

A PRESENTATION of the Regional Monitoring Program for Water Quality in the San Francisco Estuary



# OVERVIEW OF THE RMP



**MEG SEDLAK AND JAY DAVIS**  
**Presentation to BACWA Executive Board**  
June 28<sup>th</sup> 2012



# Structure of Talk

- Mission, governance, & budget
- Status & Trends
- Special studies
  
- Recommendations for soliciting more input/ participation from BACWA



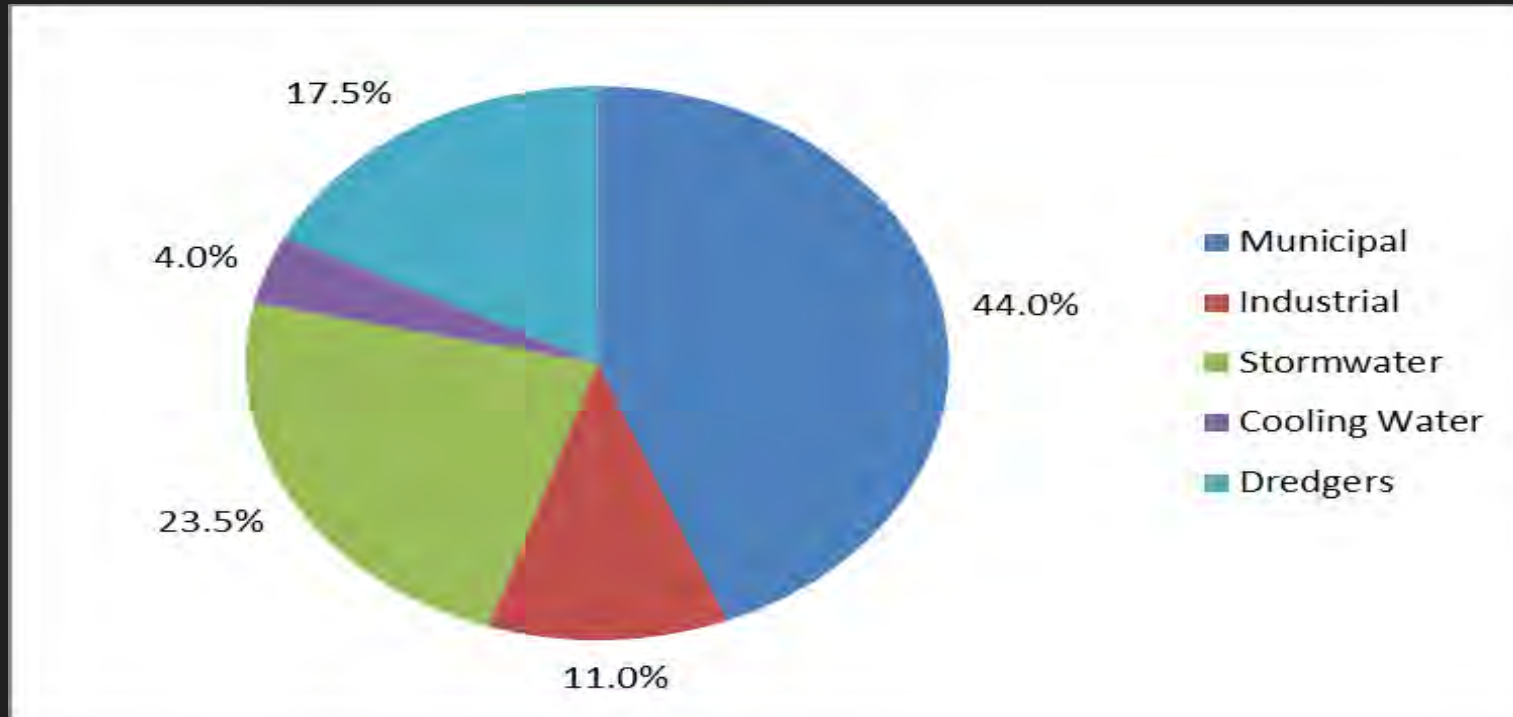
# RMP Mission

Collect data and communicate information about water quality in the San Francisco Estuary to support management decisions





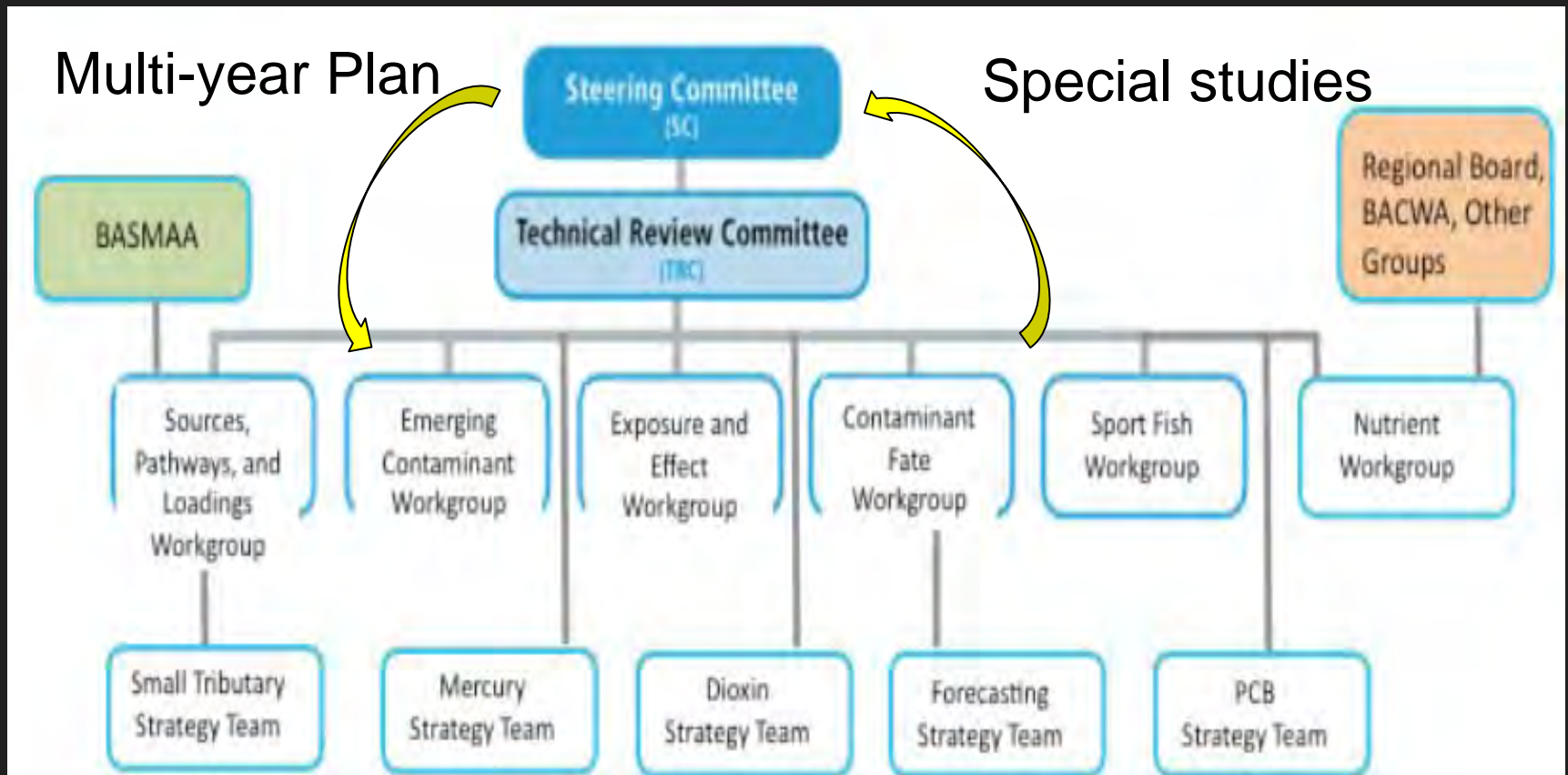
# Budget and Fees



- Funded by NPDES dischargers and dredgers
- Total RMP budget 2012: \$3.2 million

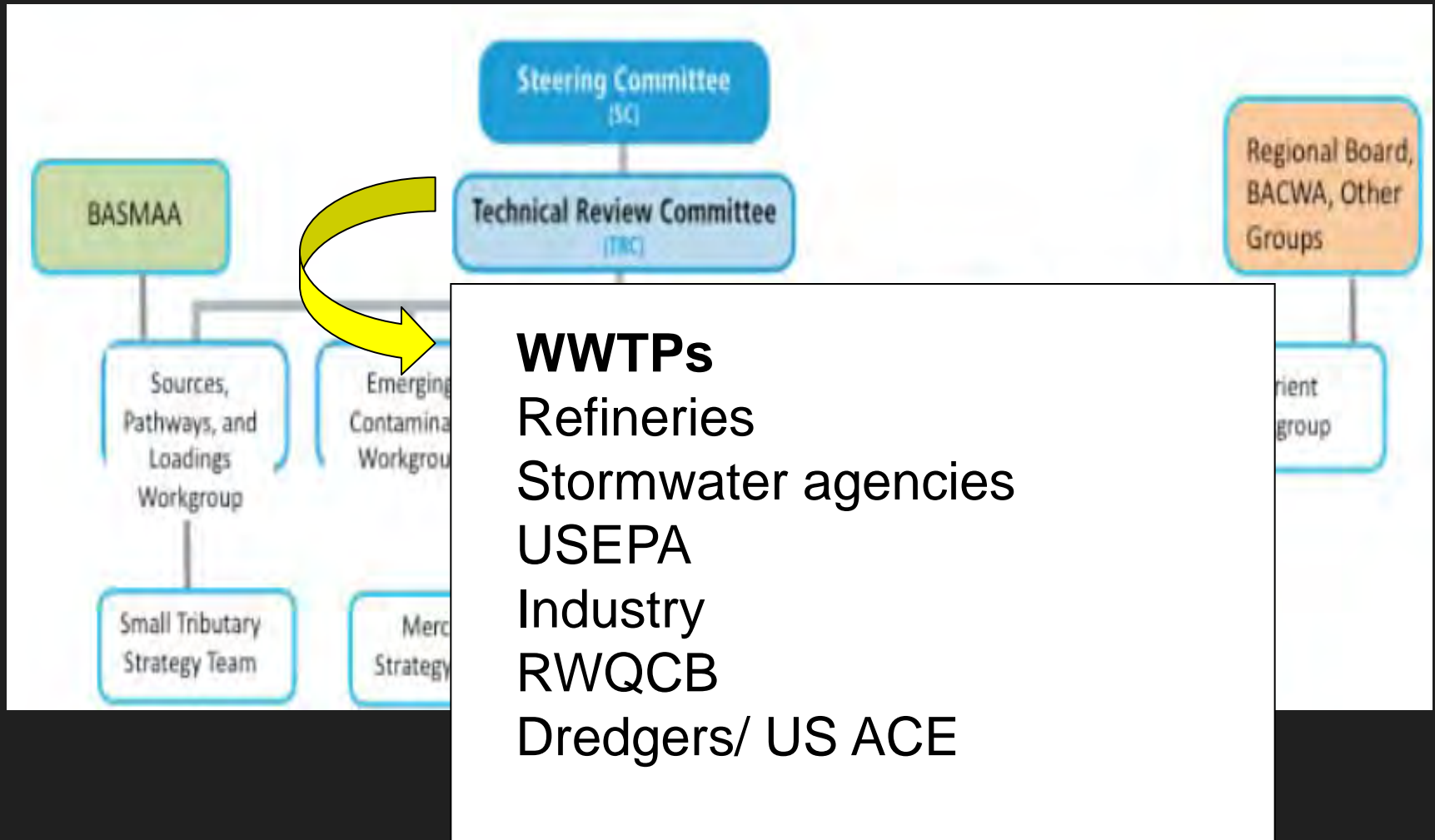


# RMP Structure



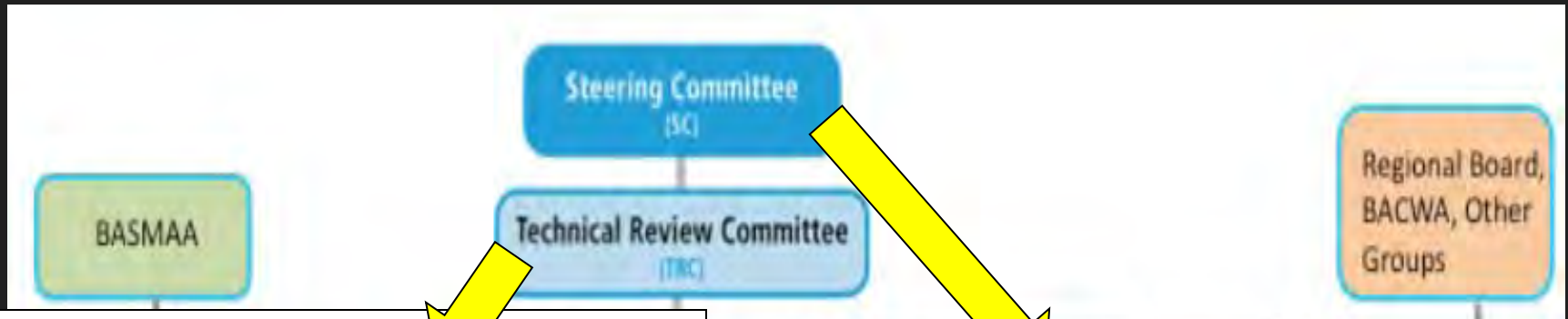


# RMP Structure





# RMP Structure



## TRC Representatives:

- Nirmela Arsem (EBMUD)
- Mike Kellogg/ Rod Miller (CCSF)
- Tom Hall (South Bay Dischargers)
- Eric Dunlavey (San Jose)

## SC Representatives:

- Karin North (City of Palo Alto –Vice Chair)
- Ken Kaufman? (SBSA)
- Daniel Tafolla (Vallejo)
- Napp Fukuda (San Jose)



# Management Questions

- MQ1: Are chemical concentrations in the Estuary potentially at **levels of concern** and are associated **impacts** likely?
- MQ2: What are **concentrations and masses** of contaminants in the Estuary and its segments?
- MQ3: What are **sources, pathways, loading, and processes** leading to contaminant related impacts in the Estuary?
- MQ4: Have the **concentrations, masses**, and associated impacts of contaminants in the Estuary **increased or decreased**?
- MQ5: What are the **projected concentrations, masses** and associated **impacts** of contaminants in the Estuary?



# How does the RMP answer MQs?



## Status & Trends Monitoring (1993 - )

- Sediment and water (biennial)
- Bivalves (biennial)
- Bird eggs (triennial)
- Sport fish (quintennial)

## Special Studies (change annually)

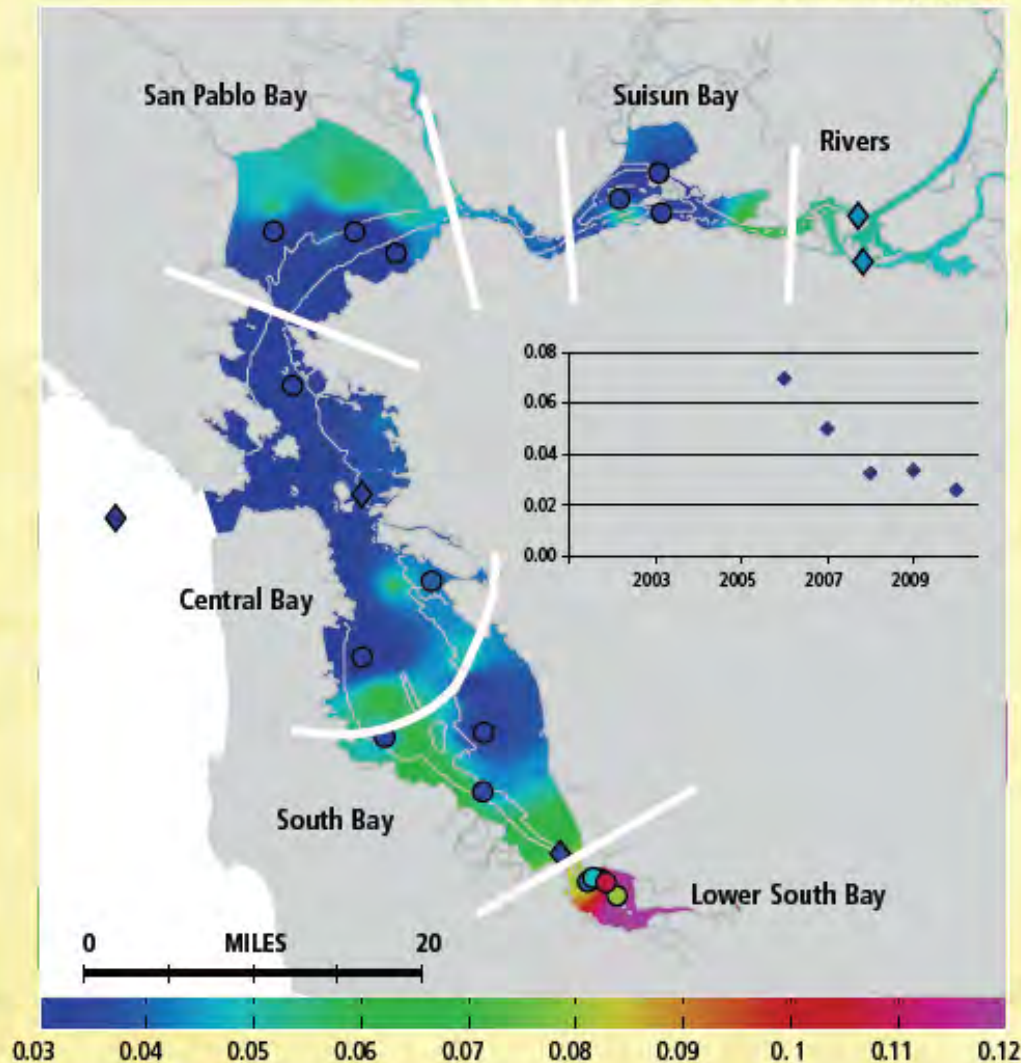
- Provide framework for adaptive management
- Responsive to changing needs



# MeHg in Water



**METHYLMERCURY IN WATER (ng/L)**



MQ1: Levels of concern

MQ2: Concentrations and masses

MQ3: Sources

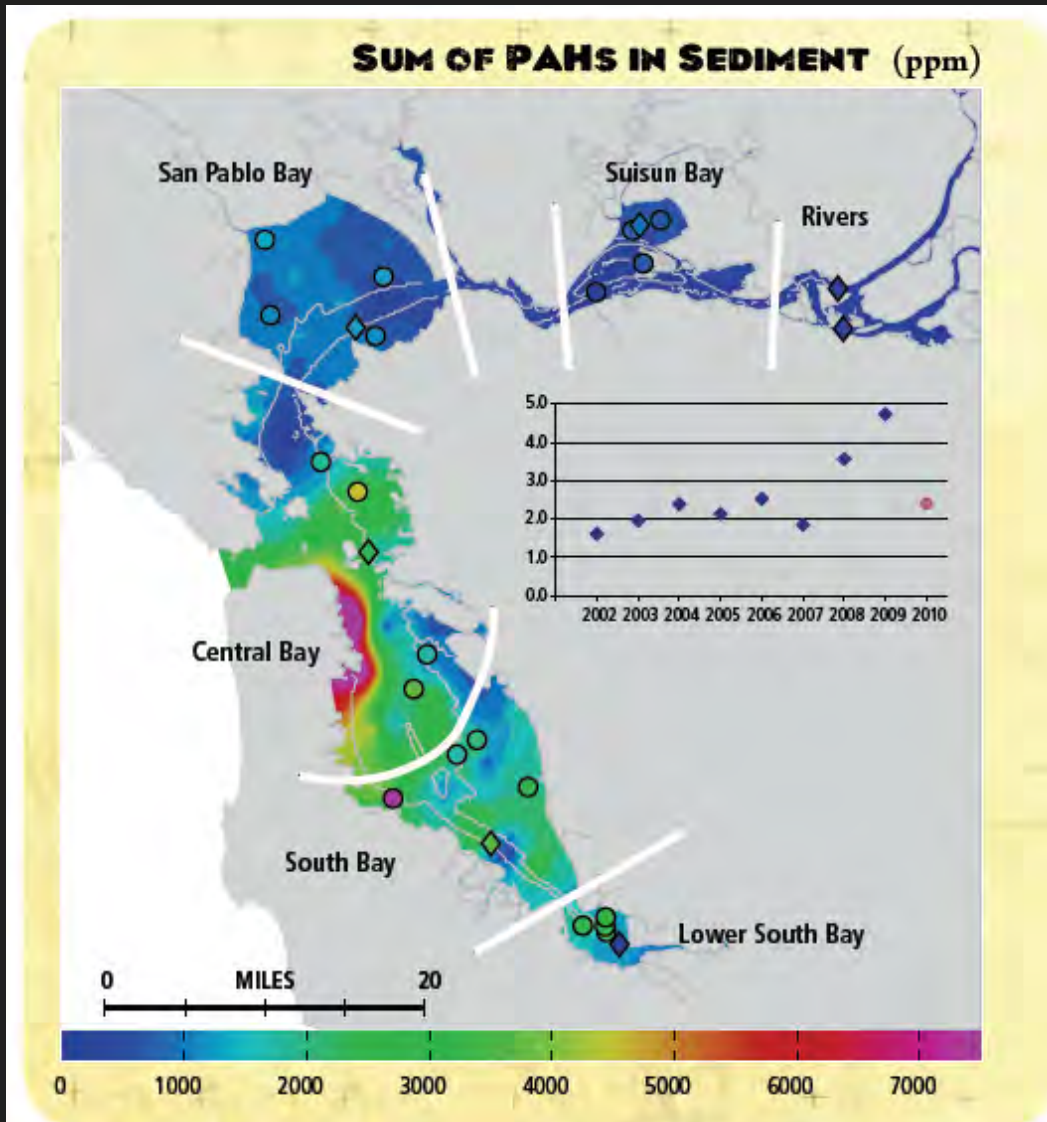
MQ4: Trends

MQ5: Forecasting

Partners: USGS



# PAHs in Sediment



MQ1: Levels of concern

MQ2: Concentrations and masses

MQ3: Sources

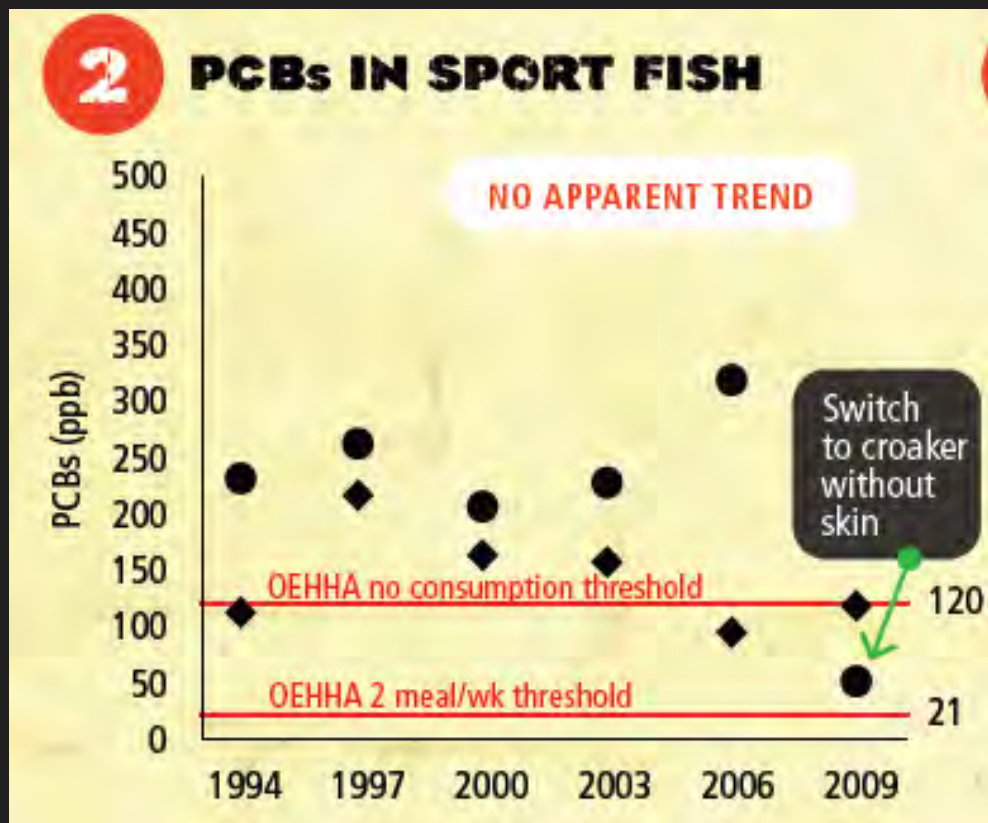
MQ4: Trends

MQ5: Forecasting

# S&T Biota – Sport Fish



- MQ1: Levels of concern and impacts
- Quintennial at 5 popular fishing sites
  - PCBs, PBDEs, PAH, dioxin, pesticides, Se, Hg, ECs



# RMP Workgroups/ Special Studies

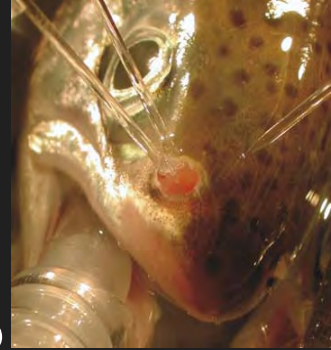




# Exposure & Effects Workgroup

- Purpose: Evaluating effects of contaminants on biota
- Recent studies:
  - PBDEs and terns
  - Effects of Hg on tern hatching success
  - Evaluation of effects of PAH on flatfish
- BACWA reps: Mike Kellogg (CCSF)

# EEWG: 2012 Evaluating effects of Cu on Salmonids



Impacts of dissolved copper (3 hr) on olfactory physiology and behavior

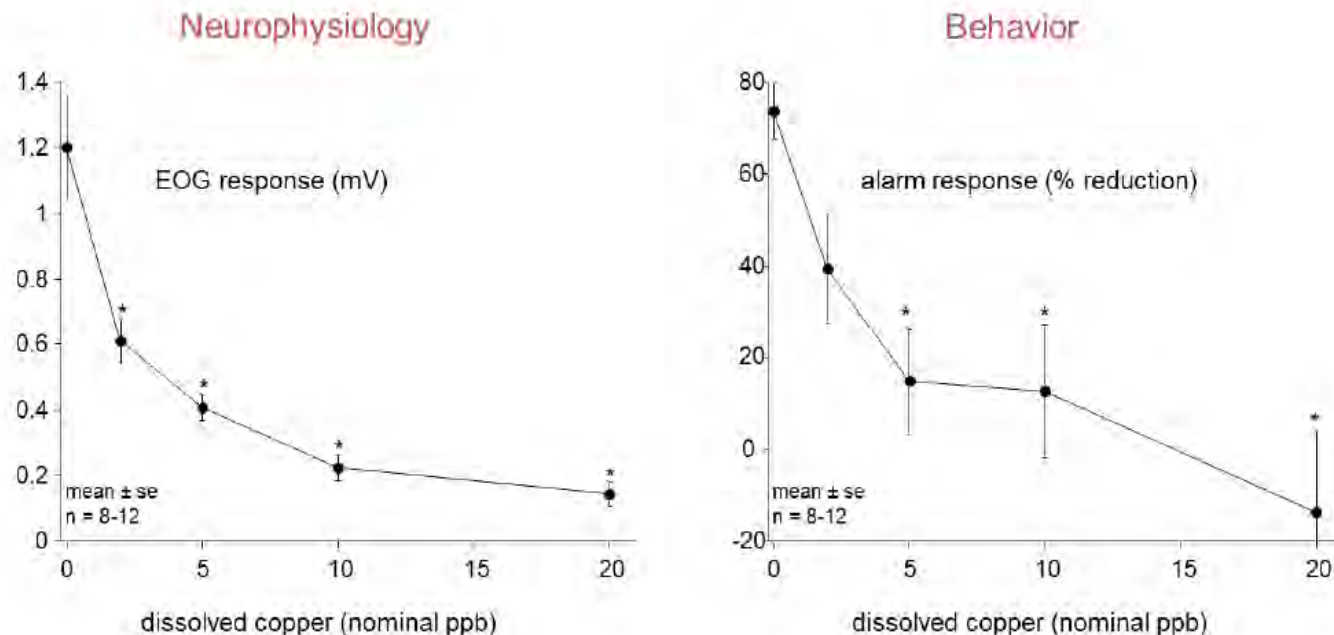
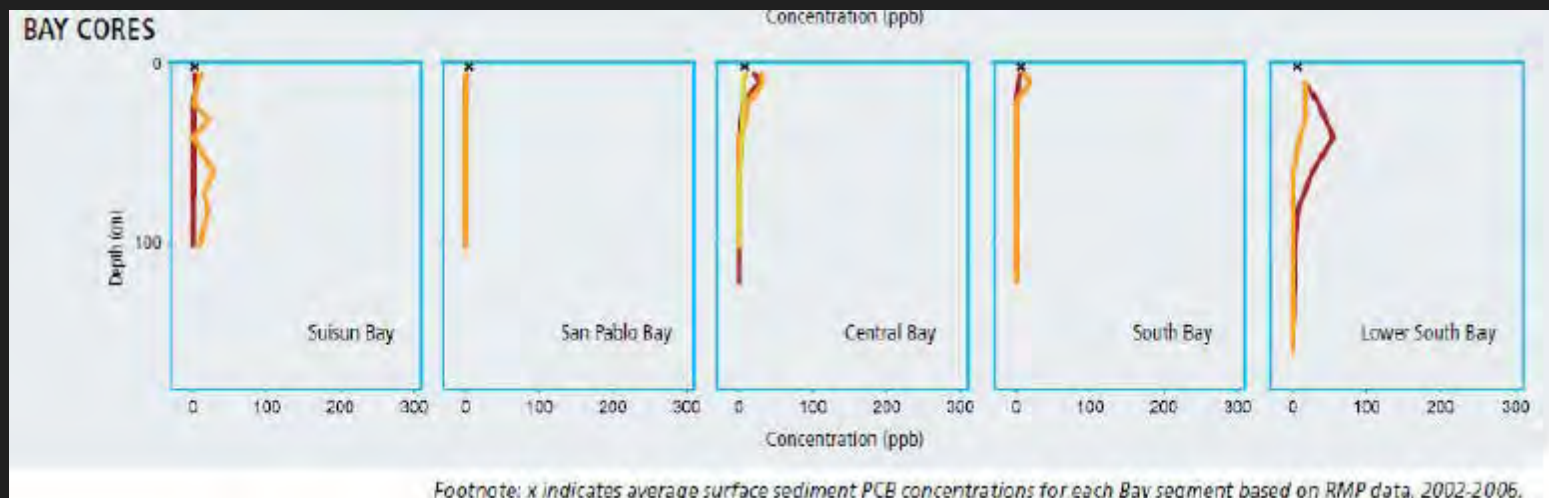


Photo: Courtesy of Dr. David Baldwin, NOAA

# Contaminant Fate Workgroup



- Purpose: to evaluate the fate of contaminants in the Bay
- Recent studies:
  - Coring studies
  - Margins Conceptual Model
- Major initiative on nutrients/modeling
- BACWA reps: Mike Connor?





# Emerging Contaminants Workgroup



- Purpose: to identify CECs that may potentially adversely impact the Bay
- Recent Studies:
  - PFCs in Bay biota, water and sediments
  - PPCPs in mussels, water & sediment
  - NIST nontargeted screening of biota
- BACWA reps: Eric Dunlavey/Simret Yigzaw (San Jose) and Eva Agus (EBMUD)

# Sources Pathways and Loading Workgroup / Small Tributary Strategy



- Purpose: Monitor storm water, small tributaries, and delta outflow to understand contaminant loads to the Bay
- Recent studies:
  - Development of spreadsheet model
  - Storm water loads from Quad., Hayward, & Delta
- BACWA reps: Eric Dunlavey and James Downing (San Jose)

# TBD - We need you!

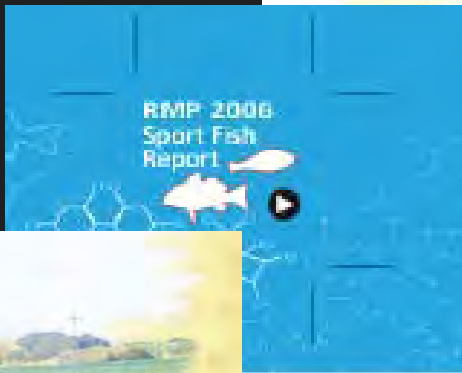


	2011	2012	2013	2014	2015
<b>TOPIC</b>					
Mercury	\$95,000	\$25,000	\$0	TBD	TBD
PCBs	\$53,000	\$0	\$0	TBD	TBD
Dioxins	\$26,000	\$95,500	\$0	\$40,000	TBD
Emerging Contaminants	\$100,000	\$117,000	\$100,000	TBD	TBD
Small Tributaries	\$340,000	\$428,000	\$450,000	\$300,000	\$300,000
Other SPL	\$0	\$0	\$0	TBD	TBD
Exposure and Effects	\$97,000	\$130,000	\$100,000	TBD	TBD
Forecasting	\$0	\$100,000	\$100,000	\$100,000	TBD
Nutrients	\$0	\$140,000	\$230,000	\$300,000	TBD
<b>ANNUAL TOTALS FOR SPECIAL STUDIES</b>	<b>\$711,000</b>	<b>\$1,035,500</b>	<b>\$980,000</b>	<b>\$740,000</b>	<b>\$0</b>
<b>ANNUAL TOTAL AVAILABLE FOR SPECIAL STUDIES</b>	<b>\$706,194</b>	<b>\$895,434</b>	<b>\$1,093,540</b>	<b>\$1,142,106</b>	<b>\$1,133,319</b>

# Information Dissemination

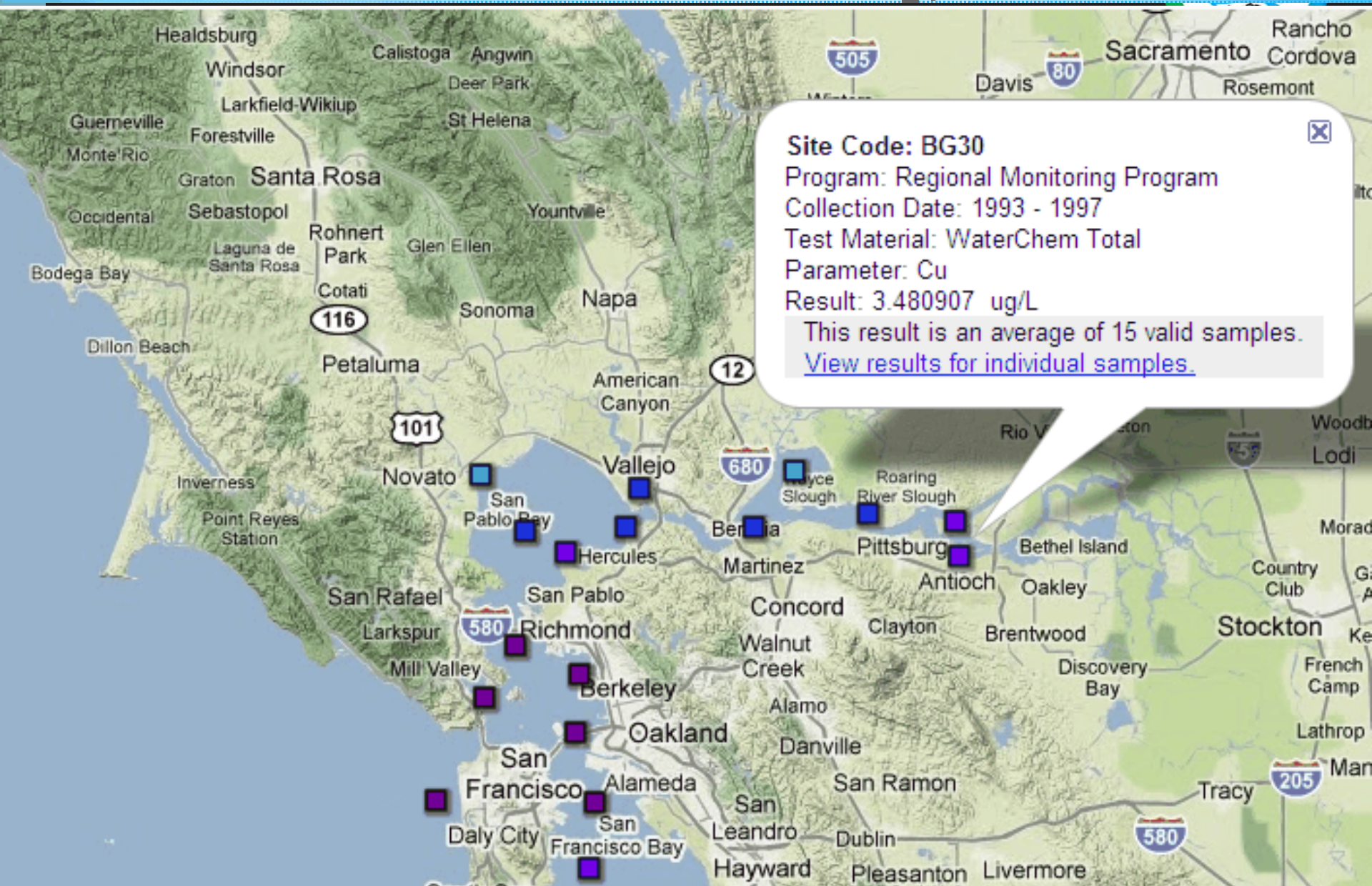


- Pulse
- Annual Meeting
  - October 9<sup>th</sup> 2012
  - David Brower Center Berkeley
- Technical reports
- Journal articles
- Workshops



# CD3 Contaminant Data Display & Download

water  
sediment  
bivalves sport fish



# RMP is enhanced by all the other activities at SFEI



California Wetlands Tracker Home About Contact Regions

San Francisco Bay Area Map | Projects | Summaries

### Interactive Map

Layers | Legends | Background | Overlays

**Project Information**

- Wetland Projects
- 1600 Permit Projects
- SFBJV Projects
- Trash

**Habitats**

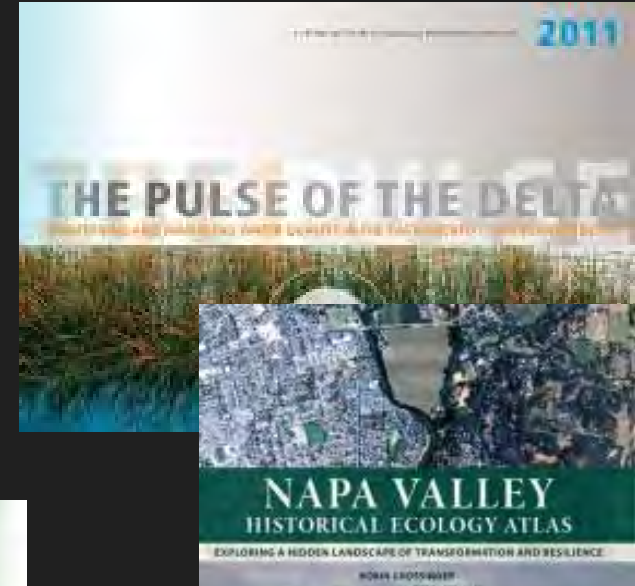
- Modern Habitats - BAARI
- Modern Habitats - NWI
- Eelgrass Habitats
- Historical Habitats

**Condition**

- CRAM
- IBI
- Toxicity

**Modern Habitats - BAARI**

- Non-Tidal Wetlands
  - Vegetated
  - Open Water
  - Slope
  - Vernal Pool
  - Unvegetated Flat
- Tidal Wetlands
  - Marsh
  - Marsh Flat
  - Bay Flat
  - Panne
  - Lagoon
  - Bay Deep



California Water Quality Web Portal

What are the Levels and Long-Term Trends in My Lake, Stream, or Ocean Location?

Select location:

**Contaminant Data**  
This interactive map allows you to explore fish contaminant data for your fishing locations. Data are available from extensive monitoring by SWAMP at lakes and reservoirs in 2007 and 2008. From the coast in 2009 and 2010 and from other studies. Data from 2007-2010 are shown by default. [View instructions](#)

Select Species:  
Species With Highest Avg Concentration:  
Select Contaminant:  
Mercury  
Select Start Date: 2007 Select End Date: 2010

**More information**

- Monitoring programs and reports
- Access Contaminant Databases from CEDEN
- Assessment Tools/fields

This map shows data generated by:

# Thank You!

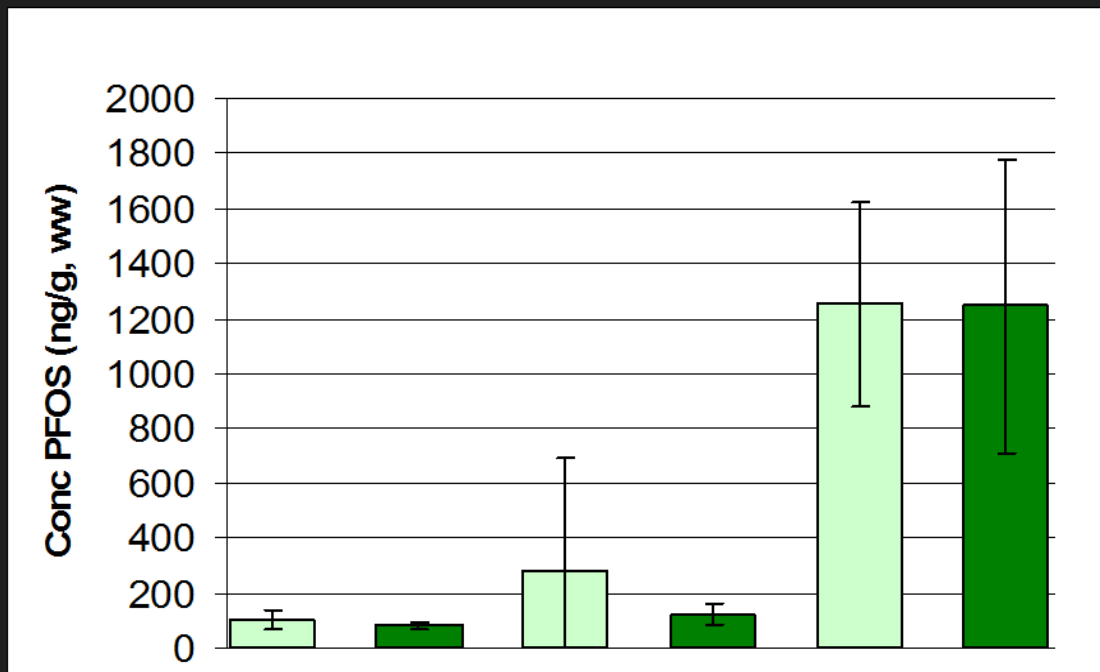




# S&T: Bird Eggs



- Cormorants & Terns:
  - Hg, Se, PBDEs, PCBs, Pesticides & EC
- MQ1: Levels of concern & impacts
- MQ4: Trends

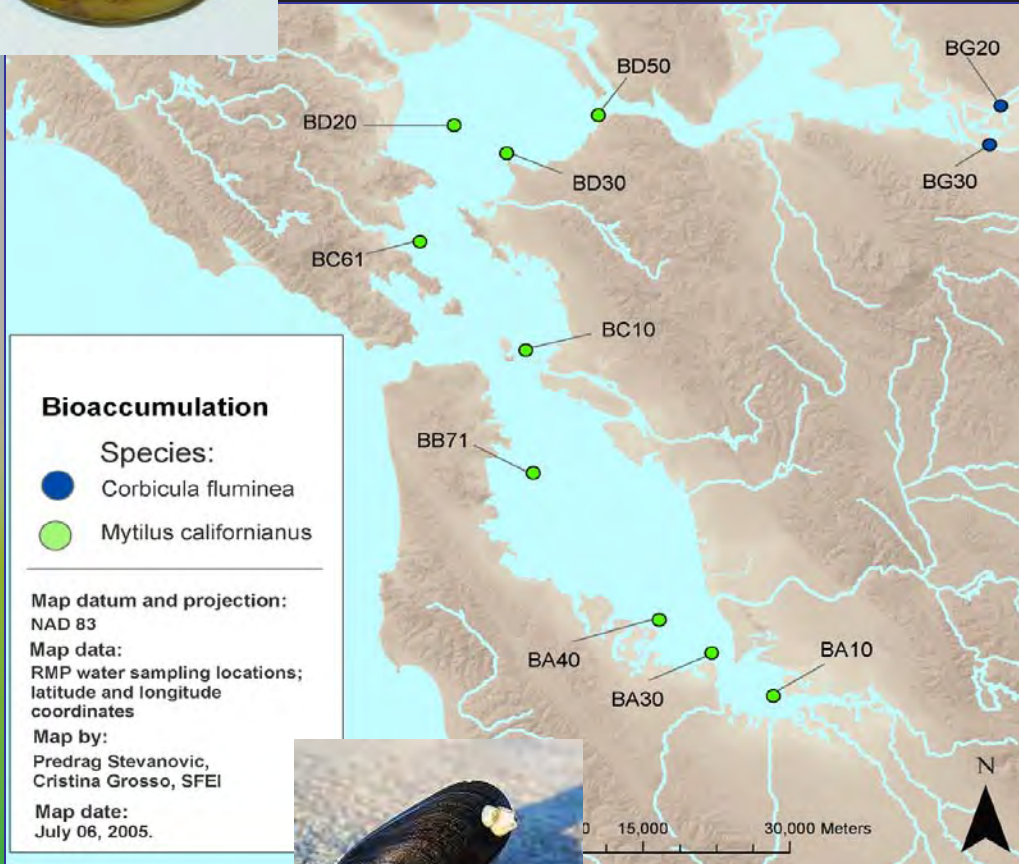




# S&T Bivalve Monitoring

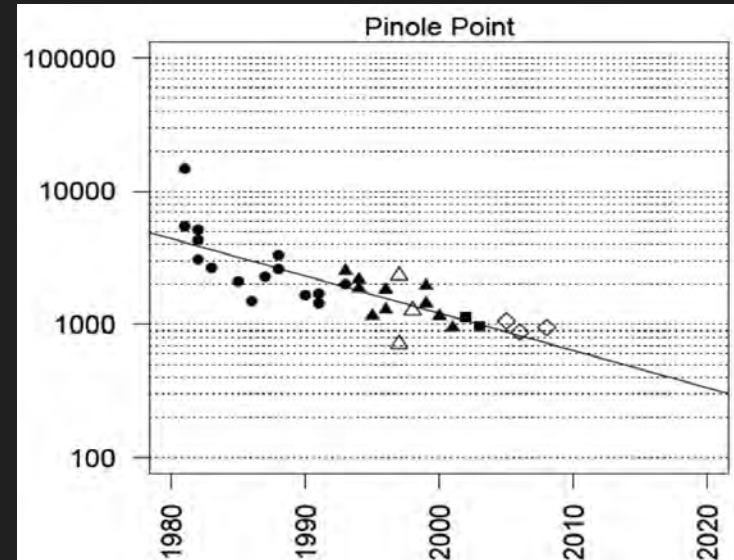


*Corbicula fluminea*



*Mytilus californianus*

- MQ1: Levels of concern;  
MQ4: Trends
- Biennial - 11 sites (all  
historical RMP)
- Organics and inorganics



# RMP Structure





# Mercury Strategy

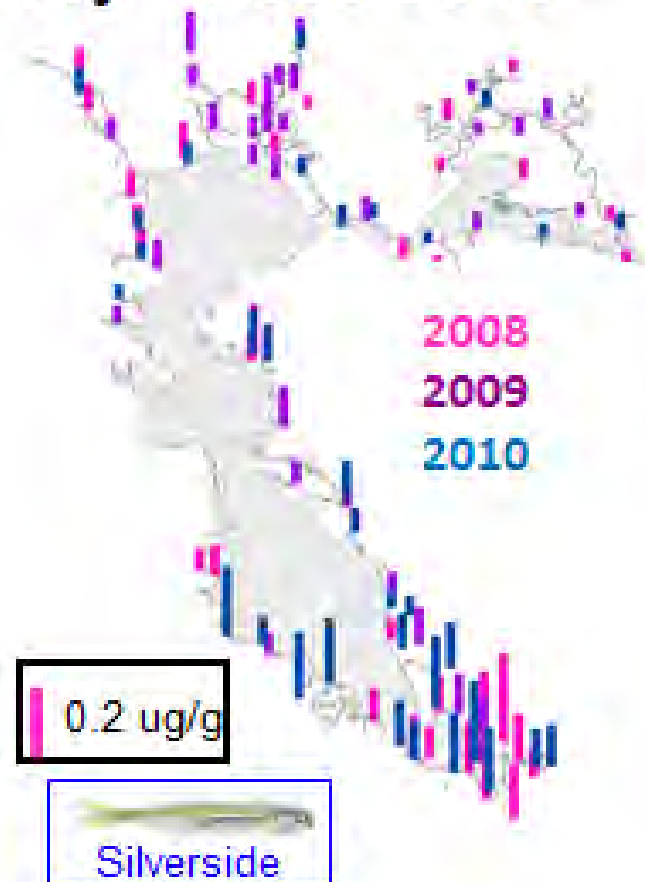
- Purpose: Understanding which pathways are most important for uptake into the foodweb
- Recent studies:
  - Mercury isotopes
  - Small fish initiative
  - MeHg Synthesis
- BACWA reps:

# Hg in Small Fish

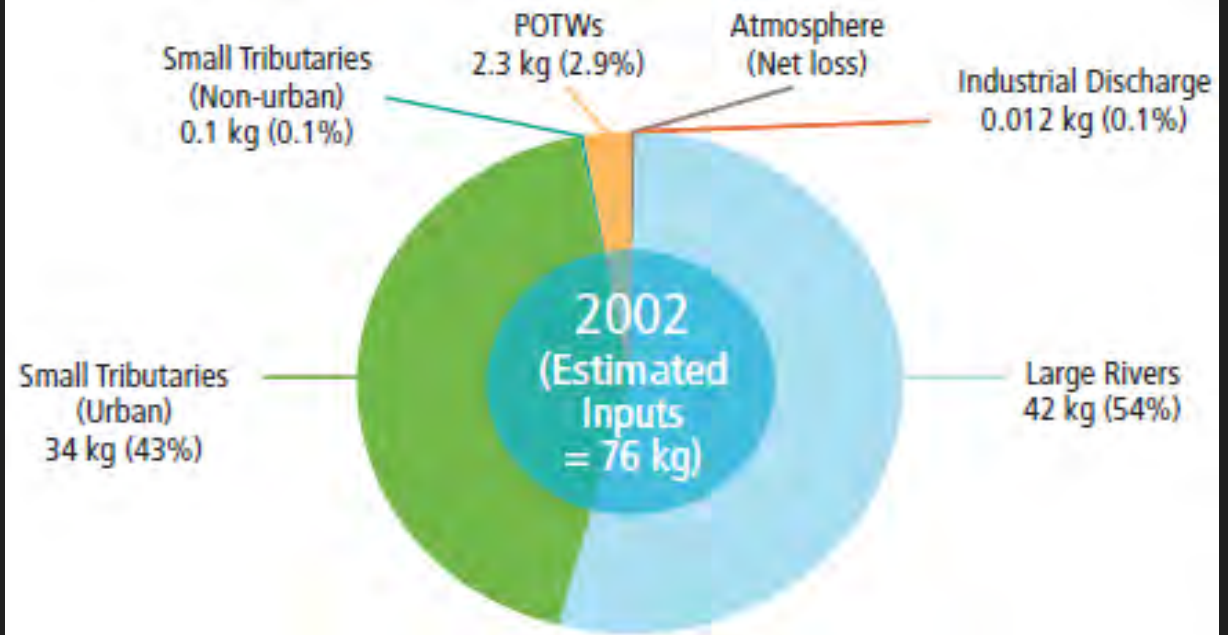
## Background

### Small Fish Spatial Survey – 2008-2010

- Design
  - Silverside and Topsmelt
  - Sampled at different types of suspected sources, eg. historic mining, WWTP outfalls, industrial watershed drainages
- Address Hg strategy questions
  - *Where (and when) is mercury entering the Bay food web?*
  - *What processes, sources, and pathways contribute disproportionately to food web accumulation?*
- Results
  - 0.01 - 0.29 mg/kg ww (average: 0.07 mg/kg ww)
  - 83% exceeded TMDL Target of 0.03 mg/kg ww
  - Concentrations higher in South Bay
  - WWTP sites often have lower concentrations



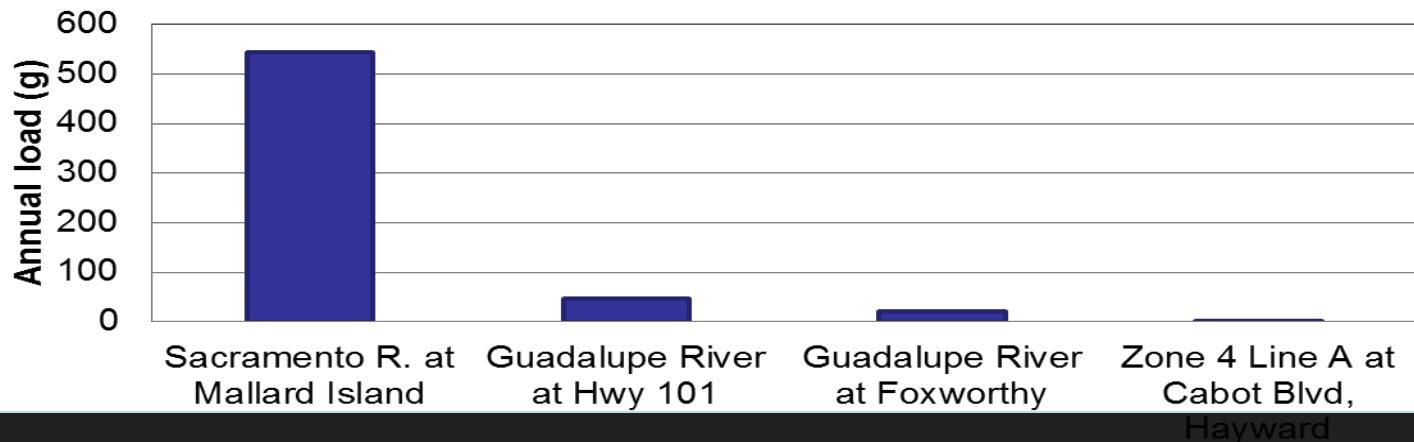
# SPLWG





# Other Strategies:

- PCB Strategy
  - Synthesis forthcoming in 2012
- Dioxin Strategy
  - Synthesis forthcoming in 2014
- Nutrient/ Modeling strategy
  - Major initiative



# Copper Rolling Average



Copper Site Specific Objective 3-year Rolling Averages | San Francisco Estuary Institute - Mozilla Firefox

File Edit View History Bookmarks Tools Help

z.Zimbra: Inbox (40) Copper Site Specific Objective 3-year ... x

www.sfei.org/content/copper-site-specific-objective-3-year-rolling-averages

Most Visited Getting Started Latest Headlines

Login/Register Visit our old site

**SFEI** SAN FRANCISCO ESTUARY INSTITUTE  
REGION-WIDE SCIENCE FOR ECOSYSTEM MANAGEMENT

HOME PROGRAMS PROJECTS DATA CENTER DOCUMENTS and REPORTS CALENDAR ABOUT US

Home :: Regional Monitoring Program :: RMP Data :: Copper Site Specific Objective 3-year Rolling Averages

## Copper Site Specific Objective 3-year Rolling Averages

As part of the copper sites-specific objective, NPDES dischargers are required to calculate annually the three-year rolling average of dissolved copper concentrations in water in each segment of the Bay, based on RMP data. This table presents the segment average and corresponding trigger levels in the [Basin Plan](#). The average includes data from randomized as well as historical sites in the segments, although it excludes data from the historical reference site outside the Golden Gate.

Bay Segment	Trigger (µg/L)	2008-2010 Rolling Average (µg/L)	Number of Samples Included in Average	Notes
Lower South Bay	4.2	3.44	15	
South Bay	3.6	2.81	12	Historical Station BA30 Included
Central Bay	2.2	1.36	12	Historical Station BC10 Included
San Pablo Bay	3	1.73	9	
Suisun Bay	2.8	2.16	9	

[Dredged Material Testing Thresholds for San Francisco Bay Area Sediments](#) up [Annual Reports and Publications](#)

[Printer-friendly version](#)

SEARCH

MORE INFO

- What is the RMP?
- Committees, Workgroups, and Strategies
- Status & Trends Monitoring
- Pilot & Special Studies
- RMP Projects
- RMP Data
  - IVIS Monthly Water Quality Data
  - Changes to the RMP
  - Contaminant Data (Display & Download)
  - RMP Target Analyte List
  - Reportable Analytes
  - Sample Area Weights
  - Dredged Material Testing Thresholds for San Francisco Bay Area Sediments
  - Copper Site Specific Objective 3-year Rolling Averages
- Annual Reports and Publications
- Annual Meetings
- Glossary

RMP SPOTLIGHT

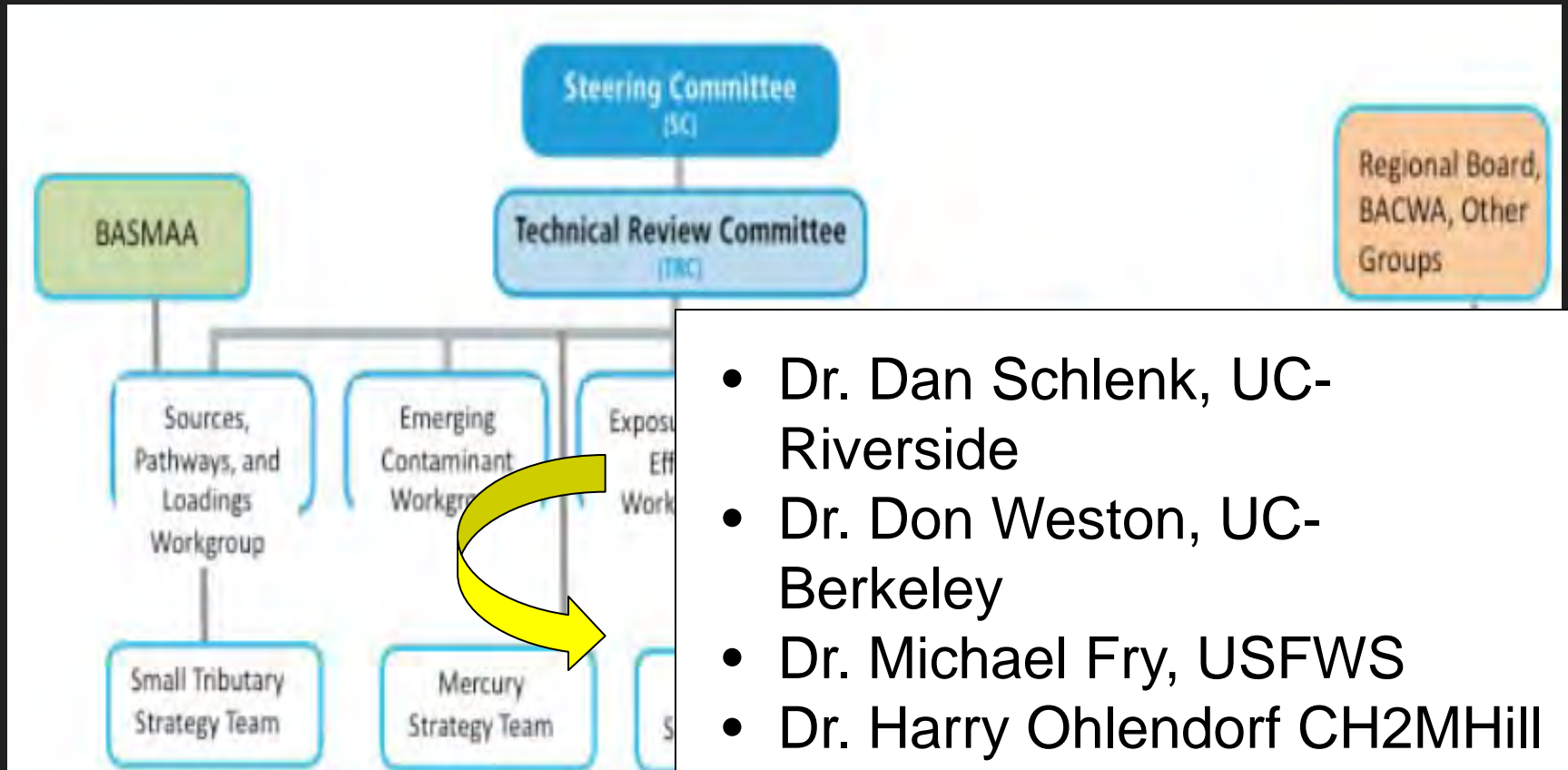
2011 PULSE OF THE ESTUARY REPORT

Contaminants in Fish on the California Coast, 2009-2010

Copper Site Specific... Downloads S:Staff (Meg) Present... iTunes Jun22 EB Agenda Dr... Document1 - Micro... BACWA RMP Overv... SFEI RMP Presentatio... 10:22 AM



# RMP Structure



- Dr. Dan Schlenk, UC-Riverside
- Dr. Don Weston, UC-Berkeley
- Dr. Michael Fry, USFWS
- Dr. Harry Ohlendorf CH2MHill
- Dr. Steve Weisberg, SCCWRP