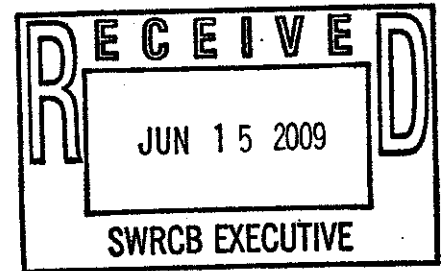


Memorandum

Date: June 15, 2009

To: Jeanine Townsend, Clerk to the Board
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0000

From: Department of Water Resources

Subject: Comments on the 2009 Draft Periodic Review Staff Report of the 2006 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary

Enclosed for the State Water Resources Control Board's (State Water Board) review are the Department of Water Resources (DWR) comments on the 2009 Draft 'Periodic Review Staff Report' (Staff Report) of the 2006 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (2006 Bay-Delta Plan). As requested in the Notice of Adoption Hearing, DWR also will be submitting 15 paper copies, including one with an original signature. DWR appreciates the opportunity to review and comment on this report.

DWR acknowledges the State Water Board's necessary involvement in the development of long-term solutions for the Bay-Delta and that the review and potential modification of the 2006 Bay-Delta Plan is critical if such plans are to succeed. As such, DWR supports the review process and the efforts of the State Water Board's staff to identify those objectives that may need to be either reconsidered or newly established. In particular, DWR continues to encourage the State Water Board to work closely with other agencies and stakeholders as the review of the 2006 Bay-Delta Plan and the development of the Bay-Delta Conservation Plan (BDGP) move forward concurrently. DWR also looks forward to working with the State Water Board and its staff to ensure that the State Water Board is fully apprised of and appreciates the potential impacts, beneficial and harmful, associated with any changes to existing objectives or implementation of new objectives.

In general, DWR has three major issues that it would like to bring to the State Water Board's attention regarding the Staff Report. First, the Staff Report identifies analyses which suggest that the operations of the State Water Project and Central Valley Project (collectively, Projects) have contributed to the decline of species listed under the federal and State endangered species acts (ESA), and perhaps to other estuarine species as well. The report, however, fails to mention the dramatic ecological effects that have occurred in the Estuary since the mid 1980's totally unrelated to water project effects. These include 1) the crash of primary production in the Suisun bay area due to the influx of the invasive clam *Corbula*, 2) the effects on improved water clarity to the detriment of delta smelt habitat due to the aquatic weed *Egeria* in the interior Delta, and 3) the reduced populations of good quality zooplankton food and the replacement with *Limnithona*, which is now the most abundance zooplankton in the Estuary and a rather poor food source for fish and many others. The Staff Report needs to present a much more balanced assessment of the changes to the Bay-Delta

ecosystem that have occurred. In past State Water Board workshops DWR and the IEP agencies have presented some of these changes.

The Staff Report also points out that the National Marine Fisheries Service, the U.S. Fish & Wildlife Service and the California Department of Fish & Game have recently issued biological opinions and/or incidental take permits which have altered the Projects' operations to protect endangered species. However, DWR believes that the Staff Report should also clearly point out that the new incidental take requirements are already incorporated in the Projects' existing water rights license and permits, since those permits require compliance with the federal and State ESAs.

In addition, since the incidental take requirements relating to reverse flow objectives, Delta Cross Channel Gate closure objectives, and export/inflow objectives have already altered Projects' operations, DWR recommends that the State Water Board, as part of its review of the 2006 Bay-Delta Plan, analyze how the above requirements affect already established objectives. As part of this review, the State Water Board should consider whether the new ESA-related requirements make other objectives unreasonable.

Second, DWR disagrees with the Staff Report and recommends that the State Water Board include ammonia and other toxics as part of its review and potential revision of the Bay-Delta Plan. As the regulating agency over water quality and water rights, the State Water Board is in the position to address water quality issues that directly affect fish and wildlife but are outside the purview of the ESA-related processes. Specifically, identifying and regulating contaminants in the Bay-Delta is something that the State Water Board is uniquely qualified to do and, in doing so, can directly contribute to a comprehensive approach for improving water quality and the sustainable use of water from the Delta.

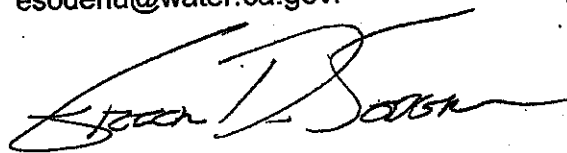
DWR understands the State Water Board staffs' rationale for recommending that the Board not consider establishing objectives for ammonia or other toxics, but believes that excluding the review of the above is, at this time, premature. By including ammonia and toxics in its review of the 2006 Bay-Delta Plan, the State Water Board can use its unique position to move forward the understanding of the components, quantities and effects pollutants have on the ecosystem and public health in the Bay-Delta. DWR believes that addressing this area is critical when developing a strategy and plan to protect the beneficial uses in the Bay-Delta.

Lastly, DWR applauds the State Water Board staff's acknowledgment that the recommendation that certain issues be further reviewed does not mean that changes will be made to the 2006 Bay-Delta Plan related to those issues. DWR also appreciates the acknowledgement that additional issues may be identified, including changes required as part of the BDCP. Many of the issues identified in the Staff Report are still being developed in the BDCP process or are involved in litigation, in which the recent biological opinions are being challenged. As such, many issues are still in a state of flux and it is wise for the State Water Board to recognize this and not commit to a particular set of issues at this time.

Ms. Townsend
June 15, 2009
Page 3

Also, in light of the uncertainty as to what the BDCP will ultimately include and how the current, and future, litigation regarding the recent biological opinions will be resolved, DWR respectfully requests the opportunity to provide supplemental comments regarding this report as new information becomes available, even after the State Water Board adopts the Staff Report.

DWR appreciates the opportunity to comment on this draft and looks forward to working with the State Water Board as it proceeds through the basin planning process. If you or your staff have questions on these comments or would like additional information please contact me at (916) 653-8826 or esoderlu@water.ca.gov.



Erick Soderlund
Staff Counsel

Enclosure

DWR SPECIFIC COMMENTS
ON THE
2009 DRAFT PERIODIC REVIEW STAFF REPORT OF THE 2006 WATER
QUALITY CONTROL PLAN FOR THE SAN FRANCISCO BAY/SACRAMENTO-
SAN JOAQUIN DELTA ESTUARY

Water Quality Control Plan Review Process

Page 10, Para. 2. In the first sentence and several other places in the report, reference is made to the implementation of the amended basin plan only through changes to water rights. It should be more clearly stated throughout the report that changes to water quality regulations will also be considered to implement the amended plan. That point is made in the last sentence of this paragraph, but it bears repeating whenever the amendment of the water rights is mentioned.

Southern Delta Salinity and San Joaquin River Flows

Page 12. General comment under 1st introductory paragraph (Southern Delta Salinity and San Joaquin River Flows). Change wording in the following sentence "Accordingly, there is no need for a staff recommendation *or conclusions* in this report". This will clarify why there are no conclusions given as in other sections.

Page 13, Para. 3. Delete last sentence, beginning with "Depending on SWP and CVP. . .", since this concept is repeated on page 14 and is more appropriately made under the Flow Related Concentration Effects section (see 3rd bullet).

Page 13. Comment under Source Loading & Evapo-Concentration, 1st bullet---- The bulleted sections correctly states that between Aug and Dec. 2008, 33 to 43% of the salt load into Clifton Court Forebay came from the San Francisco Bay, however, this statement is not put in context ie, that the total volume of seawater that came to the forebay during this time period ranged between 0.5% and 1.2% of the total volume of all water that came into the forebay.

Page 13. Same section as above. Since so much of the salt loading information presented in this and the next section is given in tons (i.e. WWTPs or industrial discharges into the San Joaquin), it would be beneficial to have the same units provided for Clifton Court as the SWP input rather than percentages only (as are discussed in the above paragraph) so that all sources could be evaluated equally. This would also allow comparison to the first bulleted paragraph under Flow Related Concentrations Effects that gives the load of salt provided from recirculation of San Joaquin river salts via the DMC.

Page 13. Same section as above. This report does not mention the salinity issues associated with the San Joaquin River's various branches and that salinity

issues may be more localized than the main stem of the river. See next comment for a specific example of this issue.

Page 13. Same section as above. This section notes that there is limited data associated with wetland discharge water quality data, however it does not mention that, at least with respect to the Old River, there is also limited agricultural discharge data associated with salinity.

Page 14, Para. 1. First bullet point, define industrial water uses to differentiate between domestic, municipal and industrial. Providing a couple of examples of uses as in domestic water use text would be helpful.

Page 14. General comment under "Flow Related Concentration Effects" section. With recent publication of two major biological opinions for delta smelt (12/08) and salmon, steelhead and green sturgeon (6/09) the report may need to incorporate available information on how changes to the CVP/SWP operations may affect hydrodynamics in the South Delta and salinity loading from the operations.

Delta Outflow Objectives

The staff report recommends that the SWRCB consider changes to the Delta outflow objective, or alternatively Delta inflow as part of the possible revision of the Bay-Delta plan. This same issue is being discussed at length as part of the ongoing BDCP process and the issue is very complicated. Because the BDCP has not identified a preferred alternative, DWR believes that it is premature for the SWRCB to consider changes to the Delta outflow objectives at this time. The report notes that the FWS BO calls for additional X2 requirements in the fall. However, DWR disagrees with the basis for this conclusion and has requested consultation with FWS, with this being one of the larger issues. Given the uncertainty, DWR believes it would be inappropriate at this time for the SWRCB to propose such changes to the objective..

However, DWR Operations and Maintenance does advocate one possible revision to the existing X2 objectives. Footnote [a] of Table 4 (e.g. the number of days that X2 must be maintained at specific locations) reads, in pertinent part, the following:

"If salinity/flow objectives are met for a greater number of days than the requirements for any month, the excess days shall be applied to meeting the requirements for the following month...."

DWR believes that if X2 days required for any given month are not met in full, then the number of deficit days shall be applied as additional requirements (X2 days) to the following month or the soonest month in which they would apply. Thus, the X2 requirement should be modified to allow for carrying over both

excess and deficit days to the following month or the soonest month in which they could be applied.

This proposed modification would allow for more operational flexibility and efficiency in modifying upstream reservoir releases of the SWP and CVP to meet the X2 requirements. It would smooth transitions which Project operators routinely face with regard to changing OMR requirements (per Delta smelt opinion), maintaining upstream cold water pools and rapid increases in upstream depletion rates that occur along the Sacramento and San Joaquin Rivers during peak irrigation periods (e.g. water released that is expected to reach the Delta but doesn't show up!).

Page 16, Para. 2. The text states the freshwater flow is a "significant factor in the survival of smolts moving downstream through the Delta." Note that the most statistically rigorous analysis of salmon survival data concluded that "the effects of flow were slightly positive but were confounded by salinity levels." (Newman and Rice. 2002. Journal of the American Statistical Association 97(460): 983-993).

Page 16, Para. 5. The text cites 2002 as the start of the POD. While the POD was apparent by 2002, the actual start of the decline was probably around 2000, with some variation depending on species (Sommer, T., C. Armor, R. Baxter, R. Breuer, L. Brown, M. Chotkowski, S. Culberson, F. Feyrer, M. Gingras, B. Herbold, W. Kimmerer, A. Mueller-Solger, M. Nobriga, and K. Souza. 2007. The collapse of pelagic fishes in the upper San Francisco Estuary. Fisheries 32:270-277.)

Page 17, Para. 2, lines 3-4. Regarding the statement that "low outflow also decreases the quality of delta smelt habitat", it is important to qualify this statement. First, the strongest results to date have only been for fall, not the entire year. Secondly, "quality" needs to be a bit more specific. Feyrer et al. (2007) reported that salinity and turbidity can affect habitat quality, but note that there are multiple other factors that their study did not evaluate. For example, prey availability and contaminants also affect habitat quality. Perhaps a better way to phrase things would be to simply say that outflow affects habitat availability for this species.

Page 17, Para. 2, lines 4-6. The statement that suitable summertime habitat for delta smelt has decreased over time also needs to be qualified. Nobriga et al. (2008) noted that there was a clear regional decrease in habitat in the south Delta, but no estuary-wide trend. Similarly, it is very misleading to state that water temperatures are directly related to outflow, at least for the estuary. Our understanding is that flow does not have a substantial effect on Delta water temperatures, particularly in summertime, when air temperatures dominate. Indeed, recent modeling by UC Berkeley shows that Delta water temperatures

are well-predicted by two simple variables: air temperature and the previous day's water temperature (Mark Stacey, UC Berkeley, unpublished data).

Page 17, Para. 3. "Moyle et al. 2009 in prep" is cited as evidence that greater salinity and habitat variability would help desirable fish species. While this may indeed be true, relatively little scientific support was provided in the cited document. Better scientific information is needed to resolve this issue.

Page 17, Para. 4. While the USFWS delta smelt BO identifies a fall X2 action that provides more Delta outflow in years following wet and above normal years, the report should also clearly recognize that an independent science review of that fall action concluded that "The degree to which moving X2 seaward will affect delta smelt habitat is not well supported by the analyses presented, and that the additional arguments presented for this action also seem weak." (Independent Peer Review of two Sets of Proposed action for the Operations Criteria and Plan's Biological Opinion, November 19, 2008. Prepared for USFWS by PBSJ)

Page 19, Para 3. The following is a better reference than Baxter ex al. (2008) for the entrainment-related information: Grimaldo, LF, Sommer, T, Van Ark, N, Jones, G, Holland, E, Moyle, P, Smith, P, and Herbold, B. 2009. Factors affecting fish entrainment into massive water diversions in a freshwater tidal estuary: Can fish losses be managed? North American Journal of Fisheries Management. In press.

Page 19, Para. 4, Last sentence. This statement should be qualified by life stage and season. Grimaldo et al. (2009) found that OMR flows were more important during winter upstream migration, and X2 was more of a factor during spring. We are not aware of similar evidence for summer or fall and doubt that the statement would apply.

Suisun Marsh Objectives

Page 22, Last Para. Replace third sentence with: "The objective of Suisun Marsh Salinity Control Gate operation is to decrease the salinity of the water in Montezuma Slough for water deliveries to seasonal wetlands. The Corps of Engineers permit for operating the gate requires that it be operated between October and May only when needed to meet Suisun Marsh salinity standards. Historically, the gate has been operated as early as October 1, while in some years (e.g. 1996, 2007) the gate was not operated at all. Assuming no significant long-term changes in delta outflow, recent operational frequencies (10 – 20 days per year) can generally be expected to continue to meet standards in the future; except perhaps during the most critical hydrologic conditions and/or other conditions that affect Delta outflow."

Page 22, Last Para. Line 9. Insert: Operation of the gates for 5 – 7 consecutive days can move the position of X2.

Page 23, Last Para. Replace "mid 2009" with "late 2009":

Page 23, Last Para. Precede third sentence with "Since implementation of the Suisun Marsh Plan could affect salinity conditions and beneficial uses, the SMCG has committed"

Page 24, Conclusion: last sentence. Insert "(and/or objectives proposed in the Suisun Marsh Plan)" as part of its potential revisions

Reverse Flow Objectives

The staff report recommends that the SWRCB evaluate establishment of Old River and Middle River (OMR) flow objectives as part of its update of the Bay-Delta Plan. The OMR requirements that are in both the FWS and NMFS Biological Opinions are prescribed as a range of possible requirements during different time periods. The specific implementation of these criteria are determined by drawing on the input of many interagency biologists that have expertise in protecting sensitive Bay-Delta fisheries that are listed under the Federal and State Endangered Species Acts. These biologists consider many real-time factors such as recent surveys/monitoring, temperatures in the Delta, existing flows and water project export rates.

SWRCB Bay-Delta objectives are somewhat rigid by nature and do not easily lend themselves to the "real-time adaptive management" process which is currently used to determine the specific protective criteria. These criteria can change in a matter of several days or in a week, depending on changing real-time conditions such as salvage at project export facilities. Moreover, the BDCP process is considering conveyance strategies which may fundamentally alter the need for reverse flow objectives. Therefore, DWR believes it is not appropriate for the SWRCB to consider reverse flow as a water quality objective.

Floodplain Habitat Flow Objectives

Page 26, Para. 2. The Opperman (2006) reference should be replaced by Sommer et al. (2001).

Page 26, Para. 4. Jassby and Cloern (2000) is a better citation than Schemel et al. (2004) regarding the possible use of floodplain to increase primary production. (Jassby AD, Cloern JE. 2000. Organic matter sources and rehabilitation of the Sacramento-San Joaquin Delta (California, USA). Aquatic Conservation: Marine and Freshwater Ecosystems 10: 323-352.)

Page 27, Para. 2. New evidence reveals that floodplain may be more beneficial to delta smelt than previously understood. As described in Sommer et al. (2009), there is evidence of "resident" delta smelt that remain year-round at the base of Yolo Bypass, principally Liberty Island. Hence, enhanced primary and secondary productivity from floodplain may benefit delta smelt more than might be expected based on their "typical" estuarine habitat. Since longfin smelt also occur seasonally in the Cache Slough Complex (DFG, unpublished data), they may also benefit from improved food production in the region. (Sommer, Ted, Kevin Reece, Francine Mejia and Matt Nobriga. 2009. Delta Smelt Life-History Contingents: A Possible Upstream Rearing Strategy? IEP Newsletter 22(1): 11-13)

Page 27, Para. 3-4. The discussion of mercury is appropriate in that it points out that floodplain habitat, like other types of wetlands, may increase mercury methylation. However, the text does not provide much context. For example, recent studies showed that the amount of methyl mercury bioaccumulated by young salmon migrating through Yolo Bypass was quite low in comparison to their whole life cycle, i.e. their ultimate adult size (Henery et al. 2009). Moreover, it is unclear whether restoration to promote aquatic organisms would result in substantially more methyl mercury production than existing land use activities in the region such as rice farming or waterflow wetlands and ponds. (Henery, R., T. Sommer, and C.R. Goldman. 2009. Growth and methylmercury accumulation in juvenile Chinook salmon (*Oncorhynchus tshawytscha*) in the Sacramento River and its floodplain the Yolo Bypass. Trans. Am. Fish. Soc. In press.)

Page 28, Para. 1. Here or elsewhere in this section it would be important to mention that managed Yolo Bypass floodplain inundation and fish passage are included in the RPA in the recently-released NMFS Biological Opinion for salmonids.

Changes to Program Implementation

Page 28. DWR agrees that the periodic review of the EMP program elements is helpful and needed. DWR does not agree that hydrologic monitoring should be a mandated component of the EMP program. The requirement to assess the impacts to ecosystem from the water projects is the mandated element. Meeting this mandate should be the objective. Various studies and analyses, as well as compliance actions do incorporate hydrodynamics and hydrology as needed, and the information is acquired from DWR or other sources. In some cases new stations are developed to collect the additional information. Both these existing water quality stations and flow stations can be used for other purposes, such as planning or performance management. But DWR and USBR should not be required under the WQCP to provide a mandated network of additional WQ stations or flow stations to meet other objectives such as the Delta Vision, the

RMP, BDCP, or recommendations from the non-regulatory processes such as SWAMP, or the California Water Quality Monitoring Council.

DWR will continue to strive for integration of its monitoring programs with other processes, as well as creating high quality data that is accessible and meets the required standards for QA/QC and metadata. However DWR and IEP should not be constrained in its achievement of the D-1641 alternative to provide data to the Board and stakeholders via the web. DWR and IEP are on track to meet this requirement and therefore transition away from the annual written report as stated in the agreement. This will allow staff to focus on long term trends analysis, a much more useful tool than any single year data set. Constraining the EMP and IEP program by dictating resources committed to CDEN or other as yet unproven or infancy stage data management or data sharing projects or structures could hamper our ability to achieve the objective stated above in the near term. Future data sharing and integration is a component of our current data storage and access objectives, so that other programs as developed may access our information. Integration should be encouraged, but not mandated.

Ammonia Objectives and Toxicity

Page 31. DWR agrees that integrated efforts through the IEP Contaminants Work Team (CWT) has led to a focused series of studies on ammonia issues, with involvement from various Board staff and stakeholders. The CALFED science program has also been integral in its development of the Ammonia Workshop, and involvement of the SAG in creating recommendations for studies. Depending upon the outcome of these studies, additional regulatory action may be needed. Unlike historical NPDES processes, impacts are now being assessed many miles from the point of discharge. This has created a new paradigm where traditional effluent effects localized to a discharge point may not be representative of effects miles from the source. This is the case for ammonia, where transformation to un-ionized ammonia can create a different toxicological effect than at the source. DWR recommends that State Board ensure that contaminant concerns for the Delta are addressed from point and non-point sources. Additionally, the data that is generated from the irrigated lands ag waiver program be made available as soon as possible for lands within the Delta or contributing to the water-sheds of the Delta.

Development and construction of fish screen devices

Page 43, Replace 2nd full paragraph with the following text.

In 2000, the CALFED ROD called for development and construction of new, improved fish screening devices at the SWP and CVP export facilities in the southern Delta to reduce the fisheries impacts. In 2002, concerns that the collection, handling, transporting and release (CHTR)

processes may adversely affect the survival of salvaged fish and limit the benefits of new fish screening facilities led CALFED to propose studies to address critical data gaps on the survival and health of salvaged delta smelt. As a result, in 2004 and 2005, Department of Fish and Game conducted studies for evaluation of CHTR effects on delta smelt investigating acute mortality and injury, assessment of fish predation, and stress effects to salvaged delta smelt. Subsequently, the South Delta Fish Facilities Forum (SDFFF), formed by CALFED, recommended in 2005 not to pursue new screening activities due to concerns related to cost (as high as \$1.7 billion) and effectiveness of screening these facilities. However, as one of the immediate actions, SDFFF recommended to complete the CHTR studies and identify current CHTR facility and operational actions to increase delta smelt survival. Therefore, in 2007 and 2008, the California Department of Water Resources (DWR) with support from the U.S. Bureau of Reclamation (USBR) and California Department of Fish and Game (DFG), conducted a field study to investigate the release phase of the CHTR process. The study was developed to gather useful information that could serve to reduce the potential vulnerability of sensitive fish species to mortality as a result of predation and/or injury during the release phase of the CHTR process, and also to develop criteria for the design of new facilities or large-scale improvements to the existing release facilities. The CHTR reports are being reviewed and expected to be published at the end of this year. The CHTR study team has been working with the Central Valley Fish Facility Review Team to analyze and develop recommendations. Based on the preliminary information, DWR has recommended a number of short-term and long-term actions to improve the salvage operation at the Skinner Delta Fish Protective Facility. These recommendations are based on field observations and hydraulic modeling as well as observations of current facility staff. Many of these recommendations have been included as actions in the recently issued biological opinion by the National Marine Fisheries Service on the long-term operation of the CVP and SWP.