

**Delta Independent Science Board Water Quality Review**  
**Final Prospectus**  
August 5, 2016

**Goal:**

The mandate of the Delta Independent Science Board (Delta ISB) includes reviews of science activities in support of adaptive management in the Sacramento-San Joaquin Delta. This review will focus on evaluating the scientific basis for assessing water quality in the Sacramento-San Joaquin Delta (Delta, hereafter) and how this information is being used in making management decisions in the Delta, especially in support of adaptive management. The review will focus on:

- Water quality data and information needs by the entities responsible for the management of Delta water quality.
- Assessing the water quality parameters that are currently being monitored, and what additional parameters may be necessary.
- Assessing the temporal and spatial resolution of water quality data collection needed to understand timing, magnitude, and trends of changes in water quality.
- Evaluating the current state and utility of process-based water quality monitoring.
- Reviewing connections between habitat quality and water quality for species of interest.
- Examining how water quality data are being used in management decisions, including the technical basis of the data being generated, the utility of the different types of data, and whether the data are sufficient to support management decisions and policies.
- Comparing Delta water quality monitoring with similar programs elsewhere.

Concurrent with this water quality review, the Delta ISB is initiating a review of ongoing monitoring efforts in the Delta. The prospectus for that review is being developed, and may also include some review of water quality monitoring.

**Motivation:**

Good water quality will support a healthy Delta ecosystem. There is a continuing perception that water quality is substantially impaired in the Delta and is not being considered adequately in management decisions, especially for ecosystem health. Proposed changes in water conveyance and changes in hydrology related to climate change are likely to affect water quality, providing further impetus for a review on this topic.

Water quality is a complex subject, and is closely linked to the coequal goals of providing a more reliable water supply for California and protecting and restoring the Delta ecosystem. Many agencies and groups monitor water quality, water flows, and ecological conditions in the Bay-Delta. However, even though science is increasingly telling us that ‘sublethal’ exposures to contaminants can profoundly affect fitness, and consequently survival and reproduction of many species, there is no comprehensive contaminants monitoring and assessment program.

**Scope:**

The Delta Independent Science Board proposes to focus this review on three priority areas: chemical contaminants (including mercury, methylmercury, selenium, and pesticides, as well as other chemical contaminants such as pharmaceuticals, personal care products, and contaminants of emerging concern), nutrients, and drinking water constituents of concern. Concurrent with our review, the Delta Science Program is convening an expert panel to specifically review the Delta Regional Monitoring Program's proposed monitoring design. We will track that process as part of our broader review.

Water quality is also defined in a variety of ways depending on different stakeholder groups (e.g., for drinking water, agricultural use, and ecosystem health), and while our review will focus on ecosystem health, it will incorporate human health and well-being by also considering drinking water.

We recognize that to understand water quality and ecological processes it is important to look at many constituents concurrently, including: disinfection by-products, dissolved organic carbon (DOC), pH, total suspended sediment/turbidity, light penetration, and also biological components such as chlorophyll, blue-green algae and cyanotoxins, and phytoplankton taxonomy and size. We will evaluate how this information is integrated into existing monitoring programs. Finally, our review will include sediment quality as appropriate, for those parameters that have substantial interactions with sediment.

This review will not focus on salinity, temperature, or dissolved oxygen. Although the importance of these attributes as a component of overall water quality is clear, several other recent reviews have addressed salinity issues, and the science basis for both dissolved oxygen and temperature is strong already, while other aspects of water quality have not received adequate attention.

**Review Process:**

The review will include several mechanisms to collect information from the entities engaged in collecting and/or utilizing water quality information. The review will include panel presentations to the Delta ISB, a questionnaire followed by individual interviews with relevant monitoring and resource protection entities, and a review of relevant documents, assessments and data management approaches. Because a large number of federal, state, local, and NGOs collect and rely on water quality information, all responses will be carefully considered, however, the Water Boards and US EPA, as the lead agencies responsible for water quality regulations and protection, will be queried and reviewed in greater detail.

A draft summary document will be circulated to the public following Delta ISB review. After the document is completed, an outreach strategy will be implemented to maximize the utility of the review.

**Intended audiences include Delta entities that collect and/or need water quality data and information, and from whom we may request information:**

- Water Boards (e.g., State Water Resources Control Board, Central Valley Regional Water Quality Control Board and San Francisco Bay Regional Water Quality Control Board)
- US Environmental Protection Agency
- Delta Regional Monitoring Program
- Delta Stewardship Council
- CA Dept of Pesticide Regulation
- CA Dept of Toxic Substances Control
- CA Division of Boating and Waterways
- Sacramento-San Joaquin Delta Conservancy
- Delta communities and residents
- Water management agencies (CA Dept of Water Resources; US Bureau of Reclamation, Public Water Agencies)
- Resource agencies (CA Dept Fish & Wildlife, NOAA Fisheries, US Fish & Wildlife Service)
- Sacramento Regional County Sanitation District
- State and Federal Contractors Water Agency
- Surface Water Ambient Monitoring Program
- Interagency Ecological Program
- US Geological Survey, including the National Water Quality Assessment Program, the CA Water Science Center, and the National Research Program in Menlo Park.

**Expected outcomes:**

This review is expected to have the following outcomes:

- An evaluation of whether appropriate water quality parameters are being measured.
- An assessment of how water quality information is being used to inform management programs in the Delta.
- Recommendations regarding resource allocations to different aspects of Delta water quality, including monitoring, methods development, data synthesis, and original studies aimed at understanding how water quality affects organisms/ecosystem.

**These outcomes will be used to:**

- Identify and prioritize gaps in information.
- Identify unnecessary or less useful information being provided through current water quality monitoring programs.
- Anticipate and articulate future needs.

**Projected Timeline:**

Individual Board Comments on Prospectus: July 2015

Draft Prospectus for Public Comment: August 2015

Revised Prospectus: August 2016

Information Gathering: August 2016 – December 2016

Report Outline: January 2017

Draft for Individual Board Comments: March 2017

Draft for Public Comments: May 2017

Final Report: Summer 2017

Outreach and Communication of Findings: Summer and Fall 2017

**Other recent relevant reviews and synthesis to be considered:**

- 2016 *The State of Bay Delta Science* chapter on contaminants
- Delta Science Program-sponsored review of the Delta RMP Monitoring Design (Summer and Fall 2016)
- Previous Delta Science Program-sponsored reviews on flows and other stressors
- Previous Delta ISB reviews on stressors, restoration, adaptive management, and flows and fishes