Interagency Ecological Program Water Quality and Phytoplankton Project Work Team CHABs Sub-Team Charter

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The Interagency Ecological Program

IEP is a consortium of nine state and federal agencies that conducts research and monitoring in the San Francisco estuary. For the past 40 years, IEP scientists and partners (e.g., universities, NGOs) have worked to: 1) describe the status and trends of aquatic ecological factors of interest in the estuary; 2) develop an understanding of environmental factors that influence the resources of the estuary; and 3) provide information to support natural resource planning, management, and regulatory activities in the estuary. One of the most effective tools for IEP activities has been the formation of Project Work Teams (PWTs) that focus on specific research and monitoring topics of interest. Examples of some of the current PWTs are available at IEP's website. These teams are formed to organize new studies, to review study plans and proposals, to write scientific papers and reports, and to promote collaboration among different groups working on the topic of interest.

Background

Cyanobacterial Harmful Algal Blooms in the Delta

Like many freshwater systems worldwide, the Sacramento-San Joaquin Delta (Delta) has been experiencing severe cyanobacterial harmful algal blooms (CHABs) (Lehman et al. 2017). Delta CHAB events are typically dominated by the potentially toxin-producing genus *Microcystis*, which was first observed in colonial form in the Delta in 1999 (Lehman et al. 2005). Since 1999, *Microcystis* blooms have been occurring during summer months in the Delta (Lehman et al. 2017, Lehman et al. 13 2022). Other common cyanobacteria which have also been observed in some regions of the Delta include genera such as *Aphanizomenon*, *Planktothrix*, *Dolichospermum*, *Pseudanabaena* and *Planktolyngbia* (Lehman et al. 2008, Spier et al. 2013, Lehman et al. 2017, Lehman et al. 2022, Perry et al. 2023).

Several regulatory and natural resources agencies are responsible for protecting the Delta's waters, and there are monitoring programs already in place that collect water quality data throughout the Delta. However, sampling methods and data generated from these programs may not be perfectly suited for CHAB monitoring. For example, methods employed for water column sampling may not specifically target CHAB species, or sampling locations may be outside of the areas where CHABs are most severe. Nevertheless, these data are freely available to the larger research community, and as a result, much of the published literature on CHABs are from special studies that have leveraged data collected as part of these established water quality programs. Although many special studies have been conducted to understand impacts of HABs to the ecosystem and public health, no formal monitoring program specifically for HABs exists in

the Delta.

Delta CHAB Monitoring Strategy

In winter 2021, the Central Valley Regional Water Quality Control Board (CVRWQB) and California Department of Fish and Wildlife (CDFW) approached the Delta Science Program (DSP) to discuss the development of a strategy to address HABs in the Delta. The DSP hosted a public workshop on HABs in November 2022 that brought together interested parties from federal, state, and local governments, tribal governments, community-based organizations, academia, nonprofits, nongovernmental organizations, and general members of the public. This workshop was developed to facilitate discussions for developing a HAB monitoring strategy to fit the needs of the many varied interests on HABs in the Delta.

After the workshop, the DSP coordinated the development of a strategy document that would address the expressed needs of workshop attendees to establish a pathway for developing a monitoring program to address HABs in the Delta. This included refining the scope of such a program to focus on cyanobacterial HABs (CHABs). Throughout the development of this strategy document the authors worked with various technical experts, tribes, environmental justice experts, and policymakers to establish a strategy document. The Delta CHAB Monitoring Strategy (Strategy) [1] document was published in 2024 and outlines goals and objectives and management questions to facilitate the coordination and development of a collaborative, Delta-wide CHAB monitoring program. The Strategy recognizes that there is no dedicated funding to specifically monitor for CHABs in the Delta, however there are many established monitoring programs that collect water quality data that might support data collection for CHABs. This provides monitoring practitioners and policymakers with an opportunity to capitalize on this nexus to collect data, work on collaborative approaches to sharing data, and to mitigate CHABs in the Delta.

To help ensure the Strategy's goals and objectives are implemented, the Strategy document calls for the establishment of an advisory team led by co-chairs representing different agencies in the Delta. The advisory team is also intended to include representatives from other interested parties in the Delta, such as tribal nations and disadvantaged communities, to facilitate collaboration on CHABs. The CHABs Sub-Team of the IEP Water Quality and Phytoplankton Project Work Team is being formed to provide a forum for convening the advisory team, named the Delta CHAB Monitoring Strategy implementation team (Delta CHABS-IT).

CHABs Sub-Team Charge

The CHABs Sub-Team of the IEP Water Quality and Phytoplankton Project Work Team will provide a venue for scientists and managers from diverse agencies, representatives from CA Native American Tribes and environmental justice organizations, and leaders from other groups within the Delta to coordinate on the implementation of the Strategy. Specific objectives of the group include:

- Finalize Strategy goals and management questions;

[1] Preece, E., Berg, G. M., Lee, T., and Odkins, K. (2024). Cyanobacteria Harmful Algal Bloom Monitoring Strategy for the Sacramento-San Joaquin Delta. Available at: https://deltacouncil.ca.gov/pdf/science-program/2024-10-21-final-delta-chabs-monitoring-strategy.pdf

- Develop a process to address the recommendations within the Strategy document and implement components of the Strategy, including a coordinated Delta-wide CHAB monitoring program and special studies;
- Identify existing barriers to collaboration/cooperation on CHABs in the Delta and identify methods to overcome them;
- Strengthen and expand partner relationships;
- Plan and implement an annual meeting focused on developing partnerships and monitoring specific to CHABs in the Delta; and
- Identify funding and other resources to support implementation of the Strategy.

The CHABs Sub-Team will not duplicate efforts of existing groups such as the NOAA MERHAB Management Transition Advisory Group (MaTAG), the California Cyanobacteria and Harmful Algal Bloom Network (CCHAB), and others. Formal linkages between the Sub-Team and these groups will be maintained by having representative members from each of these groups on the Sub-Team. Additionally, the CHABs Sub-Team will coordinate with other IEP PWTs and with the Delta Regional Monitoring Program.

Table 1: Proposed membership and respective linkages

Perspectives	Agencies, Entities
Water Management	DWR, BOR, SWC, DRMP
Water Quality	SWB, CVRB, Delta RMP, USGS, Sacramento Area Sewer District
Drinking Water	MWQI, CCWD, State Water Contractors
Public Health	Community Orgs, SWB FHAB Program, Tribes
Fish and Wildlife	CDFW, USFW, NOAA

Duration and Meeting Frequency

The CHABs Sub-Team plans to meet quarterly. Specialized subcommittees may be formed to work on specific implementation projects of the Strategy and to plan the annual Delta CHABs meeting. Subcommittees will meet as necessary to achieve desired goals. After two years, members of the CHABs Sub-Team will re-evaluate the membership and progress of the Delta CHABs-IT toward implementing the Strategy.

PWT Sub-Team Outcomes and Activities

Over the duration of this Sub-Team the following outcomes, associated with those objectives identified above, shall be prioritized. Additional activities may be identified and added to this list, at the discretion of the Sub-Team co-chairs. These topics may be addressed by subcommittees that meet more frequently outside of the quarterly PWT Sub-Team meetings. Proposed topics may include the following.

I. Finalization of Priority Management Questions:
   a. Finalize Priority Management Questions identified in the Delta CHAB Monitoring Strategy;
   b. Develop a public report listing the final management questions and describing the process for developing them;
   c. Review the management questions every two years and revise them as needed to reflect shifting priorities of the CHABs-IT;

II. Develop a process document describing how the CHABs-IT will approach adaptive implementation of the Strategy. The process document will include, at minimum, the following elements and may include other elements at the discretion of the CHABS-IT:

a. A description of the organizational structure of the CHABS-IT;

b. A process for periodically reviewing the management questions and revising them as needed to reflect priorities of the CHABs-IT;

c. A timeline for completing different components of Strategy implementation; and

d. A description of metrics and an assessment process for evaluating progress toward achieving Strategy goals and objectives.

III. Organize an annual workshop focused on Delta CHABs:

a. Hold an annual workshop to implement "*Recommendation 1.5 Hold an annual meeting focused specifically on Delta CHABs: As recommendations are implemented and lessons are learned, consistent meetings with people engaged in Delta CHAB monitoring are necessary. This allows a cohesive approach to CHAB monitoring and community-based course correction to support adaptive management. An annual meeting is an important event that can be used to inform the community about ongoing efforts related to CHABs."*

b. This also addresses Goal 1 of the Strategy: "Enhance Delta CHAB Collaboration" and the following two Objectives of the Strategy:

- Objective 1-1 Organize collaborative approach to implement Delta CHAB Strategy;
- Objective 1-2 Promote coordination, collaboration, and communication among agency and community partners;

IV. Identify additional opportunities to enhance coordination, collaboration, and communication around Delta CHABs monitoring and other activities;

V. Support the development or utilization of a collaborative platform for sharing Delta CHABs monitoring data;

VI. Identify additional resources (funding, staff time, etc.) to implement components of the Strategy, including implementing a coordinated, Delta-wide CHAB monitoring program and special studies.

PWT Sub-Team Decision-Making

As a voluntary partnership of diverse organizations, this PWT Sub-Team is not "consensus-based". The represented organizations do not necessarily have the authority to implement binding decisions. Therefore, the PWT Sub-Team is "consensus-seeking" wherein all participants take reasonable and appropriate steps to reach consensus and convey recommendations. While consensus should be sought, this PWT Sub-Team and its component subcommittees may provide a range of recommendations to the IEP Science Management Team, agencies, or other institutes for final decision-making.