OVERVIEW OF THE RMP
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

Multi-year Plan

Special studies
RMP Structure

WWTPs
Refineries
Stormwater agencies
USEPA
Industry
RWQCB
Dredgers/ US ACE
**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

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

Neurophysiology

- EOG response (mV)

Behavior

- Alarm response (% reduction)

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!

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Information Dissemination

- **Pulse**
- **Annual Meeting**
  - October 9th 2012
  - David Brower Center Berkeley
- **Technical reports**
- **Journal articles**
- **Workshops**
Site Code: BG30
Program: Regional Monitoring Program
Collection Date: 1993 - 1997
Test Material: WaterChem Total
Parameter: Cu
Result: 3.480907 ug/L
This result is an average of 15 valid samples.
View results for individual samples.
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

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

Bioaccumulation

Species:
- Corbicula fluminea
- Mytilus californianus

Map datum and projection: NAD 83
Map data: RMP water sampling locations; latitude and longitude coordinates
Map by: Predrag Stevanovic, Cristina Grosso, SFEI
Map date: July 06, 2005.

Mytilus californianus

Pinole Point

[Graph showing data trends over time for Pinole Point]
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, e.g., 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
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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<th>Bay Segment</th>
<th>Trigger (µg/L)</th>
<th>2000-2010 Rolling Average (µg/L)</th>
<th>Number of Samples Included in Average</th>
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</table>

*Data represents Copper Site Specific Objective 3-year Rolling Averages.*

*SAN FRANCISCO ESTUARY INSTITUTE*

*More Info*

- What is the RNF?
- Core Elements, Outcomes, and Findings
- Date & Time Monitoring
- Health & Special Studies
- Staff Projects
- RNF Data
  - NPDES Monitoring
  - Water Quality Data
  - Changes to the RNF
  - Contaminant Data and Trends
  - RNF Target Data List
  - Regional Assessments
  - Sources & Areas
  - RNF Summary Overview
  - Copper Site Specific Objective 3-year Rolling Averages
  - Annual Reports and Publications
- Glossary

*RNF SPOTLIGHT*

- Contaminants in Fish on the California Coast, 2009-2010
RMP Structure

- Dr. Dan Schlenk, UC-Riverside
- Dr. Don Weston, UC-Berkeley
- Dr. Michael Fry, USFWS
- Dr. Harry Ohlendorf CH2M Hill
- Dr. Steve Weisberg, SCCWRP