# Environmental Monitoring Program

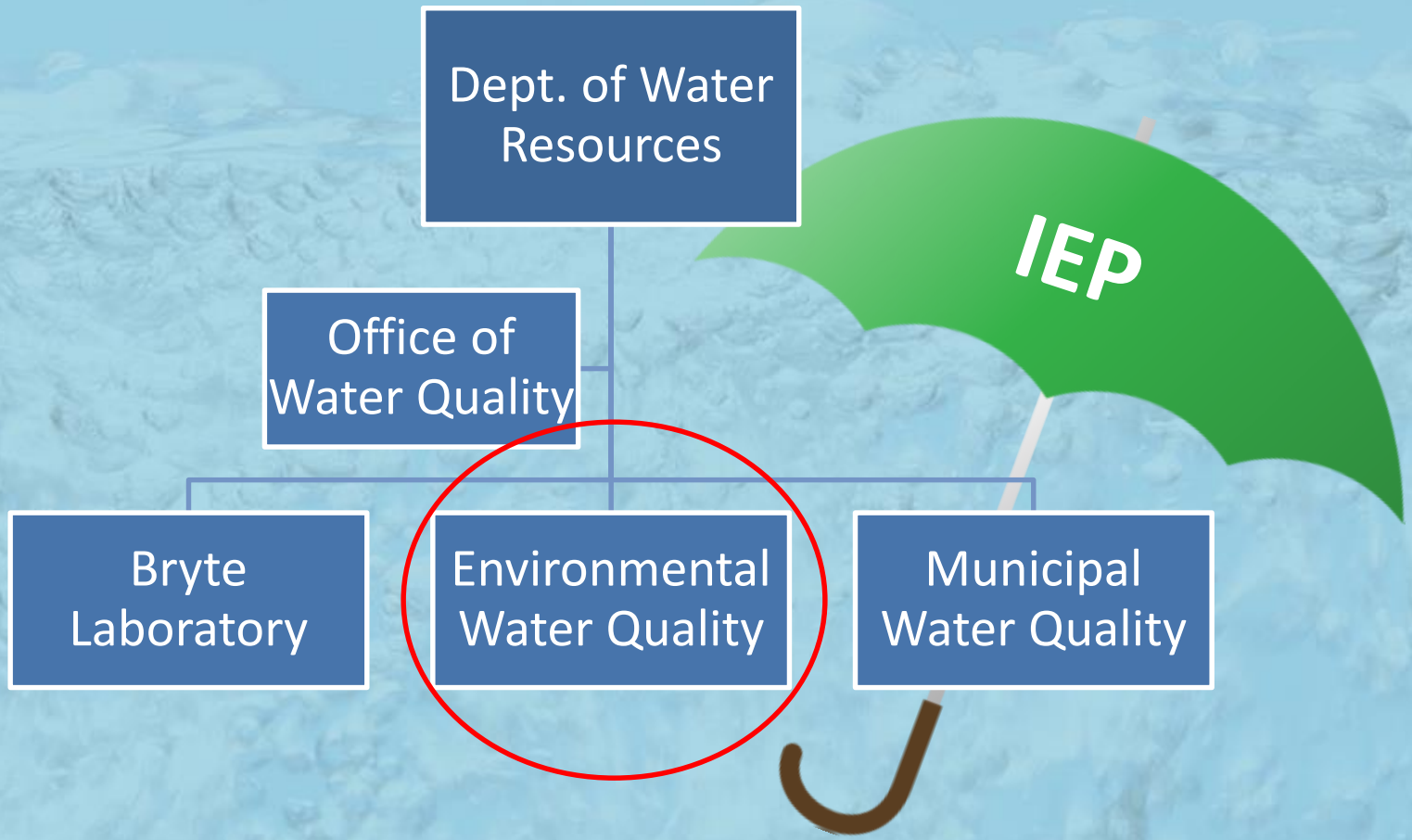
Delta Independent Science Board

May 12, 2016

# Setting the Stage:
## How the Delta ISB can Help

- Highlight the importance of monitoring and science as an integrated unit.
- Provide suggestions for integrating synthesis of monitoring data
  - Interagency Ecological Program (IEP) Management Analysis and Synthesis Team
- Provide suggestions for integrating data from various programs via centralized data repository
  - IEP and Water Quality Monitoring Council (WQMC) Data Management workgroup
- Emphasize and provide solutions regarding the need to be innovative and within the confines of a mandate
- Jon's "How to be clever"
  - Provide opportunities for collaboration and elimination of duplicative efforts …monitoring, research, data portals

# Setting the Stage: Who we are




- The Environmental Monitoring Program was created in 1971 and participates heavily in the IEP.
- Ensures compliance with water quality objectives in Water Right Decisions 1485 and 1641 for operation of the State Water Project and Central Valley Project

# Environmental Monitoring Program

| Water Quality Monitoring | Biological Monitoring | Special Studies |
|---|---|---|
| • Discrete WQ<br>• Continuous WQ<br>• Dissolved Oxygen SDWSC | • Zooplankton (DFW)<br>• Phytoplankton<br>• Benthos | • *Microcystis* |

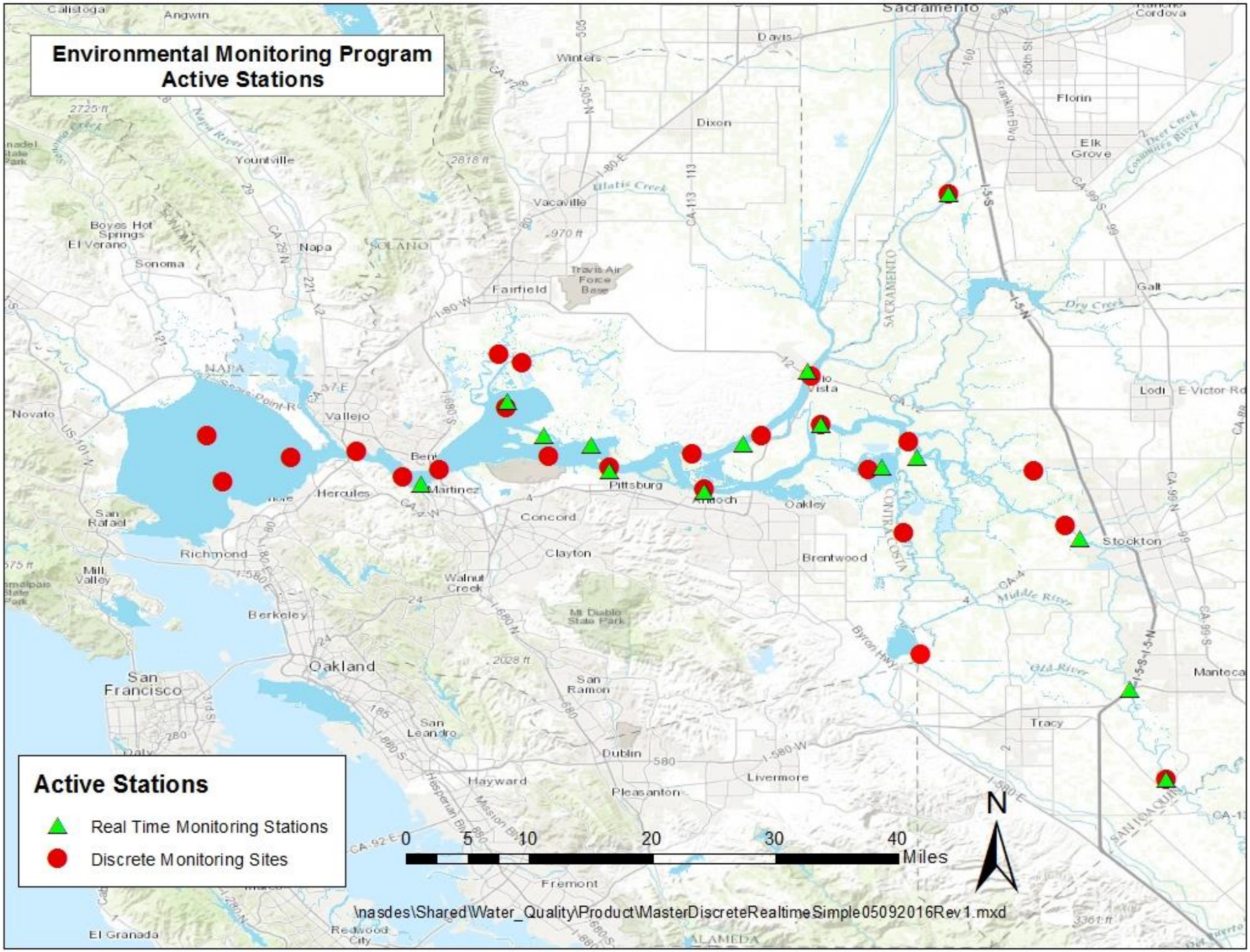
- **Mission:** to monitor and conduct data analyses to further the Department's understanding of estuarine ecology and to provide information useful for the management and conservation of the upper San Francisco Estuary and to maintain mandated compliance for water project operations.

# EMP Goals

- Provide accurate and validated information to management and operators of the State Water Project and Central Valley Project
- Detect and document changes in the upper estuary related to water project
- Detect and document invasive species, such as *Microcystis aeruginosa* and *Potamocorbula amurensis,* and conduct specials studies to discern their impacts
- http://www.water.ca.gov/bdma

# Monitoring: Where and When

- Where:
  - Throughout the estuary
- When:
  - Sampling regime is planned around tidal schedule; stations are sampled at high slack tide
  - Discrete water quality, phytoplankton, zooplankton and benthos are sampled once a month
  - Continuous water quality stations – data is collected every 15 minutes


Environmental Monitoring Program
Active Stations
Active Stations
Real Time Monitoring Stations
Discrete Monitoring Sites
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Miles
N
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Sacramento
Davis
Winters
Dixon
Vacaville
Fairfield
Travis Air Force Base
Napa
Vallejo
Benicia
Martinez
Pittsburg
Antioch
Oakley
Concord
Clayton
Walnut Creek
Brentwood
Stockton
Lodi
Galt
Elk Grove
Florin
Tracy
Manteca
Livermore
Pleasanton
Dublin
San Ramon
San Leandro
Hayward
Fremont
Oakland
San Francisco
Berkeley
Richmond
Hercules
San Rafael
Novato
Mill Valley
Yountville
Sonoma
Boyes Hot Springs
El Verano
Calistoga
Angwin
Cordova
Mt Diablo State Park
Redwood City
El Granada

# Data Management

- California Water Quality Monitoring Council
  - heavily invested in presenting our data in an interactive format on the WQMC website
  - Discrete water quality and biological data is currently available in flat files http://www.water.ca.gov/bdma/meta/
- Continuous water quality data is available on CDEC (raw data) and QA/QC'd data available upon request
- We are currently working to make our data accessible through the Water Data Library

# Program Review

- The Environmental Monitoring Program was last reviewed by the Interagency Ecological Program in 2003.

| Examples of the 2003 EMP Programmatic Review Recommendations and Status | |
|---|---|
| Recommendation:<br>• Establish a new Multiparameter station & Reestablish 3 Historical Baseline Stations. | Status:<br>• In 2004 Discrete water quality stations (Franks Tract, Honker Bay, Sherman Lake) were established<br>• In 2015 Continuous water quality stations at those same locations were established |
| Recommendation:<br>• Reduce Benthos Monitoring frequency for 2003-2004 and conduct benthos special studies | Status:<br>• Benthos monitoring frequency was reduced from monthly to quarterly during WYs 2003 & 2004.<br>• Special studies were conducted and the results were published |

# Strengths and Weaknesses

- <u>Strengths:</u>
  - Continuity
    - 45 years is a long time for a monitoring program
  - Integration
    - Water quality and biological data
  - Legal
    - Consistently contributed to maintaining compliance with water quality objectives

- <u>Weaknesses:</u>
  - Change takes time and money
    - Adaptive management is difficult
  - Geography
    - Limited to areas that are directly effected by operations
  - Data accessibility and QA/QC tools can be improved with new databases that have web services capabilities

# Questions?

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