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LATE COMMENT

May 2, 2012

Charles R. Hoppin, Chair
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Subject: Comments on the Supplemental Notice of Preparation and Notice of Scoping Meeting for Environmental Documentation for the Update and Implementation of the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary: Comprehensive Review

Dear Mr. Hoppin:

The Department of Fish and Game (Department) appreciates the opportunity to provide comments on the above referenced Supplemental Notice of Preparation (Supplemental NOP). As described in the Supplemental NOP, the State Water Resources Control Board (State Water Board) is currently preparing a Substitute Environmental Document (SED) for the review of the southern Delta salinity and San Joaquin River flow objectives included in the 2006 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan). The State Water Board is now requesting comments regarding the scope and content of environmental information that should be included in a separate SED relating to the comprehensive review of the other components in the Bay-Delta Plan, which includes the current water quality objectives, potential establishment of new objectives, modifications to the program of implementation for those objectives, and potential changes to the monitoring and special studies program.

We agree with the State Water Board's staff recommendation in the 2009 Staff Report for the Periodic Review of the 2006 Bay-Delta Plan (2009 Staff Report) that further review of certain key issues in the Bay-Delta Plan is necessary and provide the following information and comments for your consideration:

Delta Outflow, Export/Inflow, and Old and Middle River Flow Objectives

Water flow through the Delta is one of the primary drivers of ecosystem function. The timing, magnitude, quality of flows, and way in which water is diverted all influence habitat features such as temperature, turbidity, transport, nutrient loadings, pollutant dispersal, and other factors. Changes in Delta flows resulting from upstream diversions and operations of the State Water Project (SWP) and Central Valley Project (CVP) upstream of and in the Delta have resulted in modification of the hydrologic and physical habitat of the Delta system, which in turn has altered the Delta ecosystem

(Healey et al. 2008)[1]. Fish population declines coupled with these hydrologic and physical changes suggest that current Delta water flows for environmental resources are not adequate to maintain, recover, or restore the functions and processes that support native Delta fish. Salmon in the Central Valley are also in decline. Two of the four races of Chinook salmon are listed under the federal Endangered Species Act (FESA) and California Endangered Species Act (CESA) and fall-run Chinook salmon, a species of concern, is at historic low abundance. Delta smelt is listed under both FESA and CESA and longfin smelt is listed under the CESA reflecting their precipitous declines in abundance.

The Department's 2010 report "Quantifiable Biological Objectives and Flow Criteria for Aquatic and Terrestrial Species of Concern Dependent on the Delta" (2010 report)[2] provides biological goals for terrestrial and aquatic species that are dependent on the Delta, including goals for recovery and self-sustaining populations of certain at-risk species; protection and restoration of natural communities; halting species population declines; and establishing water flows through the Delta that will benefit particular species, community, or ecosystem functions. With these goals in mind, the report includes biological objectives for 27 terrestrial and 20 aquatic species, and flow criteria (timing, magnitude, and quality) for eight identified species of concern in the Delta. We recommend the State Water Board evaluate and implement water quality objectives for Delta Outflow, the Export/Import Ratio, and reverse flows in the Old and Middle Rivers that consider the biological goals and objectives in the 2010 report.

The flow criteria contained in the 2010 report includes recommendations for Delta Outflow and Old and Middle Rivers reverse flows with the suggestion that before any specific flow criteria are implemented, consideration should be given to new research and monitoring not available when the report was completed. This suggestion is in-line with the management goals in the report – that an adaptive management process be established to evaluate Delta environmental conditions, periodically review the scientific underpinnings of the biological objectives and flow criteria to ensure that they remain relevant and scientifically supportable, and to change the objectives and criteria when warranted. For example, we believe ample evidence exists that improved Delta outflows are critical to the survival of important Delta species. For many species that live in, or move through the Delta, abundance is related to the timing and quantity of Delta outflow (or the placement of X2). Although longfin smelt production has been negatively impacted by recent changes in the estuarine food web, there continues to be a strong association between longfin smelt production and winter-spring outflow levels and/or X2 position. In addition, substantial evidence exists suggesting that summer-fall X2 position strongly influences the amount and quality of suitable habitat for juvenile delta smelt and subsequent adult abundance. The initial findings of the 2011 Interagency Ecological Program (IEP) fall habitat studies appear to confirm the importance of summer-fall flows in delta smelt production. We recommend the State Water Board establish an adaptive management process to review and modify flow

[1] Healey, M.C., M.D. Dettinger, and R.B. Norgaard, eds. 2008. The State of Bay-Delta Science, 2008. Sacramento, CA: CALFED Science Program. 174 pp.

[2] http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=25987

criteria in the Delta that allows the use of the latest data and information from research and monitoring to respond to the needs of Delta species.

Delta Cross Channel Gate Closure Objectives

The current objective states that the Delta Cross Channel (DCC) gate shall be closed for a total of up to 45 days for the November through January period. The timing of this closure is important for the protection of juvenile salmon by helping to prevent straying into the interior and then southern Delta towards the SWP and CVP diversion pumps.

This is half of the equation. During October, adult fall-run Chinook salmon are moving up through the Delta towards their natal spawning grounds and the open DCC gates can cause straying of adult salmon as Sacramento River water is sent into the Mokelumne and San Joaquin Rivers. Recent studies in the Mokelumne River have shown that a combination of pulse flows along with the closure of the DCC gates in October can not only increase the number of salmon returns, it can also cut down on the stray rates of salmon from the Mokelumne going into other rivers, in particular the American River.

Escapement Year	Number	Stray rate to American R. (estimated)	Pulse Flow	DCC Closure
2008	412	75%	No	No
2009	2,232	54%	Yes	No
2010	7,196	25%	Yes	Yes (2 day)
*2011	18,462	7%	Yes	Yes (10 day)

Lower Mokelumne Partnership Experimental Action Plan-Delta Cross Channel Closure May 2011 *Update 2011 numbers by EBMUD.

We recommend that the State Water Board evaluate potential changes to the DCC Gate Closure Objectives that would close the gate during all or a portion of October, which would strengthen migration cues for migratory fish and benefit both Sacramento and Mokelumne origin fall-run Chinook salmon.

Suisun Marsh Objectives

Suisun Marsh is the largest contiguous brackish water marsh remaining on the west coast of North America and is a critical part of the San Francisco Bay/Sacramento–San Joaquin River Delta (Bay-Delta) estuary ecosystem, encompassing more than 10% of California's remaining natural wetlands. The Suisun Marsh Habitat Management, Preservation, and Restoration Plan (Marsh Plan) [3] is focused on protecting and enhancing Suisun Marsh's contributions to the Pacific Flyway and endangered fish and

[3] http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=781

wildlife species habitats, maintaining and improving strategic exterior levees, and restoring tidal marsh and other habitats. We recommend the State Water Board evaluate water quality objectives for the Bay-Delta Plan that contributes to the implementation of the Marsh Plan objectives and purposes, one of which concerns protecting and improving water quality for beneficial uses in Suisun Marsh, including estuarine, spawning, and migrating habitat uses for fish species as well as recreational uses and associated wildlife habitat. Delta outflow, State and federal water export operations, urban and agricultural run-off, and upstream diversions all affect water quality in Suisun Marsh. Improvement of water quality and management practices will benefit the ecological processes for all habitats, including managed and tidal wetlands.

Floodplain Habitat Flow Objectives

Studies have shown that floodplains provide important ecosystem support functions, such as providing rearing habitat for juvenile Chinook salmon, spawning and rearing habitat for splittail, and increased food production at lower trophic levels. We recommend that the State Water Board evaluate flow objectives based on important metrics, such as the frequency, duration, timing, seasonality, and magnitude of inundation that influence these, and other, ecological benefits of floodplains.

One thing to note here is the presence of mercury throughout much of the Delta and its tributaries. In recent years, the production, export, and bioaccumulation of methylmercury have become a focal point with the State Water Board's regulatory efforts (e.g., total maximum daily loads (TMDL)). In the 2009 Staff Report, the discussion on flow objectives to support floodplain habitat and other fish and wildlife beneficial uses identified that methylmercury contamination in fish is associated with floodplain areas and wetlands in the Bay-Delta system and that restoration activities could exacerbate the existing mercury issue. Although methylmercury production is often associated with floodplain areas and seasonal wetlands, restoration of these habitat types is critical to the conservation and protection of the Bay-Delta ecosystem. Wetlands restoration enhances and maintains numerous beneficial uses of water. We recognize the issues of methylmercury production and bioaccumulation and believe it prudent to be cognizant of these issues when restoring floodplain and wetland habitat.

The Department's Ecosystem Restoration Program (ERP) has funded several studies that inform restoration activities on minimizing methylation. ERP is funding several grants that will further contribute to the knowledge base. The Department makes available the results of these studies as they are completed. Creation of new wetlands and new restoration activities in the Delta will need to comply with the Methylmercury TMDL for the Delta. Through this TMDL, additional studies will be conducted to inform restoration design and improve management practices of multiple wetland types to minimize methylmercury production and export. We recommend that the Bay-Delta Plan incorporate an approach to wetlands restoration consistent with the strategic goals and objectives in the Department's DRAFT Ecosystem Restoration Program Conservation Strategy for Restoration of the Sacramento-San Joaquin Delta Ecological

Management Zone and the Sacramento and San Joaquin Valley Regions[4]. This strategy includes recommendations for a variety of floodplain and wetland habitats in the Delta and Delta watersheds that benefit species and ecosystem functions.

Changes to the Monitoring and Special Studies Program

Given the fundamental complexity and dynamic nature of the estuary, there is an ongoing need for well-conceived, strongly supported, and collaboratively conducted scientific monitoring and research. There are many key scientific uncertainties that hamper efficient management of the estuary, including, but not limited to, the role of nutrient stoichiometry in fish species productivity, the mechanisms underlying the flow/longfin smelt abundance association, the mechanisms underlying the associations between sturgeon reproduction and river flow/outflow, and the role of tidal and floodplain habitat in estuarine productivity. The IEP has a demonstrated tradition of providing high quality ecological information and scientific leadership for use in management of the San Francisco Estuary, including the Delta. This multi-agency collaboration will continue to be important for addressing these scientific uncertainties and evaluating multiple stressors that influence Delta issues (e.g., the pelagic organism decline). A high priority of this coordination must be the methodical integration of effectiveness monitoring, long term trends monitoring, compliance monitoring, and the proactive identification of emerging trends. The need to match adaptive management model approaches, provide transparent and timely data sharing, engage common stakeholders efficiently, and coordinate study proposals and study implementation will be essential in maintaining the effectiveness of long- and short-term studies. We look forward to continuing and expanding our support in close coordination with the other IEP agencies and recommend the State Water Board stay engaged and help lead this process.

The scope of studies, such as the Spring Kodiak Trawl indices, longfin smelt surveys, crustacean and lower trophic level surveys (e.g. zooplankton), should be increased to provide complete information in order to fully understand the effects and efficacy of outflow, export and inflow objectives. Enhancing the seasonal or geographic scope of these studies will lead to a better understanding of the population dynamics of target species. For example, the Smelt Larva Survey could be extended to better document the recruitment of delta smelt or other fish species of interest. Expanding the geographic scope or modifying the sampling procedures could allow for the population estimates (or indices) that are needed to assess the performance of actions to meet objectives. We recommend expanding surveys into Cache Slough and the Sacramento Deep Water Ship Channel, which will provide baseline data for these regions prior to planned habitat restoration and better information on the distribution and habitat of delta smelt. The State Water Board should also consider focused extensions of the Tow Net Survey, Fall Midwater Trawl Survey, and Spring Kodiak

[4] http://www.dfg.ca.gov/ERP/reports_docs.asp

Trawl Survey in order to understand the health, growth, and fecundity of delta smelt, longfin smelt, and other fishes. There is also a particular need for the development of effective life cycle models for key fish species.

The State Water Board should consider including fish surveys beyond the demersal zone in San Francisco bay and also resuming several key studies that are currently suspended: (1) The shoreline residential fish survey, which develops data on abundance trends and distribution of many shoreline fishes — including predatory largemouth bass; (2) catfish surveys to understand the role of these predators on and competitors with native species; and (3) juvenile sturgeon surveys which are necessary for proper management and for restoration planning.

We recommend that shallow-water habitats associated with floodplains be sampled more thoroughly to provide a suitable baseline. Information on fishes in shallow-water habitats has been periodically gathered by several special studies but very limited sampling is on-going. Current beach seine sampling provides reasonable coverage in the lower Sacramento and San Joaquin rivers and some of the Delta, but sampling is sparse in the western Delta and absent in Suisun Bay. Sampling is currently relatively intensive within Liberty Island, but this effort is not planned to be long-term. We recommend that some modest level of effort be maintained.

It will also be important to ensure that monitoring studies address, and can gather data in a timely manner to address, whether restored habitats and flood plain objectives provide habitat and or nutrition for target species, and (if so) whether or not habitat and nutritional effects on the species compensate (completely mitigate) for negative effects. Similarly, rapid and transparent reporting — as practiced by IEP — must be implemented in any new or proposed long-term fish entrainment monitoring programs (e.g. fish salvage facilities) or regional fish protective actions. To the extent feasible, prior to any changes to objectives, updated baseline studies with any changed study regimes should be completed, thereby ensuring adequate understanding of changes under new objectives.

Additionally, we recommend that the State Water Board take an active role in the coordination of scientific endeavors and management initiatives that — while outside the immediate boundaries of the Delta — contribute to the Delta's health and management. This includes immediate impact drivers (e.g., contaminants discharged upstream of the Delta) as well as organizational factors (e.g., numeric modeling of ecological processes that span jurisdictional boundaries).

Coordination with Federal, State and Other Ecosystem Planning and Implementation Programs and Efforts

As the State Water Board realizes, there are many different efforts underway in the Bay-Delta, and its watershed. Many of these efforts are consistently producing new information, synthesizing on-going studies into new paradigms, and making progress with on-the-ground activities. In updating the Bay-Delta Plan, the State Water Board

will need flexibility to work with multiple groups in order to capture the best science for the basis of the update and must also consider multiple stakeholder concerns when balancing the beneficial uses of the state's water. We suggest that State Water Board review the most significant on-going efforts and develop a strategy to incorporate recent accomplishments and new understandings. For example, on the San Joaquin River and its tributaries, the ERP and Anadromous Fish Restoration Program have successfully funded others and directly implemented multiple floodplain restoration projects. The Department of Water Resources (DWR) is also funding projects through the Flood Plain Corridors Program, and the US Fish and Wildlife Service has made consistent progress on their wildlife refuge lands that enhance floodplains.

As a related issue, the State Water Board should examine the science, both worldwide and that conducted within the Delta system, that addresses the importance of flows in riparian ecosystems. In particular, it is critical to incorporate current understandings of how inundated flood plains facilitate the interchange of ecosystem services between the river, adjoining wetlands, riparian forests and the contiguous uplands. The Department is aware of the effort the State Water Board has already taken to incorporate a strong science framework into this process and supports the continued reliance on the scientific information developed and/or submitted as part this process to date.

The Supplemental NOP states that information produced as part of the Bay Delta Conservation Plan (BDCP) may also be considered. In addition to the BDCP, there are many other on-going local, state and federal programs such as: Natural Community Conservation Plans, San Joaquin River Restoration Program, Central Valley Project Improvement Act, Delta Stewardship Plan, Central Valley Flood Protection Plan, California Climate Action Team and Climate Action Initiative, and various Integrated Regional Water Management Plans whose coordination/integration should be described in the Bay-Delta Plan.

Program of Implementation and Mitigation Measures

The Delta is a complex, dynamic ecosystem in which multiple processes and stressors are linked to, and interact with, one another. As the State Water Board re-examines the 2006 Bay-Delta Plan and develops updated objectives and implementation strategies, an attempt needs to be made to mitigate for indirect outcomes that fall outside the goals and objectives set forth. The National Research Council's (NRC) report "Sustainable Water and Environmental Management in the California Bay-Delta" (NRC 2012)[5] gives great guidance on how to view the multiple stressors of this system and should be reviewed by the State Water Board. We recommend that the State Water Board focus attention on the potential interactions of various stressors as they develop objectives in order to more effectively mitigate for indirect outcomes of any

[5] NRC. 2012. Sustainable Water and Environmental Management in the California Bay-Delta. Available at: http://www.nap.edu/catalog.php?record_id=13394#toc

proposed implementation strategies of the Bay-Delta Plan. For example, the implementation of water quality objectives may require modifications to SWP and CVP operations, which could affect biological resources associated with the water bodies south of the Delta that store, convey, and receive SWP and CVP water.

Adaptive Management

We recommend that the State Water Board develop a clear and concise definition of adaptive management that will be used throughout the Implementation and Monitoring and Special Studies Programs. The recent report by the NRC (NRC 2011)[6] on adaptive management and the BDCP has a very pertinent discussion of this issue. Adaptive management involves the development of hypotheses as the conceptual basis and rationale to support implementation of management actions, followed by monitoring and assessment of outcomes to determine whether the project goals and objectives are being achieved. A rigorous assessment of outcomes in an adaptive management process serves as a test of the established hypotheses and informs potential future changes in management actions. The term "adaptive management" has also been used to describe less rigorous processes that allow flexibility in the implementation of management actions (e.g., the releases of instream flows to accomplish real-time oriented objectives). Adaptive management should not suggest that standards are flexible, but should provide a systematic process for determining whether or not defined and measurable biological goals were met by the management actions (see Poff et al. 2003[7] for a good discussion).

Climate Change

As pointed out by the NRC, the changes to baseline climatic conditions will be one of the most challenging issues facing resources managers as we seek to rehabilitate the Delta ecosystem (NRC 2012). These changes will most likely alter the physical and ecological structure of the Delta, while exacerbating the difficulties in dealing with overall water issues in California. As baseline climatic and physical conditions in the Delta change, habitat and ecosystem services are likely to change, affecting the species that rely on them. The State Water Board should undertake as part of this update of the Bay-Delta Plan, and in coordination with the Department and DWR, a review of the current climate change science that relates to the Delta system. In particular, we believe that a high level of uncertainty exists regarding our (State Water Board and the Department's) ability to propose changes in the Bay-Delta Plan objectives that will address both current and future needs without a much better focus on the interactions of ecological systems during changing baseline conditions. To help

[6] NRC. 2011. A Review of the Use of Science and Adaptive Management in California's Draft Bay Delta Conservation Plan. Available at: http://www.nap.edu/catalog.php?record_id=13148

[7] Poff, N.L. et al. 2003. River flows and water wars: emerging science for environmental decision making. Front. Ecol. Environ. 6, 298–306

address this uncertainty, the Bay-Delta Plan should be evaluated regularly for current and future success in meeting species and community needs.

In conclusion, the Department is committed to providing the State Water Board with additional data and information throughout its comprehensive review and update of the 2006 Bay-Delta Plan. We suggest that State Water Board review the most significant on-going efforts underway in the Bay-Delta and develop a strategy to incorporate these recent accomplishments and new understandings of this complex system. Should you have any questions or require clarification regarding our comments, please contact Glenda Marsh, Environmental Program Manager, at (916) 445-1739.

Sincerely,

for

Scott Cantrell
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