stream flow/water allocation issue, see id., pp. VIII-7 to VIII-13, which was handled under state water rights systems, id., pp. VIII-22 to VIII-24. The Report says nothing about using water quality standards under Section 303 to control nonpoint salt water intrusion. The Report states that States are best prepared, and have the legal authority to handle salt water intrusion. Id., p. VIII-14. In sum, both the Salt Water Intrusion Report -- which was EPA's main source document for salt water intrusion -- and EPA's Legal and Institutional Approaches to Water Quality Management Planning and Implementation portray salt water intrusion as a stream flow/water allocation issue which is to be handled by the States under their water rights law, not a water quality issue under Section 303.

C. THE CLEAN WATER ACT ESTABLISHES A SEPARATE REGULATORY SCHEME FOR POLLUTION CONTROL REGULATION, APART FROM STANDARD-SETTING AND REGULATION OF POLLUTANTS UNDER CLEAN WATER ACT SECTIONS 303(c) AND 402.

Comment: EPA has limited authority to regulate salinity intrusion under Clean Water Act Section 208. Salinity intrusion is addressed in the Clean Water Act only in Section 208 and in Section 304(f). The language and legislative history of the Clean Water Act

make clear that: 1) salt water intrusion into estuaries and other pollution caused by changes in water flows was to be regulated as pollution under Sections 208, not Section 303; 2) the regulatory mechanism for controlling salt water intrusion was best management practices, not water quality standards (which makes sense because stream flow was the key variable which is best regulated by operational controls on water development projects); 3) regulation of salt water intrusion was left to the States, not the federal government because regulation of salt water intrusion directly affected water rights allocation which was a matter that had been traditionally left to the States; and, 4) the case that largely prompted and was to be accommodated by the salt water intrusion legislation was this very case -- the Bay-Delta of California.

Discussion: Control of Pollution Resulting From Changes in Fresh Water Flows is Implemented Pursuant to State Plans Adopted Under Section 208

EPA mistakenly says on page 2-8 of its Bay/Delta Draft Regulatory Impact Assessment that "[t]he ultimate purpose of water quality standards ... is to restore and maintain the chemical, physical, and biological integrity of the nation's waters." The citation is to Clean Water Act Section 101(a), but Section 101(a) states that "[t]he objective of this chapter is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." (Emphasis added.) This distinction is important because the "chapter" is the entire Clean Water Act, which includes matters such as pollution that are regulated by the states. See National Wildlife Federation v. Gorsuch 693 F.2d 156, 178 (D.C. Cir. 1982) (Congress "explicitly chose not to completely federalize water pollution control, but instead directed the states to establish their own pollution control programs under EPA oversight.")

The federal legislation first established a regulatory program for nonpoint source pollution under the 1972 Federal Water Pollution Control Act. Section 208, together with Section 304(f) established an approach for controlling nonpoint source pollution using state planning processes. These sections contain the only mention in the Clean Water Act of salt water intrusion and changes in the flow of water, and they treat these matters differently from other nonpoint sources of pollution. The 1987 Clean Water Act amendments added Section 319, 33 U.S.C. §1329.[8]

Significantly, Congress deliberately wrote Section 208 to maximize California's autonomy in managing and regulating nonpoint source salt water intrusion in the Bay-Delta. This effectively prevented federal control over regulation of salt water intrusion caused by changes in fresh water flows. The Congressional debate between Congressmen Waldie and Johnson on March 27, 1972 makes it clear that

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[8] *Section 319 requires states to adopt nonpoint source management programs which identify best management practices to reduce nonpoint source pollution, and a program to implement the best management practices. See §§319(b)(1), (2)(A),(B), 33 U.S.C. §§1329(b)(1), (2)(A),(B). Section 319 does not give EPA any direct regulatory authority over nonpoint source pollution. Section 319 regulates nonpoint sources, but does not does not mention salt water intrusion or other pollution caused by reductions in fresh water flow as a matter for regulation.*

Section 208(b)(2)(I) was intended to prevent federal regulation of salinity intrusion in the California Bay-Delta Estuary.[9]

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[9] *"Mr. Waldie. I would like to ask a series of questions involving section 208 of the bill.*

The question I want to ask the gentleman from California on the committee, my colleague and my friend, Congressman Johnson, affects section 208 which is the areawide waste treatment program.

In the bill that the committee first considered, there were very, very strong provisions on page 53 involving the problem of saline intrusion, and those provisions say: "The plan shall include procedures to control salt water intrusion."

*There is no qualification. Yet I see when the bill was finally adopted that it was weakened immeasurably to the point where i[t] now says: :The plan shall include a process to identify, if appropriate, salt water intrusion * * *" And then: "They shall set forth procedures and methods to control * * *."*

Then it qualifies it even further by saying: "To the extent feasible and where such procedures and methods are otherwise a part of the waste treatment management plan."

You make no amendments in any of the other nonpoint pollution techniques except salt water intrusion.

Mr. Chairman, I have to conclude that this was a major weakening of this bill and that it was done at the request of someone who does not desire to have salt water intrusion, which is nonpoint pollution, controlled in the bill.

Particularly I have reference to estuaries in which salt water intrusion and reduced outflows are particularly destructive. I particularly have reference to the delta in California. Someone did not want those sources of pollution to be controlled. Can the gentleman tell me for what reason this amendment was placed in the bill to weaken this bill as drastically as it did – and who proposed that amendment?" 1972 Legislative History, Vol. 1, p. 484. (Emphasis added).

In response, Congressman Johnson, who also was a member of the Conference Committee, stated:

"Mr. Johnson of California. I believe you referred to the introduced bill in your first reference.

During the hearings, we heard from representatives of California including the State water resources department and the State water pollution control board. We also were given the Governor's position. The language in the bill reflects their views. The committee report on page 96 states the following:

*"The Committee notes that in some States water resources development agencies are responsible for allocation of stream flow * * *." Id., p. 485.*

After a brief interruption, Congressman Johnson continued:

"Mr. Johnson of California. The gentleman well knows that in our State in the headwaters of the Sacramento and the San Joaquin Rivers we have developed dams and storage reservoirs up and down the Sierra Nevada Mountains and also minor diversion facilities in the coastal country. All this water flows through the delta, and this water has been controlled under a program in which the State and Federal agencies, including the Corps of Engineers and the Bureau of Reclamation, have participated. The fear was brought to the committee's attention when our State people testified that the State was losing control of its water resources programs under the introduced bill.

The State wanted assurance that this would not happen, and this particular provision on page 96 of the report points this up." Id. (Emphasis added).

In response, Congressman Waldie stated:

"The difficulty with this provision – and I gather that it is a California provision – the act was amended and weakened from its initial strong provisions controlling saline intrusion and water diversions to take care of a problem that the water resources people wanted to take care of to enable them to exert control, the control over the delta they had been exerting.

I suggest to the gentleman that the weakening amendment is not in the best interest of the delta in any way, regard, or respect. The problem of protecting the waters that are gathered in that delta from saline

Despite Congressman Waldie's concerns, the final legislation retained the language of the House bill. Compare H.R. 11896, Section 208(b)(2)(I), reprinted in 1972 Legislative History, Vol. 1, p. 955 with Section 208(b)(2)(I), 33 U.S.C. §1288(b)(2)(I).

As Congressman Johnson noted, California's major concern -- which was accommodated in the legislation -- was retaining discretion to regulate and manage salt water intrusion in the Bay-Delta Estuary because such regulation directly affected water rights allocation in California. That was why Congressman Johnson referred to page 96 of the House Report in his colloquy with Congressman Waldie. That portion of the Report specifically referred to preserving state authority over stream flow allocation.[10]

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intrusion and protecting that estuary from the consequences of saline intrusion, has been made much greater by the adoption of that weakening amendment.

I suggest to the gentleman that I will be offering an amendment tomorrow seeking to return this provision of the bill to where it was prior to the time the California water people started putting their hands into this national act to have it adopted and worked around to adversely affect California only and the part of California that the gentleman I represent in this particular issue." Id., pp. 485-486. (Emphasis added).

Congressman Johnson further replied to Congressman Waldie:

"Mr. Johnson of California. The gentleman asked me a question. I think it is well established in the record that California does have a very workable program under way at the present time. Our State water resources people, the Governor of the State, the Water Pollution Control Board, the Bureau of Reclamation, and the Corps of Engineers are working very carefully with the flow of the waters into the delta, and certainly under this measure the State will be given the opportunity to carry on that type of activity. The state will have a right to issue permits under that particular section. I see no harm in it whatsoever.

I point out to the gentleman that nonpoint sources are not controlled under this bill." Id., p. 1486. (Emphasis added).

Congressman Waldie then closed the debate on this subject with the following:

"Mr. Waldie. In response I would point out that the permits involved in this bill have nothing to do with nonpoint salt water intrusion, and there is no control within this bill for nonpoint pollution, and that control will only come about by the development and adoption of an areawide management program that controls. The fact of the matter is that the State of California has done a miserable job in terms of protecting the estuaries of California from salt water intrusion, and this amendment which was adopted to the national act at the request of California authorities, enables them to continue doing the miserable job they have been doing without any guidance and without any control from the Federal Government. I think it is a very, very unhappy situation for our State but also for other States which now find a major weakening of the control section which protects estuaries. That is what is at stake here -- the estuaries of the Nation. That provision has been weakened to the point where estuaries will be jeopardized." Id. (Emphasis added).

10 *"The Committee notes that in some States water resource development agencies are responsible for allocation of stream flow and are required to give full consideration to the effects on water quality. To avoid duplication, the Committee believes that a State which has an approved program for the handling of permits under section 402, and which has a program for water resource allocation, should continue to exercise the primary responsibility in both of these areas and thus provide a balanced management control system." House Report 911, reprinted in 1972 Legislative History, Vol. 1, p. 783. (Emphasis added).*

As the court noted in National Wildlife Federation v. Gorsuch, 693 F.2d 156, 179 n.67, the language of Section 208(b)(2)(I) "was intended to prevent water quality goals from interfering with state water allocation plans." (Emphasis added). Indeed, the Conference Committee, on which Representative Johnson served, even went so far as to weaken the already tenuous link between salt water intrusion and water quality in the Senate bill by deleting from the final legislation the Senate language referring to procedures to control salt water intrusion "to protect water quality." See S. 2770, Section 208(b)(2)(I), reprinted in 1972 Legislative History, Vol. 2, p.1598.

D. THE CLEAN WATER ACT DOES NOT EXTEND TO REGULATION OF WATER QUANTITIES

1. EPA's Proposed Standards Violate EPA Policy.

Comment: Assuming that EPA can properly set standards that regulate water flow and facility operations, the proposed standards violate EPA policy because they directly and materially affect California's water rights system even though reasonable alternatives are available.

Discussion: EPA's policy regarding the relationship between adoption of water quality standards and state water allocation authority is stated in EPA's Water Quality Standards Handbook, Second Edition, dated September, 1993, in Appendix G: Questions and Answers on: Antidegradation. The Water Quality Standards Handbook says it "provides guidance issued in support of the Water Quality Standards Regulation (40 CFR Part 131, as amended)" [See page iii], and Appendix G says it "provides guidance on the antidegradation policy component of water quality standards and its application." See Introduction.

Appendix G, Questions and Answers on: Antidegradation states at page 11, question 30:

> "30. What is the relationship between the antidegradation policy, State water rights use laws and section 101(g) of the Clean Water Act which deals with State authority to allocate water quantities?
>
> The exact limitations imposed by section 101(g) are unclear; however, the legislative history and the courts interpreting it do indicate that it does not nullify water quality measures authorized by CWA (such as water quality standards and their upgrading, and NPDES and 402 permits) even if such measures incidentally affect individual water rights; those authorities also indicate that if there is a way to reconcile water quality needs and water quantity allocations, such accomodation [sic] should be pursued. In other words, where there are alternate ways to meet the water quality requirements of the Act, the one with least disruption to water quantity allocations should be chosen. Where a planned diversion

would lead to a violation of water quality standards (either the antidegradation policy or a criterion), a 404 permit associated with the diversion should be suitably conditioned if possible and/or additional nonpoint and/or point source controls should be imposed to compensate." (Emphasis added.)

The General Counsel of EPA, in a memorandum to Regional Administrators dated November 7, 1978, interpreted Clean Water Act Section 101(g) in the context of the water quality standards program and concluded that "EPA should therefore impose requirements which affect water usage only where they are clearly necessary to meet the Act's requirements."

In 1979 EPA submitted a report to Congress in accordance with Clean Water Act Section 102(d), titled Water Quality/Water Allocation Report. The report discusses the issue of using water quality standards to set minimum water flows for instream uses. In Chapter V on "Instream Flows", the report emphasizes the States' primary authority over water allocation. The report rejects the idea of EPA adopting flow criteria.[11] The Report points out that "the decision between instream and offstream uses is primarily the States' responsibility." Id., p. V-19.

On July 10, 1979, EPA published a notice of proposed rulemaking soliciting comments regarding development of a a policy regarding control of changes in instream flows.[12] On October 29, 1982, after receiving comments, EPA published a proposed rule on water quality standards in which it disclaimed any intention of requiring States to set minimum flows in water quality standards, saying: "EPA is not requiring States to develop prohibitions against stream flow modifications. EPA is encouraging States to consider flow in setting uses, and in developing permit conditions for dischargers." 47 FR 49234, at 49251.

Based on EPA's previous administrative interpretations of Section 101(g), EPA's current unprecedented attempt to set minimum instream flows is inconsistent with and contrary to EPA's position on this issue. Also, the sources discussed above clearly show that if EPA adopts water quality standards for the Bay-Delta Estuary,

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11 *"EPA does not require that standards include flow criteria to protect the use included in the standards although States have the authority to establish such criteria. In June 1978, EPA published an advanced notice of proposed rule-making that raised the possibility of a change in this policy, while ruling out the option of promulgating flow criteria when the States choose not to do so." Id., p. V-18. (Emphasis added.)*

12 *"EPA may therefore develop a policy to urge States to prohibit alteration or restriction of natural flows that would interfere with fishable, swimmable water quality. EPA does not at this time intend, however, for its policy to result in Federal promulgation of specific streamflow and quantity requirements in the event a state fails to take appropriate action. Whatever policy EPA develops will be consistent with new section 101(g) of the act, which recognizes each state's authority to allocate water quantities within its jurisdiction." 43 FR 29588, at 29591.*

it has a duty to select standards that are both protective of the use and cause the least disruption to the State's water rights system. Some of the proposed standards are exceptionally disruptive to the State's water rights system and are not consistent with this duty. The following discussion explains the effect of implementing each of the three proposed standards on water rights.

a. Suisun Bay Salinity Criteria

The two ppt salinity isohaline standard is a Delta outflow standard. The standard can be achieved only by increasing the Delta outflow. The standards were developed by using the daily estimates of net Delta outflow from October 1, 1939 to September 30, 1975 to calculate the frequency with which the two ppt isohaline was downstream of each of the specified locations in each year (See Appendix II of 59 FR, at 848-849.) The Federal Register notice states that "EPA expects that the State Board will develop an implementation plan for these Estuarine Habitat criteria by changing the volume and timing of water flows through the estuary." (See page 838.) From a water management perspective, there is no difference between EPA's draft salinity isohaline standard and its corresponding Delta outflow standard.

The Bay-Delta Estuary is the heart of California's water supply and distribution system. Water from thoughout the Central Valley flows into the Delta and a portion of this water is exported to water deficient areas in the State. Approximately 7,000 water right holders in the watersheds of the Central Valley hold approximately 14,000 water right permits. Considering the importance of the Delta to California's water supply system and the complexity and size of the water supply system, there is no other single standard that EPA could propose that would be more disruptive to California's water supply and to the water rights that support it than the proposed Delta outflow standard. The proposed standard violates the federal policies discussed above because other, less disruptive, options are available to EPA to protect estuarine habitat.

For example, EPA could have chosen to protect the estuarine habitat benficial use by proposing appropriate biological criteria. This approach would be consistent with EPA's Policy on the Use of Biological Assessments and Criteria in the Water Quality Program (Appendix R: Water Quality Standards Handbook, Second Edition). EPA states in its Federal Register notice that biological criteria for the Delta are scientifically defensible and approvable (59 FR 815) A number of well established biological indices exist for the Bay/Delta Estuary that could be used as biological criteria. Examples include striped bass populations, the striped bass index, and abundance indices for Delta smelt, Sacramento splittail, longfin smelt, Bay shrimp, and starry flounder. Biological criteria could be based on historical population levels or abundance indices. Healthy, sustainable populations of these indicator species are certain to adequately protect the estuarine habitat beneficial use, and this approach

minimizes disruption to water quantity allocations, as required by federal policy. Biological criteria allow the State maximum flexibility in implementation. The State can implement the standards through habitat improvements, physical alterations to the Delta configuration, changes in points of diversion, or changes in the flow regime.

b. Salmon Smolt Survival Criteria on the Sacramento and San Joaquin Rivers

The salmon smolt survival criteria are proposed to protect the fish migration and cold fresh-water habitat beneficial use. It is presented as biological criteria. However, the criteria as drafted are inconsistent with federal policy because they will not both protect the fish migration beneficial use and cause the least disruption to the State's water quantity allocations.

The proposed salmon smolt survival criteria includes, as part of the criteria, the method of computation to determine compliance with the criteria. For the San Joaquin River, compliance is calculated with an equation whose variables are average CVP plus SWP exports and flow in the San Joaquin River at Stockton. Therefore, the San Joaquin River salmon smolt survival criteria are actually a combined standard for San Joaquin River flow and Delta exports.

For the Sacramento River, compliance is calculated with an equation whose variables are average water temperature at Freeport, average CVP plus SWP exports, diversions into the Delta Cross Channel and diversions into Georgiana Slough. The State has essentially no control over temperature in the Delta. Additionally, the Federal Register text explaining the proposed criteria states that putting a barrier at the head of Georgiana Slough may have deleterious effects on the Delta smelt and other native aquatic life in the central Delta, and possibly on adult salmon returning upstream. (59 FR 825) Therefore, the Sacramento River salmon smolt survival criteria are actually a combined standard for Delta Cross Channel gate operation and Delta exports. Delta Cross Channel gate operation has a substantial effect on the amount of water available for export at the CVP and SWP pumps. The proposed salmon smolt survival criteria will substantially disrupt the State's water rights system because they can only be implemented by regulating Cross Channel gate operation and Delta exports.

EPA could have chosen to protect the fish migration and cold fresh-water habitat beneficial use by adopting adult salmon population levels as biological criteria. The criteria could be based on historical salmon populations or on the goal of doubling natural production of anadromous fish. This goal has been adopted by both the State Legislature, at Fish and Game Code Section 6900 et seq., and the Congress, in the Central Valley Project Improvement Act of 1992. This approach is more comprehensive than EPA's proposal because it incorporates all of the factors that affect salmon survival in the Central Valley. The State already has prepared three habitat improvement plans for salmon and

anadromous fish in the Central Valley: the Upper Sacramento River Fisheries and Riparian Habitat Management Plan prepared by the Resources Agency and dated January 1989; the Central Valley Salmon and Steelhead Restoration and Enhancement Plan prepared by the Department of Fish and Game and dated April 1990; and the San Joaquin River Management Program prepared by the San Joaquin River Management program Advisory Council and dated January 1993. The Comprehensive Conservation and Management Plan prepared by the San Francisco Estuary Project and dated June 1993 also includes recommendations for protection of anadromous fisheries in the Central Valley.

c. Striped Bass Spawning Criteria on the San Joaquin River

The proposed striped bass spawning criteria are fundamentally different from the other two sets of criteria. The salinity isohaline criteria and the salmon smolt survival criteria are designed to correct problems caused primarily by water flows, water operations, and pollution, while pollutant control is the focus of the striped bass spawning criteria. As such, the striped bass spawning criteria could be implemented without treading as heavily on the State's water rights system.

The salinity problem in the San Joaquin River is caused by agricultural drainage. Consequently, the SWRCB can use its pollution control authorities to implement appropriate management measures if EPA adopts the proposed striped bass spawning criteria. For the short term, the management measures in the plan titled A Management Plan for Agricultural Subsurface Drainage and Related Problems on the Westside San Joaquin Valley, dated September 1990 will provide the framework for SWRCB action. For the long term, control of the problem may require export of salts from the San Joaquin Valley through an isolated facility to a salt sink.

EPA's recommended approach to implementation of the proposed striped bass spawning criteria is significantly different than the approach outlined above. EPA "expects that the State Board would implement these criteria by making appropriate revisions to operational requirements included in water rights permits issued by the State Board" (59 FR 827) The State's high quality water supplies should not be used to dilute pollutants if reasonable alternatives exist. To do so appears contrary to EPA's regulation at 40 CFR Section 131.10(a), which provides in pertinent part: "In no case shall a State adopt waste transport or waste assimilation as a designated use for any waters of the United States."

Further, this implementation method is unnecessary in light of the Central Valley Improvement Act of 1992, which provides that the Bureau of Reclamation shall assist in restoring the striped bass fishery. See Section 3406(b)(18). The current approach to restoring the fishery is to control agricultural discharges to the San Joaquin River.

2. Clean Water Act Section 101(g) Reserves To The States The Authority To Allocate Water Supply Under State Water Laws

Comment: States have the authority to allocate quantities of water under state law, and the provisions of the Clean Water Act may not be applied to undermine this state authority. The proposed criteria have more than an incidental effect on California's water allocation authority and do not accommodate state water allocation authority.

Discussion: Clean Water Act Section 101(g), 33 U.S.C. Section 1251(g) was added in the Clean Water Act of 1977. It provides:

> "It is the policy of Congress that the authority of each state to allocate quantities of water within its jurisdiction shall not be superseded, abrogated or otherwise impaired by this Act. It is the further policy of Congress that nothing is this Act shall be construed to supersede or abrogate rights to quantities of water which have been established by any State. Federal agencies shall co-operate with State and local agencies to develop comprehensive solutions to prevent, reduce and eliminate pollution in concert with programs for managing water resources." (Emphasis added)

In explaining Section 101(g) to the Senate after the Conference Committee made some changes, the author, Senator Wallop, explained that the purpose of this section was to preserve state authority over water quantity allocation and water rights.[13]

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[13] *Senator Wallop stated in pertinent part:*

"This amendment ... is not intended to change present law, for a similar prohibition is contained in Section 510 of the act. This amendment does seek to clarify the proper role of Federal water quality legislation in relation to State water law. Legitimate water quality measures authorized by this act may at times have some effect on the method of water usage. Water quality standards and their upgrading are legitimate and necessary under this act. The requirements of section 402 and 404 permits may incidentally affect individual water rights. Management practices developed through State or local 208 planning units may also incidentally affect the use of water under an individual water right. It is not the purpose of this amendment to prohibit those incidental effects. It is the purpose of this amendment to insure that state allocation systems are not subverted, and that effects on individual rights, if any, are prompted by legitimate and necessary water quality considerations."

"This amendment is an attempt to recognize the historic allocation rights contained in State constitutions."

"It is designed to protect historic rights from mischievous abrogation by those who would use an act, designed solely to protect water quality and wetlands, for other purposes. It does not interfere with the legitimate purposes for which the act was designed."

"The amendment speaks only -- but significantly -- to the rights of States to allocate quantities of their water and to determine priority uses. ...."

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"Water quality and interstate movement is an acceptable Federal role and influence. But the States historic rights to allocate quantity, and establish priority of usage remains inviolate because of

Senator Wallop explained that Section 101(g) was a response to proposals published by the Water Resource Council on July 15, 1977 at 42 FR 36790. 1977 Legislative History, Vol. 3, pp.531. The Water Resource Council identified as a "problem" the "lack of coordination between water quality and water quantity planning efforts." It listed as one option centralizing water resource planning or project review in one federal agency. The Water Resource Council raised the possibility of federally-mandated minimum instream flows for environmental purposes. It indicated that State administration of water allocation might make water quality control programs ineffective by granting new water diversions rights.

EPA is proposing to do precisely what the Water Resource Council suggested in 1977. This is what Section 101(g) was intended to prevent. Consequently, the proposed criteria are contrary to and violate Section 101(g).

The fact that preserving state authority over water allocation is set forth as a "policy" in the Clean Water Act does not reduce the force of Section 101(g) in this case. Setting forth that requirement as a general "policy" merely indicates that it was to apply to the entire Clean Water Act, not just certain provisions. EPA's nondegradation policy was based entirely on the general goal of fishable/swimable waters in Section 101(a)(2), yet EPA found that general statutory "goal" capable of sustaining mandatory regulatory requirements.

Moreover, the court in National Wildlife Federation v. Gorsuch (1982) 693 F.2d 156, 178, 18 ERC 1105, 1122 said that "policies", like Section 101(g), have more force than "goals", like the fishable/swimmable goal of Section 101(a)(2). Insofar as the Bay-Delta Estuary issues involve accommodation between the goal in Section 101(a)(2) and the policy in Section 101(g), Section 101(g) is the more compelling and specific statutory command.

EPA's statement in the Federal Register notice at 59 FR 813 that "a general policy statement ... 'cannot nullify a clear and specific grant of jurisdiction'", citing Riverside Irrigation District v. Andrews (1985) 758 F.2d 508, 513, is unavailing because EPA has no "clear and specific" grant of jurisdiction in this case to control salinity intrusion, other pollution caused by reductions in fresh water flow, or operation of water diversion facilities using Section 303 water quality standards. In fact, the only clear and specific grant of jurisdiction applicable in this case is the explicit grant of authority to the States to regulate salt water intrusion under Section 208. See Section 208(b)(2)(I).

EPA's reliance on Riverside, supra, and United States v. Akers (1986) 785 F.2d 814 is misplaced because those cases do not support EPA's adoption of the proposed

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this amendment. The Water Pollution Control Act was designed to protect the quality of water and to protect critical wetlands in concert with the various States. In short a responsible Federal role." December 15, 1977 Senate Debate, reprinted in 1977 Legislative History, Vol. 3, pp. 531-532.

criteria. Both of those cases involve permits or regulation under Clean Water Act Section 404, 33 U.S.C. Section 1344, not water quality standards under Section 303. Section 404 regulates the discharge of dredged or fill material into navigable waters. Factors other than water quality are considered in issuing Section 404 permits such as impacts on municipal water supplies, shellfish beds, fishery areas, wildlife, and recreation. Both of these cases addressed construction of new projects; neither of these cases involved regulation of pollution caused by operation of existing facilities. Neither case had a direct and immediate impact on water rights comparable to this case.[14]

Further, the court in National Wildlife Federation v. Gorsuch, cited above, held that in the area of salt water intrusion state water supply concerns take precedence over water quality concerns. The Gorsuch court stated that Section 101(g) was not intended to take precedence over legitimate and necessary water quality considerations, except with respect to salt water intrusion. The court stated:

> "However, with respect to one area where quality and quantity are in conflict -- salt water intrusion caused by water diversion for drinking or irrigation -- Congress explicitly declined to require the states to control water quality." 693 F.2d at 179, n. 67. (Emphasis added.)

The court went on to say that the adoption of the Section 208(b)(2)(I) provision for salt water intrusion "was intended to prevent water quality goals from interfering with state water allocation plans", citing the colloquy between representatives Johnson and Waldie in the House debates. Id. Therefore, EPA's water quality standards are not "incidental" because they reverse the priority between water supply and water quality mandated by Section 208(b)(2)(I) and Gorsuch.

EPA's concept for implementing the proposed criteria is analogous to setting effluent limitations for water quality standards. In applying effluent limitations a regulatory agency takes a set water quality standard and then "works back" to determine what additional effluent limitations must be imposed on point sources (over and above the technology-based effluent limitations of Section 301) to attain the water quality standards. Here, EPA apparently wants the State to "work back" and cut back diversions to attain the water quality standards. This method is inappropriate for the Bay-Delta Estuary because the pollution EPA seeks to regulate is nonpoint source pollution, most of which is from salt water intrusion. With point source pollutants, EPA has authority to directly regulate the discharges. EPA has no such authority here. See Oregon Natural Resouce Council v. U.S. Forest

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[14] *A more recent decision, James City County, Virginia v. Environmental Protection Agency (1993) 12 F.3d 1330, approved EPA's veto of a Section 404 permit. The veto was based entirely on environmental impacts. It addressed a proposed project, not an existing project, and did not address pollution caused by an existing facility. While it mentioned Clean Water Act Section 101(g), it restricted EPA's role under this section, in the context of a Section 404 permit, to assuring water purity, not allocation of water quantities.*

Service, 834 F.2d 842, 849 (9th Cir. 1987) (water quality standards cannot be imposed as effluent limitations against nonpoint sources; Congress made point sources subject to direct federal regulation, but left regulation of nonpoint sources to the states).

3. Adoption Of The Proposed Criteria Would Be Inconsistent With Court Decisions Pertaining To Dam-Induced Pollution.

Comment: In several cases, the federal Courts of Appeals have addressed situations where pollution was caused by dams or other diversions of water. In each case, the courts refused to require the facilities to obtain discharge permits under Clean Water Act Section 402. In each case EPA opposed efforts to judicially extend the Clean Water Act to regulation of water diversion facilities that incidentally altered the quality of water. The courts recognized a dual system of regulation in the Clean Water Act, with some matters being regulated through the permit system and some being regulated through the nonpoint source planning system that was reserved to the states. In the Bay-Delta Estuary, however, EPA is acting inconsistently with the earlier cases by seeking to regulate the very matters that it previously argued it could not regulate.

Discussion: In National Wildlife Federation v. Gorsuch, cited above, EPA argued that it did not have authority to require a permit under Clean Water Act Section 402 when the pollution (i.e., low dissolved oxygen, cold, and supersaturation) was caused by operation of a dam and was not added to the waterway. The issue was whether EPA must require a permit for operation of the dam. The court agreed with EPA's distinction between "pollution" and "pollutant", holding that the adverse change in water quality was not a pollutant and did not come from a point source. EPA argued, and the court agreed, that the Clean Water Act divides the causes and control of water pollution into two categories: point sources of pollutants which are regulated through the Section 402 program, and nonpoint sources of pollution which are regulated by the states under Section 208. Id., at 18 ERC 1105, 1111. The court noted that Congress had explicitly chosen not to completely federalize water pollution control. Id., at 18 ERC 1105, 1122. As explained above, the court also noted that by adopting Section 101(g) Congress intended to minimize federal control over state decisions on water quantity. Id., at 18 ERC 1105, 1123.

In U.S. v. Tennessee Water Quality Control Board, 19 ERC 1826 (6th Cir. 1983), the court held that the state water pollution control agency could not require the Tennessee Valley Authority, a federal agency, to acquire a permit under Clean Water Act Section 402 for a hydroelectric dam, because the changes in water quality were not caused by the discharge of pollutants. In the Tennessee case, EPA appeared and argued that the project should be treated as a nonpoint source of pollution and regulated by the state under Section 208.

In National Wildlife Federation v. Consumers Power Co., 28 ERC 1572 (6th Cir. 1988), the court held that a hydroelectric power company did not require a permit under Section 402 because even though operation of the turbine resulted in discharge of dead fish and fish remains, there was no addition of pollutants to the water because the fish already were present. EPA appeared and argued that the effect of the facility on the fish did not constitute addition of a pollutant. EPA argued that dam-caused pollution should be regulated as a nonpoint source of pollution.

These cases demonstrate EPA's long-standing position that the states should regulate nonpoint sources of pollution under state law, and that changes in water quality caused by dams are the result of nonpoint sources of pollution. Standards do not have a specified role in the Section 208 scheme for regulating nonpoint sources of pollution. Further, standards should not have a role in regulating nonpoint pollution caused by changes in water flow, because the feasible regulatory mechanism involves the allocation of water supplies, which is reserved to the states. Where the predominant or sole cause of pollution in a water body is operation of water diversions, as is the case with the proposed salmon smolt survival criteria and the proposed 2 ppt salinity criteria, adoption of water quality standards under the Clean Water Act is not an appropriate method of regulation. The State, however, has authority under its own laws to establish enforceable requirements to control pollution caused by water diversions.

E. EPA IS OVERSTEPPING ITS AUTHORITY IN AN ATTEMPT TO FORCE CALIFORNIA TO ADOPT MORE STRINGENT FLOW REQUIREMENTS

Comment: Even though EPA is not authorized to regulate salt water intrusion and is not authorized to directly regulate nonpoint source pollution, EPA is attempting to do just that through the proposed criteria.

Discussion: Under the United States Constitution, the federal government cannot require a state to regulate individuals using federal standards that the state has not adopted. See New York v. United States (1992) 112 S.Ct. 2401. This case teaches that under the Tenth Amendment of the United States Constitution, if the federal government wants individuals to be regulated under federal standards, the federal government can pass laws to regulate them directly, but it cannot make a state regulate individuals using federal standards that the state has not adopted.

EPA lacks federal statutory authority to regulate individuals directly on the subject of the proposed criteria. Therefore, EPA essentially is trying to force California to adopt more stringent best management practices (i.e., changes in operational criteria for water projects) to reduce pollution caused by reduction of fresh water flows.

EPA's suggestion that it is preserving state water rights authority by giving the State "full discretion" for implementing the Bay-Delta standards is meritless. By setting the

proposed Bay-Delta standards, EPA is necessarily reallocating water from consumptive uses to instream uses. The only method available to attain EPA's water quality standards is by increasing Delta outflow, San Joaquin River flow and cutting exports, and that means reducing diversions for consumptive uses. This means that the proposed criteria will reallocate water supplies; specifically, up to 2.3 MAF (assuming there is no need for a buffer or take restrictions) for instream use and fish habitat. Telling the State that it has "full discretion" to decide how to make up the difference leaves no discretion but to reduce water supplies for consumptive uses. EPA could promulgate alternative criteria that would achieve the same protections without long-term reductions in consumptive uses of water. EPA's notion that water quality is separate and distinct from water quantity in this case is fiction.

F. THE ACTUAL LEVEL OF PROTECTION DIFFERS FROM THE TARGETED LEVEL

Comment: EPA's draft standards exceed the targeted level of habitat conditions.

Discussion: EPA claims that its draft criteria are consistent with the Interagency Statement of Principles, dated June 15, 1992, which was signed by EPA, USFWS and NMFS (WRINT-USFWS-10) and submitted to the SWRCB during the SWRCB's 1992 Bay-Delta hearings (59 FR 813). This statement establishes both a long-term protection goal of offsetting water development effects fully and the following interim protection goal.

> "In the interim, the Board should establish standards sufficient to achieve a goal of restoring habitat conditions to levels which existed during the late 1960's and early 1970's. This goal is consistent with the mandates of State and Federal anti-degradation requirements, and generally reflects conditions that occurred in the Delta before fish habitat and populations began to experience the significant recent decline."

Inexplicably, the statement goes on to say that these interim standards should include a set of habitat protection measures sufficient to achieve an average fall-run salmon smolt survival index at levels characteristic of the period 1956 to 1970.

This goal statement can be interpreted a number of ways because the term "habitat conditions" can mean a number of things. For example, habitat conditions can be defined in terms of water quality, hydrology, biological populations or some other parameter. EPA has chosen to use hydrology to establish its estuarine habitat standard and salmon smolt survival standard, and water quality to establish its striped bass spawning standard. The choice of which parameter to use to establish a standard can make a significant difference. This issue is discussed in detail in a subsequent comment, and the entire basis for the legal validity of the EPA approach is discussed elsewhere in our comments.

The following section analyzes EPA's three sets of draft standards in terms of the targeted level of protection and the parameters EPA has selected to define this level of protection.

Draft Two PPT Isohaline Standard

EPA contends that its two ppt isohaline standard represents the flow conditions that existed in the late 1960's to early 1970's. This contention is analyzed below in three different ways. All three analyses support the conclusion that EPA has substantially exceeded its targeted level of habitat conditions.

The most accurate way to analyze whether EPA's draft two ppt isohaline standard exceeds the targeted level of protection is to compare the standard to historical flow conditions in February through June in order to ascertain when EPA's standards begin to consistently require additional outflow. Under a "perfect" set of standards that actually reflected late 1960's to early 1970's conditions, this type of analysis would yield a result in which the standards require no additional outflow until approximately the early 1970's. After that date, additional outflow would be required to offset water development that occurred since the early 1970's and resulted in the diversion of water from February through June. Of course, it is not possible to draft a "perfect" set of standards, but if this analysis shows that the draft standards consistently require additional outflow prior to the targeted period, the draft standards must have a bias toward a higher level of protection than the targeted period. Contra Costa Water District (CCWD) did this type of analysis for the period 1930 to 1991 and published it in a February, 1994 report titled "Report on Clean Water Act X2 Water Quality Standards". CCWD analyzed the historical water requirements of these draft standards a number of ways, and the water requirements of the draft two ppt isohaline standard, as proposed, are provided on Figure 1 and Table 1. Inspection of Table 1 shows that, excluding some wet year types, EPA's draft isohaline standard requires outflow in excess of historical levels for every year after 1949. Therefore, EPA's draft isohaline standard substantially exceeds the targeted level of protection.

The second way to analyze whether EPA has exceeded its targeted level of protection is to undertake regression analyses of the historical number of days the two ppt isohaline was downstream of the three locations versus the Sacramento River Index for the period 1964 to 1976 and compare the results to EPA's draft standards. The period 1964 to 1976 was selected because it brackets the targeted time period, and it includes one dry year (1964) and one critically dry year (1976). This comparison is provided in Figures 2 to 4. Inspection of these figures shows that EPA's draft standards far exceed the historical conditions in the targeted period. Both the regression lines and all of the individual data points lie well below EPA's draft standards in all but wet years.

The third way to determine whether EPA's draft isohaline standard exceeds the targeted level of protection is to compare the mean location of the two ppt isohaline from February through June in the targeted historical period with the calculated mean

position from the DWRSIM operations study used to estimate the water supply impacts of the draft standards. The mean location of the two ppt isohaline at the targeted historical period was calculated two ways. First, the mean location for each year type was calculated by averaging the mean locations that actually occurred from 1964 to 1976. Second, the 1975 historical level of protection for each year type was estimated using regression analyses of the historical data from 1930-1992. These analyses are provided on Figures 5 to 9. The comparison of the historical mean position with the calculated mean position is made in Table 2. (The regression analyses indicate that there is little or no time dependence to the data in wet and above normal year types, but there is a strong time dependence in the other year types. Therefore, Table 2 does not include the wet and above normal year type mean locations at the 1975 level of development. There likely would be a time dependence to the mean locations throughout the historical period of record if a more appropriate year type classification system were used rather than the 40-30-30 system. This issue is discussed in a subsequent comment.) The table shows that EPA's draft standards will move the two ppt isohaline farther downstream than the 1975 level for all of the year types which show time dependent relationships. The problem is particularly acute in critically dry years where EPA's draft standards far exceed the targeted level of protection.

This third way to determine whether EPA has exceeded its targeted level of protection is less accurate than the first two methods because the first two approaches rely exclusively on historical data, but the third approach compares historical data to a DWRSIM model output. DWR, the agency that both developed DWRSIM and is its principal user, has in the past cautioned the SWRCB not to compare historical data to DWRSIM model outputs. The following DWR statement from the draft D-1630 proceedings makes this point (Comments of the Department of Water Resources on State Water Resources Control Board Draft D-1630, page 3, February 16, 1993).

> "DWR has consistently pointed out that DWRSIM is most appropriately used to compare model runs under different criteria. It is not appropriate to compare a DWRSIM run with actual historical operations. A model run uses monthly flows and fixed assumptions (e.g., demand, Trinity operations, in-basin depletions, etc.) which in actuality varied over that period for which the operation study is run."

Nonetheless, all three methodologies give the same result.

EPA has substantially exceeded its targeted level of protection. EPA's draft standards, as proposed, will require hundreds of thousands more acre-feet of water than is justified by EPA's targeted level of protection.

The conclusion that EPA has exceeded its targeted level of protection is expected because of the methodology EPA used to derive the draft isohaline standard, which was to average the number of days the isohaline was at or downstream of the three locations, Port Chicago, Chipps Island and the confluence, from 1940 to 1975. This

methodology is certain to overestimate the number of days that the two ppt isohaline was downstream of the designated locations during the targeted period because a great deal of water development occurred between 1940 and 1975. For example, approximately 3.5 million additional acres of land was brought into agricultural production in these years (DWR Bulletin 160-87, page 9). In other words, the number of days the two ppt isohaline was downstream of the three locations has a strong time dependence. This conclusion is illustrated in Figures 10 to 12 in which the quadratic regressions for the number of days the isohaline is downstream of the three locations versus the Sacramento River Index are plotted for three periods between 1940 and 1975 (1940-1951, 1952-1963 and 1964-1976). This conclusion is also supported by Figures 7 to 9. DWR has also demonstrated this point by plotting the number of days at each of the three locations versus the time period 1930-1992 for each of the five year types (15 graphs). DWR is presenting its analysis to EPA in DWR's comments, and we will not repeat it here.

There are at least two alternative approaches for developing standards that more accurately estimate the number of days that the two ppt isohaline was downstream of the specified locations in the targeted period. The first approach is to use the regression analyses in Figures 2 to 4 to estimate the appropriate number of days at each location. This time period should reduce or eliminate the bias in EPA's approach caused by the long time period and the fact that all the years are on one side of the targeted period. The second approach is to use the DWR regression analyses cited in the previous paragraph, in which DWR plotted the number of days at each of the three locations versus the time period 1930-1992 for each of the five year types, to estimate the appropriate number of days at each of the three locations at the 1975 level of development. The results of these two analyses are provided in Table 3 along with EPA's draft standards. There are differences between the two analyses, but they both show that EPA's draft standards typically require one to two months more time at Port Chicago and Chipps Island, and consequently hundreds of thousands of acre-feet more water, than is justified by the conditions in the targeted period.

Finally, there is sufficient information available to estimate the approximate historical level at which EPA has established the isohaline standard. Figure 1 and Table 1 show that EPA's draft standards begin to consistently require water for all year types other than wet year types after 1949. Also, the regression analyses on Figures 10 and 11 show that the time period that best represents EPA's draft standards is 1952 to 1963. These observations lead to the conclusion that EPA's isohaline standard reproduces the February through June hydrology of the early 1950's.

Fall-Run Chinook Salmon Smolt Survival Standards

EPA's discussion regarding its fall-run Chinook salmon smolt standards is garbled. Detailed comments on this discussion and the standards are provided in a subsequent comment in this analysis. For the purposes of this comment, it is sufficient to note that EPA states that it is "relying primarily on the goal of restoring habitat conditions to

those existing in the late 1960's to early 1970's." EPA then proceeds to propose standards that have no apparent connection to this targeted level of protection. In summary, the calculated salmon smolt survival (mean of water year types) at the targeted level of protection (1964-1976) in the Sacramento and San Joaquin rivers is 0.30 and 0.21, respectively. EPA has proposed a mean survival on the Sacramento and San Joaquin rivers of 0.36 and 0.29, respectively.

Striped Bass Spawning Standard

As discussed above, in general EPA contends that the targeted level of protection for the draft standards is late 1960's to early 1970's conditions. This targeted level of protection does not appear to apply to the striped bass spawning standard. Instead EPA proposes a standard that is intended to "fully protect the historic spawning range of striped bass on the lower San Joaquin River." (The standard does not achieve this level of protection, as discussed in a subsequent comment.) For completeness, a review of historical salinity conditions on the San Joaquin River at Vernalis was undertaken to determine whether EPA's draft standard exceeds the targeted level of protection. Figure 13 shows the maximum monthly average EC in April or May at Vernalis from 1930 to 1992 for wet, above normal and below normal year types, and Figure 14 provides a linear regression analysis of the EC at Vernalis versus the San Joaquin River Index for the targeted period. These graphs show that EPA's standards far exceed the targeted level of protection in all but the wettest years, and for above normal and below normal year types, EPA's striped bass spawning standard is probably more reflective of the conditions of the late 1940's and early 1950's.

G. THE ISOHALINE STANDARDS ARE OUTFLOW STANDARDS

Comment: The two ppt isohaline standards are Delta outflow standards.

Discussion: EPA has gone to some length to draw a distinction between its isohaline standards and the corresponding outflow standard, but it is a distinction without a difference. In the Bay-Delta Estuary, the salinity gradient is established by the interaction of fresh water outflow with incoming saline tides. Delta outflow is a determinant of and the only practical way to regulate the salinity gradient. This basic hydrologic fact has been recognized for decades by everyone familiar with the hydrology of the Bay-Delta Estuary.

The fact that the isohaline standard is an outflow standard is illustrated both by the method EPA used to derive the standard and by the method EPA assumes the SWRCB will use to implement the standard. EPA's draft two ppt isohaline standards were developed by using the daily estimates of net Delta outflow from October 1, 1939 to September 30, 1975 to calculate the daily location of the two ppt isohaline, as described in Appendix II of the Federal Register notice. This calculation has only two variables: daily net Delta outflow and the initial location of the two ppt isohaline on October 1, 1939. The actual location of the two ppt isohaline on October 1, 1939 was not known

so EPA assumed it was located 75 kilometers upstream of the Golden Gate Bridge. Sensitivity analysis showed that by February 1 of the next year the calculated isohaline position was largely independent of this initial assumption. Therefore, the only relevant variable is net Delta outflow. In regard to implementation of the isohaline standards, the Federal Register notice states that "EPA expects that the State Board will develop an implementation plan for these Estuarine Habitat criteria by changing the volume and timing of water flows through the estuary" (59 FR 838). Increasing Delta outflow is the only means available to achieve the standard.

Considering the fact that EPA derived the standards by converting Delta outflow into salinity and EPA's expectation that the SWRCB will implement the standards by converting salinity into Delta outflow, EPA could have saved both itself and SWRCB staff substantial effort if EPA had simply proposed an outflow standard and eliminated all of the unnecessary intermediate calculations.

H. SMOLT SURVIVAL STANDARDS

Comment: The salmon smolt survival standards are combined export, flow and Delta Cross Channel gate operation standards.

Discussion: EPA has characterized its salmon smolt survival standards as the index values found in Table 4 of its draft rule. However, these index values cannot be directly measured, and there is no requirement that these index values actually be achieved. The criteria require that water project operations be consistent with the formulas used to calculate the index values. Therefore, the formulas specifying project operations in the Delta are the actual standards.

The variables in the two equations for the Sacramento River and the San Joaquin rivers are the year type indices, average water temperature at Freeport, combined CVP and SWP exports, Delta Cross Channel gate operation, proportion of flow through Georgiana Slough, and San Joaquin River flow at Stockton. There is no way to substantially control water temperature at Freeport or flow through Georgiana Slough. Therefore, the controllable factors in the equations are combined CVP and SWP exports, San Joaquin River flow and Delta Cross Channel gate operation.

The salmon smolt survival standards are, in short, a command to run the State's water projects a certain way to attain a projected level of fishery protection. EPA acknowledges this fact when it states that it "expects that the State Board would implement these criteria by making appropriate revisions to operational requirements included in water right permits issued by the State Board."

Figures 15 and 16 are provided to further illustrate this point. If EPA's draft standards are adopted, these graphs will become operational charts for the CVP and SWP. For example, when the Delta Cross Channel gates are closed and the target index is 0.4 on the Sacramento River, Figure 15 shows that the standard cannot be achieved when the

temperature is above approximately 64 degrees fahrenheit. Below this temperature, the project operators will measure the temperature at Freeport, locate this temperature on the horizontal axis of the graph, move vertically up the graph to the 0.4 index level, and then locate the allowable exports on the vertical axis. Figure 16 shows that a similar procedure will be used on the San Joaquin River.

I. THE BIOLOGICAL GOALS SHOULD BE STATED

Comment: EPA should state its biological goals in quantitative terms.

Discussion: The Federal Register notice does not identify EPA's biological goals in quantitative terms. Instead, EPA talks in generalities about the need to return to habitat conditions that existed in the late 1960's and early 1970's. Habitat involves a huge array of factors, not just the couple of factors for which EPA has proposed draft standards.

Identifying biological goals in quantitative terms is important for a number of reasons. First, it allows all the parties to closely scrutinize the nub of the issue. Second, it provides guidance to the State on what alternative standards are approvable. The Federal Register notice says that "it is EPA's longstanding policy that the federal regulations will be withdrawn if a state adopts and submits standards that in the Agency's judgement meet the requirements of the Act" (59 FR 813). A process to adopt alternative standards would be lengthy and resource intensive, and this effort could be wasted if goals are not clearly defined. Third, clear expression of the biological goals provides a check on the effectiveness of the draft standards. The Federal Register notice states that during triennial reviews "the state has the opportunity to adjust criteria that are shown to be over or under protective of the uses" (59 FR 842). Without clear expression of the biological goals there is no way to make such a showing. In D-1485, the SWRCB identified an average striped bass index of 79 as its biological goal. This goal was not achieved, but its clear expression provided a simple method for checking on the effectiveness of the standards.

In order to provide some clarity to the subject of biological goals, historical biological data for a number of species have been compiled and graphed (Figures 17 to 27). The predicted response of estuarine species to different regulatory conditions has also been computed and graphed on Figures 28 and 29. The estuarine species on Figures 28 and 29 are the ones for which predictive models have been developed and presented in the SWRCB water right hearings. The models have been developed using regression analyses, and they have limited predictive ability if the conditions under which they are applied differ significantly from those under which they were developed, but they are provided to illustrate possible effects of the draft standards. The exports and outflows used in the regression equations are obtained from a DWRSIM output at six MAF demand over 71 years of historical hydrology.

Figures 28 and 29 illustrate an additional and substantial reason why EPA should quantify its biological goals. There are only two estuarine species for which both historical abundance data are available in the targeted period and predictive models exist: longfin smelt and striped bass. Figures 28 and 29 show that the predicted biological response to the draft standards for these two species over the 70 years of modeled hydroloogy is far below the historical level of the targeted period. This difference is due in part to the fact that the late 1960s and early 1970s were wetter than normal. However, these figures show that while EPA has substantially exceeded the conditions of its targeted period for the parameters it has selected to regulate, average biological populations may not return to the levels of the targeted period. The estuarine species models indicate that all of the Federal proposals combined may achieve an approximate biological goal of stopping the decline of estuarine species. It may be possible to achieve this goal at substantially lower water cost.

In light of this result, it is particularly important for EPA to quantitatively define its biological goal and to clarify whether its biological goal is to stop the decline of estuarine species or to return populations to some historical level. If EPA's goal is to return estuarine species to their late 1960's to early 1970's population levels, EPA's proposal is seriously flawed.

J. OTHER ALTERNATIVES CAN PROVIDE EQUIVALENT PROTECTION FOR FISHERIES AT A SUBSTANTIALLY LOWER WATER COST

Comment: The combined Federal proposal provides approximately equivalent protection to the fishery resources of the Bay-Delta Estuary as would have been provided by draft D-1630, but the Federal proposal has a substantially higher water cost.

Discussion: In evaluating the effects of draft D-1630, EPA concludes in its Federal Register notice that draft D-1630 "meets neither the procedural nor the substantive requirements of the Clean Water Act" (59 FR 812). However, based on a comparison of the biological model results for the estuarine species analyzed in draft D-1630, there is little difference between the biological response to draft D-1630 and the combined federal proposals. Figures 30 and 31 provide the predicted biological response of estuarine species to draft D-1630 in the period 1984 to 1989, and are copied from the decision. (D-1630-P is the predicted response to the standards in the decision.) Table 4 provides the predicted salmon smolt survival in the Delta over 70 years of modeled hydrology under draft D-1630 conditions, and Tables 5 and 6 provide historical smolt survivals and EPA's proposed criteria. As is evident from inspection of these figures and tables, direct comparison of the model results is not possible because the models have changed. Additionally, the flows and exports used as input to these models were obtained from different DWRSIM outputs with different export demands. (EPA incorrectly requested DWRSIM be run at an export demand of six MAF while draft D-1630 was run at a demand of 7.1 MAF. The lower demand will decrease the water supply impacts and increase the biological benefits of EPA's draft standards in

comparison to model runs at the higher demand level of 7.1 MAF. This issue is discussed in a subsequent comment.)

The water supply impacts of draft D-1630 and the combined Federal proposals are substantially different. The projected water supply impacts of draft D-1630 at a 7.1 MAF demand in comparison to D-1485 over 70 years of modeled hydrology and the critically dry period would have been approximately 740 TAF and 650 TAF, respectively. The water supply impacts of the EPA and NMFS standards in comparison to D-1485 at a 7.1 MAF demand are 1.1 MAF over 71 years of modeled hydrology and 1.7 MAF in the critically dry period, assuming no buffer. (It is appropriate to compare the water supply impacts of the combined Federal proposals to the water supply impacts of draft D-1630 in this case because the NMFS standards are essentially a subset of the draft D-1630 standards.) The determination of water supply impacts of EPA's draft decision are discussed in detail in a subsequent comment. EPA has repeatedly asserted in meetings and public forums that it is committed to implementing the requirements of the Clean Water Act at the lowest possible water cost. If this assertion is true, EPA should adopt other requirements, assuming that EPA believes it has the authority to do so.

The proposed promulgation gives the appearance that EPA has given inadequate consideration to alternative standards in its proposal. The lack of discussion of alternatives is inappropriate in light of the fact that EPA is intending to take control of California's principal water supply and distribution system.

K. THE WATER SUPPLY IMPACT ANALYSIS SERIOUSLY UNDERESTIMATES THE WATER COSTS

Comment: EPA's water supply impact analysis of its draft standards is inappropriately optimistic.

Discussion: EPA's estimate of the water supply impact of its draft standards is based on optimism rather than responsible water supply analysis. EPA's water supply impact analysis is derived from a DWRSIM operations study. There are numerous assumptions incorporated into such a study, and the accuracy of the results are a subject of valid discussion, but EPA does not have control of the assumptions embedded in DWRSIM. There are, however, three principal assumptions incorporated into the water supply impact analysis over which EPA and the other federal agencies did have control and in each case EPA or the other federal agencies chose the most optimistic possible assumption from a water supply perspective. The assumptions are the demand level, the need for buffers to ensure compliance, and take limits under the Endangered Species Act.

EPA requested DWR to run the DWRSIM operations study at an export demand level of six MAF. This level of demand was probably selected because the maximum historical export level was approximately six MAF in 1989 and all requested deliveries

were provided in that year. The use of a historical demand level to estimate future demands is inappropriate because demands are increasing over time. It would be irresponsible of the State's water supply planners to assume that demands will not be increasing in the future. Without substantial augmentation of the State's water supply, the State is facing chronic water shortages. (California Water Plan Update, Draft DWR Bulletin 160-93). Fundamentally, the problem with EPA's estimate of the demand level is that it is using the demand of the late 1980's to estimate the demand of the late 1990's and early Twenty First Century even though the best available information indicates that demands are increasing over time.

The best available information indicates that the export demand level at the 1995 level of development is 7.1 MAF, as estimated by DWR. EPA's use of a lower demand level is arbitrary and unsubstantiated.

In actuality, the export demand level fluctuates based on the hydrologic conditions. In wet years, the demand level decreases and in dry years it increases. For ease of computation, DWRSIM is usually run at a single demand level. Over the life of these standards, the demand level in dry years will exceed 7.1 MAF. The present demand level in dry years is approximately 7.1 MAF. The demand level in wet years has not yet reached 7.1 MAF.

Regardless of the demand level used to estimate the water supply impacts of EPA's draft standards, once a set of standards is adopted, the CVP and SWP will try to deliver all the water requested by their customers within the constraints of the standards as long as the requests are consistent with contractual agreements. Therefore, the practical effect of EPA's selection of an inappropriately low demand level is to decrease the projected water supply impacts and increase the projected biological benefits of EPA's draft standards, which in turn reduces the economic effects of the standards. (The predicted biological response to the proposed standards are derived by application of export/outflow levels obtained from a DWRSIM operations study to regression equations, and the biological response improves as demands decrease.)

The second optimistic assumption EPA used to estimate the water supply impact of its draft standards is that no buffer would be needed to ensure consistent compliance with the draft two ppt isohaline standard. In a draft September 24, 1993 report to EPA titled "Preliminary Results of Analysis and Model Studies of Proposed EPA Standards" DWR informed EPA that in DWR's opinion there are a number of uncertainties in estimating water supply impacts that would result in operationally trying to meet EPA's proposed two ppt isohaline standard. A significant problem in DWR's opinion is that the equation used by EPA to translate outflow to the location of the isohaline has considerable variance, and a buffer is needed to ensure that the two ppt standard is actually achieved approximately 95 percent of the time. EPA's response to this issue is that EPA will be flexible in approving an implementation program for the standard, and EPA will not require a buffer even if this results in the standard not being consistently met. There are two problems with this response. First, if EPA intends for the

standard to be flexibly implemented, the flexibility should be incorporated into the standard, not promised at some future date. Second, even if EPA does provide the promised level of flexibility through an implementation program, a court could decide that the standards must be implemented fully. Fundamentally, the water supply impact should reflect the impact of the standard as written, not as promised at some future date.

The actual magnitude of a buffer required to consistently comply with EPA's draft standards is speculative. It is likely that some buffer will be required, and the only way to determine its magnitude will be through operational experience.

The third optimistic assumption does not deal with EPA standards, but rather standards adopted under the Endangered Species Act. The standards adopted by the USFWS and the NMFS include take limits for Delta Smelt and winter-run Chinook salmon, respectively. The federal agencies, in characterizing the water supply impacts of their combined sets of standards, assumed that the take limits would have no water supply impact. This assumption is incorrect. The take limits can have very substantial water supply impacts, and it is not possible to model these impacts. For example, in 1993 take limits accounted for reduced exports in the spring and early summer of over 800 TAF. The 800 TAF of reduced exports, however, did not translate directly into water supply impacts because 1993 was a wet year and the reductions could be made up, in part, later in the year. In a dry year, however, reductions in exports due to take limits could translate directly into water supply impacts.

The results of the DWRSIM operations studies under various regulatory conditions and at the two demand levels have been compiled in Tables 7 and 8. The contents of these tables are summarized in Figures 32 to 35. The purpose of these tables and figures is to provide a detailed description of the water supply impacts of the Federal proposals. EPA has summarized the water supply impacts of its draft decision at a six MAF demand level as 540 TAF on average and 1.1 MAF in the critical period. The best available information requires the use of the 7.1 MAF demand level, and using this demand level the water supply impacts increase to 780 TAF on average and remain approximately 1.1 MAF for the critical period. The additional water supply impacts caused by the take limits and the need for a buffer are speculative but could be substantial. EPA and the other Federal agencies should make an attempt to estimate these additional water supply impacts. The assumption that there are no water supply impacts due to these factors is inappropriate. Using the best information available, the effect of take limits in 1993, the take limits alone could increase the water supply impacts of the combined Federal proposals in drier years by 800 TAF from the numbers cited above.

Another factor that should be considered when characterizing water supply impacts is the effect of the standards on average reservoir storage levels. The DWRSIM operations studies showed that reservoir levels decreased significantly under EPA's

draft standards, but no mention of this water supply impact was included in the Federal Register notice.

When discussing the impacts of a change in standards, the focus is usually on the incremental change in water supply impacts caused by the change in standards. It is also important to look at the total quantity of exports available under the new conditions. Figure 33 shows that, assuming no buffer is required, take limits have no effect, and the export demand is 7.1 MAF, the available annual exports under the combined federal proposals will be 5.4 MAF on the average and 3.6 MAF on the average during a critical period. These numbers will actually be lower due to take limits and the need to include a buffer.

While the best available information requires the use of the 7.1 MAF demand level to characterize water supply impacts, in order to minimize confusion, the output from the six MAF demand level DWRSIM operations study was used in the biological models to estimate the biological response to the draft standards. The use of this lower demand level will cause the biological benefits of EPA's draft standards to be overestimated.

L. SALINITY IS NOT THE PRINCIPAL CAUSE OF THE FISHERY DECLINES IN THE BAY-DELTA ESTUARY

Comment: The principal factors affecting fishery resources in the Bay-Delta Estuary are flow and diversions, not salinity.

Discussion: EPA has gone to substantial lengths in its Federal Register notice to characterize the cause of the estuarine fisheries problems in the Delta as the shift in the mean position of the two ppt isohaline a few kilometers upstream from February through June. (See Table 3 which estimates the mean location of the two ppt isohaline under different historical and regulatory conditions.) It is likely that EPA's focus on this issue is due to a belief that EPA has the authority to promulgate standards for salinity intrusion into the Bay-Delta Estuary but not flow.

Some of the major factors affecting fishery resources in the Bay-Delta Estuary are exports from the Delta and flows into, out of, and throughout the Delta. CDFG's assessment of the cause of the decline of Delta fisheries was summarized in the following statement from the SWRCB's hearing process (WRINT-DFG-8).

> "Most native fish species living within the brackish and freshwater portions of the Estuary exhibit a general pattern of increasing abundance in relation to the magnitude of Delta outflow during the winter and spring. The abundance of about 55 percent of the fish and large invertebrates using the Bay portion of the Estuary, however, does not change in relation to variations in freshwater flows. Most of the estuarine and anadromous fish species, however, are more abundant in wet than in dry years. In fact, as the current drought has progressed, the overall abundance of fish has

generally declined, particularly in San Pablo and Suisun bays. This suggests to DFG that increasing flows will have a positive effect on species abundance in the Delta, although DFG acknowledges that there may be viable, non flow related measures which when combined with flow measures may maximize abundance in the most efficient way.

"Superimposed on the effects of variations in water flows are the direct losses of fish entrained in water being diverted from the Estuary. A second effect of diversions is interference with fish migration and the use of the Delta as nursery habitat, due to changed flow patterns resulting from the CVP and SWP exporting water from the southern Delta, while most of their water supply comes from the Sacramento River.

"The result of these effects has been a widespread deterioration of fishery resources caused by water development and some other factors, as well."

The best scientific information supports a conclusion that flows and diversions are the causal factor for the decline of the fishery resource. High flows transport eggs and larvae outside the central Delta and the zone of influence of the export pumps. There is no evidence that the effects of the chemical characteristics of the water (salinity) have contributed to the fishery declines. EPA's discussion of the cause of the decline focusses on the chemical characteristics of the water. EPA states that,

"scientific evidence provides substantial support for the need for the proposed salinity criteria protecting the water quality necessary to sustain the ecological health of the estuary" (59 FR 816).

The estuarine species that EPA has identified as requiring low-salinity habitat are euryhaline[15]. No specific information is presented that these species require a specific salinity for survival or spawning with the exception of striped bass spawning for which a separate standard is proposed. The preference that some species exhibit for what EPA characterizes as low salinity habitat is actually an association with an area of high density of organisms, the entrapment zone. The entrapment zone is formed by the physical interaction of Delta outflow with incoming tides. Naturally, this area also has low salinities.

EPA also notes that good correlations exist between the salinity gradient and abundance of a number of species. These relationships were first developed using outflow, but because outflow establishes the salinity gradient, an outflow/abundance relationship can easily be transformed into an salinity/abundance relationship. The correlations were not improved by transforming outflow into salinity.

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[15] *"Euryhaline" means that the species are capable of tolerating a wide range of saltwater concentrations. American Heritage Dictionary, Second Edition, page 469.*

M. OUTFLOW IS THE MORE APPROPRIATE BASIS FOR A STANDARD IN THE WESTERN DELTA AND SUISUN MARSH

Comment: The Delta Outflow Index is a better parameter than the two ppt isohaline on which to base a standard in the western Delta and Suisun Marsh.

Discussion: EPA's choice of the two ppt isohaline as the most appropriate parameter on which to base a standard in Suisun Marsh is based on the report titled, "Managing Freshwater Discharge to the San Francisco Bay/Sacramento-San Joaquin Delta Estuary: The Scientific Basis for an Estuarine Standard". EPA has included all of the recommendations and conclusions of this report verbatim in the Federal Register notice. EPA notes that this report was agreed to by all parties who participated in a series of workshops with the exception of DWR, USBR, the SWRCB and the State Water Contractors. Significantly, the organizations that disagreed with the use of this unwieldy parameter as a standard are the ones that will be responsible for trying to make it work, if EPA is successful in requiring its implementation.

The report states that the factors that should be considered in selecting an index to manage and protect the Estuary are that the index "(1) can be measured accurately, easily and inexpensively; (2) has ecological significance; and (3) has meaning for nonspecialists." The report concludes that the salinity isohaline fulfills these factors better than the Delta Outflow Index. Presumably, the failing of the Delta Outflow Index is that it is a calculated index using flows, exports and depletions throughout the Delta. The problem with EPA's analysis is that it neglects consideration of the most important factor in managing the Estuary, specifically, the ability of the SWP and CVP to closely control the selected index. The projects have substantial experience controlling the Delta Outflow Index. The precise location of the salinity isohaline in Suisun Bay is largely outside the daily control of the projects. Suisun Bay is at sea level and is affected by the tidal action of the Pacific Ocean. Twice a day the Pacific Ocean tides cause water to move into and out of Suisun Bay and the Delta. The average tidal flow into and out of the Delta is 170,000 cfs. These tremendous tidal forces can change unpredictably with wind and barometric pressure. The salinity isohaline moves upstream and downstream many kilometers daily in response to these forces. Belatedly, EPA has apparently come to realize the problems with the isohaline standard, and it has suggested that the SWRCB implement the standard by translating the isohaline standard into its approximate Delta Outflow Index. It would be simpler to use the better parameter as a standard in the first place.

N. THE SALMON SMOLT SURVIVAL CRITERIA SHOULD BE REVISED

Comment: EPA's discussion on salmon smolt survival standards is garbled and contains many serious inaccuracies and shortcomings. Among the more serious concerns are: (A) the position of the Five Agency Chinook Salmon Committee is mischaracterized; (B) the logic in the development of the smolt survival index values is difficult to follow; (C) the smolt survival models are not sufficiently precise tools to use

as standards; (D) the availability of a scientific basis for setting temperature criteria to protect salmon migration is mischaracterized; (E) the results of studies on the effects of temperature on smolt survival are mischaracterized; (F) the benefits of the proposed standards are mischaracterized; (G) comparisons among Tables 2 through 4 in the Federal Register text are inappropriate because the index values were derived by different methods; and (H) standards derived by the method EPA is proposing will result in higher survivals than occurred in the targeted period because the mean is now established as the minimum.

Discussion: A brief, separate discussion is provided for each of the concerns expressed above.

(A) The Federal Register text states that

> "EPA is proposing the use of target values derived from the recommendations and analyses carried out by the Delta Team of the Five Agency Chinook Salmon Committee. This interagency group consists of representatives from the USFWS, California DFG, California DWR, NMFS, and USBR. Its reports (Five Agency Delta Salmon Team, 1991a, 1991b) represent a consensus on the most effective and feasible implementation measures to protect downstream migrant salmon smolts in the Delta" (page 824).

The Five Agency Chinook Salmon Committee never reached consensus, and the text is not consistent with the references cited. A memorandum from CDFG to the Five Agency Group dated May 22, 1992 indicates that the entire group was not in support of any one alternative, and some parties were not in agreement with the entire range of alternatives considered.

The text implies the Five Agency Chinook Salmon Committee references (1991a and 1991b) provide a set of effective and feasible implementation measures developed by consensus to protect downstream migrant salmon smolts in the Delta. This is not the case. The document referred to as 1991a, "Evaluation of the Feasibility of Protecting Downstream Migrant Chinook Salmon Smolts in the Sacramento River and San Joaquin River with Physical Facilities", evaluates physical facilities, structures and technologies, not operation alternatives, to achieve protection. The second document, 1991b, "Benefit/Cost Evaluation of Alternative Salmon Protective Measure in the Sacramento-San Joaquin Delta", evaluates the cost to the projects of five operational alternatives, but no recommendation is provided. These five early alternatives are not the same as Alternatives A-E presented later by the USFWS in WRINT-USFWS-7.

The information and alternatives developed by the USFWS were presented by USFWS alone to the SWRCB (WRINT-USFWS-7). WRINT-USFWS-7 provided five sets of operational alternatives for SWRCB consideration, but it did not

recommend a particular alternative. Alternative D from that document is the basis for the index values presented in Table 3. At no time did any of the Five Agency Chinook Salmon Teams submit either a draft or final document of any sort to the SWRCB as a consensus document or proposal for salmon protection. The one document that came close to that goal was the second draft of the Delta Salmon Team Scoping Report dated June 25, 1991, but it was never adopted by the Committee.

(B) The logic in the development of the smolt survival index values is difficult to understand. Examples of conflicting statements are as follows:

> Page 823: "In developing the goals or target index values for its proposal; EPA is relying primarily on the goal of restoring habitat conditions to those existing in the late 1960's and early 1970's as recommended in the Interagency Statement of Principles. Strict adherence to this recommendation would suggest using the index values associated with that historical period as the target index values."
>
> Page 824: "For a number of reasons, however, strict adherence to the late 1960's and early 1970 target is inappropriate."
>
> Page 824: "On the Sacramento River system, EPA believes salmon smolt migration will be protected if the long-term average survival over all water year types replicates the target historical period values."
>
> Page 824: "On the San Joaquin River system,....EPA is proposing index values that afford both better protection in drier years and overall index values that are higher than in the historical late 1960's to early 1970's period."
>
> Page 825: "EPA believes that these adjustments [of the Sacramento River survival indices] still provide protection consistent with the goal of restoring habitat conditions to those existing in the late 1960's to early 1970's..."
>
> Page 825: "The Sacramento River criteria provide overall protection at approximately the 1956-1970 historical level (.37 mean survival index). The San Joaquin River criteria provides (sic) better protection than the 1956-1970 historical level (.27 mean survival index)."

These statements are confusing. A clarification of the goal of the target index values would be helpful.

(C) The USFWS has never recommended the use of its salmon smolt survival indices as standards in the Bay-Delta Estuary. Instead, the USFWS has used the salmon

smolt survival model to estimate the effects of operational changes on smolt survival in order to develop recommendations for standards dealing with operational issues such as export levels, Delta Cross Channel gate operation and San Joaquin River flows. EPA's direct use of the models as standards is an inappropriate use of the models.

The models are not sufficiently precise tools to predict actual smolt survivals. The model calculations can result in biologically meaningless values such as less than zero and greater than one. Also, there can be a great deal of variability between predicted versus observed survival index values. Examples of these discrepancies can be found in the following references: 1) WRINT-USFWS-9, page 36, Table 9; and 2) USFWS, Abundance and Survival of Juvenile Chinook Salmon in the Sacramento-San Joaquin Estuary, 1990 Annual Progress Report, page 59, Table 18. The index values in these examples, both predicted and observed, were calculated by USFWS. Another example of biologically suspect results from the models can be seen on Table 6. This table shows that, using the DWRSIM output for EPA's standards as input to the San Joaquin River smolt survival models, the smolt survival models predict increased survival without a barrier at the head of Old River compared to with barrier conditions. EPA's standards assume that a barrier will be constructed, but the models EPA bases its standards on predict that this expensive project will decrease smolt survival. Given the discrepancies between the expected versus calculated and observed results of the models, additional verification is necessary.

The models estimate smolt survival using mean monthly data. The implementation of the smolt survival models is not addressed; however, without further guidance, one would assume a direct, daily application of the model. Shorter term application of the model might lead to highly variable results in smolt survival. If a shorter time-step application of the model is proposed, verification will be required.

(D) EPA states that "EPA has not developed a scientific basis for precise temperature criteria" (page 823), and consequently it is proposing the smolt survival criteria to protect the designated uses. This statement is not true. There is an abundance of literature available on suitable temperatures for migrating Chinook salmon. One such document is "Water Temperature Effects on Chinook Salmon (Oncorhynchus tshawytscha) with Emphasis on the Sacramento River", DWR, January, 1988 (WQCP-SWRCB-7). EPA has in the past recommended that the SWRCB adopt a 65 degree fahrenheit criterion, based on the available scientific evidence.

The issue here is not the lack of scientific information available to develop a suitable temperature criterion, but rather the difficulty in implementing such a criterion. EPA hired a consultant to examine this issue, and the consultant's report shows that the water projects cannot effectively control temperatures in the Delta without an inordinately large cost to the State's water supply ("Water

Temperature Control in the Sacramento-San Joaquin Bay/Delta: Toward a Reasonable Strategy", Biosystems Analysis, Inc., 1992, pages 5-2 and 5-4).

EPA should approve the temperature objective adopted by the SWRCB in its 1991 Water Quality Control Plan.

(E) The Federal Register notice states that "USFWS results from spring tagged smolt releases into the central Delta showed that mortality was approximately 2 1/2 times greater at 67o than at temperatures of 63o and 64o F". This statement was taken out of context and does not represent the overall mortality rate and temperature relationship in the Sacramento River. It was the result of one test or sample within one month of one year in one reach in the Sacramento River. It is possible when examining these isolated experiments, given the highly variable results, to find almost any result desired to fit a policy position. For example on page 15 of WRINT-USFWS-7, the same table from which this statement originated, smolts released at Ryde, where one would assume temperature plays the greatest role in smolt mortality, on April 6 at 64oF, did not survive as well as those released on April 27 at 67o F (survival index of 1.36 and 1.67, respectively).

The entire paragraph from which this statement was taken reads as follows: "In 1992, releases made at Ryde and into Georgiana Slough, showed preliminarily that the greatest difference in survival between the two groups was at the higher temperature (67oF), where mortality was 2 1/2 times greater than at temperatures of 64oF (Table 3). This infers that being diverted into the Central Delta especially during times of relatively high temperatures causes high mortality to migrating smolts (Table 3)." (WRINT-USFWS-7) The significant information from this Table is not the difference in survival of the various groups at different temperatures, but the difference in survival between the groups released at Ryde (downstream of Georgiana Slough) and in Georgiana Slough.

(F) The Federal Register notice states that "[T]he index can be used to determine whether Fish Migration and Cold Fresh Water Habitat uses are impaired in the Bay/Delta. When applied in criteria, the index measures and can control the condition of the resource at risk by directly assessing and limiting the loss of salmon smolts within the Delta due to a variety of impaired water quality conditions."

This statement is not true. The only water quality parameter included in the models is temperature and that parameter is not within reasonable operational control. The other parameters in the models are flows, exports and Delta Cross Channel gate operations.

The smolt survival index cannot directly assess or limit the loss of salmon smolts due to a variety of possible impaired water quality conditions beyond those

parameters addressed in the model. Water quality impairment such as agricultural runoff, toxins, etc., that may cause mortality to smolts are not controlled with these criteria. The model equations also do not address other physical conditions that may impair smolt survival such as numerous individual agricultural diversions and reverse flows.

The fish migration beneficial use designation means that the water body provides a migration route and temporary aquatic environment for anadromous or other fish species. The fish migration beneficial use applies to all runs of salmon, sturgeon, striped bass, etc. in the Sacramento and San Joaquin rivers. The salmon smolt survival model is applicable to fall-run Chinook salmon smolts only and provides no protection for other runs of Chinook salmon or other species of anadromous fish. In this regard, it is curious to note that of the four runs of salmon in the Sacramento River the only run that is not in substantial decline is the fall run, and this is the only run for which EPA is proposing specific protections.

The cold freshwater habitat beneficial use designation means that the water body provides a cold water habitat to sustain aquatic resources associated with a cold water environment. Only a temperature objective for both the Sacramento as well as the San Joaquin rivers would protect this beneficial use designation. The smolt survival index does not help insure suitable temperatures in either the Sacramento or the San Joaquin River. In the Sacramento River, measures such as closure of the gates and export reductions will be used to ameliorate conditions when water temperatures increase. In the San Joaquin River, the smolt model does not factor in water temperatures at all. Therefore, the model is not useful for determining whether cold water habitat is impaired, and it does nothing to insure or improve cold water habitat. The only way to protect the cold freshwater habitat beneficial use designation is to adopt a reasonable temperature objective in the Delta as the SWRCB did in its 1991 Water Quality Control Plan.

(G) Comparison of the index values among Tables 2, 3 and 4 in the Federal Register text is inappropriate because different temperature data bases, water year types and equations are used to derive the values in the tables. Appropriate comparisons are provided in Table 6.

Temperatures are a significant factor in the calculation of the Sacramento River smolt survival index. The estimated historic smolt survival indices in Table 2 of the Federal Register text were calculated using the mean monthly flows from the DAYFLOW database and the mean monthly temperatures both from the USGS gage at Freeport (1960-present) and from the Sacramento Water Treatment Plant in Sacramento (1939-1959). The survival index values in Tables 3 and 4 were calculated using the mean monthly flows from a DWRSIM output and a different temperature data base. The temperature data base is a combination of modeled and actual temperatures. The modeled data were calculated using USBR's temperature model (Rowell 1990) and the output from an old version of the

DWRSIM model called 75D (Kelley et al 1991) for water years 1922-1978. For the years from 1978 to 1992, the Freeport temperature data were used to complete the data base for the period from 1922-1992. The operation model 75D was run with a 1990 level of demand and 1990 level of development, whereas the model run used to generate the flow data for the values in Tables 3 and 4 utilized a 1995 level of development and 1989 level of demand. These different model runs provide significantly different hydrology. The application of modeled temperatures derived under one set of hydrology to a completely different set of hydrology is inappropriate.

There are at least a couple of solutions to this problem. First, use historic Freeport and Sacramento temperature data for the historic as well as modeled conditions. Second, the USBR temperature model could be run for the entire period 1922-1992 using the DWRSIM output for the draft standards. Because temperature is the most significant factor influencing the survival index for the Sacramento River, it is critical that thorough consideration is given to the temperatures used in the calculations. (See Table 6 of these comments for transitional calculations.)

An additional problem is that different equations were used to calculate the Sacramento River smolt survival index values in Table 2 of the Federal Register text and in Tables 3 and 4. In Table 2, Sacramento River index values are calculated using the old equations from WRINT-USFWS-7, whereas the values in Tables 3 and 4 are calculated using the new equations in WRINT-USFWS-9. The San Joaquin River equations did not change. The Sacramento River estimated historic index values in Table 2 should be recalculated using the new equations.

All of the survival values in the tables are sorted by water year type and then averaged over the five water year types. In Table 2, the annual survival indices for both the Sacramento and San Joaquin rivers are sorted by the D-1485 water year classification system. In Tables 3 and 4, the Sacramento and San Joaquin river indices are sorted by the 40-30-30 and 60-20-20 classification methods, respectively. As with the other differences, the methods of data manipulation should be consistent.

(H) EPA's use of mean survivals in some historical period to set minimum standards will result in a level of protection that exceeds the level that actually occurred in the targeted period. There is a great deal of variability in the calculated smolt survival indices even within year types. (See Table 9). The lower end of this variability is eliminated by making the mean the minimum enforceable standard.

This problem is especially acute on the Sacramento River where there are a number of unusually high indices in the targeted period of 1956-1970. Between the years 1930 and 1992, the four highest calculated survival indices, in order, occurred in 1967, 1956, 1963, and 1958. The use of the indices in these years

results in an unusually high mean index in the wet year category as well as the above normal year category because it is derived by interpolation. The calculated mean of the five water year categories is also, therefore, unusually high.

O. THE STRIPED BASS CRITERIA SHOULD BE RECONSIDERED BECAUSE OF INACCURACIES IN THE ANALYSIS

Comment: EPA's discussion on striped bass and the standards necessary for its protection contain several serious inaccuracies. Examples include: (A) EPA's interpretation of the striped bass spawning index (SBI) is incorrect; (B) EPA has incorrectly interpreted striped bass spawning data; and (C) EPA's statement on the level of protection afforded by its proposed San Joaquin River spawning standard is incorrect.

Discussion: A brief, separate discussion is provided for each of the concerns expressed above.

(A) EPA states that the SBI has fallen far short of the 1978 Water Quality Control Plan without project goal and that "...during the 1980's, the SBI averaged approximately 7.5, and in 1983 and 1985 reached all-time lows of 1.2 and 2.2" (59 FR 811). These numbers do not represent the entire SBI, but only the Delta portion of the SBI. The Suisun Bay portion of the SBI is mistakenly ignored by EPA. Likewise, the statement that the highest SBI obtained since the 1978 Delta Plan was adopted was in the 20's is also incorrect: 1982 was 48.6 and 1986 was 64.9. The actual annual SBI is plotted in Figure 26. The average SBI for the period 1980-1989 was 22.7; the actual SBI for 1983 was 15.4, and in 1985 it was 6.3. The use of 1983 as an example of declining resources is particularly ironic, in that the 15.4 value is not used in most CDFG analyses because there was so much outflow that the young bass were carried beyond the sampling stations. The fall midwater trawl indicated that there was a substantial number of young bass produced in 1983.

(B) EPA states that "[a]ccording to the California DFG, striped bass spawn successfully only in freshwater with electrical conductivities less than 0.44 millimhos per centimeter electroconductivity [EC]..." (59 FR 826). This statement has not been proven. As discussed in the 1991 Water Quality Control Plan for Salinity (pages 5-32 and 33), CDFG has observed some spawning in ECs of 1.5 mmhos/cm, and laboratory studies indicate that egg survival is not affected adversely in water with ECs up to 1.5 mmhos/cm. The overall success of spawning at these high ECs has not been determined.

(C) EPA states that its proposed striped bass spawning criteria,

"...will fully protect the historic spawning range of striped bass on the lower San Joaquin River, while reflecting the natural variability in salinity levels in different year types" (59 FR 827).

If the intent of the standard is, in fact, to fully protect striped bass spawning, the standard should apply in all years, not just wet, above normal and below normal years types. Additionally, the variability in salinity levels at Vernalis is not caused primarily by natural conditions but rather by the discharge of agricultural drainage to the San Joaquin River. It is also unclear why the standard should apply only up to Vernalis. Historical evidence indicates that spawning occurred upstream of Vernalis. Lastly, the standard does not protect the historic striped bass spawning range because the principal factor affecting the suitability of this area as spawning habitat is CVP and SWP exports.

P. IMPLEMENTATION OF THE STRIPED BASS STANDARDS SHOULD FOCUS ON NON POINT DISCHARGE REDUCTION

Comment: EPA's expectation that the SWRCB will implement the striped bass spawning standard by making revisions to operational requirements in water right permits is inconsistent with federal regulations.

Discussion: The Federal Register notice says that EPA expects the SWRCB to implement the striped bass criteria "by making appropriate revisions to operational requirements included in water right permits issued by the State Board" (59 FR 827). We interpret this statement to mean that EPA expects the SWRCB to order the release of high-quality water in excess of existing requirements to dilute water that has been polluted by agricultural drainage. This expectation is inconsistent with Federal regulations at 40 CFR 131.10(a) which state, in part, that "[I]n no case shall a state adopt waste transport or waste assimilation as a designated use for any waters of the United States." While EPA is not recommending a formal beneficial use designation of waste assimilation, that would be the practical effect of implementation of the recommendation.

If EPA chooses to adopt this standard, the SWRCB's program of implementation in the short term would probably focus on reduction of salt loading from agricultural drainage in April and May. In the long term, isolated discharge of agricultural drainage to a salt sink or to the ocean may be necessary.

Q. FURTHER DOCUMENTATION IS REQUIRED BEFORE MAKING CHANGES IN STANDARDS FOR SUISUN MARSH

Comment: Existing standards and ongoing studies provide appropriate protection for wetlands in Suisun Marsh.

Discussion: The wetlands in Suisun Bay fall into three general categories: interior managed wetlands within Suisun Marsh, wetlands along interior tidally-influenced channels within Suisun Marsh, and wetlands along the shores of Suisun Bay and Grizzly Bay. The largest amount of wetlands fall within the first two categories. The three categories are protected as brackish marsh by standards at Chipps Island and within Suisun Marsh channels. In 1987, the Suisun Marsh Preservation Agreement was signed by CDFG, DWR, USBR, and the Suisun Resource Conservation District. This agreement called for some relaxations of the D-1485 salinity standards within Suisun Marsh channels, but the SWRCB declined to make the changes without a detailed biological assessment of the impacts of the changes. This biological assessment is being done by CDFG under contract to DWR, and it will document the existing biological community in the three areas discussed above and their needs. Special emphasis is being placed on threatened and endangered species. It is likely that the existing biological community includes endangered species that require the existing salinity regime. The SWRCB stated in the 1991 Water Quality Control Plan for Salinity that it will consider adoption of new, appropriate water quality objectives for this area when the biological assessment is completed. Intervention by EPA to protect the wetlands of Suisun Marsh and Suisun Bay is unnecessary.

R. BASING THE LEVEL OF PROTECTION ON THE ASSUMPTION THAT THE MAJOR FISHERY DECLINES OCCURRED SINCE 1976 IS UNSUPPORTED

Comment: EPA's standards are based, in part, on the unsupported assertion that at about the mid 1970's "fish habitat and populations began to experience the most recent significant declines" (59 FR 820).

Discussion: EPA states its level of protection is based, in large part, on the assumption that the fishery populations took a significant decline around 1975. EPA goes so far as to say that "including the year 1976 is inappropriate, given that by 1976 the decline of certain aquatic resources was already apparent" (59 FR 840). EPA does not support this assumption with any data. Inspection of the plots of historical fishery abundances in Figures 17 to 27 can be used to qualitatively assess this assumption. Probably the most obvious feature of these graphs is the large variability of the data. However, for most species these graphs show a gradual decline in biological resources throughout the period of record, punctuated by significant declines in drought years and recoveries in wet years. The gradual decline probably began in the last century and is due to a myriad of factors throughout the watershed.

The decline that EPA is citing in 1976 is due to drought conditions. The years 1976 and 1977 constitute the worst recorded two year drought in California history. (Draft DWR Bulletin 160-93) In general, fishery resources rebounded when the drought ended. However, the extended drought of 1987 to 1992 caused significant damage to fishery resources.

S. THE USE OF AVERAGE FLOWS TO ESTABLISH THE TWO PPT ISOHALINE CRITERIA IS INAPPROPRIATE

Comment: EPA's two ppt isohaline standard inappropriately relies on reproducing average historical flow conditions even when such flows are not required to protect the beneficial use.

Discussion: There is tremendous variability in the amount and timing of flows through the Delta. EPA's draft standards will eliminate the low end of this variability by raising minimum outflows to average outflows in a particular year type. The elimination of this variability causes some strange results. For example, in 1970, a wet year, CCWD's draft analysis of actual hydrologic conditions in the Delta shows that an additional 2.88 MAF of water would have had to be released from storage to meet EPA's draft standards. Such large releases in a wet year are not necessary to protect beneficial uses, but that is the result of forcing the average conditions on all years.

T. EPA'S PROPOSAL TO "SPREAD THE BURDEN" OF MEETING THE PROPOSED CRITERIA IS NOT THE SAME CONCEPT USED BY THE SWRCB IN DRAFT WATER RIGHT DECISION 1630

Comment: EPA's proposal at 59 FR 822 that the SWRCB "spread the burden" of meeting the proposed criteria is not the same concept that the SWRCB proposed in draft Water Right Decision 1630. EPA's concept of allocating the water costs is unclear, but appears inconsistent with state law.

Discussion: At 59 FR 822, EPA urges the SWRCB to,

> "spread the burden across as broad a spectrum of water users as possible. The economic analysis prepared in conjunction with this proposal suggests that spreading the burden results in substantially lower costs than does imposing the burden on a particular geographic area or a narrowly defined group of water users. This is not just a matter of fairness. The federal agencies' preliminary discussions with water project managers indicated that increasing the pool of contributors substantially increases the operational flexibility of the water system, and thereby reduces the total impact of meeting the proposed criteria. For that reason, the federal agencies hope the State Board will continue the concept it adopted in its proposal for D-1630, and will allocate the burden of meeting these criteria across the broad range of the state's water users."

The referenced economic analysis suggests, at pages 3-6 and 3-7, that 80% of the water costs be applied to agriculture and 20 percent to urban water uses, and that a pro rata reduction for all Delta diverters would be appropriate. EPA implies that this is the same concept the SWRCB introduced in draft D-1630.

This is not the same concept. The concept in draft Water Right Decision 1630 for water cost allocation was to require parties to contribute according to the proportion of their adverse effects on the Bay-Delta Estuary. The draft D-1630 did not spread the burden by requiring the same responsibility per acre-foot from each of the affected water right holders. Instead, draft D-1630 sought to require the affected water rights each to mitigate the effects of their own diversions on the Estuary. Thus, a diversion that had a greater effect on the Estuary would have a greater mitigation responsibility, both to contribute water and to pay mitigation fees. Further, mitigation fees varied based on whether the water use was agricultural or urban. Affected water right holders who diverted the same water to storage and then from the Delta channels, entraining fish, had more responsibility than diverters who only diminished the natural flow. Within each tributary, the responsibilities among water right holders with the same effects were set proportionately and took into account the amounts of water needed from the tributary. However, the responsibility of a water right holder on one tributary would not necessarily be the same as the responsibility of a water right holder with the same size diversion on another tributary.

State law includes protections for the counties of origin (Water Code Sections 10505 and 10505.5) and for the watersheds of origin (Water Code Section 11460 et seq.). These protections are intended to ensure that exports of water from the protected areas (i.e., the watershed or the county of origin) do not deprive these areas of water they reasonably require. Draft D-1630 avoided interfering with these protections, but EPA's pro rata approach has the potential to interfere with these protections.

The EPA approach could result in inbasin water users being required to mitigate for the effects of exports from the Delta. For example, the 2 parts per thousand isohaline criteria could be viewed as requiring additional carriage water to carry organisms away from the effects of the export pumps. EPA should ask itself whether it would be fair to require upstream water users to provide extra water to make sure the export pumps do not entrain fish. Also, this approach could be seen as requiring the water users within the areas protected by the county of origin and watershed protection statutes to provide water so that water exports can be maintained or increased.

III. COMMENTS ON THE REGULATORY IMPACT ASSESSMENT (RIA)

Comment:: The validity of an analysis of this nature is based on the accuracy of its underlying assumptions. Unfortunately, the assumptions in this analysis are incorrect. The following incorrect, principal assumptions are found in this analysis.

Discussion:

1. The RIA assumes that the water supply impacts of the combined Federal proposals are 540 TAF on average and 1.1 MAF in the critically dry period. As discussed in a comment above, assuming there is no need for a buffer and the take limits are not

considered, the water supply impacts of EPA's draft standards alone will be 780 TAF on average and 1.1 MAF in the critically dry period. However, a buffer of some magnitude will be required. The water supply impacts of the combined Federal proposals will be substantially higher due to take limits. Based on experience in 1993, an assumption of additional water supply impacts of 800 TAF in drier years may be reasonable to account for the effects of take limits.

2. The RIA assumes that water supply reductions will be distributed between agricultural users and urban users at a relative amount of 80 percent and 20 percent. This assumption is unsupported.

3. The RIA assumes that water supply reductions will be dealt with through water marketing, water trading and crop shifts. The most likely near term response is actually increased ground water pumping.

Despite the fact that the analysis appears incorrect from the outset due to incorrect principal assumptions, a review of the analysis was undertaken. The following technical comments summarize the results of that review.

Technical Analysis of the RIA

Comment: The RIA is intended to answer the question, "what is the cost of meeting the proposed standards and how does this cost compare with the benefits resulting from the proposed standards?" The RIA uses sound analytical techniques but is incomplete.

Discussion:

The main problems are as follows:

1. The RIA does not give enough information for the reader to judge whether the scenarios presented are realistic. The impacts on agriculture depend on the extent to which growers can trade water and change their cropping patterns. Not enough information is given on the cropping patterns and water exchanges in the scenario suggested to be the most likely outcome of the standards.

   The impacts on urban water users depend on the extent to which utilities can substitute reclaimed water for Delta water and use water from a drought water bank. The RIA does not demonstrate convincingly that water will be available from these sources.

2. The discussion of local economic impacts is inadequate. Local impacts are of critical importance in a situation where growers and water utilities can trade water after allocations have been reduced. Transfers of water benefit growers receiving payment for their water, but impose costs on workers and other businesses in the area.

3. The time horizon of the analysis is not clear. Eventually, costs may be lower than indicated in the analysis, as water users make long-run adjustments. However, other developments, such as the trend toward higher-valued crops, may tend to increase costs.

4. Many of the benefits resulting from the proposed standards are not quantified. Improving conditions for nonconsumptive use of the Delta would appear to be an important reason for introducing the standards. Nonuse benefits, such as the value to the public of the continued existence of a healthy Delta would also appear to be an important issue. These benefits are mentioned in the RIA, but no attempt is made to compare their value with the cost of meeting the standards.

Specific comments on parts of the RIA are as follows:

Page 3-6. The analysis assumes that agricultural users absorb 80 percent of the water supply reductions and urban water utilities absorb the remaining 20 percent. This assumption affects the direct losses to water users, but has less importance to the overall economic impacts if water users can trade.

Some comparisons of the cutbacks with existing water use in the affected area would be welcome.

Page 3-7. The analysis assumes that growers do not substitute ground water for Delta water. In reality, growers are likely to respond to cutbacks by pumping. In the short run, this would reduce losses to growers and local economic impacts, since land could be kept in production. However, in some locations, more pumping would increase the rate of overdraft, increasing costs to all water users in the area, not only those absorbing the cutbacks of Delta water. In some cases, eventual impacts might be greater than if there were no increased pumping, because the benefits to growers substituting ground water for Delta water might eventually be exceeded by higher pumping costs imposed on neighboring water users.

Page 3-8. The scenarios do not consider new water development by water utilities. Although the cost of water from most proposed water projects is more than the recent sales price of water from the drought water bank, utility managers may prefer water development for reasons such as reliability.

Page 4-5. Scenario 1 assumes that supply reductions occur within the CVP service area. This seems to be an optimistic no-trading scenario, with no reduction in fruit acreage and only a small reduction in vegetable acreage. Why was this allocation of reductions chosen? Are there other no-trading scenarios with more severe impacts?

Scenario 3 seems to be overoptimistic in terms of the ability of growers to trade water.

The RIA states that the average impacts were estimated by applying an average water cutback, rather that estimating the impacts of the cutbacks required in various water years

and averaging these numbers. It is not clear what the effect of this approach is. The RIA states that it tends to overestimate impacts. However, since the least productive land is fallowed first, we would expect impacts to increase more than linearly with cutback level. In this case, average impacts averaged over all water years would exceed those of an average cutback.

Scenario 2 assumes transfers within the San Joaquin Valley and changes in cropping patterns. More information is needed to allow readers to judge if the cropping patterns implied by the analysis seem reasonable. Cropping patterns will also vary from year to year depending on water availability. The variation implied by the model should be discussed and compared with past fluctuations to assess whether it is realistic for growers to respond to varying water availability in this way.

Page 4-8. The terms "costs" and "impacts" are both used to mean drop in production value. This could be confusing, since there are many effects of the cutbacks which are measured in dollars

Page 4-9. More details on Scenario 2 are essential to judge the validity of the analysis.

Page 4-10. Some discussion is needed on the physical feasibility of water transfers.

The conclusion that the regulations would not affect food prices follows from the change in cropping patterns indicated by the agricultural model. A less favorable no-trading scenario could result in some increases in food prices.

Page 4-11. The change in producers' surplus is the correct measure of costs to growers. However, it needs to be made clearer exactly how it is defined. The discussion on this page implies that producers' surplus includes return to equipment, but page 4-13 implies that it does not.

The discussion of land values is confusing. It should be made clear whether the change in producers' surplus includes changes in the return to land.

Page 4-13. More discussion is needed on the effect of displacement of equipment. We recognize that idled equipment could be sold, that transaction costs would be a purchase from the region's economy, and that if prices of used equipment were depressed, the growers buying the equipment would benefit by the selling growers' losses. However, it is realistic to assume that there would be some losses because some equipment would be unused in dry years, some would be scrapped prematurely, and some would end up being underused.

More discussion on job losses resulting from the regulations is needed. Most of the areas that would be impacted by the regulations have weak economies, so it is likely that workers displaced by the reduction in acreage would be unemployed for many months. The effect of the fluctuation in cropping patterns on the labor market also should be analyzed.

Page 4-17. All of the urban scenarios hinge on the availability of water from new reclamation projects.

Page 4-20. Statements on this page and page 4-17 suggest that water use would be cut in dry years by pricing, but the table on page 4-25 states that consumer surplus losses would exceed out-of-pocket costs, implying that other methods would be used. In practice, water utilities would use some combination of rationing, pricing, and conservation measures. It should be made clear what is proposed.

Page 4-21. Consumer surplus is the correct measure of losses to consumers resulting from reduced water availability. However, not enough information is given to allow readers to judge whether the numbers presented give a realistic estimate of these losses.

The demand analysis is overly dependent on one study of water shortages. Given the lack of information, comparisons with other studies would be desirable.

It should be stated clearly how conservation fits into this analysis. Does conservation shift the demand for water, describe movement in response to price changes, or describe the movement from short-run to long-run demand?

Page 4-23. The secondary regional impacts of water transfers from agriculture are of critical importance and should be addressed.

Page 5-11. The retail sector should not be included in the benefits of increased salmon landings. Because the standards will not change total income in the state significantly, increased consumer spending on salmon must be offset by reductions in spending elsewhere in the economy. The only benefits are those to the salmon harvesting and salmon processing industries. Multipliers should be applied to these industries only. In the case of salmon marketed directly by producers, an adjustment to indirect benefits should be made to reflect reduced consumer spending elsewhere.

Page 5-19. The benefits of increased ocean fishing do not include those resulting from increased spending on fisheries. Although this spending must be offset by reduced consumer spending elsewhere in the economy, it benefits a particular industry in a particular region and should be identified.

Page 6-8. This analysis considers only backward linkages from the agricultural sector. Some assessment should be made of the effect of reduced acreage on industries processing agricultural products.

IV. RESPONSES TO SPECIFIC ISSUES FOR COMMENTERS TO ADDRESS

EPA has identified a number of specific issues for which they are requesting comments. The numbers of the following responses correspond to the numbers in the Federal Register notice. In several cases comments regarding the text of these issues are also provided.

1. The use of a smooth function rather than a step function as the basis for setting water quality criteria has been discussed for some time in California, and this general methodology is acceptable. However, EPA's specific proposal is poor.

   There are two major problems with EPA's proposal as drafted. First, the principal purpose of EPA's two ppt isohaline standards is to reproduce the February through June hydrology in the Delta. The 40-30-30 index is probably a poor index to use for this purpose because only a small portion of this index relates to rainfall that occurred in the period of interest. An example of this problem can be found in the wet year, 1970. Most of the rainfall occurred early in the water year; therefore, EPA's standards would have required huge releases of stored water because inadequate rainfall occurred from February through June. The best way to address this problem is to weight the hydrologic index more heavily toward the conditions in February through June. For example, the four rivers Sacramento Basin index from February through June could be used as the hydrologic index. Other indices that place the major emphasis on the February through June period may also be appropriate. Selection of the most appropriate index may take substantial effort.

   The second principal problem is that EPA has used average data from 1940 to 1975 to construct its smooth function. As discussed elsewhere in these comments, there is a strong time dependence in this data, and consequently, the use of the long time period to estimate the appropriate number of days at each location will provide a result that exceeds the targeted level of protection. There are two different ways to develop a more appropriate time period for constructing a smooth function. The first way is to use a shorter time period, for example, 1964-1976. Examples of a smooth function using this shorter time frame and the four rivers Sacramento Basin Index are provided in Figures 36 to 38. The correlation coefficients for Port Chicago and Chipps Island are quite good. The second way is to use a series of regression analyses to estimate the number of days at each location for the level of development in a single year. DWR is undertaking this analysis at the 1975 level of development, and the analysis is not repeated here.

   Regardless of how the smooth function is constructed, it is likely that the projects will occasionally encounter problems meeting the proposed standards because of lack of knowledge of future hydrology. Storms late in the year could push the required number of days at a certain location beyond the remaining period available to meet the standard. EPA should formulate the draft standard in such a way that this type of situation is not a violation.

Comments on Text of This Issue

a. EPA states that the smooth function would result in the same average number of days required for each year type. This statement is probably not true.

b. EPA states that it has discussed the use of the smooth function with the SWRCB and has thus far received a very positive response. No such discussions with the SWRCB Members have occurred. EPA has discussed this issue with SWRCB staff, and the response has been noncommittal.

c. EPA states that, fortunately, there is a very high correlation among the four points it uses to construct its smooth function. This high correlation is the result of eliminating most of the variability in the data by using averages within year types. If all of the data is used to develop the regressions instead of just the averages, the correlations are poor, as seen in Figures 39 to 41 (R squared of 0.57 at Port Chicago, 0.29 at Chipps Island, and 0.13 at the confluence). The poor correlations are largely due to the strong time dependence of the data.

2. Compliance with EPA's draft standards will require complex changes in CVP and SWP operation. The projects should be provided flexibility to help them achieve compliance with new standards. If the projects believe that increasing the averaging period of the standards to 28 days will increase their flexibility, this extension of the averaging period should be provided.

3. The draft isohaline standard, as proposed, will require the use of a substantial buffer to ensure consistent compliance. Anything less than a perfect level of compliance is unacceptable to some members of the public and will result in litigation, even if EPA is willing to be lenient. It is true that the SWRCB can develop an implementation program that would not require a buffer, but such an implementation program would probably be litigated as well. If, as stated in the Federal Register notice, "EPA believes that the use of these proposed confidence levels would require substantial additional outflows through the estuary without any corresponding ecological benefit to the Estuarine Habitat designated use" (59 FR 838), then EPA should redraft the standard to preclude the need for a confidence level. It is not appropriate for compliance with EPA's standards to require a waste of water.

4. The underlying assumption behind this issue is that EPA's standards do not provide adequate protection in wetter years because the mean position of the two ppt isohaline in wetter years under the draft standards is projected to be significantly upstream of the mean position that occurred in the targeted historical period. This assumption is illustrated in the table that accompanies the text. However, this assumption is incorrect and the table is misleading. The table does not provide the projected mean location of the two ppt isohaline under the draft standards; rather, the table lists the mean location of the two ppt isohaline assuming that the projects were able to operate precisely to the draft standards in all year types. This assumption is approximately correct in the driest years,

but it is decidedly incorrect in the wetter years. A more accurate representation of the situation can be found in Table 2. As discussed elsewhere in these comments, portions of Table 2 are constructed from a DWRSIM output, and their results should be viewed cautiously. There is no proposed project that could have a substantial effect on the mean locations over the next decade during wet and above normal year types. If some future development requires modification of the draft standard, this modification can be accomplished through the normal review process.

This issue illustrates a problem with EPA's approach to adopting standards. EPA's single-minded focus on reproducing some historical level of hydrology tends to obscure the principal objective of this effort which is to protect the beneficial uses. In the wettest years, the uses are protected. There is no need to require the release of stored water in these years because such releases will have only a very minor effect on the already very large flows moving through the Delta.

5. As discussed in detail in the comments above, the principal problem with EPA's use of the period 1940-1975 to develop its two ppt isohaline standard is that there is a strong time dependence to the data. Therefore, EPA overestimates both the number of days that the isohaline was downstream of the three locations and the mean location of the isohaline during the targeted period of the late 1960's to early 1970's.

   Assuming that EPA's goal is to achieve the 1960's to 1970's hydrology, there are two ways to deal with this problem. First, a regression analysis of the number of days at each of the three locations versus the Sacramento River Index using a shorter time period that actually brackets the targeted time period could be used to estimate the standard. The shorter time period will minimize the influence of the time dependency of the data, and bracketing the targeted period will eliminate the bias caused by having all years on one side of the targeted period. Second, regression analyses of the number of days at each of the three locations for each year type versus the Sacramento River Index using the entire historical record could be used to estimate the appropriate number of days at the 1975 level of development. The appropriate number of days at the three locations derived from these analyses are provided on Table 3. However, as we have stated elsewhere, the methodology employed by EPA in applying the Clean water Act to this situation, by developing Section 303 standards, is inappropriate.

   Comments on Text of This Issue

   a. EPA's assertion that there is not a strong time dependency to the data is wrong. This can be seen on Figures 7 to 12 and Figures 39 to 41. Figures 39 to 41 also show that the standards will be substantially different depending on the time period selected.

   b. EPA believes that it is inappropriate to include the year 1976 in the analysis because "by 1976 the decline of certain aquatic resources was already apparent." This statement is not pertinent because the decline of aquatic resources was apparent decades earlier and there is no basis for drawing a line at 1976. In any event if the

regressions of the number of days at each location versus the Sacramento River Index are recalculated using the period 1964 -1975 instead of 1964-1976, essentially the same lines are obtained, as can be seen by comparing Figures 2 to 4 with Figures 42 to 44.

6. There is no information available to analyze this question. The question proposes a number of changes to the draft standards, but there is no accompanying assessment of the biological benefits or water supply impacts.

7. This issue is discussed in a comment above.

8. This issue is discussed in a comment above. EPA provides no biological basis for the need to adopt standards in excess of existing controls to protect the Suisun Bay tidal marshes.

9. This issue illustrates a significant weakness in EPA's draft standards. The standards specify the number of days that the two ppt isohaline must be downstream of three locations from February through June, but no weight is given to the relative importance of higher flows within this period. The responsible parties may choose to meet the requirements early in the season, and water would not be available during periods of higher biological activity. This problem could be especially important in drier years when flow requirements are lower. The solution to this problem is to tie the flow requirements to biological monitoring, if possible, and require higher flows in the most critical period. This approach works both ways, however, high flow requirements should be eliminated if real-time monitoring indicates that they are not required.

   This issue also includes a request for comment on how implementation of these criteria will affect carryover storage requirements imposed on the projects for the benefit of the threatened winter-run Chinook salmon. The projects will increase reservoir drawdown in attempting to satisfy EPA's draft standards and to maximize deliveries to their customers. Consequently, carryover storage requirements may not be attainable in most years under EPA's draft standards.

   The impact of EPA's proposed criteria should be evaluated in light of endangered winter-run Chinook salmon and the duration and amount of cold water supplies required for their reproductive success in the Upper Sacramento River. It is extremely important for EPA to evaluate the reservoir carryover potential to support both their proposal as well as existing protective measures. It would serve little purpose to provide optimal habitat conditions in the Estuary during drought years at the risk of running out of water to sustain maintenance conditions upstream.

10. In discussed in a comment above, there is an abundance of literature available to set a temperature criterion for protection of migrating salmon.

11. We have insufficient information available to formulate a balance between the benefits and costs of a barrier at Georgiana Slough.

    Additional research is needed to determine the effectiveness of the sound barrier at the head of Georgiana Slough.

12. As discussed in a comment above, the salmon standards are actually the equations EPA identifies to define compliance. The USFWS has developed two separate equations for with and without barrier conditions, but EPA's standard includes only the with barrier equation. Therefore, the standard has to change if a barrier is not constructed.

    The assumption that smolt survival is improved if the barrier is installed is probably true, even though the US FWS smolt servival model indicates otherwise under some circumstances. If the barrier is not constructed, the only two variables available to improve smolt survival according to the models are flow in the lower San Joaquin River and exports. This, however, is not true.

    Other factors contribute to smolt mortality in the San Joaquin River during April and May such as water temperature, predation, in-Delta and upriver agricultural diversions and runoff. If water temperature in the lower Sacramento River affects smolt survival, then it follows that temperature affects smolt survival in the lower San Joaquin River. Even though it has not been possible to mathematically describe the relationship between these factors and smolt survival, it does not mean that these factors should be ignored or that efforts should not be made to control them. Efforts could be focused on the serious water quality issues affecting all aquatic resources in the lower San Joaquin River, and the survival of Chinook salmon smolts would no doubt be improved.

13. This question implies that there is a need to establish a minimum flow standard on the San Joaquin because the SWRCB may develop an implementation program that is consistent with the salmon migration standard but allows flows on the San Joaquin River that are inadequate to protect salmon migration. The SWRCB is unlikely to pursue such an unproductive course. Addition of another standard is not necessary.

14. A number of federal agencies are presently grappling with the definition of "doubling the production of anadromous fish species". Considering the time and effort that is going into the implementation of the CVPIA, EPA should rely upon what the agencies have developed.

    The USFWS has never attempted to link the Chinook salmon smolt models to changes in numbers of adult salmon over time. If EPA intends to make that connection, then its logic and bases should be thoroughly explained.

15. The CPOP models the entire life cycle of fall-run Chinook salmon in the Sacramento River; therefore if it is used alone, the lower San Joaquin River would not be addressed. EA Engineering, Science and Technology created a Chinook salmon model (EACH) for

the entire life cycle of Chinook salmon for the San Joaquin River system. For the segment describing smolt survival through the Delta, EA Engineering used the USFWS smolt survival models.

SWRCB staff has asked BioSystems, Analysis, Inc. in the past to run their CPOP model on different water operation scenarios and staff found that the analysis is both expensive and takes a long time to complete. If EPA is interested in the BioSystems' CPOP model, specifically the Delta smolt survival segment, then the practical application, appropriateness, usefulness and performance of the updated CPOP model should be presented for peer and agency review.

16. It seems likely that estuarine species are affected by estuarine conditions throughout the year. EPA's draft standards are likely to improve conditions in the Delta from February through June, but they may cause poorer conditions the rest of the year due to shifts both in releases from upstream reservoirs and in export periods. This problem can be addressed only by extending standards throughout the year. Focussing only on one time of the year is probably not the best answer for the Estuary. A more reasonable year-round approach would be more appropriate.

17. EPA should be concerned about the unforeseen environmental impacts of its draft standards because they may be substantial. EPA discusses in detail its perception of the potential benefits of its draft standards, but there is no discussion of their environmental costs. EPA's draft standards will result in reduced reservoir levels, hydropower benefit losses, higher instream water temperatures in the fall, higher instream flows in the fall, higher export rates in the fall, and higher risk of losing salinity and flow control in the Delta. These environmental costs need to be assessed against the environmental benefits of EPA's draft standards. The benefits of EPA's draft standards may not substantially exceed these environmental costs.

CCWD'S ANALYSIS OF ADDITIONAL OUTFLOW REQUIRED BETWEEN FEBRUARY 1 AND JUNE 30 TO MEET THE U.S. EPA'S X2 STANDARD

YEAR	YEAR TYPE	ADDITIONAL OUTFLOW (TAF)
1930	DRY	90
1931	CRITICAL	680
1932	DRY	50
1933	CRITICAL	0
1934	CRITICAL	340
1935	BELOW NORMAL	60
1936	BELOW NORMAL	40
1937	BELOW NORMAL	0
1938	WET	0
1939	DRY	580
1940	ABOVE NORMAL	0
1941	WET	0
1942	WET	0
1943	WET	0
1944	DRY	110
1945	BELOW NORMAL	20
1946	BELOW NORMAL	0
1947	DRY	250
1948	BELOW NORMAL	0
1949	DRY	0
1950	BELOW NORMAL	210
1951	ABOVE NORMAL	90
1952	WET	0
1953	WET	630
1954	ABOVE NORMAL	80
1955	DRY	170
1956	WET	0
1957	ABOVE NORMAL	1060
1958	WET	0
1959	BELOW NORMAL	1480
1960	DRY	430

YEAR	YEAR TYPE	ADDITIONAL OUTFLOW (TAF)
1961	DRY	470
1962	BELOW NORMAL	150
1963	WET	460
1964	DRY	920
1965	WET	410
1966	BELOW NORMAL	860
1967	WET	20
1968	BELOW NORMAL	1060
1969	WET	0
1970	WET	2880
1971	WET	790
1972	BELOW NORMAL	810
1973	ABOVE NORMAL	1220
1974	WET	410
1975	WET	300
1976	CRITICAL	1330
1977	CRITICAL	2470
1978	ABOVE NORMAL	90
1979	BELOW NORMAL	1130
1980	ABOVE NORMAL	370
1981	DRY	1090
1982	WET	0
1983	WET	0
1984	WET	2560
1985	DRY	650
1986	WET	1330
1987	DRY	920
1988	CRITICAL	1190
1989	DRY	1290
1990	CRITICAL	1330
1991	CRITICAL	1340

TABLE 1

Mean Position, in km, from the Golden Gate Bridge, of the Febuary through June 2 ppt Isohaline by Year Type

TABLE 2

Year Type	C	D	BN	AN	W
1940-75[1]	--	70.0	67.3	60.5	57.0
1964-76[1]	82.5	74.1	72.9	62.4	58.9
1975[2]	81.8	74.9	73.4	--	--
D1485 + EPA + NMFS[3]	76.4	73.5	69.7	63.5	58.6
D1485 + EPA[3]	76.6	73.9	70.1	63.5	58.6
Base Case (D1485)[3]	84.4	77.4	71.9	65.4	59.9

[1]Calculated by averaging historical positions by year type.

[2]Calculated from regression equations derived from 1930-1992 historical data. Wet and above normal year types are not included because there is little or no time dependence to the data.

[3]Mean Position calculated from DWRSIM study at 6 MAF demand over 71 years of historic hydrology.

Number of Days at the Three Locations of a Two PPT Isohaline Standard Derived by Different Methods

YEAR TYPE		WET	AN	BN	DRY	CRITICAL
Port Chicago	EPA[1]	133	105	78	33	0
	1964–76[2]	107	80	43	3	0
	1975[3]	118	96	25	8	0
Chipps Island	EPA[1]	148	144	119	116	90
	1964–76[2]	143	121	85	42	5
	1975[3]	140	142	89	68	30
Confluence	EPA[1]	150	150	150	150	150
	1964–76[2]	150	138	120	97	71
	1975[3]	150	150	150	150	150

[1]EPA draft standards--Calculated by averaging the number of days at each location from 1940–75.
[2]Calculated from midpoints of regression lines for above normal, below normal, and dry year types and by estimation from graphs for wet and critically dry year types using 1964–76 data.
[3]Calculated from regression analyses using historical record from 1930–92 at the 1975 level of development. Locations provided by George Barnes, DWR (Personal Communication).

TABLE 3

TABLE D

CALCULATED SMOLT SURVIVAL INDEX
FALL–RUN CHINOOK SALMON

SACRAMENTO RIVER

STANDARD / WY	WET	AN	BN	DRY	CRIT	MEAN
D–1485	0.39	0.27	0.24	0.20	0.19	0.27
1984–1989	0.23	–	–	0.21	0.16	0.20
D–1630–P	0.41	0.34	0.32	0.29	0.26	0.34
D–1630–T	0.41	0.34	0.32	0.29	0.26	0.34

SAN JOAQUIN RIVER WITH BARRIER

STANDARD / WY	WET	AN	BN	DRY	CRIT	MEAN
D–1485	0.35	0.21	0.17	0.15	0.17	0.23
D–1630–P	0.41	0.30	0.25	0.23	0.21	0.29
D–1630–T	0.41	0.30	0.25	0.23	0.21	0.29

SAN JOAQUIN RIVER WITHOUT BARRIER

STANDARD / WY	WET	AN	BN	DRY	CRIT	MEAN
D–1485	0.13	0.07	0.06	0.05	0.12	0.09
1984–1989	0.26	–	–	0.03	0.07	0.11
D–1630–P	0.24	0.23	0.21	0.22	0.19	0.22
D–1630–T	0.24	0.23	0.21	0.22	0.19	0.22

NOTES

* Survival index values are based on USFWS Delta Smolt Model (WRINT–USFWS–7).
* D–1485 conditions were estimated using DWRSIM with a 7.1 MAF demand.
* 1984–1989 conditions were taken from DAYFLOW; no barrier was in place from 1984–1989.
* D–1630–P and D–1630–T conditions were estimated using a modified DWRSIM output with a 7.1 MAF demand.
* Barrier located at the head of Upper Old River

U.S. FISH AND WILDLIFE SERVICE
FALL–RUN CHINOOK SALMON
SMOLT SURVIVAL INDEX

SACRAMENTO RIVER

DATABASE/WATER YR DAYFLOW	WET	ABOVE NORMAL	BELOW NORMAL	DRY	CRITICAL	MEAN OF WY TYPES
Proposed Rule, p.72	D–1485 Water Year Types, Old Equations and Historic Temperatures					
1956–1970 from Table 2	0.56	0.45#	0.35	0.26	0.20#	0.36
DAYFLOW	40–30–30 Water Year Types, New Equations and Historic Temperatures					
1956–1970	0.55	0.41*	0.29	0.34	0.20$	0.36
1964–1976	0.48	0.21*	0.26	0.30*	0.22*	0.30
1965–1985	0.47	0.33	0.27	0.21	0.24	0.30
DAYFLOW	40–30–30 Water Year Types, New Equations and Modeled Temperatures					
1956–1970	0.43	0.35*	0.24	0.28	0.20$	0.30
1964–1976	0.38	0.20*	0.20	0.28*	0.16*	0.25
1965–1985	0.39	0.33	0.22	0.21	0.21	0.27
EPA CRITERIA	0.45	0.38	0.36	0.32	0.29	0.36

SAN JOAQUIN RIVER WITH BARRIER

DATABASE/WATER YR	WET	ABOVE NORMAL	BELOW NORMAL	DRY	CRITICAL	MEAN OF WY TYPES
EPA CRITERIA	0.46	0.30	0.26	0.23	0.20	0.29

SAN JOAQUIN RIVER WITHOUT BARRIER

DATABASE/WATER YR DAYFLOW	WET	ABOVE NORMAL	BELOW NORMAL	DRY	CRITICAL	MEAN OF WY TYPES
Proposed Rule, p.72	D–1485 Water Year Types					
1956–1970 from Table 2	0.61	0.25#	0.18	0.17	0.15#	0.27
DAYFLOW	60–20–20 Water Year Types (Equations were not changed)					
1956–1970	0.70	0.34	0.28	0.19	0.25	0.35
1964–1976	0.44	0.18	0.20	0.12	0.11*	0.21
1965–1985	0.51	0.13	0.20	0.06	0.19	0.22

Water year type not represented, values are interpolated or extrapolated.
* Water year type represented only once, actual value.
$ Critical water year did not occur in this period, value is an extrapolated value taken from Table 2 in EPA's Proposed Rule.
o Smolt survival using DAYFLOW are calculated using historical mean monthly flows.
o EPA criteria are those in Proposed Rule on Bay/Delta Standards, January, 6 1994.
o Index values calculated using USFWS smolt survival models (WRINT–USFWS–7 and –9).

TABLE 5

U.S. FISH AND WILDLIFE SERVICE
FALL–RUN CHINOOK SALMON
SMOLT SURVIVAL INDEX

SACRAMENTO RIVER

STNDARDS/WATER YR		ABOVE	BELOW			MEAN OF
DWRSIM–HIST. TEMPS.	WET	NORMAL	NORMAL	DRY	CRITICAL	WY TYPES
D–1485	0.43	0.28	0.26	0.22	0.19	0.28
D–1485+NMFS	0.45	0.30	0.30	0.25	0.21	0.30
D–1485+EPA	0.51	0.39	0.39	0.34	0.29	0.38
D–1485+NMFS+EPA	0.51	0.39	0.39	0.33	0.29	0.38
MODELED TEMPS.						
D–1485	0.38	0.27	0.24	0.21	0.18	0.26
D–1485+NMFS	0.40	0.29	0.27	0.24	0.21	0.28
D–1485+EPA	0.45	0.38	0.36	0.32	0.28	0.36
D–1485+NMFS+EPA	0.45	0.38	0.36	0.32	0.28	0.36
EPA CRITERIA	0.45	0.38	0.36	0.32	0.29	0.36

SAN JOAQUIN RIVER
WITH BARRIER

STNDARDS/WATER YR		ABOVE	BELOW			MEAN OF
DWRSIM	WET	NORMAL	NORMAL	DRY	CRITICAL	WY TYPES
D–1485	0.39	0.18	0.16	0.16	0.16	0.21
D–1485+NMFS	0.39	0.19	0.19	0.19	0.19	0.23
D–1485+EPA	0.53	0.35	0.32	0.27	0.23	0.34
D–1485+NMFS+EPA	0.53	0.35	0.32	0.26	0.23	0.34
EPA CRITERIA	0.46	0.30	0.26	0.23	0.20	0.29

SAN JOAQUIN RIVER
WITHOUT BARRIER

STNDARDS/WATER YR		ABOVE	BELOW			MEAN OF
DWRSIM	WET	NORMAL	NORMAL	DRY	CRITICAL	WY TYPES
D–1485	0.18	0.05	0.05	0.07	0.09	0.09
D–1485+NMFS	0.18	0.08	0.09	0.15	0.17	0.13
D–1485+EPA	0.48	0.36	0.35	0.31	0.31	0.36
D–1485+NMFS+EPA	0.48	0.36	0.35	0.31	0.30	0.36

The higher without barrier values calculated from the DWRSIM runs are due to a crossing of the slopes of the model regression equations.

- o DWRSIM is DWR's operations model; model runs use 6.0 MAF demand.
- o EPA criteria are those in Proposed Rule on Bay/Delta Standards, January 6, 1994.
- o Index values calculated using USFWS smolt survival models (WRINT–USFWS–9).
- o Water year types based on 40–30–30 index for the Sacramento and 60–20–20 index for the San Joaquin River.

DWRSIM- MODELED WATER SUPPLY IMPACT OF NMFS AND/OR EPA STANDARDS COMPARED TO D-1485 AT 6.0 MAF DEMAND FOR WATER YEARS 1922-1992

		TOTAL EXPORTS FROM THE DELTA (TAF)					WATER SUPPLY REDUCTION FROM BASE (TAF) (2)				
YEAR	YEAR TYPE (1)	BASE (D-1485)	NMFS	EPA	NMFS + EPA	NMFS + EPA W/BUFFER	NMFS	EPA	NMFS + EPA	NMFS + EPA W/BUFFER (3)	% OF YEARS
1927	W	6,071	6,094	5,888	5,817	5,549	(23)	597	658	920	
1938	W	6,070	6,131	5,764	5,760	5,099	(61)	306	310	971	
1941	W	6,038	6,111	5,938	5,828	5,968	(72)	269	276	236	
1942	W	6,065	6,065	6,033	6,034	6,036	0	416	417	415	
1943	W	6,660	5,672	5,827	5,626	5,807	(12)	51	50	71	
1952	W	6,180	6,186	5,770	5,766	5,628	(6)	499	490	631	
1953	W	5,617	5,513	5,647	5,649	4,899	104	147	145	895	
1956	W	6,219	6,249	5,990	5,924	5,394	(30)	581	627	1,157	
1958	W	6,423	6,402	6,080	6,074	6,143	21	529	535	466	
1963	W	6,110	6,206	5,936	5,766	5,466	(96)	494	644	944	
1965	W	6,083	6,091	5,803	5,698	5,126	(8)	569	784	1,364	
1967	W	6,181	6,166	6,699	5,672	5,806	25	951	669	734	
1969	W	5,953	5,929	5,609	5,608	5,493	24	344	344	460	
1970	W	5,440	5,461	5,805	5,807	5,517	(21)	1	(1)	89	
1971	W	6,406	6,292	5,964	5,953	5,781	113	611	622	784	
1974	W	6,395	6,380	6,066	6,066	6,065	15	709	709	709	
1975	W	5,874	5,855	5,676	5,677	5,618	19	383	381	640	
1982	W	6,470	6,448	6,022	6,021	5,890	22	448	449	480	
1983	W	5,572	5,572	5,545	5,546	5,534	0	27	26	38	
1984	W	4,600	4,583	4,793	4,795	4,537	17	(94)	(96)	162	
1986	W	5,843	5,952	5,732	5,695	5,269	(9)	137	184	580	
Average W		5666	5668	5784	5767	5551	1	368	392	608	30%
1922	AN	6,070	6,013	5,734	5,740	5,426	57	646	643	955	
1928	AN	6,110	6,100	5,951	5,660	4,975	10	456	647	1,332	
1940	AN	6,132	6,042	5,742	5,694	5,635	90	506	557	816	
1951	AN	6,066	6,250	5,915	5,903	5,383	(152)	514	526	1,046	
1954	AN	5,960	6,096	5,939	5,872	4,783	(126)	33	100	1,178	
1957	AN	5,803	5,834	5,818	5,766	5,182	(31)	157	178	783	
1973	AN	5,899	5,890	5,943	6,039	6,031	9	197	102	109	
1978	AN	5,064	5,068	4,388	4,348	3,585	(4)	928	884	1,648	
1980	AN	5,843	5,823	5,651	5,636	5,578	20	374	390	348	
Average AN		9697	9911	5884	5882	5169	(14)	413	448	882	13%
1923	BN	6,017	6,024	5,997	5,920	5,050	(7)	59	238	1,008	
1926	BN	5,358	5,553	5,250	4,893	3,245	(195)	136	603	2,141	
1939	BN	6,080	6,970	5,733	5,693	4,090	110	499	599	2,142	
1937	BN	5,689	5,995	5,849	5,626	3,734	(16)	336	359	2,251	
1945	BN	6,179	6,167	6,026	5,990	5,919	12	261	298	667	
1946	BN	5,904	5,912	5,875	5,878	5,467	(9)	33	33	441	
1948	BN	6,192	6,667	5,740	4,630	4,556	525	459	1,569	1,643	
1950	BN	6,192	5,842	5,695	5,317	4,646	340	552	900	1,671	
1959	BN	5,871	5,884	5,581	5,578	4,991	(13)	114	116	734	
1962	BN	6,048	6,040	6,034	5,272	5,218	408	434	786	882	
1966	BN	5,880	5,881	5,984	5,895	5,412	(1)	184	283	738	
1968	BN	5,335	5,355	5,669	5,670	5,045	(20)	(315)	(316)	309	
1972	BN	5,689	5,991	5,950	5,674	5,434	(102)	(20)	256	498	
1979	BN	5,813	5,818	6,009	5,943	5,628	(5)	(84)	2	317	
Average BN		5899	5921	5767	5557	4857	73	180	400	1180	20%
1925	D	5,970	5,999	5,384	5,147	4,297	71	625	882	1,722	
1926	D	6,120	6,741	5,447	5,142	4,819	378	709	1,014	1,337	
1930	D	6,132	5,176	4,308	4,179	2,870	956	1,842	1,974	3,280	
1932	D	5,206	5,120	4,149	4,183	2,500	89	1,077	1,062	2,726	
1939	D	5,560	5,506	5,618	5,375	4,803	54	232	476	848	
1944	D	6,105	6,082	5,809	5,844	5,188	23	505	670	1,118	
1947	D	6,101	5,891	5,763	5,447	5,003	210	617	933	1,377	
1949	D	6,108	6,059	5,389	4,892	3,326	47	1,029	1,426	3,091	
1955	D	6,113	5,927	5,811	5,468	4,288	286	573	916	2,096	
1960	D	6,119	5,520	5,415	4,719	4,488	599	1,022	1,719	1,939	
1961	D	6,076	5,584	5,523	4,641	4,411	492	754	1,436	1,886	
1964	D	6,030	5,668	5,789	5,221	4,211	362	401	978	1,988	
1981	D	5,807	5,821	5,800	5,802	5,681	(14)	29	27	148	
1985	D	5,942	5,978	5,786	5,670	4,801	(36)	444	556	1,328	
1987	D	5,984	5,730	5,357	4,892	4,098	254	798	1,169	1,887	
1989	D	5,948	5,270	4,581	4,525	2,526	678	1,367	1,423	3,422	
Average D		5957	5680	5372	5079	4221	277	748	1041	1858	23%
1924	C	5,196	4,801	4,047	3,845	2,761	395	1,288	1,395	2,674	
1926	C	5,110	4,874	3,680	3,614	3,128	236	1,739	1,804	2,280	
1931	C	4,160	3,657	3,024	2,822	1,663	503	1,450	1,652	2,791	
1933	C	4,596	4,225	3,504	3,593	2,139	371	1,250	1,161	2,618	
1934	C	4,325	3,967	2,880	3,084	1,735	358	1,419	1,326	2,648	
1976	C	5,302	5,282	4,949	4,950	3,892	20	514	613	1,671	
1977	C	3,378	3,119	2,397	2,387	1,167	259	1,155	1,178	2,378	
1988	C	5,341	4,580	3,957	3,721	2,774	761	1,581	1,817	2,764	
1990	C	5,301	4,679	4,004	3,567	1,827	623	1,613	2,050	3,760	
1991	C	4,843	4,398	3,543	3,149	2,064	445	1,381	1,775	2,880	
1992	C	4,384	4,222	3,858	3,584	2,422	162	586	880	2,122	
Average C		4721	4346	3828	3479	2328	376	1280	1428	2982	15%
AVG.		5,748	5,615	5,342	5,199	4,868	134	564	707	1,338	
MAX.		6,470	6,448	6,080	6,074	6,143	956	1,842	2,050	3,760	
MIN.		3,378	3,119	2,397	2,387	1,167	(195)	(315)	(316)	38	

(1) D-1630 YEAR TYPES

(2) CALCULATED BY ADDING EXPORT REDUCTIONS FROM THE BASE CASE TO INCREASES IN SAN JOAQUIN RIVER FLOW FROM THE BASE CASE

(3) DWR'S ESTIMATE OF BUFFER NECESSARY TO ENSURE COMPLIANCE WITH STANDARD 95% OF THE TIME

TABLE 7

DWR5894- MODELED WATER SUPPLY IMPACT OF NMFS AND/OR EPA STANDARDS COMPARED TO D-1485 AT 7.1 MAF DEMAND FOR WATER YEARS 1922-1992

YEAR	YEAR TYPE (1)	TOTAL EXPORTS FROM THE DELTA (TAF) BASE (D-1485)	NMFS	EPA	NMFS + EPA	NMFS + EPA W/BUFFER	WATER SUPPLY REDUCTION FROM BASE (TAF) (2) NMFS	EPA	NMFS + EPA	NMFS + EPA W/BUFFER (3)	% OF YEARS
1927	W	6,727	6,644	6,032	6,038	6,060	83	1,068	1,094	1,060	
1938	W	6,578	6,583	6,257	6,161	6,663	(5)	(182)	(68)	232	
1940	W	6,726	6,563	6,791	6,553	6,194	163	889	1,227	1,688	
1941	W	6,786	6,821	6,092	6,060	6,033	(35)	687	899	1,059	
1942	W	7,033	7,021	6,661	6,618	6,516	12	781	923	923	
1943	W	6,959	6,968	6,595	6,548	6,606	(9)	597	844	1,384	
1951	W	7,049	6,789	6,120	5,893	5,259	260	749	976	1,610	
1952	W	6,823	6,865	6,243	6,215	5,628	(42)	566	583	1,170	
1953	W	6,892	6,707	6,621	6,325	5,603	185	550	846	1,568	
1956	W	6,790	6,582	6,040	5,891	5,671	208	855	904	1,224	
1958	W	7,040	7,158	6,350	6,299	5,939	(118)	788	937	1,200	
1963	W	6,841	6,782	6,305	6,272	5,881	48	1,030	1,063	1,354	
1965	W	6,748	6,619	5,980	5,891	5,321	129	1,129	1,222	1,782	
1967	W	6,720	6,671	6,185	6,085	6,049	49	699	789	808	
1969	W	6,599	6,558	6,111	6,100	5,971	41	488	488	628	
1970	W	6,723	6,592	6,287	6,288	5,336	131	702	704	1,654	
1971	W	7,147	6,826	6,209	6,118	4,980	321	1,104	1,185	2,333	
1973	W	6,884	6,707	6,288	6,168	5,250	277	1,081	1,174	2,090	
1974	W	7,068	7,162	6,412	6,417	5,781	(77)	1,058	1,051	1,707	
1979	W	5,261	5,278	5,132	5,223	4,336	(18)	355	284	1,181	
1980	W	6,582	6,729	6,388	6,388	5,175	(147)	340	348	1,581	
1982	W	6,957	6,811	6,218	6,181	6,110	146	729	784	835	
1983	W	6,857	6,888	6,408	6,449	6,391	(29)	249	208	266	
1984	W	5,695	5,677	5,631	5,631	5,282	18	185	185	734	
1986	W	6,889	6,586	6,049	5,817	5,479	103	719	951	1,292	
	Average W	6732	6683	6182	6120	5835	69	703	764	1249	33%
1922	AN	6,814	6,662	6,169	6,176	6,081	252	1,181	1,180	1,259	
1926	AN	6,109	5,921	4,500	4,548	4,658	488	1,856	1,910	1,799	
1928	AN	7,013	6,754	6,211	6,934	6,484	259	832	1,108	1,859	
1935	AN	5,881	5,907	5,312	4,484	3,122	(26)	688	1,718	3,078	
1936	AN	6,958	6,561	6,811	5,438	4,111	398	1,329	1,804	3,129	
1946	AN	6,799	6,543	6,275	6,093	5,910	255	847	929	1,012	
1948	AN	6,729	5,838	6,220	4,833	4,824	1,083	1,890	2,177	2,288	
1954	AN	7,186	7,002	6,827	6,287	6,385	184	876	1,118	2,017	
1976	AN	7,081	6,860	6,827	6,822	6,239	111	853	858	1,242	
	Average AN	6740	6407	5891	5913	5091	333	1161	1411	1991	12%
1923	BN	7,158	6,830	6,825	6,803	5,982	628	1,638	1,661	1,482	
1930	BN	6,250	4,997	4,607	4,216	2,809	1,253	1,774	2,165	3,472	
1932	BN	5,280	5,122	4,092	4,063	2,919	158	1,641	1,960	2,806	
1937	BN	6,530	6,382	5,838	5,895	3,918	148	918	862	2,838	
1945	BN	6,803	6,652	6,080	6,120	5,976	151	1,068	1,028	1,272	
1950	BN	6,617	5,872	5,726	5,298	5,348	746	1,119	1,649	1,469	
1957	BN	7,068	6,694	6,555	6,439	6,507	364	682	778	1,710	
1960	BN	6,528	5,678	5,803	4,991	4,870	850	770	1,582	2,003	
1962	BN	6,247	5,693	5,717	5,450	5,378	594	889	1,268	1,338	
1968	BN	7,037	6,629	6,438	6,143	5,884	408	399	694	1,153	
1969	BN	6,824	6,454	6,462	6,382	6,167	170	174	274	469	
1972	BN	7,098	6,476	6,447	6,076	5,267	622	732	1,103	1,922	
1989	BN	6,207	5,362	4,315	3,677	4,173	855	1,904	2,342	2,047	
	Average BN	6672	6048	5652	5449	4891	624	1084	1287	1856	17%
1926	D	6,370	5,710	5,472	5,210	5,350	660	1,233	1,495	1,348	
1944	D	6,721	6,302	6,095	5,832	5,081	419	902	1,185	1,809	
1947	D	6,550	5,888	5,828	5,606	4,801	662	738	1,057	1,781	
1949	D	6,480	6,059	5,392	5,326	4,522	421	1,440	1,507	2,319	
1955	D	6,678	5,915	5,847	5,347	4,608	761	1,200	1,700	2,441	
1959	D	6,768	6,385	6,478	6,181	5,787	384	309	600	1,014	
1961	D	6,264	5,552	5,631	5,239	4,761	712	667	1,059	1,537	
1964	D	6,775	5,859	6,029	5,385	4,852	1,116	808	1,562	1,968	
1978	D	7,051	6,892	6,476	6,356	5,777	159	804	924	1,802	
1981	D	6,810	6,511	6,379	6,097	5,440	299	588	869	1,926	
1985	D	6,919	6,507	6,035	5,974	5,379	409	973	1,134	1,630	
	Average D	6670	6129	5978	5877	5144	583	887	1167	1721	16%
1924	C	5,135	4,118	3,730	3,224	2,724	1,019	1,481	1,987	2,487	
1928	C	5,628	4,428	3,971	3,762	2,880	1,200	1,882	2,011	2,789	
1931	C	4,142	3,813	2,844	2,884	1,720	329	1,220	1,480	2,438	
1933	C	4,508	4,007	3,509	3,486	2,118	488	1,227	1,371	2,718	
1934	C	4,361	3,974	3,017	3,088	1,858	387	1,383	1,282	2,521	
1939	C	6,038	6,120	6,139	5,427	5,688	518	514	1,229	952	
1976	C	6,261	5,805	5,868	6,443	4,138	356	688	780	2,088	
1977	C	3,504	3,007	2,182	2,217	1,578	497	1,385	1,330	1,969	
1987	C	6,460	5,866	5,835	5,460	5,147	594	577	952	1,265	
1988	C	5,544	4,284	4,603	3,328	3,608	1,260	988	2,263	1,883	
1990	C	5,148	4,608	3,585	3,270	2,748	540	1,810	1,826	2,446	
1991	C	4,822	4,353	3,534	3,328	2,298	569	1,408	1,815	2,646	
1992	C	4,809	4,408	4,362	3,754	2,386	128	188	804	2,182	
	Average C	5143	4814	4087	3727	2889	623	1121	1481	2169	17%
AVG.		6,404	6,041	5,632	5,426	4,871	382	830	1,137	1,692	
MAX.		7,158	7,162	6,881	6,822	6,519	1,260	1,956	2,342	3,472	
MIN.		3,504	3,007	2,182	2,217	1,578	(147)	(182)	(68)	232	

(1) D-1485 WATER YEAR TYPES

(2) CALCULATED BY ADDING EXPORT REDUCTIONS FROM THE BASE CASE TO INCREASES IN SAN JOAQUIN RIVER FLOW FROM THE BASE CASE

(3) DWR'S ESTIMATE OF BUFFER NECESSARY TO ENSURE COMPLIANCE WITH STANDARD 66% OF THE TIME

TABLE 8

SMOLT SURVIVAL INDEX				
DAYFLOW				
Water Year	Year Type	Sacramento River	Year Type	San Joaquin without barrier
1930	D	0.44	C	0.47
1931	C	0.22	C	0.42
1932	D	0.38	AN	0.61
1933	C	0.41	D	0.44
1934	C	0.26	C	0.42
1935	BN	0.41	AN	0.76
1936	BN	0.39	AN	0.77
1937	BN	0.40	W	0.83
1938	W	0.49	W	0.97
1939	D	0.27	D	0.48
1940	AN	0.37	AN	0.78
1941	W	0.51	W	0.87
1942	W	0.57	W	0.77
1943	W	0.40	W	0.80
1944	D	0.36	BN	0.48
1945	BN	0.42	AN	0.69
1946	BN	0.41	AN	0.64
1947	D	0.26	D	0.45
1948	BN	0.49	BN	0.49
1949	D	0.35	BN	0.48
1950	BN	0.39	BN	0.53
1951	AN	0.39	AN	0.52
1952	W	0.54	W	0.95
1953	W	0.47	BN	0.35
1954	AN	0.33	BN	0.44
1955	D	0.33	D	0.26
1956	W	0.53	W	0.63
1957	AN	0.41	BN	0.31
1958	W	0.58	W	0.95
1959	BN	0.23	D	0.26
1960	D	0.42	C	0.26
1961	D	0.30	C	0.24
1962	BN	0.42	BN	0.29
1963	W	0.58	AN	0.49
1964	D	0.30	D	0.23
1965	W	0.52	W	0.64
1966	BN	0.29	BN	0.23
1967	W	0.71	W	0.73
1968	BN	0.23	D	0.09
1969	W	0.54	W	0.76
1970	W	0.29	AN	0.19
1971	W	0.52	BN	0.17
1972	BN	0.28	D	0.03
1973	AN	0.21	AN	0.17
1974	W	0.38	W	0.16
1975	W	0.40	W	0.13
1976	C	0.22	C	0.11
1977	C	0.27	C	0.28
1978	AN	0.38	W	0.68
1979	BN	0.27	AN	0.09
1980	AN	0.39	W	0.34
1981	D	0.22	D	0.10
1982	W	0.50	W	0.41
1983	W	0.57	W	0.98
1984	W	0.24	AN	0.07
1985	D	0.21	D	0.04
1986	W	0.26	W	0.38
1987	D	0.11	C	0.09
1988	C	0.22	C	0.03
1989	D	0.25	C	0.04
1990	C	0.22	C	0.13
1991	C	0.26	C	0.15
1992	C	0.15	C	0.18

SUMMARY						
SACRAMENTO RIVER						
	WET	AN	BN	D	C	MEAN
1956–1970	0.55	0.41*	0.29	0.34	0.20$	0.36
1964–1976	0.48	0.21	0.29	0.30*	0.22*	0.30
1965–1985	0.47	0.33	0.27	0.21	0.24	0.30
SAN JOAQUIN RIVER						
	WET	AN	BN	D	C	MEAN
1956–1970	0.70	0.34	0.28	0.19	0.25	0.35
1964–1976	0.44	0.18	0.20	0.12	0.11*	0.21
1965–1985	0.51	0.13	0.20	0.06	0.19	0.22

Sacramento River sorted by 40–30–30 water year classification.
San Joaquin River sorted by 60–20–20 water year classification.
* Water year type represented only once.
$ Critical water year did not occur in this period, value is an extrapolated value taken from Table 2 of EPA's Proposed Rule.

TABLE 9

CCWD'S ANALYSIS OF ADDITIONAL OUTFLOW REQUIRED BETWEEN FEB. 1 AND JUNE 30 TO MEET THE U.S. EPA'S X2 STANDARD

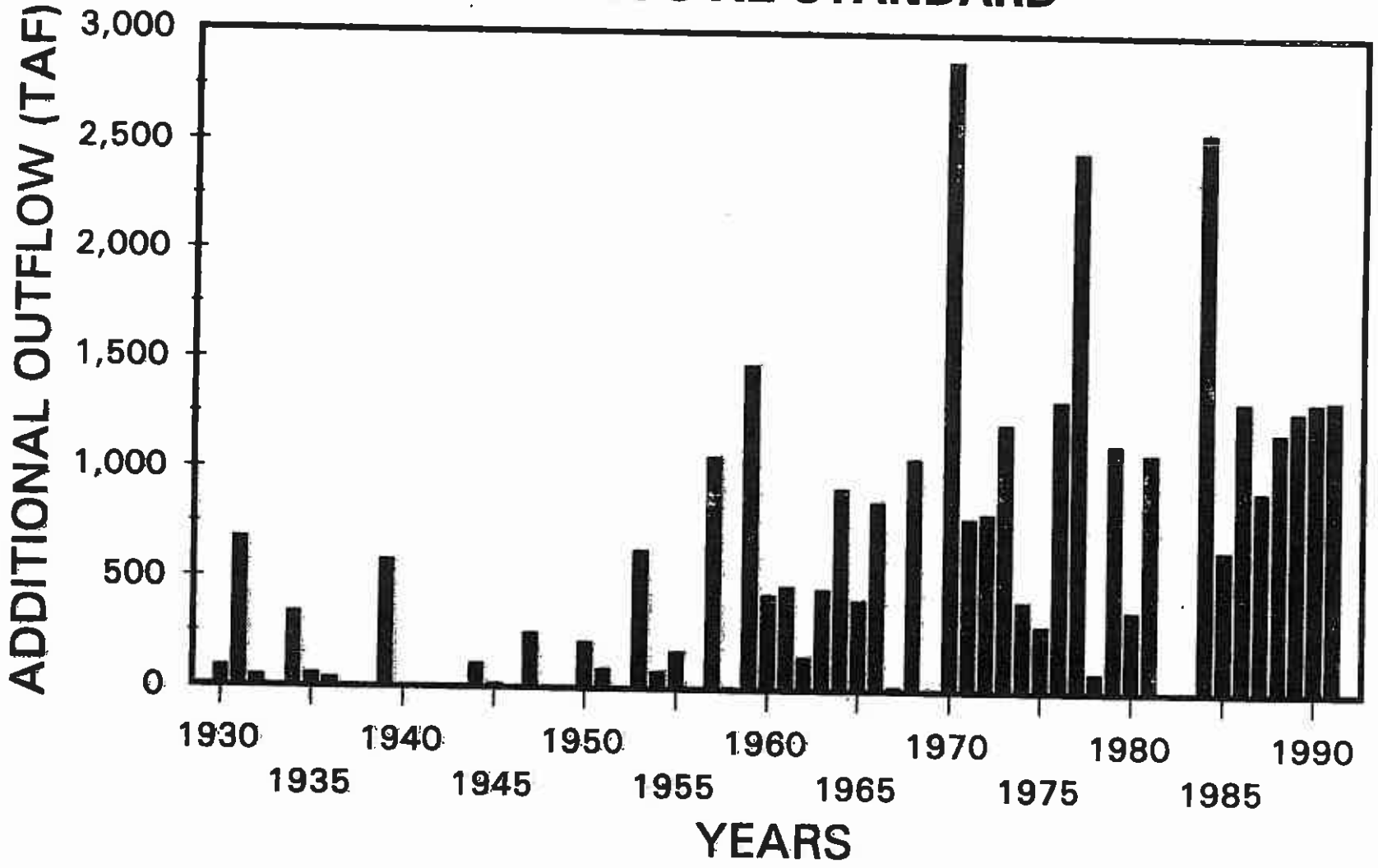
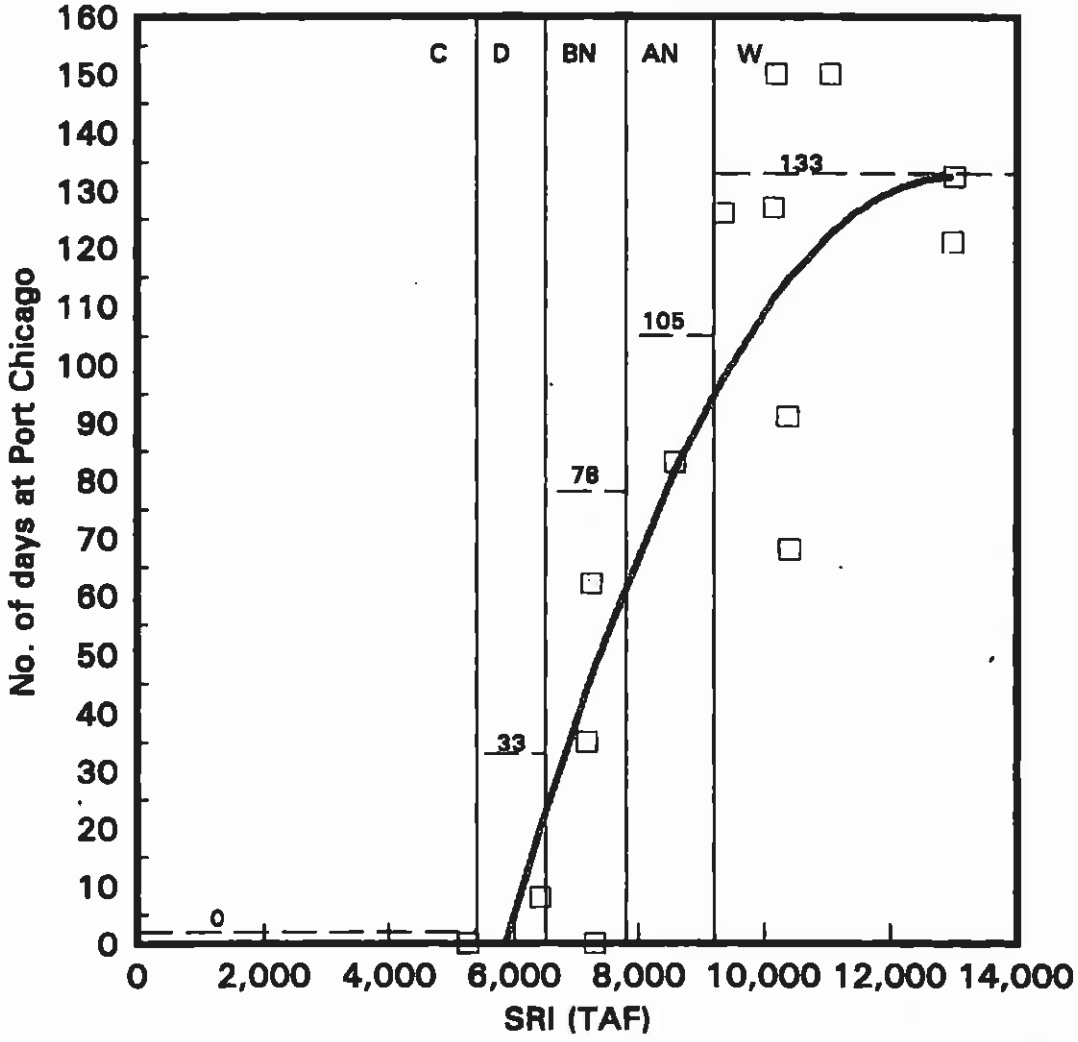


FIGURE 1

No. of days 2ppt is at or below Port Chicago from Feb through June (1964-76) Versus the Sacramento River Index (SRI)



Y=a*SRI**2+b*SRI+c
a=-2.5810E-06, b=0.06722, c=-305.2
R Square=0.742

Quadratic regression line for historic data
EPA Proposed Standard
Year Class Boundary
Actual No. of days per year for historic period

FIGURE 2

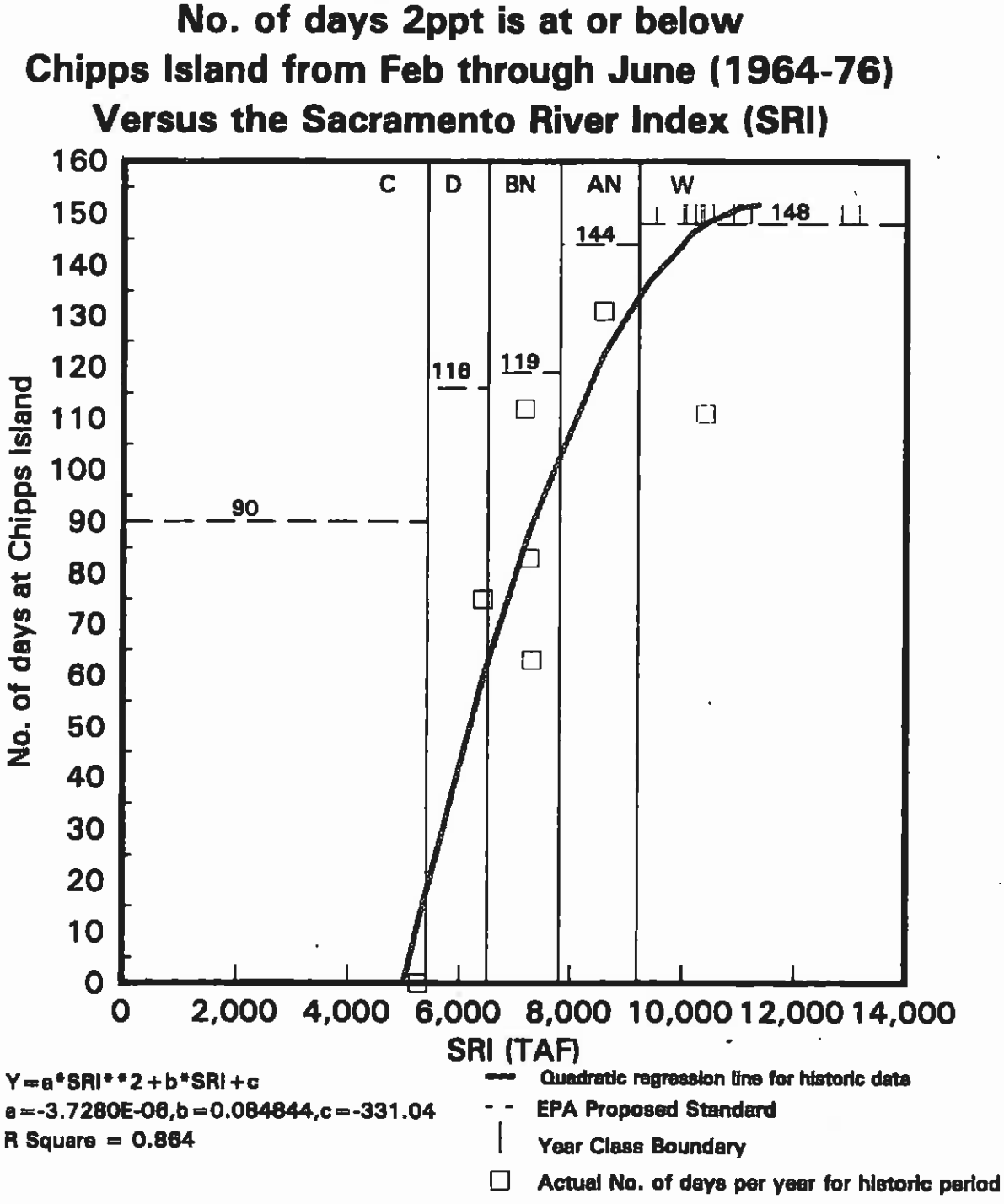

No. of days 2ppt is at or below
Chipps Island from Feb through June (1964-76)
Versus the Sacramento River Index (SRI)
No. of days at Chipps Island
SRI (TAF)
C
D
BN
AN
W
90
116
119
144
148
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
Y=a*SRI**2+b*SRI+c
a=-3.7280E-06,b=0.084844,c=-331.04
R Square = 0.864
Quadratic regression line for historic data
EPA Proposed Standard
Year Class Boundary
Actual No. of days per year for historic period

FIGURE 3

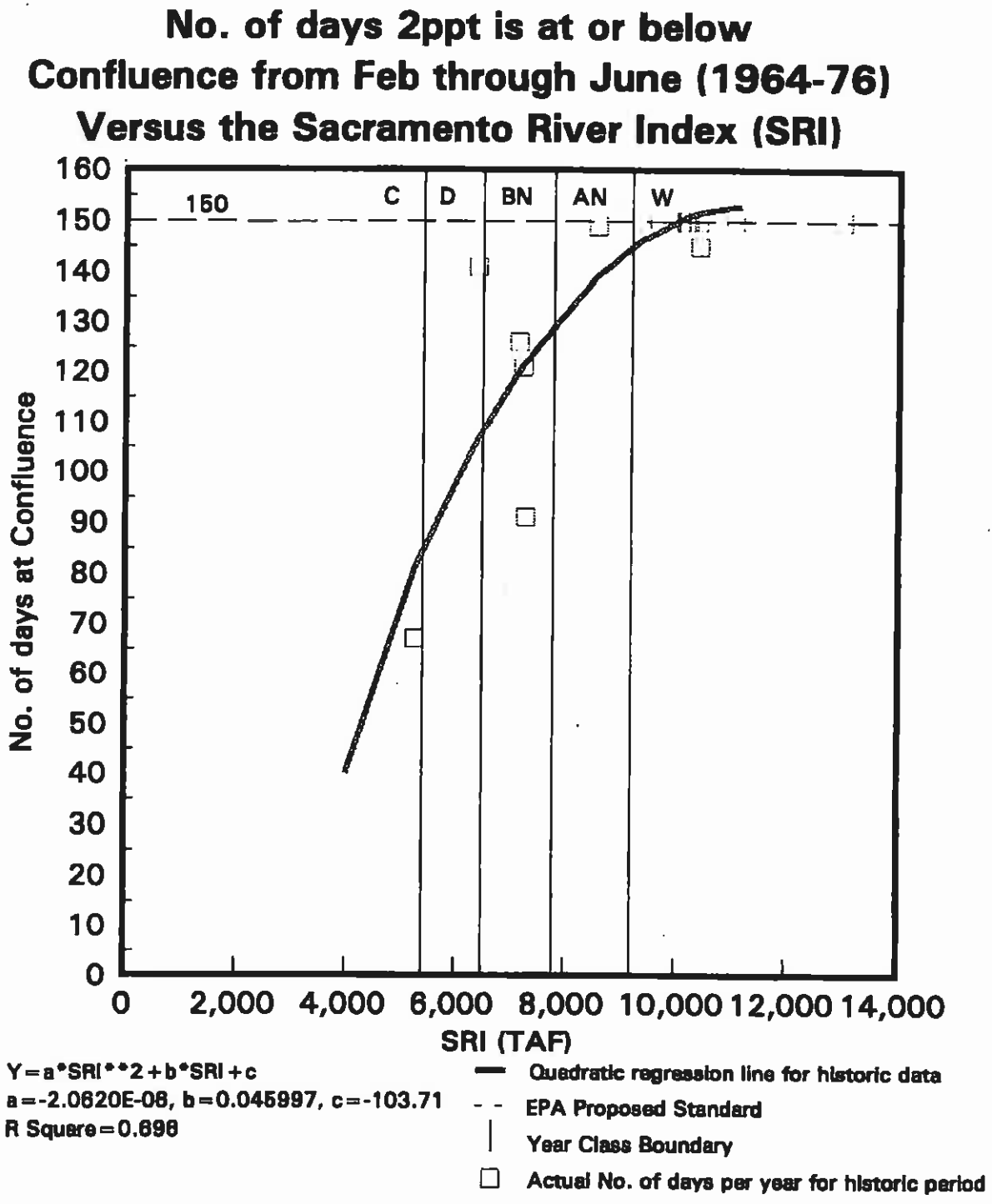
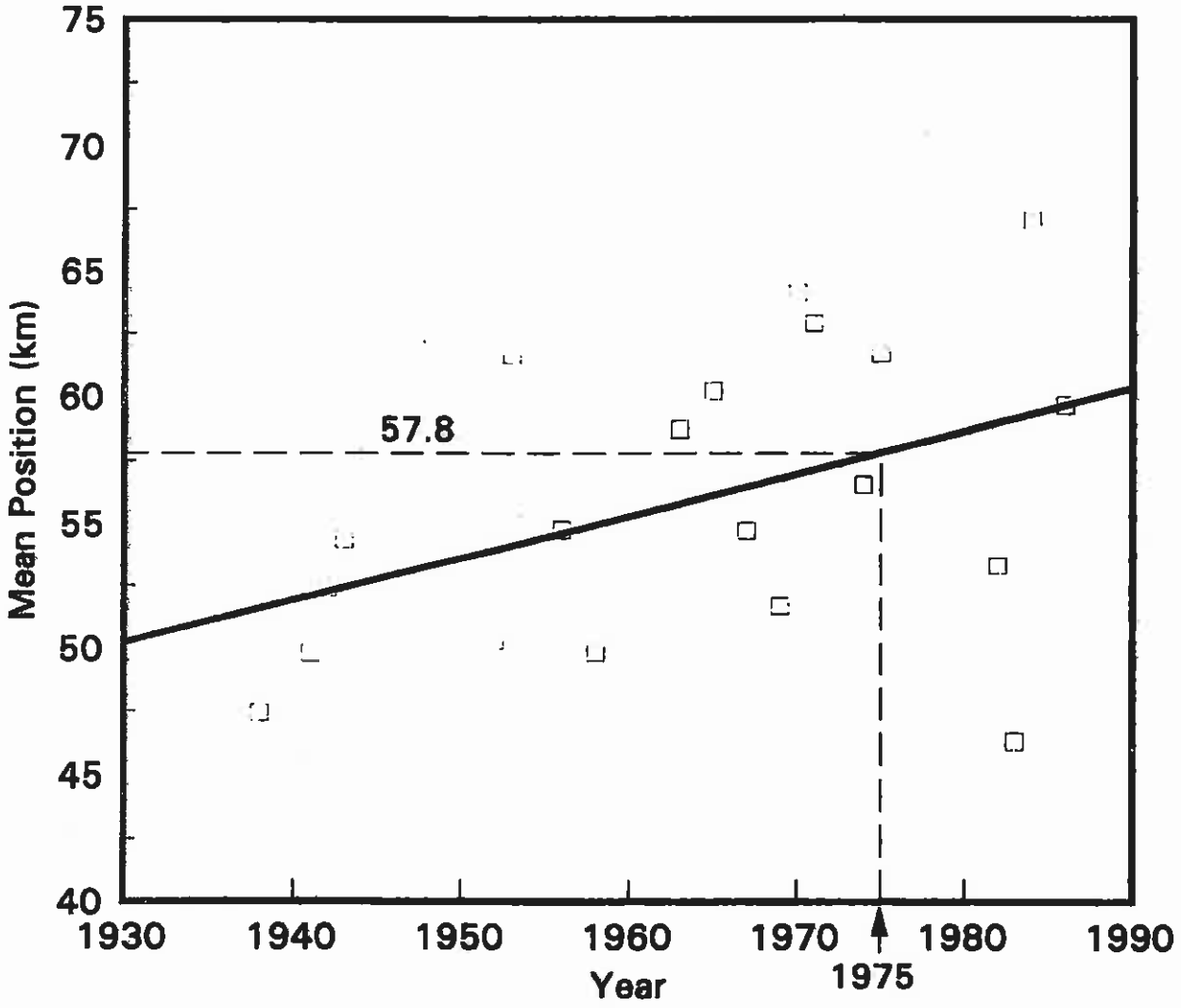

No. of days 2ppt is at or below
Confluence from Feb through June (1964-76)
Versus the Sacramento River Index (SRI)
No. of days at Confluence
SRI (TAF)
150
C
D
BN
AN
W
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
Y=a*SRI**2+b*SRI+c
a=-2.0620E-06, b=0.045997, c=-103.71
R Square=0.698
Quadratic regression line for historic data
EPA Proposed Standard
Year Class Boundary
Actual No. of days per year for historic period

FIGURE 4

Historical Mean Position, in km, from the Golden Gate Bridge of the February through June 2ppt Isohaline in Wet Years (40-30-30) from 1930-92



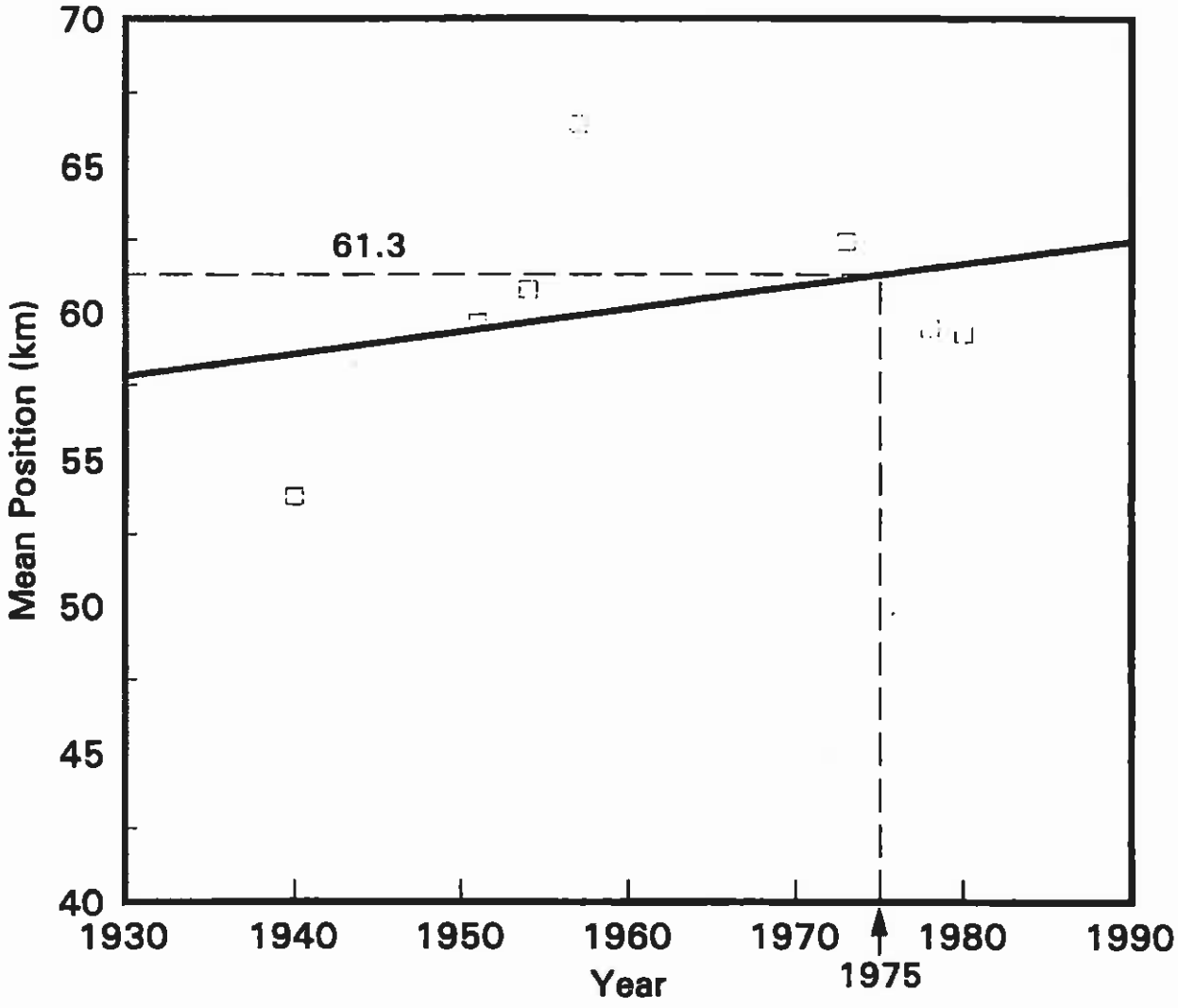
$R^2 = 0.1894$

$Y = mX + b$

$m = 0.1684$, $b = -274.79$

FIGURE 5

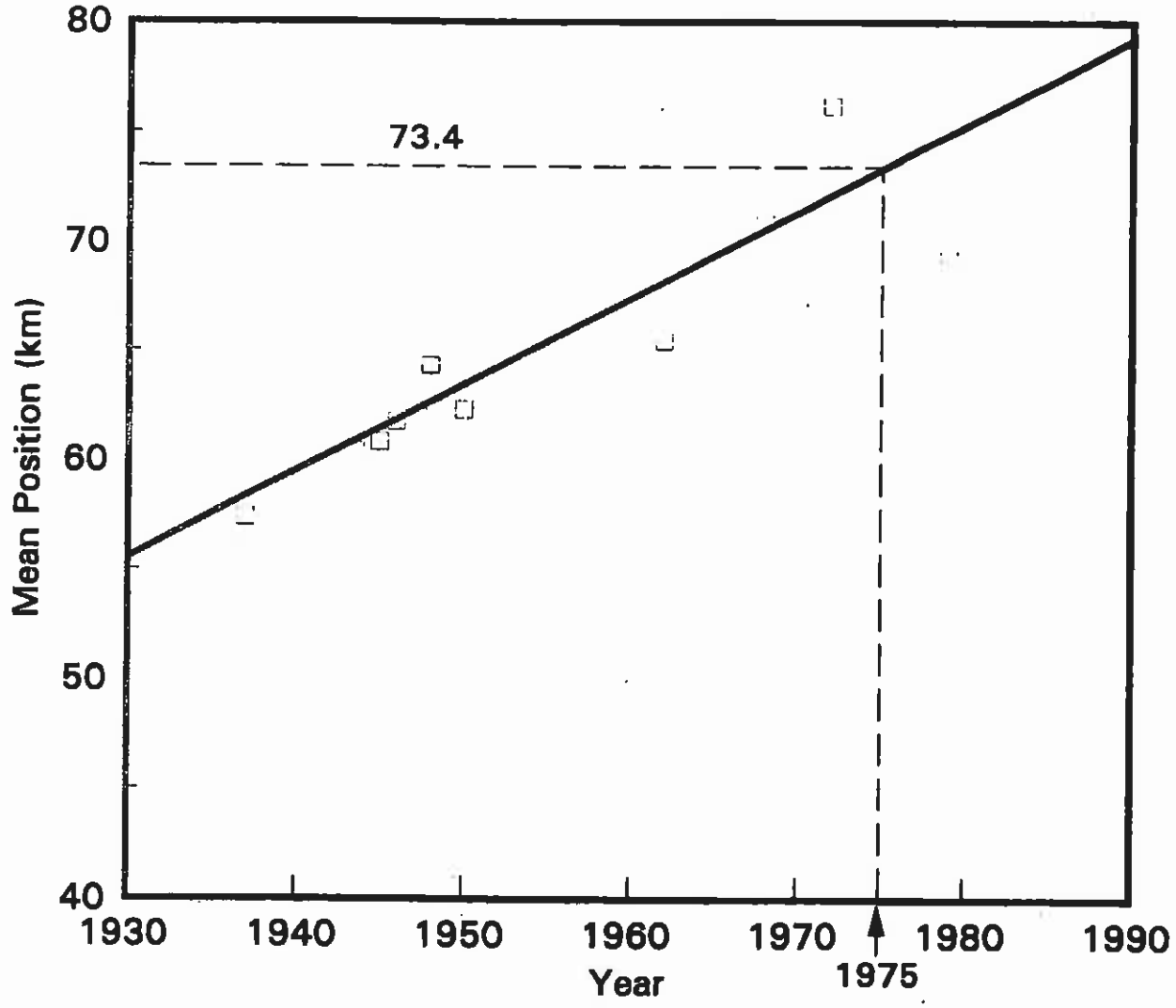
Historical Mean Position, in km, from the Golden Gate Bridge of the February through June 2ppt Isohaline in Above Normal Years (40-30-30) from 1930-92



$R^2 = 0.0951$
$Y = mX + b$
$m = 0.0770$, $b = -90.80$

FIGURE 6

Historical Mean Position, in km, from the Golden Gate Bridge of the February through June 2ppt Isohaline in Below Normal Years (40-30-30) from 1930-92



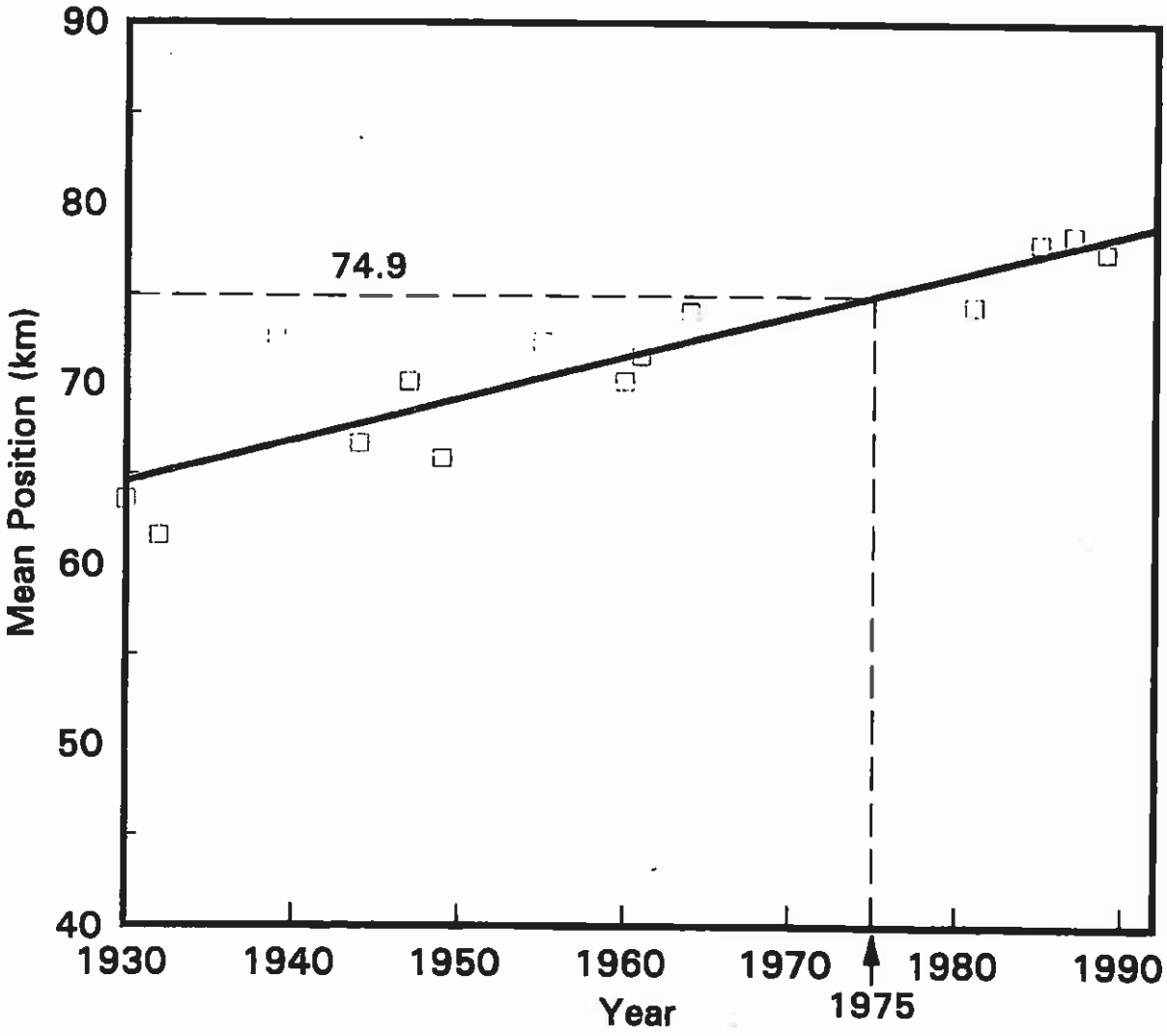
$R^2 = 0.8233$

$Y = mX + b$

$m = 0.3945$, $b = -705.78$

FIGURE 7

Historical Mean Position, in km, from the Golden Gate Bridge of the February through June 2ppt Isohaline in Dry Years (40-30-30) from 1930-92



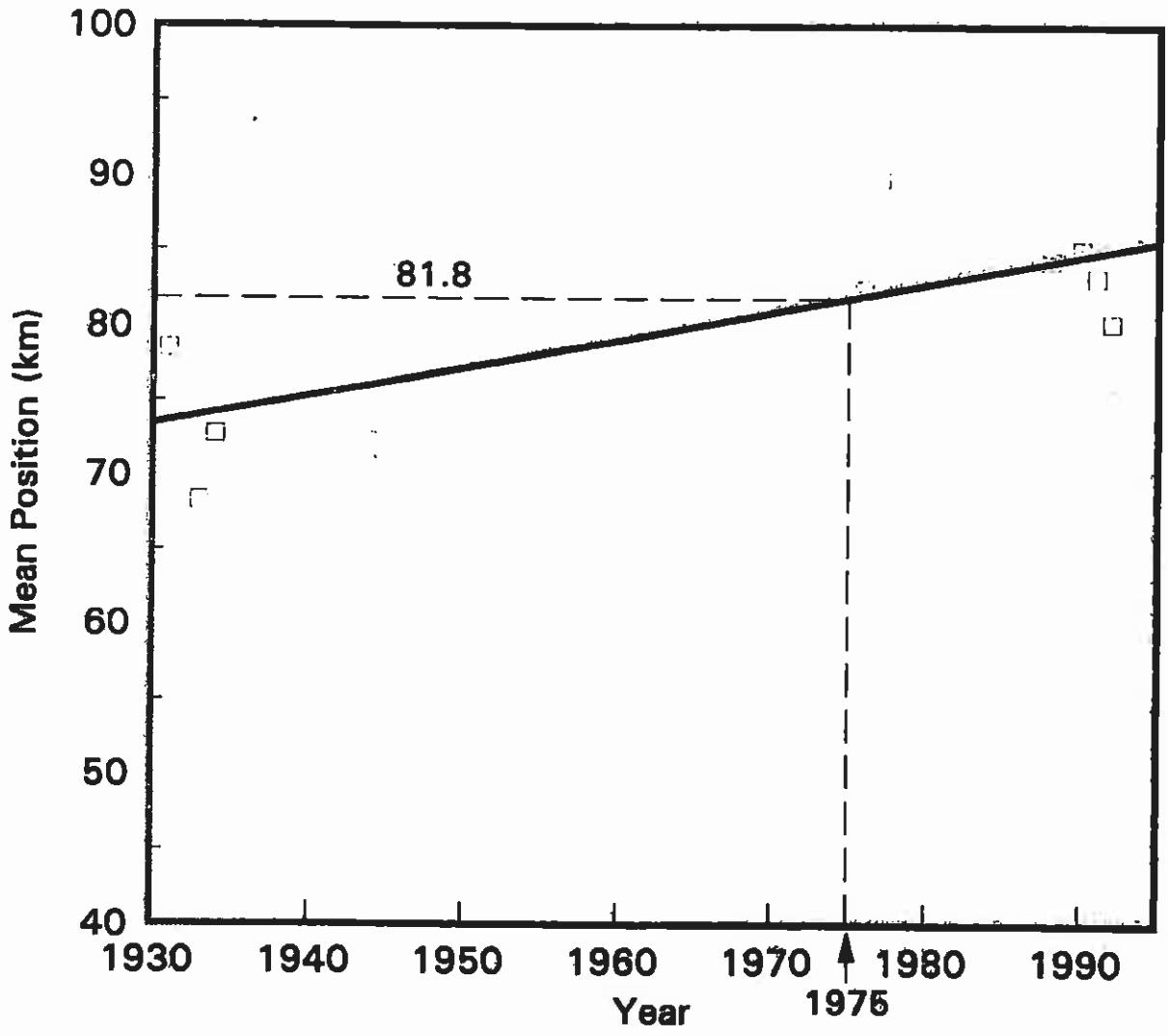
$R^2 = 0.7884$

$Y = mX + b$

$m = 0.2300$, $b = -379.35$

FIGURE 8

Historical Mean Position, in km, from the Golden Gate Bridge of the February through June 2ppt Isohaline in Critical Years (40-30-30) from 1930-92



$R^2 = 0.5919$

$Y = mX + b$

$m = 0.1865$, $b = -286.52$

FIGURE 9

No. of days 2ppt is at or below Port Chicago from Feb through June Versus the Sacramento River Index (SRI)

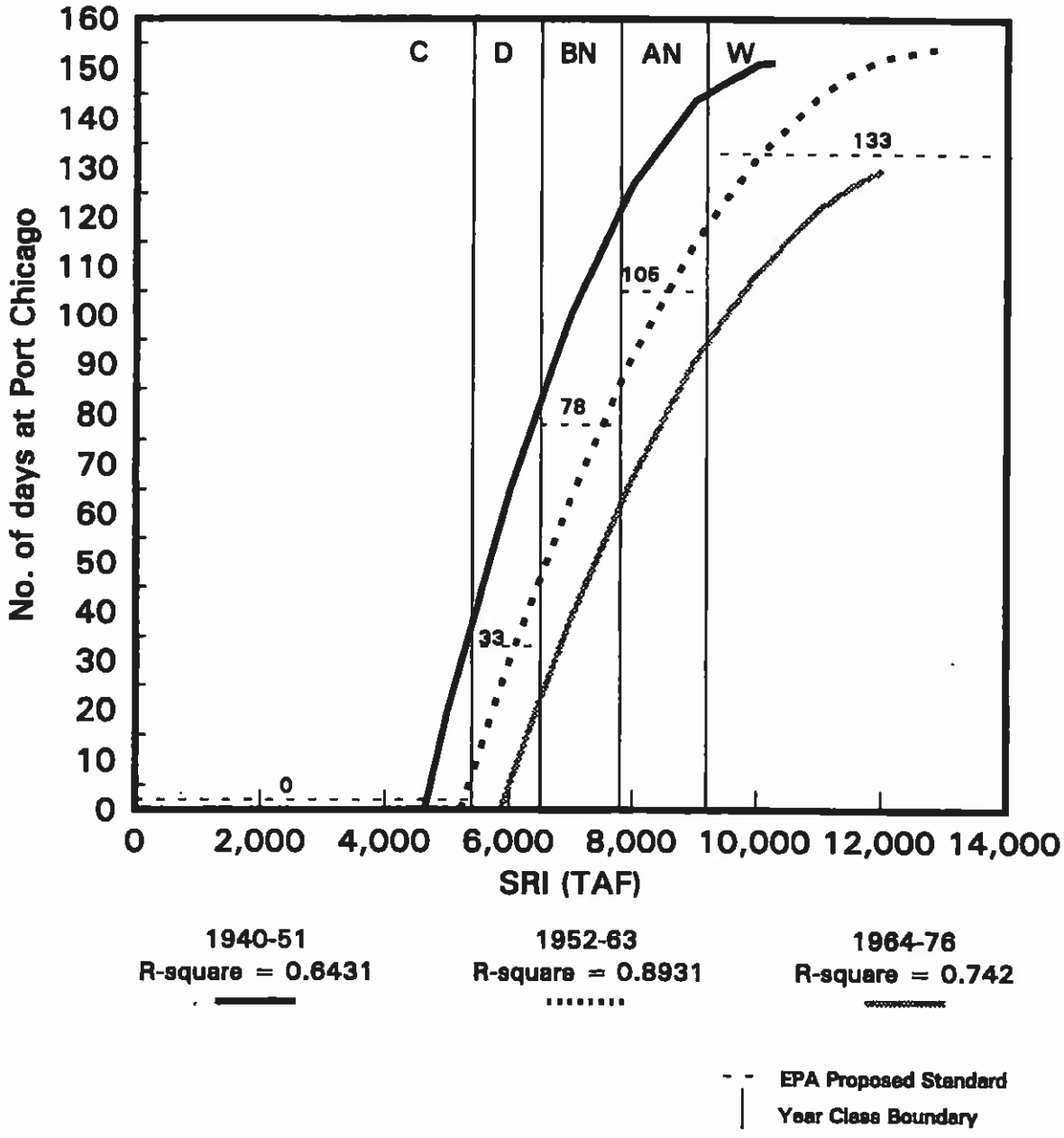


FIGURE 10

No. of days 2ppt is at or below Chipps Island from Feb through June Versus the Sacramento River Index (SRI)

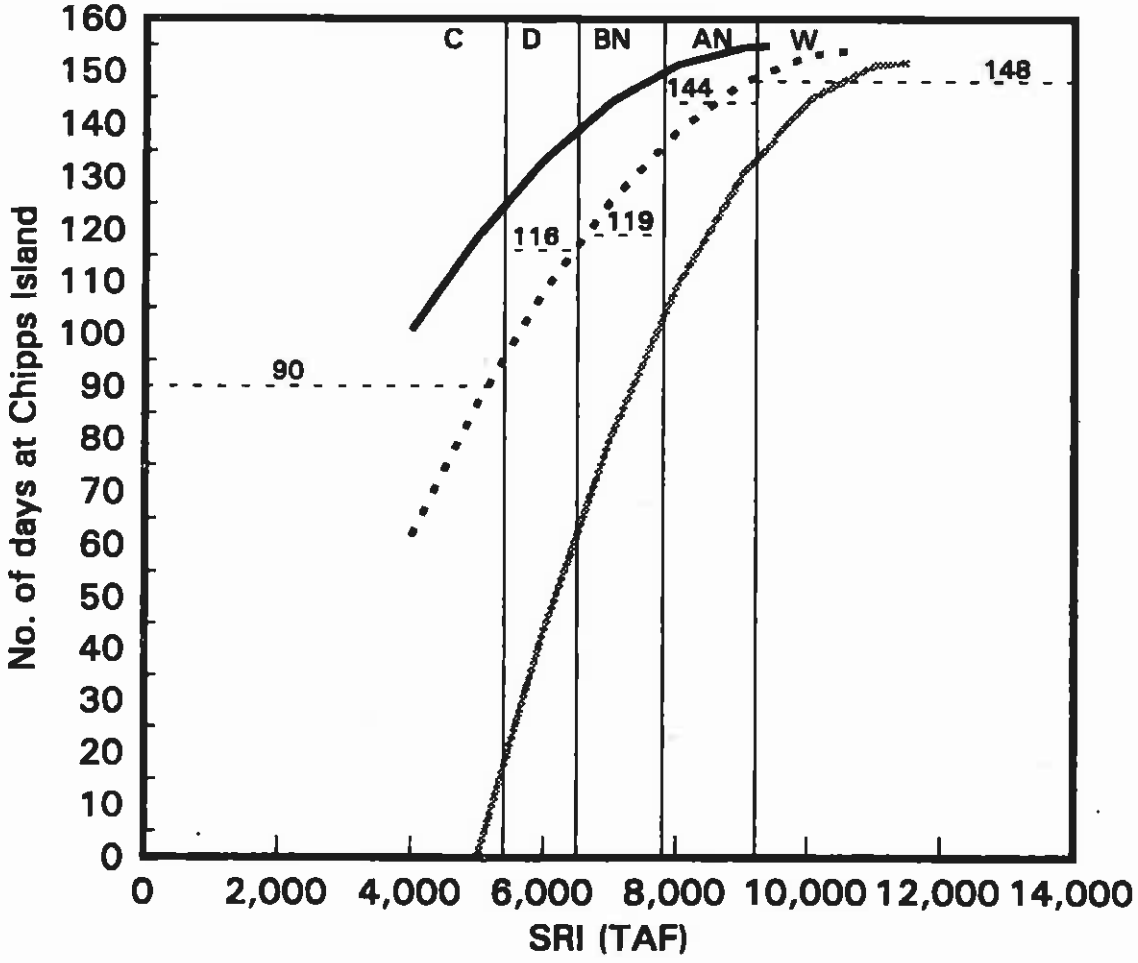


FIGURE 11

No. of days 2ppt is at or below Confluence from Feb through June Versus the Sacramento River Index (SRI)

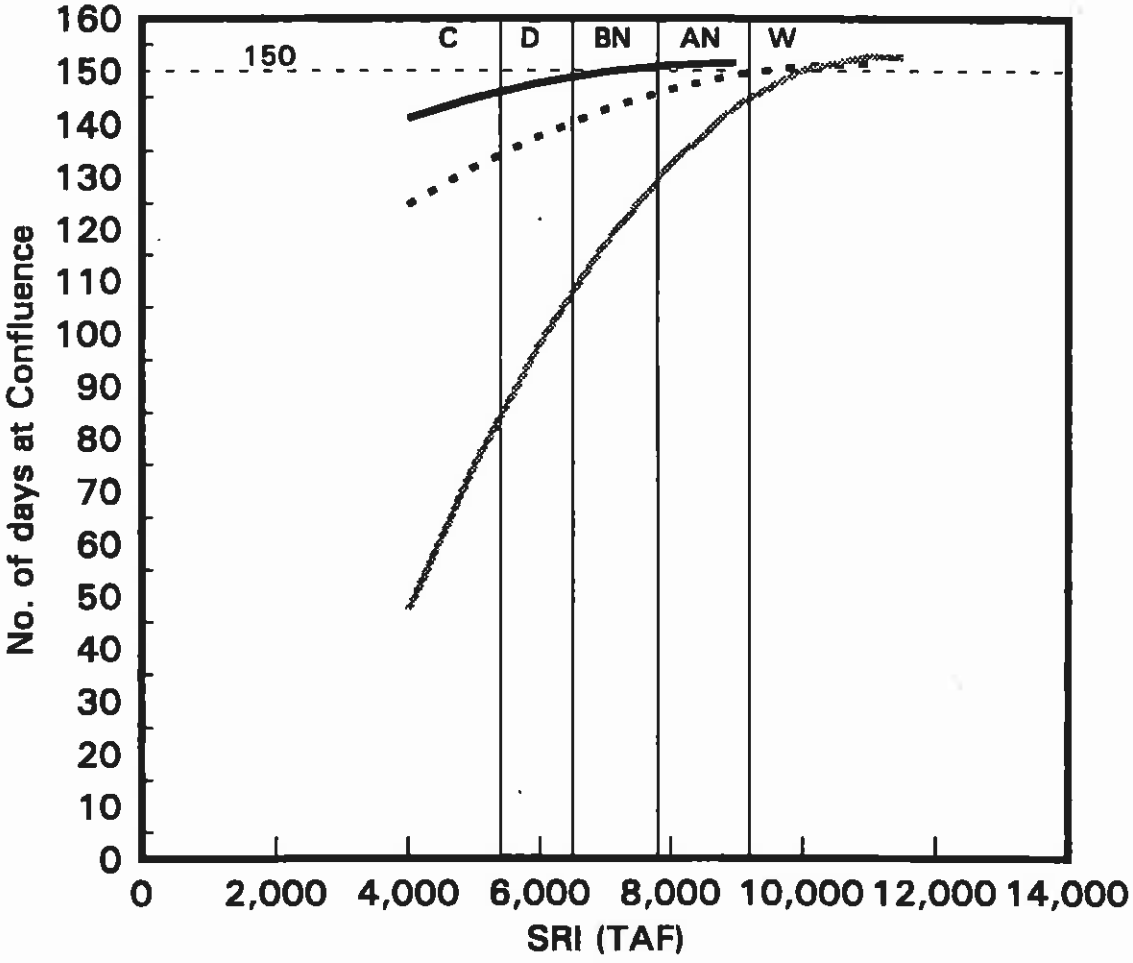
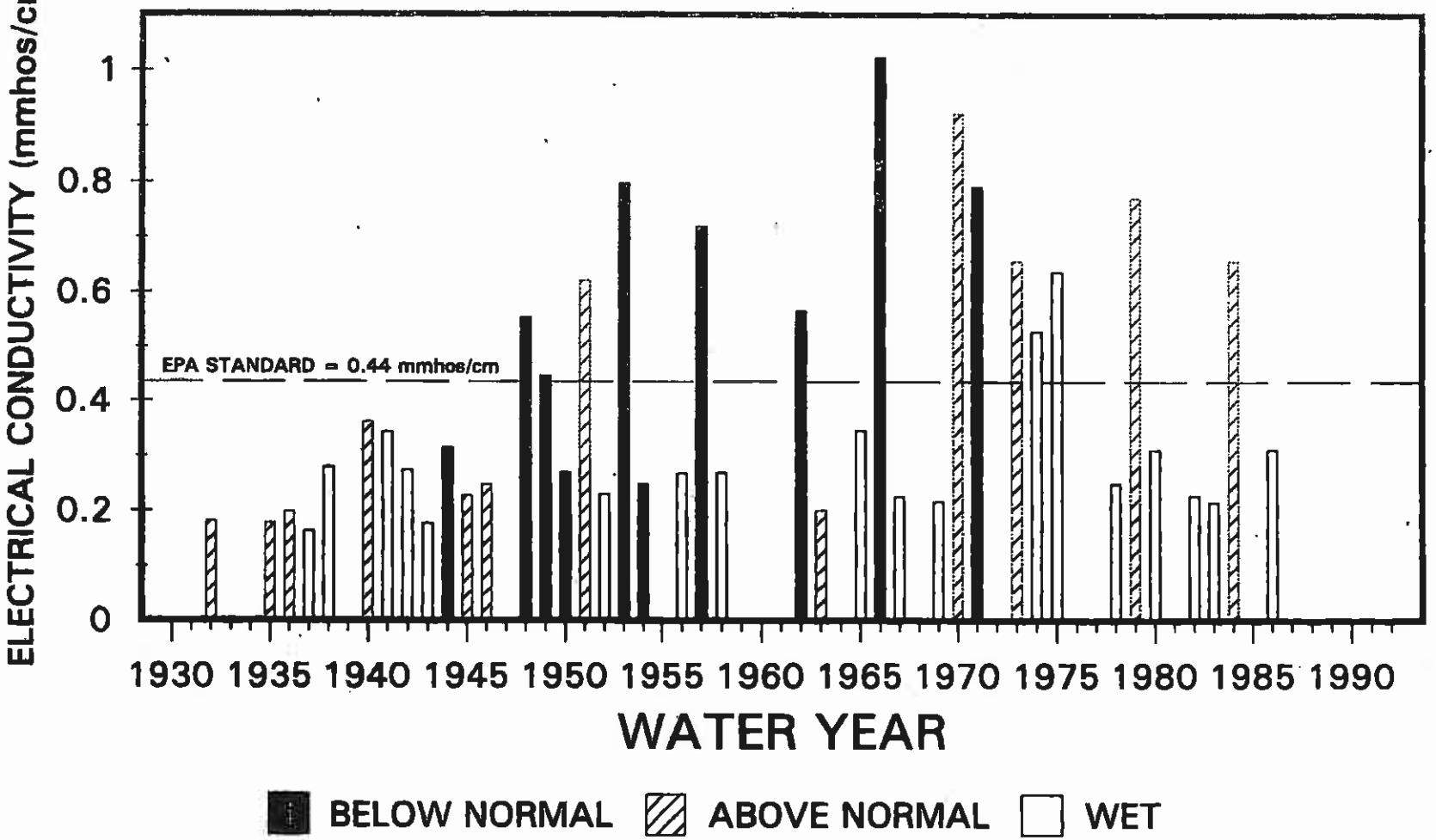


FIGURE 12

MAXIMUM MONTHLY EC FOR APRIL OR MAY
SAN JOAQUIN RIVER NEAR VERNALIS (1930-92)
(CRITICAL AND DRY YEARS EXCLUDED)

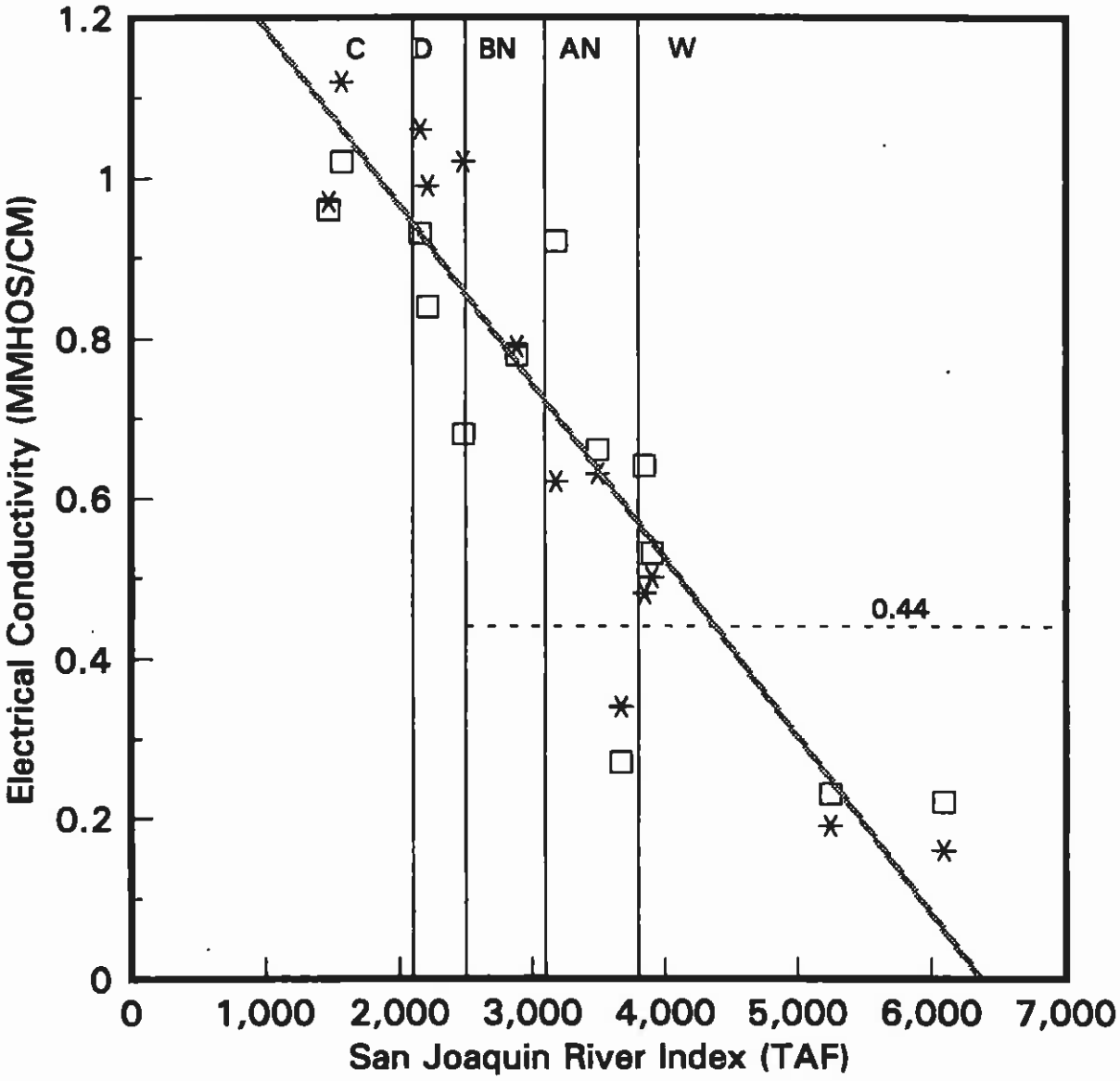


Ref.; EXHIBITS I-CVPWA-113 & I-DWR-61

G:\LOTUS\VERNALIS\TDSEC6 1/21/94

FIGURE 13

Mean Monthly EC for April and May
San Joaquin River Near Vernalis (1964-76)



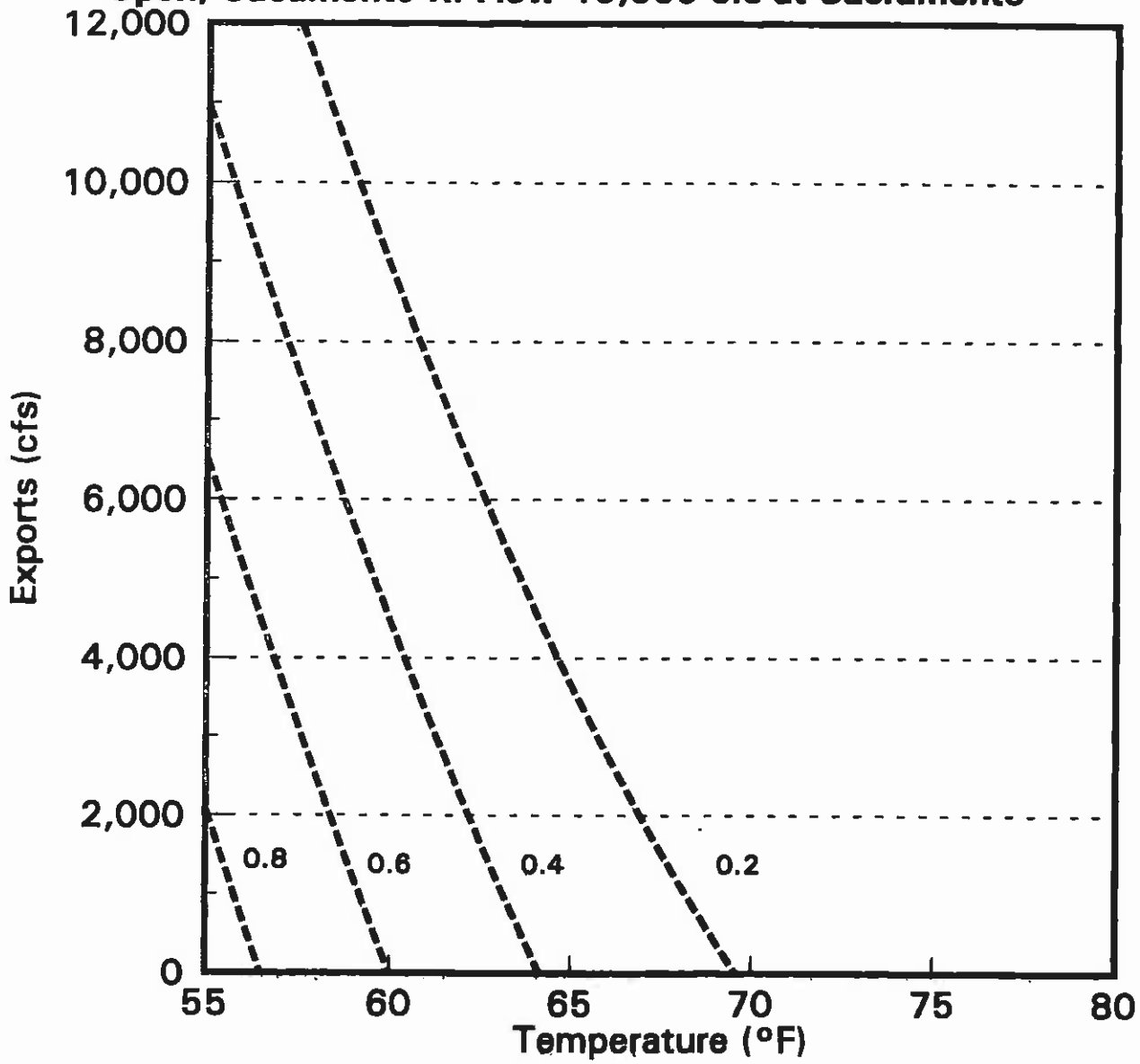
R Square: 0.86
Slope: -0.00022
Intercept: 1.41

- - EPA Proposed Standard
| Year Class Boundary
〰 Linear regression line for historic data
□ April EC
✳ May EC

FIGURE 14

Sacramento Smolt Survival Index

Delta Cross Channel Closed and Georgiana Slough Open; Sacamento R. Flow 10,000 cfs at Sacramento



Represents lines of constant survival

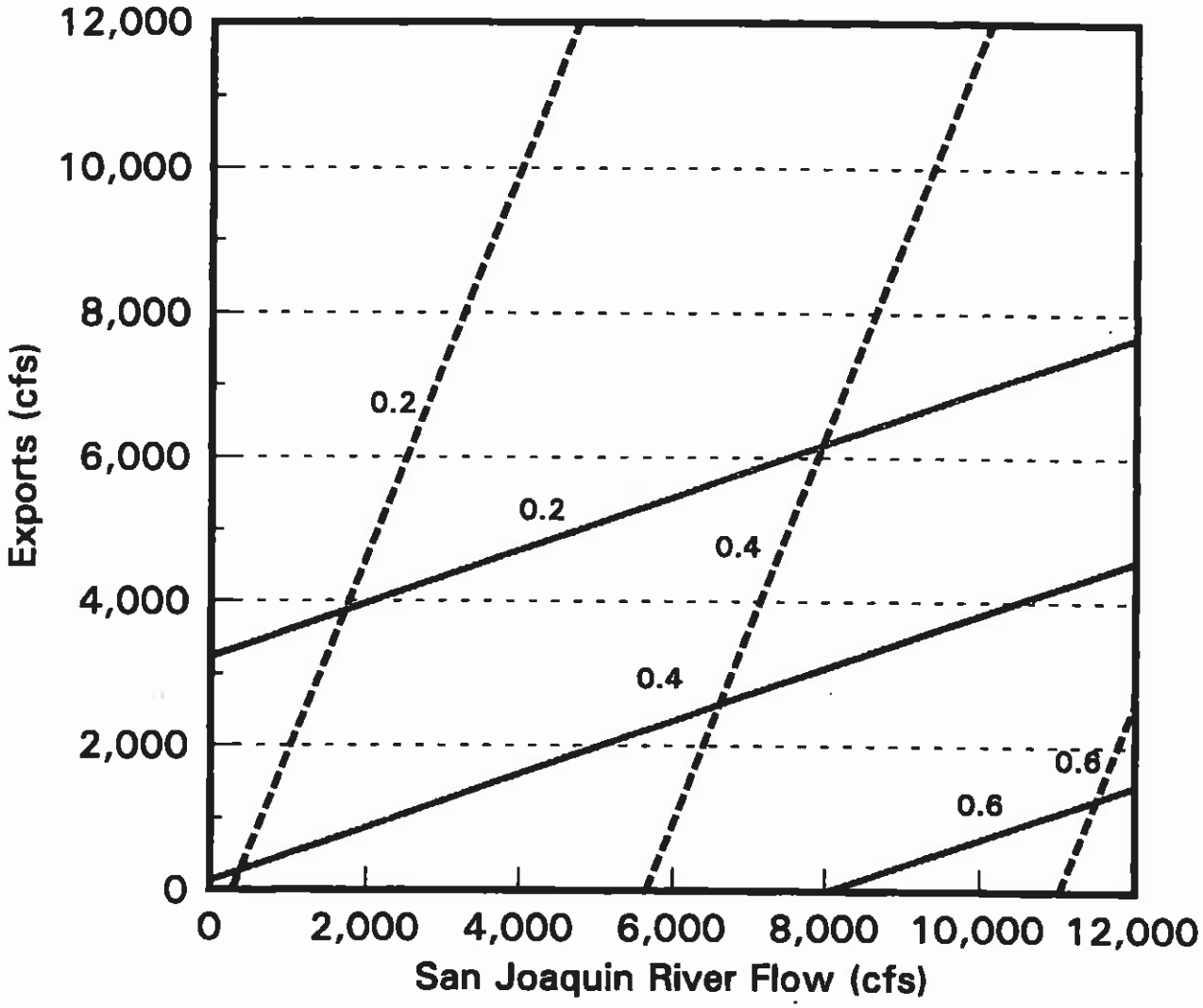
$$Y = 1-((-2.45925+0.0420748T)+(-0.5916024+0.017968T+0.0000434E)(P1)+(-1.613493+0.0319584T)(P2)-(-2.45925+0.0420748T)*(-0.5916024+0.017968T+0.0000434E)(P1)-(-2.45925+0.0420748T)*(-1.613493+0.0319584T)(P2))$$

Y = Sacramento River Salmon Smolt Survival Index
T = Mean monthly water temperature at Freeport (°F)
E = Mean monthly CVP+SWP exports (cfs)
P1 = Percent of water diverted into Delta Cross Channel and Georgiana Slough at Walnut grove (flow at Sacramento-Steamboat and Sutter Sloughs
P2 = Percent of water remaining in Sacramento River downstream of Walnut Grove (1-P1)

FIGURE 15

San Joaquin River Chinook Salmon Smolt Survival

With and Without a Barrier At Head Of Old River



Represents lines of constant survival

With Barrier ---- Without Barrier ——

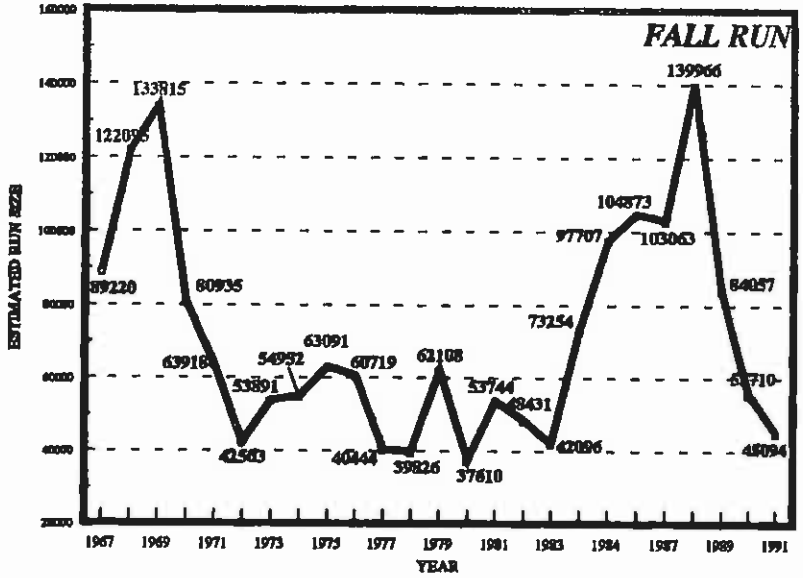
With a barrier installed at the head of Old River, flow at Vernalis is nearly equivalent to flow at Stockton.

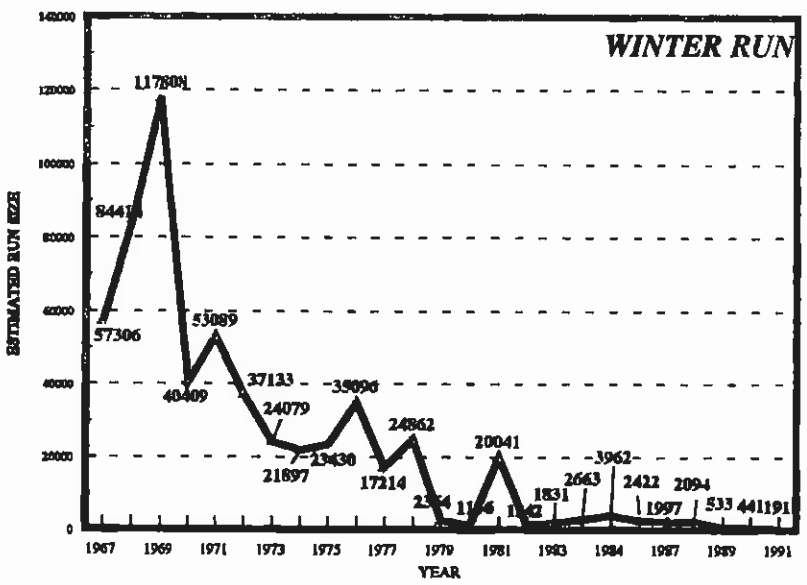
Survival with Barrier = (0.341271-0.000025(exp)+0.000067(flow))/1.8
Survival without Barrier = (4.90106+0.000286(flow)-(0.000774(exp)))/12
exp = CVP+SWP exports (cfs)
flow = San Joaquin River flow at Vernalis (cfs)

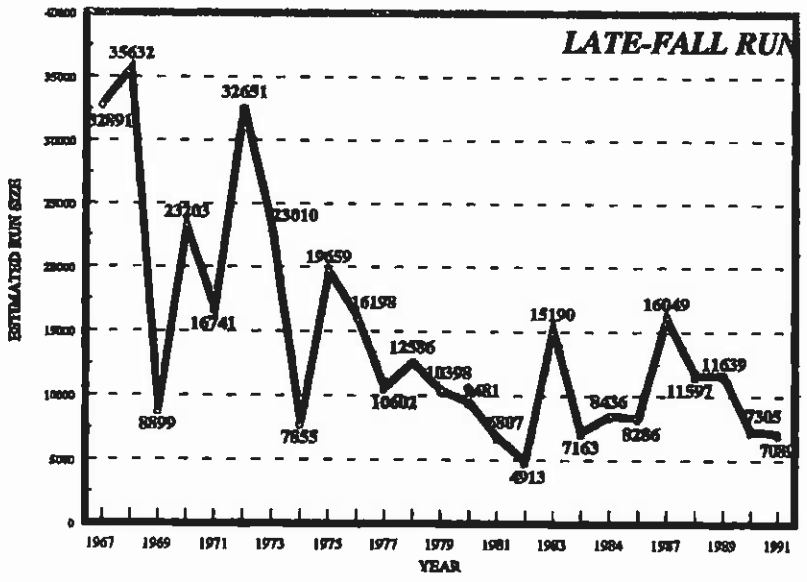
FIGURE 16

SACRAMENTO RIVER

Annual Estimated Chinook Salmon Run Size Above Red Bluff Diversion Dam (DFG)







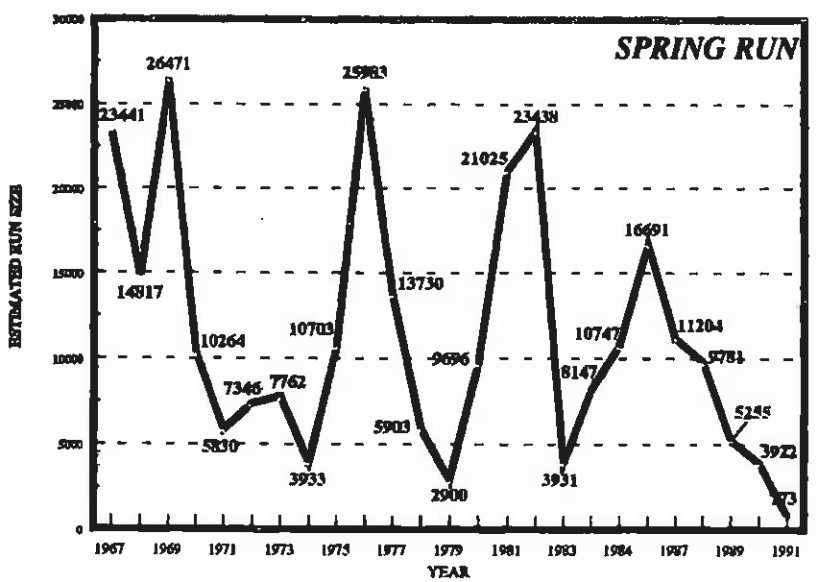
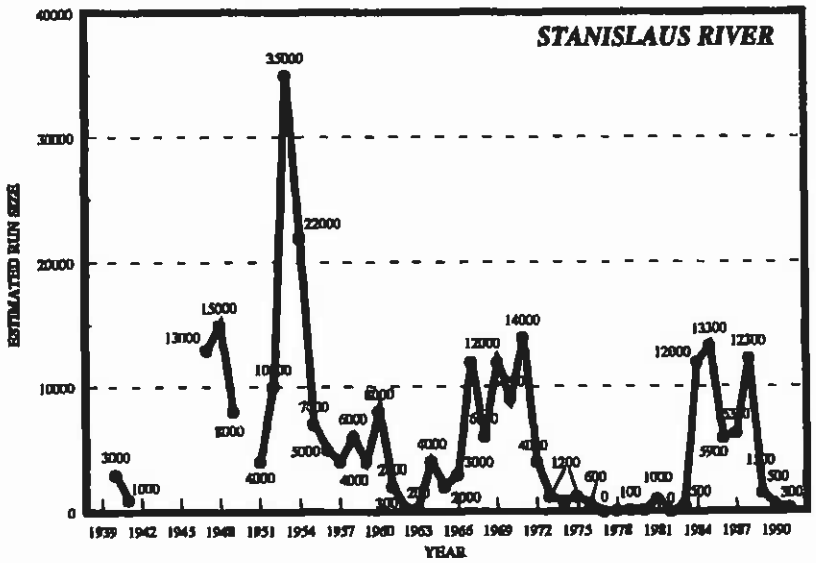
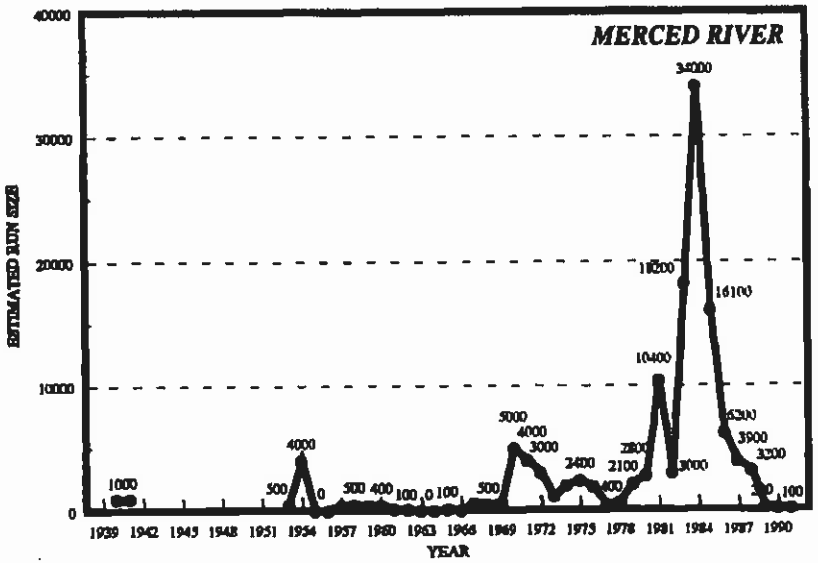


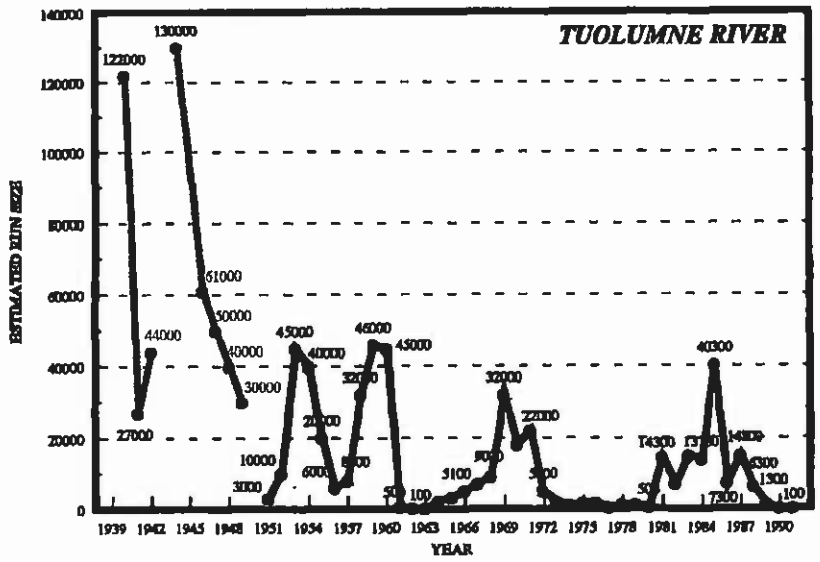
FIGURE 17

SAN JOAQUIN BASIN

Annual Estimated Chinook Salmon Run Size (DFG)







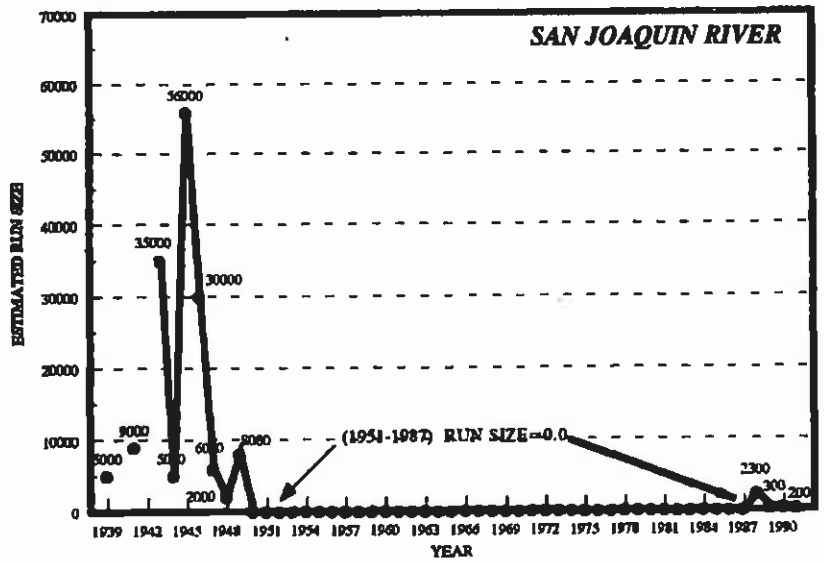


FIGURE 18

DELTA SMELT ABUNDANCE INDEX

SUMMER TOWNET SURVEY; HISTORICAL DATA

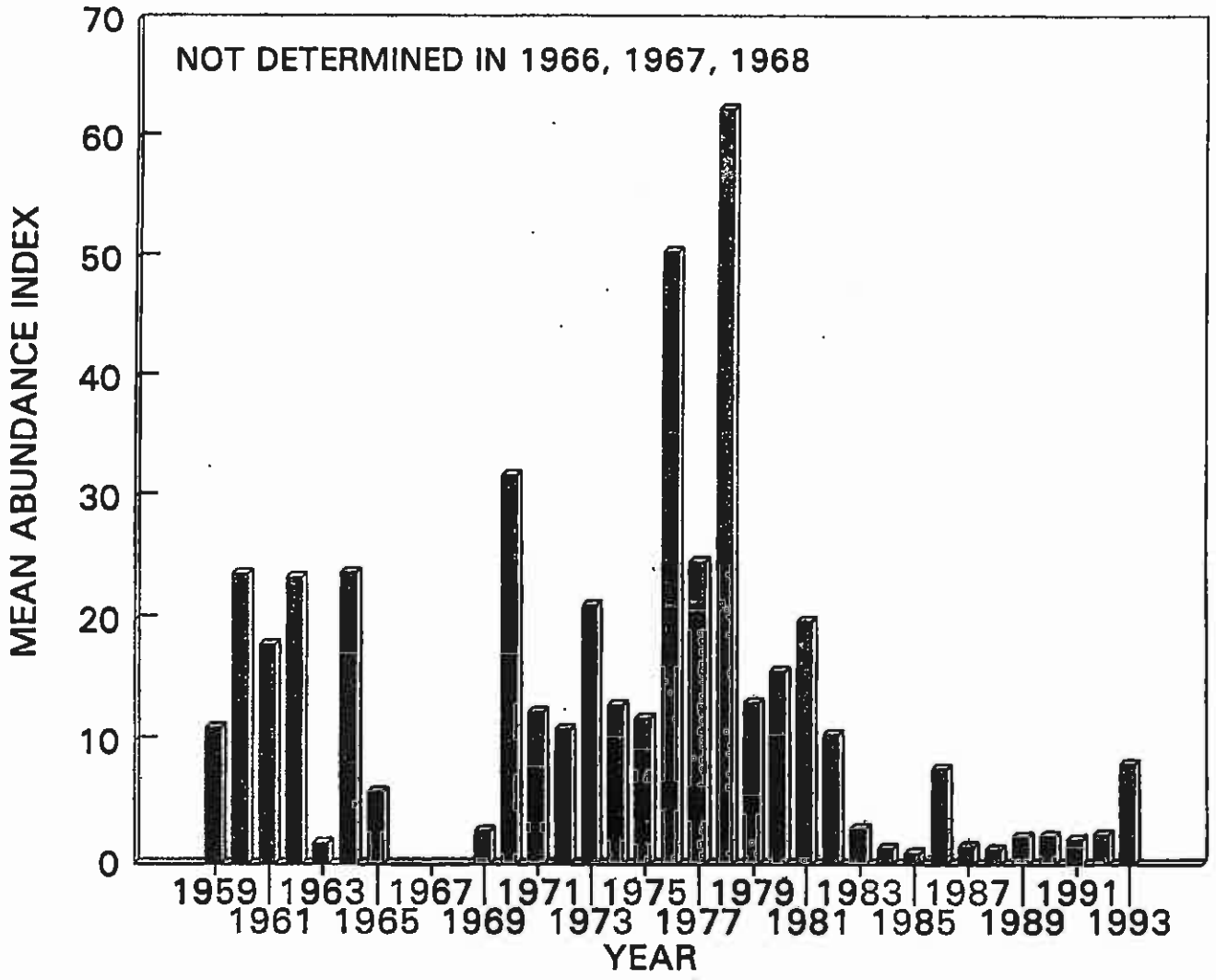


FIGURE 19

DELTA SMELT MIDWATER TRAWL INDEX

CUMULATIVE MONTHLY ABUNDANCE INDICES

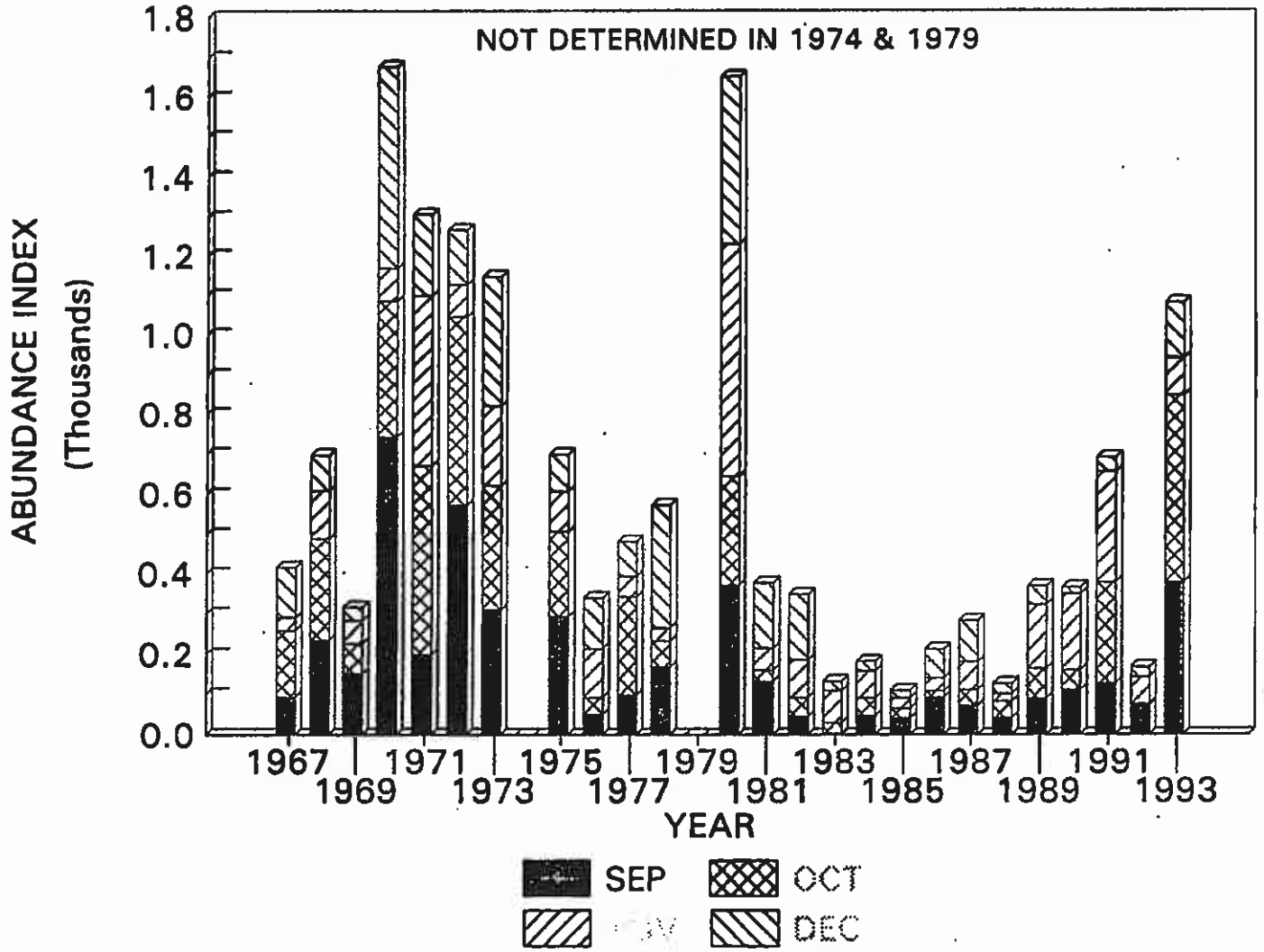


FIGURE 20

DELTA SMELT MIDWATER TRAWL INDEX

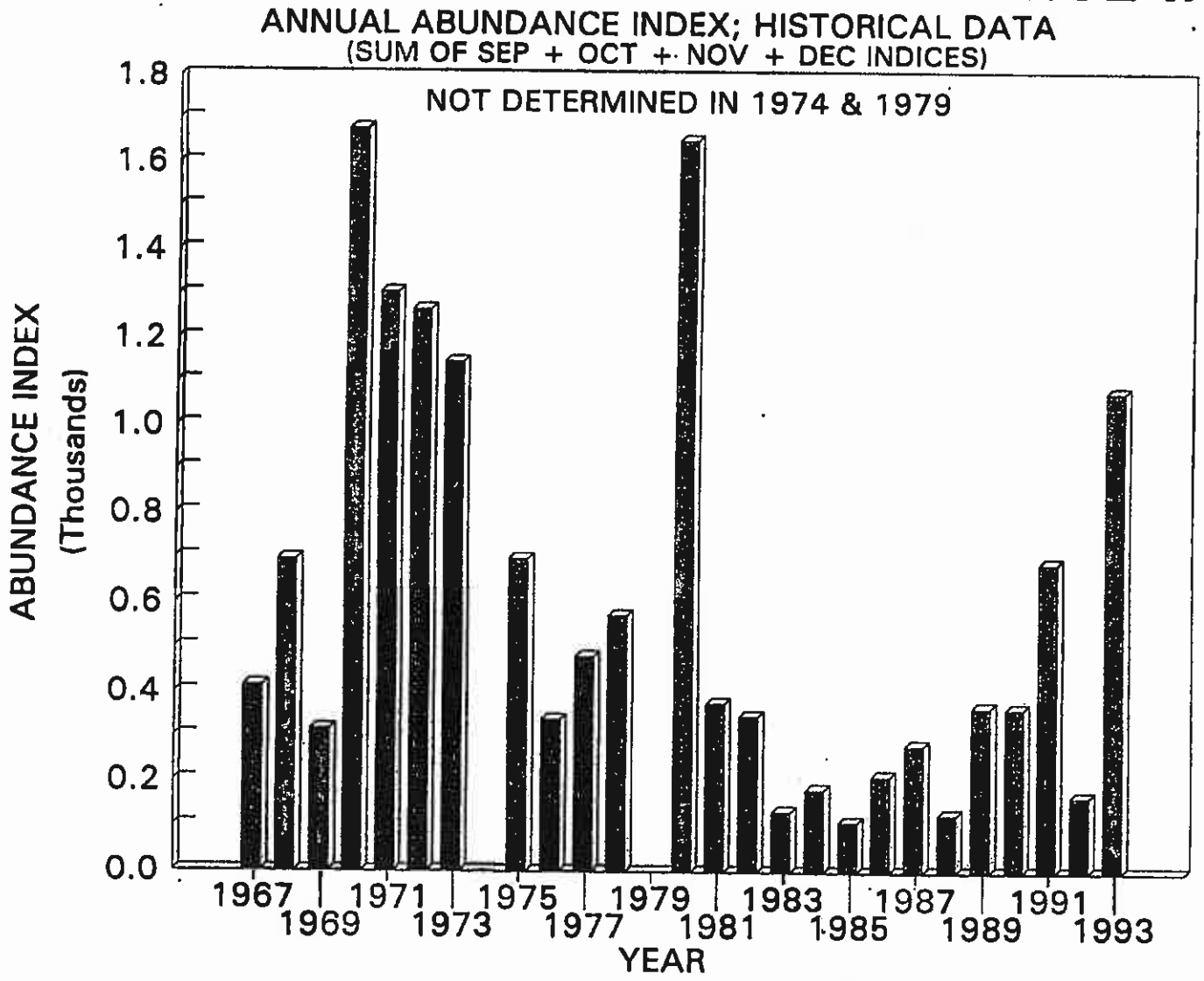


FIGURE 21

PACIFIC HERRING ABUNDANCE INDEX

CUMULATIVE APRIL-SEPTEMBER YOUNG OF THE YEAR

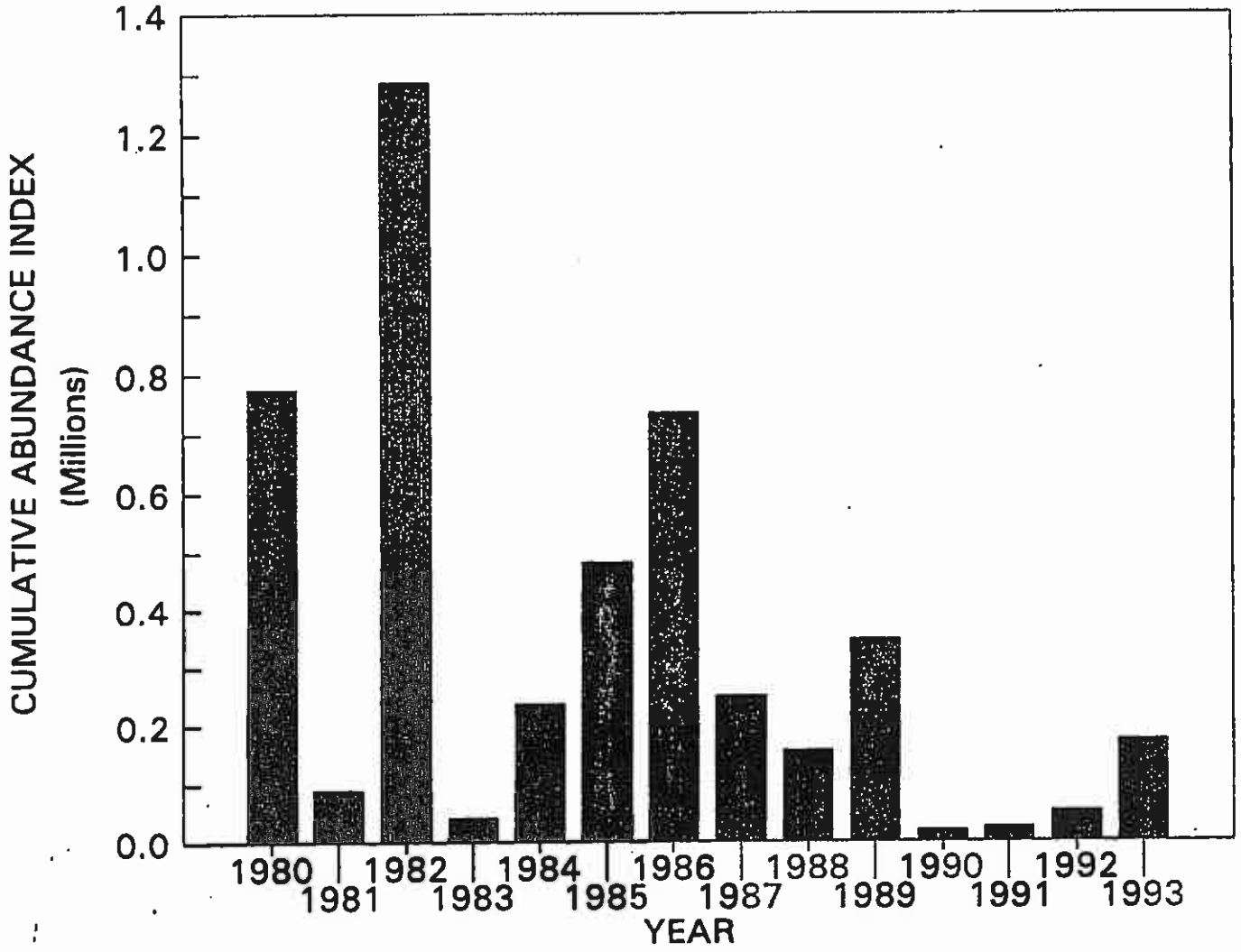


FIGURE 22

LONGFIN SMELT ABUNDANCE INDEX

FROM FALL MIDWATER TRAWL SAMPLING

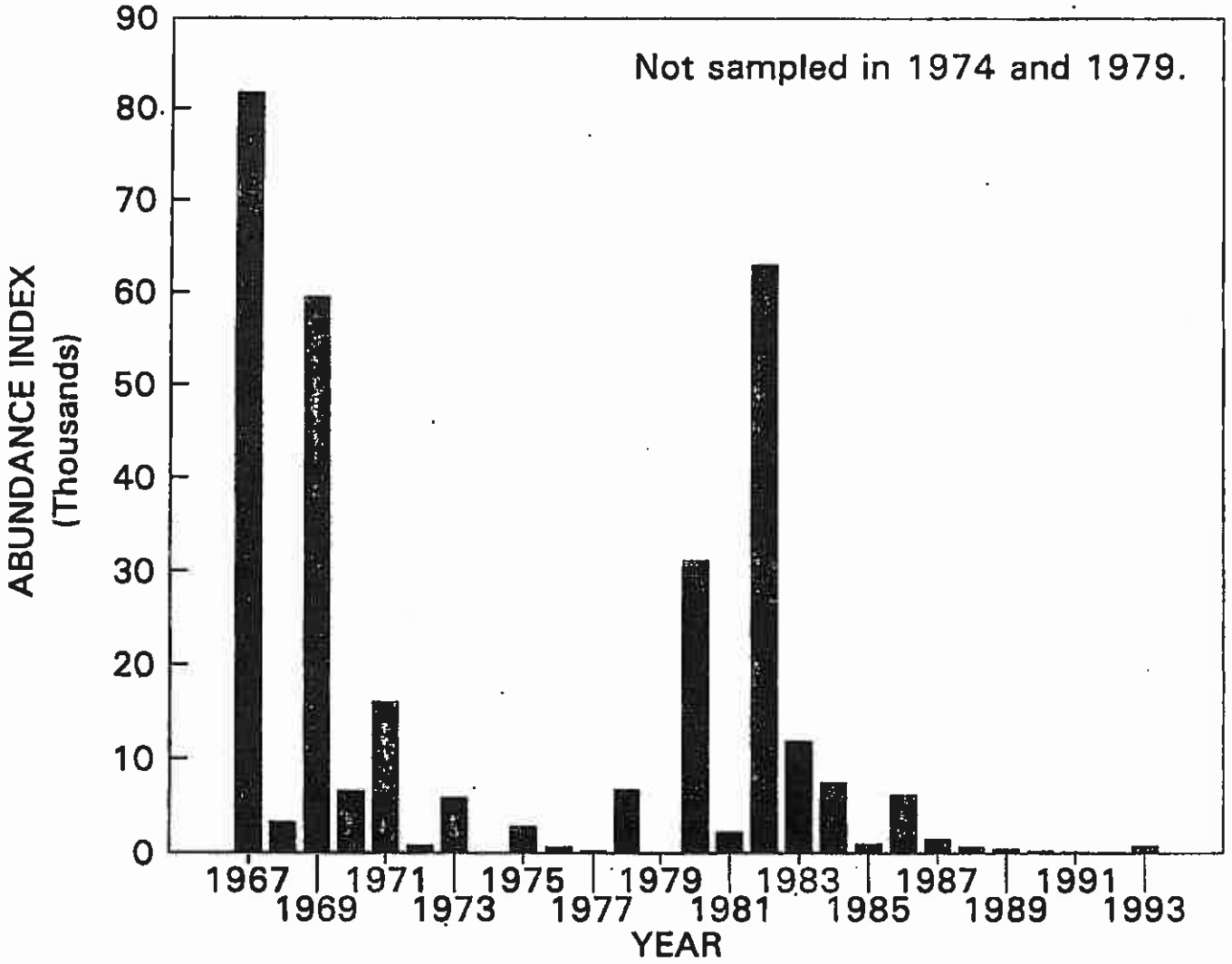
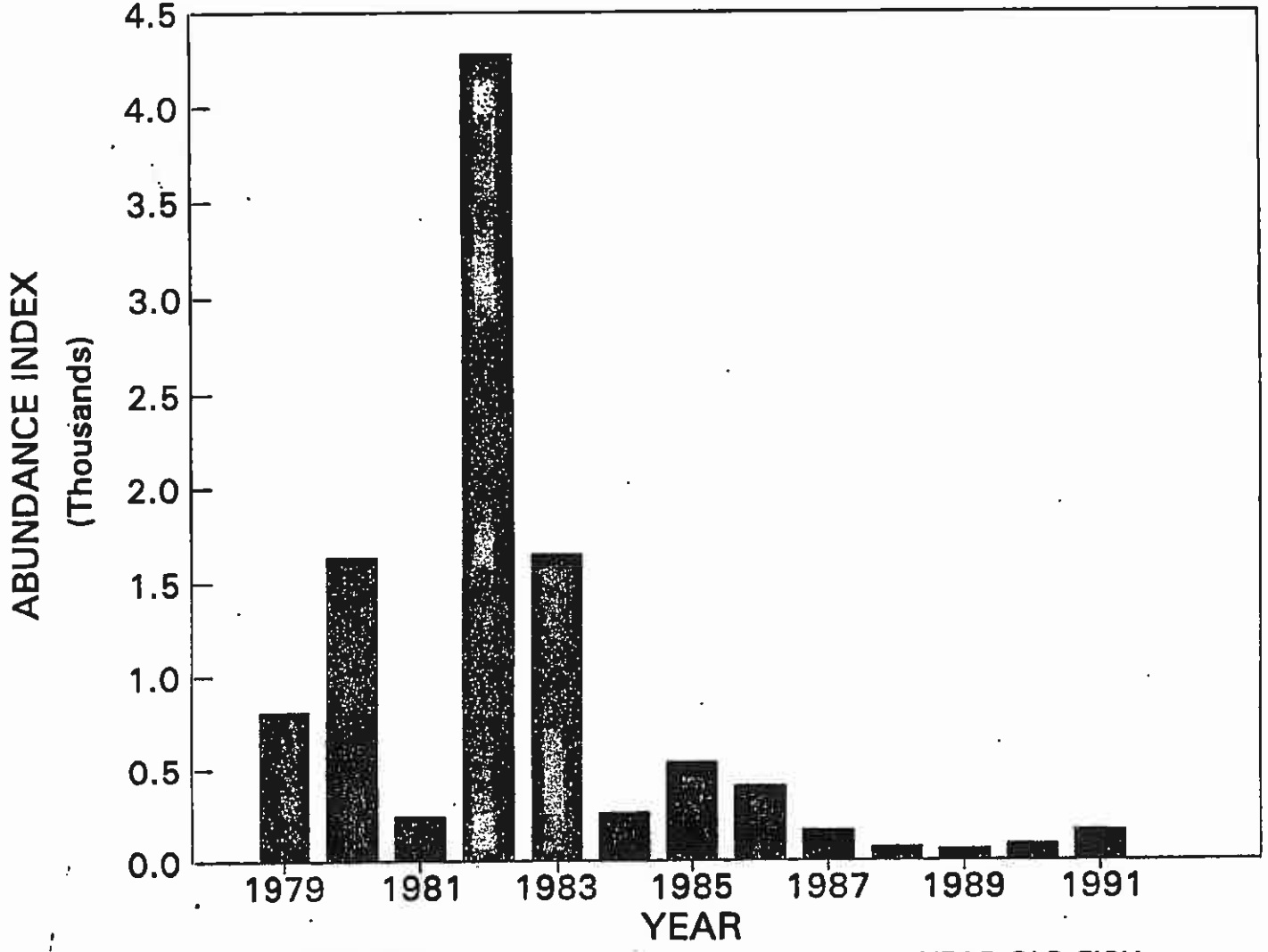


FIGURE 23

STARRY FLOUNDER ABUNDANCE INDEX

HISTORICAL ABUNDANCES; ACTUAL DEMAND



VALUES SHOWN ARE ABUNDANCES OF 1-YEAR-OLD FISH COLLECTED IN YEAR FOLLOWING YEAR SHOWN.

FIGURE 24

IMMATURE BAY SHRIMP ABUNDANCE INDEX

HISTORICAL ABUNDANCE; ACTUAL DEMAND

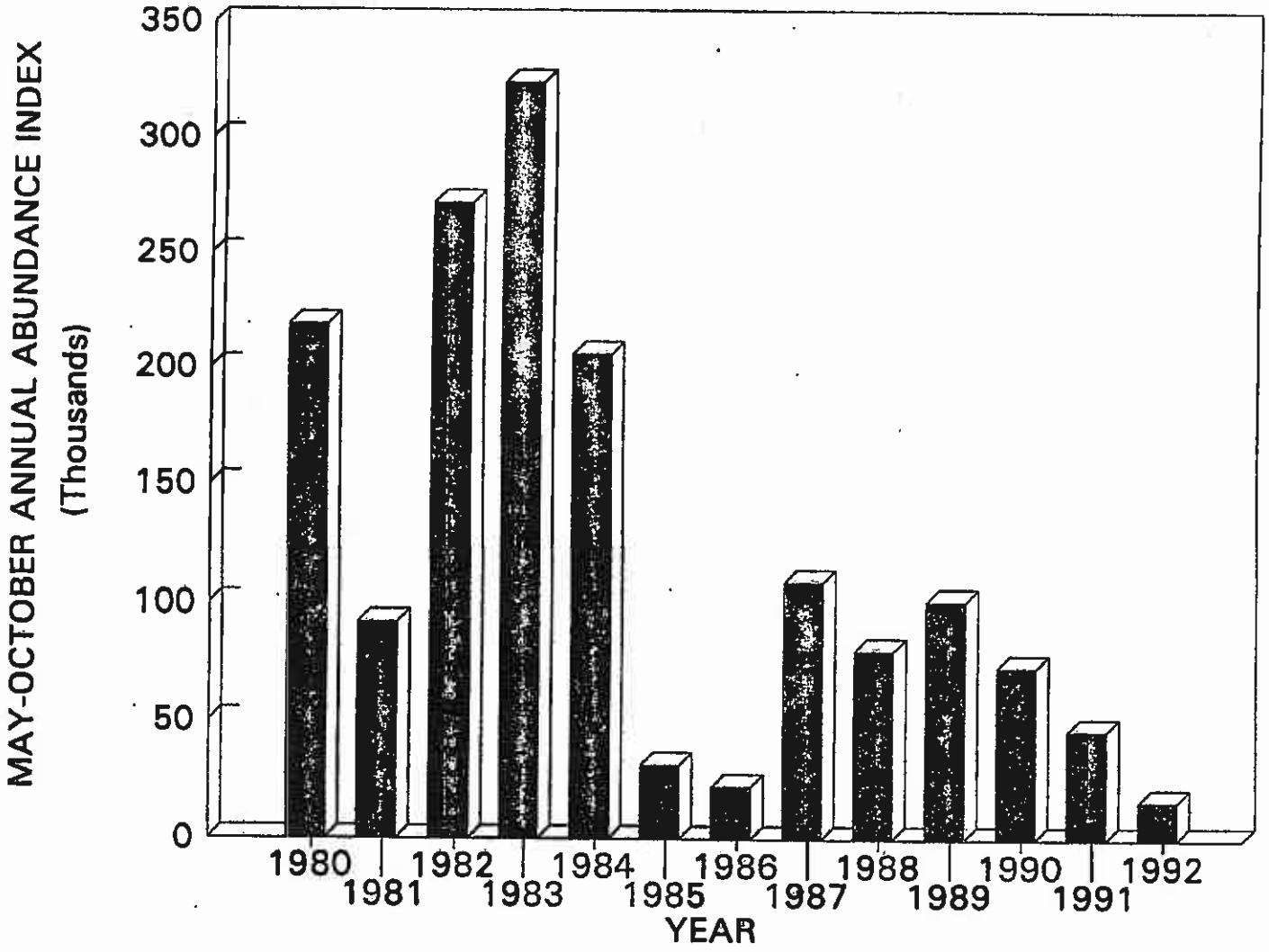
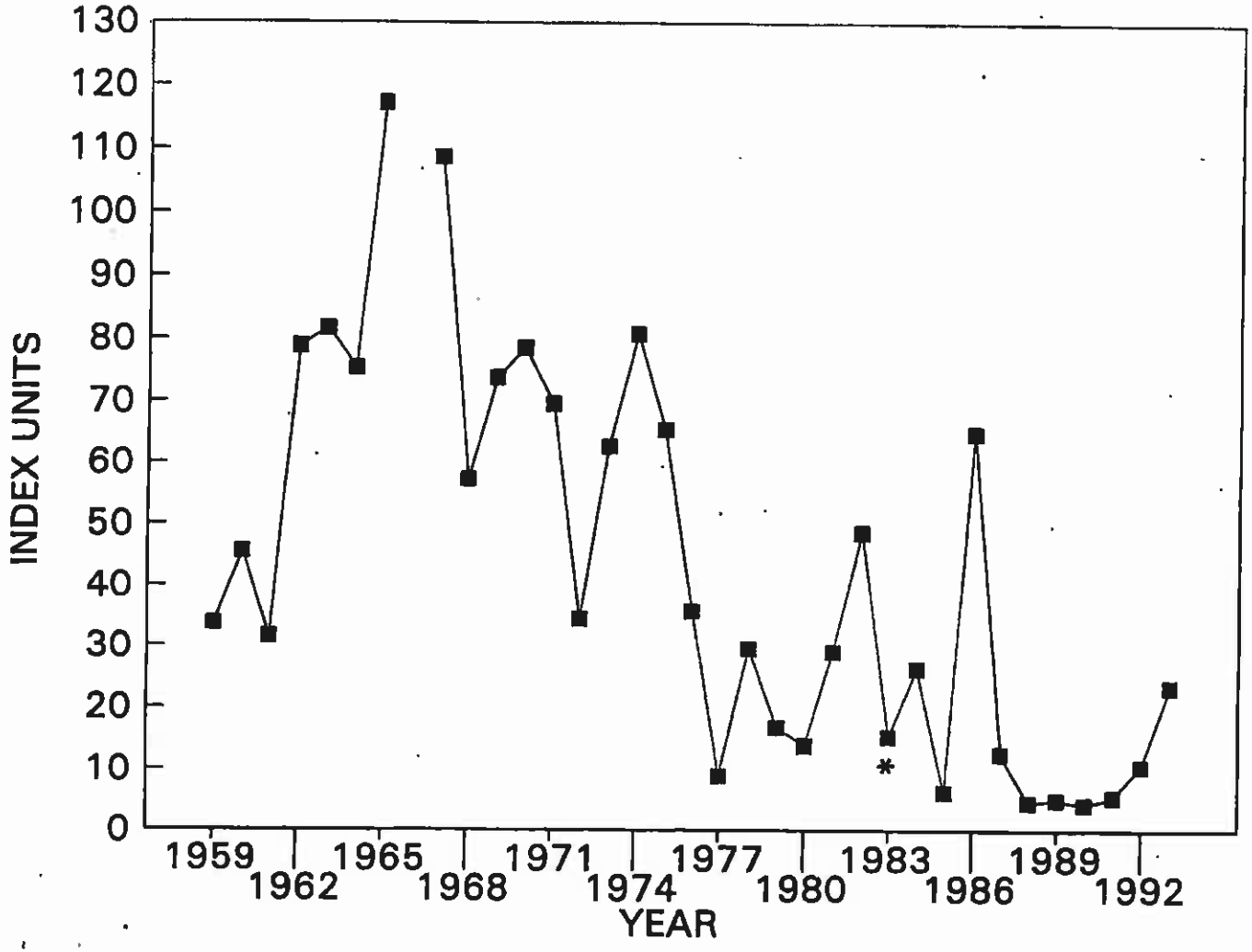


FIGURE 25

STRIPED BASS INDEX

Not Sampled in 1966



* 1983 underestimated due to very high Delta outflows

FIGURE 26

HISTORICAL STRIPED BASS LEGAL ADULTS

Petersen Population Estimates without Hatchery Fish

(1969-91)

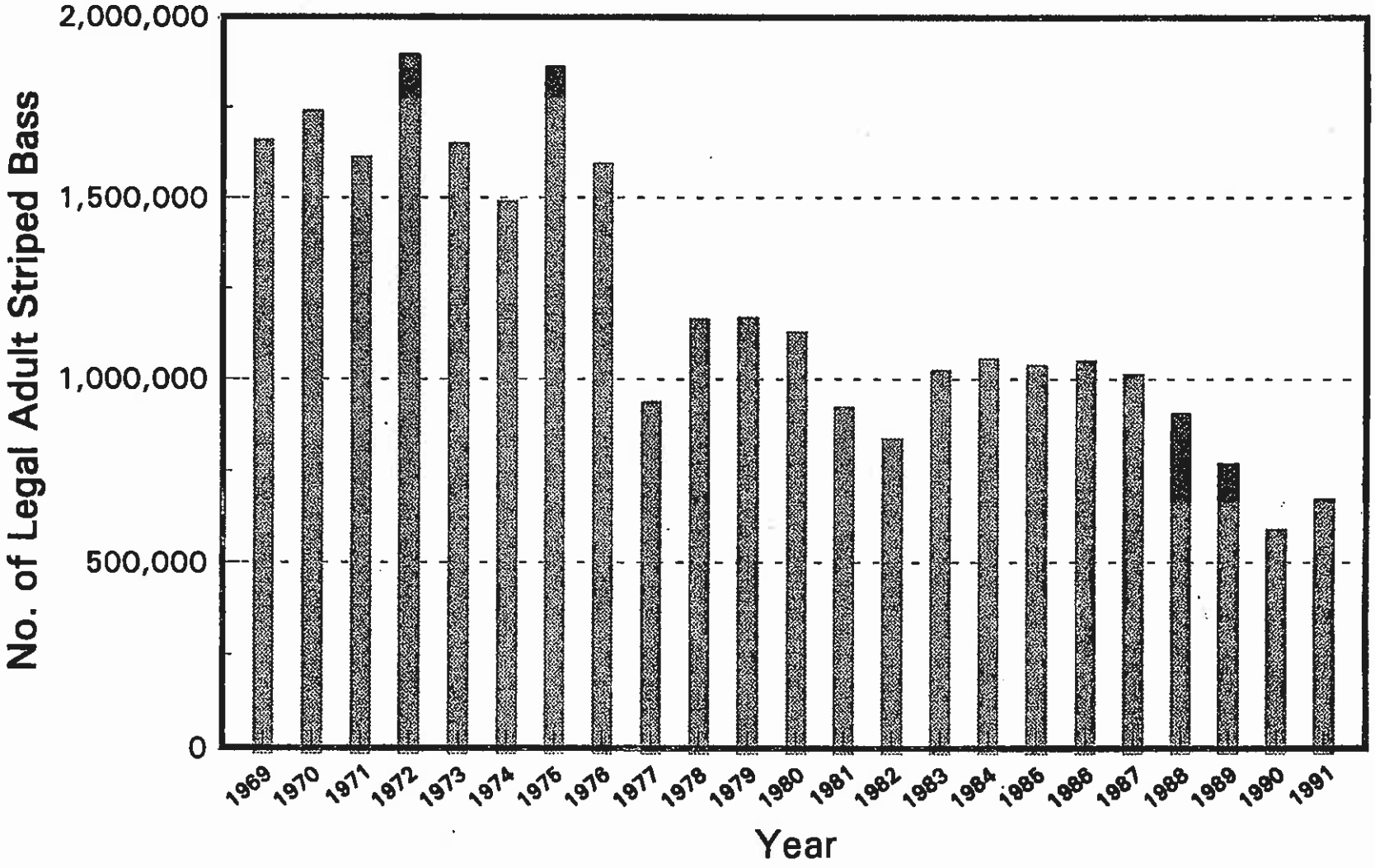
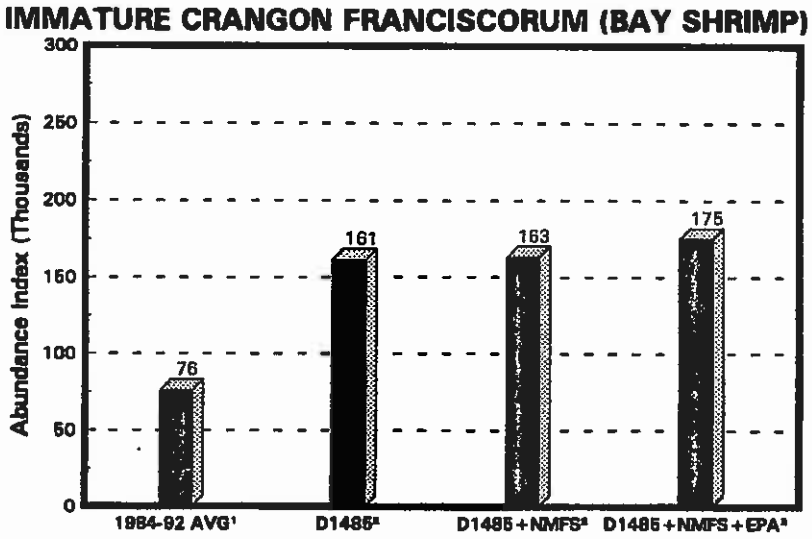
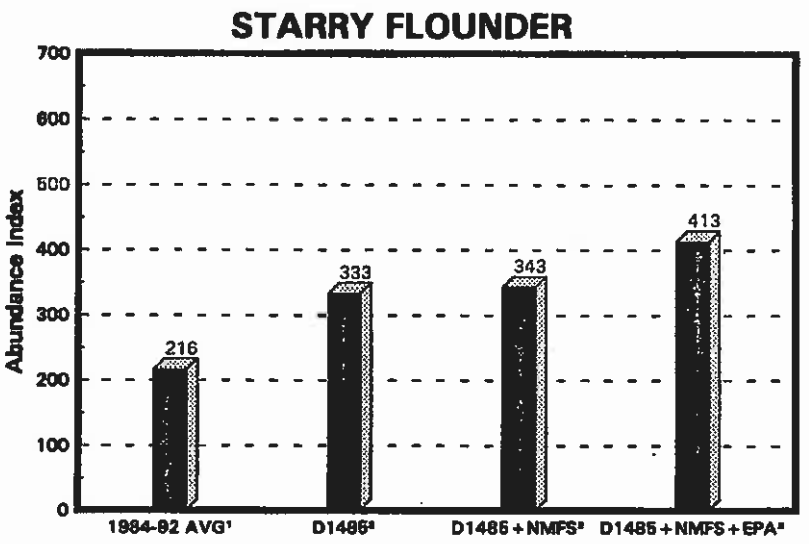
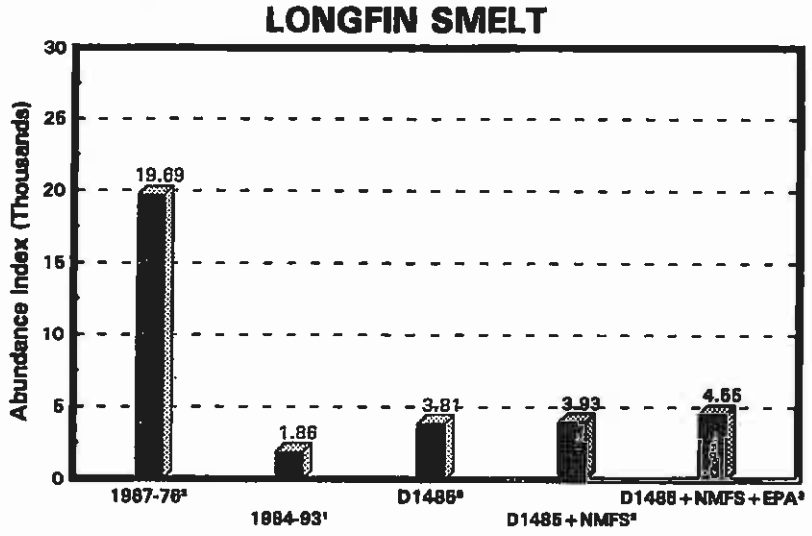


FIGURE 27

ESTUARINE SPECIES ABUNDANCE COMPARISONS







Note: Data are not available for the historical reference period (1964-76) except for longfin smelt where data began at 1967

References

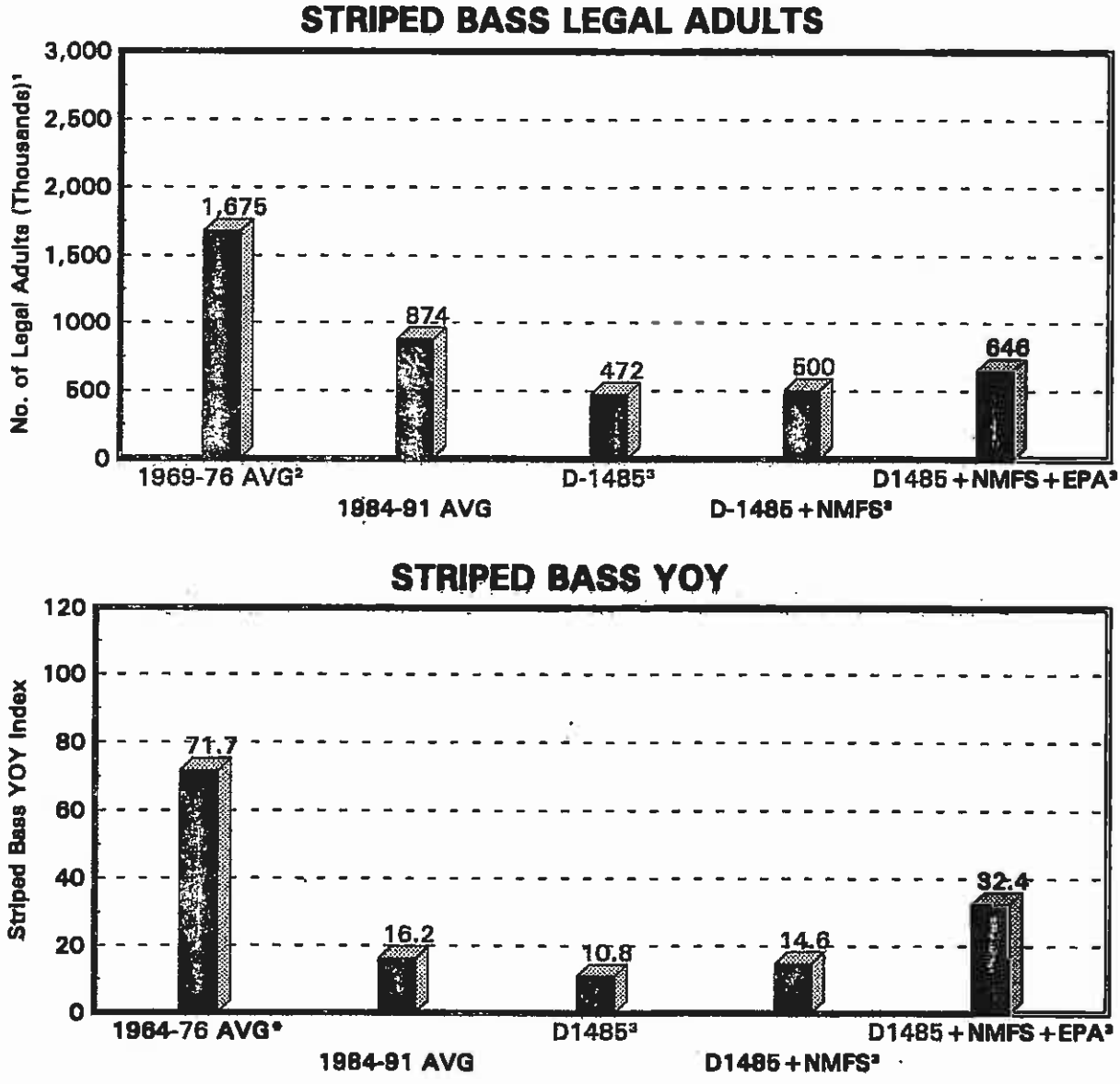
[1]Historical abundance

[2]Calculated using DFG Regression; Flows obtained from DWRSIM at 6.0 MAF demand; 1922-1992 hydrology

[3]Historical abundance without 1974 data

FIGURE 28

STRIPED BASS ABUNDANCE COMPARISONS



[1]Data obtained from Petersen Population Estimates with Hatchery Fish Removed

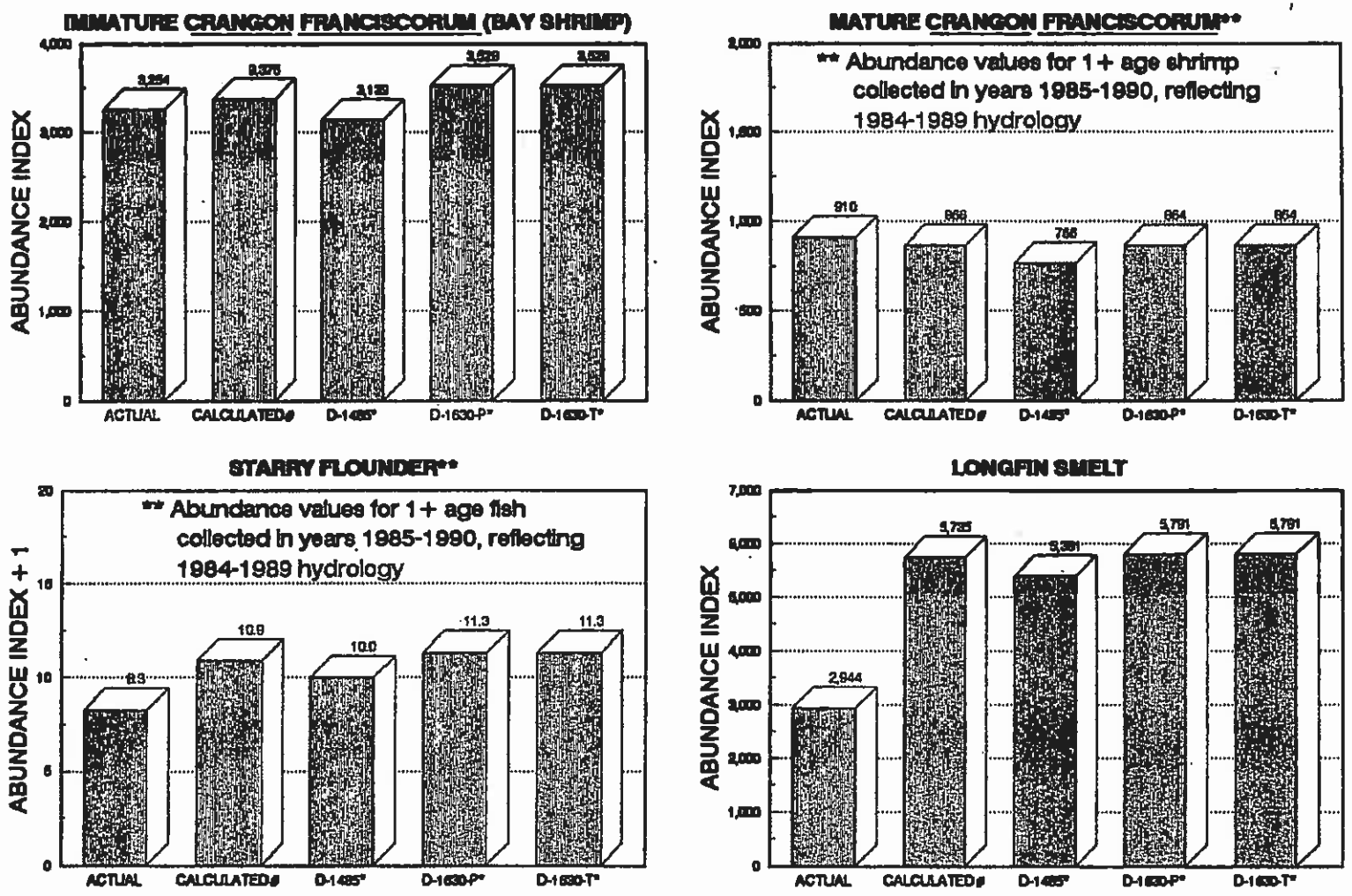
[2]Data not available prior to 1969

[3]Calculated using DFG Regression; Flows obtained from DWRSIM at 6.0 MAF demand; 1922-1992 hydrology

*1966 datum not available

FIGURE 29

FIGURE D. ESTUARINE SPECIES ABUNDANCE COMPARISONS
Averages for 1984-1989



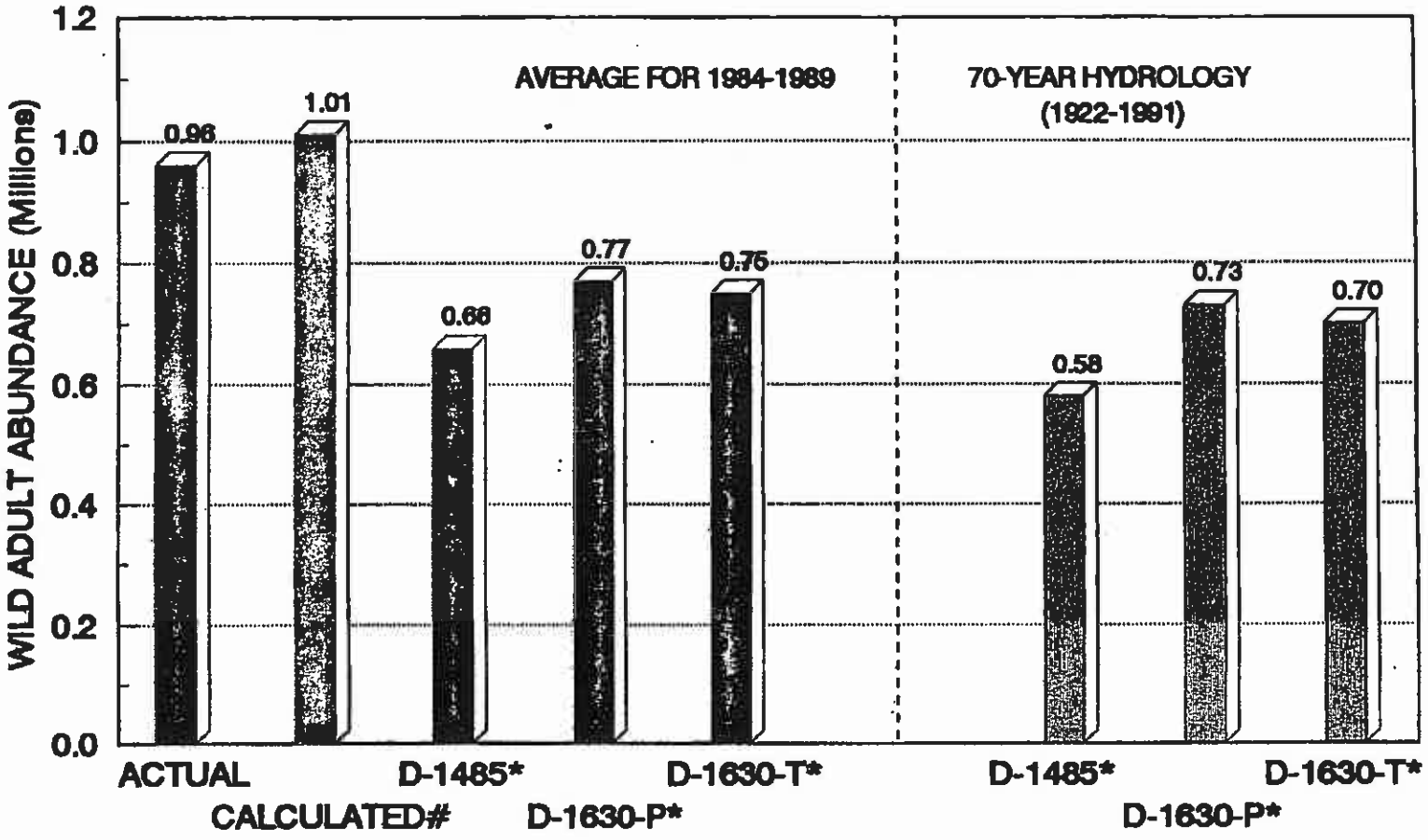
= Historical 1984-1989 hydrology applied to DFG estuarine species models

* = DFG estuarine species models run with 7.1 MAF demand

FIGURE 30

FIGURE C

STRIPED BASS WILD ADULT COMPARISON

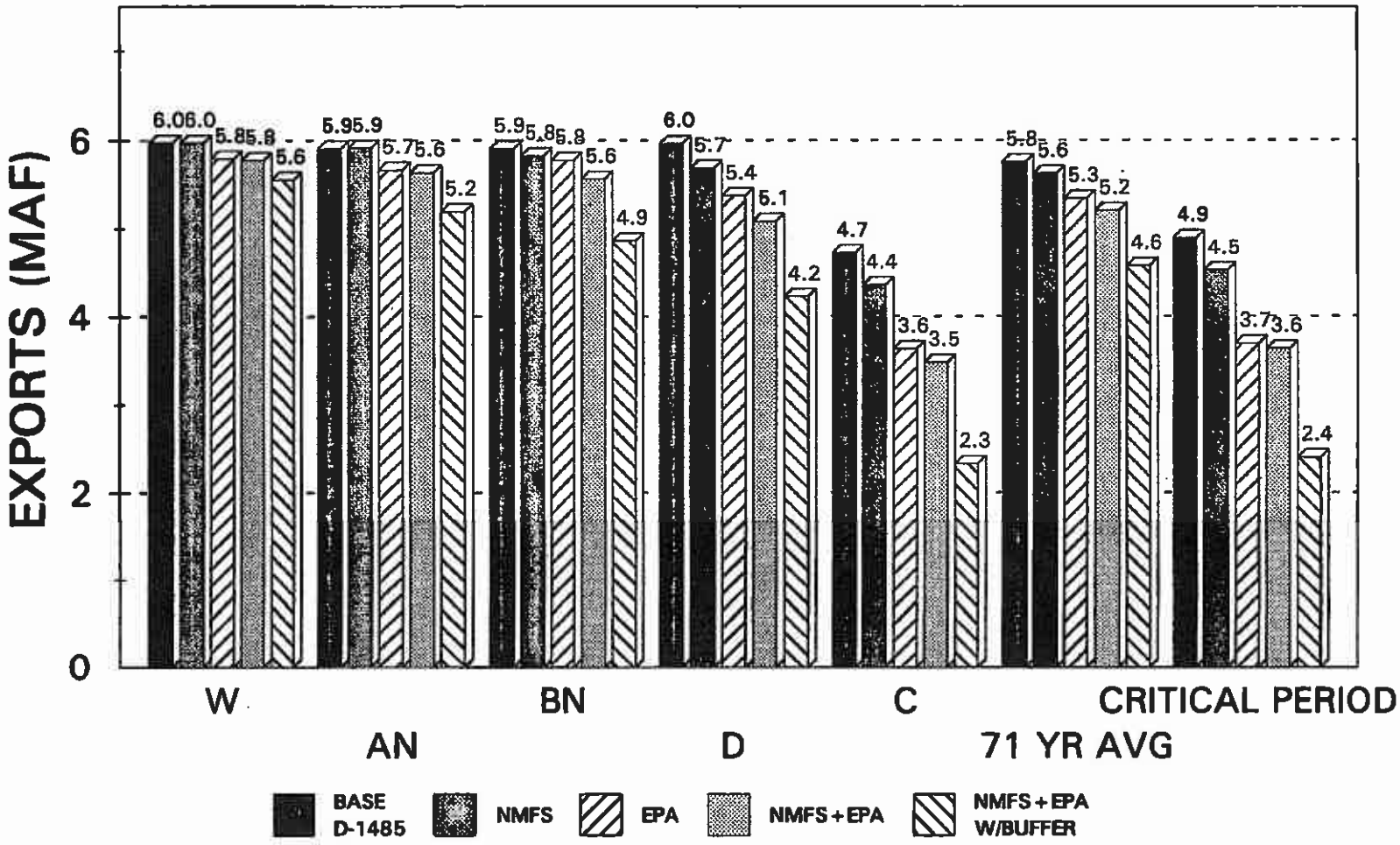


= Historical 1984-1989 hydrology applied to DFG striped bass model

* = DFG striped bass model run with 7.1 MAF demand

FIGURE 31

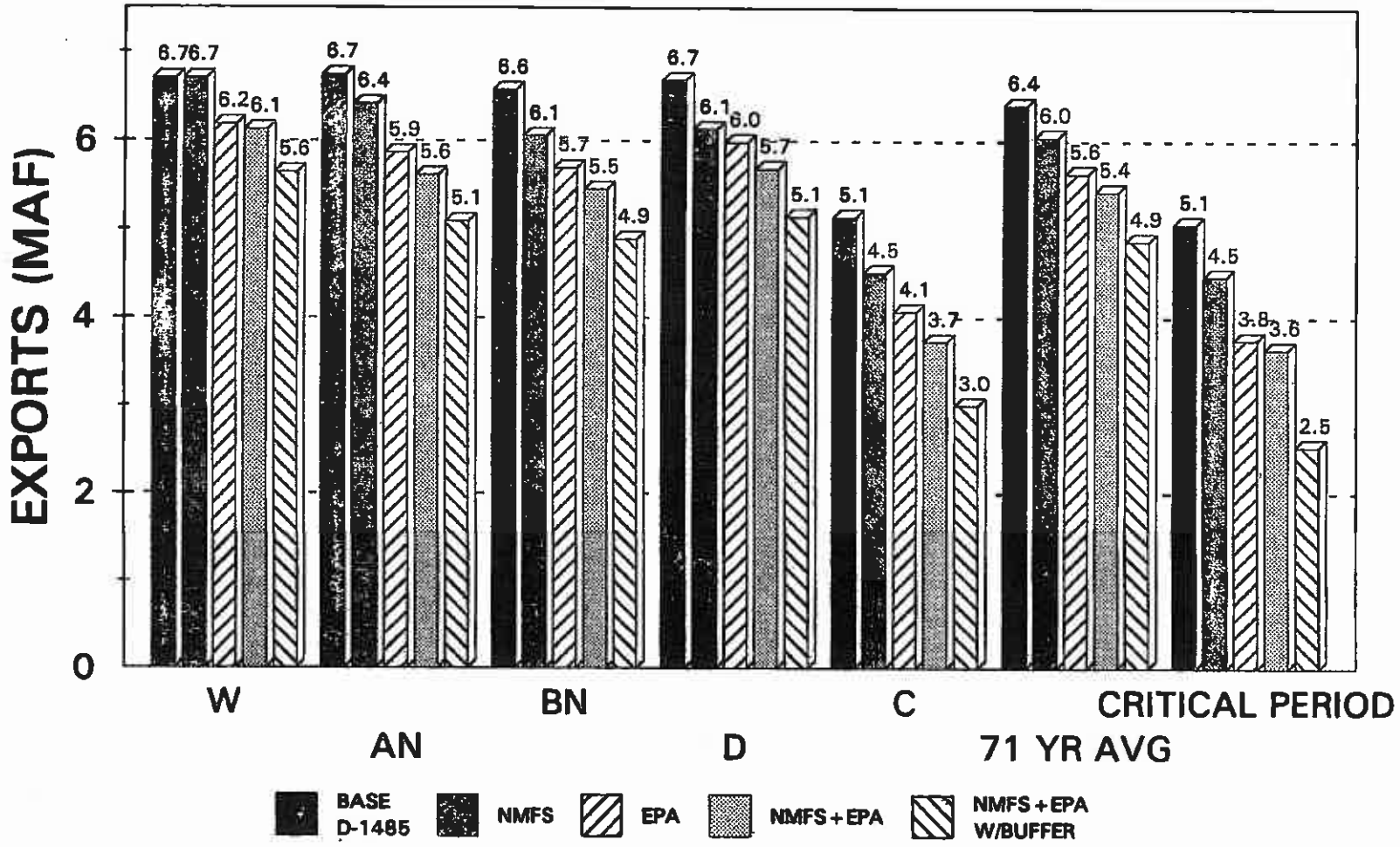
AVAILABLE EXPORTS FROM DELTA AT 6.0 MAF DEMAND UNDER DIFFERENT REGULATORY CONDITIONS AS MODELED BY DWRSIM



CRITICAL PERIOD Extends from May 1928-Oct 1934

FIGURE 32

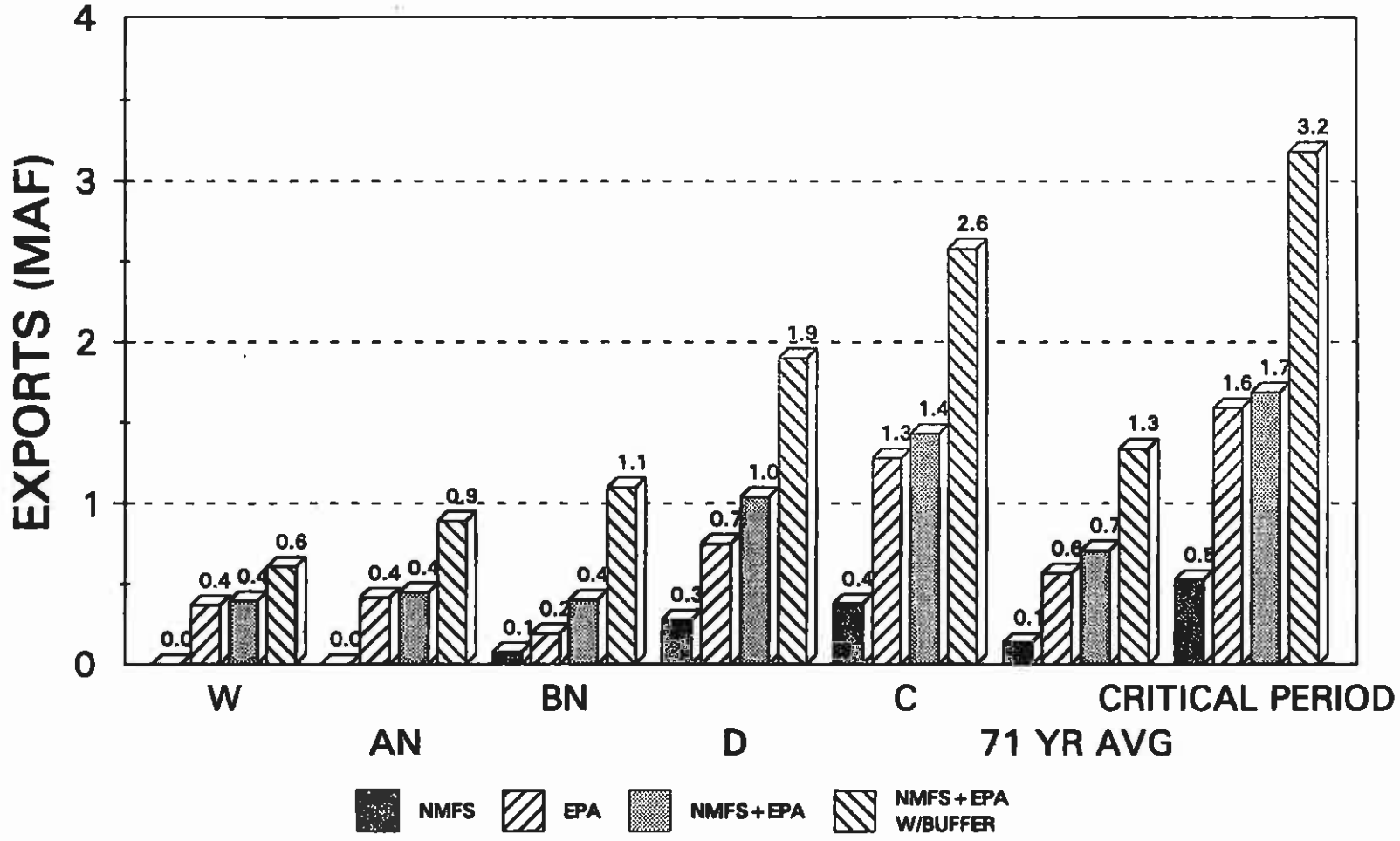
AVAILABLE EXPORTS FROM DELTA AT 7.1 MAF DEMAND UNDER DIFFERENT REGULATORY CONDITIONS AS MODELED BY DWRSIM



CRITICAL PERIOD Extends from May 1928-Oct 1934

FIGURE 33

WATER SUPPLY IMPACTS AT 6.0 MAF DEMAND UNDER DIFFERENT REGULATORY CONDITIONS AS MODELED BY DWRSIM

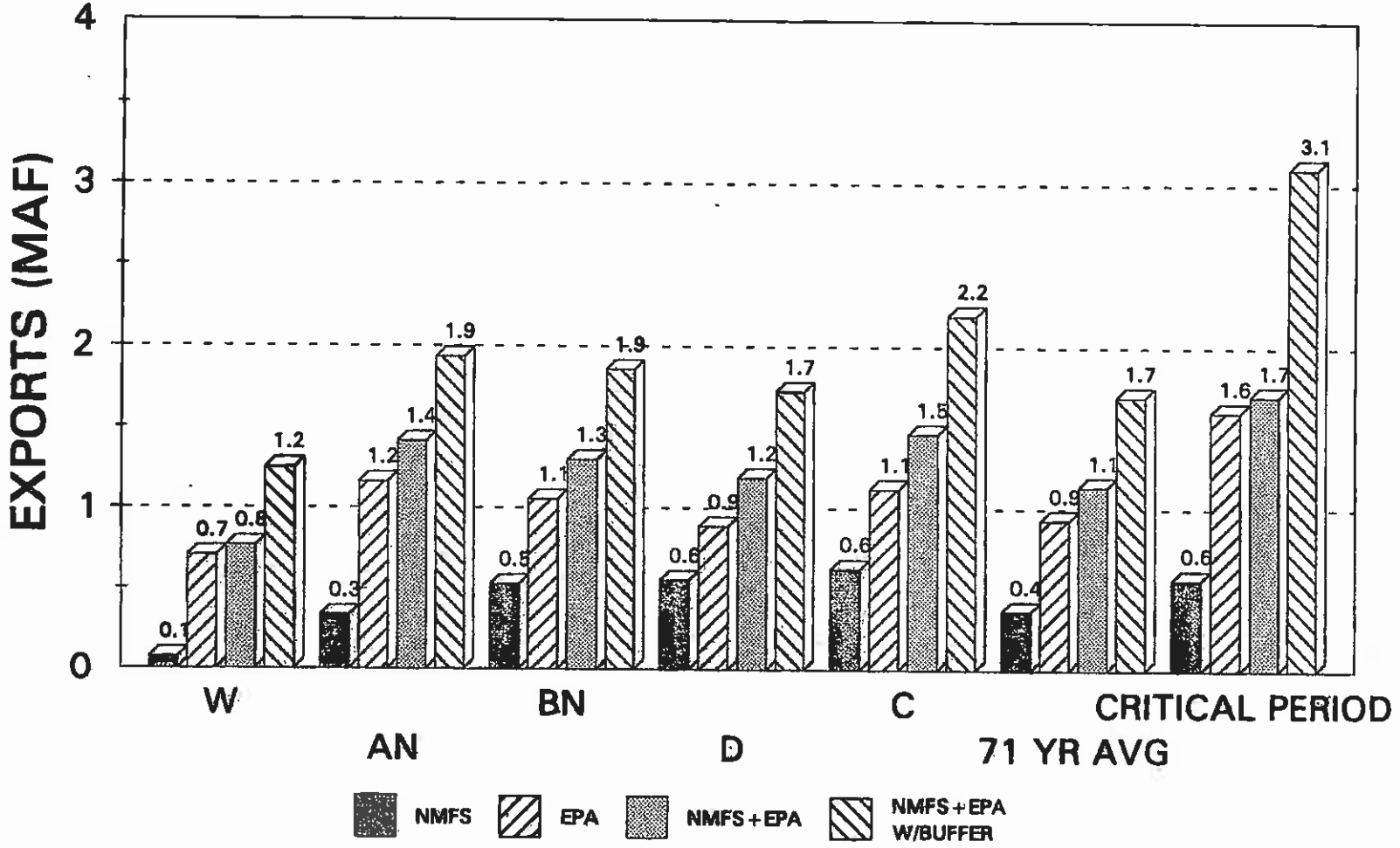


CRITICAL PERIOD Extends from May 1928-Oct 1934

FIGURE 34

FIGURE 35

WATER SUPPLY IMPACTS AT 7.1 MAF DEMAND UNDER DIFFERENT REGULATORY CONDITIONS AS MODELED BY DWRSIM



CRITICAL PERIOD Extends from May 1928-Oct 1934

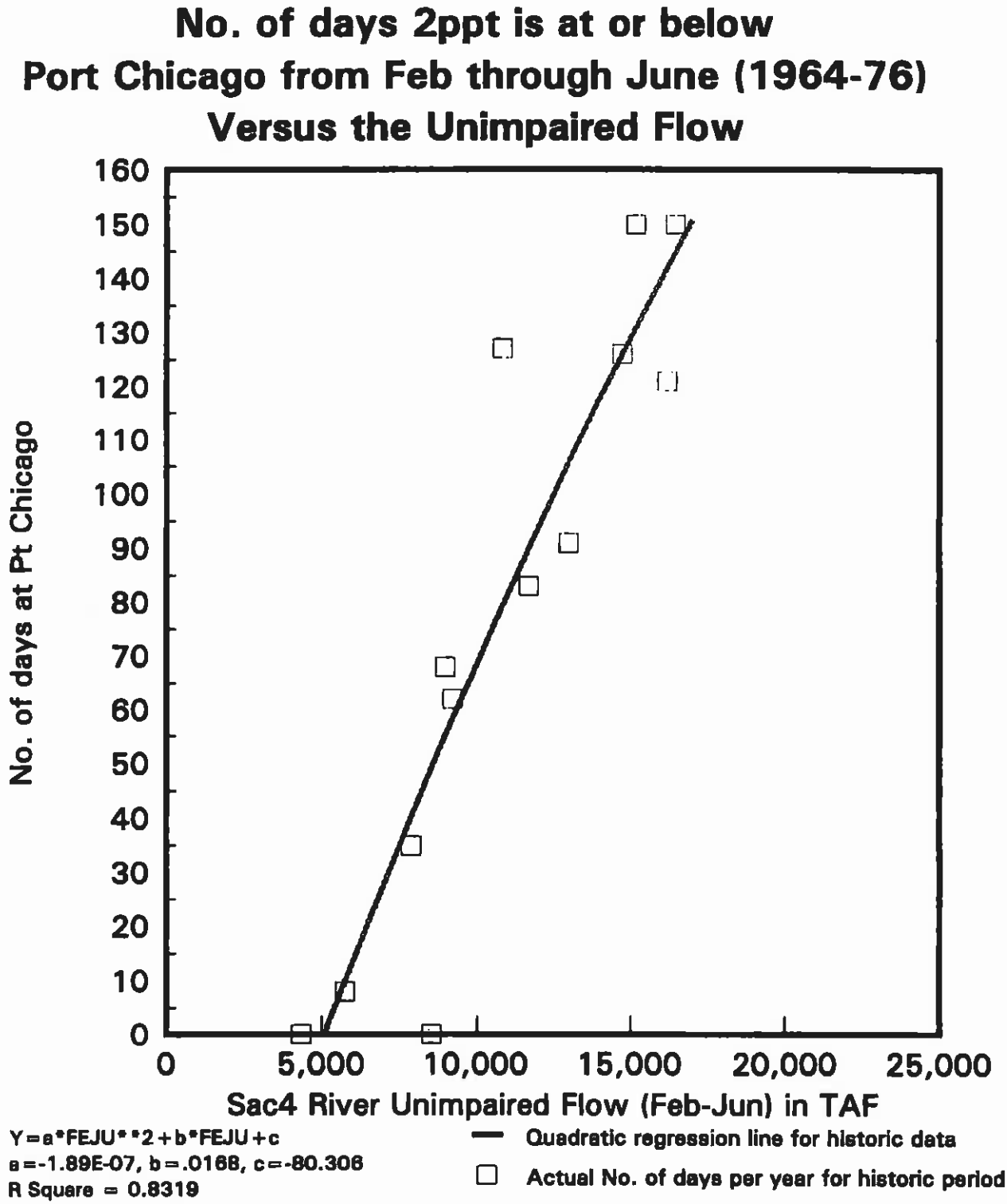
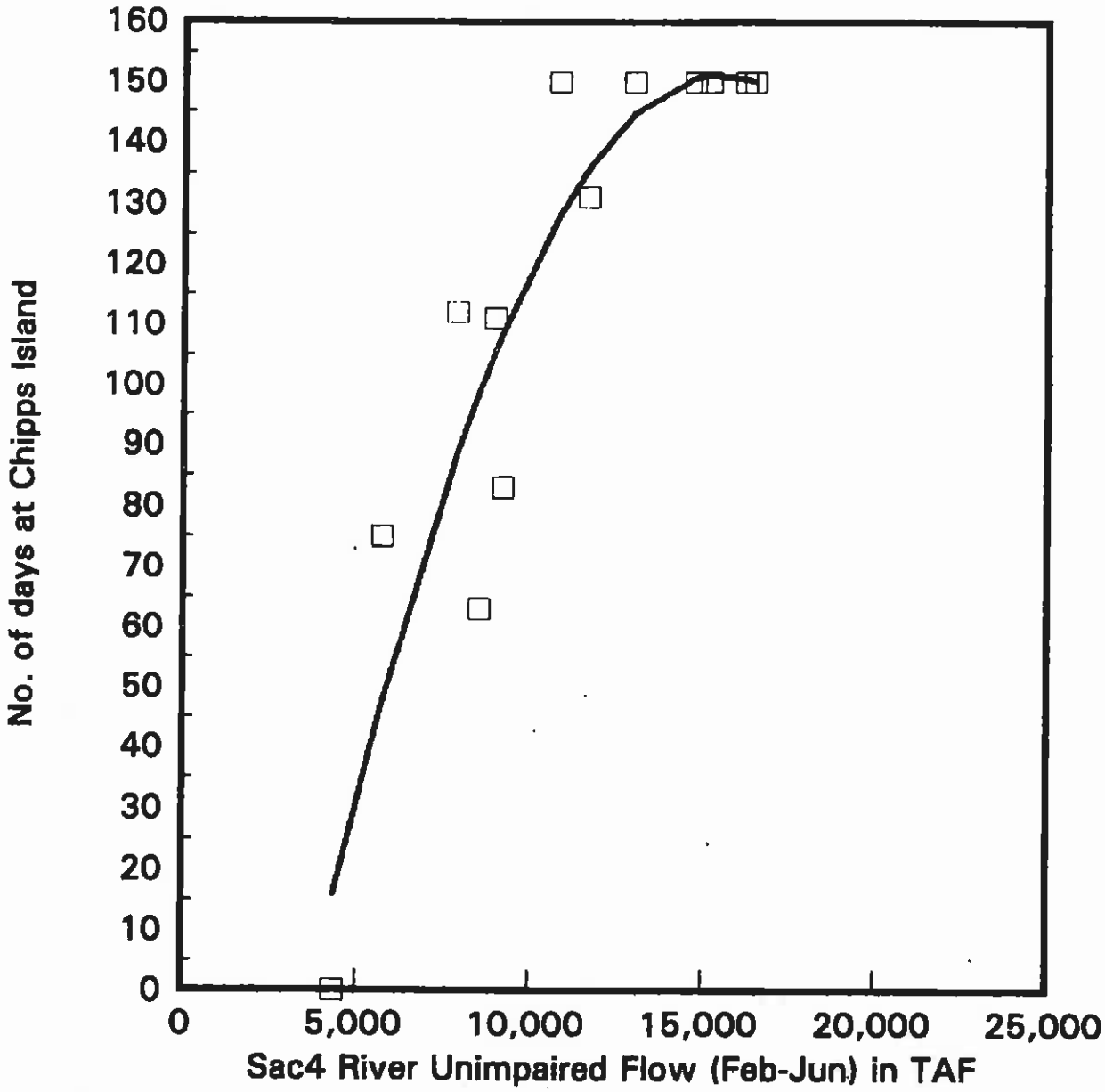

No. of days 2ppt is at or below
Port Chicago from Feb through June (1964-76)
Versus the Unimpaired Flow
No. of days at Pt Chicago
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
0
5,000
10,000
15,000
20,000
25,000
Sac4 River Unimpaired Flow (Feb-Jun) in TAF
Y=a*FEJU**2+b*FEJU+c
a=-1.89E-07, b=.0168, c=-80.306
R Square = 0.8319
Quadratic regression line for historic data
Actual No. of days per year for historic period
QUPC6478
1/18/94

FIGURE 36

No. of days 2ppt is at or below Chipps Island from Feb through June (1964-76) Versus the Unimpaired Flow



Y=a*FEJU**2+b*FEJU+c
a=-1.11E-07, b=0.0342, c=-112.377
R Square = 0.8446

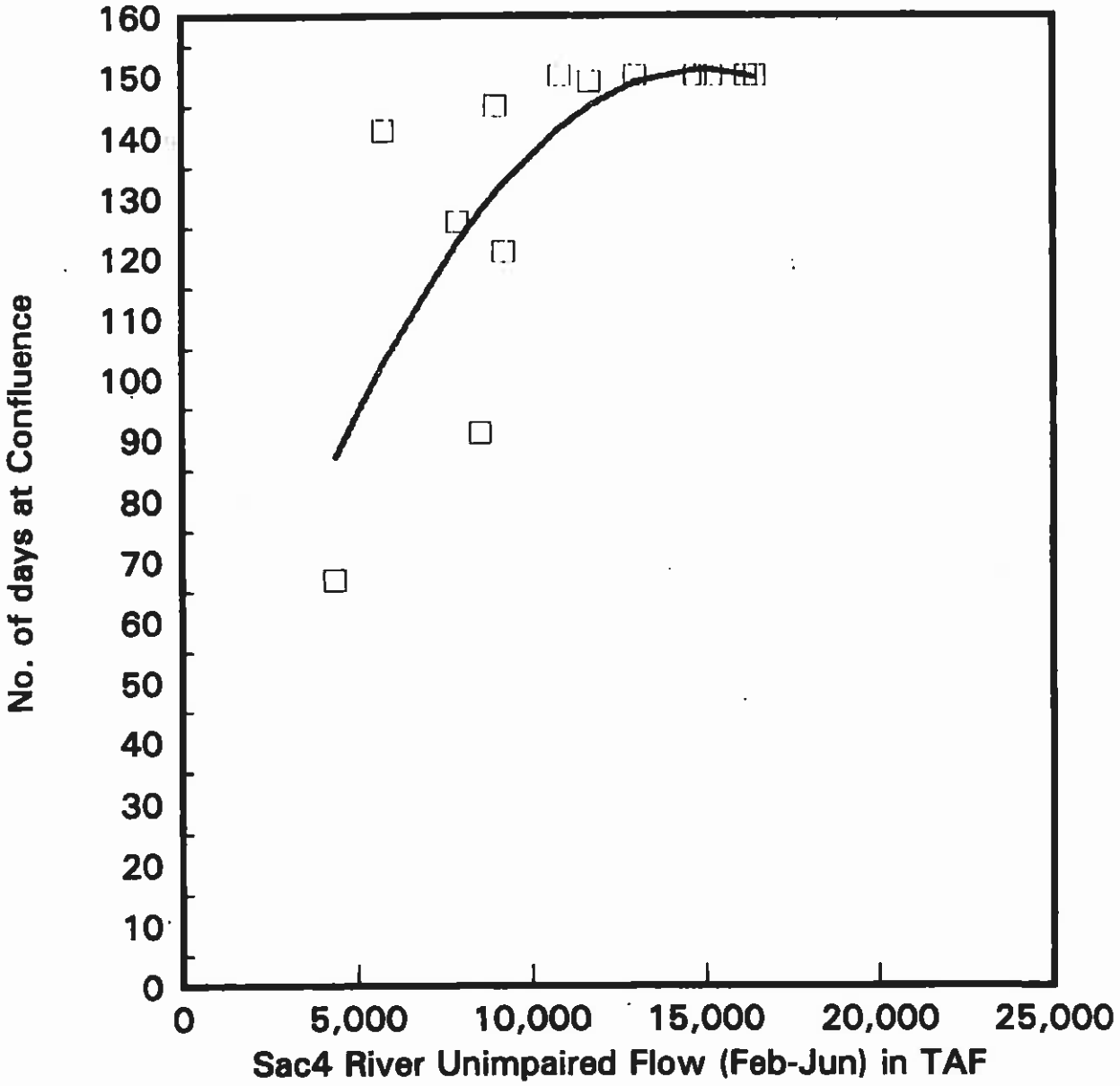
— Quadratic regression line for historic data

□ Actual No. of days per year for historic period

QUCP8476
1/18/94

FIGURE 37

No. of days 2ppt is at or below Confluence from Feb through June (1964-76) Versus the Unimpaired Flow



Y=a*FEJU**2+b*FEJU+c
a=-5.78E-07, b=0.0172, c=22.883
R Square = 0.5720

— Quadratic regression line for historic data

☐ Actual No. of days per year for historic period

QUCF6478
1/18/94

FIGURE 38

No. of days 2ppt is at or below Port Chicago from Feb through June Versus the Sacramento River Index (SRI)

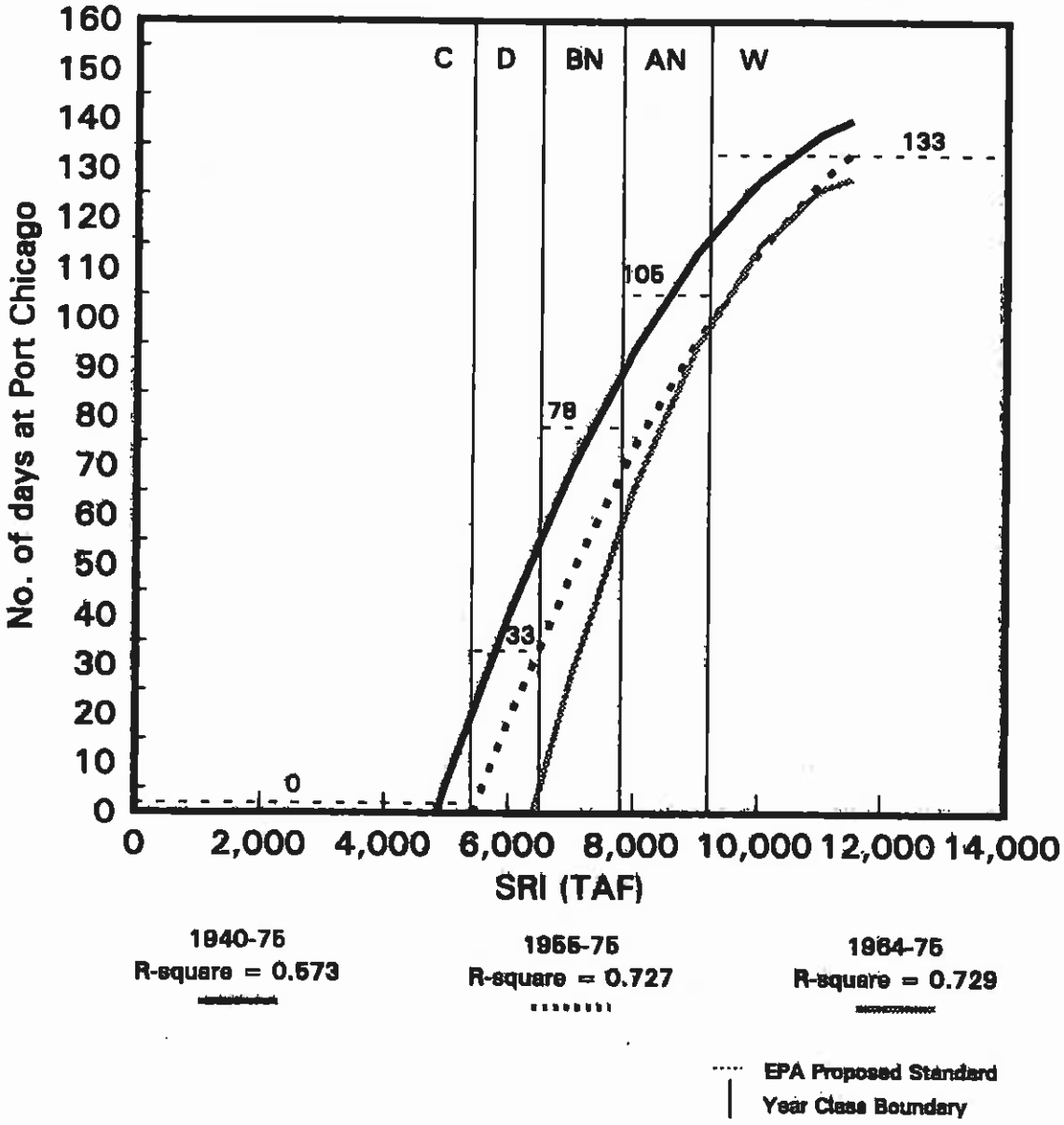


FIGURE 39

No. of days 2ppt is at or below Chipps Island from Feb through June Versus the Sacramento River Index (SRI)

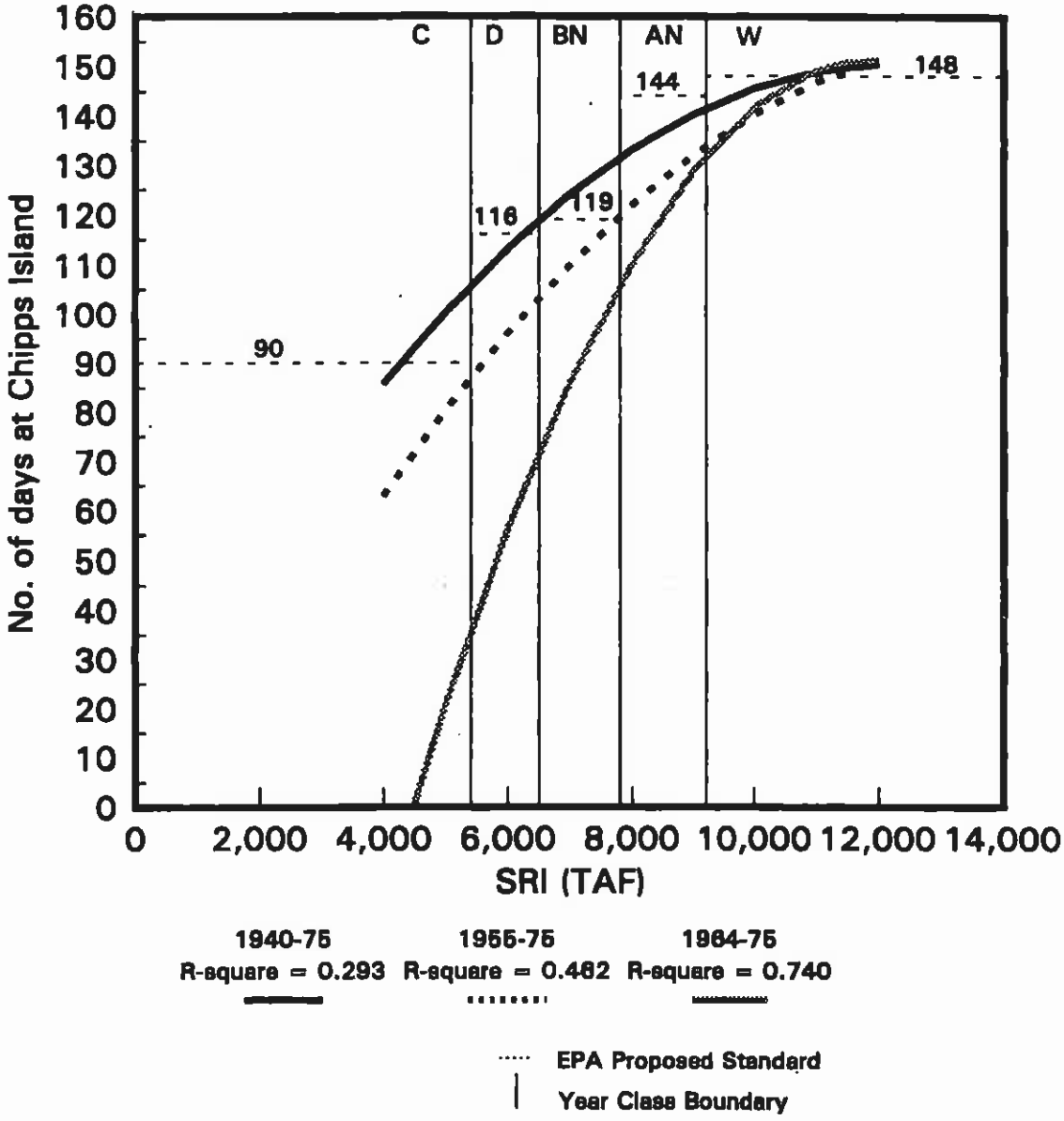


FIGURE 40

No. of days 2ppt is at or below Confluence from Feb through June Versus the Sacramento River Index (SRI)

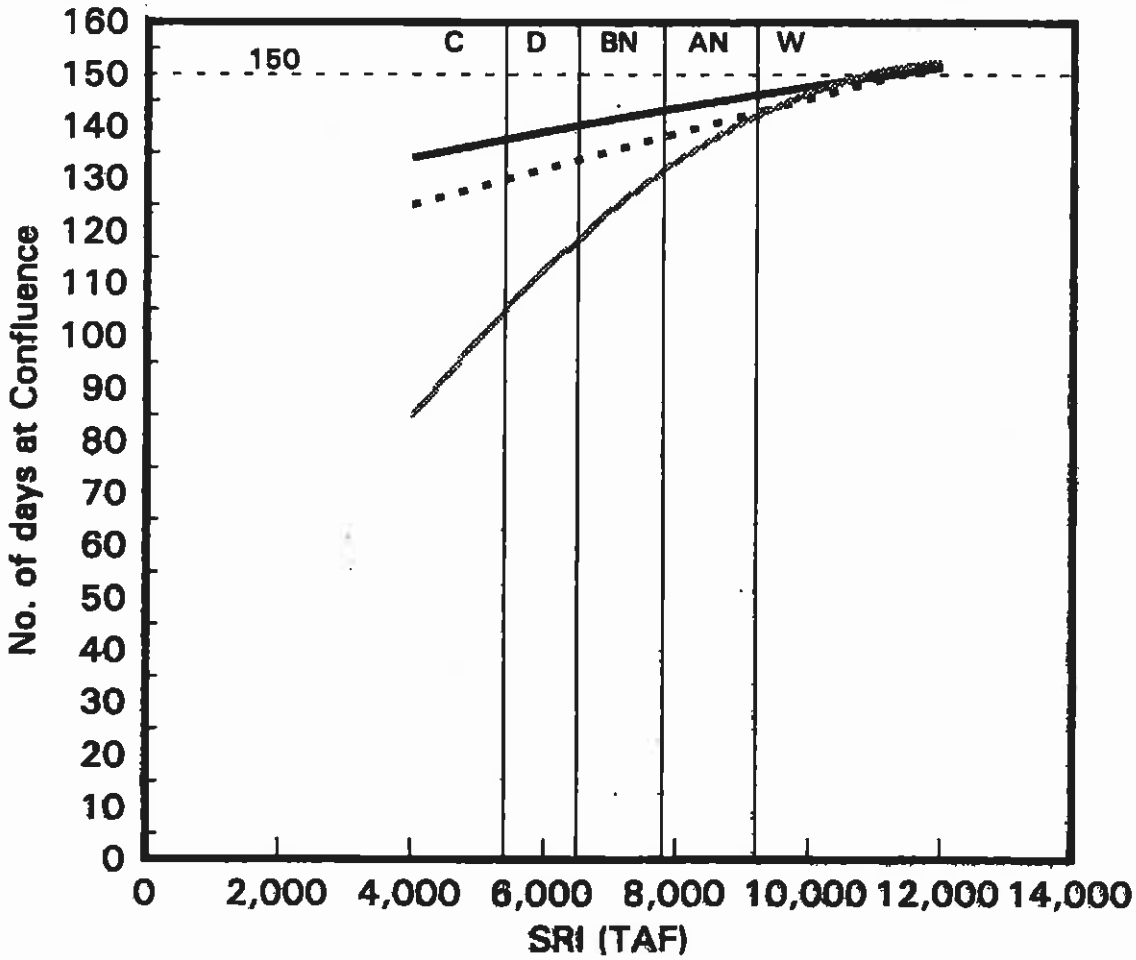


FIGURE 41

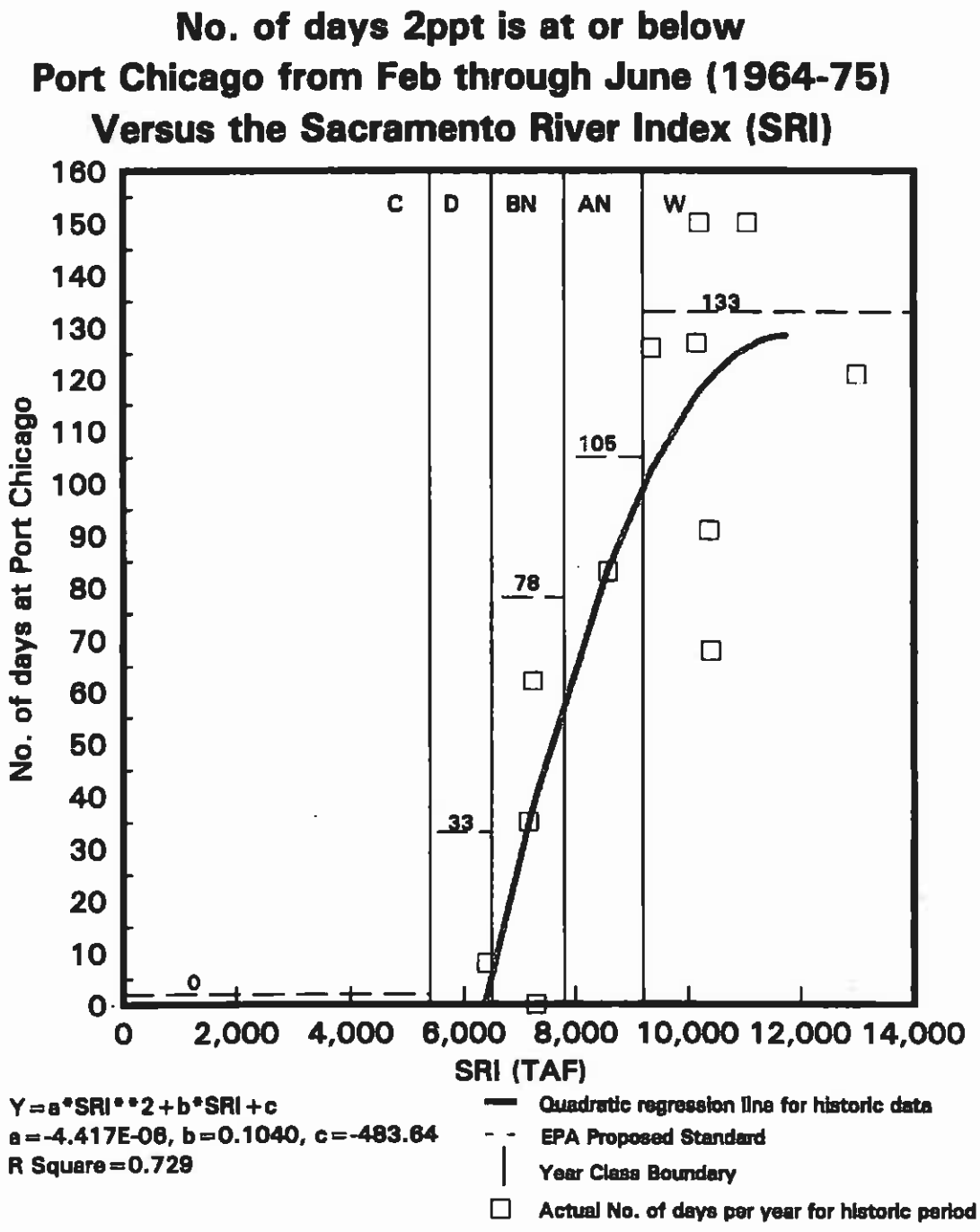

No. of days 2ppt is at or below
Port Chicago from Feb through June (1964-75)
Versus the Sacramento River Index (SRI)
No. of days at Port Chicago
SRI (TAF)
C
D
BN
AN
W
0
33
78
105
133
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
Y=a*SRI**2+b*SRI+c
a=-4.417E-06, b=0.1040, c=-483.64
R Square=0.729
Quadratic regression line for historic data
EPA Proposed Standard
Year Class Boundary
Actual No. of days per year for historic period

FIGURE 42

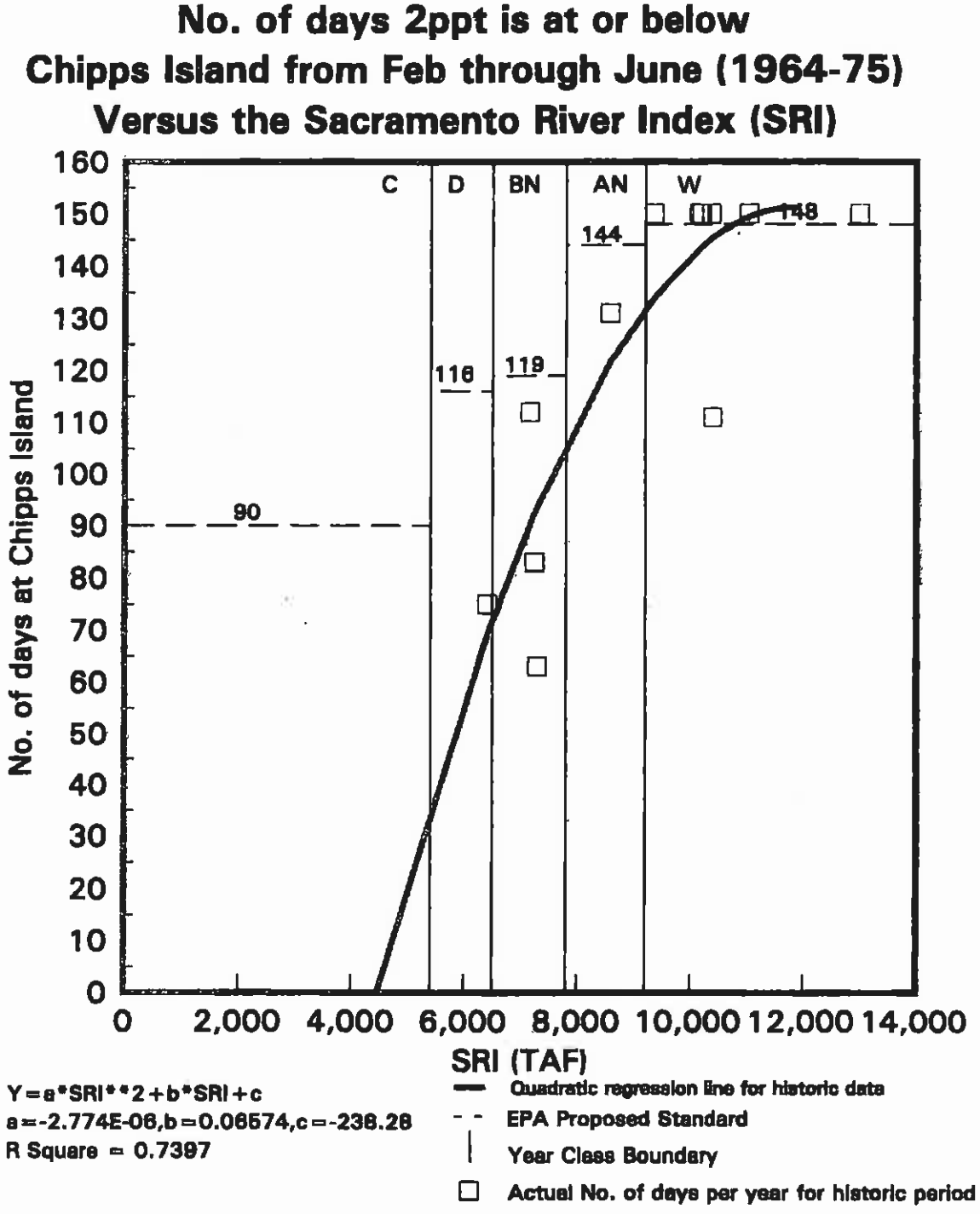

No. of days 2ppt is at or below
Chipps Island from Feb through June (1964-75)
Versus the Sacramento River Index (SRI)
No. of days at Chipps Island
SRI (TAF)
C
D
BN
AN
W
90
116
119
144
148
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
Y=a*SRI**2+b*SRI+c
a=-2.774E-06,b=0.06574,c=-238.28
R Square = 0.7397
Quadratic regression line for historic data
EPA Proposed Standard
Year Class Boundary
Actual No. of days per year for historic period

FIGURE 43

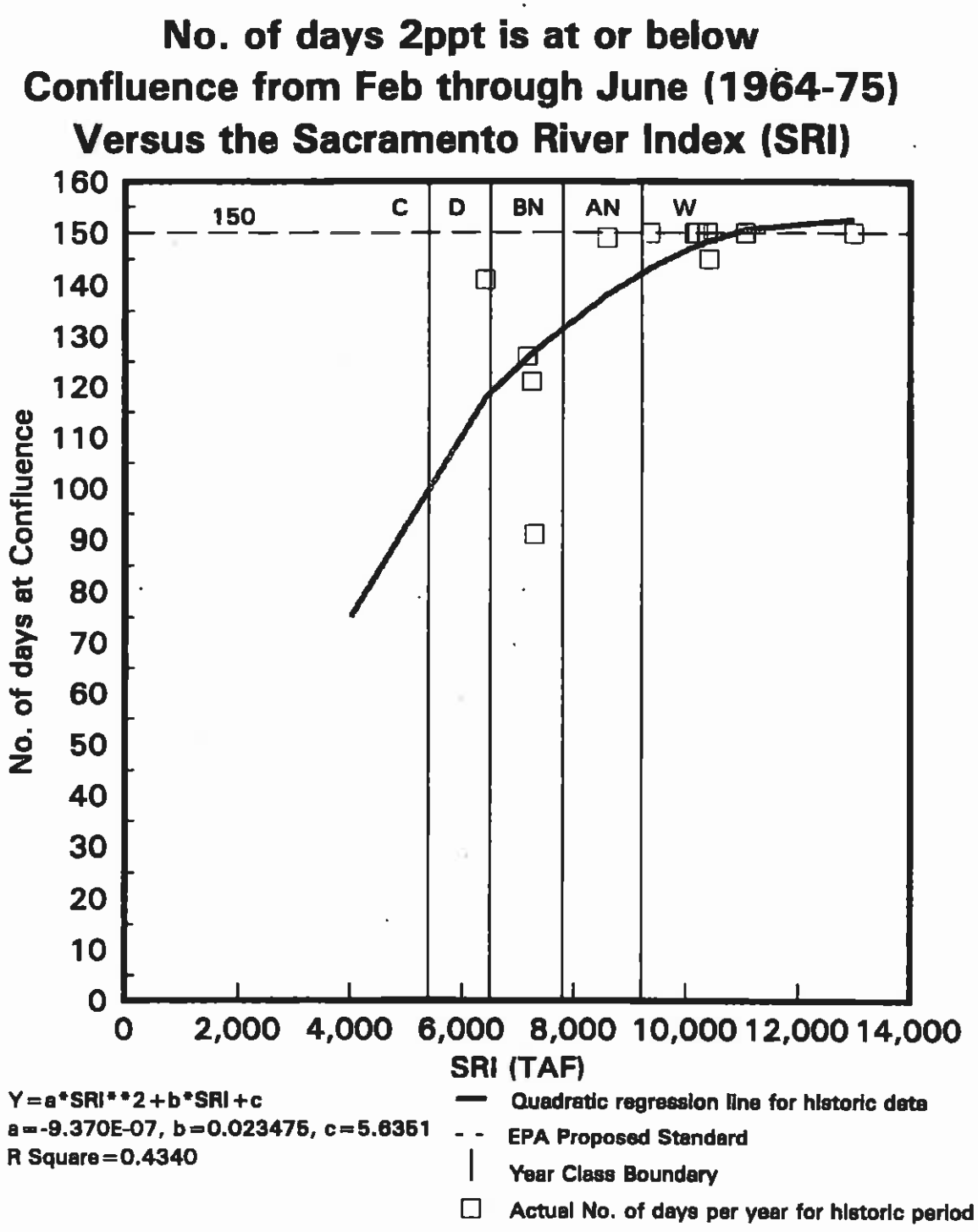

No. of days 2ppt is at or below
Confluence from Feb through June (1964-75)
Versus the Sacramento River Index (SRI)
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
150
C
D
BN
AN
W
No. of days at Confluence
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
SRI (TAF)
Y=a*SRI**2+b*SRI+c
a=-9.370E-07, b=0.023475, c=5.6351
R Square=0.4340
Quadratic regression line for historic data
EPA Proposed Standard
Year Class Boundary
Actual No. of days per year for historic period

FIGURE 44

ATTACHMENT 2

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BEFORE THE UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

In the Matter of Water Quality Standards for Surface Waters of the Sacramento River, San Joaquin River, and San Francisco Bay and Delta of the State of California	OW-FRL-4783-6 COMMENTS OF THE OFFICE OF THE ATTORNEY GENERAL FOR THE STATE OF CALIFORNIA

ATTORNEY GENERAL--OFFICE COPY

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DANIEL E. LUNGREN, Attorney General
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BEFORE THE UNITED STATES

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INTRODUCTION

The Attorney General for the State of California, respectfully submits the following comments on legal issues raised by the U. S. Environmental Protection Agency's ("EPA") proposed rule regarding water quality standards for surface water of the Sacramento River, San Joaquin River, and San Francisco Bay and Delta of the State of California. The Attorney General submits these comments on behalf of the State of California and in conjunction with the technical and regulatory comments provided by other state agencies. The Attorney General concludes that EPA's adoption of the proposed rule would be reversible error in that such an action would be "arbitrary, capricious, an

abuse of discretion, or otherwise not in accordance with law", "contrary to constitutional right, power, privilege, or immunity", and "in excess of statutory jurisdiction, authority, or limitations, or short of statutory right" within the meaning of the Federal Administrative Procedure Act. (5 U.S.C., §706(2).) Such results obtain for the following reasons.

1. Section 101(g) of the Federal Clean Water Act precludes the EPA from promulgating water quality standards under Section 303 of the Act where the implementation of those standards would have a direct and material impact on the state water allocation system.

2. The Federal Clean Water Act does not authorize EPA to promulgate standards for diversion-induced, salt water intrusion under Section 303 of the Act, but, instead, limits EPA to reviewing state efforts to address such saltwater intrusion under Section 208 of the Act.

3. The Tenth Amendment of the U. S. Constitution prohibits the federal government from mandating the California State Water Resources Control Board to implement the proposed EPA water quality standards and from requiring the California Department of Water Resources to operate the State Water Project in accordance with those standards.

SUMMARY OF THE PROPOSED RULE

Under the proposed rule, EPA would promulgate three different sets of water quality criteria for the San Francisco Bay and Sacramento-San Joaquin Delta under Section 303 of the Federal Clean Water Act. EPA proposes a salinity criteria

allegedly designed to protect estuarine habitat in the Suisun Bay. As the submittals of the State Water Resources Control Board and the Department of Water Resources have established, this salinity standard, set at 2 parts per thousand and measured at Roe Island, Chipps Island, and the confluence of the Sacramento and San Joaquin rivers, is a surrogate for Delta outflow requirements, requirements that can only be met through the regulation of water diversion. The proposed rule concedes its flow and diversion origins by admitting that "EPA expects that the State Board would implement these salinity criteria by making appropriate revisions to operational requirements included in water right permits issued by the State Board." (59 Fed. Reg. 821 (January 6, 1994).)

Second, EPA suggests a smolt survival criteria for the Sacramento River and the San Joaquin River that purport to protect salmon smolt migration through the Bay-Delta Estuary. According to the proposed rule:

> "For the Sacramento River system, the proposed salmon smolt survival criteria are based on the most recent model (USFWS 1992b) for predicting migration success for the Sacramento River fall-run population, and rely on the relationship between smolt survival and three facts: temperature, diversion out of the mainstream Sacramento River, and export rates. The San Joaquin model is based on experimental data, and relies on the relationship between salmon smolt survival and river flows, diversion into Old River, and export rates." (59 Fed. Reg. 823.)

Again, the EPA proposal recognizes the flow and diversion basis of this criteria by observing that "EPA expects that the State Board would implement these criteria by making appropriate

revisions to operational requirements included in water rights permits issued by the State Board." (Id. at 825.)

Finally, EPA presents striped bass spawning criteria for the San Joaquin River. This salinity criteria is intended to address upstream salinity primarily caused by agricultural runoff. In the proposed rule EPA expressly recognizes that improved spawning conditions could lead to greater losses of young striped bass to entrainment of the pumping plants of the State Water Project and the Federal Central Valley Project. (59 Fed. Reg. 827.) The EPA proposal again openly relies upon the State Board to implement these criteria through pumping restrictions on the water right permits issued by the State Board for the projects. (Id.)

As the following will establish EPA, lacks the authority to promulgate these criteria under Section 303 of the Federal Clean Water Act and, alternatively, the federal government lacks the power due to the Tenth Amendment of the U. S. Constitution to compel state agencies such as the State Water Resources Control Board or the Department of Water Resources to implement such standards.

I SECTION 101(g) OF THE FEDERAL CLEAN WATER ACT PRECLUDES EPA FROM PROMULGATING WATER QUALITY STANDARDS UNDER SECTION 303 OF THE ACT WHERE THE IMPLEMENTATION OF THOSE STANDARDS WOULD HAVE A DIRECT AND MATERIAL IMPACT ON THE STATE WATER ALLOCATION SYSTEM.

A. The Historical Congressional Policy Of Deference To State Water Right Law.

In the complicated field of Federal/State relationships, Congress has spoken with a clear and consistent voice regarding the issue of water resource allocation. As the U. S. Supreme Court has observed:

> "The history of the relationship between the Federal Government and the States in the reclamation of the arid lands of Western States is both long and involved, but through it runs the consistent thread of purposeful continued deference to state water law by Congress." (California v United States (1978) 438 U. S. 645, 653.)

This policy first appeared under the "equal footing" doctrine. In 1850, Congress admitted California as a state to the Union "on an equal footing with the original states in all respects whatever." (9 Stat. 452.) Under this doctrine, Congress granted the Western states, upon their admission into the Union, exclusive sovereignty over the unappropriated waters in their streams. (Kansas v Colorado (1907) 206 U.S. 46, 95; Fox River Paper Co. v Railroad Commission of Wisconsin (1926) 274 U.S. 651, 655; Shively v Bowlby (1894) 152 U.S. 1, 49; Pollard v Hagan (1845) 44 U.S. (3 How.) 212, 223-24.)

For example, in Kansas v Colorado, a case involving a dispute over the flow of the Arkansas River, Kansas argued that Congress had expressly applied English common law to both states and that the common law included the riparian system of water rights. The U. S. Supreme Court rejected this view and held that:

> "[Each state] may determine itself whether the common law rule in respect to riparian rights or that doctrine which obtains in the arid regions of the West of appropriation of waters for the purposes of irrigation shall control. Congress cannot enforce either rule upon any State." (Kansas v Colorado, supra, 206 U.S. at 94.)

Thus the "equal footing" doctrine represents a Congressional recognition of the right of the individual states to set their own water resource destinies.

Congress reaffirmed its policy of deference to state water right law in the passage of the Desert Land Act of 1877. The Desert Land Act followed numerous mining and homestead acts designed by Congress to reclaim and settle public domain land. (California v United States, supra, 438 U.S. at 655-657.) The Act authorized the entry to and cultivation of public land. Upon compliance with certain conditions, a settler would receive a land patent. With regard to water, the Act authorized settlers to appropriate water for irrigation and reclamation. However, the Act specifically provided that all sources of water upon public lands were to "be held free for the appropriation and use of the public." (19 Stat. 377.)

In California Oregon Power Co. v Beaver Portland Cement Co., the U. S. Supreme Court interpreted the Desert Land Act as affirming the policy of deference to state water law. (California Oregon Power co. v Beaver Portland Cement Co. (1935) 295 U.S. 142). At issue in Oregon Power was whether a federal land patent carried with it a common law riparian water right. After reviewing the statutory language, the court held that:

> "If this language is to be given its natural meaning, and we see no reason why it should not, it effected a severance of all waters upon the public domain, not theretofore appropriated, from the land itself. From that premise it follows that a patent issued thereafter for lands in a desert-land state or territory, under any of the land laws of the United States, carried with it, of its own force, no common law right to the water

> flowing through or bordering upon the lands conveyed." (California Oregon Power Co. v Beaver Portland Cement Co., supra, 295 U.S. at 158. (Emphasis added.)

Thus the Court determined that the Desert Land Act severed the right to water from public domain land and delegated to the states the power to allocate their water resources. (California Oregon Power Co. v Beaver Portland Cement Co., supra, 295 U.S. at 164.)

Congress reaffirmed this delegation of authority to the states in the passage of the Federal Reclamation Act of 1902. The Act authorized the federal government to construct water resource development projects and, at least initially, to finance these facilities through the sale of public domain land. (43 U.S.C., §391.) However, section 8 of the 1902 Act specifically provided that:

> Nothing in this act shall be construed as affecting or intended to affect or to in any way interfere with the laws of any State or Territory relating to the control, appropriation, use, or distribution of water used in irrigation, or any vested right acquired thereunder, and the Secretary of the Interior, in carrying out the provisions of this act, shall proceed in conformity with such laws. . ." (43 U.S.C., §§ 372, 383.)

In 1978, the U. S. Supreme Court brought together the separate doctrines that establish Congressional deference to state water law in the case of California v United States. (California v United States, supra, 438 U.S. at 653-663.) In that decision, the United States had challenged the authority of the State Water Resources Control Board ("State Board") to impose terms and conditions affecting the operation of the New Melones

Reservoir, a federal reclamation facility located on the Stanislaus River. The United States had contended that the State Board lacked the power to impose any terms and conditions on the operation of the federal project. However, the Supreme Court rejected the United States' arguments and concluded that Section 8 of the 1902 Act required the United States to comply with the state water right law unless such law was directly inconsistent with clear Congressional directives regarding the project. (California v United States, supra, 438 U.S. at 678.) In reaching this conclusion, the Court relied upon its earlier decisions describing the broad scope of state jurisdiction over internal waters:

> "The Court noted that there are two limitations to the State's exclusive control of its streams - reserved rights "so far at least as may be necessary for the beneficial uses of the government property," id., at 703, and the navigation servitude. The Court, however, was careful to emphasize with respect to these limitations on the States' power that, except where the reserved rights or navigation servitude of the United States are invoked, the State has total authority over its internal waters." (Id. at 662.) (Emphasis added.)

It is within this historical context of longstanding Congressional deference to state water right law, that Congress adopted Section 101(g) of the Federal Clean Water Act.

B. Section 101(g) Reserves To The States The Authority To Allocate Water Quantity Under State Water Right Law.

Congress adopted Section 101(g) of the Clean Water Act, as part of the 1977 amendments to the Act. The section provides that:

> "It is the policy of Congress that the authority of each State to allocate quantities of water within its jurisdiction shall not be superseded, abrogated or otherwise impaired by this Act. It is the further policy of Congress that nothing in this Act shall be construed to supersede or abrogate rights to quantities of water which have been established by any State. Federal agencies shall co-operate with State and local agencies to develop comprehensive solutions to prevent, reduce and eliminate pollution in concert with programs for managing water resources." (33 U.S.C., §1251(g)) (Emphasis added.)

The plain language of this provision makes clear that states have the authority to allocate quantities of water under state law, and that the provisions of the Clean Water Act may not be applied to undermine this state authority.

In adopting Section 101(g), Congress built upon the existing language in the Clean Water Act that already reflected the previously-mentioned, Congressional deference to state water right law. Section 101(b) of the Act provided that "[i]t is the policy of Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, to plan the development and use (including restoration, preservation, and enhancement) of land and water resources, and to consult with the Administrator in the exercise of this authority under the Act." (33 U.S.C., §1251(b).) Section 510 similarly provided that, "[e]xcept as expressly provided in this Act, nothing in this Act shall . . . (2) be construed as impairing or in any manner affecting any right or jurisdiction of the States with respect to the waters

(including boundary waters) of such States." (33 U.S.C., § 1370.)

The legislative history of Section 101(g) expressly confirms that Congress intended the section to be part of the long-standing tradition of Congressional deference to state water right law. During the Senate debate, Senator Malcolm Wallop of Wyoming explained the purpose of the provision which eventually became Section 101(g):

> "Mr. President, this is a simple amendment and I shall not take much time on it. I have talked with the managers of the bill on both sides and I believe they will accept it.
>
> "The amendment simply states that nothing in the act shall be construed to supersede or abrogate or in any other way, affect any authority now vested in any State to establish or operate programs for the allocation of quantities of water within its respective boundaries, or any rights to or allocations of quantities of water which have been established pursuant to such program.
>
> "Mr. President, I compliment the Committee on Environment and Public Works on both sides for the understanding that they have shown to the unique problems of western water law and western water pollution problems. I think the committee's understanding in the case of irrigated agriculture was a splendid example of how people on both sides were able to come to conclusions that are logical and flexible. I thank them for that.
>
> "This simply affirms, more or less, the same notion. It is an attempt to recognize the historic allocation rights contained in State constitutions.
>
> "It is designed to protect historic rights from mischievous abrogation by those who would use an act, designed solely to protect water quality and wetlands, for other purposes. It does not interfere with the legitimate purposes for which the act was designed.
>
> "The amendment speaks only -- but significantly -- to the rights of States to allocate quantities of their water and to determine priority uses. It recognizes the differences in types of water law across the Nation. It recognizes patterns of use.
>
> "When Wyoming became a State and the Congress ratified our constitution in the Act of Admission, that Constitution stated then and states today, "The water of all natural streams, springs, or lakes or other

> collections of still water within the boundaries of this State are hereby declared to be the property of the State."
>
> "Water quality and interstate movement is an acceptable Federal role and influence. But the States historic rights to allocate quantity, and establish priority of usage remains inviolate because of this amendment. This act remains an act to protect the quality of water and to protect critical wetlands in concert with the various States. In short a responsible Federal role." (August 4, 1977 Senate Debate, reprinted in Committee on Environment and Public Works, 95th Cong., 2d Sess. A Legislative History of the Clean Water Act of 1977: A Continuation of the Legislative History of the Federal Water Pollution Control Act, (1978) (hereinafter "1977 Legislative History"), Vol. 4, p. 1030.)[1/]

Thus, Senator Wallop's August 4, 1977 statement confirmed the Congressional tradition of deference to state control over water allocation decisions, while recognizing the more general federal role of protecting water quality. Where the two clash, "the States historic rights to allocate quantity, and establish priority of usage remains inviolate." (Id.)

The Conference Committee, which included Senator Wallop, made minor changes to the language of the amendment and included

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1. Like Wyoming, California similarly mandates state ownership of water. Section 102 of the California Water Code provides that "all water within the State is the property of the people of the State, but the right to the use of water may be acquired by appropriation in a manner provided by law." (Cal. Wat. Code, § 102.) Most Western states have adopted similar statutory or constitutional declarations of state ownership of the water within their respective boundaries. (See Wells A. Hutchins, Water Rights Laws in the Nineteen Western States (1971), Vol. 1, pp. 5-6.) California's principle doctrine for allocating water, the doctrine of reasonable use, is set forth in Article 10, Section 2 of the California Constitution. (See National Audubon Society v Superior Court (1983) 33 Cal.3d 419, 443.)

the amendment within the policy provision of the Act.[2/] The Conference Report explained the provision as follows:

> "The conference substitute amends section 101 of the Act to add a new subsection declaring it the policy of Congress that the authority of each State to allocate quantities of water within its jurisdiction should not be superseded, abrogated or otherwise impaired by this Act. It is further the policy of Congress that nothing in this Act should be construed to supersede or abrogate rights to quantities of water that have been established by any State. Federal agencies are to cooperate with State and local agencies to develop solutions to prevent, reduce and eliminate pollution in concert with programs for managing water resources. In addition, the Administrator is required to submit a report before July 1, 1978, analyzing the relationship between programs under this Act and State and Federal programs for allocation of water. This

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2. The original Wallop Amendment in the Senate bill as passed read:

> "Nothing in this Act shall be construed to supersede or abrogate or in any other way affect any authority now vested in any State to establish or operate programs for the allocation of quantities of water within its respective boundaries, or any rights to, or allocations of, quantities of water which have been established pursuant to such programs." (1977 Legislative History, Vol. 4, p. 1090.)

The Conference substitute read:

> "It is the policy of Congress that the authority of each State to allocate quantities of water within its jurisdiction shall not be superseded, abrogated or otherwise impaired by this Act. It is the further policy of Congress that nothing in this Act shall be construed to supersede or abrogate rights to quantities of water which have been established by any State. Federal agencies shall cooperate with State and local agencies to develop comprehensive solutions to prevent, reduce and eliminate pollution in concert with programs for managing water resources." (1977 Legislative History, Vol. 3, p. 186.)

The Conference substitute also added § 102(d) which required EPA to prepare a report on the relationship between Clean Water Act programs and programs for water allocation. (See House Conference Report 830, 95th Cong. 1st Sess., reprinted in 1977 Legislative History, Vol. 3, pp. 186-187.)

report is to include necessary recommendations." (House Conference Report No. 830, pp. 52, reprinted in 1977 Legislative History, Vol. 3, p. 236.)

Senator Wallop explained the Conference substitute on the Senate floor, reiterating that it was designed to preserve state authority over water quantity allocation and water rights:

> "The conferees accepted an amendment which will reassure the State that it is the policy of Congress that the Clean Water Act will not be used for the purpose of interfering with State water rights systems. I sponsored this amendment with Senator Hart on the floor of the Senate. This amendment came immediately after the release of the Issue and Option Papers for the Water Resource Policy Study now being conducted by the Water Resources Council. Several of the options contained in that paper called for the use of Federal water quality legislation to effect Federal purposes that were not strictly related to water quality. Those other purposes might include, but were not limited to Federal land use planning, plant sitting and production planning purposes. This "State's jurisdiction" amendment reaffirms that it is the policy of Congress that this act is to be used for water quality purposes only.
>
> "The amendment simply states that it is the policy of Congress that the authority of each State to allocate quantities of water within its jurisdiction shall not be superseded, abrogated or otherwise impaired by this act. It also states that it is the further policy of Congress that nothing in this act will be construed for the purpose of superseding or abrogating rights to quantities of water which have been established by a State.
>
> "This amendment is not intended to create a new cause of action. It is not intended to change present law, for a similar prohibition is contained in section 510 of the act. This amendment does seek to clarify the policy of Congress concerning the proper role of Federal water quality legislation in relation to State water law. Legitimate water quality measure authorized by this act may at times have some effect on the method of water usage. Water quality standards and their upgrading are legitimate and necessary under this act. The requirements of section 402 and 404 permits may incidentally affect individual water rights. Management practices developed through State or local 208 planning units may also incidentally effect the use of water under an individual water right. It is not the purpose of this amendment to prohibit those incidental effects. It is the purpose of this

amendment to insure that state allocation systems are not subverted, and that effects on individual rights, if any, are prompted by legitimate and necessary water quality considerations.

"This amendment is an attempt to recognize the historic allocation rights contained in State constitutions.

"It is designed to protect historic rights from mischievous abrogation by those who would use an act, designed solely to protect water quality and wetlands, for other purposes. It does not interfere with the legitimate purposes for which the act was designed.

"The amendment speaks only -- but significantly -- to the rights of States to allocate quantities of their water and to determine priority uses. It recognizes the differences in types of water law across the Nation. It recognizes patterns of use. . . . .

". . . Water quality and interstate movement is an acceptable Federal role and influence. But the States historic rights to allocate quantity, and establish priority of usage remains inviolate because of this amendment. The Water Pollution Control Act was designed to protect the quality of water and to protect critical wetlands in concert with the various States. In short a responsible Federal role," (December 15, 1977 Senate Debate, reprinted in 1977 Legislative History, Vol. 3, pp. 531-532.)

Thus, according to Senator Wallop, the section 402 and 404 permitting sections of the Act and the section 208 planning provisions of the Act may "incidentally effect the use of water under an individual water right." However, in no case, does the Act authorize EPA to subvert the "state allocation systems." (Id.) Most significantly, Senator Wallop's listing of the sections within the Clean Water Act that may "incidentally affect" water allocation did not include EPA's water quality standard-setting authority contained in section 303 of the Act, the section relied upon by EPA in the proposed rule.

An equally significant point about the Section 101(g) legislative history is that it establishes that the section was prompted by certain proposals by the U. S. Water Resources

Council to use federal water quality regulation to establish federal minimum instream flows. Senator Wallop, in his remarks about the final Conference bill, specifically stated that his amendment "came immediately after the release of the Issue and Option Papers for the Water Resource Policy Study now being conducted by the Water Resource Council", and that it was prompted by concerns over some of these proposals. (See 1977 Legislative History, Vol. 3, p. 531.) Senator Hansen of Wyoming also had complained about the Water Resources Council proposals on the same day that Senator Wallop introduced his amendment. (See 1977 Legislative History, Vol. 3, pp. 941-942.) Senator Hansen stated:

> "I have real concerns and fears with regard to the entire thrust of these proposals, particularly with regard to issue papers; three, institutions and institutional arrangements; four, water conservation; and five, Federal reserved water rights.
>
> Ever since gold was panned in California, the concept of prior appropriations has been the system upon which the West has relied in the utilization and development of its water. Based upon this system and the State water laws developed around it, farms and ranches were created from the frontier. Based upon this system, industry developed. And based upon this system, cities and towns grew up. For over 100 years the arid West has relied upon this system and developed in accordance with it and grown strong and economically prosperous because of it.
>
> Now the Federal Government, through a national water policy as developed by the Water Resources Council, declares that the system is inadequate because it ignores this consideration or that consideration. Now the Federal Government declares that it will make use of the 50 percent of the land that it owns in the West, that it will make use of its position as trustee for Indian lands, that it will make use of the money which it returns to the American taxpayer, to change the water law of the West and put in its place a system that someone in Washington thinks is better.
>
> Mr. President, it is my intention to do all that I can in order to prevent the adoption of a national water policy which abrogates and destroys the ability

> of States to deal with problems which are State problems. It is my intent to be clear on this issue, that State water laws are matters to be dealt with by the States and not by some official in Washington." (Id.)

The Water Resource Council Issue Paper ("WRC Issue Paper") that so concerned Senator Wallop and others threatened the states' authority to allocate water quantities and determine water rights. The WRC Issue Paper, which was published in the Federal Register on July 15, 1977, roughly three weeks before Senator Wallop introduced his amendment on August 4, 1977, identified as a "problem" the "lack of coordination between water quality and water quantity planning efforts". (42 Fed. Reg. 36790 (July 15, 1977).) The WRC Issue Paper listed as one option for solving this problem centralizing water resource planning or project review in one federal agency. (Id.)

The WRC Issue Paper also called for a reexamination of water resources institutions, stating that this review "should not be limited to what has been traditionally viewed as strictly federal areas concerning water resources", and that while this review "will respect the fact that the acquisition, use, and disposition of rights to use water have historically been a matter of individual State laws . . . it may be necessary to develop a national perspective both as to water quantity and quality . . ". (42 Fed. Reg. 36792.) (Emphasis added).

Most significantly, the WRC Issue Paper raised the possibility of federally-mandated minimum in-stream flows for environmental purposes. Thus, the WRC Issue Paper claimed that "[c]oncepts of 'beneficial use' and 'diversion' in [state] water

law systems frequently have not evolved to include instream flow needs or certain offstream environmental uses." (42 Fed. Reg. 36793.) Options to remedy this included "[e]stablish[ing] institutions at the federal level whereby instream flow needs could be identified, quantified, and effectively provided for through specific procedures", and using federal sanctions, such as contracting, licensing, and permit approvals to implement state instream flow requirements. (Id.)

The WRC Issue Paper also indicated that water diversions may be a legitimate federal concern because of their effect on water quality. After discussing how state water rights law often developed without appreciating the connections between groundwater and surface water regimes, the WRC issue paper said:

> "A related problem may arise when laws and programs fail to recognize the relationship between water quality and water quantity. Thus, problems may result in stringent regulations of discharges of pollutants into a watercourse while no attention to quality is given to permitting a diversion from the same watercourse even though the diversion may have a greater quality impact by reducing the assimilative capacity of the stream or further concentrating existing pollutants in the stream than does the discharge of the pollutants. In either case, those are adverse quality consequences and in each case they should be recognized.
>
> "The integration of surface and groundwater and administering rights to make surface diversions from streams are primarily matters of State law; however, the Federal Government does have an interest in those problems particularly if State law might threaten the viability of a Federal project or program. For example, Federal water quality control programs may be ineffective if State administration continues to grant rights in streams in which existing diversions make water quality standards difficult to attain." (42 Fed. Reg. 36793) (Emphasis added).

The WRC Issue Paper went on to listed various federal regulatory options to handle this problem. (Id.)

Given this historical background, Section 101(g) was clearly intended by Senators Wallop, Hansen and others to block implementation of WRC Issue Paper proposals which threatened state autonomy over water rights. Consequently, when Senator Wallop used the term "quantities of water" in Section 101(g) he was not using the term in some abstract, ungrounded fashion. Instead, he undoubtedly had in mind at least those "water quantity" proposals being discussed in the WRC Issue Paper which had prompted his amendment in the first place. Federal regulation of instream flows to help attain water quality standards was one of those "water quality" proposals which Section 101(g) was intended to prevent.

C. EPA's Past Administrative Practice Has Been Not To Require Flow And Diversion Requirements To Implement Water Quality Standards.

As previously noted, Section 102(d) of 1977 amendments to the Clean Water Act required EPA to prepare a report for Congress which would "include recommendations concerning the policy in section 101(g) of the Act." (33 U.S.C., §1252(d).) In 1979, EPA issued a draft report entitled Water Quality/Water Allocation Coordination Study: A Report to Congress in Response to Section 102(d) of the Clean Water Act ("EPA Water Quality/Water Allocation Report"). A copy of this report is attached to these comments as Exhibit A. This report specifically discusses the issue of using water quality standards to set minimum flows for instream uses. The Report, in its chapter on "Instream Flows", first emphasizes that states have primary authority over water allocation. (EPA Water Quality/Water Allocation Report at p. V-

2 ("the primary responsibility for allocating water between in-stream and offstream uses rests with the States"); Id. at p. V-9 ("States have the primary responsibility for protection of instream flows"). The Report then notes the interrelationship between instream flows and the water quality standards program, with the primary illustration being the need to identify a minimum level of flow in order to set water quality related effluent limitations for point discharges. (Id. at V-10 to V-15.) The Report then discussed using water quality standards to set minimum flows for instream uses, and stated:

> "EPA does not require that [water quality] standards include flow criteria to protect the use included in the standards although States have the authority to establish such criteria. In June 1978, EPA published an advanced notice of proposed rule-making that raised the possibility of a changed in this policy, while ruling out the option of promulgating flow criteria when the States choose not to do so." (Id., p. V-18.) (Emphasis added).

The Water Quality/Water Allocation Report goes on to say that some states' water laws might favor instream flows while others might not but that, "[i]n any case, the decision between instream and offstream uses is primarily the State's responsibility." (Id., p. V-19.) (Emphasis added.) Hence, the Water Quality/Water Allocation Report specifically disavows any use of water quality standards to set minimum flows for instream uses.

As quoted above, the Water Quality/Water Allocation Report stated that it was considering a change in its policy regarding use of water quality standards for instream flows. (Id., p. V-18.) EPA did undertake that review and eventually concluded not

to change its policy, and not to require minimum stream flows in the water quality standards process.

On July 10, 1979, EPA published a statement of policy and a notice of proposed rulemaking on water quality standards. (See 43 Fed. Reg. 29588 (July 10, 1979).) This notice contained a section entitled "Consideration of Streamflow and Allocation of Water Quantities", which stated:

> "Some water resource management practices (such as stream diversion for agricultural purposes) not only affect water quantity in a stream segment but also affect the water quality in the same segment. These practices may in some cases be inconsistent with the congressional goal of fishable, swimmable water wherever attainable."
>
> "EPA may therefore develop a policy to urge States to prohibit alteration or restriction of natural flows that would interfere with fishable, swimmable water quality. EPA does not at this time intend, however, for its policy to result in Federal promulgation of specific streamflow and quantity requirements in the event a State fails to take appropriate action. Whatever policy EPA develops will be consistent with new section 101(g) of the act, which recognizes each State's authority to allocate water quantities within its jurisdiction." (Id. at 29591.) (Emphasis added.)

The notice went on to solicit comments on the stream flow/water allocation issue which was specifically posed as follows: "Should EPA encourage State adoption of stream flow and quantity allocation prohibitions? How can EPA do so within the confines of new section 101(g) of the act?" (Id. at 29591.)

On October 29, 1982, EPA published a proposed rule on water quality standards which summarized the comments it had received on the stream flow/water allocation issue. (See 47 Fed. Reg. 49234 (October 29, 1982).) This proposed rule stated:

> "The majority of commenters answered that EPA should not encourage State adoption of stream flow and quantity allocation prohibitions. Thirty-one

commenters were opposed to the proposed policy. The argument raised most frequently was that the States have the authority in the area of stream flow and water allocation and that Section 101(g) of the Clean Water Act was adopted specifically to protect that authority. Many interpreted EPA's proposed policy as an overt, purposeful step toward usurping State's rights."

"Eighteen individuals suggested that EPA should encourage State adoption of stream flow and quantity allocation prohibitions. However, many stated that the Agency should be careful to restrict its activities to encouragement rather than regulation." (Id. at 49251.) (Emphasis added).

EPA then stated its "response" on this issue as follows:

"EPA is not requiring States to develop prohibitions against stream flow modifications. EPA is encouraging States to consider flow in setting uses, and in developing permit conditions for dischargers." (Id. at 49251.) (Emphasis added).

Thus, EPA disclaimed once again any intention of requiring states to set minimum flows for instream uses in water quality standards. The most that EPA would do was "encourage[] States to consider flow in setting uses". By the citation to Section 101(g) in its 1982 proposed rule, EPA at least implicitly agreed with the commenters that Section 101(g) barred EPA from requiring minimum instream flows in water quality standards.

EPA's current attempt to set minimum instream flows for the Bay/Delta through water quality standards is inconsistent with and contrary to EPA's previous administrative interpretations in the Water Quality/Water Allocation Report and EPA's 1982 water quality standards rulemaking. Thus, EPA's proposed Bay/Delta standards are not only unprecedented, but they are contrary to the EPA's own longstanding administrative practice.

D. The Proposed EPA Rule For The Bay-Delta Estuary Violates Section 101(g) By Mandating Flow And Diversion Requirements That Will Have A Direct And Material Impact On The State Water Allocation System.

The EPA proposed rule concedes that under all three of the proposed water quality criteria, the Suisun Bay salinity criteria, the salmon smolt survival index, and the San Joaquin River striped bass spawning criteria, the EPA expects the State Board to implement the criteria "by making appropriate revisions to operational requirements included in water right permits issued by the State Board." (See 59 Fed. Reg. 821, 825, and 827.) As EPA's Draft Regulatory Impact Assessment of the proposed rule admits:

> "It is assumed that the primary method for implementing the combined federal proposals will be to increase Delta outflow. This follows the SWRCB approach of implementing Delta water quality requirements by changing the requirements in water right permits." (See U. S. Environmental Protection Agency, Draft Regulatory Impact Assessment of the Proposed Water Quality Standards for the San Francisco Bay/Delta and Critical Habitat Requirements for the Delta Smelt (December 15, 1993) at p. 3-5.)

As we shall show, EPA's proposed rule violates Section 101(g) of the Federal Clean Water Act by requiring implementation measures that will have a direct and material impact on the state water allocation system.

First, the EPA proposed rule openly admits that:

> "The primary method for implementing the combined federal proposals will be increases in Delta outflow. Current estimates of the additional outflow developed by the California DWR are 540,000 acre-feet on average and 1.1 million acre-feet in critically dry years." (59 Fed. Reg. 832.)

This additional Delta outflow translates into direct water supply reductions for agricultural and urban water users. (Id.) However, according to the submittals of the State Water Resources Control Board, the EPA estimates significantly understate the actual water supply losses of the proposed rule by understating the actual demand for water South of the Delta and by failing to include a "buffer" amount of flow to ensure real world compliance with the Suisun Bay salinity criteria. The Department of Water Resources' own calculations, included in the Department's submittals, forecast average annual, long-term water supply losses of between 710,000 acre feet and 1,300,000 acre feet to meet the proposed EPA water quality criteria. During a critical dry period, the time when water needs are the most pronounced, the Department projects that the EPA criteria will result in annual water supply losses ranging between 1,700,000 acre feet and 3,200,000 acre feet. On its face, this staggering projection of water supply losses, alone, should establish the proposed rule's direct and material impact on the state water allocation system.

Second, these projected losses are additionally magnified when compared with the actual water delivery capabilities of the state and federal projects. According to the Department of Water Resources, the water supply of the Federal Central Valley Project and the State Water Project based upon 1990 facilities and programs and compliance with existing state law requirements is as follows:

Water Supply	Average Year	Drought Year
CVP	7.5 million	5.0 million
SWP	2.8 million	2.2 million
TOTAL	10.3 million	7.2 million

Source: California Department of Water Resources, California Water Plan Update, Vol. 1 (November 1993 DRAFT) at p. 358.[3/]

Thus, during an average water year, project compliance with the EPA water quality criteria, will result in the reduction of the two projects' water supplies by between 6.9 percent and 12.6 percent. During a critical dry period, the criteria would reduce water supplies by between 23.6 percent and 44.4 percent. These dramatic reductions in water supplies, particularly during drought years, demonstrate the massive consequences of implementing the proposed rule to California's water allocation system.[4/]

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3. These Department of Water Resource water supply estimates have not been reduced to reflect the projects' compliance with the federal requirements imposed by the National Marine Fisheries Service under the Federal Endangered Species Act for the protection of the Sacramento River winter-run salmon. The additional reduction of water supplies to reflect compliance with the winter-run salmon requirements would further decrease the available, base water supply and therefore increase the water supply impacts to the projects of compliance with the new criteria set forth by EPA in the proposed rule.

4. The proposed rule suggests that the water supply impacts of the water quality criteria on the two projects can be lessened by spreading the implementation obligations among other water right diverters from the Bay-Delta Estuary. (59 Fed. Reg. 822.) However, the imposition of the water quality criteria on all significant diverters from the Bay-Delta Estuary implies an even greater impact on the state water allocation system, thus further contravening the policy of Section 101(g). Moreover, any broad-scale, pro rata sharing of the implementation burdens among diverters would have to be reconciled with the California area of origin and watershed protection statutes. (Cal. Wat. Code, §§ 10500 et seq. and 11460.)

EPA has justified its intrusion into the area of state water allocation by adopting a minimalist interpretation of Section 101(g). Despite Section 101(g)'s clear language to the contrary, EPA argues that the Clean Water Act allows the agency to impose water quality standards affecting water allocation "where they are clearly necessary to meet the Act's requirements." (59 Fed. Reg. 813.) It is EPA's view that the proposed rule properly "accommodates" the state water allocation system because EPA's proposed rule only sets the water quality criteria for the Bay-Delta Estuary, leaving to the State Board "the full discretion over water allocation to achieve the criteria." (Id.) In support of this constrained interpretation of Section 101(g), EPA has relied upon two U. S. Circuit Court decisions. (Riverside Irrigation Dist. v Andrews (10th Cir. 1985) 758 F.2d 513; United States v Akers (9th Cir. 1986) 785 F.2d 814.) However, neither of these decision supports such an expansive interpretation of EPA authority under Section 303, nor such a constrained application of Section 101(g).

First, both decisions referenced by EPA involved the application of Section 404, the dredge and fill permit provisions of the Clean Water Act, not the water quality standard setting provisions of Section 303. Unlike Section 303, Section 404 and its implementing regulations expressly refer to EPA authority to regulate flows.[5/] The Riverside and Akers decision are therefore

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5. See Section 404(f)(2) (permit required "where the flow or circulation of navigable waters may be impaired"); Section 404(f)(1)(E) (no permit required for certain roads where "flow and circulation patterns are not impaired"); 40 C.F.R., §§230.23, 230.24 and 230.25 (guidelines requiring consideration of water

fully consistent with the legislative history of Section 101(g), wherein Senator Wallop announced that Section 404 of the Act may allow the federal government to "incidentally affect" state water allocation decisions. (1977 Legislative History, Vol. 3, p. 532.) However, Senator Wallop's comments were never extended to include EPA's water quality standard-setting powers under Section 303 of the Act, the section invoked by the proposed rule.

Second, neither the Riverside nor the Akers decision raised the question of EPA intrusion into an existing, state water allocation system. In Riverside, the court had considered the construction of a new dam, not the alteration of an existing water allocation system. (Riverside Irrigation Dist. v Andrews, supra, 758 F.2d at 510-511.) No evidence was apparently ever presented establishing that the denial of the Section 404 permit or the prohibition of the dam would have a direct and material impact on the water allocation system of the state of Colorado. (Id.)[6/] The Akers decision is even less relevant to the proposed rule because it did not involve any impacts on the state water allocation system, but, instead, involved the draining and diking of wetlands. (United States v Akers, supra, 785 F.2d at 819.) Thus neither of the decisions referenced by EPA in the proposed

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quantity effects of discharge of dredged and fill materials on flows and salinity gradients, and resulting environmental effects.)

6. The Court also did not have to reconcile State water quantity authority with Clean Water Act regulation because all that the Corps had done was deny a nationwide permit for the dam project. The dam proponents were free to pursue an individual Section 404 permit, and that is where the issue of state water rights and Section 404 regulation would eventually be joined. (Id. at 514.)

rule supports the agency's expansive interpretation of its water quality authority under Section 303, nor the agency's denigration of the state rights policies of Section 101(g).

II. EPA LACKS AUTHORITY UNDER SECTION 303 OF THE CLEAN WATER ACT TO ADOPT A 2 PARTS PER THOUSAND SALINITY STANDARD FOR SALT WATER INTRUSION INTO SUISUN BAY.

A. Salt Water Intrusion Is Not Subject To Federal "Water Quality" Regulation.

The Federal Clean Water Act makes clear that salt water intrusion, like that in Suisun Bay, is not a "water quality" matter that is regulated by water quality standards under Section 303. Section 102(b) of the Act, 33 U.S.C. §1252(b), provides that in the survey or planning of any federal reservoir, consideration shall be given to the inclusion of water storage for regulation of streamflow. The statute then divides the authority to consider the need for and value of storage. EPA was given authority to determine the need for storage for purposes of "water quality control." (See §102(b)(3), 33 U.S.C. §1252(b)(3).) However, federal dam operating agencies, like the Corps of Engineers and Bureau of Reclamation, were given authority to determine under Section 102(b)(2):

> "[t]he need for and value of storage for regulation of streamflow (other than for water quality) including but not limited to navigation, salt water intrusion, recreation, esthetics, and fish and wildlife . . ." (33 U.S.C. §1252(b)(2)) (Emphasis added).

In short, EPA was to regulate water storage for purposes of "water quality" but the dam operating agencies were to regulate non-water quality matters which specifically included "salt water intrusion." It is unlikely that Congress intended the term

"water quality" to have an entirely different meaning in Section 102(b)(2) than it had in Section 303 or the rest of the Clean Water Act, particularly when it was discussing "water quality" functions of the federal agency that was to implement the Act. Therefore, the plain language of Section 102(b)(2) establishes that "salt water intrusion" is not subject to federal "water quality" regulation under Section 303 of the Act.

The language of Section 102(b)(2) was not chosen haphazardly. The Senate bill gave EPA the authority to determine the need for storage for water quality purposes, whereas the House bill gave the authority to the federal dam operating agencies subject only to the "advice" of EPA. (Compare S. 2770, §102(b)(2), reprinted in A Legislative History of the Water Pollution Control Act Amendments of 1972 ("1972 Legislative History"), Vol. 2, p. 1537. with H. R. 11896, §102(b)(2), reprinted in 1972 Legislative History, Vol. 1, p. 898.) The Conference Committee split the difference, and gave EPA the authority regarding "water quality" matters, and gave the dam operating agencies for non-water quality matters, such as salt water intrusion. (See 1972 Legislative History, Vol. 1, p. 284.)[7/] Hence, the Conference Committee deliberately focused on the issue of what was and was not a "water quality" matter, and

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7. However, the Federal Central Valley Project does not, under this section, have the independent power to set salt water intrusion standards for the project. Section 8 of the Reclamation Act requires the project's compliance with state salinity standards. (See United States v State Water Resources Control Board (1986) 182 Cal.App.3d 82, 134-137.) Congress has confirmed this deference to state law in the 1993 passage of the Central Valley Project Improvement Act. (See Pub. L. 102-575, 106 Stat. 4714.)

concluded that salt water intrusion was not a "water quality" matter. To interpret salt water intrusion as a "water quality" matter within Section 303 of the Clean Water Act, but not as a "water quality" matter within the meaning of Section 102(b) is to rely upon an internally inconsistent, and therefore erroneous, reading of the Act.

B. The Clean Water Act Clearly And Unambiguously Provides That The Problem Of Salt Water Intrusion Is To Be Addressed Under Section 208 Of The Act.

The language, legislative history, and case law of the Clean Water Act make clear that salt water intrusion is to be addressed in Section 208 of the Act, not Section 303. Section 208(b)(2)(I) specifically provides that state areawide waste treatment management plans for nonpoint source pollution will include:

> "a process to (i) identify, if appropriate, salt water intrusion into rivers, lakes, and estuaries resulting from reduction of fresh water flow from any cause, including irrigation, obstruction, ground water extraction, and diversion, and (ii) set forth procedures and methods to control such intrusion to the extent feasible where such procedures and methods are otherwise a part of the waste treatment management plan." (33 U.S.C., §1288(b)(2)(I)) (Emphasis added)

In addition, Section 304(f)(2)(E) required EPA to issue to state agencies implementing Section 208 management plans, information and guidelines on non-point source pollution, including specifically:

> "salt water intrusion resulting from reductions of fresh water flow from any cause, including extraction of ground water, irrigation, obstruction, and diversion". (33 U.S.C. §1314(f)(2)(E). (Emphasis added).

The legislative history of Section 304(f)(2)(E) confirms that salt water intrusion was considered to be non-point pollution regulated under Section 208. Both the Senate and the House bills contained the identical provision for information and guidelines on salt water intrusion. (See S. 2770, §304(e)(1,2)(E), reprinted in 1972 Legislative History, Vol. 2, p. 1618; H.R. 11896, §304(e)(1,2)(E), reprinted in 1972 Legislative History, Vol. 1, pp. 983-984.) Both the Senate and House Committee reports on this provision described salt water intrusion as non-point source pollution subject to Section 208 regulation. (See Senate Report 414, 92d Cong., 1st Sess., reprinted in 1972 Legislative History, Vol. 2, p. 1470 ("the Administrator is required to issue information to the States and to the public on the processes, procedures, and methods to control pollution related to non-point sources. Included within this category are activities such as agriculture, forestry, mining, construction, disposal of material in wells, and salt water intrusion.") (Emphasis added); House Report 911, 92d Cong., 2d Sess., reprinted in 1972 Legislative History, Vol. 1, pp. 795-796. ("Section 304(e) addresses the problem of nonpoint sources of pollution. . . The Committee . . expects the Administrator to be most diligent in gathering and distribution of the guidelines for the identification of nonpoint sources and the information on processes, procedures, and methods for control of pollution from such nonpoint sources as . . salt water intrusion") (Emphasis added).) The Conference Committee adopted the language of the

bills without change. (See 1972 Legislative History, Vol. 1, p. 309.)

EPA's water quality planning and management regulations also identify salt water intrusion as nonpoint pollution subject to Section 208 regulation. (See 40 C.F.R. §130.6(c)(4)(iii)(F).) ("BMPs [best management practices] shall be identified for the nonpoint sources identified in section 208(b)(2)(F)-(K) of the Act and other nonpoint sources as follows . . . Salt water intrusion:) (Emphasis added).

C. Nonpoint Source Pollution From Salt Water Intrusion Was Never Intended To Be Regulated Under Section 303.

Salt water intrusion is not only nonpoint source pollution subject to Section 208 regulation, but it was also never considered to be a part of the Section 303 water quality standards program. First, in discussing what became Section 208, Senate Report 414 stated that salt water intrusion was not covered by the existing federal water quality regulatory program:

> "The present Federal water pollution control program does not consider degradation of water caused by reduction in fresh water flows which produce the intrusion of salt or brackish waters into estuaries and rivers. Salt water intrusion, no less than point sources of discharge, alters significantly the character of the water and the life system it supports.
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> . . . . .
>
> Fresh water flows can be reduced from any of a number of causes. The bill requires identification of those causes and establishment of methods to control them, so as to minimize the impact of salt water

intrusion." (1972 Legislative History, Vol. 2, p. 1458) (Emphasis added).[8]

Significantly, the Section 303 water quality standards program merely continued the existing water quality standards program under prior federal water pollution control legislation. (See House Report 911, reprinted in 1972 Legislative History, Vol. 1, p. 791. ("Section 303 continues the use of water quality standards."); Conference Report 1236, 92d Cong., 2d Sess. reprinted in 1972 Legislative History, Vol. 1, p. 305 ("Section 303 of the House amendment continues the use of water quality standards contained in the existing law.").) Indeed, Section 303 as enacted provided for the carry over of existing water quality standards. (33 U.S.C. §1313(a).) Moreover, there is no indication that in enacting the 1972 legislation Congress intended to alter or expand the motion of "water quality standard" from what it had been under pre 1972 legislation. Consequently, because salt water intrusion was not covered by the pre-1972 legislation, it was also not intended to come within the Section 303 water quality standards program enacted in 1972. Instead, Congress adopted the Section 208 nonpoint source pollution control program to cover salt water intrusion "[f]or the first time". (1972 Legislative History, Vol. 2, p. 1457.)

Second, both the Senate and House bills contained areawide waste treatment management programs for nonpoint source

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8. By emphasizing that "[f]or the first time, the Committee bill provides a mechanism to establish a program to control the principal nonpoint sources of water pollutants", (Id. at 1457,) the Senate Report also indicated that nonpoint salt water intrusion had never been regulated under previous water quality standards legislation. (Emphasis added).

pollution. (See S. 2770, §209, reprinted in 1972 Legislative History, Vol. 2, p. 1592; H.R. 11896, §208, reprinted in 1972 Legislative History, Vol. 1, p. 950.) The Conference Committee adopted the language in the Senate and House bills with some modifications. (See 1972 Legislative History, Vol. 1, p. 300.) What is important, however, is that the Senate bill did not have a Section 303 water quality standards provision. The Senate believed that effluent limitations were a better regulatory strategy than water quality standards. (See Senate Report 414, reprinted in 1972 Legislative History, Vol. 2, p. 1425-1426; id. at 1274 (remarks of Sen. Eagleton).) The Section 303 water quality standards provision originated in the House bill. (See H.R. 11896, §303, reprinted in 1972 Legislative History, Vol. 1, p. 969.) Consequently, because the Senate bill contained a Section 208 nonpoint pollution control program but had no Section 303 water quality standards provision, the Section 208 nonpoint pollution control program, including the regulation of salt water intrusion, obviously was intended to be implemented without the use of any Section 303 water quality standards. Salt water intrusion, in short, was to be regulated solely under Section 208, not under Section 303. Since the Conference Committee adopted a version of the Senate bill, and gave no indication that it was altering this basic assumption of the Senate bill, the inescapable inference is that salt water intrusion is not covered by the water quality standards program of Section 303. (Cf. Bethlehem Steel v EPA 538 F.2d 513, 516 (2d Cir. 1976)(where language in Section 509 of the 1972 Clean Water Act was included

in the Senate Bill which did not contain Section 303, the language of Section 509 language could not have been referring to water quality standards under Section 303).)[9/]

Third, not only did Congress specifically provide for regulation of salt water intrusion in the nonpoint source pollution provisions, i.e., Section 208 and section 304, and not in the water quality standards provision of Section 303, but the nonpoint source pollution provisions were kept distinct and separate from the Section 303 water quality standards program. For example, EPA is supposed to adopt "criteria" for water quality standards under Section 304(a)(1). (33 U.S.C. §1314(a)(1).) However, when Congress directed EPA to provide comparable information on salt water intrusion, it did so not in the Section 304(a)(1) provision for water quality criteria, but in the Section 304(f)(2)(E) provision requiring guidelines for nonpoint source pollution. The continuing planning process of Section 303(e) was also careful to distinguish and separate Section 208 nonpoint pollution control programs -- which are provided for in Section 303(e)(3)(B) -- which are provided for in Section 303(e)(3)(F). The clear inference from the structure of the Act is that salt water intrusion is regulated exclusively under Section 208 of the Act, not Section 303.

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9. Since the Senate Bill also contained the Section 304 provision requiring information and guidelines for salt water intrusion (even though there was no Section 303 of the Senate Bill), the Section 304 guidelines for salt water intrusion were obviously not intended to be implemented via water quality standards adopted under Section 303.

Section 208 provided the initial regulatory program for nonpoint source pollution under the 1972 Federal Water Pollution Control Act. The 1987 Clean Water Act Amendments added Section 319, which built upon the Section 208 program. (33 U.S.C., §1329.) Section 319 requires states to adopt nonpoint source management programs which identify best management practices to reduce nonpoint source pollution, and a program to implement the best management practices. (33 U.S.C. §§1329(b)(1), (2)(A),(B).) However, unlike the case with water quality standards under Section 303, the federal government lacks authority under either Section 208 or Section 319 directly to regulate nonpoint source pollution. This fundamental limit on federal authority directly to regulate nonpoint source pollution has been repeatedly recognized by courts, commentators and EPA itself.[10/] This

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10. See e.g., Shanty Town Associates Ltd. Partnership v EPA F.2d 782, 791 (4th Cir. 1988) ("The Act provides no direct mechanism by which EPA can force the states to adopt adequate nonpoint source pollution control programs. Instead, Congress anticipated that EPA would use the threat and promise of federal financial assistance to accomplish this task.") (Emphasis in original); Appalachian Power Co. v Train 545 F.2d 1351, 1373 (4th Cir. 1976) ("Congress consciously distinguished between point source and nonpoint source discharges, giving EPA authority under the Act to regulate only the former."; id., fn. 68 ("Nonpoint sources are subject only to analysis, study, and suggestions" by EPA); Kennecott Copper Corp. v EPA 612 F.2d 1232 (10th Cir. 1979 (noting "[EPA's] lack of authority to regulate 'nonpoint sources'"); Natural Resources Defense Council v EPA 915 F.2d 1314, 1316 (9th Cir. 1990) ("The [Clean Water] Act thus banned only discharges from point sources. The discharge of pollutants from nonpoint sources . . . was not directly prohibited."); Oregon Natural Resources Council v U. S. Forest Service 834 F.2d 842, 849 (9th Cir. 1987) (Congress "drew a distinct line between point and nonpoint pollution sources. Point sources are subject to direct federal regulation and enforcement under the Act. See 33 U.S.C. §1342. Nonpoint sources, because of their very nature, are not regulated under the NPDES. Instead, Congress addressed nonpoint sources of pollution in a separate portion of the Act which encourages states to develop areawide waste treatment

limitation is further evidence that Congress never intended Section 303 standards to apply to diversion-induced pollution, such as salt water intrusion, but only to discharge-induced pollution, which EPA could regulate through the Act's discharge permit system.

D. The Legislative History Of Section 208 Unequivocally Confirms That Congress Intended The Section To Apply To The Salt Water Intrusion Problems Of The Bay-Delta Estuary And That The Intended Congressional Response Was To Defer To State Water Law.

The legislative history of Section 208 of the Clean Water Act unequivocally establishes that Congress drafted the section specifically to maximize California's autonomy in managing salt water intrusion in the Bay-Delta Estuary. The sharp colloquy between Congressman Waldie and Congresswoman Johnson during the

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management plans.") (Footnotes omitted); Sierra Club v Abston Construction Co. 620 F.2d 41, 43 (5th Cir. 1980); see also A Legislative History of the Clean Water Act of 1977: A Continuation of the Legislative History of the Federal Water Pollution Control Act, (1978) (hereinafter "1977 Legislative History"), Vol. 4, p. 642 ("In 1972, Congress made a clear and precise distinction between point sources, which would be subject to direct Federal regulation, and nonpoint sources, control of which was specifically reserve to State and local governments through the section 208 process."); 1 Grad, Treatise on Environmental Law (1933) §3.03[4][n], p.3-216.7 ("Unlike point sources, however, nonpoint sources are not subject to any comprehensive regulatory structure, at least at the federal level. Nor does section 319 give the federal government any direct regulatory authority over nonpoint sources. Responsibility still lies with the states."); 33 C.F.R. §320.4(d) ("the Clean Water Act assigns responsibility for control of nonpoint sources of pollution to the states."); Water Quality/Water Allocation Coordination Study: A Report to Congress in Response to Section 102(d) of the Clean Water Act, ("EPA Water Quality/Water Allocation Report"), U.S.E.P.A., August, 1979, p. III-10 ("The federal government has no direct enforcement authority over nonpoint sources under the Clean Water Act.")(Emphasis added.)

March 27, 1972 House debate unambiguously settles this issues in favor of state control:

> "Mr. Waldie. I would like to ask a series of questions involving section 208 of the bill.
> The question I want to ask the gentleman from California on the committee, my colleague and my friend, Congressman Johnson, affects section 208 which is the areawide waste treatment program.
> In the bill that the committee first considered, there were very, very strong provisions on page 53 involving the problem of saline intrusion, and those provisions say: "The plan shall include procedures to control salt water intrusion."
> There is no qualification. Yet I see when the bill was finally adopted that was weakened immeasurably to the point where i[t] now says: The plan shall include a process to identify, if appropriate, salt water intrusion * * *" And then: "They shall set forth procedures and methods to control * * *."
> Then it qualifies it even further by saying: "To the extent feasible and where such procedures and methods are otherwise a part of the waste treatment management plan."
> You make no amendments in any of the other nonpoint pollution techniques except salt water intrusion.
> Mr. Chairman, I have to conclude that this was a major weakening of this bill and that it was done at the request of someone who does not desire to have salt water intrusion, which is nonpoint pollution, controlled ind the bill.
> Particularly I have reference to estuaries in which salt water intrusion and reduced outflows are particularly destructive. I particularly have reference to the delta in California. Someone did not want those sources of pollution to be controlled. Can the gentleman tell me for what reason this amendment was placed in the bill to weaken this bill as drastically as it did -- and who proposed that amendment?" (1972 Legislative History, Vol. 1, p. 484.)(Emphasis added.)

In response, Congressman Johnson, who also was a member of the Conference Committee, stated:

> "Mr. Johnson of California. I believe you referred to the introduced bill in your first reference.
> During the hearings, we heard from representatives of California including the State water resources department and the State water pollution control board.

We also were given the Governor's position. The language in the bill reflects their views. The committee report on page 96 states the following:

"The Committee notes that in some States water resources development agencies are responsible for allocation of stream flow * * *." (Id., p. 485.)

After a brief interruption, Congressman Johnson continued:

"Mr. Johnson of California. The gentleman well knows that in our State in the headwaters of the Sacramento and the San Joaquin Rivers we have developed dams and storage reservoirs up and down the Sierra Nevada Mountains and also minor diversion facilities in the coastal country. All this water flows through the delta, and this water has been controlled under a program in which the State and Federal agencies, including the Corps of Engineers and the Bureau of Reclamation, have participated. The fear was brought to the committee's attention when our State people testified that the State was losing control of its water resources programs under the introduced bill.

The State wanted assurance that this would not happen, and this particular provision on page 96 of the report points this up." (Id.)(Emphasis added.)

In response, Congressman Waldie stated:

"The difficulty with this provision -- and I gather that it is a California provision -- the act was amended and weakened from its initial strong provisions controlling saline intrusion and water diversions to take care of a problem that the water resources people wanted to take care of to enable them to exert control, the control over the delta they had been exerting.

I suggest to the gentleman that the weakening amendment is not in the best interest of the delta in any way, regard, or respect. The problem of protecting the waters that are gathered in that delta from saline intrusion and protecting that estuary from the consequences of saline intrusion, has been made much greater by the adoption of the weakening amendment.

I suggest to the gentleman that I will be offering an amendment tomorrow seeking to return this provision of the bill to where it was prior to the time the California water people started putting their hands into this national act to have it adopted and worked around to adversely affect California only and the part of California that the gentleman I represent in this particular issue." (Id., pp. 485-486.)(Emphasis added.)

Congressman Johnson further replied to Congressman Waldie:

"Mr. Johnson of California. The gentleman asked me a question. I think it is well established in the record that California does have a very workable program under way at the present time. Our State water resources people, the Governor of the State, the Water Pollution Control Board, the Bureau of Reclamation, and the Corps of Engineers are working very carefully with the flow of the waters into the delta, and certainly under this measure the State will be given the opportunity to carry on that type of activity. The state will have a right to issue permits under that particular section. I see no harm in it whatsoever.

I point out to the gentleman that nonpoint sources are not controlled under this bill." (Id., p. 1486.)(Emphasis added.)

Congressman Waldie then closed the debate on this subject with the following:

"Mr. Waldie. In response I would point out that the permits involved in this bill have nothing to do with nonpoint salt water intrusion, and there is no control within this bill for nonpoint pollution, and that control will only come about by the development and adoption of an areawide management program that controls. The fact of the matter is that the State of California has done a miserable job in terms of protecting the estuaries of California from sale water intrusion, and this amendment which was adopted to the national act at the request of California authorities, enables them to continue doing the miserable job they have been doing without any guidance and without any control from the Federal Government. I think it is a very, very unhappy situation for our State but also for other States which now find a major weakening of the control section which protects estuaries. That is what is at stake here -- the estuaries of the Nation. That provision has been weakened to the point where estuaries will be jeopardized." (Id.)(Emphasis added).

Despite Congressman Waldie's concerns, the final legislation retained the language of the House bill. (Compare H.R. 11896, Section 208(b)(2)(I), reprinted in 1972 Legislative History, Vol. 1, p. 955 with §208(b)(2)(I), 33 U.S.C. §1288(b)(2)(I).)

As Congressman Johnson noted, California's major concern -- which was accommodated in the legislation -- was retaining discretion to regulate and manage salt water intrusion in the

Bay-Delta because such regulation directly affected water rights allocation in California. That was why Congressman Johnson referred to page 96 of the House Report in his colloquy with Congressman Waldie. That portion of the Report specifically referred to preserving state authority over stream flow allocation:

> "The Committee notes that in some States water resource development agencies are responsible for allocation of stream flow and are required to give full consideration to the effects on water quality. To avoid duplication, the Committee believes that a State which has an approved program for the handling of permits under section 402, and which has a program for water resource allocation, should continue to exercise the primary responsibility in both of these areas and thus provide a balanced management control system." (House Report 911, reprinted in 1972 Legislative History, Vol. 1, p. 783.)(Emphasis added.)

As the court noted in National Wildlife Federation v Gorsuch (D.C. Cir. 1982) 693 F.2d 156, 179, n.67, the language of §208(b)(2)(I) "was intended to prevent water quality goals from interfering with state water allocation plans." (Emphasis added.) Indeed, the Conference Committee, on which Representative Johnson served, even went so far as to weaken the already tenuous link between salt water intrusion and water quality in the Senate bill by deleting from the final legislation the Senate language referring to procedures to control salt water intrusion "to protect water quality." (See S. 2770, Section 209(b)(2)(I), reprinted in 1972 Legislative History, Vol. 2, p. 1598.)

Thus, the legislative history of Section 208 and its judicial interpretation firmly establishes Congress' intention that the Bay-Delta salt water intrusion problem was to be addressed under the Section 208 planning process and that the

process was intended to defer to existing state water allocation plans. EPA's disregard of these Congressional mandates by including salt water intrusion criteria in the proposed rule is further evidence of EPA's failure to comply with the Clean Water Act in its Bay-Delta rule-making.

E. Adopting Water Quality Standards For Salt Water Intrusion Is Contrary To EPA's Past Administrative Practice.

EPA's guidance documents on salt water intrusion all indicate that salt water intrusion is to be handled by the states as an instream flow/water rights issue. For example, EPA's 1973 Salt Water Intrusion Report -- which is the guideline that EPA adopted pursuant to Section 304(f)(2)(E) -- nowhere states that water quality standards under Section 303 can or should be used to control salt water intrusion into estuaries. A copy of this report is attached to these comments as Exhibit B. Instead, the Salt Water Intrusion Report stresses stream flow regulation through comprehensive water allocation management and planning as the control method for salt water intrusion. (U. S. Environmental Protection Agency, Identification and Control of Pollution from Salt Water Intrusion (1973), pp. 48-50.) The report pointedly observed that:

> "Stream flow can be regulated and sea water encroachment retarded by impounding excess surface waters during periods of high runoff and releasing these waters during periods of low stream flow. The economics of such projects and the large volumes of water required generally preclude their undertaking solely for sea water intrusion control. This contingency, however, should be incorporated in plans for impoundment structures for flood control, irrigation, and recreation." (Id. at 50.)(Emphasis added.)

Thus EPA recognized that the application of salt water intrusion standards to existing facilities may be uneconomical, but that plans for new facilities might include contingencies for the protection against salt water intrusion.

Regarding the issue of state water right law, the Salt Water Intrusion Report noted that:

> "Any attempt to control an activity involving the diversion and use of surface or ground waters, in order to prevent water pollution, will probably involve vested water rights and usually will be in conflict with these water rights." (Id at 73.)

Recognizing this jurisdictional dilemma, the EPA report then argued that the federal government has the constitutional power to regulate water allocations, but concluded that:

> "The Federal Government has never elected to assert these constitutional powers over surface waters in a general manner except with respect to control of pollution resulting from disposal of wastes. Rather, the Congress has repeatedly stated that the states shall control the use of intrastate waters. Section 8 of the Reclamation Act of 1902 (32 Stat. 388, 1902) explicitly provides that the Secretary of the Interior shall obtain water rights for reclamation projects in accordance with state water laws. The same provision or one expressing the same intent has been included in acts amendatory of and supplementary to the original Reclamation Act, and in numerous other enactments concerning water resources, including the Flood Control Act of 1944 (58 Stat. 887, 1944).
>
> In further support of this apparently consistent Congressional intent, it is significant that there are no federal statutes governing the allocation of water resources, surface or ground, or the administration of water rights. Although periodically bills are introduced in Congress for those purposes, they have never passed beyond the committee stage. Up to 1973,

> therefore, responsibility for the allocation of water resources and the granting and administration of rights to intrastate waters has been left to the states." (Id. at 75-76.)(Emphasis added.)

This astonishing admission by EPA of Congress' intent to defer to the states in the field of diversion-induced, salt water intrusion cannot be reconciled with EPA's present, broad ranging claim of water resource jurisdiction over the Bay-Delta Estuary.

In addition to the 1973 Salt Water Intrusion Report, EPA's Report on Legal and Institutional Approaches to Water Quality Management Planning and Implementation also discussed salt water intrusion as a stream flow/water allocation issue, which was to be handled under state water rights systems. (U. S. Environmental Protection Agency, Legal and Institutional Approaches to Water Quality Management Planning and Implementation (March 1977), pp. VIII-7 to VIII-13 and VIII-22 to VIII-24.) A copy of this report is attached to these comments as Exhibit C. The EPA Report further stated that the states were the best prepared and have the legal authority to handle salt water intrusion. (Id. at VIII-14.) The report says nothing at all about using water quality standards under Section 303 to control salt water intrusion. In sum, both the Salt Water Intrusion Report -- which was EPA's main source document for salt water intrusion -- and EPA's Legal and Institutional Approaches to Water Quality Management Planning and Implementation portray salt water intrusion as a stream flow/water allocation issue which is to be handled by the states under their water rights law, and not as a water quality issue under Section 303.

III THE TENTH AMENDMENT OF THE U. S. CONSTITUTION PROHIBITS THE FEDERAL GOVERNMENT FROM MANDATING THE STATE WATER RESOURCES CONTROL BOARD TO IMPLEMENT THE PROPOSED EPA WATER QUALITY STANDARDS AND FROM REQUIRING THE DEPARTMENT OF WATER RESOURCES TO OPERATE THE STATE WATER PROJECT IN ACCORDANCE WITH THOSE STANDARDS.

The Tenth Amendment to the U. S. Constitution provides that:

> "The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people." (U. S. Const., amend. X.)

Recent U. S. Supreme Court decisions have revived the substantive powers of this constitutional provision. In Gregory v Ashcroft, Justice O'Connor invoked the Tenth Amendment as a federal rule of statutory construction that assumes that Congress does not intend to apply federal legislation to the states unless the legislation unambiguously imposes such an obligation. (Gregory v Ashcroft (1991) ___U.S.___, 111 S.Ct. 2395, 2403.) Most importantly for the present case, the Court in New York v United States has recently imposed clear Tenth Amendment limits on the power of Congress to require the states to implement federal programs.

In New York v United States, Justice O'Connor, again writing for the majority, held that the provisions of the Federal Low-Level Radioactive Waste Policy Amendments Act requiring the individual states either to "take title" of all waste generated within their borders or to regulate the waste in accordance with the instructions of Congress violated the Tenth Amendment. (New York v United States (1992) ___U.S.___, 112 S.Ct. 2408, 2428.) Justice O'Connor's opinion focused on the distinction between the permissible direct regulation of individuals by Congress and the

impermissible indirect regulation of individuals by the states through Congressional mandates. According to the Court:

> "While Congress has substantial powers to govern the Nation directly, including in areas of intimate concern to the States, the Constitution has never been understood to confer upon Congress the ability to require the States to govern according to Congress' instructions." (Id. at 2421.)(Emphasis added.)

After reviewing the history of the Tenth Amendment, the Court again noted that:

> "In providing for a stronger central government, therefore, the Framers explicitly chose a Constitution that confers upon Congress the power to regulate individuals, not States. As we have seen, the Court has consistently respected this choice. We have always understood that even where Congress has the authority under the Constitution to pass laws requiring or prohibiting certain acts, it lacks the power directly to compel the States to require or prohibit those acts." (Id. at 2423.)(Emphasis added.)

Finally, the Court outlined two legitimate situations where Congress could influence a state's policy choices. First, Congress could subsidize state activity subject to federal conditions, and, second, Congress could offer the states a choice of state regulation or preempting federal regulation. (Id. at 2423-2424.) The Court observed that:

> "By either of these two methods, as by any other permissible method of encouraging a State to conform to federal policy choices, the residents of the State retain the ultimate decision as to whether or not the State will comply. If a State's citizens view federal policy as sufficiently contrary to local interests, they may elect to decline a federal grant. If state residents would prefer their government to devote its attention and resources to problems other than those deemed important by Congress, they

> may choose to have the Federal Government rather than the State bear the expense of a federal mandated regulatory program, and they may continue to supplement that program to the extent state law is not preempted. Where Congress encourages state regulation rather than compelling it, state governments remain responsive to the local electorate's preferences; state officials remain accountable to the people." (Id. at 2424.)(Emphasis added.)

However, the Court warned that Congressional mandates requiring state regulatory agencies to implement federal policies would impair federal accountability:

> "By contrast, where the Federal Government compels States to regulate, the accountability of both state and federal officials is diminished. If the citizens of New York, for example, do not consider that making provision for the disposal of radioactive waste is in their best interest, they may elect state officials who share their view. That view can always be preempted under the Supremacy Clause if it is contrary to the national view, but in such a case it is the Federal Government that makes the decision in full view of the public, and it will be federal officials that suffer the consequences if the decision turns out to be detrimental or unpopular. But where the Federal Government directs the States to regulate, it may be state officials who will bear the brunt of public disapproval, while the federal officials who devised the regulatory program may remain insulated from the electoral ramifications of their decision. Accountability is thus diminished when, due to a federal coercion, elected states officials cannot regulate in accordance with the views of the local electorate in matters not pre-empted by federal regulation." (Id.)(Emphasis added.)[11]

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11. The Ninth Circuit Court of Appeals has recently applied the Supreme Court's Tenth Amendment ruling in New York v United States in the context of timber harvesting. In Board of Natural Resources v Brown, the State of Washington challenged the Federal Forest Resources Conservation and Shortage Relief Act on

As one scholar has observed, if the federal mandate was: "You pay the piper, but we'll call the tunes," then Congress has violated the Tenth Amendment. (Rotunda & Novak, 1 Treatise on Constitutional Law, §4.10, n.33, p. 419 (1992).)

Under the EPA's proposed rule, it is readily apparent that EPA intends to "call the tunes" as to the appropriate Bay-Delta water quality criteria, but that it expects the State Board to "pay the piper" by "making appropriate revisions to operational requirements included in the water right permits issued by the State Board." (See 59 Fed. Reg. 821, 825, and 827.) It is at

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the grounds that the Act violated the Tenth Amendment by requiring the states to issue regulations implementing a federal ban on timber export. (Board of Natural Resources v Brown (9th Cir. 1993) 992 F.2d 937, 940-941.) In response, the Ninth Circuit observed that:

> "[W]e need look no further than the Supreme Court's recent decision in New York, in which the Court clarified the limitations imposed by the Tenth Amendment on Congress' power to use the states as implements of regulation. The Court reaffirmed the principle that Congress may not "commandee[r] the legislative processes of the States by directly compelling them to enact and enforce a federal regulatory program." Id. __U.S. at ___, 112 S.Ct. at 2420, quoting Hodel v Virginia Surface Mining & Reclamation Ass'n 452 U.S. 264, 288, 101 S.Ct. 2352, 2366, 69 L.Ed.2d 1 (1981)(Hodel)." (Id. at 946.)

The Ninth Circuit then held that:

> "These provisions of the Act and the Secretary's orders violate the Tenth Amendment as interpreted by New York. They are direct commands to the states to regulate according to Congress's instructions, and thus violate the principle that the "Federal Government may not compel the States to enact or administer a federal regulatory program." New York, ___U.S. at ___, 112 S.Ct. at 2435." (Id. at 947.)

this point that EPA has crossed the bright line into a Tenth Amendment violation. As Justice O'Connor observed:

> "No matter how powerful the federal interest involved, the Constitution simply does not give Congress the authority to require the States to regulate. The Constitution instead gives Congress the authority to regulate matters directly and to pre-empt contrary state regulation. Where a federal interest is sufficiently strong to cause Congress to legislate, it must do so directly; it may not conscript state governments as its agents." (New York v United States, supra, 112 S.Ct. at 2429.)(Emphasis added.)

As we have previously noted, Congress, through the Clean Water Act, has not provided the EPA with permitting authority to regulate diversions. The regulation of diversions is left to the states. The Clean Water Act only provides the agency with permitting authority to regulate discharges. Thus, in the words of Justice O'Connor, Congress has not given EPA "the authority to regulate matters directly and to pre-empt contrary state regulation." (Id.) The Tenth Amendment therefore prevents EPA from circumventing Congress' failure to provide federal authority to regulate diversions by indirectly adopting water quality criteria under Section 303 of the Act, the implementation of which would "conscript" the State Board as EPA's "agent" in furtherance of federal interests. The Tenth Amendment argument is even stronger in the present case because the federal mandate is only grounded in an agency regulation and not in the specific language of the statute. To the extent that the EPA water quality criteria can only be implemented through state water right law, EPA's adoption of such criteria must be barred by the Tenth Amendment.

The application of the EPA's proposed water quality criteria or similar criteria under the Endangered Species Act to the Department of Water Resources' operation of the State Water Project raises separate and more complicated Tenth Amendment concerns. The U. S. Supreme Court decision in New York v United States declined to address "the authority of Congress to subject state governments to generally applicable laws." (New York v United States, supra, 112 S.Ct. at 2420.) Recognizing that "the Court's jurisprudence in this area has traveled an unsteady path", Id. at 2420, we nonetheless submit that the imposition of "generally applicable laws," such as the Endangered Species Act, to the State Water Project will raise Tenth Amendment concerns where such federal mandates would threaten a vital state interest, in a field traditionally associated with state government, where the state's residents have relied on state occupation of the field and the assertion of the federal mandate would be to the detriment of that reliance interest, and where the federal interest can be substantially protected by equivalent state regulation. These requirements find at least a passing resonance in the field of state water resource management. Whether the application of the Endangered Species Act to the State Water Project will cross this Tenth Amendment line will depend upon the actual water supply impacts of these requirements on the State Water Project, its contractors, and the people of the state.

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CONCLUSION

It should be emphasized that the Attorney General's comments are not intended as an objection or an endorsement of the water quality policies described in the EPA proposed rule for the Bay-Delta Estuary. The soundness of those policies are simply not at issue in these comments. What is at issue is EPA's unprecedented and broad-ranging claim of legal authority under Section 303 of the Clean Water Act to act as the paramount water master for the State of California. As we have explained, EPA lacks the authority under the Clean Water Act to hold such a role. EPA's adoption of the proposed rule would therefore be an ultra vires act.

DATED: March 11, 1994.

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ATTACHMENT 3

UNITED STATES DISTRICT COURT

FOR THE EASTERN DISTRICT OF CALIFORNIA

DELTA SMELT CONSOLIDATED CASES	1:09-cv-00407 OWW DLB 1:09-cv-00480-OWW-GSA 1:09-cv-00422-OWW-GSA 1:09-cv-00631-OWW-DLB 1:09-cv-00892-OWW-DLB
SAN LUIS & DELTA-MENDOTA WATER AUTHORITY, *et al.* v. SALAZAR, *et al.* (1:09-cv-00407 OWW DLB)	
STATE WATER CONTRACTORS v. SALAZAR, *et al.* (1:09-cv-00480-OWW-GSA)	PARTIALLY CONSOLIDATED WITH: 1:09-CV-01201-OWW-DLB
COALITION FOR A SUSTAINABLE DELTA, *et al.* v. UNITED STATES FISH AND WILDLIFE SERVICE, *et al.* (1:09-cv-00422-OWW-GSA)	MEMORANDUM DECISION RE CROSS MOTIONS FOR SUMMARY JUDGMENT (DOCS. 548, 549, 550, 658, & 661)
METROPOLITAN WATER DISTRICT v. UNITED STATES FISH AND WILDLIFE SERVICE, *et al.* (1:09-cv-00631-OWW-DLB)	
STEWART & JASPER ORCHARDS *et al.* v. UNITED STATES FISH AND WILDLIFE SERVICE (1:09-cv-00892-OWW-DLB)	
FAMILY FARM ALLIANCE v. SALAZAR, *et al.* (1:09-CV-01201-OWW-DLB)	

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> the Central Delta due to lack of turbidity or first flush. Thus, the effects of critical dry operations on delta smelt take are probably small and lower than estimated.
>
> In summary, adult entrainment is likely to be higher than it has been in the past under most operating scenarios, resulting in lower potential production of early life history stages in the spring in some years. While the largest predicted effects occur in Wet and Above Normal WYs, there are also likely adverse effects in Below Normal and Dry WYs. Only Critically Dry WYs are generally predicted to have lower entrainment than what has occurred in the recent past.

BiOp at 212-13.

This approach is consistent with Kimmerer (2008). The BiOp does not focus on whether there is a statistically significant correlation between OMR flows and the population growth rate.[10] Rather, following Kimmerer (2008), the BiOp focuses on predicting the frequency of large salvage events and concluded that Project operations increase their frequency. It was not arbitrary, capricious, or clear error for FWS to base its jeopardy conclusion in part on these predictions of relative increases in entrainment. *See* BiOp at 276.

b. Population Level Analysis/Life-Cycle Modeling.

Plaintiffs maintain the BiOp's failure to employ a life-

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[10] FWS did rely on a study by Manly and Chotkowski that found a statistically significant correlation between OMR flows and smelt abundance, albeit a small one. *See* BiOp at 159 ("Manly and Chotkowski (2006; IEP 2005) found that monthly or semi-monthly measures of exports or Old and Middle rivers flow had a reliable, statistically significant effect on delta smelt abundance; however, individually they explained a small portion (no more than a few percent) of the variability in the fall abundance index of delta smelt across the entire survey area and time period.").

cycle model ignored the best available science. Doc. 551 at 21-22. Using a quantitative[11] life-cycle model[12] is a recognized (the best) method to evaluate the effects of an action upon a fish population's growth rate. Dr. Richard B. Deriso[13] opined that a population growth rate analysis is the generally accepted method utilized by fisheries biologists to evaluate the impact of a stressor on a fish species' population. Declaration of Dr. Richard B. Deriso, Doc 401, at ¶ 36; *see also* Declaration of Dr. Ray Hilborn[14], Doc. 393, at ¶¶ 7-16 (agreeing that life-cycle models are the accepted method in population dynamics to evaluate anthropogenic effects on the probability of growth or decline of a species); Declaration of Ken B. Newman[15], Doc. 484, at ¶ 8 (agreeing with "utility of life history models for assessing population level effects of SWP/CVP operations."). Dr. Hilborn explained that a quantitative population dynamics/life cycle model can help distinguish human actions that have a significant impact on population size from those that have little impact on population size, because competition for a resource that is independent of the human activity may cause significant mortality

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[11] The BiOp used a relatively simple, non-quantitative, conceptual life-cycle model. *See* BiOp at 203. It is undisputed that no quantitative life cycle model was employed.

[12] The experts use the term "population dynamics model," "life history model," and "life cycle model" interchangeably.

[13] Dr. Deriso is an expert in the field of quantitative ecology and its application to fisheries management. Deriso Decl., Doc. 396, at ¶¶ 5-10.

[14] Dr. Hilborn is an expert in aquatic and fishery sciences. Hilborn Decl., Doc. 393, at ¶ 1.

[15] Dr. Newman is an expert in mathematical statistics employed by FWS in Stockton, California.

at one stage in the species' life cycle, meaning that human actions that kill fish at that life stage may have little impact on the population level later in the life history. Hilborn Decl., Doc. 393 at ¶ 15.

Federal Defendants knew of the value of life-cycle modeling. At a March 8, 2007 meeting on the OCAP ESA Re-consultation, attended by FWS employees, the importance of using a life cycle model was emphasized and inquiry made about the progress to date. AR 016016 - 016017. During the Delta Smelt Action Evaluation Team meeting on August 8, 2008, that Team recognized that population models for delta smelt already had been developed, and that those models were a starting point for quantitative analyses when combined with appropriate assumptions. AR 011381-011382; *see also* AR 010023, 010027-010029.

There is considerable dispute over whether an appropriate life-cycle model (i.e., one sufficient to perform the types of analyses that would be helpful in the BiOp) existed at the time the BiOp issued. Dr. Newman declares:

> Despite the utility of life history models and despite the information that the various surveys provide about different life history stages, an adequately realistic quantitative delta smelt life history model that has been fit using fish survey data does not exist. The BiOp did in many places (e.g., pp 146, 184, 203) consider the full life history of delta smelt but considerations were via conceptual models in contrast to quantitative models with parameters estimated from data. Part of the difficulty is that there are currently no off-the-shelf computational programs for fitting such a model to data and one must develop