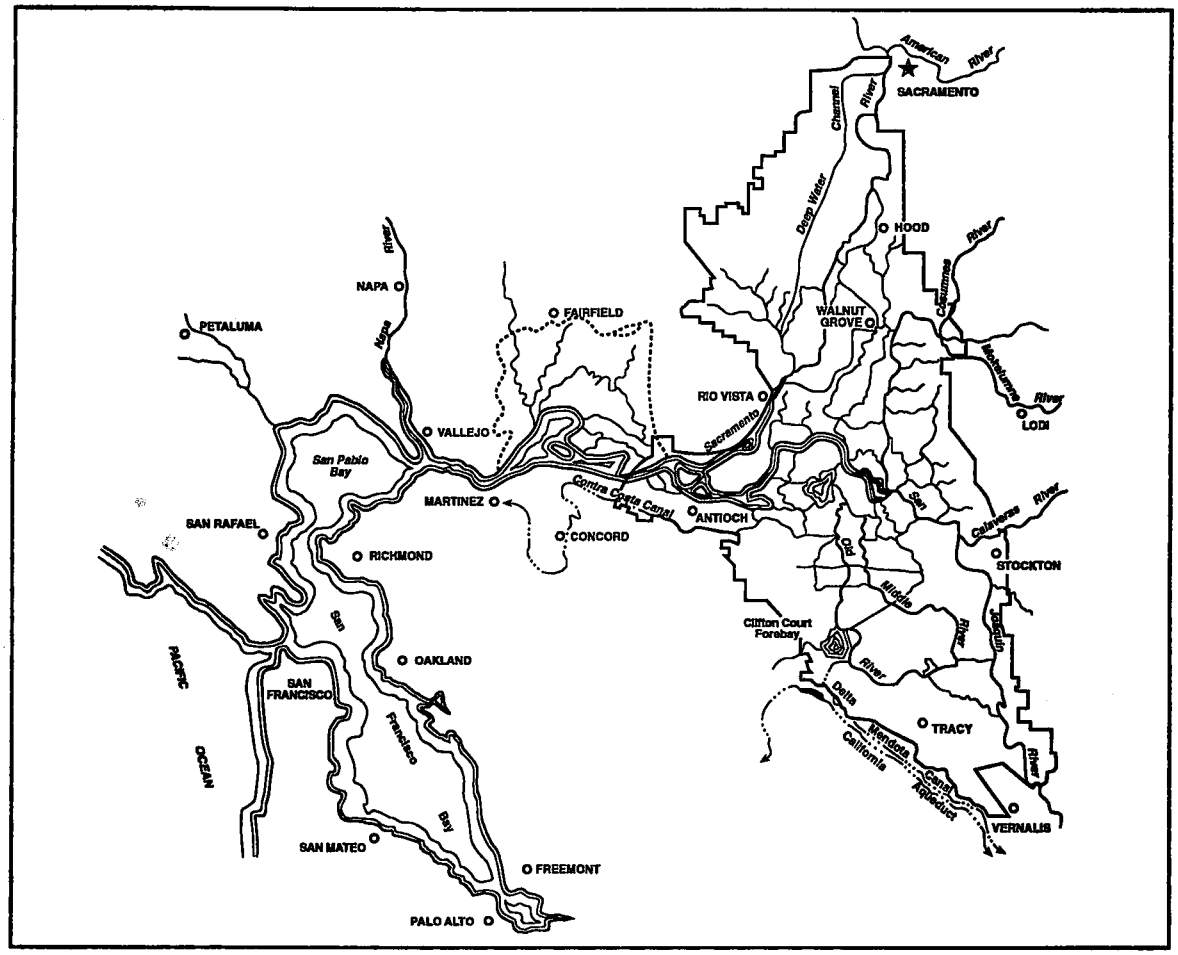

RESPONSE TO COMMENTS

APPENDIX 2
to
Water Quality Control Plan
for the
San Francisco Bay/Sacramento-San Joaquin Delta Estuary

95-1WR
MAY 1995

STATE WATER RESOURCES CONTROL BOARD
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LIST OF ABBREVIATIONS

cfs	cubic feet per second
F	Fahrenheit
MAF	million acre-feet
mmhos/cm	millimhos per centimeter
mS/cm	milliSiemens per centimeter
TAF	thousand acre-feet
POC	particulate organic carbon

LIST OF ACRONYMS

BCDC	San Francisco Bay Conservation and Development Commission
CCWD	Contra Costa Water District
CDWA	Central Delta Water Agency
CEQA	California Environmental Quality Act
CUWA	California Urban Water Agencies
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
DFG	Department of Fish and Game
DWR	Department of Water Resources
EIR	Environmental Impact Report
ESA	Endangered Species Act
ETAW	evapotranspiration of applied water
FED	Federal Ecosystem Directorate
FERC	Federal Energy Regulatory Commission
IEP	Interagency Ecological Program
MWD	Metropolitan Water District
NEPA	National Environmental Policy Act
NID	Nevada Irrigation District
NMFS	National Marine Fisheries Service
PG&E	Pacific Gas and Electric
RWQCB	Regional Water Quality Control Board
SDWA	South Delta Water Agency
SJTA	San Joaquin Tributary Agencies
SJVDP	San Joaquin Valley Drainage Program
SMPA	Suisun Marsh Preservation Agreement
SRCD	Suisun Resource Conservation District
SWP	State Water Project
SWRCB	State Water Resources Control Board
USBR	U. S. Bureau of Reclamation
USEPA	U. S. Environmental Protection Agency
USFWS	U. S. Fish and Wildlife Service

LIST OF AGENCIES OR INDIVIDUALS SUBMITTING COMMENTS ON THE DRAFT PLAN

Agency or Individual Name	Identifier	Date
Bay Fishermen's Coalition	BFC-1	transcript
Bartkiewicz, Kronick, and Shanahan	BART-1	10 Mar 95
Bay Institute of San Francisco	BISF-1	22 Feb 95
Bay Institute of San Francisco	BISF-2	7 Mar 95
Bay Institute of San Francisco	BISF-3	10 Mar 95
California Waterfowl Association	CWA-1	3 Mar 95
Central Delta Water Agency	CDWA-1	23 Feb 95
City of Stockton	STOC-1	23 Feb 95
Club Fed	CFED-1	23 Feb 95
Contra Costa Water District	CCWD-1	10 Feb 95
Delta Protection Commission	DPC-1	17 Mar 95
Delta Tributary Agencies Committee	DTAC-1	23 Feb 95
Delta Wetlands	DELTAWET-1	23 Feb 95
Delta Wetlands	DELTAWET-2	27 Feb 95
Department of Water Resources	DWR-1	23 Feb 95
Department of Water Resources	DWR-2	10 Mar 95
Gallery, Daniel F.	GALLERY-1	8 Mar 95
Interagency Ecological Program	IEP-1	transcript
Joint California Water Users	JCWU-1	23 Feb 95
Joint California Water Users	JCWU-2	10 Mar 95
League of Women Voters of California	LWV-1	8 Mar 95
Mountain Counties Water Resources Association	MCWRA-1	23 Feb 95
Natural Heritage Institute	NHI-1	23 Feb 95
Natural Heritage Institute	NHI-2	3 Mar 95
Nevada Irrigation District	NID-1	21 Feb 95
Nevada Irrigation District	NID-2	7 Mar 95
New Hogan Lake Conservancy	NHLC-1	28 Feb 95
Northern California Power Agency	NCPA-1	10 Mar 95
Northern California Water Association	NCWA-1	23 Feb 95
Pacific Coast Federation of Fisherman Association	PCFFA-1	23 Feb 95
Porgans, Patrick J.	PORGANS-1	23 Feb 95
Porgans, Patrick J.	PORGANS-2	7 Mar 95
San Francisco Bay Conservation & Development Commission	BCDC-1	23 Feb 95
San Francisco Estuary Institute	SFEI-1	23 Feb 95
San Francisco Public Utilities Commission	SFPUC-1	23 Feb 95
San Francisco Public Utilities Commission	SFPUC-2	9 Mar 95
San Joaquin County	SJC-1	23 Feb 95
San Joaquin Tributary Agencies	SJTA-1	23 Feb 95
San Joaquin Tributary Agencies	SJTA-2	10 Mar 95
Santa Clara Valley Water District	SCVWD-1	23 Feb 95
Save The American River Association	SARA-1	6 Mar 95
Smiland & Khachigian	WWD AREA1-1	23 Feb 95
Smiland & Khachigian	WWD AREA1-2	10 Mar 95
South Delta Water Agency	SDWA-1	23 Feb 95
South Delta Water Agency	SDWA-2	9 Mar 95
State Water Contractors	SWC-1	23 Feb 95
State Water Resources Control Board	SWRCB-1	28 Feb 95
Stockton East Water District	SEWD-1	23 Feb 95
Stockton East Water District	SEWD-2	10 Mar 95
Suisun Resource Conservation District	SRCD-1	3 Mar 95
U. S. Bureau of Reclamation	USBR-1	10 Mar 95
Western Area Power Administration	WAPA-1	3 Mar 95
Williams, John G.	WILLIAMS-1	25 Jan 95
Woodbridge Irrigation District	WID-1	23 Feb 95

RESPONSE TO COMMENTS

on the
Water Quality Control Plan for the
San Francisco Bay/Sacramento-San Joaquin Delta Estuary

PREFACE

This report responds to comments received on the draft Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (draft plan) and the draft Environmental Report, appendix to the draft plan, (draft environmental report). The draft plan was released for public comment on December 15, 1994, and the draft environmental report was released on January 23, 1995. A public hearing was held on February 23, 1995 to receive comments and recommendations regarding the draft plan. The hearing record was closed on March 10, 1995. Comments were received by 41 parties.

This report is divided into three parts. Part I responds to comments on the draft plan; Part II responds to comments on the draft environmental report; Part III responds to miscellaneous comments. Within the first two parts, the comments are organized in the same order as the chapters and sections in the draft plan and the draft report. Chapter and section headings in this document correspond to the respective headings in the draft plan and the draft report. Section headings are not included if no comments were received on that section. If a comment applies to both the draft plan and the draft report, the comment appears in Part I.

PART I. COMMENTS ON THE DRAFT PLAN

CHAPTER I. INTRODUCTION

Comment: [Page 1, para. 1] It is highly unlikely that variations in natural conditions by themselves would have caused the fish and wildlife uses of the Estuary to have experienced the severe degradation occurring over the last century and accelerated in recent years. On the contrary, Estuary-dependent biological resources of the Bay-Delta ecosystem have evolved under the highly variable conditions characteristic of estuaries in general and the Bay-Delta system in particular. Human activities, both historical and current, are implicated as the primary causal factor in the recent decline of Bay-Delta fish and wildlife species. (BISF-1)

Response: The first paragraph of the draft plan has been clarified to highlight current and historical human activities as the primary factor in the degradation of fish and wildlife uses.

Comment: [Page 1, para. 3, last sentence] The Department of Water Resources (DWR) believes that the following statement on the first page of the draft plan must be an erratum: "Full implementation of this plan by the State Water Resources Control Board (SWRCB) will occur through the adoption of a water rights decision". The program of implementation in the draft plan properly identifies implementation through waste discharge permits and through recommended actions by other agencies, in addition to water rights actions. (DWR-1)

Response: The statement has been corrected in the plan.

A. Purpose and Scope

Comment: The following comments concern development of long-term standards.

1. Although the draft plan may provide "the component of a comprehensive management package...that regulates salinity...and water project operations," it does not fully discharge the SWRCB's obligations to regulate salinity and water project operations in order to fully protect beneficial uses of the Estuary. (BISF-1)

2. The plan does not provide the long-term standards needed to fully protect Delta-dependent species and to restore the Estuary. (LWV-1)

3. Under the Principles for Agreement, the plan is intended to provide interim protection to the public trust values of the Estuary, pending the outcome of a planning process for long-term Delta solutions. The interim arrangement is intended to remain in place for only three years. The long-term planning process is expected to yield longer-term standards and other measures that would provide a higher level of protection. The plan should recognize the interim nature of the agreement and the commitment to

promulgation of long-term standards fully protective of Delta dependent species. Whereas the interim protections are predicated on the current facilities and physical configuration of the Delta, the long-term protections will presumably reflect more optimal facilities and water management institutions. (NHI-1)

Response: The plan discusses the fact that the Principles for Agreement extends for only three years and the agreement provides for development of a long-term solution to the fish and wildlife, water supply reliability, flood control, and water quality problems in the Estuary. The SWRCB agrees that the objectives in the plan are predicated on existing facilities, and the plan will be updated, if necessary, to protect beneficial uses or if the conditions under which the plan was developed change. There is a commitment in the plan to review the plan every three years to ensure that it continues to adequately protect beneficial uses.

Comment: The plan should acknowledge that the flow, water quality, and operational measures contained therein are not intended to preclude the implementation of other supplementary flow, water quality, and operational measures for the Bay-Delta over the interim period through other measures. Other actions that will provide environmental improvements beyond the plan and the Principles for Agreement include: (1) the anadromous fish doubling plan under the Central Valley Project Improvement Act (CVPIA), and other flow related enhancements; (2) environmental water purchases under the CVPIA and other authorities; and (3) measures taken by regulatory and management agencies to avoid the need to list spring-run salmon or other species as threatened or endangered. (NHI-1)

Response: A statement has been added to section A of Chapter I of the plan to clarify that this plan, in conjunction with RWQCB plans, other SWRCB plans and policies, and programs under the jurisdiction of other agencies, such as the CVPIA, provides a coordinated and comprehensive approach to Delta protection. The importance of the CVPIA efforts to implement measures to achieve its anadromous fish doubling objective is emphasized in section B.2 of Chapter IV.

Comment: [Page 3, para. 2, 1st sentence] In order for the draft plan to succeed as a "component of a comprehensive management package for the protection of the Estuary's beneficial uses", as described in the text, it must be implemented in conjunction with other important State, federal and voluntary initiatives, such as the CVPIA, the recommendations to other agencies in the draft plan, and the San Joaquin Valley Drainage Program (SJVDP). The SWRCB should explicitly recognize the linkage between the adequacy of this plan and the successful implementation of these other elements of a comprehensive management package. (BISF-1, LWV-1)

Response: The plan emphasizes the importance of the other initiatives in Chapter I and Chapter IV.

Comment: [Page 4, 1st full para.] We strongly object to the following statement in the draft plan: "Consistent with the intent of the State Legislature, as expressed in Water Code section 13000, in the Porter-Cologne Water Quality Control Act, these objectives and recommendations are intended to attain the goal of the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible."

While an important step forward, this improved interim level of protection for the next three years does not automatically translate into the attainment of the highest water quality which is reasonable. More importantly, the consideration of balancing competing demands on the Estuary's waters and accounting for economic and social factors cited in the text should play no role in the adoption of water quality objectives, as opposed to the designation of beneficial uses themselves or the apportionment of responsibility for compliance during water rights proceedings. Under the federal Clean Water Act authority delegated to the SWRCB, water quality objectives that protect beneficial uses must be based solely on scientific, as opposed to economic, social, or technological, considerations. (BISF-1)

Response: The SWRCB will adopt the draft plan only if it believes that the plan is consistent with State and federal law. The statement is an expression of that belief, and has not been amended.

Federal law requires consideration of economic factors when designating beneficial uses; State law requires consideration of economic factors when setting water quality objectives. The plan must accommodate both approaches. Also, the U. S. Environmental Protection Agency (USEPA) has approved the State water quality program as meeting the requirements of federal law.

As discussed elsewhere in these responses, the SWRCB does not believe that flow requirements or operational restrictions are subject to the federal requirements that water quality objectives must be based solely on scientific considerations. In any event, as described in Chapter III of the plan, the available evidence indicates that higher flows and lower exports provide greater protection for the bulk of estuarine resources up to the limit of unimpaired conditions. There is no definable threshold, short of elimination of human influences throughout the watershed, above which aquatic resources are protected and below which they are not protected. Therefore, the objectives must be based on a subjective determination of the reasonable needs of all of the consumptive and nonconsumptive demands on the waters of the Estuary.

Comment: [Page 4] The SWRCB should insert in the final version of the draft plan and in the adoption resolution protective language substantially similar to language recommended by the commenter. The purpose of the recommended language is to provide assurance that the plan does not modify existing water rights, so that claims regarding water right impacts may be filed after the water rights proceeding rather than filing them upon adoption of this plan. (WWD AREA1-2)

Response: A paragraph similar to the recommended paragraph, with changes to provide further explanation and to conform the language to that used in this proceeding, has been added to the plan.

Comment: The following comments concern the characterization of the plan as an ecosystem approach.

1. Although the draft plan endorses the concept of an ecosystem approach, it does not maximize the opportunities it has created to achieve this. Such an approach would be aimed at developing an understanding of the complete estuarine ecosystem and the place freshwater flows play in its functioning. It should establish goals and objectives, and develop a research program intended to address future management goals. An inevitable result of an ecosystem approach would be to place a greater emphasis on the restoration of riparian and estuarine wetland habitats instead of its present role in the draft plan as just one of 13 elements. (BCDC-1)

2. The draft plan provides a more coordinated and comprehensive approach to protection of the Estuary's beneficial uses than currently exists, and it incorporates regulatory requirements for management from an ecosystem perspective. However, it is not accurate to describe the plan as a comprehensive ecosystem approach when a number of critical parameters regarding ecosystem structure and function remain unaddressed, uncertain, or unknown. (BISF-1)

3. We believe that the proposed plan is not ecosystem management, but rather water management in the hopes of protecting two species on the federal Endangered Species Act (ESA) list. (SARA-1)

Response: The plan was crafted to address multiple factors affecting fish and wildlife and to provide benefits to multiple species; hence, it is referred to as a comprehensive ecosystem approach. The SWRCB believes that, regardless of the level of detail incorporated into the plan, it would always be possible to develop a more complete understanding of the Estuary, but this plan is a reasonable step at this time.

The restoration of riparian and estuarine wetland habitats is critically important. However, the SWRCB believes that all of the recommendations are important, and it has elected not to prioritize the recommendations.

C. Legal Authority

Comment: [Page 6] With respect to beneficial uses, the plan should refer only to establishment, and not to designation of beneficial uses. (DWR-1)

Response: This change has been made.

Comment: The following comments concern legal authority to adopt the objectives.

1. The SWRCB does not have authority to adopt all of the proposed objectives as water quality objectives under the Porter-Cologne Act. The 1991 Water Quality Control Plan for Salinity for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (1991 Bay-Delta Plan) recognized that flow requirements cannot be adopted as water quality objectives. (JCWU-1, DWR-1, WWD AREA1-2)

2. A list of diverse legal authorities should be included instead of the current discussion. (JCWU-1)

3. The plan should be based on the full range of the SWRCB's water management authorities under California law, including but not limited to the public trust doctrine and the reasonable use doctrine. (NHI-1)

4. The SWRCB cannot rely on Water Code sections 1242.5, 1243.5, 1257, and 1258 to support the inclusion of flow and operational provisions in a water quality control plan. There exists no statutory authority for a "Coordinated Estuarine Protection Plan" -- as proposed by the Joint California Water Users in their Feb. 22, 1995 comment -- that would rely on "multiple legal authorities", including water right statutes, to establish flow and operational objectives for the Delta. (WWD AREA1-2)

Response: Modifications are included in the plan to list the laws whose purposes will be supported by the objectives in the plan and to more fully explain the authority under which the SWRCB will adopt the plan including the objectives therein. The plan, when implemented, will carry out the requirements of the public trust doctrine, the reasonable use doctrine, and other laws as well as meeting the Porter-Cologne Act. The plan does not rely on laws other than the Porter-Cologne Act as authority for the SWRCB to adopt flow and operational objectives. For the reasons stated in the plan, flow and operational requirements can be adopted as water quality objectives under the Porter-Cologne Act, but the USEPA has no authority to replace these objectives with federal water quality standards for flow and operations. The 1978 Water Quality Control Plan for the Sacramento-San Joaquin Delta and Suisun Marsh (1978 Delta Plan) adopted flow and operational requirements as water quality objectives, and the 1991 Bay-Delta Plan did not amend or repeal them. The 1991 Bay-Delta Plan pointed out that the SWRCB had the option of revising the flow and operational objectives adopted in 1978 at a later time. (See the 1991 Bay-Delta Plan, footnote 1, page 1-2.)

One of the commenters in this group takes language from a response to a comment on the 1991 Bay-Delta Plan to support the view that the SWRCB cannot adopt flow requirements as water quality objectives, but the quoted language is only part of the response and is out of context. The response addressed a comment saying that the SWRCB was obliged to include flow objectives in the 1991 Bay-Delta Plan.

Comment: Because the draft plan would set flow and diversion mandates, it would effectively adjudicate and result in the impairment of water rights without any of the due process and other procedural protections contained in the water right statutes and regulations. The proceeding on the plan does not comply with 23 Cal. Code Regulations section 764, which allows a combined hearing on water quality and water rights if the SWRCB uses the water rights procedures. (WWD AREA1-2)

Response: The plan establishes new objectives and amends existing objectives; these changes will not be implemented until after a water right proceeding has been conducted and a water right decision issued. The plan does not determine which water right holders will have responsibility for meeting the objectives, nor does it mandate any new compliance at this time. Since the SWRCB has not combined the proceeding on water quality with the future water right proceeding, section 764 does not apply.

Comment: The SWRCB should maintain a distinction between water quality and water rights planning to preserve state primacy over the management and allocation of the State's water resources. The SWRCB should ensure that the federal government cannot assert a claim of jurisdiction over water allocation issues. (JCWU-1, DWR-1)

Response: The plan does not allocate quantities of water and it does not prescribe a water allocation scheme. Further explanation has been added in the plan regarding the limits of USEPA authority with respect to water allocation issues. While the State may regulate water uses to implement water quality protections, the Clean Water Act does not give the USEPA authority to interfere with state water allocations.

Comment: The plan should emphasize that its adoption complies with the California Environmental Quality Act (CEQA), even though it includes provisions regarding flow and project operations. (JCWU-1, DWR-1)

Response: A discussion has been added regarding CEQA compliance in accordance with the comment.

Comment: [Page 7] Footnote 3 should not say that criteria under the federal Clean Water Act are the equivalent of objectives under State law. (DWR-1)

Response: A change that further explains the relationship between criteria and objectives has been made.

Comment: [Page 7] The plan cites Water Code section 13050(g)-(h) as authority to adopt water quality objectives for flow but the commenter does not believe the Legislature intended this result. The commenter claims the SWRCB is unable to give any specific cites to bolster this reasoning. (SDWA-2, WWD AREA1-2)

Response: A citation to the legislative history of this section has been added to the plan.

Comment: Normally, the plan would set only water quality standards, and then it would be the responsibility of the DWR as the regulator of water rights to decide what amounts of water (i.e., flows) are necessary, what are the priority of the demands, and what the junior rights must give. (SDWA-2)

Response: The SWRCB, not the DWR, regulates water rights. (See Stats. 1967, Chapter 284; Wat. Code §174.) As provided in section 174, the Legislature combined the water quality and water right functions of State government in the SWRCB.

Comment: By setting flow standards and excluding the South Delta Water Agency (SDWA) from the process, the SWRCB has prevented those who will pay for the flows from arguing and presenting evidence as to what those flows should be. Only one public hearing, on February 23, 1995, was held. (SDWA-2)

Response: The SWRCB held a series of six public workshops from April through October, 1994 to seek comments and recommendations regarding the content of a new water quality control plan for the Bay-Delta Estuary. Additionally, SWRCB staff held several public workshops. The SDWA participated in these workshops. The draft plan is supported by the information obtained in connection with those workshops. The SDWA also attended the hearing on February 23, 1995 and provided comments. The plan puts no specific burden on members of the SDWA, and it carries out the intent of the Racanelli decision to set water quality objectives first without regard to water rights.

Comment: [Page 8, para. 3] The SWRCB received the following comments regarding the USEPA's approval of the plan.

1. The SWRCB should present the plan to the USEPA for approval under several specific provisions (sections 208, 303, and 319) of the federal Clean Water Act, instead of presenting it for approval without specifying the sections under which the USEPA may approve it. The discussion in Chapter I.C.5. of the Plan should be replaced with text proposed in the comment. (JCWU-1, DWR-1)

2. The plan incorrectly interprets the USEPA's authority. The USEPA may approve state standards for freshwater flow under Clean Water Act section 303 or may promulgate its own standards in the absence of approvable state standards. Reduced freshwater flow can constitute water pollution and is, therefore, a water quality matter. Clean Water Act section 101(g) does not bar the USEPA from issuing or approving standards which regulate water quantity or any other parameters of water quality even if water allocations are affected. (BISF-1)

3. The USEPA has authority to approve water quality standards pertaining to flow and water project operations. (NHI-1)

Response: The purpose of the first comment is to help insulate the plan from too broad a review and assertion of jurisdiction by the USEPA over the water supply that will be affected by implementation of the plan. Much of the language recommended by the commenter has been incorporated into section I.C.5 of the plan, along with the original language; some recommended language is not incorporated because it is less defensible and less decisive than the original language. The SWRCB also recognizes that the Supreme Court, in PUD No. 1 of Jefferson County v. Washington Dep't of Ecology (1994) 114 S.Ct. 1900, rejected arguments based on Clean Water Act section 101(g) that water quantities could not be regulated under Clean Water Act section 401. The Supreme Court's interpretation allows states to regulate water users to prevent adverse effects on water quality, but does not allow the USEPA to interfere with the states' water allocation authority. The Supreme Court did not consider whether the USEPA could promulgate standards for water quantities in PUD No.1; the state, not USEPA, had adopted the standards.

Section 303(e) requires each state to have a continuing planning process which, among other things, incorporates all elements of any applicable plans under section 208 and includes adequate implementation for revised or new water quality standards. With these provisions, approval under section 303(e) would include approval of the elements of a plan under section 208 or 319, without the need for a separate plan. No need exists to submit the plan specifically under sections 208 or 319.

CHAPTER II. BENEFICIAL USES

Comment: The beneficial use definitions in the draft plan are slightly different than those currently recommended for adoption in Basin Plans. We recommend that all SWRCB and RWQCB plans and policies use consistent beneficial use designations. (SWRCB-1)

Response: The recommended beneficial use definitions have been incorporated into the plan. The changes are not substantive.

Comment: The beneficial uses of the waters of the Bay-Delta Estuary should be expanded to include hydroelectric power generation. (NCPA-1)

Response: The addition of hydroelectric power generation as a beneficial use is inappropriate because there are no existing or planned hydroelectric power generation facilities within the boundaries of the Bay-Delta Estuary.

CHAPTER III. WATER QUALITY OBJECTIVES

Comment: [Page 12, para. 1] The draft plan admittedly does not guarantee the reasonable protection of the Estuary's fish and wildlife beneficial uses. Instead the draft plan will "protect fish and wildlife beneficial uses at a level which stabilizes or enhances the conditions of aquatic resources". However, when it comes to other uses the draft plan will "ensure the

reasonable protection of municipal, industrial and agricultural beneficial uses". (PORGANS-1)

Response: The SWRCB believes that the plan provides reasonable protection for all beneficial uses. The language in the plan has been clarified to state that belief.

B. Water Quality Objectives for Agricultural Beneficial Uses

Comment: The agricultural standards in the central Delta are restricted to the period from April 1 to August 15. Although most irrigation occurs during this period, water is diverted from the channels on to lands in the central Delta for critical agricultural uses in every month of the year. The water quality needs for irrigation and leaching after August 15 and before April 1 are usually met by water quality standards designed to protect other uses; however, explicit recognition of the water quality needs of agriculture on a year-round regimen should eventually be reflected in agricultural water quality standards for every month. (CDWA-1)

Response: The only standards being reviewed during this review period are the fish and wildlife standards. The SWRCB will consider reviewing the agricultural standards during the next Bay-Delta Plan review.

C. Water Quality Objectives for Fish and Wildlife Beneficial Uses

Comment: The following comments express the concern that the water quality objectives for fish and wildlife provide inadequate protection.

1. We do not believe that the objectives in the draft plan for the July-January period provide adequate direct protection for the wide range of anadromous fish species present in the Estuary. Therefore, the success of the plan relies on achieving mitigation for this shortcoming through the aggressive implementation of a number of crucial factors. These include: adequate exercise of operational flexibility to allow variations in the percent of Delta inflow diverted during periods of increased risk, as permitted in the plan; a program of implementation that aims to identify those measures necessary to meet the new narrative objective for chinook salmon; prompt allocation of flows by the U. S. Bureau of Reclamation (USBR) to meet its obligation to double anadromous fish populations, as called for by the CVPIA; and expeditious development of a high priority monitoring component. (BISF-1)

2. It appears that salmon protection is still inadequate. (BCDC-1)

3. Both the draft plan and the Principles for Agreement fail to provide adequate protection for species under stress but not yet listed (e.g., spring-run salmon, Sacramento splittail, and longfin smelt). Operational flexibility and adaptive management are important elements in the agreement that could be used to further protect these species. (LWV-1)

4. The fall-run chinook salmon on the San Joaquin River is the biggest loser. It is important to protect these stocks during average and wetter years as a buffer against severe losses when conditions are less favorable. The run may continue as a remnant run unless there is a concerted effort to have a greater and positive flow (2,000-5,000 cubic feet per second (cfs)) from the San Joaquin River and tributaries. Spring-run and late fall-run also lose out. There must be greater protection from the impacts of diversion from November through April. (SARA-1)

5. Applying public trust principles to managing water and biological resources requires that all salmon runs be provided with greater protection through greater outflows and other measures. (SARA-1)

6. One of the most important issues for potential refinement of the Principles for Agreement is the need for protection of spring-run chinook salmon. The spring-run received short shrift in the agreement and in the draft plan as well. The only measure likely to directly benefit outmigrating spring-run in the November through January period is the provision for up to 45 days of Delta Cross Channel closure. Delta Cross Channel gate closure may provide significant benefit to outmigrating spring-run smolts in the fall months. We are urging the coalition of stakeholders to concur in allowing the operations group to allow additional days of closure to benefit the salmon. (NHI-1)

Response: The SWRCB believes that the full package of protection offered by the plan is reasonable. The SWRCB will review the plan every three years to ensure that the protection provided by the plan is reasonable. Monitoring required by the plan will provide the information necessary to conduct the triennial review.

The plan includes the operational flexibility and monitoring program identified by the commenters. The SWRCB also supports prompt allocation of flows by the USBR to meet its obligations under the CVPIA.

The approach identified in the plan to implement the narrative salmon objective is to promptly implement the numerical standards and recommendations in the plan. The monitoring program will then establish whether additional measures are necessary to ensure achievement of the objective.

Comment: [Page 12, last para.] One of the most significant differences between this draft plan and the 1978 Delta Plan is that the current plan expresses no ultimate goals for restoring the Estuary. Instead the draft plan states that "there are no clearly defined threshold conditions which can be used to set objectives for flows and project operations..." This statement is to be contrasted with Water Right Decision 1485 (D-1485) which sets as objectives mitigation of pre-project conditions for Suisun Marsh and restoration of specific historic population levels for striped bass and salmon. If these prior, quantifiable objectives

have been abandoned, there should be explicit acknowledgement that this is so and the reasons given.

For any long-term plan to be effective, there has to be some statement as to what are optimum, acceptable and unacceptable levels of a resource by which management actions are measured. This can be as general as "doubling anadromous fish populations" or as specific as the striped bass index in D-1485. For the draft plan to simply state that "a continuum of protection exists" both places an unfair burden on estuarine scientists to establish such targets and can pit non-economic, unquantified, environmental beneficial uses against economic, quantifiable beneficial uses such as irrigation diversions.

Fortunately, there is an opportunity to address this critical problem. We recommend that an important task under the special studies program contained in the plan be devoted to characterizing thresholds, historic conditions, and optimal levels of key species. (BCDC-1)

Response: The plan contains goal statements for fish and wildlife. The plan states that a reasonable level of protection is provided that will stabilize or enhance the condition of aquatic resources. The plan also contains two narrative water quality objectives for salmon production and protection of Suisun Marsh. The narrative salmon objective requires a doubling of natural production of chinook salmon, and the Suisun Marsh objective requires water quality conditions sufficient to support a natural gradient in species composition and wildlife habitat throughout all elevations of the tidal marshes. With respect to long-term goals for restoration of the Estuary, the SWRCB believes that the goals will be developed through the long-term, multi-agency planning process established under the Framework Agreement.

The SWRCB will not recommend that the special studies program be devoted to the activities requested by the commenter. As stated in the plan, the SWRCB believes that there are no threshold conditions which can be used to set objectives and that a subjective determination of the reasonable needs of all the demands must be made.

The approach taken in this plan regarding goals is similar to the approach in D-1485. D-1485 contains the following statement.

> "While the standards in this decision approach without-project levels of protection for striped bass, there are many other species, such as white catfish, shad and salmon, which would not be protected to this level. To provide full mitigation of project impacts on all fishery species now would require the virtual shutting down of the project export pumps. The level of protection provided under this decision is nonetheless a reasonable level of protection until final determinations are made concerning a cross-Delta transfer facility or other means to mitigate project impacts."

Lastly, it is important to note that the Racanelli Decision found that the use of without-project conditions to set water quality objectives was inappropriate. The court

determined that objectives should provide reasonable protection of beneficial uses, considering all demands made on the water.

Comment: [Page 12, last para.] The draft plan acknowledges that "there are no clearly defined threshold conditions which can be used to set objectives for flow and project operations....Therefore, these objectives must be set based upon a subjective determination of the reasonable needs of all of the....demands on the waters of the Estuary." This means that the SWRCB cannot justify how it arrived at its flow objectives. However, there do exist such objective parameters. Under water rights hearings (not under water quality hearings), the SWRCB should decide what are the priorities of fish and wildlife needs, what level are those needs, and what junior rights must give way. By doing what it has done, the SWRCB has avoided a public discussion of how and how much priority fish flows have. (SDWA-2)

Response: The SWRCB had a public discussion of the appropriate magnitude of flow objectives. However, the SWRCB is not prioritizing the objectives in these proceedings. If during the water rights proceeding it is determined that all of the objectives cannot be reasonably achieved, the SWRCB will consider prioritizing conflicting objectives.

Comment: The SWRCB should consider adopting a biological resource objective similar to the following objective adopted by the Bay-Delta Oversight Committee. (PCFFA-1)

> "Preserve, restore or, where those are not possible, simulate an ecosystem that provides for the integrity of biological resources as defined by composition, structure, and function."

Response: This biological resource objective summarizes the overall goal of all of the elements of the plan, but it is too broad a statement to adopt as a water quality objective.

Dissolved Oxygen Objective

Comment: The Central Valley RWQCB recently reissued a permit to the City of Stockton for its wastewater discharge. This permit imposes new and more stringent dissolved oxygen-related effluent limitations and requires immediate compliance. In order to comply with these requirements, the City of Stockton must build new wastewater treatment facilities, which will take ten years to construct. The City of Stockton believes this requirement places an unreasonable burden on the Stockton Metropolitan Region, but more importantly, the City and its wastewater users face ten years of potential violations of State and federal law during the period of time required to design and construct the facilities necessary to meet the new requirements. The City of Stockton requests the addition of a footnote accompanying the water quality objective for dissolved oxygen. The footnote reads as follows: (STOC-1)

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

Response: The footnote has been incorporated into the plan. The City of Stockton is responsible for part of the dissolved oxygen problem on the San Joaquin River, but other factors contribute to the problem. The City of Stockton needs time to design and construct facilities. The proposed footnote provides the Central Valley RWQCB with the legal authority to provide a schedule of compliance for the City of Stockton in its permit, if appropriate.

Salmon Protection Narrative Objective

Comment: The record before the SWRCB indicates that the objectives in the plan will not achieve the objective of doubling salmon production. The SWRCB should emphasize the importance in helping to achieve the narrative objective of prompt allocation of flows to meet the fish goals of the CVPIA. In addition, the plan should commit the SWRCB to undertake those measures necessary to achieve the objective in a timely manner including: (1) timely completion of the water rights hearing to adopt instream flow requirements for salmon migration on all tributaries; and (2) formulation of numeric objectives to protect salmon outmigration, such as a salmon smolt survival index. (BISF-1)

Response: The record before the SWRCB does not contain a quantitative analysis of whether the numeric objectives will achieve the narrative objective of doubling salmon production. The draft plan has been modified to discuss implementation of the narrative objective (see section B.2 of Chapter IV), and the recommendations of the commenter are included in the discussion.

It should be noted, however, that modeling work done by the San Joaquin Tributary Agencies (SJTA) and submitted to the SWRCB at its October 19 workshop [*SJTA. 1994. Presentation of the SJTA to the SWRCB, October 19, 1994, on San Joaquin River Salmon and Striped Bass Issues*] indicated that the joint water users proposal at that time for flows and exports, including construction of a barrier at the head of Old River, would more than triple salmon escapement on the San Joaquin River over modeled historical escapement from 1982 to 1991. The plan is similar to the joint water users proposal, but it includes a recommendation to evaluate the effect of the Old River barrier instead of a requirement to construct it.

Comment: We have several concerns with the narrative salmon objective. First, it is unclear. Are the standards intended to achieve doubling or will there be some additional, but unspecified independent requirements? Second, the goal is unrealistic. Water alone, almost certainly, cannot double; other factors must be considered. Third, if this objective is intended to lead to new, greater flow requirements, then the proposed objective would be unreasonable. Fourth, while the Principles for Agreement include a general statement regarding doubling, it does not have to be included in the plan. Fifth, if it remains in the plan, the USEPA may include it in its Bay-Delta standards. If the narrative objective must remain in the plan, it should be included as a general goal that may be achieved by the standards and the recommendations. (BART-1)

Response: The narrative objective is clear, but the program of implementation of the objective in the draft plan is not sufficiently clear. The final plan contains a description of the program of implementation in section B.2 of Chapter IV. As discussed in that section, it is uncertain whether implementation of the numeric objectives alone will achieve the doubling objective. Implementation of the recommended actions should also increase salmon populations. If the measures in the plan do not achieve the objective, the SWRCB may consider additional measures during a subsequent review of the plan.

The narrative objective is included in the plan because the SWRCB believes that it is an appropriate and reasonable objective, consistent with State and federal law, not because it is included in the Principles for Agreement as a general statement.

The SWRCB does not believe that the USEPA has the authority to implement a narrative salmon objective to the extent that implementation requires flow or operational measures.

San Joaquin River Salinity Objectives

Comment: The standard included in the draft plan for San Joaquin River salinity is inconsistent with the standard endorsed in the Principles for Agreement for San Joaquin River salinity. The Joint Agencies have had further discussions with the operations group regarding this matter and have reached a consensus on its appropriate resolution. To reflect that consensus, the Joint Agencies recommend that the standard be amended so that it does not apply in critically dry years. (JCWU-2) (Support for this change was also expressed by CFED-1, BISF-1, USBR-1, DWR-1, NHI-1, LWV-1)

Response: The change has been made in the plan.

Comment: It is inappropriate to set standards to improve the habitat for an exotic species that is a known threat to the native chinook salmon. There is no reference to the lack of spawning habitat as a reason for the decline in striped bass, however the SWRCB proposes a salinity objective to protect striped bass spawning habitat in the lower San Joaquin River. There is no reason to adopt a striped bass water quality standard. We believe that: (1) there is no real scientific evidence that a salinity barrier to migration exists; (2) even if such a barrier did exist, it would not affect the production of striped bass, because as broadcast spawners, they are not spawning habitat limited; and (3) if striped bass did spawn farther upstream, the eggs and larvae would be susceptible to increased entrainment at the State and federal pumping facilities. (SJTA-2)

Response: The salinity standard is part of a range of measures to protect a wide range of aquatic resources in the entire Bay-Delta ecosystem. With adequate protective measures for prey species, protection for the predator species should not be of concern.

The purpose of the salinity standard in the spring is to improve habitat conditions in the lower San Joaquin River for spawning striped bass and other warm water fish such as the

Sacramento splittail. The California Department of Fish and Game (DFG) has recommended adoption of the objective to ensure adequate striped bass spawning habitat.

The salinity objective extends from Prisoners Point to Jersey Point. This reach encompasses the historical spawning range for striped bass. The SWRCB has been encouraged in the past to extend the objective to Vernalis, but the SWRCB is not adopting this recommendation because this section of the San Joaquin River is not a significant part of the historical spawning range, and if striped bass did spawn farther upstream, the eggs and larvae would be susceptible to increased entrainment at the State and federal pumping facilities, as noted by the commenter.

Suisun Marsh Salinity Objectives

Comment: The following changes should be made to the Suisun Marsh salinity objectives. (DWR-2) (This comment was submitted by the DWR; however, it was titled "Joint Recommendations on Suisun Marsh Objectives Presented in the SWRCB's Draft Water Quality Control Plan", and it was signed by the USBR, DWR, DFG, and Suisun Resource Conservation District (SRCD). Support for this recommendation was also expressed by JCWU-2 and CWA-1)

1. The Van Sickle Island objective should be removed because other objectives control salinity near the island. We will seek the confirmation of the consensus parties that removing the Van Sickle station conforms with the Principles for Agreement. Our recommendation is conditioned on obtaining that confirmation.

2. Implement the Suisun Marsh Preservation Agreement (SMPA) standards in the western Suisun Marsh. The November standard should be 16.5 milliSiemens per centimeter (mS/cm) for normal and deficiency years, and the December standard should be 15.5 mS/cm for normal years and 15.6 mS/cm for deficiency years.

3. The effective date for objectives for stations S-35 and S-97 should be set to October 1, 1997.

Response: The last two recommendations are incorporated into the plan. The first recommendation is not incorporated. Confirmation of the recommendation was not received.

Comment: The SRCD Board of Directors is concerned about the modification to the effective dates for compliance at stations S-35 and S-97 in the Suisun Marsh. These stations effective dates for compliance have been changed many times. There should be a precise time frame to come into compliance this year and any extensions of this time should have a provision for mitigation. Mitigation should be made to the landowners in the area that have to manage their property with the poorer water quality. (SRCD-1, CWA-1)

Response: The compliance date for stations S-35 and S-97 is October 1, 1997. This date was recommended by SRCD, DFG, DWR, and USBR, as noted in the previous comment. The parties responsible for meeting this objective will be determined during the water rights proceeding. Mitigation may be required by the responsible parties through a water rights proceeding if they fail to comply with the terms of their water right permits.

Comment: In prior proceedings we have emphasized the importance of maintaining the goals and standards for protecting the wetlands of Suisun Marsh. The draft plan now allows for higher salinities in the western marsh in drier years. In addition, the draft plan provides only narrative, not numerical, standards for protection of brackish tidal marsh. We have consistently advocated the need for salinity standards to prevent the continued encroachment of salt marsh into Suisun Bay. Since 1981, the San Francisco Bay Conservation and Development Commission (BCDC) has been involved in reviewing the planning and implementation of the Suisun Marsh protection facilities and has consistently raised questions about the ability of the Suisun Marsh Salinity Control Gates to improve salinity in the western marsh and urged that Delta outflow be used to reduce salinities instead. (BCDC-1)

Response: The DFG, SRCD, DWR, and DFG recommended that the deficiency objectives be adopted for the western marsh. These deficiency objectives provide better water quality than existing conditions in the marsh, as described in the environmental report; therefore, the objectives will not allow encroachment of salt marsh into Suisun Bay. With respect to the narrative objective, the SWRCB does not believe that there is sufficient information to adopt numerical objectives for the tidal marshes at this time, but work on this issue will continue through the Suisun Marsh Ecological Work Group, as recommended in the plan.

The SWRCB does not believe that it is reasonable to require compliance with western marsh salinity standards through regulated Delta outflow. Low salinity conditions in these areas can be achieved only at enormous expense of water.

Comment: The adoption of the SMPA deficiency standards for the western marsh should be undertaken with the proviso that an ecological assessment of the impacts of the plan's new requirements be conducted and completed in a timely manner. (BISF-1)

Response: The program of implementation of the plan includes a recommendation that a Suisun Marsh Ecological Work Group be formed, and one of its recommended activities is to assess the effects of the water quality objectives on Suisun Bay and Suisun Marsh .

Comment: The objectives in the draft plan for Suisun Marsh include a narrative objective for the brackish tidal marsh. A program to analyze brackish tidal marsh habitat and biodiversity requirements and identify improved water quality regulations, including numeric objectives, is urgently needed if this narrative objective is to be achieved. (BISF-1)

Response: The program of implementation of the plan includes a recommendation that a Suisun Marsh Ecological Work Group be formed, and this task has been added to its recommended activities.

Delta Outflow Objectives

Comment: The draft plan does not provide sufficient guidance as to the manner in which Delta outflow requirements will be applied operationally during the months of February and March. The Joint Agencies have met with representatives from various State and federal agencies including SWRCB staff to address this issue, and we believe that a substantial consensus has been reached on an appropriate and practical resolution of the matter. To reflect that consensus, the Joint Agencies propose that footnote 11 of page 18 of the draft plan be replaced with the following footnote. (JCWU-2) (Support for this change was also expressed in CFED-1, BISF-1, USBR-1, DWR-1, NHI-1, LWV-1)

> "The minimum daily outflow shall be 7,100 cfs for this period, calculated as a 3-day running average. This requirement is also met if either the daily average or 14-day running average electrical conductivity at the confluence of the Sacramento and the San Joaquin rivers is less than or equal to 2.64 millimhos per centimeter (mmhos/cm) (Collinsville, station C2). If the best available estimate of the Eight River Index is more than 900 thousand acre-feet (900 TAF) in January, the daily average or 14-day running average electrical conductivity at station C2 shall be less than or equal to 2.64 mmhos/cm for at least one day between February 1 and February 14; however, if the Eight River Index is between 650 TAF and 900 TAF in January, the operations group established under the December 15, 1994 Principles Agreement shall decide whether this requirement will apply, with any disputes resolved by the CALFED policy group. If the best available estimate of the Eight River Index for February is less than 500 TAF in February, the standard may be further relaxed in March upon the recommendation of the operations group, with any disputes resolved by the CALFED policy group. The standard does not apply in May and June if the best available estimate of the May Sacramento River Index for the water year is less than 8.1 million acre-feet (MAF) at the 90 percent exceedence level. Under this circumstance, a minimum 14-day running average flow of 4,000 cfs is required in May and June. Additional Delta outflow objectives are contained in Table A on page 23."

Response: The footnote is incorporated into the plan with minor editing changes.

Comment: The draft plan improperly confuses Suisun Bay salinity objectives for the February-June period with Delta outflow objectives for the July-January period. The water quality objectives for the February through June period are salinity-based objectives. These objectives are intended to protect estuarine habitat by replicating salinity conditions in Suisun Bay, based on significant correlations found between those conditions and abundance of Estuary-dependent aquatic organisms at all trophic levels. Further, the consensus of

estuarine scientists is generally that salinity is a more accurate and dependable measure of estuarine habitat. Accordingly, the February-June requirements should be listed as, most precisely, "Suisun Bay Salinity" objectives, or, alternatively, "Estuarine Habitat", objectives, separate from the July-January objectives for Delta outflow, and expressed as salinity values which can be met through either salinity or flow compliance measures. (BISF-1)

Response: 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. Therefore, the SWRCB believes that the February-June standard is appropriately characterized as an outflow standard.

The scientific justification for expressing the standard as an outflow requirement is at least as strong as the justification for expressing it as a salinity standard. This justification is described in Chapter VI of the environmental report. Since 1980, as part of the Interagency Ecological Program (IEP), the DFG has undertaken a study to investigate the relationship between Delta outflow and the abundance and distribution of fish and invertebrates. The abundance of 70 species of fish, shrimp, and crabs have been analyzed. Over two-thirds of the species considered to be estuarine, anadromous, or fresh water were significantly more abundant in wet years. Significant positive relationships were found for several species. The participants in a series of San Francisco Estuary Project workshops subsequently developed similar significant positive relationships between the X2 isohaline position and the abundance of the same aquatic resources. The fact that similar significant relationships can be derived between the abundance of aquatic resources and either Delta outflow or an isohaline position is expected because Delta outflow and isohaline positions are highly correlated. The mechanism that causes the relationship between the abundance of some aquatic resources and either outflow or salinity is unknown.

Comment: The X2 isohaline objective should be met by flows from both the San Joaquin Basin (25 percent) and the Sacramento Basin (75 percent) as if the flows were unimpaired. For biological, ecological, and hydrological reasons, there is greater equity in this 25/75 percent contribution than having the Sacramento River alone provide these flows. (SARA-1)

Response: Balancing the outflow requirements between the two major river systems entering the Delta based on unimpaired conditions is a sound concept. However, the San Joaquin system is more heavily allocated than the Sacramento system. Therefore, a hydrologic balance as proposed would result in larger impacts in the San Joaquin Basin. The SWRCB believes that the X2 isohaline objective, as formulated, provides reasonable protection for the Estuary, and the February through June San Joaquin River flow requirements protect aquatic resources in the lower San Joaquin River.

Comment: Steelhead have freshwater habitat requirements that are not being met in most of the rivers of the Central Valley. Steelhead smolts need greater outflow during November, December, and January as they pass through the Delta. (SARA-1)

Response: Average monthly State Water Project (SWP) fish salvage data, for the years 1980-1991, indicate that most steelhead are salvaged in the late winter and early spring, with the peak occurring in March and April (Steve Ford, DWR, pers. comm., April 1995). The plan provides for significantly greater outflow in the February through June period than was required under D-1485.

Comment: How are the Delta outflow and export percentages computed? Computing Delta inflow, export, Delta consumption, Delta outflow, and associated record keeping must be standardized. (SARA-1)

Response: The footnotes to Table 3 in the plan specify how to calculate Delta inflow, Delta outflow, Delta consumption, and percent of Delta inflow diverted.

Comment: [Page 18] The reference in footnote 11 of Table 3 in the draft plan is confusing. The footnote refers to the "maximum daily or 14-day running average" electrical conductivity at the confluence of the Sacramento and San Joaquin rivers. The reference should be substituted with the phrase "daily average or 14-day running average". (JCWU-1)

Response: The footnote has been clarified as requested by the commenter.

River Flows

Comment: The actions, measures, or streamflows necessary at Vernalis to protect water quality, beneficial uses, and renewable resources of the lower San Joaquin River and the southern Delta have not been established. (SARA-1)

Response: The draft plan includes year-round EC objectives at several locations in the southern Delta to protect agricultural beneficial uses. Protection for aquatic resources is provided by year-round export restrictions, flow requirements at Vernalis in February through June and October, a dissolved oxygen objective from September through November, an EC objective for striped bass spawning, and a narrative objective for salmon protection.

Comment: At the February 23, 1994 hearing, the SDWA made a request for a change to the plan. The change would have clarified that the Vernalis flow objectives would not be implemented to the degree they would prevent meeting the salinity standards and other superior in-stream uses. Apparently the SWRCB has concluded that not one issue raised by the San Joaquin River system appropriators and riparians at the February 23, 1995 hearing was valid and hence required any change in the plan. (SDWA-2)

Response: The SDWA's assertion that the SWRCB does not contemplate making any changes is unfounded and wrong. The final plan contains numerous changes made in response to comments from the parties. The referenced change requested by SDWA was not included because it would have the effects of (1) nullifying the Vernalis flow objective under some conditions, and (2) establishing a water right priority between the fish flows and

claimed downstream water rights. The Vernalis flow objective is important for fishery protection, and nullifying it could leave this beneficial use unprotected. Further, the proposed change should be considered in a water rights proceeding that assigns responsibility for the implementation of the objectives, not in the plan. The SWRCB believes it would not be appropriate to establish water right priorities in the water quality control plan.

Comment: The draft plan includes increased San Joaquin River flows at Vernalis in February through June. The outmigration of smolts takes place primarily in April and May (with small fractions occasionally outmigrating in March or June). There is no biological justification of the increased flows in February through June with the exception of the April-May pulse flows to move smolts through the Bay-Delta and promote the production of chinook salmon. The SJTA objects to the proposed flows because there is no scientific justification for these flows. These flow standards were never presented at any public forum and the parties have had no opportunity to review and comment on them. The flows are based on recommendations of the U. S. Fish and Wildlife Service (USFWS) for the benefit of Delta smelt rather than flows necessary for the protection of chinook salmon. Inflow requirements at times when San Joaquin River salmon are not present are not beneficial to San Joaquin River salmon.

The draft plan identifies two purposes for the San Joaquin River flow standards: (1) to move smolts past the pumps and (2) to move the smolts from the upstream areas. The first purpose must be mitigated by the projects and the second purpose is being addressed in other forums and should not be included in this plan. The proposed flows often significantly exceed those experienced under pre-project periods of fishery abundance, and they do not serve any habitat or biological purpose so much as they attempt to separate public trust resources from the pumps.

The draft environmental report states that spring flow requirements in the San Joaquin River outside the salmon outmigration period are meant to benefit various estuarine species by improving salinity conditions in the central and southern Delta, and by providing transport flows out of the central Delta. We object to these conclusions because Delta pumping obviously has adverse effects on salinity and on flow conditions in the central and southern Delta. However, the draft plan does not impose any direct limits on spring export, except during the salmon outmigration. The plan does limit the ratio of export to total Delta inflow, but since total inflow is driven primarily by Sacramento flow and releases from upstream projects in the Sacramento River Basin, this has little relevance to conditions in the southern Delta. (SJTA-1)

Response: The draft plan states in Chapter III that "Sacramento and San Joaquin river flow objectives are included to provide attraction and transport flows for the upstream and downstream migrations of various life stages of anadromous fishes". A more detailed description of the need for these flows is provided in section A.4 of Chapter VIII in the environmental report. The environmental report states that the purpose of the standards is to improve survival of salmon smolts emigrating down the San Joaquin River and to improve

habitat conditions in the south and central Delta. The outmigration of salmon occurs over a time period greater than just the one month of the pulse flow, but the one month period was determined to be reasonable. The DFG has shown that increased flows on the San Joaquin River during the spring months are highly correlated with increased numbers of adult spawners returning two and a half years later. USFWS tagging studies have shown that smolt survival increases with increased flows and reduced exports. The draft environmental report also notes that the flow objectives coincide with the spawning season of a number of estuarine species such as Delta smelt, Sacramento splittail and striped bass, and the objectives will improve salinity conditions for spawning in the central Delta and provide transport flows out of the central Delta to Suisun Bay where higher quality habitat is available. The references used to develop this section of the environmental report are cited in the text.

The decline in San Joaquin River fall-run chinook salmon is not simply due to exports. Reduced outflow from the San Joaquin River basin has contributed to the degradation of the aquatic habitat in the Estuary, independent of export impacts.

The need to adopt objectives for higher flows on the San Joaquin River was discussed in several public forums, including the SWRCB's proceedings leading to release of draft Water Right Decision 1630 (D-1630), and the workshops for the draft plan held in 1994.

Total inflow is composed of inflow from the Sacramento, San Joaquin, and eastside rivers, precipitation, and runoff. The San Joaquin and eastside rivers play a very important role in the water quality and flow conditions in the central and southern Delta.

Allocation of responsibility to meet the plan requirements will be established during the water rights proceeding.

Comment: In the program of implementation of the draft plan, the SWRCB recommends that a study be conducted to determine the effects of pulse flows on fish eggs and larvae. Does this mean that the October pulse flow of 28 TAF is not supported by any current study? (SDWA-2)

Response: The SWRCB recommends an experimental study program on the effects of pulse flows on planktonic fish eggs and larvae in the Delta during the April through June period when the egg and larval stages are present [section C.11 of Chapter IV]. The experiments would involve flows from both the Sacramento and San Joaquin rivers. There is some uncertainty as to the magnitude and duration of the flow necessary to move the eggs and larvae downstream and provide benefits to the various species. Therefore, instead of requiring a pulse flow, the SWRCB recommends experiments that would be designed to evaluate the effects of the pulse flow on the fish eggs and larvae.

In contrast, the proposed October pulse flow objective of 28 TAF at Vernalis is to originate from the San Joaquin basin only. The purpose of the pulse flow is to provide multiple benefits to the fall-run chinook salmon migrating upstream to spawn. The benefits of additional flow in October would include: (1) improved water quality in the lower San Joaquin River (higher dissolved oxygen and lower water temperatures) and tributaries (lower water temperatures), and (2) passage flows and cues to the salmon from the various tributaries, so that they can find and return to the river in which they were reared.

Comment: The fish and wildlife objectives include a flow requirement of 1,000 cfs during October as measured at Vernalis, with a pulse flow of 28 TAF to "bring flows up to a monthly average of 2,000 cfs". What this is supposed to mean is unclear. We assume this pulse flow applies only to October and does not apply to the months of July through January. However, this issue should be clarified. (SDWA-2)

Response: The 28 TAF requirement applies only to October. The flow objective for October is a minimum monthly average flow of 1,000 cfs plus a 28 TAF pulse. The pulse is limited either to 28 TAF or to the amount necessary to provide a monthly average flow of 2,000 cfs, whichever is less. The 28 TAF pulse is not required in a critical year following a critical year. The objective has been clarified in the plan.

Comment: The plan should recognize that there are uncertainties in determining the appropriate hydrologic forecast on the San Joaquin River based on available data, and it should, therefore, require only best estimates for making that determination. The plan should also recognize the need to review the classification based on additional data in the future and revise it as necessary in the next triennial review process. (JCWU-2) (Support for this change was also expressed in CFED-1, DWR-1, NHI-1, LWV-1)

Response: The footnote in Table 3 of the plan is amended to require that the water year classification be established using the best estimate of the 60-20-20 San Joaquin Valley water year hydrologic classification at the 75% exceedence level. No change has been made to the footnote to recognize the need to review the classification during the next triennial review because the SWRCB intends to review all of the objectives at that time and there is no need to single out this objective.

Comment: If the SWRCB does not require contribution from San Francisco to meet the Bay-Delta standards, then the SWRCB should use inflow into Don Pedro to determine the Tuolumne River portion of San Joaquin Valley Water Year Index. Total inflow into Millerton Lake is used to calculate the San Joaquin Valley Water Year Index, yet there is no indication that the San Joaquin River is expected to contribute to the Vernalis flow requirements. If there are no contributions from the upper San Joaquin River, then the value for the unimpaired inflow into Millerton Lake should be set at zero. (SDWA-2)

Response: Allocation of responsibility among the water right holders in the watershed will be the subject of a water rights proceeding scheduled to commence following adoption of the

plan. At that time, the SWRCB will consider amending the San Joaquin Valley water year index if the allocation methodology is inconsistent with the index.

Comment: The SJTA and the San Joaquin River Flow Coordinator should make decisions regarding the timing and duration of pulse flows rather than the operations group established by the Framework Agreement. Monitoring needs to be conducted to verify the need for and effectiveness of the fall pulse flow. (SJTA-2)

Response: At present, the SWRCB believes that the operations group is the most appropriate group to evaluate information regarding the pulse flows. The SJTA and San Joaquin River Flow Coordinator should provide input to the operations group.

Monitoring will be needed to assess the effectiveness of the timing, duration and amount of all of the flow requirements, including the pulse flow in the fall. The plan calls for a monitoring and special studies program which will provide more information on the factors affecting salmon in the Delta, as well as feedback on the effectiveness of the objectives. At the end of three years, the objectives in the plan will be reviewed and modified, if appropriate.

Comment: The plan fails to carry out Water Code section 13241, which requires that the objectives will ensure reasonable protection of beneficial uses. The flow objective at Vernalis could cost as much as 1.3 MAF from February through June of each year. This is unreasonable because the USBR will meet it immediately from New Melones Reservoir, before the plan is implemented through water right permit changes. (SDWA-2)

Response: The commenter essentially is saying that the USBR's actions in advance of the SWRCB issuing a water right decision are unreasonable, not the SWRCB's adoption of the plan. The plan contemplates that the responsibility for meeting this objective will be evaluated by the SWRCB during the water rights phase. Under the circumstances envisioned in the plan, this objective provides reasonable protection to the beneficial uses.

The maximum water supply cost cited by the commenter is based on the assumption of no natural flow in the San Joaquin River from February through June. The actual water supply costs are much lower because natural flow is present. The water supply impacts are discussed in Chapter VII of the environmental report.

Export Limits

Comment: The Bay-Delta and the public trust will continue to suffer until export restrictions are increased. (SARA-1)

Response: Exports are likely to have an adverse effect on aquatic resources. However, the SWRCB believes that elimination of exports is unreasonable and the full package of protection provided to aquatic resources by the draft plan is appropriate.

Comment: The draft plan allows an export pumping rate of 1,500 cfs or 100 percent of the San Joaquin River flow at Vernalis from April 15 to May 15, whichever is greater. As a practical matter and a matter of public trust, diverters should not be allowed to divert 100 percent of any river at any time. (SARA-1)

Response: The flow on the San Joaquin River at Vernalis is used to establish the maximum allowable export rate from April 15 through May 15, but the exported water does not all originate from the San Joaquin River. Additional sources include the eastside rivers, the Sacramento River, and local sources such as precipitation and agricultural drainage. This export rate is an improvement over historical conditions when exports often exceeded 100 percent of San Joaquin River flow from April 15 through May 15.

At other times of the year, especially between July and January when the export objective is 65 percent of Delta inflow, the exports are far in excess of the flow on the San Joaquin River at Vernalis and include substantial amounts of Sacramento River water. If exports are restricted to the flow at Vernalis, the water supply impact would be millions of acre-feet per year.

Comment: The draft plan discards the QWEST standard and substitutes a less restrictive percent inflow diverted standard even though "no definitive studies or analyses were completed to support these export/inflow restrictions". (PORGANS-1)

Response: There are no definitive studies and little analysis to support the QWEST standard. Also, the QWEST standard is not always more restrictive than the percent inflow diverted standard.

Some of the proposed standards were developed without definitive data to support the specific standard, because no such data were available. The standards in some cases are based on the professional judgement of scientists and engineers familiar with the Delta. The QWEST standard and the percent inflow diverted standard are actually quite similar. Both types of standards tie export pumping to the available water supply in the Delta. They are based on the concepts that: (1) export pumping negatively affects the aquatic habitat; (2) some control of export pumping is appropriate; and (3) restrictions on export pumping should be linked to the quantity of water entering the Delta.

Comment: The export restriction of 35 percent of inflow may be reasonable, but it must be followed by a cap on the amount that can be pumped at any time. (SARA-1)

Response: Limits on export pumping are provided through a combination of diversion works capacity, water right permit terms, and U.S. Army Corps of Engineers permit terms, as discussed in section A of Chapter VII in the environmental report.

Comment: The 35 percent of inflow diverted standard in February through June should be extended to include November, December and January. The 65 percent limit is too high.

Declines of aquatic resources have occurred even though levels lower than 65 percent were exported in the past. A 50 percent level may be reasonable, but even this level should be capped at a flow or amount that can be pumped at any time. (SARA-1)

Response: The SWRCB acknowledges in the plan that lower exports provide greater protection for the bulk of estuarine resources, up to the limit of unimpaired conditions. The export percentages are based on a subjective determination of the reasonable needs of all of the consumptive and nonconsumptive demands on the waters of the Estuary. The fact that aquatic resources declined in the past even though the percent inflow diverted from July through January was less than 65 percent does not establish a cause and effect relationship. The objectives reduce exports and increase outflow in February through June, especially in dry periods. February through June is the most important period for many of the aquatic resources in the Estuary.

Comment: The formula for percent inflow diverted does not account for in-Delta diversions for consumptive use. Failure to include in-Delta consumption in the values used to represent Delta inflow will allow for much higher total depletions of Delta inflow than reflected in the permitted percentages of Delta inflow diverted, and will significantly increase the risk of in-Delta mortality and entrainment for anadromous and other estuarine-dependent species. The SWRCB should work with agencies and interested parties to develop more sensitive export criteria formulae which include in-Delta withdrawals and other important factors. (BISF-1, SARA-1)

Response: Percent inflow diverted is defined in the plan as exports from the Tracy Pumping Plant and diversions at Clifton Court Forebay divided by the total inflow. The actual inflow diverted would include other in-Delta diversions minus in-Delta return flows and precipitation. The environmental analysis is based on the defined quantity; therefore, the risk of in-Delta mortality and entrainment due to the objectives was incorporated into the analysis. The SWRCB agrees that ongoing analysis of the objectives is appropriate, and the SWRCB will work with all agencies to further refine the export criteria.

Comment: The Contra Costa Water District (CCWD) should not be considered an exporter in the draft plan. We recommend that the following footnote be added to the definition of Delta exports. (CCWD-1)

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

Response: The equation for Delta exports in Footnotes 8 and 18 for Table 3 of the draft plan describes the calculation of the Net Delta Outflow Index. Delta exports in this context are not intended to establish eligibility for area of origin protection. The recommended footnote has been added to clarify this intent.

Comment: The export limits in the plan are not intended to impede water transfers, but to allow transfers where doing so would not affect attainment of the plan's overall requirements. To clarify this point, the Joint Agencies propose that the following language be added to the end of the current text in this section. (JCWU-1, JCWU-2)

> "Export limits in this plan are not intended to impede voluntary water transfers that involve the movement of water through the Delta but do not otherwise affect attainment of requirements for the protection of fish and willdlife beneficial uses. When considering petitions to approve such transfers in the future, the SWRCB therefore expects that a finding of no unreasonable impact on fish or other instream uses within the Delta would be appropriate if all objectives for the protection of fish and wildlife beneficial uses are being met during implementation of the transfer."

Response: The environmental analysis considered the effect of transfers only during the July through October period. Therefore, it would not be appropriate to conclude, based on the environmental analysis, that transfers at other times of the year are acceptable. The proposed language is not incorporated into the plan, but the SWRCB will delineate its position of transfers when specific requests are received.

Comment: The objectives in the plan should be recognized to encompass all exports from the Delta through the CVP/SWP pumping facilities, including CVP and SWP contract water, water transfers, and water from in-Delta storage projects like Delta Wetlands. (DELTAWET-1)

Response: The analysis of the plan's effects on project operations and the environment considered only CVP and SWP contract water at existing demands and water transfers, up to the limit of the objectives, from July through October. Additional analysis may be necessary for transfers outside the period analyzed.

Comment: We are concerned about the potential impact the plan may have on the ability to deliver water supplies to wetlands south of the Delta. The CVPIA requires the Secretary of the Interior to deliver a base supply of 250 TAF to such wetlands. The export limits in the draft plan significantly reduce the period during which the CVP can make diversions from the Delta. These restrictions will force the projects to rely on the fall and winter months to move most of the water south. These are the same months during which the water supplies for the refuges and the wildlife management areas must be delivered. As a result, there is a major question as to whether sufficient pumping and conveyance capacity exists to deliver the water available in a given year during such a narrow time frame. The final plan should address this issue, and if necessary, include language that will safeguard these critical wetland water supplies. (CWA-1)

Response: There is sufficient pumping and conveyance capacity within the existing objectives to accommodate water deliveries for wetlands. The water supply analysis indicates that there are only ten months (all of them in January) over the 71 years of modeled

hydrology in the July through January period when the projects will be operating to, or very close to, the export limit of 65 percent of Delta inflow. This analysis included the water deliveries for wetlands. Therefore, even though wetland deliveries may be reduced in very critically dry years, the SWRCB believes that no special accommodation for wetland deliveries is necessary.

Comment: The export objective allows the State and federal water projects to increase their exports to the San Joaquin Valley and Southern California when upstream non-project water users have to give up water for the Delta. This will happen when the SWRCB reallocates responsibility for meeting the objectives and requires other water right holders in the system to contribute water to the Delta. (PORGANS-1)

Response: Allocation of responsibility to meet the objectives will be established during the water rights proceeding.

Comment: Populations of Delta smelt, longfin smelt, splittail, striped bass and others in the central Delta could lose out through entrainment and other losses during the massive pumping in July through January. What is the ratio of direct losses at the pumps to the indirect losses of 1:10, 1:15, or 1:20? (SARA-1)

Response: There is no single ratio to describe the direct or indirect losses at the pumps. The calculation of losses associated with the entrainment of fish to the CVP and SWP export facilities is based on several methods. These account for the different sizes of fish, the different species, and the different levels of information available about the two export facilities over their period of operation. Information is primarily available for striped bass and chinook salmon. Additional experiments have been conducted in the last couple of years to improve the estimates, especially for winter-run chinook salmon.

There are two sources of losses at the SWP before the fish are counted at the salvage facility. The first occurs in the Forebay, and the second is associated with the fish screens. Pre-screening losses for striped bass range from 70-94 percent (average of 82 percent) and for chinook salmon range from 63-86 percent (average of 75 percent). Pre-screening losses at the CVP are approximately 15 percent for striped bass and chinook salmon. Losses at the trashracks and headworks are assumed to be 15 percent. After the fish have been collected, they can die either from handling or in the trucking operation. Further losses probably occur after the fish are returned to the Delta, due to stress and predation, but are not accounted for in this process because adequate information is not available for this purpose.

Additional information on this topic is available from the DFG or in the following two documents: (1) *DFG. 1987. Estimates of fish entrainment losses associated with the SWP and federal CVP facilities in the south Delta. DFG Bay-Delta Project. DFG Exhibit 17. 31 pp. plus appendices. (2) DFG. 1992. Revised and updated estimates of fish entrainment losses associated with the SWP and federal CVP facilities in the south Delta. DFG Bay-Delta Division. WRINT-DFG-Exhibit 1. 7 pp. plus appendices.*

Delta Cross Channel Gates Closure

Comment: We are concerned about the erratum to footnote 24 for Table 3 of the draft plan. This footnote now differs from the criterion as expressed in the Principles for Agreement. In the principles, the criterion states, "During the period May 21 through June 15, the Delta Cross Channel may be rotated closed four days and open three days, including the weekend." The footnote to Table 3 of the draft plan was originally consistent with that language, but has since been modified to say, "For the May 21-June 15 period, close the Delta Cross Channel gates for four consecutive days each week, excluding weekends." The wording in the Principles was intended to allow the USBR to retain discretion in the operation of the Cross Channel because a fixed, mandated cycle of operation may adversely affect objectives for salinity control. Furthermore, we are concerned that closure of the gates at that time of year may under some circumstances affect the distribution of Delta smelt. As such, we strongly support retaining discretion in determining gate operations and recommend the following text be added to footnote 24 of Table 3 of the draft plan: "This requirement may be modified by the CALFED operations group." (USBR-1)

Response: The footnote was amended in the erratum because the word "may" made the operation of the gate discretionary and as such was not a water quality objective. The SWRCB supports operational flexibility where appropriate. The footnote has been amended in the plan to state: "For the May 21-June 15 period, close the Delta Cross Channel gates for a total of 14 days. The timing of the gate closure shall be based on the need for the protection of fish and will be determined by the operations group established under the Framework Agreement."

CHAPTER IV. PROGRAM OF IMPLEMENTATION

Comment: The following sentence, or similar language, should be added to the first paragraph of this chapter. (BISF-1)

> The success of this plan in protecting beneficial uses of the Estuary as part of a comprehensive management package depends on the adequate and timely implementation of the measures described in this chapter.

Response: The recommended language is added.

A. Implementation Measures Within the SWRCB's Authority

Comment: It is difficult for water right holders other than the CVP and the SWP to comment on the proposed standards until the water right holders know how the SWRCB proposes to implement the standards and the water right holders are then able to evaluate the resulting environmental impacts upon their own areas. Therefore, the SWRCB must prepare an environmental analysis before allocating impacts, and it must preserve the opportunity for

water right holders to address the standards after the impact of these standards upon their water rights is known to them. (WID-1)

Response: The SWRCB will prepare appropriate environmental documentation before it allocates responsibility for implementing the objectives. The SWRCB will periodically review the objectives pursuant to Water Code section 13240 and may revise them after the water right phase.

Comment: The SWRCB should insert an additional subsection dealing with implementation of the narrative water quality objectives in this section of the plan. The subsection should discuss the actions the SWRCB will take to implement the narrative objectives. (BISF-1)

Response: This section of the plan has been reorganized. Separate subsections have been added to discuss implementation of the narrative objectives.

Comment: [Page 24; also page 1] The SWRCB received the following comments regarding the USBR's implementation of the plan in advance of a water right decision.

1. The draft plan should not be implemented prior to both its adoption and the adoption of an appropriate water right decision if such implementation would require the USBR to take the vested water rights of Westlands Water District's Area I or would give the USBR discretion to take such rights. The commenter suggests that the SWRCB should, in the plan, order the USBR to operate its project in deference to Area I's rights. (WWD AREA1-1)

2. Under the draft plan, there will be no water available to contractors out of New Melones Reservoir. The USBR should not be allowed to make New Melones responsible for meeting flow requirements, even as an interim solution while the water rights phase proceeds. The place of use for New Melones water is limited to the counties of Stanislaus, Calaveras, Tuolumne, and San Joaquin. By allowing the USBR to meet the flow objectives, which will in turn cause the USBR to violate the Vernalis salinity standard in Water Right Decision 1422, the SWRCB will violate Water Code section 12232, which forbids the SWRCB from causing further significant degradation of the water quality in the San Joaquin River. (SEWD-1, SEWD-2, SDWA-2)

3. The draft plan states that the USBR shall provide the flows on the San Joaquin River to meet the objectives "in accordance with the biological opinion for Delta smelt". It is unclear what this is supposed to mean. The opinion is not cited or provided, but it in fact requires much lower flows than the plan. What is the USBR actually going to do and what does the SWRCB expect it to do? (SDWA-2)

4. The draft plan indicates that the USBR shall provide for the San Joaquin River flow requirements in accordance with the biological opinion for Delta smelt during the next

three years. This sentence, which purports to assign an obligation for meeting the water quality objective, is inappropriate in a water quality control plan. (SEWD-1)

5. The plan should contain no inference regarding the distribution of water supply impacts to anyone other than the CVP and the SWP. The flow objectives in the plan will be reevaluated after three years. Therefore, the impacts discussed in the draft environmental report should be limited to those areas dependent upon flows provided from New Melones Reservoir, which will meet the flows pursuant to the plan and the biological opinion. (SJTA-2)

Response: The plan does not require the USBR to meet the flow objectives during the interim period before the water rights phase is completed. The language in the plan has been clarified. The USBR is required to meet its current water right permits until they are amended.

The SWRCB, however, cannot prevent the USBR from varying its operations within the constraints of its water right permits. Although the place of use for consumptive uses of water from New Melones in the USBR's permits is limited to the four county area, the use of water in the Delta for flow and water quality purposes at Vernalis is not prohibited. The limitation of consumptive uses to the four county area prevents the USBR from selling New Melones water for consumptive uses outside these counties, but it does not preclude the USBR from releasing the water for flow and water quality purposes downstream at Vernalis. Nothing in the USBR's water right permits requires the USBR to contract with a particular water user within these counties.

Some of the above commenters suggested that the SWRCB order the USBR in the plan to refrain from implementing the plan before a water right decision is issued. The proceedings on the plan are not an appropriate forum for the SWRCB to enforce the USBR's water right permits; this is a matter for a water rights proceeding. Further, some if not all of the USBR's current actions apparently are necessary to meet requirements of the federal ESA. The SWRCB cannot order the USBR to violate its obligations under the ESA.

At the time the draft plan was released, the SWRCB staff assumed that the USFWS would soon release a Delta smelt biological opinion that would contain the same San Joaquin flow requirements as contained in the Principles for Agreement and the draft plan. The new biological opinion was released on March 6, 1995, and it does contain the same flow requirements. The commenter correctly notes that the biological opinion in effect on the date of release of the draft plan requires lower flows on the San Joaquin River than the objectives in the draft plan.

Comment: [Page 25] Section A of Chapter IV of the draft plan describes the implementation of objectives through future water rights actions. In doing so, it identifies various water quality objectives as water supply-related, including the south Delta agricultural salinity objectives and a San Joaquin River dissolved oxygen objective. The

SWRCB's intention to meet these objectives by means other than flow alone should be clarified in the plan. A statement, therefore, should be added to this section and to Tables 2 and 3 of the plan to recognize that the objectives are water supply-related only "where it is reasonable and in the public interest to meet the objective with flow". (JCWU-1, SFPUC-1)

Response: Chapter IV has been reorganized in the plan, and implementation of the south Delta agricultural salinity objectives and the dissolved oxygen objective are now under a section titled "Implementation Measures Requiring SWRCB Water Quality and Water Rights Authority and Multi-Agency Cooperation". This reorganization clearly defines the SWRCB's intention to meet these objectives by means other than flow alone. The statement that these objectives are water supply-related only where it is reasonable and in the public interest to meet the objective with flow is not added because the SWRCB believes that all of its actions are reasonable and in the public interest. There is no need to single out particular objectives for this statement.

Comment: [Page 25] The following comments concern implementation of the south Delta salinity objectives.

1. The program of implementation for the south Delta agricultural salinity standards states that flows in the San Joaquin River at Vernalis are expected to contribute to achieving the salinity objectives in the south Delta. Use of water to dilute the pollution of others is not a listed beneficial use of San Joaquin River water. We believe that the SWRCB and the Central Valley RWQCB must enforce the San Joaquin River water salinity standards by requiring those discharging saline water into the river to cease all such discharges. Salinity problems on the San Joaquin River are the responsibility of those discharging water in excess of salinity standards into the river. The program of implementation should describe the steps that must be taken to reduce the salt load entering the river rather than relying on additional fresh water flows to dilute such salts. The only real solution to the San Joaquin Valley salinity problem is to export salt from the valley through an isolated channel.

   Identifying additional releases from other reservoirs for salinity control as may be required through ongoing and future Federal Energy Regulatory Commission (FERC) proceedings is inappropriate. The USBR New Melones project is obligated as a condition of its water rights permit, to meet certain salinity standards in the southern Delta. It is inappropriate to suggest that upstream water users contribute flows to meet the permit conditions of a junior water appropriator. The only appropriate way to meet the salinity objectives is to reduce, eliminate, or mitigate the salt discharges to the San Joaquin River. Since much of the salt entering the San Joaquin River originates in the CVP service area, it appears that burden to solve the salinity problem also belongs on the CVP. (SJTA-1)

2. The SWRCB continues to fail to address the salinity problems on the San Joaquin River. Rather than taking affirmative steps such as limiting when and what levels of

salt may be discharged into the river (which is exactly what the RWQCB and SWRCB are constituted to accomplish), the SWRCB simply makes recommendations and expects the problem to be addressed. Such noncommittal language clearly fails to satisfy the obligations to specify what actions are necessary and when these actions will occur as required by Water Code Section 13242. (SDWA-2)

3. The draft environmental report infers at page IX-1 that "salty return flows" in the San Joaquin River have a right to be there and that diversions of fresh water have frustrated that right. We recommend that such inference be removed. Saline return flows should be controlled at their sources, and the use of fresh water releases to mitigate their effects should be avoided. The fresh water release requirements for the San Joaquin River should not be premised upon the dilution requirements of drainage flows. (SFPUC-2)

4. The draft plan states: "Implementation of the objectives will be accomplished through the release of adequate flows to the San Joaquin River and control of saline agricultural drainage to the San Joaquin River and its tributaries." Despite this statement, the SWRCB has done nothing to contribute to the control of saline agricultural drainage to the San Joaquin River and its tributaries. In fact, the SWRCB recently approved the San Joaquin River Basin Plan proposed by the Central Valley RWQCB which failed to establish water quality standards for salinity in the San Joaquin River. (SEWD-1)

Response: Flow objectives have been established for the protection of aquatic habitat in the San Joaquin River. The plan notes that these flow objectives will, incidentally, reduce the salt concentration in the south Delta. In the same vein, the plan notes that ongoing FERC proceedings may result in additional releases from upstream reservoirs to protect fish and wildlife in the tributaries, and these flows will reach the Delta, resulting in decreased salt concentrations. The USBR is presently responsible for providing salinity control at Vernalis, and the SWRCB does not intend to suggest that upstream water users should contribute flows to mitigate for the actions of other water users. Water users are responsible for mitigating the effects of their own diversions.

The use of water to dilute the pollution of others is not a listed beneficial use of water, but the concept of discharging waste at levels within the assimilative capacity of a receiving water is well established. At present, the only reasonable approach to dealing with the salinity problems in the San Joaquin River is through a combination of dilution with fresh water releases, in-Basin management measures, and limited discharges to the San Joaquin River. The SWRCB and the Central Valley RWQCB are working to achieve the best water quality reasonable through these measures. In the 1991 Bay-Delta Plan, the SWRCB directed the Central Valley RWQCB to reduce the salt load at Vernalis by ten percent. The RWQCB responded by requiring drainage operation plans from the areas on the westside of the San Joaquin River with the worst drainage problems. The drainage operation plans focus on water conservation to reduce salt and trace metal loadings to the river. The SWRCB

realizes, however, that all of these measures are unlikely to fully protect the beneficial uses of the San Joaquin River. The only option that will fully protect beneficial uses is the construction of an isolated facility to export salts from the basin. The SWRCB believes that the USBR should fulfill its obligation to provide drainage by commencing a reevaluation of this project. This recommendation has been incorporated into the plan.

In Chapter IX of the environmental report, the statement is made that releases from New Melones help compensate for diversions of freshwater that have left mostly salty return flows in the San Joaquin River. This statement describes part of the interim strategy to deal with this drainage problem; it does not infer that the return flows have a right to be in the river.

Comment: [Page 25] It is not clear that dissolved oxygen problems can be significantly improved by changes in San Joaquin River flows. Testimony presented by the Central Valley Project Water Association concluded that: (1) dissolved oxygen concentrations in the San Joaquin River near Stockton are strongly influenced by local factors that reduce dissolved oxygen regardless of relatively high dissolved oxygen concentration upstream; (2) dissolved oxygen concentrations are strongly influenced by temperature and only weakly influenced by flow; and (3) the temporary barrier installed by the DWR in Old River to influence dissolved oxygen at Stockton had no specific effect on dissolved oxygen (Exhibit #202 from the CVPWA in the 1991 Bay-Delta Plan record). Hallock et al 1970 suggests that export pumping exacerbates the dissolved oxygen problem on the lower San Joaquin River by denying alternative routes to migrating salmon. This is due to the effects of reverse flows in the southern Delta which prevent any San Joaquin Basin water from reaching the western Delta by routes other than the lower San Joaquin River.

To the extent that dissolved oxygen problems near Stockton are the result of dredging activities in the Stockton Ship Channel and turning basin and effluent discharges near Stockton, the burden of mitigating these impacts cannot be transferred to other entities. Dissolved oxygen problems resulting from net reverse flows in the lower San Joaquin River are export-related, and the burden of mitigating these impacts must be placed on the export projects. (SJTA-2)

Response: The pulse flow in the fall is designed to attract the chinook salmon upstream to the tributaries; improved water quality in the lower San Joaquin River would be an additional benefit.

The responsibility to meet the objectives will be established during the water rights proceeding.

Comment: Compliance with the dissolved oxygen standard at Stockton has not been evaluated if freshwater releases are considered the only measure to achieve the standard. (SFPUC-2)

Response: The plan states that compliance with the dissolved oxygen objective will be achieved through a combination of control of wastewater discharges, construction of barriers, and freshwater flows. This plan's objectives for flows in the San Joaquin River at Vernalis are expected to contribute to achieving the dissolved oxygen objective and additional flow-related measures will be considered by the SWRCB during the water rights proceeding.

B. Recommendations to Other Agencies

Comment: The League of Women Voters recommends that the draft plan include provisions encouraging the maximum use of water conservation and reclamation in both the agricultural and urban sectors. We also urge the implementation of the SJVDP and concur that all water supply agencies receiving water from the Delta should establish aggressive groundwater management programs. (LWV-1)

Response: The draft plan is a regulatory document that establishes beneficial uses, water quality objectives, and a program of implementation for the objectives to protect the waters of the Delta. Implementation of the SJVDP is part of the program of implementation of the objectives, and it has been included in the plan. The other elements cited by the commenter, conservation, reclamation and groundwater management, are important elements in ensuring water supply reliability, but they are not elements of this water quality control plan. Conservation, reclamation, and groundwater management are discussed in the draft environmental report as mitigation measures, and the SWRCB recommends maximum use of these measures. The SWRCB may incorporate provisions encouraging the maximum use of water conservation and reclamation into the water rights decision that will implement, in part, the requirements in the plan.

Comment: The draft plan should recognize the efforts of those involved in developing the Category III implementation plan and acknowledge that recommendations on actions to address non-flow related factors may change as a result of those efforts. (JCWU-1)

Response: The draft plan is amended as suggested by the commenter.

Comment: The following sentence, or similar language, should be added to this section of the plan. (BISF-1)

> "The ability of this plan to meet its obligations as one component of a comprehensive management package depends in large part on the success of water users and State and federal agencies in assigning priorities and securing funding for these activities by the time this plan is adopted in final form."

Response: The recommended language is not incorporated into the plan, but additional language has been added to emphasize the importance of securing funding for the recommended actions. The plan states that the SWRCB will support appropriate legislation to secure funding, if necessary, and may consider the issue during the water rights process.

Comment: Is it reasonable to deliver water to irrigate lands when that action results in drainage and wastewater that is toxic to fish, other aquatic life, and wildlife, and which degrades both public and private beneficial uses of the receiving water? (SARA-1)

Response: It is not reasonable to retire productive, irrigated land due to drainage problems unless all other options are exhausted. The plan includes a program of implementation to manage salt loads in the short-term, and it recommends construction of an isolated drainage facility in the San Joaquin Valley to solve the problem in the long-term.

Comment: The Principles for Agreement identified provision of adequate flows for San Joaquin River fisheries during the spring pulse flow as a continuing problem. The SWRCB should, therefore, include an additional recommendation to the USBR and other agencies to acquire water through purchases from willing sellers to augment flows on the San Joaquin River during the April/May pulse flow. These augmentation flows should not be subject to 100 percent of San Joaquin River flow export criterion during this period. (BISF-1)

Response: The flow objectives on the San Joaquin River from April 15 through May 15 range from 3,110 cfs to 8,620 cfs. These flows are substantially higher than recent historical flows during this period. The effect of these flow objectives should be evaluated before recommending that they be augmented.

Comment: We feel that the SWRCB should be more aggressive in defining methods to manage the various factors that influence fish and wildlife in the Central Valley. The plan defines various other recommended actions, such as drainage control and harvest management. However, because of the criticality of these impacts on restoration activities and their interrelationship with the factors under the SWRCB's direct authority, these other factors must be emphatically addressed. (NCPA-1)

Response: The SWRCB agrees that all of the factors that affect aquatic resources in the Estuary must be emphatically addressed. The combination of the water quality objectives and the recommendations to other agencies is intended to accomplish this goal. The SWRCB will monitor the effectiveness of the plan and correct any deficiencies as they become evident.

Comment: [Page 29, last para.] The BCDC has taken a strong position against the discharge of San Joaquin Valley agricultural drain water into the San Francisco Bay. The draft plan might be interpreted to be endorsing such action. To ensure that salts and agricultural pollutants are dealt with on site, we emphasize the need for source control and discourage the use of reservoir releases for pollution dilution in the San Joaquin River. (BCDC-1)

Response: As stated in the plan, in the long-term, in-basin management of salts must be supplemented by disposal of salts outside of the San Joaquin Valley if agriculture is to continue on existing lands. Therefore, the SWRCB recommends that the USBR reevaluate

alternatives for completing a drain to discharge agricultural drainage outside of the San Joaquin Valley. The most likely alternative discharge locations are the ocean or the Bay-Delta Estuary. The most appropriate site for the discharge should be selected through the reevaluation process. Waste discharge requirements to protect the beneficial uses will be developed after the discharge location is selected and environmental studies are completed.

Comment: [Page 30] We support the approach to fish screening incorporated in the draft plan. The implications of location, timing, and methodology need to be much better understood before what could otherwise be an extremely expensive, disruptive, and ineffectual construction program is started. (CDWA-1)

Response: The SWRCB agrees with this comment. The recommended action outlines a stepwise approach for evaluating the need for screens and a program for their installation, as appropriate.

Comment: [Page 30] The diverter has a responsibility to screen diversions as a cost of doing business. Screening has not been rigorously enforced by the SWRCB. An injunction should be filed by the Attorney General against the diverters that are not complying with the screening requirements, or that have inadequate screens. (SARA-1)

Response: The SWRCB can take enforcement action against a diverter if the method of diversion is unreasonable. The recommended actions in the plan include a program to develop both performance criteria for diversions and testing specifications to assess if diversions are having an unreasonable effect on fish.

Comment: [Page 32] The following five comments address the construction of the Old River Barrier and the possible benefit of such construction, as illustrated by the USFWS salmon smolt survival model:

1. We urge the SWRCB to consider including the Old River barrier in the preferred alternative as recommended by all of the parties. To ignore the Principles for Agreement and require a large amount of water to provide protection where a physical solution is recognized will be a waste of water. (SJTA-2)

2. The USFWS model shows the significance that the Old River barrier has on survival. The USFWS smolt model has been incorporated into the EACH model, and with a barrier there is a 3-4 fold increase in salmon population over the base case through a ten year period. (SJTA-2)

3. The figures in Chapter VIII show that without the Old River Barrier there is only a 0.01 improvement in the salmon smolt survival index between the calculated and the preferred alternative using the 1984-1992 reference period hydrology, and only 0.03 using the 1922-1992 baseline. The preferred alternative achieves these trivial gains at enormous costs to upstream water users. In contrast the same USFWS model predicts

increases of 0.16 to 0.20 in the index when the barrier is present under the preferred alternative flows. According to the model results, there is essentially no benefit to salmon smolts as a result of the proposed San Joaquin River flows. Therefore, it makes no sense to require such high spring flows without the Old River Barrier in place. (SJTA-2)

4. Which of the alternatives include the Old River Barrier? It is not apparent from the discussion which alternatives, if any, include the Old River Barrier. It is misleading to tout the benefits of the Old River Barrier when the SWRCB's preferred alternative does not include the barrier. (SJTA-2)

5. There have been no studies to date regarding the potential effect of the Old River Barrier on Delta smelt. Reservations about the use of a barrier because of its effect on Delta smelt are based on speculation and judgement. Requiring high spring flows without the Old River Barrier would be a waste and unreasonable use of water. (SJTA-2)

6. The Principles for Agreement included requirements to install and operate a physical barrier at the head of Old River between April 15 and May 15, coincident with the outmigration of salmon smolts, and between October 1 and October 31, consistent with provision of pulse flows to attract adult fall-run chinook salmon in the San Joaquin River. Similarly, the Principles for Agreement includes a requirement to install an acoustic barrier at the head Georgiana Slough between November 1 and June 30, coincident with outmigration of salmon smolts. These requirements have been omitted from the draft plan, which should be revised to include them. (JCWU-1)

Response: The program of implementation of the plan includes a recommendation to the DWR and the USBR, in consultation with the DFG, USFWS, and National Marine Fisheries Service (NMFS), to test the use of a physical barrier at the head of Old River and either a physical or acoustic barrier at the head of Georgiana Slough. These barriers are still experimental, and a requirement to install them at this time is premature. There is general agreement that the barriers are beneficial to emigrating salmon smolts, but their effect on estuarine species is uncertain. It is premature to require construction of barriers until evaluation and environmental documentation of their effectiveness is complete.

Comment: [Page 33] I am concerned about the proposed research to determine the impact of introduced species, specifically striped bass, and the limitation on the introduction of new species, under recommendations to other agencies. I feel that it's a case of pitting one species against the other and maybe punishing a substantial population to benefit other beneficial uses, such as water diversions. (Transcripts-BFC)

Response: The recommendations regarding introduced species are intended to determine the impacts of introduced species on native species, and to protect native species, as necessary,

against introduced species. The recommended research is intended to determine the impacts on introduced species and the potential benefits of control measures. The restriction regarding requests for introduction of new aquatic species is not applicable when there is reliable evidence that such action will not have deleterious effects on native species.

Comment: [Page 33] We support the construction of a hatchery on the Tuolumne River. (SJTA-2)

Response: Comment noted.

Comment: [Page 34] Ramping rates for the protection of salmon and steelhead are already given due consideration as part of the FERC licensing process. It would be inappropriate for the SWRCB to recommend changes in instream flow requirements in water rights permits on FERC-licensed facilities. (SJTA-2)

Response: The comment is noted. The SWRCB believes that it does have the authority to recommend some changes in instream flow requirements and to modify water rights permits with respect to these facilities.

Comment: [Page 34] We support the draft plan's approach of looking at various alternative water conveyance facilities, especially in view of the increased outflow the draft plan provides. Keeping the primary nursery areas well west of the export pumps should reduce the impact of the export pumps on the eggs, larvae, and smaller fish that are hardest to screen, and will probably eliminate carriage water needs. Incremental solutions short of an isolated transfer facility should be the most effective means of dampening the impacts of water conveyance facilities. Isolated transfer facilities would in our view violate the common pool concept which is at the heart of the Delta Protection Act. (CDWA-1)

Response: The Delta Protection Act (Water Code sections 12200-12205) ensures an adequate water supply in the Delta to maintain and expand agricultural, industrial, urban, and recreational development. Any alternative conveyance facility considered under this recommendation must comply with this act and any other applicable law.

Comment: [Page 35] We concur with the statement of the need to perform biological and hydrodynamic studies regarding the effectiveness of pulse flows. Design of such studies should ensure that adequate information is acquired to distinguish between the effects of pulse flow/export reduction and barrier effectiveness. (SFPUC-2)

Response: The SWRCB concurs with your suggestion that these studies distinguish between the effects of pulse flow/export reduction and barrier effectiveness.

Comment: [Page 37] A statement regarding the potential for implementation of a sliding scale for western Suisun Marsh standards should be included in the program of implementation. (DWR-2) (This comment was submitted by the DWR; however, it was

titled "Joint Recommendations on Suisun Marsh Objectives Presented in the SWRCB's Draft Water Quality Control Plan", and it was signed by the USBR, DWR, DFG, and SRCD. Support for this recommendation was also expressed by JCWU-2 and CWA-1)

Response: In general, sliding scales result in objectives more consistent with the natural hydrologic conditions in the Estuary. Therefore, the suggested statement is included in the plan.

Comment: [Page 37] A statement should be included in the program of implementation regarding the importance of operating the Suisun Marsh Salinity Control Gates to meet salinity standards in both the eastern and western Suisun Marsh, and describing a process to address potential future requests to alter their operation. (DWR-2) (This comment was submitted by the DWR; however, it was titled "Joint Recommendations on Suisun Marsh Objectives Presented in the SWRCB's Draft Water Quality Control Plan", and it was signed by the USBR, DWR, DFG, and SRCD. Support for this recommendation was also expressed by JCWU-2 and CWA-1)

Response: The statement is unnecessary at this time. The process outlined by the commenter is applicable to all of the objectives. There is no reason to single out this objective for discussion of the process. If appropriate, the SWRCB may consider this issue during the water rights process.

Comment: [Pages 37-38] The draft plan should include a specific recommendation for the mitigation of adverse salinity impacts on brackish tidal wetlands through restoration of this type of habitat elsewhere in the Suisun Marsh. This mitigation should be a high priority under the section titled "Recommendations to Improve Habitat Conditions". To assist in the implementation of this mitigation program, we request that the BCDC be included in the Suisun Marsh Ecological Work Group. (BCDC-1)

Response: The plan includes a recommendation to restore and preserve marsh, riparian and upland habitat in and upstream of the Delta. These activities are important throughout the watershed. The BCDC is added to the Suisun Marsh Ecological Work Group, as recommended. It should be noted that the list of recommended parties on the work group was not meant to exclude any other interested party from participation.

Comment: [Page 38] Staff from the NMFS and the USEPA should be included on the Suisun Marsh Ecological Work Group. (DWR-2) (This comment was submitted by the DWR; however, it was titled "Joint Recommendations on Suisun Marsh Objectives Presented in the SWRCB's Draft Water Quality Control Plan", and it was signed by the USBR, DWR, DFG, and SRCD. Support for this recommendation was also expressed by JCWU-2 and CWA-1)

Response: The NMFS and the USEPA are added to the Suisun Marsh Ecological Work Group. It should be noted that the list of recommended parties on the work group was not

meant to exclude any other interested party from participation.

Comment: [Page 38] A statement should be included in the program of implementation for evaluating and meeting Suisun Marsh objectives in the western Marsh. (The proposed language in the statement is provided by the commenter. The statement charges the Suisun Marsh Ecological Work Group with evaluating the objectives scheduled to begin in October 1997, and it includes a brief history of the facilities previously envisioned to meet these objectives. The statement also discusses the ability of the DWR and the USBR to control the salinity at these locations.) (DWR-2) (This comment was submitted by the DWR; however, it was titled "Joint Recommendations on Suisun Marsh Objectives Presented in the SWRCB's Draft Water Quality Control Plan", and it was signed by the USBR, DWR, DFG, and SRCD. Support for this recommendation was also expressed by JCWU-2 and CWA-1)

Response: The plan states that the work group will evaluate the beneficial uses and water quality objectives for the Suisun Bay and Suisun Marsh ecosystem. This statement should adequately address the commenter's concerns. The issue of the ability of the DWR and the USBR to meet the objectives in the western marsh will be considered during the water rights proceeding.

C. Monitoring Program

Comment: Federal agencies will be working with the State agencies and others to develop a monitoring program to address the needs and requirements of the new standards. We believe the IEP is the appropriate vehicle to develop such a monitoring program and that integrated monitoring should be the goal. The monitoring program should also aid the efforts involved with the CVPIA implementation and the joint long-term State and federal Delta planning process. (CFED-1)

Response: The SWRCB agrees that an integrated monitoring program to assess the overall condition of aquatic resources in the Bay-Delta should be developed by the IEP. The provisions of the plan are consistent with this recommendation. The compliance monitoring program, however, is based on the need to ensure that the objectives are being met, and a detailed compliance monitoring program is included in the plan.

Comment: Representatives of the IEP have been working with representatives of water and environmental interests to develop a mutually agreeable monitoring program to evaluate the protective measures and provide information for revising the measures in the future. The document specifying monitoring goals, objectives, and strategies is being prepared to guide IEP monitoring programs development. This document exists in draft form. The parties have not reached the point of mutual agreement on the content language. Our intent is to submit a document acceptable to all parties to the SWRCB before the March 10, 1995, comment submission deadline. (Transcripts-IEP)

Response: The final version of the document mentioned by the IEP has not been submitted to the SWRCB.

Comment: The following principles should be used in developing and implementing the monitoring program (the commenter also provides specific suggestions about the application of the principles): (1) monitoring should evaluate the condition of organisms as well as populations; (2) monitoring should clarify the effects of water temperature on salmon smolts; (3) monitoring should incorporate up-to-date statistical methods; (4) monitoring should try to answer multiple questions; (5) monitoring methods should be evaluated by simulations; (6) monitoring should be complemented by modeling; (7) monitoring programs should have close supervision; (8) monitoring programs should provide for contingencies; (9) monitoring programs should take advantage of the intellectual resources of California's universities; (10) monitoring conducted under the Principles for Agreement should be coordinated with monitoring mandated by the CVPIA. (WILLIAMS-1)

Response: Monitoring necessary to characterize the condition of biological resources in the Bay-Delta is developed through the IEP. The IEP draws upon technical resources from multiple State and federal agencies and the university community. The principles recommended by the commenter are largely adhered to by the IEP.

Comment: The monitoring plan needs a great deal of work before it actually provides a blueprint for the monitoring that needs to be done. Any monitoring plan must address such issues as design, power and replication if we are to have any confidence in its results. We recommend that the current draft and subsequent iterations that add details be subject to extensive external review. (SFEI-1)

Response: The compliance monitoring program in the draft plan is sufficiently detailed at this time. The special studies element of the monitoring program is not detailed because it is undergoing constant refinement through the IEP process. The draft plan establishes only general goals for the special studies element. The IEP program is subject to extensive review. The SWRCB will consider adding more detail to the monitoring program during the water rights proceeding to implement the plan, if appropriate.

Comment: One of the most significant impediments to developing effective standards for protecting the Estuary has been the failure to conduct a coherent research and monitoring program aimed at answering key management questions. An independent review of the monitoring effort concluded that, while much money has been spent on monitoring, much of the data collection was unfocused. Although coordination and direction of the monitoring effort has improved, we are concerned that the mistakes that occurred after D-1485 will be repeated. In the draft plan's description of the monitoring program, it is clear that the monitoring will not include key resources such as the south Bay and will inadequately characterize San Pablo Bay. There is little emphasis on important hydrologic, hydrodynamic, and geomorphic processes affecting the Estuary. In addition, there is a disturbing confusion in terminology whereby research is characterized as an element of

monitoring. Furthermore, it appears the SWRCB intends to abdicate any leadership on the research effort; placing a difficult burden on agency scientists to determine management priorities. (BCDC-1)

Response: The SWRCB believes that the IEP is the appropriate place to develop a coherent research and monitoring program. The IEP draws upon the expertise of scientists in government, the universities, and the private sector. The independent review referred to by the commenter largely focused on IEP activities, and the IEP has been restructured to ensure that key management questions are addressed.

The monitoring section of the draft plan has been redrafted and the confusion in terminology referred to by the commenter has been eliminated.

Comment: While all of the details of a comprehensive monitoring and research program will take time to develop in a thorough and rational manner, it is appropriate that the SWRCB give guidance to that effort. The SWRCB has included a special studies element in addition to routine water quality and biological monitoring activities. We believe that two program elements are critical to making special studies a meaningful element of a comprehensive monitoring and research program. (1) In the short term, priority programs to enhance monitoring of special status species are essential. The ability to enhance protection for these species will rely on improvements in the ability to monitor distribution and migration of these species. (2) In the long term, estuarine research programs to increase understanding of the Bay-Delta ecosystem must be drastically expanded. (BISF-1)

Response: The two program elements identified by the commenter are important. The elements fall within the goal statements that are incorporated into the revised plan.

Comment: We recommend that the following long-term goals be included in the monitoring program: (1) understanding the ecological responses of species of special concern to water project operation and design, with a view towards maximizing the predictability and sufficiency of water supplies while minimizing adverse impacts on these species; and (2) increasing our understanding of the large scale characteristics and functions of the Bay-Delta Estuary ecosystem, in order to better predict systemwide responses to management options. (BISF-3)

Response: The second goal has been incorporated into the monitoring program. The content of the first goal is incorporated into other goal statements in the monitoring program, but the wording is different.

Comment: The Joint Agencies indicated in their earlier comments that efforts were ongoing to address the development of an appropriate monitoring program for the plan and related activities. While substantial progress has been made in this area, ongoing efforts may continue past the anticipated date of the SWRCB's adoption of the plan. To reflect the status of current activities and stress the need for continuing work, the Joint Agencies recommend replacing the monitoring program section of the plan. (Proposed language for a complete monitoring program is provided.) (JCWU-2)

Response: The monitoring program section has been redrafted. Much of the language suggested by the commenter is incorporated into the redrafted section.

PART II. COMMENTS ON THE DRAFT ENVIRONMENTAL REPORT

CHAPTER I. INTRODUCTION

B. Background

Comment: [Pages I-4 and I-5] The SWP and the CVP water rights are subject to the area of origin statutes, and diversions for export by these projects are restricted until the needs in the watershed, including protections for beneficial uses in the Bay-Delta Estuary, are met. (SJTA-2)

Response: The SWRCB recognizes these statutes and will take them into consideration when it conducts the water rights phase of the Bay-Delta proceedings.

Comment: [Page I-5] The draft environmental report acknowledges the area of origin statutes at page I-5, but the report also says the goal of the project is to: "Minimize the impact of new standards on water supply reliability throughout the Bay-Delta watershed and export areas." (SEWD-2)

Response: The SWRCB recognizes the existence of the area of origin statutes and will consider them when it conducts the adjudicatory water rights phase to implement the objectives.

Comment: [Page I-7, 1st full para., first sentence] DWR has contracts with 29 public agencies, not 30 agencies. (DWR-2)

Response: The text is revised accordingly.

Comment: [Page I-7, 2nd full para.] The draft environmental report states that half of the SWP supply is excess Delta flows. Excess flows that were previously available to meet the fish and wildlife needs of the Estuary must first be used to meet the beneficial uses in the Estuary and in the watershed before being exported for use outside the watershed. (SJTA-2)

Response: This water rights issue will be considered in the water rights phase of these proceedings.

Comment: [Page I-8] Water Right Decision 990 (D-990) recognizes the importance of the area of origin principles. The Delta-Mendota Canal and Contra Costa Canal permits prohibit exports until in-basin demands are satisfied, and D-990 reserved jurisdiction to require the bypass of natural flow or releases from storage to meet CVP responsibility for Bay-Delta needs. The SWRCB should continue to require the SWP and the CVP to mitigate their impacts and should hold the export projects solely responsible to provide water for salinity control and to meet their own export uses and carriage water requirements. (SJTA-2)

Response: This is a water rights issue which may be raised and considered in the water rights phase of these proceedings.

Comment: [Page I-10, 3rd full para.] To provide more complete information, we suggest that a cross reference be added to the end of the paragraph as follows: "D-1485 and the 1978 Delta Plan are discussed in greater detail on pages III-1 -III-10." (JCWU-1)

Response: The text is revised to reflect the comment.

Comment: [Page I-11, para. 4, 1st sentence] Contrary to assertions made in the draft plan and the accompanying draft environmental report, the joint proposal by the California Urban Water Agencies (CUWA) and some agricultural interests did not represent a consensus by all agricultural interests. In fact, most of the agricultural water agencies in the State were not present during, nor were they asked to attend, any of the deliberations on the proposal. (SJTA-1)

Response: The draft plan does not make this assertion. The draft environmental report has been clarified to state that the urban and agricultural interests that signed the Principles for Agreement represented principally urban and agricultural water exporters from the Delta.

Comment: [Pages I-11 and I-12] The draft environmental report states that it complies with CEQA requirements for analyzing the environmental effects of the proposed actions, but the report does not examine the effects on wildlife and agriculture during periods when fish flows are not required. During these periods, the USBR may have used up all the water allocated to other uses. This is justified by stating the plan isn't implemented for another three years, but the USBR is now implementing the flow objectives. (SDWA-2)

Response: Modeling analyses which predict the effect of the plan on water quality in the Delta throughout the year have been incorporated into Chapter VIII of the environmental report. This modeling effort is described in more detail in the response to comments on Chapter VIII.

The plan does not require the USBR to meet the flow objectives this year. To the extent that the USBR meets new objectives that are in the plan, it is doing so either voluntarily or to comply with ESA requirements.

Comment: [Page I-12] Add a paragraph to point out the adequacy of the environmental report to serve as an environmental impact report (EIR). (JCWU-1, DWR-1)

Response: The recommended paragraph, with minor changes, has been added after the third full paragraph, to point out the adequacy of the environmental report to serve as an EIR.

Comment: [Page I-12, final paragraph] Add a sentence to more clearly reflect the intended use of the draft environmental report with respect to possible modification of D-1485. (JCWU-1)

Response: A sentence similar to the recommended sentence has been added.

CHAPTER II. PROJECT DESCRIPTION

Comment: The draft environmental report does not appear to clearly identify the scope of actions under analysis. It is unclear whether the intended scope of the draft report is an analysis of the three year Principles for Agreement or of a longer term plan. For example, in Chapter VII the draft environmental report identifies a modeling assumption that "if there is insufficient water in New Melones to meet all of the requirements, the model obtains additional water from the San Joaquin River upstream of the confluence with the Stanislaus River." This creates at least two conflicts. First, there is no provision in the Principles for Agreement for calling on upstream water releases beyond that to be supplied by New Melones. Second, the reasonable and prudent alternatives in the biological opinion for Delta smelt say that if there is insufficient water in New Melones Reservoir to meet the requirements of the biological opinion the standard may be relaxed. (SFPUC-1)

Response: The draft environmental report analyzes the effect of implementation of the draft plan. The draft plan is consistent with the Principles for Agreement, but it is not exactly the same as the principles. If adopted, the objectives in the plan will remain in effect until amended by the SWRCB. For modeling purposes, the SWRCB staff requested the DWR to assume that San Joaquin River flow requirements would be met by releases from New Melones Reservoir. If there was insufficient water to meet the requirements from New Melones, the DWR was requested to identify the additional water required. This request was made in order to identify the total amount of water needed to meet the objectives. Once the objectives are adopted, the SWRCB intends to use its regulatory authorities to ensure that the objectives are met.

CHAPTER III. EXISTING REGULATORY CONDITIONS

Comment: [Page III-24 to III-25] The SWRCB should not adopt the inference in the draft environmental report that biological justification exists linking San Joaquin River flows to Delta smelt abundance. To date, there is insufficient evidence to validate the reasonable and prudent alternatives contained in the biological opinion for Delta smelt, the effectiveness of transport flows, or the necessity of San Joaquin River flows when the Old River barrier is installed. The San Joaquin standards are to be reviewed over the next three years to evaluate the scientific support for these measures. (SFPUC-1)

Response: The purpose of this chapter is to document existing regulatory conditions. This section describes the requirements in the biological opinion for Delta smelt, which includes a

flow requirement on the San Joaquin River. The SWRCB is not adopting any inferences by stating the biological opinion requirements.

CHAPTER IV. ENVIRONMENTAL SETTING

C. Central Valley Basin

Comment: [Page IV-5, last sentence] The description of the aquifer underlying the Central Valley states that "Useable storage capacity in a depth zone of 200 feet below ground surface has been estimated as between 80 and 93 MAF in the San Joaquin River Basin..." The SWRCB should understand that there are literally thousands of domestic wells drilled to depths of less than 100 feet. In order to estimate the cost of emptying and filling this underground space, the SWRCB will have to analyze the cost of deepening all domestic wells to more than 200 feet. In addition, there is already an overdraft of 209 TAF on average in the San Joaquin Basin. This plan will only make the overdraft worse. (SJTA-2)

Response: The SWRCB understands that wells are often drilled to shallow depths and that substantial expense can be incurred when declining groundwater levels require wells to be deepened. The statements made in this section are factual descriptions of the groundwater system in the area and are not meant to imply that the water supply can be exploited without expense.

The overdraft problem cited by the commenter is discussed in Chapter VIII of the environmental report.

Comment: Average runoff from the Sacramento Basin is estimated at 21.3 MAF in the draft environmental report. No similar number is given for the San Joaquin Basin on page IV-24. (SJTA-2)

Response: Average runoff from the Sacramento Basin has been modified; the correct runoff amount is 22.4 MAF. Average runoff from the San Joaquin Basin is 7.93 MAF; this information has been incorporated into the text.

Comment: [IV-24, para. 5] The sentence, "At times, no flows may also occur below diversion points on the larger streams", is only correct for portions of the San Joaquin River upstream of the mouth of the Merced River. It is not true for the Merced, Tuolumne, or Stanislaus rivers, or the mainstem San Joaquin River below the mouth of the Merced River. (SJTA-2) (A similar comment referring only to flows on the Tuolumne River was made by SFPUC-2.)

Response: The statement is correctly extracted from the reference DWR 1993a in Chapter IV. However, the reference is not completely clear on this issue, and the sentence has been deleted.

Comment: [Page IV-25, Table IV-2] San Francisco controls 740 TAF of the storage in New Don Pedro Reservoir, consisting of 570 TAF plus half of any encroachment into the 340 TAF of flood control space. The 740 TAF of New Don Pedro capacity should be allocated to San Francisco. Also, Buchanan Dam on the Fresno River should be included in the list of major reservoirs. (SJTA-2)

Response: The table identifies the major reservoirs in the San Joaquin River basin and their principal owners. Turlock Irrigation District and Modesto Irrigation District are correctly identified as the owners of New Don Pedro. The table is not intended to identify all of the entities that have some measure of control of each of the major reservoirs.

For the purposes of this table, major reservoirs are defined as reservoirs with a capacity in excess of 100 TAF. Buchanan Dam, with a capacity of 90 TAF, does not fit this definition.

Comment: [IV-25, para. 1] Please provide a reference for the statement that dissolved oxygen fluctuations due to algal concentrations and partially treated M&I wastewater have led to fish kills on the Stanislaus, Tuolumne, and San Joaquin rivers. The cause of these fish kills is not the responsibility of the upstream water projects. These problems should be addressed by the SWRCB and the Central Valley RWQCB through their authority to regulate wastewater discharges. (SJTA-2)

Response: The first paragraph in chapter IV states that, unless otherwise cited, the information presented in this chapter is extracted from two DWR sources. This statement is extracted from the reference DWR 1993a.

The issue of responsibility for fish kills is not a subject of this proceeding.

Comment: [IV-26, 5th full para.] Prior to 1977, the Tuolumne River water quality was heavily influenced by abandoned gas wells that discharged highly saline water into the river. As a result, the Tuolumne River had higher salinity than the other tributaries. The salinity of the Tuolumne River water decreased significantly after the wells were capped in 1977, and water quality has also improved due to higher flows provided by New Don Pedro Reservoir for fishery purposes, particularly in the fall months. (SJTA-2)

Response: The paragraph in question states that the Tuolumne River generally has good quality through much of the year. However, as stated, the abandoned wells and agricultural return flows still result in water quality conditions that are occasionally less than optimum.

Comment: The entire discussion is limited to the land use and economy of the Delta export agricultural areas. This section should be revised to include land use and economy of the eastside San Joaquin Valley. (SJTA-2)

Response: The section has been revised to include a discussion of the land use and economy of the eastside San Joaquin Valley.

Comment: The entire discussion is limited to recreation at the CVP and SWP facilities. There is no mention of the recreational opportunities elsewhere in the basin, including reservoir recreation at New Melones, New Don Pedro, New Exchequer and other reservoirs, fishing along the basin's rivers and streams, and boating and whitewater rafting on the major tributaries. (SJTA-2)

Response: The text has been revised to include other recreational opportunities.

Comment: [Page IV-27, para. 1] The draft environmental report should correctly note that groundwater will continue to be a source for municipal and industrial supplies as well. Most importantly, however, the draft report should note that the interim plan to provide all San Joaquin River water quality flows from New Melones will effectively eliminate the ability of the water agencies in the Stockton area to implement artificial recharge and conjunctive use programs as planned for that source for the past 25 years. (SEWD-2)

Response: The text has been modified to include the fact that groundwater will continue to be a source for municipal and industrial supplies. In regard to the second part of the comment, the SWRCB is not adopting an interim plan. The Delta smelt biological opinion requires the USBR to meet flow requirements in the San Joaquin River. These flow requirements are the same as the flow objectives in the plan. The SWRCB will implement its flow objectives through a water right decision, at which time it will consider the issue of allocation of responsibility among the water right holders in the Central Valley.

D. Sacramento-San Joaquin Delta (and Central Sierra Area)

Comment: [Page IV-36, 4th full para.] The text incorrectly states that the CCWD contract with the USBR is for a supply level of 145 TAF per year. The correct supply level is 195 TAF per year. Also, the text should be modified to provide a current description of the status of the Los Vaqueros project. (JCWU-1)

Response: The contract amount has been corrected, and the description of the Los Vaqueros project has been updated.

Comment: [Page IV-37, 1st full para.] The text in this paragraph should be revised to state that the CCWD provides the municipal and industrial water needs of approximately 400,000 county residents, not 300,000 as stated. (JCWU-1)

Response: The text has been revised.

Comment: The section on surface water quality should include a discussion of sewage discharges from public and industrial wastewater treatment plants. While the increased use of secondary treatment facilities has reduced the impact of these discharges on surface water quality in recent years, there should be some recognition of the potential impact of reduced

nutrient loadings to the Delta, including possible reductions in zooplankton and phytoplankton production. (JCWU-1).

Response: A discussion of this issue has been added to the section.

Comment: [Page IV-39, last para., 3rd sentence] The draft environmental report states: "During periods of reverse flow, bromides from the ocean intermix with Delta water at the western edge of Sherman Island." In fact, low outflow and tidal mixing cause salinity intrusion to Sherman Island regardless of whether the flows are reversed. We, therefore, recommend that the quoted statement be substituted with the following: "During periods of low Delta outflow, tidal mixing of salts from the ocean (including bromides) extends farther into the Delta, increasing the bromide concentrations at municipal drinking water intakes." (JCWU-1).

Response: The text is revised to reflect the comment.

Comment: [Pages IV-40 and IV-46] These sections are intended to provide an overview of fish and wildlife supported by the Delta, the San Francisco Bay system, and surrounding lands. The discussion would be more complete if it included reference to introduced or exotic species in the system. (JCWU-1)

Response: A discussion of introduced species is provided in Chapter V.

Comment: [Page IV-41, para. 4] The statement that biological productivity is highest in the entrapment zone is wrong. Biological production, or biomass, may be higher in the entrapment zone due solely to the entrapment process, but productivity (rate of growth) is not higher in the entrapment zone when compared to outside of the zone for any species measured. (DWR-2)

Response: The statement has been corrected.

E. Suisun Marsh

Comment: [Page IV-42, para. 5] The last sentence in this paragraph describes the importance of tidal wetlands. The description should be modified to note that the majority of Suisun Marsh consists of managed, diked wetlands. (DWR-2).

Response: The description is modified.

Comment: [Page IV-42, para. 6] The heading of this paragraph should be changed from "Surface Water Hydrology" to "Land Use". (DWR-2)

Response: The heading is changed.

Comment: [Page IV-43, 1st partial para.] The last sentence of this paragraph states that "[T]he DFG owns and manages 14,000 acres, while another 1,400 acres on the channel islands is owned by the federal government". This sentence should be changed to the following: "The DFG owns and manages 14,700 acres. The Solano County Farmlands and Open Space Foundation owns 1,050 acres of tidal wetlands, 940 acres of Potrero Hills Uplands, and a 78 acre diked managed wetland. The U.S. Navy administers 1,400 acres of tidal wetlands on the channel islands of Suisun Bay." (DWR-2)

Response: The text has been revised accordingly.

Comment: [Page IV-43, 1st full para.] The discussion in this paragraph is limited to undiked tidal marshes. The DWR recommends that the following language be inserted. "Within the diked managed wetlands of the Suisun Marsh, water management and the resulting controlled wetland hydroperiod has been shown to have the significant effect on vegetation type used by several sensitive fish including Delta smelt, longfin smelt, chinook salmon, and splittail." (DWR-2)

Response: The suggested language is inserted.

Comment: [Page IV-43, 5th full para.] The discussion of threatened and endangered species in this section is incomplete. The following, more complete discussion should be substituted. "Resident breeding populations of two endangered species (the salt marsh harvest mouse and the California clapper rail), one threatened species (the California black rail), and two candidate species for federal listing (the Suisun song sparrow and Suisun ornate shrew) have been documented in Suisun Marsh. Two State-listed plant species (Mason's lilaeopsis and Soft bird's beak) occur in Suisun Marsh in addition to three federal candidate species (Suisun Slough thistle, Suisun aster, and Delta tule pea)." (DWR-2)

Response: The more complete discussion is added.

CHAPTER V. AQUATIC RESOURCES

A. General Causes of Decline

Comment: Section A of Chapter V is misleading because the decline of aquatic resources is actually caused by three human induced factors: water development, land use practices, and harvesting. The section should be revised by reducing the eight factors to these three factors. (BISF-3)

Response: The most significant factors are the human-induced factors. These actually include all of the factors except natural hydrologic variability and oceanic conditions. Of the human-induced factors, water development, land use practices, and harvesting of aquatic species are probably the most significant. Text has been added to this section to emphasize this point.

Comment: [Page V-1, last sentence] This sentence refers to an analysis of water year types for the period 1930-1992. Failure to address DWRSIM output (e.g. simulated D-1485 flow for years prior to 1930, including the 1928-1934 critical period and the 1924 critical year) may result in an incomplete analysis. This section should be revised to incorporate the full 71-year period of 1922 through 1992 used in the DWRSIM analysis. (It also should be noted that 1930-1992 is a 63 year hydrological period, not 62.) (JCWU-1)

Response: This section is not addressing DWRSIM output; it is simply a discussion of historical conditions. However, water year classifications are available for both the San Joaquin River and Sacramento River from 1922-1930 and are therefore included in the revised Table V-1.

Comment: [Page V-2, Table V-1] The SWRCB must keep differences between the two basins in mind and not make the same assumptions for both basins when it is determining allocation of basin responsibilities to the Bay-Delta Estuary. (SJTA-2)

Response: Comment noted. The SWRCB will consider specific hydrologic conditions when developing allocation responsibilities during the water rights proceeding.

Comment: [Page V-3, 1st partial para.] References to the driest and longest droughts are incorrect; they should not include 1986. (DWR -2)

Response: The sentence has been revised accordingly.

Comment: [Pages V-4 to V-6] This section generally provides a thorough overview of the upstream impacts on aquatic resources. It also may be appropriate, however, to acknowledge the potential impacts associated with the loss of nutrients and particulate organic carbon (POC) that may have occurred due to the blocking and impounding of upstream sources as a result of dam construction. (JCWU-1)

Response: This issue is addressed in sections A.2.e, A.4, A.5, and A.6 of Chapter V..

Comment: [Pages V-8 and V-81] The draft environmental report is replete with documentation of the harm to fish and wildlife caused by the poor quality of water in the lower San Joaquin River. The concern expressed in the report rings hollow. The SWRCB had the opportunity to correct this problem when the Central Valley RWQCB's basin plan was before it. CEQA prohibits the SWRCB from requiring other agencies to mitigate this problem when it has the direct ability to do so. (SEWD-2)

Response: The draft environmental report outlines a multi-pronged approach to the salinity problems in the lower San Joaquin River. The SWRCB's consideration of the regional water quality control plan was separate from this plan. CEQA does not require the SWRCB directly to provide mitigation which is outside its authority. Here, a number of agencies

have authorities and responsibilities with respect to the mitigation actions discussed in the environmental report and the plan.

Comment: [Page V-9, Figure V-2] While the SJTA acknowledge that water projects within the basin reduce the San Joaquin River spring runoff as compared to the calculated unimpaired flow, the figure is misleading in that fails to recognize that a significant portion of the water captured by upstream reservoirs during the spring peak is held for flood control purposes. The significant benefits provided by these flood control operations must be recognized by the SWRCB. Additionally, unlike the Sacramento River Basin, some 1.5 MAF of San Joaquin River basin water is exported out of the San Joaquin River basin via the Hetch Hetchy Aqueduct and the Friant-Kern Canal. Other in-basin users should not be responsible for the obligation of the water users who divert water out of the basin. (SJTA-2)

Response: The SWRCB recognizes the many benefits of water project operations. The purpose of the figure is to document the change in the San Joaquin River flow due to water project operations.

Obligations of water users to meet the objectives will be established during the water rights proceedings.

Comment: [Page V-8, para. 3] The second sentence needs to be clarified; it does not hold true for wet and above normal years. (DWR -2)

Response: Water development affects inflow to the Delta in all years; however, the effect is less pronounced in wetter years, and this clarification has been made.

Comment: [Page V-10, 4th full para.] The draft environmental report states that the CVP pumped 2.8 MAF and the SWP pumped 3 MAF in 1989. The CVP diversions should include CCWD deliveries and CVP water wheeled by the SWP. The SWP diversion totals should include those for the North Bay Aqueduct. (SARA-1)

Response: The value of 2.8 MAF represents the approximate diversion of water through the Tracy Pumping Plant to the Delta-Mendota Canal in 1989. Earlier in the same paragraph, it is mentioned that additional CVP pumping is conducted at the Contra Costa Canal, at an average of 130 TAF in 1987-1989 (134 TAF in 1989 according to the DWR's DAYFLOW Hydrologic Data). SWP diversion through the North Bay Aqueduct and wheeling of CVP water does not constitute a significant portion of the total project exports and are not crucial in this descriptive paragraph.

For clarification, a sentence is added to this section of the environmental report stating that the total CVP diversion from the Delta through both canals was over 3.0 MAF in 1989.

Comment: [Page V-11, 4th full para.] New information is available on the hydrodynamics of the entrapment zone. This section needs to be revised. (DWR-2, JCWU-1)

Response: The section on the entrapment zone (section A.2.d of Chapter V) has been revised to summarize the current theory on the entrapment zone. The "entrapment zone" may no longer be an appropriate term for the various forces that occur in the Estuary. Understanding of the low salinity habitat and hydrodynamics of the Estuary, and their influence on the estuarine biota, is continually evolving.

Comment: [Page V-13, 1st full paragraph, 1st sentence] For purposes of clarity, the words "approximate location of the upstream edge" should be substituted in this sentence for the word "location". (JCWU-1)

Response: The suggested phrase is added to the text (section V.A.2.d.). The sentence now reads: "An operational definition based on 2 parts per thousand salinity measured on the bottom (commonly known as X2) has been used to define the approximate location of the upstream edge of the entrapment zone in the Estuary."

Comment: [Page V-13, para. 5, last sentence] The statement that no agricultural diversions in the Delta are screened is incorrect. At least one and maybe six are screened. (DWR-2)

Response: The text is revised accordingly.

Comment: [Page V-16, last paragraph, 1st sentence] The use of the word "significant" to describe fish losses from agricultural diversion is ambiguous. "Significance" is a concept with both statistical connotations and implication for the analysis of environmental impacts under CEQA. Unless the context makes clear the sense intended, use of this term should be limited in the draft environmental report. (JCWU-1)

Response: The paragraph begins by stating that agricultural diversions may well account for significant fish losses in the Delta. The text then describes that the estimated impact of Delta agricultural diversions on fish could amount to several hundred million striped bass and tens of thousands of juvenile chinook salmon. The word "significant" can be used as an adjective meaning "important" or "of consequence", and that is the context in this case.

Comment: [Page V-18, 1st full para.] The August 1994 biological assessment provides additional information on the potential effects of the Pacific Gas and Electric Company's (PG&E) power generating facilities on Delta smelt and striped bass. (DWR-2)

Response: The paragraph is revised to incorporate the new information.

Comment: [Page V-18, 2nd full para.] It is important to note in the discussion of reverse flows that tidal flows dominate water movement in the Estuary. The increases in spring flows recommended for the San Joaquin River, while generally increasing the net seaward

Comment: [Page V-27, 1st full para., 1st sentence] We believe that global warming is still a theory and not yet a fact. (DWR-2)

Response: The sentence has been modified.

Comment: [Page V-32, 1st full para.] This paragraph states that "quantification of the declines [in aquatic resources] has only been done for a few factors such as outflow and diversion." Whether such quantification has ever been successfully achieved for any factor, however, is a matter of ongoing scientific debate. This statement would be more accurate if the word "attempted" were substituted for "done". (JCWU-1)

Response: To minimize confusion, the text has not been changed. Numerous attempts to correlate declines of aquatic resources with various physical parameters may have been attempted. Most of these analyses were probably not published. According to the documents reviewed, only those utilizing outflow and diversions have shown statistically significant results.

B. Population Trends and Causes of Declines

Comment: [Page V-36, para. 5] The description regarding the relationship between phytoplankton growth rates and location of the entrapment zone is incorrect. (DWR-2)

Response: The text of the draft environmental report accurately reflects the discussion on page 10, second paragraph, of the source document (Kimmerer 1992). The section on the entrapment zone has been rewritten to reflect current and evolving theories of the physical and biological mechanisms operating in the Estuary.

Comment: [Page V-45, para. 4] The section on causes of decline in zooplankton should be updated based on Kimmerer 1994 *(Kimmerer, W.J., E. Gartside, J.J.Orsi. 1994. Predation by an introduced clam as the likely cause of substantial declines in zooplankton of San Francisco Bay. Marine Ecology Progress Series. Vol. 113:81-93. 13 pp.)*. (DWR-2)

Response: Text is added to include the findings in the publication.

Comment: [Page V-55] The section on Sacramento splittail does not mention recent data on habitat use that have been developed in connection with technical review of the biological opinion being prepared to support possible ESA determinations involving the Sacramento splittail. To ensure a more complete analysis of this issue, SWRCB staff should obtain and review these data before finalizing the environmental report. (DWR-2, JCWU-1)

Response: The text is modified to include current information that was not available when the draft environmental report was written.

movement of water in the Delta are not of a sufficient magnitude to overcome the tidal influences within the Delta. Once outmigrating salmon smolts have reached the Delta, their movement is affected primarily by the tidal flows, not by the San Joaquin River flows. (SJTA-2)

Response: The environmental report presents findings of other agencies on the status, trends, and causes of decline of various aquatic resources in the Estuary. The USFWS presented results of an analysis relating chinook smolt mortality to QWEST. The reference for this information, USFWS (1994), has been added to draft environmental report. Other parties, such as the CUWA (1994), DWR (1992a) and the DWR and USBR (1993) have published reports describing QWEST and/or reverse flows and the possible influence of the combined factors creating this phenomenon on entrainment of fish at the CVP and SWP pumping facilities. Whether QWEST or reverse flows affects smolt survival is an issue of ongoing discussion among the parties.

Comment: [Page V-18, last para., 1st sentence] The sentence states that: "Reverse flows reportedly disorient anadromous fish as they migrate either upstream or downstream following the salinity gradient". The discussion includes no reference to any particular study or report, however, that would support this statement. Either biologically credible authority should be cited here or the statement should be deleted. (JCWU-1)

Response: The reference to the 1992 USFWS publication "Measures to Improve the Protection of Chinook Salmon in the Sacramento/San Joaquin River Delta" was inadvertently omitted. The reference has been included after the second sentence of the paragraph.

Comment: [Pages V-19 to V-20, Figures V-7 and V-8] The figures illustrate that with high Delta flows and no CVP or SWP exports, there would be a continuous downstream flow pattern throughout the Delta with the exception of the tidal influence. This indicates that the projects should be responsible for all Bay-Delta standards necessary to maintain exports and protect Delta water quality. (SJTA-2)

Response: Water allocation responsibilities will be addressed in the water rights phase.

Comment: [Page V-21, para. 1] The reference to CUWA (1994) in support of the statement in this paragraph that "Reverse flows may also influence the number of fish lost via entrainment into the CVP and the SWP pumping stations" is misleading. The referenced report actually concluded that the DWR has found no statically significant relationships between reverse flow frequency and Delta smelt abundance indices. The paragraph should be revised to reflect this fact. (JCWU-1)

Response: The text has been modified as follows to address the comment: "CUWA (1994) reviewed the literature describing the effects of reverse flows on fish. According to this review, reverse flows may influence the number of fish lost via entrainment into the CVP and the SWP pumping plants."

Comment: The following comments state that the decline of the subject species is not due to low flows in the San Joaquin River. (SJTA-2)

1. [Page V-58] According to the draft environmental report, the cause of decline of white catfish appears to be south Delta exports. Inadequate San Joaquin River flows are not listed as a cause of decline. It is, therefore, unlikely that increasing flows in the San Joaquin River will benefit this species by overcoming these export project-caused impacts.

2. [Page V-62] The listed causes of decline of Delta smelt include: (1) restricted habitat and increased losses through entrainment by Delta diversion; (2) movement of the entrapment zone since 1984 from Suisun Bay to the Delta river channels; and (3) increases in the proportion of water diverted from the Delta. Inadequate San Joaquin River flows are not listed as a cause of decline, and it is unlikely that increasing flows in the San Joaquin River will benefit this species by overcoming these export project-caused impacts, particularly when 100 percent of the San Joaquin River flow at Vernalis is exported during the April 15-May 15 period. Also, there is no discussion of the effects, if any, that the proposed Old River Barrier may have on Delta smelt.

3. [Page V-67] The cause of decline of longfin smelt is the increase in water diverted by the SWP and the CVP. Inadequate San Joaquin River flows are not listed as a cause of decline, it is therefore unlikely that increasing flows in the San Joaquin River will benefit this species by overcoming these export project-caused impacts.

Response: The decline in white catfish, Delta smelt, and longfin smelt is not simply due to exports. Reduced outflow from the San Joaquin River basin has contributed to the degradation of the aquatic habitat in the Estuary, independent of export impacts. The proposed standards in the spring provide protection for various life stages of a multitude of estuarine species. The flows from the San Joaquin River basin improve general habitat conditions in the lower San Joaquin River and Delta. White catfish, Delta smelt, and longfin smelt will probably benefit from improved habitat conditions, resulting from increased outflows, as will other species.

The plan recommends the installation of the barrier at the head of Old River in the spring. It is expected that, as part of the evaluation of the effectiveness of the barrier, the DWR and the USBR will determine the effects of the barrier on Delta smelt and other fish species.

Comment: [Pages V-58 and V-62, para. 3] While conventional thought is that Delta smelt prefer shallow water, this may not necessarily be the case. On June 16, 1994, the IEP conducted deep and shallow water sampling with mixed results. (DWR-2)

Response: Text is added to incorporate the comment.

Comment: [Page V-60, para. 2, last sentence] After hatching, many Delta smelt may be transported downstream to the entrapment zone, and many also remain upstream to rear in the channels of the lower Sacramento and San Joaquin rivers. On the average, more Delta smelt have been caught in the Delta than in Suisun Bay, even when analyzing just the "good" years. Mid-water trawl results show an average of 37 percent of the Delta smelt are caught in Suisun Bay and 63 percent in the Delta for the period of 1967-1981. The summer townet index during the "good" period of 1969-1981 also shows an average of 45 percent of the smelt reared in Suisun Bay, while 55 percent reared in the upstream areas. (DWR-2)

Response: The text is modified to reflect the comment.

Comment: [Page V-62, para.1, 2nd sentence] Hanson (1994) conducted an analysis to specifically test the hypothesis that adult fall abundance is dependent upon geographic distribution of juvenile Delta smelt. He found no significant relationship between the percentage of juvenile Delta smelt collected downstream of the Sacramento-San Joaquin River confluence and the corresponding fall midwater trawl abundance index. This finding does not support the theory that a significant distribution of larval and juvenile Delta smelt to Suisun Bay will result in a large fall index. (DWR-2)

Response: Text is added to incorporate the comment.

Comment: [Pages V-62 and V-63] The information in this section, particularly paragraphs referencing correlations of increased diversion and decline of Delta smelt, is incorrect. The DFG and the DWR could not find any significant statistical correlations, inverse or otherwise, between Delta smelt abundance in the summer or fall and either export for the SWP and the CVP, abundance and salvage at the SWP and the CVP export facilities, or abundance or salvage levels and the proportion of inflow diverted. (DWR-2)

Response: The text is modified to incorporate the comment.

Comment: [Page 64, 1st full para.] The draft environmental report states that high flows may be detrimental to the planktonic smelt larvae. Despite this statement, the preferred alternative requires higher than historical outflows in most years. (SEWD-2)

Response: The subject paragraph reads as follows:

> "The period of the Delta smelt decline includes unusually wet years with exceptionally high outflows. Very high outflows may be detrimental to the planktonic larvae which may be transported out of the Delta and into San Pablo and San Francisco bays with no way to get back upstream."

The outflows referred to in this paragraph are in excess of several 100,000 cfs. The highest outflow required in the plan is approximately 29,000 cfs. Also, the statement that the

preferred alternative requires higher than historical outflows in most years is incorrect. The objectives are designed to provide outflow patterns similar to recent historical outflows.

Also, it is important to realize that the declines cited in this paragraph may be due to sampling problems. High outflows may provide high quality habitat downstream of the sampling locations.

Comment: [Page V-67, para. 1, first sentence] One of the references cited (DWR 1992a) does not support the statement that "the factor most strongly associated with the recent decline in the abundance of longfin smelt has been the increase in water diverted by the SWP and CVP during the winter and spring months when the smelt are spawning." What DWR 1992a does say is that "a major effect of the SWP on longfin smelt appears to be due to entrainment at Clifton Court Forebay." Please correct this sentence. (DWR-2)

Response: The sentence is corrected.

Comment: [Page V-67] The discussion in this section on correlation analyses of flow and species abundance should be qualified to reflect that such correlations do not demonstrate cause and effect. In addition, the use of the term "breaking down" in the last paragraph on page V-67 is unclear and should be explained. (JCWU-1)

Response: The following sentence is deleted: "This suggests that increased Delta outflow during December-May should increase the abundance of longfin smelt". Breaking down means that as more data points are collected and incorporated into the regression equation, the association between outflow and longfin smelt abundance becomes weaker.

Comment: [Page V-73, last two para.] Hatchery production supplements the spring- and winter-runs in addition to the fall- and late fall-run mentioned in the draft environmental report. Peak fall-run spawning occurs in October and November in the Sacramento Valley streams and a little later in the San Joaquin system, not the October through March period mentioned in the report. (DWR-2)

Response: The text has been corrected.

Comment: [Page V-73, 3rd full para., last sentence] The statement that the Central Valley chinook salmon population now consists primarily of fall-run fish raised in hatcheries is inconsistent with the statement on page V-75 that total escapement averaged 247,100 natural spawners and 28,500 hatchery spawners. (SJTA-2)

Response: The statement has been deleted.

Comment: [Page V-74, para. 1] The draft environmental report states that the San Joaquin River system supports a population of late fall-run chinook. There is little basis to conclude that there is currently a distinct population of late fall-run in the San Joaquin River or its

tributaries, apart from late fall-run strays from the Sacramento River system and late spawning San Joaquin fall-run fish. (DWR-2, SFPUC-2, SJTA-2)

Response: The DFG document "Restoring Central Valley Streams: A Plan For Action" November, 1993, states that there are small populations of late fall-run chinook salmon in each of the Merced, Stanislaus and Tuolumne rivers. Further monitoring, documentation, and studies could be conducted on the runs of salmonids in the San Joaquin River basin to determine the magnitude of these runs and whether there are distinct runs of late fall chinook in these rivers or whether these fish are observed later in the year due to variable timing of returning of the fall-run chinook. The text has been modified as follows: "The San Joaquin River system supports fall-run, and possibly a small population of late-fall-run chinook salmon."

Comment: [Page V-74, para. 1] Based on recent trawls at Sacramento, late-fall migration through the Delta likely occurs in November and December but may peak in January and February, not possibly in January as indicated in the text. It isn't clear that there were "enormous runs of salmon in the upper Sacramento, Pit and McCloud rivers" in 1942. There are not good data on this but Kelley et al (1987) showed that the Central Valley catch and spawning escapement was low through about 1942 and rebounded to near peak levels by the mid-1940's. On the Feather River, by the time that Oroville Dam was built in the mid-1960's, most of the upstream habitat had already been lost. This isn't clear in the text. (DWR-2)

Response: The text regarding late fall-run migration is consistent with the comment. The environmental report simply makes a distinction between the timing of the natural and hatchery-produced late fall-run smolts, as follows: "Significant emigration of naturally-produced (emphasis added) juveniles occurs through November, into December, and possibly January. Emigration of hatchery-produced juveniles occurs well into February (DFG 1993)".

The source document, "Restoring Central Valley Streams: A Plan For Action", states that: "Based on gill-net catch data for the Sacramento-San Joaquin rivers it has been estimated that the peak chinook salmon runs in the Sacramento River system may have been as large as 800,000 to 1 million fish, with an average run size of about 600,000 fish prior to 1915." These runs are characterized as enormous in the text. However, the source document also states that: "Generally, only sparse or incomplete population estimates are available for years prior to 1953." This sentence is added to the environmental report.

The SWRCB is not aware of a reference that documents that most of the upstream habitat on the Feather River was lost prior to construction of Oroville Dam. Therefore, no clarification was added to the text.

Comment: [Page V-76, 2nd full para.] The lowest escapement ever observed in the San Joaquin River basin was 320 fish in 1963. This information was submitted during the D-1630 proceedings and can be found in the reference WRINT-USFWS-7, p.6. (SJTA-2)

Response: The text has been changed to incorporate the comment

Comment: [Page V-79, 2nd full para.] The winter-run on the Sacramento River is the only one in the world, not just in California. There might have been one on the Calaveras River, but its existence is poorly documented. There really are not any reliable data to document that the winter-run declined after Shasta was closed. (DWR-2)

Response: The text is amended to state that the only winter-run in the world is in the Sacramento River. The statement that winter-run declined after Shasta was closed came from the document, "Restoring Central Valley Streams: A Plan For Action", which was cited in the text. That document states that when completion of Shasta and Keswick dams in the early 1940's blocked access to the upper Sacramento tributary streams, the population began declining but recovered dramatically during the 1940's and 1950's, apparently by taking advantage of cool water released from the reservoirs in the summer.

Comment: [Page V-80, 3rd full para., last sentence] We suggest that you revise the statement "low population levels occurred historically and the population rebounded in the 1980's in response to high flows" to read "low population levels...in association with high flows." The higher flows led to higher escapement in large part by reducing the percentage of San Joaquin River water diverted by the CVP and the SWP, and thereby significantly reducing smolt mortality associated with the pumps.

Response: The text has been changed as recommended by the commenter. However, the commenter's assertion that the higher escapement is due in large part to the reduction in the in the percentage of San Joaquin River water diverted by the CVP and the SWP is speculative.

Comment: [Page V-80, last sentence] The draft environmental report notes the responsibility and significance that Friant Dam has had in regard to the reduced production and survival of salmon throughout the San Joaquin system. This fact cannot be ignored when allocating responsibility. Suitable San Joaquin River flows must be provided by the USBR. Alternatives to providing the water from Friant Dam include releases of USBR water through New Melones or transferring water through the Delta Mendota canal and San Luis Reservoir. (SJTA-2)

Response: Comment noted. Water allocation responsibilities will be dealt with in the water rights phase. At this time, the SWRCB is not setting any instream or water quality standards outside of the legal boundaries of the Delta.

Comment: [Pages V-80 to V-82] Throughout this section are numerous statements regarding the impacts of the export projects on the San Joaquin River chinook salmon population. The draft environmental report points out that the salmon populations have been severely affected by pumping operations in the Delta and that peak chinook salmon losses occur at the State and federal export pumps in April through June when the fall-run smolts

are passing through the Delta. The burden of mitigating project-created impacts to the San Joaquin chinook salmon population cannot be transferred to other entities. The projects must be held responsible for flows necessary to permit export pumping, whether those flows are operational carriage water or additional flows to offset and mitigate the project impacts.

Additionally, to the extent that dissolved oxygen problems near Stockton are the result of dredging activities and effluent discharges in the Stockton Ship Channel and turning basin, the burden of mitigating these impacts cannot be transferred to other entities.

It is true that chinook salmon escapement in the San Joaquin River basin is correlated with spring flows at Vernalis 2 1/2 years earlier. However, the causes of this correlation require further analysis. For example, in month-by-month comparisons, the strongest correlation by far is between June flow and escapement, although the peak of smolt outmigration is in May. The correlation with July flow is about as strong as that with May, and stronger than any other month except June, even though there are never any smolts in the San Joaquin River in July. These observations are difficult to reconcile with the simple cause and effect relationship suggested in the text. The poorest correlations of all are for the months of September, October, and November, when the upstream migration of parent spawners takes place. It is, therefore, ironic that reference to flow-escapement relations to justify increased spring flow at Vernalis is immediately followed by a claim that increased fall flow would benefit upmigrating adults. (SJTA-2)

Response: The chinook salmon problem is not simply an export problem. Reduced outflow from the San Joaquin River basin has contributed to the degradation of the aquatic habitat in the Estuary, independent of export impacts. The proposed standards in the spring provide protection for various life stages of a multitude of fish species. The flows from the San Joaquin River basin are to contribute to and improve general habitat conditions in the lower San Joaquin River and the Delta. Chinook salmon will probably benefit from improved habitat conditions, resulting from increased outflows, as will the Delta smelt, striped bass and other species.

The pulse flow in the fall is intended to attract the chinook salmon upstream to the tributaries; improved water quality would be an additional benefit. The dissolved oxygen sag in the Stockton Ship Channel in the fall is due to many factors.

There is a strong correlation between spring flows on the San Joaquin River and returning adult salmon 2 1/2 years later. This relationship indicates that favorable flow conditions in the spring will improve smolt survival through the Delta, a time in the life cycle and location where the mortality can affect the number of returning adults. This relationship is documented in a number of DFG and USFWS publications. It is true that the causes of this relationship could benefit from further analysis; nevertheless, objectives should be based on the best available information. The basis for the pulse flow in the fall, however, has nothing to do with the relationship between spring flows and number of returning adults. It is based on observations by the DFG that low flows in the fall can delay the upstream migration of

fish to the tributaries, and to the hatchery on the Merced River. The delay in migration and spawning, among other things, can lead to decreased spawning success and delay in the outmigration of smolts the following spring.

Comment: [Page V-81] The Four-Pumps Advisory Committee has approved a permanent barrier on the San Joaquin River near its confluence with the Merced River. In the last paragraph, minimum flows may not help salmon. (DWR-2)

Response: The information regarding construction of a permanent barrier has been added to the text. The issue of minimum flows in the San Joaquin River in the fall to benefit salmon is discussed in section A.4.a of Chapter VIII.

Comment: The following comments concern the issue of the effect of temperature on salmon and whether temperatures in the Delta are controllable.

1. [Page V-81, 1st sentence] The draft environmental report concludes that San Joaquin River basin smolt losses can be attributed to high temperatures. This is contrary to the conclusion reached by the USEPA that "...experimental data from releases near the upstream edge of the Delta did not show a statistical relationship between survival and temperature at release. In other words, on the San Joaquin River, temperature should not be used as the independent variable in the criteria." (40 CFR Part 131; 60 FR 4664, 4690). (SEWD-2)

2. [Page V-81, 1st sentence] There is no evidence that temperatures in the San Joaquin River affect either salmon recruitment or escapement. Temperature has not been demonstrated as a significant factor in survival of outmigrating juvenile salmon in the San Joaquin River. The San Joaquin River population of chinook salmon is the most southerly population and, therefore, might be expected to be least susceptible to high temperatures. Figure 1 in the SJTA's comments on the draft plan is a figure showing the daily average water temperature for water released from New Don Pedro between 1978 and 1993. Except for a few days in 1980, the temperature of water released from New Don Pedro has ranged from 47°F and 53°F, well below the temperatures needed for chinook salmon. (SJTA-2)

3. [Page V-98] Numerous participants have commented in the past on the effects of reservoir releases on downstream temperatures (e.g. WQCP-CVPWA-204). The SWRCB concluded in the 1991 Bay-Delta Plan that reservoir releases were not a controllable factor for achieving water quality temperature objectives. (SJTA-2)

Response: The environmental report presents findings of other agencies on the status, trends, and causes of the decline of various aquatic resources in the Estuary. The DFG concludes that high temperature is one of the many factors that cause mortality to San Joaquin River smolts migrating downstream. The reference for this information, DFG (1993), is cited in the report. The USFWS conducted experiments with hatchery-reared fall-

run chinook salmon, and the results indicate that temperature, along with several other environmental conditions, influences survival as they migrate through the Delta. The USFWS has not recommended a particular temperature, and the plan does not establish a temperature standard in the lower Sacramento or San Joaquin rivers.

The USEPA analyzed the available smolt mortality data for the development of its water quality standards and concluded that experimental data on the San Joaquin River did not show a significant statistical relationship between survival and temperature at the time of release of smolts. Nevertheless, the revised USFWS San Joaquin River smolt survival model uses temperature at Jersey Point as one of the factors used to calculate smolt mortality.

Whether elevated water temperatures affect smolt survival is an issue of ongoing discussion among the parties. Even though data are not available to conclude a statistically significant relationship with smolt mortality, salmon smolts are known to be temperature sensitive, and it is reasonable to postulate that temperature, in conjunction with other factors, can cause smolt mortality in the San Joaquin River basin.

The environmental report notes that water temperatures in the Delta can only be minimally controlled. The fact that even large cold water releases from reservoirs result in only small changes in Delta water temperatures caused the SWRCB to conclude in the 1991 Bay-Delta Plan that controlling temperature in the Delta through reservoir releases does not appear to be reasonable.

Comment: [Page V-82, 1st full para.] The discussion regarding studies using fall-run salmon should specify that hatchery fall-run chinook were used in the tests. (DWR-2)

Response: The description "hatchery-reared" is added to text. In the next paragraph, the text already includes the reference to hatchery-reared salmon.

Comment: [Page V-83, last para.] We don't really know when spring-run smolts migrate, or even if they actually migrate as smolts. There is some evidence they migrate as post smolts and there are no data indicating that Delta mortality is significantly controlling their abundance. We are not even sure when they move through the Delta. (DWR-2)

Response: The information on spring-run chinook salmon was submitted by the NHI and cited in the text. No other specific information on the timing of spring-run migration through the Delta was provided.

Comment: [Page V-84, 2nd full para.] As with spring run, it is not clear when steelhead move through the Delta, but the highest catches at the salvage facility occur in winter months. This doesn't seem consistent with the present text. (DWR-2)

Response: The following sentence has been added to the text: "Average monthly SWP fish salvage data, for the years 1980-1991, indicate most steelhead are salvaged in the late winter

and early spring, with the peak occurring in March and April (Steve Ford, DWR, pers. comm., April 1995)".

Comment: [Page V-90, para. 5] The relationship between striped bass young-of-the-year and toxics is just as strong as the DFG's outflow/export relationship. Also, add "and decreased outflows during the recent 6-year drought" at the end of the sentence that ends with the reference DFG 1992a. (DWR-2)

Response: A discussion of the effect of toxics on striped bass survival is provided in the second full paragraph on page V-94 of the draft environmental report. The recommended phrase is added.

Comment: [Page V-92, Figures V-41 and V-42] The figures show that the decline in striped bass populations occurred primarily in the older age classes. The age 3 numbers in the early 1980's were comparable to previous years, but the recent drought appears to have caused a decrease. The older fish declined much earlier. (DWR-2)

Response: It is likely that the drought, in combination with other factors, affected striped bass populations. However, the graphs do not establish a cause and effect relationship.

Comment: [Page V-93, para.1, last sentence] Add "however, a large percentage of striped bass rear in the Delta". (DWR-2)

Response: The sentence is: "Higher outflows may also shift the entrapment zone to a location downstream of the Delta, where larval striped bass appear to survive better (DWR 1992a)." The purpose of the sentence is to indicate the apparent benefit to the striped bass of rearing in the entrapment zone when it is downstream of the Delta, rather than identifying the relative abundance of juvenile striped bass in various locations in the Delta.

Comment: [Page V-93, para. 4] Figures VI-1 and VI-2, referred to in this paragraph, are an oversimplification of the striped bass model. Although they may illustrate relative effects, actual numbers should be viewed with caution. (DWR-2)

Response: The text (section B.7.d of Chapter V) states: "Figures VI-1 and VI-2 in Chapter VI show the relationship between mean exports and outflow during April-July and August-March, respectively, to maintain a striped bass population of 1 million, assuming various young-of-the-year indices. These figures represent a simplification of the DFG's striped bass model and illustrate how outflows and exports may be managed to maintain striped bass populations in the Estuary". Later, in section VI.D of the draft environmental report, the text states: "The statistical validity of the DFG's striped bass model has been reviewed (DWR 1992c). This review concluded that the model has poor predictive ability. Statistical criticisms of the model include multicollinearity, autocorrelation, averaging, and propagation of errors." The purpose of these figures is to illustrate the DFG's opinion on the relative

effects of exports and outflow on striped bass survival. The limitations on the use of the model and the figures are articulated.

Comment: [Page V-94, 1st full para.] The inland silverside and the striped bass also compete in the Suisun Bay and Marsh. (DWR-2)

Response: The text has been amended to reflect the comment.

Comment: [Page V-95, para. 5, second sentence] The effect of outflow on water temperature is not "the" mechanism, but one possible mechanism that explains shad recruitment in drier years. (DWR-2)

Response: The sentence has been amended to state that a mechanism that may explain the linkage of shad abundance with outflow is the effect of outflow on water temperature.

Comment: [Page V-97] The SWRCB's authority to impose terms and conditions on a licensed water right is limited to situations where it has reserved jurisdiction or has exercised its authority pursuant to State law and SWRCB regulations regarding a finding of waste or a specific unreasonable use. (SJTA-2)

Response: This is a water rights issue which may be considered during the water rights phase of this proceeding.

CHAPTER VI. MODEL DESCRIPTIONS

A. DWR's Planning Simulation Model

Comment: I am concerned about the SWRCB relying on the project operators to provide the SWRCB and the public with modeling results from DWRSIM when they are the ones being regulated. Who will be held responsible if the assumptions in the model fail to be accurate? (PORGANS-2)

Response: The DWR developed DWRSIM, and it is the principal user of the model. All of the participants in this proceeding relied on the DWR to provide DWRSIM model results to analyze alternatives. The SWRCB believes that the model is the best tool available to analyze the effect of new standards on project operations, and the DWR is best qualified to run the model. Two other models were used to analyze the effect of the new standards: PROSIM developed by the USBR and an outflow/salinity model developed by CCWD. These two models provided similar estimates for the water supply impact of the SWRCB's draft plan.

With respect to the issue of responsibility, the SWRCB will review project operations during the next review of the water quality objectives, and the objectives may be modified if project operations are substantially different than the modeled operations.

Comment: An important concern regarding the water modeling analysis is the exclusion of future changes in the diversion by the CVP of water from the Trinity River. Current federal studies are underway which expect to significantly reduce the water diverted from the Trinity River to the Central Valley. This reduction (estimates of the reduction range from 200 TAF to 800 TAF) will affect the ability to maintain both water quality and temperatures that currently support fish and wildlife habitat in the Central Valley and hence the Bay-Delta. This scenario should be further explored as part of the Bay-Delta assessment to identify potential impacts and mitigation factors. (NCPA-1)

Response: The water supply modeling incorporates all of the existing requirements on the CVP and the SWP. Future, potential requirements were not incorporated. Such requirements, including the Trinity River diversion, were discussed in Chapter VIII under cumulative impacts.

Comment: [Page VI-1, para. 3] The draft environmental report states that the CVP and the SWP export demands south of the Delta are based on the 1995 level of land use patterns (i.e., acres irrigated). Racanelli found the level of export/land use irrigation demands of 1978 (D-1485) lacked measures and action to sufficiently protect several aspects of fish, habitat, and other beneficial uses. What is the justification for using the 1995 land use pattern figures instead of the 1978 land use pattern and water demand? If the 1995 land use pattern/irrigation demand is used, then the inflow-Delta conditions which provided for the highest salmon populations should be used (adult returns 68,485 fish) on the San Joaquin River tributaries, not the 1967 to 1992 average of 20,644 (Mills and Fisher DFG 1994).

Is the 1995 level of development being used to protect investments of special interest folks who were foolish to buy land without a water supply? Is this an effort to protect special interest investments for a future buy-out program as a way to get around the no-compensation-rule? (SARA-1)

Response: A principal purpose of the environmental report is to analyze the effect of the objectives under existing conditions. The 1995 level of development constitutes existing conditions. Land use patterns and salmon populations have changed over time.

Comment: [Page VI-2, 5th full para.] The draft environmental report indicates that interpretation of modeling results are subject to the uncertainty of the CVPIA allocation of the 800 TAF because "the USBR has not yet established criteria on how this obligation will change CVP operations". Despite this statement, for the past three years, the USFWS has allocated 200 TAF of the 800 TAF from New Melones. Given this precedent, the environmental report should evaluate this additional impact regardless of its establishment as a permanent criteria. (SEWD-2)

Response: The SWRCB has identified the CVPIA requirements as a cumulative impact in Chapter VIII. However, the long-term allocation of the water set aside by the CVPIA has not been established, and consequently, it has not been incorporated into this analysis.

The water supply impact analysis is largely dependent upon DWRSIM studies of the base case and the preferred alternative. These studies are conducted, at the SWRCB's request, by the DWR. The DWR consulted with the USBR regarding operating assumptions at New Melones Reservoir, and incorporated their recommendations into the DWRSIM operations studies.

C. Striped Bass Model

Comment: [Page VI-3] A model by C. Foe of toxics vs. abundance of striped bass has also been developed. (DWR-2)

Response: The model developed by C. Foe, of the Central Valley RWQCB correlates pounds of rice pesticides applied annually divided by the flow rate of the Sacramento River and the annual difference between the predicted and observed number of larval bass in the Delta. (*DWR. 1992. Bay-Delta Fish Resources, by Dr. Randall Brown. Department of Water Resources. 46 pp. WRINT-DWR-30*). The primary reason why a discussion of this model was not included in the environmental report is that the focus of the plan is on salinity, flow, and water project operations. Toxics issues are not addressed in this forum. The text has been revised to clarify this issue.

Comment: [Pages VI-4, 3rd full para.] As noted in the draft environmental report, the striped bass model has "poor predictive ability" and several intrinsic statistical defects. For that reason, the model should not be used as the basis for any analysis contained in the draft environmental report. This section should, therefore, be deleted. (JCWU-1)

Response: In section D of Chapter VI of the draft environmental report, the text states: "The statistical validity of the DFG's striped bass model has been reviewed (DWR 1992c). This review concluded that the model has poor predictive ability. Statistical criticisms of the model include multicollinearity, autocorrelation, averaging, and propagation of errors." The limitations of the use of the model are adequately articulated. The purpose for including the model is to illustrate the factors that the DFG believes affect striped bass populations.

E. Salmon Models

The following comments address the validity of the USFWS salmon smolt survival models:

1. Comment: At various locations within the draft environmental report, the USFWS salmon smolt survival models have been used to indicate an anticipated biological response of salmon to the proposed standards. The validity of the models has been critiqued during the past year and as a result the use of the models as predictors of response has been cautioned. We recommend that the depiction of absolute values of salmon survival derived from the models be removed. (SFPUC-2)

2. Comment: If the statistical validity of the USFWS models are so criticized, why is the SWRCB using them for its analysis? It is inappropriate to use the models for the purpose of determining outflows and for setting policy. The models do, however, show the significance that the Old River Barrier has on the survival of salmon smolts migrating through the Delta. The SJTA analyzed several pulse flow alternatives with and without the Old River Barrier using the EA chinook salmon model, which incorporates the USFWS salmon smolt models. The results showed that with the Old River Barrier in place, there was a three- to four-fold increase in salmon population over the base case through a ten year period of analysis. Without the Old River Barrier, there was less than one-fold increase due to smolt mortality at the export pumps. (SJTA-2)

3. Comment: The inclusion of the resource model results in Chapter VIII implicitly suggests that those results and the models used to obtain them represent the best science available. The population models used to produce these results are generally based on incomplete data and incorporate numerous unverified assumptions. Much of the scientific community would likely disagree with any attempts to use such crudely derived models as quantitative management tools. We recommend that the text on pages VIII-24 through VIII-31, be omitted, and that the discussion of the biological benefit of the objectives be limited to the more general qualitative analysis presented on pages VIII-15 through VIII-24. (BISF-2)

4. Comment: As noted in the last paragraph on page VI-11 of the draft environmental report, the statistical validity of the USFWS smolt survival models has been disputed. The smolt survival models have several inherent analytical problems and should not be used as the basis for any analysis contained in the draft environmental report. This section should be deleted. (JCWU-1)

Response: The bases of the USFWS salmon smolt survival models have been challenged. The criticisms of the models include: the fundamental assumptions; the data sets used; the statistical analyses of the data; and the statistical validity of the model construction.

The salmon smolt models are not used as quantitative management tools; the models are not used to set policy or to establish the outflow or export objectives. The models are used for qualitative comparisons among alternatives and to illustrate the factors that are believed to affect smolt survival. Also, the models have been the subject of a great deal of discussion and evaluation among scientists working in the Delta, and their results are of informational interest.

CHAPTER VII. WATER SUPPLY IMPACTS OF PREFERRED ALTERNATIVE

Comment: [Page VII et seq.] The draft environmental report does not comply with Water Code section 13241. The SWRCB must consider the current beneficial uses of water within

the area of origin and water quality objectives for the reasonable protection of the uses of water put to use by the Nevada Irrigation District (NID). (NID-2)

Response: Section 13241 does not require the SWRCB to establish objectives for the protection of beneficial uses outside of the area under consideration. The SWRCB will consider the NID's beneficial uses before assigning responsibility to the NID for meeting objectives.

Comment: Water supply is included as a separate section [Chapter VII], rather than being incorporated in the environmental impacts discussion [Chapter VIII]. This may have been done to clarify that the document satisfies obligations both under the Porter-Cologne Act and for environmental review. Additional language is recommended for the second paragraph on page VII-1 to clarify the relation between the water supply and environmental impact analyses. (JCWU-1)

Response: The water supply impact analysis [Chapter VII] is separated from the environmental impacts analysis [Chapter VIII] because the base case (or reference case) is different in these two analyses. The base case for the water supply analysis is existing level of demand. The reference case for the environmental analysis is historical operations, and historical demand, from 1984 to 1992. If historical operations were used as a base case for the water supply analysis, the conclusion would have been that there is no impact to exports associated with adoption of the draft plan because projected export levels would be approximately the same as the export levels over the historical period. This conclusion would be incorrect because it ignores the fact that export demands have increased.

A sentence has been added to the second paragraph of this chapter to clarify that export levels and reservoir storage are also discussed in Chapter VIII as a component of the environmental impact analysis.

A. Modeling assumptions

Comment: [Page VII-1] Club FED has some concerns about the modeling assumptions used in the preferred alternative, and the CVP/SWP operational framework used to portray the strategy to meet the preferred alternative. The effort to model the preferred alternative and the operational strategy of the CVP/SWP system is an ongoing process and the models and assumptions are being constantly refined. Therefore, the numerical results from the studies analyzed and reported by SWRCB staff in the environmental report on the basis of three modeled components (total export reductions, Sacramento River Basin storage changes, and San Joaquin River Basin water supply impacts) should not be considered as definitive and are subject to change as knowledge and assumptions change. The areas of particular concern in the modeling studies are: (1) export operations during the San Joaquin River pulse flow months of April and May; (2) upstream operations of CVP facilities and how they interact with the preferred alternative criteria in the Delta and upstream objectives such as instream flow issues, and especially temperature control objectives in the upper Sacramento River; and

(3) use of New Melones as a surrogate measure for the San Joaquin River system and the operational implications to this CVP facility. (USBR-1)

Response: The SWRCB is aware that the modeling assumptions may change in the future. The SWRCB has emphasized that modeling results must be interpreted with care and full consideration of the modeled conditions and assumptions. However, the assumptions used are, in the SWRCB's view, the most reasonable assumptions at this time.

Comment: [Page VII-4] Full compliance with the southern Delta agricultural standards through freshwater releases from upstream projects has not been evaluated. Nor has compliance with the dissolved oxygen standard at Stockton been evaluated if fresh water releases are considered the only measure to achieve the standard. The SWRCB should consider the reasonableness of compliance with these standards during the water rights phase. (SFPUC-2)

Response: Since the plan does not implement these standards, it is not necessary in the environmental report to evaluate their effects. Further, such an evaluation would be speculative since the alternative methods to implement these standards are not yet determined. (See 14 Cal.Code Regs. §15145) The SWRCB will consider the reasonableness of implementing these standards during the water rights phase.

Comment: [Page VII-4, para. 3] Why does DWRSIM make releases from New Melones to meet flow requirements on the San Joaquin River? Even given the assumption that the environmental report uses the CVP as surrogates for all water right holders, there are other CVP units capable of providing the required San Joaquin River flows. (SEWD-2)

Response: The only reservoir modeled by DWRSIM in the San Joaquin Valley is New Melones. Therefore, New Melones was used as a surrogate for the total storage impact of the objectives on San Joaquin Basin storage.

Comment: [Page VII-4, para. 4] DWRSIM places a cap of 70 TAF on the water releases from New Melones reservoir to meet water quality objectives at Vernalis. Such a cap is unsupported in law or in fact given the increases in poor quality agricultural drainage noted in the environmental report. Such a limitation is particularly offensive when the SWRCB has done nothing to reduce the poor quality of San Joaquin River water which would make such a limitation more realistic. (SEWD-2)

Response: The assumption of the 70 TAF cap is not based on any legal limits. D-1422 requires the USBR to release sufficient water to achieve the salinity objectives at Vernalis. However, it is a reasonable assumption in this analysis because salinity control over the long term is unlikely to be achieved exclusively through releases of high quality water from upstream reservoirs. Additional measures, including control of saline discharges and discharge of saline water to a salt sink, must also be considered. The SWRCB will consider the issue of salinity control at Vernalis during the water right phase of the proceedings.

In the 1991 Bay-Delta Plan, the SWRCB directed the Central Valley RWQCB to reduce salt loads to the San Joaquin River by ten percent. The RWQCB responded by requiring drainage operation plans from the areas on the westside of the San Joaquin River with the worst drainage problems. The drainage operation plans focus on water conservation to reduce salt and trace metal loading to the river.

B. Water Supply Impacts

Comment: The SWRCB estimated the water costs of the draft plan at 300 TAF in average years and 900 TAF in drought years. These water costs, however, are estimated by comparing the draft plan's Delta export rates with inflated base export rates, thus producing inflated water costs. A better approach is to compare the plan's Delta exports with the historical Delta exports that caused the decline of the Delta fisheries. When this comparison is done, the results show that the SWRCB's draft plan allows the State and federal projects to increase exports. (PORGANS-1)

Response: The environmental report uses a base case for the water supply impact analysis of existing demands and modeled operations over the 1922 to 1992 historical hydrology, and a reference case for the environmental analysis of historical operations from 1984 to 1992. The base case for water supply impact analysis was chosen because it would be incorrect to assume that demands for water supply are not increasing. Water supply agencies receiving export water from the Delta have planned their operations on the assumption that Delta water would be available under D-1485 regulatory conditions. On the other hand, the environmental analysis must be based on the conditions actually experienced in the Estuary.

The commenter correctly notes that, if the hydrology of 1984 to 1992 reoccurs, exports will be larger by a small amount under the regulatory conditions of the plan than occurred over the historical period of 1984 to 1992. The higher exports are driven by the higher existing demands. Under the same demand conditions, exports would be substantially lower under the new plan compared to D-1485 conditions. The observation that exports would increase under the plan in comparison to the 1984-1992 reference condition is discussed in Chapter VIII of the environmental report.

Comment: [Page VII-4, para. 3] The impact analysis in the environmental report incorrectly assumes that, if there is insufficient water from the CVP's entitlement in New Melones to meet all of the Vernalis requirements, additional water is supplied from the San Joaquin River upstream of the Stanislaus River. Such a premise not only ignores California water rights law, but it fails to adequately assess the impacts of the preferred alternative. To the extent that the USBR is unable to provide the required Vernalis flows, allocation of responsibility must be based on the priority system. On page VII-4, the statement "if there is insufficient water in New Melones to meet all of the requirements, the model obtains additional water from the San Joaquin River upstream of the confluence with the Stanislaus River" should be revised. A more proper characterization of the model's operation is that

the model obtains water from unspecified sources within the San Joaquin River Basin. (SJTA-1, SJTA-2)

Response: For modeling purposes, the DWR was requested to model the water supply impacts for the San Joaquin River Basin by assuming that the necessary releases are made from New Melones Reservoir. Any flow requirements in excess of New Melones capacity are assumed to be provided by unspecified sources. No inference should be made from these assumptions regarding distribution of water supply impacts to specific water right holders. The SWRCB has not determined who will share in that responsibility, or how the impacts will be allocated. The allocation process will be the subject of a water rights proceeding which will commence following adoption of the plan. To clarify this point, statements in Chapter VII and Chapter XI have been amended to state that additional water will come from unspecified sources.

Comment: [Page VIII-4, para. 3] The draft environmental report acknowledges that if New Melones flows are insufficient, other upstream water is assumed. This ignores reality. During the three years before completion of the water rights phase, there will be no upstream allocation for the objectives. (SEWD-2)

Response: The plan does not require that the objectives be met from New Melones Reservoir during the period before a water rights decision is issued. The assumption of upstream water addresses the results after the objectives are implemented.

Comment: [Page VII-5, 1st full para., 2nd sentence] There should be no inference regarding the distribution of water supply impacts to anyone other than the CVP and the SWP. The plan covers only a three year period during which the USBR is required to meet the San Joaquin River flow objectives, in accordance with the biological opinion for Delta smelt. The SWRCB is not considering allocation of flows at this time. Allocation of this responsibility among the water right holders in the watershed will be the subject of a water rights proceeding scheduled to commence following adoption of the plan. Consequently, the impacts described in the environmental report should only be limited to those areas dependent upon flows provided by the USBR's entitlement from New Melones. The proper time to evaluate the impacts of any proposed allocation scheme is during the water rights phase. (SJTA-1)

Response: The SWRCB is not responsible for analyzing the effects of the biological opinion for Delta smelt. It is not the intent of the SWRCB to infer in the environmental report distribution of water supply impacts to anyone, including the SWP and CVP. The environmental report states that "no inference should be made from this analysis regarding distribution of water supply impacts to specific water users." As noted by the commenter, the SWRCB is not considering allocation of flows at this time. Furthermore, the report specifies that "the SWP and CVP are used as surrogates in order to determine the overall water supply impacts." The discussion of impacts is meant to be of a general nature,

encompassing upstream, downstream, and in-Delta impacts, and does not infer any specific allocation of responsibility.

The Principles for Agreement applies for the next three years, but the water quality control plan, once adopted, remains in effect until amended by the SWRCB. California Water Code Section 13240 requires that water quality control plans adopted by the SWRCB must be periodically reviewed and may be revised. In addition, the Clean Water Act requires a triennial review of water quality control plans. The program of implementation of the draft plan states that the San Joaquin River flows are interim flows and will be evaluated as to timing and magnitude in the next three years. The water right decision is expected to be completed within this time period and the existing flows are the most likely flows that will be incorporated into that decision.

Comment: [Pages VII-7 through VII-10] The following comments express concerns regarding the water supply impact of the plan on NID. (NID-1, NID-2)

1. A SWRCB water right decision that required a change in our operations could conflict with (1) existing contracts between the NID and the PG&E, (2) agreements with the DFG, (3) a Davis/Grunsky contract with the DWR, and (4) the NID's FERC license.

2. The NID urges the SWRCB to consider all beneficial uses of water, especially the multiple uses that occur within the NID's district. Public trust needs are present within the areas of origin that must be met by use of water storage and stream flow facilities.

3. The NID urges the SWRCB to consider allowing water transfers between willing sellers and buyers with as little administrative interference as possible.

4. The draft environmental report's failure to recognize that the plan will cause changes in the NID's reservoir operations is unacceptable. The SWRCB must recognize that there will be significant impacts on local water supplies by imposition of the standards. The SWRCB cannot assume that they are largely speculative. (NID-1, NID-2)

Response: All of these issues can be considered during the water rights phase, but they are not ripe for consideration in the draft environmental report. The draft environmental report cannot analyze the potential effects in the areas of origin in detail because the alternatives for allocating responsibility for meeting the objectives have not yet been developed. Therefore, the draft environmental report analyzes only the overall impacts without going into detail with respect to individual locations, such as the NID's service area, within the area of origin. Until the SWRCB has developed a water right allocation alternative that will impact the NID's water supply, it would be unduly speculative to attempt to analyze the effects on the NID's water supply. CEQA does not require speculation. (14 Cal. Code Regs. §15145.)

Comment: [Pages VII-7 through VII-10] The SWRCB cannot adopt the standards and look for the water later. The analysis of the effects of the standards on the NID must occur first. (NID-2)

Response: This comment is inconsistent with the guidance of the Court of Appeal in the Racanelli Decision (United States v. SWRCB (1986) 182 Cal.App.3d 82, 227 Cal.Rptr. 161) which advised the SWRCB, with respect to the 1978 water right decision and plan, that it should have adopted the plan first, to ensure that it set adequate water quality objectives, and only then should have considered the water rights issues. The SWRCB is following the Court of Appeal's guidance.

Comment: [Page VII-7] The draft environmental report does not clearly specify whether the increase in Sacramento River Basin storage is a result of reduced exports by the CVP and the SWP, increased export of San Joaquin River flows during the spring and fall, changes in project operations as a result of the winter-run biological opinion, or a combination of all three. To the extent that Sacramento River Basin storage is increased as a result of CVP and SWP export of the additional San Joaquin River flows, the projects alone must be held responsible for providing the flows necessary to permit export pumping and additional flows to offset and mitigate project impacts (SJTA-2).

Response: The water supply analysis consists of three components: export reductions, Sacramento River Basin storage changes, and San Joaquin River Basin impacts. These components are interrelated; each one impacts the others, and together they constitute the water supply impacts of the plan. Furthermore, water supply impacts cannot be ascribed to individual requirements; they are caused by the response of project operations to all of the new requirements. Even if such a determination were possible, it is not the SWRCB's intent to assign responsibility for mitigation during this water quality control plan review process. Lastly, it should be noted that the final DWRSIM analysis of the plan showed a decrease in Sacramento River Basin storage. This result is incorporated into the environmental report.

Comment: [Page VII-10] The two alternatives for analyzing San Joaquin River Basin impact are basically the same. There should be no water supply impacts to anyone other than the CVP and the SWP. The upstream projects cannot be held responsible for providing flows for the benefit of the export projects. The CVP and the SWP alone must provide the flows necessary to permit export pumping. The most important and efficient way to reduce the amount of water necessary to maintain water quality in the southern Delta is to remove the salt discharged to the San Joaquin River. It is improper and illegal to allocate responsibility for water quality control and excess fish flows to non-CVP and SWP reservoirs (SJTA-2).

Response: The purpose of the flow objectives on the lower San Joaquin River is to improve habitat conditions in the river, not to provide flow for the benefit of the export projects.

The SWRCB is not considering allocation of flows at this time. The water supply impact analysis for the San Joaquin River Basin assumes two limiting cases in order to describe, in general terms, the overall impact of the plan without specifically allocating responsibility to any particular water users.

Comment: [Page VII-11] The term "average annual additional water" is inconsistent between the two sections on this page. Is "average annual additional water" the amount of water needed from New Melones to meet the Vernalis flow requirement under the preferred alternative as compared to the base case or does it refer to the shortage on the San Joaquin River after attempting to meet the San Joaquin River flow requirement from New Melones? (SJTA-2)

Response: "Average annual additional water," as used in the first paragraph to describe impacts on New Melones Reservoir carryover storage, is the additional water in excess of New Melones releases required under the preferred alternative. The same term, as used to describe San Joaquin River flow, means the additional river flow required from the base case to meet the standards under the preferred alternative.

For clarification, the term "average annual additional flows in excess of New Melones releases" is used to describe impacts on New Melones carryover storage, and the term "average annual additional flow from the base case" is used to describe impacts on San Joaquin River flow.

Comment: [Pages V-11 and V-13] The narrative description of the potential effects to San Joaquin River flows on page VII-11 and the graph on page VII-13 illustrates the potential for masking impacts that will arise when averaging within year types. Figure VII-10 shows that during the above normal years of the simulation, the average additional San Joaquin River flow will amount to 483 TAF due to the proposed standards. However, as stated in the narrative description, the largest single year of modeled additional flow is 1963, when 897 TAF of additional release was required. There will be significant differences in impacts within year types associated with the extremes of the range of flows. We recommend that the depiction of the range of potential impacts be better illustrated and described. (SFPUC-2)

Response: Additional descriptions of the ranges of potential impacts for exports and San Joaquin River flows under the preferred alternative have been added to the appropriate sections in Chapter VII of the environmental report. For each water year type, the minimum, average, and maximum impacts of the preferred alternative on exports and San Joaquin River flows are discussed on pages VII-6 and VII-14, respectively, in the final environmental report.

Comment: [Page VII-11] This section discusses average annual decreases in New Melones storage and average annual needs for increases in San Joaquin River water in order to comply with the objectives. There appears to be no analysis of the actual operation of the

dams and how one year's depletion affects the next year's ability to meet any requirements, much less the flow objectives. (SDWA-2)

Response: Actual operation of the dams will depend on the allocation of responsibility among water users in the basin, the water quality objectives, and management decisions by reservoir operators. Allocation of responsibility among water users will be established during the water right proceeding. Management decisions cannot be foreseen at this time; thus, a detailed analysis of New Melones operation would be theoretical at this time. Reservoir operations are simulated over the 71-year hydrology in DWRSIM, representing the best available method of analyzing the water supply impacts of the plan. This simulation accounts for the effect of one year's depletion on the next year's ability to meet requirements.

Comment: [Page VII-11, fourth paragraph] The draft environmental report states that additional Vernalis flows of 0.1 TAF, 15.4 TAF, and 8.4 TAF are provided in January, July, and August, respectively. There is no information as to why such flows are provided. If the model assumes they are needed for water quality purposes, that should be stated. (SEWD-2)

Response: Additional San Joaquin River flows provided in February through June under the requirements of the plan also incidentally provide water for meeting the San Joaquin River salinity objectives in these months. Thus, the balance of the 70 TAF of New Melones set aside for salinity control is shifted to later in the year. This shift is responsible for the additional San Joaquin River flows seen in July and August. The additional flow in January is minor. This explanation has been included in the environmental report.

Comment: [Pages VII-14 and VIII-1] The draft environmental report identifies neither impacts nor mitigation requirements. (SEWD-2)

Response: The impacts and mitigation measures the commenter references apply to an action that the SWRCB will not take when it adopts the plan. While the plan sets objectives, it is not the vehicle to implement these objectives. A water right decision in the water right phase of these proceedings will establish the final implementation measures after the SWRCB has duly considered potential effects on water right holders. That decision will be accompanied by appropriate further environmental documentation. The commenter in effect asks that the SWRCB ignore the guidance of the Court of Appeal in United States v. SWRCB, cited above. In that case the Court of Appeal directed the SWRCB to adopt the plan first and then consider implementation in a later proceeding. The purpose of this guidance was to ensure that the objectives in the plan were not driven by the effects on the SWP and the CVP.

D. San Luis Reservoir Storage

Comment: [Page VII-17, Figure VII-15] The figure shows that San Luis Reservoir will be filled over half of the time by the end of March. Some of this water should be dedicated for discharge to the San Joaquin River to meet the current and future federal obligation for fish flows and water quality. (SJTA-2)

Response: This option will be considered by the SWRCB during the water rights proceeding to implement the plan. The SWRCB is not considering allocation of responsibility at this time. Allocation of this responsibility among the water right holders in the watershed will be the subject of a water rights proceeding scheduled to commence following adoption of the plan.

Comment: The impacts to existing reservoirs are lumped together and not identified. (SARA-1)

Response: Impacts to individual reservoirs cannot be evaluated until the water rights phase when a specific water allocation methodology is being evaluated. The CVP and the SWP were used as surrogates for the total reservoir impact to the system.

CHAPTER VIII. ENVIRONMENTAL EFFECTS OF PREFERRED ALTERNATIVE

Comment: [Page VIII-1, para. 2] There should be no inference that water supply impacts will be distributed to anyone other than the CVP and the SWP. For the three-year period before the plan is implemented, the impacts described should be limited to those areas dependent upon water from New Melones. The impacts of any proposed allocation scheme should not be evaluated until the water rights phase. An EIR must be prepared before reallocating water to benefit public trust resources in the Bay-Delta Estuary. (SJTA-2)

Response: The analysis in the environmental report presents a programmatic view of the impacts of the plan when it is implemented after the water rights phase. Since the plan does not require that New Melones be used to meet the new objectives before then, the impacts of any current implementation by the CVP of similar standards need not be analyzed in the environmental report. The SWRCB will prepare appropriate environmental documentation in connection with the water rights phase of the proceedings.

Comment: [Page VIII-1, para. 2] The following comments express concerns regarding the use of the word "speculative" in characterizing impacts of the plan.

1. The use of the term "speculative" could be misconstrued to suggest that the plan and environmental report are in some way premature and/or incomplete, which they clearly are not. To avoid this confusion, modification to the existing language is suggested. (JCWU-1)

2. The NID is concerned that the draft environmental report be designed to make the plan withstand legal challenge. It disagrees with the Joint Agencies recommendation that the language regarding the "speculative" nature of the impacts be deleted and replaced. This recommendation by CUWA/Ag is an attempt to put words in the mouth of the SWRCB staff. (NID-2)

Response: It is correct to say that certain impacts of implementation are speculative in nature. Until the SWRCB has developed the water right allocation alternatives, it cannot analyze their effects. The SWRCB will conduct appropriate environmental analysis of the effects of implementing the objectives before the implementation measures are imposed. CEQA does not require an agency to speculate as to the effects of an action. (14 Cal. Code Regs. §15145.) Here, the SWRCB is using a programmatic document; the current action will not incur the environmental effects. A future environmental document will analyze these effects when alternative actions have been developed. Under this circumstance, it is not necessary to guess as to the exact effects of the future action. In any event, the term "speculative" has been deleted. Further clarification is added to the paragraph by stating that the report need not explain in detail the as-yet unknown effects of implementing the objectives, since the SWRCB will conduct appropriate environmental analysis of the effects of implementing the objectives before the implementation measures are imposed.

Comment: [Pages VIII-1 et seq.] The draft environmental report tries to justify a preselected action. The draft environmental report should contain discussions of various alternatives that meet National Environmental Policy Act (NEPA) and CEQA requirements. (SARA-1)

Response: The environmental report discusses the alternatives in Chapter XI. This discussion meets the requirements of CEQA.

Comment: What is the baseline condition for NEPA or CEQA? This baseline condition must be carefully identified because it becomes the condition against which future actions and alternatives are measured. The baseline conditions must include the best restrictions of D-1485, draft D-1530 [sic], and the restrictions of the federal ESA biological opinions. (SARA-1)

Response: The reference conditions for the environmental analysis are described at the beginning of Chapter VIII as the actual conditions that existed in the Estuary from water year 1984 through 1992. Actual conditions are the appropriate reference condition to use for an environmental analysis.

A different base condition is used in Chapter VII for the water supply analysis. The water supply base conditions are 1995 level of demand and D-1485 regulatory requirements. This base case was used because the exporters were anticipating these deliveries. However, the water supply base case would not be appropriate for the environmental analysis because the Bay-Delta environment never experienced this level of exports.

Comment: [Page VIII-1, para. 3] The 1984-1992 reference period used for the environmental analysis is totally inappropriate. It is not representative of conditions on the San Joaquin River. The reference period has six critical years in a row, and the one wet year was a subnormal snow melt year where most of the runoff occurred in one month. The stated purpose for using this reference period, instead of the 1922-1992 period used for the hydrological analysis, is because the Bay-Delta never actually experienced those modeled conditions. The Bay-Delta environment never actually experienced the conditions of the preferred alternative to which the base case is being compared. It is never appropriate to evaluate an alternative by comparing modeled values with observed values; modeled results should always be compared with modeled results. (SJTA-2)

Response: The reference condition for an environmental analysis should always reflect actual conditions experienced by the environment, not modeled conditions. The recent historical period of 1984-1992 was chosen for the environmental analysis because it contains enough years to capture some of the biological and hydrological variability in the Estuary, including the extended drought of 1987 through 1992. For some parameters, such as exports, in the analysis, modeled conditions of the preferred alternative are compared to actual historical operations because, in these cases, the models used are the only available tools to predict conditions under the preferred alternative for the environmental analysis. The modeled-historical data comparisons are necessary for this purpose, albeit results must be interpreted with care and full consideration of the modeled conditions. Even for the case of exports, however, actual conditions were compared to the standards to illustrate how project operations would be changed under the plan.

A. Effects in the Estuary

Comment: [Page VIII-2, 2nd full para., Pages VIII-3 and VIII-4] References in the Delta Outflow section to the "G model" developed by the CCWD are misleading. A more accurate reference would be to the CCWD's additional outflow model, which was based on the G model. (JCWU-1)

Response: The text in this chapter and in Chapter VII has been changed to reflect the comment.

Comment: [Figures VIII-7 through VIII-10] The figures define exports as combined pumping from Banks, Tracy, and Contra Costa pumping plants. To be consistent with the Principles for Agreement, exports should apply to diversions from Tracy and Banks only. (JCWU-1)

Response: Since export limits in the plan are applicable to Banks and Tracy exports only, these figures should consider only these two components, and not diversions by the CCWD, North Bay, and City of Vallejo. Figures VIII-7 through VIII-10 and the discussion in the Delta Outflow section have been revised accordingly. Additionally, language has been

inserted in the Delta Exports section to clarify the definition of the term "exports" as used in the environmental impact analysis of Chapter VIII.

Comment: [Page VIII-9, last para.] There is a discussion of the projected need for additional flows to meet the salinity standards at Vernalis. It is not clear whether the analysis of the average historical EC at Vernalis from 1984 through 1992 considers the quantity of water released from New Melones to create the average historical EC used. (SEWD-2)

Response: The discussion compares salinity at Vernalis from 1984 to 1992 with the objectives at Vernalis. The USBR operated New Melones during this period to achieve the salinity objective of 500 parts per million total dissolved solids at Vernalis, when feasible. The text has been amended to clarify this point.

Comment: The following comments deal with compliance with salinity objectives in the south and central Delta.

1. We are concerned about the potential impacts of Delta Cross Channel closures and increased San Joaquin River flows on water quality in the central Delta. It is likely that these actions in combination will result in San Joaquin River water quality, which is grossly impacted by San Joaquin Valley drainage, adversely impacting water quality in some channels of the central Delta. Operation studies conducted to test the different Bay-Delta scenarios under consideration did not include resulting water quality at measuring stations within the central Delta. The draft environmental report and the SWRCB deliberations on the draft plan cannot be complete without such information for all months. (CDWA-1)

2. The discussion of the modeling assumptions contained on page VII-4 clearly acknowledges that full compliance with the southern Delta agricultural requirements (through fresh water releases from upstream projects) has not been evaluated. (SFPUC-2)

3. On page VIII-9, there is a description of how the flow objectives will result in a failure to meet salinity standards at Vernalis. The environmental report should examine how alterations in the flow objectives may impact this problem, unless it is assumed that the fish and wildlife objectives are more important beneficial uses than the agricultural ones. This issue cannot be put off as suggested on page VIII-50 because the plan requires the USBR to meet these objectives during the next three years. (SDWA-2)

4. Meeting the Prisoners Point standard under the plan may not be possible. Although Prisoners Point is upstream from the mouth of the Mokelumne River, the transfer of water through the central Delta to the export pumps has historically kept salinity below the 0.44 mmhos/cm EC objective. With the Delta Cross Channel closed and

export restricted, water quality in the Prisoners Point vicinity may reflect saltier San Joaquin River conditions instead of Mokelumne River conditions. This may be particularly true in two instances: (1) in April and May, outside the pulse flow period, when the San Joaquin River is managed to meet the 0.7 mmhos/cm EC agricultural standards; and (2) during the April 15-May 15 period when exports are restricted to an amount equal to 100 percent of the San Joaquin River flow at Vernalis, especially without the Old River barrier in place. (SJTA-2)

5. The draft environmental report states in Chapter VI that DWRSIM is not capable of analyzing the water supply impacts of water quality objectives for the interior stations in the southern Delta. Not only are the impacts of the preferred alternative speculative, not only do they use the CVP and SWP as surrogates, but even the models used are not capable of analyzing water supply impacts in critical areas of the Delta relating to the San Joaquin River. Water quality objectives should not be adopted when the impact of those objectives are not capable of being measured. (SEWD-2)

Response: The discussion on page VIII-9 of the draft environmental report compares historical salinity at Vernalis to the standards in the plan. This analysis shows that in some dry and critical years, compliance with the standards would require improvement in historical salinity conditions at Vernalis.

At the request of the SWRCB staff, the DWR analyzed the effect of the objectives on Delta salinity. The DWR Delta Simulation Model was used to estimate monthly average salinity for the period from water year 1987 through water year 1992 at ten stations in the Delta. Discussion of this analysis has been incorporated into Chapter VIII of the environmental report. A brief summary follows.

> Under the standards in the plan, salinity at central Delta stations (Jersey Point, San Andrea, and Prisoners Point) increase significantly during the November through January period when the Delta Cross Channel is closed the first half of each month. The increase persists into February when the Delta Cross Channel is closed continuously. The Terminous station shows similar increases but tends to lag by one month. Spring and summer salinity at Jersey Point, San Andrea, Prisoners Point, and Terminous is lower under the plan. The agricultural water quality standards are satisfied within the bounds of model accuracy for the central and northern Delta stations. Standards in the southern Delta are often exceeded, however, because DWRSIM was run using a 70 TAF cap on flows released to the San Joaquin River for water quality purposes. As a result, standard exceedences occur in dry and critical years during the April through August period when the standard is 0.7 mmhos/cm. Southern Delta water quality is only marginally affected by Delta Cross Channel operation. Most salinity differences in the southern Delta between the plan and the base hydrology are due to temporal differences in inflow and export magnitudes.

The draft plan does not envision that the salinity objectives in the south Delta will be achieved exclusively through freshwater releases; implementation of the objectives will be achieved through a combination of release of adequate flows and control of saline drainage. Therefore, full compliance through release of fresh water has not been evaluated.

As discussed elsewhere in this Response to Comments, the draft plan has been amended to state that the USBR intends to try to meet the flow objectives at Vernalis, as required in the biological opinion for Delta smelt, through releases from New Melones. The plan does not require the USBR to meet these flows.

Comment: [Page VIII-15] The discussion indicates that the plan is intended to benefit many levels of the aquatic ecosystem of the Bay-Delta, so that conditions are improved for a broad range of species utilizing the system. The discussion should acknowledge, however, that not all species will receive the same level of protection, and should include a statement that potential adverse impacts on upstream fisheries resources will need to be assessed based on the results of monitoring. (JCWU-1)

Response: The text has been revised to incorporate the comment.

Comment: [Page VIII-20, last para., 4th sentence] The subject sentence states that the derivation of the recommended flows is not based on the results of habitat or population studies, rather on scientific judgement. This statement is an example of how these proposed standards are lacking in sound scientific analysis and are without any scientific or biological justification. (SJTA-2)

Response: The objectives require minimum Delta outflow in July and August. The justification for the increased outflows include: (1) general improved habitat conditions; (2) transport of eggs and larvae out of the river and Delta areas and dispersal into downstream estuarine habitats; and (3) nutrient transport into Suisun and Honker bays resulting in increased phytoplankton production. Some of the proposed standards are developed without experimental data to support the specific standard because no such data are available. These objectives are developed based on the judgement of a number of participants in the SWRCB's proceedings.

The plan calls for a monitoring and special studies program which will provide more information on the factors affecting aquatic habitat in the Delta, as well as feedback on the effectiveness of the proposed standards. At the end of three years, the standards in the plan will be reviewed and modified, if necessary.

Comment: [Page VIII-32] Station "S-75" should be labeled "S-35" in the table of compliance monitoring stations. (DWR-2)

Response: The correction has been made.

Comment: [Page VIII-32, para. 2] The draft environmental report indicates that the subsequent discussion of the environmental effects of the standards on Suisun Marsh is divided into four sections: background, proposed standards, salinity conditions, and Suisun Marsh biota. There is no section describing impacts of the plan on Suisun Marsh. (DWR-2)

Response: The draft environmental report has been revised to reflect that three sections (background, proposed standards, and salinity conditions) are discussed. A discussion of threatened and endangered Suisun Marsh biota is provided in Chapter XIII.

Comment: [Page VIII-33, Figure VIII-32] Station S-35 is incorrectly located on the map. (DWR-2)

Response: The correction has been made.

Comment: [Page VIII-34, 1st full para.] The last sentence states that the DWR and the USBR are still developing a program to consistently achieve the 1978 Delta Plan western marsh standards, and they have not yet met the western marsh standards during the deficiency periods defined in the SMPA. This sentence should be revised to reflect that the 1978 Delta Plan western marsh standards were not in effect. (DWR-2)

Response: The sentence has been clarified, as requested.

Comment: [Page VIII-34, para. 4, 1st sentence] The sentence states that in 1987 the DWR requested that the water quality objectives in the SMPA be adopted as the marsh standards. The first line of the fifth paragraph on page VIII-34 states that the same request was made again by the DWR during the SWRCB's current proceeding. The subject requests were made, not only by the DWR, but also by the USBR, DFG, and SRCD. (DWR-2)

Response: The correction has been made.

Comment: [Page VIII-34, para. 4, last sentence] The sentence states that the DWR and the USBR plan to complete a Suisun Marsh Biological Assessment in 1996. This biological assessment is no longer relevant. Portions of the study that are relevant were submitted to the SWRCB in December 1994. The major remaining elements of the study plan no longer reflect current water management of the Estuary. The SWRCB has called for a Suisun Marsh Ecological Work Group to evaluate beneficial uses and water quality objectives for the Suisun Marsh ecosystem. This work group is the appropriate forum for future evaluations of water quality standards in Suisun Marsh. (DWR-2)

Response: The sentence has been amended to reflect the comment.

Comment: [Page VIII-35, para. 2, 7th sentence] The sentence states that there should be a natural gradient of increasing salinity from east to west which is not reflected in the existing standards but is included in this proposal. This should be revised to read: "Also there

should be a natural gradient of increasing salinity from east to west which is not reflected in the existing standards, but is included in this proposal when deficiency period standards are in effect." (DWR-2)

Response: The recommended clarification has been made.

Comment: [Page VIII-36, first para.] The Suisun Marsh Biological Assessment study plan approved by SWRCB staff addressed implementation of SMPA standards throughout Suisun Marsh under D-1485 hydrologic conditions. If a biological assessment is needed for future standards proposed by the Suisun Marsh Ecological Work Group, a new study plan will be necessary. (DWR-2)

Response: The discussion has been amended to state that, since the Suisun Marsh Biological Assessment study plan addresses implementation of SMPA standards under D-1485 conditions, a new study plan may be necessary for future standards.

Comment: [Page VIII-36, para. 3] A sentence should be inserted at the end of the paragraph stating that creek flows into northwestern Suisun Marsh are regulated by the management of reservoirs on Green Valley and Suisun Creek watersheds and are affected by urban development in the area. (DWR-2)

Response: The recommended language has been inserted.

Comment: [Page VIII-37, 1st full para.] The following sentence should be added at the end of this paragraph.

> "Salinity in northwestern Marsh sloughs (e.g., S-97) is primarily affected by surface water inflows from local creeks and drainage water from the managed wetlands; and is relatively unaffected by Delta outflow and Suisun Marsh Salinity Control Gates operations." (DWR-2)

Response: The statement has been added to this paragraph that salinity in northwestern Marsh sloughs is relatively unaffected by Suisun Marsh Salinity Control Gate operation. The statement regarding Delta outflow has not been added because Delta outflow affects salinity in this area.

Comment: [Page VIII-37, last para.] The statement in this paragraph that the principal environmental concern regarding the marsh is conversion of existing brackish marsh to salt marsh should be augmented by the statement that fish and wildlife agencies have also expressed concern about conversion of brackish marsh to freshwater marsh in efforts to meet internal Suisun Marsh standards. (DWR-2)

Response: The recommended statement has been inserted.

Comment: The Old River Barrier should be discussed in Chapter VIII and V. (SFPUC-1)

Response: The Old River Barrier is recommended by the SWRCB in the water quality control plan, but it is not a water quality objective and is not discussed in detail. The effect of the Old River barrier on salmon smolt survival is discussed in section A.4.b of Chapter VIII and section E of Chapter VI.

Comment: [Page VIII-50, 1st full para.] The draft environmental report states that increased flows may reduce the capacity to provide dilution water from New Melones for salinity control purposes at Vernalis, as required by D-1422, depending on how the responsibility to meet the fish and wildlife objectives are allocated. This conclusion is minimized for two reasons: (1) for the interim period, this will certainly happen because New Melones will provide all flows required, as provided in the plan; and (2) the artificial 70 TAF cap is unwarranted. (SEWD-2)

Response: The SWRCB is not requiring the USBR to meet the flow objectives prior to adoption of a water right decision. This requirement is being imposed by the USFWS under the authority of the federal ESA. The USBR is likely to meet these flow requirements through releases from New Melones Reservoir. The 70 TAF cap is warranted because the SWRCB believes that salinity control measures will reduce the need for releases of dilution water from New Melones. During the water rights phase, the SWRCB will consider both the responsibility and the capacity of individual water right holders to meet the objectives.

B. Effects in Upstream Areas

Comment: [Page VIII-50] Why does the draft environmental report analyze the impacts of the objectives based upon an assumed allocation if the SWRCB is delaying the issue of flow allocation until the water rights phase? (SJTA-2)

Response: The draft environmental report analyzes these effects in only a general, programmatic fashion, for the purpose of analyzing the potential effects of adopting these objectives at the earliest possible point in the proceedings. Additional analysis will be provided in connection with the water rights phase when the exact implementation actions are known.

Comment: [Page VIII-51, para. 4] The term "upstream area" is defined as the Sacramento Valley and the eastside San Joaquin Valley. The definition excludes the Friant service area, the San Joaquin River exchange contractors, and others who use the waters of the San Joaquin River. If the SWRCB insists on including the upstream areas in its analysis of the impacts of the plan, then it must include all users, not just select groups. (SJTA-2)

Response: The term "upstream area" is broadly defined in the environmental report and is meant to include all users of San Joaquin and Sacramento river water before it enters the Delta. It is not the intent of the SWRCB to infer in the environmental report distribution or

exclusion of water supply impacts to any party. The discussion of impacts is meant to be of a general nature, encompassing upstream, in-Delta, and export area impacts.

Comment: [Page VIII-51, last para.] Why isn't Friant Reservoir included as part of the San Joaquin Valley storage? The operation of this reservoir results in 2.75 to 3.0 MAF of Delta depletion. Impacts of providing exchange contract water (about 1 MAF) extends from the Delta upstream to the upper Sacramento, American, and Trinity rivers. The Stanislaus River will be impacted by the operation of New Melones Reservoir as it is manipulated to provide water to the southern Delta and lower San Joaquin River in an effort to support fish habitat beneficial uses and water for export. (SARA-1)

Response: In the water supply impact analysis and in DWRSIM modeling, it was assumed that all water in the San Joaquin River Basin necessary to meet the requirements of the plan would be released from New Melones. Thus, the impact on storage in New Melones represents the overall modeled storage impact for the San Joaquin River Basin, including any impact that would be attributable to Friant under real operation. The actual responsibility to meet the objectives will be established during the water rights phase.

Comment: The impacts to tributary systems and their resources, uses, and values are not identified. The Bay-Delta and the rivers are an integral part of the same system, and the Bay-Delta cannot be separated from its tributary ecosystems without impacts that will spread throughout the entire system. (SARA-1)

Response: The impacts to tributary systems are dependent on the water allocation decision that will be made during the water rights phase of the proceedings. At that time an appropriate environmental document will be prepared that analyzes the effect on tributary systems of the allocation decision.

Comment: Tributary flow regimes needed to conserve, restore, and protect fish resources are not identified. The Delta and the public trust will suffer until all streams contribute their fair share of the water required to meet environmental needs. (SARA-1)

Response: The draft plan establishes flow requirements and operational restrictions in the Bay-Delta necessary to achieve reasonable protection for all of the uses of Bay-Delta waters. Tributary flow regimes are not a subject of this draft plan.

Comment: [Page VIII-52, last two para.] According to the environmental report, there are no Sacramento River impacts because the required flows are similar to the base flows. For the San Joaquin River, the Vernalis flow requirements result in substantial impacts to San Joaquin River flows. In fact, under current conditions, the proposed standards could not be met even in wet years. (SJTA-2)

Response: The purpose of the plan is to establish water quality control measures which contribute to the protection of beneficial uses in the Estuary. Thus, the plan establishes

reasonable controls on factors which have been identified as likely contributors to the declines in aquatic resources, including low San Joaquin River flows. The SWRCB agrees that the flow objectives on the San Joaquin River can cause substantial impacts in some years. However, the statement that the flow objectives cannot be met even in wet years is incorrect. The objectives will be met this year by unregulated flow.

Comment: [Page VIII-58, para. 1] Regarding the release of the 28 TAF pulse flow in October, we believe the analysis in the draft environmental report to be in error concerning the lack of a requirement to provide the pulse flow in any year in the reference period. It appears from the data illustrated in Figure VIII-51 that the full 28 TAF of additional release would have been required in at least some of the years. If we have correctly interpreted the proposed standards, the 28 TAF pulse is required to provide a 2,000 cfs monthly flow at Vernalis. (SFPUC-2)

Response: The 28 TAF is required, as necessary to bring flows in the San Joaquin River up to a monthly average of 2,000 cfs in October, except for a critical year following a critical year. Under the San Joaquin River Basin hydrologic classification, water years 1987 through 1992 are designated as critical. From 1988 through 1992, October flows were less than 2,000 cfs. However, the 28 TAF was not required in any of these years because each of these critical years follows a critical year.

Comment: [Page VIII-58, para. 2] The draft environmental report states that water users in upstream areas will be required to contribute an unknown amount of water to meet the Bay-Delta standards. The draft report then refers the reader to Chapter XII for a quantitative assumption regarding the allocation of water supply impacts in the eastside San Joaquin Valley. Chapter XII has no discussion. There is no explanation of the methods used by the SWRCB to allocate responsibility among the upstream users. We are left to speculate as to how the SWRCB may have assigned responsibility.

Response: The sentence that refers the reader to Chapter XII for a quantitative assumption regarding the allocation of water supply impacts has been deleted. The methodology for allocating water supply impacts in the eastside San Joaquin Valley is described below. The methodology was developed in order to conduct an economic analysis. No inference should be made regarding allocation of responsibility in the water right proceeding based on this methodology.

The additional water above base flows required by the objectives on the San Joaquin River was divided among the three tributaries based on the percentage of the unimpaired flow originating from each of the tributaries (Stanislaus - 28.2%, Tuolumne - 47.2%, and Merced - 24.6%). Water right holders with storage capacity in the basin in excess of 100 TAF were then assigned responsibility for flows in each tributary based on their percentage of the storage capacity in the tributary. The responsibility of the City of San Francisco was then removed and assigned to the other water right holders in the basin based on the percentage of their responsibility before the City of San Francisco was removed. The City

of San Francisco's responsibility was removed because it was assumed that high value urban water would be replaced by water purchases within the basin. The following table lists the final percent allocations.

Tributary	Owner	Reservoir	Capacity (acre-feet)	Responsibility (including SF)	Responsibility (excluding SF)
Stanislaus	Calaveras Co.	Spicer Mdws	184,300	0.0183	0.0206
28.2%	Oakdale & San Joaquin	Donnels Lake	64,700	0.0064	0.0072
		Tulloch	68,400	0.0068	0.0077
		Beardsley	98,500	0.0098	0.0110
	PG&E	Strawberry	18,300	0.0018	0.0020
	USBR	New Melones	2,400,000	0.2388	0.2689
Subtotal			2,834,200	0.282	0.318
Tuolumne	TID/MID	New Don Pedro	2,030,000	0.3475	0.3913
		Turlock lake	45,000		
47.2%		Modesto lake	28,000	0.0077	0.0087
				0.0048	0.0054
		Lake Lloyd	268,000		
	San Francisco	Hetch Hetchy	360,400	0.0459	0
		Lake Eleanor	26,100	0.0617	0
				0.0045	0
Subtotal			2,757,500	0.472	0.405
Merced	Merced I.D.	Lake McClure	1,024,000	0.2460	0.2770
24.6 %					
Subtotal			1,024,000	0.246	0.277
Total			6,615,700	1	1

Comment: [Page VIII-58, para.3] The draft environmental report states that if the SWRCB requires upstream water users to provide some of the water necessary to meet these new standards, both crop shifts and land retirement are likely. This conclusion is minimized for two reasons: (1) the plan provides that upstream water users will provide all the water necessary to meet the San Joaquin River flow objectives in the interim period; and (2) the impact on groundwater overdraft is not discussed. (SEWD-2)

Response: The SWRCB is not requiring the USBR to meet the flow objectives prior to adoption of a water right decision. This requirement is being imposed by the USFWS under the authority of the federal ESA. The USBR is likely to meet these flow requirements through releases from New Melones Reservoir. The impact of groundwater overdraft is discussed in section C of Chapter VIII (Effects in Export Areas). The text in section B of Chapter VIII (Effects in Upstream Areas) has been augmented with the statement that similar groundwater effects are expected in upstream areas if water supplies are curtailed in these areas.

Comment: [Page VIII-61, 1st full para.] The draft environmental report states that reservoir levels are likely to decline, but the impacts cannot be determined because reservoir levels will be dependent upon management decisions made by reservoir operators, i.e. reducing storage in reservoirs or limiting deliveries to customers. This lack of analysis merely masks the fact that if upstream areas have to make substantial flow contributions, recreation will be significantly affected. (SJTA-2)

Response: Management decisions by reservoir operators are primary factors affecting actual operation of reservoirs. The objectives do not address these management decisions and there is no way to quantifiably predict them. Therefore, there is no means by which these decisions can be foreseen; analysis of their impacts is not feasible at this time. In DWRSIM, reservoir operations are simulated over the 71-year hydrology, representing the best available method of analyzing the water supply impacts of the plan. The draft environmental report recognizes, in the same paragraph cited by the commenter, that "lower reservoir levels can have a significant impact on recreational activities".

Comment: [Page VIII-62] There is concern expressed about pumping groundwater and its resultant problems. Overdrafting the groundwater and requesting a supplemental surface water supply is a common tactic used by water agencies to justify more water development. (SARA-1)

Response: The purpose of this discussion is to identify the probable response of water users to a reduction in surface water supplies. The SWRCB believes that increased reliance on groundwater is a probable response.

Comment: [Page VIII-63] As Table VIII-4 illustrates, the preferred alternative will exacerbate the current groundwater overdraft situation in the San Joaquin Valley. Reduced surface water supplies will probably be replaced with groundwater, where available, and the overdraft will increase the magnitude of the water supply impact. The discussion of water supply impacts should also state that groundwater overdraft will increase significantly under the preferred alternative. (SJTA-2)

Response: The discussion in Chapter VIII states that the worst case estimate of increased groundwater pumping in the short-term is that all of the reduced surface water supplies from the Delta will be replaced by increased groundwater pumping. This short-term increase is an

environmental effect that occurs because water users are replacing lost surface water supplies in order to decrease the magnitude of the water supply impact. Therefore, the groundwater overdraft belongs in the environmental effects section of the report, not the water supply impact section.

C. Effects in Upstream Areas

Comment: [Page VIII-62, 3rd full para, last sentence] The draft environmental report states that the average amount of groundwater overdraft in California is about 1.0 MAF per year (based on a draft version of Bulletin 160-93). In the final Bulletin 160-93, the amount was revised to 1.3 MAF per year. (DWR-2)

Response: The correction has been made, and the citation to the draft Bulletin 160-93 has been updated to the final Bulletin 160-93.

Comment: [Page VIII-65, 1st partial sentence] The draft environmental report states that "...but the majority of the reductions would be borne by export areas if the CVP and the SWP are largely responsible for meeting the standards". This statement is inaccurate. On an interim basis, the draft plan requires that all reductions be borne by upstream users Stockton East Water District and Central San Joaquin Water Conservation District for the San Joaquin River flows. In addition, this statement fails to acknowledge that there are area of origin users who are CVP and SWP contractors. (SEWD-2)

Response: As discussed elsewhere in this document, the plan does not allocate responsibility to meet the requirements. Responsibility will be determined in the water rights proceeding following adoption of the plan. The biological opinion for Delta smelt requires that the USBR meet San Joaquin River flow requirements.

The statement has been amended to state that, if the CVP and the SWP are held largely responsible for meeting the standards, the majority of the reductions would be borne by the projects' contractors.

E. Irreversible or Irretrievable Commitment of Resources

Comment: [Page VIII-73] The text in this section identifies certain irreversible commitments of resources, but does not indicate why these commitments are justified. The following language is suggested to address this point. (JCWU-1)

> These commitments of resources are justified in light of the enhanced protection that the plan will provide to aquatic habitat-related beneficial uses in the Estuary. If the plan had not been adopted and implemented, there may be further declines in fresh- and brackish-water aquatic and terrestrial habitats in the Delta, resulting in the potential listing of additional species under the federal and State ESAs.

Response: The recommended clarification has been added to this section.

F. Growth-Inducing Effects

Comment: [Page VIII-73, last para., 1st sentence] The opening sentence of this section references potential impacts to areas served by the CVP and the SWP. If the proposed standards are met also by entities other than the two projects, those areas could also experience similar impacts. The draft environmental report should be revised to broaden the areas of potential impacts beyond the CVP and SWP service areas. (SFPUC-2)

Response: The sentence has been revised to state that the standards will reduce the amount of water available to water users in areas served by the CVP, the SWP, and other parties charged by the SWRCB in the upcoming water rights proceeding with responsibility for meeting the requirements of the plan.

I. Cumulative Impacts

Comment: [Page VIII-77, 1st full para., 2nd sentence] The sentence states that requirements under the federal ESA are not incorporated into the base case analysis. This is inconsistent with the base case assumptions on page VII-4 which indicated that the base case for this analysis is D-1485 conditions, modified to account for upstream requirements on the Sacramento River imposed by the NMFS to protect winter-run chinook salmon. (SEWD-2)

Response: The base case is D-1485 conditions, modified to account for upstream requirements on the Sacramento River imposed by the NMFS to protect winter-run chinook salmon. However, this section has been completely rewritten and the base case discussion is no longer included.

Comment: [Page VIII-78, last para.] Reference "MWD 1993" is listed in the literature cited section of Chapter VIII as testimony from the D-1631 proceedings. This citation is a typographical error and should be changed to "D-1630". (JCWU)

Response: The cited reference refers to MWD testimony during the proceedings of Mono Lake Water Right Decision 1631. The reference to D-1631 is correct.

Comment: [Page VIII-75 to VIII-79] The following comments were received concerning additional cumulative impacts not discussed in the draft environmental report.

1. The cumulative impacts section should include the current FERC proceeding for the lower Tuolumne River. The Plan and the FERC proceeding could have significant individual and collective water supply ramifications to non-project entities. (SFPUC-2)

2. This cumulative impacts section should include a discussion of pending FERC decisions on the Mokelumne and Tuolumne rivers and the pending SWRCB water right decision on the Yuba River. (SJTA-2)

Response: The FERC proceedings and other SWRCB water right proceedings, in combination with implementation of the plan, could have a cumulative impact on some projects in the Central Valley. Therefore, these proceedings are added to the environmental report.

CHAPTER IX. RECOMMENDATIONS TO OTHER AGENCIES

(All comments regarding recommendations to other agencies are included in Part I of this Response to Comments.)

CHAPTER X. MITIGATION AND UNAVOIDABLE SIGNIFICANT IMPACTS

Comment: The draft environmental report identifies various impacts of the draft plan and lists mitigation measures or other recommendations that have been identified to address these impacts. The document would convey this information more effectively if the information regarding impacts and mitigation measures were consolidated and provided in summary form. It would be helpful if Chapter X contained a table summarizing the following: (1) each potentially significant impact of the plan; (2) mitigation measures, if any; and (3) whether the impact would remain significant if the mitigation measures were implemented. (JCWU-1)

Response: Chapter XIV provides a summary of significant impacts. Chapter X is dedicated to mitigation measures. The range of possible mitigation measures are summarized in the introduction to Chapter X, and a more detailed discussion is provided in the subsequent text. As mentioned at the end of Chapter X, the SWRCB does not believe that the significant impacts, all of which are associated with reduced water supplies from the Delta, can be fully mitigated by the mitigation measures. The significant impacts are unavoidable. A table in Chapter X summarizing this information is unnecessary. The resolution adopting the plan will contain a summary of the information requested by the commenter.

Comment: [Page X-1, para. 1, 2nd sentence] The statement that mitigation measures under the SWRCB's regulatory authority cannot be imposed until a water right decision is made that implements the plan is an acknowledged deficiency in the environmental documentation. The SWRCB should complete the water right decision before adopting any water quality control plan, at least a plan which the USBR and other federal agencies can and will use to take away Westlands Water District Area I's water rights. (WWD AREA1-1, SEWD-2)

Response: This water quality control plan establishes objectives and a program of implementation. In accordance with Water Code section 13241, the program of implementation describes the nature of the actions which are needed to achieve the objectives, sets time schedules for actions, and describes the surveillance that will be needed

to determine compliance with the objectives. It does not, however, establish the enforceable requirements that will implement the objectives. Consequently, adoption of this plan will not have an immediate impact on the environment. Because further actions will be necessary before any impact occurs, mitigation measures are not required until this plan is implemented.

The commenter's contention that the SWRCB should complete the water right decision before adopting this plan is contrary to the guidance provided to the SWRCB by the Court of Appeal in United States v. State Water Resources Control Board (1986) 182 Cal.App.3d 82, 227 Cal.Rptr. 161, 180. The Court of Appeal stated that the SWRCB's 1978 actions combining its water rights and water quality proceedings for the Delta resulted in defects in the water quality objectives. These defects were caused when the SWRCB established objectives that protected Delta water quality only against the effects of the CVP and the SWP. As the Court of Appeal pointed out, the SWRCB is obligated to provide reasonable protection for the beneficial uses taking into account all competing demands for the water. Establishment of the objectives first, followed by implementation actions in a water right decision, avoids the defects cited by the court.

A. Conservation

Comment: [Page X-3] The discussion of agricultural water conservation should acknowledge that there are some agricultural districts in the State which do not benefit from all of the agricultural water conservation practices listed. Some districts practicing conjunctive use methods for recharging overdrafted groundwater basins with surface water discourage some of the listed actions such as lining of canals and mechanisms to decrease surface water use. (SEWD-2)

Response: The discussion and recommendations regarding agricultural water conservation in the environmental report are not intended to take precedence over planned conjunctive use programs. A sentence has been added to the recommendations in this section to clarify this intent.

There are some water districts in the State that encourage conjunctive use in agricultural areas. For example, during the SWRCB's draft D-1630 proceedings, the Madera Irrigation District testified that it uses imported water from the Fresno River and the upper San Joaquin River for direct crop irrigation and for percolation to the groundwater basin through natural channels and unlined distribution systems during periods when water availability exceeds demands. (WRINT-MAD-6,3) The problem with this approach is that such a program can result in inefficient use of water supplies during periods of critical need for other water users and for public trust resources unless the conjunctive use program is carefully planned.

Comment: Delta levee maintenance is critical to fresh water conservation in the Delta. Previous and current studies show that evaporation from flooded surfaces in the Delta uses

approximately two acre-feet per flooded acre more than if the same acre was farmed. (CDWA-1)

Response: There is no question that the existing Delta configuration, including levees, is critical for ensuring the continued capacity to export in the southern Delta. However, this chapter discusses additional activities that can be undertaken to mitigate for the loss of supplies from the Delta, not existing maintenance activities.

C. Water Transfers

Comment: [Page X-7] The discussion of water transfers should acknowledge that this solution is not available on a statewide basis. There are regions of the State which are physically isolated from water conveyance facilities and which cannot readily avail themselves of this mitigation measure. (SEWD-2)

Response: A sentence has been added to this section acknowledging that water transfers are not available on a statewide basis.

Comment: The discussion of water transfers fails to recognize that, though authorized under various statutes, most such transfers would still require a permit hearing to determine the impacts of the transfer on other water right holders. This becomes very important if the proposed transfer decreases return flow to the waterway. (SDWA-2)

Response: The discussion of water transfers notes that most transfers require SWRCB approval, and that this approval is dependent on either CEQA compliance for long-term transfers or a finding of no injury to any other legal user of water for short-term transfers.

D. Reclamation

Comment: [Page X-8] The draft environmental report urges all water users to maximize their production and use of reclaimed water. However, there have been concerns raised by and before the Delta Protection Commission that the Delta is an inappropriate location for release of treated wastewater. The Commission's adopted Plan includes a policy prohibiting deposition of wastewater or biosolids in the Primary Zone of the Delta. (DPC-1)

Response: The purpose of the recommendation is to encourage adequate consideration of reclamation projects. The SWRCB recognizes that reclamation may not be an appropriate option under all circumstances.

E. Mitigation Fund

Comment: [Page X-9] The Principles for Agreement calls for a financial commitment of roughly $60 million annually. Currently, there are a number of State and federal programs and funding mechanisms, such as the CVPIA's Restoration Fund that are focused on

protecting many of the same fish species and habitat as the draft plan. Before the SWRCB levies any new user fees or financial commitments upon anyone, the SWRCB should undertake an exhaustive review of current programs to determine if existing funds or programs could be redirected. (NCWA-1)

Response: The SWRCB presently has no plans to levy fees on water users in the Central Valley to fund the non-flow measures established in the Principles for Agreement. The environmental report recommends that the water users develop a legislative proposal to authorize a mitigation fund for the Delta. If such a proposal is developed, a review of current resources is likely to occur to ensure that the mitigation fund is necessary.

G. Offstream Storage Projects

Comment: [Page X-10] To provide a more consistent description of the status of the Los Vaqueros Project, we suggest substituting the last sentence in the discussion with the following: "The Los Vaqueros Reservoir Project, which will be used to improve water quality in the CCWD and provide emergency storage, has received all necessary environmental and water rights permits and currently is under construction. (JCWU-1)

Response: The text has been revised accordingly.

Comment: Delta Wetlands should be included in the environmental report as a major offstream storage project under consideration. (DELTAWET-1,2)

Response: Delta Wetlands is a major offstream storage project under consideration, and the project has been added to the environmental report.

Comment: CCRC Farms and Tuscany Research Institute, coapplicants to appropriate water in the Delta at Mandeville Island, join in the comments of Delta Wetlands and submit that their project at Mandeville Island should also be included in the environmental report as another project which can improve water supply reliability by providing offstream storage. (GALLERY-1)

Response: The Mandeville Island project is a major offstream project for which an application to appropriate water has been filed, and the project has been added to the environmental report.

Comment: We believe that the draft plan, in conjunction with other initiatives, establishes a minimum level of interim protection for biological resources under current conditions of storage and withdrawal capacity in the Bay-Delta system. Any significant changes in the ability to store or divert water from the Estuary, such as construction of the proposed Los Banos Grandes Reservoir, would necessitate review and revision of the requirements of the draft plan. Such changes should be considered under the identification and analysis of alternatives in the long-term process discussed in section J. (BISF-3)

Response: The long-term planning process is in the early stages of development, and the scope of the planning process is not yet known. However, the principal focus of the process will be to develop solutions to the Delta problems. A recommendation from the SWRCB at this time to expand the process to include consideration of offstream projects would be inappropriate.

The environmental report in support of the draft plan analyzed the impact of (1) projected CVP and SWP operations in the Delta with existing demands and storage facilities and (2) the impact of water transfers through the CVP and SWP facilities from July through October under the proposed objectives and current conditions of storage and withdrawal. Substantial changes in the modeled conditions may necessitate a review of the objectives during the triennial review process.

Comment: Since we are talking about limiting diversions in order to increase flows for beneficial purposes, we should also consider increasing storage to allow more flow and to allow an easier and more humane balancing of these interests. (Transcript-BFC)

Response: The SWRCB recognizes that enhanced water supply reliability in the future can be achieved, in part, by additional offstream storage. In Chapter X of the environmental report, the SWRCB encourages the DWR to evaluate the feasibility of the Los Banos Grandes project under the new regulatory conditions imposed by the plan and the MWD to move forward with its planned construction of Domenigoni Valley Reservoir.

I. Purchase of Delta Islands

Comment: The draft environmental report recommends an evaluation of the feasibility of purchasing Delta Islands and converting the land use to some function that would minimize subsidence and reduce water use. This issue should be addressed in more detail and should include a thorough discussion of the current scientific research on subsidence of peat soils, a definition of what peat soils would be subject to retirement, a range of options for private ownership and management, and an evaluation of the water to be available as a result of any acquisition. The long-term protection of the island levees carries a substantial, permanent financial responsibility, and any acquisition analysis should include evaluation of financial impacts. (DPC-1)

Response: The purpose of the recommendation to evaluate the feasibility of purchasing Delta Islands is to collect the information identified by the commenter.

XI. ANALYSIS OF ALTERNATIVE STANDARDS

A. Description of Alternatives

Comment: It may be useful if Chapter XI includes a brief description and analysis of a "no action" alternative. Because the environmental report is not required to meet the formal

requirements of an EIR, it technically is not required to analyze the consequences of a "no action" alternative. Nevertheless, a discussion of a "no action" alternative would provide further justification for the plan and would help to clarify for the public why that alternative is unacceptable. (JCWU-1)

Response: For the purpose of comparing the alternatives in Chapter XI, the "no action" alternative is assumed to be the base case used for the water supply impact analysis in Chapter VII. Thus, in discussing the alternatives' impacts on water supply and aquatic resources, references to the base case are also applicable to the "no action" alternative. For clarification, additional description of the base case or "no action" alternative has been included in section A of Chapter XI.

Comments: [Page XI-1] The SWRCB only included complete regulatory alternatives and did not evaluate the SJTA proposal for the San Joaquin River, which requires far less water and provides significant equivalent benefits to the salmon fishery. (SJTA-1)

Response: There are a very large number of alternatives and combinations of alternatives that the SWRCB could have evaluated. The alternatives evaluated were selected because they represent a broad range of both benefits and water supply impacts. Because of the time and effort required to run operation studies and analyze each alternative, the selection was limited to five alternatives and a base case.

Comment: [Page XI-22] The draft environmental report does not clearly identify the base for the discussion on impacts of alternatives on San Joaquin River salmon. Chapter VIII uses a 1984-1992 reference period hydrology, while Chapter XI uses the 1922-1992 historical hydrology. (SJTA-2)

Response: The draft environmental report states on page XI-22 that the effects on aquatic resources are determined using the aquatic resource models described in Chapter VI of the report and the DWRSIM-modeled 71-year hydrology. The DWRSIM study of the base case was conducted as described in Chapter VII of the report. Figures XI-21 and XI-22, which depict salmon smolt survival results, note that "abundance index values are obtained using the USFWS salmon smolt model and DWRSIM model output for 1922-1992."

The analyses of the alternatives are not as detailed as the analysis for the preferred alternative, and model analyses were conducted only over the 71-year modeled hydrology.

Comment: [Page XI-29, 3rd full para.] While the SWRCB can find that the objectives provide a reasonable interim level of protection, it cannot find without more analysis that the fish and wildlife objectives discharge the SWRCB's long term obligations under State and federal water quality statutes and the public trust. (BISF-3)

Response: The analysis in the environmental report is adequate to determine that the objectives will provide reasonable protection for the fish and wildlife beneficial uses of the

waters of the Bay-Delta Estuary. (Wat. Code section 13240) In determining whether there is reasonable protection, the SWRCB must review the competing uses for the water. Considering the many competing demands for the water, and considering the fact that meeting these objectives requires a reduction in amounts of water for other uses, the objectives in this plan provide reasonable protection for all of the beneficial uses.

CHAPTER XII. ECONOMIC IMPACTS OF THE PREFERRED ALTERNATIVE

Comment: For a greater understanding of how the exported water is used, a table should be added showing the acreages, amount of water applied, crops grown, and total subsidies paid to each farm unit receiving CVP or SWP water for the core years 1984 to 1992. For comparison, prepare another table showing the number of commercial salmon boats fishing, the first wholesale price received per boat fishing, and any subsidies received by these boats for the same core years. (SARA-1)

Response: The recommended tables are not necessary to support adoption of the draft plan.

Comment: The SWRCB should undertake a rigorous analysis of the possible social and economic consequences of the proposed plan. It is important to understand the potential social and economic costs the environmental protections contained within the Bay/Delta standards may impose on California. (NCWA-1)

Response: Chapter XII of the environmental report presents the results of an analysis of the proposed plan's economic impacts. The economic models used in this analysis are in general use, and are considered to be capable of producing sufficiently rigorous results. Although no separate social impact analysis was undertaken (the SWRCB is under no legal requirement to produce such an analysis), section D of Chapter XII contains an analysis of "Impacts on Regional Economies." Because economic impacts on small geographic areas are causally related to social effects in those areas, social impact analysis is not entirely absent from the environmental report.

Comment: One thing that concerns me is the lack of a detailed cost-benefit analysis in the environmental report. Efforts that potentially impact employment, substantial capital investment, small farms, and fishermen's lives should be done with this uncertainty in mind. I would like to know what are the costs and benefits of all these aspects that are being considered in the plan. I urge the SWRCB to consider a cost-benefit analysis as one of the key elements of this decision. (Transcript-BFC)

Response: The best available estimate of the economic impact of the plan is provided in Chapter XII. It is not possible to quantify the benefits of the plan, but a discussion of possible benefits is included in Chapter XII.

B. Impacts on Agriculture

Comment: The draft plan as applied to Area I of Westlands Water District does not sufficiently consider the economic impacts of the reduced irrigation deliveries that the USBR is unilaterally imposing under the draft plan. (WWD AREA1-1)

Response: The USBR's decision to reduce deliveries south of the Delta was made in response to its obligations under the federal ESA. Because the SWRCB did not require or request the delivery reductions referred to in this comment, it is under no obligation to analyze impacts specific to those reductions. The economic impacts of the SWRCB's proposed plan are fully analyzed in Chapter XII of the environmental report.

Comment: The following comments were made regarding the economic impacts of increased groundwater pumping. (DWR-2)

1. In an average year, under D-1485 conditions, there is a water shortage of about 900 TAF in the San Joaquin Valley. This shortage is currently being met by overdrafting groundwater basins. This imbalance of demand/supply in the valley has serious implications for the determination of the water supply impacts of the preferred alternative and the corresponding economic impacts.

2. Given this existing shortage, reductions in supplies from the Delta would exacerbate current shortage-related problems, including the groundwater basin overdraft.

3. The environmental and economic impacts of an unsustainable increase in groundwater pumping should be analyzed in the environmental report.

4. In addition to economic impacts, environmental impacts on natural ecosystems are possible. Falling groundwater levels in some agricultural areas can adversely affect deep-rooted trees and shrubs which depend upon a water table sufficiently high to carry them through the dry season.

5. The agricultural impact analysis uses two simplistic scenarios for groundwater use for drought management. Although probably outside the scope of study, a more realistic analysis could reveal important economic impacts not apparent using the simplified approach.

6. The long-term negative effects on pumping depths and the quality of the pumped supply are likely to be significant in some areas of the Central Valley and will be increasingly likely to affect all types of crop production, particularly during drought events. Increased water costs due to increased pumping depths can affect California's competitive advantage relative to other states and other countries.

Response: All economic impact analysis performed on the plan took into consideration the

demand for water in the San Joaquin Valley, as well as the supplies available from the SWP, the CVP, and local sources. The relationship between reduced deliveries and groundwater pumping is discussed in Chapter XII, as are the economic implications of increased reliance on groundwater supplies. The SWRCB does not agree that the difference between the water used in the valley and the water supplied by the projects constitutes a "shortage" attributable to the operations of the projects. Our analysis does not, therefore, begin with an assumed 900 TAF shortage. (The commenters characterization of the shortage implies that the projects are obligated to supply whatever demand may occur.) As stated in Chapters VI and VII, impacts are estimated as the difference between supplies available under D-1485 and under the preferred alternative. Secondary impacts due to such factors as subsidence and tree mortality were not considered due to uncertainty concerning future institutional, economic, and physical limits on pumping, as well as the practical need to restrict the analysis to more direct water supply impacts.

The issue of "California's competitive advantage relative to other states . . .," is an important factor that must be considered in the context of all applicable statutory requirements. The State's competitive advantage is influenced by numerous factors, including federal price support programs, water supply, climate, etc.

As surface water supplies are reduced, increased groundwater mining can be attributed to a number of sound economic and physical factors which have driven expansion of agriculture in California.

Comment: The following comments were made regarding the response of San Joaquin Valley farmers to reduced water supplies. (DWR-2)

1. The SWRCB's analysis assumes that water shortages in the San Joaquin Valley which result from the draft plan will be offset by water transfers within the valley. Because there is no surplus supply in the San Joaquin Valley to offset the reductions in surface water, deliveries would come from land retirement, land fallowing, or increased groundwater overdraft. The preferred alternative assumes water transfers will reduce water supply impacts in the basin. This simply cannot be true considering the fact that the valley has a permanent water shortage and that the CVP is not able to deliver full contract water in any year, even when water is available in storage facilities north of the Delta. Crop shifts are mentioned in the environmental report as a practice that would reduce the impact of the preferred alternative. We agree that crop shifts may occur in some areas. However, the assumption that growers are always able to fallow their least profitable crops and will move to more profitable productions is a gross simplification of the process and would unreasonably underestimate the economic impacts of the preferred alternative. Farmers make decisions on their crop types based on a number of factors including water supply and its cost, soil, climate, pest control and the most important of all, market conditions.

2. The preferred alternative reduces San Joaquin Valley water supplies in two ways--by reducing SWP/CVP export from the Delta and by reallocating the existing valley supply to environmental use in the San Joaquin River. The combined impacts of these actions would be in the range of 0.5 to 1 MAF in average and drought years, respectively. Such a reduction in surface deliveries would reduce agricultural crop acreage by about 200,000 acres in average years. Drought year impacts would be much higher. Most likely lands which are used to grow crops such as cotton would be affected. This would result in a direct loss in crop production of about $200 million. The environmental report has significantly underestimated the losses by assuming unreasonable assumptions such as increased groundwater use, crop change, water transfer, etc.

Response: Chapter XII of the environmental report does assume that some (not all) of the preferred alternative's water supply impacts in the San Joaquin Valley can be offset by intra-Valley transfers. It also assumes that the water that would be transferred would be made available through the fallowing and retirement of the least productive cropland, crop shifting, and increased irrigation efficiency. Rather than predicting the extent to which transfers are likely to mitigate the economic effects of the proposed plan, however, Chapter XII shows how impacts would vary over two transfer scenarios. The fact that there is no surplus water available in the San Joaquin Valley does not, as this comment argues, preclude an increase in transfers within the valley. So long as physical transfer capacity is available, increased transfers are possible. Unused transfer capacity has always been available in the San Joaquin Valley--even in dry and critically dry years. This capacity has not been utilized due to legal, economic, and institutional barriers. To the extent that these barriers are reduced or removed, water will be transferred to growers who are willing and able to pay the most for it. This will result in a more efficient allocation of water in the valley, and mitigate the economic impacts of the proposed plan. If barriers are not overcome, transfers will not increase, and impacts will be substantially greater (an outcome which should act to speed up barrier removal). The SWRCB's analysis did, as this comment points out, simplify the process farmers use to decide how much of which crops to plant. If a reality as large and as complex as the agricultural economy of the San Joaquin Valley is to be modeled, simplification is absolutely necessary (as it is with the use of models in any discipline). The SWRCB employed simplifications that are used and sanctioned by respected agricultural economists, and which, moreover, are consistent with economic theory. The rational farmer will seek to allocate scarce water supplies, whenever possible, to lands and crops that produce the greatest return per unit of applied water. The price effect of more farmers bringing greater quantities of "higher-valued crops" to market is captured by the Central Valley Agricultural Production Model, which is capable of modeling the longer-term price effects of changed production levels.

Comment: We suggest that the SWRCB re-examine the suitability of the economic parameters, as well as assumptions, used to determine the economic impacts of the preferred alternative. The draft environmental report states that the economic losses are within the range of the normal fluctuations in agricultural production in the valley. A close examination

of the total losses indicates that (1) the losses are not within the normal fluctuations in agricultural production, and (2) these losses present a reduction in economic output of the valley above and beyond the normal fluctuations of agricultural production. (DWR-2)

Response: The DWR's alternative analysis of the economic impacts of the proposed plan assumes a 900 TAF shortage attributable to the operation of the two water projects. The SWRCB believes that the appropriate base case is D-1485 conditions. Although the DWR agues that the SWRCB's methods tend to bias the impact estimates downward, the methods advocated by the DWR have the opposite effect. The SWRCB feels that the analysis in the environmental report is based on the soundest possible methodology and the most defensible assumptions (some of which are described in the responses to other DWR comments, above). The SWRCB also wishes to point out that, in its comments on Chapter XII, the DWR expresses agreement with our finding that the impacts of the proposed plan are "relatively small compared to the whole valley."

Comment: The following comments express the concern that the economic analysis underestimates the impact of the plan. (DWR-2)

1. The conclusion reached in Chapter XII regarding the agricultural impacts is correctly qualified by the statement that, "The economic impact of implementation of the draft plan on agriculture may vary substantially depending on the extent that water can be transferred between users and on the extent that growers are able to respond to reduced availability of surface water by changing crops and pumping groundwater." The conclusion is that "Under the most pessimistic scenario . . ." net losses to producers average $20 million annually.

2. For reasons given below, we feel that this is an overly optimistic conclusion, even as qualified. It is also only part of the picture. First, growers don't deal with average circumstances only. The distribution of possible outcomes (i.e., variance) is more likely to be important to growers' economic decisions and financial viability and the affected regions' economic health than what average conditions are. If serious economic losses are experienced in quick succession, averages can be irrelevant. Because the draft plan increases the frequency and magnitude of shortage events, this is of real concern.

3. Basing impacts on an average year within the three water year categories can mask a great deal of important information and bias the results of the analysis. Simply put, the economic impact of the effects of the proposed standards on average water supply conditions, whether an average of all years or an average of critically dry years, is not equal to the average of the economic impact of the proposed standards in years falling in those categories, particularly for those categories producing the largest shortages. Nevertheless, it appears that the environmental report's analysis assumed that they were equivalent values.

4. As stated later in the environmental report, producers' income is only part of the losses to the San Joaquin Valley. The cited income multiplier of 2.7 means that losses in income in agriculture and in businesses directly and indirectly related to agriculture can be as high as $54 million annually, even if the $20 million figure was appropriate as a lower bound. Although the environmental report is correct in stating that the multiplier number is conservative, this is still significant. Local businesses affected by farm production levels also do not exist in an "average" world.

5. Sole reliance on models to assess agricultural impacts can lead to serious bias; model studies should be augmented with institutional analysis and case studies for credibility.

6. Models show economically optimal conditions for different scenarios of water availability, costs of inputs, crop market conditions, etc. As such they are useful tools for looking at the consequences of decisions which affect water availability from a limited perspective: what is obtainable if all factors of agricultural production are employed to their best economic advantage. This is only one piece of the puzzle, however. The institutional, social, infrastructure, financial, and environmental constraints and consequences associated with obtaining these economically optimal conditions can be only roughly approximated, if an attempt to model them is made at all. While the Central Valley Agricultural Production Model has a provision to take some of these factors into account in its implicit cost function, the rationing model makes no such allowance--a serious shortcoming.

7. The effects of the time needed to adapt to changed conditions as well as the effects of any changes in required financial resources, and management and/or labor skills are also difficult to reflect in models. In addition, because of these factors and the dynamic nature of the marketplace, economically optimal conditions are literally never achievable.

8. Depending upon the specific crops and geographic regions involved, the biases introduced by depending exclusively on model results can range from minimal to severe. For example, effects on farmers in specific regions growing for seasonal niche markets are unlikely to be captured in the model because of geographic and crop type aggregations. The farmer may place a high value on preserving a contractual relationship with a processing plant by maintaining the production of a crop which would otherwise be uneconomical in a shortage situation. Another example is the importance to the farmer of maintaining the production of low-income crops to avoid the loss of "base acreage" for federal crop programs.

9. Although models do provide valuable insights about the economic forces involved, impact analyses should be augmented with specific knowledge about the other, sometimes very important, forces involved whenever possible. To the degree that this can be done, increased credibility can be attributed to the results. The SWRCB largely failed to provide this type of corroborating information.

10. While some communities, non-farm business enterprises, and farm enterprises may have sufficient financial and other resources to cope with each year of a multi-year shortage sequence as well as depicted for the average low delivery year in the draft environmental report, this is very unlikely for many businesses and communities, particularly for small agricultural communities and farm enterprises. Where an individual shortage event analysis might show economic hardship, a multi-year analysis might show economic disaster. This important issue is not addressed in the draft environmental report.

Response: It is possible to conceive of a great many specific and/or localized effects which could in some way be causally related to the proposed plan (e.g., a series of economic losses experienced in quick succession; high costs being borne by farmers growing for seasonal niche markets). Rather than attempt to deal with a multitude of possible specific outcomes, the SWRCB elected to model the most likely and most probable larger-scale project effects. The resulting impact estimates consist--necessarily--of averages. This is often the only way to characterize impacts when time and analytical resources are limited and individual responses to changes will vary. One way to correct for any bias this approach might introduce is to employ conservative assumptions. Conservative assumptions tend to increase the magnitude of the resulting impact estimates, and to decrease the likelihood that actual impacts will be significantly underestimated. One conservative assumption the SWRCB used in its analysis was that local water supplies will be operated similarly from year to year--that no operational changes will be made to reduce the severity of drought-year impacts. In reality, drought impacts can often be mitigated to some degree by increasing local reliance on groundwater, reducing carryover storage, reallocating available supplies, and arranging transfers. The SWRCB also analyzed the impacts of a range of possible water user response scenarios. The SWRCB feels that these measures were sufficient to correct for any bias that may have been introduced by describing primarily aggregated and averaged impacts.

It is also not entirely accurate to assert that the SWRCB relied solely on large-scale modeling results to assess impacts. Smaller-scale impact information was assessed in two ways: by breaking the impact study area up into regions to allow interregional variations to be assessed, and by presenting input-output (I/O) modeling results (the I/O results appear in Section D of Chapter XII). I/O results show income and employment effects on areas as small as individual counties. Such effects are often not captured by larger-scale models, which tend to treat them (properly) as transfers.

One comment in this group also points out that the proposed plan could impose inordinately high costs on farmers growing low-valued crops in order to preserve "base acreages" used in federal agricultural subsidy programs. Primarily for the sake of manageability, the SWRCB's analysis treated agricultural subsidies like other specific anomalies: though they were not dealt with specifically, the aggregate analysis was based on very conservative assumptions in order to ensure that anomalies such as subsidies would not cause actual impacts to significantly exceed modeled impacts.

Comment: The following comments note that aggregated impact estimates can mask smaller-scale, localized effects. (DWR-2)

1. Agricultural impacts are reported as impacts to the San Joaquin Valley. Although, as the environmental report states, impacts can be relatively small compared to the whole valley, this broad scope can mask very serious impacts in small regions or communities. It should be made clear that, although assessing the potential for these types of impacts are outside of the scope of the environmental report, it is important to realize that such effects are possible.

2. In the agricultural sector, where regional problems are likely to be most acute, differences in water rights and water supply contract types as well as differences in the access to--or cost of--surface or groundwater supplies during shortages can result in very different levels of economic impact. The economic health of some agricultural communities can be seriously affected by large drops in the production of specific types of crops because they are labor intensive or make use of a large amount of local goods and services to produce, haul, store, and process, or both. Other communities with a more diversified economic base may be relatively unfazed under the same circumstances.

3. Similarly, communities which are more dependent upon maintaining agricultural land values for tax revenue purposes can be at a serious disadvantage compared to communities with other sources of revenue that are substantial. The former communities can lose a large amount of their capacity to provide needed community services if agricultural land values decline because of added unreliability.

Response: The response to the observation that aggregated impact estimates can mask smaller-scale, localized effects is articulated in a response to the preceding group of comments. In addition, section 4 of Chapter XII describes the primary interregional variation in impact severity. There, it is shown that--in the absence of significant transfers--over two-thirds of the losses in net income occur in western Fresno County.

Comment: The potential for loss of State consumer welfare due to increases in the cost of food and fiber which may accrue due to production cutbacks associated with water shortages is not addressed in the draft environmental report. This effect, although it may be relatively small, should not be overlooked (DWR-2).

Response: A discussion of the potential for decreased consumer surplus as a result of irrigation water cutbacks was not included in Chapter XII for two reasons. First, as noted in the comment, any such effect is likely to be small. Second, any such loss would result in a transfer to the agricultural sector (growers, processors, distributors). The result would be no net change in welfare, economy-wide.

Comment: The following comments deal with the increased risk to farmers due to decreased water supplies. (DWR-2)

1. A major effect of the proposed standards will be to add risk to an already risky agricultural production environment and to reduce income to already financially jeopardized agricultural communities. In some geographic areas this combination is likely to further curtail investment in agricultural production (including the availability and cost of loans to meet crop production costs and for the capital needed to bring higher-valued, but financially riskier, tree fruit and row crops into production). The drop in income will also jeopardize the retirement of current debt and the value of farmland as equity, further limiting the ability to invest. These concerns are not adequately addressed in the agricultural impact valuations.

2. Another important consideration is how variability in crop production will be affected by the proposed rule. Depending upon the geographical area involved and the nature of the market for the specific crop, the consequences can be serious. The ability of farmers to market some crops is dependent upon the reliability of production. Large food producers are likely to drop contracts with growers who cannot deliver with the consistency required in favor of contracts with more reliable growers in competing regions, states, or even countries. The location of grain drying and storage facilities, for example, is influenced by the availability of local farm output to create sufficient income. In turn, jobs in the local communities and costs to farmers are affected by the proximity of these facilities. If production variability increases sufficiently, the owners of such facilities may find the added risk to their income unacceptable, forcing them to close or relocate.

Response: It is unclear exactly why the commenter considers specific coverage of agricultural credit and crop production variability impacts to be significant omissions. The plan's long-term economic impacts on agriculture are discussed in Chapter XII of the environmental report. The models used to estimate those effects took into consideration all variables generally considered to be significant in such estimates. If the commenter is suggesting that the specific inclusion of these variables would have significantly changed the outcome, the SWRCB disagrees. Less water will certainly make credit less available and more expensive, and make it more difficult to produce at predictable levels, but these effects have not been considered important enough to be included in existing agricultural impact models (even the most detailed such models). Regarding the loss of crop processing facilities, the commenter may have a valid point. The SWRCB did not possess the time or the analytical resources to analyze the plan's impacts on sectors with backward linkages to agriculture (I/O models only take into account sectors with which the sector of interest--agriculture--is backwardly-linked). Although it seems doubtful that this adverse impact would be large, we cannot say that it would not be significant.

Comment: The environmental report cites improvements in irrigation systems as a shortage management strategy that can be used by growers to offset the impacts of reduced deliveries.

In most cases, more careful management of their existing system would be the response to reduced water availability. In either case, improved irrigation management by itself will only result in applied water reductions on-farm. It will not reduce the amount of water needed to meet crop evapotranspiration of applied water requirements (ETA); only crop fallowing or switching to crops with lower ETA will have this effect. Improvements in irrigation efficiency may simply mean that a farmer dependent on upstream surface runoff into a drain may no longer have that supply available to meet ETA for his or her crops. (DWR-2)

Response: The basis of the assertion that most farmers will respond to reduced water by managing existing irrigation systems more carefully (rather than installing new systems) is unclear. The economic expectation is that, the longer the period of adjustment, the greater the number of farmers who will install new, more efficient systems. Regarding crop ETA, the SWRCB in no way stated or implied that it is possible to alter crop ETA requirements by changing irrigation systems. Our statement is noncontroversial: more efficient irrigation systems allow the same types and amounts of crops to be raised with less *applied* water. The difference is that more efficient systems result in a larger percentage of the applied water going to ETA and less to return flows. For this reason, many farmers who stay in business over the long-term under conditions of reduced water supplies will install more efficient irrigation systems. This will certainly not occur in every case, but the adoption rate can be expected to rise over time.

Comment: The following comments deal with the effects of water transfers. (DWR-2)

1. As irrigation water shortages become more frequent and are of larger duration and size, water transfers become more costly and less likely to be as successful as in prior years. This is an additional burden on the viability of agriculture. An increasing market for agricultural-to-urban transfers, a consequence of decreasing urban water service reliability, is likely to exacerbate this by being a more financially attractive alternative to transfers within the agricultural community.

2. Although the environmental report cites income from water transferred to urban users as a boon to agricultural areas, if these transfers involve crop fallowing to any significant degree, the negative impacts on those affected by crop production levels and the variability in those levels can be serious. The report does not address this issue even though reduced production levels and increased variability in some geographic areas are likely even before additional transfers to urban areas are considered. Agricultural areas have historically relied upon intra-agency and inter-agency transfers to preserve trees and maintain production of higher-valued crops. Urban areas are planning increased reliance on agriculture-to-urban transfers to meet growing supply reliability needs even without the proposed standards. The proposed standards would not only present additional constraints to moving transferred water across the Delta, under the impact assessment assumptions in the draft environmental

report, they would require an additional reliance on such transfers to manage economic impacts.

3. The DWR Drought Water Bank experience and subsequent studies of that experience have shown that transfers from agricultural areas have substantial local "third-party" economic effects and that local governmental agencies are extremely concerned about their impacts. This concern is very likely to reduce the willingness of such areas to make water available for transfer as the size and frequency of such transfers is increased. In addition, large transfers from a single region or those that would substantially affect the production of a single type of crop (which would be more likely with a larger reliance on transfers) would be likely to severely affect some sectors of the local economy. This impact would not be mitigated by payments to farmers by urban areas because such income would not be likely to find its way to the affected parties (water sales which result in fallowed crops--more likely as the size of the transfers increase--would not make up for income lost by seed sellers, crop haulers, or crop processors). Although overall income to a community may not suffer, some sectors of the economy may suffer severely. The effect of the proposed standards will be to increase the frequency and severity of water shortages to urban and agricultural users. Severity will be affected both in terms of water availability in any one year and the duration of shortages over multiple years. The analysis in the SWRCB's environmental report is based on impacts assessed by water year category and without consideration of how those shortages are actually allocated and the economic, financial, social, and physical consequences of shortages in preceding years. These consequences can be severe depending upon the geographic region in question and the severity of antecedent shortage events. Although the risk of agricultural impacts has been historically mitigated by the ability of agriculture to make internal water transfers and pump groundwater, these options can be jeopardized by increased transfers from agricultural uses to urban uses and by worsening of overdraft conditions due to increased reliance on groundwater. Water transfers from agricultural areas involving in-lieu pumping groundwater as well as more frequent shortages in those areas can both cause additional overdrafting.

Response: Regarding the assertion that decreased agricultural water supplies will render transfers more costly and less successful, considerable evidence points to a quite different conclusion: that the primary impediment to successful, low-cost transfers is not the available water supply, but existing legal and institutional arrangements. Altering or removing the problematic arrangements could substantially increase the amount of water transferred in all types of water years--even if the total supply available to agriculture falls below historical averages.

Regarding the assertion that agricultural-to-urban transfers are undesirable, the SWRCB is charged with allocating water supplies among all competing beneficial uses. Allocations based strictly on the principle of economic efficiency would divert the waters of the State to their highest and best uses. This might, in fact, mean that a higher proportion of available

supplies would go to urban and industrial users. It makes little sense to California as a whole if significant quantities of water are locked into uses which yield low returns when those supplies could, instead, be transferred to users who could realize higher returns. A strong argument can be made for re-allocating water such that a higher proportion goes to urban and industrial uses, leaving agriculture to redirect its share to higher-valued crops--even if the ultimate result is some shrinkage in the agricultural sector. Some adjustment, via re-allocation of water, would probably benefit the California economy. Even if adjustments occur, however, it is clear that water supply reductions with transfers involve far less impact to agriculture than do reductions without them. In addition, the economy of the state as a whole benefits most when there are no artificial barriers limiting transfers between agricultural, urban, and industrial users. The sellers also benefit by being able to sell to the highest bidder. A further point not considered in this series of comments is that, as the supplies of crops grown primarily in California diminish due to decreased water supplies (due in part to transfers out of the agricultural sector), their prices will rise. This increases the return per unit of applied water. As the value rises, the amount of water staying in the agricultural sector will rise. Economic theory would lead us to expect that this and other processes would result in a more efficient equilibrium in all water using sectors.

Regarding the comment that the standards will impede transfers across the Delta, the plan provides the regulatory certainty that has been lacking over the last several years and should therefore facilitate transfers.

Comment: As the duration of a shortage event increases, the costs and losses rapidly increase. The effect is that a shortage twice as large or twice as long is very likely to result in more than twice the economic impacts. As shortages become larger or longer, this phenomenon becomes more pronounced. Any analysis which does not account for this can easily bias the analysis of the economic impacts of proposed actions. (DWR-2)

Response: The SWRCB's analysis was not of a long-duration shortage event, but of a small but permanent decrease in the supply of water available to agriculture. The analysis was based on the normal assumption that, in the short-term, the economic impacts will be the greatest, but that, over the long-term, the agricultural sector will adjust to the new water regime (via transfers, new irrigation technology, crop shifting fallowing, temporarily increased groundwater pumping, etc., as described in previous responses). Although some farm enterprises which operate on relatively narrow profit margins might not be able to withstand the shortage costs the proposed standards would impose (especially during extended dry periods, as this comment points out), our analysis indicates that the sector as a whole will have no difficulty finding a new stable equilibrium point.

Comment: Although some growers may in fact fallow land or change crops in response to reduced water deliveries, those acreages devoted to permanent crops can not accommodate such reductions. Within the Modesto and Turlock Irrigation Districts, approximately 40% of the lands under cultivation are currently devoted to permanent crops; within the Merced

Irrigation District, the amount of permanent crops is approximately 37% of the irrigated acreage. (SJTA-2)

Response: The analysis in Chapter XII of the environmental report assumes that the water available to agriculture would be allocated away from lower-valued forage and grain crops to higher-valued crops (including "permanent" trees and vines). The switching and fallowing would occur on lands where it would no longer be economical to grow lower-valued crops. No switching or fallowing was assumed for higher-valued, permanent crops. Some commenters have argued that, depending upon the extent and duration of the shortage, some lands that currently support permanent crops might have to "accommodate" fallowing (due either to an unavailability of water, or to a steep increase in the price of water). Chapter XII shows that, if such adjustments are necessary, water transfers can go a long way toward mitigating the adverse economic impacts.

Comment: Again the draft environmental report incorrectly assumes that deliveries are reduced by an amount equal to the upstream contribution for additional flow. The process of allocating responsibility for flows is not the subject of this draft plan. Therefore, impacts from the proposed San Joaquin River flows must be allocated solely to the CVP. (SJTA-2)

Response: In order to complete an economic analysis, an allocation methodology for water supply reductions on the eastside of the San Joaquin Valley must be assumed. The methodology used is described in a previous response. As stated throughout the environmental report, no inference should be made at this time regarding final allocations of responsibility.

Comment: The analysis assumes that water can be transferred freely within the 21 areas. Although physically the capacity exists to freely transfer water, current state policies and the limitations discussed in Chapter X, section C, do not promote the free transfer of water. Until such time as those institutional constraints can be reduced or eliminated, the transfer of water is not a viable option to most regions. The SWRCB should look at the factors which need to be resolved to permit transfers under this plan. (SJTA-2)

Response: Nothing in this comment in any way contradicts or calls into question the analysis presented in the environmental report. The analysis in Chapter XII accommodates the uncertainty about the role transfers will play by considering two different transfer scenarios. The point is made in the report, however, that, as supplies decrease (or, at least, do not increase) and demands increase, the likelihood that transfers will become easier will increase.

C. Impacts on Urban Users

Comment: The following comments concern the economic impacts of the plan to the urban sector. (DWR-2)

1. It is unclear whether the damage function used in the analysis of urban impacts consists of average values, to be applied to the entire shortage, or marginal values, to be applied only to an increment of shortage. In any case, it appears from existing studies that these are values most appropriate to residential users and are therefore inappropriate to apply to other sectors experiencing shortage. Unit economic costs and losses to industry can easily be an order of magnitude higher than for residential users for the same percentage cutback. Associated with these industrial losses are employment losses not discussed in the environmental report.

2. Local water agencies can and do reallocate shortages away from industrial and commercial users to protect jobs and to avoid large economic costs and losses and financial hardship to these sectors. If this assumption is implicit in the urban impact analysis, this should have produced residential user shortages that were higher than the overall shortage imposed on an urban service area. This effect can be substantial; depending upon the protection given to the other sectors, an overall shortage of thirty percent can easily translate to more than a thirty-five percent shortage imposed on the residential users. There is no indication the environmental report adjusted the calculated losses on this basis.

3. Shortages can impose large "fixed costs on urban water agencies as they implement programs to encourage voluntary reductions in water use, impose alternate-day watering schemes, detect unreasonable use (e.g., "gutter flooded patrols"), or run rationing programs which use some type of "hearing" process to exempt hardship cases. The environmental report did not address these costs. Another impact overlooked is the impact on jobs and income in the "green industry." Although the end of a shortage will allow some businesses (e.g., nurseries) to recoup some of their losses, the disruption of income to some small enterprises such as lawn maintenance services can result in extreme hardship and even bankruptcy, particularly in a continuing drought situation.

Response: The values in the loss function presented in Section C.1 of Chapter XII are marginal values, to be applied to increments of shortage. The values are based on studies of residential water users. An examination of the effect on the standards on individual industries was beyond the scope of this environmental document. However, some industrial water use is for relatively low-valued uses, such as vehicle washing. Thus, like residential shortage costs, industrial shortage costs are low at small shortages and increase as the shortage increases and begins to affect higher-valued uses. Utility managers attempting to minimize the aggregate impact of a shortage on their customers will attempt to allocate water between user types in a way that equalizes marginal shortage costs for each class of user. This response will tend to reduce aggregate shortage costs toward those indicated by the shortage cost function for residential water users.

When averaged over all years, the costs of managing shortages are likely to be a small proportion of water utilities' total budgets. Because water utilities have good access to

credit, costs averaged over all years are the relevant measure of impacts on utilities. An examination of impacts on producers of horticultural products, retail nurseries, and landscape contractors is beyond the scope of this environmental document. We recognize that water shortages are likely to have temporary adverse impacts on the landscaping industry. However, in the long run, the industry will adapt to a situation where its customers are facing deeper and more frequent water shortages.

D. Impacts on Regional Economies

Comment: The draft environmental report indicates that displaced jobs do not represent a permanent job loss to the region. This is not true because without the loss of water, the regional job market would have increased faster as opposed to remaining stable or decreasing. (SJTA-2)

Response: It is common, but incorrect, to assume that any loss of jobs in a region always reduces the future basis for regional job growth. In some areas, it could be the case that decreased agricultural water supplies serve to hasten economic transitions already underway. A more rapid change from agricultural to municipal-industrial uses could raise the basis from which future job growth occurs. A change to more labor-intensive crops could have a similar effect. The point is that a loss of jobs at any one point in time has no easily predictable effect on future job market trends. The best indicators of future regional job growth are larger-scale economic trends. The California economy is currently in a growth phase, and the economy of the Central Valley is growing faster than the overall state average. This trend alone would indicate that job losses related to agricultural water supply reductions will not be permanent.

E. Impacts on Hydroelectric Power Generation

Comment: [Page XII-17] Does the inclusion of PG&E and Southern California Edison in the hydroelectric power generation analysis imply that they will also be required to contribute to Bay-Delta flows? Is the same true for Sacramento Municipal Utility District which does not appear in the analysis? Who will pay for the impacts on hydroelectric purchase agreements (SJTA-2)?

Response: The hydroelectric power production impacts summarized in the environmental report were submitted by other entities (Western Area Power Administration and the Association of California Water Agencies). As the SWRCB's summary states, the analysis was based on the assumption that some flows currently dedicated to hydroelectric generation (including some flows used by the Sacramento Municipal Utility District) would be dedicated to meeting the Bay-Delta water quality standards. The reports submitted to the SWRCB were silent on how this re-direction (and related impacts such as increased use of electric groundwater pumps) would affect hydroelectric purchase agreements.

Comment: [Page XII-18, para. 1] Does the statement "The accuracy of this information has not been verified by the SWRCB staff" mean that the SWRCB staff has verified all the information where this statement is not present? (SJTA-2)

Response: The statement has been removed. The SWRCB relied upon many sources in preparing this draft environmental report, and the sources are referenced.

Comment: Chapter XII should include a summary of the economic impacts on power users in addition to the impacts on water users. (NCPA-1)

Response: The hydroelectric power production impact estimates described in Chapter XII were submitted by the Western Area Power Administration and the Association of California Water Agencies. These results do not include disaggregated estimates of the economic impacts on power users. Only aggregate estimates to the Western Area Power Administration and its customers were reported.

Comment: The following comments concern the hydroelectric power generation analysis. (NCPA-1)

1. The final economic analysis has been completed by the Western Area Power Administration, and it should be included in the final environmental report.

2. The values in Table XII-6 are not consistent with the power impact values we have calculated.

3. Table XII-6 and associated text seem to be in error. The values that we reported for Restoration Fund Costs and Offset by Surplus Sales Revenues, which result in higher total costs of about $2 million annually, are included with this comment letter.

Response: The Impacts on Hydroelectric Power section in Chapter XII of the draft environmental report was based on information provided by the Western Area Power Administration in its October 18, 1994 submittal. That information was presented without alteration or revision of any kind. The updated information is included in the final environmental report.

F. Benefits

Comment: [Page XII-23, Table XII-7] The benefits listed in the table are highly questionable--most do not apply to the Bay-Delta Estuary or to California. If the SWRCB is not estimating the benefits accruing from its proposal, then what is the purpose for including a table such as this? (SJTA-2)

Response: As stated in the text, Table XII-7 was included in order to illustrate "the potential magnitude of some of the values the preferred alternative would produce." The

limitations and applicability of these values to California were also acknowledged: "values specific to the Bay-Delta system cannot be extracted from most of these studies." The absence of benefit values specific to the Bay-Delta system made it important to demonstrate to readers of the environmental report that the proposed plan would produce economic benefits, and that the magnitude of those benefits are potentially large. To omit this discussion could imply to some readers that the plan is without benefits.

Comment: [Page XII-24, para. 2, 1st sentence] We agree that the "relationship between smolt survival and the size of the adult population, evidence of a significant positive relationship is lacking (sic)." (SJTA-2)

Response: Comment noted

CHAPTER XIII. EFFECTS OF PREFERRED ALTERNATIVE ON SPECIAL STATUS SPECIES

Comment: This chapter contains an analysis of the preferred alternative on special-status species. For clarity, we recommend that a paragraph be added to the first page prior to Section I to discuss the relationship of this chapter to the environmental impacts discussion: "Special-status species impacts are also a component of the environmental impacts analysis, and were considered in analyzing potential environmental impacts of the project and in selecting the preferred alternative." (JCWU-1)

Response: The clarification has been added to the introduction to Chapter XIII.

Comment: Adverse impacts to spring-run salmon and other anadromous fish using the Estuary during the November through January period could be substantial. The plan's requirements may be a regulatory improvement, but the actual level of exports and water quality conditions could result in conditions more adverse than under the D-1485 regime. In order to achieve a finding of no significant impact, the environmental report should include under its description of proposed measures: (1) timely implementation of the narrative salmon requirement; (2) exercise of operational flexibility; (3) monitoring and research programs designed to better identify needs of special status species; and (4) implementation of Category III, CVPIA and other initiatives. (BISF-2)

Response: The plan has been modified and addresses these concerns. Section B.2 of Chapter IV of the plan addresses the salmon narrative objective including: (1) its timely implementation through the water rights proceeding; (2) its consistency with the goals of the CVPIA; and (3) the operational and other measures necessary to double the natural production of chinook salmon from average 1967-1991 levels. The issue of operational flexibility is addressed in revised Footnote 22 to Table 3 in the plan, which states that variations in operations will be agreed to by the operations group, established under the Framework Agreement. In the section on Monitoring and Special Studies (section D of

Chapter IV), the plan states that agencies and interested parties are developing a near-real-time monitoring program to assist the operations group.

Comment: [Page XIII-23, para. 1] Delete the statement that the Suisun Slough thistle was "Last observed in 1974...". Insert: "DWR staff has observed and mapped the distribution of this species at two locations in Suisun Marsh in 1991-1994 (DWR 1994)". (DWR-2)

Response: The text has been amended, as recommended.

Comment: [Page XIII-25, para. 4] Delete the statement "especially in the Cutoff Slough vicinity" when referring to the decline of the clapper rail population. The Cutoff Slough population is still present, but it is not the most dense concentration of rails in Suisun Marsh. California clapper rails are present in tidal marshes along the Grizzly Bay and western Suisun Bay shoreline, Suisun Slough, Cutoff Slough and Hill Slough. (DWR-2)

Response: The text has been modified accordingly.

Comment: [Page XIII-26] Delete: "The proposed increases in freshwater outflow are within the historical range of salinities experienced in the past and are not expected to adversely affect the California clapper rail." California clapper rails were first observed in Suisun Marsh in 1979. There are no records of definitive survey for clapper rails in Suisun Marsh before this time. It is unknown whether clapper rails were present in Suisun Marsh when the historical ranges in salinities were affecting Suisun Marsh. There has been a reduction of suitable habitat for the species in the downstream reaches of the Estuary. It is unknown whether the proposed standards will adversely affect the California clapper rail in Suisun Marsh, but this is a possibility. (DWR-2)

Response: The text has been modified to state that the proposed increases in freshwater outflow are within the historical range of salinities experienced in the recent past. The additional outflow required by this plan is small in comparison to actual outflows and their annual variation.

Comment: [Page XIII-35] The draft environmental report states that the proposed standards, including San Joaquin River pulse flows in April-May and increased base flows from February to June, will benefit winter-run smolts. Additional spring flows on the San Joaquin River have never been identified in any winter-run chinook salmon biological assessment or biological opinion as having a benefit to that species. There is no scientific justification for this statement. The decline in winter-run is strictly related to Sacramento River conditions and export-caused impacts. (SJTA-2)

Response: The 1993 NMFS winter-run biological opinion states that (page 53) elimination of reverse flow conditions in the western Delta (QWEST > 0 cfs) from February through April and maintenance of lower reverse flow conditions from October through January should reduce losses of winter-run chinook salmon. Higher San Joaquin River flows increase

QWEST, which is the calculated flow in the lower San Joaquin River. Therefore, higher flows on the San Joaquin River may benefit winter-run chinook salmon.

The decline of winter-run chinook salmon is primarily a Sacramento River issue. However, reduced outflow from the San Joaquin River basin has contributed to the degradation of the aquatic habitat in the Estuary. The San Joaquin River flow standards are intended to improve these habitat conditions. Winter-run chinook salmon rear and migrate through this area, and improved habitat conditions should benefit them as well as many other species.

Comment: Winter-run will lose out under this plan. Needed protection can be provided through greater percentage outflow from November through at least April and one percent take limit. (SARA-1)

Response: The 1993 NMFS biological opinion stated that peak emigration of winter-run chinook smolts through the lower Sacramento River and Delta usually occurs from January though March. As discussed in Chapter XIII of the environmental report, winter-run protection will be provided by the proposed standards during the period from February through April. These standards include: the Delta outflow standards, closure of the Delta Cross Channel gates, pulse flows, maximum export limits, and export/inflow limits. Additional protection is provided in January through Delta Cross Channel gate closure (45 days from November through January). The SWRCB agrees that it would be possible to provide greater protection for winter-run, but the level of protection provided by the plan is believed to be reasonable at this time.

The NMFS signed the Principles for Agreement and agreed to the standards contained in the plan. The take limit is established by the NMFS, and is not under the authority of the SWRCB.

Comment: [Page XIII-36, 2nd full para., 1st sentence] The statement that Delta smelt are most abundant in the entrapment zone for most of the year is not supported by any data, and conflicts with historical and current data. See previous comments on Delta smelt in Chapter V. (DWR-2)

Response: The text has been modified to reflect our current understanding of the hydrodynamics of the Estuary and distinguish low salinity habitat from the entrapment zone. The point of the statement was that Delta smelt are most often found just upstream of low salinity habitat.

Comment: [Page XIII-39] The upstream projects should not be required to provide increased flows on the San Joaquin River in order to maintain net seaward flows while export project pumping continues. The Delta smelt problem and the causes of its decline are strictly a project-related, export problem.

The draft environmental report notes that the declines in Delta smelt have been attributed primarily to restricted habitat and increased losses through entrainment by Delta diversions [draft environmental report, p. V-62]. The decline in Delta smelt coincides with the increases in the proportion of water diverted since 1984. Prior to 1984, and before the sharp decline in Delta smelt abundance, the entrapment zone was generally located in the western Delta. Since 1984, however, the increased export pumping has shifted the entrapment zone upstream into the Delta river channels. See also Table 2.3 in USFWS, Technical /Agency Draft Recovery Plan for the Sacramento-San Joaquin Delta Native Fishes, December 1994, which evidences the decline in Delta smelt abundance after 1982. The proposed standards will require non-project San Joaquin River flows to offset the impacts of increased export pumping.

We recommend that if the Old River Barrier is not installed during the spring outmigration period for the San Joaquin chinook salmon, then the SWRCB should require a complete cessation of export pumping for a minimum of four weeks during the April-May period. The precise four weeks should be determined each year by the SJTA and the San Joaquin River Basin Flow Coordinator depending on the time the smolt outmigration takes place. (SJTA-2)

Response: The principal cause of the shift in the location of low salinity habitat over the last few years was the extended drought in California.

The Delta smelt problem is not exclusively an export problem. Habitat values in the Estuary have degraded due to many causes, including reduced inflows and outflows, especially in the spring. Inflows to the Delta have decreased, especially in the spring. The flows from the San Joaquin River basin are established to contribute to and improve general habitat conditions in the lower San Joaquin River and Delta. Reduced outflow from the San Joaquin River basin has contributed to the degradation of the aquatic habitat independent of export impacts.
Delta smelt will probably benefit from improved habitat conditions, resulting from increased outflows, as will chinook salmon, striped bass, and other species.

The SWRCB recommends that agencies test the use of a barrier at the head of Old River in the spring (and fall), as a means of improving survival of migrating chinook salmon (Chapter V of the plan); however, the SWRCB will not require that it be installed because of possible adverse impacts to other species. The DWR and the USBR have stated their intention to install the barrier when feasible. The SWRCB will consider adding a requirement for installation of the barrier in subsequent proceedings.

The SWRCB believes that cessation of export pumping for four weeks during the April-May period is not necessary or reasonable.

Comment: [Page XIII-39, para. 3] The first two sentences are not supported by either historical or current data. Adult and juvenile Delta smelt were and still are always found in greater abundance in the Delta than in Suisun Bay, in wet years or dry years, during either

the "good" or "bad" periods. Please refer to the previous comments on Delta smelt and in particular, Appendix 1. (DWR-2)

Response: The Delta smelt analysis is based in large part on information from USFWS documents. Recent information and analyses provided by the DWR contradict certain conclusions presented by the USFWS. The text has been amended to reflect the current understanding.

CHAPTER XIV. ENVIRONMENTAL CHECKLIST

Comment: The environmental checklist in the draft plan contains several groundless determinations. For example, the checklist concludes that the draft plan will cause "substantial reductions in the amount of water otherwise available for public water supplies". It also concludes that the draft plan will result in no "deterioration to fish and wildlife". Finally, the checklist concludes that the "project will result in increased groundwater withdrawals to replace decreased water supplies". (PORGANS-1)

Response: The objectives in the draft plan, if implemented, will restrict the ability of the CVP and the SWP to export water from the Delta, and it will require releases from storage to meet new, higher outflow requirements. These restrictions and requirements will reduce the amount of water otherwise available for public water supplies. The best available estimate of the water supply impact is provided in Chapter VII of the environmental report. When one source of water is limited, water users shift to an alternative supply which in many cases is groundwater. Lastly, the sole reason for the shift in water supplies from consumptive uses to public trust uses is to improve habitat conditions for fish and wildlife.

PART III. MISCELLANEOUS COMMENTS

Comment: It would be helpful if the environmental report included a brief summary of expected actions to ensure the implementation of plan requirements, including the triennial review process, water rights proceedings, and additional monitoring and data collection efforts. In that regard, members of the Joint Agencies already have identified a number of elements that should be considered as part of the triennial review process, including compliance with standards, habitat response to standards, Category III implementation, water supply impacts, and possible modification of standards. This group expects to provide the SWRCB with additional information on this subject prior to the close of the public comment period for the plan. (JCWU-1)

Response: The environmental report is an appendix to the plan. The summary of expected actions to implement the plan is provided in the program of implementation of the plan.

Additional information on this subject was not submitted by the commenter.

Comment: The environmental report would be more useful and accessible if it contained a list of organizations and persons consulted throughout the preparation process. (JCWU-1)

Response: SWRCB staff met to discuss the plan and the environmental report with any person or organization that requested a meeting. However, no record of the meetings was kept. The index of exhibits of the proceedings provides a list of all the documents considered by the SWRCB during the proceedings.

Comment: The Commission has previously testified and commented to the SWRCB on the need to consider protection for the entire San Francisco Bay Estuary ecosystem, including the important role of the South Bay, which includes 40 percent of the total Estuary. Unfortunately, there is no mention of the important role freshwater flow pulses play in improving water quality, increasing primary production and reducing toxicity of benthic organisms in the south Bay, nor in fact any mention of the south Bay, in the entire plan. The plan should explain the reasons for excluding the south Bay and should include a monitoring and research program aimed at developing recommended standards. (BCDC-1)

Response: Specific standards were not proposed for the south Bay for two principal reasons. First, the issue was not raised by any of the participants in the SWRCB's workshops leading to preparation of the draft plan. Second, the magnitude of Delta outflows necessary to affect significantly salinity in the south Delta cannot be reasonably provided by reservoir operation. These large flows can only be provided through uncontrolled runoff during large storm events, such as occurred this year.

Response: In 1994, the Governor's Water Policy Council and the Federal Ecosystem Directorate (FED) entered into a Memorandum of Agreement, referred to as the Framework Agreement. The purpose of the agreement is to establish a comprehensive program for coordination and communication between the council and the FED with respect to environmental protection and water supply dependability in the Bay-Delta Estuary and its watershed. The actions identified by the commenter are incorporated into this coordination process.

Comment: The SWRCB should make every effort to provide more water to support adequate fisheries in the San Joaquin River below Friant Dam. (BCDC-1)

Response: At this time, the SWRCB is not setting any instream flow requirements upstream of the legal boundaries of the Delta. Such flow requirements may be developed during the water right proceeding to implement the plan.

Comment: The fall-run chinook salmon will lose out as flows on tributaries are manipulated to meet water quality and export demand. Habitat conditions will improve in the Delta, but most people believe the net effect will be negative. (SARA-1)

Response: The SWRCB will consider the extent to which the issue of fluctuating flows on tributaries must be considered when it allocates responsibility to meet the Delta objectives during the water rights proceeding.

Comment: We hope that the SWRCB recognizes that it must retain its discretion to modify the new Bay-Delta water quality objectives, to adopt alternative objectives, and to adopt adequate mitigation measures, if any such action is necessary, to avoid or mitigate any adverse environmental impacts in upstream areas. CEQA requires detailed analyses of the potential impacts of SWRCB water right actions in upstream areas, and appropriate changes and mitigation measures in any SWRCB water right decision. (BART-1)

Response: The SWRCB recognizes that it must retain its discretion to modify the new Bay-Delta water quality objectives, to adopt alternative objectives, and to adopt adequate mitigation measures, if any such action is necessary, to avoid or mitigate any adverse environmental impacts in upstream areas.

Comment: The following comments address the process that resulted in the Principles for Agreement.

1. The draft plan was hammered out by the same interests and agencies that have been overdrafting Delta supplies for decades, and omitted a number of people that participated in the SWRCB's hearings. (PORGANS-1)

2. The Principles for Agreement and the subsequent plan were the result of negotiations between State, federal, environmental, and water contractor interests. There was no

representation in that process by the San Joaquin River system riparians or appropriators upstream of the Delta. In fact, a representative of the CUWA/Ag group confirmed that such lack of representation was necessary in order for an agreement to be reached. (SDWA-2)

3. The SWRCB chose to rubber stamp the December 15, 1994 Principles for Agreement rather than assume the role of an independent evaluator managing the public trust interests of the Bay-Delta Estuary. The SWRCB accepted the lowest common denominator; the lowest amount of export reductions acceptable to the DWR, the USBR, the banks, and other interests south of the Delta. (SARA-1)

Response: The SWRCB and its staff invited all participants in the workshops dealing with the triennial review of the 1991 Bay-Delta plan to propose alternative standards for consideration. Several parties availed themselves of this opportunity and DWRSIM operation studies were undertaken and the results distributed for all alternatives submitted to the SWRCB. The preferred alternative was selected because, among other reasons, it provided reasonable protection to aquatic resources in the SWRCB's judgement, and it was agreed to by a broad range of participants, including some urban, agricultural, and environmental organizations.

The SWRCB has always encouraged the parties to the Bay-Delta proceedings to confer on appropriate standards and reach consensus. The SWRCB does not, however, control this informal consensus process. The SWRCB's process of public workshops and hearings was open to all interested parties.

Comment: To equally balance Delta water flow, enhance south Delta flows and revive the San Joaquin River and salmon numbers, the SWRCB needs to take the following actions in the next five years. First, develop a federal and State agreement to reduce flood control at Don Pedro and New Melones by 200 TAF each. The project's capacity will allow fishery flows and additional irrigation water without compromising flood control features. Second, San Francisco should be required to release 50 TAF to restore salmon runs. And third, Friant should be required to release 200 TAF in all but drought years to improve south Delta water flow, dilute agricultural drainage and restore San Joaquin salmon. (NHLC-1)

Response: Comments regarding water allocation decisions will be considered during the water rights phase of the proceedings.

Comment: Neither the draft plan nor the other initiatives required as part of the comprehensive management package completely discharge the SWRCB's obligations under State and federal law to provide full protection of the beneficial uses of the Estuary's waters. Several laws are cited, including the Water Code, the federal Clean Water Act, Fish and Game Code section 5937, the public trust doctrine, and the Racanelli Decision. (BISF-1, SARA-1)

The special studies element of the monitoring program will be developed through the IEP, in coordination with other monitoring programs such as the San Francisco Estuary Institute's Regional Monitoring Program.

Comment: The draft environmental report has a tendency to presuppose a broad-based allocation of responsibility for meeting Delta requirements. (SFPUC-1)

Response: The environmental report uses the SWP and the CVP as surrogates in order to determine the water supply impacts of the alternatives under consideration. In several places throughout the report the statement is made that no inference from this analysis should be made regarding distribution of water supply impacts to specific water users. This statement is not meant to imply that a broad-based allocation of responsibility is likely, but rather that this issue is not addressed at all in the plan. The allocation issue will be considered by the SWRCB in the water rights proceeding.

Comment: Current water users are relieved of any liability or pressure to give up more water if endangered species in the Delta continue to decline because of a lack of clean water. (PORGANS-1)

Response: This comment appears to be based on the Principles for Agreement which states that, if additional federal ESA listings are necessary, any additional water needs will be provided by the federal government on a willing seller basis financed by federal funds. This provision is not incorporated into the draft plan. The provisions of this plan will be reviewed periodically to ensure that the aquatic resource protections are reasonable.

Comment: There is no guarantee that the water quality standards contained in the plan will ever be enforced by either the State or federal government. (PORGANS-1)

Response: The standards will be incorporated into the water right permits of the responsible parties through the water rights proceedings following adoption of this plan. Violation of the terms and conditions of a water right permit will trigger a review by the SWRCB. After review of the circumstances surrounding a violation, the SWRCB can initiate an enforcement action. Federal enforcement activities are not under the control of the SWRCB.

Comment: The draft plan opens the door to another Peripheral Canal proposal, sure to reignite the north-south bitterness that earmarked the 1982 Peripheral Canal proposal. (PORGANS-1)

Response: The program of implementation of the plan includes a recommendation to evaluate alternative water conveyance and storage facilities of the SWP and the CVP in the Delta but makes no recommendation favoring construction of the Peripheral Canal. The current water diversion facilities in the Delta adversely affect aquatic resources. The SWRCB is obligated to ensure that methods of diversion are reasonable.

Comment: The plan is unlikely to end the continued pollution of the Delta from toxic drainage water from western valley factory farms. This bottleneck in any comprehensive Delta protection plan remains unsolved a decade after the Kesterson National Wildlife Refuge disaster. Indeed, after $100 million in studies and cleanup, the growers that polluted Kesterson are still pushing for a master drain canal to dump the agricultural drainage into the Delta near Chipps Island. And on December 17, 1994, a federal judge in Fresno, at the request of the Westlands Water District, ordered the USBR to apply to the SWRCB for a permit to finish the agricultural drain to the Delta. (PORGANS-1)

Response: Implementation of the objectives and the recommendations to other agencies in the plan should adequately control pollution from San Joaquin Valley agricultural activities. The plan includes a recommendation that the USBR reevaluate alternatives for completing a drain to discharge salts outside of the San Joaquin Valley.

Comment: A water quality monitoring station should be established on the San Joaquin River above its confluence with the Stanislaus so that the flow and water quality implications of water from sources other than the Stanislaus River can be anticipated and understood before problems arise. (CDWA-1)

Response: There are water quality monitoring stations on the San Joaquin River above its confluence with the Stanislaus River. The nearest monitoring station on the San Joaquin River upstream of its confluence with the Stanislaus is at Maze Road.

Comment: An EC water quality standard the same as the Vernalis standard and an accompanying monitoring station should be added to the San Joaquin River downstream of its confluence with the Merced River. The sole measuring point at Vernalis encourages the USBR to meet the standard through New Melones flows (SJC-1).

Response: The standards in the draft plan are limited to locations within the legal boundaries of the Bay-Delta Estuary. The Vernalis monitoring station is located on the San Joaquin River at the southern boundary of the Delta. Water quality standards and compliance monitoring stations upstream on the San Joaquin River are principally the responsibility of the Central Valley RWQCB. The Central Valley RWQCB should adopt salinity standards on the San Joaquin River as necessary to protect beneficial uses. Coordination between the SWRCB and the Central Valley RWQCB will be needed to implement these objectives. It should also be noted that D-1422 requires the USBR to meet salinity standards at Vernalis through releases from New Melones.

Comment: The determination of Bay-Delta water quality standards should be integrated with the other major water actions being considered within northern California at this time, including the CVPIA, Trinity River restoration, San Joaquin River restoration, etc. All of these activities could have direct impacts on the timing and availability of water to meet Bay-Delta requirements. (WAPA-1)

Response: The draft plan is adequate to discharge the SWRCB's legal obligations. The law does not require the SWRCB to provide "full" protection. The SWRCB is required, in setting objectives, to provide reasonable protection of the beneficial uses and to prevent nuisance. (Wat. Code §13241) As noted in the draft plan, no clearly defined threshold levels exist which can be used to set objectives for flows and project operations. Instead, a continuum of protection exists which depends largely on the amounts of inflow and exports occurring in the Delta. Therefore, the draft plan sets objectives which will meet the reasonable needs of the beneficial uses.

Meeting the Water Code requirement also satisfies the requirements of the federal Clean Water Act for water quality standards, since the objectives in the draft plan are based on a consideration of their use and value for the established beneficial uses. (33 U.S.C. §1313(c).)

The federal and State antidegradation policies require that existing instream water uses and the water quality necessary to protect the existing uses shall be maintained and protected. The SWRCB expects that compliance with the objectives will maintain and protect the existing beneficial uses, and that the other measures called for in the plan will enhance protection of the existing uses. Therefore, the plan complies with the antidegradation policies.

Under the public trust doctrine, protections of public trust uses are subject to the rule of reasonableness set forth in California Constitution Article X, section 2. (National Audubon Society v. Superior Court (1983) 33 Cal.3d 419, 443, 189 Cal.Rptr. 346, 362.) The plan includes reasonable protections for public trust uses which meet this requirement.

Fish and Game Code section 5937 requires that adequate water be released or bypassed below a dam to keep downstream fish in good condition. This section may be a consideration in the water right phase. Nothing in the plan is inconsistent with this section.

Comment: The water quality objectives should not force the SWRCB to deviate from the water right priority system and the area of origin statutes in the water rights proceeding. The water right decision that implements the plan should adhere to these laws. Additional environmental water demands that would preclude additional upstream water development should not be imposed on upstream water supplies and storage. In implementing the standards the SWRCB should follow the area of origin laws, require the Delta exporters to fully mitigate their adverse environmental effects, follow the water right priority system, not give municipal and domestic uses preference, and prepare an EIR. (DTAC-1, MCWRA-1, BART-1)

Response: Nothing in the plan is intended to drive the future water right proceeding toward a predetermined water allocation scheme. The SWRCB will consider how to allocate responsibilities for meeting the objectives among water right holders when it conducts the water rights phase of the Bay-Delta proceedings. In the water rights phase, the SWRCB will

consider all applicable laws and will prepare appropriate environmental documentation before considering an action.

Comment: Water users in Area 1 of Westlands Water District receive water from the USBR under contract. They assert certain rights to receive a quantity of water from the USBR. The comment describes these rights and asks that the SWRCB enforce their protection. The USBR has reduced their water allocation in recent years, and they find the USBR's explanations inadequate or lacking. One of the explanations is that the reductions are needed to comply with federal Clean Water Act standards. Section 101(g) of the Clean Water Act, at 33 U.S.C. §1251(g), states that it is the policy of Congress that nothing in the Clean Water Act shall be construed to supersede or abrogate rights to quantities of water which have been established by any state. (WWD AREA1-2)

Response: The SWRCB will not require water users to comply with the new objectives in the plan until the SWRCB has held a water rights proceeding and has amended water rights. To the extent that the commenter urges the SWRCB to take enforcement action against the USBR under Water Code section 1825, the commenter may request such an action by filing a complaint with the Division of Water Rights. The United States Supreme Court, in PUD No. 1 of Jefferson County v. Washington Dep't of Ecology (1994) 114 S.Ct. 1900, narrowly interpreted section 101(g) to allow a state to regulate water users under the Clean Water Act to prevent their having an adverse effect on water quality. The Supreme Court pointed out that insufficient flows can cause water quality violations, and that reduced habitat caused by low flows may constitute pollution.

Comment: The SWRCB may need to reconsider the objectives during the water rights phase as part of an economic balancing and environmental analysis. (SFPUC-1)

Response: The SWRCB recognizes that some changes may be needed in the objectives after the water rights phase. The plan is subject to periodic review pursuant to Water Code section 13240 and may be revised upon review. Therefore, the SWRCB will have an opportunity to make needed changes.

Comment: The burden of mitigating project-created impacts on Delta public trust values cannot be transferred to other entities. To the extent that mitigation of project impacts requires additional water to flow into the Delta, it would be unfair and would violate the area of origin laws (Wat. Code sections 10500 et seq and 11460 et seq.) to require upstream non-project water right holders to provide such mitigation flows.

We are concerned that the SWRCB will not adequately consider our water requirements. The draft plan focuses on water quality and environmental uses in the Delta. There is almost no discussion of upstream uses. (SJTA-1, SJTA-2)

Response: The draft plan focuses on uses in the Bay-Delta Estuary because its purpose is to provide reasonable protection for those uses and because this is the area where the plan is

applicable. The SWRCB will consider the allocation of responsibility to provide water to meet the objectives during the water rights phase. The SWRCB recognizes the importance of complying with all applicable statutes when it allocates responsibility to meet the objectives in the plan.

Comment: The commenter asserts that the SWRCB's procedures for adopting the draft plan do not comport with the requirements of the Administrative Procedures Act, set forth at Government Code sections 11340 et seq. The commenter cites Government Code sections that apply to general rulemaking, and also cites SWRCB v. Office of Administrative Law (1993) 12 Cal.App. 4th 697 as authority for the comment. (WWD AREA1-1)

Response: As is noted in the Court of Appeal's decision which the commenter cited, the Legislature enacted Government Code sections 11352 through 11354 in 1992. The new sections did not affect the above litigation, which was pending at the time of the legislative enactment. (See Gov. Code §11354) Section 11353 exempts the adoption of a water quality control plan after June 1, 1992 from most of the rulemaking provisions of the Administrative Procedures Act, and it imposes special requirements. The procedures being used to adopt the draft plan fully comply with the requirements set forth in section 11353.

Comment: The plan should specify a charter under which the CALFED operations group, established under the Framework Agreement, will operate, including its authority and procedures. The plan should charter the operations group to include as voting members at least the signers of the Principles for Agreement and the commercial and sport fishermen. The charter should specify the voting members, the voting rules, the rules for convening and conduct of meetings, and the process for referring disputes to CALFED. The operations group should be constituted in conformance with the Federal Advisory Committee Act and California's Brown Open Meeting Act. The SWRCB and the federal agencies should seek the advice, respectively, of the California Attorney General and the Regional Solicitor regarding the formation of the operations group to conform to the Brown Act and the Federal Advisory Committee Act. The charter should provide that the operations group and CALFED are not empowered to constrain the State and federal agencies with respect to decisions on take under the ESA. (NHI-1, LWV-1, BISF-1)

Response: The organization of the operations group currently is the responsibility of the parties who executed the Principles for Agreement. The SWRCB will not implement the objectives in the plan until it has adopted an appropriate water right decision. Until then, the parties who executed the Principles for Agreement intend to implement the agreement through the operations group. Therefore, any organizational actions to ensure that the operations group is properly constituted should be carried out by the parties who executed the Principles for Agreement. The Bagley-Keene Open Meeting Act, not the Brown Act, will apply to the state agencies who are parties to the Principles for Agreement.

The water right decision after the water rights phase of the Bay-Delta proceedings will be the appropriate SWRCB determination to include specific provisions regarding an advisory body

to conduct real-time management of fishery protections in the Bay-Delta Estuary. The parties should be prepared to recommend a specific structure for the operations group or its successor when the SWRCB conducts a hearing in the water rights phase.

Comment: The plan should include default requirements for the $180 million mitigation and enhancement fund that is described in the Principles for Agreement. Without adequate assurances regarding funding of Category III activities, the plan does not provide equivalent protections to the USEPA standards. The default requirements should establish a water user fee program and apportion responsibility between the State and federal agencies and the water users. The plan should provide for the payment of the assessments to a non-governmental, nonprofit entity. The funding should consist of new monies -- that is, funds not otherwise available for habitat improvements in the Estuary. The use of funds should be coordinated with the use of funds under the CVPIA. The plan should set forth criteria governing the types of non-monetary contributions that would qualify as fund contributions, and the proposals should be reviewed by the fish and wildlife protection agencies for approval. The plan should specify the types of activities that would qualify for funding, and these activities should include restoration and water purchases. (NHI-1, LWV-1)

Response: The plan is not the place to establish an enforceable requirement for the payment of fees. At a minimum, further proceedings would be necessary to accomplish this, since the draft plan contained no such proposal upon which the parties could comment.

Further, such a requirement would be better suited for consideration in the water rights proceeding which will implement the plan. Any interim implementation should be conducted by the parties to the Principles for Agreement. Interested parties should be prepared during the water right phase to provide detailed recommendations for establishing a fee program. The parties should recognize, however, that legislation may be necessary to facilitate a fee program if the SWRCB is involved in it.

Comment: A draft environmental report meeting NEPA and CEQA requirements should be released for public review and comment before a plan is selected. The alternatives should be discussed in the same detail. (SARA-1)

Response: The environmental report meets the requirements of CEQA, under Public Resources Code section 21080.5. As this is not a federal action, NEPA does not apply. CEQA does not require that the alternatives be discussed in the same detail as the preferred alternative.

Comment: The draft environmental report must meet the central requirements of CEQA. (SEWD-2)

Response: The draft environmental report meets the requirements of CEQA by meeting the requirements of Public Resources Code section 21080.5.

Comment: The project includes both adoption of the objectives and implementation of the plan, but the draft environmental report does not address the impacts of implementation. (SEWD-2)

Response: The draft environmental report is a programmatic document. It addresses some of the impacts of implementation, where the impacts are known or can be estimated using reasonable assumptions. CEQA does not require speculation as to the effects of actions, and provides for the use of a programmatic document when a project will be completed in stages. Later documents can be used to describe specific actions in appropriate detail. Since the project includes adoption of both the objectives and the program of implementation, further documentation will be prepared before the objectives are implemented.

Comment: The draft environmental report contains some extrapolation and estimation regarding likely future outcomes and leaves some unresolved issues regarding project implementation, some of which must be resolved by other agencies, but the project is sufficiently well-defined for an adequate analysis of potential impacts. The analysis and conclusions in the draft environmental report are well-reasoned and based upon the best available evidence. While some of the analysis is "speculative" in the sense that future events cannot be predicted with complete accuracy, it is not speculative in the sense of being premature or incomplete. This point should be clarified in the text where appropriate. (JCWU-1)

Response: The SWRCB agrees that the draft environmental report is well-reasoned, based upon the best available evidence, and adequate to comply with the requirements of CEQA. The meaning of the term "speculative" is clarified in the environmental report and in this response to comments.

Comment: The SWRCB cannot adopt the draft plan until the proper CEQA review is completed. (SEWD-2)

Response: As discussed in the plan, the proper CEQA review for adopting the plan has been completed. Additional CEQA review as appropriate will be conducted before water right holders are required to meet the objectives in the plan unless the effects on such water right holders has been adequately analyzed in the environmental report.