UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

December 11, 2012

Thomas Howard
Executive Director
State Water Resources Control Board
P.O. Box 100
Sacramento, California 95812

RE: Comprehensive Review of the Bay-Delta Water Quality Control Plan

Dear Mr. Howard:

Thank you for taking initial steps toward restoring aquatic life protection in the San Francisco Bay/Sacramento- San Joaquin River Delta (Bay Delta Estuary) by completing a series of workshops focused on biological and technical issues relevant to the ongoing comprehensive review of the 2006 Water Quality Control Plan (Bay-Delta WQCP). The U.S. Environmental Protection Agency (EPA) provided written and verbal comments during the State Water Resources Control Board's (State Board's) workshops.[1] The State Board is focusing the comprehensive review of the 2006 Bay-Delta WQCP on evaluating the impact of insufficient freshwater flows as one of the stressors contributing to the long-term decline and recent plummeting fish populations in the estuary.[2] After reviewing the presentations and submissions, we have additional comments to provide and recommendations to reinforce. Please consider this feedback as the State Board moves forward expeditiously with its review.

1. Focus on Flows

Increased freshwater flows, supplemented with physical habitat restoration, are essential for protecting resident and migratory aquatic species, habitats, and ecosystem processes. Both are necessary for improved protection of public trust resources; "one cannot substitute for the other."[3] The State Board[4] and California Department of Fish and Game[5] have already noted that

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[1] *Available at* http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/comp_review.shtml.

[2] "Specifically, the State Water Board seeks input and information to support whether the water quality objectives and associated program of implementation discussed above should be modified or whether they should remain the same. In particular, the State Water Board seeks input and information to support whether Delta outflows, Delta inflows, and water project operational constraints should be increased, decreased, or remain the same." STATE WATER RESOURCES CONTROL BD., 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 (January 24, 2012)(Supplemental NOP) at p. 4.

[3] STATE WATER RES. CONTROL BD., DEVELOPMENT OF FLOW CRITERIA FOR THE SACRAMENTO-SAN JOAQUIN DELTA ECOSYSTEM PREPARED PURSUANT TO THE SACRAMENTO-SAN JOAQUIN DELTA REFORM ACT OF 2009 (August 3, 2010) (2010 Flows Report) at p. 7, available at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/final_rpt080310.pdf.

existing freshwater flows into and through the Delta are inadequate to protect aquatic public trust resources in the Bay Delta Estuary. Assessing flows and making comprehensive decisions for protecting all of the beneficial uses of the Bay Delta Estuary are functions that are – under California's law - uniquely assigned to the State Board.

EPA fully appreciates that adverse impacts to the Bay Delta Estuary's aquatic resources are the result of many stressors.[6] During the development of EPA's Bay Delta Action Plan, EPA examined the scientific status of and regulatory response to the most frequently identified of these multiple stressors (ammonia, mercury, selenium, pesticides, inadequate estuarine habitat and migratory corridors, and contaminants of emerging concern).[7] The Action Plan summarizes the regulatory response from the State and Regional Boards, EPA, and other agencies to these stressors. Although EPA concluded that the Clean Water Act programs, taken as a whole, are not protecting the beneficial uses of the Bay Delta Estuary, we also found that the State and Regional Boards have initiated work on most of the significant stressors. These actions will reduce the impact of pollutants by updating wastewater treatment and storm water permits, adopting and implementing Total Maximum Daily Loads (TMDLs), and monitoring and reducing non-point source contaminants through waste discharge requirements under state water quality law.

Although the response to multiple stressors is necessarily divided by the respective responsibilities of the State and Regional Boards, the Boards have used their Strategic Workplan process to assure that their collective response is comprehensive and coordinated. As a part of this comprehensive response, the State Board chose to focus this current effort on evaluating the flow component of the multiple stressors. Consistent with the findings in our Action Plan, EPA supports this focus for the State Board's current proceedings.

2. Recommendations

In response to the State Board's requests, EPA made recommendations regarding measures to evaluate as modifications to the Bay-Delta WQCP. These recommendations, which are summarized below, are intended to improve the quantity and quality of aquatic habitat in the low salinity zone, provide continuous migration corridors for migratory fishes, and provide a

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[4] "The best available science suggests that current flows are insufficient to protect public trust resources." Page 2 and "The public trust resources that are the subject of this proceeding include those resources affected by flow, namely, native and valued resident and migratory aquatic species, habitats, and ecosystem processes." Page 10 in 2010 Flows Report.

[5] "...current Delta water flows for environmental resources are not adequate to maintain, recover, or restore the functions and processes that support native Delta fish." Executive Summary in CAL. DEPT. OF FISH AND GAME, QUANTIFIABLE BIOLOGICAL OBJECTIVES AND FLOW CRITERIA FOR AQUATIC AND TERRESTRIAL SPECIES OF CONCERN DEPENDENT ON THE DELTA (November 23, 2010), available at http://www.dfg.ca.gov/water/water_rights_docs.html.

[6] "Current research findings do not support the idea that a "single stressor" is responsible for the ecological changes in the Bay Delta Estuary. Most research supports the idea of multiple stressors, interacting in concert, as the cause of the Bay Delta Estuary ecosystem decline." U.S. ENVTL. PROT.AGENCY, WATER QUALITY CHALLENGES IN THE SAN FRANCISCO BAY/SACRAMENTO –SAN JOAQUIN DELTA ESTUARY, 76 Fed. Reg. 9709 (Feb. 22, 2011) (ANPR), at p. 10 (cites omitted). The unabridged version of this notice is available at http://www.epa.gov/sfbay-delta/pdfs/BayDeltaANPR-fr_unabridged.pdf.

[7] U.S. ENVTL. PROT .AGENCY, WATER QUALITY CHALLENGES IN THE SAN FRANCISCO BAY/SACRAMENTO-SAN JOAQUIN DELTA ESTUARY: EPA'S ACTION PLAN (August 2012)(Action Plan), available at http://www.epa.gov/sfbay-delta/pdfs/EPA-bayareaactionplan.pdf.

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salinity gradient from the Delta through the Bay to the Pacific Ocean that supports the habitat requirements for diverse estuarine species. These recommendations also support the State Board in their effort to evaluate a range of freshwater flows that mimic the natural hydrograph, protect aquatic species with life histories adapted to this freshwater flow pattern, and balance water needs for municipal, agricultural, commercial, recreation, and other beneficial uses.

- The spring Delta outflow objectives should be "triggered" at the time of the first flood. The recommendation to move the operative start date from February 1 to January 1 is one approach for matching the objectives with the likely natural hydrology. An alternative approach would be to initiate the objective based on a real time measure of first flood conditions after December 15th.
- Modify the existing Delta springtime outflow objective by maintaining the Roe Island flow objective but eliminating the Roe Island trigger. This modification would adjust freshwater flows so that they more closely mimic the pattern of the natural hydrograph, thereby protecting the benefits of high flow conditions needed to increase fish populations and improve ecosystem function, estuarine habitat protection, fish spawning and growth, and larval fish transport by linking several ecological functions of the natural hydrograph to the functions of the low-salinity zone.
- Establish September and October Delta outflow objectives for wetter years. Fall freshwater flows should be identified using a reference period (times of increasing and considerably higher fish populations). The trigger should be an indicator of basin natural hydrology, such as spring reservoir storage, rather than water year type. This objective should protect fall estuarine habitat and salmon spawning by protecting the quantity and quality of the low salinity zone and the cold water pool.
- Require fall freshwater pulse flows from the San Joaquin and Mokelumne Rivers to reach the Bay for a minimum of 2 weeks, longer following wetter springs in the San Joaquin watershed. This objective is intended to improve adult salmon out-migration and successful spawning by providing a continuous corridor of natural chemical cues to natal streams.

EPA is working closely with state and federal fish and wildlife agencies to assure that our recommendations are consistent with proposals by those individual agencies. We are enclosing the summary recommendations from each of these agencies provided to the State Board at the second workshop.

3. "Protective Experiments" as Criteria

During the recent workshops, the State Board sought input on incorporating adaptive management into the Bay-Delta Plan so that future regulatory provisions could take advantage of new information. The federal Clean Water Act and state Porter-Cologne Act include a built-in mechanism, the triennial or periodic review, for revising water quality regulatory provisions to respond to new scientific information. Although these provisions enable "adaptive management" generally, EPA also supports the idea of the State Board's adoption of more explicit scientific experiments in the regulatory process. These experiments would need to be scientifically constructed and not likely to adversely affect the aquatic resources being targeted for protection. An example of this approach was the Vernalis Adaptive Management Plan (VAMP), adopted

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during the mid-1990s with the State Board's active participation. The VAMP program had mixed success, primarily because it did not ultimately collect data from all the water year types called for in the experimental design. A more recent example is the initial Fall Low Salinity Habitat studies (FLaSH) performed by IEP in 2011. This effort used a process of conceptual models, hypothesis testing and intensive multi-disciplinary field studies by diverse academic and agency scientists to produce substantial information in a short time. Both VAMP and FLaSH were very intensive efforts requiring substantial financial and human resources, so the topics to be addressed through such work should be few and well-defined. Nevertheless, VAMP and FLaSH confirm that a carefully constructed real-time, large-scale scientific experiment can be developed and implemented under the present regulatory framework. Ensuring the appropriate funding and water availability are essential for avoiding adverse impacts to aquatic resources during experimental freshwater flows.

4. Moving Away from "Advocacy" Science

We, as well as the invited science panel, observed a trend towards "advocacy" science in the stakeholder workshop presentations. This is unfortunate but not surprising given the history of water management in California, the resources at issue and the external litigation environment. Nevertheless, it complicates the State Board's task of developing a solid scientific and technical basis for its decisions.

We have two suggestions. First, the State Board has received valuable input from the independent science panels. Focused reviews by these independent panels can help the State Board sort through the complex scientific issues. EPA recognizes the expense and time associated with these panels, but we think the value added is immense. On the other hand, we discourage inviting further delay with additional preliminary informational workshops.

Second, during the agency and stakeholder discussions on managing the CVPIA "b2" water and the Environmental Water Account (EWA) in the 1990's, interested parties participated in several "gaming" exercises. In this gaming, modelers, biologists, and stakeholders worked through multiple year operational scenarios in an interactive simulation. We believe that these gaming exercises allowed all participants to identify real problems and opportunities in managing the system for the protection of multiple beneficial uses. A similar set of gaming exercises might be useful in evaluating the State Board's alternatives for freshwater flow objectives, especially in light of significant improvements in modeling tools.

5. The Need to Act

We cannot stress enough that the State Board needs to move expeditiously to adopt and implement a revised Bay-Delta Plan that provides freshwater flow improvements to protect beneficial uses. It is essential to move forward now with the technical information available. Regulatory agencies are frequently required to make decisions in the absence of stakeholder unanimity or complete scientific information. The Bay Delta Estuary is a "well studied estuary"[8] with an enviable decades-long monitoring program. We agree with the Independent Science

[8] Cloern, J.E., and A.D. Jassby. 2002. Drivers of Change in Estuarine-Coastal Ecosystems: Discoveries from Four Decades of Study in San Francisco Bay. *Reviews of Geophysics,* Vol. 50, RG4001 (October 24, 2012), at p. 2. *Available at* http://www.agu.org/pubs/crossref/2012/2012RG000397.shtml.

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Panel that there is no reason to expect that further delay will enable new scientific breakthroughs.[9] Given the significant time and uncertainty associated with making the physical changes to habitat and conveyance envisioned in the Bay Delta Conservation Plan, this State Board action is critical for near and long-term progress in protecting the most sensitive beneficial uses and the State's coequal goals of ecosystem restoration and water supply reliability.[10]

EPA looks forward to working with the State Board as it completes its review and revises and implements the Bay-Delta Water Quality Control Plan.

Sincerely,

Karen Schwinn
Associate Director
Water Division

Enclosure: Summary of Agency Recommendations from Workshop 2

Cc: Jeanine Townsend, Clerk of the Board

[9] "Rather than waiting for the promise of the next version of analyses or the next generation of models (in the hope that the next analysis or model will be a "break-through"), we urge the Board to proceed with revising water quality objectives based on tools that are available now or truly imminent. Specifically, it is not clear how much improvement in accuracy and precision will be provided by new 2-dimensional and 3-dimensional hydrodynamic models." STATE WATER RESOURCES CONTROL BOARD, BAY-DELTA INDEPENDENT SCIENCE PANEL #2: FISHERY RESOURCES (09/17/12) at page 3.

[10] The Delta Stewardship Council's recent Final Draft Delta Plan includes as one of its policies a request to the State Board for quick action on flow criteria: "Development, implementation, and enforcement of new and updated flow objectives for the Delta and high priority tributaries are key to the achievement of the coequal goals. The State Water Resources Control Board should update the Bay-Delta Water Quality Control Plan objectives as follows: a) By June 2, 2014, adopt and implement updated flow objectives for the Delta that are necessary to achieve the coequal goals. b) By June 2, 2018, adopt, and as soon as reasonably possible, implement flow objectives for high-priority tributaries in the Delta watershed that are necessary to achieve the coequal goals." DELTA STEWARDSHIP COUNCIL, FINAL DRAFT OF THE DELTA PLAN (November 2012), *available at* http://deltacouncil.ca.gov/delta-plan/current-draft-of-delta-plan, at page 155-56 (last visited 12/07/12).

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WORKSHOP 2 - FISHERY AND REGULATORY AGENCY PANEL PRESENTATION (slide 74)
October 1, 2012

Objective	Recommendations
Springtime Delta outflow	• Begin in January or activate based on first storm • Remove Roe Island trigger but require Roe Island standard • Operate reservoirs to maintain coldwater pool for salmonids • Specific X2 recommendations from CDFG in 2010 Flow Criteria Report
Fall Delta Outflow	• Activate and quantify objective based better estimate of real hydrologic conditions such as 8-river index or end of June reservoir storage • Identify a range of X2 values with 2010 flow criteria and reference conditions • Specific X2 objectives recommended by CDFG in 2010 Flow Criteria Report • OCAP Biological Opinion RPAs designed to avoid jeopardizing endangered species from operating CVP & SWP are not necessarily sufficient to support beneficial uses (NMFS and FWS phase II scoping comments).
San Joaquin Migratory Corridor	• Provide a spring and fall downstream flow connection between Vernalis and the Bay
Delta Cross Channel	• Specific gate operation recommendations in Attachment 1 of CDFG workshop comments, Table 1 page 16
Sacramento Inflows	• CDFG 2010 Flow Criteria recommendations at Wilkins Slough, Freeport, and Rio Vista
San Joaquin Inflows	• CDFG 2010 Flow Criteria recommendations
Old and Middle River Flows	• CDFG 2010 Flow Criteria recommendations • OCAP Biological Opinion RPAs designed to avoid jeopardizing endangered species from operating CVP & SWP are not necessarily sufficient to support beneficial uses (NMFS and FWS phase II scoping comments).
Floodplain flows	• CDFG 2010 Flow Criteria recommendations

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