Chapter 4. Comments and Responses to Comments on the 2000 Revised Draft Environmental Impact Report/Environmental Impact Statement

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This chapter contains the comment letters received on the 2000 REIR/EIS followed by responses to those individual comments. Far fewer parties commented on the 2000 REIR/EIS than on the 1995 DEIR/EIS. Comment letters on the 2000 REIR/EIS are organized alphabetically by the name of the commenter (agency or individual).

Each letter and each comment within a letter have been given a number. Responses are numbered so that they correspond to the appropriate comment. Where appropriate, responses are cross-referenced between letters or with a master response.

Changes to the text of the 2000 REIR/EIS that are made in response to comments are shown with a line through the text that has been deleted (~~strikeout~~) or double underlining where new text has been added. These changes have been incorporated into the corresponding chapters in Volume 1 of this FEIS

Table 4-1 provides a list of all agencies and persons who submitted comments on the 2000 REIR/EIS.

Table 4-1. List of Comment Letters on the 2000 REIR/EIS for the Delta Wetlands Project

Commenter	Date	Letter number
California Department of Conservation	07/31/00	R1
California Department of Water Resources	07/31/00	R2
California Regional Water Quality Control Board, Central Valley Region	07/20/00	R3
California Urban Water Agencies	07/31/00	R4
California Waterfowl Association	07/26/00	R5
Central Delta Water Agency et al. (Nomellini, Grilli & McDaniel)	07/27/00	R6
Contra Costa County Community Development Department	07/26/00	R7
Contra Costa Water District	07/31/00	R8
Delta Protection Commission	07/31/00	R9
Delta Wetlands Properties (Ellison & Schneider)	07/31/00	R10
East Bay Municipal Utility District	07/31/00	R11
East Bay Regional Park District	07/28/00	R12
Ironhouse Sanitary District	07/24/00	R13
Metropolitan Water District of Southern California	08/07/00	R14
Natural Heritage Institute	07/16/00	R15
Pacific Gas and Electric Company	07/31/00	R16
Bob Raney (Bethel Island property owner)	07/12/00	R17
Reclamation District #830	07/24/00	R18
Bradford Reclamation District No. 2059	07/28/00	R19
State Water Contractors	07/31/00	R20
City of Stockton (McDonough, Holland & Allen)	07/31/00	R21
U.S. Department of the Interior	08/17/00	R22
U.S. Environmental Protection Agency, Region IX (Federal Activities Office)	08/06/00	R23

Letter R1

State of California **The Resources Agency**

MEMORANDUM

To: Project Coordinator
Resources Agency

Date: July 31, 2000

Mr. Jim Sutton
State Water Resources Control Board
Division of Water Rights
901 P Street, P.O. Box 2000
Sacramento, CA 95812-2000

From: **Department of Conservation**
Office of Governmental and Environmental Relations

Subject: Revised Draft Environmental Impact Report/Environmental Impact Statement (DEIR/DEIS) for the Delta Wetlands Project, Contra Costa and San Joaquin Counties - **SCH #1995093022**

The Department of Conservation's Division of Oil, Gas and Geothermal Resources (Division) has reviewed the above referenced project. The Division supervises the drilling, maintenance, and plugging and abandonment of oil, gas and geothermal wells in California. We offer the following comments for your consideration.

The cover letter accompanying the DEIR/DEIS does not indicate that project impacts on natural gas exploration and development in the area will be addressed. However, failure to analyze project impacts on oil and gas resources will result in an incomplete environmental document.

Several wells have been drilled in the areas proposed by the project for water storage and wetlands establishment. Presently, two wells are producing natural gas on the Webb Tract. (In 1999, the combined production of these wells was 1.1 billion cubic feet of gas). Two additional wells have been approved for future drilling on the Webb Tract. **R1-1**

Although natural gas exploration has occurred within these islands with marginal success, the Delta area, in general, is a fertile area for natural gas production and exploration. It is reasonable to expect these islands will continue to be prime locations for drilling. Therefore, consideration should be given to mitigation measures that will allow future exploration and development of natural gas on these islands.

If the project is implemented as proposed, the records of the wells that have been drilled within the project areas should be reviewed to determine if well reabandonment would be necessary. Also, if these previously plugged and abandoned

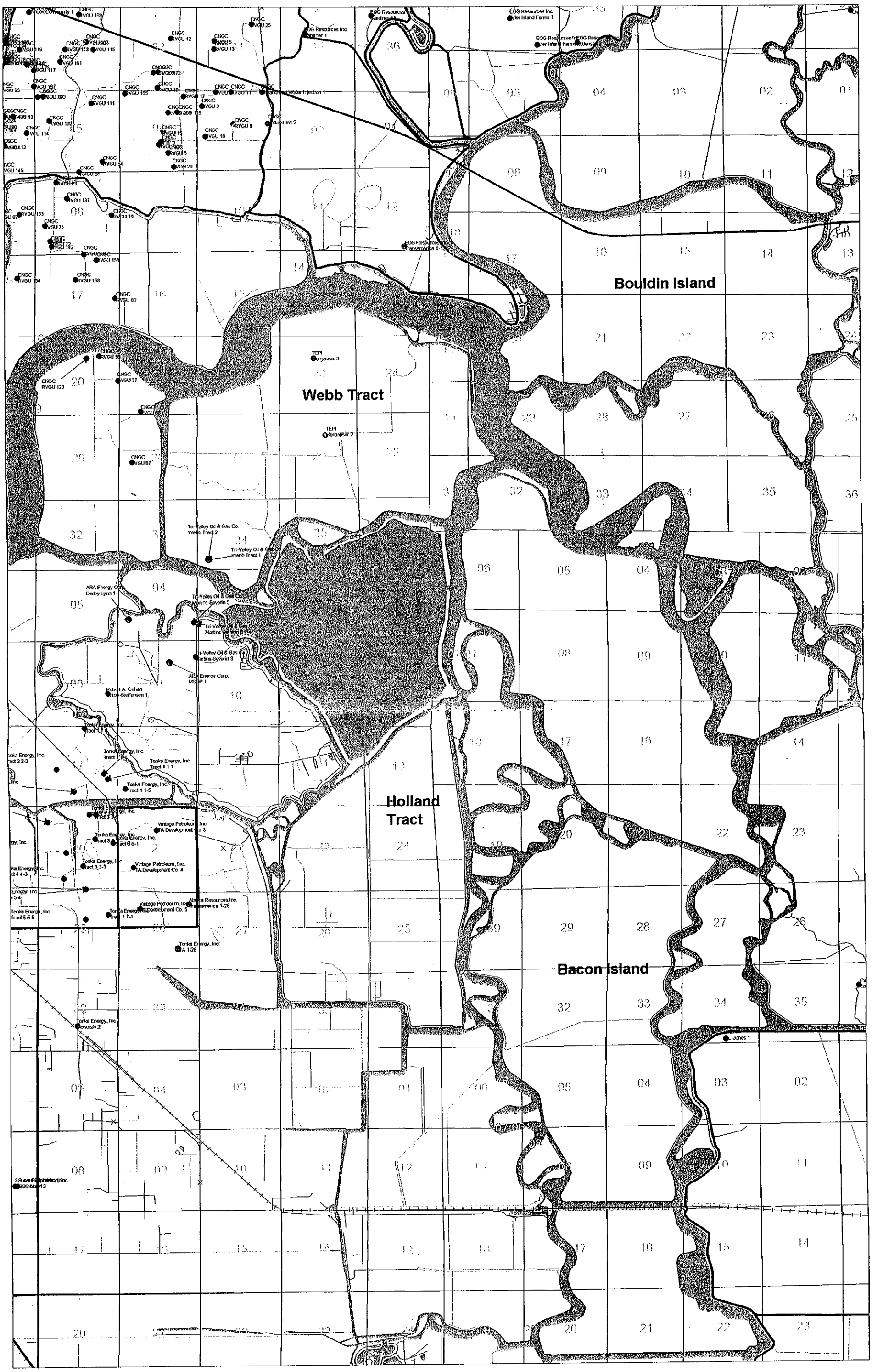
wells are within areas where project related excavation is to occur, well reabandonment of the top portion of the wells may be necessary, particularly if well casings are damaged or cut off to a depth below ground level. **R1-1 cont'd**

Thank you for the opportunity to comment on the DEIR/DEIS. If you have questions on our comments, or require technical assistance or information on gas wells, please contact Bob Reid at the Sacramento district office: 801 K Street, 20th Floor, MS 20-22, Sacramento, CA 95814-3530; or, phone (916) 322-1110. You may also call me at (916) 445-8733.

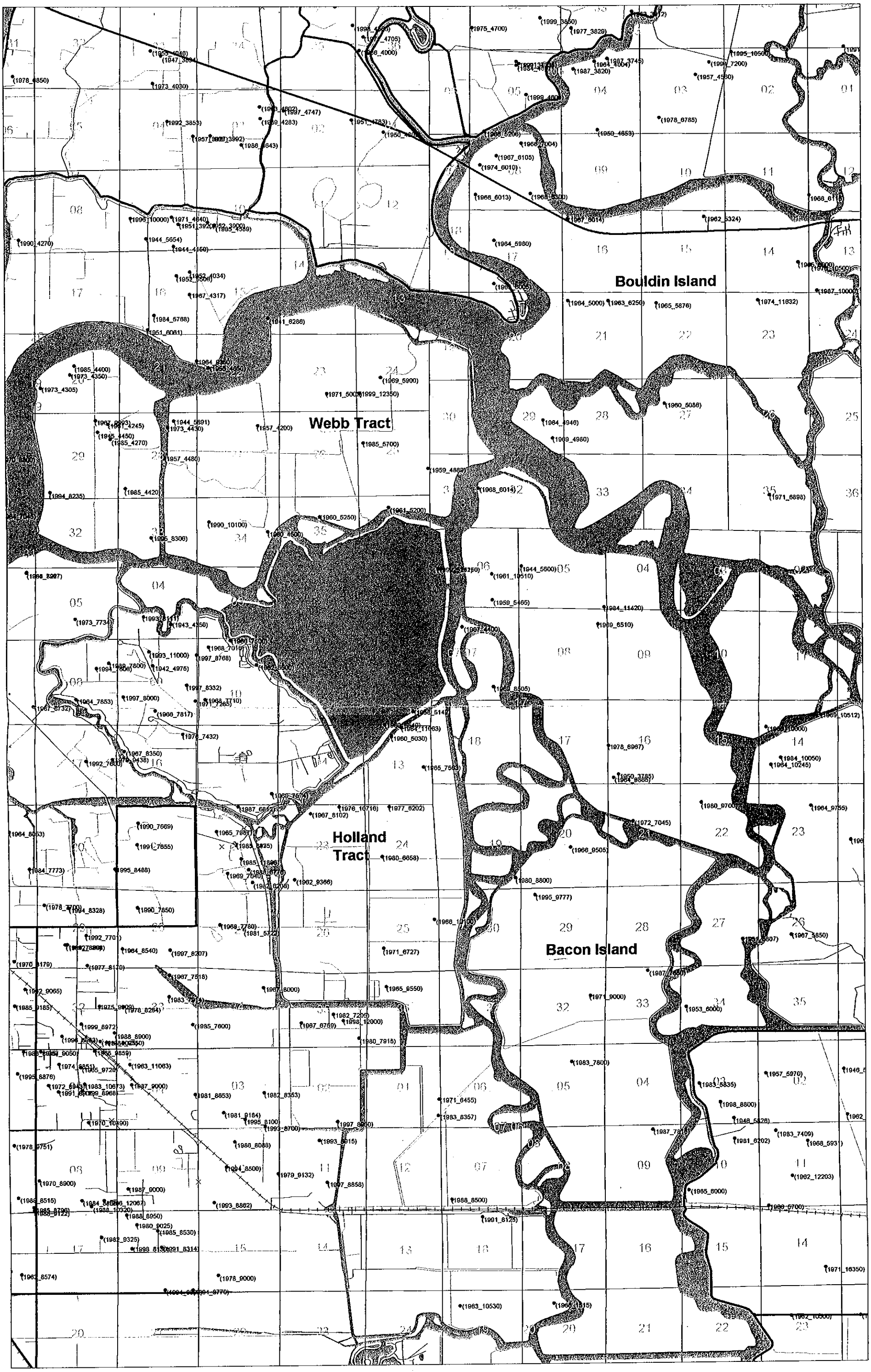
for Jason Marshall
Assistant Director

Enclosure: map with well locations

cc: Bob Reid
Division of Oil, Gas, & Geothermal Resources, Sacramento
Linda Campion
Division of Oil, Gas, & Geothermal Resources, Sacramento



PRODUCING WELLS



Previously Plugged and Abandoned Wells

California Department of Conservation

R1-1. The issue of project effects on oil and gas resources, including natural gas wells, was addressed in the 1995 DEIR/EIS. As described in Chapter 3E, "Utilities and Highways", implementation of the Delta Wetlands Project would not affect the potential for gas exploration on the project islands; mineral rights would not change from current conditions, and future proposals to drill on the islands would be subject to environmental review by the county and by the California Department of Conservation under an oil or gas well permit. Therefore, inundating the reservoir islands would not preclude future natural gas exploration.

The California Department of Conservation, Division of Oil and Gas, oversees the construction, operation, and closure of wells used to tap oil, gas, and geothermal resources. Although storage of water on Webb Tract would not preclude future natural gas exploration, it may require that existing producing wells be abandoned, and that abandoned wells be evaluated to determine whether reabandonment is necessary. During the final design of the proposed project, Delta Wetlands would need to work with the Division of Oil and Gas and existing mineral rights holders to determine whether wells located on the project islands need to be abandoned or reabandoned. Abandonment of wells would be completed in compliance with Division 2, Chapter 4 of the Public Resources Code, which governs the regulation of oil and gas resources, and Title 14, Division 2, Chapter 4 of the California Code of Regulations, "Development, Regulation, and Conservation of Oil & Gas Resources".

Letter R2

STATE OF CALIFORNIA -- THE RESOURCES AGENCY
GRAY DAVIS, *Governor*

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

RECEIVED
AUG 0 2 2000

Mr. Mike Finan
U.S. Army Corps of Engineers, Sacramento District
Regulatory Branch
1325 J Street, Room 1480
Sacramento, California 95814-2922

Dear Mr. Finan:

The Department of Water Resources has reviewed the "Revised Draft Environmental Impact Report/Environmental Impact Statement for the Delta Wetlands Project" (May 2000) and submits the attached comments. Our comments address issues discussed in the REIR/EIS that we believe need additional information and analysis to more fully understand the potential environmental impacts of the proposed project. We hope these comments are useful in evaluating and responding to the Department's concerns.

If you have any questions about our comments, please contact me or John Pacheco of my staff at (916) 653-6426.

Sincerely,

Katherine F. Kelly, Chief
Office of State Water Project Planning
(916) 653-1099

Enclosure

Same letter sent to:

Mr. Jim Sutton
State Water Resources Control Board
Division of Water Rights
Post Office Box 2000
Sacramento, California 95812-2000

California Department of Water Resources
Comments on the Delta Wetlands Project
Revised Draft EIR/EIS
July 31, 2000

The Department of Water Resources reviewed the Revised Draft EIR/EIS for the Delta Wetlands Project (May 2000) ("REIR"). Below are comments made by DWRs' Division of Planning and Local Assistance, Division of Operations and Maintenance, Office of State Water Project Planning, Division of Safety of Dams, Environmental Services Office, and Division of Engineering. These comments address specific areas of concern with respect to of water quality, fish, and Delta Wetlands Project design and operation.

In addition, DWR believes that the FEIR should include information with respect to a comparison of alternative locations for reservoir islands that would achieve the same purpose of the selected sites at Bacon Island and Webb Tract. The California Environmental Quality Act requires lead agencies to consider alternative locations where other locations could avoid or substantially lessen significant effects (CEQA Guidelines Section 15126.6.). By considering other alternative storage sites in the Delta, potential significant impacts to drinking water supply, water quality in the Delta, seepage to neighboring islands, and stability of Delta levees may be avoided or lessened.

In 1999, the SWRCB and U.S. Army Corps of Engineers, as lead agencies for the DW Project, held several meetings to discuss issues in preparation of the REIR. During the meeting, DWR presented information on the CALFED Integrated Storage Investigation (ISI) program. The REIR discusses the ISI program and its relationship to the DW Project. DWR staff is developing information on three in-Delta storage options for the ISI. These options are: (1) DW Project Islands using Webb Tract and Bacon Island; (2) CALFED In-Delta Project using Bacon, Woodward, and Victoria Islands; and (3) Southeast Delta Islands Project using McDonald and Victoria Islands and Upper and Lower Jones Tracts. DWR will complete a reconnaissance level analysis of these three options by late August 2000. The analysis will provide preliminary comparison on the feasibility of the islands for meeting water supply needs and concerns with environmental impacts and water quality concerns. The lead agencies for Delta Wetlands should also consider this information on these islands in relationship to the feasibility of the proposed Delta Weltands project and the alternatives analysis for that project. **R2-1**

Division of Planning and Local Assistance

The Division of Planning and Local Assistance (DPLA) reviewed Chapter 4 of the REIR with focus on the impacts from the Delta Wetlands Project discharges on levels of

Total Organic Carbon/Dissolved Organic Carbon (TOC/DOC) and Trihalomethane (THM) formation potential in the Delta channels and at the export pumps.

In general, the difficulties with predicting the water quality in the proposed Delta Wetlands (DW) reservoir islands, especially TOC/DOC concentrations and loads, require careful development and adoption of mitigation measures. Results from DWR's Special Multipurpose Applied Research Technology Station (SMARTS) experiments showed that water quality in terms of TOC/DOC, THMFP, EC, and nutrients can vary significantly depending on a variety of conditions that include time of flooding, duration of storage, water depth, surface water exchange rate, peat soil characteristics, and algal productivity.

Additional information is presented below and is provided to correct technical errors or potential misinterpretations about the referenced studies and salt and organic carbon budgets described in the REIR. Our recommended changes further support the need for mitigation measures in view of the complexities and uncertainties of predicting the water quality of the proposed DW Project. If the Project is approved, it may be prudent to construct and operate the four-island project in stages. Initial work could begin on the habitat islands and one reservoir island. The one reservoir island should have water quality monitoring during the stages of filling, holding water, and discharge to better understand EC and TOC/DOC levels prior to operating the second reservoir island. These actions would reduce the risk of having to mitigate two filled reservoirs at the same time. R2-2

The first set of comments below focuses on the potential impacts of organic carbon loading from the project and not on THM formation impacts at treatment plants or salinity. DPLA has recommended further analyses to help respond to questions concerning carbon loading, which would also assist in calculating relative contributions of these other constituents at the export pumps and to satisfy concerns of water quality impacts. The second set of comments focuses on the use of Municipal Water Quality Investigations (MWQI) SMARTS data and other water quality elements within the REIR.

I. SIGNIFICANCE CRITERIA FOR DOC

The original Draft EIR (DEIR) presented projected concentration data for constituents in the stored water that was widely unaccepted, and much of the testimony at the 1997 water rights hearing on the DW Project focused on this disparity. Though presented briefly in the DEIR, the REIR gives extensive support to justify the significance criteria of 20 percent change in the numerical limit of a water quality variable or change in the mean value for a variable without a numerical limit. This extensive new documentation gives rise to a more detailed look at this criteria. DPLA believes the approach used in the REIR is faulty and fails to provide an approach that could better describe the potential impacts of the DW Project to water quality at the export facilities in the Delta.

The REIR (and DEIR) proposes using the average or mean value of a simulated export DOC concentration of 4 mg/l and allowing a 20 percent increase before a significant impact occurs. This criterion would allow an average increase in the delta export values of 0.8 mg/l of DOC.

A. Concern with Using Simulated Average Export DOC Concentration

DPLA has concerns with using the average or mean export concentration of 4 mg/l DOC and allowing a 20 percent increase to determine if a significant impact occurs from DOC loading for the following reasons:

1. The REIR notes that total delta lowlands contribute 40 percent of export carbon at the southern export facilities. Using the 4 mg/l average, delta lowlands, including Bacon Island and Webb Tract, contribute 1.6 mg/l of the 4 mg/l average concentration. DW suggest that its increased contributions can equal an increase of 50 percent of all delta drainage contributions at the pumps before the impact is significant.

R2-3

2. Data from DWR's consultant Marvin Jung, to be published in his forthcoming report #3, "Water Quality Benefits from controlling Delta Island Drainage" (Marvin Jung, Fall 2000), show a modeled potential reduction in agricultural drainage of 60 percent from candidate regions in the delta that could equal approximately a 0.8 mg/L decrease at the pumps. In addition, a document with related information, "Candidate Regions for Treatment to Reduce Organic Carbon Loads," was provided to the DW staff. Estimated costs to meet this goal of reducing carbon by 0.8 mg/l at the facilities using treatment are $278-411 million for capital costs, with an annual cost O&M cost of $11 million. This information highlights the potential costs associated with changes in carbon and the effect of the REIR significance criterion of 20 percent. This criterion would allow the DW project to add up to 0.8 mg/l carbon at the pumps with no mitigation.

3. Targets (CALFED)

CALFED has set forth a plan for the Delta in its June 9, 2000 "California's Water Future: A Framework for Action". The water quality program in CALFED has set target goals of 3 mg/l for total organic carbon (not DOC). Analysis of MWQI Data at Banks shows the current probability of exceeding this standard for DOC is 68 percent (Bruce Agee May 2000- MWQI Delta Workshop). An additional 0.8 mg/l will further reduce the ability to meet this goal.

R2-4

4. Habitat Restoration (Cumulative Impacts)

CALFED has identified as a concern potential changes in the amount and seasonality of carbon loading at the pumps due to possible CALFED tidal and seasonal wetland restoration projects in the Delta. DW has not modeled the

seasonal or potential additional loads of carbon from the two proposed habitat restoration islands. Conversely, there is also a belief that seasonal wetlands on Delta islands could help improve carbon loading at the pumps by holding late winter/early spring water on the islands in seasonal wetlands. The proposed criterion does not take into account the potential changes in the water quality due to the operation of the two restoration islands.

Tables 2-2 and 3-9 state that there will be no discharges for export or rediversion from the habitat islands to the reservoir islands but Table 2-1 states there will be a maximum discharge of 200 cfs. While this discharge is relatively small, the water will certainly be part of the exportable water in the channels and there is the potential of high concentrations of salts, nutrients, and organic carbon in the habitat island discharge. Shallow tank experiments (2 ft. water depth) conducted at the DWR SMARTS facility showed there could be high buildup of EC, TOC/DOC, and nutrients under conditions of low water exchange in shallow flooded islands. There should be a brief discussion of the habitat island discharges and loads in the REIR. **R2-5**

5. Other Projects

No discussion is presented of cumulative impacts regarding the Sacramento Regional treatment Plant 2020 master plan, the Tracy Hills wastewater project, and the City of Tracy Wastewater expansion plans. Whether these are required, as part of the cumulative impact assessment for the REIR is a matter of interpretation based on CEQA guidelines. Regardless, all of these projects have the potential to incrementally increase carbon at the export facility, along with the DW project. Since the SWRCB can review and examine a broad range of issues when issuing water rights permits, these cumulative impacts should be considered. **R2-6**

6. CVRWQCB/SWRCB Development of Drinking Water Policy

In 1999, meetings were held as part of the Triennial review of the basin plan. Testimony was presented to the CVRWQCB on the disconnect between the Clean Water Act and the Safe Drinking Water Act. Funding has been provided for the SWRCB to develop a policy relating to drinking water standards in the Delta. This includes the investigation of carbon loading from permitted sources. This supports the effort to identify loading of all carbon in the Delta with a TMDL approach, and the relative impact to the beneficial use of the water.

The DW project may provide a maximum of 3 to 4 percent of the total water exported through pumps from the Delta, yet the REIR states that the project can increase the total carbon loading at the pumps up to 20 percent without a significant impact. This inequity has the potential to significantly impact the beneficial use of water by other water users and needs to be addressed by the EIR process. **R2-7**

B. Recommendation to Use Common Units of Measure and Clarification of Information

During post-hearing meetings with Delta Wetlands, Jones and Stokes, and SWRCB staff, the MWQI Program staff requested that carbon loading be described in common units of measure, such as pounds per day or Kg per day in the channels and at the pumps under different modeling regimes. The REIR does not present carbon loading based on common and acceptable units of measure. Much of the documentation in the REIR discusses rates of loading per square meter of land surface area, and then changes to loading rates per cubic meter of storage. The discussion of exports is also confusing because at times it is not clear whether the discussion is in regard to DW exports or Delta pumping exports. R2-8

Additionally, all MWQI and USGS data used have been converted to a loading rate of grams per meter squared. DPLA found the documentation in the REIR mostly relies on a text discussion, with limited documentation on conversion of existing data. In addition, it was difficult to verify the validity of the loading assumptions. Many of the time series graphs are so compressed they are difficult to read and interpret. True loading numbers and quantified loading by month in comparison should be presented for the channels and the pumps under various scenarios and hydrological years. Conversion formulas should be provided in the appendix.

C. Recommended Approach For Development and Analysis of Potential Significant Impact from Changes in DOC

Because of the concerns with using the simulated average export DOC concentrations of 4 mg/l, DPLA recommends a different approach to the significance criterion for DOC. The REIR acknowledges that the comprehensive loading study on Twitchell Island is one of the most definitive to date. We suggest the following approach using information from the Twitchell Island study and existing data already reviewed by the DW project.

1. Use 1995 monthly discharge volumes from Twitchell to calculate a per acre rate of drainage volume discharge for a typical delta island with similar land use in 1995. If other drainage volume estimates for Bacon are available and preferred then these could also be used.

   Use the following formula to provide a baseline condition for Bacon for a 1995 water year. R2-9

   > " Monthly discharge volume per acre X Bacon Island Acreage X 1995 Bacon island actual DOC concentrations = mass loading per month for the baseline condition for 1995 "

2. Calculate the range of concentrations from the proposed storage option using the referenced range of carbon values from testimony at the hearings. Also use a range of carbon values based on times of filling. Use 1995 year as a scenario.

3. Model the percentage by month of drain volume that leaves Bacon and Webb islands and reaches the export facilities, including CCWD, the SWP and CVP. Calculate, for the baseline or existing condition, the loading in pounds or kilograms per month at the pumps, and the percent of the total loading at the pumps. Calculate the same information based on operating criteria for the storage project.

4. Calculate the percentage difference for each month in carbon loading at the pumps between the existing condition loading and the storage project loading, as well as the concentration impact. This is where the significance of impact can be evaluated. A 10-20 percent difference between the baseline land use condition loading totals and the storage option loading totals might be more realistic as significance criteria for impact. The project should only be compared to itself when calculating the change in percentage of loading. For example: if Bacon Island under a normal baseline condition contributes 0.1 mg/l at the pumps, then the storage project could contribute 0.12 mg/l before it would be considered significant under a 20 percent rule (an additional 0.02 mg/l could be added).

R2-9 cont'd

5. Using the existing historical MWQI Data for the export facilities, calculate the probability of exceeding the 3.0 mg/L CALFED target for carbon with the change in loading at the pumps.

Using the above approach, and modeling additional years would provide the reviewers with a comparative approach to assess the significance of the impact due to changes in DOC.

D. Mitigation of Impacts from Changes in DOC

The above sections explain the problems of using the REIR method to determine impacts from DOC loading and the importance of considering the timing of loading (seasonality). Tables 4-20 through 4-22 in the REIR show the potential to exceed even the unacceptable 0.8 mg/l significance criteria under various filling carbon concentration values. In addition, as discussed above, it is difficult to evaluate the units of carbon loading for filling and discharging the reservoir using the g/m2/month units. In Table 4-21 of the REIR, the mid-range filling DOC value (4 g/m2/month) results in an average loading of 0.82 mg/L in June and 0.53 mg/L in July. The export water of the SWP and CVP traditionally experience lower DOC concentration during these months. If pumps are running during these months, the contribution from Delta Wetlands at the pumps might exceed the 20 percent criteria for the month. This highlights the importance of evaluating the impacts based on the seasonality of exports.

Mitigation should be based on specific periods of export to municipal and industrial water users as loading exceeds the baseline condition for the four Delta Wetland islands by 10-20 percent. For example, if the existing land use for the four islands contributes a total 0.2 mg/l at the export facilities for the month of July, then significance criteria could be set at 20 percent of this baseline condition, which would be 0.04mg/L. Therefore for this example, if the net change for July is less than 0.04 mg/l at the export facilities (CCWD, Banks, Tracy) then no mitigation is required. If the change were greater than 0.04 mg/L, Delta Wetlands would be required to reduce their loading by controlling discharges to the channels from the four islands. **R2-10**

The REIR shows that under the 0.8 mg/l significance criteria that metering the discharge of water would require a long period of time in order to meet the criteria under certain hydrological conditions. The proposed significance criterion of 20 percent of the existing monthly load suggested in DPLA's comments is much more stringent. A monthly comparison of net change in loading versus export amounts would provide the seasonality of loading, and allow a true estimate in the net change in carbon delivered to users.

II. DISSOLVED ORGANIC CARBON AND SALT BUDGETS FOR DELTA ISLANDS (pg 4-16)

The statement, "The concentrations of dissolved substances in drainage will vary because of dilution by rainwater or increases from evaporative losses." overly simplifies the salt budget. The REIR would be more technically correct to include the following information:

Terms for the salt and organic carbon budget and processes are more complex than stated and are different between salts and DOC. For dissolved minerals that affect EC, the processes of ion exchange, precipitation, resolubilization of mineral compounds, adsorption, desorption, and oxidation-reduction reactions will also cause variations in the salt budget. For dissolved organic matter, the physical, chemical, and microbiological breakdowns or transformations of particulate organic matter in the soil and drain water will increase the dissolved organic concentrations and alter its composition in the drainage water. **R2-11**

At least seven factors determine the water quality in agriculture drainage (Bower, 1974):

1) ratio of surface water runoff water to water moving through the soil (percolated water)
2) applied water quality

3) applied chemical soil amendments
4) drainage fraction
5) mineral and salt solution and precipitation
6) cation-exchange, adsorption, and oxidation-reduction reactions in the soil
7) removal of soil solutes by crops

The primary sources of soluble salts in agricultural soils are (Rhoades, 1974):

- applied irrigation waters
- salt deposits in soil parent materials before farming occurred
- surface and subsurface agricultural drainage waters draining from upper-lying to lower-lying lands
- shallow water tables

Additional secondary sources of salts include:

- applied fertilizers, soil amendments, and animal manures
- weathering mineral soils
- rainfall and snow

Despite testimony to the contrary, the REIR continues to present salinity/carbon ratio calculations. This has been refuted and is not accepted within the Delta drinking water scientific community. The REIR acknowledges that the 1995 Twitchell Island real measured data was twice the value of the calculated ratio value. This ratio approach should be dropped from the analyses.

R2-11 cont'd

III. SUMMARY AND INTERPRETATION OF SMARTS REPORTS (pg 4-17)

The report did not incorporate the corrections to the summary and interpretation of the SMARTS reports provided by MWQI's consultant Marvin Jung's January 2000 memo to Dr. Russ Brown of Jones and Stokes.

In addition to elevated DOC and EC, the SMARTS 1 experiments also showed that nutrients from the submerged peat soil were at eutrophic levels and resulted in algal blooms in the tanks.

R2-12

The REIR should have stated the titles, purpose, and objectives of each of the two SMARTS experiments. SMARTS 1 was titled, "A Trial Experiment On Studying Short-Term Water Quality Changes In Flooded Peat Soil Environments." SMARTS 2 was titled,"Seasonal Water Quality Changes in Flooded Peat Soil Environments Due to Peat Soil, Water Depth, and Water Exchange Rate". It is not until the end of the section (page 4-22) that the readers are informed that SMARTS was not developed to simulate the proposed operating scheme of the Delta Wetlands reservoir islands. However, the data was used extensively in the REIR to estimate organic carbon loads from the islands.

SMARTS 2 was a one-year study (1/21/99 - 1/21/00) not a 27-week study (pg 4-17). At the request of the SWRCB, DWR completed a draft work-in-progress report (dated 11/2/99) prior to the study's end. Jones & Stokes reviewed the progress report of the first 27 weeks of SMARTS 2. There were data for 36 weeks (1/21/99 - 9/15/99) in the progress report that were not used in the REIR. The additional data indicates that organic carbon buildup could appreciably continue beyond the proposed DW discharge period should restrictions be placed on those discharges.

The REIR incorrectly stated that two different peat soil sources were used (pg. 4-18). SMARTS 2 peat soil, which was delivered in two batches, were taken from the same Twitchell Island field or source. The differences between the soil character in the two batches were attributed to a major winter storm event that occurred between the time the two batches were taken. Although one soil batch was preferred, the experiment was not compromised because there were no soil differences between the tank pairs (i.e., those with same peat soil and water depths but different flow conditions (static vs. continuous flow-through) that were compared. The two soil batches divided SMARTS 2 tanks into two subexperiments with 2 pairs of tanks using batch #1 soil and the second 2 pairs of tanks the other batch.

R2-12 cont'd

The REIR compared the SMARTS peat soil water DOC to USGS field data (pg 4-19). We attribute the higher peat soil pore water DOC to be higher than field data because SMARTS simulated a waterlogged condition with no drainage occurring. Under this condition, DOC will build up in the pore water as the water to soil contact time increases. The USGS field study examined pore water DOC in a field that was drained. In this condition, surface water dilutes the pore water as it is pulled down through the peat soil. In a flooded island condition, seepage or drainage processes will be less than in a drained farm field.

The REIR also states that the USGS Twitchell Island soil water DOC were generally in the range of 40 to 100 mg/l (pg. 4-19). Table F2 from the cited 1998 USGS report showed that DOC at station "TwitPiz7" (0.5 to 1.5 ft. below land surface) was up to 207.9 mg/l on 6/20/96. The sample was taken below an enclosed pond under a reverse-flooding operation where it is flooded to about 1 feet deep from early spring to mid-July and then kept moist to very wet in standing water during the winter.

Although the SMARTS experiments were not designed specifically to simulate the Delta Wetlands reservoir islands, the results did show that peat soil characteristics and thickness, water depth, water exchange rate, duration of flooding, and time of flooding may be manageable factors that affect water quality in a wetland or reservoir island. Peat soil characteristics vary spatially and with depth at the same location depending on the history of the area. For example, heavy rains or flooding will leach away salts and organic carbon when drained. If surface water exchanges (flows) are high enough, the contribution of salts and organic carbon from the flooded peat soil is not apparent in the surface water due to high dilution and transport. Timing and duration (exposure) of flooding peat soil can also affect water quality. Long periods of

flooding will result in elevated DOC and EC in the surface water. Organic matter decay is slowest during the cold winter months when microbial activity is lowest. Therefore, collecting, storing , and releasing water during the cold months will likely result in lower concentrations than during the warmer seasons. In addition to salt and DOC concerns, there are potential eutrophication problems from nutrient releases from submerged peat soils and nuisance algal blooms.

R2-12 cont'd

The calculated DOC load of 8 g/m2/yr was computed by Jones & Stokes and not computed in the "Candidate Delta Regions for Treatment to Reduce Organic Carbon Loads, MWQI-CR #2 (Jung and Tran, 1999)" report (pg 4-23).

IV. ESTIMATES FROM THE 1995 DEIR/EIS (pg. 4-24)

The issue that the Holland tract flooded wetland experiment may have been terminated too early to determine if the level of DOC had started to level off or not may have been addressed by the SMARTS 1 and 2 tank 1 observations. Tank 1 had 1.5 ft. of peat submerged by 2 ft. of water under static conditions. SMARTS 1 tank 1 DOC levels approached 40 mg/l at the end of 3 months. In SMARTS 2, the DOC was up to 41 mg/l in 3 months (3/31/99) and continued up to 200 mg/l by the sixth month (7/21/99) and about 250 mg/l by 9/15/99. The high TOC/DOC concentrations were attributed to the peat soil since test conditions in SMARTS 2 included covered tanks to exclude algae growth as a source. The DOC concentrations in the Holland Tract pond experiment were up to about 38 mg/l at the end of three months.

R2-13

V. ESTIMATING EXISTING LEVELS OF DISSOLVED ORGANIC CARBON AND SALINITY IN DELTA AGRICULTURAL DRAINAGE (G-1)

Three assumptions were used in the REIR water quality assessment method. First, that EC can be modeled to be a conservative constituent on the Delta islands. Second, DOC can also be modeled to behave conservatively on the Delta islands. And thirdly, if DOC and EC or soluble salts behave similarly, the ratio of drain water EC to applied water EC can be used to predict the amount of DOC for Delta island sources.

The assumption of steady state, $C_d/C_i = D_i/D_d$, (where C is concentration of a solute, D is water depth, i is irrigation water and d is drainage water) works only if the solute in the applied-water is not sorbed by plant or soil or precipitated (Bower, 1974). For the DWEIR assumptions to be correct, if available the REIR should include supporting information to the following questions:

1. If EC is conservative, are the soluble constituents in applied water and in drainage water also conservative and shown by the same ionic ratios (composition)?

R2-14

2. Does DOC undergo the same biological, chemical, and physical processes and reactions that occur with inorganic salts in solution?

MWQI water quality data for mineral constituents for Sacramento River water and drain water at the DW Project islands appear dissimilar. While drain water EC are often several times more than the applied water EC, not all mineral ions are in the same ratio as the drainage to applied water EC ratio. EC correlated well with some ions but not as well as with other ions (e.g., Ca, Mg, SO_4).

As the soil solution is concentrated, the salt species most likely to precipitate first are the alkaline-earth carbonates. These include CaCO3 (calcite, aragonite, or vaterite, MgCO3 (magnesite) or $MgCO_3 \cdot 3H_2O$ (nesquehonite), and (Ca,Mg) CO3 (dolomite). The amount and which form of carbonate is precipitated from the water depend upon several properties within the soil chemical system. Crops in humid climates and in irrigated areas where the applied irrigation water has a low salt concentration can absorb the sum amounts of Ca, Mg, Na, Cl, and SO4 removed annually in the same order of magnitude as that removed in drainage water.

The concentration factor that is computed by comparing drainage EC to applied-water EC is useful in predicting the concentration of nonsorbed and nonprecipitable solutes in drain water. However, the concentration factor influences precipitation, solution, cation exchange, and adsorption reactions in soil that in turn affect the quality of drainage water. As the concentration factor increases, salt precipitation and anion adsorption by soil increases, solution processes decrease and cation-exchange equilibrium shifts such that monovalent cations (e.g., Na^+) in the soil solution exchange for divalent cations (e.g. Ca^{+2}) on the exchange complex. The proportion of monovalent and divalent cations adsorbed on soil-exchange complexes are concentration dependent, with dilution favoring adsorption of cations with the highest valence (Bower, 1974). Since EC is a gross measurement of total dissolved solids, and applied and drain waters of the same EC can have different ionic composition, EC may not be exhibit full conservative behavior based on the preceding explanation and MWQI data.

R2-14 cont'd

For example, at Bacon Island, the EC ratio was 1.96 for drainage water to applied water but not for chloride. The average chloride at Sacramento River was 6.8 mg/l (Table 4-1) with an average EC of 159 mS/cm. The comparison made in the REIR assumed the applied water was Sacramento River water with an EC of 300 mS/cm. The Bacon Island drainage chloride average was 102 mg/l. If the applied water chloride concentration followed the 1.96 EC ratio, the applied water chloride should have been 52 mg/l (102/1.96) if we assume the chloride doubled to 14 mg/l (2x6.8 mg/l) when the EC doubled to 300 mS/cm. In the Bouldin Island example, the average drain water to applied water EC ratio was 2.5 (426/160) but the corresponding average chloride concentration ratio was 4.7 (32/6.8). For Twitchell Island, the assumed EC ratio was also 3 (937/300). The applied water chloride level would have been 55 (174/3) based on the EC ratio.

The second REIR assumption is made that DOC behaves as a conservative dissolved substance (i.e., its concentration increases with evaporation, decreases with rainfall, and is not removed by biological or other physical and chemical processes) and that DOC accumulates in soil moisture in the same manner that salt does. Results from the DWR SMARTS experiments as well as by others, show that TOC and DOC is a gross measurement similar to EC and that the composition of the organic pool varies with source and time. While there are some organic fractions (e.g., humic matter) that behave conservatively because of slow degradation, organic matter in the Delta channels, islands, and drains undergo constant transformation. There were about 20 cited articles along with a lengthy discussion about the microbial degradation of organic matter in flooded peat soil in the SMARTS 2 progress report, which show that TOC/DOC are not conservative parameters. Unless there is evidence supporting the two REIR assumptions of conservative behavior in all EC and DOC measurements, the last assumption that EC can be used to model DOC cannot be made. **R2-14 cont'd**

References

Bower, C.A., 1974. Salinity of Drainage Waters. In: Drainage for Agriculture. No. 17 in Agronomy series. J. Van Schilfgaarde, ed. American Society of Agronomy, Madison, Wisconsin.

Rhoades, J.D., 1974. Drainage for Salinity Control. In: Drainage for Agriculture. No. 17 in Agronomy series. J. Van Schilfgaarde, ed. American Society of Agronomy, Madison, Wisconsin.

Division of Operations and Maintenance

I. Summary

The issues raised by the Project Operations Planning Branch have been addressed in the REIR.

II. Specific Comments

p. 3-3, a continuation of "Definition of Terms", 4th bullet of page, "South-of-Delta Delivery Deficit": The definition does not mention changes to southern SWP storage facilities such as Castaic, Pyramid, Silverwood, and Perris reservoirs. **R2-15**

p. 3-4, "DWRSIM" second paragraph, "The AFRP was implemented pursuant to the CVPIA, resulting in ... several new ... standards": The term "standards" implies regulatory obligation. No such obligation from the AFRP is beholden upon the SWP. Furthermore, the AFRP actions are only potential objectives for the operations of the CVP. **R2-16**

p. 3-13, "Delta Wetlands Project Diversion Criteria", last bullet on page, "This conidition (*X2 at Chipps Island)* was simulated in DeltaSOS with a miniumum Delta outflow requirement of 9,000 cfs for the months of September through January": The reason for using 9,000 cfs is not given. The Delta outflow requirement pursuant to Chipps Island, February through June, is 11,400 cfs. R2-17

p. 3-15, second paragraph, second line should read: **Delta Wetlands discharges from Bacon Island are limited to 50 percent of San Joaquin River flow, as measured at Vernalis, during the period of April through June.** Or the term "San Joaquin River inflow" could be changed to "Delta inflow from the San Joaquin River." The term San Joaquin River inflow is vague and may refer to the flow into the San Joaquin River from its tributaries. R2-18

OFFICE OF STATE WATER PROJECT PLANNING

WATER SUPPLY (DWRSIM)

Page 3-12

Under "Vernalis Adaptive Management Plan and Delta Export Pumping Restrictions", the statement "VAMP flow requirement depends both on San Joaquin River flows during the pulse flow period of April 15 – May 15 and the previous month's runoff condition" is not correct. It is correct that the VAMP flow requirement depends on the San Joaquin River flows during the pulse flow period, but it also depends on the current and previous year's 60-20-20 index to determine whether to do double step increases. It does not depend on the previous month's runoff conditions. R2-19

Page 3-17

On top of the page, the paragraph on SWP interruptible demand and delivery in DWRSIM is not correct. The interruptible demand and delivery implemented in DWRSIM are as follows:

The interruptible demand input in DWRSIM is 84 taf/month in all months, not just from November through March as stated on page 3-17. R2-20

Interruptible delivery is made whenever the following conditions are met:

- There is surplus water in the Delta.
- Banks P.P. has excess capacity.
- SWP San Luis storage is full (not just above target storage as stated on page 3-17).

DIVISION OF SAFETY OF DAMS

The REIR indicates that DW proposes a design for the reservoir islands that will allow storage of water up to elevation +6 feet above mean sea level. The California Water Code provides that levees in the Sacramento-San Joaquin Delta shall not be considered a dam if the maximum possible water storage elevation of the impounded water does not exceed four feet above mean sea level. (Water Code Section 6004.) Because the project proposes storage elevations above +4 feet, the levees will considered a dam. Therefore, the reservoir levees will need to be designed pursuant to requirements of the Division of Safety of Dams for "jurisdictional" dams. R2-21

Projects for jurisdictional dams must submit a construction application to DSOD after obtaining its water rights. All dam safety issues related to the proposed work would have to be resolved prior to approval of the application and any construction activity.

ENVIRONMENTAL SERVICES OFFICE

Environmental Services Office staff reviewed the May 2000 Delta Wetlands Project REIR. Our review focused on whether the REIR addresses our earlier comments on the previous DEIR. Overall, we noted several improvements over the DEIR, but several major issues remain unresolved. Our major concern continues to be that: 1) there is inadequate information about the project's fish facilities; and 2) the document does not adequately address the potential predation impacts of project facilities. Specific comments are summarized below.

I. FISH SCREEN AND PREDATION ISSUES

The REIR does not adequately address the Department's previous comments on the draft document regarding fish facilities. The revised document provides some additional information about the project's fish screens, namely that they will comply with the Reasonable and Prudent Measures of the regulatory agencies regarding fish protection, DFG's fish screening policy (the document is silent regarding compliance with NMFS's fish screening criteria), and the USFWS 0.2 foot per second approach velocity criterion for delta smelt. R2-22

While generally this additional information is helpful, the revised document does not provide the information on predation, hydraulic control, debris, cleaning systems, and other maintenance issues that DWR suggested in December 1995. In the discussion on pages 5-16 and 5-17, the document fails to mention the predation that is likely to occur at fish screens. The document also appears to inaccurately attribute to the NMFS Biological Opinion the statement that fish screens will *reduce* predation during diversion operations (a statement that is contradicted by the DFG Biological Opinion), and fails to state to what this reduction is compared. The document is also

unclear as to the exact number of project intakes. We continue to be concerned that project facilities including screens and boat docks will increase the number of feeding stations for predators. We disagree with the assertion in the EIR/EIS (Page 5-16) that project facilities will not significantly affect predator-prey interactions. We are concerned that the proposed DW instream structures will increase the number of feeding stations for predators. The problem would be exacerbated during periods when DW is diverting, creating higher concentrations of prey (and increased predation rates) in channels adjacent to the DW project through a "bathtub drain" effect. In summary, most of DWR's previous comments about fish screens and predation were not addressed . R2-22 cont'd

II. THE PROPOSED ADAPTIVE MANAGEMENT STRATEGY FOR FISH

The Final Operations Criteria (Appendix B) in the REIR still provides insufficient information about who will collect the required data and whether the information can be processed quickly enough to allow adaptive management. We continue to have questions about whether the proposed use of transport modeling will be: 1) performed quickly enough to allow for adaptive management within a reasonable time frame; and 2) relevant to all of the fish species of concern. R2-23

III. OTHER ISSUES

Several other points raised by DWR regarding the previous DEIR do not appear to have been addressed. The REIR still does not provide an adequate analysis of the potential for nuisance algal blooms, has not updated key biological information (e.g. splittail life history) and provides few details about the methodologies used for impact analysis. R2-24

DIVISION OF ENGINEERING

The Division of Engineering reviewed the Delta Wetlands Project REIR, including the Appendix H, "Levee Stability and Seepage Analysis Report for the Delta Wetlands Project."

A. Liquefaction

The liquefaction evaluation presented in the REIR indicates that *"a few pockets of potentially liquefiable soil deposit may exist in the levees and foundation soils. We believe, however, that these liquefiable soil pockets are confined in limited areas and therefore are expected to have negligible adverse effects on the stability of the levees."* This evaluation is not consistent with the Corps of Engineering's 1987 study, "Sacramento – San Joaquin Delta Levees Liquefaction Potential," or Division of Engineering's review of DWR geological investigations for Webb Tract and Bacon Island. The Corps of Engineers study identified Webb Tract as having *high* liquefaction R2-25

potential (defined as 50 percent of the borings analyzed indicate liquefiable soils for a 5.5 M earthquake and ground motion of 0.10g). Bacon Island was identified as having *moderate* liquefaction potential (defined as 21 to 50 percent of the borings analyzed indicated liquefiable soils under the same earthquake loading conditions). Boring logs from DWR geotechnical investigations indicate areas of loose sand (Standard Penetration Test blow counts less than 10) in both the embankment and the foundation.

It should be noted that the Corps of Engineers 1987 report identified both Webb Tract and Bacon Island as islands which had undergone prior earthquake damage. A 250-foot slip reportedly occurred on the east levee of Bacon Island following the M5.5 Livermore earthquake of January 24, 1980. Levee cracking was reported on Webb Tract after the 1983 Pittsburg and Coalinga earthquakes. **R2-25 cont'd**

The liquefaction of the embankment and foundation should be further evaluated. Liquefaction mitigation, if required, could significantly impact project costs.

B. Design Earthquake Loading

The design earthquake loading reflects 10 percent accedence in 50 years. This loading represents the minimum ground motion identified by the Uniform Building Code for normal (non-critical) structures. This level of earthquake loading is less than what would be required for jurisdictional dams, critical structures (i.e. Hospitals, etc.), and most landfills, and it may be unconservative in light of potential economic and water quality impacts. **R2-26**

C. Slope Stability

Large displacements were predicted for the landside slopes (2 feet) and waterside slopes (4 feet) for the four sections analyzed. It should be noted that the sections chosen do not reflect the most critical sections analyzed in terms of slope stability. Consequently, the results presented do not reflect the largest values of anticipated displacement that could occur. **R2-27**

The large displacements predicted for the levees under seismic loading would result in severe cracking and possible failure from erosion or overtopping. Consequently, the proposed levee freeboard (3 feet) may need to be increased to help prevent an overtopping failure.

California Department of Water Resources

R2-1. The NEPA and CEQA analysis for the Delta Wetlands Project analyzes a reasonable range of alternatives that would meet the project purpose; it also analyzes the No-Project Alternative as required by NEPA and CEQA. As described in Chapter 2 under "Alternatives Considered but Not Selected for Detailed Evaluation", the lead agencies considered water storage on other Delta islands as a potential alternative. Lower Jones Tract, Upper Jones Tract, McDonald Island, Victoria Island, and Woodward Island were all considered in the evaluation of other Delta islands. However, those sites were eliminated from further evaluation because other factors, such as conflicts with existing infrastructure, made them impracticable as alternative storage sites. See the Section 404(b)(1) Alternatives Analysis presented in Appendix 4 of the 1995 DEIR/EIS for more details.

R2-2. The commenter recommends building the Delta Wetlands Project in stages, with one reservoir island and one habitat island created and operated in each stage. The comment suggests that by monitoring the quality of reservoir water during the first stage, Delta Wetlands will be able to determine, before it operates the full-scale project, the water quality effects that are likely to result from project operations and the extent of mitigation that would be necessary. The commenter suggests that such a staged approach would reduce the risk that Delta Wetlands would have to mitigate large effects of discharges on water quality after it had filled both reservoirs.

As noted in the paragraph that precedes this comment, however, the quality of water stored over peat soil may vary considerably and may be influenced by several factors, such as the time of flooding, duration of storage, depth of stored water, and site-specific peat soil characteristics. The FOC include different discharge rules for the two reservoir islands (i.e., discharges are allowed from Bacon Island in any month but are allowed from Webb Tract only from July through December); therefore, the diversion and discharge cycles on these two islands would differ, and the water quality parameters for the water stored on each island may differ somewhat. For this reason, the data collected for one island would help determine what timing and rate of discharges from that island would be appropriate to avoid potential water quality effects, but they would not necessarily replicate the conditions that would be found on the second island. Therefore, the two islands will need to be monitored separately.

The 1995 DEIR/EIS and the 2000 REIR/EIS evaluated the construction and operation of the four proposed project islands as one project. The proposed mitigation of the potential effects of discharging water with elevated EC or DOC levels is to do the following:

- monitor water quality parameters and
- control the release of water for export or augmentation of outflow as necessary to maintain those parameters at or below specified levels in the blended water at the export facilities or in outflow.

It is not necessary to construct and operate a staged project rather than the full-scale project to directly mitigate environmental impacts of the proposed project; such staged construction and operation would be at the discretion of the project applicant.

R2-3. This commenter suggests that the significance criterion of a 20% change in the monthly average export DOC concentration used in the 2000 REIR/EIS is too lenient.

The first part of this comment states that the significance criterion for DOC of a 20% increase in average concentration (0.8 mg/l) is equivalent to half the existing contribution of all Delta agricultural drainage to the export DOC concentration. This conclusion appears to be based on a misunderstanding of some statements in the 2000 REIR/EIS. Contrary to what the commenter states, the text of the 2000 REIR/EIS does not indicate that 40% of export DOC originates from agricultural drainage; it states that "40% of total Delta agricultural drainage is assumed to originate from the Delta lowlands and be transported toward the export pumps" (page G-13 of Appendix G). The monthly average concentration of DOC at the export pumps depends on several factors:

- # DOC concentrations in water that comes into the Delta,
- # the way in which in-Delta activities (including agricultural activities) change DOC concentrations,
- # the volume of Delta inflows and exports, and
- # the proportion of the export water that comes from each source.

Appendix G indicates that the Delta lowlands are assumed to be the source area for all DOC increases in the Delta, and that drainage from the lowlands is assumed to be about 40% of the total flow from agricultural drainage in the Delta. Because flow from agricultural drainage is only a portion of the total export water, Delta agricultural drainage would contribute only a fraction of the export DOC concentration; the fraction from agricultural drainage varies throughout the year depending on agricultural drainage activities.

The commenter also reports that DWR and others are working to identify options for reducing organic carbon loads by controlling Delta island drainage and using other techniques, such as treatment. The comment discusses costs for reducing organic carbon at treatment facilities by 0.8 mg/l. It is unclear what averaging period is used in the commenter's estimates of treatment costs; however, the values appear to be annual costs.

The significance criterion used in the analysis of Delta Wetlands Project effects on water is applied to changes in export DOC on an average monthly basis. The project could adversely affect DOC concentrations at the export pumps only during those months when discharges are occurring, typically 1–3 months in a year. As reported in the results of the 72-year simulation, Delta Wetlands would not exceed the significance criterion during

every discharge month. Additionally, Delta Wetlands operations would improve DOC conditions compared to existing (no-project) conditions during other months when agricultural drainage from the project islands would have increased DOC under no-project conditions. Therefore, the net annual effect of the Delta Wetlands Project on export DOC would be much less than the monthly changes reported in the document. See Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", for a discussion of project effects on DOC and treatment plant costs.

The Delta Wetlands Project WQMP requires monitoring of project-related TOC loading that could cause an increase in water treatment costs. Master Response 7 describes the WQMP screening criteria that would trigger the requirement that Delta Wetlands modify operations (e.g., reduce or reschedule discharges) and implement mitigation of long-term water quality impacts.

R2-4. As stated by the commenter, CALFED has established an overall long-term goal to reduce TOC at the exports to less than 3 mg/l. This is a very ambitious goal. DWR monitoring data indicate that concentrations of export TOC exceed 3 mg/l more often than not under existing conditions (see Figure G-9 in Appendix G of the 2000 REIR/EIS and Appendix C1 in the 1995 DEIR/EIS). For purposes of the Delta Wetlands modeling analysis, average DOC concentrations in the Sacramento River and San Joaquin River were assumed to be 2 mg/l and 4 mg/l, respectively, and the simulated annual average DOC concentration in exports was approximately 4 mg/l (see Chapter 3C of Volume 1 of this FEIS). Therefore, an isolated Delta facility that diverts water from the Sacramento River directly to the export locations would be the best option for satisfying the target of 3 mg/l.

The lead agencies recognize the goals of other agencies, including CALFED, to improve water quality conditions. However, the analysis of a project's effects in compliance with CEQA and NEPA compares existing (no-project) conditions and with-project conditions to determine the incremental effect of project operations. CALFED's long-term goal does not reflect existing conditions and is not a prevailing standard. The analysis of Delta Wetlands Project effects on DOC appropriately uses significance criteria that are based on existing conditions, rather than on CALFED's goal. In addition, even if water diverted and discharged by Delta Wetlands had higher DOC concentrations than were considered acceptable for exporting, reservoir island storage and discharges could still supply Delta outflow during periods with reduced Delta inflows at times when the CVP and SWP are not exporting water.

One of the Delta Wetlands WQMP "Drinking Water Quality Protection Principles" states that "Project operations shall contribute to CALFED's progress toward achieving continuous improvement of Delta drinking water source quality". In agreeing to implement the WQMP, Delta Wetlands has committed to operating according to this principle.

R2-5. Under the proposed project, Delta Wetlands would divert water onto the habitat islands to provide the water necessary for implementing the HMP. Diversions and discharges of water to and from the habitat islands would not differ substantially from existing

agricultural practices. Because a large portion of the habitat islands would remain in agricultural crops, it is assumed that the DOC concentrations of habitat island discharges would be similar to those of current agricultural drainage. Discharge from the habitat islands would account for a very small proportion of water exported from the Delta; therefore, if DOC loading on the habitat islands were found to be greater than under existing agricultural practices, the resulting effect on export DOC concentration would be extremely small.

Additionally, the Delta Wetlands WQMP requires Delta Wetlands to monitor water quality conditions on the habitat islands. Under the WQMP, the operational screening criteria apply to the effects of project operations taking place on both the reservoir islands and the habitat islands. The TOC screening criteria are described in Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts".

R2-6. DWR indicates that wastewater discharges may increase in the future, and potentially contribute a larger amount of DOC to exports under cumulative future conditions. The discussion of cumulative future impacts did not include changes in the DOC concentrations of inflows from the Sacramento and San Joaquin Rivers because it is difficult to quantify the influence that wastewater treatment plant projects would have on future DOC levels. An increased load of DOC from wastewater would probably increase the background DOC at the export locations. In general, this could limit future Delta Wetlands Project operations.

R2-7. The commenter indicates that the significance threshold used in the 2000 REIR/EIS allows the Delta Wetlands Project to increase the DOC load in exports by 20%. This is incorrect. The 20% significance criterion would allow an increase in the *monthly* DOC concentration equal to 20% of the mean DOC concentration; the mean DOC concentration in exported water is estimated to be 4 mg/l. As described in response to Comment R2-3, the net annual effect of the Delta Wetlands Project on export DOC would be much less than individual monthly changes reported in the document. Additionally, the Delta Wetlands WQMP includes more detailed operating criteria for project diversions and discharges related to effects on TOC. See also Master Response 6, "Significance Criteria Used for the Water Quality Impact Analysis".

R2-8. The units used in the 2000 REIR/EIS are scientifically consistent and accurate. Loads are basically a mass of material in some volume or from some area in some time period; there are many different possible units for measuring loads. All experimental and field measurements of DOC concentrations are normalized to the common units of g/m^2 in the analysis so that the different measurements can be compared. Methods for converting concentration measurements to estimates of DOC loading are described in the 2000 REIR/EIS on pages 4-15, 4-18, and 4-23 (pages 3C-54, 3C-56, and 3C-61, respectively, of Volume 1 of this FEIS), given in the footnotes of Table 4-5 (Table 3C-13 in FEIS Volume 1), and detailed in many of the sections of Appendix G.

R2-9. DWR suggests a methodology for estimating the effects of Delta Wetlands operations on export DOC loads that is similar to the methodology built into the DeltaSOQ model used in the 2000 REIR/EIS. By comparing with-project conditions to no-project conditions, both methods isolate the effects attributable to changes in DOC from the project islands; however, the methods differ with DWR's step 4. DWR recommends calculating the load, in weight, of DOC contributions from the Delta Wetlands islands to exports under both no-project conditions and with-project conditions. These two values would be compared; a significant impact would be identified when the DOC load from the project islands under project operations exceeds a given percentage of the load from the same islands under no-project conditions.

This alternative method for determining project impacts, however, does not address the underlying reasons for controlling DOC levels. DOC loads, in themselves, do not constitute an environmental concern; DOC in raw water is of concern only because the water may be treated for use as drinking water, possibly resulting in the formation of DBPs, which may affect human health. The criteria for treating water delivered to treatment plants are expressed as concentrations of DOC. Therefore, the change in DOC concentration (not DOC load) at the export locations is the most appropriate water quality assessment variable.

See response to Comment R2-4 regarding CALFED targets for long-term DOC concentrations.

R2-10. For purposes of impact assessment, an annual average concentration of DOC was used to establish the significance criteria. During project operations, the impact of Delta Wetlands diversions and discharges would be a function of the concentration of DOC in Delta Wetlands' water, in Delta inflows, and at the export pumps. Seasonal changes in DOC concentrations could be monitored, and the criteria used to trigger mitigation could be based on a different (i.e., seasonal) averaging period. However, the incremental effect of the Delta Wetlands Project would still drive the evaluation of project impacts on export DOC and the need for mitigation. See Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", regarding the mitigation triggers proposed in the Delta Wetlands Project WQMP. The full text of the WQMP is included in the Delta Wetlands–CUWA agreement in the Appendix to the Responses to Comments.

R2-11. See response to Comment B7-8.

R2-12. **Summary of Use of the SMARTS Data in the NEPA and CEQA Analysis.** The SMARTS experiments, like all the information on DOC loading and concentrations presented in the 1995 DEIR/EIS and in testimony presented in the water right hearing, were interpreted and evaluated for applicability to conditions under the proposed project. Results of the SMARTS experiments were considered in combination with all the other available information on DOC.

Of the available sources of information on DOC, however, the SMARTS reports include some of the information most relevant to project conditions (because it pertains to releases of DOC from Delta-island peat soils). Therefore, special attention was given in Chapter 4 of the 2000 REIR/EIS to describing the SMARTS experiments and interpreting their results (see Chapter 3C of Volume 1 of this FEIS). This necessarily involved evaluating the limitations of comparing the conditions induced in the laboratory with natural processes on the project islands. The 2000 REIR/EIS therefore included several interpretations and evaluations of the SMARTS data that went beyond the information provided by DWR. DWR, for example, did not calculate DOC loads from the tanks and did not compare the concentrations of DOC or EC in soil water with those measured in the water.

Evaluation of the 36-Week Data Set Provided by DWR. The latter 9 weeks of data in the 36-week data set were overlooked during the preparation of the 2000 REIR/EIS evaluation because they were not included in the data sheets in DWR's progress report (although they were graphed in another part of the report). Review of these additional data indicates that the DOC concentration increased most rapidly during the first 6 months of the experiment.

Measurements of pore-water DOC concentrations provide additional information about the rate at which DOC is released over time. The peat soil in the SMARTS tanks is assumed to consist of about 50% pore water and 50% peat soil particles. The pore-water DOC concentration increases as the peat soil particles are modified by microbial (biochemical) processes and pieces of the complex organic molecules dissolve into the pore water. The pore water then mixes with the surface water in the tank and DOC is transferred from the pore water to the surface water. The measured DOC load in the SMARTS tanks is the combination of the initial source of DOC in the pore water and the relatively slow exchange with the surface water.

The DOC loading observed in the tanks is the result of DOC loading from the pore water and will be greater if the pore-water DOC concentration is higher. Review of the data showed that the pore-water DOC concentrations in the SMARTS 2 static tanks increased dramatically during the initial 4 months of the experiment, then decreased during the subsequent months of the experiment; this result indicates that the subsequent production of DOC from the submerged peat soil was limited. The origin of the high DOC concentrations during the initial months cannot be identified; DWR did not make detailed biochemical measurements of the peat soils.

Difference in Soil Batches Used by DWR. The SMARTS 2 data showed different DOC and EC values in the soil water from the two batches of soil collected from the same field on Twitchell Island. DWR attributes the differences to the effects of leaching by rainfall. However, there were only about 4 inches of rainfall in November 1999. Because the soil water for the 12-inch soil layer scraped for use in the SMARTS tanks would be about 6 inches, almost all of the rainwater should have been retained in the soil. It is unlikely that salt or DOC would already have been leached from the soil.

The discussion on page 4-18 of the 2000 REIR/EIS (page 3C-57 of FEIS Volume 1) notes the differences in EC between the two batches to indicate the different initial characteristics of the soils. It is important to note such information when interpreting experimental results because the information helps to define the limits of applicability of the data.

USGS Field Data. One USGS measurement of 208 mg/l in soil water on Twitchell Island does not invalidate the statement in the 2000 REIR/EIS that most DOC concentrations in soil water from the Delta are less than 100 mg/l. The values for the soil used for SMARTS 2 were very high in comparison.

Summary Conclusions. As noted in the comment, the DWR SMARTS experiments were successful in obtaining measurements of DOC concentrations related to flooded peat soils. The results must be interpreted before the raw data can be applied to scientific purposes such as impact evaluations.

See responses to Comments B7-50 and C14-13 regarding algae and nutrients in Delta Wetlands water.

R2-13. The results of the SMARTS studies and the results of the Holland Tract demonstration wetland experiment were both used in estimating the potential for DOC loading on the reservoir and habitat islands. The Holland Tract experiments, although limited in scope and duration, best mimic the in-field conditions that may be found during project operations.

The commenter is comparing DOC concentrations in surface water from the SMARTS experiments to DOC concentrations from the Holland Tract experiment; however, DOC concentrations alone do not provide an adequate estimate of potential loading. The depth of water over the peat soil contributes to the final DOC concentrations. It may be more appropriate to compare the DOC in soil water from the SMARTS studies with that found in the Holland Tract experiment; see response to Comment R2-12 for more information about the uses of data on soil pore-water. It is agreed that measurements will be needed to determine the actual values for DOC loading from Bacon Island and Webb Tract. The Delta Wetlands Project WQMP includes monitoring to obtain such measurements; the full text of the WQMP is included in the Delta Wetlands–CUWA agreement in the Appendix to the Responses to Comments.

R2-14. The chemical reactions and processes within the peat soils in the Delta are numerous and complex. Appendix C-2 in the 1995 DEIR/EIS includes a full discussion of the anion and cation ratios in water from the Sacramento River, the San Joaquin River, and the ocean. The assumption that all diverted salt and DOC is later incorporated in the drainage water is appropriate for the simulated monthly assessment of potential impacts used for CEQA/NEPA impact assessment. See also response to Comment B7-8.

The commenter also states that the EC and chloride ratios used in this method are not always consistent; the EC ratio on Bacon Island is used as an example. The commenter

fails to note, however, that some of the chloride in the water diverted onto each of the Delta Wetlands islands originated from San Joaquin River water or from the intrusion of seawater into the Delta. The ratio of chloride to EC is higher for these water sources. For more information, see Appendix G of the 2000 REIR/EIS and Appendix C2 of the 1995 DEIR/EIS.

The commenter points out that the simple method of estimating the DOC load in agricultural drainage that is described in the 2000 REIR/EIS is a very rough approximation. This method provides only a rough approximation of the DOC that could have originated from the applied irrigation and seepage water. However, this is an adequate method to use in establishing baseline conditions for a monthly simulation of potential project effects.

R2-15. Operations of southern SWP reservoirs are generally simulated by DWRSIM to follow fixed monthly storage changes. Possible changes in southern reservoirs were not included in the estimates of deliveries or delivery deficits.

R2-16. The commenter is correct. AFRP target actions are applied only to CVP facilities under the CVPIA and court interpretation of the CVPIA. DWR is not directly obligated to change SWP operations to meet AFRP target actions. However, actions that apply to CVP facilities may also affect SWP operations because of the Delta outflow requirements and export pumping limits, such as the WQCP E/I ratios and the Vernalis Adaptive Management Plan (VAMP) pumping limits, that the SWP and CVP share under complex rules and procedures.

R2-17. The Chipps Island X2 requirement described on page 3-13 of the 2000 REIR/EIS (page 3A-34 of Chapter 3A of FEIS Volume 1) applies only to diversions under the Delta Wetlands Project. Maintaining X2 at or below Chipps Island requires an outflow of approximately 11,400 cfs. The minimum *monthly* flow of 9,000 cfs was used in the monthly modeling to represent the average of the two X2 requirements that apply to the Delta Wetlands Project: 10 days of outflow at 11,400 cfs to maintain X2 at Chipps Island and approximately 20 days of outflow at 7,100 cfs to maintain X2 at Collinsville. These values result in a monthly average of 8,533 cfs; therefore, monthly project simulations use a 9,000-cfs minimum monthly outflow for Delta Wetlands diversions in September through January to approximate these requirements.

The Delta outflow requirement referenced by the commenter (11,400 cfs) is part of the 1995 WQCP and is applied to the SWP and CVP operations based on Delta conditions. The Delta Wetlands X2 requirement described above is independent of the CVP and SWP requirement. Maintenance of the 1995 WQCP outflow requirement is simulated in DWRSIM. The assessment in the 2000 REIR/EIS does not adjust DWRSIM estimates of required Delta outflow.

R2-18. The term "San Joaquin River inflow" referenced by the commenter refers to flow at Vernalis.

R2-19. The text referred to by the commenter has been revised as follows:

> The VAMP flow requirement depends both on San Joaquin River flows during the pulse-flow period of April–May 15 and ~~on the previous month's runoff conditions~~ the current and previous water-year 60-20-20 index values . . .

R2-20. The text referred to by the commenter has been revised as follows:

> This assumption of maximum possible export pumping is similar to the SWP interruptible supply simulated in DWRSIM 771 as 84 TAF/month (i.e., 1,400 cfs) ~~during the November-through-March period, whenever there is available water for SWP export beyond the specified monthly demands and SWP target storage in San Luis Reservoir~~; interruptible delivery is made when the following conditions are met:
>
> # there is surplus water in the Delta,
> # Banks Pumping Plant has excess capacity, and
> # San Luis Reservoir is full.

Because DWRSIM assumes that contractors will take this additional water whenever it is available during winter, it may be reasonably assumed that the Delta Wetlands Project water would be purchased when available.

R2-21. See response to Comment B7-6.

R2-22. Responses to comments on the 1995 DEIR/EIS submitted by DWR's Environmental Services Office are provided in Chapter 3 (see responses to Comments B7-62 through B7-83).

The commenter states that the 2000 REIR/EIS "provides some additional information about the project's fish screens, namely that they will comply with the Reasonable and Prudent Measures of the regulatory agencies regarding fish protection, DFG's fish screening policy (the document is silent regarding compliance with NMFS's fish screening criteria), and the USFWS 0.2 foot per second approach velocity criterion for delta smelt". The commenter further states that the document does not provide the information on predation, hydraulic control, debris, cleaning systems, and other maintenance issues that DWR commented on in December 1995, and requests information on these issues.

The basic fish screen design proposed by Delta Wetlands was described in Appendix 2 of the 1995 DEIR/EIS. DFG, NMFS, and USFWS subsequently considered fish screen design and operation criteria in the federal and California ESA consultation. All the requirements of these agencies for Delta Wetlands' fish screen design and procedures are specified in their biological opinions for the project, which are included in Appendices C, D, and E of the 2000 REIR/EIS. See also response to Comment B6-60.

Chapter 5 of the 2000 REIR/EIS (see Chapter 3F of Volume 1 of this FEIS) provides *summary* information about DFG's, NMFS's, and USFWS's fish screen measures that have been incorporated into the proposed project. It refers to the measures included in the FOC (the 0.2-fps approach-velocity criterion) and in the DFG and NMFS biological opinions, and refers reviewers to the appropriate appendices of the 2000 REIR/EIS for details. See response to Comment B6-60 regarding the details of the fish screen design that were developed through consultation with DFG, NMFS, and USFWS.

For a discussion of the potential for predation at the Delta Wetlands facilities, see response to Comment B7-64.

In reference to predation, this comment also states that the document "appears to inaccurately attribute to the NMFS Biological Opinion the statement that fish screens will *reduce* predation during diversion operations ... and fails to state to what this reduction is compared". The commenter is apparently referring to the summary of NMFS biological opinion RPMs listed on page 5-6 of the 2000 REIR/EIS (page 3F-48 of Chapter 3F of FEIS Volume 1).

NMFS's RPM on fish screens states: "Measures shall be taken to reduce the extent of entrainment and predation during Delta Wetlands diversion operations through the use of properly designed fish screens". Details about this measure are provided on pages 40 and 41 of the biological opinion (Appendix D of the 2000 REIR/EIS). The summary statement on page 5-6 of the 2000 REIR/EIS (FEIS Volume 1, page 3F-48) characterizes this RPM accurately; it indicates that NMFS requires Delta Wetlands to use properly designed fish screens to reduce entrainment and predation during diversion operations. The reduction is in comparison with existing conditions; this does not contradict the DFG biological opinion. Constructing fish screens that meet the terms and conditions in the biological opinions would result in less entrainment and less predation than diverting water without fish screens or using an inferior fish screen design.

The commenter's discussion also refers to a "bathtub drain" effect that could occur during project diversions. Available information, including documents produced by DWR, does not conclusively support the assumption that diversions, such as those proposed by Delta Wetlands, would result in a "bathtub drain" effect. Because of the low approach velocity (0.2 fps) at the screen face of Delta Wetlands' siphons and the bypass flow that would be provided by tidal and net Delta channel flow, it is unlikely that the fish screens and diversion facilities would cause concentration of juvenile salmonids and other fish species. DWR has not provided information supporting a "bathtub drain" effect related to the CVP and SWP exports from the south Delta. A bathtub drain effect, therefore, would not be expected during operation of the Delta Wetlands Project, especially given the FOC restrictions that limit Delta Wetlands' diversions to a percentage of outflow and San Joaquin River inflow. Because of these limitations, Delta Wetlands would have much smaller potential effects on channel flows than would CVP and SWP exports.

R2-23. Transport modeling was proposed in the 1995 DEIR/EIS as part of the mitigation of potential effects of the Delta Wetlands Project on fisheries. The mitigation measures proposed to reduce project effects on fishery resources have been replaced with the FOC and RPMs described in the biological opinions, as discussed in Master Response 4, "Impacts on Fisheries Identified in the 1995 DEIR/EIS and Adoption of Biological Opinions". The FOC terms do not include transport modeling but include a monitoring program that is summarized in Master Response 4; the program includes, but is not limited to, in-channel and on-island monitoring, reporting, and resolution of technical monitoring issues with DFG. For more detail, see the attachment to the FOC entitled "Delta Wetlands Fish Monitoring Program" in Appendix B of the 2000 REIR/EIS.

R2-24. See response to Comment B7-50 regarding mitigation of algae blooms. See responses to Comments B7-66 and B7-74 regarding the commenter's previous request for more information about the life histories of delta smelt and splittail. It is not clear which methodologies the commenter is referring to; see responses to Comments B7-67 and B7-79 through B7-83.

R2-25. Although the potential for liquefaction is understated in the Appendix H text referenced by the commenter, the analysis of dynamic levee stability accurately reflects a high potential for liquefaction in the soils analyzed. The review of the borings drilled in the proposed reservoir islands indicates that the upper 5–10 feet of the shallow sand alluvium are loose and saturated; therefore, the potential for liquefaction is high. Should a severe earthquake occur in the region, liquefaction-induced damage to the Delta levees could be substantial under both the no-project and with-project conditions. The post-liquefaction residual strength in the upper sand alluvium was incorporated into the dynamic levee stability model (see Appendix H of the 2000 REIR/EIS). A soft/loose foundation layer under the levees was used in the model to represent both the peat and the loose sands that are subject to liquefaction. The deeper portion of the sand alluvium is described as dense to very dense, and hence not susceptible to liquefaction. These foundation conditions are the same under the baseline (no project) and proposed project. No additional analysis or mitigation is required.

R2-26. The design earthquake used in the seismic evaluation of the reservoir levees is appropriate for the NEPA and CEQA analysis. The ground motions at the project site for the earthquake event with a 10% probability of exceedance in 50 years is also the maximum credible earthquake on the Midland Thrust fault, which is the controlling fault for the project islands. The ground motions used for the project are similar to the ground motions considered in the evaluation of the seismic vulnerability of the Delta levees conducted by the CALFED Levees and Channels Technical Team, Seismic Vulnerability Sub-Team (CALFED Bay-Delta Program 1999b).

R2-27. The cross sections used for the analysis of static slope stability and earthquake-induced levee deformation were selected to be reasonably representative of conditions that would be encountered on the reservoir islands and to allow for conservative estimates for stability issues. Therefore, the results of the analysis are representative of stability conditions in

most parts of the Delta Wetlands Project levees, but not of worst-case conditions. See Master Response 8, "Levee Stability Analysis and Worst-Case Conditions".

The analysis of earthquake-induced levee deformation is based on state-of-the-practice procedure and consists of using the following:

- limit-equilibrium slope stability analysis, to estimate the most critical failure surface and associated yield acceleration; and

- the Newmark double integration method, used in conjunction with the acceleration time histories. This method is used to estimate the deformation that would be associated with the most critical failure surface of the section analyzed.

Several figures in Section 3 of Appendix H of the 2000 REIR/EIS show the most critical failure surfaces determined through the evaluation; the results indicate that such deformation would affect only a portion of the crest. Therefore, the proposed levee freeboard would be adequate to prevent an overtopping failure under seismic conditions. Additionally, the measures proposed to mitigate inadequate channel-side stability would also apply to slough-side deformation, and would apply to more severe conditions as well as the conditions analyzed.

California Regional Water Quality Control Board
Central Valley Region
Steven T. Butler, Chair

Winston H. Hickox
Secretary for Environmental Protection

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20 July 2000

Aimee Dour-Smith
Jones and Stokes, 2600 V Street
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CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) DOCUMENT REVIEW FOR PROPOSED PROJECT: DELTA WETLANDS PROJECT, CONTRA COSTA AND SAN JOAQUIN COUNTIES

We have reviewed the draft EIR CEQA Document.

To protect water quality, the Regional Water Quality Control Board will require appropriate pollution control measures during construction and post construction. The Regional Board may require the following: Construction Storm Water Permit, 401 Water Quality Certification, General Order for Low Threat and Dewatering General Order.

Construction Storm Water Permit
A Construction Storm Water Permit (Order No. 99-08-DWQ) is required for construction activities where clearing, grading, filling, and excavation result in a land disturbance of five or more acres. The Storm Water Permit requires that discharges of sediment and earthen materials, as well as chemicals and other materials from vehicles, building materials, and storage areas be eliminated or minimized. The permit also requires a Storm Water Pollution Prevention Plan be prepared which specifies: 1) Best Management Practices preventing construction pollutants from contacting with surface waters and 2) a monitoring program for the site. If there are any questions about the Storm Water program, you may call Dani Berchtold at (916) 255-3383 or Leo Sarmiento at (916) 255-3049. R3-1

401 Water Quality Certification
A Federal 404 permit is required for activities involving a discharge (such as dredged material or fill) to waters of the United States. "Waters" include wetlands, riparian zones, streambeds, rivers, lakes, and oceans. These projects also require a Water Quality Certification (per Section 401 of the Clean Water Act) verifying the project does not violate State water quality standards. If there are any questions about the Water Quality program please contact Matthew Reischman at (916) 255-3120.

Dewatering Permit
Some pollutants associated with construction dewatering activities may be addressed under the General Construction Storm Water Permit. However the Central Valley Regional Board may choose to cover the dewatering discharge under Order No.5-00-175, General Order for Dewatering and Other Low Threat Discharges. For Dewatering Permit questions, please contact Leo Sarmiento, of our Stormwater Unit at (916) 255-3049 or Patricia Leary, of our NPDES Section at (916) 255-3023.

Aletheia Gooden
Program Assistant

California Regional Water Quality Control Board, Central Valley Region

R3-1. Delta Wetlands applied to the SWRCB for a water quality certification under Section 401 of the Clean Water Act. As stated in the 2000 REIR/EIS, the SWRCB denied the Section 401 certification without prejudice in 1998. Delta Wetlands will resubmit the application for Section 401 certification to the SWRCB. Table 4-1, "Permits and Approvals that May Be Required for the Delta Wetlands Project Alternatives", of the 1995 DEIR/EIS and of Volume 1 of this FEIS includes water quality certification under Section 401 from the SWRCB and the issuance of waste discharge requirements by the regional water quality control board (RWQCB). The following additional information has been added to Table 4-1:

Agency and Requirements	Agency Authority	Project Activities Subject to Requirements
Regional Water Quality Control Board		
Construction Storm Water Permit (Order No. 99-08-DWQ)	The RWQCB, under the SWRCB, ensures compliance with National Pollutant Discharge Elimination System requirements pursuant to Section 402 of the Clean Water Act	Clearing, grading, filling, and excavation activities extending over 5 acres or more

CALIFORNIA URBAN WATER AGENCIES

July 31, 2000

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State Water Resources Control Board
Division of Water Rights
Attn: Jim Sutton
P.O. Box 2000
Sacramento, CA 95812-2000

U.S. Army Corps of Engineers, Sacramento District
Regulatory Branch
Attn: Mike Finan
1325 J Street, Room 1480
Sacramento, CA 95814-2922

Delta Wetlands Project
Draft Revised Environmental Impact Report/Environmental Impact Statement

Dear Mssrs. Sutton and Finan:

California Urban Water Agencies[1] (CUWA) has reviewed the Delta Wetlands Project Draft Revised Environmental Impact Report/Environmental Impact Statement (DREIR/S) and respectfully submits the following comments for your consideration.

Background

California Urban Water Agencies (CUWA) and its member agencies have been participating in the public review of this Project since 1997 and are parties to the water rights proceedings for the Project. The primary focus of CUWA's participation in the review of the Project has been to ensure that the potential impacts to drinking water quality due to Project operations are adequately mitigated. CUWA is concerned that, left unmitigated, the Project could lead to long-term degradation in drinking water quality. There is a potential for Delta Wetlands operations to result in increased total organic carbon (TOC), bromide, total dissolved solids (TDS) and chloride concentrations in urban water supplies. In addition, the Project has the potential to adversely impact human health and increase the cost of water utility operations. These potential impacts are ascribed to the Delta Wetlands Project because of the high rates of discharge of water with elevated concentrations of constituents of concern in close proximity to urban water agencies' intakes.

R4-1

[1] The California Urban Water Agencies (CUWA) is an organization of twelve municipal water providers serving over 22 million water consumers in the City of Sacramento, San Francisco Bay Area and Southern California. CUWA's member agencies use about 90% of the urban water supplies diverted from the Sacramento-San Joaquin Delta and its tributaries.

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In an effort to address these concerns, CUWA and Delta Wetlands are developing a water quality management plan (WQMP) for the Project. Similar to the mitigation plan provided in the DREIR/S, the draft WQMP provides that the Delta Wetlands operations would be regulated based on information from real-time monitoring and modeling of actual daily Delta flows, Delta Wetlands Project operating capacities, CVP and SWP operations, Delta water quality, and quality of water stored on the Delta Wetlands Project islands. Collectively, the elements of the draft WQMP would provide the urban water utilities with the necessary assurances that the Delta Wetlands Project would be operated in a manner that will ensure the protection of public health and long-term integrity of drinking water supplies diverted from the Sacramento-San Joaquin Delta.

The parties have made good progress toward completion of a WQMP which would provide the basis for CUWA and Delta Wetlands to enter into a stipulated agreement that confirms that the Delta Wetlands Project would be operated in strict accordance with the terms and conditions of the final WQMP. **R4-1 cont'd**

CUWA's comments on the DREIR/S are intended to accomplish three purposes: (1) provide information to address deficiencies in the analysis of the potential effects of the Project; (2) document our concerns related to the proposed thresholds of significance for water quality parameters of concern; and (3) recommend specific revisions to the thresholds of significance that address CUWA's concerns and bring the analysis of the Project effects into conformity with the approach used by CUWA and Delta Wetlands in the draft WQMP.

CUWA also has concerns about the effects of the Delta Wetlands Project on: (1) fish that migrate through or reside in the Delta and (2) surrounding levees that protect the water supply infrastructure for millions of people. Additional protective measures are needed to minimize effects on fisheries, and a better plan for monitoring groundwater levels and taking corrective action is needed to adequately protect levees from adverse effects. Individual member agencies will submit detailed comments on these topics.

Thresholds of Significance for Water Quality Parameters of Concern

We note that the significance criteria used in the DREIR/S for total organic carbon (TOC)[2], salinity (expressed as electrical conductivity, or EC)[3], chloride[4] and bromide[5] are **R4-2**

[2] Increases in export DOC of more than 20% of the mean DOC (3.8 mg/L), or about 0.8 mg/L, are considered to be significant water quality impacts.

[3] If Project operations caused the value for EC to exceed 90% of the numerical standard for EC, the effect was considered to be a significant impact. Additionally, increases in export EC of more than 20% of the applicable standard was considered to be a significant impact. The applicable objectives for EC at the export locations varies seasonally from 450 mg/L or 700 mg/L at the export locations.

[4] If Project operations caused the value for chloride to exceed 90% of the numerical standard for chloride, the effect was considered to be a significant impact. Additionally, increases in export chloride of more than 20% of the applicable standard was considered to be a significant impact. The applicable objectives for chloride vary seasonally at the export locations from 150 mg/L to 250 mg/L.

the same as those used in the 1995 DEIR/S. During the 1997 water rights hearing for the Project, CUWA expressed serious concerns regarding the adequacy of the 1995 DEIR/S significance criteria for water quality. These concerns were based on the fact that the central Delta is already severely impaired for these constituents and that the proposed thresholds of significance allow excessive degradation of water quality in conflict with long-term environmental goals for the Delta and would result in severe economic and environmental impacts to municipal water users. The arguments included in the DREIR/S in favor of continued use of these thresholds have not alleviated our concerns in this regard.

The DREIR/S cites natural variability, measurement errors and modeling uncertainties and CEQA guidance related to economic impacts and adopted standards in support of the continued use of the 1995 DEIR/S thresholds. The DREIR/S states that "based on professional experience," natural variability was assumed to be 10% of the specified numerical standard for variables with numerical standards; or 10% of the mean value for variables without numerical standards. Measurement errors and modeling uncertainties were likewise assumed to be about 10% of the numerical standard for variables with numerical standards; or 10% of the mean value for variables without numerical standards. Then, it is assumed that the natural variability, measurement errors and modeling uncertainties can simply be added together to establish the thresholds of significance that would be used to analyze the Project effects. For purposes of analyzing Project impacts in the DREIR/S, water quality degradation of up to 20% of the adopted standards for parameters of concern are considered insignificant.[6] Additionally, for those parameters that do not have adopted water quality objectives, increases of up to 20% of the average ambient concentrations are considered insignificant.[7]

R4-2 cont'd

CUWA finds that the impacts to municipal water users associated with 20% increase in water quality degradation for each of the parameters of concern are both excessive and unnecessary. We are also troubled that there is no quantitative or qualitative evidence to support the threshold, and that the DREIR/s assumes that the cumulative effect of the maximum natural variability, measurement errors and modeling uncertainties can simply be added together to analyze the effects of the Project. In the discussion that follows, we have identified specific concerns with the current approach to the thresholds of significance and recommend corrective measures.

---

[5] Increases in export bromide of more than 20% of the equivalent chloride standards, using the bromide to chloride ratio, are considered to be significant water quality impacts. Under this formula, a change of 100 µg/L to 170 µg/L bromide at the export locations is considered to be a significant water quality impact.

[6] Parameters of concern with adopted water quality objectives include: EC, chloride, bromate and THMs. Under the significance criteria used in the DEIR, increases of up to 90 to 140 mg/L EC (objective varies seasonally) and 30 mg/L to 50 mg/L chloride (objective varies seasonally) and 16 µg/L THMs are considered less than significant. The DREIR/S did not analyze bromate formation so no significance criteria was provided for this parameter.

[7] Parameters of concern without adopted water quality objectives include DOC and bromide. Under the significance criteria used in the DEIR, increases of up to 0.8 mg/L DOC and 100 µg/L to 170 µg/L bromide are considered less than significant.

Natural Variability

The DREIR/S states that "based on professional experience," natural variability was assumed to be 10% of the specified numerical standard for variables with numerical standards; or 10% of the mean value for variables without numerical standards. We find no basis for considering natural variability in establishing the thresholds of significance for the water quality parameters of concern. As explained in the description of the DREIR/S mitigation measures, "Delta Wetlands operations would be regulated based on information from *real-time monitoring* of actual daily Delta flows, Delta Wetlands Project operating capacities, CVP and SWP operations, Delta water quality, quality of water stored on the Delta Wetlands Project islands, and fisheries."[8] Reliance on real-time monitoring to trigger adjustments to Delta Wetlands' operations in response to adopted mitigation requirements would eliminate the uncertainty associated with natural variability. Currently, the DREIR/S fails to provide documentation to support the assumption that the real-time natural variability for the parameters of concern is ±10%. The DREIR/S must be revised to disclose the basis of this assumption and the rationale as why additional loading of parameters of concern up to the level of natural variability is considered insignificant. If this assumption cannot be supported, this variable must be stricken from consideration in establishment of the significance criteria. **R4-3**

Measurement Errors and Modeling Uncertainties

The DEIR/S states that measurement errors and modeling uncertainties were assumed to be about 10% of the numerical standard for variables with numerical standards; or 10% of the mean value for variables without numerical standards. CUWA and Delta Wetlands have spent the last twelve months developing a draft water quality management plan (WQMP) to address the potential water quality impacts associated with Project operations. Similar to the mitigation plan provided in the DREIR/S, the draft WQMP provides that the Delta Wetlands operations would be regulated based on information from real-time monitoring and modeling of actual daily Delta flows, Delta Wetlands Project operating capacities, CVP and SWP operations, Delta water quality, and quality of water stored on the Delta Wetlands Project islands. The draft WQMP is intended to provide the urban water utilities with the necessary assurances that the Delta Wetlands Project will be operated in a manner that will ensure the protection of public health and long-term integrity of drinking water supplies diverted from the Sacramento-San Joaquin Delta. **R4-4**

Under the WQMP, the significance criteria would be based on real-time field measurements and theoretical computer modeling results, both of which have limited accuracy and confidence intervals. CUWA and Delta Wetlands have agreed in concept that for purposes of determining changes, baseline confidence intervals of ± 5% will be assumed. Thus, for the purposes of providing mitigation of long-term water quality impacts pursuant to the WQMP, no mitigation would be required if the net increase in TOC, TDS, bromide or chloride is 5% or less. However, should the net increase in TOC,

[8] Page 4-45 of the DREIR/S, emphasis added.

TDS, bromide or chloride be greater than 5%, Delta Wetlands would be required to mitigate the increase in TOC, TDS, bromide and chloride loading.

CUWA recommends that the lead agencies use the same rationale to establish the thresholds of significance to be used in the Final REIR/S (5% of the numerical limits for water quality variables with numerical limits and 5% of the mean value for variable without numerical limits). Under this approach, increases of up to 0.2 mg/L DOC, 22 to 35 mg/L EC, 8 mg/L to 13 mg/L chloride, and 25 µg/L to 42 µg/L bromide are considered less than significant. **R4-4 cont'd**

Economic Impacts

The DREIR/S cites the first sentence in CEQA Guidelines Section 15064(e), which states that "[e]conomic changes resulting from a Project "shall not be treated as significant effects on the environment," in support of the statements on pages 4-32, 4-34 and 4-44 that CEQA does not require a significance determination of the economic impacts on Municipal water utilities and 22 million consumers they serve stemming from increase DOC loading due to Project operations. In reaching these conclusions, the DREIR/S fails to consider important CEQA principles that distinguish between economic and social effects which do not constitute significant environmental impacts; and those physical effects which can constitute significant impacts. Consider, for example, the rest of Section 15064(e) that was omitted from the discussion in the DREIR/S:

> Economic or social changes may be used, however, to determine that a physical change shall be regarded as a significant effect on the environment. Where a physical change is caused by economic or social effects of a Project, the physical change may be regarded as a significant effect in the same manner as any other physical change resulting from the Project. Alternatively, economic and social effects of a physical change may be used to determine that the physical change is a significant effect on the environment if the physical change causes adverse economic or social effects on people, those adverse effects may be used as a factor in determining whether the physical change is significant. **R4-5**

In addition, CEQA Guidelines Section 15131(b) provides that "[e]conomic or social effects of a Project may be used to determine the significance of physical changes caused by the Project."

Thus, contrary to what is stated in the DREIR/S, CEQA requires consideration of the environmental, economic and social effects of the Delta Wetlands Project in determining whether the physical effects of the increases of DOC concentrations caused by Project operations are significant. This evaluation must include an assessment of the following potential impacts that have been excluded in the DREIR/S:

1) Physical changes that cause adverse economic and social effects on people.
   a) Increased water treatment costs.

b) Increased incidence of permit violations.
c) Affect of increased concentrations of TOC and THMs on public attitudes regarding the safety of drinking water supplies.

2) Physical changes that are caused by economic or social effects of the Project.
   a) Risk associated with hauling additional chemicals and acid used for TOC removal through urban communities.
   b) Discretionary income of the utility and its consumers redirected to water treatment costs.

3) Physical changes that causes adverse environmental impacts.
   a) Increased incidence of cancer and reproductive health impacts.
   b) Increased incidence of permit violations.
   c) Increased pressure on CALFED goal to reduce TOC concentrations in the Delta and THM concentrations in drinking water supplies.

R4-5 cont'd

Analysis of Project Effects on Water Quality, Urban Water Agencies and the Public

Relative Contribution of DOC

The DREIR/S notes that the combined Delta lowlands contribute 40% of the DOC at the southern export facilities. Using the 3.8 mg/L average DOC concentration at the export locations, Delta lowlands, which include Bacon Island and Webb Tract, contribute 1.6 mg/l of the 3.8 mg/L, or 42% of the average concentration. Unpublished data from a forthcoming the Department of Water Resources Municipal Water Quality Investigations (MWQI) unit report entitled "Water Quality Benefits from controlling Delta Island Drainage (Marvin Jung Fall 2000), indicate a potential reduction in agricultural drainage from candidate regions in the Delta could equal approximately a 0.8 mg/L reduction in DOC at the export locations. The estimated cost to achieve a DOC reduction of 0.8 mg/l is $278 to $411 million dollars for capital facilities and $11 million per year for operation and maintenance. This information provides further support for CUWA's position that the threshold of significance for DOC in the DREIR/S is misplaced. The MWQI data demonstrates that the proposed 20% threshold of significance for DOC increases due to Delta Wetlands Project operations would result in a 50% increase in the combined DOC contributions from the Delta lowlands at the export locations and could completely erase the benefits of a several hundred million dollar investment in DOC control facilities before the impact would be considered significant.

R4-6

Revised Drinking Water Regulations and Source Water Protection Requirements

We find the discussion of current and proposed drinking water standards on pages 4-26 and 4-27 to provide an inadequate assessment of the potential impact of Delta Wetlands Project operations on municipal water users. To be adequate under CEQA and NEPA, the REIR/S must consider the following in establishing thresholds of significance and assessing the Project's effects on urban water agencies and their customers:

R4-7

> In 1996, the United States Congress reauthorized the Safe Drinking Water Act. As part of that reauthorization, Congress mandated that the U.S. EPA promulgate

Stage 1 and Stage 2 of the Disinfectants/Disinfection By-Product (D/DBP) Rule by November 1998 and May of 2002, respectively. The D/DBP Rule calls for significant lowering of the allowable concentrations of trihalomethanes (THMs), bromate and other disinfection by-products (DBPs) in drinking water and for the first time in the history of the Safe Drinking Water Act, TOC has been identified as a contaminant that drinking water utilities will be required to remove from their source waters.

The Stage 1 Rule, promulgated in November 1998, requires drinking water utilities to reduce influent TOC. For utilities diverting drinking water supplies from the Delta, this new rule requires twenty-five % of the TOC in the influent to the water treatment plant be removed when the Delta TOC concentration is between 2.0 and 4.0 mg/L. If the Delta TOC concentration is greater than 4.0 mg/L, the utilities are required to remove thirty-five % of the influent TOC. The ambient TOC concentrations of Delta water are generally greater than 4.0 mg/L in the winter months and slightly less than 4.0 mg/L during the summer. Left unmitigated, the cumulative impact of TOC discharges from Delta Wetlands to the Delta could increase the frequency of exceedance of the 4.0 mg/L TOC standard and lead to additional treatment cost for the drinking water utilities on the order of millions of dollars per year.

R4-7 cont'd

For utilities employing conventional treatment, the higher TOC concentrations could be problematic, as they would be unable to increase TOC removal without significant capital investment and increased operation and maintenance cost. For water utilities employing ozone as their primary disinfectant, the likely impact of higher TOC concentrations is a significant increase in ozone demand, which would result in higher operational costs and increased bromate formation. Regardless of the type of treatment employed, increases in TOC levels in source water can have significant impacts on water treatment operations and DBP and bromate levels in drinking water supplies.

Under Stage 1 water utilities are also required to reduce the concentration of THMs in their treated water from the previous standard of 100 μg/L to 80 μg/L. The discharge of increased quantities of THM precursors to the Delta would make it more difficult for CUWA members who rely on Delta supplies to comply with THM standards and could increase the human health risks associated with the production of THMs and other DBPs in treated drinking water. TOC and bromide are the DBP precursors in Delta waters that present the greatest health and regulatory concerns. Disinfection of drinking water supplies containing elevated concentrations of TOC or bromide results in the formation of hundreds of DBPs. Exposure to these chemical by-products of drinking water disinfection is suspected to cause cancer. Other DBPs may cause adverse developmental and reproductive effects. Thus, even short-term spikes in TOC and DBPs could be sufficient to trigger serious public health impacts.

The CALFED Bay-Delta Program is considering integration of the Delta Wetlands Project as an integral component of the Bay-Delta solution.[9] The Framework for Action includes CALFED's long-term goals for drinking water quality improvement of 3.0 mg/L for total organic carbon (TOC) and 50 ug/L for bromide. In addition to these long-term TOC and bromide targets, CUWA has recommended CALFED adopt the following interim water quality milestones:

1)	by 2002:	Bromide concentration < 300 µg/L TOC concentration < 4.0 mg/L
2)	by 2005 - 2007:	Bromide concentration < 100-150 µg/L TOC concentration < 3.5 mg/L
3)	by 2007:	Total dissolved solids < 220 mg/L
4)	by full implementation:	Total dissolved solids < 150 mg/L TOC concentration < 3.0 mg/L Bromide concentration < 50 µg/L

These recommended milestones were based on specific assumptions about the future state of drinking water treatment technology and regulations, including the Stage 2 Disinfectants/Disinfection by-Products (D/DBP) Rule. Although there is still substantial uncertainty surrounding these assumptions, some elements of the Stage 2 D/DBP Rule are emerging through the current FACA process.

R4-7 cont'd

The Federal Advisory Committee Act (FACA) negotiators have agreed that Stage 2 will retain many of the numerical D/DBP standards established in Stage 1 (i.e., 80 µg/L total trihalomethanes [TTHMs], 60 µg/L for the sum of five haloacetic acids [HAA5]). However, the proposed Location Running Annual Average (LRAA) eliminates the spatial averaging in the distribution system, and will require greater control of the DBP precursors (TOC and bromide). Nationwide analyses in support of the FACA negotiations have shown that a 80 µg/L LRAA for TTHMs is equivalent to a 67 µg/L (or lower) standard under the current Running Annual Average compliance requirement. Precursor control will, therefore, be similar to what would have been required had the Stage 2 standards been lowered to the levels indicated on Page 4 of the DREIR/S.

Other elements of the Stage 2 Rule are less certain. Because of the growing body of research evidence that brominated DBPs (e.g., bromate, bromodichloromethane) may pose a greater health risk than other DBPs, it is likely the Stage 1 bromate standard will be lowered in Stage 2, or in subsequent stages of EPA efforts to control D/DBP levels in drinking water. For example, the FACA is considering lowering the bromate standard from 10 to 5 µg/L.

Given the uncertainty over what level of precursor control will be required in Stage 2 and subsequent D/DBP regulations, it is critical that the REIR/S evaluate the potential impacts of Delta Wetlands Project operations on the intermediate

[9] CALFED Bay-Delta Program, "California's Water Future: A Framework for Action," June 9, 2000.

and long-term Delta water quality performance measures outlined above. It is important that the REIR/S establish thresholds of significance and mitigation strategies that are tied to agencies' ability to cost-effectively comply with drinking water regulations. We recommend that the lead agencies consider the interim milestones recommended by CUWA and the long-term water quality milestones adopted by CALFED along with other information that will be used to establish the thresholds of significance for the final REIR/S.

R4-7 cont'd

Increases in DOC/TOC Concentrations in the Delta and Resultant DBP Formation

The Project effects on TOC and bromide concentrations at the urban intakes could have significant adverse impacts on the 22 million people receiving their water from the Delta by increasing bromate, trihalomethanes, haloacetic acids, and other disinfection by-products produced during the water treatment process, resulting in an increased risk to public health and increased costs to water utiltities. CEQA Guidelines subsection §15065(d) requires an EIR evaluate all aspects of a proposed project that may cause substantial adverse effects on human beings, either directly or indirectly.

Water stored on a shallow reservoir over an extended period of time will increase in salinity and organic carbon concentration. The peat soil on the Project islands and the high nutrients concentration in Delta water further accelerate the build up of organic carbon concentration in the stored water and increase the organic carbon concentration at Delta drinking water intakes when the stored water is released. The DREIR impact analysis does not analyze the full range of potential organic carbon concentration in Project stored water and assess the corresponding increase at Delta intakes when the water is released.

R4-8

Substantial data on organic carbon production in wetlands and in shallow water reservoirs on peat soil were presented in the 1997 water rights hearing for the Project. Furthermore, extensive testimony was provided on the rate of release of organic carbon from Project islands, in particular on the seasonal variation, quantity, and potential decrease after initial filling. Despite this wealth of information, the RDEIR/S does not evaluate a reasonable range of impacts on organic carbon concentration at the intakes and the corresponding increase in disinfection by-products resulting therefrom.

The available information shows a wide range of organic carbon loading and large seasonal variations. It also shows that, even at a high rate of organic carbon release from the peat soil, the amount of carbon released from the soil is only a small percentage of the carbon content in the top layer of peat soil. Thus, we question the assumption made in the DREIR/S that the rate of organic carbon release will decrease appreciably after initial fillings on Project reservoirs.

The evaluation of organic carbon loading and Project impacts on disinfection by-products in the RDEIR/S is deficient in a number of aspects:

- The Revised Draft EIR/EIS does not evaluate the effects of seasonal variation of Project impacts. The analysis assumes that the rate of carbon release is constant, which ignores algae and macrophytes in the reservoirs which could be significant sources of dissolved and particulate organic carbon in Project reservoirs. These sources are highly seasonal and peak in their production of DOC in the summer, just prior to the time of releases from Project reservoirs in most years. Organic carbon release from peat soil also increases with temperature, which is highest in the summer. Ignoring this seasonal variation may lead to significant underestimates of DOC concentration in reservoir water at times of release.

- The three different organic carbon loading rates (at 1, 4, and 9 gm/m^2/month) analyzed in the Revised Draft EIR/EIS do not adequately represent the range presented in the water rights hearing. Potential loading rate could be much higher. For example, Contra Costa Water District (CCWD) Exhibit 10 in the water right hearing shows that the average rate of organic carbon release from the peat soil alone could be up to 13 gm/m^2/month. CUWA Exhibit 6 discusses that primary productivity of emergent plant communities could be up to 2,250 gm/m^2/year (or an "average" of 188 gm/m^2/month, if seasonal variation is ignored). Thus, the highest loading rate analyzed in the Revised Draft EIR/EIS, at of 9 gm/m^2/month, could significantly underestimate DOC loading on the reservoir islands.

- The Revised Draft EIR/EIS provides an incorrect evaluation of the organic carbon loading rates that could be deduced from the "SMARTS" experiments. It misinterprets the experiment set-up and conditions and underestimates the rate of organic carbon loading in two ways: **R4-8 cont'd**

    1. The estimates in the RDEIR/S are based on the assumption that organic carbon concentration in the tank water will cease to increase at the end of the experiment. This underestimates the rate of organic carbon loading in the experiments. For example, the Revised Draft EIR/EIS assumes that the total annual organic carbon load from the tanks in "SMARTS 1" would be the same as the load released in the 12-weeks duration of the experiment, in spite of the continuous increase in organic carbon concentration after the 12 weeks reported in a similar but of longer duration experiment "SMARTS 2".

    2. The RDEIR/S underestimates the rates of organic carbon load that could be estimated from "SMARTS 1". It ignores results from those tanks with higher rates, asserting that "... load estimates obtained from the flushing (flowing water) tanks are questionable" (page 4-18). The "SMARTS" results from the flowing tanks are more appropriate for use in the REIR/S. The equivalent range of monthly loads would be 17 – 37 gm/m^2/month. The largest rate assumed in the Revised Draft EIR/EIS of 9 gm/m^2/year is smaller than the range estimated from "SMARTS 1" by a factor of between 2 and 4.

Generally, Delta water has a TOC of greater than 4.0 mg/L in the winter and under the Stage 1 Rule, a 35 % TOC removal is required under these conditions. In the summer,

the TOC concentration is typically lower than 4.0 mg/L which reduces the TOC removal requirement to 25%. The DREIR/S states that Delta Wetlands Project operations would result in reservoir discharges typically in the months of July through September. Based on the proposed thresholds of significance, these discharges could increase the TOC of exported water by up to 0.8 mg/L without causing a "significant impact." Under these conditions, the TOC concentrations at the export locations would likely exceed 4.0 mg/L, thus, Delta Wetlands Project operations may increase the TOC removal requirement at the water treatment plant from 25 % to the more costly 35 %.

Approximately 30 mg/L of alum--with a sufficient amount of acid addition to lower the pH to 6.3--would be required to reliably remove 25 % of the TOC in Delta water. Whereas, 40 mg/L of alum at pH 5.5 would be needed to reliably achieve a 35% TOC removal. The additional treatment costs to meet these enhanced coagulation requirements in Delta water are $26.10/acre-ft and $39.15/acre-ft, depending on whether the influent TOC is less than or greater than 4.0 mg/L, respectively based on estimated cost of drinking water treatment provided by the Metropolitan Water District of Southern California. Additionally, whenever there is an increase in TOC, the disinfectant demand of the water increases. Thus, more chlorine or ozone is required to meet the disinfection requirements. The higher disinfectant dose results in both increased operating costs and higher DBP formation.

R4-8 cont'd

As stated above, the CEQA Guidelines require that the REIR/S include an evaluation of Project effects on DOC loading and the potential impacts on public health and water utility operations. We feel strongly that one of the objectives of thresholds of significance used to evaluate the impact of increased DOC loading should be to ensure, within a reasonable margin of error (in the Draft WQMP CUWA and Delta Wetlands are using ±5%), that Delta Wetlands Project operations do not cause TOC at the export pumps to exceed 4.0 mg/L. Such a restriction would be consistent with a fundamental principle of CEQA, which provides that Project impacts that substantially degrade water quality are potentially significant.[10] To be considered adequate under CEQA, the thresholds of significance used in the REIR/S must include reasonable controls on Project TOC contributions at the export locations as follows:

1. Delta Wetlands Project operations shall not cause TOC concentrations at the urban intakes to exceed 4.0 mg/L; and
2. Delta Wetlands Project operations shall not cause TOC concentrations at a water treatment plant to exceed 4.0 mg/L.

THM Impacts

The Project effects on TOC and bromide concentrations at the urban intakes could have significant adverse impacts on the 22 million people receiving their water from the Delta by increasing bromate, trihalomethanes, haloacetic acids, and other disinfection by-products produced during the water treatment process, resulting in an increased risk to

R4-9

[10] *See,* CEQA Guidelines Appendix G, Section VIII(f).

public health and increased cost of water utility operations. CEQA Guidelines subsection §15065(d) requires an EIR evaluate all aspects of a proposed project that may cause substantial adverse effects on human beings, either directly or indirectly.

CUWA does not agree with the changes made to the Malcolm-Pirnie equation for total trihalomethanes ("TTHMs") production in the Revised Draft EIR/EIS (Appendix G, pages G-16 to G-18). The original equation was developed based on rigorous scientific analysis, whereas no basis has been provided to justify the changes made to the equation for use in the RDEIR/S. No information is provided to support the assumption in the RDEIR/S that the "basic chemistry" requires that the TTHMs concentration would double if the bromide concentration is to increase from 0.05 mg/L to 1.00 mg/L.[11] In fact, the Malcolm-Pirnie equation, which was developed from actual data, suggests otherwise.

R4-9 cont'd

As the Malcolm-Pirnie equation (page G-17) illustrates, TTHM formation depends on a number of factors such as pH, chlorine dose, and temperature in addition to the concentrations of organic carbon and bromide. To properly identify the effects of bromide alone on a single plot of TTHM versus bromide, the values of each of the other factors have to be identical. It is not clear if the data used in Figure G-10 are all obtained under the assumed pH, temperature, dissolved organic carbon concentration, chlorine dosage and contact time. If not, the comparisons would be meaningless. The REIR/S must clearly disclose the actual values of these factors used in the analysis.

Because of the changes to the equations, the RDEIR/S may not adequately disclose potentially significant Project effects. The analysis must be revised and the proper formulae and analyses must be used to adequately disclose the Project effects.

Page 4-33 of the DREIR/S states the significance thresholds for THMs are set to be "more stringent than the adopted standards" and therefore exceed the expectations of

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[11] A high bromide concentration has two impaccts on TTHMs formation. Firstly, THMs-Br weigh more. Secondly, bromide, when oxidized by chlorine (HOCl) to hypobromous acid (HOBr), can result in the formation of more molecules of THMs than chlorine does. This second effect was not considered in the reasoning in the Revised Draft EIR/EIS.

Trussell and Umphres (in: "The Formation of Trihalomethanes", *Journal of American Water Works Association*, volume 70, part 11, p.604, November 1978) found that the mole-concentration of TTHMs produced per mole of TOC in water chlorinated was related to the ratio of the mole-concentration of bromide incorporated into TTHMs (THM-Br) and the moles of TOC present. They found that the concentration of bromide in the source water influenced the rate of the TTHM reaction as well as the TTHM yield. That is, the rate of TTHM formation was higher in water with a higher bromide concentration.

Amy and colleagues (in: Amy, Gary L.; Lo Tan; & Marshall K. Davis, "The Effects of Ozonation and Activated Carbon Adsorption on Trihalomethane Speciation", *Water Research*, volume 25, part 2, page 191, February 1991) found that HOCl functions as a more effective oxidant, whereas HOBr behaves as a more efficient halogen substitution agent. They performed THMFP tests and observed that, in general, less than 10% of the HOCl became incorporated into the TTHMs (THM-Cl), whereas as much as 50% or more of the bromide became incorporated into THM-Br. In addition, they found that as the concentration ratio of bromide to TOC increased, the percentage of other brominated disinfection by-products increased.

CEQA and NEPA.[12] CUWA does not agree that the significance thresholds for THMs are adequate to prevent substantial adverse effects on human beings, either directly or indirectly. To reliably ensure compliance with the current THM standard of 80 µg/L, drinking water utilities strive to consistently maintain TTHM concentrations of less than 64 µg/L in finished drinking water supplies.

To be considered adequate under CEQA, the thresholds of significance used in the REIR/S must include reasonable controls on Project impacts on THM formation at water treatment plants as follows: **R4-9 cont'd**

1. Delta Wetlands Project operations shall not cause or contribute to a predicted monthly average TTHM concentrations in drinking water in excess of 64 µg/L, as calculated in the raw water of an urban intake in the Delta; and
2. Delta Wetlands Project operations shall not cause or contribute to predicted monthly average TTHM concentrations in drinking water in excess of 64 µg/L, as calculated from measurements at the outlet of a water treatment plant.

Increase in Bromide Concentrations in the Delta and Resultant DBP Formation

The Project effects on bromide concentrations at the urban intakes could have significant adverse impacts on the 22 million people receiving their water from the Delta by increasing bromate, trihalomethanes, haloacetic acids, and other disinfection by-products produced during the water treatment process, resulting in an increased risk to public health and increased cost of water utility operations. CEQA Guidelines subsection §15065(d) requires an EIR evaluate all aspects of a proposed project that may cause substantial adverse effects on human beings, either directly or indirectly.

The lead agencies' work plan for the REIR/S directed Jones and Stokes and Associates (JSA) to use the Ozekin equation to model the impact of Delta Wetlands Projects operations on bromate formation. Yet, page 4-30 of the DREIR/S states that the potential effects of the Delta Wetlands Project operations on bromate concentration are not calculated because no reliable relationship between bromate and DOC or bromide could be identified. **R4-10**

The lead agencies requested the CUWA's assistance in identifying our member agencies' water treatment plants that receive Delta water, currently having monitoring programs for raw water (i.e., bromide, and total organic carbon (TOC)) and DBPs, and cover the range of currently used treatment processes. At the August 10, 1999 Delta Wetlands Project status meeting the State Board narrowed the scope of this request. At that meeting, CUWA was asked to provide water treatment plant operational data suitable to validate and calibrate the Malcolm Pirnie, Inc. (MPI) total THM (TTHM) formation equation and the Ozekin bromate formation equation for Delta waters. On August 25, 1999, CUWA

[12] For the DREIR/S analysis, the lower of two significance criteria controlled: (1) exceedances of 72 µg/L (90% of the current THM standard of 80 µg/L) or changes of greater than 16 µg/L (20% of 80 µg/L).

submitted a comprehensive response to the lead agencies' request for assistance in identifying and collecting available data pertaining to bromate formation at municipal treatment plants.

CUWA submitted information (three data files) to the lead agencies and Mr. Russ Brown of JSA that could be used to validate and calibrate the THM and bromate equations. The files contain data from the Metropolitan Water District of Southern California's (MWD) simulated distribution system testing that can be used to validate and calibrate the TTHM equation and ozone and bromate data from MWD's demonstration plant as well as Santa Clara Valley Water District's (SCVWD) pilot plant.

CUWA agrees with the statement on page G-19 that evaluation of the bromate formation data indicates that the Ozekin equation tends to over-predict bromate formation. This is why CUWA recommended that JSA use the MWD and SCVWD data to calculate a correction factor to address the tendency of this equation to over-predict bromate formation. This recommendation parallels the approach used by the U.S. Environmental Protection Agency (EPA) in its evaluation of the bromate formation data to generate information to be used by the FACA for considering lowering the bromate standard from 10 to 5 µg/L under Stage 2. Thus, EPA and the FACA have accepted that it is possible to correct the Ozekin equation to source water characteristics so to reliably predict bromate formation in support of a national rule making process. Consequently, we do not agree with the statement on page G-19 that "[b]ased on the lack of any observed relationship between bromate formation and Br or DOC concentrations in source water, it was determined that the impact analysis should ... not try to predict changes in bromate concentrations expected in drinking water treated by O3."

R4-10 cont'd

In light of the EPA's willingness to embrace the reliability of the Ozekin equation, as corrected against source water data, we find omission of the bromate formation analysis to be completely unacceptable and urge the lead agencies fully investigate the impact of Delta Wetlands Project operations on bromate concentrations in municipal water supplies treated with ozone.

A significant shortcoming in the DREIR/S is the omission of a threshold of significance thresholds for bromate. CUWA does not agree with the assumption that the significance criteria for bromide is sufficient to control impacts due to Delta Wetlands operations on bromate formation. To reliably ensure compliance with the current bromate standard of 10 µg/L, drinking water utilities strive to consistently maintain bromate concentrations of less than 8 µg/L in finished drinking water supplies.

As stated above, the CEQA Guidelines require that the REIR/S include an evaluation of Project effects on bromate formation and the potential impact on public health and water utility operations. Thus, to be considered adequate under CEQA, the thresholds of significance used in the REIR/S must include reasonable controls on Project impacts on THM and bromate formation at water treatment plants as follows:

1. Delta Wetlands Project operations shall not cause or contribute to predicted monthly average bromate concentrations in drinking water in excess of 80% of the adopted bromate standard (currently 8 μg/L), as calculated in the raw water of an urban intake in the Delta; and
2. Delta Wetlands Project operations shall not cause or contribute to predicted monthly average bromate concentrations in drinking water in excess of 80% of the adopted bromate standard (currently 8 μg/L), as calculated from measurements at the outlet of a water treatment plant.

R4-10 cont'd

Salinity Impacts

Total dissolved solids (TDS) and chloride concentrations are also of concern to the drinking water utilities. Under current Delta operating criteria, elevated TDS concentrations in the Delta result in the Central Valley Project (CVP) and State Water Project (SWP) having to release additional water from storage to comply with Delta water quality standards. TDS in Delta water would also have an adverse impact on water management programs of the CUWA agencies; most notably water recycling and groundwater storage programs. Collectively, CUWA members and their sub-agencies have invested over a billion dollars in capital facilities to maximize their water recycling and groundwater storage opportunities. The success of these water management programs is contingent upon the continued availability of acceptable quality water from the Delta.

R4-11

Local and regional water planning and regulatory decisions have been based upon SWP contract provisions which specifies a TDS objective of 220 mg/L on average for any ten-year period and 440 mg/L for any month. Over the last ten years, TDS concentrations of the SWP have frequently exceeded the 220 mg/L objective. CALFED has initiated a process to provide a rationale for establishing water quality targets and interim milestones for TDS in the Delta. CUWA's Board of Representatives recently adopted a salinity management policy to guide CUWA's participation in the CALFED Water Quality Program.[13] This policy is based on a study assessing the impacts of the salinity of Bay-Delta supplies on urban water agencies and their customers. A copy of CUWA's salinity impact study is included as an attachment hereto.[14]

CUWA is concerned that the model used for salinity simulation (DeltaSOQ) may not accurately predict salinity impacts on urban utilities. We recommend the salinity impact

[13] CALFED should provide for a level of salinity in water diverted from the Delta which supports CALFED recycling and conjunctive use goals in the most cost-effective manner; minimizes dry-year water demands on the Delta; and provides for blended drinking water TDS levels of no more than 500 mg/L. CALFED should adopt a short-term salinity target of 220 mg/L to be met at urban diversion points by the end of Stage 1 and a long-term salinity target of 150 mg/L to be met at urban diversion points by 2020. Alternatively, CALFED should achieve an equivalent level of salinity reduction within the urban agencies' service areas through a cost-effective combination of source control; blending with higher quality sources; treatment technologies; and improved state and federal operations.

[14] California Urban Water Agencies, "Recommended Salinity Targets and Program Actions for the CALFED Water Quality Program," December 1999.

modeling be revised as suggested in the comments submitted by Contra Costa Water District.

To be considered adequate under CEQA, the thresholds of significance used in the REIR/S must include reasonable controls on the Project to avoid salinity impacts caused by Delta Wetlands discharges from the reservoir islands: **R4-11 cont'd**

1. Delta Wetlands discharges shall not cause a monthly average increase in EC or chloride at a Delta export location in excess of 5%;
2. Delta Wetlands discharges shall not cause an increase in chloride at the export locations of greater than 10 mg/l; and
3. Delta Wetlands discharges shall not cause salinity levels at the export locations to exceed 90% of an adopted a salinity standard.

Cumulative Impacts

CEQA Guidelines subsection 15130(b)(1) provides that an EIR should include an evaluation of the cumulative effects of the proposed Project in conjunction with reasonably foreseeable projects that may result related or cumulative impacts, including projects outside the control of the agency. Thus, the REIR/S must include an evaluation of the cumulative effects of increased TOC, DBP and salt loading in drinking water supplies, including, but not limited to the following future projects: CALFED's plans for wetlands restoration in the Delta, Sacramento Regional County Sanitation District, City of West Sacramento, City of Tracy Wastewater Treatment Plant expansions, and the proposed Mountain House and Discovery Bay wastewater treatment plant discharges. **R4-12**

Mitigation

CEQA and NEPA require an EIR/EIS to propose adequate and practicable mitigation measures in sufficient details for all significant and potentially significant impacts. The proposed mitigation strategy presented in the DREIR/S calls for real-time monitoring of Delta Wetlands operations and imposition of operational constraints as necessary to prevent exceedances of the significance thresholds for the drinking water parameters of concern. Assuming the thresholds of significance are modified in accordance with the recommendations herein, the proposed mitigation strategy is consistent with that proposed in the WQMP for addressing short-term impacts due to Project operations. However, the lead agencies should also consider the need to mitigate long-term water quality impacts so to ensure that the Project effects on Delta water quality do not have an adverse impact on CALFED's goals and objectives for continuous improvement in Delta water quality for drinking water parameters of concern. **R4-13**

Conclusion

CUWA finds that the analysis contained in the DREIR/S is helpful in beginning to address some of the unresolved water quality issues. However, the discussion in Chapter 4 and Appendix G and the thresholds of significance used to support the analysis of the **R4-14**

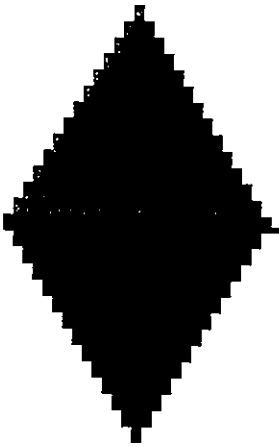
Project impacts fall short of the objectives set forth in the SWRCB's November 25, 1998 letter to the applicant outlining the need for further review of the water quality issues. Consequently, we recommend that the lead agencies revise Chapter 4 and Appendix G to address these comments and re-circulate the REIR/S among the interested parties for further review and comment. This will ensure that an adequate investigation of the potential Project effects on municipal water utilities and their customers has been conducted, and will lead to identification of reasonable mitigation of those impacts that are determined to be significant.

R4-14 cont'd

Thank you for the opportunity to comment on the DEIR/S. We look forward to working with the lead agencies and Delta Wetlands on the resolution of the issues identified herein.

Sincerely,

Lyle N. Hoag
Interim Executive Director



Recommended Salinity Targets and Program Actions

For the

CALFED

Water Quality Program

Prepared by

California Urban Water Agencies

December, 1999

California Urban Water Agencies

R4-1. The comment indicates that CUWA has been working with Delta Wetlands to prepare a WQMP that will "provide urban water utilities with the necessary assurances that the Delta Wetlands Project would be operated in a manner that will ensure the protection of public health and long-term integrity of drinking water supplies diverted from the Sacramento-San Joaquin Delta". In October 2000, Delta Wetlands submitted the final WQMP to the SWRCB as part of an agreement between Delta Wetlands and CUWA to resolve CUWA's concerns about project effects on water quality. The WQMP describes the measures that Delta Wetlands has agreed to implement to limit potential effects of the project on drinking water quality and treatment plant operations. By agreeing to implement the WQMP, Delta Wetlands has agreed to implement a comprehensive monitoring plan and restrict discharges when necessary to limit project effects on DOC, THMs, and other water quality variables. The Delta Wetlands–CUWA agreement is included in the Appendix to the Responses to Comments.

Responses to CUWA's specific comments on the 2000 REIR/EIS are provided below. See also responses to Comment Letter R11 from EBMUD regarding project effects on fisheries and levees.

R4-2. The commenter is correct in noting that the significance criteria used in the 2000 REIR/EIS analysis are identical to those used in the 1995 DEIR/EIS except that the THM criterion has been updated in response to changes in the federal Disinfection Byproducts Rule. (See Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", for a discussion of the new drinking water standards.)

The criteria used to determine the significance of effects of Delta Wetlands Project operations on water quality have been set to conform with the existing objectives and standards specified in the 1995 WQCP. For some Delta water quality variables, however, no regulatory objectives or numerical standards have been set. The selected significance threshold for these constituents is a percentage change from average measured values that encompasses natural variability. These significance thresholds exceed the expectations of CEQA and NEPA. See Master Response 6, "Significance Criteria Used for the Water Quality Impact Analysis", regarding the significance criteria used in the impact assessment; see response to Comment R2-3 for additional information about the significance criteria for export DOC. The following responses to comments discuss more specific objections to the significance criteria.

R4-3. The commenter seems to be confusing the analysis of simulated monthly project effects performed for the NEPA and CEQA impact assessment with the mitigation requirement that real-time monitoring occur during actual project operations and that diversions and discharges be adjusted as needed. The commenter is correct in stating that reliance on real-time monitoring to trigger adjustments to Delta Wetlands' operations would reduce the uncertainty associated with natural variability. However, in an impact analysis, it would be unreasonable to establish a significance threshold that does not allow for

project effects that fall within the natural variability of the constituents in question; doing so would make simulated effects attributed to the project indistinguishable from no-project conditions. See Master Response 6, "Significance Criteria Used for the Water Quality Impact Analysis", for a discussion of the significance criteria used in the 1995 DEIR/EIS and the 2000 REIR/EIS.

The Delta Wetlands Project WQMP includes screening criteria that allow smaller incremental changes in export water quality than the changes adopted as significance criteria in the 2000 REIR/EIS. These "Operational Screening Criteria" would be used to trigger changes in Delta Wetlands Project operations; the WQMP requires that Delta Wetlands conduct real-time monitoring to evaluate project effects against the criteria during project operations. Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", and response to Comment C9-17 describe the WQMP criteria in more detail.

R4-4. CUWA suggests that measurement and modeling uncertainty be designated as 5%, and that the significance criteria be designated as 5% of the standard or 5% of the mean value for parameters not currently regulated. There is no evidence to suggest that any change in water quality that is detectable (i.e., greater than the modeling uncertainty) constitutes a significant water quality impact. Also, changing the thresholds of significance as suggested by the commenter would not change the significance findings for most of the project effects evaluated in the NEPA and CEQA analysis. Increases in export DOC, treatment plant THMs, and salinity were already identified as significant impacts in the 2000 REIR/EIS analysis.

The significance criteria used in the EIR/EIS analysis are applied to *monthly* project operations. The Delta Wetlands Project generally would divert water for about 1 month each year and discharge for about 2 months each year. If the project were allowed a maximum monthly increase in export water quality of 20% of the applicable objective or mean value in each of these 3 months, the overall change in the annual average export water quality would be only one-fourth (i.e., 3/12) of the maximum allowed monthly change, or less than 5% of the applicable objective or mean value annually.

The Delta Wetlands Project WQMP, finalized in October 2000, uses many of the methods suggested by the commenter. The WQMP assumes a 5% uncertainty in measured or modeled TOC, THM, and bromate concentrations. The WQMP also requires that Delta Wetlands implement additional mitigation of long-term water quality impacts if project operations cause more than a 5% net increase in the TOC concentration in water diverted from the Delta for urban uses, averaged over 3 years. For more information, see Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", and the text of the WQMP, which is included in the Delta Wetlands–CUWA agreement in the Appendix to the Responses to Comments.

R4-5. As reported in Chapter 4 of the 2000 REIR/EIS (see Chapter 3C of Volume 1 of this FEIS), even without considering economic effects, the environmental impact of the Delta Wetlands Project on degradation of water quality is deemed significant, and mitigation has been proposed. See Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", for a discussion of the relationship between economic effects and environmental effects.

R4-6. See response to Comment R2-3.

R4-7. See Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", for a discussion of current and proposed drinking water standards and the analysis of project effects on DBPs. As noted by the commenter, plants that currently treat Delta water already must meet the 35% TOC removal requirement at times. The plants are able to employ this level of treatment, but refrain from doing so more often because of cost. Master Response 7 also discusses the issue of economic impacts on treatment plants that result from project operations. See also response to Comment R2-4 regarding CALFED's long-term goal for reducing TOC at the exports.

R4-8. The commenter argues that the 2000 REIR/EIS impact analysis did not analyze the full range of potential DOC loading rates that could occur on the reservoir islands and the corresponding increase in DBPs. The testimony and information referenced by the commenter were considered during preparation of the 2000 REIR/EIS. The testimony presented at the water right hearing in 1997 included very little data (i.e., actual measurements).

Responses to each bullet point in the comment are presented below.

Seasonal variations in DOC releases from peat soil and algae on the project islands were not ignored in the analysis. There are hypotheses about such variations; however, there are only very limited data that can be used to quantify the potential seasonal differences in loading rates for purposes of monthly impact analysis. Therefore, the analysis of potential project effects on DOC used constant monthly loading rates.

The 2000 REIR/EIS recognized that there is disagreement among experts about the amount of DOC loading to stored water that would occur under Delta Wetlands' proposed reservoir storage operations (see the section entitled "Areas of Known Controversy" on page ES-8 in the 2000 REIR/EIS [see also page S-8 of FEIS Volume 1]). Therefore, the mitigation recommended in the 1995 DEIR/EIS and 2000 REIR/EIS is designed to accommodate the uncertainty about the seasonal loading of DOC from the project islands; it consists of reducing and/or delaying project discharges to minimize effects on concentrations of export DOC. Thus, the mitigation is designed to be effective regardless of the actual increases in DOC concentrations observed under project implementation. The Delta Wetlands Project WQMP uses a similar method for mitigating project impacts on DOC. See Master

Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", for more information.

See response to Comment R2-12 regarding interpretation of the SMARTS experiments.

Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", discusses the TOC removal requirements and effects of the proposed project on treatment costs. Master Response 6, "Significance Criteria Used for the Water Quality Impact Analysis", describes the significance criteria used in the CEQA and NEPA impact analysis.

The Delta Wetlands Project WQMP incorporates the criteria recommended by the commenter as an operating condition of the project. For details, see Master Response 7 and the WQMP (included in the Delta Wetlands–CUWA agreement in the Appendix to the Responses to Comments).

R4-9. See Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", regarding the THM prediction methods used in the 2000 REIR/EIS. The Delta Wetlands Project WQMP includes the new Malcolm Pirnie equation as a prediction tool and incorporates the criteria recommended by the commenter as an operating condition of the project; for details, see Master Response 7 and the WQMP (included in the Delta Wetlands–CUWA agreement in the Appendix to the Responses to Comments).

R4-10. The contribution of Delta Wetlands Project operations to the formation of bromate at water treatment plants can be estimated from increases in bromide attributable to the project; changes in bromide concentrations can be calculated from changes in chloride concentrations reported in the 2000 REIR/EIS. See Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", for a discussion about evaluating project effects on bromate formation.

The Delta Wetlands Project WQMP includes many of the revisions suggested by the commenter. The WQMP identifies the Ozekin equation (with a 0.56 correction factor) as a prediction tool and includes a calculated bromate concentration of 8 Fg/l as a short-term screening criterion for Delta Wetlands operations. See Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", and the WQMP for details.

R4-11. See responses to Comment Letter C9, particularly Comments C9-1 and C9-17, from CCWD for more information about the assessment methods used to evaluate project effects on salinity, the effect of project operations on salinity, and the way in which implementing the FOC has reduced potential project effects on salinity.

The Delta Wetlands WQMP and the protest dismissal agreement between Delta Wetlands and CCWD incorporate some of the commenter's suggestions for operating rules to control

project effects on salinity. See response to Comment C9-17 and the Delta Wetlands–CCWD protest dismissal agreement, which is included in the Appendix to the Responses to Comments.

R4-12. See response to Comment C9-52 for a discussion of the cumulative impact analysis. See response to Comment R2-6 regarding the cumulative effects on water quality of increases in urban wastewater.

R4-13. The commenter states that the Delta Wetlands Project should also evaluate and mitigate long-term effects of project operations on water quality. The impact analyses presented in the 1995 DEIR/EIS and the 2000 REIR/EIS assumed that there would be no long-term impacts of the proposed project if the monthly impacts remain less than significant. As shown in the evaluations of project impacts on DOC presented in the 1995 DEIR/EIS and the 2000 REIR/EIS (see Chapter 3C of Volume 1 of this FEIS), salinity and DOC concentrations at the export locations under project operations may be higher or lower in any given month than concentrations under no-project conditions. These changes sometimes exceed significance thresholds, which are applied to monthly changes rather than annual or long-term averages; therefore, impacts on these variables were identified as significant and mitigation was recommended. For purposes of impact analysis, the reduction of monthly water quality impacts to a less-than-significant level is assumed to be sufficient to also reduce any long-term impacts to a less-than-significant level.

The WQMP negotiated by Delta Wetlands and CUWA includes specified monitoring, modeling, and operational controls that would protect drinking water quality as well as or better than the mitigation measures in the NEPA and CEQA analysis. The WQMP also requires that Delta Wetlands implement additional mitigation of long-term water quality impacts if project operations cause more than a 5% net increase in TOC, TDS, bromide, and chloride in water diverted from the Delta for urban uses, averaged over 3 years.

R4-14. The requirements for recirculation of a NEPA and CEQA document were described in Chapter 1 of the 2000 REIR/EIS. These requirements state, "Recirculation is not required where the new information added to the EIR merely clarifies or amplifies or makes insignificant modifications in an adequate EIR" (State CEQA Guidelines Section 15088.5). The revisions to the water quality analysis requested by the commenter merely clarify the information already presented. The impacts of the proposed project on water quality were considered significant and mitigation was recommended. The WQMP and protest dismissal agreements included in the Appendix to the Responses to Comments add specificity to the mitigation that was proposed in the NEPA and CEQA documentation already completed for the project. Therefore, the lead agencies need not recirculate the 2000 REIR/EIS.

California WATERFOWL

Conserving California's waterfowl, wetlands, and waterfowling heritage.

July 26, 2000

Mr. Jim Sutton
State Water Resources Control Board
Division of Water rights
P.O. Box 2000
Sacramento, CA 95812-2000

Mr. Mike Finan
Regulatory Branch
U.S. Army Corps of Engineers, Sacramento District
1325 J Street, Room 1480
Sacramento, CA 95814-2922

Re: Draft EIR/EIS – Delta Wetlands

Gentlemen:

The California Waterfowl Association (CWA) is pleased to submit brief comments on May 2000 Revised Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Delta Wetlands Project.

CWA, organized in 1945, is an 14,000 member conservation organization dedicated to the preservation, enhancement and restoration of California's waterfowl and wetlands. We have active programs in the areas of education, outreach, research and government affairs.

The California Waterfowl Association has been following the progress of this project for over a decade, and has been enthusiastically supportive of the project's benefits for wetland-dependent wildlife species for a very long time. Although our organization focuses on the wetland aspects of our environment, we are sensitive to the needs of fish and recognize that sometimes there are conflicts between what is good for wetland species and what is good for their neighbors in the aquatic environment. We are pleased that Delta Wetlands and the resource agencies have developed satisfactory biological opinions and that the project now is fish-friendly as well as wildlife-friendly. **R5-1**

We believe that the Revised Draft Environmental Impact Report/Environmental Impact Statement is extremely thorough and even conservative in its analysis. We

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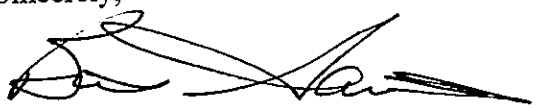
hope that the appropriate decision-makers move quickly to approve this project so that its many fish and wildlife benefits may begin to accrue to the species of concern.

R5-1 cont'd

Thank you for the opportunity to submit these comments.

Sincerely,



Bill Gaines, Director
Government Affairs

cc: Mike Spear
Lester Snow
Steve Ritchie
Bob Hight
Tom Hannigan
John Winther
CVHJV Management Board
Bob McLandress
Dick Daniel

California Waterfowl Association

R5-1. The lead agencies acknowledge this comment supporting the fish and wildlife benefits of the proposed project.

Letter R6

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July 27, 2000

State Water Resources Control Board
Division of Water Rights
Attn: Jim Sutton
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Sacramento, CA 95812-2000

U.S. Army Corps of Engineers, Sacramento District
Regulatory Branch
Attn: Mike Finan
1325 J Street, Room 1480
Sacramento, CA 95814-2922

Re: Revised Draft Environmental Impact Report/Environmental Impact Statement and Executive summary for the Delta Wetlands Project

Dear Ladies and Gentlemen:

The following comments are submitted on behalf of the parties represented by our firm who have appeared in the subject SWRCB proceedings. The parties have collectively sometimes been referred to as the Central Delta Parties.

Salinity

The RDEIR fails to recognize the significance of resulting increases in salinity to the Delta agricultural diverters. The RDEIR uses an artificial construct of significance and then attempts to justify it by arguing that CEQA/NEPA significance criteria is different than mitigation requirements otherwise applicable under law. (See ES-9). Significance should be related to potential adverse impact. Water quality objectives for agricultural use in the interior Delta are based on a maximum 14-day running average which except for dry year relaxations are set at .45 EC (mmhos/cm). A comparison of Table 4-11 Simulated No-Project Export with Table 4-18 Difference in Export EC Between Proposed Project and Simulated No-Project shows that particularly for the months of June and July there are numerous years when the salinity will be significantly increased. By way of example, in a year like 1995, export salinity in June would be increased from .449 EC to .497 and in July would be increased from .623 to .675. For agriculture in the interior Delta where groundwater tables are high and in effect the crops are sub- **R6-1**

irrigated, the need for artificial leaching will increase. The increases in salinity at the export pumps can be expected to be much less than those in the vicinity of the discharges from the proposed reservoirs and therefore the impact to irrigators in the vicinity of the discharge much greater. The water quality objectives have been set at specific locations based on anticipated operation of the Delta which did not include a major new source of saline water discharging into the interior channels of the Delta. The RDEIR does not adequately address the impacts due to increased salinity. Given the non-degradation policy of the SWRCB and the well recognized adverse consequences of increased salinity on agricultural, urban and industrial uses there is no valid basis to support a determination of no significance. The water quality objectives are set as maximums and any natural variability is expected to occur below such maximum levels. **R6-1 cont'd**

Temperature

The RDEIR has eliminated the temperature mitigation included in the DEIR presumably on the basis that the Amended DFG Biological Opinion incorporated more protective requirements. The Amended DFG Biological Opinion reflects a substantial reduction or retreat from the temperature requirements advocated by DFG in their direct and rebuttal testimony. (See DFG Exhibits 7 and 19). The RDEIR does not include any analysis or new evidence supporting the deletion of the DEIR mitigation. Additionally, with the reduced temperature protection it would appear that the project would not conform to the temperature requirements in the applicable Water Quality Control Plans. See particularly pages 2 and 3 of DFG Exhibit 19. **R6-2**

Levee Design and Stability and Seepage Control Measures

Attached hereto please find May 26, 2000, comments from Christopher H. Neudeck of Kjeldsen, Sinnock & Neudeck, Inc. which are incorporated herein as our comments to the levee and seepage portions of the RDEIR.

Water Supply and Operations

The RDEIR analysis ignores the economic constraints of potential purchasers of DWP water, particularly agricultural purchasers and ignores the clear testimony by urban water agencies that they would not purchase or use such water because of its poor quality. Given the clear and uncontroverted evidence in the hearing record the RDEIR should include some analysis of the marketability of the water. The assumption that all available capacity in the CVP and SWP export systems is available to the DWP is unrealistic. To the extent that DWP water is exported through SWP or CVP facilities the water rights would be junior to future uses in the areas of origin (see particularly WC 11460) and therefore the yield will substantially diminish with the passage of time. All new storage projects and re-operation of existing projects in the Sacramento-San Joaquin River Watersheds will to some extent be competing for the same "surplus" flows. The RDEIR fails to adequately consider such factors. **R6-3**

Impacts From Use of DWP Water

The RDEIR makes assumptions that the DWP water will be exported for use but fails to include any analysis of the impacts associated with such use. A range of potential impacts including particularly the potential impact to San Joaquin River Quality and San Joaquin Valley Salt Balance should be included. The impacts associated with an increase in export water salinity as well as the delivery of additional quantities of water to the west side of the San Joaquin Valley should be considered. **R6-4**

Yours very truly,

DANTE JOHN NOMELLINI

DJN:ju
Enclosures
cc: See attached mailing list

CALVA

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1084-001

May 26, 2000

Mr. Dante J. Nomellini
Central Delta Water Agency
Post Office Box 1461
Stockton, CA 95201

Re: Delta Wetlands Project
Levee Stability and Seepage Analysis report by
URS Griener Woodward Clyde (URSGWC)

Dear Dan:

On behalf of the Central Delta Water Agency, Fred Brovold and I have reviewed the subject URS Griener Woodward Clyde (URSGWC) Report and submit the following comments:

The report did not assess the most severe conditions that may be encountered on this project nor did it analyze the areas with the most challenging soil conditions. A levee system is only as good as its weakest link. It is customary to evaluate the extremes and design accordingly when looking at a flood control levee. The report must address both extreme flood and seismic conditions and the areas with the most critical soil conditions and report the results accordingly. **R6-5**

The report states that the interceptor wells generally appear to mitigate seepage problems provided they are properly designed and constructed and most of all properly maintained. The cost to operate and maintain these wells will be a high cost that must be taken into account when evaluating the potential success of this project. **R6-6**

The proposed significance standards should be considered as preliminary and be subject to review and modification based on observed seepage conditions. We concur that the baseline measurement period should be longer than one year and at least three years. **R6-7**

The report provides values for wave run-up and reservoir setup but does not provide the calculated wave height values. We recommend the wave heights be calculated and the levee freeboard be evaluated. **R6-8**

We recommend performing additional sensitivity analyses for the seepage condition related to the location of the borrow pits. The borrow pit excavation will potentially remove horizontally bedded, lower hydraulic conductivity layers, and provide direct seepage paths into higher hydraulic conductivity horizontal layers. **R6-9**

The water surface elevations for the 100 - year floodplain were not considered in the levee stability analysis. It is important that the analysis address the most critical case rather than only what is considered representatively critical.

In addition to analyzing the 100-year flood plain the report should analyze the additional stage that can occur over that of the 100 flood plain which results from wind waves generated over areas with a long fetch. We have included an excerpt from a hydrology report prepared by the US Army Corps of Engineers in February of 1992, reporting the 50, 100 and 300-year flood elevations in the Delta. The purpose of the excerpt is to demonstrate that the stage frequency flood data presented in the USACOE's report are for static water conditions only, and they do not take into account wave action from wind and other sources. The attached stage data showing wind wave heights must be added to the 100-year flood plain elevation and then the levee stability analyzed accordingly. **R6-10**

The sections chosen for stability analysis on Webb Tract are not the most critical. Webb Tract's levee station 160+00 is OK, whereas levee station 630+00 is not the most critical. Sections that should be included on Webb Tract include sections between levee station 475+00 to 525+00 and levee station 410+00 to 430+00. The sections chosen for stability analysis on Bacon Island are not the most critical whereas levee station 300+00 should be included. Soil conditions and historical performance support the need for analysis of conditions at these additional sections. **R6-11**

The Factors of Safety (FOS's) for the levee waterside slopes are not acceptable. The project needs to consider its options to reduce the driving forces causing the instability on the waterside by designing setbacks and/or benching the existing waterside slopes versus the proposed impracticable waterside buttressing and/or flattening of slopes. The range of FOS's calculated for the existing condition on the waterside slope of the levee appear to be about two tenths higher than we expect from our experience in the Delta. A range of 1.3 to 1.5 is reported for the existing conditions on the waterside slope; we think a range of 1.1 to 1.3 is more typical for the waterside slope. We believe that these slightly higher FOS's result from the type of laboratory testing that was used to develop the total stress strength parameters. The report should discuss the suitability of the testing methods for the soil layers used in the stability analysis model. **R6-12**

The report should provide a more detailed description and discussion of the liquefaction evaluation. It is generally well known that the Delta area has extensive shallow deposits of potentially liquefiable Holocene sands, silty sands and sandy silts. The report should clearly show the post earthquake configuration of the critical levee section and demonstrate that an effective levee section remains after the design earthquake. The report currently estimates deformations in the range of 2-4 feet, but does not demonstrate where that deformation occurs. **R6-13**

Both of the project islands are partly bordered by rivers that have geologically old alignments and locations. Webb Tract is bordered by the San Joaquin River to the north and False River to the south; Bacon Island is bordered by Old River to the west and Middle River to the east. Extensive Holocene sand deposits are often found beneath and adjacent to these ancient

river locations. The report should address the potential effects of these sand deposits together with the potential for earthquake induced lateral spreading. R6-13 cont'd

The report uses effective stress strength parameters for the peat and organic soils to calculate long-term levee stability. We recommend that the report also use undrained strength analysis parameters for the peat and organic soils to calculate long term stability because the effective stress strength parameters may not account for pore pressure increases that occur during shearing which result in unconservatively higher FOS's. R6-14

The levee break analysis should be re-done to better show the progression of a levee break. Levee breaks typically start with a fairly narrow width then eroding substantially into a much wider opening. At the narrower stages of a break there is a much greater focus of erosive energy directed on the opposite levee. Observations of past levee breaks in the Delta area show that the hydraulic erosion extends over 1,000 feet landward and 600 to 1,000 feet wide and develops scour holes down to the depths of the geologically older Pleistocene soils which may occur between depths of 40 to 80 feet deep. Riprap alone will not withstand the maximum flow rates expected from a levee failure from a full reservoir island. The report must better address the mitigation measures to avoid the impacts of this extreme erosive force R6-15

Groundwater on the project islands varies 3-5 feet below the surface. The report indicates that borrow operations are intended to go down 9 feet. The dewatering techniques necessary to borrow to that depth have not been addressed in this report.

The report is not clear as to whether the calculated quantities for borrow are based on the neat quantities required to fill between the lines and grades of the design and the finished section or whether it includes factors for shrinkage, settlement and subsidence. It must be anticipated at a minimum, that the fill requirements for this job will be on the order of 60% to 200% + in excess of calculated neat yardage to take into account shrinkage, settlement and subsidence. We looked at one of the design sections and projected the neat fill requirements for Webb Tract based off that section. We recognize the nature of this gross estimation, nevertheless the results of that estimate was 4.0 million cubic yards, which confirms the report was based on neat yardage rather than the actual yardage required by taking into account the shrinkage, settlement and subsidence. If this gross estimate is correct then the report needs to re-evaluate its quantity requirements and take into account the required variance over the neat yardage calculation. R6-16

The report states in the summary of slope stability analysis that the design is inadequate in meeting the criteria set forth by the USACOE and DSOD. The project must not be approved or allowed to move forward unless it is demonstrated that these design criteria can be met and a stable levee will be constructed. R6-17

The recommended stage construction is to extend construction over 4-6-year period. This report should address the techniques and procedures which will be employed to monitor and control the filling so as to not overstress and possibly fail the levees. R6-18

The fact that the report has not addressed the most critical levee sections and the fact that the Federal and State FOS's required for this type of construction are not met requires that the project reconsider its design and resubmit for review.

If you have any question regarding the enclosed comments please call me

Sincerely,

KJELDSEN, SINNOCK & NEUDECK, INC.

Christopher H. Neudeck

CHN/ls
Encl.

OFFICE REPORT

FEBRUARY 1992

SACRAMENTO-SAN JOAQUIN DELTA CALIFORNIA

SPECIAL STUDY

HYDROLOGY

US Army Corps
of Engineers
Sacramento District

failures. The curves were smoothed to remove any localized effects of a levee failure.

3. The maximum elevation on a stage-frequency curve does not exceed the height of the levee crowns at that location. The curves are drawn solid up to the 100-year level. This reflects the reliability of the gaged data. Above the 100-year elevation, the stage-frequency curves are dashed. The curves are dashed above the 100-year level due to the many uncertainties that can occur at the higher frequencies. No stations have a period of record long enough to have actual data that would have a plotting position rarer than the 100-year event. Therefore, in order to estimate elevations of frequencies greater than the 100-year, the curves are extrapolated based on judgement and the shape of the curve below the 100-year. The height of the adjacent levee crown is also taken into account. The stage-frequency curves do not exceed the height of the adjacent levee crown.

C. Results - The 50- and 100-year higher-high stages at the 24 stations used in the analysis are shown in Table 6. In an attempt to determine the conditions that would cause a 100-year flood stage, or any other high flood stage, historical events were examined to establish the influence of wind, flood inflow, tidal cycle and barometric pressure on Delta stages. It was concluded that many combinations of these parameters could be possible, each with a varying degree of probability, and that predicting the factors which cause a particular high stage, or the effect of changes in one or more parameters, would be quite difficult.

When the stage-frequency data in this memorandum are used, it must be understood that:

1. For any particular frequency, the stage shown on the stage-frequency curve is valid only for that station. A stage created by any combination of high flows, tide, extreme barometric pressure, and winds could give a 100-year stage at one station and something of greater or lesser frequency at neighboring stations.

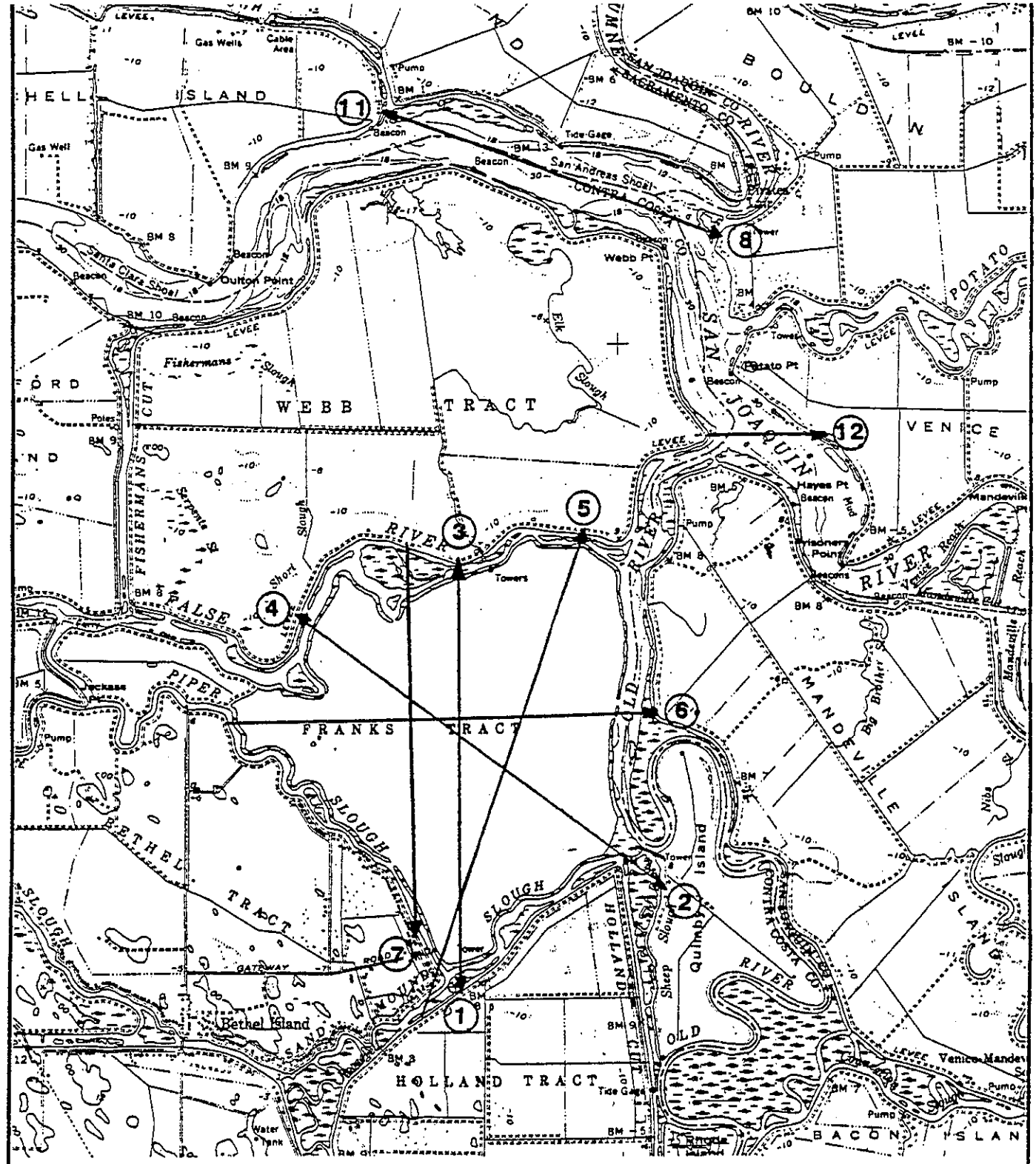
2. A maximum water-surface elevation plot developed for a particular frequency by straight-line connection of elevations from a series of stage-frequency curves will give an elevation higher, at some locations along the reach, than a historical event of corresponding frequency. This is due to the variation in width, depth and bottom slope of Delta channels. However, the error resulting from straight line elevations is less than 0.3 foot.

3. The stage data presented are for static water conditions. Wave action from wind, boats or other sources must be added to any stage data being analyzed. Wind set and any other hydrologic action that increases stages are reflected in the static stage data.

1. Sacramento River at Rio Vista - The stage recording gage for the Sacramento

TABLE 7
WIND-WAVE CALCULATIONS

Location	Levee Slope	Wind Direction	Design Windspeed (mph)	Wind Duration (min)	Design Wave (ft)	Wind Set (ft)	Wave Runup (ft)	Water Depth (ft)	Fetch Length (ft)
Holland Tract Location 1	1:2	North	35	45	2.5	.17	4.96	15	15,850
	1:3	North	35	45	2.5	.17	3.46	15	15,850
Quimby Tract Location 2	1:2	Northwest	29	51	2.1	.13	4.15	15	16,900
	1:3	Northwest	29	51	2.1	.13	2.89	15	16,900
Webb Tract Location 3	1:2	South	27	50	1.9	.10	3.70	15	15,850
	1:3	South	27	50	1.8	.10	2.56	15	15,850
Webb Tract Location 4	1:2	Southeast	35	47	2.3	.19	4.57	15	16,900
	1:3	Southeast	35	47	2.3	.19	3.30	15	16,900
Webb Tract Location 5	1:2	Southwest	23	60	1.7	.09	3.32	15	18,500
	1:3	Southwest	23	60	1.7	.09	2.30	15	18,500
Webb Tract Location 6	1:2	West	28	50	2.0	.11	3.89	15	16,150
	1:3	West	28	50	2.0	.11	2.70	15	16,150
Bethel Island Location 7	1:2	North	36	42	2.5	.17	4.90	15	14,600
	1:3	North	36	42	2.5	.17	3.41	15	14,600
Bouldin Island Location 8	1:2	Northwest	30	43	2.0	.11	3.84	15	13,500
	1:3	Northwest	30	43	2.0	.11	2.65	15	13,500
Sherman Island Location 9	1:2	Northwest	30	59	2.1	.17	4.20	15	21,350
	1:3	Northwest	30	59	2.1	.17	3.05	15	21,350
Jersey Island Location 10	1:2	West	27	76	2.1	.18	4.67	15	28,100
	1:3	West	27	76	2.1	.18	3.84	15	28,100
Twitchell Island Location 11	1:2	Southeast	36	39	2.4	.16	4.71	15	13,500
	1:3	Southeast	36	39	2.4	.16	3.26	15	13,500
Venice Island Location 12	1:2	West	29	22	1.2	.04	2.28	15	5,200
	1:3	West	29	22	1.2	.04	1.50	15	5,200



SACRAMENTO - SAN JOAQUIN DELTA

WAVE RUNUP LOCATIONS AND FETCH DIAGRAM

CORPS OF ENGINEERS. SACRAMENTO. CALIFORNIA

Prepared: J.H.
Drawn: J.H.

Date: February 1992

SHEET 1 OF 2 CHART 26

Central Delta Water Agency et al. (Nomellini, Grilli & McDaniel)

R6-1. The commenter states that the salinity evaluation in the 2000 REIR/EIS does not adequately address the impacts of increased salinity on central Delta agricultural diverters. Salinity control for agricultural purposes is recognized as an important issue for beneficial water use in the Delta. The 2000 REIR/EIS evaluated the effects of Delta Wetlands Project operations on EC at the agricultural salinity monitoring compliance stations (i.e., Jersey Point and Emmaton). These stations have well-established salinity objectives that would not be violated as a consequence of Delta Wetlands Project operations.

The greatest potential effect on central Delta salinity may occur during periods of Delta Wetlands discharge for export, when water released from the Delta Wetlands reservoir islands mixes with central Delta channel water. The commenter identifies the minimum 14-day average EC objective for the interior Delta as 450 microsiemens per centimeter (FS/cm) and states that there are months when Delta Wetlands discharges would result in an exceedance of the standard. However, because of the recognized influence of the San Joaquin River inflow, the 1995 WQCP sets southern Delta EC objectives at 700 FS/cm during the irrigation season of April–August. These water quality objectives would not be violated as a result of Delta Wetlands operations.

Additionally, the simulated EC values for water diverted onto the Delta Wetlands reservoir islands were assumed to be equal to the previous month's EC value in the south Delta channels (i.e., export EC value). This is a very conservative approach, which results in EC values simulated for the reservoirs that are higher than expected. The flow conditions that would allow Delta Wetlands to divert would also substantially reduce the salinity of the diverted water. The actual effects of Delta Wetlands operations on central Delta salinity would likely be less than indicated in Table 4-18 of the 2000 REIR/EIS (Table 3C-26 in Chapter 3C of FEIS Volume1).

The Delta Wetlands Project WQMP places additional limits on the salinity effect of Delta Wetlands operations. The chloride limit of 10 mg/l adopted in the WQMP is equivalent to about 50 FS/cm EC when the ratio of chloride to EC is about 0.2 (see Figures C1-17, C1-19, and C1-21 in Appendix C1 in the 1995 DEIR/EIS). Delta Wetlands operations would not be allowed to cause salinity to increase above 90% of any applicable standards. In combination, these criteria would provide adequate protection of central Delta salinity for agricultural beneficial uses.

R6-2. Mitigation Measure F-2 in the 1995 DEIR/EIS was recommended to reduce Impact F-2, "Increase in Temperature-Related Mortality of Juvenile Chinook Salmon", to a less-than-significant level. During the federal and California ESA consultation process, which took place after the 1995 DEIR/EIS was published, DFG, NMFS, and USFWS developed the water temperature mitigation terms that are included in the FOC. Incorporating the temperature term from the FOC into the proposed project reduces the potential temperature-related effects of the project on juvenile chinook salmon to a less-than-significant level. Therefore, no additional measures are required to mitigate project effects.

Additionally, the NMFS biological opinion for project effects on winter-run chinook salmon requires Delta Wetlands to monitor and report daily receiving water temperature and DO conditions and any changes to those conditions that result from Delta Wetlands discharges. NMFS will use the information to determine whether the Delta Wetlands Project is affecting winter-run chinook salmon, spring-run chinook salmon, and steelhead to an extent not previously considered.

The SWRCB will determine appropriate temperature requirements.

R6-3. An economic analysis of the marketability of Delta Wetlands Project water is not necessary for the full disclosure of environmental impacts and is not required by CEQA or NEPA. It would be improper to speculate on the potential effect that Water Code Section 11460 et seq. may have on water availability with the passage of time. The assumptions used in the analysis present a "worst-case" scenario and therefore are appropriate for purposes of NEPA and CEQA compliance.

R6-4. See Master Response 3, "Areas of End Use and Potential Growth-Inducement Effects of Delta Wetlands Water Deliveries".

R6-5. See Master Response 8, "Levee Stability Analysis and Worst-Case Conditions".

R6-6. There is no requirement that the NEPA and CEQA analysis examine the costs associated with operation of the interceptor well system; Delta Wetlands would be responsible for funding all terms and conditions and mitigation measures adopted as part of any permits issued by USACE and the SWRCB.

R6-7. See response to Comment C17-4 regarding modifications to the proposed seepage performance standards. See response to Comment R10-16 regarding the period for baseline groundwater measurement.

R6-8. The analyses of wave height presented in Appendix H of the 2000 REIR/EIS included an estimate of wave height, reservoir setup, and wave runup characteristics based on design wind velocities and reservoir fetch and levee geometry.

Design wind velocity data were obtained from the generalized wind charts of "fastest mile of record" published by USACE (U.S. Army Corps of Engineers 1976). These data indicate that the estimated fastest-mile-of-record wind velocities over land at elevation 25 feet for winter, spring, summer, and fall are 58, 52, 40, and 60 miles per hour, respectively. The fastest-mile-of-record wind velocities were adjusted for duration-dependent average wind velocities using the procedures described in USACE's Shore Protection Manual (U.S. Army Corps of Engineers 1984). For example, the 40-minute-duration average wind velocities were estimated to be 47, 43, 34, and 49 miles per hour during winter, spring, summer, and fall, respectively. The estimated wave characteristics for the most severe wind conditions during fall are summarized in the following table.

Reservoir Name	Fetch Length (miles)	Wave Height (feet)	Reservoir Setup (feet)	Wave Runup Without Riprap (feet)	Wave Runup With Riprap[1] (feet)
Bacon Island	3.15	4.7	0.38	4.0 (5H:1V) 6.4 (3H:1V)	2.2 (5H:1V) 3.5 (3H:1V)
Webb Tract	2.83	4.4	0.34	3.8 (5H:1V) 6.1 (3H:1V)	2.1 (5H:1V) 3.4 (3H:1V)

[1] If riprap is used on the bank slopes, the runup would be reduced to 55% of the estimated runup values.

The values presented above would be considered when determining appropriate freeboard during final design. As described in the 1995 DEIR/EIS and 2000 REIR/EIS (see Chapter 3D of Volume 1 of this FEIS), Delta Wetlands would construct levees to meet or exceed DWR's Bulletin 192-82 standards, which require a freeboard of 1.5 feet above 300-year flood stage in the adjacent channel. The preliminary design for the Delta Wetlands reservoir islands shows levees built to approximately +9 feet elevation, resulting in a 3-foot freeboard on the interior of the islands under maximum reservoir storage conditions. Based on the analysis presented above, Delta Wetlands may construct a levee that would have a gentler interior slope (i.e., 5H:1V) and would be reinforced with riprap for erosion protection in areas subject to long fetch and high wave action. The proposed interior 3-foot freeboard on a riprapped 5:1 slope would be adequate to prevent overtopping from wave runup and reservoir setup even under the most severe wind conditions.

R6-9. Appendix H of the 2000 REIR/EIS presents an analysis of the effects that excavating borrow pits would have on seepage. The analysis modeled the borrow pit as exposing the sand aquifer. A sensitivity analysis was completed by analyzing the effects of a borrow pit at a range of distances from the levee. This method was used to estimate the minimum distance to the levee beyond which no change in the rate of seepage to neighboring islands was observed. No additional sensitivity analysis is needed.

In the sensitivity analysis described in Appendix H of the 2000 REIR/EIS, no change to seepage conditions was observed when the borrow pit was simulated at 400 feet from the levee. Because of uncertainties about the exact shape of the aquifer body in the subsurface and the exact rate at which it transmits groundwater, an 800-foot setback distance between the borrow pit and the project levees was recommended. This is a conservative approach. A setback distance greater than about 800 feet from the levee toe should ensure that there is no noticeable effect on seepage in the channel and on neighboring islands.

R6-10. The water surface elevations for the 100-year flood stage were taken into consideration during the levee analysis. The 100-year flood stage in Delta channels adjacent to the reservoir islands was estimated to be approximately elevation 7.2 feet. However, the purpose of the levee stability analysis is to provide a reasonably conservative analysis of conditions that would affect levee stability. Typically, the flood stage condition of 7.2 feet is a short-term condition. Gage recordings and historical data confirm that the maximum

peak flood occurs for a short period of time (i.e., hours). The 7.2-foot flood stage condition does not last long enough to establish the subsurface conditions that affect levee stability in the long term. Thus, the 7.2-foot flood stage condition does not represent the steady-state condition. The flood-stage level of 6.0 feet was used instead in the levee stability analyses to avoid excessive cumulative conservatism.

The flood-stage elevation and wind-generated wave conditions described by the commenter contribute to the design of an appropriate channel-side freeboard to prevent overtopping during storm events. Because these factors are of short duration and do not affect the long-term condition of levee stability, they need not be factored into the levee stability analysis.

R6-11. See Master Response 8, "Levee Stability Analysis and Worst-Case Conditions".

R6-12. The mitigation measure on page 6-21 in Chapter 6 of the 2000 REIR/EIS (page 3D-40 in Chapter 3D of FEIS Volume 1) requires that Delta Wetlands adopt a final levee design that achieves a recommended FS of 1.3 and reduces the risk of levee failure on the water-side slopes. The measure does not limit the options available to Delta Wetlands during final design to meet the recommended FS. Appendix H of the 2000 REIR/EIS recommends buttressing of water-side slopes or flattening of land-side slopes as practical options to achieve the recommended FS; additional options were presented at the water right hearing in October 2000. As shown in Figure R6-1 which follows this response, these options include:

- reducing the channel-side slope;
- constructing a rock buttress in the channel at the levee toe;
- widening the levee crest so that even if a portion of the levee should fail and slump off, the remaining crest will be wide enough to provide a capable levee until repairs can be made; and
- widening the levee crest with "notching" of the levee on the channel side (i.e., lowering the channel side of the levee crest to reduce the weight supported by the lower channel-side slope), thereby reducing the diving forces for channel-side failure.

The commenter questions the accuracy of the calculated range of FSs for existing conditions. The FSs for existing conditions on the water-side slope were calculated based on the geometry and soil conditions of the cross sections used in the analysis, which were selected to be representative of typical conditions for the reservoir islands. See Master Response 8, "Levee Stability Analysis and Worst-Case Conditions".

Soil shear strength parameters used in the levee stability analyses were derived from a combination of sources. These include:

- # strength tests on soils in the area by HLA;

- # published correlations between the index properties of soils (e.g., water content, density, grain size, plasticity), their resistance to penetration by drilling, and their shear strength; and

- # published and unpublished results of various laboratory tests.

Shear strength parameters for sandy soils were based on a combination of published experimental data on the relationship between shear strength and penetration resistance (based on field measurements), professional judgment, and experience with similar materials.

Shear strength parameters for peat were estimated using:

- # the results of HLA's strength tests on peat in the area;

- # published data on similar materials; and

- # unpublished research data from the University of California, Davis.

R6-13. See responses to Comments R2-25, R2-26, and R2-27 regarding the seismic stability analysis and potential for liquefaction.

R6-14. Undrained strengths were used to assess the FS for the "end-of-construction" condition, which represents the condition of the levee immediately after improvements have been constructed in a single stage. The end-of-construction analyses assumed single-stage construction for two reasons:

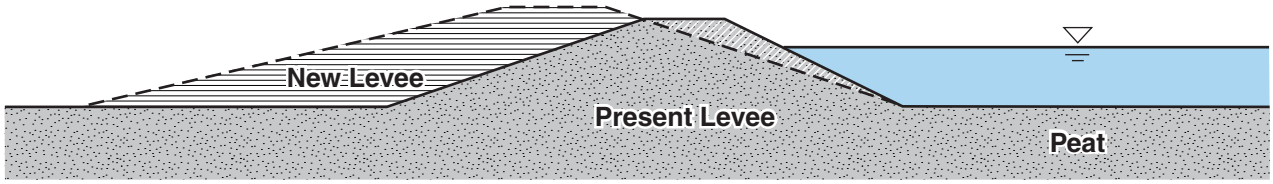
- # Single-stage construction is a potential worst-case condition.

- # Using this assumption was a conservative way of modeling the conditions that would result from multiple-stage construction if there were too little time between stages for the soil to gain an appreciable amount of strength.

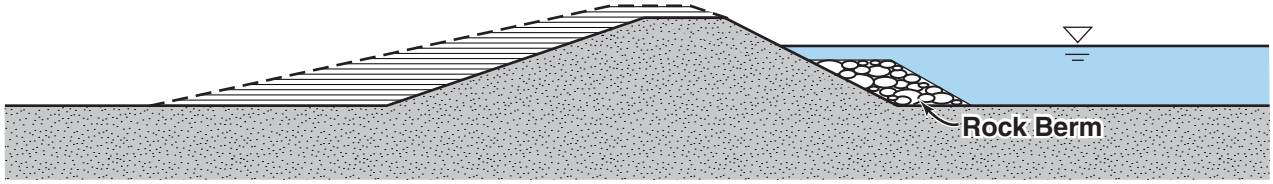
Undrained strength will increase as the compressible materials, including the peat foundation materials, consolidate. Consolidation of these foundation materials, which are weak initially, results in considerably higher FSs than those reported for the end-of-construction condition. The analyses showed that complete consolidation under staged construction would likely occur in approximately 1 year. Once the compressible materials completely consolidate, FSs are typically assessed using drained strengths. Therefore, the analyses of long-term conditions presented in the 2000 REIR/EIS used drained strengths. This method is consistent with generally accepted engineering practice.

Reservoir Side *Channel Side*

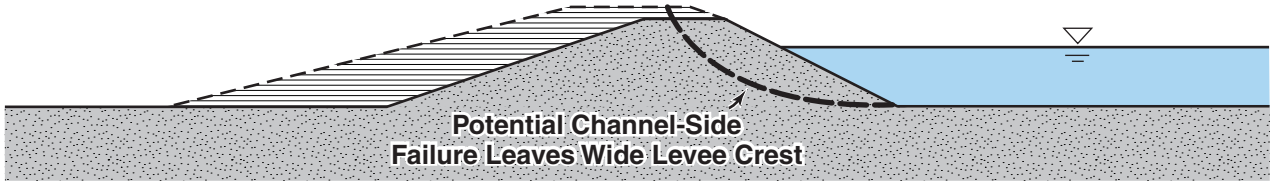
a) Flatten Channel-Side Slope



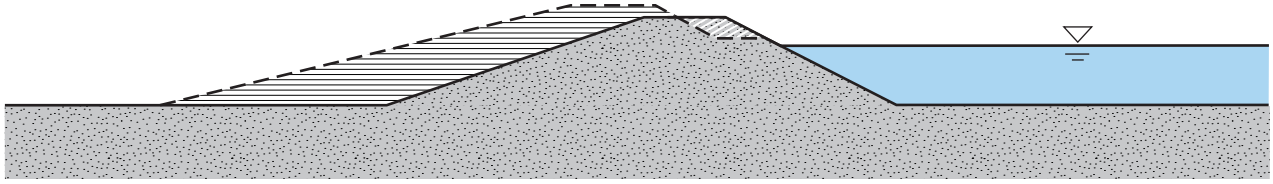
b) Place Rock Berm at Channel-Side Levee Toe



c) Widen Levee Crest



d) Widen and Notch Levee Crest



Jones & Stokes

Figure R6-1
Methods to Improve Channel-Side Stability

R6-15. The levee breach analysis presented in Appendix H of the 2000 REIR/EIS shows a range of levee break widths that represent the progression of a levee break. The analysis simulated the effects on Bradford Island of the breach of a Webb Tract levee. The area between Bradford Island and Webb Tract represents one of the shortest distances between a reservoir island and a neighboring island; therefore, this analysis represents a worst-case scenario. The analysis evaluated the potential effects of a levee breach under full reservoir conditions (+6 feet elevation) and extreme low channel condition (-2 feet elevation), which also represents a worst-case scenario. Appendix H presents results for levee breaks 40, 80, 200, and 400 feet wide, with the maximum resulting flow velocities along the channel bank opposite the breach shown as 2, 9, 12, and 16 fps. A maximum breach opening of 400 feet was selected for these analyses based on the report Breaching Characteristics of Dam Failures (MacDonald and Langridge-Monopolis 1984). Results of the analyses are summarized in the following tabulation.

Breach Width (feet)	Breach Development Time (minutes)	Peak Outflow (cfs)	Maximum Water Surface Elevation in Slough (feet)	Maximum Flow Velocity in Slough at Opposite Bank (fps)
40	24	9,200	- 1.75	2.5
80	30	24,000	- 0.75	8.0
200	42	61,000	+ 0.75	12
400	57	123,000	+ 5.5	16

The observed erosive forces referenced by the commenter refer to levee breaches in which water from an adjacent channel enters a "dry" Delta island. The head differential between a full or flood-stage channel (assuming +6 feet elevation) and a dry or empty island in the central Delta (lower than -10 feet elevation) is greater than in the with-project case. Additionally, in the unlikely case that a levee breached under the with-project condition, water from a reservoir island would be expelled into the channel water rather than into a dry island; the resulting force would be less erosive than when water from a channel enters a dry island.

As discussed in Master Response 8, "Levee Stability Analysis and Worst-Case Conditions", CEQA states that an EIR should discuss the effects on the environment with "emphasis in proportion to their severity and probability of occurrence". (State CEQA Guidelines Section 15143.) As described in the 2000 REIR/EIS, the potential risk of a levee failure on the project islands is extremely low. Additionally, the 2000 REIR/EIS includes mitigation to ensure that the Delta Wetlands levees meet minimum stability requirements; this further reduces the risk of levee failure under project operations. Therefore, no additional analysis or mitigation is required.

R6-16. Borrow site dewatering will not be required to extract the material used in levee improvements. Once the material has been removed from the borrow area, it can dry at other locations within the island before being placed on the levees.

As stated on page 3-16 of Appendix H of the 2000 REIR/EIS, "These estimates [of borrow material quantities] include not only the initial fill quantity but also the additional quantities required later to restore and continue restoring the levees to the specified configuration to compensate for long-term settlement".

R6-17. If water is stored above +4 feet elevation on the reservoir islands, Delta Wetlands will need to propose final levee designs that meet the DSOD design criteria. Additionally, the 2000 REIR/EIS includes a mitigation measure that requires Delta Wetlands to adopt a final levee design that achieves a recommended minimum FS of 1.3, which is consistent with DWR's recommendations under Bulletin 192-82 for rehabilitation of nonproject levees in the Delta. This standard is more conservative than USACE's standard for nonfederal Delta levees of 1.25.

R6-18. Construction monitoring should track:

- # pore pressures in foundation soils (particularly in weak foundation soils), which reflect consolidation and strength gain; and

- # displacements, which are indicative of potentially impending failure.

Rigorous monitoring allows the rate of fill placement to be adjusted in such a way that the potential for slope failure is minimized. The following description of construction monitoring was presented by Delta Wetlands at the October 2000 water right hearing (Exhibit DW-95).

> [C]onstruction monitoring allows the designer to check that the intent of the final design is properly incorporated into the constructed works. Where conditions may vary from those shown on project plans and final design documents, the levees can be modified to ensure that a safe and reliable levee is maintained during and after construction.
>
> [During construction, Delta Wetlands' resident engineer] will check that the soil conditions encountered during construction are consistent with the conditions used as the basis of design and check that the contractor is constructing the improvements according to the project plans. [The resident engineer] will observe and provide appropriate testing for fills placed for the levees, erosion protection systems, cutoff walls, monitoring wells on adjacent islands, interceptor wells, and borrow areas. Engineering technicians will monitor fill placement and check the relative compaction of fills. [Data will be collected] from instrumentation placed within fill and monitoring wells. During installation of interceptor wells, [Delta Wetlands] will e-log the bores and check gradations of sand from the drill cuttings to [refine the final designs for] screened interval(s), slot size(s), and filter pack gradation. Engineers will provide oversight for the various construction elements, attend meetings,

provide input for the contractors, respond to submittals, and write letters and reports regarding construction activities.

The construction monitoring will include checking that the fill placement is not overstressing the levee and peat foundation. The levees will be monitored during filling operations to check for signs of distress such as cracking or slumping. In addition to the visual observation, [Delta Wetlands will monitor] the rate of pore pressure dissipation and strength gain in the peat soil. This information will provide a check on the results of the stability analyses. If the pore pressure measurements and other monitoring indicate that the peat is not gaining strength as rapidly as anticipated, the construction sequence [would] be modified.

Additionally, the protest dismissal agreement between Delta Wetlands and EBMUD establishes a Design Review Board. The duties of the Design Review Board include reviewing plans and specifications for levee designs, reviewing construction monitoring results, and confirming that the project design and implementation meets the design objectives.

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Phone:

Contra
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County

Dennis M. Barry, AICP
Community Development Director

Letter R7

State Water Resources Control Board
Division of Water Rights
Attn: Jim Sutton
P.O. Box 2000
Sacramento, CA 95812-2000

July 26, 2000

Dear Mr. Sutton:

Thank you for the opportunity to comment on the revised draft Environmental Impact Report/Statement for the Delta Wetlands Project. We are in receipt of the revised draft, and have reviewed the subject areas contained in the document for which additional information has been developed.

The County has submitted a number of questions regarding the Delta Wetlands Project at the time the draft Environmental Impact Report/Statements were circulated, in 1990 and again in 1995. Some subject areas have been addressed as part of the additional information provided in the recently revised draft, but a great number of comments made during earlier years remain unanswered. We assume prior comments will be addressed as part of the final document. **R7-1**

The information provided in the revised draft document does not fully address the questions raised by the County in our letter to the State Water Resources Control Board dated July 22, 1997 (attached), regarding the Water Rights Decision for the Project. Therefore the County submits the comments contained in the attached letter to you at this time, to ensure response as part of the final environmental document.

If you have questions, please do not hesitate to contact me at (925) 335-1226.

Sincerely,

Roberta Goulart

Roberta Goulart
Principal Planner

The Board of Supervisors
County Administration Building
651 Pine Street, Room 106
Martinez, California 94553-1293
Jim Rogers, 1st District
Gayle B. Uilkema, 2nd District
Donna Gerber, 3rd District
Mark DeSaulnier, 4th District
Joe Canciamilla, 5th District

Contra Costa County

Phil Batchelor
Clerk of the Board
and
County Administrator
(510) 335-1900

SH-IL-45

July 22, 1997

Mr. Walt Pettit, Executive Director
State Water Resources Control Board
Paul R. Bonderson Building
901 P Street
Sacramento, CA 95814

Re: Water Rights Decision on the Delta Wetlands Project

Dear Mr. Pettit:

The Contra Costa County Board of Supervisors has authorized this letter to urge that any decision to grant water rights to the Delta Wetlands Project ensure that the drinking water supply of County residents is fully protected and that the fish and other aquatic resources of the Delta are maintained. Current plans for operating the Delta Wetlands Project provide no such assurance. Potential negative impacts include the following:

- Delta Wetlands diversions could aggravate the salinity intrusion problem in the Delta at some times of the year, degrading drinking water quality for hundreds of thousands of County residents and harming fish.
- The X2 salinity requirement for the Delta Wetlands Project under the federal biological opinion is less restrictive than the salinity requirement for the Los Vaqueros Reservoir diversions, even though the Los Vaqueros water right would be more senior. As a result, operation of the Delta Wetlands Project could limit or even prevent diversions to Los Vaqueros at times when such diversions would otherwise be allowed. R7-2
- Releases of water from the Delta Wetlands Project could harm water quality for municipal drinking water and fish by leaching excess amounts of organic carbons from the peat soils, by concentrating salts via evaporation, and by increasing water temperatures.
- The timing of Delta Wetlands operations could create problems by diverting water during periods of low water quality and releasing this stored water when water quality in the Delta is relatively better.

The State Water Resources Control Board should address these negative impacts by including protections for drinking water and fish in any water rights permit that is issued for this project.

Specifically, the County recommends that any permit be linked to: 1) an X2 requirement for diversions that is more stringent than that for the Los Vaqueros Project; 2) a prohibition on Delta Wetlands discharges when water quality in the project is lower than that in the Delta; and 3) a general condition that the Delta Wetlands Project will not harm Contra Costa Water District or any other water diverter in the County with more senior water rights.

R7-2 cont'd

Thank you for accepting the comments of Contra Costa County on this issue. If you have any questions about this letter, please feel free to call John Kopchik at (510) 335-1227.

Sincerely,

Mark DeSaulnier
Chair, Contra Costa County Board of Supervisors
Ex-officio Chair, Contra Costa County Water Agency

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Contra
Costa
County

Harvey E. Bragdon
Director of Community Development

December 21, 1995

State Water Resources Control Board
Division of Water Rights
Attention: Jim Sutton
P.O. Box 2000
Sacramento, CA 95812-2000

Dear Mr. Sutton,

Thank you for the opportunity to review the Draft Environmental Impact Report and Environmental Impact Statement for the Delta Wetlands Project. Generally, the report is exhaustingly thorough. There are, however, a range of issues which are of concern to the County and to which we need responses.

First, as a statement, we recognize that NEPA requires consideration of a range of alternatives to be discussed throughout the EIR/EIS. However, the Habitat Management Plan (HMP) in the appendices and the thrust of the body of the EIR all imply that Alternative 3 is not really viable in terms of mitigation of project impacts. We could spend considerable effort commenting on that alternative but have chosen not to, given our belief that for that alternative to be chosen additional environmental review would be required. It does not provide mitigations for on-site habitat issues. No off-site solutions are proposed. Given County, State and Federal regulations and policies, the document would need substantial augmentation and recirculation for the selection of Alternative 3. We feel Alternative 1 and 2 effectively cover the worst case scenarios to be considered. R7-3

Second, it would be impossible for the reader not to be aware of the amount of effort and creativity put forth in the development of the proposal. The amount of technical work necessary to analyze this complex project, and the cooperation of the applicant and State and Federal Agencies to bring the document to this point in the process, is obvious. Staff and consultants should be commended for their efforts to date.

Now to specifics on the Draft document. Page 3D-5 discusses the Delta Flood Protection Act of 1988. It indicates in the second paragraph that it authorized $12 million annually through 1998-1999. Should that read 1988-1999? At the end of this

paragraph it states "under the Delta Flood Protection Act, no project receiving funding from the act can result in a net long-term loss of riparian, fishery, or wildlife habitat, and a DFG finding to that effect must be issued before funds are disbursed." Have any of the four islands in this application received funds under this act? What assurances have been given to DFG and how does this project effect those assurances?

The role of Local Reclamation Districts is discussed on page 3D-6. If the project is approved as applied for, 3 of the 4 islands will be wholly owned by Delta Wetlands. The project description implies that Delta Wetlands will be responsible for levee repair and maintenance (as does the HMP in the Appendices). What will be the role of the Reclamation Districts relative to the project? Will the 3 wholly owned islands be maintained by Delta Wetlands and the Reclamation Districts be obsolete and be abolished? There may be some merit for abolition of these districts if the islands are wholly owned by a private corporation. The discussion on Financing the Levee System on page 3D-19 is not clear in this regard. That section states that "the cost of reclamation would be much lower than in the use of existing Delta levees because much (emphasized) of the routine maintenance would not fall within State and Federal cost-sharing programs". Specifically, what State and Federal funds are still proposed to be utilized for maintenance? Given the economic analysis found in the EIR, why should any State or Federal funds continue to be needed for levee maintenance and repair? Shouldn't all obligations be transferred to Delta Wetlands except for Holland Tract, (which they won't wholly control)? Since this is listed as a beneficial impact, the final document should clarify any government levee maintenance subsidy that would still accrue to the project. In case of a levee failure, will State and Federal funding (subsidy) be allowed?

R7-3 cont'd

Page 3E-2 under Webb Tract references the Delta Ferry Authority. It indicates that this authority is jointly funded by Contra Costa County, the Webb Tract Reclamation District and the Bradford Island Reclamation District. That was an interim financial arrangement. The County is no longer funding the ferry services. The County still collects local funds through a County service area for this service; about $15,000/year. It is transferred to the ferry operator. The impact of this project on the existing ferry service is discussed on page 3E-6 and that anticipates a decline in usage. If that's true, then the project raises the issue of the viability of the continuance of the ferry service. Delta Wetlands may need to subsidize the service to keep it viable. Without the ferry service, the recreational facilities on Webb Tract would probably be infeasible. Having Delta Wetlands subsidize the ferry service should be made a mitigation measure for the project. Impact E-2 needs to be revisited to assure additional ferry operational funding.

The discussion on page 3E-2 indicates that the County in 1993 "abandoned those sections of Holland Tract Road on the west and east perimeter levees past the locked gates". That was done in response to a request of the reclamation district for these vacations. The last time staff visited the perimeter roads on the west and east levees, they were not passable to passenger vehicles, however, trucks and four wheel drive vehicles could utilize those roads. If the recreational facilities are to be approved by the County, improved road access to all the recreation facilities will be required. The roadways will be private driveways and will need to be maintained by either the reclamation district or the owner of the recreation facilities. This should be made a mitigation measure in the Final EIR.

Mitigation Measure E-4 on page 3E-11, dealing with private security services, is essential if the recreation component is to be developed.

The discussion of providing fire district services to the recreation facilities on Webb Tract is casually mentioned in Mitigation Measure E-5 on page 3E-11. While procedurally, this mitigation measure is correct, there may be impacts associated with placing this island into a fire district. The Bethel Island Fire Protection District is the nearest district; and it is largely a volunteer fire protection district. Such a district relies on local residents to serve as volunteers and to man the fire equipment. The project description does not indicate if there will be caretakers and/or permanent staff associated with recreational facilities. It does not indicate if Delta Wetlands employees will be largely day workers or if 24 hour a day coverage will be provided. Such employees could form the basis of a volunteer district staff.

R7-3 cont'd

Unfortunately, the response time for fire equipment and manpower to arrive by boat from Bethel Island would be long. On island fire fighting capability would be desirable should the recreation facilities proceed. Mitigation Measure E-6 should be strengthened to require local fire fighting capability to serve the proposed recreational facilities (rather than just annexation to a district). Districts, per se, don't fight fires, manpower and equipment does. The island roads will need to be improved to handle fire equipment.

The discussion of water, sewage and solid waste facilities to serve the recreational facilities is very generalized and merely indicates the need to meet County requirements. The Mitigation Measures E-7, E-10 and E-12 just require obtaining appropriate local and state permits for recreational facility services and utilities. This lack of specificity may require supplemental environmental analysis.

On page 3F-15 Mitigation Measure F-1 requires providing information to USFWS and DFG on fish habitat. The information called for would be helpful to the Counties in consideration of the permits for location of the recreational facilities. A sentence should be added to this mitigation measure which requires this material to be submitted to the Counties when considering the recreational facilities and urging coordination of that review with USFWS and DFG.

On page 3I-12 under Webb Tract, it indicates "the clubhouse on the eastern tip of the island is sited above the proposed high water level and could remain onsite". Could this be converted to one of the proposed recreation facilities by Delta Wetlands or are they asking for the other new facilities plus this existing one? The project description Figure 2.3 does not show this existing clubhouse. If it is to remain, does this change the project description? Are there added impacts, e.g., traffic, if it continues to exist?

On page 3I-12, there is a discussion of the Williamson Act Contract on Webb Tract and that County staff has determined the water component to be consistent with the current Williamson Act. While that is correct, it would be desirable for the applicant to notify the County of his intent to non-renew this contract and the issue of Williamson Act status will resolve itself over time.

R7-3 cont'd

On page 3I-12, it discusses Contra Costa County staff's view that for the proposed level of recreation facilities will require rezoning to Planned Unit District. The same discussion takes place on page 3I-13 dealing with Holland Tract. If these areas aren't to be rezoned then land use permits will be required. Unfortunately Table 4-1 in Chapter 4 Permit and Environmental Review and Consultation Requirements, fails to list either rezoning or land use permits. Those concepts should be added to Table 4-1. Health Department permits for water and sewage issues should also be added to that table, consistent with prior EIR text.

Page 3I-2 correctly indicates that the Contra Costa County General Plan contains policies which urge the preservation of prime agricultural soils. The County General Plan defines prime agricultural soils as Class I and II soils; it does not utilize the NRCS system. Holland Island and Webb Tract are almost exclusively Class III and IV soils. Consequently, the discussion on page 3I-14 on the conflict with our prime agricultural soils policies in the County General Plan misses the mark.

Page 3I-6 under Holland Tract, states that Veale Tract is within the Urban Limit Line (ULL) and so development is likely to occur within the next 20 years. This statement

is incorrect. - Being inside the ULL would allow consideration of a general plan amendment from agricultural to urban use, not a presumption that such change could occur.

Page 3L-11 discusses barge traffic to import rock to the project sites for levee stabilization. No source(s) of rock is identified. Importing rock will affect truck trips. No loading points for the barges are identified. Truck trips will affect road capacity. More importantly, if they travel on rural delta roads they could cause substantial impacts to the structural integrity of these roads. The Final EIR needs to identify the probability of truck traffic on specific roads for rock and other construction materials. This discussion needs to be coordinated with the Public Works Departments of the affected counties. Adequate mitigation needs to be suggested in the Final EIR; that could include resurfacing or roads to withstand the wear and tear of the truck traffic.

On more general issues, there is a recommendation in the DEIR for a $2/acre foot Fishery Enhancement Fund. Will the use of this money be restricted to studies and programs for the Bay Delta System? They should be. Could the mitigation measure be modified to insure notification of the Contra Costa County Water Agency when meetings are held to discuss use of these funds? The use of these funds should be restricted to Bay Delta projects and not be used to cover staff operational costs. A mitigation measure should provide for such limitations.

R7-3 cont'd

Proposed Delta Wetlands project operations could result in lower water quality in some instances, impacting Contra Costa Water District drinking water intakes at Rock Slough and Old River. In particular, it is not clear how project operations could affect CCWD's ability to fill the Los Vaqueror Reservoir. How will project operations affect the ability to fill the Los Vaqueror Reservoir with higher quality water?

It is not clear how Delta Wetland reservoir filling could occur during below normal and dry water years. What are the effects of reduced reservoir filling versus a full reservoir scenario? If no filling occurs in the absence of surplus flows, how will the reservoir islands be managed?

Despite the significant degree of evaluation contained throughout Chapter 3 of the draft EIR/EIS and appendices, questions and concerns remain relative to water quality impacts, given the wide range of conditions found over time in a very complex and little-understood Delta system. In addition, the effects on fish due to reduction of outflow and resultant change in flow patterns remains unclear. Models, although helpful in

gauging general change, do not provide a great degree of certainty, given the wide range of varying, complex conditions found in the Delta. For these reasons, Contra Costa County requests that a detailed, ongoing monitoring program be instituted to allow continued specified assessment of these important issues and their impacts, should this project be implemented. This could have an added benefit in continued assessment as to this project's potential for impacts relative to other water rights, (determined not to be significant, as described on page 3A-11).

The DEIR does not discuss the greenhouse effect and its potential impacts on this project. While the impacts of the concept are sharply debated, the concept that there is something climatically going on that seems to be scientifically defensible. This could effect levee height requirements, etc. Some discussion of this problem would appear mandatory.

No site specifics are presently included on the proposed recreational facilities. The document did not include any information on if the hunting facilities as proposed, are marketable. Nor did it describe the organization structure. Will they be for individual clubs or will Delta Wetlands manage them as a unit? While a schematic is included in an appendix on what a typical recreation facility design might look like, no interior design or elevations are provided. The exact location of the facilities are not identified. The road improvements necessary to serve the facilities will need to be identified. All these items will be needed by the counties for consideration of the recreational facilities. If Delta Wetlands intends to permit these over time and not all at once (or build them over time), follow-up environmental documentation may be needed. The Final EIR should set the stage for subsequent environmental documents.

R7-3 cont'd

As is clear from the prior comments, most of our concerns focus on the proposed recreational facilities for which the County will be a permitting agency. The Final EIR will be adequate to consider the larger issues behind the Delta Wetlands project. It may, however, need to be supplemented for County consideration of the recreation facilities.

The EIR/EIS does not appear to discuss inclusion of public access onto these islands. The recreation component should include some public access points, and these areas should be included in environmental review of the project.

As a last comment, the Habitat Management Plan (Appendix C-3) appears to be complete and workable. The hunting component, however, will be dependant on the ability to approve the recreation facilities. That won't be known until after the lead

State and Federal Agencies make determinations on the water storage concepts.

If you have any questions on these comments, feel free to call Jim Cutler at (510) 646-2034 or Roberta Goulart at (510) 646-2071.

R7-3 cont'd

Sincerely yours,

Roberta Goulart for

Jim Cutler
Assistant Director,
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Contra
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County

Harvey E. Bragdon
Director of Community Development

(18)

April 30, 1991

State Water Resources Control Board
Division of Water Rights
901 P Street
Sacramento, CA 95816

RE: DELTA WETLANDS DRAFT ENVIRONMENTAL IMPACT REPORT

In addition to comments previously submitted, Contra Costa County offers the following comments pertaining to the Delta Wetlands draft environmental impact report.

1. Potential impacts of this project, DWR's North and South Delta Water Management Plans, the Los Baños Grandes Reservoir and the Los Vaqueros project have serious cumulative implications to the water quality, fisheries, supply and export scenarios, and need to be examined in greater detail.

   The fact that the proposed Delta Wetlands Project operations would result in decreased outflows during part of the year, is a cause for concern, especially during the dry water year. We understand that no reservoir filling would take place during the critically dry year. What are the impacts of decreased outflow resulting from this project, coupled with the DWR's Delta Water Management Plans, and the Los Vaqueros Reservoir when this project becomes operational? What are the impacts to fish and wildlife resources during the dry water year, on a cumulative basis?

   Also, by making additional water available during the summer months for exportation, the Delta Wetlands Project may allow changes in operation of the State and Federal projects which could increase impacts to fishery resources and water quality. For these reasons it is important to include detailed cumulative impact assessments as part of the environmental review process. R7-4

2. The possibility of a reduced reservoir filling scenario should be included for at least the dry water year and below normal year, and considered for the normal water year as part of the environmental review process. Minimum flow standards should be set prior to pumping operations, and a reduced period of reservoir filling should be established as part of this project in dry and below normal water years.

3. Longstanding County policy dictates that no additional exports should occur until the current Bay-Delta proceedings are completed, and new water quality standards have been set. Some discussion of effects of revised standards on the project should be

included in the EIR/EIS, as new standards could significantly revise the extent or degree of impacts described.

In addition, the impact of increased exports needs to be examined in greater detail. How would these exports dovetail with SWP and CVP operations?

4. The EIR/EIS discusses various components of water quality as regards the proposed project operations. The EIR/EIS states that an increase in compounds with trihalomethane formation potential would result from water storage operations. How would this affect the Contra Costa Water District intake at Rock Slough, especially from discharges at Holland Tract?

   The EIR/EIS states (p 3C-112) that island discharges and their effects will be evaluated. The effects of discharges, (both direct and indirect) need to be evaluated as part of the EIR/EIS to the extent possible. In addition, a mitigation/monitoring plan should be included to deal with impacts which could occur.

5. The EIR/EIS should address an alternative whereby less than four islands are flooded. Given the many complex issues associated with the proposed project, flooding of one (or two) islands could take place initially, in order to assess impacts and target problem areas on a smaller scale. We understand that the four islands each have characteristics which make them unique. However, there is much information (such as impacts to water quality, circulation, discharges, fisheries, wildlife, levee stability and seepage) which could further refine and compliment existing data as well as mitigation/monitoring programs, which also need to be included. R7-4 cont'd

6. A comprehensive seepage control program (which includes monitoring, mitigation and bond) should be finalized and included as part of the EIR/EIS process. We understand that due to interior grading of islands, some potential exists for movement of water through sand lenses to adjacent islands. We also understand that much work has been done on this issue, and would like to see this reflected in the report.

   In addition, a program for levee stability and maintenance needs to be identified, which also includes a monitoring/mitigation/bond program. The EIR/EIS states that levees would not be constructed prior to flooding of the islands. Erosion of proposed 10:1 slopes will require maintenance. Responsibility needs to be outlined in the event of levee failure.

   Funding for levee rehabilitation as part of the Delta Wetlands Project should not come from sources designated through SB 34, the Delta Flood Protection Act. The nature of the project, coupled with the tremendous levee restructuring required, make this project an unfavorable candidate for use of public funds. The EIR/EIS should discuss this issue.

7. The EIR/EIS states that no public access will be allowed on the islands, except for the possibility of pre-arranged tours. We feel some public access points should be included

as part of this project. The County may require some type of public access as part of the permit process, therefore we recommend that it be included as part of the EIR/EIS.

8. The Delta smelt is a candidate for listing as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) or the California Department of Fish and Game (CDFG). The Delta Wetlands Project proposes to divert water during February-April when eggs and larvae are present in the project area and are unscreenable. The EIR/EIS states that entrainment of Delta smelt eggs and larvae, given their present status, could significantly affect the population (p. 3F-28). The project proponents propose to monitor project diversions for Delta smelt and halt diversions if detected (p. 4-17). We concur with this proposal, however, the EIR/EIS lacks detailed information discussing how sampling will be conducted. This information is needed to determine if sampling is adequate to protect the population. Given that eggs and larvae are unscreenable, we believe that diversion of water should not take place when they are likely to be entrained, consequently, monitoring is very important. Diversion of water must not occur when Delta smelt eggs and larvae are present. Please include more information on sampling as part of this EIR process.

9. The project proponent proposes to "halt" diversions if Delta smelt larvae are present and to "avoid" diversions during March and April if it is determined at the water rights hearing that diverse impacts to winter-run smolt outmigration is significant (p. 4-17). We agree that diversions should be halted when necessary to protect Delta smelt and winter-run salmon. However, no clarification of the winter-run mitigation measure is given in the document (see p. 3F-42). We also do not think "avoid" is a reasonable term to be included in a water rights permit to protect winter-run salmon. When the impact of diversion or exportation to winter-run salmon is apparent, then water diversion or export should not be allowed; furthermore, it should not be up to the project proponents discretion on whether or not they can divert.

R7-4 cont'd

10. There are no mitigation measures proposed for impacts to any fish species or life stage impacted at the State and Federal pumping plants due to the sale and exportation of Delta Wetlands water or to incremental impacts to most fish species directly impacted by operation of the Delta Wetlands project. The EIR/EIS frequently identifies small incremental impacts to most all fish species discussed, i.e., entrainment impacts on striped bass (p. 3F-28), increased predation on juvenile chinook salmon (p. 3F-32), increase movement of San Joaquin salmon smolt towards the CVP and SWP pumps (p. 3F-33), additional impacts to fall chinook salmon (p. 3F-33), increased impacts to chinook salmon due to 2F increase in temperature of released water (3F-37), impacts to spawning American shad (p. 3F-39), entrainment of Sacramento split-tail larvae and juveniles and white catfish (p. 3F-39). However, there are no mitigation measures proposed for these impacts.

In addition, the EIR/EIS states that impacts will occur to "Other Bay Species" and "other Delta Species", but states that impacts cannot be determined with available information. The EIR/EIS identifies potential impacts of reduced Delta outflow, which include reduced recruitment of marine species that rely on estuarine circulation to

distribute eggs and larvae, increased exposure to toxics caused by increased water residence time, and reduced habitat, temporarily and spatially, because of the more landward positioning of the null zone caused by lower Delta outflows (P. 3F-34). We request that these species be identified. In addition, no mitigation measures are proposed for these impacts.

Will you require an impact assessment at the State and/or Federal pumping plants for fishery impacts due to the additional water made available by the Delta Wetlands Project and that mitigation measures be proposed for those losses? Will other losses identified above be mitigated?

11. The EIR/EIS states that unscreenable striped bass eggs and larvae occur, sometimes in high numbers, during the month of April (p. 3F-27). Delta Wetlands has applied to divert water through April, although they indicate diversion in April would only occur in 1-2% of the years. We do not believe diversion should be allowed during April unless the project proponents demonstrate no impact to striped bass eggs and larvae. To this end, we request that detailed monitoring activities should be included in this EIR.

12. The EIR/EIS claims that several million striped bass eggs and larvae could potentially be saved under the proposed project because agricultural diversions (several TAF) would be eliminated (p. 3F-35). We do not agree with this assessment because the impact to striped bass eggs and larvae would still occur and would be greater than existing conditions; the impact would be shifted from the agricultural diversions (several TAF) to impacts associated with increased exportations (312 TAF) at the State and/or Federal pumps. In either case, we believe that monitoring should be required to demonstrate the actual level of impact. Will you require monitoring and mitigation for losses?

R7-4 cont'd

13. The EIR/EIS proposes to negotiate with CDFG details of fish screen design characteristics such as approach velocity, mesh size, flow uniformity, and cleaning frequency to ensure effective operation (p. 2-20). Delta Wetlands should not be approved unless these details are worked out in advance; it should not be assumed that screening and monitoring requirements can be worked out after the project is permitted. Monitoring criteria should be identified, agreed upon by CDFG and other resource agencies, and should be required during all years to ensure protection of fishery resources. Will you require these details to be worked out before the project is permitted?

In addition, the EIR/EIS indicates that the fish screens proposed by the project proponent will only protect some fish species and life stages (p. 3F-27). The EIR/EIS lacks specific information on which species and life stages that will or will not be protected. Please include this information in the EIR/EIS.

14. On page 2-23, the project proponents propose to design the screens with a 5.0 fps initial approach velocity. The EIR/EIS states (p. 3F-9) that the preferred approach

velocity to screens is 3.0 to 3.5 fps. High approach velocities will make it harder for many fish species and life stages to avoid entrainment and impingement. We request that approach velocities be required to be designed below this range, and kept no higher then the preferred range during operation to ensure impacts are kept to a minimum.

Also, were project filling rates based on 5 fps intake velocities? If so, will you re-estimate filling times based on the lower intake velocities?

15. Delta Wetlands proposes to release stored water for probable exportation during May-July but the water rights application also asks to release in August (p. S-3). For the proposes of impact assessment only the May-July period was considered. Impact assessment should correspond directly with the period for diversion and release of water in the water rights permit, not with the time period currently proposed by Delta Wetlands. If water rights were granted through August, then Delta Wetlands could release all or most of the water in that month. However, this scenario was not considered. The EIR/EIS indicates that no impacts will occur in August (p. 3F-41). Is that because the project proponents don't anticipate on releasing water then? We believe that many of the impacts occurring during May-July releases could occur in August. Will you require an analysis of August releases? This requirement would not be necessary if the water rights application eliminated August for releasing water. R7-4 cont'd

16. CDFG has identified the summer months as an undesirable period for water export (for exiting water export projects) due to impacts to fisheries and has held meetings with DWR to reduce summer exports. The Delta Wetlands Project, however, would make additional water available during summer for exportation and would increase impacts at the State or Federal pumps over existing conditions. This proposed operation appears contrary to current efforts of CDFG. Some discussion of this issue should be included in the EIR/EIS.

17. CDFG has indicated that high flows during the winter through the Bay/Delta result in larger populations of Bay shrimp and that during low outflow, populations are smaller. Bay shrimp have a one-year life cycle and are an important food item for many fish species in the Bay/Delta. The EIR/EIS did not address the impacts of diverting winter water from the Bay/Delta on this resource. Impacts to the Bay shrimp should be examined as part of this EIR.

18. The survey methods as described on page 3H-4 of the DEIR are incomplete in determination of nesting values during nesting periods. Nest density values cannot be evaluated from stationary sites.

19. The Eastern side of Webb Tract Island was not available for habitat evaluation (see page 3H-14, Para. 2). The habitat values on that side of the island are not comparable to any other sites on the island, as there was no other areas being managed specifically for wildlife and farming compatibility. Further, wildlife values and wildlife use cannot be determined by aerial surveys.

20. The HEP team did not include waterfowl species in modeling that are year round and indigenous species to the DWP. Nor were these species' nesting needs and values adequately considered. The nesting needs and habitat values required by the Mallard, Gadwell, Teal, Wood Duck, Short-eared Owl, Marsh Hark, and Ringneck Pheasant are all year-round species and were not adequately studied or valued. Subsequent studies are needed! The nesting studies conducted by the Department of Fish and Game and the California Waterfowl Association at Grizzly Island Wildlife Area, should be used as a minimum base line when considering the nesting value and potential of the four Project Islands. How will mitigation for these species be determined? Where, when and how will mitigation for these loss be replaced? Will in-kind ecological environments be re-established?

21. Page 2-7 of the HEP Report states that major assumptions were made by the HEP team regarding DWP operation and long-term impact/effect on habitat conditions for wildlife. What percent of total project impact was tested on test sites? Does this percentage equal appropriate evaluation procedures for a project of such magnitude? Should a project of this magnitude be based on any assumptions? Who will assume liability if assumption are wrong? Will bonding be required? If so, how much of a bond will be required?

R7-4 cont'd

22. How will the early watering of the Project Islands be managed to ensure the prevention of botulism outbreaks?

23. Pages 2-27 through 2-29 of the HEP Report pointed out that the HEP team could not agree on HIS/food values for waterfowl. The HEP team failed to collect any waterfowl craw samples to empirically determine the actual foods being consumed by waterfowl during any time of the HEP study. Therefore, all findings concerning waterfowl food values are supposition and assumption on the part of the HEP team. If the major concern of the HEP seems to stem around the loss of late winter food for Tundra swan, and White-fronted goose, shouldn't the HEP team have taken samples of craw contents during study periods of January through May?

24. The HEP identified food values for waterfowl. These values focused on corn as a significant food factor to provide winter food supplies for these species. The value was based on the corn availability. Other food values incidental to agricultural/crops (i.e., root fibers, grasses, insects, etc.) need to be identified, and valued as to each species in their overall wintering needs. The HEP's Biological review did not adequately evaluate or identify subsidiary food values for wildlife of other habitats on the Project Islands.

25. On pages 2-9 and 2-30 of the HEP Report there is a discussion regarding habitat/food availability for waterfowl use at given water depth. In these discussions, food is presumed to be at the canopy levels of vegetation instead of at the bottom of pond. It is reasonable to assume that most seed will be knocked to the bottom by flooding and wind/wave action. Therefore, equations used to evaluate food availability during inundated condition should be from water surfaces to pond bottom.

26. A significant number of upland species will be displaced and lost due to project flooding. The mitigation of this problem as stated in the DEIR does not adequately address this problem. In addition, the diversity, breadth and distribution of varying ecological systems and their extremely important edge zones, are not adequately valued as a ecological gestalt as it inter-related to adjacent environmental needs. The broad and varied distribution of riparian woodland, riparian scrub, emergent wetlands, wetlands, ponds, upland, and croplands, are not valued. Will the project plan for mitigation of riparian and wetland habitat edge zones provided like/in-kind adjacent habitat values as pre-project provided?

27. Will nesting habitat mitigation provide more or less predator nest predation due to concentration and configuration of mitigation measures proposed on North Bouldin and the levees of other Project Islands?

28. Mitigation for habitat/wildlife losses should occur concurrently during the construction phases of the project. If not, a value of loss that will result during the lapse of time from beginning of project to completion of mitigation should be identified and provided for over and above the agreed upon base-line losses so that there shall be no overall net loss. In addition, if mitigation does not occur concurrently, then an appropriate bond for projected mitigation costs should be posted by project owners.

R7-4 cont'd

29. There should be a rigorous review addressing the cumulative environmental Delta impact of all water-related projects in the region. Specifically the cumulative impact of the DWR's projects (LOS BAÑOS GRANDES, SOUTH DELTA WATER MANAGEMENT PROGRAM, WEST DELTA AND NORTH DELTA PROGRAMS) THE DELTA WETLANDS PROJECT AND LOS VAQUEROS RESERVOIR.

30. Mitigation for all habitat/wildlife losses occurring within Contra Costa County, as part of this project, should be mitigated within Contra Costa County. The County may require in-County mitigation as part of the permit process if appropriate, therefore, we recommend that it be included in the EIR/EIS.

If you should have any questions, please contact Roberta Goulart of our staff at (415) 646-2071.

Sincerely yours,

Harvey E. Bragdon
Director of Community Development

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JCC

17

April 15, 1991

California Water Resources Control Board
Division of Water Rights
901 P Street
Sacramento, CA 95816

U.S. Army Corps of Engineers
Regulatory Section
650 Capital Mall
Sacramento, CA 95814

Dear Gentlemen:

Thank you for the opportunity to review the Draft EIR/EIS on the Delta Wetlands Project. The documents provide an extensive range of information on this project. None-the-less there are questions which we feel need to be responded to in the Final document.

One area of concern deals with the local road circulation patterns. As indicated on page 3E-7 the Contra Costa County currently maintains Holland Tract Road which wraps around 3 sides of that island.

Reclamation District #2025 has requested that the County vacate it's interests in that Holland Tract Road to that District on both the western and eastern perimeter of the island northerly of the two marinas. Some time in 1991 the County shall consider this request. The Final EIR needs to examine what impact, if any, the vacation of this land would have on the proposed project. This is directly relevant to the issue of eliminating the public's right to use the roads and to fish off adjacent lands.

A similar area of concern is how this project might affect the financing of the ferry boat service to Bradford and Webb Tracts. Will the Delta Wetlands Project enhance or reduce the viability of the ferry boat service. Will the recreational users offset the loss of agricultural passengers and cargo that finance the ferry boat services.

R7-4
cont'd

A major area which requires expansion is the discussion of the hunting preserves. The draft EIR meticulously analyzes the impacts the operation of water related aspects of the project, however if fails to provide as much detail to the hunting and water related sports aspects of the project. How important are the hunting preserve facilities to the project viability? Can it succeed without all or some of the hunting clubhouses?

How will the hunting preserves receive potable water? If deep wells are to be the source of water, how will that effect subsidence? How will they handle sewage effluent? According to our understanding of Regional Water Quality Control rules, a public agency will be required to operate the sewage treatment facilities. What agencies are proposed to handle this functions in Contra Costa County? Is this a legitimate function which can be undertaken by the Reclamation Districts for each island? It can be anticipated that sphere of influence changes and annexations may be needed which are not discussed in the DEIR. Since the answers to these questions may affect agencies which aren't reviewers of this EIR e.g. the LAFCO's of each County or water and sewer agencies, will supplemental environment documents be prepared on the issue of providing facilities to the hunting preserve clubhouses?

On page 3I-23 the Draft EIR raises the issue whether reservoirs are consistent with the uses allowed in the existing County agricultural zoning districts. In previous discussions with the project applicant, County staff had expressed the opinion that the correct approach for the County to consider the issues of the hunting preserve facilities and other aspects of County approval which are required, would be for the DW lands to be rezoned to a Planned Unit Development District. We presume that Table 5-3 is sufficient to cover this concept.

R7-4
cont'd

In reviewing the ownership of lands around Holland and Webb Tract, it appears that some adjacent tule berms may be under the control of the project applicant. Will this project cause any impact on these tule berms, for instance will they be hunted or will ownership of those tule berm areas transferred to a public agency to insure their long term preservation? This should be considered as a potential mitigation measure for the wildlife impacts of the project.

The project indicates substantial efforts to ensure levee stability and to attempt to protect adjacent levees from seepage. There is a concern that this project increase instability to adjacent islands and that should the project levees fail, that the levees will be repaired to protect adjacent land areas. No mitigation measure appears to be discussed in the DEIR which would require rapid repair of breached levees. Measures such as bonding for levee repair in case of failure should be considered.

Webb and Holland Tracts both abut Franks Tract State Park. Part of Franks Tract park has been suggested for a wildlife preserve. The Final EIR needs to clarify any anticipated impacts that the project will have, on that State Park facility.

On page 36-60 and 36-61, the document points out that hunting club houses are proposed within 200 feet of special status species on both Webb and Holland Tracts. The Final EIR should clarify if the mitigation measures on page 36-67, first two paragraphs, actually resolve the problem or if relocation (or elimination) of the clubhouses wouldn't be more effective mitigation.

Portions of the Delta already have high levels of recreational use, especially boaters. Bethel Island, the Gateway to the Delta, is located next to Holland Tract. On summer weekends and holidays boat use in this area is high. Will there be any conflict or competition between their commercial marinas on Bethel Island and the hunting preserve clubhouse boat ramps?

R7-4
cont'd

Upon finalization of the EIR/EIS process, the County looks forward to reviewing the project on it's merits.

Sincerely yours,

James W. Cutler

James W. Cutler
Assistant Director,
Comprehensive Planning

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Contra Costa County Community Development Department

R7-1. See responses to Comment Letter C13.

R7-2. Delta Wetlands Project impacts on fisheries, drinking water quality, and Los Vaqueros Reservoir operations were addressed in the 2000 REIR/EIS. The change in water quality attributable to salinity and DOC in water discharged from the Delta Wetlands Project islands is expected to have minimal biological effects in the Delta and could increase availability of food for Delta fishes (see page 3F-16 in the 1995 DEIR/EIS [page 3F-17 in FEIS Volume 1]). See responses to Comment Letter R8 from CCWD regarding impacts on drinking water quality. See also response to Comment C9-22 for information about measures that will ensure that Delta Wetlands will not interfere with CCWD's ability to meet the terms of the Los Vaqueros Project biological opinions.

R7-3. See responses to Comment Letter C13.

R7-4. Delta Wetlands originally applied for water rights to store water seasonally on all four project islands. The Delta Wetlands Project, as originally proposed, was analyzed in a DEIR/EIS released in December 1990. Delta Wetlands submitted a revised water right application in August 1993 and revised its project description to propose using two islands for water storage and two islands to compensate for wetland and wildlife impacts of the operation of those reservoir islands. The information and analyses in the 1995 DEIR/EIS supersede the information and analyses contained in the 1990 DEIR/EIS. These letters (dated April 30, 1991 and April 15, 1991), attached to Contra Costa County Community Development Department's submittal to the SWRCB, are comments on the 1990 DEIR/EIS and therefore are no longer applicable to the proposed project.

Letter R8

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July 31, 2000

State Water Resources Control Board
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U.S. Army Corps of Engineers, Sacramento District
Regulatory Branch
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Sacramento, California 95814-2922

Subject: Revised Draft Environmental Impact Report/Environmental Impact Statement for the Delta Wetlands Project dated May 31, 2000

Dear Mr. Sutton and Mr. Finan:

This letter sets forth the comments of the Contra Costa Water District ("CCWD" or "District") on the Revised Draft Environmental Impact Report and Environmental Impact Statement ("EIR/EIS") for the Delta Wetlands Project ("Project") dated May 31, 2000.

The stated objective of this Revised Draft EIR/EIS is to address outstanding issues identified subsequent to the release of, and not adequately addressed in, the September 1995 Delta Wetlands Project Draft EIR/EIS, including, but not limited to, adverse Project impacts on the water supply and water quality of CCWD and other drinking water utilities using Delta water, as discussed in detail in State Water Resources Control Board's (SWRCB) November 25, 1998, letter to Delta Wetlands Properties (Walt Pettit to Anne Schneider). A subsequent SWRCB letter to Delta Wetlands Properties (Harry M. Schueller to Anne Schneider, dated July 16, 1999) sets forth the intended scope of the Revised Draft EIR/EIS and the approaches to be used to address each one of the outstanding issues: to summarize the issue, identify the new information and/or analysis, describe the revisions made to the analysis, and present the recommended changes in impact analyses and mitigation measures "Work Plan"). As is described more fully below, the Revised Draft EIR/EIS fails to adequately conform to the Work Plan set forth in the July 16, 1999 letter.

The District has previously provided extensive comments on many of the outstanding issues addressed in the May 2000 Revised Draft EIR/EIS, for example in CCWD's December 20, 1995 comment letter on the September 1995 Draft EIR/EIS (Walter J. Bishop to Jim Sutton, SWRCB, and Jim Monroe, U.S. Army Corps of Engineers) and in CCWD's exhibits and testimony for the 1997 State Water Resources Control Board Hearing ("Hearing") on Delta Wetlands Project Water Rights Applications. These documents are hereby incorporated by reference. Regrettably, many of the District's previous comments have again not been addressed in a meaningful manner in the Revised Draft EIR/EIS. **R8-1**

The May 2000 Revised Draft EIR/EIS fails to provide adequate analyses, fails to include sufficient details to comply with the disclosure purposes of CEQA and NEPA and to facilitate the purposes of the public review process, which include "sharing expertise, ... checking for accuracy, detecting omissions, discovering public concerns, and soliciting counter proposals" (CEQA Guidelines §15200), and contains significant analytic errors on a number of the outstanding issues, the effect of which is to grossly underrepresent the environmental consequences of the proposed project. The Revised Draft EIR/EIS:

1. Fails to adequately assess or disclose the impacts of the Project on CCWD and its customers. There is already substantial evidence in the record that the proposed Project will result in unacceptable adverse effects on municipal and industrial water supplies and injure CCWD and its customers by impairing the beneficial uses of water delivered by CCWD to the 430,000 people living within the District's service area. Unless adequate mitigation measures are proposed, adopted, and implemented, there is substantial evidence that the proposed Project will:
   a. Increase salinity at the District's drinking water intakes in many months by significantly reducing Delta outflow; **R8-2**
   b. Increase the concentration of drinking water contaminants by discharging from Project islands poor quality water with high concentrations of organic carbon, algae, salt, and possibly other contaminants;
   c. Increase acute and chronic public health risks caused by higher levels of disinfection by-products as a result of higher salinity and organic carbon concentration in the District's water supply;
   d. Impair the operation and significantly degrade the overall performance and water quality, emergency reliability, and ecosystem benefits of the District's recently completed Los Vaqueros Project;

2. Contains serious methodological errors and does not provide adequate and accurate disclosure of the Project's water quality impacts. The Revised Draft EIR/EIS:
   a. Significantly underestimates Project impacts at CCWD's Delta intakes. The Revised Draft EIR/EIS reports the water quality impacts only as aggregated averages of water quality at CCWD's diversion points and the State Water Project and Central Valley Project export **R8-3**

pumps (that is, as a single "export chloride" concentration), even though the Revised Draft EIR/EIS admits that the water quality and Project impacts at these three geographically distinct intakes are significantly different;

b. Uses a salinity simulation model that has unacceptably large errors. The model often under-predicts salinity at compliance locations at times of high salinity, by as much as 40% of the measured data. Because the Revised Draft EIR/EIS also improperly uses a significance criterion that considers Project impacts as large as 20% as less-than-significant (unless the salinity is within 90% of a water quality standard), Project impacts reported in the Revised Draft EIR/EIS as less-than-significant would have caused significant degradation and in some cases considerable exceedance of an applicable water quality standard;
c. Underestimates the Project's impacts on organic carbon concentration at the Delta's drinking water supply intakes. As a result, Project impacts on disinfection by-products level at CCWD's treatment plants and the resulting increase in public health risk are significantly underestimated;
d. Alters an established mathematical model used to estimate Project impacts on total trihalomethanes formation without a reasoned justification or substantial evidence. This leads to unverifiable model results of unknown accuracy which cannot be relied upon for assessing Project impacts;
e. Fails to even attempt to quantify the Project's impacts on bromate formation by arbitrarily dismissing a model that is widely accepted, published in peer-reviewed academic journals, and currently used by the U.S. Environmental Protection Agency in developing national drinking water regulations;
f. Improperly concludes significant environmental impacts as less-than-significant based on analyses using grossly inadequate significance criteria and an inaccurate water quality impact simulation model;
g. Fails to disclose Project impacts on the District's Los Vaqueros Project and the District's water quality goal of 65 mg/L chloride for delivered water;
h. Fails to document and justify substantial changes in an established model for predicting salinity in the Delta. This leads to results and conclusions on Project impacts that are unreliable and inadequate for disclosing environmental impacts under the California Environmental Quality Act and the National Environmental Policy Act;

R8-3 cont'd

3. Fails to provide adequate and enforceable mitigation measures for identified significant impacts, including those that have unacceptable adverse impacts on CCWD's municipal and industrial water supplies.

R8-4

Details of these comments are discussed in the Appendices to this letter.

The Revised Draft EIR/EIS is deficient in numerous respects. The California Environmental Quality Act and the National Environmental Policy Act require an EIR/EIS to adequately disclose all environmental impacts and provide sufficient information on mitigated Project operations. The

R8-5

Revised Draft EIR/EIS is legally required to contain detailed mitigation measures to ensure that the Project does not significantly affect Delta water quality, that the Project does not impair the beneficial uses to which the water is put, that the Project does not adversely affect the users of the water supplied by CCWD, that the Project does not cause unacceptable adverse impacts on municipal and industrial water supplies, and that the Project does not adversely impact the operations of CCWD's Los Vaqueros Project. To meet these statutory requirements, the District submits that the Revised Draft EIR/EIS must be revised again to comply with the Work Plan set forth in the July 16, 1999 letter and to address the comments and disclosure requests discussed in this letter. The revised document must then be re-circulated for additional review and comment.

R8-5 cont'd

The District would welcome an opportunity to discuss its concerns and supply further details on the technical issues raised in this letter. If you have any questions, please contact me at (925) 688-8187.

Sincerely,

Richard Denton
Water Resources Manager

Appendix A — Detailed Comments of the Contra Costa Water District on the Revised Draft Environmental Impact Report/Environmental Impact Statement for the Delta Wetlands Project

Appendix B — Summary list of additional information that must be included in the Project EIR/EIS

RAD/KTS/LMH

Delta Wetlands file

cc: City of Antioch
California Urban Water Agencies
Delta Wetlands Properties

Appendix A

Detailed Comments of the Contra Costa Water District on the Revised Draft Environmental Impact Report/Environmental Impact Statement For the Delta Wetlands Project dated May 31, 2000

This Appendix provides detailed discussions of the potential impacts of the proposed Delta Wetlands Project ("Project") on the facilities and operations of the Contra Costa Water District ("CCWD" or "District") and CCWD's detailed comments on the Revised Draft Environmental Impact Report and Environmental Impact Statement ("EIR/EIS") for the Project dated May 31, 2000. This Appendix is divided into five sections:

I. CCWD's drinking water facilities and operations
II. Project impacts and mitigation measures
III. Methodological deficiencies in the Revised Draft EIR/EIS
IV. Deficiencies in the analyses and scope of the Revised Draft EIR/EIS under the pertinent provisions of the California Environmental Quality Act, Pub. Res. Code §21000 *et seq* ("CEQA") and the National Environmental Policy Act, 42 U.S.C. §4321 *et seq* ("NEPA")
V. Adverse impacts to CCWD caused by increased salinity and concentrations of organic carbon and other constituents of concern at CCWD's intakes

Materials in the Revised Draft EIR/EIS are referred to in *underlined-italics* in the following.

I. CCWD Facilities and Operations

The Contra Costa Water District serves approximately 430,000 people throughout north, central, and east Contra Costa County. Its clients also include 10 major industries, 36 smaller industries and businesses, and 50 agricultural users. CCWD operates raw water distribution facilities, water treatment plants, and treated water distribution facilities. CCWD supplies raw and treated water to Antioch, Concord, Diablo Water District (serving Oakley), Pittsburg, Southern California Water Company (serving Bay Point), Martinez, and parts of Pleasant Hill and Walnut Creek.

CCWD's treated water service area encompasses all or part of the cities of Concord, Clayton, Clyde, Pleasant Hill, Walnut Creek, Martinez, and Port Costa. Treated water for this service area is provided from the District's Bollman Water Treatment Plant in Concord. The 75 MGD Bollman facility uses chlorination for pre-oxidation, chlorination and intermediate ozonation for disinfection, and chloramine as disinfectant residuals. CCWD also supplies treated water to the Diablo Water District ("DWD"), which serves customers in Oakley from a plant jointly owned by CCWD and DWD. This Randall-Bold Water Treatment Plant is a 40 MGD direct/deep-bed filtration plant and

utilizes both pre- and post-ozonation to provide a high quality drinking water to the customers in its service area.

CCWD is entirely dependent on the Delta for its water supply. The Contra Costa Canal and pumping facilities and the recently completed Los Vaqueros Project make up CCWD's principal water supply and delivery system. CCWD diverts unregulated flows and regulated flows from storage releases from Shasta, Folsom, and Clair Engle reservoirs into the Sacramento River as a contractor of the United States Bureau of Reclamation's ("Bureau") Central Valley Project ("CVP"). Under Water Service Contract I75r-3401 (amended) with the Bureau, CCWD can divert and re-divert up to 195,000 acre-feet annually ("AFA") of water from Rock Slough and the new Old River intake. Currently, CCWD uses between 125,000 and 140,000 AFA. CCWD can also divert up to 26,780 AFA of water under its Mallard Slough water rights (Water Rights License No.3167 and Permit No.19856). The City of Antioch and Gaylord Container, both customers of the District, also have their own water rights entitling them to divert water from the Delta.

CCWD has obtained its water supply from the Delta since 1940. Delta water is subject to large variations in salinity and mineral concentrations. CCWD and its customers' water supply from the Delta is also vulnerable to any man-made or natural sources that could degrade Delta water quality. Degradation in water quality is objectionable to CCWD customers, costly to residential and industrial users, and increases public health risk. The most recent federal drinking water regulations, promulgated in December 1998 by the U.S. Environmental Protection Agency, impose stringent limits on disinfection by-products in treated water. To ensure that the standards for the principal disinfection by-products that are currently regulated (maximum concentration limits for bromate, total trihalomethanes, and haloacetic acids) are met, low bromide and organic carbon levels in the source water are critical. Bromide level is directly proportional to chloride concentration in Delta water.

Contra Costa Water District is committed to supplying its customers with the highest quality water practicable and providing all reasonable protection of the supply from any known or potential source of hazardous contamination. CCWD Resolution No. 88-45 states in part that:

> *"CCWD is committed to reducing the concentration of sodium and chloride in the District's water, thereby reducing household and landscape irrigation concerns and industrial and manufacturing costs caused by the fluctuating sodium and chloride level of CCWD's Delta source...."*

In May 1987, CCWD's Board of Directors adopted water quality objectives for water distributed within its service area. The acceptable concentration levels for sodium and chloride were established at 50 milligrams per liter (mg/L) and 65 mg/L, respectively. In 1988, the voter-constituents of CCWD approved the issuance of bonds to finance the $450,000,000 Los

Vaqueros Project. The primary purposes of the Los Vaqueros Project are to improve the quality of water supplied to CCWD customers and minimize seasonal quality changes, and to improve the reliability of the emergency water supply available to CCWD. The Los Vaqueros Project consists of a reservoir with 100,000 acre-feet of storage, a new point of diversion (at Old River south of the State Highway 4 crossing) which operates in conjunction with the current Rock Slough diversion point, water conveyance and delivery facilities, pumping plants, and other facilities.

On June 2, 1994, the State Water Resources Control Board issued Decision 1629, which gives CCWD additional rights to divert and store water for beneficial uses. The State Board subsequently issued Water Rights Permits No.20749 and 20750 for filling Los Vaqueros Reservoir from the new intake at Old River near State Highway 4 and diversion and storage of the water of Kellogg Creek. These rights are in addition to the contractual rights to divert and store water furnished through the CVP. Construction of the reservoir began in September 1994 and was completed in January 1998. Diversion from the Old River intake for delivery to CCWD's service area began in the summer of 1997. Under Water Rights Permit No.20749, up to 95,850 AFA may be diverted for storage between November 1 of each year to June 30 of the succeeding year. On January 28, 1999, the Los Vaqueros Reservoir was filled to 100,000 acre-feet for the first time. In February 1999, CCWD released water from the reservoir for the first time for use in the District's service area. Releases from the reservoir are also scheduled to provide net benefits to the Delta ecosystem by allowing CCWD to cease all diversions during fish sensitive periods.

The key to successful performance of the Los Vaqueros Project is the District's ability to fill and continue to refill the reservoir from Old River with high quality water, and to use that high quality water for blending when salinity at the District's Delta intakes exceed the 65 mg/L chloride goal. Any increase in Delta salinity caused by new Bay-Delta projects will increase the demand on blending water from the reservoir and at the same time reduce the availability of high quality water for refilling. The District and the 430,000 people living in its service area will be injured through higher pumping costs to replace the extra blending water that has to be released, through additional treatment costs, and through increased corrosion and health risks of a higher salinity water supply.

II. PROJECT IMPACTS AND MITIGATION MEASURES

Unless adequate mitigation measures are proposed, adopted, and implemented, operations of the Delta Wetlands Project will have a number of significant adverse impacts on CCWD's water supply and water quality. These impacts can be classified as (a) impacts caused by Project diversions, (b) impacts caused by discharges from Project islands, and (c) other impacts. The Project will increase salinity, organic carbon, and possibly pathogens and other constituents of concern at the District's

R8-6

intakes and injure CCWD as a legal user of Delta water and its 430,000 customers. The adverse impacts to CCWD caused by increased salinity and concentrations of organic carbon and other constituents of concern at CCWD's intakes are discussed in further detail in Section V of this Appendix.

Analyses in the Revised Draft EIR/EIS grossly underestimate these Project impacts. Section III of this Appendix discusses these methodological deficiencies in detail. The District submits that the findings of less-than-significant for a number of water quality impacts in the Revised Draft EIR/EIS are based on a simulation model with an error of unacceptable magnitude and a significance criterion threshold so large that it mocks the mandate of full disclosure of environmental impacts under both the California Environmental Quality Act ("CEQA") and the National Environmental Policy Act ("NEPA"). **R8-6 cont'd**

For those impacts that the Revised Draft EIR/EIS acknowledges are significant or potentially significant, insufficient details are disclosed to enable a reader to evaluate or comment upon the mitigation measures proposed. Neither the operation nor the environmental impacts of the modified Delta Wetlands Project with these mitigation measures in place are even cursorily disclosed. **R8-7**

The Revised Draft EIR/EIS is also inadequate because it fails to meet CEQA and NEPA requirements on disclosing cumulative impacts. Except for the higher allowable pumping rate at Banks, the Revised Draft EIR/EIS fails to consider any of the numerous reasonably foreseeable proposed projects that could affect water quality in the Delta. The Revised Draft EIR/EIS must be revised to include impact analyses of the Project in conjunction with south Delta barriers, CALFED Bay-Delta Program preferred alternative components, and other reasonably foreseeable future projects in the Bay-Delta and Central Valley that could cumulatively increase Project impacts. The new analyses must be re-circulated for public review and comments. These analyses must be included in the Final Project EIR/EIS, along with revisions addressing the latest public comments. **R8-8**

The environmental impact analyses in the EIR/EIS must be appropriately revised to address the comments discussed in this Appendix. An adequate disclosure of the mitigated Project operations and the environmental impacts resulting thereof, once prepared, must be circulated for public review and comments before the lead agencies consider certifying the EIR/EIS. The Revised Draft EIR/EIS must be further revised and re-circulated for public review and comments. **R8-9**

The following is a discussion of the significant impacts of the Delta Wetlands Project on the District that would require further analyses to meet CEQA and NEPA requirements. Potential mitigating measures for these impacts are also included in the discussion.

A. Impacts of Delta Wetland diversions

The Delta Wetlands Project will increase the salinity at CCWD's Delta drinking water intakes by significantly reducing Delta outflow. As discussed in Section III, the Revised Draft EIR/EIS is inadequate because it fails to quantify the Project impacts with an acceptable accuracy and uses significance criteria with thresholds that are too large to be consistent with CEQA and NEPA requirements. The perfunctory conclusion that the impact on chloride concentration at Delta drinking water intakes is less-than-significant is not supported. Moreover, the Revised Draft EIR/EIS is inadequate because this salinity impact analysis is fundamentally flawed and does not meet the minimum requirements of environmental impact analysis set forth under CEQA and NEPA. A "hard look" at the water quality impacts of the proposed project would involve the use of a validated Delta hydrodynamic and salinity model, such as the Fischer Delta Model, to provide reliable disclosure of the Project impacts on salinity at CCWD's intakes and other compliance locations, as required by CEQA Guidelines §15384 ("substantial evidence").

Notwithstanding the requirement in the Work Plan that it does so, the Revised Draft EIR/EIS has failed to provide anything more than a perfunctory justification for maintaining the same significance criteria as the 1995 Draft. The District further requests that the significance criteria to be used to assess the water quality impacts of the proposed project be sufficiently restrictive to be consistent with the full disclosure purposes of both CEQA and NEPA. To this end, the District submits that a maximum of 5% Project-induced increase in the water quality parameters of concern, including, but not limited to, salinity (quantified as electrical conductivity and chloride and bromide concentration) and concentrations of organic carbon (both dissolved and particulate) and disinfection by-products (bromate, trihalomethanes, haloacetic acids, etc.) should be used in the Revised EIR/EIS. **R8-10**

The Revised Draft EIR/EIS is also inadequate because it fails to disclose the proposed Project's significant impacts on the operation of CCWD's $450 million Los Vaqueros Project and on CCWD's ability to meet its adopted water quality goal. Because the Revised Draft EIR/EIS only discloses salinity impacts at CCWD's Rock Slough and Old River intakes in terms of a single combined "export chloride" concentration, the District is unable to estimate how Project impacts will affect CCWD's ability to fill its Los Vaqueros Reservoir and make reservoir releases to blend with Rock Slough and/or Old River diversions to meet CCWD's 65 mg/L chloride concentration goal for delivered water.

The Revised Draft EIR/EIS must propose actions to mitigate these significant impacts [California Public Resources Code §21081.6, CEQA Guidelines §15126.4]. Ample opportunity exists for the Project to significantly reduce adverse salinity impacts on CCWD when diverting to Project reservoir islands while having minor impacts on Project water delivery. For example, *Table 4-19* shows large chloride increases at urban intakes in the Delta

caused by Project operations in water year 1980. Water with high salinity (*Tables 4-8, 4-10*) is diverted in December 1979 at times of low Delta outflow (*Table 3-5*), leading to large chloride increase at the intakes. This high salinity stored water is subsequently released from Project reservoirs in June and July 1980 (*Table 3-23*), causing large chloride increase at the intakes when the ambient water quality is generally good (*Table 4-12*). In this example, Project impacts would have been significantly reduced if diversion were made one or two months later, and would have little or no impacts on Project water delivery. The Revised Draft EIR/EIS is inadequate because it fails to propose and analyze mitigation measures that use additional criteria for reservoir island filling. Measures such as a higher minimum Delta outflow and/or lower maximum X2 location and chloride concentration at urban intakes for Project diversions must be considered to avoid adverse impacts on Delta water agencies. CEQA and NEPA require that all proposed mitigation actions be discussed in sufficient detail to enable the public to become informed of their efficacy, and that adequate environmental analyses are performed to ensure that the mitigation measures will in fact reduce significant impacts to a true level of insignificance. The Revised Draft EIR/EIS falls short on both counts.

R8-10 cont'd

B. Impacts of Delta Wetland discharges

Water stored on a shallow reservoir over an extended period of time will necessarily increase in salinity and organic carbon concentration. The peat soil on the Project islands and the high nutrients concentration in Delta water further accelerate the build up of organic carbon concentration in the stored water and increase the organic carbon concentration at Delta drinking water intakes when the stored water is released. The impact analysis in the May 2000 Revised Draft EIR/EIS fails to analyze the full range of potential organic carbon concentration in Project stored water despite the voluminous information that has become available since the 1995 Draft EIR/EIS was released. It fails to assess the corresponding increase at Delta intakes when the water is released.

Release of Project stored water will also necessarily increase salinity at the District's Delta water supply if the salinity of the discharge from Delta Wetlands islands exceeds that of the receiving water.

R8-11

Project-related increases in organic carbon concentration and bromide at Delta intakes could have significant adverse impacts on CCWD by increasing bromate, trihalomethanes, haloacetic acids, and other disinfection by-products produced during the water treatment process and thereby increasing the public health risk. CEQA Guidelines §15065(d) mandates a finding of significance if a proposed project will cause substantial adverse effects on human beings, either directly or indirectly. Thus, the Revised Draft EIR/EIS must mitigate this significant impact. In addition, the Revised Draft EIR/EIS fails to meet CEQA and NEPA requirements because it fails to provide a meaningful and reliable disclosure, in good faith, of Project impacts on disinfection by-products and public health.

Section III in this Appendix discusses the significant methodological errors in the Revised Draft EIR/EIS in assessing the Project's water quality impacts. The District has identified serious errors in the estimates of the potential range of organic carbon concentration in Project stored water, in relating the concentration of water quality parameters in stored water to impacts at the District's intakes, and in disclosing the Project impacts on the disinfection by-products concentrations at these intakes and the increase in public health risk. As a result, the Revised EIR/EIS fails to take a "hard look" at the environmental impacts of the proposed project.

Despite the serious methodological errors which significantly underestimate the water quality impacts, Chapter 4 in the Revised Draft EIR/EIS demonstrates that the Project would adversely impact urban water agencies by causing substantial increase in organic carbon and disinfection by-products concentrations at Delta intakes. **R8-11 cont'd**

CEQA and NEPA require an EIR/EIS to propose adequate and practicable mitigation measures in sufficient detail for all significant and potentially significant impacts. The District has previously and repeatedly requested that the Project proponents consider a number of mitigation measures to reduce the Project's impacts on salinity and organic carbon at Delta intakes. These comments are discussed in detail in the District's comment letter on the 1995 Draft EIR/EIS and the District's exhibits and testimony in the 1997 Water Rights Hearing and are hereby incorporated by reference.

C. Cumulative Impacts

CEQA and NEPA require that an EIR/EIS address the cumulative effects of proposed projects. CEQA Guidelines §15130(b)(1) defines the scope of cumulative impacts analysis to include either "A list of past, present, and reasonably anticipated future projects producing related or cumulative impacts, including those projects outside the control of the agency" or "A summary of projections contained in an adopted general plan or related planning document which is designed to evaluate regional or area-wide conditions. Any such planning document shall be referenced and made available to the public ...". The Revised Draft EIR/EIS is inadequate because it fails to meet this statutory requirement by erroneously considering only the "most likely change...that would directly influence proposed Delta Wetland operations" (*page 3-26* to *3-27*). The assertion that it "represents reasonably foreseeable future Delta conditions and regulatory standards" (*page 4-47*) is not supported by substantial evidence. **R8-12**

The Revised Draft EIR/EIS fails to disclose Project impacts under foreseeable future conditions. Section A.4 in Attachment A to the June 2000 CALFED Final Programmatic EIR/EIS includes a list of projects that will be or likely to be implemented over the life of the proposed Delta Wetlands Project. A number of these projects would, when considered

together with the Delta Wetlands Project, compound or increase the impacts on salinity and concentrations of organic carbon and disnfection by-products to the water supply of Delta water agencies. The cumulative impacts analysis in the Revised Draft EIR/EIS must, at a minimum, evaluate the cumulative effect of these projects

The cumulative impacts analysis in the Revised Draft EIR/EIS must also recognize that Delta water is already severely impaired as a source for drinking water and as an ecosystem. Delta waterways are listed under Clean Water Act §303(d) as significantly impaired for electrical conductivity ("EC"), unknown toxicity, and organic enrichment (organic carbon and other nutrients). Suisun Marsh wetlands are listed for salinity, low dissolved oxygen and salinity. Lower San Joaquin River is listed for salinity. Total Maximum Daily Load limits are required by law to reduce the pollutant levels in these impaired waters. The waters of California are also subject to the National Toxics Rule, state and federal anti-degradation policies, and the California Toxics Rule. The ongoing Triennial Review of the Sacramento-San Joaquin River Basin Plan conducted by the state's Regional Water Quality Control Board, Central Valley Region, will establish water quality standards for drinking water beneficial use. The Revised Draft EIR/EIS must analyze the cumulative impacts of the projects referenced in the preceding paragraph in the legal context described above, including these imminent water quality standards for drinking water beneficial use. The excessively large thresholds of significance used in the Revised Draft EIR/EIS prevent the public from evaluating the extent to which the proposed project would degrade Delta water quality, in conflict with long-term environmental goals and the existing and applicable laws of the state of California and the United States.

R8-12 cont'd

III. METHODOLOGICAL DEFICIENCIES IN THE REVISED DRAFT EIR/EIS

The Revised Draft EIR/EIS contains a large number of methodological and technical flaws which may not be apparent to the general public but which affect the accuracy and reliability of the environmental impacts analysis for the proposed Project and the validity of virtually all of the conclusions reached concerning water quality impacts. Similarly, a number of erroneous assumptions and inaccurate methodology used in the Revised Draft EIR/EIS could substantially affect the document's results and conclusions. To comply with CEQA and NEPA disclosure requirements, a number of the sections of the Revised Draft EIR/EIS must be revised according to the comments discussed in this Appendix. The new revisions must then be re-circulated for additional review and comments. The following is a description of the more significant methodological and technical flaws of the Revised EIR/EIS:

1. The Revised Draft EIR/EIS is inadequate because it fails to reliably disclose Project impacts on water quality at CCWD's and other Delta drinking water intakes

The water quality model (DeltaSOQ) used in the Revised Draft EIR/EIS assumes that the water quality at municipal intakes of the State Water Project ("SWP") at Clifton Court Forebay, Central Valley Project ("CVP") at Tracy Pumping Plant, and CCWD at Rock Slough and Old River are identical. The model implicitly assumes that the water quality impacts of the Delta Wetlands Project at these intakes are identical, regardless of the distances of the individual intakes from the Project discharge locations. In reality, as the Revised Draft EIR/EIS elsewhere admits, water quality at the SWP, CVP, and CCWD intakes can be, and often are, significantly different. The close proximity of CCWD's two primary intakes to the Project discharge locations makes CCWD more vulnerable to the potentially high salinity and organic carbon reservoir discharges from the Project. The averaged Project impacts disclosed in the Revised Draft EIR/EIS, even if they had been accurate, significantly under-report the magnitude of water quality degradation at CCWD's intakes caused by the proposed Project.

A more detailed hydrodynamics and water quality model must be used to identify the Project impacts at CCWD's intakes. The District has previously discussed this same issue in detail in a comment letter reviewing the draft water quality technical appendices of the 1995 Draft EIR/EIS (Richard Denton to Jim Sutton, SWRCB, letter dated February 10, 1995) and again in a comment letter on the 1995 Draft EIR/EIS after its release (Walter J. Bishop to Jim Sutton and Jim Monroe, December 20, 1995). The current Revised Draft EIR/EIS does not even acknowledge, let alone address these concerns, notwithstanding the directive to summarize significant issues. **R8-13**

The District therefore repeats its requests that more detailed water quality simulations are performed, for example, by using a validated Delta hydrodynamic and water quality simulation model such as the Fischer Delta Model. A well-calibrated and verified simulation model is critical to reliable disclosure of Project impacts at individual locations in the south Delta and elsewhere. Without an accurate simulation model, adequate environmental impact analyses would not be possible and the EIR/EIS will remain inadequate in meeting CEQA and NEPA requirements. The water quality impacts analysis must be revised to disclose the different adverse impacts at each of the urban drinking water intakes in the Central and South Delta, including CCWD's Rock Slough and Old River intakes, and re-circulated for public comment and review.

2. Water quality simulation model DeltaSOQ has large inherent errors and results in erroneous determination of Project impacts

The model used for water quality simulation (DeltaSOQ) significantly under-predicts salinity at Chipps Island and Emmaton. For example, the comparison of model results to historical **R8-14**

data in *Figure G-4* shows that the model under-predicts salinity at Chipps Island at times of salinity intrusion. The magnitude of this underestimate is more than 30% of the measured salinity, for example in the summer of 1972, beginning of water year ("WY") 1987, spring of 1988, WY 1991, and beginning of WY 1994. Similarly, the model also predicts much lower salinity than actual at Emmaton in WYs 1977, 1991 and 1992. Model predictions for Jersey Point are not discernible in *Figure G-4* and accordingly cannot be compared with measured data.

More to the point, the model also predicts significantly different salinity than the actual measured data at CCWD's Rock Slough intake most of the time (*Figure G-6*). In particular, the model predicts a smaller range of chloride variation than was actually measured in most of the years presented. Of most concern to the District is the under-prediction at times of high salinity at Rock Slough. For example, model results predict a chloride of under 100 mg/L at times when the actual measured historical chloride was over 200 mg/L in WY 1990. Similarly, model results predict a chloride of between 160 and 180 mg/L when historical chloride was between 195 and 235 mg/L in WY 1991. **R8-14 cont'd**

On the other hand, the model significantly over-predicts chloride at Rock Slough during periods when the historical measurements were low (*Figure G-6*). In fourteen (WYs 1972-5 and 1978-87) of the twenty years of comparison, there are numerous months when measured Rock Slough chloride is considerably below 50 mg/L when the model predicts chloride of 50 mg/L or higher. Note that chloride at CCWD's Los Vaqueros intake at Old River is usually even lower at times when chloride at Rock Slough is low.

The large error in model predictions leads to a water quality impact analysis that is fundamentally flawed in the following ways:

- The Revised Draft EIR/EIS adopts a significance criterion that considers a Project impact on salinity that could be as large as 20% as less-than-significant unless the salinity is within 90% of an applicable standard ("20%/90% criterion").[1] At times of high salinity, the potentially large under-prediction of model results could erroneously predict a salinity under the No Project alternative to be well below an applicable salinity standard, when in reality the salinity would have been close to the standard. As a consequence, a Project impact that causes water quality to significantly exceed that standard in reality is disclosed as less-than-significant in the Revised Draft EIR/EIS, when the model under-predicts and erroneously predicts the salinity increase to be within the 20%/90% criterion. **R8-15**

[1] The District considers such a large threshold as significance criterion inappropriate and violates both the letter and spirit of CEQA and NEPA. This is discussed separately in greater detail in Section III.6 of this Appendix.

- Project impacts on the chloride concentration at CCWD's intakes presented in Chapter 4 of the Revised Draft EIR/EIS are inconsistent with Project operations and are most likely erroneous. The decrease in "export chloride" in a number of months presented in *Table 4-19* defies reason:
  - In Jan 1981, mean "export chloride" is purported to decrease by 12.5 mg/L, when compared to the "No Project" alternative, when the Project is diverting at a monthly-averaged rate of 3,871 cfs (*Table 3-13,16)*. It defies reason that reducing Delta outflow could improve Delta salinity by the amount reported. **R8-16**
  - In June and July 1985, the monthly averaged "export chloride" is purported to decrease by more than 13 mg/L, compared to the "No Project" alternative, at a time when the Project is neither diverting nor releasing under the "unlimited demand" conditions (*Table 3-14*), or releasing only in June under the ""limited by south-of-Delta delivery deficits" conditions (*Table 3-17)*. It is not clear how this "salinity benefit" could come about.

- Section III.7 in this Appendix provides substantial evidence that the District's 65 mg/L chloride goal is an appropriate salinity objective for the environmental impact analysis. The District's ability to meet this chloride goal is critically dependent on the availability of high quality water for diversion at the District's Old River intake (typically a chloride concentration of 50 mg/L or less). As discussed above, DeltaSOQ over-predicts salinity at south Delta locations at times of low Delta salinity and would not provide an adequate analysis to fully disclose the Project's impacts on Los Vaqueros operations. **R8-17**

Thus, the salinity impact analysis in the Revised Draft EIR/EIS is inadequate and fundamentally flawed and does not meet the minimum disclosure requirements of environmental impact analysis set forth in CEQA and NEPA. The District repeats its requests that a validated Delta hydrodynamic and water quality model, such as the Fischer Delta Model, be used to provide a reliable disclosure of the Project impact on salinity at CCWD's intakes and other compliance locations, as required by CEQA Guidelines §15384 ("substantial evidence"). This new information must be prepared and circulated for review and comments and must be included in the Final Project EIR/EIS, along with revisions addressing these latest public comments. **R8-18**

2. Disclosure of the Project's impacts on organic carbon concentration is inadequate, misleading, and inaccurate. Estimates of Project impacts on disinfection by-product concentrations at CCWD's drinking water treatment plants is inadequate and subject to large errors **R8-19**

Substantial scientific evidence on organic carbon production in wetlands and in shallow water reservoirs on peat soil were presented in the 1997 State Water Resources Control Board ("Board") Hearing on Delta Wetlands Project Water Rights Applications ("Hearing"). Extensive testimony on the rate of release of organic carbon from Project islands, in particular

on the seasonal variation, quantity, and potential decrease after initial filling were submitted, cross-examined, and accepted into Hearing record. Despite this wealth of information, the Revised Draft EIR/EIS fails to disclose a reliable range of impacts on organic carbon concentration at the intakes and the corresponding increase in disinfection by-products resulting therefrom.

Extensive evidence has been introduced on the sources of organic carbon in a water storage system such as that on Project reservoir islands. This evidence shows a wide range of organic carbon loading and large seasonal variations. It also shows that, even at a high rate of organic carbon release from the peat soil, the amount of carbon released from the soil is only a small percentage of the carbon content in the top layer of peat soil. This evidence demonstrates that it is highly unlikely that the rate of organic carbon release will decrease appreciably after initial fillings on Project reservoirs. This contradicts one of the key assumptions used in the analysis in the Revised Draft EIR/EIS. **R8-19 cont'd**

Specifically, the disclosure of organic carbon loading and Project impacts on disinfection by-products in the Revised Draft EIR/EIS is deficient in the following aspects:

- The Revised Draft EIR/EIS fails to disclose the existence of seasonal variation in the rate of release of organic carbon or the effects thereof in its assessment of Project impacts. The analysis erroneously assumes, contrary to substantial evidence, that the rate of carbon release is constant. The Hearing record plainly shows that during some seasons algae and macrophytes in the reservoirs are by far the largest source of dissolved and particulate organic carbon in Project reservoirs. This source is highly seasonal and peaks in the summer, in most years just prior to the time of releases from Project reservoirs. Substantial empirical evidence also establishes that organic carbon release from peat soil increases with temperature, which is highest in the summer. Ignoring these seasonal variations leads directly to significant underestimates of organic carbon concentration in reservoir water at the proposed times of release of water from the reservoir islands. **R8-20**

- The three different organic carbon loading rates (at 1, 4, and 9 gm/m^2/month) analyzed in the Revised Draft EIR/EIS do not adequately represent the full range of loading rates presented in the Hearing. There is substantial evidence that the potential loading rate could be much higher. For example, CCWD Exhibit 10 in the Hearing shows that the averaged rate of organic carbon release from the peat soil alone could be up to 13 gm/m^2/month. CUWA Exhibit 6 discusses that primary productivity of emergent plant communities could be up to 2,250 gm/m^2/year (or an "average" of 188 gm/m^2/month, if seasonal variation is ignored).[2] The highest loading rate analyzed in the Revised Draft EIR/EIS, at 9 **R8-21**

[2] Estimates of organic carbon production in shallow water could be found in most aquatic ecology text books, for example in Tables 7-1 and 7-3 in *Wetlands*, 2nd edition, by Mitsch and Gosselink, 1993. The values reported are similar to those reported in Table 3 in CUWA Exhibit 6 for the Hearing.

gm/m^2/month, could significantly underestimate the actual loading by a factor of 20 or more. In addition, the Revised Draft EIR/EIS limits the 9 gm/m^2/month rate to the initial filling, notwithstanding substantial evidence presented in the Hearing that carbon loading would continue long after the initial filling. **R8-21 cont'd**

- The Revised Draft EIR/EIS fails to accurately disclose the organic carbon loading rates that could be deduced from the "SMARTS" experiments. It misinterprets the experiment set-up and conditions and underestimates the rate of organic carbon loading in a number of ways:
  - The estimates in the Revised Draft EIR/EIS are based on the unsupported and illogical assumption that organic carbon concentration in the tank water will cease to increase after the end of the 12-week-long experiment. This assumption grossly underestimates the rate of organic carbon loading in the experiments. For example, the Revised Draft EIR/EIS erroneously assumes that the total annual organic carbon load from the tanks in "SMARTS 1" would be the same as the load released in the 12-weeks duration of the experiment, in spite of the continuous increase in organic carbon concentration after the 12 weeks reported in a similar but longer duration experiment "SMARTS 2".
  - The Revised Draft EIR/EIS underestimates the rates of organic carbon load that could be estimated from "SMARTS 1". The analysis ignores results from those tanks with higher rates, asserting summarily that "... load estimates obtained from the flushing (flowing water) tanks are questionable" (*page 4-18*). Since sufficient information is available to estimate the uncertainties in the results, the result is that the expected range of organic carbon loading is not fully disclosed. From the results in "SMARTS 1", the District estimates the organic carbon loading rates in the four tanks with stagnant water to be 104, 230, 235, and 136 gm/m^2/year (average 176 gm/m^2/year) and the rates in the tanks with flowing water to be 207, 373, 443, and 202 gm/m^2/year (average 306 gm/m^2/year).[3] That is, the results ignored in the analysis in the Revised EIR/EIS (those from the flowing water tanks) are on average 74% higher than the results used (those from the tanks with stagnant water). Physically, a stagnant water tank would yield a lower carbon load because of the higher organic carbon concentration in its surface water.[4] This results in a smaller concentration gradient between the peat soil and the surface water, and the diffusive flux of organic carbon into the surface water would accordingly be smaller. Because the Project reservoir islands will have much deeper water than the tanks in the "SMARTS" experiments, the organic carbon concentration in the surface water will be lower than those in the "SMARTS 1" tanks (which were as high as 130 mg/L). Thus, the "SMARTS" results from the flowing tanks better reflect the anticipated actual project conditions, and are therefore more appropriate for use in the Revised Draft EIR/EIS. The equivalent range of monthly loads would be 17 – 37 **R8-22**

[3] The Revised Draft EIR/EIS misstates the range to be 24 – 54 gm/m^2/year in *Table 4-5*.
[4] Unlike in tanks with flowing water, organic carbon in the surface water in tanks with stagnant water is not removed..

gm/m^2/month. The largest rate assumed in the Revised Draft EIR/EIS of 9 gm/m^2/month is smaller than the range estimated from "SMARTS 1" by a factor of between 2 and 4. This is hardly the sort of "full disclosure" contemplated by CEQA and NEPA. **R8-22 cont'd**

- As discussed in Sections III.1 and III.2 above, the water quality model (DeltaSOQ) used in the Revised Draft EIR/EIS is incapable of accurately relating the quality of the stored water in Project reservoir islands to Project impacts on water quality at Delta drinking water intakes. These model results underestimate increases in organic carbon and bromide concentrations at these intakes, and consequently underestimate the levels of disinfection by-products estimated from these concentrations.

- The Revised Draft EIR/EIS uses an equation that is not supported by substantial evidence in estimating the total trihalomethanes formed in the water treatment process. This equation underestimates the effects of increasing bromide caused by the Project. This is discussed in more detail in Section III.4 below. **R8-23**

- The Revised Draft EIR/EIS fails to adequately disclose Project impacts on bromate levels at drinking water treatment plants using Delta water. The reason offered in the Revised Draft EIR/EIS for not addressing bromate impacts is unjustified. This is discussed in more detail in Section III.5 below.

Under state and federal law, the Revised Draft EIR/EIS must disclose the full range of Project impacts on organic carbon concentration at Delta municipal intakes that is both verifiable and consistent with current scientific understanding, and which encompasses the Hearing record and other more recent information available. The EIR/EIS must disclose in this fashion the Project impacts (caused by the increase in concentrations of organic carbon and bromide) on increased levels of disinfection by-products. This information must be prepared and circulated for public review and comments and must be included in the Final Project EIR/EIS, along with revisions addressing the latest public comments.

3. Without substantial evidence to support doing so, changes an established mathematical model to estimate Project impacts on total trihalomethane formation. This leads to results of uncertain accuracy and the disclosure on Project impacts is not reliable.

The changes made to the multiple nonlinear regression equation for total trihalomethanes ("TTHMs") production in the Revised Draft EIR/EIS (*Appendix G, pages G-16* to *G-18*) are arbitrary and capricious, for there is neither substantial evidence nor rigorous scientific analysis to justify the changes made in the Revised Draft EIR/EIS. No explanation is given to explain the assumption in the Revised Draft that the "basic chemistry" requires that the TTHMs concentration would only double if the bromide concentration is to increase by **R8-24**

twenty times, from 0.05 mg/L to 1.00 mg/L.[5] The Malcolm-Pirnie equation, which was developed based on rigorous scientific analysis of actual data using scientifically rigorous methods, suggests otherwise. The fact that the established proper THM formula was not even used for comparative purposes, and was instead replaced by an arbitrary equation, falls short of the mandate of "full disclosure", and calls the entire analysis into question.

As the Malcolm-Pirnie equation (*page G-17*) illustrates, TTHM formation depends on a number of factors such as pH, chlorine dose, and temperature in addition to the concentrations of organic carbon and bromide. To properly identify the effects of bromide alone on a single plot of TTHM versus bromide, the values of each of the other factors have to be identical. The Revised Draft EIR/EIS does not disclose whether the data used in *Figure G-10* are all obtained under the same assumed pH, temperature, dissolved organic carbon concentration, chlorine dosage and contact time. If not, the comparisons would be meaningless. The EIR/EIS must clearly disclose the actual values of these factors used in the analysis.[6]

R8-24 cont'd

[5] A high bromide concentration has two impacts on TTHMs formation. Firstly, THMs-Br weigh more. Secondly, bromide, when oxidized by chlorine (HOCl) to hypobromous acid (HOBr), can result in the formation of more molecules of THMs than chlorine does. This second effect was not considered in the reasoning in the Revised Draft EIR/EIS.

Trussell and Umphres (in: "The Formation of Trihalomethanes", *Journal of American Water Works Association*, volume 70, part 11, p.604, November 1978) found that the mole-concentration of TTHMs produced per mole of TOC in water chlorinated was related to the ratio of the mole-concentration of bromide incorporated into TTHMs (THM-Br) and the moles of TOC present. They found that the concentration of bromide in the source water influenced the rate of the TTHM reaction as well as the TTHM yield. That is, the rate of TTHM formation was higher in water with a higher bromide concentration.

Amy and colleagues (in: Amy, Gary L.; Lo Tan; & Marshall K. Davis, "The Effects of Ozonation and Activated Carbon Adsorption on Trihalomethane Speciation", *Water Res.*, volume 25, part 2, page 191, February 1991) found that HOCl functions as a more effective oxidant, whereas HOBr behaves as a more efficient halogen substitution agent. They performed THMFP tests and observed that, in general, less than 10% of the HOCl became incorporated into the TTHMs (THM-Cl), whereas as much as 50% or more of the bromide became incorporated into THM-Br. In addition, they found that, as the concentration ratio of bromide to TOC increased, the percentage of other brominated disinfection by-products increased.

[6] Two alternatives are commonly used in assessing the accuracy of a multiple-independent-variables equation (such as the Malcolm-Pirnie equation) using measured data. One approach is to plot the measured value against the predicted value computed from the actual values of the independent variables used in the measurement. The deviation of a data point from a 1:1 line on such a plot would give the discrepancy between the predictive equation and a "perfect correlation". In the case of the Malcolm-Pirnie equation for predicting TTHMs concentration (the predicted value) in chlorinated water, the independent variables are pH, temperature, chlorine dosage and contact time, concentrations of bromide and organic carbon, etc.

Another approach would be to plot the measured value divided by the entire equation except for the part accounting for the dependency of the particular variable of interest against that same variable. For example, to investigate the bromide dependency of TTHMs concentration using the the Malcolm-Pirnie equation, measured values of the variables would be substituted into the expression

$$\{ [\text{TTHM concentration}] / [7.21\ DOC^{0.004}\ UVA^{0.534}\ (Cl_2 - 7.6\ NH_3 - N))^{0.224}\ Hours^{0.255}\ Temp^{0.48}\ (pH - 2.6)^{0.719}]\}^{1/2.01} - 1$$

Because of the arbitrary and capricious nature in which changes to established formulae have been made without any justification or supporting evidence, and without disclosing the effects of those changes, the Revised Draft EIR/EIS does not adequately disclose water quality impacts and may in fact be hiding significant impacts. The analysis must be revised and the proper formulae and analyses used and the results must be properly disclosed. The new analysis must be re-circulated for comment. In its present state, the analysis is wholly inadequate and fails to properly disclose important impacts.

R8-24 cont'd

4. Fails to disclose Project impacts on bromate formation and public health risk

The Revised Draft EIR/EIS fails to meet CEQA and NEPA requirements because it fails to disclose Project impacts on bromate formation in municipal water treatment plants and the resultant public health risk. The Revised Draft EIR/EIS misrepresents the Ozekin equation (*page G-19*) and erroneously rejects its use, even though the Ozekin equation is a widely accepted model currently being used by the U.S. Environmental Protection Agency to develop new drinking water regulations.

The correct form of the Ozekin equation is[7]

$$\text{bromate} = 1.63\ 10^{-6}\ \text{DOC}^{-1.26}\ \text{pH}^{5.82}\ (\text{ozone dose})^{1.57}\ \text{bromide}^{0.73}\ \text{time}^{0.28}$$

R8-25

The Revised Draft EIR/EIS (*page G-19*) discloses that it mistook the exponent for the dependency on dissolved organic carbon concentration to be 0.004 (instead of –1.26). The Revised Draft EIR/EIS does not disclose whether the analysis in *Figure G-11* was entirely based on the erroneous equation as written.

As illustrated in the Ozekin equation, bromate formation varies with a number of factors such as pH, ozone dose and contact time, in addition to the concentrations of organic carbon and bromide. In actual practice, the ozone dose applied increases with organic carbon concentration in the source water. Analyses using the Ozekin equation usually assume a linear relationship, such that bromate formation increases with dissolved organic carbon concentration ("DOC") to the one-third power ($\approx \text{DOC}^{-1.26+1.57} = \text{DOC}^{0.31}$).

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which are plotted against the measured values of bromide concentration This would more directly delineate the dependency of TTHMs concentration in chlorinated water on bromide concentration. A similar plot could be made to examine the DOC dependency.

The Revised Draft EIR/EIS, in lieu of using rigorous approaches widely used in scientific analyses, uses an arbitrary and capricious presentation to distort the effects of bromide concentration and DOC concentration on TTHMs formation.

[7] See, for example, Appendix A in "Bay-Delta Water Quality Evaluation" by D.M. Owen, P.A.Daniel, and R.S.Summers, 1998, for a brief discussion of the conditions the equation was derived.

To properly identify the effects of bromide (or DOC) alone on a single plot of bromate versus bromide (or DOC), the values of each of the other factors have to be identical. The Revised Draft EIR/EIS fails to disclose whether the data used in *Figure G-11* was all obtained under the assumed pH and ozone contact time, for example. If not, the comparisons would be meaningless. The EIR/EIS must clearly disclose the actual values of all of these factors used in the analysis. Footnote 6 in this Appendix discusses two accepted approaches for analyzing the relationship between the concentration of a disinfection by-product and bromide or organic carbon concentration.

The Contra Costa Water District and other urban agencies have produced substantial evidence in the Hearing supporting their concerns on Project impacts on bromate formation. The Work Plan for this Revised Draft EIR/EIS explicitly requires revision on the assessment of bromate formation (Water Quality work component 2.2, page 13 of July 16, 1999 SWRCB letter, Harry M. Schueller to Anne J. Schneider, representing Delta Wetlands Properties). The conclusory and unsupported assertion that "... the (Project) effects on bromate concentration are not calculated because no reliable relationship between bromate and DOC or Br could be identified" (*Page 4-30*) fails to conform to the Work Plan, and is not in any way justified. **R8-25 cont'd**

The Revised Draft EIR/EIS is inadequate because it fails to disclose Project impacts on bromate formation and the corresponding public health risk. CEQA and NEPA require that these impacts be disclosed in the Revised Draft EIR/EIS and that a new draft be prepared and re-circulated for public review and comments.

5. Conclusions on the Project's environmental impacts are based on inappropriately large thresholds as the criteria for significant impacts

The Revised Draft EIR/EIS is inadequate in meeting CEQA and NEPA requirements because it uses a set of significance criteria that is so large that it is inconsistent with the purpose and requirements of CEQA and NEPA. The criterion leads to a finding of less-than-significant impact even if the Project would increase a water quality parameter by as large as 20% of an applicable standard, unless the parameter is within 90% of the standard ("20%/90% criterion"). The use of such a large threshold of significance fails to disclose substantial environmental degradation and is in plain violation of applicable federal and state anti-degradation policies. **R8-26**

The discussion in the Revised Draft EIR/EIS in support of the 20%/90% criterion is based on subjective "professional experience" even though the criterion is illogical, unsupported by substantial evidence, and is inconsistent with statutory requirements of CEQA and NEPA. The criterion was purportedly based on the assumption that natural variability in the Delta environment of the water quality variable addressed is 10% of a numerical standard, if

a standard exists, or 10% of the mean value of the variable in the absence of a numerical standard. Measurement errors and modeling uncertainties are likewise assumed to be 10% of the numerical standard, if a standard exists, or 10% of the mean value of the variable in the absence of a numerical standard. The Revised Draft EIR/EIS further assumes that the variability due to simultaneous "natural variability" and "modeling uncertainty" are additive. It then concludes that the threshold of significance is to be 20% of the numerical standard, if a standard exists, or 20% of the mean value of the variable in the absence of a numerical standard.

The District is not aware of any precedent or logic supporting the use of "natural variability" and add to "modeling uncertainties" in determining significance threshold in CEQA or NEPA. Even if there was, the resulting threshold of significance, when evaluated in accordance with substantial evidence, would have been so large as to render the environmental impact analysis meaningless.

Historical data discussed in Chapter 4 of the Revised Draft EIR/EIS (*page 4-8* to *4-16*) demonstrates that the "natural variability" in the Delta environment is much greater than the 10% assumed. All the water quality parameters presented in that chapter (EC at various stations, TOC, chloride) have a "natural variability" of at least 50%. Moreover, Appendix G of the Revised Draft EIR/EIS shows that the water quality model used in the analysis (DeltaSOQ) also has an error ("modeling uncertainty") much larger than 10%. Section III.2 in this Appendix shows that this modeling uncertainty is 40% or more for salinity at Chipps Island. Adding the values of the "natural variability" and "modeling uncertainty" that are supported by substantial evidence would lead to a threshold for significance of 90%, which would plainly render any environmental impact analysis meaningless and is clearly inconsistent with the purpose of CEQA and NEPA.[8]

R8-26 cont'd

The Public Resources Code of the State of California, §21068, defines a "significant effect on the environment" as "substantial, or potentially substantial, adverse change in the environment." CEQA Guidelines §15384 define "substantial evidence" as "enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion... *Argument, speculation, unsubstantiated opinion* or *narrative, evidence which is clearly erroneous or inaccurate*, or evidence of social or economic impacts which do not contribute to or are not caused by physical impacts on the environment does not constitute substantial evidence" [emphasis added]. CEQA Guidelines §15064.7 defines threshold of significance as "...an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant. ... Threshold of significance to be

[8] The large modeling inaccuracy in this case points to the need to develop more accurate models for determining environmental impacts. Modeling errors must not be used as an excuse to increase the magnitude of the significance criteria threshhold and thereby hiding the actual impacts of a project.

adopted for general use ... must be adopted by ordinance, resolution, rule, or regulation, and developed through a public review process and be supported by substantial evidence." The 1997 Hearing provided an appropriate public process for the development of such a significance criterion. Both CCWD and CUWA submitted substantial evidence supporting a significance criterion of 5% change, or less. The Revised Draft EIR/EIS simply ignores this information, despite the directive in the Work Plan to describe such information.

The District has also submitted testimony in the 1997 Hearing that the EIR/EIS must assess Project impacts on the District's delivered water quality goal. This water quality objective is discussed in more detail in the following section. In a separate water rights hearing, the District submitted to the SWRCB substantial evidence[9] amply documenting the significant adverse impacts on the District caused by an increase of 5 mg/L of CCWD's delivered water goal of 65 mg/L chloride. (CCWD respectfully requests that the lead agencies take official notice of that evidence, additional copies of which will be furnished upon request.) This impact is less than 8% of the delivered water goal and much less than (about one-tenth of) the 20% significance criterion used in the Revised Draft EIR/EIS. For comparison purpose, a 5 mg/L chloride impact would be only 2% of the 250 mg/L chloride standard used in the Revised Draft EIR/EIS for salinity impact analysis. Despite that much smaller threshold, a project that causes a 5 mg/L chloride increase would significantly impair the operation of the Los Vaqueros Project and impair the benefits of the Los Vaqueros Project to CCWD and the Delta ecosystem. As is described more fully in the referenced evidence, the adverse impacts on CCWD include reduced emergency water supply reliability, degraded delivered water quality, reduced fishery benefits, reduced operational benefits to CVP, and impaired recreational value. A threshold of significance of 20% of the 250 mg/L chloride standard is clearly inappropriate for the "full disclosure" required of environmental impact analysis.

R8-26 cont'd

New Project impacts analyses based on a set of much smaller significance criteria that is consistent with CEQA and NEPA requirements must be prepared and circulated for public review and comments. These analyses must be included in the Final Project EIR/EIS, along with revisions addressing the latest public comments.

6. <u>The Revised Draft EIR/EIS fails to disclose Project impacts on the District's Los Vaqueros Project and the District's water quality goal of 65 mg/L chloride for delivered water</u>

In May 1987, CCWD's Board of Directors adopted water quality objectives of 65 mg/L chloride and 50 mg/L sodium for water distributed within its service area. In 1988, the voters in the District's service area approved funding for the Los Vaqueros Project to meet

[9] In: CCWD Exhibit-3, titled "The impacts of increased Delta salinity on Contra Costa Water District and the performance of CCWD's Los Vaqueros Project", Expert Testimony of William J. Hasencamp before the State Water Resources Control Board, State of California, in Phase 5 "The responsibilities for meeting the dissolved oxygen and southern Delta salinity objectives" in the Bay-Delta Water Rights Hearing commencing July 1, 1998.

these water quality objectives. The Los Vaqueros Project has been completed and in full operation since 1998.

The need to improve water quality is clearly stated in the Los Vaqueros Project EIR/EIS[10]. The Los Vaqueros EIR/EIS states that:

> It may be difficult to meet primary drinking water standards expected to be established by the U.S. Environmental Protection Agency in the near future without modifying CCWD's treatment processes. Necessary equipment modifications to meet anticipated primary drinking water standards are being planned at CCWD's existing water treatment plant and are being incorporated into the construction of the Randall-Bold Water Treatment Plant.
>
> CCWD's conventional water treatment processes, however, do not lower the concentration of parameters for which secondary standards exist, such as sodium, chloride, total dissolved solids, and water hardness. These parameters diminish the overall water quality delivered to municipal customers and industry. Existing secondary standards for chloride and TDS sometimes cannot be met with the present CCWD system, particularly during critical years. Levels of sodium and water hardness, and associated health risks to some individuals, also can be high during periods of water quality degradation.

Both the Randall-Bold Water Treatment Plant and the Los Vaqueros Project have been completed and are in operation. In addition, the District has recently completed an extensive improvement project at the Bollman Water Treatment Plant with the conversion to ozonation.

The District has invested heavily in improving the water quality of its water supply. The financial burden the District and its 430,000 customers assume in committing to these investments are based on the premise that source water quality from the Delta will be protected from degradation that would reduce or erase the benefits of these heavy investments.[11] The District and its customers look towards state and federal agencies to uphold the statutory environmental protection provided for in CEQA and NEPA and the water quality protections provided for in the state and federal anti-degradation statutes. CEQA and NEPA compliance documents for projects that could degrade CCWD's source water supply must fully disclose the projects' potential impacts on CCWD's ability to meet its water quality goals.

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[10] Pages 1-1 *et seq* in Final Stage 2 Environmental Impact Report/Environmental Impact Statement for the Los Vaqueros Project SCH#91063072, Volume I, September 1993.

[11] Policy statement of Walter J. Bishop, General Manager of CCWD, in the 1997 Water Rights Hearing, in particular Hearing Transcript p.1323 *et seq*.

The Revised Draft EIR/EIS is inadequate because it fails to fairly and fully disclose the impacts of the proposed Delta Wetlands Project on CCWD's ability to meet its water quality goals. The Revised Draft EIR/EIS must be further revised to incorporate a detailed analysis of the Project impacts on the water quality at CCWD's Rock Slough and Old River intakes. These impacts must be identified at those sites rather than being masked as an "averaged" "export chloride" impact. The impacts in water quality in CCWD's Los Vaqueros Reservoir and the quality of water delivered to CCWD's service area must be disclosed. The revised EIR/EIS must be re-circulated for public review and comments. **R8-27**

8. The Revised Draft EIR/EIS fails to document and justify substantial changes in an established model for predicting salinity in the Delta. This leads to results and conclusions on Project impacts that are unreliable

The Revised Draft EIR/EIS (*page G-9*) describes the DeltaSOQ calculations for salinity intrusion. These are stated as "using the Contra Costa Water District (CCWD) methodology". This statement is factually incorrect. The "CCWD methodology," more commonly referred to as the "antecedent outflow-salinity model" (or the "G-Model"), is used by CCWD in determining electrical conductivity ("EC") in western Delta and chloride concentration in Rock Slough due to seawater intrusion. This G-Model has been calibrated and verified with extensive historical data.

The component in the DeltaSOQ model used in the Revised Draft EIR/EIS that corresponds to this G-Model has been substantially altered, eliminating entirely the time it takes for the chloride concentration at Rock Slough to respond to changes in Delta outflow. For example, the 14-days time delay used in the G-Model (between changes in salinity at Jersey Point and Rock Slough), is assumed to be 0 days in the DeltaSOQ model. In other words, the DeltaSOQ model erroneously assumes that salinity in Rock Slough responds instantaneously to salinity change in Jersey Point, which is physically impossible. This fundamental alteration of the G-Model is contrary to the basic physical processes governing flow and salinity transport in the Delta. This single assumption causes modeled water quality impacts at Rock Slough to occur too early. The Revised Draft EIR/EIS fails to present any reason or any substantial evidence to support the change. **R8-28**

The Revised Draft EIR/EIS also fails to provide any substantial evidence to support using substantially different coefficients in the equations for predicting EC at Jersey Point and chloride concentration at Rock Slough. The coefficients used in the Revised Draft EIR/EIS *page G-9* to *G-10*) are substantially different from those in the 1995 Draft EIR/EIS (see pages B2-14 and B2-15 of the 1995 Draft EIR/EIS). A key coefficient in the DeltaSOQ equation for effective outflow is changed from 5,000 to 6,600 (a 32 percent increase) without any supporting evidence.

The Revised Draft EIR/EIS is inadequate because it fails to disclose the reason for the modifications to this aspect of the G-Model, which is critical to estimating EC at Jersey Point and chloride concentration at Rock Slough. Accurate estimates of the salinity at these locations are essential to accurately estimating and meaningfully disclosing Project impacts. The Revised Draft EIR/EIS must be further revised to provide accurate predictions of the salinity at these two key locations using a valid calibrated model verified by substantial evidence. The District requests that the G-Model be used as is and without unjustified and unexplained changes. If the modified salinity-outflow model continues to be used, the results using both the G-Model and the modified model must be disclosed and compared to allow full disclosure of the impacts of the modifications. The model results must be fairly disclosed and circulated for public review and comments and must be included in the Final Project EIR/EIS, along with revisions addressing the latest public comments. **R8-28 cont'd**

IV. DEFICIENCIES IN THE ANALYSIS AND SCOPE OF THE REVISED DRAFT EIR/EIS

The Revised Draft EIR/EIS is inadequate in meeting CEQA and NEPA requirements because it fails to disclose a number of significant environmental impacts of the proposed Project. An EIR/EIS must identify and focus on the possible significant environmental impacts of a proposed project [Pub. Res. Code § 21000(a); Title 14, Cal. Code Regs. ("Guidelines") § 15126]. The analysis should clearly identify direct and indirect impacts in the short-term and in the long-term. "While foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can" [Guidelines § 15144]. The Revised Draft EIR/EIS for the Delta Wetlands Project fails to meet these requirements.

A. Unavoidable Significant Impacts

R8-29

An EIR must identify any significant impacts that cannot be avoided if the project is implemented, including those that can be mitigated but not reduced to a level of insignificance [Pub. Res. Code § 21100(b); Guidelines § 15126(b)]. Where the only means of avoiding such impacts would be to impose an alternative design on a proposed project, but the lead agency nevertheless decides not to require such design changes, the EIR must describe the implications of impacts involved and the agency's reasons for choosing to tolerate them rather than requiring the alternative design [Guidelines § 15126(b); Pub. Res. Code § 21000(b)]. The Revised Draft EIR/EIS fails to meet these requirements.

Section II of this Appendix gives a detailed discussion on the significant impacts of the proposed Project. Section III gives a detailed discussion on the methodological deficiencies in the Revised Draft EIR/EIS. The District requests that a revised EIR/EIS be prepared to address these comments in detail and re-circulated for review.

B. Increased risks to public health

An EIR must fully describe the impacts on public health, if any, of the proposed project. CEQA Guidelines 15065(d) provides for a mandatory finding of significance if a project will cause substantial adverse effects on human beings, either directly or indirectly. If the proposed project does substantially increase health risk, the reasons that the proposed project is believed by its proponent to be justified for immediate implementation should be explained [Guidelines § 15126(e)]. **R8-30**

Sections II and III of this Appendix give detailed discussions on the failure of the Revised Draft EIR/EIS to adequately disclose the Project impacts on the acute and chronic public health risks health effects of increased disinfection by-products in drinking water supplies. The Revised Draft EIR/EIS also fails to explain the reasons why immediate implementation of the Project is justified in light of such potential health risks. The District requests that a revised EIR/EIS be prepared to address these comments in detail and re-circulated for review.

C. Significant cumulative impacts.

An EIR must identify and discuss significant cumulative impacts [Guidelines §15130(a)]. Cumulative impacts are those that are "individually limited but cumulatively considerable" [Pub. Res. Code §21083(b)]. The cumulative impact analysis must contain three elements. First, it must identify related projects through the use of either a project list or a projection approach [Guidelines §15130(b)(1)]. Second, it must contain a summary of the expected environmental effects to be produced by related projects [Guidelines §15130(b)(2)]. Finally, it must contain a reasonable analysis of the cumulative impacts of the related projects and an examination of reasonable options for mitigation measures for a proposed project [Guidelines § 15130(b)(3)]. **R8-31**

The Revised Draft EIR/EIS fails to adequately discuss the cumulative impacts of the proposed Project in combination with other reasonably foreseeable Projects in the Delta, as discussed above. An additional required analysis is how the proposed Project might be coordinated operationally with the Los Vaqueros Project, as well as an analysis of the environmental impacts of such operations. Salinity increases at the District's intakes should be examined in conjunction with impacts from other proposed projects that may also cause elevated salinity and organic carbon concentration in parts of the Delta. A revised EIR/EIS must be prepared to address these comments in detail and re-circulated for public review and comments..

D. The EIR/EIS fails to adopt legally adequate mitigation measures

An EIR must identify mitigation measures that could minimize each significant environmental effect [Guidelines § 15126(c)]. Where several mitigation measures are available, each should **R8-32**

be discussed and the basis for selection of a particular measure identified [*Id.*].

The Revised Draft EIR/EIS fails to identify mitigation measures that are adequate to minimize the significant impacts of the Project on Delta water quality, as discussed above. The Revised Draft EIR/EIS must contain detailed mitigation measures and outline an implementation plan to ensure that the diversions to, operations of, and discharges from, Delta Wetlands Project islands do not significantly affect concentrations of organic constituents and potential contaminants in ambient Delta channels or at the Delta intakes and export pumps. This will also help to ensure that Project diversion, operations, and discharges do not impair beneficial uses of the water, injure lawful users of water, or cause unacceptable adverse impacts on municipal water supplies or other beneficial uses. The District requests that a revised EIR/EIS be prepared to address these comments in detail and re-circulated for public review and comments.

R8-32 cont'd

V. Adverse impacts to CCWD caused by increased salinity and concentrations of organic carbon and other constituents of concern at CCWD's intakes

As more fully described in the material of which official notice is requested, higher salinity adversely impacts on the District's municipal and industrial water supply and the District's customers in the following ways:

- Increased salinity (quantified as total dissolved solids, chloride, bromide, and sodium concentrations) will impact industrial and municipal uses by increasing corrosion and causing health problems. Increased salinity in source water also reduces the potential and feasibility of recycling (water reuse) and conjunctive uses.

- A higher bromide in source water leads to higher disinfection by-products such as bromate and brominated trihalomethanes, makes it more difficult for urban agencies to meet increasingly stringent drinking water regulations and increases health risk.

- A higher salinity at CCWD's intakes reduces the performance of the Los Vaqueros Project by decreasing the frequency CCWD could meet its delivered water salinity goal and by increasing the pumping cost associated with replenishing blending water releases from the Reservoir. The water quality goal of CCWD's $450,000,000 Los Vaqueros Project is to provide its customers with a delivered water quality of 65 mg/L chloride or less. The Los Vaqueros Project improves the quality of CCWD's water supply by storing high quality Delta water (typically water with a chloride concentration of less than 50 mg/L), when it is available, in the Los Vaqueros Reservoir for blending with Delta diversions later on when salinity in Delta water is high. The Los Vaqueros Project also includes a new Delta intake, at Old River south of Broden Highway (State Route 4), which usually has a better water quality

than CCWD's existing intake at Rock Slough. A higher salinity in the Delta will decrease the amount of water available for storage in the Los Vaqueros Reservoir and increase the salinity of both the stored water and water diverted directly from the Delta.

As more fully described in the material of which official notice is requested, increases in organic carbon concentration at CCWD's intake adversely impacts the District's municipal water supply and the District's customers in the following ways:

- A higher particulate and dissolved organic carbon concentration in the source water requires a higher disinfectant (ozone) dosage and increases treatment cost.

- A higher ozone dosage also increases the level of disinfection by-products such as bromate in the treated water, increases health risk to the public, and makes it more difficult to comply with existing and future drinking water regulations. This impact could be further aggravated by a simultaneous increase in bromide level caused by salinity increase.

- Increased organic carbon level increases formation of disinfection by-products such as trihalomethanes and haloacetic acids during chlorination and chloramination, increases health risk to the public, and makes it more difficult to comply with existing and future drinking water regulations.

As more fully described in the material of which official notice is requested, increases in pathogens and other water quality constituents of concern at CCWD's intake adversely impacts the District's municipal water supply and the District's customers in the following ways:

- Higher pathogens level (in particular protozoan such as *Cryptosporidium parvum* and *Giardia lamblia*) in the source water requires a higher level of disinfection. This leads to higher disinfection by-products concentrations, increases public health risk, and makes it more difficult to comply with existing and future drinking water regulations. It also increases treatment cost.

- Higher concentrations of pesticides, heavy metals, and other toxins could lead to exceedance of national drinking water standards for primary pollutants. The number of regulated pollutants has been increasing steadily in the past thirty years and will increase further under the recently re-authorized federal Safe Drinking Water Act.

California water users have expended a great deal of effort to develop programs for improving water quality in the Delta. Contra Costa Water District, in collaboration with a number of urban water agencies, has been an active participant in the development and implementation of the Bay-Delta Accord, implementation of the Central Valley Project Improvement Act, and the CALFED Bay-Delta Program. CCWD has contributed both funding and in-kind services to stop

degradation of Delta water quality and improve conditions in the Delta. Source control is one of the critical elements in all of these efforts. Potential degradation of Delta water quality, if left unmitigated, will significantly reduce the benefits or nullify these efforts which have been made at significant costs.

Appendix B

Summary list of additional information that must be included in the Project EIR/EIS

CCWD has identified a number of cases where the Revised Draft EIR/EIS is inadequate and the Draft EIR/EIS will need to be further revised and recirculated for public comment and review. This appendix is intended to assist the lead agencies in this process by summarizing the key requested revisions. More details are given in Appendix A.

1. Detailed analysis of monthly impacts at CCWD's intakes, other municipal water supply intakes and compliance locations using a validated Delta hydrodynamic and salinity model, such as the Fischer Delta Model, to provide detailed reliable disclosure of the Project impacts on salinity at these locations. Data should be disclosed as absolute monthly chlorides or EC and the corresponding changes from the existing No-Project base case.

2. Reanalyse water quality impacts in the Central and South Delta and disclose the different impacts at individual urban Delta drinking water intakes such as the State Water Project ("SWP") intake at Clifton Court Forebay, Central Valley Project ("CVP") intake at Tracy Pumping Plant, and CCWD's intakes at Rock Slough and Old River. The present model DeltaSOQ is grossly inadequate because it only presents a single combined Central Delta chloride concentration. The CALFED Bay-Delta Program, Department of Interior CVPIA, CCWD Los Vaqueros Project and other Bay-Delta environmental documents have all provided and disclosed water quality impacts with this required level of geographic detail in the South and Central Delta. Data should be disclosed as absolute monthly chlorides or EC and the corresponding changes from the existing No-Project base case for each intake location. **R8-33**

3. Use of a 5% significance criterion for Project impacts on the water quality parameters of concern, including, but not limited to, salinity (quantified as electrical conductivity and chloride and bromide concentration) and concentrations of organic carbon (both dissolved and particulate) and disinfection by-products (bromate, trihalomethanes, haloacetic acids, etc.). If other significance thresholds are also used, data must be disclosed that indicates the effects of choosing different thresholds on the impact analysis conclusions.

4. Reanalysis of Delta Wetlands operations which include of operations criteria that delay reservoir island filling after the first winter storms to eliminate the effects of increased seawater intrusion on Delta drinking water intakes and ensure only the highest quality water is diverted onto the islands. Such criteria could be based on based on criteria such as higher minimum Delta outflow threshold, and/or lower maximum X2 location and chloride concentration criteria at urban intakes. Data should be provided that clearly discloses the reduction in adverse water quality impacts, and water supply impact on Delta Wetlands, if any, when these mitigation measures are implemented.

5. Reanalysis of organic carbon impacts based on a more realistic range of organic carbon concentration in Project stored water, taking into account seasonable variations in organic carbon input, and incorporating important information from the SMARTS flowing water tests.

6. Reanalysis of future cumulative impacts of the Delta Wetlands Project which includes are more complete combination of future Bay-Delta Projects, including those being developed by the CALFED Bay-Delta Program, taking into account future Total Maximum Daily Load limits as required for impaired waterways such as the Delta.

7. Reanalysis of water quality impacts in terms of CCWD's ability to meet its 65 mg/L delivered chloride goal. Data should disclose monthly water quality at CCWD's Rock Slough and Old River intakes plus the corresponding Los Vaqueros Reservoir operations and changes in CCWD delivered chloride concentrations.

R8-33 cont'd

8. Reanalysis using the original scientifically-derived and peer-reviewed multiple nonlinear regression equation for total trihalomethanes ("TTHMs") rather than an arbitrarily modified version of the Malcolm-Pirnie model.

9. Analysis of the Project impacts on the formation of bromate water treatment plants as previously proposed in the work plan for the Revised Draft EIR/EIS, using the widely-accepted Ozekin model which is currently being used by the U.S. Environmental Protection Agency to develop new drinking water regulations. Data must be provided for bromate production with at least the same level of detail as THM production data, including detail for each of the urban drinking water intakes in the South and Central Delta.

10. Reanalysis using Contra Costa Water District's (CCWD) original salinity-outflow (G-Model) methodology. If the modified but significantly different model continues to be used, detailed disclosures of the reasons for the modifications and a detailed comparison of the differences in calculated impacts using both methods must be given. The reasons for changing the equation coefficients between the 1995 Draft and the Revised Draft must also be disclosed.

11. Full disclosure of Project impacts on the acute and chronic public health risks health effects of increased disinfection by-products in drinking water supplies.

12. Development of mitigation measures and outlining an adequate implementation plan regarding the water quality impacts of the Project.

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August 3, 2000

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Division of Water Rights
Attn: Jim Sutton
901 P Street
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Sacramento, California 95812-2000

U.S. Army Corps of Engineers, Sacramento District
Regulatory Branch
Attn: Mike Finan
1325 J Street, Room 1480
Sacramento, California 95814-2922

Subject: CCWD Comment Letter dated July 31, 2000 on the Revised Draft Environmental Impact Report/Environmental Impact Statement for the Delta Wetlands Project

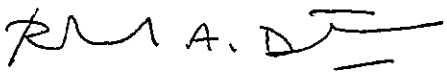
Dear Mr. Sutton and Mr. Finan:

The Contra Costa Water District ("District") has identified a couple of typographic errors in its July 31, 2000 comment letter on the Revised Draft Environmental Impact Report and Environmental Impact Statement for the Delta Wetlands Project. These errors are minor and do not materially affect the substance of the District's comments:

- Issues III.3 through III.7 in Appendix A (pages A-11 to A-21) were mislabeled as III.2 through III.6. Two separate issues were labeled as III.2. The second one should have been III.3. Similarly, the issue labeled as III.3 should have been III.4, III.4 should have been III.5, III.5 should have been III.6, and III.6 should have been III.7. **R8-34**
- Discussion on the proposed project's impacts on the levels of disinfection by-products was misprinted as "acute and chronic public health risks health effects". Please delete "health effects" from the phrase in IV.B in Appendix A (page A-23) and item 11 in Appendix B (page B-2). This should have read "acute and chronic public health risks".

If you have any questions, please contact me at (925) 688-8187.

Sincerely,



Richard A. Denton
Water Resources Manager

Delta Wetlands file

cc: City of Antioch
California Urban Water Agencies
Delta Wetlands Properties

Contra Costa Water District

R8-1. Previous CCWD comments were reviewed carefully during preparation of the 2000 REIR/EIS. CCWD comments provided some of the most useful feedback on the 1995 DEIR/EIS. See responses to Comment Letter C9.

R8-2. This comment summarizes several concerns:

- # increased salinity at CCWD intakes;
- # elevated levels of DOC, algae, salts, and possibly other contaminants in Delta Wetlands discharges;
- # project effects on DBPs; and
- # the impairment of Los Vaqueros Project operations.

These concerns are addressed in responses to specific comments that follow.

These issues are also the basis of the terms of the protest dismissal agreement between Delta Wetlands and CCWD. See response to Comment C9-1.

R8-3. The concerns about the methods used in the 2000 REIR/EIS to evaluate project effects on salinity, DOC, THM, and bromate that are summarized in this comment are addressed in responses to specific comments that follow.

R8-4. The mitigation recommended in the 1995 DEIR/EIS and 2000 REIR/EIS is designed to accommodate the uncertainty about the effects of the project on salinity and DOC. These mitigation measures are enforceable through the permit terms and conditions issued by the SWRCB and USACE. The mitigation measures require Delta Wetlands to monitor water quality parameters in Delta channels, on the Delta Wetlands Project islands, and at the export locations; this information would be used to calculate the expected effect of Delta Wetlands operations on export water quality. Delta Wetlands operations would then be reduced and/or delayed to minimize effects on concentrations of export DOC and salinity. Thus, the mitigation is designed to be effective regardless of the actual increases in salinity and DOC concentrations observed under project implementation.

The Delta Wetlands Project WQMP uses a similar combination of monitoring, modeling of expected impacts, and modifications of project operations to mitigate project impacts on water quality. The WQMP and the protest dismissal agreement between CCWD and Delta Wetlands specifies water quality monitoring, modeling, and operational controls that would protect drinking water quality as well as or better than the mitigation measures in the NEPA and CEQA analysis. For more details, see Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts"; response to Comment

C9-1; and the Delta Wetlands–CCWD protest dismissal agreement (included in the Appendix to the Responses to Comments).

R8-5. See response to Comment R4-14 regarding recirculation of the 2000 REIR/EIS. Responses to specific comments from CCWD are provided below.

R8-6. See responses to CCWD's specific comments on the impact analysis methodology below. Additionally, Master Response 6, "Significance Criteria Used for the Water Quality Impact Analysis", and Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", provide more information about the significance criteria used in the analysis and project effects on DBPs, respectively.

R8-7. See response to Comment R8-4 regarding the mitigation measures recommended in the 2000 REIR/EIS. The 2000 REIR/EIS reevaluated project effects with incorporation of the FOC restrictions on project operations. Incorporating the FOC restrictions reduces project impacts on salinity. The commenter is correct in noting that project operations would be further modified if the recommended mitigation measures for water quality effects were implemented; however, implementing those measures would not result in the identification of new, significant environmental impacts. Therefore, no additional analysis is required.

R8-8. See response to Comment C9-52 regarding the cumulative water quality impact analysis.

R8-9. See response to Comment R4-14 regarding recirculation of the 2000 REIR/EIS; see response to Comment R8-7 regarding evaluation of mitigated project operations.

R8-10. Many of the statements made in this comment are similar to comments received on the 1995 DEIR/EIS from CCWD; see also responses to Comment Letter C9. Specifically, see responses to Comments C9-17 and C9-22 regarding restrictions on Delta Wetlands' operations adopted as part of the Delta Wetlands–CCWD protest dismissal agreement and the FOC, respectively. These restrictions minimize potential project effects on salinity.

CCWD suggests that a 5% change be used for the significance criteria rather than the 20% used in the NEPA and CEQA analysis. This disagreement over the selected significance criteria is not a fundamental flaw of the analysis. See Master Response 6, "Significance Criteria Used for the Water Quality Impact Analysis", for a discussion of the application of the significance criteria used in the 1995 DEIR/EIS and the 2000 REIR/EIS analysis.

CEQA and NEPA do not require the use of the most complex or detailed model available for impact analysis. Monthly modeling of Delta flows and corresponding salinity patterns is the currently accepted method for planning studies and environmental assessments; this monthly modeling approach was used for the Delta Wetlands Project impact assessment. The 2000 REIR/EIS disclosed the impacts of Delta Wetlands diversions on salinity. See also response to Comment C9-12 regarding the WQMP modeling assumptions to which Delta Wetlands and CUWA have agreed; these include use of the FDM Version 10 with simulations of daily tides.

The use of a representative Delta export location in the DeltaSOQ model is discussed in detail in response to Comment C9-12. The 2000 REIR/EIS reported changes in chloride concentrations in the south Delta exports (see Table 4-19 in the 2000 REIR/EIS [Table 3C-27 in Chapter 3C of FEIS Volume 1]). The analysis cannot speculate on how CCWD would change its operations or apply its operating rules for Los Vaqueros Reservoir in response to changes in Delta conditions; however, CCWD can use this information to estimate the subsequent effects on the operations of Los Vaqueros Reservoir and the Contra Costa Canal. The protest dismissal agreement between Delta Wetlands and CCWD addressed CCWD's concerns about the project's potential effects on Los Vaqueros Reservoir operations.

CCWD also suggests that if Delta Wetlands waits until salinity is reduced before it begins diversions, the potential salinity effects would be greatly reduced during subsequent Delta Wetlands discharge periods. The FOC measures do require that the X2 location be at or downstream of Chipps Island before Delta Wetlands begins diversions. The 2000 REIR/EIS indicated that these FOC measures have substantially reduced the potential effects of Delta Wetlands diversions on salinity (see pages 3C-76 and 3C-77 in Chapter 3C of FEIS Volume 1; see also response to Comment C9-22).

Additionally, the salinity impact analysis assumed that the salinity of water diverted onto the Delta Wetlands islands was equal to the previous month's export salinity. This is a conservative assumption; the salinity of water diverted onto the Delta Wetlands reservoir islands during actual project operations may be less than that modeled for the impact analysis (see Comment R10-7).

Finally, the protest dismissal agreement between CCWD and Delta Wetlands includes additional restrictions on Delta Wetlands diversions to minimize project effects on salinity; for more information, see response to Comment C9-17 and the protest dismissal agreement contained in the Appendix to the Responses to Comments. The FOC and the WQMP provide more than adequate protection for salinity in CCWD diversions.

R8-11. See response to Comment R4-8 regarding the range of DOC loading rates estimated in the analysis. See response to Comment C9-12 regarding the evaluation of project effects on salinity. See Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", regarding the evaluation of project effects on DBPs and mitigation measures proposed to address those effects. See also responses to CCWD's Comment Letter C9 on the 1995 DEIR/EIS.

R8-12. See response to Comment C9-52 regarding the cumulative water quality impact analysis.

R8-13. The use of a representative Delta export location in the DeltaSOQ model is discussed in detail in response to Comment C9-12. See responses to Comments C9-12 and R8-10 regarding the use of the FDM for impact analysis and during project operations. There is no need to recirculate the 2000 REIR/EIS; see response to Comment R4-14.

R8-14. The simulated No-Project Alternative serves as the baseline condition with which simulated Delta Wetlands Project operations are compared for impact assessment purposes. Although DeltaSOQ cannot replicate all the complex changes in water quality that occur in the Delta, the DeltaSOQ results are generally confirmed by the historical EC and chloride measurements. See response to Comment C9-13 for a detailed discussion of the relationship between simulated water quality and historical values.

R8-15. The commenter seems to be confusing the monthly simulations with actual project operations. The monthly simulations are used in the NEPA and CEQA analysis to determine the potential for project impacts on salinity; in actual (real-time) project operations, mitigation would be triggered if operations caused an impact on water quality. The commenter states that the monthly model considerably underpredicts salinity, resulting in unaccounted adverse effects during project operations. However, the mitigation measures require Delta Wetlands to monitor water quality parameters in Delta channels, on the project islands, and at the export locations before and during project operations. This information would be used to calculate the real-time effect of Delta Wetlands operations on salinity. The Delta Wetlands–CCWD protest dismissal agreement and the WQMP provide additional details about the way that coordinated project scheduling, modeling, monitoring, and operational constraints would be used to track short-term and long-term project effects on water quality. See also response to Comment R8-4 above.

R8-16. The commenter argues that DeltaSOQ calculations of improvements in export chloride during periods of Delta Wetlands Project diversions are erroneous and that the result shown for January 1981, in particular, "defies reason".

In the example month (January 1981), project diversions were simulated to be 3,871 cfs. The export chloride simulated for no-project conditions was 50 mg/l, and the chloride concentration was simulated to improve by 12.5 mg/l under project operations to 37.5 mg/l.

Project diversions would always reduce Delta outflow, and the reduction in outflow would always increase the seawater intrusion at Chipps Island and Jersey Point, at least slightly. In some cases when the project is simulated to be diverting, however, outflow remains high enough to prevent seawater intrusion from causing any measurable effect at Jersey Point. The following table summarizes for the example month the DeltaSOQ-simulated reduction in Delta outflow and the corresponding increase in EC at Chipps Island. Although Chipps Island EC increased, the simulated chloride concentration at Jersey Point changed by less than 1 mg/l.

Project Effects on Outflow and Seawater Intrusion
with Project Diversions of 3,871 cfs

	No-Project	With Project	
Affected variable	Simulated amount	Simulated amount	Description
Delta outflow	26,951 cfs	23,080 cfs	Reduced by Delta Wetlands Project diversions
Chipps Island EC	194 FS/cm	270 FS/cm	Increased by reduction in outflow
Jersey Point chloride	8 mg/l	8 mg/l	Remained the same because outflow was still sufficient to prevent measurable seawater intrusion

The salinity of water that enters the Delta from different sources can vary considerably. The salinity of exported water therefore depends on the relative contribution of each source to the total volume of exports. The sources of water for diversion or export are the western Delta and Sacramento River inflow, agricultural drainage, and San Joaquin River inflow. The salinity of agricultural drainage and San Joaquin River inflow is generally higher than that of water from the western Delta/Sacramento River. DeltaSOQ calculates the fraction of these water sources that will be exported or diverted or that will be discharged (i.e., as QWEST) from the south Delta.

Project diversions may include agricultural drainage and San Joaquin River inflow. If these sources have higher salinity than western Delta/Sacramento River water and if the volume diverted onto the project islands is great enough, the water reaching the export locations will consist of smaller proportions from these sources. Consequently, water from the western Delta and Sacramento River will make up a greater proportion of exports. Such a shift in source contributions to exports for January 1981 is shown in the following table.

In this simulation, a greater proportion of exports consists of western Delta/Sacramento River water during project diversions than under no-project conditions, and this source has much lower salinity than agricultural drainage and San Joaquin River inflow. Therefore, the project-related change in the proportions of export water that originate from the different sources results in improved salinity of exports.

Effects of the Delta Wetlands Project on Exports
with Project Diversions of 3,871 cfs

Export component	No-Project (Exports = 5,720 cfs; QWEST = 2,567 cfs)		With Project	
	Export fraction	Salinity of fraction	Export fraction	Salinity of fraction
Agricultural drainage (125 mg/l chloride) —1,067 cfs	13%	125 mg/l x 0.13 = 16 mg/l	11%	125 mg/l x 0.11 = 14 mg/l
San Joaquin River inflow (103 mg/l chloride) —2,244 cfs	29%	103 mg/l x 0.29 = 30 mg/l	17%	103 mg/l x 0.17 = 18 mg/l
Western Delta and Sacramento River inflow (8 mg/l chloride)	58%	8 mg/l x 0.58 = 4 mg/l	72%	8 mg/l x 0.72 = 6 mg/l
Total exports	100%	50 mg/l	100%	38 mg/l

The simulated reduction in export salinity in June and July 1985 was the result of the salinity of Delta Wetlands discharges being lower than no-project salinity. Discharges for export are shown in Tables 3-15 and 3-18 of the 2000 REIR/EIS (Tables 3A-34 and 3A-37, respectively, in Chapter 3A of FEIS Volume 1); the tables referred to by the commenter show Delta Wetlands storage amounts, not discharges. The analysis of project effects on water quality in Chapter 4 of the 2000 REIR/EIS was based on the scenario in which discharges for export are limited by south-of-Delta delivery deficits (Table 3-18 [FEIS Volume 1, Table 3A-37]).

R8-17. CCWD's goal of delivering water with less than 65 mg/l chloride is not a prevailing standard or water quality objective for the Delta. The analysis of Delta Wetlands Project effects on salinity appropriately uses significance criteria that are based on existing standards, rather than CCWD's goal. The established 1995 WQCP chloride objectives are 150 mg/l and 250 mg/l (depending on the water-year type).

The water right protest dismissal agreement that Delta Wetlands and CCWD submitted to the SWRCB addresses CCWD's remaining concerns about potential project effects on the quality of water available for diversion by CCWD and Los Vaqueros Reservoir operations. See response to Comment C9-17.

R8-18. See responses to Comments C9-12 and R8-10 regarding use of the FDM; see response to Comment R4-14 regarding recirculation of the 2000 REIR/EIS.

R8-19. See response to Comment R4-8 regarding the range of DOC loading estimated in the analysis. See Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", regarding the evaluation of project effects on DBPs and mitigation measures proposed to address those effects.

R8-20. See response to Comment R4-8.

R8-21. See response to Comment R4-8.

R8-22. See response to Comment R2-12 from DWR regarding the interpretation of the SMARTS experiments presented in the 2000 REIR/EIS.

R8-23. See responses to Comments C9-12 and C9-13 regarding the use of DeltaSOQ in the impact analysis. See Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", for a discussion of the methods used to evaluate project effects on DBPs.

R8-24. Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", discusses the use of the Malcolm Pirnie equation in the impact analysis.

R8-25. Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", discusses project effects on bromate and use of the Ozekin equation. The commenter is correct that the equation in the text on page G-19 of Appendix G of the 2000 REIR/EIS shows an incorrect exponent for DOC; however, the results shown in Figure G-11 used the correct equation. The correct equation indicates that a 20% change in chloride (i.e., bromide) will cause a 14% change in bromate concentration.

R8-26. See Master Response 6, "Significance Criteria Used for the Water Quality Impact Analysis", regarding the significance criteria used in the analysis. See also responses to Comments R4-2, R4-3, and R4-4 regarding significance criteria, estimates of natural variability and modeling uncertainty, and operational controls adopted as part of the Delta Wetlands Project WQMP. See response to Comment R8-17 regarding CCWD's salinity goal for delivered water.

The WQMP and the protest dismissal agreement between Delta Wetlands and CCWD include the provision that a change in chloride of 10 mg/l would be used as the operational limit for Delta Wetlands operations. For more details, see response to Comment C9-17 and the protest dismissal agreement (which is included in the Appendix to the Responses to Comments).

R8-27. See response to Comment R8-17 regarding CCWD's salinity goal for delivered water. See response to Comment C9-12 regarding use of a representative export location in the impact analysis.

R8-28. The commenter questions changes made to equations taken from the antecendent outflow–salinity model (or the "G-model") used to predict EC. CCWD's G-model reports *14-day* average EC and outflow values. Therefore, this information must be modified for use in the *monthly* assessment model. The salinity–outflow equation used in the monthly assessment model assumes that end-of-month salinity will correspond to end-of-month effective outflow, which is calculated using the monthly G-model equations.

The monthly model does not ignore the possible time lag between Jersey Point EC and Rock Slough chloride, but assumes that the salinity increase will occur during the same month. If the analysis assumed that the increase occurred during the following month, the timing of project effects could be mischaracterized. See response to Comment C9-12 for a detailed discussion of the use of representative export location and the timing of project effects.

The coefficient for estimating effective outflow for Jersey Point salinity was changed for the 2000 REIR/EIS analysis to be consistent with the value used by CCWD in the G-model (i.e., 6,600 rather than 5,000), as shown in the equation on page G-9 of Appendix G. Appendix G provides comparisons of measured EC values at these locations.

R8-29. The 1995 DEIR/EIS and the 2000 REIR/EIS disclosed unavoidable significant effects of the Delta Wetlands Project as required by CEQA. As described above, the water quality impact assessment identified significant direct and cumulative effects on water quality and proposed feasible mitigation measures. No information provided in this comment letter changes the significance findings in the 2000 REIR/EIS; no new unavoidable impacts are identified.

R8-30. See Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts".

R8-31. The cumulative impact assessment presented in the 1995 DEIR/EIS and 2000 REIR/EIS meets the requirements of CEQA. See response to Comment C9-52.

R8-32. See response to Comment R8-4 regarding the mitigation measures recommended in the 2000 REIR/EIS.

R8-33. Responses to the issues listed in this comment are provided above.

R8-34. The typographical errors noted in this letter were taken into consideration when the responses to the preceding comments were prepared.

Letter R9 JES/JMC

STATE OF CALIFORNIA—THE RESOURCES AGENCY

GRAY DAVIS, *Governor*

CC: BTL

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July 31, 2000

Jim Sutton
State Water Resources Control Board
P.O. Box 2000
Sacramento, CA 95812-2000

Subject: Comments on the Revised Draft Environmental Impact Report/Statement (RDEIR) for the Delta Wetlands Project; SCH Number: 1995093022

Dear Mr. Sutton:

I am writing regarding the above-named environmental document dated May 31, 2000. The proposed project is located in the Primary Zone of the Delta in San Joaquin and Contra Costa Counties. Local government actions associated with approval of the proposed project would be subject to appeal to the Delta Protection Commission. State and federal actions are not subject to appeal to the Delta Protection Commission, thus comments on State and federal actions are advisory only. The Commission itself has not had the opportunity to review the RDEIR so these are staff comments only. The comments are, however, based on the Commission's law and adopted land use plan, as well as other research reviewed and accepted by the Commission. The Commission was charged with protecting and enhancing the existing land uses in the Delta, including agriculture, wildlife habitat and recreation. In addition, the stability of the levees was identified as a critical charge.

The proposed project is a water storage and habitat enhancement project on four islands in the Delta. The project includes:

- diverting and storing water on Bacon Island and Webb Tract for later discharge for export or to meet outflow or environmental requirements;
- diverting water seasonally to create and enhance wetlands and to manage wildlife habitat on Bouldin Island and most of Holland Tract; and
- building recreational facilities for boating and hunting along the perimeter levees on all four islands.

The RDEIR addresses only five key resource areas:

- Water supply and operations
- Water quality
- Fisheries
- Levee stability and seepage
- Natural gas facilities and transmission pipelines.

The Commission's enabling legislation states the Commission's land use plan should "permit water reservoir and habitat development that is compatible with other uses" (PRC Section 29760(b)(14)). The Commission's adopted land use plan includes a recommendation which states "Water reservoirs that are consistent with other uses in the Delta should be permitted"(Land Use Recommendation). Recommendations were incorporated in the Plan to address Delta actions that go beyond local government authority; the authority to allow the proposed diversions and storage are State and federal actions. The proposal to construction recreational facilities is subject to local government approvals.

The RDEIR does not address issues associated with the conversion of agricultural land to reservoir and managed habitat, the creation of several thousand acres of habitat as mitigation for the creation of the reservoirs, nor the recreation component of the project which includes construction of several facilities and up to 1,200 berths.

The issues addressed in the RDEIR of concern to the Commission include water quality, seepage, and levee stability.

The Commission's land use plan states: "Salinity levels in Delta water shall ensure full agricultural use of Delta agricultural lands, provide habitat for aquatic life, and meet requirements for drinking water and industrial use" (Water Policy P-1) and "Water agencies at local, state and federal levels shall work together to ensure that adequate Delta water quality standards are set and met and that beneficial uses of State waters are protected consistent with the CALFED agreement" (Water Policy P-3).

> The RDEIR indicates that the proposed project could result in increased salinity in the west Delta and includes mitigation measures. Those mitigation measures should be incorporated into the final approvals for the project to ensure that water in the western Delta is adequate for agriculture. **R9-1**

The Commission's land use plan states: "Water reservoirs that are consistent with other uses in the Delta should be permitted" (Land Use Recommendation R-1) and " The priority land use of areas of prime soils shall be agriculture. If commercial agriculture is no longer feasible due to subsidence or lack of adequate water supply or water quality, land uses which protect other beneficial uses of Delta resources, and which would not adversely affect agriculture on surrounding lands, or viability or cost of levee maintenance, may be permitted..."(Environmental Policy P-1).

> Seepage has been identified as a likely impact on nearby islands that are used for agriculture. The RDEIR includes a number of mitigation measures, including interceptor wells, to minimize impacts dues to seepage. Those mitigation measures should be incorporated into the final approvals for the project to ensure that seepage does not adversely impact agriculture on nearby islands. **R9-2**

The Commission's land use plan states: "...local governments shall adhere to guidelines for federal and local levee maintenance and construction...and set longer term goals of meeting PL-99 standards..." and "As much as feasible, levees should be designed and maintained to protect against damage from seismic activity..."(Levee Recommendation R-13).

> The RDEIR includes substantial additional modeling and information about levee stability associated with the reservoirs. The RDEIR states that the interiors of the reservoir levees will need to be reinforced to protect against erosion. The applicant should determine if the project must conform to levee or dam standards, and develop appropriate designs to meet the State's requirements. The project would provide levees built to the standards in Bulletin 192-82, which is more stringent than PL-99. The project should ensure that the reservoir levees are adequate to protect against slumping or erosion.
>
> The RDEIR does not discuss any possible impacts associated with the proposed construction of levee facilities on the stability of the levees. The Final environmental document should state whether the construction of the proposed recreational facilities will require any mitigation or design change to the levee to ensure levee stability.

R9-3

Since the DEIR was released in 1995, new information about recreation needs and about hunting has been made available. The DEIR describes the proposed private fishing and hunting facilities proposed for each island. No public access or recreation is proposed as part of the project. The Delta Protection Commission and Department of Boating and Waterways retained the Department of Parks and Recreation to prepare a Delta Recreational User Survey in 1997. That report, available in hard copy from the Commission, and on the Commission's web site--www.delta.ca.gov--outlines current facilities and activities, and recreational needs in the Delta. In addition, hunting has continued to decline in California with resident hunting licenses down 61% between 1970 and 1998 and State duck stamps down 58% in the same period (Valley-Bay Care, Ducks Unlimited, Spring 2000). Fishing has remained popular with a slight decrease (8%) in the same period. This new information should be reflected in the final environmental document.

R9-4

The DEIR identified the loss of agricultural land on the project islands as "inconsistent with Contra Costa County agricultural principles to preserve prime agricultural lands for agricultural production and promote a competitive economy and would therefore be a significant and unavoidable land use impact. Direct conversion of approximately 16,180 acres...or of 20,345 acres...including harvested cropland and pasture, short-term fallowed land, and long-term idled lands, is considered to be a significant and unavoidable agriculture impact. Implementation ...would contribute to the significant and unavoidable cumulative impact of cumulative conservation of prime agricultural land in the Delta" (page 3I-1). The final environmental document should address the cumulative impact of the loss of agricultural land in the Delta taking into account the

R9-5

acreage proposed for conversion to habitat, conveyance and storage in the CALFED programmatic environmental document.

R9-5 cont'd

In summary, the final environmental document should include appropriate mitigation to protect Delta water quality, to ensure stable levees within the project, and to ensure that seepage from the proposed reservoirs does not adversely impact nearby agricultural islands. In addition, the final environmental document should address issues raised in the earlier DEIR regarding recreation opportunities and loss of agriculture.

Please call if you have questions about these comments.

Sincerely,

Margit Aramburu
Executive Director

Cc: Chairman Patrick N. McCarty
Supervisor Joe Canciamilla
Supervisor Steve Gutierrez
Terri Roberts, State Clearinghouse

Delta Protection Commission

R9-1. The 2000 REIR/EIS evaluated salinity impacts for Jersey Point and Emmaton using the WQCP salinity objectives at these compliance locations, suggesting that mitigation may be required for some potential Delta Wetlands diversion periods. The SWRCB has incorporated mitigation measures as terms and conditions of Delta Wetlands' water right permit. Similarly, USACE will adopt mitigation measures in the record of decision for the Section 404 permit.

R9-2. The SWRCB has incorporated mitigation measures as terms and conditions for Delta Wetlands' water right permit. Similarly, USACE will adopt mitigation measures in the record of decision for the Section 404 permit.

R9-3. See response to comment B7-6 regarding the application of DSOD standards to the Delta Wetlands Project.

Driven pile foundations are typically used to support structures adjacent to levee embankments that are underlain by compressible materials such as peat. The stiff and dense soil beneath the peat will bear the weight of these structures. For the Delta Wetlands Project, the recreation facilities will not impose significant loads on the levees; therefore, they will not affect the design or stability of the levee. Levee inspection and maintenance at these sites must be maintained in compliance with the reclamation district's criteria for locating structures near the structural section of the levee. These criteria can vary between reclamation districts. Delta Wetlands must receive approval of the final design for the recreation facilities from the reclamation district before constructing the facilities.

It should be noted that Delta Wetlands has removed the construction of recreation facilities from its CWA permit application, and USACE will not approve construction of these facilities when it issues its record of decision. Refer to Master Response 5, "Mitigation of Environmental Effects Related to Use of Recreation Facilities".

R9-4. The lead agencies acknowledge the importance of public recreation in the Delta. See response to Comment B6-21.

R9-5. The cumulative impact of the Delta Wetlands Project on agricultural land in the Delta is considered significant and unavoidable (see Impact I-8, "Cumulative Conversion of Agricultural Land", in the 1995 DEIR/EIS [page 3I-25 in FEIS Volume 1). Implementation of CALFED contributes to this cumulatively significant conversion of agricultural land in the Delta.

Letter R10

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July 31, 2000

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Re: Delta Wetlands comments to the Revised Draft Environmental Impact Report/Statement for the Delta Wetlands Project

Dear Messrs. Sutton and Finan:

Delta Wetlands Properties ("Delta Wetlands") is providing the enclosed comments to the Revised Draft Environmental Impact Report/Statement ("REIR/S"). As you are aware, the Delta Wetlands project has endured extensive environmental review. Delta Wetlands believes this additional review, in certain instances, goes beyond the requirements of the California Environmental Quality Act and the National Environmental Policy Act. Delta Wetlands agreed to the additional assessment in order to provide information to the State Water Resources Control Board ("SWRCB") in response to the November 25, 1998 correspondence from the SWRCB.

Jones & Stokes has done an excellent job, once again, in assimilating the various environmental information and providing a comprehensive report. The enclosed comments consist of specific references to the REIR/S which outline our substantive concerns and an Errata which addresses typographical errors and misunderstandings regarding the Delta Wetlands project.

Sincerely,

Barbara A. Brenner

Barbara A. Brenner

BAB:rko
enc.

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DELTA WETLANDS COMMENTS TO THE REIR/S
(July 31, 2000)

General Comment

The *Revised Draft Environmental Impact Report and Environmental Impact Statement for the Delta Wetlands Project* ("REIR/S") prepared for the State Water Resources Control Board ("SWRCB") and the U.S. Army Corps of Engineers ("USACE") contains a number of very conservative assumptions and approaches to the analysis for the Delta Wetlands project. The California Environmental Quality Act ("CEQA") and the National Environmental Policy Act ("NEPA") require a reasonable assessment of a project's potential environmental impacts in order to help the lead agencies (SWRCB and USACE) evaluate the project for permitting purposes. The REIR/S has gone beyond the CEQA/NEPA requirements in numerous instances by making overly conservative assumptions in its analysis, which have led to conclusions which are unreasonably conservative. The REIR/S should clearly delineate, at a minimum, the type of analysis that is required by CEQA and NEPA, and should identify the instances in which the analysis is intentionally conservative. The document should also indicate that, as a result of conservative analyses, mitigation measures recommended on the basis of such overly conservative analyses should be carefully considered and not automatically adopted by the lead agencies.

Delta Wetlands has provided detailed comments which include examples of conservative assumptions in the REIR/S. There are additional overly conservative assumptions incorporated in the REIR/S that are not specifically mentioned below. Given the conservative assumptions explicitly recognized in the REIR/S, as well as those outlined by Delta Wetlands which are not explicitly identified, a clarifying statement in the REIR/S is justified and would result in a more fair and reasonable assessment of the project.

R10-1

Chapter 2. Project Description

Page 2-5, third paragraph. The level of demand for CVP/SWP water is assumed to remain at 1995 levels in the cumulative future analysis with no explanation or justification. Assuming the demand remains at 1995 levels is a very conservative approach. The REIR/S should clearly set forth the fact that the analysis is conservative and explain why such is the case.

Chapter 3. Water Supply

Page 3-4 , third paragraph. The REIR/S in its discussion of DWRSIM studies 409 and 771 should note the effect an increase in Trinity River flows, the recent interpretation of the CVPIA(b)(2) rules, and the need to obtain Level 4 water for refuges would have on these DWRSIM water demand assumptions. These increased water demands, along with a growing

population, nullify the DWRSIM assumption that water demand is the same today as in 1995. In addition, this further supports Delta Wetlands' contention that the REIR/S assumptions are extremely conservative. R10-1 cont'd

Chapter 4. Water Quality

Page 4-37, first paragraph and page 4-38, first paragraph. The salinity modeling presented in the REIR/S assumes that 100% of the volume and 100% of the mass of water quality constituents (e.g., chlorides, DOC) in Delta Wetlands discharges goes to the municipal water supply export pumps. However, because of mixing processes within the Delta, assuming that 100% of the mass of water quality constituents in Delta Wetlands discharges will reach the municipal water supply export pumps is a very conservative approach. Discharges from the Delta will mix with water in the channels, effectively distributing its DOC and TDS content to water that reaches the export pumps and water that does not (e.g., outflow and irrigation water). In addition, the mixing equation relied upon in the REIR/S is based on monthly monitoring averages and does not account for the time lag between the discharge from the Delta Wetlands reservoirs and the arrival at the export pumps. This time lag serves to further dilute the impact of Delta Wetlands waters at the export pumps. This analysis should clearly indicate it is a conservative approach to the analysis or more accurately account for the percentage of the mass of water quality constituents that will reach the municipal water supply export pumps. R10-2

Page 4-29, third paragraph; page 4-41, first paragraph; and page G-14, fourth paragraph. It is unclear why the 1g/m^2/mo DOC loading estimated for the islands under agricultural use is assumed to continue from the four project islands even after agricultural activities are discontinued. It is mentioned in the REIR/S that this is based on comments received on the 1995 DEIR/S, but no rationale is provided. The REIR/S states that, *"Although Delta Wetlands would cease farming operations on the islands under project conditions, the contribution of Delta Wetlands islands to agricultural drainage DOC is simulated as a constant under no-project and with-project conditions in response to comments on the 1995 DEIR/EIS."* (REIR/S, p. 4-29, ¶ 4.) The 1g/m^2/mo agricultural DOC load is added to the estimated project DOC loads, effectively double counting the islands' potential effect on long-term DOC impacts. This assumption is much more conservative than the DOC assessment set forth in the 1995 DEIR/S. The REIR/S should indicate this is a very conservative assumption and is based solely on comments to the 1995 DEIR/S. The REIR/S should also set forth the probability of this event occurring. R10-3

Figures 4-20 through 4-22; pages G-14 through G-15; page 4-22, fifth paragraph. The graphical representations of the three Delta Wetlands operation simulations for the three assumed DOC loading rates (1, 4, and 9 g/m^2/mo) appear to represent constant loading at these rates from the island soils to the stored water during all time periods examined. This approach may be appropriate for the 1 g/m^2/mo scenario, which was intended to represent the long-term loading from project discharges. However, as the text of the REIR/S indicates, the 4 g/m^2/mo and 9 g/m^2/mo were selected to represent initial filling conditions, not long-term loading conditions. R10-4

Figures 4-21 and 4-22 result in significant overestimation of total DOC contribution, the frequency, and duration of high DOC discharges from the islands. It appears that start-up conditions were modeled every month for the 73 years of projected operation. This presentation of the model results is misleading and inconsistent with the model assumptions. **R10-4 cont'd**

Pages 4-17 to 4-22. We concur with the REIR/S statement, *"It should be noted that the SMARTS experiments do not represent the proposed conditions on the Delta Wetlands islands, and the experimental design and sampling methods may not be applicable to in-situ conditions."* (REIR/S, p. 4-22, ¶ 3.) We therefore do not agree with the extensive reliance on the SMARTS data as the primary basis for the initial loading estimates used in the REIR/S (4 and 9 $g/m^2/mo$). Significant reliance on the SMARTS results for quantitative assessments is not appropriate, given the serious limitations of the data as acknowledged by the REIR/S.

The SMARTS data should not be used to develop quantitative estimates of potential DOC impacts from the Delta Wetlands project. As noted in the REIR/S, the SMARTS experiments are not reliable because of soil source variations, depth of peat soils used, and uncertain volume and concentration measurements. There are additional reasons for not relying on the SMARTS results which should also be noted, including temperature concerns, and the lack of photodegradation and biodegradation availability. The soil porosity, percent compaction, or any other physical soil parameter of the material was not recorded. The submersible pumps almost certainly provided more mixing and soil/water interface disturbance than would occur under actual reservoir conditions,[1] and there are numerous inconsistencies in the data that render the data unreliable. **R10-5**

On page 4-21, the REIR/S authors state that *"These values [mass loading estimates] suggest that submerged peat soil with a previous history of agricultural use may produce a DOC load of 2 to 5 times the measured agricultural drainage DOC loads (of about 12 g/m^2)."* This statement is problematic because: (1) It depends on the SMARTS work accurately reflecting full-scale flooded island conditions, (2) it incorporates the unclear calculation discussed above, and (3) it does not address the difference between short-term and long-term DOC loading from the soils. The REIR/S DOC analysis should not rely on the SMARTS results to quantify the potential impacts of the Delta Wetlands project. Again, at a minimum, the REIR/S should clearly set forth the probability of the project experiencing initial DOC loading of 4 or 9 $g/m^2/mo$.

Page 4-30, first paragraph. The REIR/S states, *"Reservoir operations might cause more DOC to be mixed from the pore water into the water column than when the peat soils are drained*

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[1]On page 4-21, paragraph 2, the REIR/S states that, *"The submersible pumps may mimic wave-induced mixing that would occur on the Delta Wetlands islands."* This statement does not appear to be based on a scaled engineering analysis. Marvin Jung, the director of the SMARTS experiments, stated that these pumps were included to provide thorough mixing of the water column during the experiments and were not necessarily designed to replicate wave action on Delta Wetlands islands (pers. comm., 7/7/00).

under agricultural practices." This is contrary to the 1995 DEIR/S in which the two scenarios were assumed to introduce equal concentrations of DOC into the water column. The REIR/S acknowledges a lack of evidence on the subject, yet suggests a completely unsupported scenario. This seems to contradict the 1995 DEIR/S where it was thought that less DOC might leach out but assumed the same as a conservative estimate. In this instance the REIR/S compounds the overly conservative assessment of the previous document; it should at least make this clear. **R10-6**

Page 4-39, third paragraph, and page 6-1, first paragraph. Many of the potential salinity impacts identified in the REIR/S (e.g., Emmaton) appear to be the result of filling the reservoirs with high salinity water. The DeltaSOQ model predicts salinity levels in the Delta at the end of each month and uses this salinity level to simulate the reservoir quality for diversions during the following month. A more accurate simulation would be to average the monthly salinity during the month of filling. This "prior month" approach elevates salinity levels on the reservoir and is unreasonably conservative since it assumes the water stays at the highest salinity level (e.g., end of previous month) for the entire month of diversions. The REIR/S should assess the effects on salinity using average monthly salinity levels. The project is likely to have a salinity benefit if analyzed using the monthly average salinity level. **R10-7**

Page 4-42, second and third paragraphs. The project effects on export DOC for the initial-filling and high initial-filling assumptions are characterized as occurring in more than half of the years of operation (e.g., 37 out of 73, 48 out of 73). Initial filling will only occur the first year of operation. The project's initial DOC loading estimates are very different from the long-term DOC loading estimates. The REIR/S should clearly state the limits of the initial DOC loading estimates as to probable time and duration. **R10-8**

Page G-12, fourth bullet. The REIR/S adds residence time as a factor which affects DOC loading. The 1995 DEIR/S, however, established that most of the DOC is released in the initial months after the reservoir island first stores water and then there is little or no continued increase. Adding residence time as a factor in DOC loading estimates is not supported by the scientific evidence and is an unreasonably conservative approach. The REIR/S should at least clearly state this is another very conservative assumption. **R10-9**

Page G-18, eighth paragraph; Figure G-10a; page 4-14, third paragraph, page G-16, first paragraph; page G-19, seventh paragraph. Delta Wetlands agrees with the REIR/S assertion that source water DOC measurements do not always correlate well with treated water THM concentrations. This conclusion is supported, for example, by data on the influent DOC and treated water THM presented in the REIR/S for the Penitencia Water Treatment Plant. **R10-10**

However, it is suggested that discharges from the project islands be regulated based on their effect on treated drinking water THM concentrations by using raw water DOC as the predictor of THM concentrations in treated drinking water (Mitigation Measure C-6). Mitigation Measure C-6 does not appear to consider Delta Wetlands' potential effect on treated water THM concentrations which should be determined considering the role of water treatment processes in reduction of the amount of DOC that can potentially be converted to THMs. The processes of

coagulation, flocculation, sedimentation, and filtration within a typical water treatment plant can remove DOC to varying degrees depending on many parameters such as points of chlorine addition, coagulant dose, chlorine dose, temperature, and others. These treatment steps are not accounted for in THM formation potential tests. Not accounting for treatment plant-specific processes, their sequence and operational parameters, and their effect on DOC concentrations through the plant, will result in overestimating the project's potential effects on THMs. **R10-10 cont'd**

This difficulty is recognized to some degree in Appendix G of the REIR/S: *"Because DBP concentrations are determined by both the raw water quality parameters (DOC and Br^-) and the treatment process parameters (chlorination dose* [note: coagulant dose and DOC removal before chlorination is another significant consideration], *pH, temperature, holding time), only representative estimates of the incremental effects of increased DOC and Br^- concentrations on these DBP concentrations can be calculated."* This limitation is, however, overlooked in the main REIR/S text (Chapter 4): *"...frequent DOC measurements may be used to monitor project effects on THM concentration..."*.

Chapter 5. Fisheries

Page 5-9, Impact Assessment Methodology. The REIR/S should emphasize that the modeling methodology employed, particularly the USFWS salmon survival model and the entrainment index for salmon, produce results that are "worst case", high-end estimates of potential impact. The models' parameters do not account for the fact that the Delta Wetlands project will eliminate 92 unscreened agricultural diversions and the remaining diversions on Delta Wetlands reservoir islands will be consolidated and have the most protective fish screen criteria ever implemented in California (e.g., 0.2 fps max. approach velocities). Entrainment potential at the Delta Wetlands diversions is eliminated for salmonids and is extremely low for all other fish species under the final operations criteria ("FOC"). Adding a statement describing the conservative bias of the analysis will improve understanding of the bases for the "less-than-significant" findings. **R10-11**

Page 5-15, second paragraph. The REIR/S should add that the FOC also indirectly protects Mokelumne River chinook salmon through biological monitoring during Delta Wetlands project operations. Biological monitoring will be conducted from December through August when Delta Wetlands is diverting to storage or discharging. Operations will be adjusted to accommodate presence of delta smelt during these times, and since juvenile Mokelumne River salmon migrate through the Delta channels during these same periods, they would potentially benefit from the real-time operation's adjustments for Delta smelt. **R10-12**

Chapter 6. Levee Stability and Seepage

Page 6-7, first full paragraph. Relief wells on adjacent islands were not eliminated from consideration. Delta Wetlands' proposal is to use interceptor wells on Delta Wetlands reservoir islands because installing such a system does not require permission from adjacent reclamation **R10-13**

districts and private property owners. However, if permission is attainable, Delta Wetlands may elect to install wells on adjacent islands. Likewise, a cutoff wall is not the preferred choice due to economics, but a cutoff wall may be considered if necessary. These measures have been shown to be technically feasible (e.g., page App. H, ES-7) and it should be noted that there are various alternatives for the final levee design. Delta Wetlands will have a monitoring program in place to evaluate effectiveness of seepage control systems including relief wells or pumped wells or other systems. **R10-13 cont'd**

Page 6-10, fourth paragraph; page 6-20, first bullet; and App. H, page ES-5, fourth bullet. Delta Wetlands does not believe that background monitoring wells should be limited to one mile or less from the reservoir because the background monitoring wells are intended to describe Delta-wide variations and need to monitor a larger geographic area. Delta Wetlands intends to install over 25 monitoring wells at locations more than one mile (and commonly two to three miles) from Delta Wetlands reservoir islands. These background wells will be spread over approximately 15 islands in the Central Delta. Data from these numerous wells would be used as a group to form the basis of assessing truly regional conditions. They are intended to provide a measure of groundwater response to a flood condition, periods of prolonged rainfall, and major changes in evapotranspiration. The text also stated that URSGWC has recommended this requirement. However, Delta Wetlands could find no such recommendation in Appendix H. **R10-14**

Page 6-10, fifth paragraph. Delta Wetlands agrees that more than one background monitoring well should be used for each row of seepage monitoring wells. All of the background monitoring wells should be used together to describe the Delta-wide variations that would be used in establishing background conditions. Delta Wetlands believes that attempting to rigorously monitor the local background conditions opposite each seepage monitoring well would be a complex and infeasible proposition. See comments for page 6-10, paragraph 10. **R10-15**

Page 6-10, sixth paragraph. Delta Wetlands does not believe three years of groundwater data are required. Delta Wetlands' assessment, based on the existing eight years of groundwater monitoring data collected for the Delta Wetlands project, is that a one-year initial period covers the statistically significant issues. The variables are predominately driven by daily, monthly, or yearly cycles. When the Delta Wetlands project is operating, the background wells will be collecting data far from the influence of the Delta Wetlands project. These wells would be used to assess the longer term trends and make appropriate adjustments in the data interpretation. Set forth below are the various factors that are expected to have any significant influence on groundwater data: **R10-16**

(1) tidal within 12-1/2 and 25 hour periods, a 28 day period and a one year period;
(2) rainfall within a one year period;
(3) normal runoff events within a one year period;
(4) evapotranspiration within a one year period;
(5) irrigation and other agricultural practices within a one year period.

Delta Wetlands compared the one year versus the three year baselines and their effect on the significance criteria using the existing eight years of groundwater monitoring data and determined that the correlation between the two is 0.999. Due to this correlation, Delta Wetlands urges that this recommended change to the background groundwater monitoring not be required. **R10-16 cont'd**

Page 6-10, seventh paragraph. URS recommends a straight-line mean be used in the seepage performance standards. Delta Wetlands assumes that this approach is intended to be used initially, but that seepage performance standards will be reassessed once operation commences to allow for future improvements in the performance standard criteria. **R10-17**

Page 6-10, eighth paragraph; Table 6-4, impact D-2; App. H, page 2-20, fourth paragraph; App. H, page 2-21, first paragraph (first bullet). The REIR/S suggests that the single well action limits for seepage be changed from one foot over 2 standard deviations to one-half foot over 2 standard deviations. Delta Wetlands believes that there are sufficient natural variations to require a higher tolerance for single wells. The seepage performance standards are intended to establish the limit for which Delta Wetlands must take action to ensure there is no net seepage caused by the project to the neighboring islands. This is contrary to the REIR/S assumption that the seepage performance standards are intended to provide evidence of the Delta Wetlands project causing seepage onto a neighboring island.

Using a seven point running average of the weekly data collected over an eight year period at 30 monitoring well locations, the annual mean and standard deviation for each well was computed for the first full year of data. These data were subject to the same factors expected to have a significant influence on groundwater data addressed in comments to page 6-10, sixth paragraph. From these statistical measures of actual field conditions, the two criteria were analyzed. The first was the criterion recommended by Delta Wetlands and reviewed by the Seepage Committee (annual mean + 2 standard deviations + 1.0 foot). The second criterion was that contained in the REIR/S (annual mean + 2 standard deviations + 0.5 foot). **R10-18**

For each of these, the frequency of false positives was analyzed for all of the available data (approximately eight years). For this group of data, no false positives occur using the Delta Wetlands recommended criteria. However, using the REIR/S proposed criteria, 72 false positives occur.

For the REIR/S proposed criteria, the 72 false positives occur during 38 different weeks. Where more than one well indicated a false positive during a week, only one of the false positives is counted for that week. The average monitoring well was read 332 times during the eight-year sampling period. The false positives occur during 38 of the 332 times monitored, approximately one week out of every nine.

The available data show that the single well trigger criterion recommended in the REIR/S is too strict to allow reasonable operation of the project. Delta Wetlands' original criterion that had been previously reviewed by the Seepage Committee protects neighboring islands from potential

seepage impacts and is a more practical criterion. The recommendation to lower the criterion by 0.5 foot is unreasonable and should not be adopted. **R10-18 cont'd**

Page 6-10, tenth paragraph; App. H, page ES-5, second bullet (second paragraph); App. H, page 2-19, fifth and sixth paragraphs; App. H, page 2-20, fifth paragraph (second and third bullets). The geotechnical analysis attempted to correlate individual wells within an island. Their apparent premise was that Delta Wetlands intended to use one or two background wells on an island as the basis for establishing groundwater conditions unaffected by the Delta Wetlands project. This is not the Delta Wetlands plan. Delta Wetlands intends to install over 25 monitoring wells at locations more than one mile (and commonly two to three miles) from Delta Wetlands reservoir islands. These background wells will be spread over approximately 15 islands in the Central Delta. Data from these numerous wells would be used as a group to form the basis of assessing truly regional conditions. They are intended to provide a measure of groundwater response to a flood condition, periods of prolonged rainfall, and major changes in evapotranspiration.

Delta Wetlands has not proposed a quantitative measure of locally induced variations, such as land use and irrigation practices. Seasonal variations within each island that are primarily induced by agricultural practices have always been recognized as an issue requiring special consideration. Delta Wetlands views these issues to be between individual fields and not between adjacent islands. Groundwater levels can be affected locally by individual field's crops, planting dates, and irrigation patterns. While the REIR/S proposal to add more monitoring wells deserves consideration, to be reliable it would almost require a background monitoring well opposite each seepage monitoring well. Delta Wetlands believes it would be difficult to achieve farmer authorization to place monitoring wells in or immediately adjacent to the fields for the following reasons: (a) the monitoring wells will likely get in the way of farming activities, (b) farmers may wish to reconfigure their fields without having to consider monitoring well locations, (c) many farmers may not be receptive to having outsiders go into the farmed fields when monitoring well servicing or data downloading is needed, and (d) some landowners may simply not want Delta Wetlands monitoring wells on their private property. The only reasonably accessible locations for wells within the island interiors would be along existing roads. Most of these roads are parallel to drainage ditches, many of which penetrate to the underlying sand aquifer. Wells placed near these ditches would be strongly impacted by water levels in the ditches and would not provide reliable background data. **R10-19**

Local farming practices will receive a qualitative assessment. For example, if a single well was showing increased head and an adjacent field was recently flooded, a conclusion that Delta Wetlands reservoir storage was causing the increased head in that one well would be pre-mature. If the head remained high after the local effects of field flooding were over, than a conclusion regarding Delta Wetlands reservoir causation might be made.

Delta Wetlands believes that the REIR/S approach attempts to give a precision to the "background" condition that may be impractical to achieve in a rigorous form for use in

computing the Delta Wetlands operations limits. Delta Wetlands believes this is unreasonable and urges that this recommended change to the Seepage Performance Standard not be required.

R10-19 cont'd

Page 6-13, first paragraph, fourth bullet; App. H, page ES-6, third bullet; App. H, page 3-9, fourth paragraph; App. H, page 3-10, ninth paragraph; App. H, page 4-2, eighth paragraph. This is a conservative assumption since sudden drawdown does not apply to this project. Under no condition is the water level lowered faster than the maximum pumping capacity of the reservoir pumps, which is approximately 3000 cfs (or 13 inches per day). In its analysis, URS also assumed no drainage during this sudden drawdown. This is a very conservative assumption since the drawdown of only 13 inches per day will allow some drainage of the soils during the drawdown period and thus result in greater soil strengths and a higher factor of safety.

R10-20

Page 6-14, fifth paragraph; App. H, page ES-6, first bullet; App. H, page 3-15, last paragraph; App. H, page 4-2, fifth paragraph. The REIR/S states that URS estimates that the levees could take four to six years to construct depending on final design. Delta Wetlands has prepared a preliminary levee design that can be accomplished in approximately one year. The alternatives considered by URS did not include the early construction of wide toe berms to buttress the levees and to increase the factor of safety. The REIR/S should explicitly state that time for construction clearly depends on final design.

R10-21

Page 6-20, first paragraph. Delta Wetlands believes that "adequate warning" will be provided. The reservoir will be initially filled in stages, allowing careful review of seepage monitoring data. Under operating conditions, the reservoir will fill at between one-half and one foot per day. This slow loading will ensure adequate warning of any potential problem.

R10-22

Page 6-21, first paragraph. For purposes of the traffic analysis in the 1995 DEIR/S, Delta Wetlands projected a 1.5 year project construction period. Delta Wetlands is not aware of any other estimate it has provided. At this time, Delta Wetlands believes it can safely build the levees in stages, with limited time between the lifts. Project construction continues to be estimated at approximately 1.5 years.

R10-23

Page 6-21, third paragraph. Our analysis indicates that modifications to the levee crest can increase the factor of safety to offset the decrease in safety factor from constructing the Delta Wetlands levees and filling the reservoir. Design options which will be considered include removing some of the material on the slough side of the levee crest to reduce the mass and driving forces toward the water. Reshaping the levee crest can be used to achieve a factor of safety of 1.3 or other criteria established during the hearings.

R10-24

Page 6-21, fourth paragraph; App. H, page ES-6, second bullet. The crest modification noted above is a better alternative where a wide crest is required. By reducing the weight near the slope, Delta Wetlands can achieve an adequate factor of safety (1.3).

App. H, page 1-1, fifth paragraph. Line 13: "emergency response" overstates the immediate response. No emergency necessarily exists but, rather, Delta Wetlands would be outside the agreed tolerance of seepage and must correct the seepage to continue water storage. **R10-25**

App. H, page 2-4, fifth paragraph. This paragraph does not distinguish between the historical characterization (1989-1997), and the "baseline readings" to be taken for all piezometers before the project becomes operational. The historical (1989-1997) groundwater data were collected to identify general trends and variations in the groundwater regime beneath levees on islands adjacent to or part of the Delta Wetlands project. These historical data are not used in the final seepage monitoring program.

The "baseline" or "pre-filling" data will be collected from all of the seepage monitoring wells and background monitoring wells for a period of one year prior to the first stage filling of the reservoirs. These are the baseline data that will be used to create standards by which seepage will be assessed. **R10-26**

The monitoring which commenced in 1989 and 1990 was stopped in 1997 and is not continuing. Groundwater monitoring will be re-initialized at least one year prior to commencement of reservoir filling. To the extent practical, the earlier monitoring wells will be included in the seepage monitoring and background monitoring systems.

App. H, page 2-8, fifth paragraph. "The water table level at the far toe was considered to be an important indicator of impacts ..." URS seems to be suggesting that measuring the water level at a neighboring island's toe will provide a better measure of potential Delta Wetlands reservoir impacts. This is not the case, however, since the potential changes in water level will be more pronounced the closer the monitoring station is to a reservoir island. **R10-27**

App. H, page 2-17, fifth paragraph; App. H, page 2-10, first paragraph. Seepage control measures will already be occurring. Adjustments to seepage control may be needed. Exceedence will trigger a cessation in reservoir filling and is indicative of being outside allowable operating limits. **R10-28**

App. H, page 3-6, third paragraph. The 35 foot width proposed by Delta Wetlands includes the width of the riprap and, by default, the mass and width is included in the analysis. The mass of the riprap should be included in the analyses and will affect the factor of safety. **R10-29**

App. H, page 3-9, first paragraph. Toe berms will increase the factor of safety to acceptable levels. They will also speed up the time required to construct the levees. **R10-30**

App. H, page 3-15, third paragraph; page 4-2, sixth paragraph. A build-out of 4 to 6 years is not reasonable. If the project was committed to only building a 5:1 slope it may be reasonable, but it could be readily accomplished by buttressing the 5:1 slope with large toe berms. The project will place whatever fill is needed at the toe to safely construct the levee to achieve a one-year levee construction schedule. For example, our analysis indicates that a 12:1 buttress starting **R10-31**

at elevation 0 feet will provide a safe buttress of the 5:1 slopes and assumes the material would be placed in 4 lifts with a 3-month wait between lifts. The first lift is 3 feet, the second lift is 4 feet, the third lift is 4 feet and the fourth lift is the remaining fill needed to complete the levee slope and crest. This takes into account the strength gain in the peat at the end of each stage prior to placing the next lift. **R10-31 cont'd**

App. H, page 3-18, first paragraph; Figures 3.7.2 and 3.7.3. There is no need to continue to raise grade to accommodate settlement. This is not necessary for the project nor is it planned. The only place that it will be done would be the levee crest, which is the purpose of making the levee wider at the start of levee improvement. The project does not intend to continually fill to achieve a 5:1 slope. The project will fill to create a crest wide enough to accommodate about 2 feet of future levee raising and to achieve a safe levee. The levee crest and slopes will then be allowed to settle after initial construction. The final slope inclination will depend on the shape that occurs after consolidation. **R10-32**

Chapter 7. Natural Gas Facilities

Page 7-6, first full paragraph. In the Delta region of California, there is also a risk of third party damage from agricultural operations in addition to subsidence, flooding, etc. **R10-33**

Page 7-7, third paragraph. The flooding for reservoir operation will only change the manner in which PG&E monitors and repairs leaks to its pipelines under Bacon Island. PG&E is familiar with these procedures since the adjacent island, Mildred Island, has been continuously flooded for seventeen years. **R10-34**

Figures 7-8 and 7-9. If PG&E requests, a specially designed erosion protection system could be done in this area to limit any filling to that which occurs under existing operating conditions. Therefore, there will be no impacts to their facilities at the levees. **R10-35**

Page 7-8, last paragraph. The levee improvements proposed by Delta Wetlands are no greater than those conducted during ongoing levee maintenance activities and are what CALFED is planning for all Delta islands. Reclamation District No. 2028, which includes Bacon Island, has previously sent a letter informing PG&E that DWR Bulletin 192-82 has been adopted as the reclamation district standard and that all levees would be improved to this standard. **R10-36**

ERRATA

Table 2-1, first page. The comparison of the 1995 DEIR/S and the 2000 REIR/S project descriptions does not mention the relocation of the Bacon Island discharge pump station from Old River to Middle River. The map of Bacon Island (Figure 1-3) has the discharge properly relocated. **R10-37**

Page 4-43, fourth paragraph. A mass balance equation for DOC is developed in the REIR/S to determine an allowable Delta Wetlands discharge rate, given the DOC concentration on the project islands, the existing export DOC concentration, an assumed allowable export DOC concentration increase due to project discharge, and the existing export flow rate. The first mathematical expression at the end of the third paragraph on page 4-43 appears reasonable. However, the rearranged version of that DOC mass balance equation shown just thereafter has a missing term in the parenthetical term in the denominator. The corrected version of this simplified equation (using the nomenclature of the REIR/S) is as follows:

Corrected Equation:

$$\text{Delta Wetlands Discharge} = \frac{DOC_{increment} \times \text{Export w/o DW}}{(\text{Delta Wetlands DOC} - DOC_{export} - DOC_{increment})}$$ **R10-38**

Page 4-46, third paragraph. It appears the assumption in the example regarding Delta Wetlands DOC concentration should be 8 mg/l greater than export DOC levels.

Page 5-3, sixth bullet. The term "smolt" is specific to juvenile anadromous salmonids and by convention is not applied to non-salmonid species of anadromous fishes.

Page 5-7, third paragraph. The NMFS conference opinion on steelhead was adopted on May 19, 2000, as part of the NMFS' biological opinion for the Delta Wetlands project.

Page 5-12, seventh paragraph. The generalized treatment of Delta Wetlands project water temperature management criteria in this paragraph may be construed by some readers to mean that a potential, mitigated, temperature impact on outmigrating spring run salmon exists. This is highly unlikely given the timing of their outmigration during the later fall, winter, and early spring months. A clearer statement should be added that the Delta Wetlands project will not have any thermal impacts during the months of spring run outmigration. This statement could be followed by the description of the FOC temperature management criteria, although active temperature management will not be necessary during the periods of spring run outmigration. **R10-39**

Page 5-13, third paragraph. This paragraph is discussing the percentage of returning juvenile salmon in the Mokelumne. The 90% reference is confusing. Does this mean among the adults that return, 90% are released as juveniles in the Mokelumne?

Page 5-14, third paragraph. The discussion of FOC terms should include that fish screening measures highly protective of even fry-sized salmonids will be in place during Delta Wetlands project operations. This is an important FOC element specifically applicable to Mokelumne River fishery concerns. **R10-39 cont'd**

Page 6-2, second paragraph. Relief wells and other alternates may be used for seepage control

Page 6-4, Factor of Safety. "Factor of Safety" is not correctly defined.

[A] The factor of safety for slope stability is most commonly defined as the ratio of (1) the ultimate shear soil strength along a assumed sliding surface to the (2) portion of the shear strength needed to keep the calculated forces in balance (in equilibrium).

[B] The stipulated design values for factors of safety are not "minimum values to be stable" but rather provide generally acceptable margins for unknowns and importance. **R10-40**

Page 6-7, fourth paragraph. Harding Lawson Associates used a 2D finite element model (SEEP) in its initial assessment of seepage conditions. This same model will be used in final design (HLA 1989 pp. 32-33). The "plane-view" modeling was used to assess the impacts of borrow area proximities and, recognizing the validity of superposition, was an appropriate screening tool for assessing pumping rate attributable to borrow areas.

Page 6-10, tenth paragraph. The term "shallow" background wells (10 to 20 feet deep) is misleading. All monitoring wells will penetrate the peat soils (where present) and will be screened in the top several feet of the underlying sand aquifer (where present). These "shallow" background wells will extend to the same approximate elevations as all other monitoring wells.

Figure 6-3. All landside slopes are incorrectly labeled landslide slopes.

App. H, page 2-4, first paragraph. Wells were located on the far side of the seep ditch.

App. H, page 2-4, first paragraph. The REIR/S states, "Water elevation in the sand aquifer became flat ..." However, the hydraulic grade line was reversed by the pumping. This means that, in addition to completely cutting off seepage from slough and flooded Mildred Island, water was also flowing toward the pumped wells from the interior of McDonald Island.

App. H, page 2-4, second paragraph. The conclusion is misrepresented. For the passive flow relief system the hydraulic grade line was flat, indicating that all seepage was being intercepted. **R10-41**

App. H, page 2-4, third paragraph. The report should explain that the "no settlement" conclusion applies to a neighbor's island.

App. H, page 2-5, fifth paragraph. The statement, "The groundwater level beneath the levees is generally near sea level" is not true. URS shows groundwater heads at Elevation -15 feet in

their seepage model. The average groundwater level in the three reliable original monitoring wells on Bacon Island and Webb Tract is about Elevation -15 feet.

App. H, page 2-6, first paragraph. [5th bullet in list]: Monitoring stopped in December 1997.

App. H, page 2-12, fifth paragraph. This paragraph infers a description of actual conditions rather than modeled conditions. The head beneath the levee and at the toe are created by the assumed boundary conditions and permeabilities. The tone is misleading.

R10-41 cont'd

App. H, page 3-2, fourth paragraph. The peat is not 10 to 20 feet thick below levees. It is typically 25 to 30 feet thick. This statement conflicts with the statement on page 3-4, paragraph 2.

App. H, page 3-2, seventh paragraph. The table is on page 3-5, not page 3-3.

App. H, page 3-17, third paragraph. The borrow pits will not be dewatered. Probably the material will be removed hydraulically but in any case dewatering is not planned.

Page 7-1, first paragraph. Please change the last sentence to read "The PG&E testimony...."

Page 7-7, fourth paragraph. Risks to the pipeline may temporarily increase during Delta Wetlands' construction of the levees.

Page 7-8, second paragraph. PG&E uses concrete saddle weights, drilled chance anchors and concrete pipe coating to anchor line 57A (See Clapp testimony at 2).

Page 7-8, last paragraph. To monitor the effect of levee settlement, PG&E has installed and maintains "tiltmeters" on line 57B at both the east and west levee crossings of Bacon Island.

R10-42

Page 7-9, third paragraph. Due to the nature of leaks, a walking inspection would typically not be useful for a minor or small leak but a leak inspection for a small or minor leak could be useful if performed by boat when the island is flooded.

Page 7-10, second bullet. This bullet should be modified to read: "Annual inspections to detect leaks, monitor corrosion protection, identify potential levee...."

Page G-8, first paragraph. The use of 400,000 acres for lowlands contribution appears to be a mistake in calculation. Approximately 100,000 acres are actually peat soil and from earlier studies it has been determined that the mineral soil islands actually do not exhibit any increase in DOC loading. There are approximately 100,000 acres of peat soil remaining in the Delta. If the estimate is corrected, the actual increases at the point of export would agree with what is assumed as aerial loading on peat soil islands.

R10-43

Delta Wetlands Properties (Ellison & Schneider)

R10-1. CEQA and NEPA do not preclude the use of conservative analysis of impacts. Substantial controversy has surrounded some elements of the proposed project, and there has continued to be substantial disagreement among experts on some key issues (e.g., effects of the project on DOC). The lead agencies directed that a conservative approach to the analyses of such issues be used in the 2000 REIR/EIS to ensure that the concerns of commenters on the 1995 DEIR/EIS and water right protestants would be addressed adequately. See also Master Response 8, "Levee Stability Analysis and Worst-Case Conditions".

As described in Chapter 3, "Water Supply and Operations", of the 2000 REIR/EIS (see Chapter 3A of Volume 1 of this FEIS), the results of DWRSIM study 771 were used as the basis of simulations of Delta Wetlands Project operations performed using DeltaSOS. DWRSIM study 771, which uses 1995 hydrology and demands, is the currently accepted standard used by CALFED and other state water planners to represent baseline conditions. Using the 1995 level of development for SWP/CVP project demands and deliveries allows the evaluation of the greatest level of Delta Wetlands operations likely to occur. Results for Delta Wetlands operations would differ slightly if demands and deliveries under a 2020 level of development were assumed with existing facilities.

Several factors that influence SWP and CVP operations changed during 2000. However, the simulations of potential Delta Wetlands operations based on DWRSIM 771 results remain adequate for assessment purposes. The possible changes in future Delta operations and the corresponding changes in Delta Wetlands operations are discussed in Chapter 3A of FEIS Volume 1.

R10-2. The DeltaSOQ model does assume that all Delta Wetlands discharges move to the exports. The purpose of the environmental impact analysis is to identify significant environmental impacts associated with implementing the proposed project. Therefore, the modeling of Delta Wetlands Project operations used a "worst-case" scenario in which all water discharged by the project was simulated as being exported through the SWP and CVP pumps. This assumption was used to allow for simulation of the greatest detrimental effects on water supply, water quality, and fishery resources.

R10-3. The commenter is correct in stating that the 2000 REIR/EIS did not credit the Delta Wetlands reservoir islands with a reduction in DOC loading from cessation of agricultural activities. This was a conservative analysis. However, until measurements from flooded reservoir islands are available, this conservative estimate is appropriate for purposes of water quality impact assessment.

R10-4. Figures 4-20, 4-21, and 4-22 in the 2000 REIR/EIS (Figures 3C-45, 3C-46, and 3C-47, respectively, in Chapter 3C of Volume 1 of this FEIS) show the potential DOC concentration in water stored by Delta Wetlands assuming DOC loading rates of 2, 5, and 10 g/m^2/month, respectively, and using the monthly water operations simulated for the proposed project by DeltaSOS. Periods when Delta Wetlands' DOC concentration is

shown in the figures as 0 mg/l represent those periods when the reservoirs are empty. The commenter is correct in noting that these figures show the same assumed DOC loading throughout a 24-year period (1972–1995). The purpose of these figures is to show the potential DOC concentrations during the first filling, which would not be repeated year after year. The specific project operations during the year of the first filling are unknown; therefore, the figures show the initial-fill loading for each year to provide examples of the potential range of DOC concentrations under different annual project diversion, storage, and discharge scenarios.

R10-5. As described in Chapter 4 of the 2000 REIR/EIS (see Chapter 3C of Volume 1 of this FEIS), the SMARTS experiments have somewhat limited applicability to the Delta Wetlands Project. The results of the SMARTS experiments were considered in conjunction with estimates from other studies and expert testimony to develop assumptions about Delta Wetlands reservoir islands under initial-fill operations. The lead agencies directed that the analysis in the 2000 REIR/EIS explore a range of potential DOC loading rates during water storage on the reservoir islands so that a range of potential project effects on DOC concentrations in exported water could be estimated. However, it is not possible to determine the probability that DOC loading would occur at the higher or lower rate under reservoir operations. There remains a great deal of uncertainty regarding the amount of DOC loading that may occur on the reservoir islands. Therefore, the recommended mitigation measures include a requirement that DOC on the reservoir islands be monitored and project operations be adjusted when project discharges are predicted to have a significant adverse effect on export DOC. The Delta Wetlands Project WQMP includes measures to address DOC levels; the full text of the WQMP is included in the Delta Wetlands–CUWA agreement in the Appendix to the Responses to Comments.

R10-6. The 1995 DEIR/EIS analysis did assume that the DOC load from the project reservoir islands would probably be about the same as under agricultural land use practices. Although this may still be true, the 2000 REIR/EIS included a range of possible DOC loads, from 2 times to 10 times the estimated agricultural DOC load. This range of higher assumed DOC loadings was simulated to fully evaluate potential DOC concentrations in the reservoir island water. Measurements from the actual reservoir islands would be needed to identify the appropriate range of assumed DOC loading conditions. See also response to Comment R10-5.

R10-7. The commenter is correct in noting that the impact analysis assumed that the salinity of water diverted onto the Delta Wetlands islands was equal to the previous month's export salinity. This is a conservative assumption. The purpose of the environmental impact analysis is to identify significant environmental impacts associated with implementing the proposed project. Therefore, the modeling of Delta Wetlands Project operations used a conservative approach in evaluating salinity impacts of the project. No change to the analysis is needed.

Additionally, the FOC, Delta Wetlands Project WQMP, and CCWD protest dismissal agreement each have operational controls that would limit the salinity impacts of the

project. The WQMP includes modeling and monitoring provisions to track and report the salinity effects from Delta Wetlands diversions and discharges. See response to Comment C9-1 for more information about the WQMP.

R10-8. The frequency of simulated high DOC effects during periods of Delta Wetlands discharges for export is reported to indicate that the higher DOC loadings would be more likely to cause elevated DOC concentrations in exported water. Under this assumption, mitigation would be required more often. See response to Comment R10-4 above.

R10-9. The period of inundation does have some effect on the slow release of DOC from peat soil. Most of the loading may occur during the initial filling, but longer residence times could affect DOC concentrations in water released from the reservoir islands even under long-term conditions.

R10-10. The 2000 REIR/EIS acknowledged that the THM concentrations estimated using the Malcolm Pirnie equation are much more sensitive to the operational parameters of treatment plants than to the expected changes in DOC or bromide caused by Delta Wetlands operations. The changes caused by Delta Wetlands Project operations will be smaller than identified in the 2000 REIR/EIS under the limitations on project operations described in the CCWD and EBMUD protest dismissal agreements and the Delta Wetlands Project WQMP. See Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts".

Mitigation Measure C-6 would use the measured concentrations of DOC and bromide in project discharges along with the measured DOC and bromide levels at the export locations to evaluate the effects that the change in DOC and bromide caused by Delta Wetlands would have on the THM concentration in a typical treatment plant. For the mitigation measure to be effective, this determination must employ the most accurate equation or other method available for determining effects of DOC and bromide on THM.

Additionally, the Delta Wetlands Project WQMP includes more specific procedures for estimating the effects of Delta Wetlands operations on changes in concentrations of DOC and bromide in raw water, and the subsequent effects on DBPs (THM and bromate). The data collection at the treatment plants discussed in the WQMP would presumably increase confidence in the ability of the equations to follow the variations in THM and bromate caused by changes in the raw water quality.

R10-11. In the USFWS model used for the impact assessment for spring-run chinook salmon, survival has a linear relationship with water temperature and exports; therefore, exports are assumed to have the same effect on survival regardless of the location of the diversion, the efficiency of the fish screens, the source of water exported, the discontinuation of unscreened agricultural diversions, and the conditions of flows in Delta channels. For the 2000 REIR/EIS analysis of project impacts on spring-run chinook salmon (see Chapter 3F of FEIS Volume 1), Delta Wetlands diversions and export of Delta Wetlands discharge were both treated as "exports" in the USFWS model. This is a conservative, worst-case

approach to assessing conditions under project operations because it does not consider the following:

- # Delta Wetlands diversions would be made through fish screens that would be substantially more efficient than the fish facilities for SWP and CVP exports. The screens would have an approach velocity of 0.2 foot per second and, given the location of Delta Wetlands diversions on Delta channels, substantial bypass flows. With implementation of the screen design criteria specified in the biological opinions, juvenile chinook salmon would not be entrained and impinged.

- # Most of the water currently exported from the Delta by the CVP and SWP pumps originates from the Sacramento River. Delta Wetlands water would be discharged for export in the channels of the central and south Delta; it would affect channel flows in a more restricted area than would water originating from the Sacramento River that is exported by the CVP and SWP pumps.

- # The FOC restrict Delta Wetlands diversions to periods of relatively high outflow and channel flow, so the effects of project diversions are expected to be minimized.

- # Delta Wetlands would forgo making agricultural diversions onto the project islands, thus eliminating entrainment that may be associated with the currently unscreened diversions.

Because the USFWS model used to assess effects does not incorporate these factors, the analysis presented in the 2000 REIR/EIS is conservative and presents a worst-case scenario for project operations.

R10-12. The commenter is correct in stating that, in addition to the elements of the FOC listed on page 5-15 of the 2000 REIR/EIS (page 3F-57 of Chapter 3F of FEIS Volume 1), FOC terms related to the delta smelt FMWT index and to monitoring would further minimize adverse effects on juvenile chinook salmon that originate from the Mokelumne River. The presence in Delta channels of juvenile chinook salmon from the Mokelumne River during February and March would coincide with the potential presence of delta smelt. According to the FOC, if the delta smelt FMWT index is less than 239, Delta Wetlands would not divert from February 15 through June. This restriction covers most of the period when juvenile salmon from the Mokelumne River could be present in the Delta.

In addition, Delta Wetlands would reduce diversions at a diversion station to 50% of the previous day's diversion rate when monitoring shows that delta smelt are present. Such reductions would also minimize effects on juvenile chinook salmon from the Mokelumne River.

R10-13. The commenter is correct. Relief wells and cutoff walls remain feasible options for Delta Wetlands' seepage control system. See also response to Comment C15-7.

R10-14. The bullet statement referenced by the commenter, which appeared on page 6-10 of the 2000 REIR/EIS, has been removed; it is not consistent with recommendations made in Appendix H. The seepage modeling determined that a background well should be at least 1,000 feet from the nearest monitoring well. This is the distance beyond which the reservoir is estimated to have no impact on the natural groundwater level.

R10-15. See response to Comment R10-19 below.

R10-16. The geotechnical experts who prepared Appendix H reviewed the data referenced by the commenter. The data show a strong autocorrelation between the 1-year and 3-year running averages during the 8-year period of record. This result suggests that there would be very little difference between the results of the 1-year and 3-year monitoring and that using 1 year of data should be sufficient. Therefore, Chapter 6 of the 2000 REIR/EIS has been revised to reflect this change. The third bullet on page 6-10 has been changed as follows (see page 3D-30 of Volume 1 of this FEIS):

> # At least ~~3~~ 1 ~~years~~ of data should be used to establish reference water levels in the background monitoring wells and in at least half of the seepage monitoring wells before reservoir operations begin.

The third bullet under "Mitigation Measure RD-2: Modify Seepage Monitoring Program and Seepage Performance Standards" on page 6-20 (FEIS Volume 1, page 3D-39) has been revised as follows:

> # Use at least ~~3~~ 1 ~~years~~ of data to establish reference water levels in all the background monitoring wells and in at least half of the seepage monitoring wells.

R10-17. As stated in Chapter 6 of the 2000 REIR/EIS (Chapter 3D of FEIS Volume 1), the seepage performance standards should be reevaluated periodically after reservoir operations begin.

Additionally, the protest dismissal agreement submitted by Delta Wetlands and EBMUD during the water right hearing proposes a technical review committee, identified in the agreement as the "Reservoir Island Monitoring and Action Board (MAB)". Under the terms of the protest dismissal agreement, the MAB could review and approve changes to the seepage performance standards.

R10-18. Appendix H of the 2000 REIR/EIS recommends that the "leeway" for a single monitoring well be reduced to 0.5 foot and notes that the proposed 0.25-foot leeway for the average of three wells is acceptable. ("Leeway" is the additional range above the mean plus two standard deviations that accommodates the high variability of Delta conditions.) The recommendation of 0.5 foot of leeway may be adjusted as supported by existing data and findings from periodic evaluations after startup. Additionally, other data (e.g., undesirable seepage effects such as reported impacts on agriculture in adjacent islands, or results of well-effectiveness tests) may be used in conjunction with the seepage

performance standards to assess the need for changes to the proposed standards. As discussed above, the performance standards should be supported by the results of carefully implemented monitoring, reviewed periodically after reservoir operations start to validate their utility, and updated as needed. The 1-foot leeway performance standard proposed by Delta Wetlands may be acceptable if it is shown to be practical when performance standards are reevaluated. However, for purposes of initial start-up, the 0.5-foot leeway is recommended.

R10-19. It is understood that data from the background wells would be used as a group to determine regional conditions. The shallow or in-field background wells described in the 2000 REIR/EIS are recommended as a potential method for considering the local variation of groundwater levels that is attributable to local pumping for farming operations. These wells could measure when changes in groundwater levels in monitoring wells may be caused by local farming practices versus when they may be caused by reservoir operations.

The complicating factors associated with installing such a system of wells on neighboring properties are also recognized. Therefore, although there may be merits to using these wells to differentiate between the effects of local farming practices and those of reservoir operations, these wells are not required to offset seepage impacts of the proposed project. They are not included in the recommended mitigation measure, "Modify Seepage Monitoring Program and Seepage Performance Standards", described in Chapter 6 of the 2000 REIR/EIS (Chapter 3D of FEIS Volume 1).

R10-20. The commenter is correct in stating that emptying the reservoir islands under a maximum-pumping scenario would allow the soils to drain somewhat and would result in greater soil strengths and a higher FS than the results of the sudden drawdown condition presented in the 2000 REIR/EIS. Assuming instantaneous drawdown was clearly a conservative modeling choice.

R10-21. The 2000 REIR/EIS recognizes that the amount of time needed for construction would depend on the final design. As discussed in response to Comment R6-18, construction monitoring would be required to determine the rate of fill placement. Additionally, there are techniques that could be used to increase stability during construction, such as the following, which are illustrated in Figure R10-1:

- Place the new fill in stages (see Figure R10-1[a]). Each construction stage would need to achieve required consolidation settlement and strength gain before the next stage could be constructed.

- Place the fill at such a gentle slope that the shear strength of the underlying weak soils is not exceeded (see Figure R10-1[b]). Because this method may require very gentle slopes, large columns of fill may be necessary. Depending on the cost of fill, this could become prohibitively expensive.

Install sand drains and wick drains through the weak foundation soil to greatly speed up the drainage process and hasten consolidation and strength gain (see Figure R10-1[c]). Delays between stages would be much shorter under this method; therefore, construction would proceed more quickly.

As stated in the 2000 REIR/EIS, the rate of construction would depend on the final design.

R10-22. The fourth full paragraph on page 2-20 of Appendix H discusses the expected lag time between reservoir pumping and changes in the water table at the toe of the adjacent island's levee.

R10-23. The commenter is referring to the following statement on page 6-21 of the 2000 REIR/EIS: "As described in the 1995 DEIR/EIS, levee improvements would be completed in layers or lifts less than 5 feet thick and allowed to settle to ensure that an appropriate FS would be maintained. Delta Wetlands estimated that it would take several years to complete levee improvements". This statement is based on information that Delta Wetlands provided to the lead agencies for the 1995 DEIR/EIS analysis. Page 3D-12 of the 1995 DEIR/EIS (page 3D-14 of FEIS Volume 1) states, "As proposed, levee reconstruction on the Delta Wetlands Project islands would be staged over several years to allow time for consolidation of foundation materials". The traffic analysis assumed a 1.5-year construction period to estimate worst-case traffic impacts from construction activity. See also response to Comment R10-21 above.

R10-24. See response to Comment R6-12.

R10-25. The word "emergency" was used broadly to indicate that a timely response would be required.

R10-26. The information in Appendix H regarding the groundwater data collection is incorrect and should read as follows:

> Data collection began in February 1989, and ~~continues today~~ was discontinued in 1997.

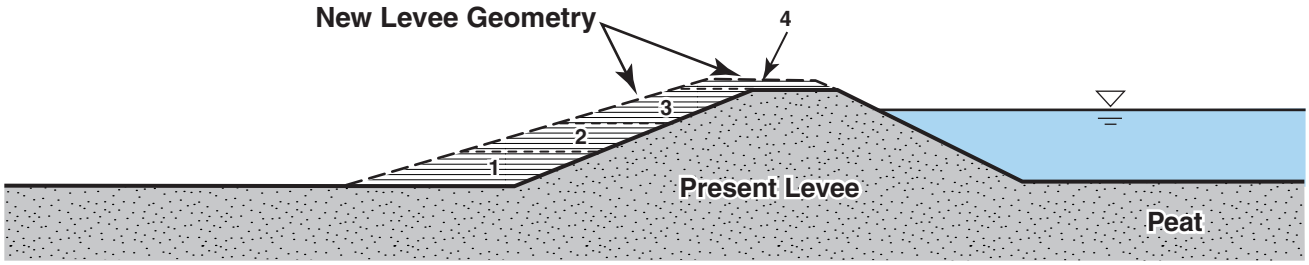
Information in the text of Chapter 3D has also been revised. See response to Comment E14-7.

See response to Comment R10-16 above for information about the collection of baseline data.

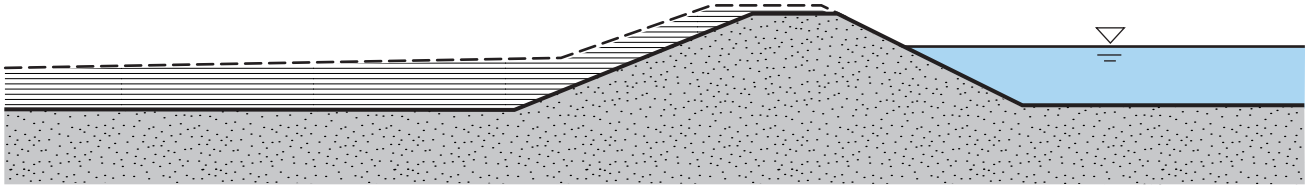
R10-27. The commenter is incorrect. The referenced text in Appendix H does not suggest that monitoring would be more effective at a neighboring island's levee toe than on the neighboring levee. Rather, changes in groundwater levels at the levee toe may be more indicative of changes that could adversely affect farmed fields on adjacent islands.

Reservoir Side *Channel Side*

a) Place New Fill in Stages



b) Use Very Gentle Land-Side Slopes



c) Use Sand Drains or Wick Drains to Speed Up Foundation Consolidation Under Stages

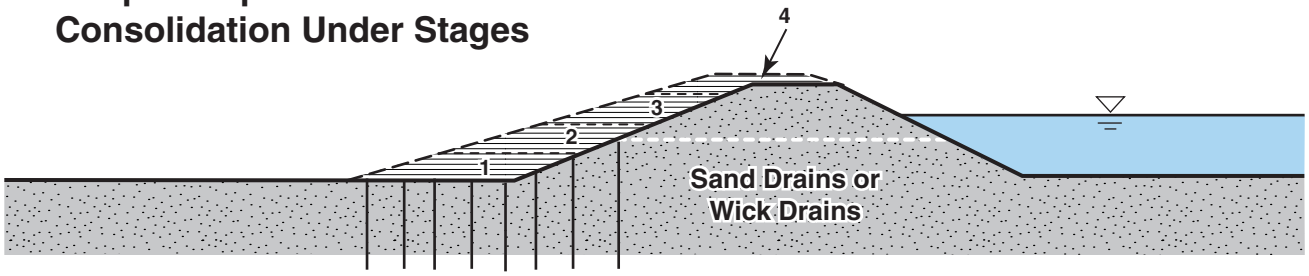


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Figure R10-1
Methods to Improve End-of-Construction Stability

R10-28. The phrase "trigger seepage control measures" is used to indicate that Delta Wetlands would need to alter the existing control measures (i.e., increase pumping rates) or stop reservoir filling activities. The analysis acknowledges that use of the interceptor wells to control seepage would already be occurring.

R10-29. As stated in the referenced text, using the mass of the riprap in the analysis could increase the FS, but the effect on the results of the analysis would be minor. No change to the analysis is needed.

R10-30. See responses to Comments R6-12 and R10-21 above.

R10-31. See responses to Comments R6-12 and R10-21 above.

R10-32. The comment refers to text on page 3-16, not page 3-18, of Appendix H of the 2000 REIR/EIS. The levee stability analyses presented in Appendix H and Chapter 6 of the 2000 REIR/EIS are based on the proposed levee improvements described in Chapters 2 and 3D of the 1995 DEIR/EIS. As stated in Chapter 3D under "Flood Control Features" (see page 3D-8 of FEIS Volume 1):

> The initial levee crest would be constructed approximately 8 feet wider than the long-term planned width (22 feet) to accommodate settlement and to allow for future levee raising. (Harding Lawson Associates 1993.) The new slopes would meet or exceed criteria for Delta levees outlined in DWR Bulletin 192-82.

See also Figure 3D-5 in FEIS Volume 1.

R10-33. The discussion in question on page 7-6 of the 2000 REIR/EIS (page 3E-27 of Chapter 3E of FEIS Volume 1) refers to natural causes of pipeline failure, not third-party causes. Third-party incidents are noted under the second bullet item on page 7-5 (FEIS Volume 1, page 3E-27).

R10-34. The comment appears to restate the discussion in question. No response is required.

R10-35. Currently, the project description does not include special treatments or levee designs on Bacon Island to limit stresses on the PG&E facilities. Because detailed levee designs that consider local subsurface conditions have not yet been completed, it is premature to conclude that the project would have no effect on the PG&E facilities. Delta Wetlands could propose an alternate levee design to minimize potential effects on the gas pipelines, but the proposed designs would also need to meet the levee stability criteria described in Chapter 6 of the 2000 REIR/EIS.

R10-36. The levee improvements proposed by Delta Wetlands are greater than those completed over the last 15–20 years as part of ongoing levee maintenance. The environmental baseline for impact analysis is the existing condition in 1987 or 1994 (see Chapter 3,

"Overview of Impact Analysis Approach", in Volume 1 of this FEIS). The reclamation district may upgrade its levees to meet the DWR Bulletin 192-82 standard in the future; however, the levees do not currently meet that standard, and the reclamation district adopted the standard after the baseline was established for impact analysis. If the Bacon Island levees are improved under agricultural use and the Delta Wetlands Project is later permitted and implemented, the incremental increases in settlement or subsidence and the resulting effect on the pipelines caused by the Delta Wetlands Project would be smaller than anticipated in the 2000 REIR/EIS impact analysis.

R10-37. The following information has been revised in Table 2-1:

Project Feature	Proposed Project, as Evaluated in the 1995 DEIR/EIS	Proposed Project, as Evaluated in the 2000 REIR/EIS
Pump Station Design	One discharge pump on each reservoir island, with 40 new pumps (on Bacon Island) or 32 new pumps (on Webb Tract) with 36-inch-diameter pipes discharging to adjacent Delta channels. Typical spacing would be 25 feet on center. An assortment of axial flow and mixed-flow pumps would be used.	Same as in 1995 DEIR/EIS~~:~~, but the discharge station on Bacon Island has been relocated from Old River to Middle River.

R10-38. The equation at the bottom of page 4-43 in the 2000 REIR/EIS has been revised as follows (see page 3C-79 of Chapter 3C of FEIS Volume 1).

$$\text{Delta Wetlands discharge} = \frac{DOC_{increment} \bullet Export_{without\ Delta\ Wetlands}}{(\text{Delta Wetlands DOC} - DOC_{export} - DOC_{increment})}$$

The example given on page 4-46 in the 2000 REIR/EIS (FEIS Volume 1, pages 3C-81 and 3C-82) has been revised as follows:

> For example, if the monthly maximum increase in DOC concentration were established as 0.8 mg/l (corresponding to 20% of the average export DOC value, which was used as the significance criterion) and if the measured Delta Wetlands DOC concentration were 8 mg/l greater than the export DOC concentration, then the Delta Wetlands Project discharge would be limited to 10% of the export pumping (including Delta Wetlands discharge).

R10-39. On page 5-3 of the 2000 REIR/EIS, the fourth bullet has been revised as follows (see page 3F-46 in Chapter 3F of FEIS Volume 1).

> # *Smolt:* A juvenile ~~fish~~ chinook salmon or steelhead that has undergone physiological change enabling it to survive in saltwater.

At the top of page 5-8 (FEIS Volume 1, page 3F-50), the sentence has been revised as follows:

> ~~USACE has requested that~~ NMFS formally adopted the conference opinion as its biological opinion on steelhead for the Delta Wetlands Project on May 19, 2000.

Water temperature was not simulated for Delta Wetlands discharge; however, there is the potential for temperature-related effects on spring-run chinook salmon. The potential temperature-related effects of project operations on winter-run chinook salmon are addressed by the FOC, which have been incorporated into the proposed project. See "Increase in Temperature-Related Mortality of Juvenile Chinook Salmon" in Master Response 4, "Impacts on Fisheries Identified in the 1995 Draft EIR/EIS and Adoption of Biological Opinions". Additionally, the NMFS biological opinion for project effects on Central Valley spring-run chinook salmon (see the appendix to this volume) includes the requirement that Delta Wetlands monitor and report on daily receiving water temperature and DO conditions and changes to those conditions that result from Delta Wetlands discharges. NMFS will use the information to determine whether the project is affecting spring-run chinook salmon to an extent not considered previously.

On page 5-13 of the 2000 REIR/EIS (FEIS Volume 1, page 3F-55), the information in the third full paragraph has been revised as follows:

> ~~However, the coded wire tag data provided by EBMUD showed that regardless of their origin (i.e., Nimbus Fish Hatchery), more than 90% of juvenile chinook salmon released in the Mokelumne River returned as adults to the Mokelumne River. The data also indicated that 60% to 100% of the juvenile chinook salmon produced in the Mokelumne River or at the Mokelumne River fish hatchery returned to the Mokelumne River as adults regardless of release location.~~ However, EBMUD's coded wire tag data showed that, of the juvenile chinook salmon released in the Mokelumne River that returned as adults, more than 90% returned to the Mokelumne River and only 10% strayed to other river systems. The data also indicate that, of the adult chinook salmon that originated as juveniles in the Mokelumne River or were produced at the Mokelumne River fish hatchery, 60% to 100% returned to the Mokelumne River regardless of where they were released as juveniles.

Based on these data, the amount of straying appears to depend on the river of origin and the location where juveniles were released; the available information does not indicate that

the concentration of Mokelumne River water in the central Delta affects the rates at which adults stray.

The third paragraph on page 5-14 (FEIS Volume 1, page 3F-56), which is referenced by the commenter, directs readers to details about the applicable FOC measures on the following page. The later discussion includes mention of the fish screens, which will protect juvenile chinook salmon from entrainment.

R10-40. The following changes to text in Chapter 6 of the 2000 REIR/EIS (chapter 3D of FEIS Volume 1) have been made in response to this comment.

On page 6-2 (FEIS Volume 1, page 3D-23), the following sentence has been added to the end of the second paragraph:

> Relief wells and other alternative methods of seepage control may be substituted for or used to augment the interceptor well system during final design.

On page 6-4 (FEIS Volume 1, page 3D-25), the last sentence in the definition of "Factor of Safety for Slope Stability" has been revised as follows:

> These FSs are typically above 1 and ~~are minimum values to be achieved for the slope to be considered stable.~~ are recommended or required for various conditions, including consideration of uncertainties in design and risks to life and property.

On page 6-7 (FEIS Volume 1, page 3D-28), the fourth paragraph has been revised as follows:

> Previous analyses prepared by Delta Wetlands' consultants (Hultgren and Tillis, Harding Lawson Associates, and Moffat & Nichols) used a two-dimensional finite element model (SEEP) to evaluate seepage conditions and used plan-view modeling techniques to ~~estimate seepage conditions~~ assess the impacts of borrow pits on seepage and on pumping rates. Plan-view modeling considered only horizontal seepage within the sand aquifer, where most seepage would occur. This approach does not include seepage through other elements of the subsurface strata or the effects of vertical infiltration from the storage reservoirs or adjacent channels. Consequently, the plan-view modeling approach does not adequately simulate the localized seepage conditions near the proposed interceptor-well system. Delta Wetlands plans to use the SEEP model in its final design for the seepage control system.

On page 6-11 (FEIS Volume 1, page 3D-31), the term "shallow background wells" has been replaced with "in-field monitoring wells". The following changes have been made to the text.

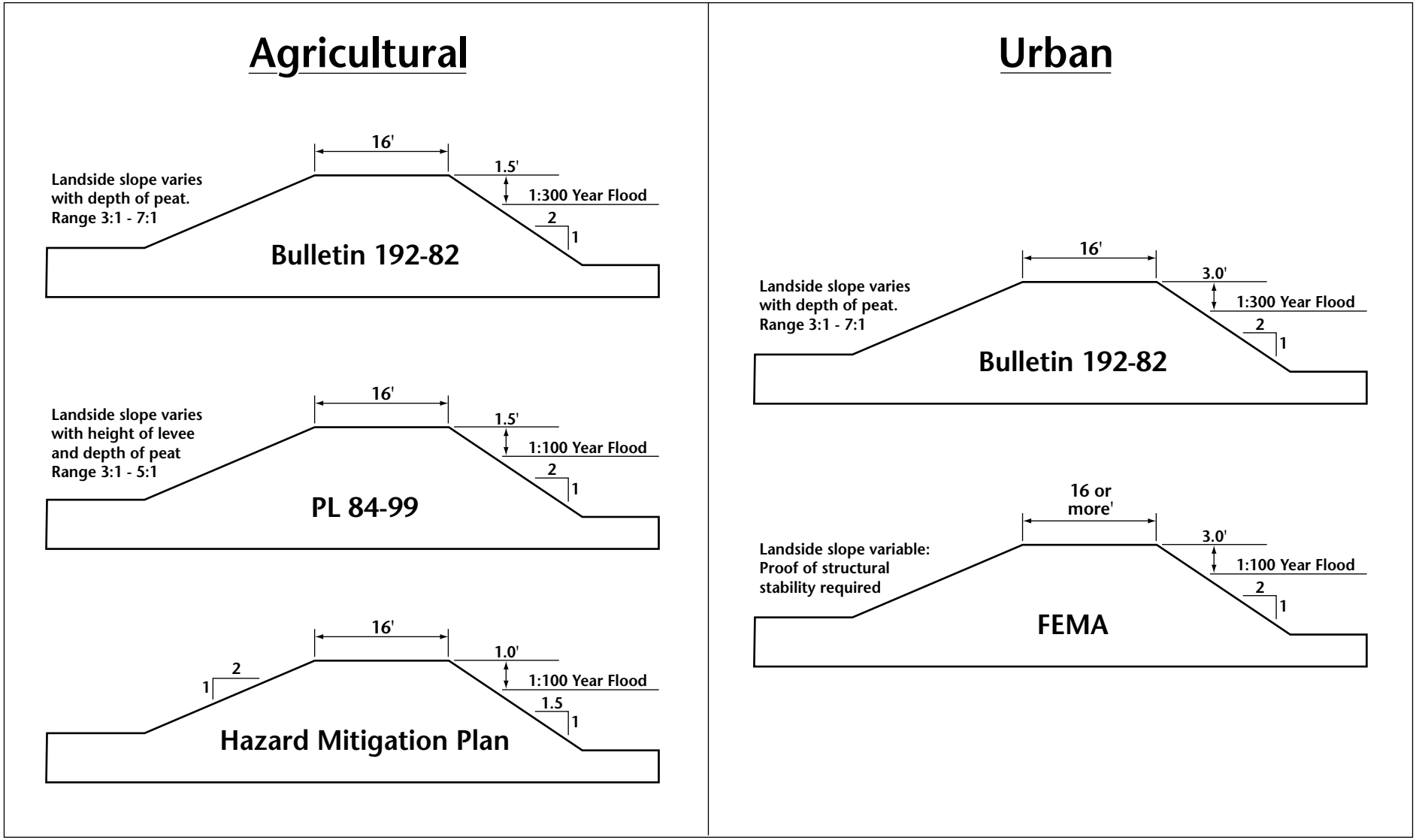

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Figure 6-3
Levee Geometric Standards

To monitor trends in groundwater management on the neighboring islands, URSGWC recommends that Delta Wetlands supplement the proposed background well system with ~~shallow background wells (10 to 20 feet deep)~~ in-field monitoring wells installed across each neighboring island. These additional ~~background~~ wells would be placed one-half mile to 1 mile apart, beginning near the levee adjacent to the reservoir island and continuing across the adjacent island, so that groundwater levels at increasing distance from the reservoir island can be compared.

Figure 6-3 of the 2000 REIR/EIS has been corrected. See the corrected version that follows these responses. This figure is included as Figure 3D-7 in Volume 1 of the FEIS.

R10-41. Appendix H of the 2000 REIR/EIS is a final technical report prepared to provide the basis for the CEQA/NEPA impact assessment described in Chapter 6 of the 2000 REIR/EIS. The commenter's recommended changes to Appendix H have been noted; however, no changes to the text of Appendix H will be made. These changes do not affect the conclusions of the environmental analysis presented in Chapter 6 of the 2000 REIR/EIS (see FEIS Volume 1, Chapter 3D).

R10-42. Some of the commenter's recommended changes to text in Chapter 7 of the 2000 REIR/EIS (Chapter 3E of Volume 1 of this FEIS) are not substantive or are unnecessary and therefore have not been made. Where the recommended change is substantive, the text in Chapter 7 of the 2000 REIR/EIS has been revised. Those changes are listed here.

On page 7-8, of the 2000 REIR/EIS (page 3E-30 of Chapter 3E of FEIS Volume 1) the first full paragraph has been revised to include additional information as follows:

The currently unused pipeline (Line 57-A) on Bacon Island may need additional weighting before the island is flooded to prevent the line from floating (Grimm pers. comm.). As mentioned previously, Line 57-A has concrete weights or other weighting material, except for approximately 900 feet on the west side of the island where the pipe is concrete coated. PG&E uses concrete saddle weights, drilled chance anchors, and concrete pipe coating to anchor Line 57-A. Under inundated conditions. . .

On page 7-8 (FEIS Volume 1, page 3E-29) the last full paragraph has been revised to include the following sentence:

To monitor the effects of levee settlement on their pipeline, PG&E has installed and maintains tiltmeters on Line 57-B at both the east and west levee crossings of Bacon Island.

On page 7-10 (FEIS Volume 1, page 3E-31), the second bullet has been revised as follows:

Annual inspections to detect small leaks, ~~identify internal or external pipeline corrosion~~ monitor corrosion protection, identify potential levee subsidence or settlement problems, and prevent future pipeline ruptures or substantial pipeline leaks in those areas by prescribing immediate repair work will still be conducted in accordance with federal and state regulations.

R10-43. DWR estimates that the Delta lowlands, defined as land with an elevation of less than 5 feet above mean sea level (msl), consist of approximately 400,000 acres. The commenter suggests that perhaps only 100,000 acres of this total have peat soil that contributes to the high agricultural load of DOC. This calculation is an example of the mass-balance approach; it suggests that all of the Delta lowlands cannot be contributing the estimated DOC load of 1 g/m^2/month because this would increase the export DOC concentrations to levels that are higher than the observed values.

The DeltaSOQ model assumes that only 40% of the Delta agricultural area drainage will mix with the exports (see the bottom of page G-8 in Appendix G of the 2000 REIR/EIS); the remainder is mixed with Delta outflow. Figure G-9 shows the calculated export DOC using the mass-balance approach. The DOC load of 1 g/m^2/month from the 40% of the Delta assumed in the central Delta is still often higher than the measured DOC concentrations. Reducing the peat soil area in the central Delta would reduce the estimated export DOC concentration proportionately.

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July 31, 2000

VIA MESSENGER

State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000
Attention: Jim Sutton

U.S. Army Corps of Engineers, Sacramento District
Regulatory Branch
1325 J Street, Room 1480
Sacramento, CA 95814-2922
Attention: Mike Finan

Re: EBMUD Comments on Revised DEIR/EIS for the Delta Wetlands Project

Dear Messrs. Sutton and Finan:

The East Bay Municipal Utility District (EBMUD or District) appreciates the opportunity to review and comment on the Revised Draft EIR/EIS (RDEIR) for the Delta Wetlands Project (Project). The District and Delta Wetlands have been meeting to resolve the issues raised by the District's protest. If, however, those efforts are ultimately not successful, the Project's potential impacts upon the substantial interests of the District would remain. Consequently, this letter contains the District's comments on the RDEIR, including Attachment A (EBMUD's specific comments on Fishery Related Issues), and Attachment B (EBMUD's specific comments on Aqueduct Security Related issues).

Mokelumne Fisheries Mitigation

The RDEIR does not adequately address the potential impacts of the proposed Project operations on Mokelumne origin salmon and steelhead. Most of the potential impacts in the RDEIR are stated in terms of impacts on San Joaquin or Sacramento fisheries resources, not Mokelumne River fishery resources. A separate assessment, including identification, monitoring and mitigation of Project impacts, needs to be made for the Mokelumne River and other Eastside tributaries. This is especially true given the proximity of Webb Tract, a proposed Project reservoir island, to the North and South forks of the Mokelumne River. This assessment must be undertaken to assure that Project impacts are not simply redirected. R11-1

Detailed comments on fishery issues follow in Attachment A.

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Mokelumne Aqueducts Security

The Delta Wetlands RDEIR needs to include more specificity on the proposed monitoring plans and mitigation measure to minimize risk of levee failures and seepage impacts on EBMUD's Mokelumne Aqueducts. EBMUD's Mokelumne Aqueducts cross the Delta, adjacent to the Project's proposed Bacon Island Reservoir, to deliver high quality Sierra water to our 1.2 million customers in Alameda and Contra Costa counties. Essentially, the Mokelumne Aqueducts are the "lifeline" of the East Bay, as they deliver approximately 95% of the water used by EBMUD's customers. Delta Wetlands must ensure that any Project operations will not have any adverse unmitigated impacts on the Mokelumne Aqueducts or the levees that protect them. Detailed comments on Delta levees and Mokelumne Aqueduct security follow in Attachment B. **R11-2**

EBMUD appreciates the opportunity to participate and provide input on the proposed Delta Wetlands Project, and we look forward to seeing EBMUD's concerns adequately addressed.

Sincerely,

Fred S. Etheridge

JBL:SDW:tjb
Attachments
cc: Service List

ATTACHMENT A – Fishery Related Issues

Review Comments on the Delta Wetland Revised Draft EIS/EIR: Fishery Related Issues

EIR Citation	EBMUD Comment	
Page ES-4 The RDEIR states that during the 1997 water rights hearing, EBMUD raised issues about project effects on "listed" species.	EBMUD's concerns were, and are, not limited solely to listed species. For example, the Project would have potentially significant adverse impacts on the Mokelumne River fall-run chinook salmon, an important, but not listed, fish species.	R11-3
Page ES-6 The RDEIR fisheries assessment (Chapter 5) discusses changes in 1995 DEIR/EIS impact conclusions that have resulted from incorporation of the FOC and RPMs into the proposed project. It also discusses new listings of fish species and evaluates new information on spring-run chinook salmon occurrence provided by DFG, data on Mokelumne River **spring- chinook** salmon provided EBMUD, and new information regarding potential increases in predation with the construction of Delta Wetlands boat docks and other facilities.	"Spring–chinook salmon" should be "fall-run chinook salmon". Throughout the RDEIR, when salmon fisheries on the Mokelumne River are discussed, the analysis should focus on *"fall-run"*, as there is no spring run of chinook salmon on the Mokelumne River. While the Final Operations Criteria and Reasonable and Prudent Measures in the DFG, USFWS, and NMFS biological opinions provide protection for listed threatened or endangered delta smelt and winter-run chinook, the life history of these species is significantly different than fall-run chinook salmon. Because of these life history differences, it cannot be assumed that measures to protect winter-run chinook salmon and delta smelt will protect fall-run chinook salmon.	R11-4
Page 3-14 Between November and January, the diversion rate is limited to 3,000 cfs (rather than 4,000 cfs) if the DCC is closed for fish protection and Delta inflow is less than 30,000 cfs. This limitation was simulated based on monthly average inflow.	The DCC is closed to keep Sacramento River salmon from entering the Central Delta in order to reduce their exposure to export effects. Because of the location where the Mokelumne River enters the Delta, Mokelumne origin salmon would not only face exposure to the CVP and SWP export pumps, but additional exposure from the Delta Wetlands diversions. To protect the juvenile Mokelumne salmon, EBMUD suggests monitoring for the presence of salmon and practicing adaptive management techniques, such as managing location and timing of diversions so as to avoid harm to the salmon. Specific adaptive management techniques have been developed and are available for use or review as necessary.	R11-5

[Continued next page]

Page 5-4 Conserve in perpetuity 200 acres of shallow-water rearing and spawning habitat.	For the benefit of Mokelumne salmon, some of the 200 acres of shallow water rearing habitat should be constructed along the migratory pathway for juvenile salmon from the lower Mokelumne River and close to the Delta Wetlands Webb Tract project island. Desirable characteristics of this type of habitat include: • Shallow water (generally < 6 feet deep) • Structural diversity (includes large woody debris, diverse substrate, varying water velocities, vegetation cover) • Floodplain inundation (typically January through April, with water inundation in pulses so levels rise and fall gradually and maintain flow) • Suitable water temperatures (generally < 20 C) • Connection to river (for fish ingress and egress) (Source: Peter Moyle and Steve Cramer, personal communication)	**R11-6**
Page 5-5 Delta Wetlands will establish an environmental water fund to be controlled by DFG; the amount deposited into the fund will be based on the amount of project diversions from October through March and the amount of project discharge.	The use of the funds for the environmental water account should be reviewed by and subject to approval of the Delta Wetlands Project Technical Advisory Committee (TAC). EBMUD should have a place on that TAC	**R11-7**
Page 5-6 Delta Wetlands will establish an aquatic habitat restoration fund.	The use of the fund should be reviewed by and subject to approval of the Delta Wetlands Project Technical Advisory Committee (TAC). EBMUD should have a place on that TAC.	**R11-8**
Page 5-10 Potential effects of the Delta Wetlands Project on spring-run chinook salmon are assessed using the new data provided by DFG on spring-run occurrence and using USFWS's recently modified salmon smolt survival model	What is the reference citation for the recently modified salmon smolt survival model?	**R11-9**
Page 5-12 For Sacramento River fish, the USFWS model assumes that increased mortality attributable to export occurs in the central Delta. Closure of the DCC gates reduces exposure of Sacramento River fish to export effects. The Delta Wetlands Project does not affect operations of the DCC or the proportion of flow drawn through the DCC and Georgiana Slough. Additionally, the FOC terms require reductions in Delta Wetlands diversions if the DCC gates are closed for fishery protection (from November through January).	Mortality in the Central Delta attributable to the Delta Wetlands project should be similar to the mortality to that attributable to other exports. As DW exports increase, it is expected that central delta mortality, primarily due to export related losses, will also increase To minimize additional losses of juvenile salmon due to exports, screen opening sizes should be limited to 3/32", in accordance with NMFS Southwest Region Fish Screening Criteria for Anadromous Salmonids, dated 1997.	**R11-10**

Page 5-12 FOC terms require that project operations not cause a change in receiving water temperature greater than 7^0 C; they also prohibit channel temperature increases greater than 1^0C where channel temperatures are 13^0 to 25^0C, and increases greater than 0.5^0C where channel temperatures are more than 25^0C (see Appendix B).	Increases in temperatures from the project operations may delay the upstream migration of adult chinook salmon into the lower Mokelumne River. A delay in the upstream migration could translate into a later out migration the following year, where conditions later in the season may not be as favorable for salmon smolt survival. EBMUD suggests a two step approach to temperature increases: When channel temperatures are between 13 and 21 degrees C, temperature increases up to 1 degree C would be acceptable. When temperature in channel is over 21 degrees C, increase in temperature should be limited to .5 degrees.	**R11-11**
Page 5-13 EBMUD did not identify, and analysis of the data provided did not show, a relationship between net Delta channel flow (QWEST) and adult migration to the Mokelumne River. Although Delta channel flows varied substantially, the new information indicated minimal variability in the 50% and 90% completion dates for adult chinook salmon migration into the Mokelumne River from 1993 through 1998.	The date of ten- percent completion of adult migration past Woodbridge dam should be reviewed annually to see if project operations are delaying the upstream migration. If the data show there is a delay in upstream migration, DW should modify project operations to avoid impacts on Mokelumne origin salmon. Data on the 10% completion date has been provided to the RDEIR environmental consultant.	**R11-12**
Page 5-13 A negative QWEST indicates that very little Mokelumne River water will exit the Delta as outflow and that most of the Mokelumne River water will be present in the water mass moving toward the CVP and SWP export pumps. A negative QWEST (e.g., in October 1993 and August 1994) does not appear to have affected the timing of adult migration in the Mokelumne River when compared to years when QWEST was positive (e.g., October 1994 and August 1995).	The ten percent completion date for upstream migration at Woodbridge Dam was 10/20/94 (later migration) when QWEST was negative in August 1994 and the ten percent completion date was 9/27/95 (earlier migration) when QWEST was positive in August 1995. While these results may not be directly comparable since salmon upstream monitoring in 1995 started over one month earlier, additional analysis should be conducted to confirm the relationship between QWEST and migration. In particular, the effect of QWEST on the ten- percent upstream migration completion date for 1995 – 98 where the starting dates for the monitoring are more comparable should be analyzed. A delay in the upstream migration could translate into a later outmigration the following year where conditions later in the season may not be as favorable for salmon smolt survival.	**R11-13**

[Continued next page]

Page 5-14 EBMUD and USFWS have indicated concern about the entrainment of fry in Delta diversions after high flows. The available salvage data for the CVP and SWP, however, show that peak entrainment of juvenile chinook salmon occurs during April and May (Figure 5-3). It is likely that fry and young juvenile chinook salmon rear in the lower portion of rivers and in the Delta channels receiving the river discharge until they reach smolt size (i.e., a level of maturity that allows movement to the ocean).	Research conducted by Entrix in Winter 2000 * indicates that juvenile chinook salmon do not move into the western Mokelumne River and take up residence, but continually move downstream, growing as they migrate (Tom Taylor, Personal Communication). This means that not only smolt, but also the more fragile fry would be exposed to DW diversions. To protect the juvenile Mokelumne salmon, EBMUD suggests monitoring for the presence of salmon and practicing adaptive management techniques, such as managing location and timing of diversions so as to avoid harm to the salmon. Specific techniques of adaptive management of Delta Wetlands project operations have been identified and are available for use as necessary. *See "Proposal to develop a juvenile chinook salmon rearing in-river and Delta habitat study." Proposal prepared for CUWA by Entrix, SP Cramer and Associates and Ted Winfield and Associates, December 1999.	**R11-14**
Page 5-15 The results shown in Table 5-4 and Figure 5-4 indicate that the Delta Wetlands Project would have a minimal effect on the proportion of Mokelumne River water moving through the central and south Delta. In most years the Delta Wetlands discharge would have proportionately less Mokelumne River water than the channel receiving the discharge.	The EIR should show the temperature effects of this discharge and possible delays in adult salmon upstream migration Additional temperature monitoring and review of 10% complete migration data should be done to determine the effects of this discharge. Adaptive management of Delta Wetlands project operations to mitigate any negative effects are recommended.	**R11-15**
Page 5-16 Fish screens would be designed to meet a 0.2-fps approach velocity, avoiding direct diversion effects on juvenile chinook salmon.	Reduce the fish screen size from 5/32" to 3/32" to protect salmon fry, in accordance with NMFS Southwest Region Fish Screening Criteria for Anadromous Salmonids, dated 1997.	**R11-16**
Page 5-16 The high concentration of disoriented fish could create exceptional predator habitat by increasing prey availability. Boat docks, however, would not divert water or constrict flows and would not cause conditions expected to disorient fish.	Migration of juvenile salmon may be delayed when they encounter a boat dock or other structure and are forced to mill at the water surface in attempts to migrate past the structure. This abnormal behavior can make them more susceptible to predation. To mitigate this effect, reduce the number and change the location of the boat docks.	**R11-17**
Page 5-17 Installation of boat docks would not be expected to affect fish predator-prey interactions significantly. Pilings and shad associated with boat docks or fishing piers may be used as cover by both predator and prey fish. However, these structurally simple forms of cover attract fish species much less than more complex forms such as brush piles or aquatic plants (Savino and Stein 1982, Gotceitas and Colgan 1987, Lynch and Johnson 1989).	The boat docks would concentrate both juvenile salmon and predators, increasing their chances for interaction. Juvenile salmon encountering a boat dock may mill around before passing below the structure. To mitigate this effect, reduce the number and change the location of the boat docks. (See "Utility of Synthetic Structures for Concentrating Adult Northern Pike and Largemouth Bass".a studys by Kevin B Rogers and Eric P. Bergersen, American Fisheries society, 6/24/99)	**R11-18**

Page 5-17 The FOC terms include compensatory measures that potentially improve and increase fish habitat, such as conservation of 200 acres of shallow-water rearing and spawning habitat, habitat replacement at a 3:1 ratio, setting aside of environmental water, and contribution of funds for DFG fish and habitat management (i.e., $100 per year per additional boat berth, compensation for incidental entrainment losses, establishment of aquatic habitat conservation and environmental water funds).	Mitigation measures should be subject to review by and approval of the technical advisory committee. EBMUD should have a place on the TAC.	R11-19
Table 5-2. Dates of annual Adult Chinook Salmon Migration Past Woodbridge Dam (by percentage complete)	The table should include the ten percent completion date in order to evaluate potential delays in adult salmon upstream migration that result from increases in water temperatures from Project discharges or from negative QWEST that results from Project diversions. The 10% completion data has been provided to the environmental consultant for the RDEIR.	R11-20
Table 5-5. Comparison between Delta Wetlands Project Impacts on Fisheries in the 1995 DEIR/EIS and in the 2000 REIR/EIS	Aquatic habitat development should be located near the project islands and not downstream in Suisun Bay since shallow water habitat will need to be available when X2 is upstream. Habitat development should be reviewed and approved by Delta Wetlands Project TAC. For the benefit of Mokelumne Salmon, shallow water rearing habitat should be constructed along the migratory pathway for juvenile salmon from the lower Mokelumne River and close to the Delta Wetlands project island. Desirable characteristics of this type of habitat include: • Shallow water (generally < 6 feet deep) • Structural diversity (includes large woody debris, diverse substrate, varying water velocities, vegetation cover) • Floodplain inundation (typically January through April, with water inundation in pulses so levels rise and fall gradually and maintain flow) • Suitable water temperatures (generally < 20 C) • Connection to river (for fish ingress and egress) (Source: Peter Moyle and Steve Cramer, personal communication)	R11-21
Table 5-5, Impact F-4: Potential Increase in the Mortality of Chinook Salmon Resulting from the Indirect Effects of Delta Wetlands Project Diversions and Discharges on Flow(s). The RDEIR states that the project impacts would be less than significant based on the inclusion of project elements identified in the biological opinions.	**General Comment:** While the Final Operations Criteria and Reasonable and Prudent Measures in the DFG, USFWS, and NMFS biological opinions provide protection for listed threatened or endangered delta smelt and winter-run chinook, the life history of these species is significantly different than fall-run chinook salmon. Because of these life history differences, mitigations for these species will not necessarily mitigate the impacts on fall-run chinook salmon. Thus, potentially significant Delta Wetlands Project impacts on fall-run chinook salmon remain.	R11-22

Table 5-5 Total Export Criteria: - Annual export of Delta Wetlands stored water will not exceed 250,000 acre-feet.	Because of the timing and location of the exports, there still could be a significant impact on Mokelumne origin salmon. A diversion preference and protocol would help mitigate negative impacts.
Table 5-5 Diversion Criteria: - Maximum X2 value limits start of Delta Wetlands diversion, September through November.	This limit does not protect juvenile Mokelumne origin salmon emigrating from December through March. A diversion preference and protocol would help mitigate negative impacts.
Table 5-5 Diversion Criteria: - Maximum X2 limits magnitude of Delta Wetlands diversion, September through March.	This limit may not protect juvenile Mokelumne origin salmon if the diversion is limited from September through December and diversions increase from January through March. A diversion preference and protocol would help mitigate negative impacts.
Table 5-5 Diversion Criteria: Delta Wetlands diversion to storage is limited by QWEST in March	While this limit provides some protection, a significant proportion of the juvenile salmon outmigration may occur in February. A diversion preference and protocol would help mitigate negative impacts.
Table 5-5 Diversion Criteria: No water is diverted, April and May	This limit will protect salmon smolts, but not fry. A diversion preference and protocol would help mitigate negative impacts
Table 5-5 Diversion Criteria: If the delta smelt fall midwater trawl index is less than 239, no diversion from February 15 through June.	This limit may benefit juvenile salmon, but a significant number of juvenile salmon fry could emigrate before this time. A diversion preference and protocol would help mitigate negative impacts.
Table 5-5 Diversion Criteria: Diversions are limited to a percentage of Delta surplus and Delta outflow (year round), and San Joaquin River (December through March) inflow.	Diversions would occur during the high outflow years which are the same years when the proportion of salmon emigrating as fry is the greatest A diversion preference and protocol would help mitigate negative impacts.
Table 5-5 Diversion Criteria: Diversions are reduced when monitoring detects presence of delta smelt, December through August.	This limit may benefit juvenile salmon, but may not be a benefit if diversions on Webb Tract through the northeastern siphon still occur. A higher impact could occur if diversions are curtailed at the southeastern siphon and increase at the northeastern siphon. A diversion preference and protocol would help mitigate negative impacts.

R11-22 cont'd

Table 5-5 Diversion Criteria: Diversions are limited if the Delta Cross Channel is closed for fish protection, November through January.	Mokelumne origin salmon are exposed to Delta Wetlands diversions regardless of the Delta Cross Channel operation. This protection measure ends at about the time when juvenile salmon emigration begins. A diversion preference and protocol would help mitigate negative impacts.
Table 5-5 Discharge Criteria: - Webb Tract discharge for export is prohibited, January through June.	This is outside the period of adult salmon upstream migration and the limit may force Delta Wetlands to discharge during the fall months when there could be a temperature impact on migrating adult salmon. Additional temperature monitoring and review of 10% complete migration data should be done to determine the effects of this discharge. Adaptive management techniques to mitigate any negative impacts are recommended.

R11-22 cont'd

ATTACHMENT B – Aqueduct Security Related Issues

Review Comments on the Delta Wetlands Revised Draft EIS/EIR: Levee and Aqueduct Security Related Issues

The Mokelumne River supplies about 95% of the water provided by EBMUD to approximately 1.2 million people in EBMUD's service area. The water is carried in an 82-mile long aqueduct of three large diameter steel pipelines running in a 100' wide right -of- way. With a maximum capacity of 325MGD, the Mokelumne Aqueducts serve as the East Bay's lifeline from Pardee Reservoir to the EBMUD service area. Security of this lifeline is one of the District's highest priorities.

The Mokelumne Aqueducts cross the Delta between Stockton and Brentwood. In the Delta, the aqueducts are buried between the San Joaquin River Crossing at Stockton and Holt, which is west of Stockton. For the remainder of the Delta Crossing, the aqueducts are elevated pipes supported on bents and piles. The aqueducts also make underground river crossings at Middle River and Old River.

The aqueducts are above ground immediately south of Bacon Island, and cross under the Middle River just to the east of Bacon Island. (Bacon Island is a proposed DW reservoir island.) Failure of a levee adjacent to the aqueducts could result in scour of the aqueduct footing and probable failure of one or more of the pipelines. The impact of an extended aqueduct outage on EBMUD's 1.2 million customers and on the economy of the service area would be significant.

For these reasons, EBMUD is concerned with the security of the levees around Bacon Island and the potential for flooding and damage to its Mokelumne Aqueducts should those levees fail; seepage onto adjacent islands, causing damage to and potential levee failure on those islands; and ensuring that Delta Wetlands Project operations are as stable and secure as they can possibly be.

EIR Citation	EBMUD Comment	
Page 6-1 Levee improvement materials would be obtained primarily from sand deposits on the project islands. Each borrow area would generally be located more than 400 feel inward from the toe of a levee so that the borrow excavation would not cause structural impacts on the levee and would be at least 2,000 feel inward from the final toe of an improved levee where a greater setback is necessary to control seepage.	Note that URSGWC report states that "A minimum of 800 to 1000 feet offset from the levee toe should be maintained for the location of borrow sites. With this offset, there is no discernable effect (based on seepage models) of the borrow areas on seepage." (Page ES-4). The report and the EIR should be reconciled.	**R11-23**
Page 6-1 The interior slopes of these perimeter levees would be protected from erosion by conventional rock revetment similar to that used on existing exterior slopes, or by other conventional systems such as soil cement or a high-density polyethylene liner. In areas where final design studies indicate that wave splash and runup could potentially erode the levee crest if it is unprotected, the levee crest would be hardened or the erosion protection facing would be extended up as a splash berm.	There is no supporting documentation for design of a "splash berm." The amount of freeboard should protect the levee from overtopping. EBMUD is concerned that soil cement is not an appropriate erosion control measure for the levee crests. Soil cement can be brittle and is subject to cracking, allowing unconstrained erosion below the soil cement cap. Also, the cap itself could pull away from the levee, leaving it unprotected. EBMUD is not aware of the effective use of polyethylene liner in a levee crest situation.	**R11-24**

ATTACHMENT B – Aqueduct Security Related Issues

EIR Citation	EBMUD Comment	
Page 6-9: Long term reliability of the proposed interceptor well system. Evidence was presented in water right hearing testimony that McDonald Island land became saturated and unfarmable after the demonstration projects were completed. DW geotechnical consultant Ed Hultgren testified, however that the relief wells became less effective with time as they became clogged with silt. Hultgren added that the demonstration wells were constructed for the demonstration project only, not for long-term use, and that when the demonstration projects were complete, the wells were not maintained.	EBMUD is concerned that the interceptor well systems have only been tested in demonstration tests conducted over ten years ago, and then for only two days. After running the tests for two days, the wells were allowed to silt up, and became less effective. Measures to prevent or eliminate siltation from clogging the wells have not been tested. The test case only proves that interceptor wells silt up.	**R11-25**
Page 6-10: Adequacy and effectiveness of the proposed seepage-monitoring program. Delta Wetlands has proposed a monitoring program to ensure that there is no seepage onto adjacent islands…	An unbiased third party or a committee including Delta Wetlands and other interested parties should perform monitoring of the seepage (Hereinafter "Neutral Monitoring Entity"). Data from all monitoring wells should be made available to members of the entity. All seepage related actions should be reviewed and approved by the entity. Other responsibilities, authorities, and actions of this Neutral Monitoring Entity should be determined.	**R11-26**
Page 6-11 Adequacy of Borrow Area Setbacks The modeling showed that setting the borrow area back 800 feet from the levee in accordance with USACE standards would result in not effects (i.e., no additional benefit) on seepage conditions or operation of the interceptor well system.	Note that URSGWC report states that "A minimum of 800 to 1000 feet offset from the levee toe should be maintained for the location of borrow sites. With this offset, there is no discernable effect (based on seepage models) of the borrow areas on seepage". (Page ES-4). The report and the EIR should be reconciled.	**R11-27**
Page 6-14: Effects of Delta Wetlands Operations on Levee Stability: Independent review of levee stability issues by URSGWC verified that the Delta Wetlands' proposed levee improvements would increase the long-term FS toward the reservoir islands in comparison with existing conditions but determined that the long-term FS toward the slough would decrease. The URSGWC evaluation also found that, compared with existing conditions, the FS toward the reservoir islands would decrease for the end of construction case and the sudden drawdown condition.	Factors of Safety, either long term or short term, should not be allowed to decrease under the DW project. At a minimum, Corps of Engineers standards (and DSOD standards, if applicable) should be met.	**R11-28**
Page 6-14 Effect of interceptor well system on levee stability. A high rate of continuous pumping in the interceptor wells can result in the migration of fine materials from the sand aquifer, which can cause internal erosion or piping in the levee material and over time lead to weakened levee foundations and potential settlement and stability problems… Delta wetlands may be required to identify the criteria by which they would judge when and interceptor well would need to be replaced	Flow meters should be installed on all interceptor wells to continually monitor performance Replacement criteria should be in the purview of the Neutral Monitoring Entity. Any weakening of the levee due to interceptor wells should be carefully monitored and mitigated for.	**R11-29**

ATTACHMENT B – Aqueduct Security Related Issues

EIR Citation	EBMUD Comment	
Page 6-16 Potential damages to adjacent Islands in the event of a reservoir island levee failure. The maximum velocity on the opposite bank would be approximately 16 fps for 30-40 minutes. It is expected that the riprapped levee would be able to withstand these velocities although floating structures and moored boats might be damaged.	DW should confirm that all levees on banks opposite the reservoir islands are riprapped to the extent that they could withstand the expected sustained velocity. EBMUD is particularly concerned with levees on islands on EBMUD's "critical perimeter" at the southern end of Bacon Island, that is: Palm Tract, Orwood Tract, Woodward Island and Lower Jones Tract.	R11-30
Page 6-22 Potential levee failure on Delta Wetlands project islands during Seismic Activity By improving the reservoir island levees, the stability of reservoir island levee slopes under seismic conditions would increase toward the reservoir island and would decrease toward the slough. Results of the dynamic stability analysis concluded that as much as 4 feet of levee deformation could occur under seismic conditions. This impact is considered significant.	The static Factor of Safety described on page 6-21 is not sufficient for Earthquake loading. The EIR does not specify how DW plans to address the estimated 4 feet of levee deformation calculated. The 4' of expected deformation could mean catastrophic failure of the levees. The proposed mitigation ("Adopt final levee design that achieves recommended factor of safety and reduces the risk of Catastrophic levee failure") does not reduce the impact of 4' deformation to a less than significant level.	R11-31
Additional concerns, not mentioned in EIR	Delta Wetlands island flooding and draining activities may also have levee stability implications. Specifically, the location of the Bacon island pumping plant and discharge structure may produce increases in river and slough channel velocities over those which presently occur. This will result in more erosion, under cutting and scour on the waterside of adjacent levees, and at the Mokelumne Aqueduct river crossings at Middle River. EBMUD recommends hydrographic and bathymetric studies of the river crossings be performed prior to construction of the DW project. Subsequent studies after project operations begin will determine the extent of project related erosion. DW should repair areas of additional erosion, undercutting, or scour that are identified.	R11-32
URSGWC Report, page ES-4: The need for monitoring and maintaining compliance with significance criteria is essential and must be carefully adopted and maintained.	EBMUD agrees. The issue of significance criteria needs further examination. Action plans based on triggers need to be fully developed. All actions should be reviewed and approved by the Neutral Monitoring Entity. See comments under "significance standards" below.	R11-33
URSGWC Report, page ES-6: The seepage mitigation design proposed by DW appears appropriate and has the potential to be effective, provided that • The interceptor well system is appropriately designed, constructed, and operated. • The monitoring system consisting of seepage monitoring wells and background wills is appropriately designed, constructed and operated, and • The significance criteria are rigorously applied and continually updated based on experience.	A Neutral Monitoring Entity and representatives from adjacent islands, reclamation districts and EBMUD, should be informed of monitoring data, and be able to initiate response actions as necessary. The spacing of the interceptor wells should be designed in accordance with geotechnical data gathered during the detailed design phase. The final spacing should be determined during construction and initial project start up to assure that the drawdown capability of the interceptor wells performs as designed.	R11-34

ATTACHMENT B – Aqueduct Security Related Issues

EIR Citation	EBMUD Comment	
URSGWC Report, page ES-6: The levee strengthening conceptually proposed by DW appears appropriate, except that measures need to be developed to improve the stability of the raised levees toward the slough.	Measures to improve the stability of the levees toward the slough have not been presented in the EIR. The Factor of Safety on the slough side is reduced from current conditions. Without additional measures, potential for levee failure is increased.	**R11-35**
URSGWC Report, page ES-7: In particular, the design construction, and operation of extraction wells will be critical to maximize the reliability of the seepage control system. It will also minimize the possibility of flushing fine particles out of the levee foundation, which could overtime lead to weakened levee foundations and potential settlement and stability problems.	The potential problem of "sand boils" and related levee instability in the areas of the interceptor wells has not been addressed. Also, the potential for "silting up" of the interceptor wells, leading to reduced capacity to relieve seepage has not been fully addressed.	**R11-36**
URSGWC Report, Page 2.3, Section 2.2.3: The pump test on Holland Island was conducted from April 24 through April 26, 1989… the pump test on McDonald Island was performed from August 15 through 16, 1989… **Page 2.4** Following the McDonald Island drawdown tests, there was some question regarding the long term effectiveness of the interceptor will system… Mr. Hultgren explained that the wells were not designed and built for long-term operation, and they were not maintained once the test program was completed.	In the 10 years since these draw down tests were performed, no additional data on long term reliability, need for maintenance, or feasibility of maintenance on interceptor wells has been performed. EBMUD questions the long-term viability of these wells, particularly with no financial guarantee built in to the system. If wells fail, seepage onto adjacent islands and levees will increase, potentially leading to instability of the levees or flooding of the islands.	**R11-37**
URSGWC Report, Page 2-17, section 2.4.1, Seepage Monitoring system: The purpose of the monitoring wells is to provide an early detection on seepage caused by the project…. A Spacing of 1500 to 2000 feet on neighboring islands to closely monitor a continuous sand aquifer that underlies both the DW project and neighboring islands. A maximum spacing of 1000 feet at critical sections.	To protect the integrity of its three main aqueducts, EBMUD considers the entire southern perimeter of Bacon Island (where it is adjacent to Palm Tract, Orwood tract, Woodward Tract and Lower Jones Tract) to be a "critical perimeter." A maximum spacing of monitoring wells of 500' along this perimeter would be required.	**R11-38**

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ATTACHMENT B – Aqueduct Security Related Issues

EIR Citation	EBMUD Comment	
URSGWC Report, Page 2-17, Section 2.4.1, Significance Standards: DW proposed seepage performance standards or significance standards to identify net seepage increases in the neighboring islands attributable to the reservoir islands. The data collected from the monitoring network will be used for application of the significance standards. If the data show exceedance of the significance standards, DW proposes to trigger seepage control measures to control the increased seepage. Data collection from the piezometers will commence at least one year prior to filling of reservoirs.	EBMUD has several main points with regards to the significance criteria. • Data collection should not be limited to one year. According to the report, ten years of data is available from existing monitoring wells. In addition, new monitoring wells should be installed in the first year of the 4-6 year construction period. All the existing and new data should also be considered in establishing the baseline. • Actions in response to exceedance of standards are not stated. • Neutral Monitoring Entity should review actions. • The groundwater level in each adjacent monitoring well should be compared to a known level of background monitoring wells, under any given condition. (E.g. When the background groundwater level is at a certain elevation pre project, the adjacent well should show the same level it was at pre-project) • Annual average groundwater levels should not be used as a basis for comparison, as this is imprecise data, which masks the effect of tidal action and other variability in local groundwater levels. More precise and locally relevant data should be used as a basis for comparison. • The leeway of +1 foot over two standard deviations is excessive. (See URSGWC report Section 2.4.3)	**R11-39**
URSGWC report, Page 2-21, Section 2.5.1, Long Term reliability of Proposed Well System: ...In summary, therefore, long term operability of the individual wells and reliability of power supply are expected to be the main potential sources of inadequate system performance. We believe that rigorous well O&M and consideration of standby power will provide high likelihood of long-term system reliability.	The EIR does not mention standby power, and does not discuss in detail the O&M procedures.	**R11-40**
URSGWC report, Page 3-1, Slope Stability. The main objective of the stability analysis was to evaluate the proposed levee strengthening scheme for Webb Tract and Bacon Island in the DW project.	It does not appear that the report evaluated the effect on the levee of a raised phreatic surface due to water on both sides of the levee when the reservoir is full. Has the potential for chunks of the levee being lifted by rising groundwater on both sides, and "floated away" been investigated? This has happened in the recent past. What measures will be implemented to avoid this?	**R11-41**

ATTACHMENT B – Aqueduct Security Related Issues

EIR Citation	EBMUD Comment	
URSGWC Report, Page 3-4, Section 3.3.3, Water Table Elevations General Note	The water surface elevations for the 100-year floodplain were not considered in the levee stability analysis. It is important, and typical in a design of this scope, that the analysis address the most critical case rather than only what is considered representatively critical. Also, the wind runup wave height should be considered at the 100-year flood-plain level.	**R11-42**
URSGWC Report , page 3-5, Section 3.3.4, Soil Parameters General note.	The report uses effective stress strength parameters for the peat and organic soils to calculate long-term levee stability. We recommend that the report also use undrained strength analysis parameters for the peat and organic soils to calculate long term stability because the effective stress strength parameters may not account for pore pressure increases that occur during shearing which result in unconservatively higher FOS's.	**R11-43**
URSGWC Report, Section three, Slope Stability Issues, Tables 3.57 and 3.56	The report states that the design is inadequate in meeting the criteria set forth by the USACE and DSOD. The project should not be approved unless it is demonstrated that these design criteria (DSOD only in the case that the reservoir water level is 6' or more above MSL) can be met and a stable levee will be constructed.	**R11-44**

East Bay Municipal Utility District

R11-1. Chapter 5 of the 2000 REIR/EIS provides an assessment of impacts on chinook salmon that originate from the Mokelumne River (Chapter 3F of FEIS Volume 1). The 1995 DEIR/EIS and the 2000 REIR/EIS both used the best available information for the impact assessment. The data did not support a conclusion that Delta Wetlands Project operations would significantly affect Mokelumne River juvenile or adult chinook salmon. The commenter argues that the proximity of Webb Tract to the north and south forks of the Mokelumne River justifies conducting a separate, detailed assessment of project impacts on Mokelumne River fish. This conclusion is not supported. Chinook salmon from the Mokelumne River would be exposed to the same project effects as chinook salmon from the San Joaquin River and those from the Sacramento River that move down Georgiana Slough (and the DCC when the gates are open).

As described in Chapter 5 of the 2000 REIR/EIS (FEIS Volume 1, Chapter 3F), several FOC terms limit effects of the Delta Wetlands Project on Delta flows during February through June, the period of concern identified by the commenter. As a result, the following terms reduce project effects on outmigrating juvenile chinook salmon:

- Delta Wetlands is prohibited from diverting water in April and May.
- Diversions are limited during all other months to a percentage of surplus flows and a percentage of outflow, and are also limited to a percentage of San Joaquin River flow during January through March.
- Several FOC terms limit indirect effects of Delta Wetlands project operations on flows in February and March by further limiting diversions during those months based on X2 position, change in X2, March QWEST criteria, and DCC closure.
- Delta Wetlands is prohibited from discharging water for export from Webb Tract in January through June.

These measures do not redirect impacts or create conditions that specifically affect chinook salmon of Mokelumne River origin.

Additionally, Delta Wetlands is required by the FOC to install fish screens that meet an approach-velocity criterion of 0.2 fps. This combination of measures reduces potential project effects on Mokelumne River juvenile chinook salmon to a less-than-significant level. See Master Response 4, "Impacts on Fisheries Identified in the 1995 DEIR/EIS and Adoption of Biological Opinions", for details about these terms.

Despite the protections provided by the FOC, Delta Wetlands and EBMUD negotiated a protest dismissal agreement describing additional measures that Delta Wetlands would take to address EBMUD's concerns about project effects on Mokelumne River salmon. The agreement, submitted to the SWRCB in October 2000, is included in the appendix to this

volume. Attachment A of the agreement specifies that Delta Wetlands will implement the following measures to provide further protection against potential project effects on Mokelumne River fisheries:

- # Restrict diversions from the northeastern siphon station on Webb Tract to only those times when the southeastern siphon station is operating at full capacity or when certain other conditions are met.

- # Remove existing agricultural siphons from Bouldin Island and Webb Tract and limit the total number of siphons on Bouldin and Webb Tract under the proposed project.

- # Limit the number of boat docks added to Bouldin Island and Webb Tract.

- # Conduct a fisheries monitoring program at Webb Tract.

The SWRCB included some of the terms of the protest dismissal agreement in the terms and conditions of the Delta Wetlands water right permit.

R11-2. See responses to EBMUD's detailed comments (R11-23 through R11-44) below.

Delta Wetlands and EBMUD submitted a protest dismissal agreement to the SWRCB during the water right hearing that acknowledges the importance of the Mokelumne Aqueduct and outlines measures to reduce risk to this structure.

R11-3. The commenter is correct. The text on page ES-4 of the 2000 REIR/EIS has been revised as follows:

> The East Bay Municipal Utility District (EBMUD) and DFG raised several issues about project effects on ~~listed~~ fish species.

The 2000 REIR/EIS provided an assessment of project effects on fall-run chinook salmon (see pages 5-12 and 5-13 [pages 3F-54 and 3F-55 of FEIS Volume 1).

R11-4. The reference to "Mokelumne River spring-run chinook salmon" under "Fisheries" on page ES-6 of the 2000 REIR/EIS has been revised as follows:

> It also discusses new listings of fish species and evaluates new information on spring-run chinook salmon occurrence provided by DFG, data on Mokelumne River ~~spring-run~~ fall-run chinook salmon provided by EBMUD, and new information regarding potential increases in predation with the construction of Delta Wetlands boat docks and other facilities.

The occurrence of spring-run chinook salmon, winter-run chinook salmon, steelhead, splittail, and delta smelt overlaps the occurrence of fall-run chinook salmon in the Delta. The FOC and the biological opinion RPMs include measures that limit Delta Wetlands

operations, and subsequent effects on Delta habitat conditions and chinook salmon, throughout the period when adult and juvenile fall-run chinook salmon could be present. With the FOC and the RPMs incorporated into the proposed project, impacts on fall-run chinook salmon, including those originating in the Mokelumne River, are less than significant.

R11-5. Juvenile chinook salmon released in the Sacramento River migrate either down the Sacramento River or through the DCC into the central Delta. The survival rate has been found to be higher for those fish remaining in the Sacramento River than for those that enter the DCC–central Delta pathway. However, the available data do not strongly support the conclusion that the lower survival rate is the result of exports and diversions (Newman and Rice 1997).

The FOC and RPMs include terms to minimize the effect of exposure to Delta Wetlands diversions. These measures reduce the potential impact on chinook salmon that originate in the Mokelumne River to a less-than-significant level.

Available information indicates that only a portion of the salmon produced in the Mokelumne hatchery are marked, few naturally produced salmon are marked, and the probability of capturing marked Mokelumne River fish is low (based on recoveries at the CVP and SWP fish protection facilities of less than 0.02% of the number released). Monitoring specifically for the presence of Mokelumne River chinook salmon, therefore, would have minimal, if any, real-time management value.

The protest dismissal agreement between Delta Wetlands and EBMUD requires that Delta Wetlands implement a fishery monitoring program when Webb Tract diversions to storage from the northeastern siphon station on the San Joaquin River exceed 50 cfs between January 1 and June 30. The monitoring program is described in Attachment A of the agreement (see the appendix to this volume).

R11-6. As required in the FOC, USFWS will approve the easement for 200 acres of shallow-water aquatic habitat and the management plan for the habitat. EBMUD's request for conservation of habitat along the Mokelumne River has been noted.

R11-7. Establishment of the fund is specified in the DFG biological opinion; use of the fund would be at the direction only of DFG. As stated in RPM 2.0, section 2.1, "The Fund shall exclusively benefit and be controlled by the DFG". Therefore, DFG would determine whether the Technical Advisory Committee would have any role in reviewing or approving the use of the fund. As part of the protest dismissal agreement, Delta Wetlands has agreed to notify DFG that EBMUD may participate on the Technical Advisory Committee and should be provided notice of all committee meetings and discussions.

R11-8. Under the terms of the FOC, use of the aquatic habitat restoration funds will be at the discretion of the resource agencies (e.g., DFG Bay-Delta office). These monies will be

used to the fullest extent possible to plan and implement actions that improve habitat for the target species in the Bay-Delta estuary.

R11-9. Mr. Frank Wernette of DFG in Stockton provided the modified model to the SWRCB during summer 1999. He did not provide a reference citation other than indicating that USFWS updated its fall-run chinook salmon model so it could be used to assess effects on late-fall-, spring-, and winter-run chinook salmon. The SWRCB provided the information to the preparers of the NEPA and CEQA analysis.

R11-10. See response to Comment R11-5 regarding mortality attributable to exports and Delta Wetlands diversions in the central Delta, and response to Comment B6-60 regarding design of fish screens.

R11-11. Mokelumne River chinook salmon probably migrate up the San Joaquin River channel and subsequently into the Mokelumne River channel. Stored water from Webb Tract would be discharged on the south side of the island, not to the San Joaquin River channel. Given the location of the discharge, the volume of tidal flow in the San Joaquin River channel, and the implementation of the water temperature mitigation measures described in the FOC, temperature changes in the San Joaquin River channel are likely to be unmeasurable. Adult chinook salmon returning to the Mokelumne River would not be affected.

R11-12. The date that 10% of migrating adults complete migration past Woodbridge Dam has been reviewed relative to potential relationships to QWEST. The conclusion is the same as discussed in Chapter 5 of the 2000 REIR/EIS (Chapter 3F of FEIS Volume 1) for the 50% and 90% completion dates of adult migration: QWEST does not clearly affect migration dates.

For example, in 1998, average QWEST in August was 5,400 cfs and the 10% completion date was October 10, while in 1995, average August QWEST was 300 cfs (varying from less than -1,000 cfs to more than 2,000 cfs) and the 10% completion date was September 28. The relationship between the 50% completion date and flow in the Mokelumne River in August has also been evaluated; the results showed that earlier dates of 50% completion were related somewhat to higher flow in the Mokelumne River. For example, in 1994 the average Mokelumne River flow in August was 40 cfs and the 50% completion date was November 7, and in 1995, the average Mokelumne River flow in August was 900 cfs and the 50% completion date was October 28.

In addition, the 1% completion date is related somewhat to the size of the run; earlier completion dates are associated with larger runs. The 1% completion date is also correlated with the 10% completion date. Data on flows and the migration of Mokelumne River chinook salmon can be evaluated in many different ways, but the causal mechanisms for the relationships found through such evaluation need to be considered carefully. More information is required before any conclusive relationship can be ascertained. One missing component is the date when adult chinook salmon return to the

estuary. Variability in completion dates may be related to the timing of return to the estuary, which in turn may be related to ocean conditions or some other factor.

In summary, the completion dates of adult fish migration are not clearly related to flow conditions. The available data do indicate that Delta Wetlands Project operations would affect the timing of migration of adult chinook salmon. This finding is consistent with the conclusion stated in the 2000 REIR/EIS.

R11-13. See response to Comment R11-12.

R11-14. The conclusion that juvenile salmon continually move downstream in the Delta and grow as they migrate is based on data that have not been made available to the general scientific community. The data also do not appear to address the effects of diversions on survival of juvenile chinook salmon in the Delta, especially fry. The analysis in the 2000 REIR/EIS is based on the best available information. With the FOC and RPMs incorporated into the proposed project, effects on juvenile chinook salmon are less than significant; see Master Response 4, "Impacts on Fisheries Identified in the 1995 DEIR/EIS and Adoption of Biological Opinions", for information about protective measures for juvenile chinook salmon included in the FOC and RPMs. See also response to Comment R11-5 above regarding monitoring for Mokelumne River chinook salmon.

R11-15. See response to Comment R11-12 regarding the data on 10% completion of adult migration; see response to Comment R11-11 for an additional discussion of potential temperature-related effects on adult migration.

R11-16. See response to Comment B6-60 regarding design criteria for fish screens.

R11-17. See response to Comment B7-64 regarding the potential for predation at the Delta Wetlands facilities and the issue of reverse and bypass flows. A new mitigation measure is proposed to reduce the number of boat slips that Delta Wetlands may construct; this measure is described under "Additional Mitigation of Potential Impacts: Reduction in Boat Slips at Recreation Facilities" in Master Response 5, "Mitigation of Environmental Effects Related to Use of Recreation Facilities".

Additionally, the protest dismissal agreement between Delta Wetlands and EBMUD establishes limits on the number of new boat docks that can be constructed on the exterior of Bouldin Island and Webb Tract. See Attachment A of the Delta Wetlands–EBMUD agreement, which is included in the appendix to this volume.

R11-18. See response to Comment R11-17.

R11-19. See responses to Comments R11-6, R11-7, and R11-8.

R11-20. The 10% completion dates are as follows:

1993, October 22;
1994, October 21;
1995, September 28;
1996, October 18;
1997, October 15; and
1998, October 10.

As discussed in response to Comment R11-12, the 10% completion dates of adult migration are not clearly related to flow conditions. The available data do indicate that Delta Wetlands Project operations would affect the timing of migration of adult chinook salmon. This finding is consistent with the conclusion stated in the 2000 REIR/EIS.

R11-21. See response to Comment R11-6.

R11-22. The FOC and RPMs limit Delta Wetlands diversions to ensure that the project will result in less-than-significant impacts on fish species. The diversion and discharge constraints will minimize effects of the project on juvenile chinook salmon in the Delta, including fry and smolt.

The occurrence of spring-run chinook salmon, winter-run chinook salmon, steelhead, splittail, and delta smelt overlaps the occurrence of fall-run chinook salmon in the Delta. The FOC and the biological opinion RPMs include measures that limit Delta Wetlands operations, and subsequent effects on Delta habitat conditions and chinook salmon, throughout the period when adult and juvenile fall-run chinook salmon could be present. With the FOC and RPMs incorporated into the proposed project, effects on fall-run chinook salmon, including those that originate in the Mokelumne River, are less than significant.

Exposure of juvenile chinook salmon to the Delta Wetlands diversion on the north side of Webb Tract would be minimal given the size of the San Joaquin River channel, the amount of tidal flow, the low approach velocity (0.2 fps) at the screen face of Delta Wetlands siphons, and the bypass flow provided by tidal and net Delta channel flow. The fish screens and diversion facilities are not expected to result in the concentration of juvenile salmonids and other fish species.

The FOC include several restrictions on operations during the January–March period to minimize effects on juvenile chinook salmon. In February and March, the maximum percentage of surplus water available for Delta Wetlands diversion would be limited to 75% and 50%, respectively, down from 90% allowed in January. Delta Wetlands diversions are limited to 15% of Delta outflow during February and March, compared with 25% in November and December. Delta Wetlands diversions are limited to 50% of San Joaquin River flow during March, compared with 125% from December through February. All the diversion limits are dependent on a FMWT index for delta smelt that is greater than 239. If the delta smelt index is less than 239, diversions would not be allowed

from February 15 through June. See the FOC in Appendix B of the 2000 REIR/EIS for details.

See response to Comment R11-12 regarding the data on 10% completion dates of adult migration; see response to Comment R11-11 for an additional discussion of potential temperature-related effects on adult migration.

R11-23. The text on page 6-1 of the 2000 REIR/EIS (page 3D-22 in Chapter 3D of FEIS Volume 1) referenced by the commenter describes the criteria for borrow sites proposed by Delta Wetlands in 1995 (see also Chapter 3D). These criteria have since been revised based on the results of the seepage analysis presented in the 2000 REIR/EIS. The borrow area setback recommended in Appendix H is presented on page 6-11 of the 2000 REIR/EIS (see FEIS Volume 1, page 3D-31). See also response to Comment R11-27 below.

R11-24. The erosion protection methods used on the interior island slopes is subject to final design. During the water right hearing, Delta Wetlands representatives testified that Delta Wetlands will use conventional design procedures and routine protection systems to protect the levees against erosion. Various shore protection schemes such as riprap and soil cement, as well as combinations of systems, would be considered in the final levee design.

R11-25. The 2000 REIR/EIS states that regular performance monitoring, maintenance, and "redevelopment" (cleaning) of the wells will be required to ensure the long-term effectiveness of the proposed interceptor-well system. See Section 2.5 of Appendix H for more information.

Additionally, the Delta Wetlands–EBMUD protest dismissal agreement describes routine operations in the Seepage Control Plan as follows:

> [Delta Wetlands] will continually evaluate the efficiency of the interceptor wells to verify that there is sufficient additional capacity to allow the pool elevation to continue to be raised. If the efficiency of a well drops off such that the ability of the well to pump greater volumes of water is in question, [Delta Wetlands] will redevelop the well to improve its efficiency prior to approaching the well's limits. If additional capacity is not readily available from an existing well, a new well can be drilled to increase the pumping capacity at the reservoir island's perimeter.
>
> . . . During the period with little to no water storage, a thorough evaluation of the efficiency of the wells will be undertaken by [Delta Wetlands] to identify those wells that may show signs of decreasing efficiency and may be susceptible to overstressing during the following season's storage cycle. The need for additional wells will also be evaluated. To the extent practical, redevelopment of existing wells and installation of additional wells will occur during the off-season.

R11-26. See responses to Comments C6-2 and C17-4.

The protest dismissal agreement submitted by Delta Wetlands and EBMUD during the water right hearing proposes a neutral technical review committee, identified in the agreement as the "Reservoir Island Monitoring and Action Board (MAB)". A copy of the agreement is provided in the appendix to this volume.

R11-27. The last sentence of the paragraph under "Adequacy of Borrow-Area Setbacks" on page 6-11 of the 2000 REIR/EIS (see page 3D-3I of FEIS Volume 1) has been modified as follows:

> The modeling showed that setting the borrow area back a minimum of 800 feet from the levee in accordance with USACE standards would result in no effects ~~(i.e., no additional benefit)~~ on seepage conditions or operation of the interceptor-well system (Section 2.3 of Appendix H).

R11-28. See response to Comment R6-17 above.

R11-29. Flow meters are one option for monitoring the effectiveness of the interceptor well system. See response to Comment R11-25 for more information on evaluating the efficiency of the wells.

R11-30. Because the potential risk of a levee failure is extremely low, the impact is considered less than significant; no mitigation, such as evaluation of the riprap condition on banks opposite the reservoir islands, is required. See also response to Comment R6-15.

R11-31. When potential changes in levee stability are evaluated, conditions under the project are compared with existing conditions. Under existing conditions, the levees are subject to deformation during seismic activity. The same is true under project conditions. The mitigation measure described in Chapter 6 of the 2000 REIR/EIS (see Chapter 3D of FEIS Volume 1) and referenced by the commenter would ensure that long-term levee stability would be equal to or greater than stability under existing conditions. When this mitigation measure is applied, the risk of levee failure under seismic conditions would be less than or equal to the risk under existing conditions. See also responses to Comments R2-25, R2-26, and R2-27 regarding the seismic stability analysis and potential for liquefaction.

R11-32. See response to Comment C17-5.

R11-33. See responses to Comments C6-2 and C17-4.

The protest dismissal agreement submitted by Delta Wetlands and EBMUD during the water right hearing proposes a neutral technical review committee, identified in the agreement as the "Reservoir Island Monitoring and Action Board (MAB)". A copy of the agreement is provided in the appendix to this volume.

R11-34. The commenter is correct in stating that the final spacing of the interceptor wells would be determined during the final design. See response to Comment C6-2 regarding the neutral monitoring entity and dissemination of information.

R11-35. See response to Comment R6-12.

R11-36. As described in Chapter 2, "Delta Wetlands Project Alternatives", Delta Wetlands would conduct routine inspections and maintenance of the reservoir island levees. Additional information about weekly levee inspections is provided in Chapter 3D under "Postconstruction Monitoring and Maintenance" (FEIS Volume 1, page 3D-13). See response to Comment R11-25 regarding the potential for "silting up" of the interceptor wells.

R11-37. The seepage monitoring and control system would be designed to maximize the potential for long-term viability of the interceptor well system. The technical analysis presented in Appendix H found that the proposed well system can be expected to operate reliably on a long-term basis, presuming that:

- # the specific design at each well location is adequate and appropriate,
- # appropriate redundant systems are in place in case of equipment failure, and
- # well systems are monitored and are maintained properly.

If the well system fails and seepage levels on adjacent islands increase above the performance standards, Delta Wetlands would be required to cease diversions onto the project islands and, in extreme cases, cease reservoir operations.

R11-38. See response to Comment C6-1 regarding the spacing of monitoring wells.

R11-39. The following responses correspond to each bullet point about the seepage performance criteria in this comment.

- # See response to Comment R10-16 regarding the collection of baseline data.

- # See response to Comment E14-10 regarding possible actions to be taken in response to exceedance of standards.

- # See response to Comment C6-2 regarding a neutral review committee.

- # Each monitoring well would be located in a unique location and would be subject to local conditions associated with variations in the porosity of the levee, irrigation and drainage practices, and other local influences. Each seepage monitoring well would be compared both to its own historical performance and to the average of all background monitoring wells. These two comparisons address both the local and regional influences, respectively.

Storing water in a reservoir does not induce tidal variations in groundwater levels. The groundwater monitoring program is intended to mask the influence of daily tides by recording the groundwater level at least hourly and computing the mean groundwater level for each monitoring well on each day. The "daily mean" is intended to represent the groundwater level with the tidal impacts neutralized. Other major influences in groundwater levels not induced by water storage in a reservoir include local rainfall; variations in river stages resulting from upstream runoff; evapotranspiration; and irrigation and drainage for specific crops. These nonreservoir influences on groundwater levels have annual cycles. Computing the annual variation of groundwater levels around the annual mean at each well location provides a measure of site-specific variations independent of those that may be caused by seepage from a reservoir. Once Delta Wetlands begins to store water in the reservoirs, variations in the groundwater levels can be compared to variations recorded in prior years so that changes in local conditions can be monitored. See also response to Comment C17-4 regarding taking into account seasonal variations in groundwater levels.

See response to Comment R10-18 regarding the recommended leeway.

R11-40. Discussions with Delta Wetlands' engineers indicate that standby power and other redundancies would be included in the final design for the seepage control system; the need for and appropriate methods used to provide standby power will be assessed during final design for the seepage control system (Hultgren pers. comm.). As described in the Delta Wetlands–EBMUD protest dismissal agreement, the reservoir island design review board (DRB) would review the design of the seepage control system; the need for standby power would be considered during its review. Additionally, after reservoir operations begin, the MAB would review operation of the seepage control system and may make recommendations about standby power or redundant facilities in response to operating conditions.

R11-41. The levee analysis takes into consideration the raised phreatic surface under the project island levees when water is stored on the reservoir islands. The most critical levee condition is when the reservoir is high and the adjacent channel is low; this condition was evaluated in Appendix H. The wide stability berms at the toes of the levees would provide sufficient weight to restrain the peat over the short distance where differential heads may be highest. Seep ditches beyond the toes of the wide berms would relieve excess head. The potential for "floating levee bits" would be evaluated during final design, but it is not expected to be a substantial issue.

R11-42. See response to Comment R6-10.

R11-43. See response to Comment R6-14.

R11-44. See response to Comment R6-17.

EAST BAY REGIONAL PARKS FOR THE FUTURE PARK DISTRICT

July 28, 2000

Mr. Jim Sutton
State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

Subject: Comments on Delta Wetlands Project Revised Draft EIR/EIS

Dear Mr. Sutton:

Thank you for providing the East Bay Regional Park District ("District") with a copy of the revised draft Environmental Impact Report/Environmental Impact Statement for the Delta Wetlands Project. The following are the District's comments on the revised draft EIR/EIS.

The District reviewed the draft EIR/EIS in 1995 and had no comments at that time. The 1995 document identified that private recreational improvements may take place as part of the project, however there would be no new public facilities contemplated. Since that time, CALFED has indicated some interest in possibly taking over this project, in which case public recreation may be included in a publically-owned project. Should such events occur, the District would be interested in promoting the establishment of public recreational facilities in the project area.

In 1997, the District adopted a new Master Plan which identified our existing and potential parklands and Regional Trails in Alameda and Contra Costa Counties. I have enclosed a copy of our Master Plan and accompanying map for your review and information. The enclosed map identifies several existing and proposed regional park and trail facilities that could be affected by the proposed project, including Big Break Regional Shoreline in Oakley, a proposed "Delta Recreation" park on Jersey Island, a "Delta Access" park on the Orwood Tract, and several proposed regional trails which would run between these three parks and other existing District facilities. Given the size and complexity of the proposed project, it is likely that some of these facilities could be developed as part of or mitigation for a future publically-funded project.

R12-1

Sincerely,

Brad Olson
Environmental Specialist

cc. Margit Arambaru, Delta Protection Commission
Steve Richie, CALFED

2950 Peralta Oaks Court P.O. Box 5381 Oakland, CA 94605-0381
TEL 510 635-0135 FAX 510 569-4319 TDD 510 633-0460 www.ebparks.org

East Bay Regional Park District

R12-1. See Master Response 2, "Integration of the Delta Wetlands Project with Federal and State Water Project Operations, Including the CALFED Bay-Delta Program", for a discussion of the potential integration of the project into CALFED.

FAX
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IRONHOUSE SANITARY DISTRICT
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Telephone
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July 24, 2000

State Water Resources Control Board
Division of Water Rights
Attention: Jim Sutton
P.O. Box 2000
Sacramento, CA 95812-2000

U.S. Army Corps of Engineers
Regulatory Branch
Attention: Mike Finan
1324 J Street, Room 1480
Sacramento, CA 95814-2922

RE: Comments on Delta Wetlands Draft EIR/S

Gentlemen:

Thank you for the opportunity to comment on the Delta Wetlands Revised Draft Environmental Impact Report/Statement (REIR/S) published May, 2000. As you noted at page 1-2 of the REIR/S:

> This REIR/EIS does not include formal responses to comments on the 1995 DEIR/EIS, although it does address several issues raised in those comments. Formal responses to all comments on the 1995 DEIR/EIS will be presented in the final environmental impact report/ environmental impact statement (FEIR/FEIS) on the Delta Wetlands Project along with responses to comments on this REIR/EIS. Comments submitted on the 1995 DEIR/EIS do not need to be resubmitted.

As you know, Ironhouse Sanitary District (ISD) submitted a letter dated December 21, 1995 commenting on the 1995 DEIR/EIS. After reviewing the REIR/S, ISD hereby formally resubmits the comments it made in 1995, even though it is not necessary to do so. In particular, ISD finds that the information presented in

R13-1

Chapter 6 – Levee Stability and Seepage, does not adequately respond to Comments 2 and 3 submitted in the December 21, 1995 letter. **R13-1 cont'd**

In closing, thank you for the opportunity to comment on the Draft EIR/S. I am looking forward to your responses to ISD's comments submitted in 1995, as well as to the above comment.

Very truly yours,

David N. Bauer

David N. Bauer,
District Manager

cab\wp80
DNB\SUTTON

cc: F. Etzel, Henn & Etzel, Inc.
chron file

Ironhouse Sanitary District

R13-1. See responses to Comment Letter C15. Additionally, after the 2000 REIR/EIS was completed, Delta Wetlands and EBMUD submitted a water right protest dismissal agreement to the SWRCB. The agreement outlines a dispute resolution process that neighboring landowners could use to identify and remedy problems attributable to seepage from the reservoir islands and related problems that may be attributable to the Delta Wetlands Project.

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Office of the General Manager

August 7, 2000

Mr. Jim Sutton
State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

Mr. Mike Finan
U.S. Army Corps of Engineers, Sacramento District
Regulatory Branch
1325 J Street, Room 1480
Sacramento, CA 95812-2000

Dear Messrs. Sutton and Finan:

Revised Draft Environmental Impact Report/
Environmental Impact Statement and Executive Summary for the Delta Wetlands Project

The Metropolitan Water District of Southern California (Metropolitan) has received the Revised Draft Environmental Impact Report/Environmental Impact Statement (RDEIR/S) and Executive Summary for the Delta Wetlands Project. The Delta Wetlands Project is a water storage project affecting four islands in the Sacramento-San Joaquin Delta. The proposed project would divert and store surplus water on two "reservoir" islands (Bacon Island and Webb Tract; with a combined storage capacity of 238,000 acre-feet), and convert two other islands (Bouldin Island and most of Holland Tract; "habitat" islands) from agriculture to wetland and upland wildlife habitat. In addition, private recreational facilities are proposed for all four islands. This letter contains our response as a potentially affected public agency.

Metropolitan supports water-management programs that can provide water quality improvements to Southern California, increased flexibility for Delta export operations, and increased Bay-Delta ecosystem benefits. The Delta Wetlands Project, if developed in accordance with the June 9, 2000 CALFED Framework for Action, has the potential to meet these objectives. However, we are concerned about the potential for significant adverse water quality impacts if the proposed project operations are not modified. Metropolitan assisted the California Urban Water Agencies (CUWA) in the development of its comments on the RDEIR/S and incorporates those comments herein. We look forward to the Lead Agencies addressing our concerns and developing an appropriate mitigation program to ensure that water quality is protected and improved, where possible. R14-1

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We appreciate the opportunity to provide input to your planning process and we look forward to receiving future environmental documentation on this project. Please refer any questions relating to Metropolitan's comments to Mr. Kevin Donhoff at (213) 217-6359.

Very truly yours,

Laura J. Simonek

Laura J. Simonek
Principal Environmental Specialist

KAD/dtf
s:/envpln/bay delta wetlands.doc

cc: Mr. Peter Maclaggan
California Urban Water Agency
455 Capitol Mall, Suite 705
Sacramento, CA 95814

Mr. James Easton
The Delta Wetlands Project
2295 Gateway Oaks Drive, Suite 140
Sacramento, CA 95833

Metropolitan Water District of Southern California

R14-1. See responses to Comment Letter R4.

Letter R15

Natural Heritage Institute

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Non-Profit Law and Consulting in Conservation of Natural Resources and the Global Environment

July 16, 2000

State Water Resources Control Board
Division of Water Rights
Attn: Jim Sutton
P.O. Box 2000
Sacramento, CA 95814-2000

U.S. Army Corps of Engineers, Sacramento District
Regulatory Branch
Attn: Mike Finan
1325 J Street, Room 1480
Sacramento, CA 95814-2922

RE: Comments on Revised Draft EIS/EIR for the Delta Wetlands Project

Dear Sirs:

NHI appreciates the opportunity to comment on the Delta Wetlands Project ("DW" or "Project") EIR/S. We have followed the progress of the DW Project for many years and have already commented on past iterations on several occasions.

The fundamental criterion used by NHI in evaluating new infrastructure is whether the environment will be better off with the Project than without it. We could not support previous versions of DW because the Project did not satisfy that criterion. However, the Project has become more favorable to the environment with each iteration. We now believe that the current proposal for DW operations will provide a net benefit to the environment, both to terrestrial and to aquatic species. We therefore support the Project.

The benefits to terrestrial species of DW have long been recognized. The permanent dedication of two Delta islands to habitat enhancement is very favorable. Moreover, the islands designed for storage should provide additional habitat values during much of the time, particularly in dry years. R15-1

The need to provide benefits to aquatic species has been the major stumbling block for DW until the current EIR/S. DW has now agreed with the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (DFG) on a set of

regulatory constraints that will significantly reduce the direct negative impacts on fish of diversions into DW, and reduce the impacts of discharges and the rediversion of water from DW at the State and Federal export pumps.

Of course, DW will still cause some damage to fish species, even with protective regulatory standards in place. However, we see the following advantages to DW:

- Significant improvement in the long-term sustainability of the Delta. The two islands designed to hold water – Bacon and Webb – will be designed to hold water on the inside. Moreover, their levees will be strengthened considerably. As a result, we consider the probability that these islands will be permanently inundated following a catastrophic earthquake in the Delta to be significantly reduced.
- Environmental share of water produced by DW. DW will provide environmental flows between 10 % and 20% of any water delivered for export from December – June.
- Export entrainment reduction. In many years, deliveries from DW to exports would accelerate the filling of San Luis Reservoir in many years. Moving the time of San Luis filling forward in time could have major fish benefits and will reduce the draw on the CVPIA b(2) account and the Environmental Water Account (EWA) reduce export pumping to safe levels.
- Reduce pressure for less benign forms of water acquisition by water users.
- Create a favorable precedent for future water development proposals. We believe that the constraints on DW are the most environmentally protective requirements ever placed on a water project in the Central Valley. We believe that this level of environmental protection will become a standard that future water development proposals will need to match.

R15-1 cont'd

We also see several other possible future benefits associated with DW:

- Environmental Storage. DW could provide very important benefits to CALFED's Environmental Water Account (EWA). DW produces most of its water in wet years. The EWA needs water more in wet years than in dry years.
- Serve the Water Transfer Market. The market for purchases, efficiency, and groundwater storage upstream of the Delta is currently hampered by a lack of reliable export capacity in the Delta. This problem is particularly acute in wetter years. DW could provide a temporary storage site during the summer until export windows open up in the September –November period.

On balance, therefore, we believe that the environment will benefit from the successful construction of the Delta Wetlands Project.

Sincerely,

Gregory A. Thomas, President
Natural Heritage Institute

Natural Heritage Institute

R15-1. The lead agencies acknowledge this comment supporting the project.

Letter R16

Pacific Gas and Electric Company

Land Rights Office
P.O. Box 930
Stockton, CA 95201

July 31, 2000

Mr. Jim Sutton
State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

Mike Finan
U.S. Army Corps of Engineers
Sacramento District Regulatory Branch
1325 J Street, Room 1480
Sacramento, CA 95814-2922

RE: Delta Wetlands Project Revised DEIR / EIS

Dear Mr. Sutton:

Thank you for the opportunity to review the document noted above.

Enclosed is Pacific Gas and Electric Company's (PG&E) comments concerning Chapter 7, Natural Gas Facilities and Transmission Pipelines.

In addition to the gas transmission facilities PG&E also operates and maintains electric distribution facilities on Bacon Island. These facilities serve agricultural and residential customers on the island.

It is unknown at this time what existing facilities may be affected, either to be removed or relocated to serve proposed pumping stations. However, PG&E expects to be reimbursed for all costs associated with any rearrangement of the facilities. **R16-1**

if you have any questions please contact me at (209) 942-1650.

Sincerely,

Michael Gunby s/s Karen Price

Michael Gunby
Land Agent

CC: Frank Dauby
Todd Hogenson
Richard Moss, Esq.

Comments on Revised Draft EIR/EIS: Delta Wetlands Project, May 2000

Chapter 7 of the Revised Draft EIR/EIS for the Delta Wetland's Project by Jones and Stokes dated May 2000 addresses the "Natural Gas Facilities and Transmission Pipelines". In general the issues associated with PG&E's existing gas transmission Line 57A and Line 57B have been included in the RDEIR and are explored in significantly greater detail then in the original EIR. There are, however, incorrect conclusions and erroneous statements within the documentation of the RDEIR that PG&E feels should be recognized and corrected.

Definition of Terms:

Internal Inspection: Internal inspection of pipelines is **not** required by either the U.S. Department of Transportation (DOT) nor the California Public Utilities Commission which are the two regulatory bodies which PG&E's gas transmission lines fall under. There are a variety of "pigs" which can be very specialized in both their design and application, however no pigs measure the resistance of electrical current from the pipe to the ground. This is done by means of above ground surveys which are performed by individuals. Specialized "In-Line-Inspection" pigs are available which perform metal loss surveys of steel gas transmission lines and are used by pipeline owners to verify the integrity of pipelines. R16-2

Load Center: The definition as stated is incorrect. In the utility business this term refers to a central control location for the daily operation of the gas pipeline system. PG&E's load centers monitor the pressure and flow of the gas at various points and can remotely operate key points to assure that the system operates within its design parameters and that all customers obtain the gas that they require.

Pipeline Balancing: The definition as stated is incorrect . This term refers to the process by which the gas utility balances the customer loads with the available supplies of natural gas. On a daily basis the entire system gas inventory must be balanced between the gas coming into the system, the gas going out of the system and that either used by customers or stored in gas storage facilities such as PG&E's McDonald Island Gas Storage Facility.

Pipeline Safety:

Although the data obtained by Jones and Stokes from the DOT Office of Pipeline Safety from 1985 through 1999 may be correct, the conclusions which are drawn from this information are seriously in error. The most significant factor in this regard is that the information obtained from the DOT OPS was incomplete. Gas R16-3

transmission pipeline operators are only required to submit reports to the DOT OPS for pipeline incidents which meet very specific criteria and thus it would appear that the number of incidents which have occurred within California over the last 14 years has been relatively small. Additionally, the California Public Utilities Commission has additional criteria for incidents that they require utilities to report which capture a far greater percentage of gas transmission incidents than the federal reporting requirements. Further, many incidents occur on PG&E's gas transmission system which are not required to be reported to any regulatory body and thus are not included in the statistics which are referenced in the DEIR, but which PG&E must adequately respond. To illustrate this point, PG&E has had a total of 7 gas transmission incidents which were DOT reportable in the two years of 1998 and 1999. In the same time period PG&E reported a total of 32 gas transmission incidents to the California Public Utilities Commission while PG&E records indicate that a total of 53 leaks and incidents occurred on our gas transmission system.

Although "modern" pipelines are statistically safer then older facilities, the operating conditions which exist in the Delta Region are some of the most challenging in California from a pipeline design, operating and maintenance perspective. Due to these conditions, PG&E continually takes pro-active steps to assure that pipeline safety incidents do not occur on our gas transmission system. For example, specifically on Line 57B, PG&E replaced a 22 inch fitting and adjacent pipe in 1993 as a result of strain which had accumulated at the foot of the McDonald Island Levee adjacent to Latham Slough. This strain was detected by the use of sophisticated smart pig technology and subsequent non-linear finite element analysis of the pipeline at key locations. We did not wait for the line to fail before taking appropriate action. We were able to discover this situation prior to potential failure by our monitoring of the pipeline and all the levee crossings between McDonald Island and Brentwood Terminal. We have also replaced various sections of Line 57B since its original installation in order to avoid having a pipeline failure. PG&E continues to feel strongly that the potential impact to our gas transmission Line 57A and Line 57B resulting from the Delta Wetland's project is very significant by increasing the risk of failure and that any conclusion otherwise is based on insufficient information or lack of understanding of pipeline design and operating conditions. PG&E's excellent safety record in regards to the operation of gas transmission facilities in this are should not be used to downplay the risk of these facilities nor their potential for catastrophic failure.

R16-3 cont'd

Natural Gas Service:

The RDEIR/EIS states that the McDonald Island Gas Storage Field is used primarily to supply gas to the Bay Area and Sacramento/Stockton when other resources are inadequate to meet demand. This statement is incorrect as PG&E has stated several times that the M.I. Gas Storage Facility is an integral part of

R16-4

PG&E's system and is used the entire year by various marketers and shippers to inject and withdrawal gas based on the dynamic market conditions which are a result of the Gas Accord adopted in 1996. R16-4 cont'd

Environmental Consequences:

The RDEIR/EIS states that the flooding of the PG&E easement would not increase the risk of structural failure of the operating gas pipeline or cause a physical change in PG&E's ability to supply gas to the Bay Area or Sacramento/Stockton. This statement is totally unsubstantiated as this conclusion cannot be rationally drawn from the data which is presented within the RDEIR/EIS documentation. Those making this statement are obviously not experts in the field of pipeline design or maintenance and have failed to consider not only the challenging environment which the existing gas transmission pipelines operate in but also the fact that these facilities operate at extremely high pressure which can lead to a variety of failure modes for the pipeline, the initiation of which cannot easily be detected nor repaired in a submerged environment. R16-5

The various mitigation measures which are recommended by the RDEIR/EIS are generally inadequate to fully mitigate the concerns which PG&E has in regards to maintaining the pipeline integrity over the remaining life of the existing facilities. The most significant issue is "Potential Delay in Emergency Repairs and Unscheduled Interruption of Service". Under the "Delta Wetlands Project Conditions" the document indicates that pipelines very rarely fail without external forces or third-party activities. In general this statement is true, however the Delta Wetlands project will create unknown and undefined new external forces as a result of the levee stability work and the inundation of the interior of Bacon Island on a cyclical basis. This project is a significant third party activity which must be mitigated or rejected. There are two false statements which follow the statement regarding the safety of pipelines. 1) Internal inspection is required by State and Federal Regulators 2) It is common industry practice to allow small leaks to go unrepaired for months. First, PG&E has performed inspections on Line 57B based on the criticality of this facility to operations, not because of regulatory requirements. Second, although it is acceptable to allow a Grade 2 or Grade 3 leak to continue, any leak on Line 57B which operates at up to 2160 psig would not fall into one of these categories and would require immediate repair or shutdown by PG&E. R16-6

Given the uncertainties of the potential impacts to both gas transmission to and from the McDonald Island gas storage facility, and the specific needs to maintain the integrity of the lines that Delta Wetlands proposes to periodically flood, PG&E strongly recommends that the Draft EIR/EIS consider the environmental impacts of rerouting lines 57 A and 57 B away from Bacon Island. Rerouting around the impacted areas on Bacon Island is similar to the recent situation involving Contra

Costa Water District's Los Vaqueros Reservoir, where the District acknowledged the necessity and funded the relocation of PG&E gas and electric transmission lines away from inundated areas.

R16-6 cont'd

Additional Issues Not Addressed by the RDEIR/EIS

Two significant issues are not addressed by the RDEIR/EIS which include the following:

PG&E will face significantly increased costs associated with the future expansion of pipeline capacity to increase usage of the McDonald Island Gas Storage Facility if the Delta Wetland's Project is constructed. Presently, PG&E has an open easement in which additional gas transmission facilities could be constructed using traditional construction methodology across Bacon Island. If the Delta Wetlands project is constructed then PG&E would either be required to bore the entire distance from McDonald Island to Palm Tract or would have to choose a much longer route between McDonald Island and Brentwood Terminal which did not include crossing Bacon Island.

R16-7

The second issue is the replacement of Line 57A or Line 57B at the end of their design lives. Neither of these pipelines was designed to operate in a flooded condition and PG&E's ability to maintain these facilities will be impaired by the conditions which will be present on Bacon Island. The effect that the cyclical filling and dewatering of the island will have on the underlying soils may as-well-as the levee structures surrounding the island could more quickly degrade the critical bond between the pipeline coating system and the steel line which could lead to accelerated corrosion and a significantly decrease in the design life of these pipeline facilities. Internal and external surveys to determine the condition of the pipelines and their cathodic protection system are expensive to implement and are beyond the normal maintenance requirements which are mandated by code or required under present circumstances.

R16-8

Pacific Gas and Electric Company

R16-1. Electrical distribution lines on the Delta Wetlands Project islands are discussed in Chapter 3E, "Utilities and Highways". See responses to Comments E15-1 and E15-2.

R16-2. The text in Chapter 7 of the 2000 REIR/EIS has been revised to reflect the commenter's corrections to the section entitled "Definition of Terms" (see Chapter 3E of Volume 1 of this FEIS). The following changes have been made:

On page 7-2 of the 2000 REIR/EIS (FEIS Volume 1, page 3E-24), the term "load center" has been removed from the list of definitions. The following change has been made under "Natural Gas Service" on page 7-3 of the 2000 REIR/EIS (see FEIS Volume 1, page 3E-25):

> The McDonald Island Storage Field is used primarily to supply gas to the Bay Area and Sacramento/Stockton ~~load~~ market centers . . .

The following change has been made on page 7-7 of the 2000 REIR/EIS (FEIS Volume 1, page 3E-28) under "Environmental Consequences":

> . . . PG&E's ability to supply gas to Bay Area or Sacramento/Stockton ~~load~~ market centers.

On page 7-2 (FEIS Volume 1, page 3E-24), the definition of "internal inspection" has been replaced with the following:

> *Internal Inspection*: The process of evaluating pipeline stresses from within the pipeline. A robotic device commonly called a "pig" is sent along the inside of the pipeline. The pig measures the shape of the pipeline, noting where the pipeline shape is abnormal (i.e., oval instead of round) and where the pipeline has ripples that indicate that the pipeline is bent or stressed.

On page 7-2 (FEIS Volume 1, page 3E-24), the definition of "pipeline balancing" has been replaced with the following:

> *Pipeline Balancing*: The process that gas utilities use to balance the customer loads (demands) with the available supplies of natural gas. Inflows to the system must be balanced on a continuous basis against outflows from the system.

R16-3. The preparers of the 2000 REIR/EIS tried to obtain additional data about pipeline safety records; however, the California Public Utilities Commission (CPUC) did not provide requested data on pipeline safety in the Delta region, and PG&E did not provide additional information. The U.S. Department of Transportation (DOT) pipeline safety data were not

used to make impact assessment conclusions; these data are provided to generally describe pipeline safety and the relative causes of pipeline incidents in the United States.

As described in the 2000 REIR/EIS, the risk of pipeline leaking or rupture is no greater under project conditions than under existing conditions. Two of the main risks to the pipeline are corrosion and physical damage from ground-disturbing equipment (e.g., farming and excavation). The pipelines are currently in cyclically dry and saturated soil as a result of farming operations and seasonal changes in groundwater levels. Therefore, implementation of the proposed project would not substantially alter the corrosive forces exerted on the pipeline. Changing the island from agricultural to flooded reservoir conditions would eliminate nearly all potential risk from ground-disturbing activities.

The need for the McDonald Island gas line repair described by the commenter was a result of levee settlement. The 2000 REIR/EIS recognizes that levee improvements on Bacon Island could result in a significant impact on the gas pipelines and recommends mitigation measures to account for that risk. The 2000 REIR/EIS also identifies the potential effects of project operations on routine inspection and maintenance procedures and identifies these impacts as significant. The 2000 REIR/EIS recommends several additional mitigation measures to ensure the continued safe operation of PG&E's Lines 57-A and 57-B where they cross Bacon Island. These measures require that Delta Wetlands:

- monitor levee settlement and subsidence where gas lines cross Delta Wetlands' levees,
- implement corrective measures to reduce the risk of construction-related pipeline failure,
- provide additional pipeline weighting if necessary,
- provide boat access for inspection activities, and
- relocate cathodic test facilities.

R16-4. The discussion that began on page 7-3 of the 2000 REIR/EIS (page 3E-25 of Chapter 3E of FEIS Volume 1) described the role of the McDonald Island storage facility and the change in its role since the Gas Accord was adopted in 1996. To clarify the current use of this facility, the following changes have been made to the text under "Natural Gas Service":

> The McDonald Island Storage Field ~~is~~ has been used primarily to supply gas to the Bay Area and Sacramento/Stockton market centers when other resources, such as gas production fields in Canada and the southwestern United States, are inadequate to meet instantaneous (i.e., peak) demands. . . .

. . . Under the new Gas Accord, PG&E's role as a storer of natural gas ~~will increase~~ has increased; consequently, PG&E's use of the McDonald Island Storage Field and reliance on Line 57-B ~~will also increase~~ has also increased. The McDonald Island Storage facility is used year-round by various marketers and shippers to inject and withdraw gas based on dynamic market conditions resulting from adoption of the Gas Accord.

R16-5. See response to Comment R16-3 above. An environmental analysis considers changes between existing conditions and conditions with project implementation. The pipeline failure mechanisms for Lines 57-A and 57-B under with-project conditions would not differ substantially from those under existing conditions. Chapter 7 of the 2000 REIR/EIS described pipeline inspection procedures used by PG&E for pipelines in inundated conditions (see Chapter 3E of FEIS Volume 1).

The lead agencies acknowledge that PG&E continues to disagree with the conclusions of the impact analysis presented in Chapter 7 of the 2000 REIR/EIS (FEIS Volume 1, Chapter 3E). This comment and those that follow in PG&E's letter reflect the disagreement among experts that was also evidenced in testimony presented by PG&E's witnesses, other pipeline experts, and the preparers of the NEPA and CEQA analysis during the SWRCB's water right hearing for the Delta Wetlands Project. The 2000 REIR/EIS presents conclusions that are based on substantial evidence and expert opinion regarding the differences between the no-project and with-project condition. PG&E has presented no additional data to support the conclusion that its gas pipelines have been or would be significantly damaged by inundation. For example, PG&E has presented no evidence of damage to Line 57-B resulting from the flooding of Mildred Island, which occurred 17 years ago.

R16-6. The commenter states that "the project will create unknown and undefined new external forces [on the pipelines] as a result of levee stability work and the inundation of the interior of Bacon Island on a cyclical basis". The effect of levee strengthening on pipelines is known and addressed regularly by PG&E. The recent repair of Line 57-B on McDonald Island is an example of this situation. The 2000 REIR/EIS identifies the potential impact of levee strengthening on the pipelines as significant and recommends mitigation measures to address those effects.

Flooding Bacon Island would not result in new, undefined or unknown effects on the pipelines. As stated above and in the 2000 REIR/EIS, the pipelines currently cross channels and a flooded island (i.e., Mildred Island) in the vicinity of Bacon Island; on Bacon Island and other agricultural islands in the Delta, the pipelines experience cyclical dry and wet periods as a result of seasonal changes in groundwater elevations. Additionally, the load or weight of 30 feet of water on the pipeline would not increase the risk of pipeline failure.

The load imparted by 30 feet of water is equivalent to one atmosphere or approximately 14 pounds psi. When compared to the rated operating pressure of PG&E pipeline 57-B,

the pressure on the outside of the pipeline when the reservoir island is full would be approximately 1% of the internal pressure. Changes in loading caused by pressure fluctuations within the pipeline are much greater than changes attributable to external pressure from the filling and emptying of the reservoir island. The filling and emptying of the island could result in external pressures that vary from about 14 to 28 psi over several months; by contrast, internal pipeline pressure can vary by hundreds of psi over a few minutes' time, depending on whether the pipeline is being used to inject or withdraw gas from the McDonald Island storage facility and the desired rate of injection or withdrawal. Inundation of the line does not represent a new or substantial change in the condition of these pipelines.

Relocating the PG&E pipelines is not required as mitigation of the project and does not need to be evaluated in the environmental analysis for the Delta Wetlands Project. It should be noted that CCWD relocated the gas pipeline for the Los Vaqueros Project because the line was located underneath the proposed site of the dam; relocation was not required as mitigation of potential effects on the pipeline from inundation.

R16-7. The availability of PG&E's easement for future gas pipeline expansions is a private property rights issue. See response to Comment E15-4.

R16-8. As described in responses to Comments R16-3 and R16-6 above, implementation of the proposed project would not create new conditions that would lead to accelerated corrosion or decrease the design life of the pipeline facilities.

Letter R17

JUL 17 2000

12 July 2000
Wednesday morning

r.e.:Public Notice #190109804

Gentlemen,

I own property on Bethel Island. My wife and I plan to retire here in another 10 years. I've read this public notice and have some questions regarding the intentions of this project. For you information I'm 53 years old. Please bear with me. I'm getting older and crustier and this is the first time I've ever responded to a public notice.

I would like to clarify;" what are the intentions of the Delta Wetlands Properties?" They state that they plan to build two "reservoir islands" and seasonally divert water to two "habitat islands." Will this water be used "solely" for this purpose or do they plan to store this water and later sell it to S. Calif. in summer months when water is in high demand? How will this water be delivered to the two distant habitat islands? Will our Property Taxes be increased, or have a supplement on our tax roll to pay for these inprovements? Nothing is ever free!

R17-1

What is the purpose of the habitat island? To promote the well bieng of our natural wildlife or to increase the duck population so hunters have more ducks to blast. Rumors have it that the purpose of the "air strip" on Bouldin Island is to bring in duck hunting parties. I sincerely hope that this is not there intentions! My wife and I really enjoy the wildlife around our property; i.e., ducks, pheasants, quail, rabbits, eggrets, etc.

How much more of an impact on our water ways will new recreation facilities have? Many of our existing sloughs are building up with silt, weeds and other related problems. Many boaters now won"t even observe the"no wake zone - 5 m.p.h." within posted area's and the Delta Water Properties want to build more facilities.

I would appreciate any further information that is available to be sent to me. If you need money in advance, please call me and I'll send you a check.

Most sincerely,

Bob Raney

Bob Raney
12958 Elkwood St.
N. Hollywood, Calif. 91605
1-818-982-2946 Home 1-323-663-3209 Work weekdays

4514 Stone Rd.
Bethel Island, Calif. 94511

Bob Raney

R17-1. This comment letter was received in response to USACE's public notice regarding the availability of the 2000 REIR/EIS. Copies of the executive summaries for the 1995 DEIR/EIS and 2000 REIR/EIS were sent to the commenter at his request.

The purpose of the Delta Wetlands Project, as stated in the 1995 DEIR/EIS and the 2000 REIR/EIS, is "to divert surplus Delta inflows, transferred water, or banked water for later sale and/or release for Delta export or to meet water quality or flow requirements for the Bay-Delta estuary". The intent of the habitat islands is to compensate for impacts on, and promote the recovery of, state-listed threatened or endangered wildlife species and other special-status species, and to provide additional wetlands and wildlife habitat in the Delta.

The islands that would be converted to habitat use are currently used for agriculture. Delta Wetlands has existing appropriative and riparian rights to divert water to these islands; Delta Wetlands' proposal is to continue to divert water to the habitat islands under these rights and under new appropriative rights. Delta Wetlands would install screens on all existing and new siphons for the protection of fish species. Water used on the habitat islands would not be discharged for export.

The HMP for the habitat islands has been designed by DFG and Delta Wetlands to provide a variety of habitat types for state-listed species. It will provide valuable habitat for many other species of birds and wildlife as well. The provision of hunting areas and hunting opportunities is one component of the HMP; the HMP specifies various controls on hunting activity. See Appendix G3 of the 1995 DEIR/EIS for a full description of the elements of the HMP, including habitat types that would be created, species expected to use the islands, and hunting restrictions.

The effects of constructing new boating facilities on waterway traffic were evaluated in the 1995 DEIR/EIS and are discussed in Master Response 5, "Mitigation of Environmental Effects Related to Use of Recreation Facilities".

The project applicant is a private entity; no tax increases would be associated with the lead agencies' approval of the project.

RECLAMATION DISTRICT #830
P. O. Box 1105
Oakley, CA 94561-1105
(925) 625-2279
fax (925) 625-0169

July 24, 2000

State Water Resources Control Board
Division of Water Rights
Attention: Jim Sutton
P.O. Box 2000
Sacramento, CA 95812-2000

U.S. Army Corps of Engineers
Regulatory Branch
Attention: Mike Finan
1324 J Street, Room 1480
Sacramento, CA 95814-2922

RE: Comments on Delta Wetlands Revised Draft EIR/S

Gentlemen:

Thank you for the opportunity to comment on the Delta Wetlands Revised Draft Environmental Impact Report/Statement (REIR/S) published May, 2000. As you noted at page 1-2 of the REIR/S:

> This REIR/EIS does not include formal responses to comments on the 1995 DEIR/EIS, although it does address several issues raised in those comments. Formal responses to all comments on the 1995 DEIR/EIS will be presented in the final environmental impact report/ environmental impact statement (FEIR/FEIS) on the Delta Wetlands Project along with responses to comments on this REIR/EIS. Comments submitted on the 1995 DEIR/EIS do not need to be resubmitted.

As you know, Reclamation District 830 (RD 830) submitted a letter dated December 21, 1995 commenting on the 1995 DEIR/EIS. After reviewing the REIR/S, RD 830 hereby

R18-1

formally resubmits the comments it made in 1995, even though it is not necessary to do so. In particular, RD 830 finds that the "New Information on Erosion Effects of Boat Wake" at page 6-17 is not responsive to Comment 3 in its December 21, 1995 letter. **R18-1 cont'd**

In closing, thank you for the opportunity to comment on the Draft EIR/S. I am looking forward to your responses to RD 830's comments submitted in 1995, as well as to the above comment.

Very truly yours,

David N. Bauer

David N. Bauer, President
Board of Trustees

CAB\WP80
830\SUTTON.COM

Reclamation District #830

R18-1. See responses to Comment Letter C16; see also Master Response 5, "Mitigation of Environmental Effects Related to Use of Recreation Facilities".

Letter R19

BRADFORD RECLAMATION DISTRICT NO. 2059
504 Bank of Stockton Building
311 East Main Street
Stockton, CA 95202
(209) 943-5551

July 28, 2000

State Water Resources Control Board
Division of Water Rights
Attn: Jim Sutton
Post Office Box 2000
Sacramento, CA 95812-2000

U.S. Army Corps of Engineers, Sacramento District
Regulatory Branch
Attn: Mike Finan
1325 J Street, Room 1480
Sacramento, CA 95814-2922

Re: Delta Wetlands EIR/EIS
Levee Stability and Seepage Technical Report by
URS Griener Woodward Clyde (URSGWC)

Dear Mr. Sutton & Mr. Finan:

As President of the Board of Trustees of Bradford Reclamation District No. 2059 (District), I have reviewed the subject Appendix H of the Delta Wetlands EIR/EIS (herein referred to as the "Report") and submit the following comments on the District's behalf.

The District has reviewed the comments submitted on behalf of the Central Delta Water Agency, and with this letter joins in supporting those comments and has incorporated herein a portion of those comments in this letter.

Bradford Island is particularly concerned about this project, due to the direct impact that it will have on the District, its levees and the lands within the District. When Webb Tract flooded in 1980, Bradford Island experienced a large amount of seepage, both beneath its levee foundation as well as out in the middle of the Island. The question now is not whether seepage will occur, but rather how much more seepage will occur than what Bradford Island experienced in 1980. This concern is based upon Delta Wetlands' plan to raise the water surface on Webb Tract to an elevation of 6.0 feet, which is at least 5 feet higher than the water surface elevation was on Webb Tract, during the 1980 flood event and which resulted in significant seepage on Bradford Island. **R19-1**

The Report did not assess the most severe conditions that may be encountered on this project nor did it analyze the areas with the most challenging soil conditions. A levee system is **R19-2**

only as good as its weakest link. It is customary to evaluate the extremes and to design accordingly when looking at a flood control levee. The Report must address both extreme flood and seismic conditions and the areas with the most critical soil conditions and report the results accordingly. R19-2 cont'd

The Report states that interceptor wells generally appear to mitigate seepage problems provided they are properly designed and constructed and most of all properly maintained. The cost to operate and maintain these wells will be a high cost that must be taken into account when evaluating the potential success of this project. The District and the landowners on the Island do not want these interceptor wells on Bradford Island, do not want to be responsible for maintaining them and do not believe that they will prevent seepage on Bradford Island. R19-3

The Report suggests that if seepage should occur after Webb Tract has been flooded under the Delta Wetlands' project, that they will, in steps, reduce the water level on Webb Tract until the seepage stops. Once the seepage is present, the damage has been done. Lowering the water level on Webb Tract will not prevent the damage, although it may tend to lessen the damage. During the 1980 flood of Webb Tract, Bradford experienced subsidence in its levees, the effects of which can still be seen today. In addition, the seepage not only appeared in the fields in the middle of Bradford, but also increased the flow of the natural artisan wells on the island by two to three times the normal flows for those wells. R19-4

Delta Wetlands has still not addressed the issues and concerns of this District, and the landowners therein, as previously expressed. The Report does not provide any assurance or plan for preventing seepage from Webb Tract onto Bradford Island, and further provides no assurance or method of receiving compensation in the event that they suffer damages resulting from the flooding of Webb Tract; the District and the landowners should not be forced to commence litigation as a means establishing and recouping their damages, thus expending large amounts of money in legal fees and costs as a means of forcing reimbursement for those damages.

The proposed standards should be considered as preliminary and be subject to review and modification based on observed seepage conditions. The District believes that the baseline measurement period should be longer than one year, and certainly no less than three years. R19-5

The Report provides values for wave run-up and reservoir setup but does not provide the calculated wave height values. The District believes the wave heights should be calculated and the levee freeboard should be evaluated. R19-6

The District recommends performing additional sensitivity analyses for the seepage condition related to the location of the borrow pits. The borrow pit excavation will potentially remove horizontally bedded, lower hydraulic conductivity layers, and provide direct seepage paths into higher hydraulic conductivity horizontal layers. R19-7

The water surface elevations for the 100-year flood plain were not considered in the levee stability analysis. It is important that the analysis address the most critical case rather than only what is considered representatively critical. R19-8

In addition to analyzing the 100-year flood plain, the Report should analyze the additional stage that can occur over that of the 100-year flood plain, which results from wind waves generated over areas with a long fetch. Attached to this letter is an excerpt from a hydrology report prepared by the US Army Corps of Engineers in February of 1992, reporting the 50, 100 and 300-year flood elevations in the Delta. The purpose of the excerpt is to demonstrate that the stage frequency flood data presented in the USACOE's report are for static water conditions only, and they do not take into account wave action from wind and other sources. The attached stage data showing wind wave heights must be added to the 100-year flood plain elevation and then the levee stability analyzed accordingly. **R19-8 cont'd**

The sections chosen for stability analysis on Webb Tract are not the most critical. Webb Tract's levee station 160+00 is OK, whereas levee station 630+00 is not the most critical. Sections that should be included on Webb Tract include sections between levee station 475+00 to 525+00 and levee station 410+00 to 430+00. Soil conditions and historical performance support the need for analysis of conditions at these additional sections. **R19-9**

The Factors of Safety (FOS's) for the levee waterside slopes are not acceptable. The project needs to consider its options to reduce the driving forces causing the instability on the waterside by designing setbacks and/or benching the existing waterside slopes versus the proposed impracticable waterside buttressing and/or flattening of slopes. The range of FOS's calculated for the existing condition on the waterside slope of the levee appear to be about two-tenths higher than expected from that experienced in the Delta. A range of 1.3 to 1.5 is reported for the existing conditions on the waterside slope; the District thinks a range of 1.1 to 1.3 is more typical for the waterside slope. The District believes that these slightly higher FOS's result from the type of laboratory testing that was used to develop the total stress strength parameters. The Report should discuss the suitability of the testing methods for the soil layers used in the stability analysis model. **R19-10**

The Report should provide a more detailed description and discussion of the liquefaction evaluation. It is generally well known that the Delta area has extensive shallow deposits of potentially liquefiable Holocene sands, silty sands and sandy silts. The Report should clearly show the post earthquake configuration of the critical levee section and demonstrate that an effective levee section remains after the design earthquake. The Report currently estimates deformations in the range of 2-4 feet, but does not demonstrate where that deformation occurs. **R19-11**

Webb Tract is partly bordered by rivers that have geologically old alignments and locations, that is, by the San Joaquin River to the north and False River to the south. Extensive Holocene sand deposits are often found beneath and adjacent to these ancient river locations. The Report should address the potential effects of these sand deposits, together with the potential for earthquake induced lateral spreading.

The Report uses effective stress strength parameters for the peat and organic soils to calculate long-term levee stability. The District believes that the Report also use undrained strength analysis parameters for the peat and organic soils to calculate long term stability because the effective stress strength parameters may not account for pore pressure increases that occur during shearing which result in unconservatively higher FOS's. **R19-12**

The levee break analysis should be re-done to better show the progression of a levee break. Levee breaks typically start with a fairly narrow width, then eroding substantially into a much wider opening. At the narrower stages of a break, there is a much greater focus of erosive energy directed on the opposite levee. Observations of past levee breaks in the Delta area show that the hydraulic erosion extends over 1,000 feet landward, 600 to 1,000 feet wide, and develops scour holes down to the depths of the geologically older Pleistocene soils which may occur between depths of 40 to 80 feet deep. Riprap alone will not withstand the maximum flow rates expected from a levee failure from a full reservoir island. The Report must better address the mitigation measures to avoid the impacts of this extreme erosive force

R19-13

Groundwater on Webb Tract varies 3-5 feet below the surface. The Report indicates that borrow operations are intended to go down 9 feet. The dewatering techniques necessary to borrow to that depth have not been addressed in this Report.

The Report is not clear as to whether the calculated quantities for borrow are based on the neat quantities required to fill between the lines and grades of the design and the finished section or whether it includes factors for shrinkage, settlement and subsidence. It must be anticipated, at a minimum, that the fill requirements for this job will be on the order of 60% to 200% +, in excess of calculated neat yardage to take into account shrinkage, settlement and subsidence. The District has been advised that the District's engineer has looked at one of the design sections and projected the neat fill requirements for Webb Tract based off that section. The nature of this gross estimation is recognized, nevertheless the results of that estimate was 4.0 million cubic yards, which confirms that the Report was based on neat yardage rather than the actual yardage required by taking into account the shrinkage, settlement and subsidence. If this gross estimate is correct, then the Report needs to re-evaluate its quantity requirements and take into account the required variance over the neat yardage calculation.

R19-14

The Report states in the summary of slope stability analysis that the design is inadequate in meeting the criteria set forth by the USACOE and DSOD. The project must not be approved or allowed to move forward unless it is demonstrated that these design criteria can be met and a stable levee will be constructed.

R19-15

It is interesting to note that the only example of reservoir storage in the Delta comes by way of the State of California, Department of Water Resources, State Water Project's Clifton Court Forebay. This example is interesting since the State of California, in its endeavor to maintain water in a historical reclamation district, chose not to rely on the existing reclamation district levees, but rather to construct new setback levees in accordance with DSOD's standards. It is also interesting to note that the new setback levees were no longer referred to as levees but rather they are referred to as dams. Several important facts to keep in mind when comparing the State's example of a reservoir levee (dams) to the levee being proposed by Delta Wetlands includes the facts that the State's dams were constructed on a solid sandy/clay foundation, they were constructed from the foundation up, and they are only designed to hold water at elevation 2.0', while the Delta Wetlands' levee is proposed to be constructed over historic foundation underlain by deep organics and is proposed to maintain water at elevation 6.0'. The technical and physical differences are significant and can not go unnoticed when considering the risk that it will be exposed to under the Delta Wetlands' proposal.

R19-16

The recommended stage construction for the levees is to extend construction over a 4 to 6 year period. This Report should address the techniques and procedures, which will be employed to monitor and control the filling so as to not overstress and possibly fail the levees. R19-17

The fact that the Report has not addressed the most critical levee sections on the reservoir islands and the fact that the Federal and State FOS's required for this type of construction are not met requires that the project reconsider its design and resubmit for review. And most importantly from the District's standpoint, the Report fails to adequately address the seepage issue that will result to Bradford Island when water to a depth of 6.0 feet is stored within Webb Tract. It is critical that these issues be addressed to provide for the protection of the lands within Bradford Reclamation District No. 2059 before Delta Wetlands is given authority to proceed with its project.

This matter is of great concern to the landowners of Bradford Island. A substantial number of the fifty two landowners on Bradford Island have expressed concern over this matter and have expressed support for the position that the District has taken and is taking with respect to this matter. In addition, the following landowners, representing nearly half of the Island, have asked that their names be made a matter of public record in supporting the position of the District as expressed in this letter:

LIZA J. ALLEN
ROBERT C. and JEAN M. BENSON
BRENT and ELIZABETH GILBERT
E. E. and ESTHER MAE GILBERT
MARK GILBERT
EUGENE C. and ESTHER LEWIS
STOCKTON PORT DISTRICT

If you have any question regarding the enclosed comments please call me.

Sincerely,

BRADFORD RECLAMATION DISTRICT NO. 2059

By _____
Brent Gilbert, Chairman

BG/awh/phf
Encl.
Cc: See attached list

OFFICE REPORT

FEBRUARY 1992

SACRAMENTO-SAN JOAQUIN DELTA CALIFORNIA

SPECIAL STUDY

HYDROLOGY

US Army Corps of Engineers
Sacramento District

failures. The curves were smoothed to remove any localized effects of a levee failure.

3. The maximum elevation on a stage-frequency curve does not exceed the height of the levee crowns at that location. The curves are drawn solid up to the 100-year level. This reflects the reliability of the gaged data. Above the 100-year elevation, the stage-frequency curves are dashed. The curves are dashed above the 100-year level due to the many uncertainties that can occur at the higher frequencies. No stations have a period of record long enough to have actual data that would have a plotting position rarer than the 100-year event. Therefore, in order to estimate elevations of frequencies greater than the 100-year, the curves are extrapolated based on judgement and the shape of the curve below the 100-year. The height of the adjacent levee crown is also taken into account. The stage-frequency curves do not exceed the height of the adjacent levee crown.

C. Results - The 50- and 100-year higher-high stages at the 24 stations used in the analysis are shown in Table 6. In an attempt to determine the conditions that would cause a 100-year flood stage, or any other high flood stage, historical events were examined to establish the influence of wind, flood inflow, tidal cycle and barometric pressure on Delta stages. It was concluded that many combinations of these parameters could be possible, each with a varying degree of probability, and that predicting the factors which cause a particular high stage, or the effect of changes in one or more parameters, would be quite difficult.

When the stage-frequency data in this memorandum are used, it must be understood that:

1. For any particular frequency, the stage shown on the stage-frequency curve is valid only for that station. A stage created by any combination of high flows, tide, extreme barometric pressure, and winds could give a 100-year stage at one station and something of greater or lesser frequency at neighboring stations.

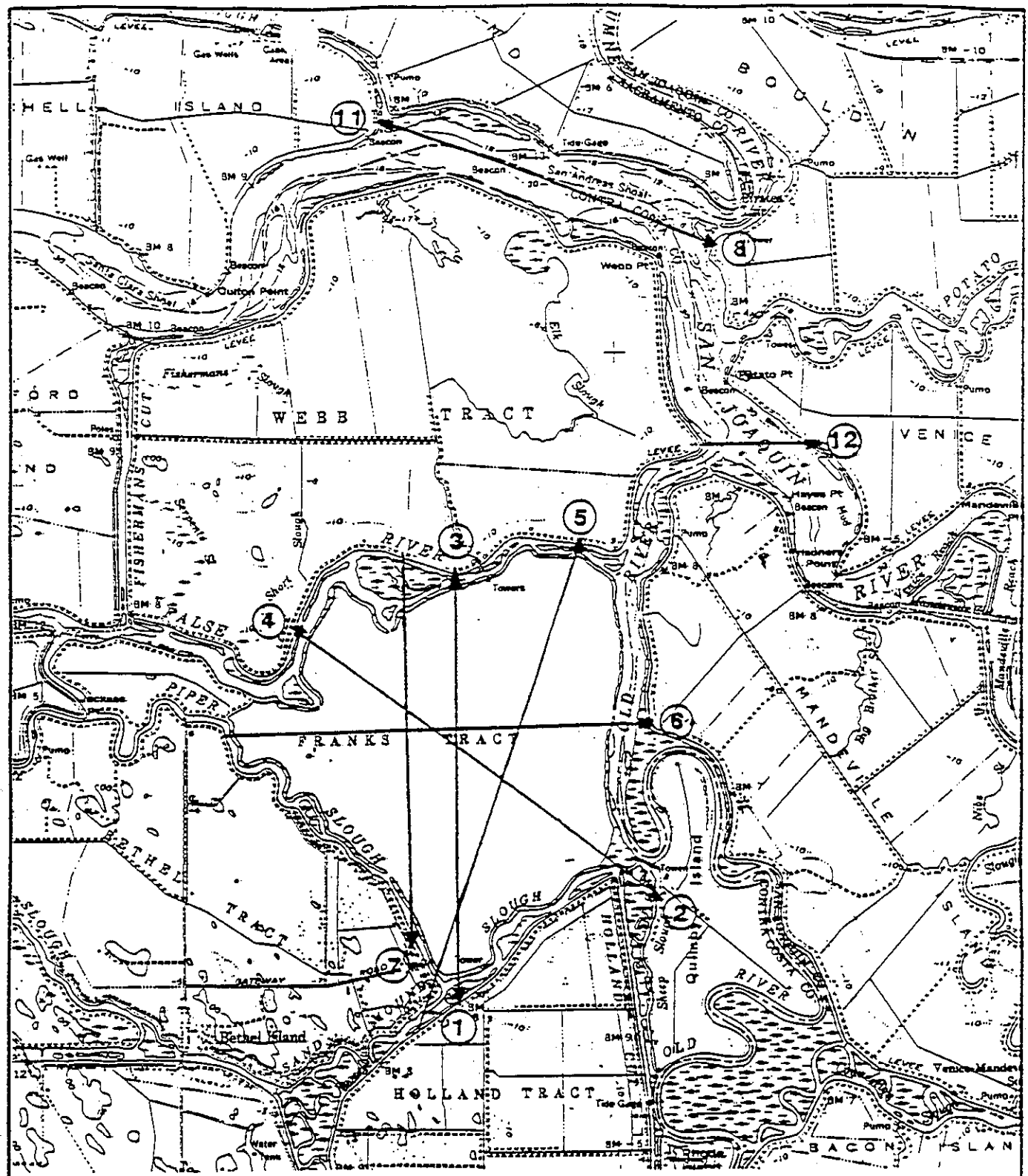
2. A maximum water-surface elevation plot developed for a particular frequency by straight-line connection of elevations from a series of stage-frequency curves will give an elevation higher, at some locations along the reach, than a historical event of corresponding frequency. This is due to the variation in width, depth and bottom slope of Delta channels. However, the error resulting from straight line elevations is less than 0.3 foot.

3. The stage data presented are for static water conditions. Wave action from wind, boats or other sources must be added to any stage data being analyzed. Wind set and any other hydrologic action that increases stages are reflected in the static stage data.

1. Sacramento River at Rio Vista - The stage recording gage for the Sacramento

TABLE 7
WIND-WAVE CALCULATIONS

Location	Levee Slope	Wind Direction	Design Windspeed (mph)	Wind Duration (min)	Design Wave (ft)	Wind Set (ft)	Wave Runup (ft)	Water Depth (ft)	Fetch Length (ft)
Holland Tract Location 1	1:2	North	35	45	2.5	.17	4.96	15	15,850
	1:3	North	35	45	2.5	.17	3.46	15	15,850
Quimby Tract Location 2	1:2	Northwest	29	51	2.1	.13	4.15	15	16,900
	1:3	Northwest	29	51	2.1	.13	2.89	15	16,900
Webb Tract Location 3	1:2	South	27	50	1.9	.10	3.70	15	15,850
	1:3	South	27	50	1.8	.10	2.56	15	15,850
Webb Tract Location 4	1:2	Southeast	35	47	2.3	.19	4.57	15	16,900
	1:3	Southeast	35	47	2.3	.19	3.30	15	16,900
Webb Tract Location 5	1:2	Southwest	23	60	1.7	.09	3.32	15	18,500
	1:3	Southwest	23	60	1.7	.09	2.30	15	18,500
Webb Tract Location 6	1:2	West	28	50	2.0	.11	3.89	15	16,150
	1:3	West	28	50	2.0	.11	2.70	15	16,150
Bethel Island Location 7	1:2	North	36	42	2.5	.17	4.90	15	14,600
	1:3	North	36	42	2.5	.17	3.41	15	14,600
Bouldin Island Location 8	1:2	Northwest	30	43	2.0	.11	3.84	15	13,500
	1:3	Northwest	30	43	2.0	.11	2.65	15	13,500
Sherman Island Location 9	1:2	Northwest	30	59	2.1	.17	4.20	15	21,350
	1:3	Northwest	30	59	2.1	.17	3.05	15	21,350
Jersey Island Location 10	1:2	West	27	76	2.1	.18	4.67	15	28,100
	1:3	West	27	76	2.1	.18	3.84	15	28,100
Twitchell Island Location 11	1:2	Southeast	36	39	2.4	.16	4.71	15	13,500
	1:3	Southeast	36	39	2.4	.16	3.26	15	13,500
Venice Island Location 12	1:2	West	29	22	1.2	.04	2.28	15	5,200
	1:3	West	29	22	1.2	.04	1.50	15	5,200



SACRAMENTO - SAN JOAQUIN DELTA

WAVE RUNUP LOCATIONS AND FETCH DIAGRAM

CORPS OF ENGINEERS. SACRAMENTO. CALIFORNIA

Prepared: J.H.
Drawn: J.H.

Date: February 1992

SHEET 1 OF 2 CHART 26

Bradford Reclamation District No. 2059

R19-1. Appendix H, "Levee Stability and Seepage Technical Report", of the 2000 REIR/EIS presents a new analysis of the potential seepage impacts of Delta Wetlands reservoir operations and an evaluation of the effectiveness of the proposed seepage control measures.

Many of the comments in this letter duplicate comments received from the Central Delta Water Agency on the 2000 REIR/EIS (Comment Letter R6) and comments received from Bradford Reclamation District No. 2059 on the 1995 DEIR/EIS (Comment Letter C7). Where appropriate, the commenter is referred to responses to identical comments.

R19-2. This comment duplicates Comment R6-5; see Master Response 8, "Levee Stability Analysis and Worst-Case Conditions".

R19-3. See response to Comment R6-6 regarding the costs associated with operation of the interceptor well system and response to Comment C7-6 regarding the installation of monitoring wells on neighboring islands.

R19-4. The seepage monitoring program would be used to monitor groundwater conditions and would trigger a response from Delta Wetlands before seepage causes damage to neighboring islands. See response to Comment E14-10 regarding the actions that Delta Wetlands would use to control seepage before seepage reaches the diversion suspension limits (i.e., before the seepage performance standards are exceeded).

The commenter has observed that seepage may extend through deeper aquifer formations or may find a path of least resistance to a neighboring island some distance from the levees directly across from the reservoir island; this issue is discussed in response to Comment C7-5.

The commenter requests that the lead agencies require a compensation method in the event of damages. The physical environmental effects of the proposed project have been addressed in the NEPA and CEQA analysis, and adequate mitigation has been identified for those impacts. A requirement for compensation or a dispute resolution process does not directly address the physical effects of the project and is not required as mitigation for project effects. See response to Comment C7-8 regarding a dispute resolution procedure that has been included in the protest dismissal agreement between Delta Wetlands and EBMUD.

R19-5. This comment duplicates Comment R6-7; see response to Comment R6-7.

R19-6. This comment duplicates Comment R6-8; see response to Comment R6-8.

R19-7. This comment duplicates Comment R6-9; see response to Comment R6-9.

R19-8. This comment duplicates Comment R6-10; see response to Comment R6-10.

R19-9. This comment duplicates Comment R6-11; see response to Comment R6-11.

R19-10. This comment duplicates Comment R6-12; see response to Comment R6-12.

R19-11. This comment duplicates Comment R6-13; see response to Comment R6-13.

R19-12. This comment duplicates Comment R6-14; see response to Comment R6-14.

R19-13. This comment duplicates Comment R6-15; see response to Comment R6-15.

R19-14. This comment duplicates Comment R6-16; see response to Comment R6-16.

R19-15. This comment duplicates Comment R6-17; see response to Comment R6-17.

R19-16. The lead agencies have noted the information about Clifton Court Forebay provided by the commenter.

DSOD would need to approve the design for all Delta Wetlands levees used to store water to an elevation greater than 4 feet above sea level. See response to Comment B7-6 for more information.

R19-17. This comment duplicates Comment R6-18; see response to Comment R6-18.

State Water Contractors

455 Capitol Mall, Suite 220 • Sacramento, CA 95814-4409
John C. Coburn General Manager (916) 447-7357 • FAX 447-2734

Letter R20

July 31, 2000

Mr. Jim Sutton
State Water Resources Control Board
Division of Water Rights
P. O. Box 2000
Sacramento, CA 95812-2000

Mr. Mike Finan
U.S. Army Corps of Engineers
Regulatory Branch
1325 J Street, 14th Floor
Sacramento, CA 95814-2922

Re: State Water Contractors Comments on Revised Draft EIS/EIR for the Delta Wetlands Project

Dear Messrs. Sutton and Finan:

The State Water Contractors ("State Contractors") have received and reviewed the Revised Draft Environmental Impact Statement/Environmental Impact Report ("REIS/EIR") for the Delta Wetlands Project ("Delta Wetlands"). This letter represents the response of the State Contractors, affected stakeholders of Delta Wetlands, as required by the National Environmental Policy Act and the California Environmental Quality Act.

The State Contractors organization consists of 27 public agencies that hold contracts or rights for water delivered by the State Water Project ("SWP").[1] Member agencies of the State Contractors supply SWP water for drinking, commercial, industrial and agricultural purposes to nearly 22 million people (approximately two-thirds of California's population) residing in Northern California, the San Francisco Bay Area, the Central Valley, the Central Coast and Southern California.

[1]The public agencies that comprise the State Contractors are the following: Alameda County Flood Control and Water Conservation District, Zone 7, Alameda County Water District, Antelope Valley-East Kern Water Agency, Casitas Municipal Water District, Castaic Lake Water Agency, Central Coast Water Authority, City of Yuba City, Coachella Valley Water District, County of Kings, Crestline-Lake Arrowhead Water Agency, Desert Water Agency, Dudley Ridge Water District, Empire-West Side Irrigation District, Kern County Water Agency, Littlerock Creek Irrigation District, Metropolitan Water District of Southern California, Mojave Water Agency, Napa County Flood Control and Water Conservation District, Oak Flat Water District, Palmdale Water District, San Bernardino Valley Municipal Water District, San Gabriel Valley Municipal Water District, San Gorgonio Pass Water Agency, San Luis Obispo County Flood Control and Water Conservation District, Santa Clara Valley Water District, Solano County Water Agency, and Tulare Lake Basin Water Storage District

The State Contractors are very interested in matters affecting conditions in the Sacramento-San Joaquin Delta ("Delta"). The participation of State Contractor members in the CALFED process is an indication of this commitment. In these efforts, the State Contractors have been working closely on several key issues with the State Department of Water Resources ("DWR") and the California Urban Water Agencies ("CUWA"). The State Contractors have discussed the concerns about the REIS/EIR raised by both of these groups, and support the findings contained in their comment letters. R20-1

The State Contractors are supportive of planning efforts, which are designed to meet the increasing water needs of California in an environmentally sound manner. Delta Wetlands clearly attempts to achieve such a balance between beneficial uses of water. After review of the REIS/EIR, however, the State Contractors have concerns that the proposed Delta Wetlands Project could adversely affect the quality of the SWP supply it receives from the Delta, could adversely affect Delta fisheries, could result in increased Delta flood risk, and could adversely affect other Delta water users. The State Contractors concerns are summarized below:

Water Operations. Since the 1995 draft EIS/EIR, Delta Wetlands has developed Final Operations Criteria defining how the project actually would be operated and has also developed a stipulated agreement with the Department of Water Resources. With the analyses presented in the REIR/EIS that are based on the Final Operation Criteria and the stipulated agreement, the State Contractors concerns about water supply impacts on the SWP appear to have been addressed. Concerns remain, however, that Delta Wetlands operations may affect water level stages in the South Delta. In addition to the direct impacts reduced stages could have on in-Delta water users, such reduced stages could also result in indirect impacts to SWP operations. R20-2

Levee Stability. The REIS/EIR dismisses the potential for liquefaction of Delta Wetlands levees as a result of seismic activity. This is not consistent with the Corps of Engineers 1987 study, "Sacramento-San Joaquin Delta Levees Liquefaction Potential" or DWR geological investigations of Webb Tract and Bacon Island. The final EIS/EIR should address these and other levee stability issues. R20-3

Fisheries. Although the REIS/EIR indicates that Delta Wetlands fish screens would comply with fishery agency requirements, the specific elements of this compliance are not indicated in the description. For example, the REIS/EIR does not discuss issues of predation, hydraulic control, debris, cleaning systems or other maintenance. Additionally, the REIS/EIR does not address related issues of algal blooms and fisheries predation from Delta Wetlands facilities such as boat docks. R20-4

Water Quality. The REIS/EIR includes a considerable amount of additional water quality information and analysis that has been added since the 1995 DEIS/EIR. However, although the additional analysis does a better job of estimating potential water quality impacts, considerable uncertainty remains about the potential impacts on Delta water quality, especially salinity and total organic carbons. Additionally, the State Contractors remain concerned about how Delta Wetlands has defined significance criteria for water quality parameters. R20-5

The State Contractors concerns, and those of DWR and CUWA, should be fully addressed in the final EIR/EIS, and the impacts that have been identified need to be avoided or mitigated to a level of insignificance. The State Contractors acknowledge the efforts of Delta Wetlands in defining final operating conditions and developing stipulated agreements with DWR and other agencies to avoid water supply impacts. We are hopeful that ongoing efforts to develop similar agreements to address our water quality concerns can be successfully concluded.

In addition to the environmental issues identified above, the State Contractors continue to be concerned that Delta Wetlands wants to dramatically change Delta conditions even though it has not identified a single specific beneficial user of the waters it proposes to develop. The applicant has only been able to conceptually identify beneficial uses for the water, and states that it anticipates selling all or a portion of the project, or the water supplies developed by the project, to DWR, the U.S. Bureau of Reclamation (USBR), the State Contractors, or other entities within the SWP and CVP service areas. However, neither the DWR, nor the State Contractors, nor any other entity to our knowledge, has yet to confirm a meaningful interest in acquiring the project or contracting for the water. R20-6

Also, on the minds of the State Contractors is how this project might fit in with the Bay-Delta facilities and regulatory components now being developed through the CALFED Bay-Delta Program. In recent months, several different approaches to using Delta Wetlands for fisheries benefits have been identified in CALFED gaming efforts in addition to more traditional water supply purposes. However, until information about the proposed project operations to meet specific purposes is developed, it is not possible to determine whether the proposed project can be a feasible and beneficial element of the CALFED Bay-Delta Program, or any other program that may be implemented to resolve Bay-Delta issues, or be incompatible with such programs. R20-7

If you have any questions about our comments, please call Terry Erlewine at (916) 447-7357.

Sincerely,

John C. Coburn
General Manager

c: Thomas Hannigan, Director, DWR
SWC Member Agencies

State Water Contractors

R20-1. See responses to Comment Letter R2 from DWR and Comment Letter R4 from CUWA.

R20-2. Delta Wetlands Project operations would not affect stage in south Delta channels. This issue is discussed in Appendix B1 of the 1995 DEIR/EIS. Delta Wetlands diversions would occur during relatively high flow conditions when the effects of the siphon diversions on tidal stages in the south Delta channels would be relatively small. Delta Wetlands discharges would increase the stage slightly in the vicinity of the discharge pumps, but they are most likely to occur during the summer months when south Delta barriers or tidal gates would be operating to control south-Delta stage problems. Additional diversions into Clifton Court would be needed to allow the export of water from Delta Wetlands discharges; these diversions into Clifton Court would occur during relatively high tide stages (i.e., when water can flow over the Clifton Court intake weir). These diversions would not reduce tidal stages in the south Delta channels and would be within the normal Clifton Court operating conditions for diversion flows. Lastly, Delta Wetlands operations would need to be coordinated with the CALFED Ops Group; see response to Comment B6-49.

R20-3. See response to Comment R2-25 regarding liquefaction potential and the levee stability analysis.

R20-4. See response to Comment B7-64 for a discussion of the potential for predation at Delta Wetlands facilities. See response to Comment B6-60 regarding details of fish screen design that were developed through consultation with DFG, NMFS, and USFWS. See response to B7-50 regarding mitigation for algal blooms.

R20-5. See Master Response 6, "Significance Criteria Used for the Water Quality Impact Analysis", for a discussion of the significance criteria used in the 1995 DEIR/EIS and the 2000 REIR/EIS. See Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", and response to Comment R2-3 regarding project effects on DOC and THMs, mitigation, and the Delta Wetlands Project WQMP. See responses to Comments C9-17 and C9-22 regarding project effects on salinity, mitigation, and the WQMP.

R20-6. The 1995 DEIR/EIS states that the identity of the end user of the Delta Wetlands water remains speculative because of the diverse interests and competing demands for water for municipal, agricultural, and environmental needs. This issue was identified as an area of known controversy in the 1995 DEIR/EIS and the 2000 REIR/EIS. See Master Response 3, "Areas of End Use and Potential Growth-Inducement Effects of Delta Wetlands Water Deliveries", for more information about beneficial use of Delta Wetlands water.

R20-7. See Master Response 2, "Integration of the Delta Wetlands Project with Federal and State Water Project Operations, including the CALFED Bay-Delta Program".

McDONOUGH, HOLLAND & ALLEN
A PROFESSIONAL CORPORATION
ATTORNEYS

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July 31, 2000

State Water Resources Control Board
Division of Water Rights
Attn: Jim Sutton
P.O. Box 2000
Sacramento, CA 95812-2000

U.S. Army Corps of Engineers, Sacramento District
Regulatory Branch
Attn: Mike Finan
1325 J Street, Room 1480
Sacramento, CA 95814-2922

Re: Revised Draft Environmental Impact Report/Environmental Impact Statement for the Delta Wetlands Project

Dear Mr. Sutton and Mr. Finan:

This firm represents the City of Stockton. The City has the following comment/question regarding the RDEIR/EIS for the Delta Wetlands Project.

The hearing notice for the resumption of public hearing for the Delta Wetlands Project includes in the first hearing issue the question of how much unappropriated water is available to the Delta Wetlands Project in light of various constraints, including the settlement agreements between Applicant and some of the protestants. The RDEIR/EIS, at page 3-16 states that Agreements with the City of Stockton and Amador County include narrative requirements that prevent Delta Wetlands operations from directly or indirectly depriving inhabitants of those jurisdictions of any water reasonably required for beneficial uses. (The actual Agreement between Delta Wetlands Properties and the City of Stockton is Delta Wetlands Exhibit 32 and Stockton Exhibit 11 in the SWRCB hearings. It provides that the Delta Wetlands permit or license "shall be junior in priority to any application filed by the City of Stockton to obtain the water reasonably required to adequately supply the beneficial needs of the Stockton Urban Area or any of the

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FACSIMILE: (510) 839-9104

inhabitants or property owners therein.") Later on page 3-16, the RDEIR/EIS states that Delta SOS simulates the various agreements reached by Delta Wetlands "by allowing maximum possible CVP and SWP export pumping and fully satisfying in-Delta diversions by agricultural and senior appropriative water right users." (Emphasis added.)

Did the Delta SOS simulation or the RDEIR/EIS take into account future appropriations by the City of Stockton which, by the settlement term, would be senior to the Delta Wetlands permit or license? For example, Stockton has filed Water Rights Application 30531 for diversions from the Delta. Did the Delta SOS simulation take this application into account? If not, the model simulation may provide misleading results with respect to the amount of water available to Delta Wetlands in future years, given the senior priority of Stockton's application. **R21-1**

Thank you for the opportunity to comment on the RDEIR/EIS.

Very truly yours,

Virginia A. Cahill

VAC:dg

cc: Morris Allen, City of Stockton
Delta Wetlands Service List

City of Stockton (McDonough, Holland & Allen)

R21-1. Delta Wetlands has signed an agreement with the City of Stockton to allow Stockton's water rights, including those filed under application 30531, to be considered senior to the Delta Wetlands water rights. The DeltaSOS modeling considered the City of Stockton future diversion to be part of the Delta diversions that are always fully satisfied in the modeling before any surplus water is allowed to be diverted onto the Delta Wetlands islands.

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
600 Harrison Street, Suite 515
San Francisco, California 94107-1376

August 17, 2000

Lieutenant Colonel Michael J. Walsh
U.S. Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, CA 95814
Attn: Mike Finan, Regulatory Branch

California State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000
Attn: Jim Sutton

Dear Lieutenant Col. Walsh and Mr. Sutton:

The Department of the Interior has reviewed the Draft Environmental Impact Report and Environmental Impact Statement (EIR/EIS) for the Delta Wetlands Project, Contra Costa and San Joaquin Counties, CA, and has no comments to offer. **R22-1**

Thank you for the opportunity to review this document.

Sincerely,

Patricia Sanderson Port
Regional Environmental Officer

cc:
Director, OEPC, w/original incoming
Regional Director, FWS, Portland

U.S. Department of the Interior

R22-1. The lead agencies acknowledge this letter.

Letter R23

AUG 10 2000

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

AUG 8 2000

U.S. Army Corps of Engineers, Sacramento District
Attn: Mr. Mike Finan
1325 J Street, Room 1480
Sacramento, CA 95814-2922

Dear Mr. Finan:

The Environmental Protection Agency (EPA) has reviewed the U.S. Army Corps of Engineers' Revised Draft Environmental Impact Report/ Environmental Impact Statement (RDEIR/S) for the **Delta Wetlands Project, Contra Costa and San Joaquin Counties, CA.** Our review is pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act (CAA). The CEQ number assigned to this document is 000186.

Delta Wetlands proposes a water storage and habitat enhancement project on four islands in the Sacramento-San Joaquin River Delta (Delta). Water would be diverted and stored on Bacon Island and the Webb Tract for later discharge for export (e.g., to southern CA municipalities) or to meet outflow or environmental requirements. Water would also be diverted seasonally to create and enhance wetlands and to manage wildlife habitat on Bouldin Island and most of the Holland Tract. In addition, the project includes recreational facilities for boating and hunting along the perimeter levees on all four islands. Levees on all four islands would be strengthened and additional siphons and water pumps would be installed on the perimeters of the reservoir islands.

Four alternatives were analyzed in the 1995 Draft EIR/EIS. These were a No-Project alternative consisting of intensified agricultural use of the four islands; alternatives 1 and 2, consisting of water storage on two islands and implementation of an habitat management plan on the other two, and a higher level of discharge pumping with Alternative 2; and, alternative 3 consisting of water storage on all four islands with limited wetland habitat provided on Bouldin Island. Generally, the RDEIR/S evaluates the proposed project as represented by alternative 2.

Our comments are focused on the additional information covered in the RDEIR/S and, as such, have not considered the full range of issues associated with this proposed project. We recognize that the current proposal is analyzed from the perspective of use of Delta Wetlands appropriative water rights to meet export water supply demands. On the other hand, as the RDEIR/S recognizes, in the future the project might be adapted to other purposes, such as incorporation into CALFED plans for water management and habitat restoration. If, in the future, there are proposed changes in management and operation of the project– for example, changes

R23-1

associated with CALFED acquisition– we would expect a thorough and comprehensive reexamination of project impacts and benefits. R23-1 cont'd

Based on our review and the environmental commitments outlined in the RDEIR/S, we have assigned a rating of **EC-2 (Environmental Concerns-Insufficient Information).** See the enclosed "Summary of EPA Rating System" for a more detailed definition of the ratings. Our concerns are based on the following: 1) the project, as proposed, may cause substantial degradation of Delta water with respect to its beneficial use as a source for drinking water. Among other effects, this degradation could limit the ability of drinking water providers to produce safe drinking water with respect to trihalomethanes, haloacetic acids and microbial pathogens; 2) the project, as proposed, may yield water with total organic carbon levels generally in excess of that specified as the target (3.0 mg/L) for CALFED as denoted in the Final EIS/R; and, 3) the RDEIR/S does not address the likely substantial impacts of recreational activities on microbial pathogen loadings, which will be key parameters for drinking water safety and compliance with upcoming drinking water standards. R23-2

We appreciate the opportunity to review this RDEIR/S. Please send two copies of the final EIS (FEIS) to the address above. If you have any questions, please contact Bruce Macler at (415) 744-1884 or Carolyn Yale at (415) 744-2016.

Sincerely,

David J. Farrel, Chief
Federal Activities Office

Enclosure

cc: Carolyn Yale WTR-3
Bruce Macler WTR-6

001001 c:\myfol\letter\deis\delta.supp.dei.wpd

Detailed Comments

Dissolved Organic Carbon Impact Significance Criteria

The RDEIR/S cites impact significance criteria of 90% of numerical water quality criteria and 20% above mean values for variables without numerical limits. Dissolved organic carbon (DOC) is not considered in this document to have a numerical water quality criterion. The RDEIR/S proposes a 20% significance criteria using the average or mean value of 4 mg/L, allowing a 20% increase before a significant impact occurs. This is an inappropriate criterion. Use of this criterion would allow an average increase in the delta export values of 0.8 mg/L of DOC. The RDEIR/S notes that total Delta lowlands (including Bacon and Webb) contribute 40% of export carbon at the southern export facilities. Using the 4 mg/L average, Delta lowlands contribute 1.6 mg/l of the 4 mg/L average concentration. Therefore, Delta Wetlands are suggesting that their increased contributions can equal an increase of 50% of all In-Delta drainage contributions at the pumps before the impact is significant. EPA believes this to be unacceptable. Because of this unacceptable contribution using this criterion, we believe that a more stringent criterion in appropriate.

The CALFED water quality program has set a target of 3 mg/L for total organic carbon (TOC). Given the project's proposed purpose of providing export water for southern California, analysis of Municipal Water Quality Investigations (MWQI) data at Banks shows the current probability of exceeding this standard for DOC is 68% (Bruce Agee May 2000- MWQI Delta Workshop). An additional 0.8 mg/L will further reduce the ability to meet this goal. A superior criterion exists that should be considered for this role, which would significantly alter the calculations and projected impacts. TOC, which is approximately the sum of DOC and insoluble organic carbon, will almost always quantitatively exceed DOC. We believe that the final EIS (FEIS) should use the 3.0 mg/L criterion. R23-3

Alternatively, the Interim Enhanced Surface Water Treatment Rule, promulgated by USEPA in 1998, includes an action level of 2.0 mg/L TOC that would trigger treatment requirements for enhanced coagulation. While use of this level would be desirable from a public health standpoint, it is substantially below average Delta TOC levels.

Drinking Water Quality

Negative Impacts of Ecosystem Restoration Projects

The data and calculations presented in the RDEIR/S indicate substantial degradation of water quality with respect to DOC levels, even using the Delta Wetlands DOC criterion. Use of the CALFED 3.0 mg/L TOC target as the criterion makes for an even greater discrepancy between project impacts and plausible water quality goals.

Negative Impacts from Recreational Activities

The RDEIR/S does not address the likely adverse impacts on water quality from anticipated recreational uses resulting from this project. These are of two types, both resulting R23-4

from fecal contamination.

First and foremost is the increased direct health risk to the recreators themselves from exposure to human microbial pathogens during body-contact recreation. Substantial data exist on the behaviors that lead to this contamination and on the resultant risks. The descriptions of recreational activities and the large number of recreational sites involved in this project indicate the potential for significant contamination to occur. This needs to be evaluated and addressed. Second, the increased microbial contamination expected from these activities pose health risks for those ultimately drinking this water. We would like to see a detailed analysis of the possible levels and loads of pathogen contamination resulting from recreational activities and an analysis of resulting health risks to the recreators and those drinking this water. **R23-4 cont'd**

Cumulative Adverse Impacts of Other Projects

No discussion is presented in the RDEIR/S of cumulative impacts from all sources, including other restoration projects, the Sacramento Regional Treatment Plant 2020 Master Plan, the Tracy Hills Wastewater Project, and the City of Tracy Wastewater Expansion Plans. These should be included in the cumulative impact assessment for the RDEIR/S under NEPA and CEQA. All of these projects have the potential to incrementally increase organic carbon at the export facility, along with the Delta Wetlands project. Since the State Water Resources Control Board can review and examine a broader range of issues when issuing water rights permits, cumulative impacts should be considered in the FEIS. **R23-5**

We are concerned that Delta Wetlands might provide a maximum of 3 to 4% of the total water exported through pumps from the Delta, yet the RDEIR/S states that the project can provide up to 20% of the carbon loading without this being a significant impact. We believe that this should be considered a significant impact in the FEIS. **R23-6**

SUMMARY OF EPA RATING DEFINITIONS

This rating system was developed as a means to summarize EPA's level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the EIS.

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

ADEQUACY OF THE IMPACT STATEMENT

Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, "Policy and Procedures for the Review of Federal Actions Impacting the Environment."

U.S. Environmental Protection Agency, Region IX (Federal Activities Office)

R23-1. For purposes of the NEPA and CEQA analysis, the Delta Wetlands Project is analyzed as a stand-alone water storage facility, operated independently of the SWP and the CVP, and without regard to potential integration with the CALFED Bay-Delta Program. See Master Response 2, "Integration of the Delta Wetlands Project with Federal and State Water Project Operations, including the CALFED Bay-Delta Program".

R23-2. The SWRCB and USACE acknowledge the commenter's evaluation of the 2000 REIR/EIS. See responses to Comments R23-3 through R23-6 for responses to specific concerns expressed in this letter.

R23-3. See response to Comment R2-3 regarding the significance criteria for DOC and estimates of DOC loading from Delta lowlands. See response to Comment R2-4 regarding the CALFED long-term targets for TOC. See Master Response 7, "Analysis of Effects of the Delta Wetlands Project on Disinfection Byproducts", regarding potential future drinking water quality standards.

R23-4. The commenter is concerned that the health risk resulting from direct exposure to fecal coliform (microbial) contamination would increase as a result of the private recreational uses of the Delta Wetlands islands, described in Appendix 2 of the 1995 DEIR/EIS and Chapter 3J of FEIS Volume 1. Although Delta Wetlands has removed construction of the recreation facilities from its CWA permit application, Delta Wetlands may subsequently apply for permits for all or some of the facilities. Health risks associated with recreational use on the project islands are discussed below.

The level of fecal contamination in water varies considerably depending on water circulation patterns, tide, wind, and rainfall (U.S. Environmental Protection Agency 1983). Although fecal contamination is an issue in the Delta, the majority of outbreaks related to body-contact recreation have occurred in closed, warm bodies of water with very low circulation (California Department of Health Services 1997).

Recreation activities can increase pathogen loading to a water body. Although coliform bacteria are not known to directly cause illnesses, they are used as a predictor of other disease-causing agents because monitoring for indicator bacteria is less expensive and easier than monitoring for pathogenic bacteria (U.S. Environmental Protection Agency 1998, U. S. Geological Survey 2000). Studies have found high levels of coliform bacteria in areas with heavy concentrations of recreational boats; these studies also indicate a direct relationship between the number of boats in a sampled area and increased coliform levels in both the water column and shellfish (San Francisco Estuary Project 1995).

Recreation activities can also increase the exposure of people to contaminants. Studies of swimmers, scuba divers, and windsurfers have shown measurable health effects associated with exposure to waters polluted by sewage (San Francisco Estuary Project 1995). In the

Delta, swimmers, waterskiers and others who swallow or come in contact with water that has been contaminated by human wastes can become ill.

The Delta Wetlands Project has the potential to affect water quality through recreational activities. The Delta Protection Commission reports that a lack of adequate restroom facilities is a continuing frustration for recreationists in the Delta (Delta Protection Commission 1997). The Delta Wetlands recreation facilities would each be equipped with restrooms for use by individuals using those facilities. Sewage disposal at the recreation facilities would comply with the requirements of the Central Valley Regional Water Quality Control Board (CVRWQCB) and local jurisdictions (see response to Comment A3-3). Boat pumpout facilities (for sewage transfer) are not included in the proposed design of the boat docks; however, the projected demand for these facilities as a result of implementing the project is low, and pumpout facilities are available in the vicinity of the project islands and at other locations throughout the Delta (see response to Comment B5-9).

The 1995 DEIR/EIS noted that the potential increase in pollutant loading from the project facilities and boating activities, in combination with other boating facilities in the Delta, could result in periodic pollution problems in Delta waters. Potential increased loading of pollutants in Delta channels therefore was identified as a significant cumulative impact. The mitigation recommended in the 1995 DEIR/EIS (Mitigation Measure C-9) requires the following:

- Delta Wetlands shall post notices at all recreation facilities describing proper methods of disposing of waste.

- Waste discharge requirements shall be posted and enforced in accordance with local and state laws and ordinances.

- Delta Wetlands shall provide waste collection receptacles on and around the boat docks.

- Delta Wetlands shall provide educational materials to recreationists that describe the deleterious effects of illegal waste discharges and identify the location of waste disposal facilities throughout the Delta. For example, educational materials distributed by Delta Wetlands could include boater education materials, pumpout maps, and pollution prevention guides developed by the San Francisco Estuary Project and the San Francisco RWQCB.

In response to concerns regarding the potential environmental effects of the proposed recreation facilities, the following mitigation measure also has been recommended:

Mitigation Measure: Reduce the Number of Outward Boat Slips Located at the Proposed Recreation Facilities. Delta Wetlands shall reduce the total number of outward (channel-side) boat slips proposed on the Delta Wetlands islands by 50%.

This mitigation is described in Master Response 5, "Mitigation of Environmental Effects Related to Use of Recreation Facilities". Implementation of this mitigation measure would reduce the amount of recreational activities supported by the project, thereby reducing the potential for recreation-related water quality impacts. Because the Delta Wetlands Project would still increase private recreation opportunities, it could increase the number of people susceptible to pathogens during body-contact recreation in the Delta. However, as described above, the Delta Wetlands Project would not substantially increase pathogen loading in the Delta; therefore, the health risk to individual Delta recreationists under the proposed project would not be different from the current risk to recreationists. In conclusion, additional risk to the public created by the addition of these recreation facilities is considered unlikely and further analysis is not warranted for the purpose of complying with CEQA and NEPA.

R23-5. See response to Comment R2-6.

R23-6. See response to Comment R2-7.