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 28th 2012

Structure of Talk

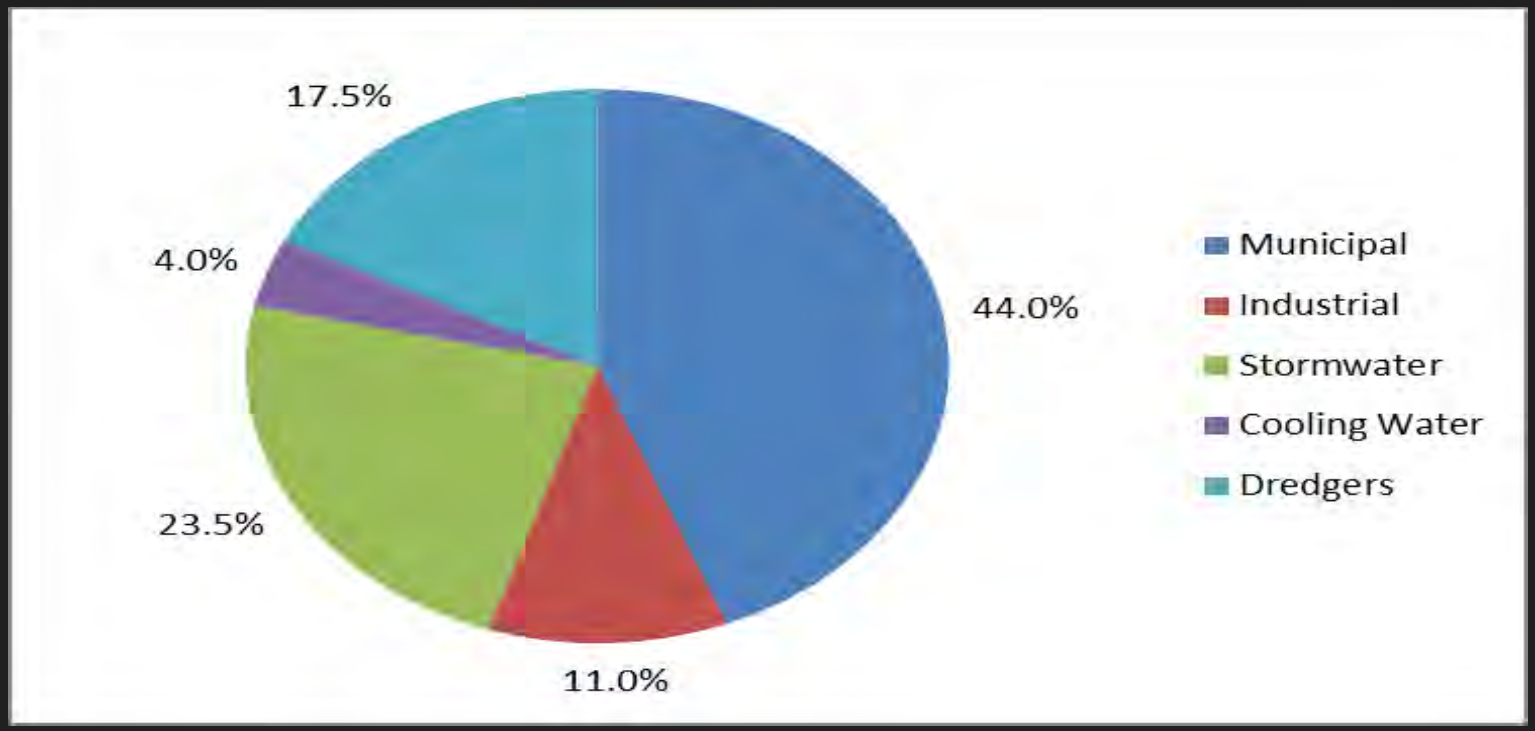
- Mission, governance, & budget
- Status & Trends
- Special studies

- 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



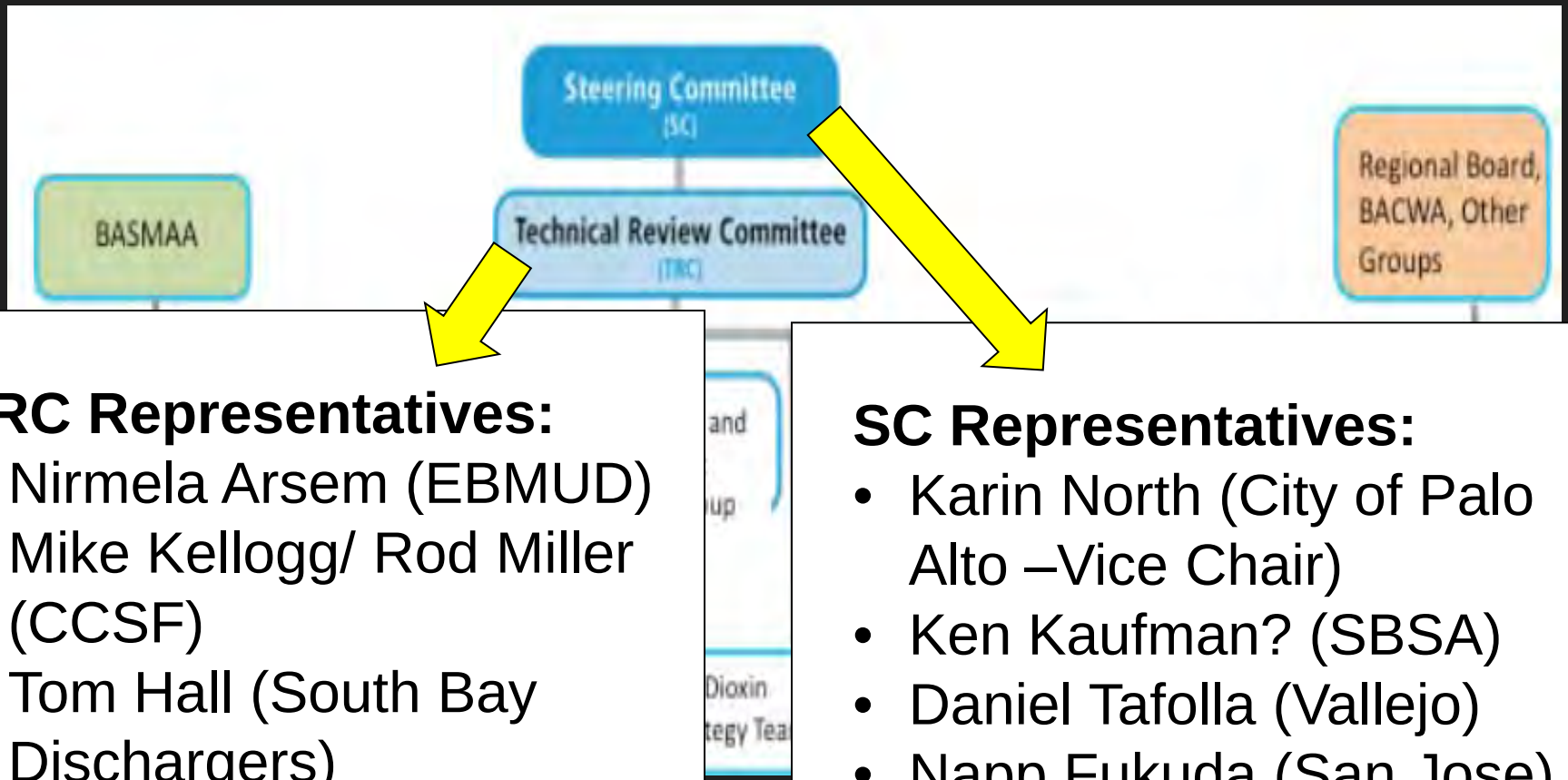
- Funded by NPDES dischargers and dredgers
- Total RMP budget 2012: $3.2 million

RMP Structure

RMP Structure

WWTPs
Refineries
Stormwater agencies
USEPA
Industry
RWQCB
Dredgers/ US ACE

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?

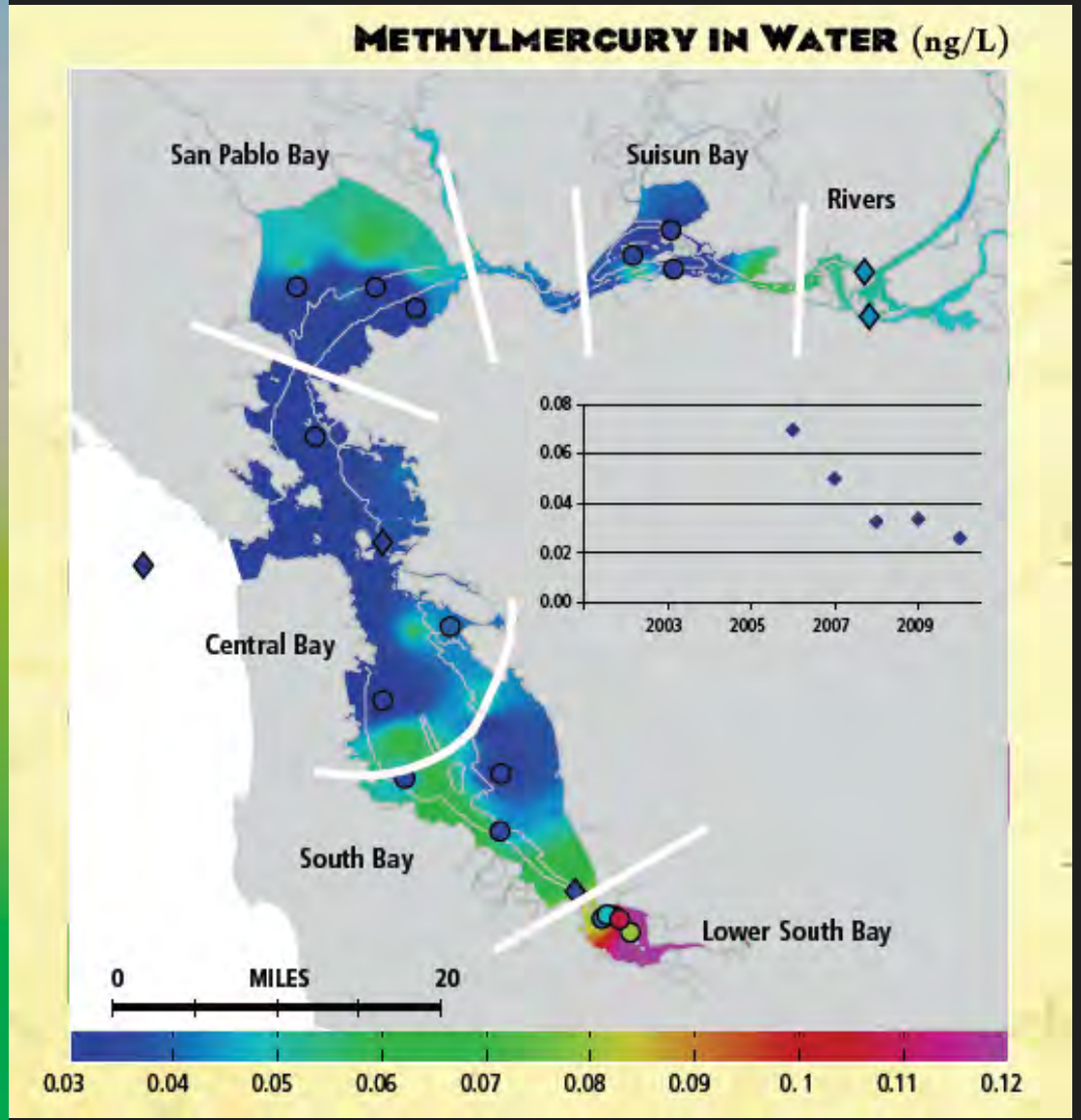
Status & Trends Monitoring (1993 -)

- 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



MQ1: Levels of concern

MQ2: Concentrations and masses

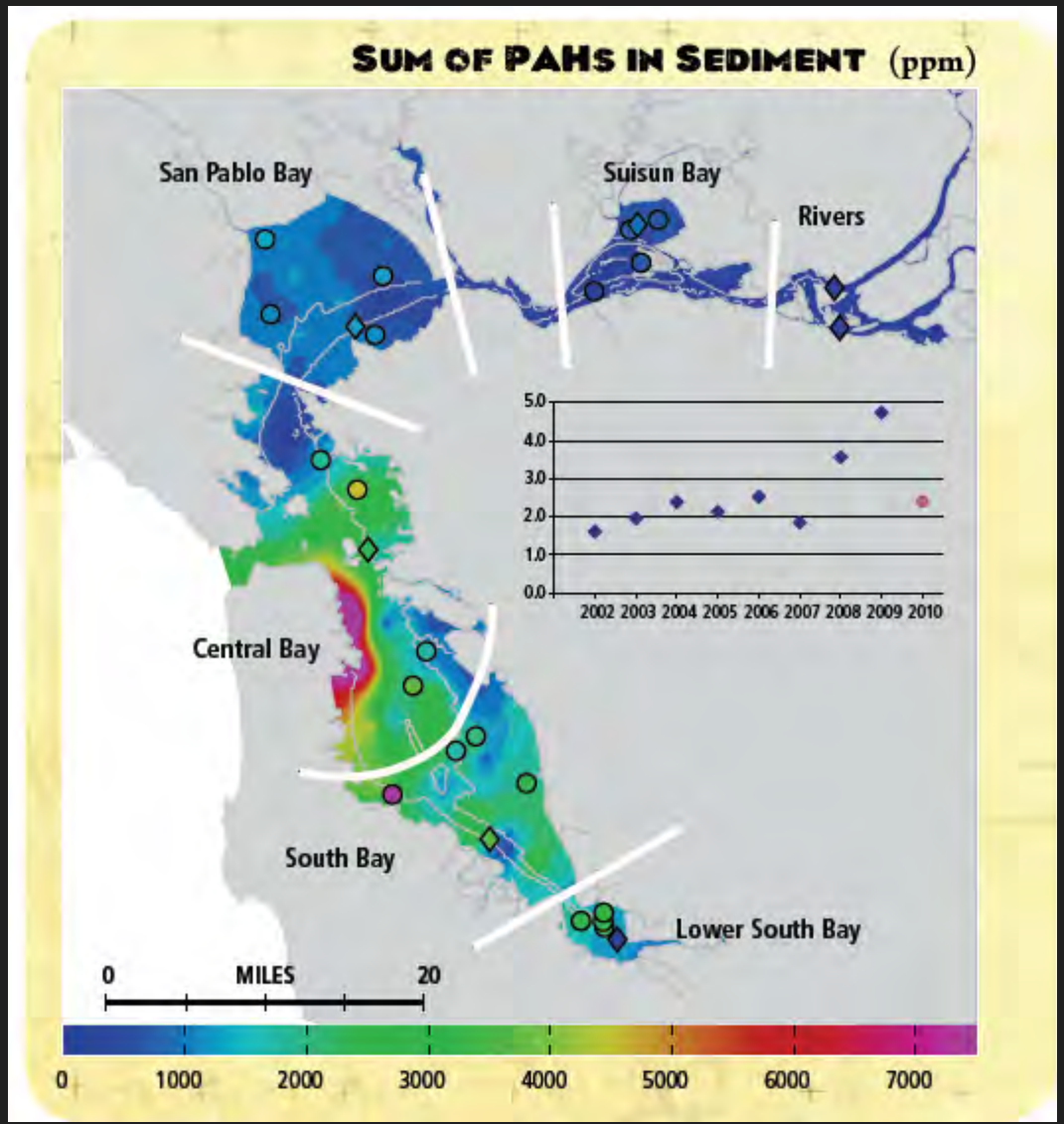
MQ3: Sources

MQ4: Trends

MQ5: Forecasting

Partners: USGS

PAHs in Sediment



MQ1: Levels of concern

MQ2: Concentrations and masses

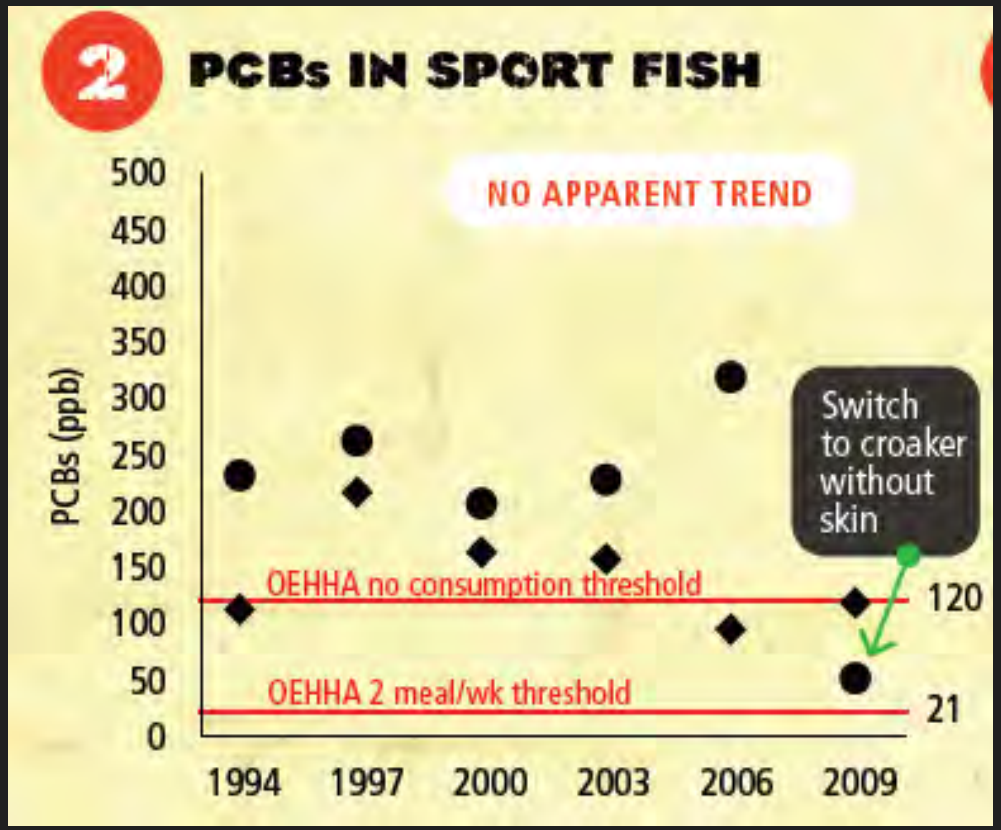
MQ3: Sources

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

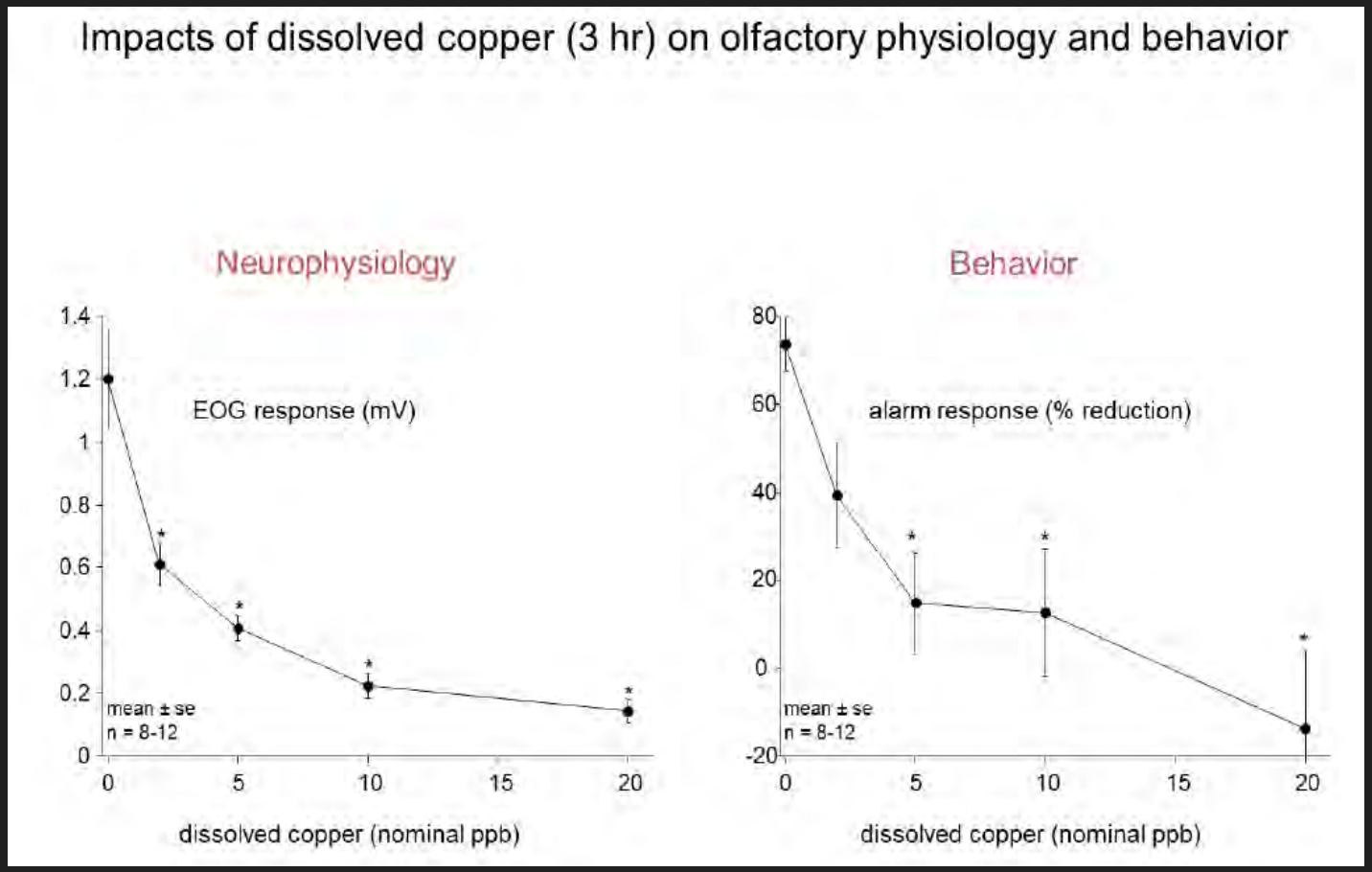
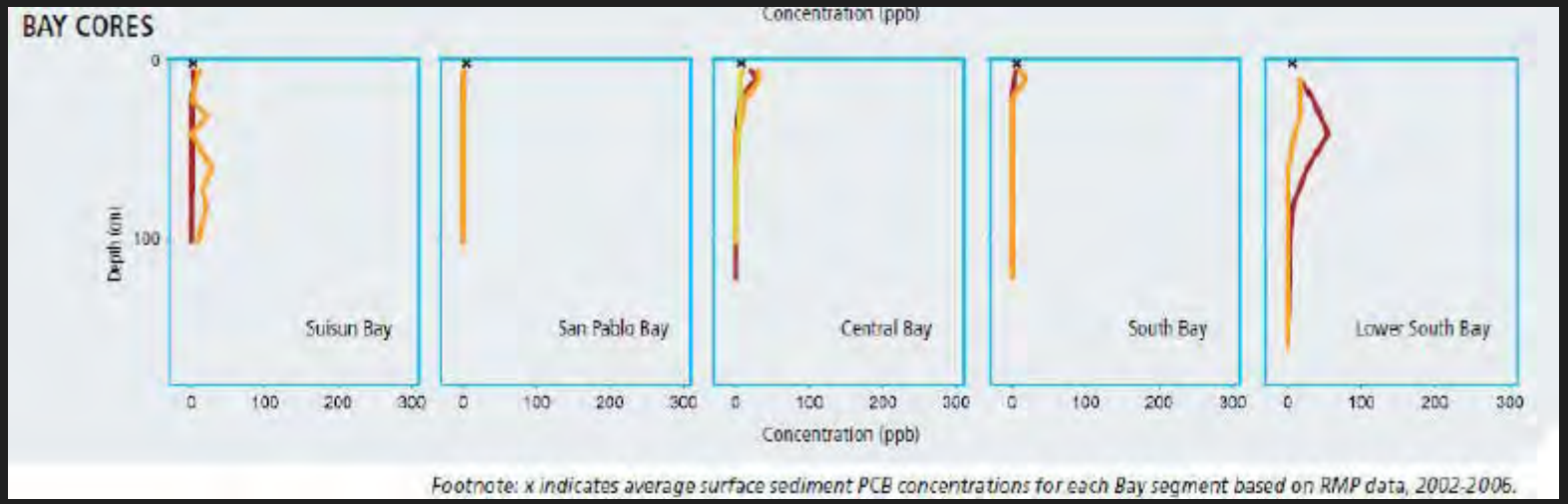


Photo: Courtesy of Dr. David Baldwin, NOAA

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

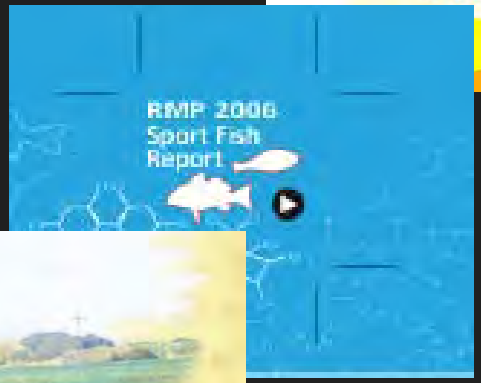
- Purpose: Monitor storm water, small tributaries, and delta outflow to understand contaminant loads to the Bay
- Recent studies:
  - Development of spreadsheet model
  - Storm water loads from Guad., Hayward, & Delta
- BACWA reps: Eric Dunlavey and James Downing (San Jose)

TBD - We need you!

	2011	2012	2013	2014	2015
TOPIC					
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
ANNUAL TOTALS FOR SPECIAL STUDIES	**$711,000**	**$1,035,500**	**$980,000**	**$740,000**	**$0**
ANNUAL TOTAL AVAILABLE FOR SPECIAL STUDIES	$706,194	$895,434	$1,093,540	$1,142,106	$1,133,319

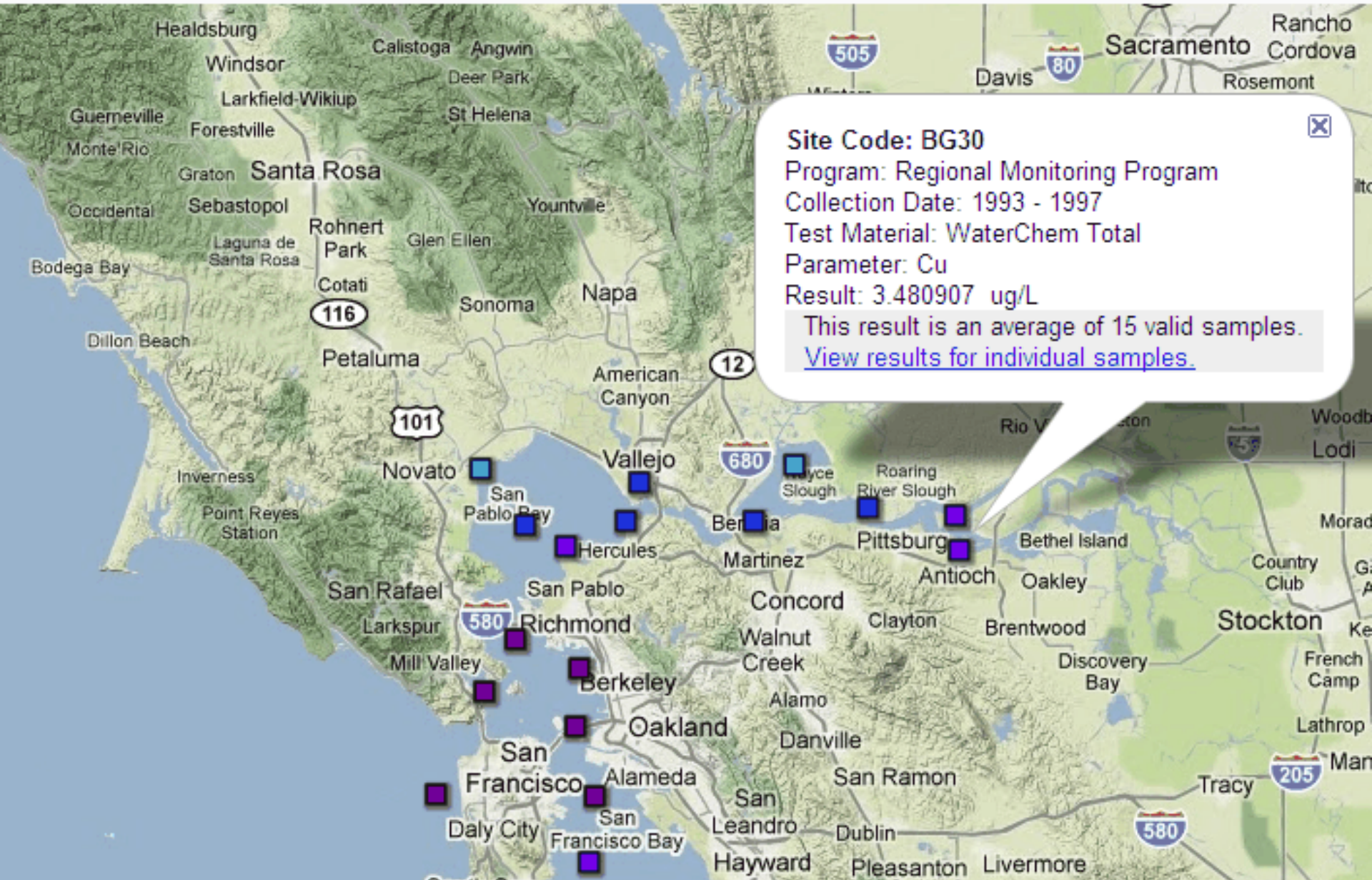
Information Dissemination

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

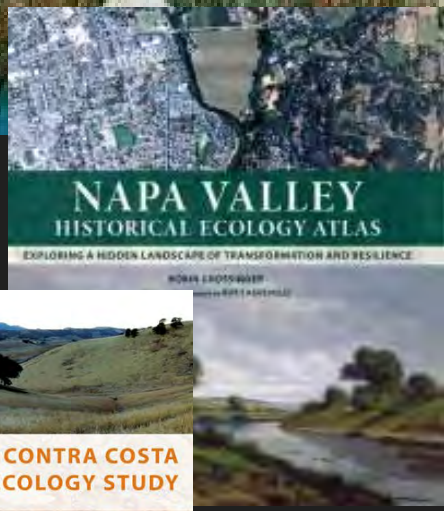


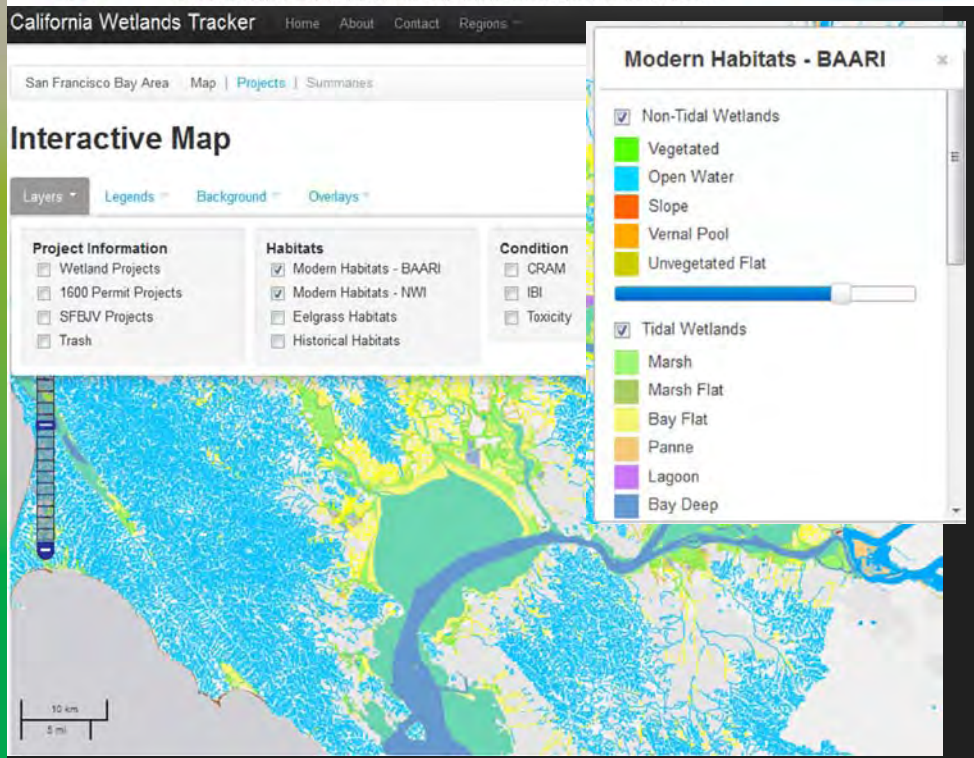
CD3 Contaminant Data Display & Download

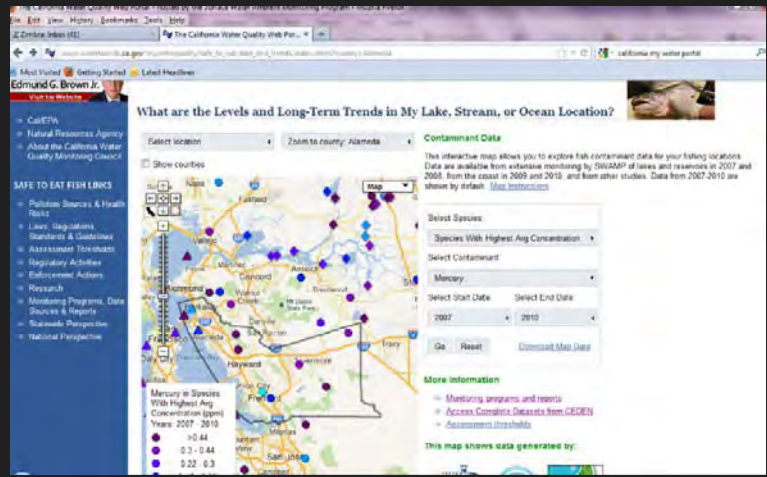
water sediment bivalves sport fish



RMP is enhanced by all the other activities at SFEI



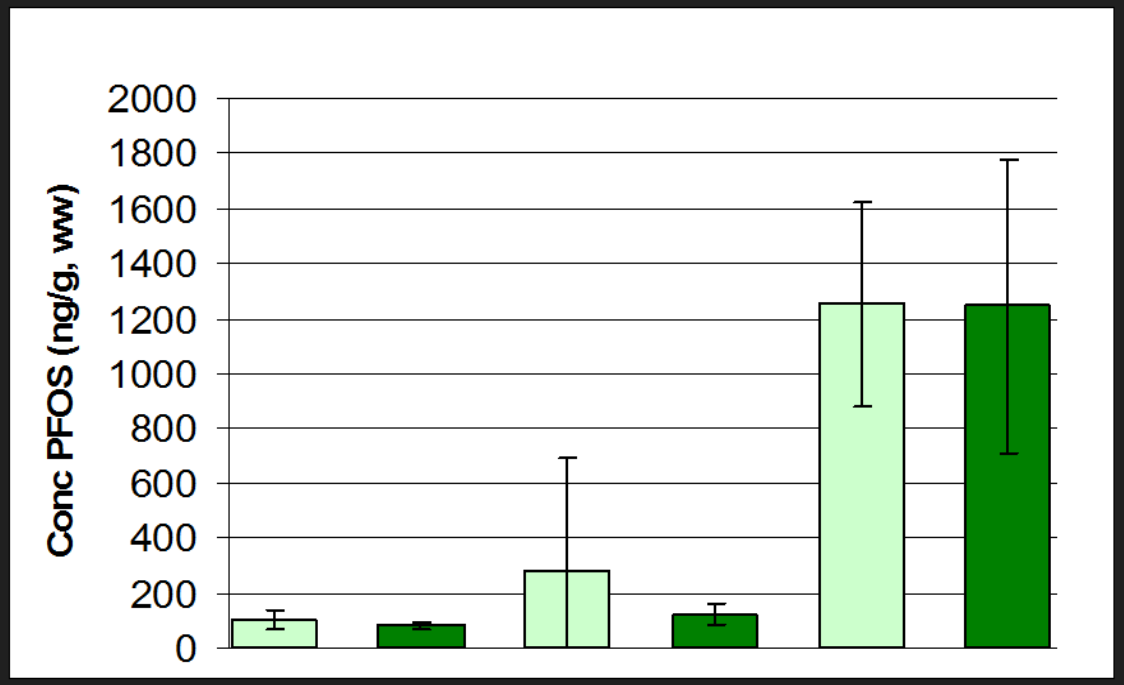




Thank You!

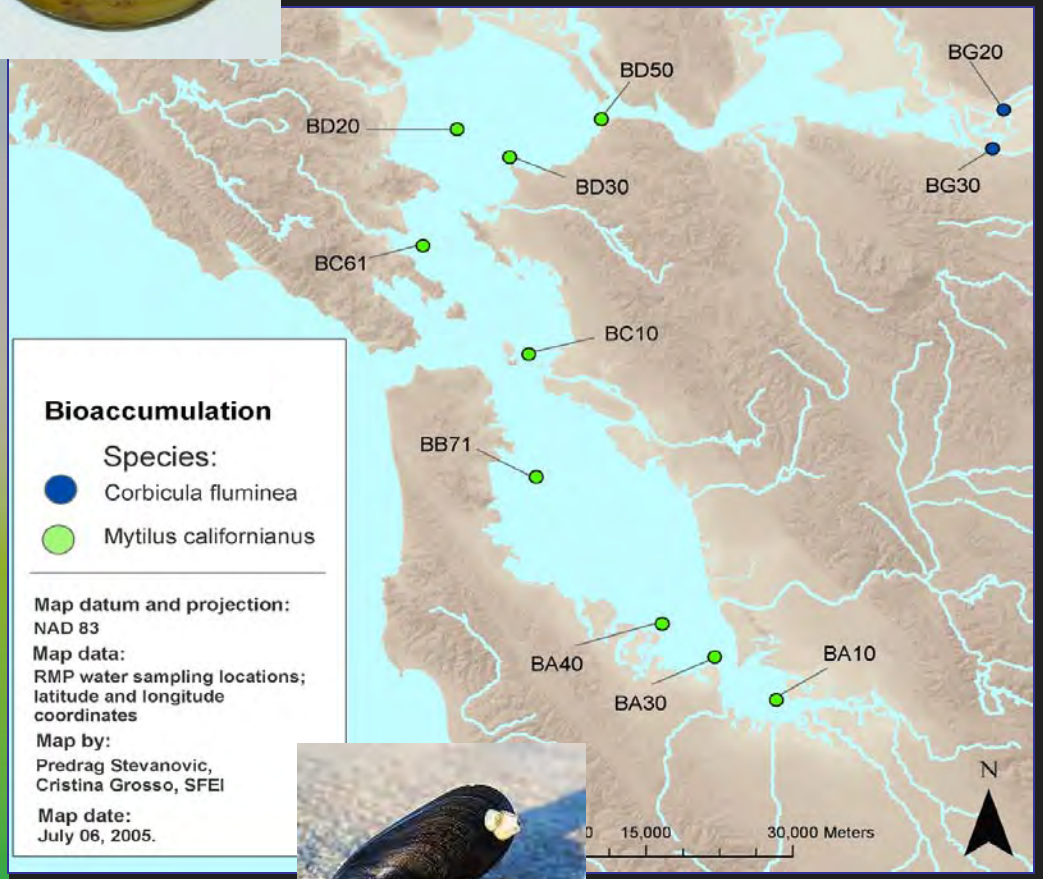
S&T: Bird Eggs

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



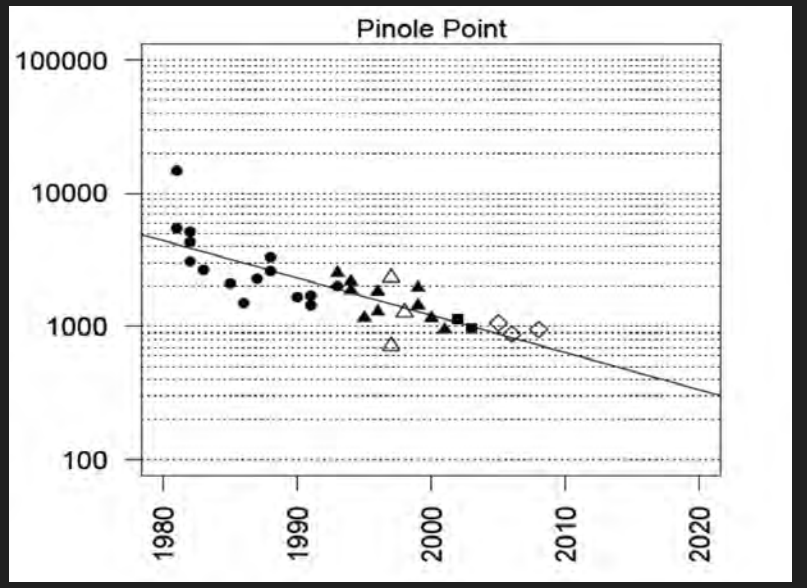
S&T Bivalve Monitoring

Corbicula fluminea



Mytilus californianus

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



RMP Structure

Mercury Strategy

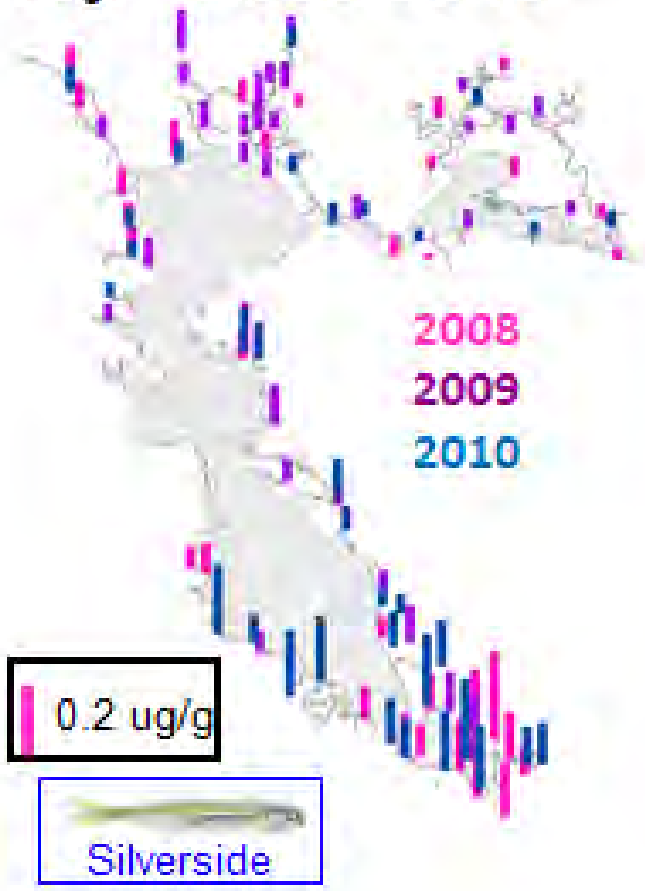
- Purpose: Understanding which pathways are most important for uptake into the foodweb
- Recent studies:
  - Mercury isotopes
  - Small fish initiative
  - MeHg Synthesis
- BACWA reps:

Hg in Small Fish

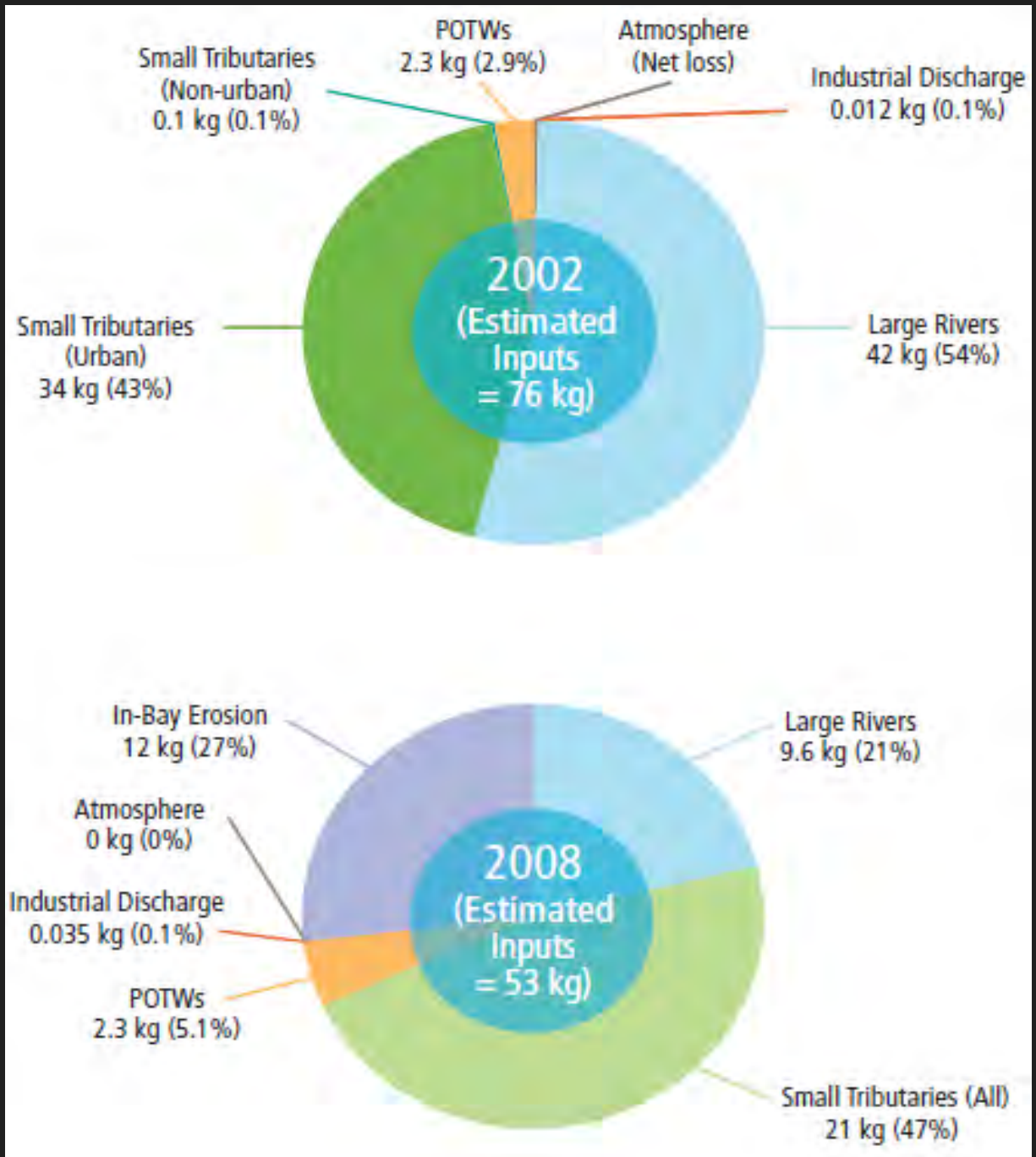
Background

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

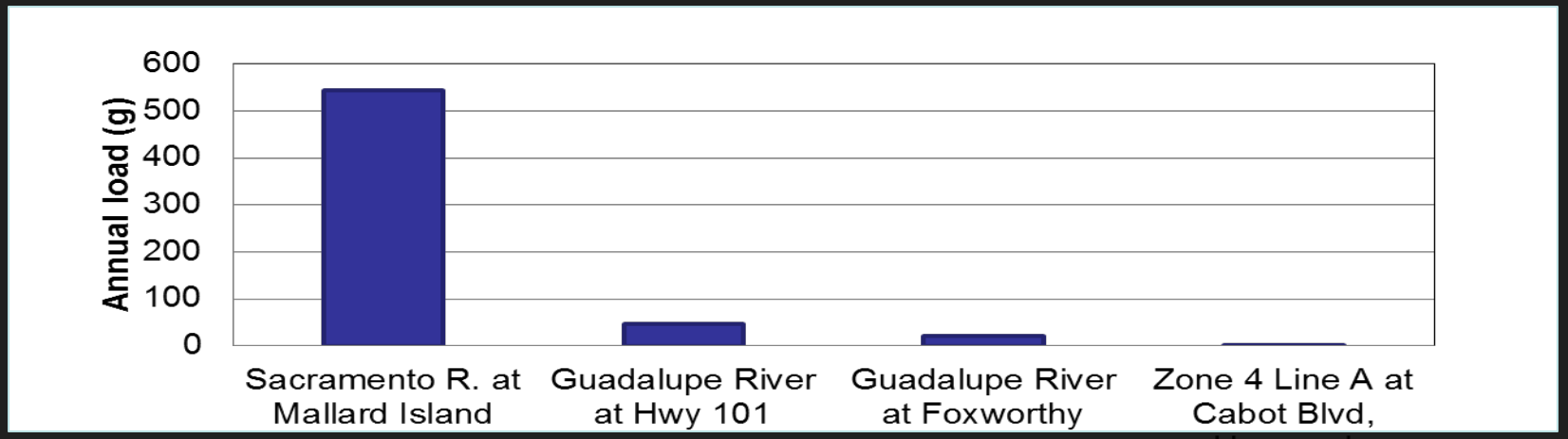


SPLWG

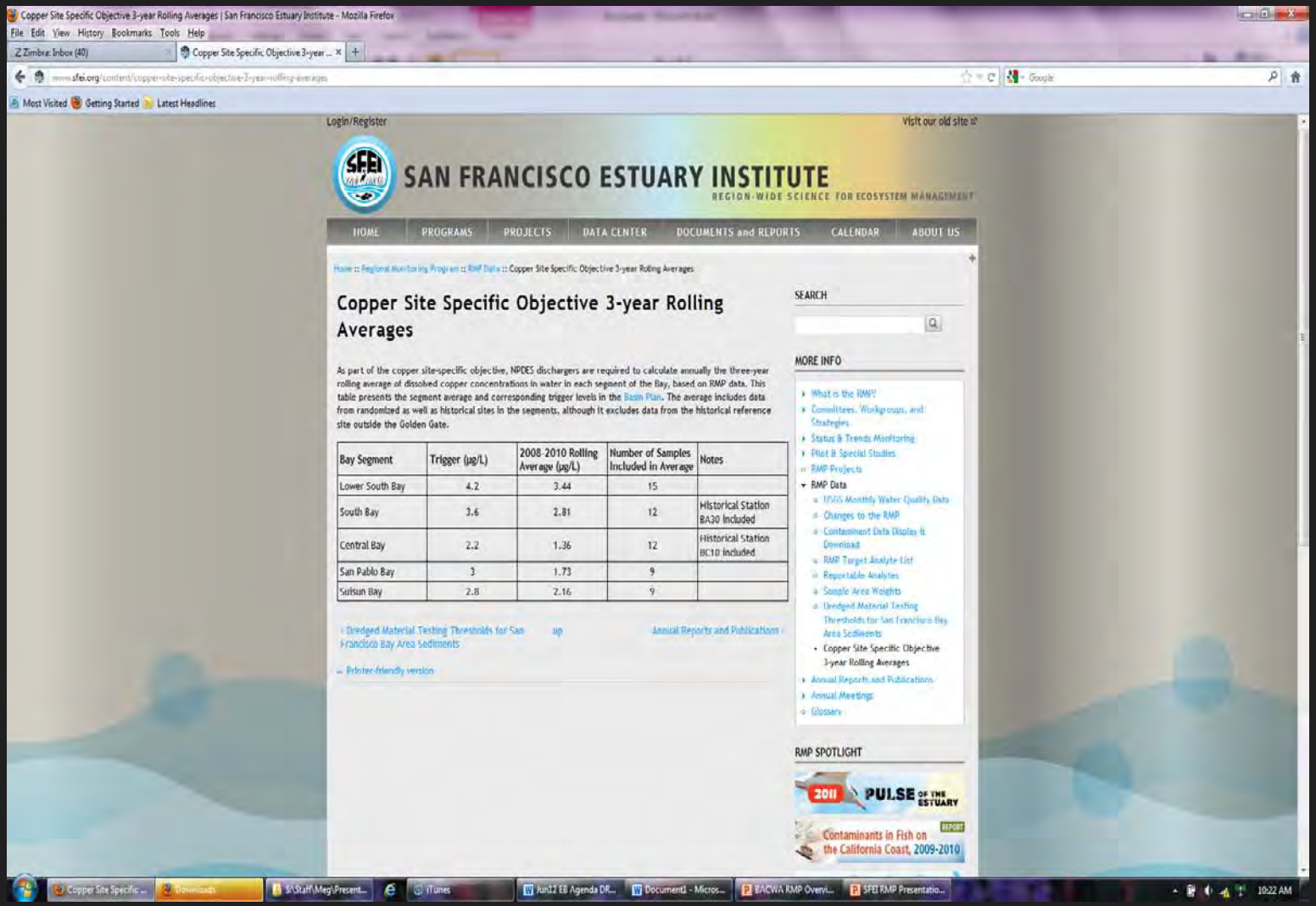

POTWs
2.3 kg (2.9%)
Atmosphere
(Net loss)
Small Tributaries
(Non-urban)
0.1 kg (0.1%)
Industrial Discharge
0.012 kg (0.1%)
2002
(Estimated
Inputs
= 76 kg)
Small Tributaries
(Urban)
34 kg (43%)
Large Rivers
42 kg (54%)
In-Bay Erosion
12 kg (27%)
Large Rivers
9.6 kg (21%)
Atmosphere
0 kg (0%)
2008
(Estimated
Inputs
= 53 kg)
Industrial Discharge
0.035 kg (0.1%)
POTWs
2.3 kg (5.1%)
Small Tributaries (All)
21 kg (47%)

Other Strategies:

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



Copper Rolling Average



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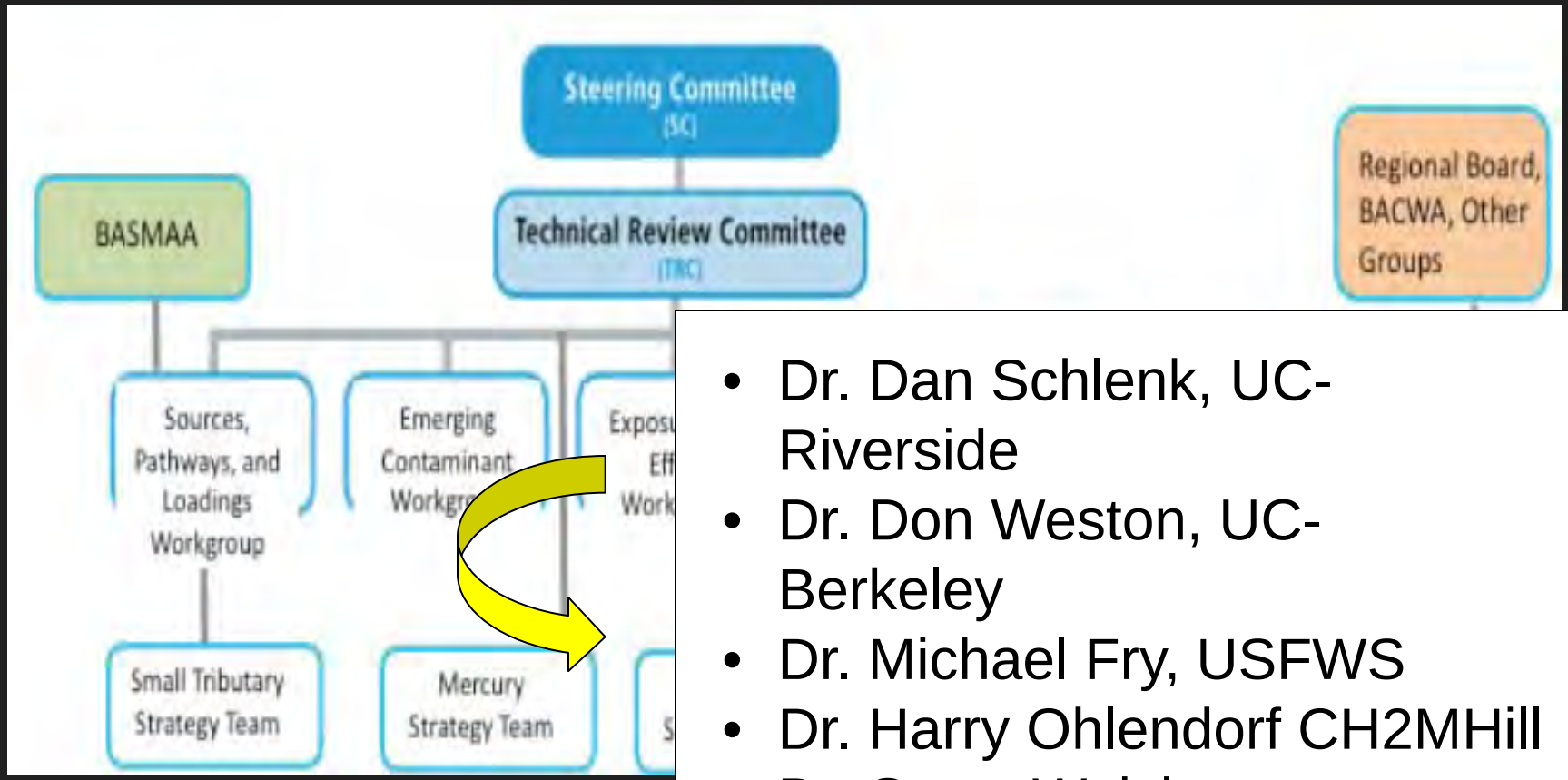

- Dr. Dan Schlenk, UC-Riverside
- Dr. Don Weston, UC-Berkeley
- Dr. Michael Fry, USFWS
- Dr. Harry Ohlendorf CH2MHill
- Dr. Steve Weisberg, SCCWRP