Phytoplankton NNE Assessment Framework

Project Overview

Background and Objectives

- **SF Bay NNE lit. review (McKee et al. 2011) recommended phytoplankton as a leading indicator to assess effects of eutrophication on SF Bay beneficial uses (BU)**
  - Phytoplankton biomass (water column chl a), assemblage (e.g. % diatoms), Productivity (carbon production)
  - Cyanobacteria abundance and toxin concentration

- **We need a framework that describes how to use these indicators to assess whether SF Bay BUs are protected**

- **Additional recommendation: synthesize available DO data and formulate work plan to review DO objectives for specific habitat types**

Objective:

- Develop a framework to use phytoplankton to assess effects of eutrophication and other adverse effects to SF Bay Bus
- Synthesize available dissolved oxygen data

Background

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- **We need a framework that describes how to use these indicators to assess whether SF Bay BUs are protected**
- **Additional recommendation: synthesize available DO data and formulate work plan to review DO objectives for specific habitat types**

Project Objectives

Objective 1: Develop a framework to use phytoplankton to assess effects of eutrophication and other adverse effects to SF Bay beneficial uses

Approach: Use Experts to Craft Assessment Framework Based on Available Science & Best Professional Judgment

What is An Assessment Framework?

- **Decision support**
  - Transparent
  - Peer-reviewed
  - Guidance interpreting a narrative nutrient objective, so science can evolve over time
- **Key components**
  - What to measure (indicators/metrics)
  - Temporal and spatial frequency in which those indicators/metrics should be measured
  - How to use those data, alone or tandem, to categorize the Bay (or segments of the Bay) in "risk categories"
- **Assessment frameworks do not:**
  - Specify regulatory thresholds – that is a policy decision

Proposed Process to Develop Phytoplankton Assessment Framework

- **Develop conceptual models**
  - Identify indicators, linkages to beneficial uses at relevant spatial and temporal scales
- **Review available assessment frameworks**
  - Sutula et al. (2011) identifies those frameworks (European Union Water Directive Framework, NOAA ASSETS)
- **Utilize those frameworks with existing SF Bay data (if available) to demonstrate how well (or poorly) they work**
  - Educate ourselves!
- **Utilize demo results, in tandem with conceptual models, to craft strawman framework with small group of experts**
  - Demonstrate with existing data
- **Vet and refine assessment framework within larger community of scientists and stakeholders (…repeat)**

Project Objectives

Objective 1: Develop a framework to use phytoplankton to assess effects of eutrophication and other adverse effects to SF Bay beneficial uses

Approach: Use Experts to Craft Assessment Framework Based on Available Science & Best Professional Judgment

Objective 2: Complete synthesis of dissolved oxygen data to inform future work plan elements on dissolved oxygen

Approach: Compile available data and synthesize status/trends with respect to existing DO objectives

Budget, Funding, Communication, and Schedule

- Preliminary $115,000 (SFRWCB from Basin Planning Funds)
- Scoped currently as 2-yr project (March 2012- March 2014)
- Tasks:
  - Develop work plan (Summer 2012)
  - Compile existing data and conduct analysis (Fall 2012)
  - Create draft strawman assessment framework (March 2013) ★
  - Report on synthesis of dissolved oxygen data (March 2013) ★
  - Final assessment framework (February 2014) ★

★ **Schedule of interim deliverables are approximate**