

Interior Delta Flows and Related Stressors Workshop Charge

March 18, 2014

Workshop Purpose

The purpose of this workshop is to identify the best available science to inform the State Water Resources Control Board's (State Water Board) decisions regarding interior Delta flow requirements included in the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan). Interior Delta flow requirements include both flow objectives and measures that should be included in the program of implementation. The purpose of this workshop is not to discuss environmental impacts, economic effects or balancing issues which will be part of Substitute Environmental Document (SED) and related water quality control planning process supporting the update of the Bay-Delta Plan. An independent panel of science experts (panel) will be provided key scientific papers, reports, and presentations to respond to the included charge questions developed to guide the panel's work.

The panel will summarize their findings on the charge questions in a written report to the Delta Stewardship Council/Delta Science Program (DSP) and State Water Board. The report will then be one piece of information that informs the State Water Board's update to the Bay-Delta Plan along with other scientific information concerning needed measures to protect beneficial uses in the Bay-Delta and information concerning the environmental, water supply, agricultural, hydropower, and economic effects of alternative Bay-Delta Plan requirements. The scientific basis and above effects analyses will all be included in the draft SED that supports the State Water Board's review of the Bay-Delta Plan. There will be opportunities for the public to review and comment on the draft SED and associated analyses prior to finalization and action by the State Water Board on any changes to the Bay-Delta Plan related to Delta outflows. As a result, there will be other forums and ample opportunity for the public to participate in the development of other information not addressed in this workshop.

Background

The State Water Board is currently undertaking a phased process to develop and implement updates to the Bay-Delta Plan and flow objectives for priority tributaries to the Delta to protect beneficial uses in the Bay-Delta watershed. The Bay-Delta Plan identifies beneficial uses of water in the Bay-Delta, water quality objectives for the reasonable protection of those beneficial uses, a program of implementation for achieving the water quality objectives and an associated surveillance and monitoring program. Phase 1 of the review of the Bay-Delta Plan is focused on southern Delta water quality and San Joaquin River flows. Phase 2 (Comprehensive Review) is focused on other changes that may be needed to the remainder of the Bay-Delta Plan to protect fish and wildlife beneficial uses, including: (1) Delta outflows, (2) export constraints, (3) Delta Cross Channel Gate closure requirements, (4) Suisun Marsh requirements ; (5) Old and Middle River reverse flows; (6) floodplain habitat flows; (7) changes to the monitoring and special studies program, and (8) other potential changes to the program of implementation. Phase 3 involves changes to water rights and other measures to implement changes to the Bay-Delta Plan from Phases 1 and 2. Phase 4 involves developing and implementing flow objectives for priority Delta tributaries outside of the Bay-Delta Plan updates.

To inform the scientific and technical basis for considering potential changes to the Bay-Delta Plan as part of Phase 2, the State Water Board held the following technical workshops:

Date	State Water Board Workshop
September 5 and 6, 2012	Ecosystem Changes and the Low Salinity Zone
October 1 and 2, 2012	Bay-Delta Fishery Resources
November 13 and 14, 2012	Analytical Tools for Evaluating the Water Supply, Hydrodynamics, and Hydropower Effects of the Bay-Delta Plan

The workshops were facilitated by the State Water Board’s consultant Dr. Brock Bernstein. During the workshops, an independent expert panel organized by Dr. Peter Goodwin, Lead Scientist for the DSP, agencies and stakeholder groups presented information related to the topics listed above. The information presented identified several areas of scientific disagreement and uncertainty, as well as some areas of agreement. In January 2013, Dr. Bernstein, in cooperation with ICF International, released a draft report summarizing the workshops’ key points, including the areas of agreement and disagreement, sources of disagreement and degree of certainty. In July 2013, Dr. Bernstein released the final report, which is comprised of the draft report and comments submitted on the draft report.¹

At its April 9, 2013 meeting, the State Water Board held an informational item on next steps related to the draft summary report. The purpose of the informational item was to receive input on the next steps for Phase 2. More specifically, the State Water Board sought input on what areas of disagreement or uncertainty identified in the summary report should be resolved during the comprehensive review of the Bay-Delta Plan, and what process should be used to resolve those issues. At the informational item, Dr. Goodwin recommended that the DSP hold a series of technical workshops to provide input on the best available scientific information to inform the State Water Board’s Phase 2 process. Specifically, the DSP proposed the following workshops to focus on critical questions arising from the State Water Board’s fall 2012 workshops:

1. Fish Predation on Central Valley Salmonids in the Bay-Delta Watershed²
2. Delta Outflows and Related Stressors³
3. Interior Delta Flows and Related Stressors
4. Effects of Nutrient Enrichment in the Bay-Delta Ecosystem

To plan and develop the workshop materials for the workshop on Interior Delta Flows and Related Stressors, a planning group was convened with a representative group of stakeholder interests. That stakeholder group provided input on the development of this workshop with final approval of all substantive materials made by the Lead Scientist.

¹ The draft Workshop Summary Report and other information concerning the workshops and the State Water Board’s review of the Bay-Delta Plan can be found at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/comp_review.shtml.

² A workshop on Fish Predation on Central Valley Salmonids in the Bay-Delta Watershed was held July 22-23, 2013. The workshop summary report is available at http://deltacouncil.ca.gov/sites/default/files/documents/files/Fish_Predation_Final_Report_9_30_13.pdf.

³ A workshop on Delta Outflows and Related Stressors was held February 10-11, 2014. The workshop summary report is in development, and will be available at <http://deltacouncil.ca.gov/science-program/workshop-delta-outflows-and-related-stressors>.

Regulatory Context

The State Water Resources Control Board and the nine Regional Water Quality Control Boards (Water Boards) have broad responsibilities to protect surface and ground water quality and balance competing demands on California water resources through programs that allocate water rights, adjudicate water right disputes, develop statewide and regional water quality control plans and implement and enforce those plans. The State Water Board allocates water rights through an administrative system that is intended to maximize the beneficial uses of water while protecting the public trust, serving the public interest, and preventing the waste and unreasonable use or method of diversion of water. The State Water Board protects water quality by establishing water quality control plans, implementing those plans and enforcing that implementation. Water Quality Control Plans identify existing and potential beneficial uses of waters of the state and establish water quality objectives and implementation measures to reasonably protect the identified beneficial uses along with surveillance and monitoring requirements. While most water quality control planning is done by the Regional Water Quality Control Boards, the State Water Board has authority to adopt statewide Water Quality Control Plans and adopts the Bay-Delta Plan because of the overlapping water quality and water rights issues of statewide significance in the Bay-Delta.

The Bay-Delta Plan includes beneficial uses that fall into three broad categories including: fish and wildlife, agricultural, and municipal and industrial uses. The current Bay-Delta Plan includes water quality objectives to protect the three categories of beneficial uses including: inflows from the Sacramento and San Joaquin Rivers; Delta outflows; water project operations; dissolved oxygen; narrative salmon protection; and various salinity objectives for the protection of fish and wildlife, agriculture, and municipal and industrial uses. The program of implementation identifies actions needed to protect beneficial uses and implement the water quality objectives, including actions the State Water Board will take, actions that the State Water Board will take with other entities, and actions that other entities should take, including non-flow and water quality actions.

The Bay-Delta Plan like other Water Quality Control Plans is not self-implementing and requires additional actions to be implemented. The primary mechanism for implementing the Bay-Delta Plan in the past has been through the State Water Board's water rights authorities. The water quality control planning process and water rights implementation processes are separate processes governed by separate statutory and regulatory requirements. The water quality control planning process is a quasi-legislative planning process, whereas the water rights process is a more formal evidentiary quasi-judicial process.

Pursuant to state and federal law, the State Water Board is required to regularly review the Bay-Delta Plan to determine what, if any, changes should be made to the Bay-Delta Plan to protect beneficial uses. The State Water Board conducted a review of the current 2006 Bay-Delta Plan in 2009. As a result of several species declines in the Bay-Delta that may be associated with Bay-Delta Plan requirements the State Water Board determined that Delta outflows and other requirements for the protection of fish and wildlife beneficial uses should be considered for potential amendment to ensure the protection of fish and wildlife beneficial uses. The State Water Board started the process of updating the Bay-Delta Plan with Phase 1 in 2009 and Phase 2 in 2012. The update process is being conducted in compliance with applicable statutory and regulatory requirements, including the California Environmental Quality Act (CEQA). The Water Quality Control Planning process is a Certified Regulatory Process pursuant to CEQA. Accordingly, the State Water Board is exempt from preparing an Environmental Impact Report (EIR) for its review. Instead, the State Water Board is preparing a

SED that is functionally equivalent to a programmatic EIR. In addition to the evaluation of environmental impacts, the SED will also evaluate economic effects and other public interest considerations at a programmatic level. All of this information will be used along with public comments from the public to inform the State Water Board's decisions regarding changes to the Bay-Delta Plan. Prior to implementation through water rights and other measures, additional project specific environmental documentation will be prepared as necessary and other statutory and regulatory requirements will be met.

Charge to the Panel

The Panel is charged with reviewing and assessing the provided written materials and oral presentations in order to identify the best available science to inform the State Water Board's decisions on Bay-Delta Plan requirements related to interior Delta flows and related factors. Specifically, this workshop is focused on the scientific basis for changes to requirements concerning export constraints including export-inflow (E-I) ratio, Delta Cross Channel Gate closures, Old and Middle River reverse flows, the monitoring and special studies program, and other potential changes to the Bay-Delta Plan program of implementation.

The Panel will evaluate and synthesize the best available scientific information and prepare a report that addresses the following questions:

- 1) What are the key studies and synthesis reports that the State Water Board should rely on in making their decisions on interior Delta flow requirements? Please comment on the strength, relevance and level of certainty of the science presented and reviewed.
- 2) Interior Delta flows have been altered in many ways, including timing, magnitude, variability, and in some cases, net direction. What are the relationships between these altered interior Delta flows and native fish survival, abundance, spatial distribution, migration, and life history diversity?
 - a) What important environmental cues for native fish are affected by altered flows? Please comment on the timing and time scales of these effects, and the species and life stages affected.
 - b) What are the effects of altered interior Delta flows on other parts of the ecosystem such as phytoplankton, zooplankton, and benthos? Please comment on the timing and time scales of these effects and the functional groups affected.
- 3) How do non-flow stressors such as predation, physical habitat, fisheries management, and water quality interact with interior Delta flows to affect the issues discussed in Question 2? How have the landscape and ecosystem scale changes of the last 100+ years altered these interactions and the functions provided by flows?
- 4) What metrics of interior Delta flows (such as OMR and QWEST flows, and export-inflow ratios) are most useful to assess, predict and manage impacts to fish and the ecosystem?
 - a) Do these remain important metrics, or are there better metrics that could be used?
 - b) For each metric, explain if the metric is useful to improve survival, abundance, spatial distribution and/or life history diversity.
- 5) What changes to interior Delta flows or other stressors would be most effective for improving survival, abundance, spatial distribution, and/or life history diversity of native fish and the ecosystem?

- a) Do the existing studies and analyses support threshold levels of specific interior Delta flows for protection of native fish species or other elements of the ecosystem?
- b) How could an adaptive management program be structured to improve understanding and management of the effects of interior Delta flows on native fish and the ecosystem? What are the key scientific uncertainties amenable to improved understanding through adaptive management experiments?

Materials

General Background

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