

Strategy for Monitoring Water Temperature, Salinity, and Acidification due to Climate Change in San Francisco Bay

Estimated Cost: \$30,000

Oversight Group: Exposure & Effects Workgroup

Proposed by: Phil Trowbridge

Background

Due to climate change, the temperature, salinity, and acidity in San Francisco Bay is changing. Furthermore, changes in water recycling practices have the potential for local effects on salinity and fresh water inflows in specific areas. These changes are largely out of the control of local managers. However, the changes will affect habitat which could either hurt or help local management policies to achieve aquatic life beneficial uses, for example:

- Effects of temperature, salinity and acidity changes on algae and HAB formation in the Bay
- Effects of increased recycled water in Lower South Bay on salinity and species-specific habitat
- Effects of sea level rise on water quality as formerly developed lands are inundated
- Effects of reduced Delta outflow and increased North Bay salinity on selenium uptake and food web transfer
- Effects of increased acidity in Bay waters on metals availability and toxicity to benthos and fish

Therefore, it is important to anticipate the changes, have a program to document the changes that actually happen, and to understand the effect the changes could have on habitat quantity (i.e., range and volume) and quality for species of management interest.

The Exposure and Effects Workgroup recommended that the RMP develop a strategy for monitoring and assessment of climate change stressors in the Bay. Climate change is huge topic with many facets. The RMP's niche in this large topic could be regional monitoring for a limited number of physical and chemical parameters.

In the future, a phase II activity could be to identify species of interest for aquatic life beneficial uses that would be vulnerable to climate change and devise a research program. This phase II activity is currently beyond the scope of the RMP.

Approach

Task 1. Workshop on Ocean Acidification. In 2015, RMP developed a \$30,000 proposal for a workshop on ocean acidification effects on the Bay. The RMP did not fund the proposal. However, EPA recently awarded SFEP, RTC and SFEI \$10,000 for this task (as well as funds to deploy pH sensors on buoys in the Bay). The workshop is tentatively scheduled for October 2016. Without additional funds, the workshop will not be able to bring in outside experts or to write a comprehensive meeting outcomes summary. Funding from the RMP in the amount of \$20,000 would make these outputs possible.

Task 2. Long-term Monitoring Design for Water Temperature, Salinity, and Acidification due to Climate Change in San Francisco Bay. The strength of the RMP is in designing efficient and effective regional monitoring programs. Many agencies are involved with climate change planning and the monitoring

programs are equally widely distributed. The RMP could serve a critical role as a coordinating entity for the various monitoring programs for sea level rise, water temperature, salinity, and acidification. The process for developing this monitoring program would be to work with partners such as SFEP, SFBNERR, and SFBJV to identify:

- the existing indicators for tracking climate change in the Bay,
- the existing monitoring to support those indicators, and
- the critical gaps that could be filled with regional monitoring.

Deliverables and Schedule

Task 1. Workshop on Ocean Acidification (by 12/31/16)

Task 2. Long-term Monitoring Design for Water Temperature, Salinity, and Acidification due to Climate Change in San Francisco Bay (draft by 5/1/17 for EEWG; final by 9/30/17)

Budget

Task 1: \$20,000

Task 2: \$10,000

Total: \$30,000