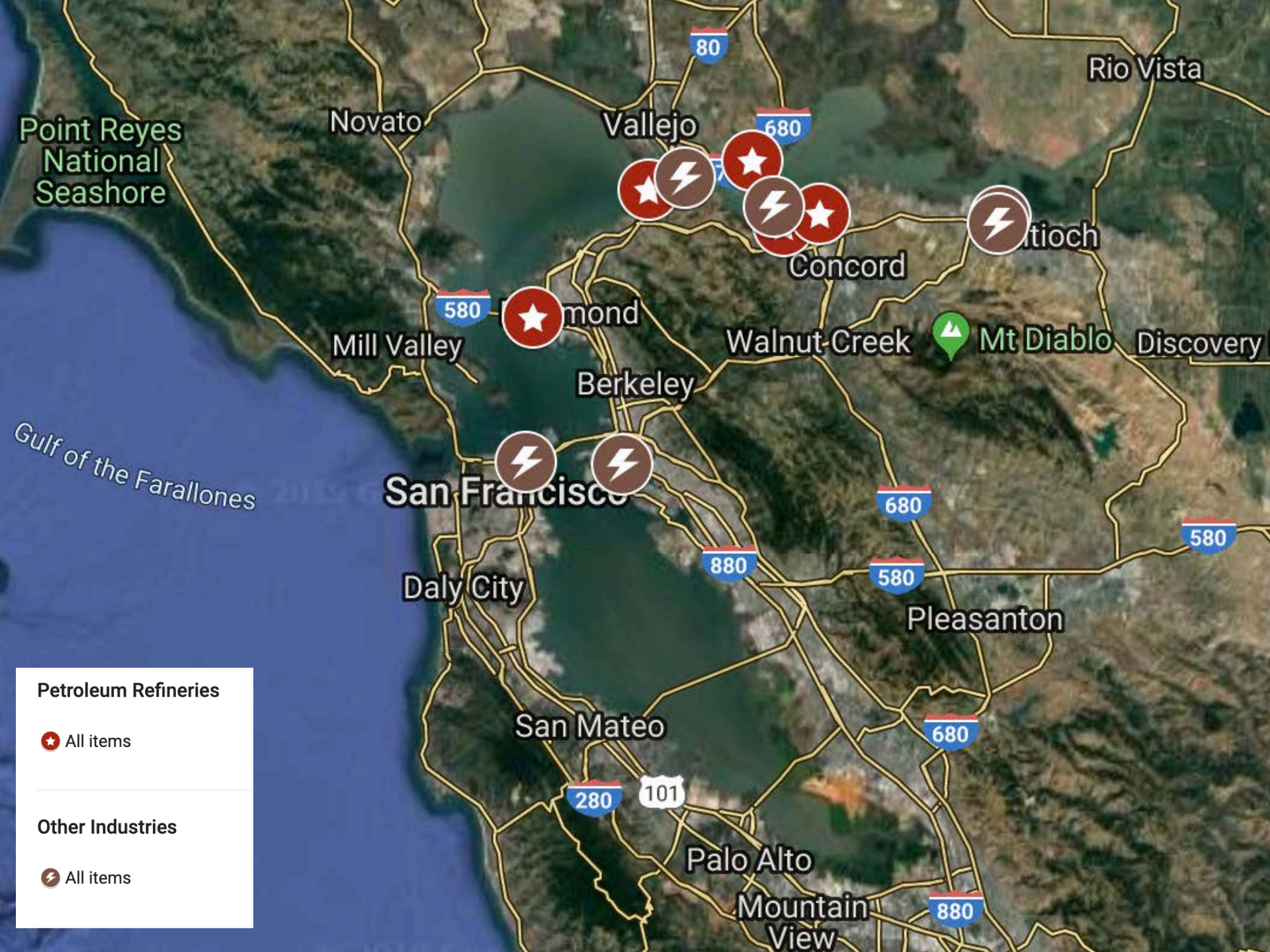


Industrial Wastewater: Regulator Perspective

**October 10, 2019
Regional Monitoring Program
Annual Meeting**

**Robert Schlipf
San Francisco Bay Water Board**





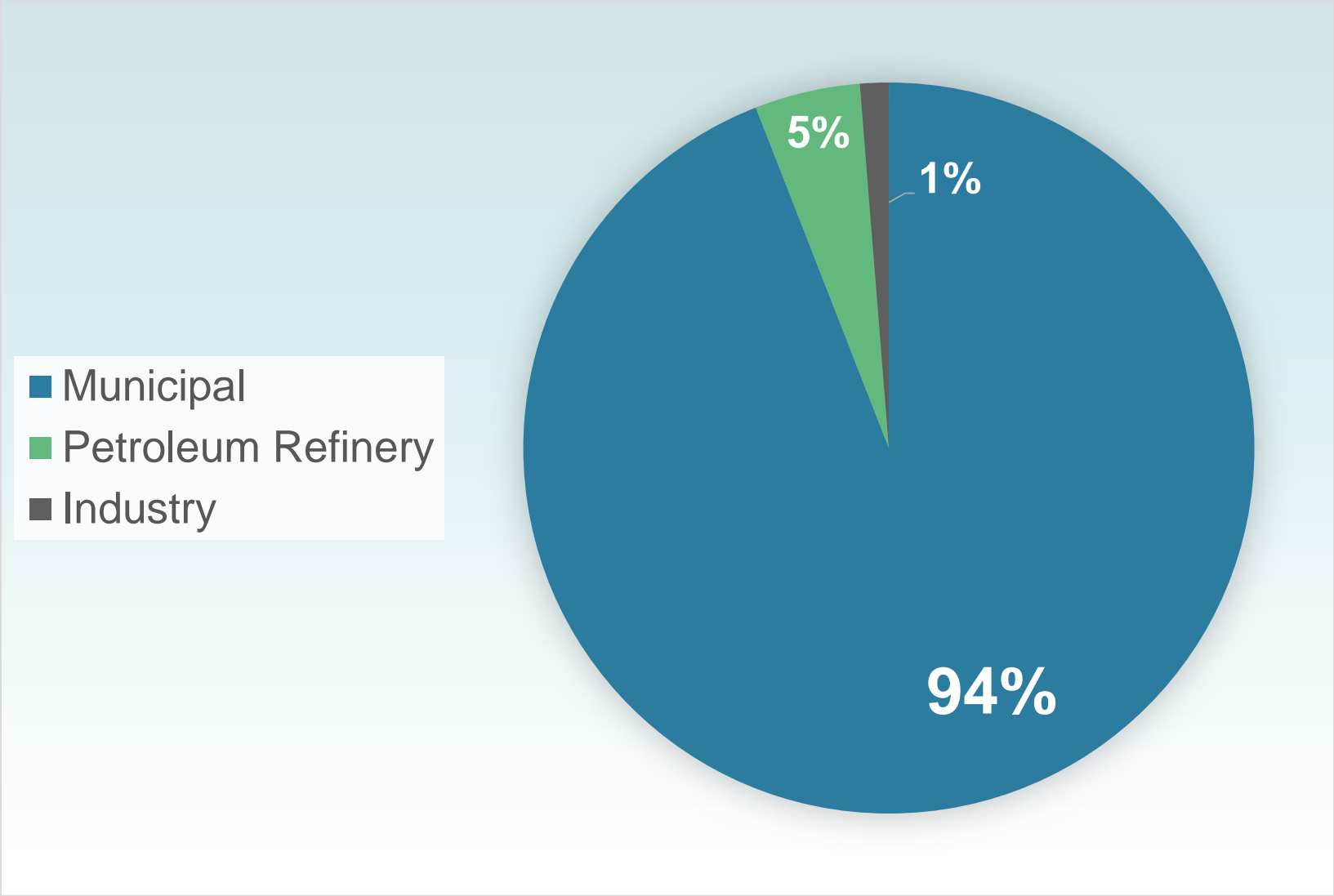
Petroleum Refineries

★ All items

Other Industries

⚡ All items

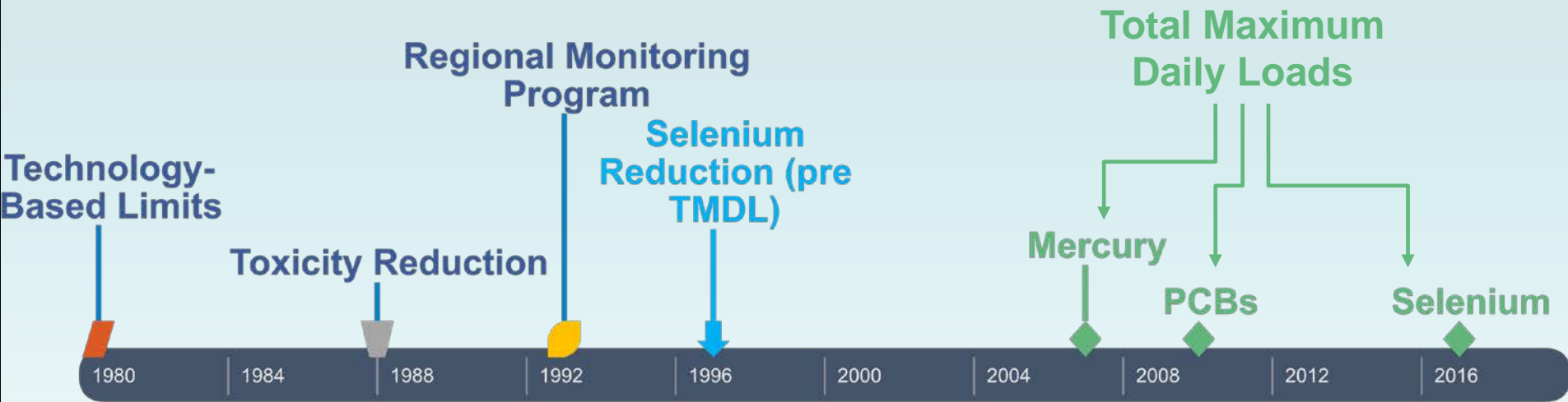
Wastewater Flows to SF Bay



Regulatory Approach

1. Technology-Based: Based on crude processed and refinery processes
2. Water Quality-Based: Protect beneficial uses
3. Whole Effluent Toxicity: Regulate unknown toxicants

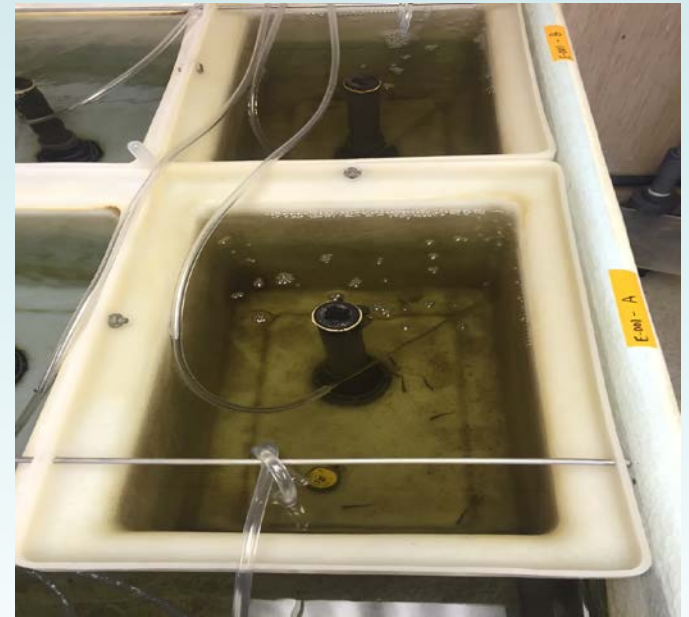
Permitting Milestones



Toxicity Reduction

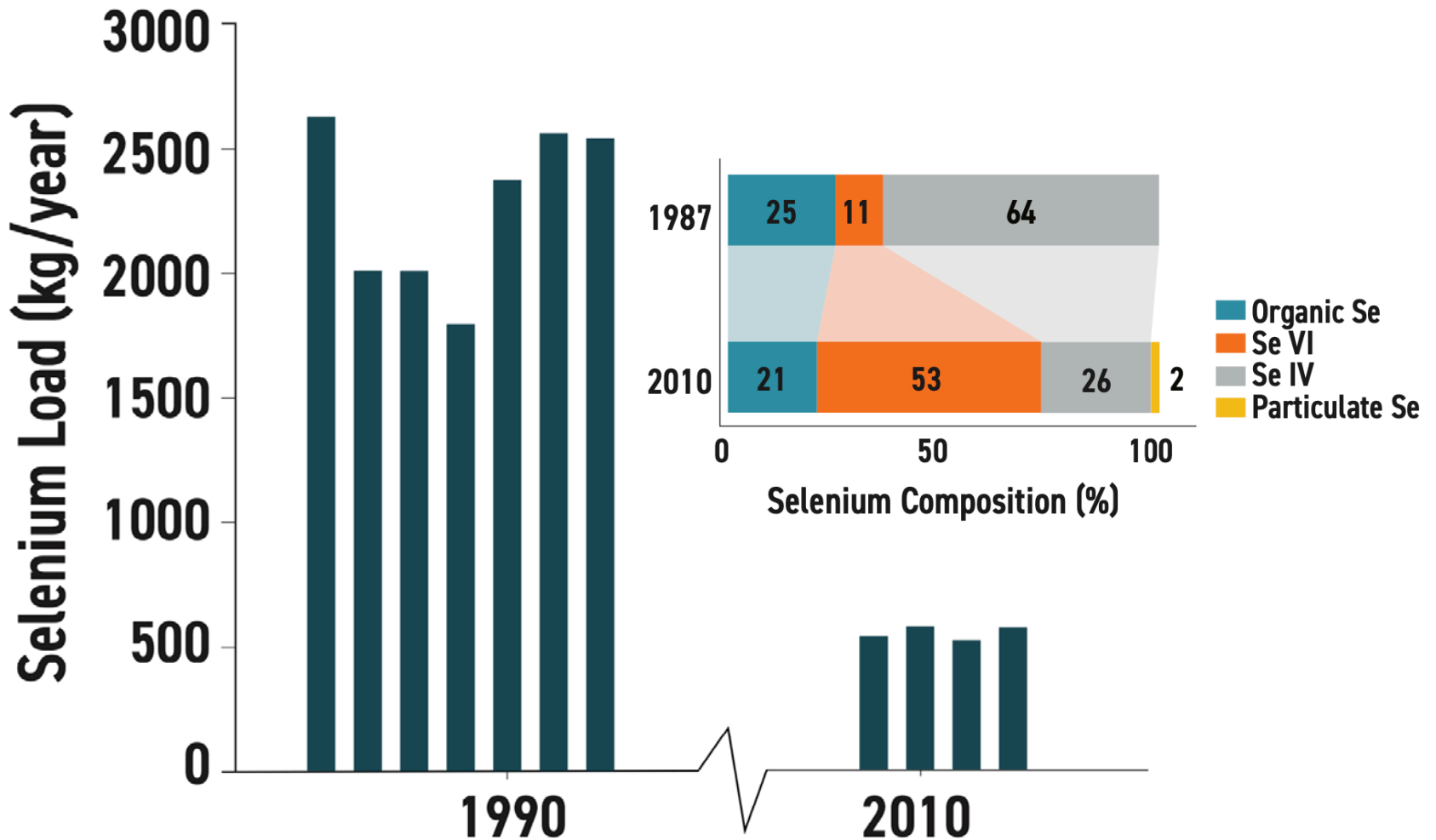


Granular Activated Carbon

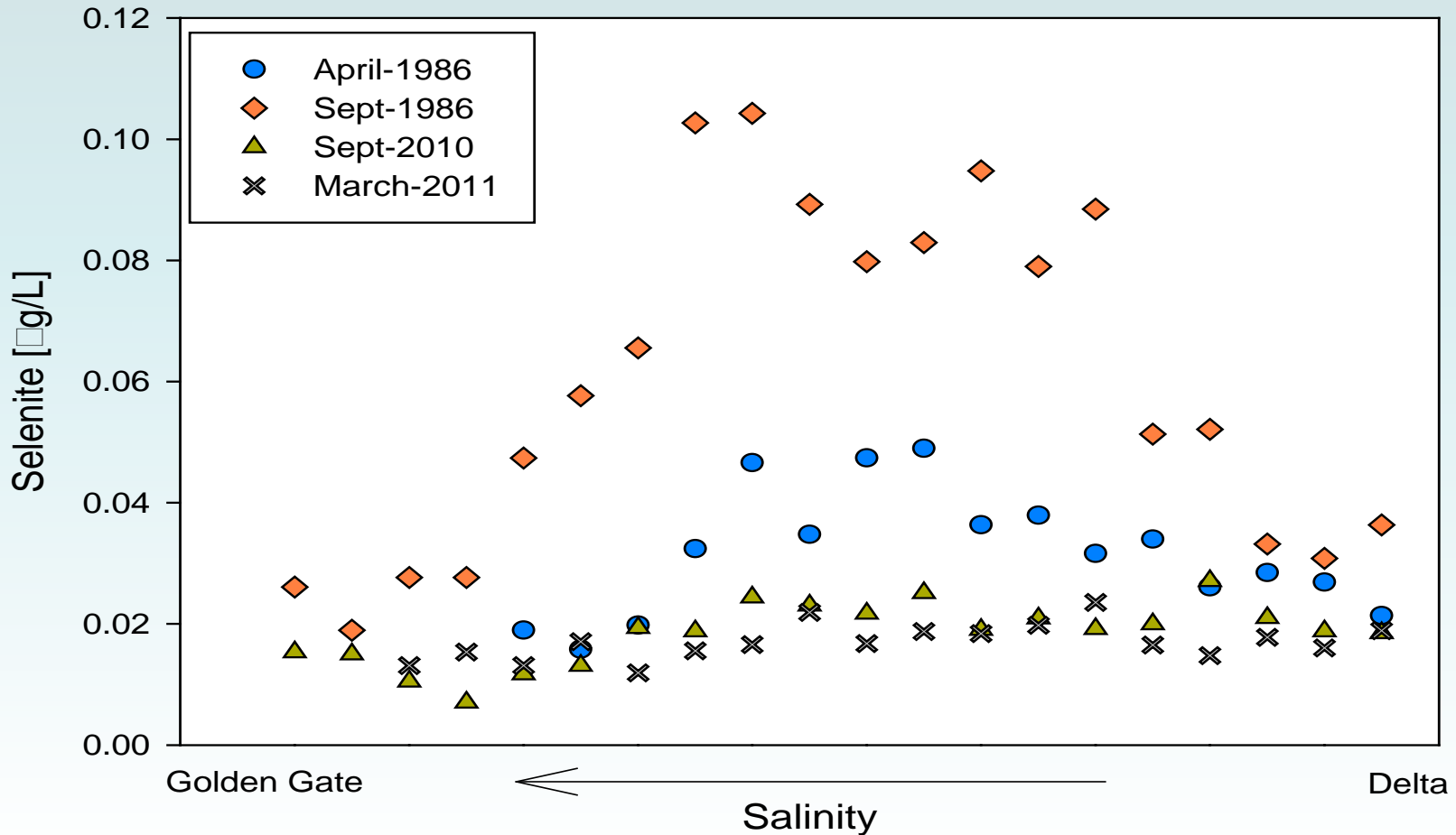


Flow through test on rainbow trout

Selenium Reduction



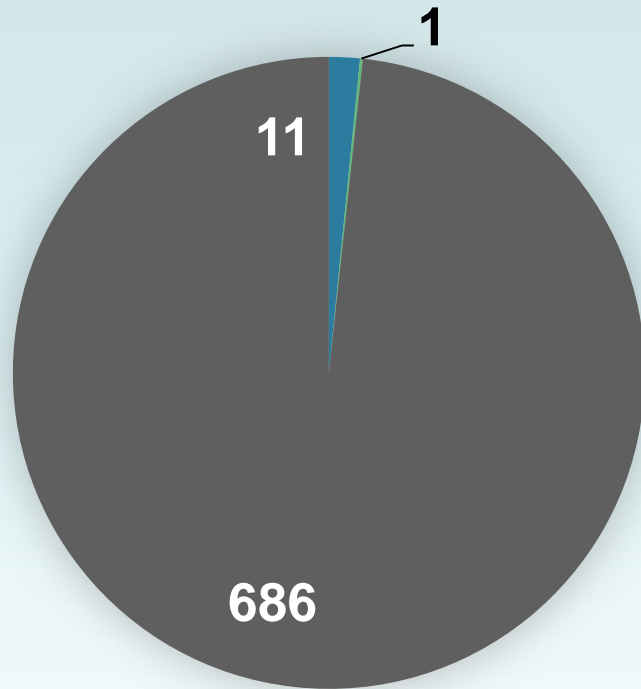
Selenite (Se IV) in North SF Bay



TMDL Implementation

Mercury Loads to SF Bay

TMDL Allocation (kg/yr)



2018 Mercury Loads:

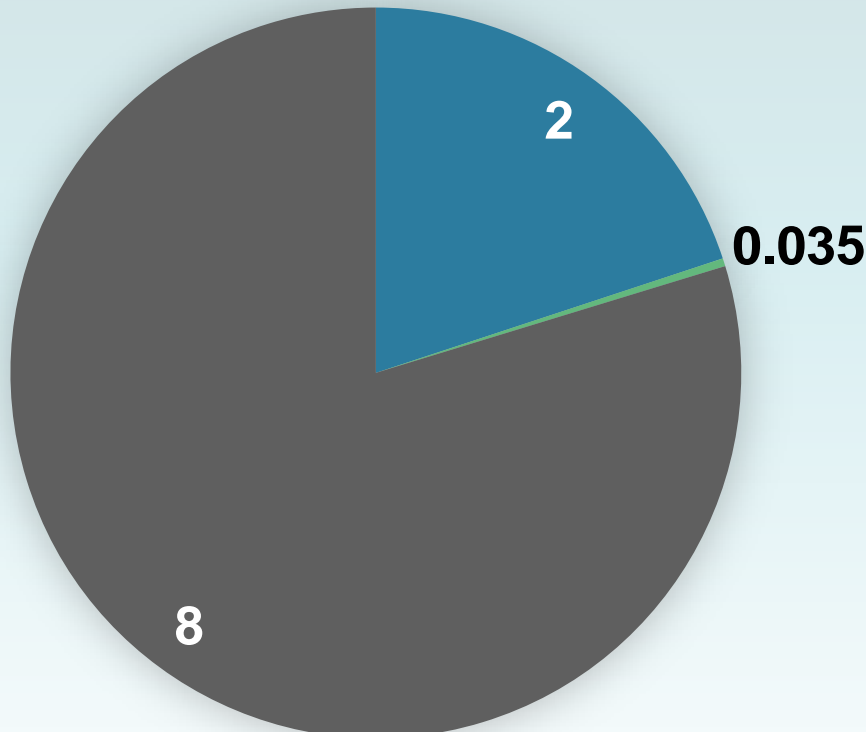
✓ Refinery: 0.27

✓ Industrial: 0.01

- Municipal
- Refinery & Industrial
- Non-wastewater

PCB Loads to SF Bay

TMDL Allocation (kg/yr)



2018 PCB Loads:

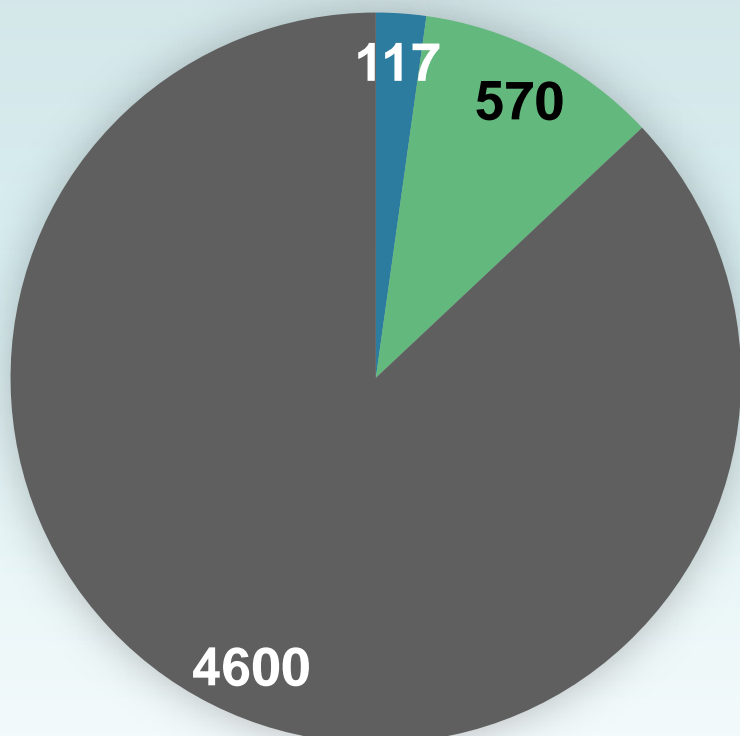
✓ Refinery: 0.012

✓ Industrial: 0.007

- Municipal
- Refinery & Industrial
- Non-wastewater

Selenium Loads to North SF Bay

TMDL Allocation (kg/yr)

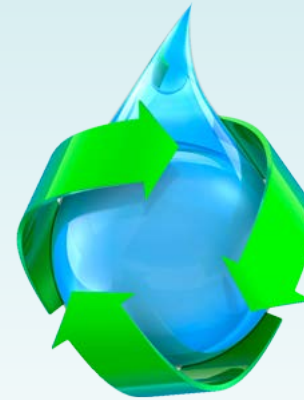


2018 Selenium Loads:
✓ Refinery: 520

- Municipal & Industrial
- Refinery
- Non-wastewater

Future Challenges

1. Climate Change Adaptation



2. Optimize Selenium Reduction

Questions?

