

Appendix

**RESPONSES TO COMMENTS
ON THE DRAFT WATER QUALITY
CONTROL PLAN (January 1991)**

**San Francisco Bay/
Sacramento - San Joaquin
Delta Estuary**

Report Number, 91-17 WR

May 1991

**Prepared by the Bay-Delta Section
Division of Water Rights
WATER RESOURCES CONTROL BOARD
STATE OF CALIFORNIA**

Preface

"RESPONSES TO COMMENTS"

The State Board wishes to thank the participants for submitting comments on the January 1991 Draft Water Quality Control Plan for Salinity for the San Francisco Bay-Delta Estuary.

The "Responses to Comments" document distributed in this mailing summarizes the comments received on the January 1991 Draft Plan. Responses to these comments are divided into two sections (which are in turn organized by chapters of the Plan): the first lists the comments and responses that resulted in changes in the Draft Plan; the second lists those which resulted in no changes. These responses to comments were made available at the April 2, 1991 Board Meeting. Only the format of presenting the responses has been changed in this document.

Table of Contents

	<u>Page</u>	
Preface.....	i	
Table of Contents.....	ii	
 Section I, Comments that Resulted in Changes in Text of the Plan		
General Comments.....	I-1	
Chinook-Temperature Objectives.....	I-1	
Suisun Marsh.....	I-3	
Specific Comments.....	I-5	
Chapter 1.....	I-5	
Chapter 5.....	I-12	
Chapter 6.....	I-23	
Chapter 7.....	I-28	
 Section II, Comments that Resulted in <u>No</u> Changes in Text of the Plan		
General Comments.....	II-1	
Flow.....	II-1	
Negotiated Agreements.....	II-1	
Environmental Conditions.....	II-2	
Operation Studies.....	II-3	
Combined Effects.....	II-3	
Striped Bass.....	II-3	
Municipal and Industrial Water Quality Issues -		
Trihalomethanes.....	II-5	
Chinook-Temperature Objectives.....	II-6	
Municipal and Industrial Use.....	II-7	
Water Quality Control Plan.....	II-7	
Specific Comments.....	II-13	
Chapter 1.....	II-13	
Chapter 2.....	II-16	
Chapter 3.....	II-17	
Chapter 4.....	II-18	
Chapter 5.....	II-18	
Municipal and Industrial.....	II-19	
Agriculture.....	II-21	
Fish and Wildlife.....	II-23	
Relationship of Striped Bass Spawning Protection Relaxation		
Provisions to Water Supply.....	II-34	
Data Needs, Gaps and Tests.....	II-35	
Period of Spawning Protection.....	II-37	
Chapter 6.....	II-42	
Chapter 7.....	II-48	
 Section III, Technical Appendices		
Comments and Responses.....	III-1	
 Section IV, Addendum to the "Responses to Comments".....		IV-1

SECTION I

Comments that Resulted in Changes in Text of the Plan

General Comments

Chinook-Temperature Objectives

Comment: Various agencies consider the temperature objectives to be generally impractical and unreasonable and note that the Plan includes the exclusion of reservoir releases as a controllable factor. USBR believes that facilities to improve salmon passage through the Delta are actions that need to be considered in the evaluation of alternatives to meet the various beneficial uses and suggests that such facilities be identified and studied by appropriate work groups (WQCP-USBR-129A, Page 2, last paragraph, Page 3, first paragraph; WQCP-SWC-631,2, first para.; WQCP-DWR-25, Page 4, third paragraph).

Response: The wording of the fall-run Chinook salmon temperature objective is going to be changed as follows:

Change in text:

"The daily average water temperature shall not be elevated by controllable factors above 68°F from the I Street Bridge to Freeport of the Sacramento River, and at Vernalis on the San Joaquin River between April 1 through June 30 and September 1 through November 30 in all water year types."

Response: The wording of the winter-run Chinook salmon temperature objective is going to be changed as follows:

Change in text:

"The daily average water temperature shall not be elevated by controllable factors above 66°F from the I Street Bridge to Freeport on the Sacramento River between January 1 through March 31."

This wording will be inserted in the following places in the text and tables of the Plan:

Tables 1-1, 5-5 and 6-3; and Pages 1-13, 5-15, and 5-25.

Response: To address the concerns expressed above, other changes will also be included.

1) Table 1-1, Page 8 of 8

Change in text:

"Based on the record in these proceedings, controlling temperature in the Delta utilizing reservoir releases does not appear to be reasonable, due to the distance of the Delta downstream of reservoirs and uncontrollable factors such

ambient air temperature, water temperatures in the reservoir releases, etc. For these reasons, the State Board considers reservoir releases to control water temperatures in the Delta a waste of water; therefore, the State Board will require a test of reasonableness before consideration of reservoir releases for such a purpose."

2) Table 5-5, Page 28 of 28

Change in text:

"Based on the record of these proceedings, controlling water temperature in the Delta utilizing reservoir releases does not appear to be reasonable, due to the distance of the Delta downstream of reservoirs and uncontrollable factors such as ambient air temperatures in the reservoir releases, etc. For these reasons, the State Board considers reservoir releases to control water temperatures in the Delta a waste of water; therefore, the State Board will require a test of reasonableness before consideration of reservoir releases for such a purpose."

3) Table 6-3, Page 8 of 8

Change in text:

"Based on the record in these proceedings, controlling temperature in the Delta utilizing reservoir releases does not appear to be reasonable, due to the distance of the Delta downstream of reservoirs and uncontrollable factors such as ambient air temperature, water temperatures in the reservoir releases, etc. For these reasons, the State Board considers reservoir releases to control water temperatures in the Delta a waste of water; therefore, the State Board will require a test of reasonableness before consideration of reservoir releases for such a purpose."

4) Page 1-13

Change in text:

"Controllable water quality factors are those actions, conditions, or circumstances resulting from human activities that may influence the quality of the water of the State, that are subject to the authority of the State Board, or the Regional Board, and that may be reasonably controlled. Based on the record in these proceedings, controlling temperature in the Delta utilizing reservoir releases does not appear to be reasonable, due to the distance of the Delta downstream of reservoirs and uncontrollable factors such as ambient air temperature, water temperatures in the reservoir releases, etc. For these reasons, the State Board considers reservoir releases to control water temperatures in the Delta a waste of water; therefore, the State Board will require a test of reasonableness before consideration of reservoir releases for such a purpose."

5) Page 5-15

Change in text:

"Controllable water quality factors are those actions, conditions, or circumstances resulting from human activities that may influence the quality of the water of the State, that are subject to the authority of the State Board, or the Regional Board, and that may be reasonably controlled. Based on the record in these proceedings, controlling temperature in the Delta utilizing reservoir releases does not appear to be reasonable, due to the distance of the Delta downstream of reservoirs and uncontrollable factors such as ambient air temperature, water temperatures in the reservoir releases, etc. For these reasons, the State Board considers reservoir releases to control water temperatures in the Delta a waste of water; therefore, the State Board will require a test of reasonableness before consideration of reservoir releases for such a purpose."

6) Page 7-4

Change in text:

Delete "Chapter 5" and insert "Section 5.5.2.5".

Suisun Marsh

Comment: The Plan deletes salinity objectives for Suisun Marsh (WQCP-SCLDF-1, page 9, point IV.).

Response: The following wording will be added to the Plan for clarification of the status of the objectives that apply to Suisun Marsh.

Change in text:

"In regard to the Suisun Marsh, the water quality objectives for Suisun Marsh are unchanged from the 1978 Delta Plan. The implementation vehicle, Water Right Decision 1485 (D-1485), was amended in 1985 to change (or delete) some monitoring stations and to revise the schedule for implementation. The DWR, USBR, DFG, and Suisun Resource Conservation District (SRCD) have signed and adopted a set of three agreements concerning the Suisun Marsh. These are the Suisun Marsh Preservation Agreement (SMPA), the Monitoring Agreement, and the Mitigation Agreement. The SMPA contains water quality standards for the managed marshes of Suisun Marsh which the four signatories would like the State Board to adopt as water quality objectives. The Mitigation Agreement describes the physical facilities that the four signatories have agreed would serve the managed marshes in order to maintain production of preferred waterfowl food plants. The facilities built so far, including the Suisun Marsh Salinity Control Gates (previously called the Montezuma Slough Control Structure), have changed the physical regime in the Marsh.

Revised water quality objectives incorporating the SMPA (with any modifications necessitated by the biological assessment) will be adopted by the State Board after the biological assessment (discussed in Section 7.4.2.6) is completed. Until that time, the water quality standards in the amended D-1485 will continue to be implemented; see Table 1-2 for a summary of these standards."

Specific Comments

Page 1-4, last sentence; continuing on to p.1-5;

Comment: Change trihalomethanes to disinfection by-products (WQCP-SWC-632,7-14).

Response: Comment noted.

Change in text:

"The existence of disinfection by-products, caused by the treatment of water containing bromides that naturally occur in ocean water and containing organic materials that result from decomposition..."

Page 1-4

Comment: The description of reverse flows should include the San Joaquin River above the confluence of the Mokelumne River, and Old and Middle rivers (WQCP-DFG-5,1).

Response: Agree.

Change in Text:

"...reverse flows in various reaches of the San Joaquin River, Old River, Middle River and other Delta channels, caused by the CVP, SWP, CCC and local agricultural diversion pumps; and..."

Page 1-6

Comment: More stable funding is required for the entire Interagency Ecological Study Program, not just DFG (WQCP-USFWS-7,3).

Response: Agree. Text will be changed. The State Board on two occasions has attempted to improve funding for this program through the legislature, but was unsuccessful.

Change in text:

"Since planning and executing studies of the Estuary require DFG to work closely with the other member agencies of the IESP, more stable and consistent funding of all IESP programs is required to achieve maximum benefits from these studies and to achieve effective Estuary management."

Page 1-7, Water Resources Management

Comment: Add the following or a second paragraph to page 1-7.
" A process being called Urban Water Conservation Best Management Practices (BMP) is being developed by urban water suppliers, environmental organizations, and other public interest groups statewide. The BMP process represents a consensus among the above groups on an appropriate resolution of the urban water conservation for these Bay-Delta hearings. The State Water Resources Control Board encourages such consensus recommendations." (WQCP-SWC-633,3).

Response: We agree with the comment in general.

Change in text:

"A process being called Urban Water Conservation Best Management Practices (BMP) is being developed by urban water suppliers, environmental organizations, and other public interest groups statewide. The BMP process represents a consensus among the above groups on the issue of urban water conservation for the Bay-Delta hearing. The State Water Resources Control Board encourages such consensus recommendations."

Page 1-7, Proposed Review of Striped Bass Fishing Regulations

Comment: Pages 1-7, 1-18, 7-20 - Board has responsibility to set water quality and water rights objectives to protect public trust resources, without regard to how the harvest of those resources is regulated by other agencies. No evidence that present management practices interfere with the Board's ability to carry out its duties. No conceptual relationship between water conservation measures and the regulation of public trust resource harvest. Request these references be removed (WQCP-DFG-5,5).

Comment: Pages 1-7, 1-18, 7-20 - Inappropriate to include fish harvest management changes as a Water Resource Management tool; is not the responsibility of the Board to manage fish harvests. The State Board has responsibility to set water quality and water right objectives to protect public trust resources regardless of how are managed (WQCP-NMFS-1,2-3).

Comment: Page 1-7 - A change in fishing regulations is a poor choice for a reasonable choice in water resources management when the problem of low populations is habitat damage rather than inappropriate fishing regulations (WQCP-USFWS-7,3).

Response: We agree that discussion of fishing regulations in the context of water management options is not appropriate, and it will be deleted. We also agree that setting water quality standards to protect habitat should be independent of fishery management decisions. However, the Board believes it appropriate to recommend, at least for consideration by other agencies as part of an overall implementation plan, temporary changes in fishery harvest regulations.

Change in text:

"Temporary changes in fishery harvest regulations should be considered as part of an overall short-term approach to improve the situation until longer-term measures may be instituted. The Board does not believe such measures should substitute for its own responsibilities to provide suitable habitat."

Page 1-10; eighth bullet, of the Plan:

Comment: Sentence should indicate that planning for M&I water needs must focus on requirements of a reliable supply of high quality drinking water at an affordable cost (WQCP-SWC-632,7-14).

Response: Comment noted.

Change in text:

"... a reliable supply of high quality drinking water..."

Page 1-11 "Salinity Requirements..."

Comment: General conclusions should be added adopting the concept of best available source for drinking water, and recognizing the need to develop a program to reduce the impacts of THM precursors from Delta agricultural drains. (Suggested language is included) (WQCP-SWC-632,4).

Response: Agree; Suggested language will be included.

Change in text:

"There is a need for water from the best available sources to meet the drinking water need of all Californians. There is a need to design and implement a comprehensive trihalomethane formation potential (THMFP) monitoring program, and to develop best management practices, or other appropriate means, to control discharges of THMFP."

Page 1-11; third bullet; last sentence:

Comment: Currently states that "deleting the 150 mg/l objective could result in increased bromide concentrations and substantially increased treatment costs". Should be revised to read that decreasing the objective could result in increased bromide concentrations and increased salinity and consumer complaints due to the salty taste in the water. (WQCP-SWC-632,1-7).

Response: Agree.

Change in text:

"... increased bromide concentrations and increased salinity and consumer complaints due to the salty taste in the water. (WQCP-SWC-632,1-7). (5.1)

Page 1-11; sixth, seventh and eighth bullets and p. 5-5; second, third and fourth bullets (language is similar for all referenced bullets); p. 5-6, following the fourth paragraph: p. 5-7; Item No. 2 and Item No. 3: p. 5-8; Item No.3 and Item No. 8: p. 6-12; Section 6.2.3.2:

Comment: Suggest deleting all referenced bullets and adding new paragraphed language. The proposed language includes a discussion on the contribution of agricultural drainage from Delta islands, and requests the State Board, DWR and USBR to

develop measures, costs and an implementation schedule to achieve a chloride objective of 50 mg/l at all Delta M&I intakes. A report on the subject is to be prepared by March 1992. The proposed language also states that as a result of the new and existing drinking water regulations, water utilities treating Delta water will continue to violate and increase the rate of violation of those standards due to current Delta water quality (WQCP-SWC-632,1-7).

Response: Disagree with deleting the referenced bullets in favor of the proposed language. However, agree with revising the seventh bullet on p. 1-11 (the third bullet on p. 5-5).

The proposed language concludes that agricultural drainage from Delta islands contributes 40 to 45 percent of the THMFP in the Delta during irrigation months, and 38 to 52 percent during the winter leaching period in water year 1988 (emphasis added). Including this information as a conclusion in the Plan would be misleading. The information provided is based on a first estimate, has not been confirmed, is for one single dry water year, and covers the entire Delta as opposed to a particular location such as the Clifton Court Pumping Plant. As such, the information should be considered preliminary (Bruce Agee, DWR, pers. comm.).

The proposed language also indicates that water utilities treating Delta water currently violate drinking water standards and that this rate of violation will increase as a result of new water regulations. This language is misleading. Violations of current drinking water standards by water utilities occur very infrequently, certainly not on a consistent basis as the proposed language seems to imply. Also, it is not a certainty that new drinking water regulations will result in stricter standards (see Contact Report dated March 15, 1991 re. conversation between Leo Winternitz, SWRCB; Bruce Macler, EPA; and Alexis Milea, DHS).

The proposed language states that the DWR and USBR will work with the SWRCB to develop measures, costs and an implementation schedule to achieve a chloride objective of 50 mg/l at all Delta M&I intakes, and to prepare a report by March 1992. This issue is a subject for the Scoping Phase and therefore it is premature as a conclusionary action for this Plan.

SWC recommends¹ deleting the seventh bullet on p. 1-11, (third bullet on p. 5-5) because the statement directly links DBP regulations and salinity, implying that drinking water quality is the only consideration for salinity revisions. Disagree with deleting the bullet but agree that the statement should be revised.

Change in text:

"If drinking water standards on DBPs are revised, the State Board will consider modifying existing salinity objectives."

Page 1-11; last bullet, and p. 5-5; fifth bullet (language is similar in both bullets):

Comment: The statements indicate that municipal water supply agencies have sufficient power to control chloride and bromide levels in the Delta, and this is not the case. Language is suggested to correct this impression. Language includes actions that drinking water supply agencies could take to try meeting a 50 mg/l chloride objective (WQCP-SWC-632,1-7).

Response: Comment noted.

Change in text:

... "encouraging DWR and the USBR to work with the SWRCB to ensure development of facilities to make maximum use of uncontrolled flows through off-stream storage, encouraging those agencies to move water supply intakes to better locations, working with the State and Regional Boards to eliminate problem discharges within the Delta, continuing the development of alternative water treatment technologies." (5.2).

Page 1-13

Comment: Suggest adding "poaching" to the factors affecting striped bass abundance. Suggest finding should read "...and recreational angler harvest, and illegal poaching." (WQCP-SWC-631,2,12).

Response: Agreed. Comment noted.

Change in text:

"...recreational angler harvest, and illegal poaching."

Page 1-14, Marshes, first paragraph

Comment: The name "Montezuma Slough Control Structure" should be replaced, wherever it occurs in this Plan, with the name "Suisun Marsh Salinity Control Gate" (WQCP-DWR-24,11).

Response: Comment noted.

Change in text:

The name "Montezuma Slough Control Structure" will be replaced, wherever it occurs in this Plan, with the name "Suisun Marsh Salinity Control Gate" (WQCP-DWR-24,11).

Page 1-14

Comment: Unclear how closure of the Delta Cross Channel gates can cause south Delta entrainment. In some cases it can reduce Sacramento River losses (WQCP-USFWS-7,3).

Response: Agree. The footnote will be reworded.

Change in text:

"Entrainment means primarily the effects of project operations, such as operation of the Delta Cross Channel gates, export pumping, and reverse and low river flows, plus local non-project diversions."

Page 7-21

Comment: It should be made clear that the first paragraph refers to the Sacramento River Water Year Classification (WQCP-CVPWA-210,36-37).

Response: Agree.

Change in text:

Page 7-21, Section 7.5.3.1., para 1, and Page 1-15, Section 1.6, para 1, will be amended as follows: "The current Sacramento River Basin Water Year Classification..."

Pages 1-15 fourth bullet and Page 7-9 fifth paragraph immediately following Section 7.4.2.1.

Comment: The language in these sections should be revised to strengthen the direction to the Central Valley Regional Board relative to actions needed regarding the Delta island drains. The Regional Board should be directed to take firm action regarding the Delta drains. These tasks are to begin in the Rock Slough and Clifton Court Forebay areas (WQCP-SWC-632,1-7).

Response: Agree with the intent to strengthen direction to the Central Valley Board and with the proposed language revisions.

Change in text:

".....Central Valley Regional Board shall require the development and implementation of best management practices or other means to appropriately control these discharges."

Page 1-16, last para.

Comment: USBR suggests that the wording of this sentence should be changed to include all runs of Chinook salmon (WQCP-USBR-129B, Page 1, paragraph 4).

Response: The sentence will be changed.

Change in text:

"Analysis is needed of the effectiveness of various means to control factors which will help maintain cooler water in the Sacramento and San Joaquin rivers and their tributaries for the protection of all runs of Chinook salmon."

Page 1-17

Comment: USFWS states that the paragraph on temperature monitoring should also indicate how the temperature data is to be used (WQCP-USFWS-7, Page 3, 6th specific comment).

Response: The following sentence will be added to the referenced paragraph (and to Page 7-8, section 7.3.2.3, first paragraph).

Change in text:

"The temperature data collected are to be submitted to the State Board which will then make a determination whether controllable factors should be controlled."

Page 1-17, Estuarine Habitat, first paragraph

Comment: It was suggested that the second sentence be changed to read:

"Relatively few investigators have been able to specifically quantify the lower level of conditions that protect the beneficial uses." (WQCP-USFWS-7,3)

Response: The text in the Plan will be changed as suggested.

Change in text:

"Relatively few investigators have been able to specifically quantify the lower level of conditions that protect the beneficial uses."

Page 1-17, Scoping and Water Right Issues (7.5), first paragraph

Comment: The Board should modify the language in this paragraph to reflect the fact that the burden of compliance monitoring will also need to be distributed (WQCP-SWC-633,5).

Response: The first paragraph will be changed.

Change in text (changed and added language underlined):

"Only a few parties are currently responsible for meeting water quality and flow requirements and for compliance monitoring activities within the Delta. The Board requests that information be developed on how these burdens should be distributed"

Page 1-19, Entrapment Zone (7.5.3.3), and Page 7-22, Section 7.5.3.3, introductory paragraph

Comment: USFWS did not agree with the qualifying phrase "if any" in the statement and that "the statement should simply read as follows: 'Studies are needed to better define the linkage between...'" (WQCP-USFWS-7,7). DWR, SWC, and CVPWA stated that the later references to the linkage of fish productivity to the entrapment zone do not include the qualifier; they claim that there is no linkage at all (WQCP-DWR-24,14; WQCP-SWC-631,1; WQCP-SWC-633,5-6; WQCP-CVPWA-210,11).

Response: The degree of linkage is what is in doubt. The language in the Plan, on pages 1-19 and 7-22, will be changed.

Change in text:

"Studies are needed to better define the degree of linkage between the location and productivity of the entrapment zone and the effects on the population levels of important fish species." [new words underlined]

Page 5-1, Section 5.0.1, paragraph 3

Comment: The second sentence implies that the South Delta negotiated agreement will be accepted as the South Delta water quality objectives. The sentence should be reworded to read as follows: "Development of objectives for the South Delta will commence upon receipt of a negotiated agreement between..."(WQCP-USFWS-7,4).

Response: This statement refers to implementation of the 1978 Delta Plan objectives, not the Draft Plan objectives. This sentence will be clarified.

Change in text:

"Implementation of the Delta Plan objectives for the Southern Delta were initially postponed until suitable circulation and water supply facilities were completed. Implementation of these objectives was further delayed at the request of the South Delta Water Agency (SDWA), USBR, and DWR, awaiting the results of continuing negotiations among these three agencies."

Page 5-7; Item No.6

Comment: Question the need to study the chloride/bromide relationship in the Delta unless there is evidence that another, as yet undiscovered, bromide source is expected to exist (WQCP-SWC-632,7-14).

Response: Agreed.

Change in text:

"A major source of bromide ions in Delta waters is sea water and a relationship has been documented to exist between chloride levels and bromide levels in sea water."

Pages 5-9 and 5-12

Comment: Meeting agricultural objectives at interior South Delta stations is contrary to the intent of the negotiated contract. With the contract in place, the water quality objectives should only apply to the station at Vernalis. The proposed objectives are infeasible and, therefore, should not be included (WQCP-DWR-24,7; WQCP-SWC-630,3-4; WQCP-CVPWA-210,10).

Response: Evidence has not been shown that it is impossible to meet the interior agricultural objectives. Implementation will look at not only Project operations but other various solutions, including; non-Project operations, a salt-reduction program, and physical facilities. The following wording replaces that which describes the southern Delta portion of Section 7.2.2.2 on page 7-3 of the Plan.

Change in text:

"o Southern Delta

The implementation plan is comprised of two interim stages and a final stage.

Interim Stage 1 -- 500 mg/l mean monthly TDS all year at Vernalis.

Interim Stage 2 -- (to be implemented no later than 1994)
0.7 mmhos/cm EC April to August 31, 1.0 mmhos/cm EC
September 1 to March 31; 30-day running average at Vernalis
and Brandt Bridge, with water quality monitored at three
current interior stations -- Mossdale, Old River, near Middle
River and Tracy Road Bridge; and an additional interior
monitoring station on Middle River at Howard Road Bridge.

Final Stage -- (to be implemented no later than 1996)
0.7 mmhos/cm EC April to August 31, 1.0 mmhos/cm EC
September 1 to March 31; 30-day running average at Vernalis
and Brandt Bridge on the San Joaquin River, with two interior
stations at Old River near Middle River and Old River at Tracy
Road Bridge. Monitoring stations will be at Mossdale at head
of Old River and Middle River at Howard Road Bridge."

or

If a three-party contract has been implemented among DWR, USBR and the SDWA, that contract will be reviewed prior to implementation of the above and, after also considering the needs of other beneficial uses, revisions will be made to the objectives and compliance/monitoring locations noted above, as appropriate.

The above change will also be reflected in Tables 1-1, 5-5 and 6-3, and 7.2.2.2 text.

Page 5-9

Comment: The Framework Agreement has been superceded by the terms of the draft contract (WQCP-USBR-129A,2).

Response: Agree. The WQCP, Page 5-9, Section 5.3.1.3, "Southern Delta" first paragraph, third bullet, will be edited.

Change in text:

"o The terms of the draft contract for settling litigation brought by the SDWA against the USBR and DWR."

Pages 5-14 and 5-15, Section 5.4.1

Comment: It was suggested that an item about Potamocorbula be added to the list of recent changes in the Delta found on page 5-14 (WQCP-SWC-631,3-4; WQCP-CVPWA-210,11).

Response: The following item will be added (and the format of items 3 and 4 modified as needed).

Change in text:

" 5. The introduction and rapid increase in numbers and range of the Asian clam Potamocorbula and its possible adverse effects on phytoplankton and zooplankton abundance."

Page 5-16 para. 1

Comment: CVPWA comment includes a suggested revision of the first sentence: Various water quality conditions, such as temperature, dissolved oxygen (DO) and salinity, affect Chinook salmon survival in the Delta (WQCP-CVPWA-210, Page 12, last paragraph; WQCP-SWC-631, Page 5, paragraphs 3 and 4).

Response: The referenced sentence will be changed to read as follows:

Change in text:

"Various water quality conditions can affect Chinook salmon survival in the Delta. The water quality variables under consideration were temperature, dissolved oxygen (DO) and salinity."

Page 5-19, Sec. 5.5.2.1 para. 1

Comment: USFWS recommends wording changes describing the time periods of the temperature objective in terms of salmon life stages; it states that the sentence, regarding the ability and options to attain a desired temperature objective have not been fully investigated, is misleading because USBR temperature modelling shows that flow does reduce temperature (WQCP-USFWS-7, Page 5, paragraph 3).

CVPWA suggests that 1) the paragraph be rewritten and provides the suggested revision, states 2) among other things that there are no winter-run Chinook in the San Joaquin River (WQCP-CVPWA-210, Page 16, last paragraph).

Response: Regarding the wording describing the time periods: wording changed. The first sentence should be reworded for clarification. Regarding the sentence on the ability and options to attain the temperature objective: This is not meant to be misleading, evidence was presented that showed it is not feasible to use only flow to achieve the temperature objectives. If flow is to be used at certain times of the year during certain water year types that evidence needs to be presented to the State Board (see IV. Controllable Factors: response to comments A. and B.).

Change in text:

"The critical periods for fall- and winter-run Chinook salmon in the lower Sacramento and San Joaquin Rivers are between December 1 and June 30 and September 1 and November 30 of each year, because these encompass the spawner migration and the juvenile outmigration phases through this area (See Appendix 5.3, Chinook Salmon)."

Page 5-19, Page 5-24

Comment: EPA notes that the text states that increased flows could have an effect on temperatures, however there is no explanation given for excluding reservoir releases from "controllable factors". The plan recommends the temperature objectives be subject to "controllable factors". This should not be an explicit part of the objective but part of the Program of Implementation (WQCP-EPA-1, Page 2, paragraphs 2-4; WQCP-SCLDF-3, Page 1).

Response: Please see response to USBR comments in GENERAL COMMENTS, Chinook-Temperature Objectives which includes changes in the text (pages, I-1 and I-2).

Page 5-22

Comment: DFG considers the objectives for fish and wildlife reasonable except for the 66°F objective for the winter run Chinook salmon because it implies that it would be acceptable to warm the river during the winter. Because there is no evidence that a temperature problem exists from January to March, it is recommended that the objective be deleted. (WQCP-DFG-5, Page 2, paragraph 1; WQCP-USFWS-7, Page 5, paragraph 4 (no page reference for the Plan); WQCP-CVPWA-210, Page 12, paragraph 4-5 (Page 5-15); WQCP-CVPWA-210, Page 20, last two paragraphs (Page 5-22); and WQCP-CVPWA-210, Page 23, paragraph 2 (Page 5-26)).

Response: The temperature objective for winter run is to provide protection for a listed species during the time when they are most likely to be in the Delta. If additional information is provided that more precisely defines the timing of their migration through the Delta and their temperature requirements while in the Delta, this information can be incorporated into the triennial review process.

Change in text (the following wording will be inserted into Page 5-22 of the Plan):

"The winter-run Chinook salmon temperature objective is a cap to prevent water temperature from going higher than the present temperatures in the Delta. It is not a goal. This objective is just one of several ways of providing protection from elevated water temperatures. Other such protection measures include the Thermal Plan (see in Section 5.5.25) and the State Board "anti-degradation policy", "Statement of Policy With Respect to Maintaining High Quality of Water in California", Resolution 68-16."

Comment: DWR states that even with the installation of the temporary rock barrier at the head of Old River, a dissolved oxygen (DO) level of 6 mg/l cannot be maintained September 1 through November 30 in the San Joaquin River near Stockton (WQCP-DWR-12). More description is needed of the many factors not related to the SWP and CVP operations that contribute to the DO problem, including: 1) the recently deepened ship channel; 2) the enlarged turning basin at the Port of Stockton; 3) the Stockton Sewage Treatment Plant; 4) upstream BOD sources; and 5) commercial use of the dead-end portion of the ship channel, where the DO often falls to zero. The Plan of Implementation should specify how this objective will be met. Two methods are suggested for improving DO levels; additional methods should be considered (WQCP-DWR-24, Page 11, last paragraph-Page 12, paragraphs 1-2; WQCP-DWR-25, Page 4, last paragraph;) (WQCP-CVPWA-210, Page 23, last paragraph-Page 24; WQCP-CVPWA-210, Page 35).

Response: The text (Page 5-23, paragraph 3) will be amended to include the following sentences.

Change in text:

"Factors that may contribute to the low levels of dissolved oxygen, in addition to low flows in the San Joaquin River during the fall months, include: 1) the recently deepened ship channel; 2) the enlarged turning basin at the Port of Stockton; 3) the Stockton Sewage Treatment Plant; 4) upstream BOD sources; and 5) commercial use of the dead-end portion of the ship channel.

Measures to implement this objective include the following: 1) regulation of the effluent from the Stockton Sewage Treatment Plant and other upstream discharges contributing to the BOD load; 2) install the temporary barrier or additional barriers as may be needed, 3) investigate mechanical or chemical methods to oxygenate the water at critical points along the river channel, and 4) increase flow in the San Joaquin River. A decision on the precise implementation measures will be made during the forthcoming proceedings."

Comment: The text does not explain how estimates of spawning activity were determined for the table on this page (WQCP-SWC-631,13).

Response: The text in Section 5.6.2.1 will be modified to explain the procedure.

Change in text:

"The percent of spawning activity assumed protected under each alternative in the table above is determined directly from Table 5-2. The range of percent spawning activity protected is simply the amount of spawning activity measured (i.e.,

percent of total eggs collected) by the end date of each alternative. There is assumed to be relatively little spawning which occurs before about April 14 each year, so the absence of ramping (i.e., appropriate salinity from April 1 rather than ramping flows to April 15) was assumed to add only about 5 percent additional spawning activity protection over that provided by ramping. The relative lack of data before April 15 makes this somewhat speculative, but in any case it is probably not significant."

Antioch and Prisoners Point Spawning and Relaxation Objectives

Pages 5-27 through 5-35

- Comment: Page 5-27 to 5-28 - The scientific basis for the 1.5 EC objective at Antioch is not described in the Plan (WQCP-EPA-1,5).
- Comment: Page 5-27 to 5-34 - The objective of 1.5 EC at Antioch is not supported by the evidence. The record shows that spawning standards should be less than 0.33 mmhos/cm. The standards should be expanded to designate specific river segments, rather than just specific points (WQCP-SCLDF-1,6).
- Comment: Page 5-32 to 5-33 - The striped bass spawning standard in the central Delta is set at a single location (Prisoners Point) (WQCP-CWPC-1,8).
- Comment: Page 5-32 to 5-33 - The benefits of the proposed change in the Prisoners Point objective from 0.55 to 0.44 mmhos/cm are not supported by data (WQCP-DWR-24,13).
- Comment: Page 5-30 to 5-32 - The relaxation provision is incorrectly tied to the Suisun Marsh D-1485 standard at Chipps Island (WQCP-SWC-630,6-7).
- Comment: Page 5-30 to 5-32 - Even with a relaxation to an Antioch EC of 4.4 mmhos/cm, ten to fifteen miles of spawning habitat would still remain (WQCP-SWC-630,8).
- Comment: Page 5-32 to 5-33 - No evidence that striped bass spawning is being adversely impacted by current objective of 0.55 mmhos/cm at Prisoners Point, and it should be retained (WQCP-SWC-630,9).
- Comment: Page 5-27 - The statement "deficiencies in firm supplies and the level of protection afforded by the striped bass spawning objective should be correlated" is unclear (WQCP-USFWS-7,5).
- Comment: Page 5-30 - No technical basis exists for estimating the length of spawning habitat in the San Joaquin River when Antioch EC is 25.2 mmhos/cm. Very little biologically-based information available to relate spawning and Antioch EC and deficiencies (WQCP-SWC-631,13).

Comment: Page 5-35 - There is no scientific evidence to justify changing the D-1485 relaxation provision to 3.7 mmhos/cm EC. No justification to retain a relaxation provision beyond 3 MAF (WQCP-CVPWA-210,26).

Comment: (Page 6-20 also) - Agrees that considerable uncertainty regarding potential benefits of striped bass salinity objectives. Arthur's work shows "ample production of striped bass eggs and larvae". Significance of various findings should be determined prior to making any final determinations on salinity objectives (WQCP-CVPWA-210,33).

Response: (Since all of this response will also be used for changes in text, each change will be labeled as to where in the Plan it will be inserted).

Change in text, Page 5-30:

"The present Antioch standard of 1.5 mmhos/cm EC was primarily designed, as is described in Section 5.6.1.1, to provide a suitable spawning habitat upstream of Antioch, not at the Antioch location itself. According to the recollection of Don Stevens of DFG (pers. comm., 3/91), Antioch was chosen as a monitoring point because a salinity monitoring station was already established at the Antioch Water Works. The use of 1.5 mmhos/cm EC at Antioch for spawning protection appears not to be generally appropriate, since DFG's own testimony indicates that striped bass prefer to spawn in freshwater, and that a spawning objective of 0.44 mmhos/cm EC represents the "best scientific evidence" of the water quality needed to restore spawning in the historical spawning area of the San Joaquin River (WQCP-DFG-4,9) (see Section 5.6.2.3). However, the Antioch water quality objective may continue to serve the purpose of being an ultimate delimiter of spawning habitat; the Antioch objective can also be considered an "implementing measure" since maintaining that objective should produce less saline, and thus more suitable habitat, upstream of Antioch in the San Joaquin River. DFG has observed some spawning in the Antioch to Jersey Point reach, sometimes in EC's of 1.5 mmhos/cm or higher, in some very dry years (1972 and 1977). Laboratory studies also indicate that egg survival is not affected adversely in water with EC's up to 1.5 mmhos/cm (DFG,25,46). These conditions have typically produced some of the lowest abundance indices, however. We also agree that the striped bass spawning objectives, as proposed, do not in fact designate a spawning reach, but only a single location (Prisoners Point) where appropriate salinities for the majority of spawning, as determined by DFG, are required to be present."

Change in text, Page 5-32:

"As several participants have pointed out, there is considerable confusion about the appropriateness of the proposed relaxation criteria, in terms of what salinity is appropriate at Antioch for various deficiency levels. As has been discussed, the 1978 Delta Plan and EIR based the relaxations on a salinity/flow relationship for the Sacramento River, which was assumed to be applicable to the San Joaquin River as well. In addition, the theoretical extent of salinity degradation was supposedly limited to a maximum of 3.7 mmhos/cm EC because of the Chipps Island Suisun Marsh standard. The entire process is built on a series of artificial relationships which are unrelated to the main issue at hand, which is the establishment and maintenance of suitable spawning habitat for striped bass in the San Joaquin River and the relaxation of that habitat requirement when water project firm deliveries are reduced.

The State Board continues to believe that, as stated in its conclusions on striped bass (Section 5.6), the "[d]eficiencies in firm supplies and the level of protection afforded by the striped bass spawning objective should be correlated". The present deficiency schedule does not do that, since no specific relationship between extent of habitat and change in salinity intrusion has been made. The present relationship is based on a Sacramento River salinity/flow relationship. Several participants have appropriately questioned the basis for this relationship.

In 1990, the projects declared a deficiency and invoked the relaxation provision. Despite compliance with other D-1485 standards, the theoretical expected Antioch maximum EC of 3.7 mmhos/cm was exceeded. In addition, monitoring data from 1990 suggest that EC's greater than 0.44 mmhos/cm occurred throughout nearly all of the striped bass spawning area, not simply at the downstream end.

The State Board would like to relate deficiencies to spawning area in a direct, measurable way: by simply making increases in deficiencies directly related to the shortening of the length of river reach in which suitable spawning habitat will be required to be maintained. The Board believes this approach would have a negligible effect on water supplies during most years because D-1485 provides some umbrella spawning protection upstream of Antioch by means of the central and western Delta agricultural standards. These standards are presently under review, and the required water quality at some locations may be reduced (salinity increased). By establishing a separate spawning habitat objective, no re-evaluation of the effects of water quality degradation on striped bass habitat will be required. The present agricultural water quality objective includes a level of 0.45 mmhos/cm EC at Jersey Point from April 1 to August 15 (in all but critical years). This objective essentially duplicates the current EC and starting date requirements for striped bass

spawning protection. In Section 7.5.2.4, Program of Implementation, we outline a proposal for evaluation of the concept of establishment of a specific spawning protection zone, and a directly related relaxation provision."

Change in text, Page 6-20:

"Various participants have argued that there is no evidence that striped bass spawning habitat is limiting, and that striped bass have been observed to spawn in water with salinity higher than 0.44 mmhos/cm EC. Laboratory tests also suggest that eggs can survive and hatch in higher salinity water (see Section 5.6.2.1). On the other hand, observations on other striped bass populations indicate that, given a choice, all prefer to spawn above the limits of seawater intrusion. In the San Joaquin River, upstream salinity barriers appear to inhibit their ability to move entirely out of the effects of ocean salinity. We agree that the evidence for whether spawning habitat is limiting for striped bass, and what the maximum allowable salinity might be, is not definitive, particularly when comparing laboratory and field observations. However, we also recognize that spawning success, as measured by survival of eggs and young bass, is inextricably linked to the effects of flows, toxics, and other factors, so that distinguishing the effects of spawning habitat salinity alone may be impossible. Additional studies and data analysis on actual spawning conditions, spawning locations in different year types, and spawning success are sorely needed. We invite all participants to evaluate this question further, and we propose that a thorough review of this objective be undertaken at the next Triennial Review of this Plan (see Program of Implementation, Section 7.5.2.4)."

Change in text, Page 7-20:

"To make certain that the State Board develops water quality objectives that are based on sound scientific data, and which are appropriately protective of striped bass spawning habitat, we request DFG to analyze the protective values of setting up a specific spawning habitat zone of 0.44 mmhos/cm EC, or some other more appropriate EC value, in the river reach between Jersey Point and Prisoners Point. Analysis of historical springtime EC data indicates that 0.44 mmhos/cm EC at Jersey Point would apparently maintain an EC at Antioch of just about 1.5 mmhos/cm, which DFG would like to retain. DFG should also analyze the possibility and the effects of relating a relaxation provision to declared deficiencies. Specifically, DFG should be prepared to discuss the effects of reducing the spawning habitat by moving the downstream end of the spawning habitat reach upstream from Jersey Point a distance proportional to the percent reduction in delivery of firm supplies, along the lines proposed in the table below. In the remaining reach, the 14-day running average of the mean daily EC would be no more than 0.44 mmhos/cm EC for the period April 1 to May 31, or until spawning has ended.

Percent Delivery Reduction Reduced	Percent River Reach
0	0
1-10	10
11-20	20
21-30	30
31-40	40
>40	40

Deficiencies are defined as deficiencies in firm supplies declared by a set of water projects representative of the Sacramento River and San Joaquin River watersheds. The specific projects and amounts of deficiencies would be defined in subsequent phases of these proceedings.

DWR should be prepared to discuss the potential effects, i.e., water costs, that would result if the State Board were to adopt water quality objectives as outlined above. The Board would like to hear from USBR, USFWS and any other interested parties on this subject at the next Triennial Review."

Page 5-38 to Page 5-42

Comment: DWR states that the Plan relies heavily on the work of Moyle and Herbold for the Delta smelt analyses and that other authors (SWC, DWR and DFG) provide a more thorough and up-to-date analysis (WQCP-DWR-24, page 13, last paragraph).

Response: Between the text of the Plan and the Technical Appendix, there were ten references used for the Delta smelt analysis. Of these, Moyle was sole or primary author of four of these, one of which was a 1990 publication. Of the other six not authored by Moyle, three were published in 1990 which were analyses by SWC, USFWS and DFG.

Exhibit WQCP-USFWS-7 submitted to the State Board on March 11, 1991, contained an additional reference for Delta smelt (Moyle, Williams, and Wikramanayake 1989) which has been reviewed and included in the Plan.

Changes in text:

Add the following publications to the list of references:

Moyle, P.B., J. E. Williams, and E. D. Wikramanayake. 1989. Fish species of special concern of California. Final report prepared for State of California, Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, California. 222 pp.

State Water Contractors. 1990. Response to the State Water Contractors to the petition to list Delta smelt as an endangered species. Report submitted to the Natural Heritage Division, California Department of Fish and Game.

Add the following reference as a footnote to Table 5-3 and Figure 5-4 in the Plan: Stevens, D. E., L. W. Miller and B. C. Bolster. 1990. Report to the Fish and Game Commission: A status review of the Delta smelt (Hypomesus transpacificus) in California. Department of Fish and Game.

Page 5-39, paras. 2 and 3

Comment: SWC suggest wording be included that DFG (1990) states that the population of Delta smelt is currently stable and provides additional language describing the population trends (WQCP-SWC-361, Page 16, paragraphs 3 and 4).

Response: The statement that the population is increasing is misleading. The following sentences will be added to the referenced paragraph.

Change in text:

"DFG (1990) stated that like the summer townet survey, the fall midwater trawl survey indicates that abundance of Delta smelt has been highly variable and has suffered a major decline. Bay survey catches show a striking decline in Delta smelt abundance after 1981, and since 1981 there has been an irregular but persistent decline. Part of this is due to the fact that the four of the last five years were low flow years and the population has been concentrated in the Delta. In the seine survey, the lowest average catches of adult Delta smelt occurred in 1980 and 1984-1989. The persistent low catches from 1984-1989 are consistent with the population decline exhibited by the midwater trawl and summer townet surveys. The DFG concluded that "the relatively stable, albeit low, population is not in imminent danger of extinction, however, the Delta smelt may well "become an endangered species in the foreseeable future.""

Page 5-42, para. 4

Comment: SWC suggest including mention of details and cost of proposed studies (WQCP-SWC-361, Page 18, paragraph 1).

Response: The following sentence will be added to the 4th paragraph after the second sentence:

Change in text:

"Further studies are proposed for determining with greater accuracy, the abundance and the factors affecting Delta smelt abundance, in the Delta."

Table 5-5, Page 6 of 28; and Appendix, Page 5.0-7

Comment: The WQCP incorrectly states DWR's advocated level of protection. DWR's previous leaching recommendations are withdrawn and should be deleted from the WQCP (WQCP-DWR-24,9).

Response: Agree. The WQCP will be revised to show DWR's correct advocated level of protection for western and interior Delta agriculture.

Change in text:

Table 5-5, page 6 of 28, "Advocated Levels" DWR's indicated recommendation for a winter ponding objective at Cache Slough and San Andreas Landing is deleted. Appendix, page 5.0-7, third paragraph, titled "Winter Ponding Objective": title and paragraph will be deleted.

Page 6-3

Comment: Footnote 3 of Table 6-1 is misleading in that Alternative 3 is described with a goal of 0.15 mg/l bromide. However, this standard is not modeled in the supporting Study H7 (WQCP-DWR-24,3).

Response: Footnote 3 will be revised by adding "This goal, however, was not modeled as part of alternative 3."

Comment: Footnote 6 of Table 6-1 contains approximate total dissolved solids to electrical conductivity instead of exact values (WQCP-DWR-24,3).

Response: The exact conversion values, as presented by DWR, will be used in footnote 6.

Change in text to reflect above.

Pages 6-4 and 6-14

Comment: The discussion of the impacts of the proposed objectives on water supply is incomplete. It does not even consider the impacts of any changes in the Suisun Marsh objectives, interior south Delta objectives or the Antioch relaxation provision for striped bass. It is not possible to determine whether the proposed objectives are "reasonable" as required by law without knowing the ultimate water cost (WQCP-SWC-633,2,14).

Response: As recommended by SWC, the following will be added as the last paragraph of section 6.2.

Change in text:

"It must be recognized that the impacts shown on Table 6-2 and Figures 6-2 and 6-3 and discussed in the following pages do not include the potential impacts on water supply of meeting any changes in current Suisun Marsh objective, the revised Antioch relaxation provisions for striped bass or the objectives for interior stations in the south Delta. Each of these objectives could cause a reduction in water available for other beneficial uses. When the impact of one or more of these objectives is known, the Board will review such objectives for reasonableness and amend them, if necessary."

In addition, the following will be added to beginning of paragraph 1 of section 6.2.3.6.

Change in text:

"Without considering the potential impact of meeting the revised Antioch relaxation provision for striped bass and the interior objectives in the south Delta, and assuming that the existing Suisun Marsh standards are not revised,..."

Change in text:

Delete "increases" and insert "decreases."

The following will replace the second paragraph.

Change in text:

"The principal reason for the decrease in Delta outflow is the new 40-30-30 year type, which allowed for more water to be stored in the Sacramento River Basin."

The last paragraph will be amended.

"The level of impact on water supplies of this alternative, not including the impact of the striped bass relaxation provision and the interior south Delta objectives, is less than ..."

Page 6-5, 6-7, 6-8, 6-11 and 6-18

Comment: Tables 6-2 and A6.3-1, and Figures 6-2 and 6-3. contain incorrect values for the Sacramento River Inflow, Total Delta Exports, and Total Delta outflow (WQCP-DWR-24; Chapter 6, Page 6-5, Page 6-7, Page 6-8, Appendix Pages 6.3-3 and 6.3-4).

Response: The State Board errata presented on March 11, 1991, shows the correct values for the Plan. Table A6.3-1 and the text will be revised accordingly.

Change in text, 6-11

Delete "39" and insert "59"

Delete "56" and insert "110"

Delete "42" and insert "50"

Delete "51" and insert "63"

Change in text:
(Page 6-18)
Delete "682" and insert "674"
Delete "1090" and insert "1078"
Delete "21" and insert "20"

Page 6-10

Comment: The 3.0 mmhos/cm EC relaxation for western and interior Delta agriculture applies to the first 15 days in August of critical years in the model simulation (WQCP-DWR-24,9; WQCP-SWC-633,14).

Response: Page 6-10, Section 6.2.2, second sentence, will be changed.

Change in text:
"...and adjusted to 3.0 mmhos/cm EC from August 1 through August 15 in critical years."

Page 6-11, first paragraph

Comment: It is not clear what this paragraph is supposed to say. It appears that drinking water and fishery issues have been mixed. Recommended wording suggested (WQCP-SWC-632,7-14).

Response: Agree with new recommended language:

Change in text:
"As new and pending drinking water standards take effect the water quality objectives in Alternative 2 may result in negative impacts for purveyors of Delta water. These negative impacts may take the form of violation of State and Federal drinking water standards for Disinfection By-Products. It is not possible to accurately quantify those impacts at present."

Page 6-13 para. 3

Comment: SWC suggest removing the reference to the USFWS smolt survival index based on flow (WQCP-SWC-631, Page 20, paragraph 4 and 5).

Response: The use of this equation, along with other analyses that may be conducted in the future, is valid insofar as the relationship between flow and smolt survival has been used to indicate an overall relative response in smolts survival to changes in flow, water temperature, diversion fraction and total exports.

Change in text:
"Using the smolt survival index for the Sacramento River (USFWS) ... smolt survival index would be greater than 0.50 would be in wet years. Above normal water years would provide an average survival index of 0.42 and the remainder of the year types less than 0.30."

Page 6-13, para. 3

Comment: CVPWA suggests deleting the sentence stating that no estimates have been made on the additional flow required to improve dissolved oxygen (WQCP-CVPWA-210, Page 31-Page 32, paragraphs 1-2).

Response: Referenced sentence (Page 6-13, section 6.2.3.4., paragraph 3, third sentence) should read as follows:

Change in text:

"A partial analysis estimating the flow required (September and November only) to change the dissolved oxygen level 1 mg/l using a multiple regression analysis was submitted. Further analysis of the impacts of the water quality objectives will be made in the forthcoming proceedings."

Page 6-14

Comment: The date should be May 31, not May 30 (WQCP-SWC-633,15).

Response: Agree. Text will be corrected.

Change in text:

"... to May 31."

Page 6-14

Comment: Paragraphs 2 and 4 both describe the water regime under Alternative 3, but the statements are confusing and contradictory (WQCP-USFW-7,6).

Response: We agree. Paragraph 2 reflected spring conditions only, while paragraph 4 referred to annual water supply impacts. However, both statements are incorrect; newer model runs, the results of which were presented as SWRCB errata at the March 11 hearing, show different impacts and flows.

Change in text:

" The model run used to simulate Alternative 3 assumes some increase in San Joaquin River flow, little change in exports, reduced Sacramento River flow and reduced Delta outflow. The impacts on indirect protection for eggs and young under this alternative, as modeled, are unclear."

Page 6-15; First paragraph and second paragraph, second sentence: p. 6-22; first full paragraph below the bullets, second sentence:

Comment: The language does not completely state the impacts on water supplies. Recommended wording is suggested (WQCP-SWC-632,7-14).

Response: Comments noted. Language will be revised accordingly.

Change in text:
(Page 6-15, first paragraph)

"The impact of setting a 50 mg/l chloride objective at Banks Pumping Plant will be to lower chloride levels at the Contra Costa Canal intake to less than 140 mg/l if seawater intrusion were the primary source of the chlorides. The chloride levels at the Banks Pumping Plant will be improved significantly; the lower salinity levels in SWP water delivered via the Banks Pumping Plant will enhance reclamation efforts and will improve the taste of the water and reduce corrosion."

(Page 6-15, second paragraph, second sentence)

"This positive effect at Banks Pumping Plant may result in lower THM formation potential in the water at Rock Slough."

Page 6-16

Comment: Additional Delta outflow could come from a reduction in upstream diversions instead of, or in addition to, reduced exports. A suggested revision would be "Like Alternative 4, the primary source of this additional water is from a corresponding reduction in exports and/or reduction in upstream diversion and use." (WQCP-DWR-24; Chapter 6)

Response: Implementation of these objectives will be better defined in the Water Right Phase of the proceedings. For simplicity, the operation studies assumed that all reductions would come from exports. The wording will be revised as suggested.

Change in text:
"Like Alternative 4, the primary source of this additional water is from a corresponding reduction in exports and/or reduction in upstream diversion and use."

Page 6-20, Table 6-3, page 5 of 8

Comment: The following clause needs to be inserted (WQCP-DWR-24,13).

Response: We agree. Table will be changed.

Change in text:
"Relaxation Provision -- replaces the above Antioch and Chipps Island Standard whenever the projects impose deficiencies in firm supplies".

Page 6-22, paragraph 1, sentence 3

Comment: This sentence should be revised as follows to more accurately state the impact of Alternative 4 on M&I use; "Alternative 4 would provide positive, but unquantified benefits with respect to M&I use (WQCP-SWC-633,16)."

Response: Agree. The WQCP will be amended as indicated in the SWC's comment.

Change in text:

"Alternative 4 would provide positive, but unquantified benefits with respect to M&I use."

Page 7-3, Section 7.2.2.2, "South Delta"

Comment: All stage 1,2,and 3 objectives should be identified (WQCP-CVPWA-210,34; WQCP-EPA-1,1).

Response: Change in text to reflect new wording in Section 5.3.1.3 (5-9).

Page 7-8, top of page [Section 7.3.1 General {Compliance Monitoring}]

Comment: The general monitoring surveys discussed in this paragraph should be expanded to include wildlife as well as fisheries (WQCP-DFG-5,4).

Response: The first sentence of this paragraph will be changed.

"o Change in text (changed and added wording underlined):
Conduct ongoing and future monitoring surveys recommended by DFG and concurred with by the State Board, concerning food chain relationships and fish and wildlife impacts as they are affected by implementation of this Plan."

Page 7-8, paragraph 5, last sentence

Comment: SWC proposes wording changes (WQCP-SWC-631, Page 23, paragraph 2-5).

Response: These changes will be made.

Change in text:
change "DWR/USBR" to "USGS"

Page 7-9; Section 7.4.2.1, second paragraph:

Comment: Contrary to what is stated in the Plan, a Disinfection By-Product Workgroup has, to this date, not yet been formed (WQCP;DWR; Oral Comment 3/11/91).

Response: Agree.

Change in text:
"A disinfection by-product (DBP) Workgroup has not been formed..."

Pages 7-9 to 7-18, Section 7.4 Special Studies and Reviews

Comment: There is agreement about the need for special studies as outlined in this section and concerns about the limits that resources -- time, personnel, and money -- put on being able to implement this ambitious set of tasks (WQCP-USBR-129A,3; WQCP-SWC-631,24; WQCP-CVPWA-210,36).

Response: The following rewording will be added to Page 7-15.

Change in text:

"There is a need to develop a list of priorities among routine and special studies and a more detailed definition of what each study's goal(s) should be. The forum for the technical scientific studies (biological, hydrodynamic, etc.) would be the Interagency Ecological Study Program. Other studies that do not fit into the Program could be undertaken by contract to a consultant or through a work group."

Comment: There is a typographical/editing error on page 7-15, numbered paragraph 3 (WQCP-DWR-24,14).

Response: The first sentence will be changed.
(added wording underlined):

Change in text:

"3) The interagency programs, including the Suisun Marsh Fish Monitoring Program and the Neomysis/Zooplankton Survey, are on-going; ..."

Page 7-10; second paragraph, second sentence:

Comment: Results of research and recommended actions by a Disinfection By-Product workgroup cannot be completed by 1/1/92, primarily because research on water treatment technologies is an on-going process. Recommended language is that "progress of research and recommended actions be reported by January 1, 1992" (WQCP-SWC-632,7-14).

Response: Comment noted. Language will be revised accordingly.

Change in text:

"... "progress of research and recommended actions be reported by January 1, 1992".

Page 7-11

Comment: SWC proposes wording changes (WQCP-SWC-631, Page 23, paragraph 2-5).

Response: These changes will be made.

Change in text:

- 1) Page 7-11, 1st paragraph, last sentence: change April and May to during April through June;
- 2) Paragraph 2, first sentence: include striped bass after both references to salmon and delete steelhead; and
- 3) Paragraph 3, last sentence: delete sentence.

Page 7-11

Comment: USFWS comments are: 1) June should be included in the last sentence, 2) the Consumnes River should be changed to the Calaveras River, and 3) are other smolt survival studies, besides the ones listed, to be considered (WQCP-USFWS-7, Page 7, paragraph 2-4)?

Response: Text will be changed.

Change in text:

- 1) (Same page, paragraph 3, third sentence) "Consumnes will be changed to 'Calaveras'; and
- 2) "All appropriate studies will be considered; the list of studies was not meant to be exclusive."

Page 7-13

Comment: DFG states that it is not accurate to say that species are often misidentified and they are confident that quality control is sufficient for the enumeration of trends in species composition, etc (WQCP-DFG-5;Page 4, #1).

Response: In response to the comment, the text of the Plan (Page 7-13, last paragraph) will be modified as follows:

Change in text:

"Historical SWP and CVP data on Delta smelt salvage has not been very reliable. DFG is confident that, currently, quality control is sufficient for the enumeration of trends in species composition. DFG will be assuming responsibility for enumerating fish at the SWP facility this next year. Improvements in procedures will be made in the future. Salvage data on Delta smelt from both facilities, including sampling methods, should be submitted during the forthcoming proceedings."

Page 7-13

Comment: SWC suggest change to the sentence addressing DFG investigations in 1991 (WQCP-SWC-631, Page 24, paragraph 3).

Response: The referenced sentence (first paragraph and sentence under Delta Smelt) will be reworded.

Change in text:

"In 1991, DFG should analyze existing data on environmental conditions, including reverse flows, affecting Delta smelt growth, survival, reproductive success and spatial distribution; ..."

Page 7-16, sec 7.4.3.2

Comment: USFWS states that biological models need to be addressed in this section as well (WQCP-USFWS-7, Page 7, paragraph 6).

Response: Text will be amended to include a section C. which will read as follows:

Change in text:

"C. Fishery Models

The following fishery models, in addition to any others that may be proposed, may be considered, as appropriate, in the impact analysis:

- o Abundance and Survival of Delta Smolts in the Sacramento-San Joaquin Estuary by the USFWS.

The USFWS (since 1978) has annually conducted research on the survival and abundance of Chinook smolts and fry as they migrate down the Sacramento through the Estuary. The research has lead to the development of several different models, including: annual index of abundance of fall-run smolts; smolt survival based on adults returns 2 1/2 years later; and smolt survival index using flow, temperature, percent diverted at Walnut Grove, export rates and migration route variables. A San Joaquin River smolt survival index is being developed based on different release sites, various levels of inflow from the San Joaquin River, SWP and CVP export rates and ocean recoveries of adults.

- o Chinook Salmon Population Model for the Sacramento River Basin by BioSystems Analysis, Inc.

This model estimates the abundance of fall-run Chinook salmon under a given set of flow and temperature conditions, mortality parameters, and assumptions about harvest in the ocean and river fisheries for the Sacramento River Basin. At present it serves as an indicator of the population trends as it has not yet been calibrated. Another version is presently being developed for winter-run Chinook salmon.

- o Draft San Joaquin River System Chinook Salmon Population Model by EA Engineering, Science and Technology.

This is mechanistic simulation model representing the principle factors influencing the abundance and production of fall-run Chinook salmon in the San Joaquin River Basin."

Page 7-20, para. 1

Comment: DFG agrees with need to evaluate striped bass hatchery production, including rearing salvaged juvenile bass. Such an evaluation is presently underway. But it is premature to prejudge the merits of a 1,000,00 rearing goal, compared to other options, at this time. Request goal be deleted (WQCP-DFG-5,5).

Comment: (Page 1-18 also) - How was goal of 1,000,000 striped bass from growout facilities determined? May not be sufficient to restore the population (WQCP-USFWS-7,3).

Response: Agree.

Change in text:
The specific goal statement will be deleted.

Page 7-21

Comment: It should be made clear that the first paragraph refers to the Sacramento River Water Year Classification (WQCP-CVPWA-210,36-37).

Response: Agree.

Change in text:
Page 7-21, Section 7.5.3.1., para 1, and Page 1-15, Section 1.6, para 1, will be amended as follows: "The current Sacramento River Basin Water Year Classification..."

Page 7-21

Comment: The WQCP should state the acceptance of the sliding scale concept (WQCP-DWR-24,5).

Response: The Water Year Classification subworkgroup has unanimously accepted the concept of the sliding scale. To reflect this point, the statement in the WQCP, page 7-21, section 7.5.3.1; "DWR has proposed the addition of a sliding scale to the classification to smooth the transitions between categories.", will be changed.

Change in text:
"The Water Year Classification subworkgroup has adopted, in concept, the addition of a sliding scale to the classification to smooth the transitions between categories."

Comment: Technical forum to discuss the Sacramento Four-Basin Index forecast process (WQCP-DWR-24,5).

Response: Page 7-22 of the WQCP states the need for this technical forum. Assumptions are a part of each years forecast. These assumptions may vary depending on the particular years hydrologic conditions. Each years assumptions should be explained in this forum. Also, the other part of the forecasting process that does not depend on assumptions should be explained and documented.

Change in text:

"DWR should convene a technical forum for interested parties for the purpose of providing the parties with the details of the methodology and assumptions used in the forecasting process. After this initial forum, additional meetings should be convened only when the methodology or the assumptions are changed."



SECTION II

Comments that Resulted in No Changes in Text of the Plan

General Comments

Flow

Comment: The State Board should have addressed flow and water project operations as well as water quality objectives in this Plan (WQCP-USMFS-1,1;WQCP-SCLDF-2,2).

Response: State Board review of the information submitted during Phase I and the Water Quality Phase of the proceedings indicated that specific salinity, temperature and dissolved oxygen levels could be determined which would provide protections to the beneficial uses addressed in the Plan. The appropriate place to provide this type of protection is a water quality control plan. However, water quantity issues, such as flow and project operations are more appropriately addressed in the portion of the proceedings leading to a water right decision. The State Board retains the option of setting flow objectives, if appropriate.

As previously stated the State Board will consider all information addressing flow and water project operations, and their relation to beneficial uses made of Bay-Delta waters during the Scoping and Water Right phases of the proceedings. In regard to water project operations the State Board will not be looking at the Central Valley Project (CVP) and State Water Project (SWP) solely. The State Board hopes to receive data which will allow it to address operations of all water projects including reservoirs larger than 100,000 acre-feet and direct water diversions of 100 cfs or greater. (The State Board will review smaller projects and their effects after completion of these proceedings, as data become available.)

The State Board believes that this Bay-Delta proceedings process should be a dynamic one. Thus, if, during the Scoping or Water Right phases of the proceedings, analysis of new information indicates that a water quality objective adopted during earlier phases of the proceedings may be inappropriate, the State Board can open a specific hearing to address that beneficial use. Similarly, a water right hearing can be opened if appropriate new data become available.

No change in text.

Negotiated Agreements

Comment: The State Board should not rely upon the use or the acceptability of negotiated agreements to protect beneficial uses adequately (WQCP-USNMFS-1,2;WQCP-USFWS-7,2).

Response: The State Board believes that beneficial use protections derived from negotiations must be considered by the State Board. The State Board will review the agreements thoroughly to make sure that the specific beneficial use(s) effected are protected and to determine that protection of beneficial uses potentially effected have not been compromised. The State Board does not intend to abrogate its responsibility.

No change in text.

Environmental Conditions

Comment: The Plan represents virtually no improvement in the environmental conditions of the Estuary over those in the 1978 Plan that the State Board admitted are inadequate (WQCP-SCLDF-1,2;EPA).

Response: Upon review of the data, the State Board found several aspects for which it could provide specific water quality protection including: expanding seasonal protection for striped bass, and temperature and dissolved oxygen protections for salmon in the Sacramento and San Joaquin rivers within the Delta area. Most of the information received by the State Board which indicated potential improvement in the protections to be afforded beneficial uses made of Bay-Delta waters addressed various flow conditions. As previously mentioned both flow and water project operations will be addressed during the Scoping and Water Right phases of the proceedings.

Comment: Issues were raised regarding Delta outflow in relation to entrapment zone location and phytoplankton blooms (WQCP-SCLDF-2,3).

Response: The Board has decided to take up these and other flow issues in the Scoping Phase of the proceedings. The State Board, however, does retain the option of setting flow objectives; if appropriate.

Comment: The State Board is recommended to direct staff to update and revise the technical portions of the Plan prior to commencement of the water rights phase of the proceedings (WQCP-WACOC-5,3).

Response: The State Board is always interested in using the most accurate and up-to-date information available. During the Scoping Phase, participants are encouraged to submit any information that they feel will be of use to the State Board in developing the environmental impact report (EIR) for the water right decision.

No change in text for all comments.

Operation Studies

Comment: The Prisoner's Point/Vernalis Striped Bass Spawning objective was only modeled when the standard was imposed at Vernalis (WQCP-DWR-24, on Chapter 6 of the Plan).

Response: Comment noted. See the response to WQCP-SWC-633 dealing with pages 6-2 and 6-14. [The reason for not modeling this objective and a qualitative analysis of the impact was deleted from earlier drafts.]

Comment: Suisun Marsh Wildlife standards are met only as per D-1485 interim standards in all operation studies. This needs to be made explicitly clear (WQCP-DWR-24, on Chapter 6 of the Plan).

Response: Comment noted. See the response to WQCP-SWC-633 dealing with pages 6-2 and 6-14. [This explanation was deleted from earlier drafts.]

Comment: Southern Delta agricultural objectives are modeled only at Vernalis, not at the proposed interior stations (WQCP-DWR-24).

Response: Comment noted. See the response to WQCP-SWC-633 dealing with pages 6-2 and 6-14. [This explanation was deleted from earlier drafts.]

No change in text.

Combined Effects

Comment: The plan does not analyze the impacts of its proposed actions on the estuary at the same time as evaluating the effect on water diversions. Consequently, the plan cannot inherently be considered to be a "balancing" of competing beneficial uses. The systematic analysis of the impact of any particular management program for the estuary requires examining the combined effect of all the overlapping flow and salinity requirements for the estuary on a particular component of the ecosystem (WQCP-SCLDF-2, on Chapter 6 of the Plan).

Response: The State Board has committed itself to an extensive evaluation of alternative management programs for the Estuary. Much analysis has been accomplished in the Plan and much more, the State Board recognizes, needs to be done in the Scoping and Water Right phases.

No change in text.

Striped Bass

Comment: The plan assumes, but does not require, maintenance of the 1978 Plan flow standards, which could lead to further ecosystem deterioration if these were modified in the future (WQCP-SCLDF-2,3).

Response: The D-1485 flow standards remain in effect until they are modified, if necessary, as part of a water right decision.

No change in text.

Comment: The Plan would not restore striped bass to historic levels, as accepted by the State Board in its restoration goal in 1978 (WQCP-SCLDF-2,3).

Response: We agree; however, in the limited scope of this plan, full restoration is not proposed. Even DFG has acknowledged that without flows and facilities, restoration to historic levels is impossible. The State Board will consider flow and facilities alternatives in the Scoping and Water Right phases. The State Board does retain the option of setting flow objectives, if appropriate.

No change in text.

Comment: The State Board rejected alternative sets of standards, including its own Alternative 5 originally recommended in 1988, which would restore striped bass and salmon to "historic" levels (WQCP-SCLDF-2,3).

Response: This alternative is beyond the scope of the present plan, because it includes flow requirements. This and other alternatives will be considered in the Scoping and Water Right phases.

No change in text.

Comment: The salinity standard proposed for striped bass spawning cannot be realistically evaluated, and is meaningless without accompanying flow and pumping standards to protect the young bass produced (WQCP-CWPC-1,10).

Response: We agree that because any salinity standard necessarily includes flow, the overall beneficial effects of salinity standards cannot be evaluated independent of possible related flow effects. However, the issue of spawning protection is separate from protection of eggs and young. The latter is a flow and diversions issue which will be dealt with in the Scoping and Water Right phases. The salinity objective for spawning is not meaningless, however. As proposed, protection would be provided for nearly all of the spawning period on the San Joaquin River independent of any umbrella protection, and slightly greater protection is provided in dry and critical years than is now the case under D-1485.

No change in text.

Comment: The present Plan is shifted toward protection of exports rather than protection of the Estuary, and continued imbalance can be expected in later phases of the hearings (CWPC - Fullerton Analysis, Page 6, para. 3).

Comment: The June 1990 Revised Draft Plan stated many strong commitments to protecting the aquatic environment. These have been in large part removed, and USFWS are concerned about the balancing process and criteria (WQCP-USFWS-7,1).

Response: The State Board revised the text to respond to concerns expressed by many participants that the previous draft was not appropriately balanced in its wording. All beneficial uses will be reasonably protected. It is inappropriate to prejudge at this time how the protection of beneficial uses will ultimately be balanced.

No change in text.

Comment: The use of the Sacramento River Basin Index may be appropriate, but if the system results in a shift towards a greater frequency of dry year occurrences, any adverse impacts on fish and wildlife must be identified and mitigated (WQCP-USFWS-7,1).

Response: The Sacramento River Basin Index more accurately reflects actual water conditions in the basin, which suggests that the pattern is slightly drier than previously believed. During the Scoping and Water Right phases, the State Board will consider deletion of two water year designations, the "subnormal snowmelt" and the "year following critical year", which presently reduce protection for fish and wildlife more than for other beneficial uses. If included in the final Sacramento River Basin Index, these changes will mitigate for the slightly higher incidence of dry years in the new Index.

No change in text.

Municipal and Industrial Water Quality Issues - Trihalomethanes

Comment: The water quality objectives for drinking water supplies proposed in the Plan may be adequate for the time being until the disinfection by-product and surface water treatment rules are effective. Water treatment technology is not the single answer to drinking water quality problems. Improvement of source water quality is essential (WQCP-SWC-632,3).

Comment: Implementation of objectives should not rely exclusively on water right modifications but should also include actions by other agencies, negotiated settlements, physical facilities and legislative action (WQCP-DWR-24,15-16).

Comment: Water at 250 mg/l chlorides does not provide adequate protection for M&I supplies. M&I water supplies cannot consistently meet current THM standards with a year round supply at 250 mg/l. The Scoping phase of the hearings should include careful examination of CCWD's proposal for a 50 mg/l chloride objective for portions of most years. The current Plan does not do this (WQCP-CCWD-21,2).

Comment: Agree that there is no cause to modify existing salinity (chloride) objectives for M&I. If drinking water standards are modified by EPA then it would be appropriate for the Board to consider new objectives as part of the triennial review process.

Strongly supports the Board's recommendation for a detailed study of agricultural discharges and development of best management practices to reduce impacts on Delta water quality and drinking supplies (WQCP,EPA).

Response To All Comments: Current text supports these comments.

No change in text.

Chinook-Temperature Objectives

Comment: DFG states that they recommend adoption of the proposed 68°F temperature objective although it is higher than optimum, because: 1) the existing temperature criterion in the Basin 5 Water Quality Control Plan; 2) the nature of the empirical evidence presented to the Board; and 3) many measures which could be implemented would lower temperatures in general rather than being targeted specifically for 68°F (WQCP-DFG-5; Page 2, paragraph 3).

Response: It would be extremely difficult, and probably not possible, to effectively or accurately control temperatures in the Delta, especially to within a range of a few degrees, given such a complex and dynamic system. A temperature value in a narrative objective provides slightly more guidance than would be available without that value. The intent of this value is to indicate a boundary by which to evaluate the relative health or quality of the Delta for fisheries habitat. (See discussion on reservoir releases to control Delta water temperatures.)

No change in text.

Comment: The Committee provides a summary of the changes in the temperature and dissolved oxygen objectives between the June 1990 and January 1991 draft Plans. It states that the 68°F objective is too high, that a more appropriate objective would have been a maximum of 63°F, and that the controllable factors language provides a huge "loophole". In addition, there is speculation that the SWRCB may intend to eliminate the salmon flow provisions of D-1485 in lieu of this temperature objective (WQCP-Committee for Water Policy Consensus, Page 5, paragraphs 1-3, concerning Pages 5-15, 5-20).

Response: Please see Specific Comments on pages 5-15 through 5-25 concerning Chinook-temperature objectives in response to comments in WQCP-EPA-1, Page 1; WQCP-SCLDF-1, Page 5; WQCP-CVPWA-210, page 23.

No change in text.

Municipal and Industrial Use

Comment: Objectives providing 150 mg/l Cl and better protection, including CCWD's proposed 50 mg/l objective for part of the year, should be addressed in the Scoping and Water Right phases (WQCP-CCWD-21,2).

Response: Comment noted.

No change in text.

Comment: Assessing water supply impacts should rely on both operation study results and an additional independent salinity analysis of the operations studies. The proposed Modeling development and Use group should resolve these issues (WQCP-CCWD-21,2).

Response: Comment noted.

No change in text.

Comment: The need for high water quality during times of uncontrolled flows should be addressed (WQCP-CCWD-21,2).

Response: With respect to chlorides, M&I supply is reasonably protected under all hydrologic conditions.

No change in text.

Water Quality Control Plan

Comment: The current 500 TDS Vernalis all-year standard should not be supplanted until all the downstream standards are fully implemented. The San Joaquin River Protection Act, at Water Code Sections 12230-12233 prohibits the Board from taking actions that would lead to further degradation of this reach of the San Joaquin River (WQCP-SWDA-36).

Response: Water Code Section 12232 provides that the Board shall do nothing, in connection with its responsibilities, to cause further significant degradation of the quality of water in the reach of the San Joaquin River between the Merced River and the Middle River. The 500 mg/l standard currently in force would be supplanted with the April through August 0.7 mmhos/cm EC standard and the September through March 1.0 mmhos/cm EC standard no later than 1994 when a new control station at Brandt Bridge, in addition to the Vernalis station, must meet this standard. By 1996 this standard must be met at all the control stations. This standard will provide better quality in the irrigation season and poorer quality in other parts of the year. This is the same long-term standard as in the 1978 Delta Plan. The Plan differs only in that it proposes to implement the standard regardless of whether there are circulation facilities. It is not a degradation.

No change in text.

Comment: The final water quality control plan represents virtually no improvement in the environmental conditions of the Estuary over the admittedly inadequate 1978 Plan (WQCP-SCLDF-1, Pages 2-3).

Response: The water quality control plan provides adequate protection against salinity, temperature and dissolved oxygen for the beneficial uses. The Plan provides at least as much protection for the beneficial uses with regard to salinity, temperature and dissolved oxygen as the 1978 Delta Plan. It does not change the flow standards; nor, contrary to the comment, does it allow any reduction in Delta outflow. Contrary to the comment, the Board has not found that the standards are unprotective. Any statements in unadopted drafts are not the Board's position unless they are adopted in this Plan. While the Board recognizes the importance of flows in protecting beneficial uses, it believes that the proper context in which to consider new flow objectives is in a water right proceeding. In the upcoming water right proceeding, the State Board retains the option of setting flow objectives to protect the beneficial uses.

No change in text.

Comment: The final water quality control plan violates the Porter-Cologne Act and the Clean Water Act, as follows: (a) it does not identify all beneficial uses which could recover through flow augmentation and pollution abatement; (b) the Plan fails to identify water quality objectives for all existing and potential beneficial uses; (c) the Plan fails to establish a program of implementation for beneficial uses; (d) the Plan fails to describe and regulate the flow of water; (e) the Plan generally fails to protect instream beneficial uses (WQCP-SCLDF-1, Pages 4-5).

Response: This response addresses the alleged individual violations in order.

(a) The Plan identifies all of the existing beneficial uses by listing the same uses which are listed in the water quality control plans for the San Francisco Bay Region and for the Central Valley Region. The Plan supplements protections in the plans for the two regions for all of these beneficial uses, to the extent that they require additional protection with regard to the parameters of salinity, dissolved oxygen, and temperature. The Plan does not violate the applicable requirements for identification of beneficial uses.

(b) This Plan is only one component of the water quality planning for the Estuary. Water quality objectives for all of the identified beneficial uses are not established in this Plan for two general reasons: first, the Plan protects only with regard to the three parameters, and leaves the balance of required protections to the Regional Board plans; second, the Board can provide protection only insofar as it knows what protection is needed.

The commenter misconstrues the deletion of the "antidegradation" standards since the previous draft. Rather than revising the Suisun Marsh standards and adding the old standards back as "antidegradation" standards, the Board will keep the standards that have been in effect until such time as it decides whether to replace them with different objectives in a future plan and water right decision.

The commenter also suggests that the Board should provide objectives for South San Francisco Bay, to reduce the concentration of toxic pollutants. The Board disagrees. Development of objectives for toxic pollutants remains assigned to the San Francisco Bay Regional Water Quality Control Board. This Plan is an adjunct to the Basin Plan for the San Francisco Bay Region; it does not supplant the Basin Plan. The Basin Plan contains objectives for toxic pollutants; such objectives are not within the scope of this Plan.

Further, the Board has no basis for requiring objectives to dilute pollutants in the South Bay. The Board's regulation at 14 CCR Section 780(b)(1) provides that the Board shall not modify a permit or license to meet water quality objectives in water quality control plans unless the Board finds that adequate waste discharge requirements have been prescribed and are in effect with respect to the discharges which have a substantial effect on the water quality, and that the water quality objectives cannot be achieved solely through the control of waste discharges. No such finding can be made. Further, EPA's regulation at 40 CFR 131.10(a) provides that waste assimilation shall not be a designated use of water.

The commenter also argues that subjecting the temperature objectives to controllable factors is inappropriate and should apply only to implementation. Water temperature is influenced by natural variations in ambient temperature and precipitation, as well as man's activities. On some hot days no amount of cold water nor any other measures could achieve temperature requirements in a reach. Further, to release large amounts of water to cool the Delta could under some circumstances be considered unreasonable. Without the "controllable factors" requirement to establish the times when the objective is in effect, the objective could not always be achieved; objectives should be achievable. See Water Code Section 13241(c). The Board will continue to subject the temperature objectives to "controllable factors."

- (c) As the commenter notes, adequate implementation is required by the Clean Water Act, at 33 USCA Section 1313(e)(3)(F), for revised or new water quality standards. Only three standards are added or revised in the Plan, for Chinook salmon temperature, Chinook salmon dissolved oxygen, and export agriculture. Therefore, only three changes in implementation measures are required. The existing implementation measures in the 1978 Delta Plan remain in effect where they are not

changed. Three new implementation measures are detailed in the Plan: one is added for implementation of the southern Delta agricultural standards even though the standards are unchanged; implementation is added for the Chinook salmon temperature standard, which will be met by controlling controllable factors that affect water temperature; implementation is added for the new export agriculture standard and for other beneficial uses as well, in the form of a salt load reduction policy to be prepared by the Central Valley Regional Board.

An additional implementation measure is added elsewhere in these responses, for the dissolved oxygen standard for Chinook salmon.

In addition, paragraph 7.2.2.3 is revised elsewhere in these responses, to provide additional explanation of the implementation measures that may be used to meet the temperature requirement for Chinook salmon.

- (d) The Plan does not have to revise or add new objectives for flow. Because flow requirements directly affect the exercise of water rights, the final establishment of such requirements must be done in a water right proceeding. Flow plays two distinct roles in protection of the Estuary's water. It is important in this water quality control plan because it is a measure which may be used to implement the water quality objectives. It has in addition a separate role in protecting the Estuary's beneficial uses, because it represents the movement of a volume of water. This second role is not a subject of water quality objectives. While a water quality control plan is not precluded from discussing flows that would protect beneficial uses other than by implementing a level of water quality, such a discussion is not required in a water quality control plan.

The commenter is confusing these two roles of flow. As a result, the commenter thinks that the location of the entrapment zone is a quality issue. In fact, the quality of the entrapment zone would be about the same wherever it was located, so a specific flow is not needed to implement the quality of the entrapment zone. While the volume of moving water can determine its location in the Estuary, it does not affect the quality.

- (e) The Board disagrees with the commenter's assertion that the Plan is based on protection of water rights and not protection of water quality. The Plan is developed to protect salinity, temperature, and dissolved oxygen parameters of water quality.

No change in text.

Comment: The final water quality plan violates the California Environmental Quality Act. (WQCP-SCLDF-1, Pages 7 to the top of page 9).

Response: This comment makes several assertions: (a) that the range of alternatives is not adequate; (b) that the Plan does not adopt mitigation measures to avoid adverse effects of water export; (c) that the Plan incorrectly states in the environmental checklist that the Plan will have no adverse environmental impacts. These are discussed individually below.

(a) The Board has listed seven alternatives, ranging from the base conditions in the current water quality control plan through an alternative that would provide much better protection than the preferred alternative. SCLDF's comments apparently contemplate a broader scope than the Plan has, and correspondingly request a broader environmental analysis. While one can always imagine more alternatives, the law does not require consideration of alternatives that are infeasible or impossible to achieve. The Plan considers all beneficial uses within the limited scope of the Plan, which is narrow. The Plan is an adjunct to other plans, not the whole of water quality planning for the Estuary. Flow issues and alternatives will be fully evaluated during the Scoping and Water Right phases of the proceedings.

(b) As explained below, the Board disagrees with Sierra Club's assertion that there are adverse impacts as a result of adoption of this Plan. Because there are no adverse effects, no mitigation measures are required. While future actions to adopt implementation measures suggested by this Plan may have adverse environmental effects, it is too speculative what those effects may be, and until the actual measures are up for consideration, it is premature to adopt mitigation measures for them.

(c) Sierra Club is incorrect that the Plan will have an adverse effect on the environment, for two reasons: first, the Plan sets objectives which provide for water quality and beneficial use protection which is equal to or better than the current conditions in the Estuary; second, even though one can speculate that some possible future actions might have an adverse effect, implementation of the Plan itself will not result in adverse effects compared with current conditions. CEQA does not consider an action to have an adverse effect unless, compared with current conditions, the effect is adverse. The commenter apparently wants the Board to improve water quality in the Estuary over current conditions. The "admissions" to which the Sierra Club refers do not refer to the matters decided in this Plan, but to other proposals and possible future actions. Because there are no adverse effects of this action, no mitigation measures are required.

Comment: The Plan violates California's antidegradation policy, because it doesn't propose flow standards (WQCP-SCLDF-1, page 9, point IV.).

Response: The absence of new flow objectives in the Plan is not a degradation, since the Board is leaving in place for now the flow standards in the 1978 Delta Plan.

No change in text.

Comment: The Board's plan approval process denied the public a fair hearing, because of ex parte contacts (WQCP-SCLDF-1, Page 9, point V).

Response: Copies of some preliminary drafts were circulated during the fall of 1990 to parties in all representative categories of interest for comment. The preliminary drafts were public documents when they were circulated. The Board is unaware of any bias, since it took into account all interests in preparing its next full draft. The next full draft, released in January 1991 was provided to all parties for comment, and the Board held a hearing on it, on March 11, 1991. Thus, the parties had a full opportunity to review the changes since the June 1990 draft and comment on them before Board action.

No change in text.

Comment: The Board failed to follow the rule-making procedures outlined in the Administrative Procedure Act (WQCP-SCLDF-1, Page 9, point VI).

Response: The adoption of a water quality control plan is not subject to the rulemaking procedures in the Administrative Procedures Act. Rather, it is subject to the procedural requirements of the Water Code.

No change in text.

Specific Comments

Chapter 1

Page 1-2, fifth paragraph

Comment: As a minimum, the water quality objectives for M&I relative to the DBP regulations will be reexamined at the triennial review, or before, if EPA proposes revised regulations (WQCP-SWC-632,1-7).

Response: Current Plan language is satisfactory. Recommended new language is too specific and is out of context with the rest of the section.

No change in text.

Page 1-4, "Fish vs. People"

Comment: There are laws and court decisions concerning the standing of fish and wildlife values in "balancing" beneficial use protections (WQCP-DFG-5,3; WQCP-NMFS-1,1).

Response: Comment noted.

No change in text.

Page 1-9; Page 3-10, Section 3.2.1.4; Page 6-9, Section 6.2.1B; and Appendix, Page 3.1-10

Comment: There is an inconsistency in the WQCP regarding the need for a subnormal snowmelt adjustment (WQCP-CVPWA-210,2).

Response: Though the current subnormal snowmelt adjustment is not recommended, it was kept in the Impact Analysis to artificially neutralize the impact of the new classification on the SWP of flow objectives. This was done because flow objectives, and the flow relaxations tied to the water year classification are issues that will be addressed in the Scoping and Water Right phases. As new information becomes available, the subnormal snowmelt adjustment will be reviewed as appropriate.

No change in text.

Page 1-10, second bullet from bottom of page

Comment: A comment concerning water conservation by Imperial Irrigation District (WQCP-SWC-633,3-4).

Response: Comment noted.

No change in text.

Page 1-11; second bullet; p.5-3; first bullet under 5.1:

Comment: The 250 mg/l chloride standard is for taste only and not for corrosion as indicated in the Plan (WQCP-SWC-632,7-14) .

Response: Comments noted.

No change in text.

Page 1-11; fourth bullet; p.5-4, last sentence

Comment: The language in these sections should be revised to state that current drinking water violations are occurring as a result of Delta-based supplies, and that as a result of the Surface Water Treatment Rule becoming effective in 1993, many more water suppliers will exceed the existing standard (WQCP-SWC-632,7-14).

Response: Violations of current drinking water standards occur infrequently, certainly not on a consistent basis. The net effect of the surface water treatment rule regarding production of Disinfection by-products (DBPs) is very dependent upon the operating procedures of individual systems. Therefore, it cannot be factually stated that the new rule will result in an increased production of DBPs. Therefore, the language should not be revised.

No change in text.

Page 1-12

Comment: The Tracy area in the south Delta is served by the CVP via the Bureau's Tracy export pumps. This location has a lower quality objective in the summer than the south Delta. Because of a lower rainfall in the Tracy area than in the rest of the south Delta, the CVP export pumps could arguably have a higher quality objective than the rest of the south Delta (WQCP-USBR-129B,1; WQCP-SDWA-36,1).

Response: The effect of rainfall will be addressed in the proposed South Delta Agriculture Study. Proposed interior stations are intended to protect all of the south Delta including the Bureau's Tracy export pumps. South Delta and export agriculture protections overlap at the Tracy export pumps.

No change in text.

Page 1-12; Page 5-12, Sections 5.3.2.1 and 2

Comment: Board staff analysis indicates that 1.5 mmhos/cm EC requires only one additional period of leaching during a 57-year period. Based on this analysis 1.5 mmhos/cm EC is reasonable and should be set for the protection of western and interior Delta agriculture prior to receiving an economic analysis of the costs of leaching (WQCP-DWR-24,8; WQCP-SWC-630,2; WQCP-SWC-633,4 & 7; WQCP-CVPWA-210,2-3).

Comment: 1.5 mmhos/cm EC is not reasonable protection for western and interior Delta agriculture as it is based on receiving "umbrella" protection (CDWA -Testimony).

Response: The Board staff analysis indicated one to two additional periods of leaching during a similar hydrologic period that occurred between 1922 and 1978, with a current level of development, current facilities, and the balance of D-1485 standards. The hydrology, development, facilities, and standards all provide a certain level of "umbrella protection", additional protection not provided by the objective. If any of these change, the "umbrella protection" and therefore the leaching frequency will change. The Board cannot base protection of a beneficial use on an unsubstantial "umbrella protection", but must provide protection that will be sufficient irregardless of other circumstances.

No change in text.

Page 1-13, 5-15

Comment: CVPWA agrees with the exclusion of reservoir releases from controllable factors; and CVPWA and SWC state that it is unclear what the time period is for measuring the temperature objective (WQCP-CVPWA-210, Page 4, paragraph 1, WQCP-CVPWA-210, Page 11, last paragraph-Page 12, 3rd paragraph; WQCP-SWC-631, Page 4, last two paragraphs).

Response: Please see response to USBR comments in GENERAL COMMENTS, Chinook-Temperature Objectives which includes changes in the text.

The time period for measuring the temperature objective is one day as it is the mean of multiple measurements within each day during the months specified. Remainder of comment considered.

No change in text.

Page 1-13

Comment: DWR notes that the clause excluding reservoir releases from controllable factors should be included in the footnotes in the two referenced tables (Table 1-1; Table 6-3;) (WQCP-DWR-25, Page 4, 3rd paragraph; WQCP-USBR-129B, Page 1, paragraph 3).

Response: Please see response to USBR comments in GENERAL COMMENTS, Chinook-Temperature Objectives which includes changes in the text.

Change in text.

Page 1-13

Comment: SWC agrees with the exclusion of reservoir releases as a means to control temperatures however the text implies that reservoir releases would be a "controllable factor" if not specifically excluded. Suggested revision of wording is provided (WQCP-SWC-631, Page 2, first paragraph).

Response: At present it appears unreasonable to meet the temperature objectives with reservoir releases. Studies do need to be conducted and additional evidence presented on the feasibility of using reservoir releases to achieve decreases in temperatures in the Estuary especially in the spring and fall months. The State Board welcomes any input regarding the appropriateness of using reservoir releases and any other controllable factors during certain times of the year during certain water years to improve conditions for salmon in the Delta.

We don't understand the statement that EPA interprets a statement to mean that all measures available to control pollutants and protect designated uses should be considered in the state's implementation plans for these standards.

No change in the text.

Page 1-16 fourth bullet; p.7-16, Section 7.4.3.2 Modelling Needs:

Comment: A model to be developed should investigate the formation of THM and other DBP precursors in the Delta (WQCP;SWC-632,7-14).

Response: Comment noted.

No change in text.

Page 1-18

Comment: Support concept of additional water project operation tests. Question of how substantial tests will be; could they include spring-time export curtailments? (WQCP-USFWS-7, Page 3, para. 10).

Response: The details of particular test criteria should be developed through the IESP. Spring curtailment experiments are certainly important to consider.

No change in text.

Chapter 2

Page 2-2, Section 2.2 Scope and Purpose of the Plan, second bullet

Comment: Questions were raised about the Board's use of a substitute document for an environmental impact report (WQCP-WACOC-5,2).

Response: The water quality planning process is a certified program under the California Environmental Quality Act (CEQA) Guidelines Section 15251(g).

No change in text.

Page 2-2; Fourth paragraph:

Comment: The sentence needs to be strengthened to reflect the need to review the Plan so as to incorporate changes in the Disinfection By-Product Regulations. Language is provided for the recommended change (WQCP-SWC-632,1-7).

Response: It is already stated that the Plan shall undergo a triennial review or sooner if needed. Additional specific revision is not necessary.

No change in text.

Chapter 3

Page 3-7, Section 3.2.1.1

Comment: Expand the explanation of the regression analysis (WQCP-CVPWA-210,7).

Response: An expanded explanation is contained in Appendix 3.1.

No change in text.

Page 3-8

Comment: The preliminary nature of the San Joaquin River Basin Classification Index should be emphasized in the WQCP (WQCP-CVPWA-210,7).

Response: There is no proposal for a San Joaquin River Basin Classification Index, just an example of a possible alternative.

No change in text.

Page 3-8, Section 3.2.1.2

Comment: The San Joaquin River Basin Water Year Classification must account for the out-of-basin diversions of water by the Hetch Hetchy and Friant-Kern Projects (WQCP-MID/TID-9,3-4).

Response: Comment noted. This issues will be addressed in the San Joaquin Water Year Classification subworkgroup.

No change in text.

Page 3-10, Section 3.2.1.5

Comment: Table 3-2 is not included in the WQCP (WQCP-CVPWA-210,8).

Response: Comment noted.

Table will be included in the final Plan.

Chapter 4

Page 5-1, last paragraph (concerning page 4-1 in the Plan.)

Comment: The comment states, "[w]e agree with the Plan that 'estuarine habitat' should not be designated as a beneficial use" (see WQCP-SWC-633, p.6).

Response: The Plan does not make that statement. "Estuarine Habitat" is a designated beneficial use of the Bay-Delta Estuary (WQCP, p.4-1).

No change in text.

Chapter 5

General

Comment: Questions were raised about the relative lengths of the discussions of the various beneficial uses, with the implication that length of section equated with importance of beneficial use (WQCP-WACOC-5,3).

Response: The length of discussion for each beneficial use or component thereof is related to the complexity of the particular issue and to the volume of evidence submitted. Increasing the length of a technical discussion without need is a waste of resources. The Scoping Phase is specifically intended to provide a forum for discussion of specific implementation measures. As such, an isolated facility will be looked at as one possible way to obtain better quality water for municipal and industrial supplies. The water quality control plan is not the State Board's dedicated arena for a detailed analysis of any physical facilities.

No change in text.

Page 5-1

Comment: Statement is misleading in talking about various influences on beneficial uses, including commercial and sports fishing, while not mentioning export pumping, because focuses on the least of the concerns. Entire paragraph is inappropriate for discussion on water quality objectives. (WQCP-USFWS-7,4).

Response: Comment noted. Issues such as the importance of export pumping are discussed elsewhere in the Plan.

No change in text.

Page 5-1, last paragraph

Comment: The comment states, "[w]e agree with the Plan that 'estuarine habitat' should not be designated as a beneficial use" (WQCP-SWC-633, p.6).

Response: The Plan does not make that statement. "Estuarine Habitat" is a designated beneficial use of the Bay-Delta Estuary (See the Plan, p. 4-1).

No change in text.

Page 5-2, Section 5.0.3

Comment: The use of the D-1485 water quality standards as the "no project" alternative was questioned (WQCP-DFG-5,; WQCP-NMFS-1,1-2). Both agencies want the Board to use the "historical without-project conditions for the CVP and the SWP and any other projects included in the water rights decision" (WQCP-NMFS-1).

Response: The Board has decided that the D-1485 standards, as amended, form an adequate base condition for this Plan. Furthermore, the Board, having heard all the evidence, believes that flow conditions are the primary factors needed for protection of the fish and wildlife beneficial use; these conditions will be considered in the upcoming phases of the proceedings. The State Board retains the option of setting flow objectives, if appropriate.

No change in text.

Municipal and Industrial

Page 5-3, Section 5.1

Comment: 250 mg/l Cl does/does not provide adequate protection for M&I supplies, while 150 mg/l Cl for industry is/is not reasonable (WQCP-CCWD-21,2 (against 250 mg/l Cl, for 150 mg/l Cl); WQCP-MID/TID-9,1; WQCP-USBR-129A,1; WQCP-SWC-633,6; WQCP-CVPWA-210,8 (for 250 mg/l Cl, against 150 mg/l Cl)).

Response: The WQCP states that a level of 250 mg/l Cl sufficiently protects municipal use for aesthetics and corrosion as set by the Department of Health Services. Consumer acceptance is accounted for in the consideration of aesthetics and corrosion. Industry is protected in the WQCP at a level of 150 mg/l Cl, not 250 mg/l Cl. The extent of the industrial beneficial use is two paper industries within the Bay-Delta Estuary boundaries. Testimony was presented on these industries requirements. Evidence submitted by DWR and CCWD conflict as to the significance of the amount of water required to meet this objective. Public health concerns are discussed in the section on Trihalomethanes.

No change in text.

Page 5-3, Section 5.1

Comment: Relocation of the CCWD's Rock Slough Intake will also result in a need to reevaluate the appropriateness of this objective (WQCP-CVPWA-210,8).

Response: Comment noted.

No change in text.

Page 5-3 second bullet last sentence

Comment: The paragraph should be changed to reflect future conditions. Also, adverse human health effects cannot be substantiated. Proposed language is provided (WQCP-SWC-632,1-7).

Response: Agree with the proposed wording to revise the sentence concerning adverse human health effects. However, disagree with the remainder of the proposed wording. It is not certain that should DBP regulations be changed, they will be more strict. EPA and DHS have confirmed this.

No change in text.

Page 5-4, Section 5.1.3

Comment: Additional M&I control points are needed in Old River and in Cache Slough to help allocate responsibility for meeting M&I objectives (WQCP-DWR-24,6).

Response: Allocation of responsibility for meeting water quality objectives will be addressed in the Scoping and Water Right phases of the proceedings. Additionally, the subject area to address this issue is more appropriately, agricultural drainage reduction, not M&I beneficial uses.

No change in text.

Page 5-5, Section 5.2.1

Comment: Revise language to state that Total Organic Carbon (TOC) is a consistent predictor of THMFP in Delta waters (WQCP-SWC-632,7-14).

Response: According to Hutton, when referencing Jung, DOC (Dissolved Organic Carbon), a component of TOC, is not a consistent predictor of THMFP in Delta waters (Hutton, P. "Trihalomethane Formation Potential in the Sacramento-San Joaquin Delta: A Mathematical Model, California Department of Water Resources Draft Report, Jan. 1991, p.5: Jung, M. "Delta Island Drainage Investigation Report" California Department of Water Resources Final Report, June 1990, p.93).

No change in text.

Page 5-5; Last paragraph; Page 5-6, following the third paragraph:

Comment: Revise language to indicate that the latest data suggests that bromodichloromethane may be the THM of highest toxicological concern and if individual THM's are regulated, users of Delta water could be significantly impacted by sea water intrusion (WQCP-SWC-632,7-14).

Response: Such language is speculative. According to EPA, not much toxicological data exists for brominated compounds. Therefore, it is likely that the first set of rules will not key in on brominated compounds (Contact Report dated March 15, 1991 re. conversation between Leo Winternitz, SWRCB; Bruce Macler, EPA; and Alexis Milea, DHS).

No change in text.

Page 5-6; first paragraph:

Comment: Revise first sentence to state that D-1485 did not include any water quality objectives for THM's because the THM standard was not adopted until 1979, one year after adoption of D-1485 (WQCP-SWC-632,7-14).

Response: Agreed

D-1485 did not include any water quality objective for THM's because the trihalomethane standard was not adopted until 1979, one year after the adoption of D-1485. It was concluded, during the 1984 Triennial Review, that, for public health reasons, protection from THMs in water from the Delta is more properly addressed through the use of alternate water treatment techniques or relocation of problem intakes rather than through the setting of more stringent salinity or TOC objectives.

No change in text.

Agriculture

Page 5-8

Comment: Protection for western and interior Delta agriculture should be based only on corn (WQCP-DWR-24,8).

Response: The WQCP states that the western and interior Delta "...water quality objectives were developed using corn as the representative crop". Central Delta Water Agency has requested protection for crops other than corn outside of the corn growing season. This is a reasonable request that will be addressed in the Scoping and Water Right phases.

No change in text.

Pages 5-9 and 1-12

Comment: In lieu of the proposed interior South Delta objectives the Board should adopt the Framework Agreement between the SDWA, DWR, and USBR (WQCP-CVPWA-210,3; WQCP-SWC-630,3-4).

Comment: The Board should insert into the WQCP a statement that if the agreement is not fully approved and executed by the end of the Water Right phase of these proceedings, the Board will reopen the WQCP to consider adoption of additional objectives (WQCP-SWC-630,3-4).

Comment: The Board should wait for the completion of agreements between the parties before adopting objectives for southern Delta agriculture (WQCP-USBR-129A,2).

Response: This would not expedite the negotiations. Also, it would not sufficiently guarantee protection of south Delta agriculture given the history of delays in setting objectives. If new information becomes available, page 7-10, section 7.4.2.2, "Southern Delta Agriculture", of the WQCP, indicates that the south Delta objectives could be reviewed and if warranted changed in the next Triennial Review.

No change in text.

Page 5-9, Section 5.3

Comment: More information needs to be developed concerning crop sensitivity to salinity during early stages of growth, potential leaching fractions, effectiveness of rainfall and timing of objectives for crops other than alfalfa. If such information warrants, then the objectives should be modified (WQCP-USBR-129B,1).

Response: It is agreed that this information is needed. This information is described on page 7-10, section 7.4.2.2.

No change in text.

Pages 5-10, and 5-12, and Table 5-5

Comment: Threemile Slough should be established as an alternative control point to Emmaton, to become effective when the Contract between DWR and the North Delta Water Agency has been fully implemented (WQCP-DWR-24,10).

Response: Western and interior agriculture objectives have not been changed in the WQCP. Location of objective stations will be addressed along with leaching and economic information at a later date.

No change in text.

Comment: The WQCP's agricultural objectives for the interior south Delta conflicts with the statement that care should be given "so as not to undermine negotiations but to bring the negotiations to a timely and fruitful conclusion", and is contrary to the intent of the negotiated contract. With the contract in place, the water quality objectives should only apply to the station at Vernalis (WQCP-DWR-24,7; WQCP-SWC-630,3).

Response: Page 5-12, Section 5.3.2.3, and Page 5-13, Section 5.3.3.2, "Southern Delta", sufficiently address the relationship between the negotiations and the WQCP. Page 5-13, of the WQCP states "... (any) agreement affecting south Delta water quality will be fully reviewed by the State Board prior to implementation of the final stage. The objectives and locations at that time may be revised as the State Board deems appropriate." This statement allows the Board the needed flexibility to protect south Delta agriculture should the negotiations fail, while additionally not giving advantage to any negotiating party. Further details of the negotiations are unnecessary to the WQCP.

No change in text.

Comment: South Delta agriculture objectives should be maintained on a 14-day running average instead of a 30-day monthly average. More stations need to be monitored in the south Delta (WQCP-SDWA-36,1).

Response: Protection for south Delta agriculture is accomplished by phasing in the 1978 WQCP objectives, while giving regard to the South Delta negotiations. Variations to the 1978 WQCP objectives will be addressed when either or both the negotiations or the South Delta Agriculture Study have been finished.

No change in text.

Fish and Wildlife

Comment: The USFWS points out that the referenced Conclusion states that there is insufficient information in the record to set specific salinity and temperature objectives for the protection of Delta smelt. USFWS states there is information on the range of temperature and salinity tolerances for Delta smelt, the general habitat type inhabited by Delta smelt in

the Estuary, and the strong association of Delta smelt abundance with high phytoplankton and zooplankton productivity when the entrapment zone was situated in the Suisun Bay. In addition, in 1990, the USFWS was petitioned to list the Delta smelt as endangered (WQCP-USFWS-7,4 & 5).

Response: For the most part, all of this information is included in the sections of the Plan (Pages 5-38 through 5-42) and the Technical Appendix (Pages 4-27, 4-28) addressing Delta smelt. This information is general, and without additional information, it would be difficult to state that the Delta smelt would be protected by establishing any particular EC objective at a specific station during a specific portion of the year. The location of the entrapment zone in the vicinity of Suisun Bay does appear to be associated with subsequent relative abundance of Delta smelt. The issue of the entrapment zone will be addressed in subsequent proceedings.

No change in text.

Page 5-15

Comment: Other comments from the same exhibits are on details of the discussion (WQCP-SWC-631,3-4; WQCP-CVPWA-210,11).

Response: Since the Board has decided that "...the location of the entrapment zone in Suisun Bay is related primarily to the freshwater outflow," they "...will defer consideration of this issue to the Scoping and Water Right Phases of the proceedings" (page 5-15). The State Board does, however, retain the option of setting objectives, if appropriate. Participants are encouraged to submit data on this and related subjects during the upcoming phases.

No change in text.

Page 5-15

Comment: SWC comments that the role of salmon fry rearing in the Delta has not been documented. The survival rate and contribution of fry rearing (compared to smolt rearing) in the Delta to adult stock should be examined and documented as part of the ongoing fishery investigation program (WQCP-SWC-631, Page 4, Chinook salmon section).

Response: We agree that the contribution of fry rearing in the Delta to the adult stock is not well documented; however, it is documented by USFWS that considerable numbers of fry are present in the Delta, especially during the years of high inflow (USFWS, 31,82-92). The relative contribution of those fry to the adult stock may well reflect the quality of the

fishery habitat in the Delta. Fry rearing in the Delta may well warrant further investigation, however that does not warrant the removal of the reference to fry rearing from the text.

No change in text.

Page 5-15

Comment: SWC suggests additional wording supporting the conclusion that upstream reservoirs can not reasonably control water temperatures in the Delta; CVPWA agrees (WQCP-SWC-631,5,11,12; WQCP-CVPWA-210,4,11).

Response: Please see response to USBR comments in GENERAL COMMENTS, Chinook-Temperature Objectives which includes changes in the text (pages, I-6 and I-7).

No change in text.

Page 5-16, para. 5

Comment: CVPWA comment includes: 1) suggested revisions to the sentence regarding San Joaquin River flow at Vernalis and salmon escapement two and one half years later; and 2) suggested modification of portion discussing trucking of fish (WQCP-CVPWA-210,13).

Response: 1) Referenced sentence will read as follows: San Joaquin River flow at Vernalis during April through June has been identified as a major factor affecting smolt survival; and mean flows during these months is correlated to subsequent adult escapement of hatchery and naturally produced Chinook salmon two and one-half years later (T,XXXVI,139:17-22).

Comment considered.

No change in text.

Page 5-16, para. 6

Comment: SWC suggests that the correlation between adult escapement and flow may be the result of an autocorrelation between hydrologic conditions and other environmental variables such as water temperature which may be influencing salmon smolt survival and SWC provides a suggested revision (WQCP-SWC-361,6).

Response: Comment noted; however, the sentence came from testimony during a hearing and therefore cannot be changed.

No change in text.

Page 5-16, para. 6

Comment: SWC suggests removing the references to the San Joaquin River when stating that the natural population of Chinook salmon is declining and refers to the reference USFWS,31,58 (WQCP-SWC-361,6).

Response: The reference to (USFWS,31,58) will be changed to (DFG,15,Appendix 1) in the first sentence of the 4th paragraph on Page 5-16. This references a table which contains the data demonstrating that San Joaquin River tributary Chinook salmon stocks as well as Sacramento River stocks have declined since the beginning of the period of record in 1953.

No change in text.

Page 5-16 to 5-19, para. 6

Comment: CVPWA suggests revision to referenced paragraph based on the assumption that the paragraph is intended to conclude that salinity is not a factor affecting Chinook salmon during their migration through the Delta (WQCP-CVPWA-210,14).

Response: The assumption that this paragraph is intended to make or support this conclusion is incorrect. In fact it was to provide an indication of the information that is known regarding smolt survival during their emigration through San Francisco Bay.

No change in text.

Page 5-17,para. 6

Comment: SWC suggests deleting the reference to the naturally produced fish in the sentence referring to the increased survival rates of those hatchery fish trucked around the Delta (WQCP-SWC-361,6).

Response: Survival rates of juvenile wild fish migrating downstream and through the Delta is assumed to be somewhat the same as that of hatchery fish because they are exposed to the same environmental conditions, travel the same migratory pathways and are exposed to the same diversions as the hatchery fish. The publication, USFWS (1990), Abundance and Survival of Juvenile Chinook Salmon in the Sacramento-San Joaquin Estuary, states that the survival rates of "wild" fish are correlated with temperatures at Freeport as are the survival rates of the hatchery fish.

No change in text.

Page 5-17

Comment: The comment states that Figure 5-1 should be clearly labeled to indicate 2 1/2 years lag time (WQCP-SWC-361,6).

Response: The figure is adequately labeled, however it will be updated as time permits.

No change to Figure 5-1.

Page 5-18

Comment: SWC suggests relabeling and updating Figure 5-2 (WQCP-SWC-361,6).

Response: This figure will be updated as time permits.

No change to Figure 5-2 at present.

Page 5-19, para. 1

Comment: CVPWA suggests revision to paragraph addressing factors that influence water temperatures (WQCP-CVPWA-210,14).

Response: The suggestions do not clarify the intent or meaning of the text.

No change in text.

Page 5-19 para. 2

Comment: SWC provides a suggested revision of a sentence addressing the Upper Sacramento River Fisheries and Riparian Habitat Management Plan (WQCP-SWC-361,7).

Response: The revised wording does not clarify the meaning of the sentence and the list of issues was not meant to be inclusive.

No change in text.

Page 5-19, para 3

Comment: SWC suggests deleting the reference to the Delta in the sentence discussing water temperatures because "concerns have focused primarily on areas such as Freeport on the Sacramento River..." (WQCP-SWC-361,7).

Response: Freeport and Vernalis are within the legal boundary of the Delta and therefore the reference to the Delta is appropriate.

No change in text.

Page 5-19

Comment: SWC states that lethal water temperatures in the Delta have not been substantiated for juvenile salmon in the Delta and therefore the word lethal should be deleted and replaced with the word stressful (WQCP-SWC-361,7).

Response: WQCP-SWC-605, Page 3, states that the upper lethal temperature for juvenile chinook salmon was determined by Brett to be above 77°F (25°C) for acclimation at or above 59 °F. In some years, temperatures above 25°C occur at Freeport and Vernalis, within the Delta (USGS temperature monitoring data), during the times of the year when juvenile salmon may be present.

No change in text.

Page 5-19, para 3

Comment: SWC comments refer to the sentence regarding "pulse flows" (WQCP-SWC-361,7).

Response: The statement that increased flows could have an affect on water temperatures is consistent with the evidence presented by several parties.

No change in text.

Page 5-19

Comment: CVPWA states that there are no winter-run Chinook in the San Joaquin River (WQCP-CVPWA-210,16).

Response: USFWS notes that winter-run have been observed in the Calaveras River (WQCP-USFWS-7,7).

No change in text.

Page 5-20

Comment: SWC suggest revision of the wording regarding cool river temperatures as benefitting the fall and winter runs (WQCP-SWC-361,8).

Response: The proposed wording confuses the timing and presence of the two runs during the spring and early summer.

No change in text.

Page 5-20, last para.

Comment: SWC comments are in regard to water temperature conditions in the Delta as opposed to Freeport (WQCP-SWC-361,8).

Response: Please see above comments regarding legal boundary of the Delta and the USGS temperature monitoring data.

No change in text.

Page 5-20

Comment: SWC comments on Figure 5-3 and the use of the USFWS survival index as opposed to survival rates (WQCP-SWC-361,8).

Response: This sentence refers to Figure 4-4 (USFWS,31,43) as stated, which shows Delta smolt survival based on recoveries of adult marked salmon correlated with mean water temperatures. It does not refer to Figure 5-3, which is only one component of an annual survival index as it represents only one reach. The older references use survival interchangeably with survival index.

No change in text.

Page 5-20

Comment: CVPWA discusses the smolt survival index relative to temperatures (WQCP-CVP-210,18).

Response: Comments noted.

No change in text.

Page 5-20

Comment: CVPWA in this comment discusses the relative importance of dissolved oxygen and temperature on the upstream migration of salmon in the San Joaquin River (WQCP-CVP-210,19).

Response: Comments considered.

No change in text.

Page 5-20, last para.

Comment: SWC comments that 1) the section discussing the blockage of migrating adult salmon in the San Joaquin River due to high temperatures and low dissolved oxygen levels in the fall is difficult to interpret; 2) the statement should be based on cited scientific references supported by quantitative data; and 3) tagging studies conducted in the San Joaquin River were difficult to interpret (WQCP-SWC-361,9).

Response: 1) The section discussing the blockage of migrating adult salmon in the San Joaquin River is based on Hallock et al (1970), as cited in the text; 2) it is the only study conducted in the Delta of a phenomenon specific to this particular area which is of concern due to the timing of its occurrence and the simultaneous presence of migrating salmon and; 3) the results of the referenced study are difficult to interpret because it is difficult if not impossible to distinguish whether the fish are reacting to the low dissolved oxygen levels or to the high temperatures or to a combination of the two variables. Please see above comments on the Dissolved Oxygen objective.

No change in text.

Page 5-22 and 5-24

Comment: SWC suggests 1) deleting a reference to the fact that the fall-run Chinook salmon population has been supported by hatchery production in the Sacramento and San Joaquin Rivers; 2) deleting the phrase: "based on the hearing record and the testimony presented at the hearing"; and 3) deleting a statement that was taken from the stated reference, WQCP-USFWS 2, 3 and 5 (WQCP-SWC-361,10).

Response: Comments considered, however the sentences state facts.

No change in text.

Page 5-23

Comment: CVPWA proposes changes in wording in the section addressing "pulse flows" (WQCP-CVPWA-210,21).

Response: Comments noted.

No change in text.

Page 5-24, para. 2

Comment: CVPWA discusses the USBR temperature model and suggests rewording of the paragraph addressing this model (WQCP-CVPWA-210,21).

Response: Comments considered

No change in text.

Page 5-24

Comment: SWC suggests changing the wording to include the statement that temperature models need to be developed (WQCP-SWC-361,10).

Response: The comment was considered but it was not sufficiently clear what these temperature models might accomplish. Sometimes models are less useful than investigative research. The USBR temperature model will no doubt evolve as future needs are identified. Please see above section on Evaluation of Water Quality Alternatives.

No change in text.

Page 5-24

Comment: SWC suggests deleting the phrase, "achieve the coldest temperature possible", because cold water temperatures may interfere with other fish species (WQCP-SWC-361,11).

Response: During the forthcoming proceedings, the possibility of and degree to which the water can be cooled to benefit juvenile salmon will be further investigated.

No change in text.

Page 5-25, para. 3

Comment: SWC suggests: 1) consideration of controllable factors does not include areas of the "the Delta", and 2) the statement regarding the potential benefits of maintaining water temperatures is an extremely weak statement (WQCP-SWC-361,11).

Response: Freeport and Vernalis are within the legal boundary of the Delta. The statement was meant to be of a general nature because it is expected that additional information will be presented on this topic.

No change in text.

Page 5-25

Comment: CVPWA suggests emphasizing that stored water cannot reasonably control temperatures.

Comment summarizes the substance of the temperature objectives and states there is little scientific justification for the temperature objectives in the plan. EPA cannot approve objectives that are not supported by available scientific evidence (WQCP-CVPWA-210,22; WQCP-EPA-1,1; WQCP-SCLDF-1,5; WQCP-CVPWA-210,23).

Response: Board staff reviewed a plethora of scientific data on laboratory experiments and field studies dealing with the effect of water temperature on juvenile Chinook salmon. Laboratory experiments indicate that there is a considerable range of temperatures at which salmon can thrive or merely

survive. Laboratory data are not directly applicable to the environmental conditions in the Delta. The USFWS field experiments, do not and cannot document the conditions through which the salmon smolts migrate. They do indicate that mortality increases with increasing temperatures, however, temperature is not the only factor causing mortality in the Delta. Smolt survival rates vary with time of outmigration, flow, temperature, export rates, migration paths, etc.. Our knowledge of the interplay of these factors and how they affect smolts survival in the Delta is imprecise. The very nature of field experiments, especially those in the Delta, is that they often provide ambiguous results, subject to interpretation. This situation is not likely to change, much less improve in the short-term, even with additional study.

The temperature objectives specify that the 66 and 68°F values are to be maximum values because that is the range above which it is found that the salmon become "stressed" or their overall condition deteriorates. Also, of all of the USFWS smolt survival studies, these temperatures were associated with the mid-range of the survival rates.

There are limited data available regarding the effects of temperatures on adult Chinook salmon either from laboratory experiments or from field studies. The field study in the San Joaquin River which provided the data on temperatures during the upstream migration of fall-run Chinook also provided information on dissolved oxygen. The two environmental factors are related and quite possibly have a synergistic effect on the salmon migration behavior. Even with limited and imprecise information, it is possible to conclude that: 1) an upper temperature limit for adult Chinook salmon migration is desirable; 2) temperatures are generally above desirable levels for migrating salmon in the Delta in the fall months; and 3) 68°F is at the upper end of desirable temperatures to provide passage to adult salmon through the Delta.

No change in text.

Page 5-25

Comment: EPA also questions whether different temperature objectives should be set for different salmon runs. The plan notes that DFG believes that temperature tolerances for winter run are similar to those of other runs. A fully protective objective is appropriate to ensure that all runs are protected (WQCP-EPA-1,1; WQCP-SCLDF-3,2).

Response: There is no precise method for determining what temperatures in the Delta provide adequate protection for Chinook salmon. A range of 66 to 68°F was identified as the boundary between providing appropriate protection and unacceptable conditions.

In the Delta during the spring and early summer months, it would be unreasonable to set temperature objectives within a conservative range of temperatures, say 55 to 60°F. Because the winter run is a federal and state listed species, the lower end of the range was determined to be appropriate for this run as its survival is more tenuous.

No change in text.

Page 5-25, Table 6-3

Comment: MID/TID states that: 1) the temperature objective on the San Joaquin River is probably not achievable, 2) the definitions of controllable factors should all be consistent, and 3) the dates of the San Joaquin River temperature objective should be changed to exclude the months of June and September because the smolt outmigration may end in the first week in June and ambient air temperature is the major factor controlling water temperature in most Septembers (WQCP-MID/TID-9,2; WQCP-DFG-5,2).

Response: 1) Comment considered; 2) appropriate changes have been made in the text (for example see page 1-13); and 3) timing of outmigration is often highly variable between years and in the San Joaquin River, a portion of the smolts do outmigrate in June in some years. The purpose of including June is to consider these smolts. Adult salmon are present in the lower San Joaquin River in September. We agree that ambient air temperature is not a controllable factor and that it may be difficult to control temperatures in September. The State Board welcomes information on those factors that are controllable for the improvement of fisheries habitat in the lower Sacramento and San Joaquin Rivers.

Please see response to USBR comments in GENERAL COMMENTS, Chinook-Temperature Objectives which includes changes in the text (pages, I-6 and I-7).

No change in text.

Page 5-26

Comment: EPA agrees that the dissolved oxygen objective is necessary but questions the scientific basis for deciding that the objective should only be in effect for three months and why different portions of the Delta should be subject to different objectives for dissolved oxygen (WQCP-EPA-1,2; WQCP-SCLDF-1, 6).

Response: Prior to this Plan, there were no water quality objectives for dissolved oxygen objectives for the interior Delta except the Basin 5 Water Quality Control Plan which allowed a 5 mg/l

dissolved oxygen objective in areas "from which fish have been excluded or where the fishery is not important as a beneficial use" and provided a 7.0 mg/l objective in the Sacramento River (below I Street Bridge) and in all Delta water west of the Antioch Bidge. Through DWR monitoring data and DFG research, a particular area during a particular time of year was identified where the local dissolved oxygen levels inhibited the movement of migrating salmon through the lower San Joaquin River. If, in the future, it is found that the low levels of dissolved oxygen occur during other times of the year in other areas in the Delta, within fisheries habitat, the Plan can incorporate those modifications during the triennial review process.

No change in text.

Comment: Page 5-29 Suggest removing the words "minimal, but" from a discussion of the adequacy of the D-1485 salinity objectives (WQCP-SWC-631,13).

Response: We disagree. As noted farther down in Section 5.6.2.1, DFG described the spawning habitat protections under D-1485 as minimal. We accept their evaluation.

No change in text.

Comment: Page 5-30 - Reference to the estimated size of the spawning area available (9.5 miles) when Antioch EC is 25.2 mmhos/cm (extreme relaxation condition) should be removed because no technical basis exists for making this statement. The length of the spawning area is in fact "relatively constant" (between ten and twenty miles in length) in high and low flows though it may move up and down the river (WQCP-SWC-631,13).

Response: We disagree. This section is intended to provide the historical context in which the present standard was developed and presented in the 1978 Delta Plan and Final EIR. As we indicate in Section I of this document, we also find the technical basis to be inadequate, but this finding does not change the historical facts and references. We also disagree that a change in spawning area from twenty miles width to only ten (a 50% reduction) constitutes a "relatively constant" size.

No change in text.

Relationship of Striped Bass Spawning Protection Relaxation Provisions to Water Supply

Pages 5-32 through 5-37

Comment: Page 5-32 - DFG disagree with using total Basin water supply rather than deficiencies as the basis for relaxation of the striped bass spawning objectives, because fish and wildlife

frequently take deficiencies in protection under the present standards while water deliveries are not cut. They advocate closer linkage between fish and wildlife deficiencies and water delivery deficiencies (WQCP-DFG-5,2).

Comment: Page 5-35 to 5-37 - Commends Board for rethinking approach to relaxation provisions. Use of CVP and SWP may not be appropriate, since may be triggered by management decisions. If relaxation provisions included, recommend approach of Alternative 2-E (Section 5.6.3.2) (WQCP-EPA-1,5).

Comment: Page 5-35 to 5-37 - The current and proposed relaxation provisions may not be adequate to protect striped bass for extended dry periods, and cannot accept without scientific evidence to support (WQCP-EPA-1,6).

Comment: Page 5-35 to 5-37 - The proposed relaxation standards do not identify the scientific basis for the Board's conclusion that these provisions will protect striped bass spawning during extended drought conditions (WQCP-SCLDF-1,6).

Response: The procedure addressed in Section I of this document would tie reduction in spawning habitat directly and proportionally to shortages in project deliveries, which is more appropriate than the method used at present. DFG and EPA have concerns that other approaches may be more appropriate, particularly by relating fish and wildlife deficiencies to other deficiencies. The use of the Sacramento River Basin Index could, if the State Board elects to do so, after completion of the Scoping and Water Right phases, delete two criteria (year following critical year, and subnormal snowmelt) which at present reduce protection for fish and wildlife while not changing protection for other beneficial uses. In addition, the Board will consider other approaches, such as the tying of export levels to water availability, and requiring certain minimum amounts of carryover storage in project reservoirs, in the scoping and water rights phases.

No change in text.

Data Needs, Gaps and Tests

Pages 5-33 through 5-37

Comment: Plan should use all available models for Plan analysis, including fishery models, such as Dr. Botsford's [UC Davis] (WQCP-NMFS-1,2).

Comment: Page 5-33 - Need to conduct investigations of the relationship between EC and spawning in the San Joaquin River, as well as the relationship between egg and larval survival and EC (WQCP-SWC-631,14-15).

- Comment: Pages 5-33 to 5-34 - Conflicting information on survival of striped bass eggs in various salinities; statement about poor survival in upper San Joaquin River as possibly related to high salinity should be deleted (WQCP-CVPWA-210,25-26).
- Comment: Page 5-33 to 5-34 - Statement on poor egg survival as possibly related to high salinity in the San Joaquin River above the Delta (Turner, 1976) should be removed in absence of better understanding of salinity/hatching success relationship. Need detailed field work and better analysis of existing DFG data sets (WQCP-SWC-631,14-15).
- Comment: Page 5-34 - Statement on temperature effects on striped bass eggs and young needs scientific references. Need analyses of temperature effects on striped bass spawning success, especially where temperature needs may conflict with salmon requirements (WQCP-SWC-631,15).
- Comment: Page 5-36 - Analysis of DFG data needed to determine relationship of salinity and spawning location in the San Joaquin River (WQCP-SWC-631,16).
- Comment: Page 5-37 - Reiteration of concern about temperature and striped bass egg and larval survival (WQCP-SWC-631,16).
- Comment: Page 5-55 - Some bibliographic references missing (WQCP-SWC-631,19).
- Comment: Page 6-13 - Need better data analysis so that can demonstrate an actual rather than a "theoretical" improvement in spawning protection at Prisoners Point (WQCP-SWC-631,21).
- Comment: Page 6-20 - Agree that should use models to analyze different alternatives for striped bass, but should use the best available models in subsequent phases to provide quantified impact assessments (WQCP-USFWS-7,6).
- Response: The State Board agrees that additional information is required in nearly every area of discussion related to the setting of water quality objectives and other requirements. We urge participants to avail themselves of any models and data available, and to share these data and analyses as much and as early as possible. It is possible to quibble with nearly any statement in the Plan; the San Joaquin River salinity statement is one example. The statement should be viewed as an area of concern for the Board, and as a call for further investigation, both in terms of salinity effects on egg survival and in terms of additional investigations of upstream spawning success when conditions in the San Joaquin River are sufficient to allow upstream migration. The word "theoretical" in relation to Prisoners Point was intended only

to indicate that the proposed objective of 0.44 mmhos/cm EC was already achieved at that location under most conditions, not that the benefit of 0.44 mmhos/cm was theoretical.

No change in text.

Comment: Page 5-33 - Suggest removing the word "substantial" from the sentence "This undoubtedly results in substantial losses of eggs and young.", with regard to striped bass spawning in channels which move water to the export pumps (WQCP-SWC-631,14).

Response: We disagree. Losses due to reverse flows, entrainment, and translocation are implicated as the biggest factor in the striped bass decline.

No change in text.

Comment: Page 5-33 - Suggest removing the word "substantial" from the sentence, "as late as 1963, substantial spawning in the San Joaquin River occurred in the reach between Stockton and Mossdale (Farley, 1966)." (USFWS-SWC-631,14).

Response: We disagree. The data from Farley (1966) show that this area was one of the two most productive spawning areas on the river that year.

No change in text.

Period of Spawning Protection

Pages 5-34 through 5-37

Comment: Page 5-34 - Suggest the wording on the period of striped bass spawning be revised to read "the period April 1 to May 31, or such earlier date when biological sampling has demonstrated that spawning has ended." (SWC-WQCP-631,15).

Comment: Pages 5-34 to 5-37 - EPA cannot support the provision until the Board demonstrates how such a determination can be made accurately given normal fluctuations in water levels and spawning activity (WQCP-EPA-1,5).

Comment: Pages 5-34 to 5-37 - The standard which includes "or until spawning ends" defies implementation, because the termination of spawning activity is difficult to predict and identify from one year to the next (WQCP-SCLDF-1,6).

Comment: Pages 5-34 to 5-37 - The extension of the spawning period protection from May 10 [sic] to May 31 may cost the projects 10,000 acre-feet of yield, but the inclusion of the phrase "or until spawning has ended", will largely eliminate this impact. Dr. Hansen's [sic] work shows that in dry and critical years spawning ends earlier (WQCP-SWC-630,8-9).

Comment: Pages 5-34 to 5-37 - Exhibit DWR-WQCP-11 showed that 99% of spawning occurs before May 21, therefore the benefit of extending the period to May 31 is speculative, at best (WQCP-DWR-24,12-13).

Response: The State Board added the phrase "or until spawning ends" to provide reasonable protection, and yet also recognize the variability in biological systems. The Board has specifically not stipulated what measurement should be used to determine when spawning ends so that a wide variety of approaches to provide this information may be explored. We therefore are not making the wording change suggested in SWC-WQCP-631. We disagree that 99% of spawning is completed by May 31, as DWR suggests; only 2 of the 15 years of data summarized in Table 5-2 in Section 5.6.2.1 show that even 95% of spawning activity was completed by May 21. To suggest that the benefits of this extension are "speculative" is to deny the data on the actual period of spawning in the San Joaquin River. Nor do we find that this protection, and its effect on yield, to be unreasonable, given that only about 30-40% of spawning activity is protected at the present time in dry and critical years.

We disagree that spawning necessarily ends earlier in dry and critical years; for example, 1977, the driest year on record, showed a late spawning period. We also disagree that this phrase will serve as a ready means to shorten the period of protection, as SWC suggests. The State Board will place the burden of proof on those who wish to shorten the period of protection. For the present time, we will require that requests for early curtailment of this objective be supported by proof based on real-time data for that particular year, not on general statistical relationships. Thus, we also disagree that the objective is not implementable in its present form, as EPA and SCLDF suggest. The proposed objective provides substantially increased protection for striped bass spawning independent of umbrella protections, and yet provides appropriate flexibility to reflect actual conditions.

No change in text.

Page 5-38, last para.

Comment: SWC suggests adding the phrase, "whose taxonomy has been characterized as 'confusing' (DFG 1990)", to the second sentence (WQCP-SWC-361,16).

Response: Comment considered.

No change in text.

Page 5-39

Comment: CVPWA comments address the variability of the annual Delta smelt abundance and the reasons for that variability; and suggest changes to the section on Delta smelt (WQCP-CVPWA-210,26).

Response: Comments noted.

No change in text.

Page 5-39, para. 4

Comment: SWC suggests, in part, inclusion of a phrase stating that DFG concluded that there is "no evidence" that Delta outflow has had major effects on Delta smelt abundance (DFG, 1990) (WQCP-SWC-361,17).

Response: It would be more appropriate to say that although there may be no correlation directly between outflow and abundance of Delta smelt there does appear to be an indirect relationship. Flow affects the location of the entrapment zone and the location of the entrapment zone has an effect on Delta smelt production. Other comments considered.

No change in text.

Page 5-42, para. 2

Comment: SWC suggests adding a reference to the peripheral canal as a method for reducing impacts to the Delta smelt by reducing entrainment into the CVP and SWP (WQCP-SWC-361,18).

Response: Methods of reducing impacts to Delta smelt, as well as other fish species, from entrainment by diversion by the CVP and SWP will be discussed in the forthcoming phases.

No change in text.

Page 5-42, para.3

Comment: SWC suggests deleting the section addressing the entrapment zone (WQCP-SWC-361,18).

Response: Comment considered.

No change in text.

Pages 5-43 and 5-44, Section 5.10 Suisun Marsh

Comment: The choice of monitoring stations was questioned, especially in regard to the Board's rationale for the differences between the 1978 Delta Plan and the amendments to D-1485 which were

made in 1985 (WQCP-EPA-1; WQCP-SCLDF-1,7; WQCP-SCLDF-2,2-3; WQCP-CWPC-1,6-7). In addition, "...the 10,000 plus acres of tidal marshes are not being addressed directly or indirectly in the Final Draft Plan" is a concern (WQCP-USFWS-7,5). More is needed in the biological assessment than simply an endangered species review; "[t]he studies should include 1) wetlands outside the legally-defined Suisun Marsh; 2) other alternatives in addition to the SMPA standards; and 3) the full range of species that depend upon marsh resources, in addition to endangered species" (WQCP-EPA-1). USFWS opinion is that "...the waterfowl resources using the 10,000 plus acres of tidal marshes in Suisun Marsh need to have their water quality needs addressed as well" (WQCP-USFWS-7,5).

Some participants advocate that the Board adopt the SMPA water quality standards for the Suisun Marsh, "...pending the completion of an endangered species review for the entire Bay-Delta plan" (WQCP-DWR-25,5; WQCP-USBR-129A,3; WQCP-SWC-633,11-12). SWC recommends "...that the Board adopt the {interim} objectives contained in Decision 1485, before it was amended, until the biological assessment is completed" (WQCP-SWC-630,10-11; "interim" added during testimony on March 11, 1991).

Response: After reviewing the information presented to date, the State Board has concluded that "...the 'Normal Standards' ... in the SMPA may adequately protect the managed wetland habitat of the Suisun Marsh" and that there is a need for "...additional information on the water quality requirements of the rare, threatened, and endangered species and their habitat in the marshes around Suisun Bay ... before it can consider modifying the current water quality objectives" (WQCP, p.5-44).

No change in text.

Comment: Only a part of the money available for "...improved duck club management schemes..." (WQCP, p.5-43) has been spent and that "...the Lower Joice Island fill/drain facility has not been constructed" (WQCP-DWR-24,10).

Response: The duck club management schemes referred to are the fill-circulate-drain cycle options designed for the operation of each club. The word "schemes", as used here, does not include any facility construction as such.

No change in text.

Page 5-44, last paragraph

Comment: The Board needs to be careful to fully satisfy both the federal and state endangered species acts (WQCP-NMFS-1,2; WQCP-USFWS-7,7).

Response: This is the Board's intent; the assistance of NMFS, USFWS, and DFG will be appreciated.

No change in text.

Comment: There was a comment on the "rare" classification (WQCP-SWC-633,12,17).

Response: Many of the designated "rare" plants are also federal candidate species and as such must be considered in the assessment, even though there is no direct protection given to them.

No change in text.

Page 5-48

Comment: Section should include data from D-1485 monitoring program, should include discussion of review of benthic monitoring program, and changes resulting from Potamocorbula clam introduction (WQCP-SWP-631,18-19).

Response: Much of the data presented in this section is from the D-1485 monitoring program, as summarized by Markmann (1986). The data on Potamocorbula are not as thoroughly analyzed as earlier data. The entire compliance monitoring is under review by a committee of the IESP. The Board has chosen not to recommend any major revisions to the current program pending completion of this review and its evaluation by the Board.

No change in text.

Page 5-51, Delta [Recreation]

Comment: There was disagreement with the discussion of the limited information available to the Board (WQCP-SWC-633,12-13).

Response: Unless additional (and up-to-date) information becomes available, the Board sees no reason to change the discussion in the Plan.

No change in text.

Page 5-53, Export Agriculture

Comment: The 1.0 mmhos/cm EC objective is too high (WQCP-SDWA-36,1).

Response: The 1.0 mmhos/cm EC objective for export agriculture is based upon reasonable protection of the beneficial use. The export pumps will receive umbrella protection from South Delta objectives. Thus, this 1.0 EC objective will not cause a degradation of export water quality.

The 5% leaching fraction mentioned on page 7-4 is the average minimum leaching fraction for the export area. With a 73% irrigation efficiency the actual average leaching fraction will probably be more like 10 to 15% due to incidental deep percolation losses. Thus, the 1.0 mmhos/cm EC objective appears to provide reasonable protection of export

agriculture. Also, higher leaching fractions in the San Joaquin Valley would just exacerbate the problem of agricultural drainage in the San Joaquin River.

No change in text.

Chapter 6

Pages 6-4 to 6-13, 6-13, paras. 1 and 2

Comment: The USFWS comments relate to the impacts on salmon smolt survival from the analysis of the water supply impacts of the various water quality alternatives (WQCP-USFWS-7,6; WQCP-CVPWA-210,30-31).

Response: The assessments of the impacts to salmon smolt survival based on the water supply impacts, resulting from the various water quality alternatives, is very preliminary and of a general nature. The results of the water supply impacts analysis are provided only in terms of acre-feet in only two year types, average and critical, based on the 57 years of record. Assessment of impacts to salmon smolts will depend on how much, when and where the flows occurs. This analysis will be done during the scoping phase of the Proceedings (See Chinook-Upstream effects of Delta flow requirements).

No change in text.

Page 6-4, Paragraph 2

Comment: The plan does not provide a complete definition of water supply impacts in that it does not include impacts on upstream reservoir storage and the timing of the flows (WQCP-DWR-24,4; WQCP-DWR-15,4).

Response: Comment noted. Table A6.3-1 from Appendix 6 presents the "Project Deliveries" water supply impacts, which includes CVP and SWP reservoir storages. [Project Deliveries was deleted from earlier drafts.]

No change in text.

Page 6-5, TABLE 6-2, Water Supply Impacts...

Comment: A question was raised about the interpretation of the "-9" figure describing "Total Delta Exports" in the results of the operations studies for Alternative 3 (WQCP-WACOC-5,4).

Response: The "-9" figure represents a decrease of 9,000 acre-feet per year in total Delta exports when compared to the base of 6,295,000 acre-feet allowed under D-1485. This small reduction is not significantly different from zero. The State Board has concluded that there will be no significant adverse environmental impacts due to the adoption of this Plan (Plan,6-29).

No change in text.

Page 6-5, 6-7, 6-8

Comment: Studies should not be analyzed by comparing Delta outflow. Decreases in Delta outflow could be due to additional upstream reservoir storage and not necessarily due to Delta objectives (WQCP-DWR-24,6-5,6-7,6-8,6.3-3 and 6.3-4).

Response: Numerous studies have been performed using Delta outflow as an indicator of water supply impacts. Delta flows and exports as well as reservoir storages will be considered in the final draft.

No change in text.

Page 6-10

Comment: The discussion of the paper industries needs, salinity treatments capability, and negotiations should be expanded in the WQCP (WQCP-DWR-24,6).

Response: Section 5.1.2 of the WQCP sufficiently discusses the paper industries needs, and the relationship between the negotiations and the WQCP. Discussion of the paper industries salinity treatment capability would not add necessary information to the WQCP.

No change in text.

Page 6-13 para. 2

Comment: SWC suggests substituting June for July in the period of April through July in the discussion of the impact assessment of the water quality Alternatives (WQCP-SWC-631,20).

Response: The reason the period April through July is used here is because the operation studies identify this period separately because the fish and wildlife objectives are introduced in April and are not removed until July. This analysis of the alternatives was very preliminary and will be more thoroughly analyzed in the forthcoming proceedings.

No change in text.

Page 6-13 para. 2

Comment: SWC suggests: 1) stating that it is a fact that there is no data available to evaluate the relationship between water temperature and smolt survival on the San Joaquin River, and 2) deleting wording stating that spring outflow in the San Joaquin River is correlated with adult salmon returns two and one half years later because it is a flow-based consideration and should be addressed later (WQCP-SWC-631,20).

Response: 1) It is not a fact that there are no data available to evaluate the relationship between water temperature and smolt survival in the San Joaquin River, and 2) in this section of the Plan, we are making a preliminary attempt to analyze the water supply impacts of the alternatives and the resulting impacts to the salmon. In subsequent Proceedings, these issues will be more thoroughly addressed.

No change in text.

Comment: NMFS urges the Board to broaden its consideration of computer models to include the Chinook population model (CPOP) for the Sacramento River Basin (WQCP-NMFS-1,2).

Response: There are several models such as CPOP that can be used as tools to assess the impacts of various operation alternatives on the salmon resources upstream and in the Delta. In the preparation of the Draft Environmental Impact Report, all available and appropriate tools will be utilized to assess the impacts of the project alternatives to be considered (See Chinook-Program of Implementation; also see 'Response to WQCP-USFWS-7, para. 6, regarding 7-16, Section 7.4.3.2 of the Plan.)

No change in text.

Comment: NMFS points out that the Board may also need to consider the Delta flow effects of Shasta reservoir carry-over storage regimes, that may be required for successful maintenance of suitable salmonid spawning and incubation temperatures in the upper Sacramento River (WQCP-NMFS-1,2).

Response: The State Board will consider the upstream effects, including the effects on fisheries, of the alternative flow requirements in the Delta during the Scoping Phase and later in the Water Right Phase. The State Board is very aware of the upper Sacramento River temperature issues and their effects on salmonid production. This issue will need to be further addressed in the context of implementation of the proposed temperature objectives for protection of Chinook salmon at Freeport during the spring months.

No change in text.

Page 6-17

Comment: CVPWA suggests revisions to the wording, discussing the evaluation of alternative water quality objectives (Alternative 6) and the potential impacts on Chinook salmon (WQCP-CVPWA-210,32).

Response: A thorough analysis of the impacts of the various water quality objectives on salmon resources will be done during the Scoping Phase of the proceedings.

No change in text.

Page 6-17

Comment: SWC suggests removal of wording in which there is speculation as to the relative benefits of the water quality alternatives to the juvenile Chinook salmon (WQCP-SWC-631,21).

Response: The wording is speculative and the relative cost and benefits of the water quality alternatives will be analyzed during the forthcoming proceedings.

No change in text.

Page 6-18

Comment: Alternative 6 does not provide full protection against entrainment of striped bass eggs and larvae in the San Joaquin River (WQCP-SWC-631,22).

Response: We agree, but as the text indicates, this refers to salinity protection for adult spawning, not to protection for the products of that spawning. There was no intention to suggest that eggs and larvae are not subject to entrainment losses under this alternative.

No change in text.

Page 6-19

Comment: DWR disagrees with the statement "Further, the '1990 level of development' used in the model does not reflect actual diversions at this time (WQCP-DWR-24,4).

Response: Reviewing the past ten years of DWR Bulletin 132 publications, 5-year entitlement delivery projections consistently overestimate actual entitlement deliveries. On an average basis this analysis indicates this overestimation is significant. In 1989, a critical year where local supplies in export areas were deficient and the SWP requirement increased, the actual entitlement delivery was 2.85 MAF. Deliveries under normal hydrologic conditions would likely be less. Bulletin 132-90 projects 1990 entitlement deliveries will be 3.3 MAF, for a normal hydrologic condition, a increase of 450 TAF in one year. The Board staff is currently investigating this issue with MWD and DWR staff.

No change in text.

Comment: CVPWA suggests that the section entitled Cumulative Impacts of Flow Alternatives should be deleted because it does not address water quality issues and the improvement in the entrapment zone through flow objectives may not necessarily provide the benefits to salmon and striped bass contemplated in this section (WQCP-CVPWA-210,32; WQCP-SWC-631,22).

Response: Comments considered. This issue will be considered further in the subsequent proceedings.

No change in text.

Expansion of Striped Bass Spawning Habitat Upstream to Vernalis

Comment: At this time there is little use in expanding striped bass spawning habitat in the San Joaquin River. Evidence indicates that striped bass are not spawning habitat limited under present conditions. Until problems of rearing habitat downstream and dislocation are corrected, little likely benefit to striped bass (WQCP-USBR-129A,2).

Comment: DWR's comments regarding lack of evidence supporting expansion of the spawning objectives were not reflected in the Final Draft (WQCP-DWR-25,5).

Comment: EPA disagree with the decision not to extend spawning habitat to Vernalis. While it agrees that pumping is the biggest factor affecting striped bass, this should not be used as basis for excluding other objectives that would help restore and maintain striped bass. Given the continued decline, it is difficult to understand rationale for rejecting objectives to improve habitat. This problem underscores the need to develop an integrated set of standards to improve spawning and migration conditions for striped bass (WQCP-EPA-1,5).

Comment: The decision to not expand spawning habitat is nonsensical in view of the continuing decline of striped bass population. The State Board should make every effort to improve habitat. It is unconscionable to reject habitat objectives because it has failed to address the entrainment losses problem. The State Board must address both problems to assure restoration of the striped bass fishery (WQCP-SCLDF-1,6).

Comment: The only major improvement in standards compared to the 1978 Plan was "blackballed" by the State Board. The reasons were the potential water costs and the doubtful benefit the objective would produce, because the Board was also not addressing the required flow and export restrictions at this time. When and if pumping restrictions are set, the Board will once again consider the issue (Section 5.6) (WQCP-CWPC-1,8).

Comment: (Page 1-14, para. 1, also) USFWS cannot understand why the State Board cannot set a Vernalis spawning objective now, and implement it later, if indeed it is a desirable action. Objectives should be set realizing that it may take time and varied actions to achieve implementation (WQCP-USFWS-7,3).

Comment: (Page 6-20, Section 6.3.3, para. 3) USFWS's opinion is that the Final Draft text and their testimony support the extension of the spawning objective to Vernalis, with qualifications as to its implementation (WQCP-USFWS-7,6).

Response: The State Board remains unconvinced that extension of the striped bass spawning habitat upstream to Vernalis would produce any significant beneficial effects, given the present configuration and water project operations in the Delta. The Board remains open to further consideration of this issue in subsequent phases and in the Triennial Review.

No change in text.

Page 6-22, Section 6.5, Environmental Effects, paragraph 3

Comment: Two questions were asked: 1) if the Plan is essentially identical to the 1978 Delta plan, as inferred by the first bullet in Section 6.4, page 6-20; and 2) if the Environmental Checklist refers "...only to the adoption of the objectives or to their ultimate implementation?" (WQCP-USFWS-7,6).

Response: In answer to 1), other than the striped bass spawning objectives, the proposed Plan is essentially identical to the 1978 Delta Plan. In answer to 2), the Board has limited the discussion to the adoption of the objectives since the actual implementation methods will be determined in the upcoming phases of these proceedings and will be subjected to an environmental analysis at that time.

No change in text.

Pages 6-24 to 6-29, TABLE 6-5, Environmental Checklist

Comment: Questions were raised about some of the items in the checklist based upon the misunderstanding of the "-9" figure in Table 6-2 (WQCP-WACOC-54-6).

Response: See response to Page 6-5.

Pages 6-24 to 6-29, Environmental Checklist

Comment: There was disagreement with the "No" response for the following checklist items (WQCP-SWC-631,22):

- 3a. Changes in currents, or the course or direction of water movements, in either marine or fresh waters?
- 3h. Substantial reduction in the amount of water otherwise available for public water supplies?

5a. Change in the diversity of species, or numbers of any species of animals ... ?

Response: The Board's "No" responses were based on the conclusion that there would be no adverse impacts due to the adoption of the water quality objectives. Beneficial impacts need not be discussed "...because the State Board has set the water quality objectives at levels designed to adequately protect the designated beneficial uses of the Sacramento-San Joaquin Delta and San Francisco Bay waters" (WQCP, p.6-29).

No change in text.

Page 6-31; last paragraph

Comment: The Board's conclusion that "[t]he availability of water for export uses is not significantly affected by this Plan" was questioned. The comment stated that "[t]he amount of water required to meet the objectives in the south Delta interior stations and the revised Antioch relaxation provision or the water required to meet any revised Suisun Marsh objectives is unknown, but could be significant" (WQCP-SWC-633,16).

Response: Based on the available information that there is a "...lack of specificity in the ability to accurately model water supply impacts associated with various water quality objectives..." (WQCP-SWC-631,22), the State Board sees no reason to change the statement in the Plan. There has been testimony that are various ways to implement the water quality objectives. The effects of proposed implementation measures will be analyzed in the upcoming phases of the proceedings.

No change in text.

Chapter 7

Page 7-3, Section 7.2.2.2, "Western and Interior Delta"

Comment: The Board should establish procedures by which an individual objective can be modified independently of the entire WQCP when additional information becomes available, for instance when the leaching study is completed (WQCP-USBR-129A,2).

Response: As stated on page 1-2 of the Plan, the State Board intends to review information as it becomes available and to update objectives as warranted.

No change in text.

Page 7-3

Comment: This section should recognize that these objectives will be changed if the results of the leaching study called for in Section 7.4.2.2 show that requiring Delta farmers to practice Best Management Practices such as leaching is reasonable (WQCP-SWC-633,17; WQCP-CVPWA-210,34).

Response: Section 7.2.2.2 addresses implementation of proposed objectives. Proposed objectives are the same as those that are currently implemented, therefore further implementation measures are not necessary. Also, page 1-2, paragraph 4 of the WQCP explains when new information will be incorporated into the WQCP as follows: "The product of the current Water Quality Phase of the planning process will be updated to reflect findings and conclusions at the end of the Water Right Phase and periodically, thereafter, whenever sufficient new information is received."

No change in text.

Page 7-3, Section 7.2.2.2, "South Delta"

Comment: This section on southern Delta Agriculture, should be expanded to address South Delta negotiations and the impossibility of meeting the proposed objectives (WQCP-DWR-24,15).

Response: These issues are sufficiently addressed in previous chapters of the WQCP. See other comments on south Delta agriculture.

No change in text.

Page 7-4, Agriculture

Comment: The Salt-Load Reduction Goal may be too difficult to meet (WQCP-MTD/TID-92; WQCP-CVPWA-210,34; WQCP-SDWA-36,2).

Response: Based on the reasoning on page 7-4 we believe that a 10% salt load reduction is a reasonable goal and see no reason to change this goal. This evaluation is supported by the results of the State Board's Technical Committee and the San Joaquin Valley Drainage Program.

No change in text.

Pages 7-5 and 7-6

Comment: It is premature to specify compliance monitoring requirements. This subject area should be open to discussion and even developed by a workgroup (WQCP-USBR-120,3; WQCP-DWR-24,14).

Response: The State Board believes that there should be no hiatus in compliance monitoring. The Interagency Ecological Studies Program (IESP) is in the process of reviewing the data developed from the D-1485 compliance monitoring program. The State Board would appreciate receiving the analysis and recommended changes of the IESP as soon as they become available. Upon review the State Board will make appropriate changes. Until that time the compliance monitoring program addressed in the Plan should continue.

There is an aspect of this monitoring program that the State Board would like discussed during the Scoping Phase which is, cost sharing to fund this program. Currently this program is funded solely by CVP and SWP contractors. There are many projects affecting either the water quality or flow into the Bay-Delta and therefore possibly the beneficial uses made of Bay-Delta waters. Funding considerations and mechanisms should start with reservoirs greater than 100,000 acre-feet and direct diverters of 100 cfs or more.

No change in text.

Page 7-5, Section 7.2.2.6 Suisun Marsh

Comment: A petition to change the compliance schedule for the Suisun Marsh objectives from that approved in the 1985 amendment to D-1485 to the schedule set forth in the SMPA (calculated from the operational date of the Montezuma Slough Control Structure) has been submitted (WQCP-DWR-24,10).

Response: The State Board has received that petition and it is being reviewed.

No change in text.

Page 7-6, Table 7-1, Bay-Delta Estuary Water Quality Monitoring Program

Comment: There is no discussion in the draft report of a State Board critique and statistical analysis of the database collected as part of the existing D-1485 monitoring program (WQCP-SWC-633,23).

Response: The State Board agrees that such an analysis is a good idea. Furthermore, the State Board believes that all the monitoring being performed in the Estuary needs to be evaluated. We would support the allocation of sufficient funds to the Interagency Ecological Study Program to perform the necessary work.

No change in text.

Comment: The following corrections should be made to Table 7-1 (WQCP-DWR-24,11):

1. There are two stations numbered "D12"; and
2. Gauge height records should be added to any Marsh compliance stations that do not have them listed.

Response: Comment noted.

No change in text.

Page 7-8, Section 7.3.2.1

Comment: What is the reason for requesting additional monitoring requirements for the North Bay Aqueduct Intake at Barker Slough (WQCP-DWR-24,7).

Response: No monitoring station had been created at Barker Slough at the time of the request.

No change in text.

Page 7-9

Comment: The SCLDF states that the State Board did not analyze the impacts of the alternative sets of objectives on estuarine resources and that if it had, it would have determined that salmon populations would be managed at substantially lower levels, with more frequent population crashes than occurred in DFG's historic baseline period of 1922-1967 (WQCP-SCLDF-2, 3,).

Page 7-9, Page 7-19

Comment: CVPWA suggests revisions and states that the SWRCB should work with interested parties to focus attention on improving the ability to define quantitative relationships between biological processes and hydrological conditions within the Bay-Delta system. The impact of harvest of salmon populations needs to be assessed as well as the losses to unscreened or improperly screened diversions (WQCP-CVPWA-210,36).

Response: The analysis of the impacts of the various water quality objectives on salmon resources will be done during the scoping phase of the Proceedings (See Chinook-Upstream effects of Delta flow requirements). It would be appropriate to analyse losses to all screened and unscreened diversions, including diversions by the projects, in the Delta at that time as well.

No change in text.

Pages 7-9 to 7-27, Sections 7.4 and 7.5

Comment: Additional special studies should be undertaken before commencement of the Water Right Phase (WQCP-WACOC-56,7).

Response: The State Board intends that the studies outlined in these sections be at least started during the upcoming Scoping Phase of the proceedings. Not all of them will be completed before the Water Right Phase commences. As information from these studies becomes available, the State Board will take new data into account under either its water quality or water right authority and make changes as appropriate.

No change in text.

Pages 7-11 and 7-12

Comment: SWC suggest revisions to the wording of the proposed studies (WQCP-SWC-631,24).

Response: These are listed directly from Kjelson et al., 1990 and it would be inappropriate to change the wording. It is stated in the text that these studies are to be considered by the Five Agency Salmon Committee for implementation.

No change in text.

Page 7-11

Comment: CVPWA states that an additional study objective should be added to this section to determine the component of smolt mortality due to causes other than temperature that have been incorporated into the smolt survival index (WQCP-CVPWA-210,35-36).

Response: The list of studies is not exclusive (see above response to WQCP-USFWS-7, Page 7). It is doubtful whether it would be possible to attribute components of smolt mortality with predation, associated with temperature, as it is not possible to attribute smolt mortality to temperature alone.

No change in text.

Page 7-16

Comment: The proposed Interagency Modeling Development and Use Committee (IMDUC) is not needed since the Department-sponsored Operation Studies Workgroup is appropriately addressing the pertinent issues. A new committee would be redundant (WQCP-DWR-24,7-16).

Response: The function of the Operation Studies Workgroup is to analyze the water supply impacts of the proceedings' water quality, flow, and implementation alternatives. The purpose of the proposed IMDUC is to enhance the modeling efforts of all modeling studies, not just those related to the proceedings. Consequently, the IMDUC is needed unless the Operation Studies Workgroup is willing to expand its role to perform, on an ongoing basis, the tasks listed on page 7-16.

No change in text.

Page 7-16

Comment: The recommended Modeling Development and Use Committee should be structured to investigate independent salinity analysis of operation studies (WQCP-CCWD-21,7).

Response: Comment noted.

No change in text.

Page 7-16

Comment: It is critical that the modelling studies be prioritized to achieve the most useful results for the Board's future decisions. Completion of the Bureau of Reclamation-funded San Joaquin River Operation Model is needed as soon as possible (WQCP-USFWS-7,7).

Response: Comment noted.

No change in text.

Page 7-19, Section 7.5.2.2

Comment: The Board should provide protection for western and interior Delta agriculture during all periods of the year where water is used by agriculture (CDWA-Testimony)

Response: The WQCP states that the western and interior Delta "...water quality objectives were developed using corn as the representative crop". Central Delta Water Agency has requested that protection for crops other than corn outside of the corn growing season. This is a reasonable request that will be addressed in the Scoping and Water Right phases.

No change in text.

Page 7-20, Section 7.5.2.5

Comment: Detailed information on upstream and export area recreation and fishery habitat is requested here for consideration in the Scoping and Water Right phases, but little concern about this issue is expressed in Section 5.16 (USFWS-WQCP-7,7).

Response: The objectives proposed in this Plan do not, of themselves, have any significant effects in terms of project operations, flows, and water storage. In the Scoping and Water Right phases, protection for other beneficial uses not covered in this Plan may require some degree of modification of project operations, flows, and reservoir storage levels. These may have significant effects on reservoir and instream recreation, instream habitat, reservoir fish habitat, and wildlife habitat. The Board needs information on these potential impacts to use in its balancing process.

No change in text.

Page 7-21

Comment: It is not necessary that the San Joaquin River Basin Water Year Classification be similar to the Sacramento (WQCP-CVPWA-210,36-37).

Response: Comment noted.

No change in text.

Pages 7-23 to 7-27, Section 7.5.3.4 Physical Facilities

Comment: It was requested that the Western Suisun Marsh Salinity Control Project be added to the list (WQCP-DWR-24,11).

Response: Since the list was not intended to be exclusive, the State Board sees no compelling reason to expand the list at this time.

No change in text.

Pages 7-23 to 7-27

Comment: NRDC claims that 1) the constraints listed on page 7-27 are "... unduly restrictive and technically misguided, and result in a process which greatly underestimates the potential for water savings..."; and 2) "... although the Board has treated the potential for new physical facilities extensively (pages 7-23 through 7-27), it has provided no description of opportunities for agricultural water conservation."

NRDC also comments on the adequacy (or lack thereof) of the work done to date by the Agricultural Water Conservation Workgroup (WQCP-NRDC-0).

Response: The State Board believes these issues are flow-related and belong in the Scoping and Water Right phases, where they will receive appropriate analysis.

No change in text.

SECTION III

Technical Appendices
Comments and Responses

APPENDIX 3.1

Page 3.1-1

Comment: The Sacramento Basin Index equation is incorrect (WQCP-USBR-129B,4; WQCP-CVPWA-210,38).

Response: Agree.

Change in text:

The Sacramento Basin Index equation will be amended as follows: "Index = C1*X + C2*Y + C3*Z"

Page 3.1-2, bullet - Determination of Water Year Classification Breakpoints, paragraph 1, sentence 3,

Comment: The term "flows" is incorrectly used (WQCP-CVPWA-210,38).

Response: Agree.

Change in text (underlined):

"In other words, there is an equal chance that the Sacramento Basin Index will..."

Page 3.1-4 bullet - Verification Process, paragraph 1, sentence 6

Comment: Figure A3-1.1 is incorrectly referenced as Figure A3-1 (WQCP-CVPWA-210,38).

Response: Agree.

Change in text (underlined):

Reference figure correctly as Figure A3-1.1.

Page 3.1-4, "Verification Process"

Comment: The derivation of water availability should be addressed. Appendix, Pages 3.1-6 through 3.1-9, The available water supply is not defined or calculated in the appendix or elsewhere (WQCP-CVPWA-210,38,39).

Response: A discussion of water availability (available water supply) was not included for the purpose of brevity.

No change in text.

Page 3.1-5

Comment: The San Joaquin Basin Index is still under development and no derivation or description of this relationship is found. Therefore, reference to the San Joaquin Basin Index should be removed (WQCP-CVPWA-210,38-39).

Response: Comment noted. A description of a possible San Joaquin Basin Index can be found in the WQCP.

No change in text.

Page 3.1-10

Comment: The subnormal snowmelt adjustment should not be eliminated from consideration (WQCP-DWR-24,5-6).

Response: The WQCP does not eliminate the subnormal snowmelt adjustment from consideration. On page 3.1-10 the WQCP states that if a subnormal snowmelt adjustment increased the accuracy of the index, then it would be beneficial. To clarify this point, the last sentence in the last paragraph of the section titled "Adjustments to Water Year Classification" is changed.

Change in text:

"However, the current subnormal snowmelt modification..."

APPENDIX 4.0

Page 4.0-5, Section 4.0.4.1, "Delta Organic Soils", paragraph 2

Comment: The definition of subirrigation is incorrect (WQCP-USBR-129B,2).

Response: Agree.

Change in text:

"...(subirrigation is an irrigation technique by which water is delivered to the crop root zone by horizontal flow through the soil from the spud ditches)."

Page 4.0-5, Section 4.0.4.1, "Delta Mineral Soils"

Comment: Most leaching in mineral soils is probably accomplished during the first few irrigations during the season and not after harvest (WQCP-USBR-129B,2).

Response: Comment noted. The WQCP will be modified to reflect the contribution of irrigation to salt leaching.

Change in text:

"Excess salts are removed during irrigation and after harvest..."

Comment: Information is insufficient to conclude that "(u)nder present conditions in the Delta, leaching measures are not currently necessary on a regular basis (WQCP-DWR-24; WQCP-USBR-129B,2)."

Response: Agree.

Change in text:

The Appendix to the WQCP will be amended by deleting the first sentence, third paragraph, Page 4-5, in the section titled "Delta Organic Soils".

Comment: There was a lengthy discussion of their concept of beneficial uses and "balancing" (WQCP-USBR-129B,2-4).

Response: The Board has designated the beneficial uses of the Bay-Delta Estuary waters, based on the general statements in the California Water Code Section 14050(f) and the requirements of the federal regulations (40 CFR 131.10) promulgated under the Clean Water Act by EPA. This designation is reconfirmed in Chapter 4 of this Plan. The State Board sees no compelling reason to change the beneficial use descriptions in response to this comment.

No change in text.

Comment: Revision of Section 4.0.5.1 Delta Habitat (page A4-11) "...to provide a stronger emphasis on the relationship between water quality parameters and habitat conditions for the various fish, invertebrates and algae inhabiting the Bay-Delta system" was requested (WQCP-SWC-631,25).

Response: Until the State Board has received sufficient evidence to allow a better discussion of such relationships, there is no compelling reason to change the description in this section.

No change in text.

Comment: The question on WQCP-CVPWA-210,39 is answered in our response to the earlier comment on page 5-14.

Comment: SWC comments that the fact that the Columbia River does not provide habitat for four races of Chinook salmon should be verified (WQCP-SWC-631,25).

Response: The availability of fisheries habitat in the Columbia River is beyond the scope of this document; however, there are three runs of Chinook salmon in the Columbia River, spring, summer and fall.

No change in text.

Comment: SWC comments that Table 1.4-5, Chinook Salmon Environmental Requirements and Life History Stages, should be updated to include more recent information (WQCP-SWC-631,25).

Response: A new table may be prepared for subsequent documents.

No change in text.

Chinook-Inland Catch Rates as Relates to Value of the Fishery

Comment: USBR references publication (USFWS 1984) and recently compiled information for the period of October 1, 1989-October 1 1990 and states that the use of the 0.02 catch value may underestimate the number of fish caught per outing thereby affecting the valuation of fish related recreation (WQCP-USBR-129B,4).

Response: Comment considered, information will be reviewed. The following may be added (Page 4-19, paragraph 2, in front of last two sentences on the page).

Change in text:

"Catch rates are highly variable. Fishing success rates may vary from an average of 0.01 fish per hour effort from Carquinez Strait to Sacramento, to an average of 0.09 fish per hour from Red Bluff to Keswick Dam. The success rates range from 0.08 to 0.72 fish per assumed 8-hour outing with the majority of the Sacramento River fish being caught on the upper portions of the river."

APPENDIX 5.0

Page 5.0-14, para. 2

Comment: Page 5.0-14, para. 2 - USBR believes the discussion of the position of the water development community, DFG and USFWS concerning increasing spawning habitat is misleading. Present Delta configuration will not help but it may be worthwhile to increase spawning habit later (WQCP-USBR-129B,1).

Response: Comment noted.

No change in text.

APPENDIX 5.2

Page 5.2-1

Comment: The time interval for compliance of the objective should be average soil salinity over the growing season, not maximum daily salinity (WQCP-DWR-24,9).

Response: This issue was discussed in the Western and Interior Delta Agriculture subworkgroup. Terry Prichard, the subworkgroups agricultural expert in the western and interior Delta, recommends an interval of compliance of 14 days (Letter to S. Humpert, June 12, 1990). Based on Mr. Prichard's recommendation, the statement in WQCP Appendix 5.2, page 5.2-1 in the section titled "Salinity Requirements for Corn", which states, "State Board Exhibit 24 indicates that, in the short-term, to maintain maximum corn yield, the maximum daily salinity of applied water should be no more than 1.5 mmhos/cm EC from April 1 through July 31 (SWRCB,24,1).", will be deleted and a clarifying statement will be added.

Change in text:

"Evidence indicates that in order to maintain maximum corn yield, in the short-term, the maximum 14-day running average of daily average salinities of applied water should be no more than 1.5 mmhos/cm EC from April 1 through July 31."

APPENDIX 5.3

Page 5.3-1, para 2

Comment: USFWS states that the reference USFWS exhibits and testimony was misrepresented by referring to Chinook salmon spawning and egg incubation temperature requirements being less than 60°F. (Page 5.3-3, Table 5.3-1) Reference should be WQCP-USFWS-1 (WQCP-USFWS-7,8).

Response: This was not meant to mislead but was a shorthand method of describing the early life history temperature requirements as being less than 60°F. Referenced text will be amended.

Change in text to Table 5.3-1:

"According to one publication, temperature requirements for the early life stages of Chinook salmon are as follows: Spawning and egg incubation: 49-56°F; Fry and juvenile rearing: 45-58°F (Bell, 1973)."

Page 5.3-1, third bullet

Comment: CVPWA states that the reference in the text to the testimony, "upstream and estuarine food supplies may be poor" is taken out of context (WQCP-CVPWA-210,39).

Response: Comments considered

No change in text.

Page 5.3-1, third bullet

Comment: SWC comment addresses elevated temperatures and food supply of juvenile salmon (WQCP-SWC-631,26).

Response: The referenced sentence is correct and is not inconsistent with the testimony. We are familiar with the different publications authored by Brett. This appendix cannot describe or contain all of the information on this topic. This section is an attempt to give a range of parameters and issues concerning Chinook salmon and temperature. Comments noted.

No change in text.

Page 5.3-2

Comment: CVPWA states that the text ignore a variety of sources of impact to upstream habitat and survival and suggests other to be included (WQCP-CVPWA-210,40).

Response: The text gives dams and diversions as an example of an impact to upstream habitat. A complete list would be too cumbersome. The additional impacts suggested, loss by entrainment, loss of gravel, additional predator habitat, etc., are impacts associated with dams and diversions.

No change in text.

Page 5.3-2, second to last paragraph, first sentence

Comment: CVPWA states that the numbers in Appendix Table 5.3-1 should be described as predicted (WQCP-CVPWA-210,40).

Response: Comment noted.

Change in text:

"The following table is a summary of predicted smolt survival indices....etc. The title of Appendix Table 5.3-1 will be changed to include the word "predicted."

Page 5.3-3, Table 5.3-1

Comment: Similar comment to that of CVPWA (WQCP-SWC-361,26).

Response: Comment noted.

Change in text:

The word predicted will be included in the text and in the Table title.

APPENDIX 5.4

Page 5.4-10

Comment: Low San Joaquin River flow may be associated with salinity, but no evidence that bass are spawning habitat limited. Releases from New Melones have improved south Delta water quality (WQCP-USBR-129B,2).

Response: The general discussion on spawning habitat and its limitations is presented in Section I of this document. Concerning the improved south Delta water quality, improvement there does little good if striped bass are prevented from taking advantage of the improved water quality because of salinity barriers farther downstream, or because the water quality is still not sufficient to provide adequate habitat.

No change in text.

Page 5.4-11

Comment: Recent evidence suggest that the summer dieoff may be due to toxic organic pollutants (WQCP-USBR-129B,2).

Response: Comment noted and the text will be modified.

Change in text:

"The cause is unknown, but may be related to liver dysfunction, possibly caused by toxic organic pollutants."

Pages 5.4-14ff

Comment: Extensive discussion of various technical issues related to striped bass, also discussed in comments on Plan text (SWC-WQCP-631,26-28).

Response: Comment noted. These issues have been responded to already in above responses.

No change in text.

SECTION IV

Addendum to the "Responses to Comments" on

The Water Quality Control for Salinity

The following comments were received after the State Board's special Board meeting on April 2, 1991.

Department of Fish and Game (DFG) Comment

Comment: DFG submitted a comment memo dated April 19, 1991, on the Compiled Revisions (April, 1991) to the Draft Water Quality Control Plan. They stated that the description of the Suisun Marsh Mitigation Agreement was incorrect on pages 1-2 and 7-31, and Tables 1-1 and 6-3 of the Final Draft of the Plan (January, 1991). The Suisun Marsh Preservation Agreement (SMPA), not the Mitigation Agreement, includes the descriptions of physical facilities.

Response: Agree. The text will be corrected in the appropriate places.

Sierra Club Legal Defense Fund (SCLDF) Comments

A. Chinook Salmon Temperature Objectives

Comment: In a letter dated April 15, 1991, SCLDF states that the State Board contends that the use of reservoir releases to control water temperature is not "reasonable, due to the distance of the Delta downstream of reservoirs and controllable factors such ambient air temperature, etc...". SCLDF believes that the State Board's position is mistaken, that regulating reservoir releases is indeed a controllable factor and in fact is the principle means available by which man can affect water temperature, etc. The Plan describes the USBR temperature model that will help evaluate Sacramento River flows required to achieve various temperature alternatives. There is no identification of any other feasible "controllable factors" that may influence temperatures. It is not clear why reservoir releases were excluded from consideration, even though they are the only logical "controllable factor" that could possibly affect water temperature.

Response: It is not that reservoir releases cannot affect temperatures, rather that amount required to do so is so great, because of the distance from major reservoirs to the Delta. For this reason, releasing water for the purpose of temperature control is considered unreasonable and a waste of water. The State Board will require a test of reasonableness before consideration of reservoir releases for such a purpose.

In regard to other possible controllable factors, Section 5.5 of the Plan includes waste discharge controls, increases in riparian canopy, and bypassing of warming areas (e.g., Thermalito Afterbay). As specified in the "Responses to Comments," the Plan will be changed in several sections:

Footnote 11 in Tables 1-1, 5-5 and 6-3; and Section 1.5, Page 1-13, and Section 5.5, Page 5-15.

B. The Specific Objectives for Salmon are Inadequate

Comment: In the April 15, 1991 letter, SCLDF also states that: 1) the State Board does not provide a logical or adequate explanation for the bifurcation of the temperature objective (66°F for the winter-run and 68°F temperature for all other races); 2) the "Responses to Comments" jumps from discussing a protection level of 66°F to a level of 60°F, without addressing the range in between (60 to 65°F) which evidence has demonstrated is the range needed to adequately protect salmon; 3) the "Response" does not address SCLDF's concern that protection for winter-run should also apply to all other runs; and 4) it is erroneous to claim that there is no precise method for determining what temperatures in the Delta adequately protect Chinook salmon despite evidence that salmon require temperatures below 65°F.

Response: As stated in the April 1991 "Responses to Comments" (under Page 5-22 heading), the State Board considers the winter-run salmon temperature objective as a cap. The temperature objectives for the winter and other runs are based on the entirety of the exhibits submitted by all parties at the hearings and workshops to date, as well as other pertinent publications, all of which are summarized in the Technical Appendix of the Plan. This information was not duplicated in the Responses to Comments. The objective is a narrative objective not a numerical objective, and as such serves as a guide to water managers regarding salmonid habitat in the Delta.

C. EC Standards

Comment: On page 3 of the April 15, 1991 letter, SCLDF states that the Plan should adopt the DFG recommendation on EC now, rather than retain "an admittedly inadequate standard".

Response: As noted on page I-20 of the "Responses to Comments," retaining the 1.5 mmhos/cm EC at Antioch retains an EC value of approximately 0.44 mmhos/cm at Jersey Point. So retaining the present Antioch standard does what DFG wanted to accomplish in D-1485, which was to provide spawning habitat upstream of Antioch. A water quality objective at Antioch of 1.5 mmhos/cm EC for striped bass spawning protection has been recognized since 1967.

Comment: On page 4 of the same letter, SCLDF states that, given the claimed lack of critical scientific EC data, the need for additional studies, and the precipitous decline in the striped bass population, the State Board should be conservative and set a standard of 0.3 mmhos/cm EC from Antioch to Vernalis, in conjunction with pumping restrictions.

Response: The State Board must set standards based on appropriate scientific data, and must be able to justify those standards. The State Board feels that it does not have adequate data to support such a standard at this time. If inadequate spawning habitat protection is not the major cause of the decline, as most participants acknowledge, then changing the standard will have little effect in and of itself, though the resultant flows might increase survival of eggs and young. In addition, pumping restrictions are not part of this phase, and will do nothing to protect adult spawning habitat. Pumping restrictions might also benefit survival of eggs and young, but again that is a separate issue unrelated to adult spawning protection. That issue will be discussed in the Scoping and Water Right phases.

D. Beneficial Uses

Comment: The State Board admits that all beneficial uses are not fully protected by the Plan, yet states that the water quality objectives are set at levels designed to adequately protect the designated beneficial uses of the Estuary (WQCP-SCLDF-3,7).

Response: These two statements are not incompatible. The Plan addresses the water quality aspects of salinity, temperature and oxygen concentrations which were identified with protecting beneficial uses. The State Board believes that the water quality objectives set forth in the Plan provide adequate protection of the designated beneficial uses. The State Board has determined that providing any more protection for the Estuary's beneficial uses from the effects of the parameters would require an unreasonable amount of water. However, there are non-water quality aspects such as entrainment and flow which the State Board will address in the forthcoming Water Right Phase. The State Board routinely holds focused actions on specific policies on water quality parameters contained in its Basin Plans, Ocean Plan and other planning documents. The Water Quality Control Plan for the Bay-Delta is similarly focused and must be viewed in conjunction with the Regional Board Basin Plans, the Inland Surface Waters and Bays and Estuaries plans, and the State Board's water right decisions that affect this water body.

E. Flow Standards

Comment: In the April, 1991 letter, SCLDF states in several places that the State Board was remiss in not including flow standards in the Plan (WQCP-SCLDF-3,5,6).

Response: While the Board does state that flow is necessary to protect beneficial uses, this statement does not indicate that the physical aspect of water is a water quality parameter. As SCLDF recognizes, the State Board identifies flow requirements when they can be tied to water quality effects on a beneficial use. However, even though flow in its own right may provide protection of a beneficial use, these protections are to be addressed in water right decisions rather than in the Water Quality Control Plan for these proceedings. The State Board believes that all the submitted data regarding protection levels for the beneficial uses of Bay-Delta waters were analyzed and appropriate water quality objectives developed.