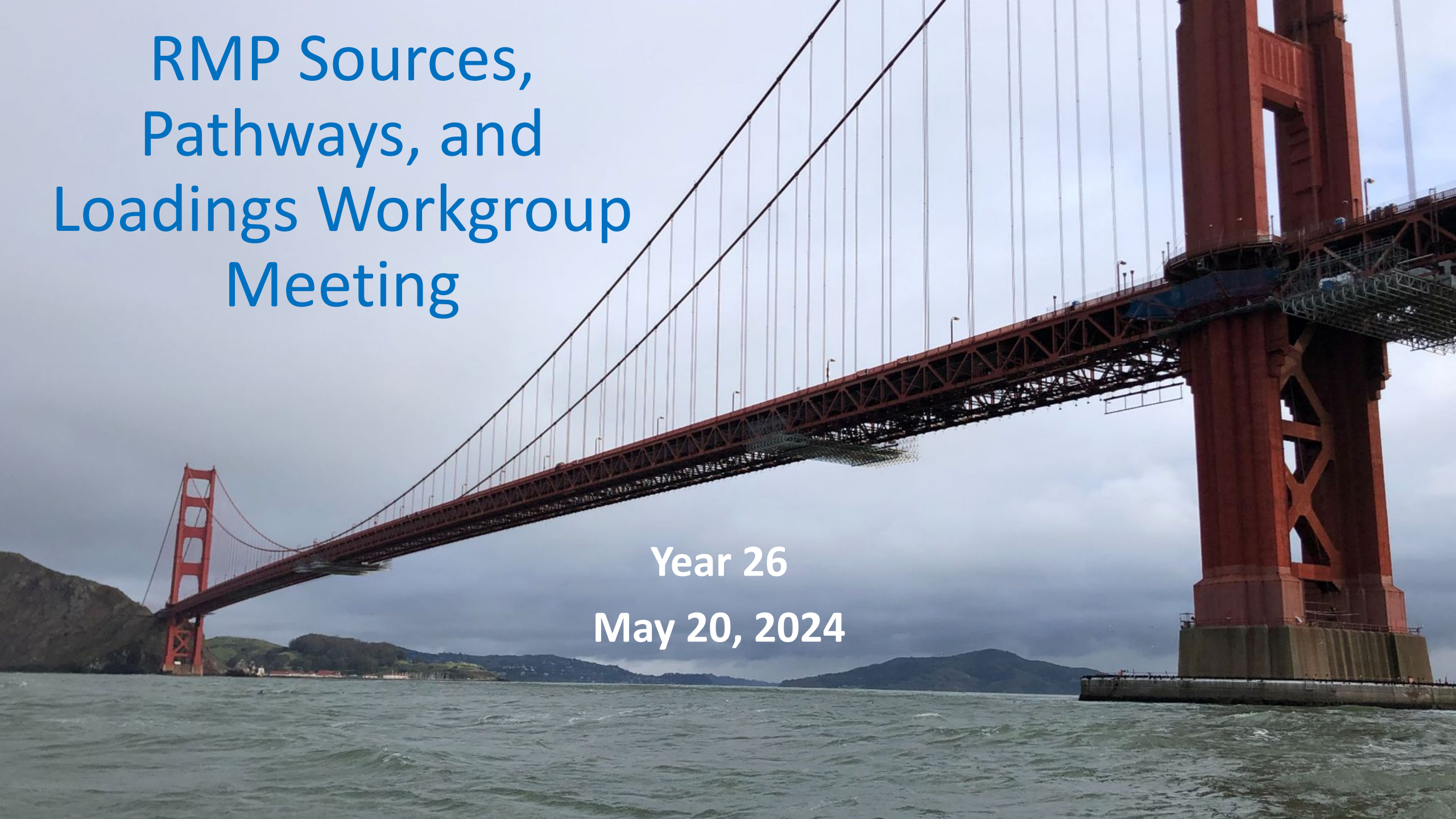
RMP Sources, Pathways, and Loadings Workgroup Meeting



Year 26

May 20, 2024

Item 1: Introductions and Meeting Goals

SFEI Housekeeping Reminders

Out the doors and to the right

Password:
sfsfsfsfsf

Please silence cell phones & laptops

Zoom Tips

1. Update your name and add your affiliation
2. Raise your hand if you have a comment or question
3. Unmute yourself and turn on video when you are speaking
4. Use the chat function if you have a **secondary** comment, question, or technical issue

In-Person Attendees

1. Mute your microphone and the volume on your laptop
2. Turn off your camera

RMP

Guidelines for Inclusive Conversations

1. Try it on
2. Practice self focus
3. Understand the difference between intent and impact
4. Practice both/and thinking
5. Refrain from blaming or shaming self and others
6. Move up / move back
7. Practice mindful listening
8. Right to pass
9. Avoid jargon
10. It’s okay to disagree (respectfully)

- would like to hear from everybody
- be mindful of the clock
- advisors, folks in the room, folks online

RMP

We acknowledge that the San Francisco Bay Area is the ancestral homeland of many indigenous people, including the Ohlone, Patwin, Coast Miwok, and Bay Miwok

S. Bezalel

SPLWG Science Advisors

Dr. Jon Butcher
Tetra Tech

Tom Jobes
Independent

Dr. James Limbrunner
Tufts University

Dr. Robert Budd
CA Department of
Pesticide Regulation

Dr. Steven Corsi
USGS

RMP

INTRODUCTIONS

Goals/Agenda for the Meeting

- Water Board and Permittees share perspectives
- Discuss SPLWG Strategy update
- Provide updates on recent and ongoing SPLWG modeling and monitoring studies
- Discuss SPLWG proposals for 2025
- Rank special study proposals for funding in 2025, endorse other studies, and provide advice to enhance the proposals

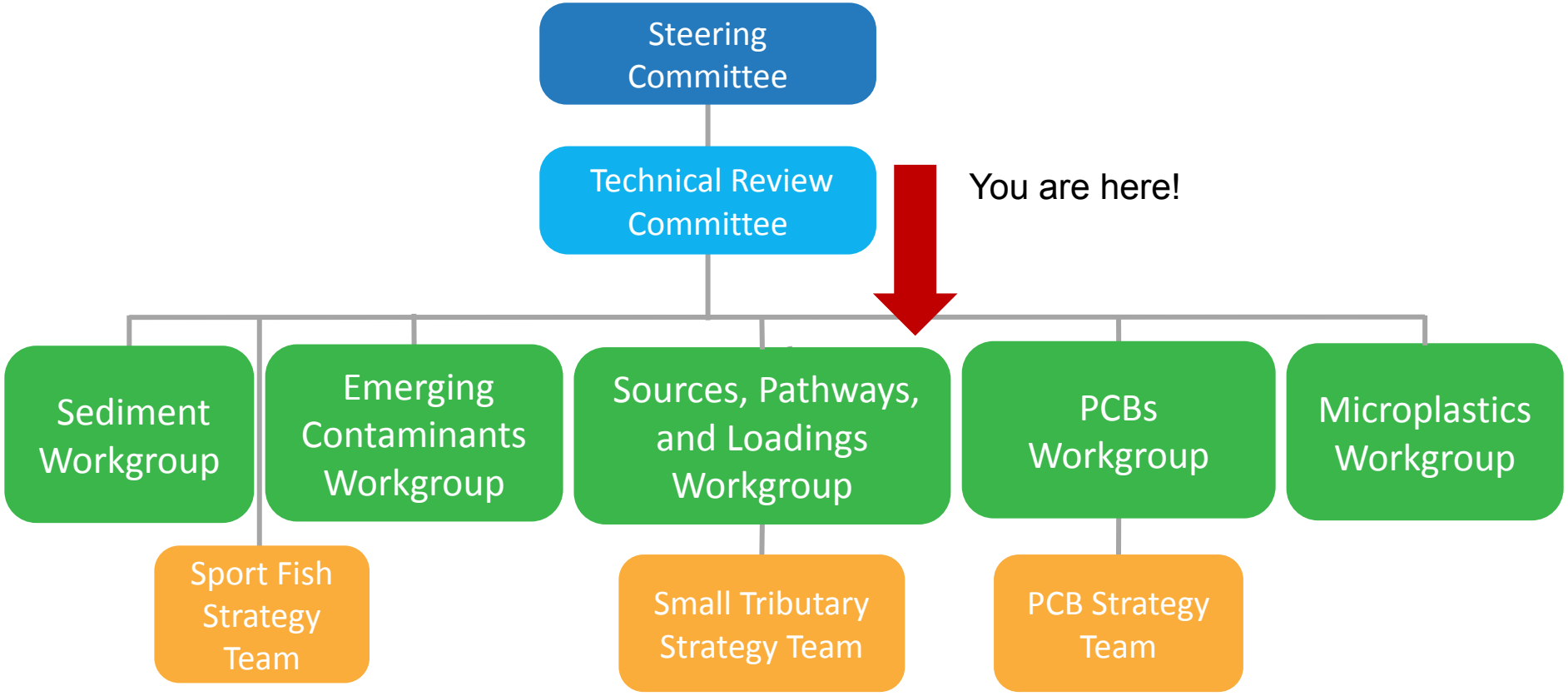
Regional Monitoring Program

Goal:
Collect data and communicate information about water quality in San Francisco Bay in support of management decisions

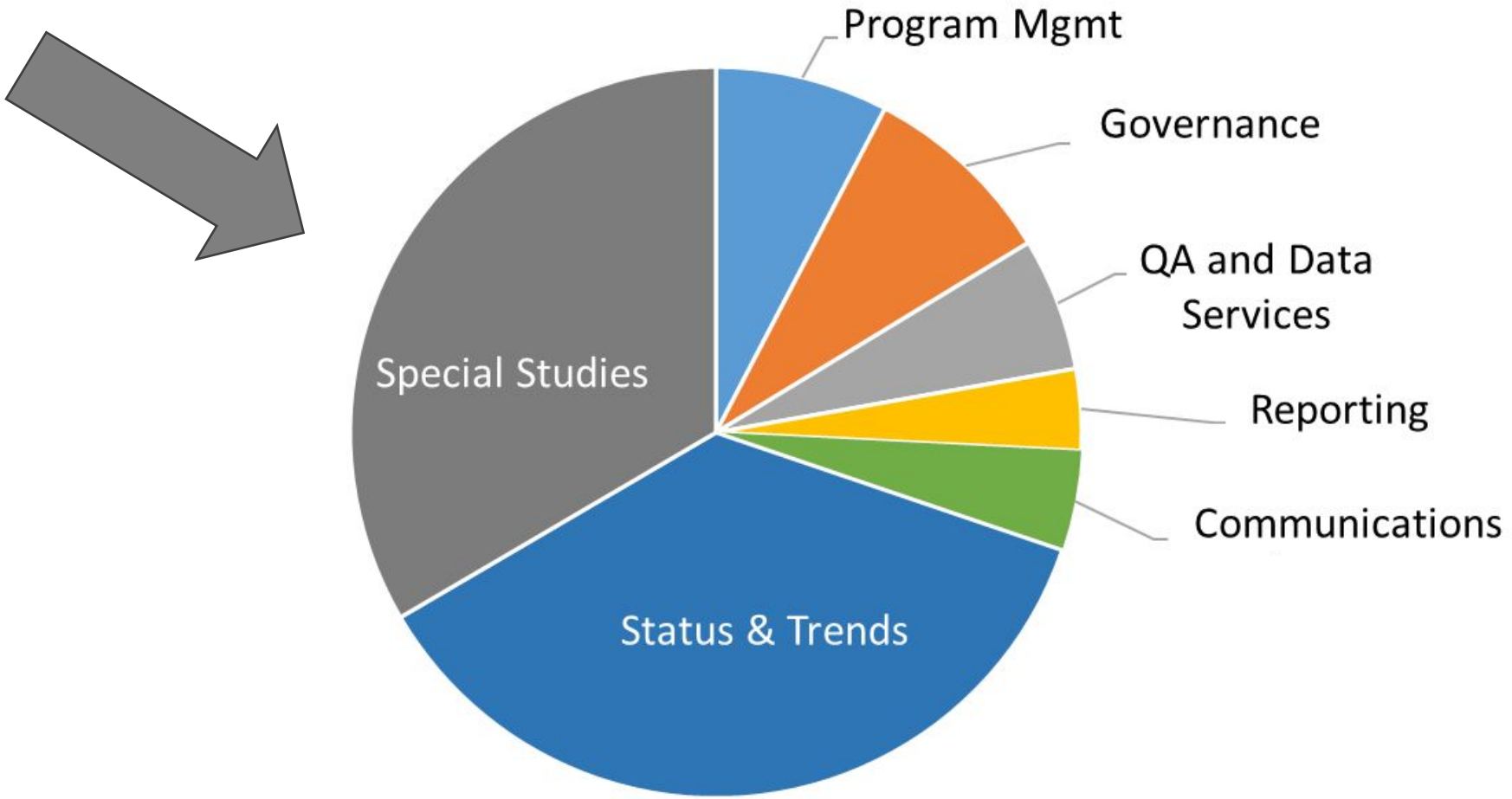
~ 68 entities in the Program

- Municipal wastewater
- Industrial wastewater
- Municipal stormwater
- Dredgers

RMP Program Structure



Regional Monitoring Program Budget



RMP Special Studies Budget for 2025

Predicted RMP Special Studies Budget for 2025 = $1.54M

★ Includes: AMR Funds + Stormwater CECs funds

But this year there's more!

USEPA San Francisco Bay Program Office

- Expected $54M per year (!) for San Francisco Bay

EPA Region 9
San Francisco Bay Program Office
FY24 Draft Annual Priority List

Subtidal eelgrass and oyster reef restoration

Wetlands Regional Monitoring Program

Beneficial Reuse of Dredged Material Support

In-Bay Monitoring of Pollutants, including trash, and algal species under the Regional Monitoring Program

Large scale shoreline resilience, multi-benefit projects including horizontal levees and wastewater treatment/reuse

Nutrient Management Strategy

Special studies/projects for addressing PFAS in SF Bay

Large scale tidal wetlands restoration

Special studies/projects for addressing PCBs under TMDL implementation plan

Large scale implementation of urban green stormwater infrastructure

BRRIT (Bay Restoration Regulatory Integration Team)

Our Primary Job Today

Prioritize the Tier 1 and Tier 2 Proposals for 2025 funding considering:

- Anticipated funding the RMP is allocating for 2025 Special Studies under SPLWG: $287K
- Anticipated additional 2025 funding coming to the SPLWG from the EPA funds: $143K
- Total for SPL in 2025: $430K
- Total for SPL in 2026 and beyond: ~$570K
- Total cost of proposed studies: $XX

Agenda Notes

- Would be good to have more time for the closed session
- Will try to make up some time in the morning (incentive: earlier lunch!)
- Will shift some time from item 7 to item 8
- Will finish at 3:30

Item 2: SPLWG Stakeholder Perspectives

SPLWG Strategy Update

SPLWG Meeting May 20, 2024

Presented by:
Alicia Gilbreath

Co-Authors:
Matt Heberger, Lester McKee, Kelly Moran

Scope of SPL Workgroup

The scope of Sources, Pathways and Loadings Workgroup is defined by the **Management Questions**, which are guided by the **Management Drivers**.

Out of the Management Questions and guided by the Management Drivers, we have a **Strategy** that frames the work we do and provides the roadmap for future work.

This Project is to update the Management Questions and update the Sources, Pathways and Loadings Strategy.

RMP Sources, Pathways, and Loadings Strategy: 2024 Update

Prepared by:
Alicia Gilbreath
Lester McKee
Matthew Heberger
Kelly Moran

Contribution No. 1189
Draft for review, May 2024

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4911 Central Ave, Richmond, CA 94804, p: (510) 746-7334, f: (510) 746-7300 www.sfei.org

Table of Contents

The Core Group…

Includes a subgroup of the SPLWG, including members from:

- Water Board
- Bay Area Municipal Stormwater Collaborative (BAMSC)
- Science Advisors

THANK YOU!

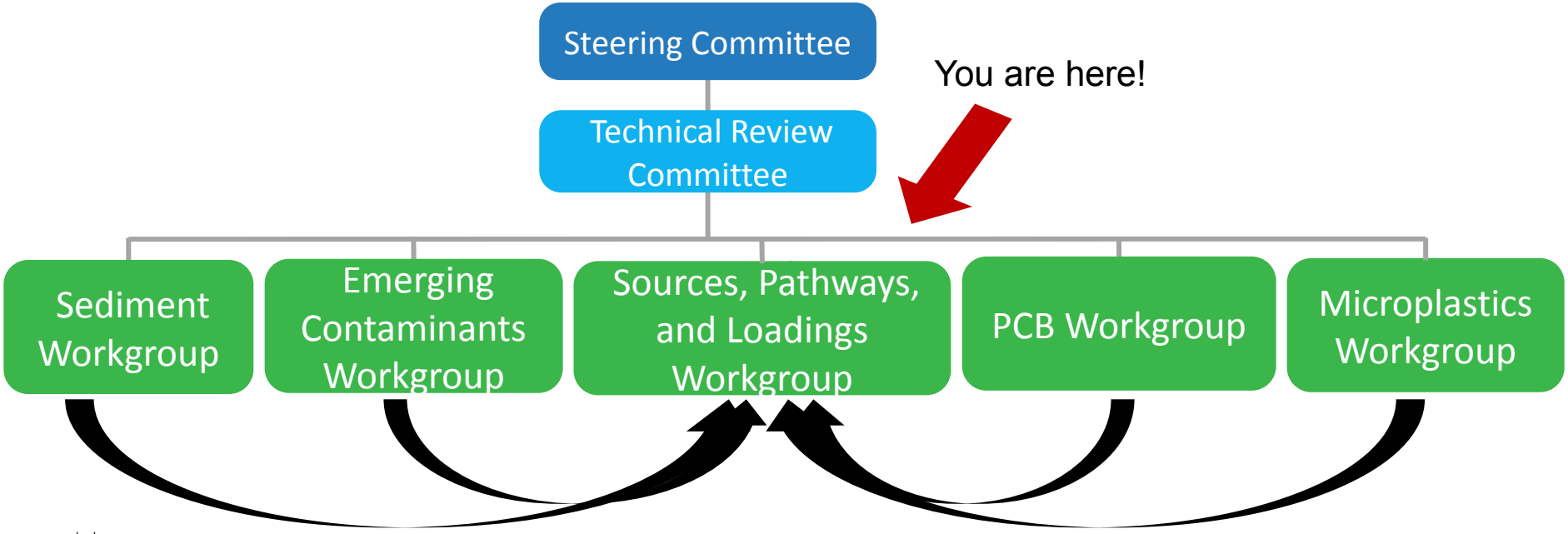
Goals:

✔ 1) Identify the management drivers (April 2023),

✔ 2) Discuss and revise the management questions (April 2023), and

→ 3) Discuss and review the updated strategy (May 2024).

RMP Program Structure - SPLWG Scope



MQs from other workgroups guide SPLWG work and influence our MQs

RMP
sfei.org/rmp

SPLWG-Related MQs from Other Workgroups

Emerging Contaminants WG MQ2: …sources, pathways, loadings….

Emerging Contaminants WG MQ4: …changed over time…. potential drivers contributing to change…

Microplastics WG MQ2: …sources, pathways, loadings …

Microplastics WG MQ3: … changing over time… potential drivers contributing to change…

Microplastics WG MQ4: …anticipated impacts of management actions…

PCBs WG MQ1, Sub-question A: … impact of focused management…

Sediment WG MQ3: … sources, pathways, and loadings…**Sub-question 3.1** …change in relation to changing climate, vegetation cover, and land use..

* Sub-questions under these ECWG questions are the focus of the Stormwater CECs Monitoring and Modeling project

SPLWG-Related MQs from Other Workgroups

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SPLWG Science Tools for Addressing MQs

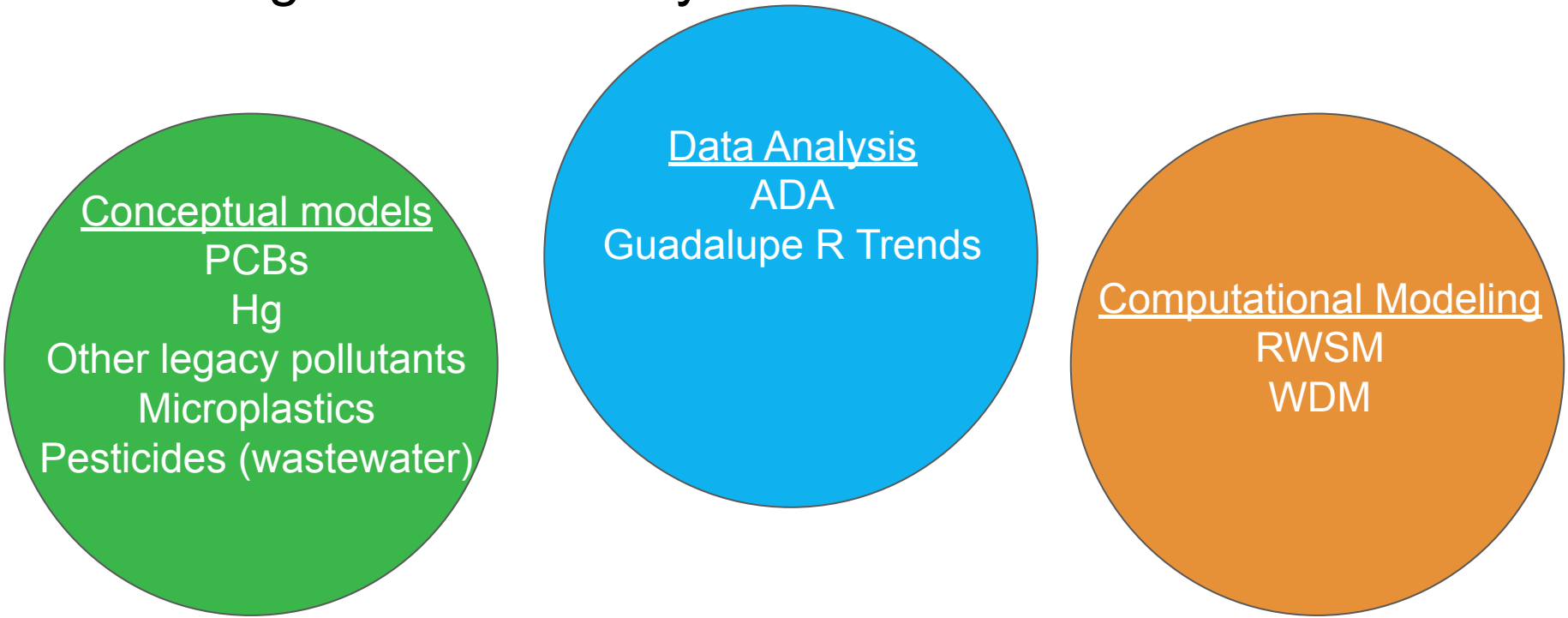
1) Modeling & Data Analysis

2) Monitoring

3) Development of Innovative Methods, Sampling Designs, and Equipment

SPLWG Science Tools for Addressing MQs

Modeling and Data Analysis



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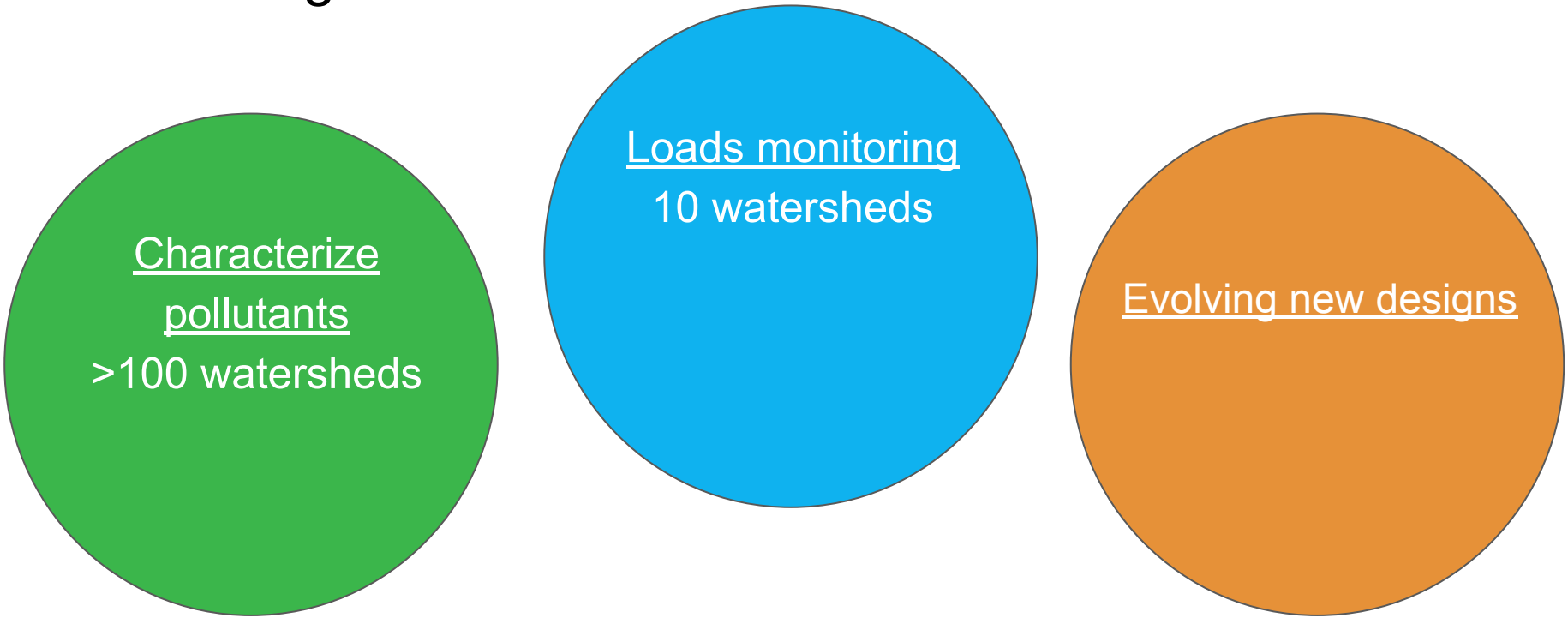
Monitoring



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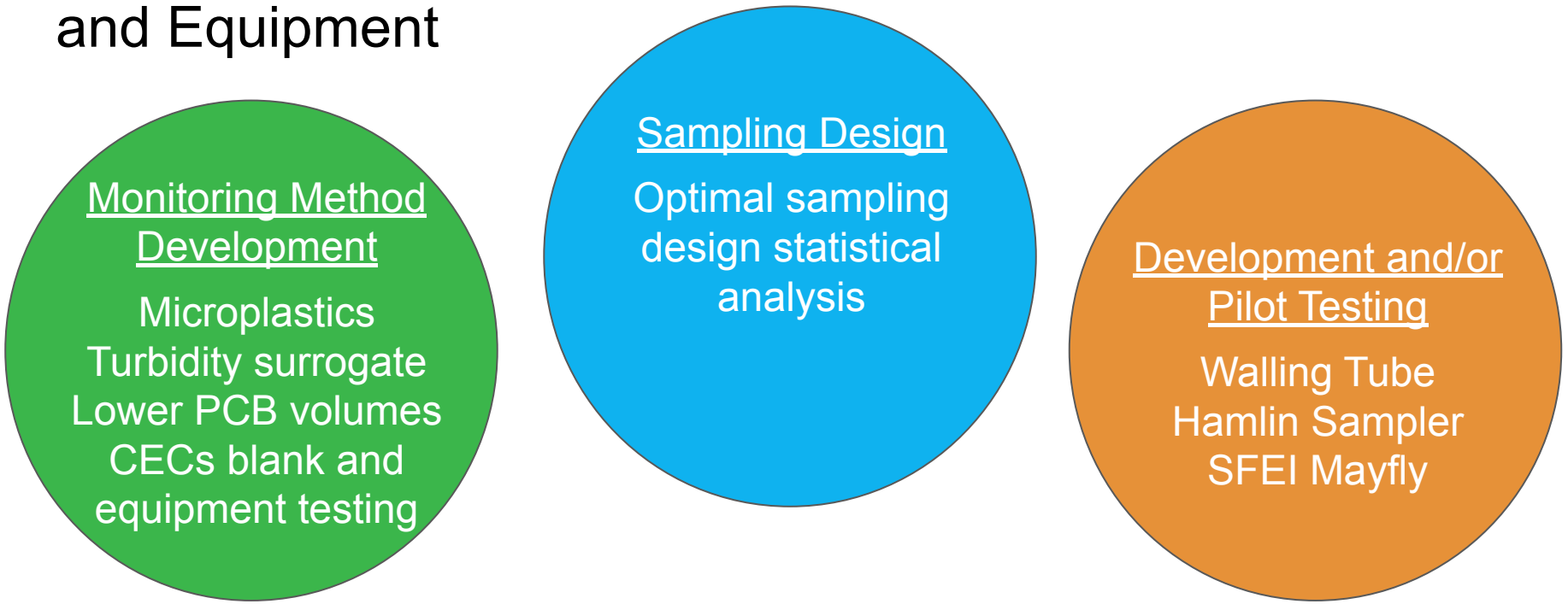
Development of Innovative Methods, Sampling Designs, and Equipment



SPLWG Science Tools for Addressing MQs

1) Modeling & Data Analysis
    - Conceptual model development (including literature and data review)
    - Data analysis
    - Computational modeling

2) Monitoring
    - 2 Types to date:
        - Characterize pollutants
        - Support load estimation
    - Expected to evolve

3) Development of Innovative Methods, Sampling Designs, and Equipment
    - Monitoring method and sampling design development
    - Developing and pilot testing equipment

Are these the right major tools?

High Level Vision for Next 5 Years

*Approximate doubling of amount of work in 2026 and beyond

- Decreasing focus on legacy pollutant monitoring, increasing focus on CECs
- Mix of fixed-station network sites, flexible remote sampling sites, and manual sampling
- Increasing efforts on modeling Hg and PCBs in advance of the TMDL reevaluations coming up
- Further develop the RWSM, or a hybrid of the RWSM and WDM, for order-of-magnitude load estimation for priority CECs
- Added focus on data analysis efforts
- Laying the foundation for a growing monitoring and modeling program (geospatial datasets, stormwater systems upgrades)

Element	Study	Funder	Collaboration with other Workgroups	Questions addressed	2025	2026	2027	2028	2029
Strategy	SPLWG strategy (formerly STLS coordination)	RMP			65	72	80	88	97
Integrated Studies	PCB/Hg monitoring and modeling to support load and trend assessment	RMP		1,3,5	167	200	200	200	200
Monitoring	Tidal area remote sampler development	RMP		1,2,4	15				
	Priority margin units (PMU) PCB monitoring	RMP SEP WQIF	PCBWG	1,2,4	(64)‡				
	Fixed-station monitoring network	RMP WQIF BAMSC	All		TBD	TBD	TBD	TBD	TBD
	Non-CECs add-on to fixed-station monitoring and other CECs monitoring	RMP			53	TBD	TBD	TBD	TBD
	Dry weather monitoring for CECs	RMP	ECWG					75	
	Central Valley Loads monitoring	RMP	PCBWG		120	50			75
	Discharge rating curve development/flow monitoring	RMP			180				
	Improved stormwater systems management	RMP	All		80	100	30	30	30
Modeling & Data Analysis	Modeling to support regional loads and trends (PCB/Hg)	RMP		3,5					
	WDM model maintenance	RMP S&T		1	50**	50**	50**	50**	50**
	Regional Watershed Spreadsheet Model update	SEP							
	Integrated watershed-bay modeling strategy and pilot implementation	SEP	PCBWG						
	Guadalupe PCB Pollutant load trends	RMP	PCBWG		60				80
	Improve geospatial information on watershed characteristics	RMP	All		50	75	25	25	25
	Improve watershed boundary delineations using stormwater network data	RMP	All		30	150	150		
	Stormwater CECs Modeling and Data Analysis	RMP WQIF	ECWG		39 55-70*	150	100 (50)‡	100 (50)‡	150
Method develop-ment and pilot testing	Develop and test automated remote samplers	RMP	ECWG		40*	30	30	30	20

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RELEVANT STUDIES IN OTHER WORKGROUPS									
Integrated	Stormwater CECs Monitoring and Modeling (multiple classes but PFAS focus)	RMP WQIF	ECWG	1,2,4	300* (100) ‡	350* (53) ‡	400*	400*	?
Integrated	Stormwater CECs Monitoring - Expanded Efforts with Additional Resources (multiple classes but PFAS focus)	RMP	ECWG		150*	200*	200*	200*	?
Monitoring	PFAS NMR Analysis in Wastewater, Stormwater, Other Matrices	RMP	ECWG		190*	195*			
Monitoring	PFAS in Precipitation	RMP	ECWG		150*	150*			
Monitoring	PFAS Stormwater Depth Pilot	RMP	ECWG		55*				
Integrated	PFAS Sources to Solutions	WQIF	ECWG		(751)‡	(799)‡	(502)‡		
Integrated	OPEs: Synthesis and Strategy	RMP	ECWG			75*			
Modeling	OPEs: Conceptual Model	RMP	ECWG				120*		
Monitoring	QACs in Bay Water, Stormwater	RMP	ECWG		100*		100*		
Monitoring	Isothiazolinones, Parabens in Wastewater, Stormwater	RMP	ECWG			100*			
Monitoring	Synthetic Dyes in Bay Water, Archived Sediment, Wastewater, Stormwater (NTA followup study)	RMP	ECWG		150*			70*	
Monitoring	Newly Identified Tire/Roadway Priorities (Bay or Stormwater)	RMP	ECWG			50*	50*		
Monitoring	Total Tire Rubber/Tire Chemical Indicators (Stormwater, Bay Wet Season Water, Sediment)	RMP	ECWG			50*	150*	150*	
Monitoring	NTA of Microfibers and Stormwater	RMP	ECWG		120*				
Monitoring	Stormwater In Vitro Toxicity Screening	RMP	ECWG		26*				
Monitoring	Stormwater (method evaluation and monitoring)	RMP OPC	MPWG		51*	(40)			
Monitoring	Investigating clothing dryers as a source	Sea Grant OPC	MPWG		(230)				
Monitoring	Air monitoring	RMP OPC/Sea Grant/ NOAA	MPWG			(40)			
Monitoring	Monitor Local Tributary Suspended Load and Bedload	RMP	SedWG		140*				
Modeling	Model Tributary Suspended Load and Bedload Flux	RMP	SedWG		82*	100*	50*		

Discussion Questions

- Can we ratify the revised MQs?
- Do you agree with the general direction of the proposed work over the next 5 years?
- Does this workplan address our MQs and management drivers?
- Are there any elements that need modification?

- Is there anything going on in the rest of the country that we should be thinking about?

Next Steps

- Please review Strategy and provide comments by June 14th
- SFEI to review comments and determine if a focused meeting with the Core Group is necessary
- Finalize Strategy by August 31, 2024

Revised SPLWG Management Questions (MQs) April 2023

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Timeline

April 2023 Core Group Meeting

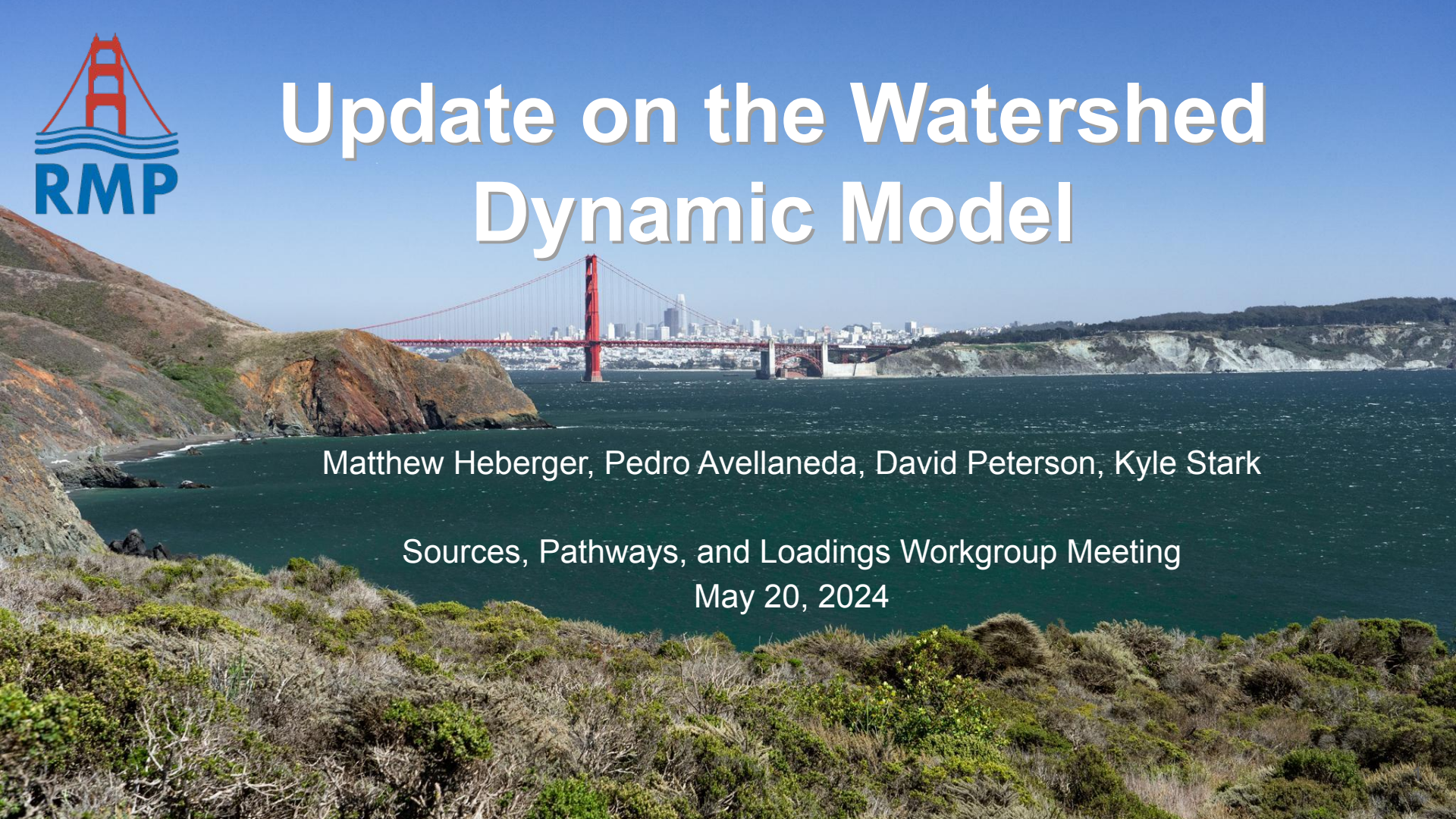
- Identified and discussed **Management Drivers**
- Revised the **Management Questions**

August 2023

- Sent out Strategy Update outline for review

May 2024

- Strategy Update draft complete for review



Update on the Watershed Dynamic Model

Matthew Heberger, Pedro Avellaneda, David Peterson, Kyle Stark

Sources, Pathways, and Loadings Workgroup Meeting
May 20, 2024

Background / History

Important, ongoing, multi-year project. Goals:

- Develop a regional watershed model to quantify stormwater runoff from Bay Area watersheds
- Assess the load and trends for:
  - Flow and sediment
  - Pollutants of Concern (POCs): PCBs and mercury
  - Contaminants of emerging concern (CECs), possibly?
  - Others in the future (e.g. nutrients)?
- Assess impacts of climate change

Overview of today's presentation

1. Intro to the watershed modeling team at SFEI
2. Project Background, Multi-Year Plan
3. Progress Update on two ongoing WDM-related projects
4. Proposed model maintenance tasks
5. Discussion of proposed methods to model watershed loads of PCBs (time allowing)

Some new faces on the watershed modeling team

Pedro Avellaneda

Matthew Heberger

David Peterson

Kyle Stark

Jay Davis

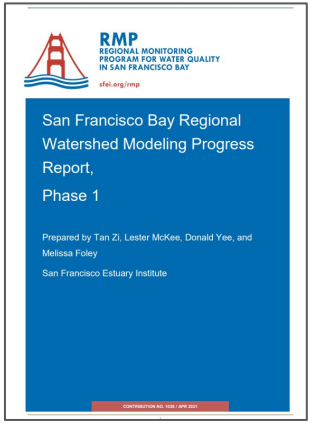
Lester McKee

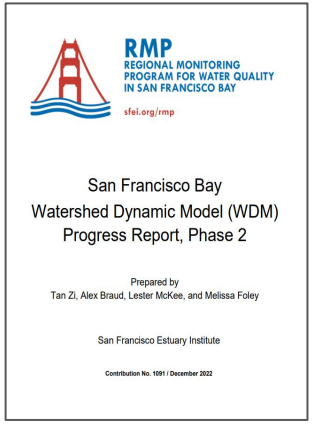
Don Yee

Watershed Dynamic Model (WDM) Multi-Year Plan

2020
100K

Hydrologic Model Development





2021
150K

Sediment Model Development

2022-2023

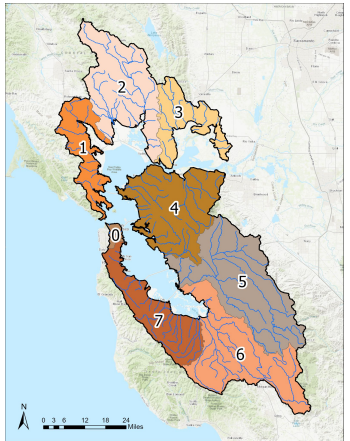
POCs Model Development

- PCBs and Hg baseline loading (2022)
  $90K + $33K
- PCBs and Hg control measure modeling
  $120K (2023)

2024

Model Uncertainty Analysis

- Year 1, programming, methods (2024)
- Year 2, application, analysis (2025)



Zi, et al, 2022

Progress Update for WDM Projects

#1 Watershed modeling to estimate loads of PCBs and mercury

#2 Integrated Monitoring and Modeling to Support PCBs and Mercury Watershed Loads Uncertainties Assessment and Monitoring Design

#1 Watershed modeling to estimate loads of PCBs and mercury

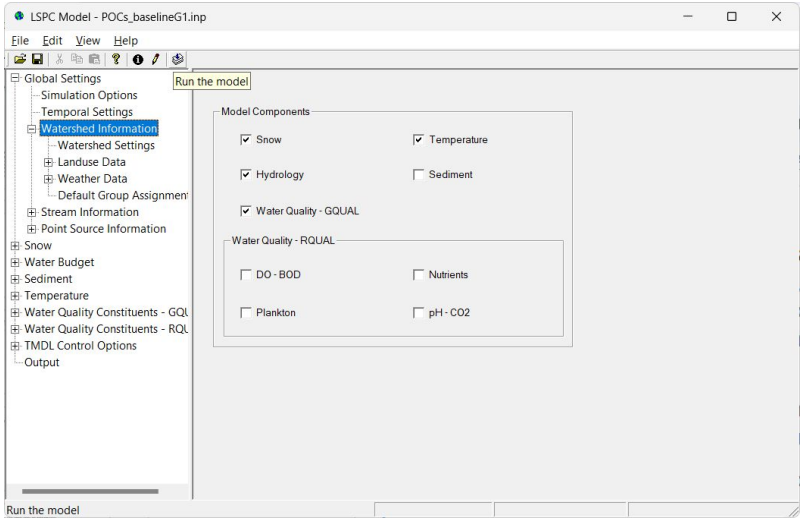
- Funding approved beginning in 2023
- Developing sediment concentrations (or *potency factors*) for PCBs turned out to be more complicated than we anticipated
- Staff are requesting an additional $79K to complete this project (seeking recommendation by TRC, approval by the SC)
- We are in active discussion with key stakeholders in the stormwater community, from SF Regional Board and the Bay Area (BAMSC)
- More discussion of PCB loading today (if there is time and interest)

#2 Integrated Monitoring and Modeling to Support PCBs and Mercury Watershed Loads Uncertainties Assessment and Monitoring Design

Funding for Year 1 of 2 approved for 2024)

First task: reprogramming LSPC to create a “headless” version that can be run from the command line.

We currently have a prototype… expect to complete in next 2-3 months.



Next Steps

- Seeking consensus among key stakeholders on data and methods to estimate PCB loading
- Improvements to land use/land cover data, begin using “land use time series” feature of LSPC?
- Variety of model maintenance and improvement tasks to be discussed below

Use of the WDM inside and outside of SFEI

- **US Army Corps of Engineers** requested model outputs for their Bay sediment model at several locations around the Bay.
- **Water Rights Division**, State Water Resources Control Board and Paradigm Consulting: requested model for use in the Napa Valley water rights planning process.
- SF Bay **Nutrient Management Strategy**: provided simulated flow at 46 locations as inputs to their Bay hydrodynamic/biogeochemical model.
- Provided model files to prof. of landscape architecture and planning at **Auburn University** in Alabama.
- Provided inputs for detailed model of **San Leandro Bay** (partnership with Integral Consulting).
- Provided model outputs for **Stevens Creek tracer study** (for future modeling of CECs).

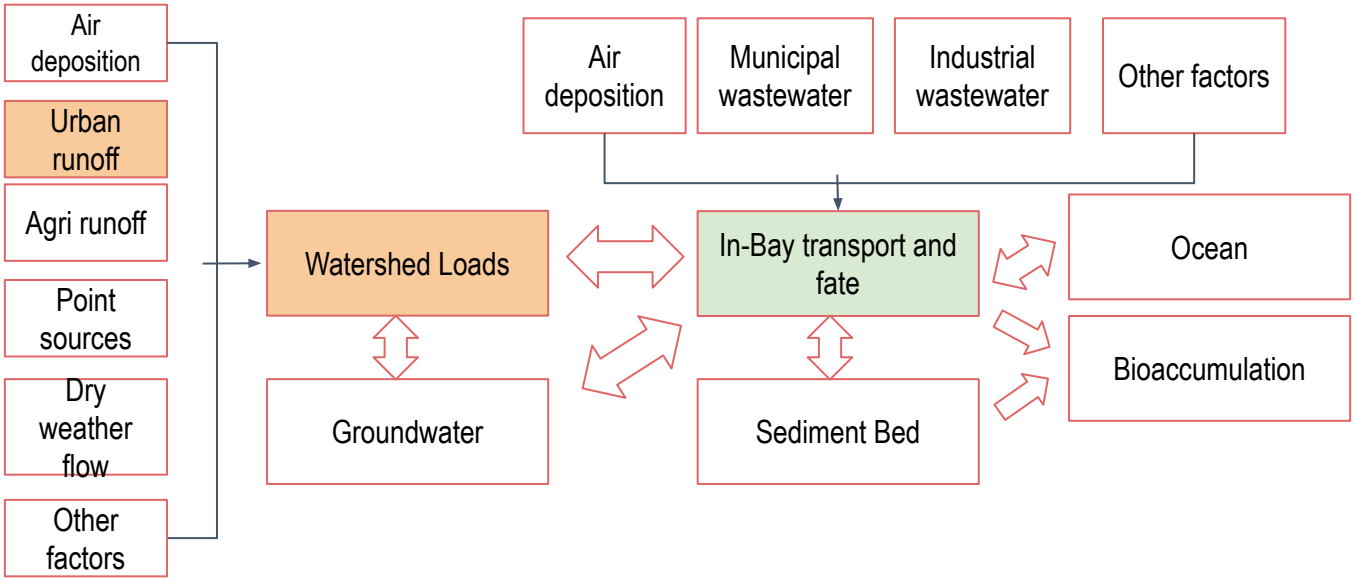
Two important strategy documents in development

1. Integrated Watershed-Bay Modeling Strategy
2. Integrated Watershed Monitoring and Modeling Strategy

Recently published report:

Modeling Stormwater Loads of Contaminants of Emerging Concern: Literature Review and Recommendations (Avellaneda et al. 2024, Contribution No. 1131)

WDM Linkage to the in-Bay model



Goal: regional coordination on watershed and Bay modeling

WDM being used to study climate change impacts on Bay-Area hydrology

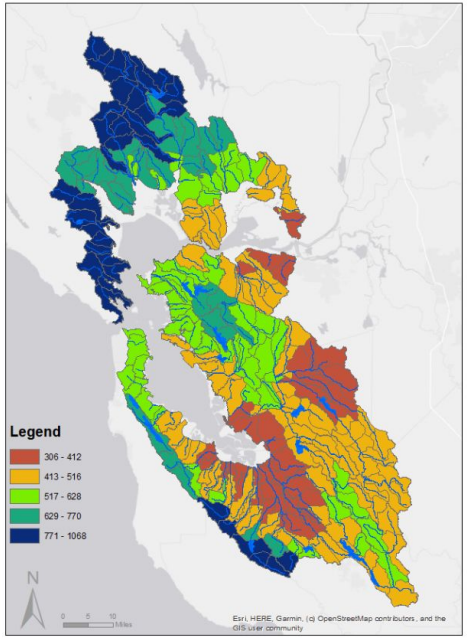
- One piece of the larger **Sediment Solutions** project
- Analysis of flow and sediment in the Petaluma River (North Bay) and San Tomas Aquino (South Bay) under a variety of projected future climates (low, medium, and high emissions scenarios)
- Funding from the US EPA and Sonoma Water
- Analysis will provide valuable information related to:
  - channel desilting and watershed erosion controls
  - habitat for fish and invertebrates
  - connectivity and stability of the riparian zone
  - sediment supply and long term health of marshes and mudflats

Model Maintenance Proposal for 2024

- Planned annual budget of $50K for model maintenance, covering a variety of tasks, as needed
- Process: annually, present plan to this workgroup, recommendation by TRC, approval by SC
- This year’s proposed plan presented in memo dated April 23
- **Desired outcome:** WG recommendation to approve model maintenance plan

Proposed Model Maintenance Tasks for 2024

1. Training in LSPC and BASINS for modeling staff (20%)
2. Create a model webpage / dashboard (35%)
3. Update / clean up weather and climate data scripts (25%)
4. Update model simulation of evapotranspiration (20%)



Precipitation from PRISM, Figure 20 in Zi et al. (2022)

Draft motion

“Approve the WDM model maintenance tasks and budget described by SFEI staff in their April 23, 2024 memo.”

(Please refer to pages 18 - 19 in the agenda package.)

WDM Stormwater Contaminant Loading

Dissolved **pollutant loading**

= flow volume × dissolved pollutant concentration

Particulate **pollutant loading**

= suspended sediment load × pollutant concentration in sediment (potency factors)

Potency Factor Analysis

Potency Factor = PCB particle concentration assigned to HRUs for modeling

- a dozen potency factor groups

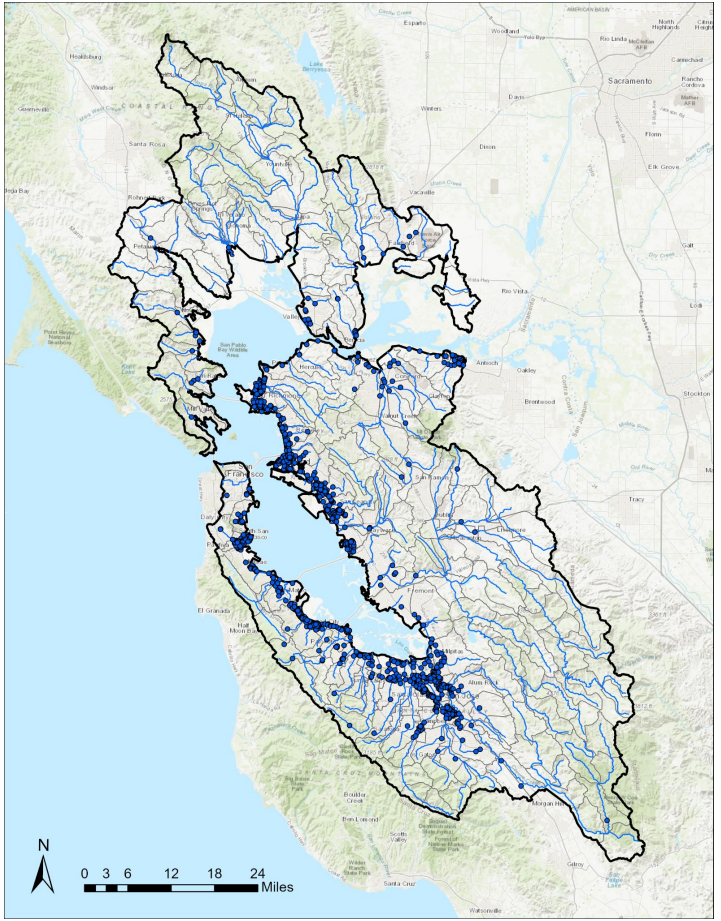
Developed with Sediment and Soil Samples

with no defined contributing drainage

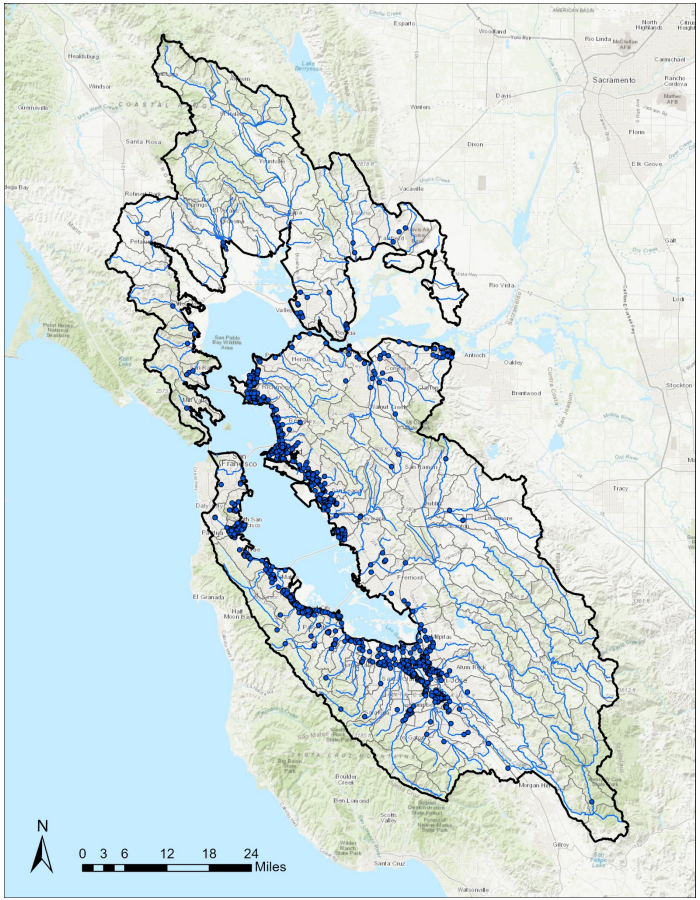
- **PCB: 1,562 records**

Point sample summary

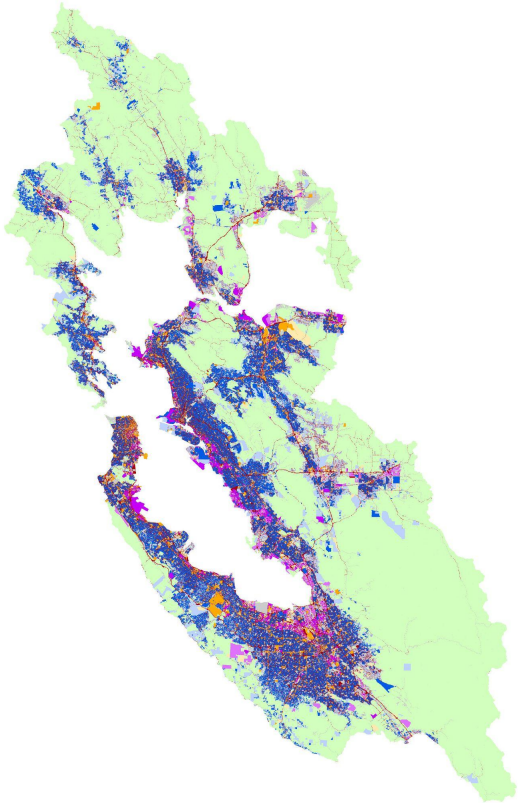
- Sampled Years 1996-2021
- Non-urban and urban samples
- Often targeted source areas



New Land Use Data



WDM Footprint



2020 (MTC Interim)

- Non-Urban
- Mixed Urban
- New Commercial
- Old Commercial
- New Residential
- Old Residential
- New Industrial
- Old Industrial
- Transportation

Feedback to Address

1. Transportation values seemed too high
    a. Many samples taken on roadsides targeted adjacent land use
2. Known source areas needed to be factored into analysis
3. Can the 2020 land use be applied to much older samples?

Adjustment Process

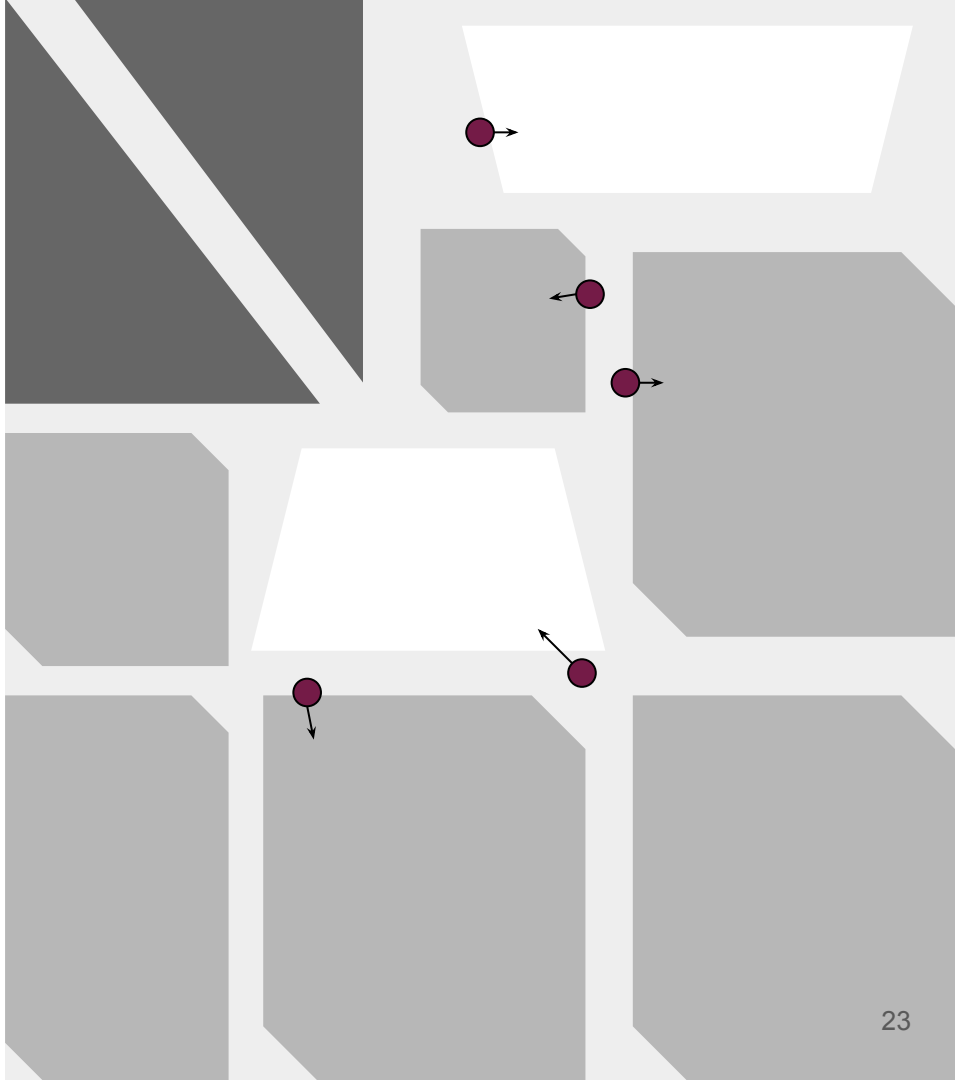
1. Transportation land use adjustments
2. Source Area adjustments
3. Sample and land use timestamps
4. Potency Factor groupings

Land Use Adjustments

Land Use Adjustment

Majority of sediment samples that fell on transportation were adjusted to *adjacent* land use are

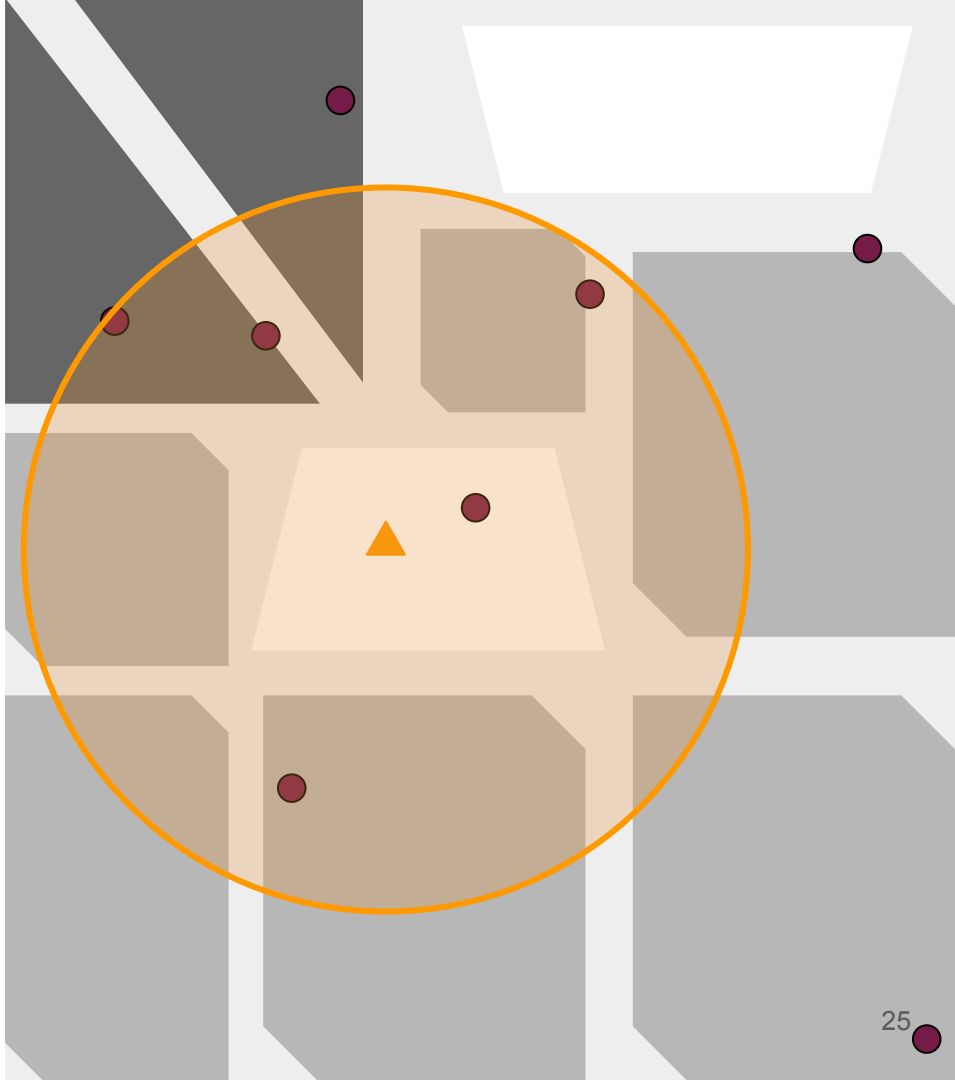
- Manual process using nearest pixel and best professional judgment
  - Both street and aerial photo basemaps used to help guide BPJ
- Reduced Transportation samples from n = 825 to n = 37



Source Area Adjustments

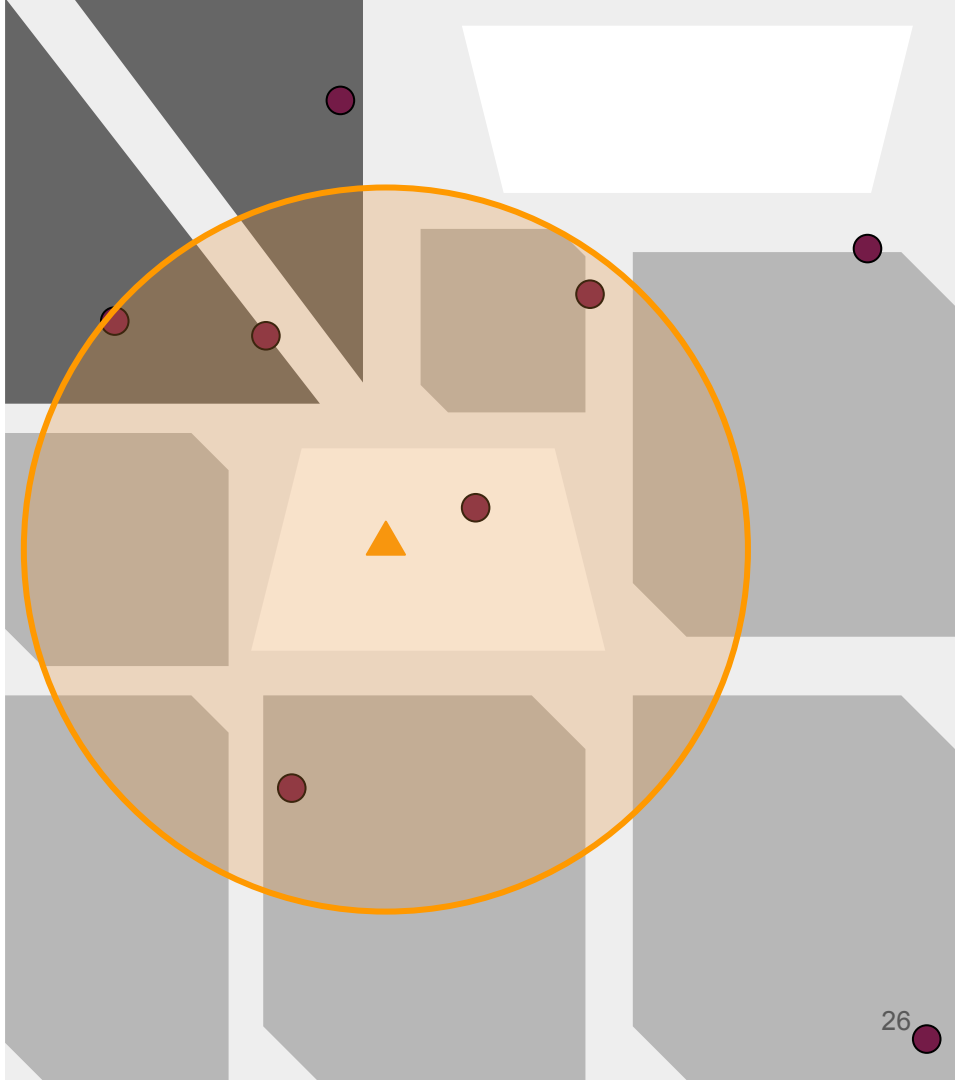
Source Area Analysis

- Data for known sources from:
  - *2022 EnviroStor Cleanup and Hazardous Waste sites (filtered for PCB sources)*
  - *PCBs Source Referrals and Self-Abatement Properties through FY19-20 from Geosyntec*
- Data include coordinates and acreages of sources
- Acreages converted to circular buffers around each source point



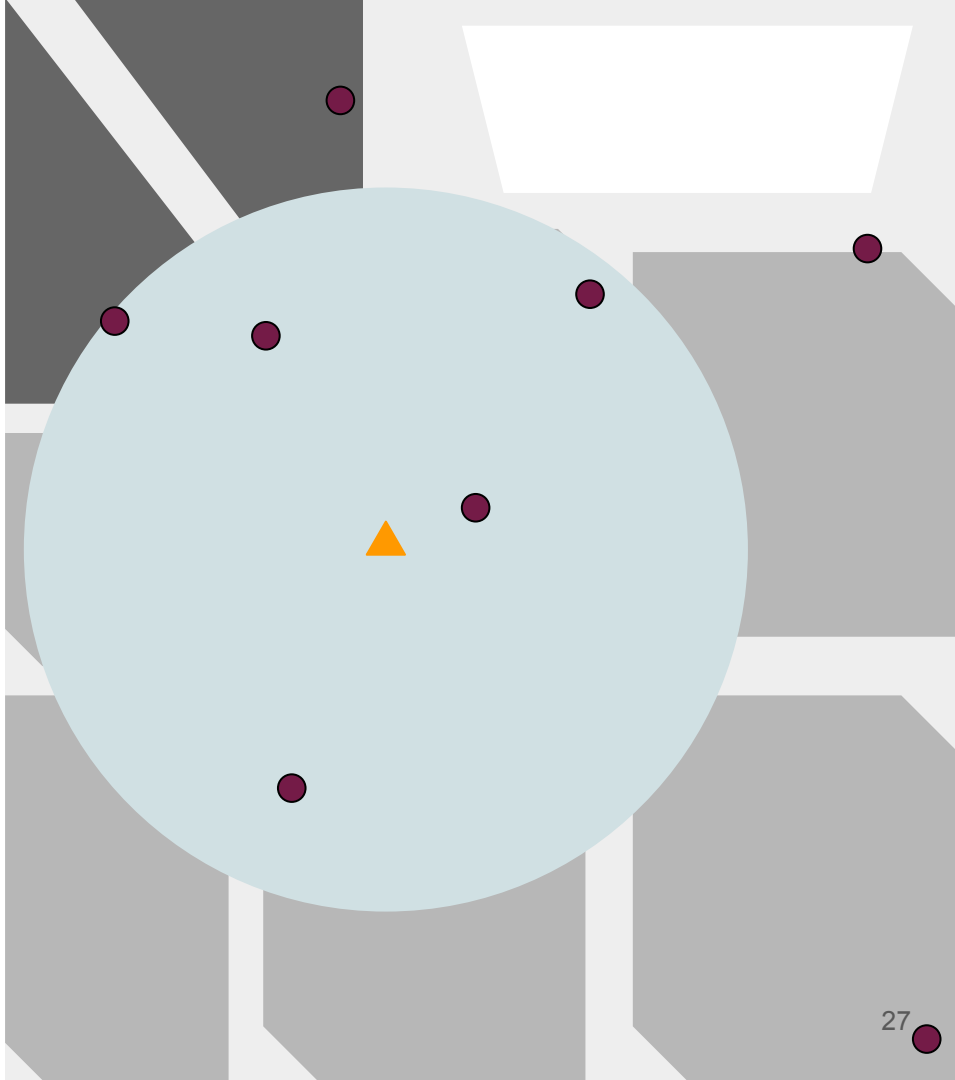
Source Area Analysis

How do we process these samples to best represent their sources?



Adjustment Option 3

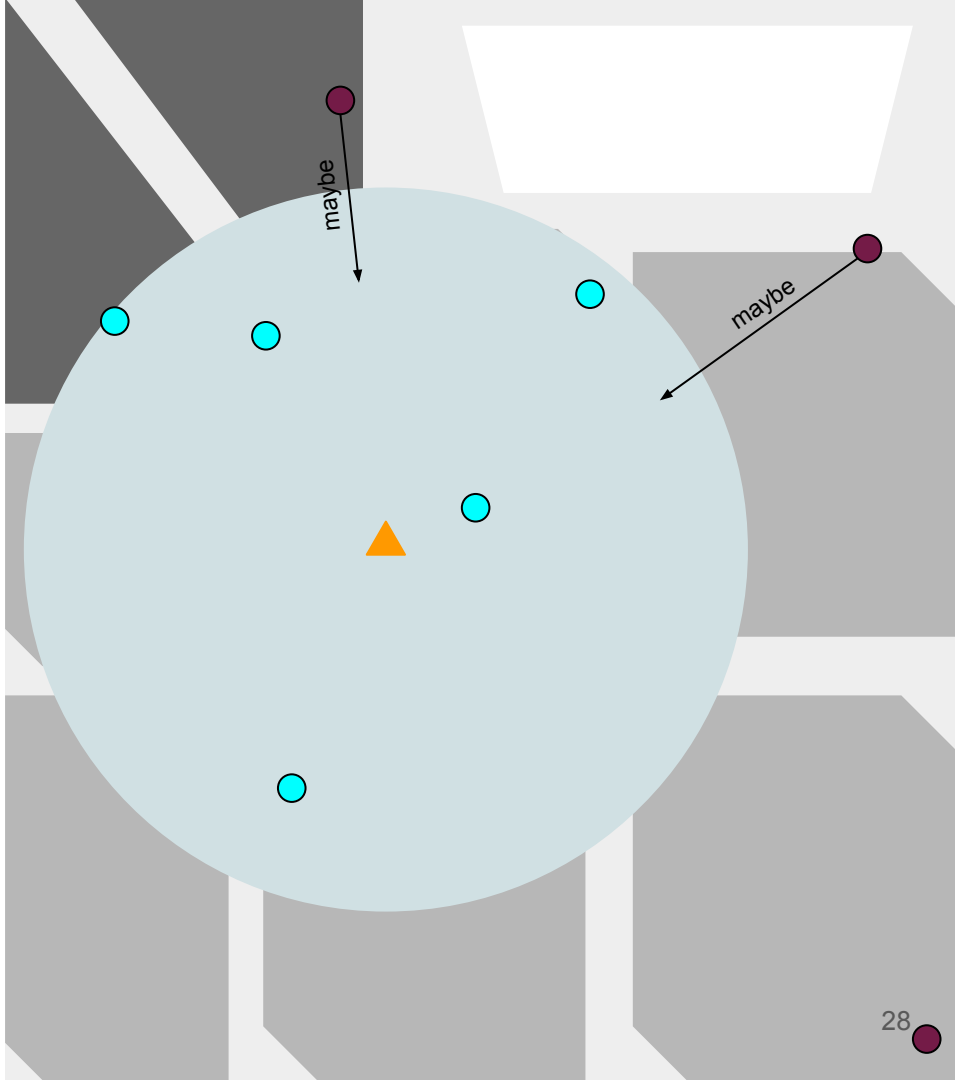
Create a “Source Area” HRU for the buffer area



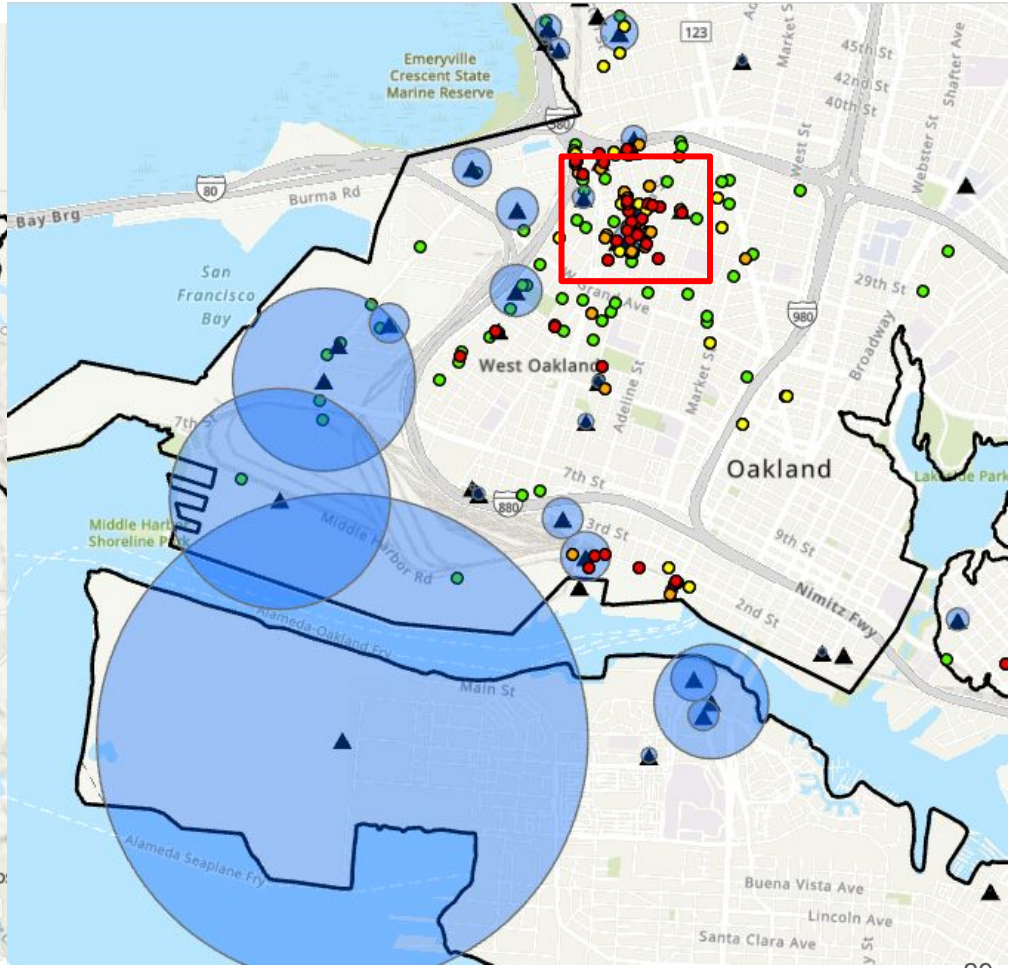
Adjustment Option 3

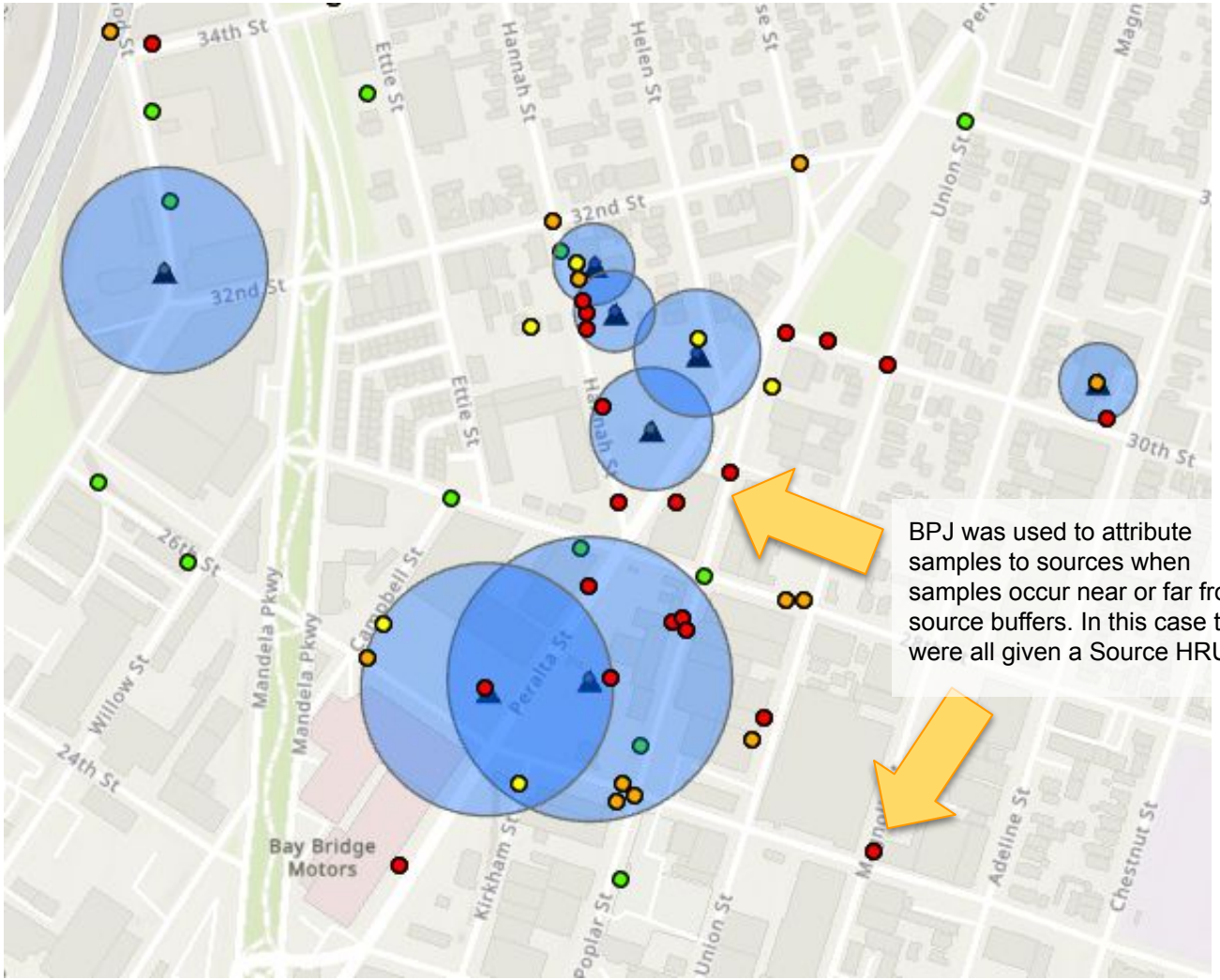
Create a “Source Area” HRU for the buffer area

- Samples inside buffer are given “Source Area” HRU
- Samples outside buffer are sometimes included based on BPJ
- Results in high potency factor value for the entire area of the buffer




Vacaville
Napa
Petaluma
Fairfield
Vallejo
Point Reyes National Seashore
Concord
Oakland
San Leandro
Fremont
Redwood City
Sunnyvale


Emeryville Crescent State Marine Reserve
Burma Rd
San Francisco Bay
West Oakland
Oakland
Middle Harbor Rd
Alameda Seaplane Fly
Nimitz Fwy
Main St
Buena Vista Ave
Lincoln Ave
Santa Clara Ave

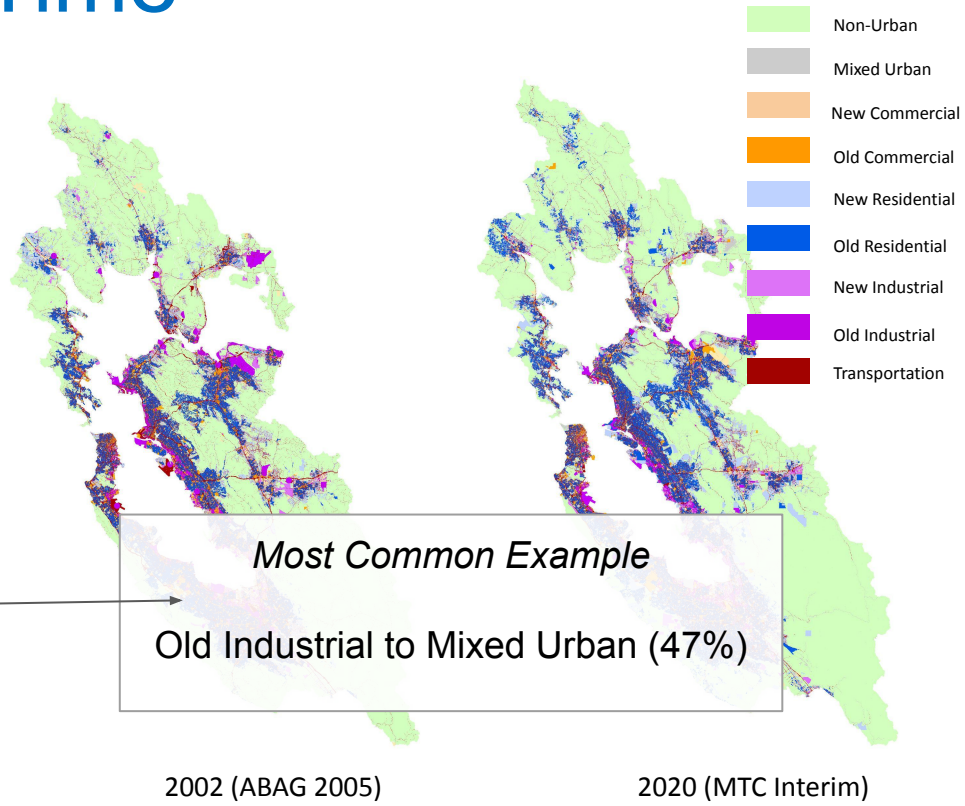

≤ 200 ug/Kg
> 200 ug/Kg
> 358 ug/Kg
> 1,000 ug/Kg
Source Point
34th St
32nd St
30th St
26th St
24th St
Ettie St
Hannah St
Helen St
Union St
Mandela Pkwy
Campbell St
Peralta St
Willow St
Kirkham St
Poplar St
Adeline St
Chestnut St
Bay Bridge Motors
BPJ was used to attribute samples to sources when samples occur near or far from source buffers. In this case these were all given a Source HRU

Time Stamp Adjustments

Land Use & Sample Time

Assumptions

- Variable at parcel scale, Default to 2020 mapping
- If land use is “Old” in 2002 and “Old” in 2020
  - OK to use 2020 mapping
- If land use is “New” in 2002, and “Old” in 2020
  - assume 2020 is correct and use 2020 mapping
- If land use is “Old” in 2002 and “New” in 2020
  - assume land use change, use 2002 mapping



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- If land use is “New” in 2002, and “Old” in 2020
  - assume 2020 is correct and use 2020 mapping
- **If land use is “Old” in 2002 and “New” in 2020**
  - **assume land use change, use 2002 mapping**

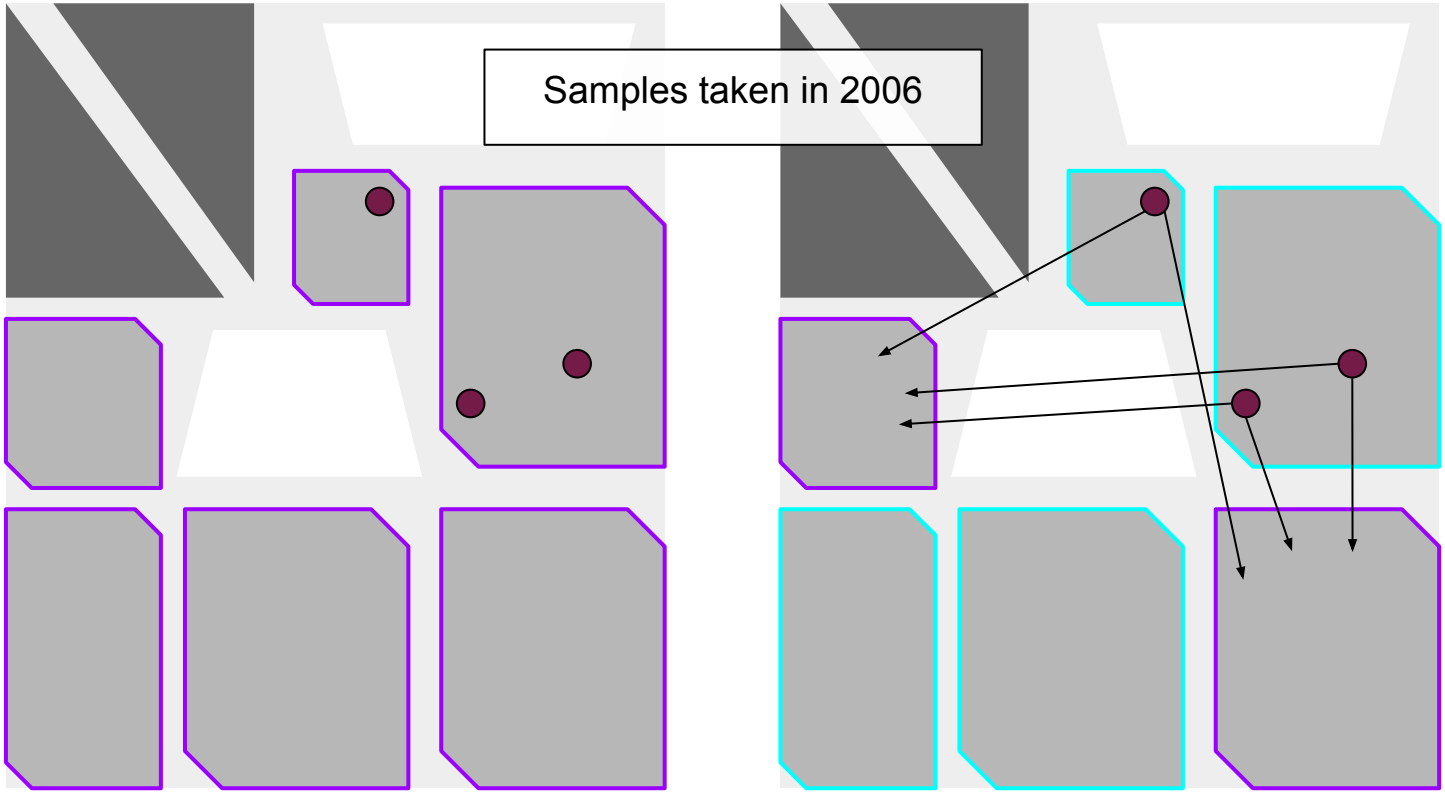
→

- 181 samples
  - 16 high conc. samples
  - All but 2 were from 2008 & earlier (those 2 were in 2013)
- Alternative:
  - Split samples at midpoint year (2011) and round up or down

Land Use & Sample Time

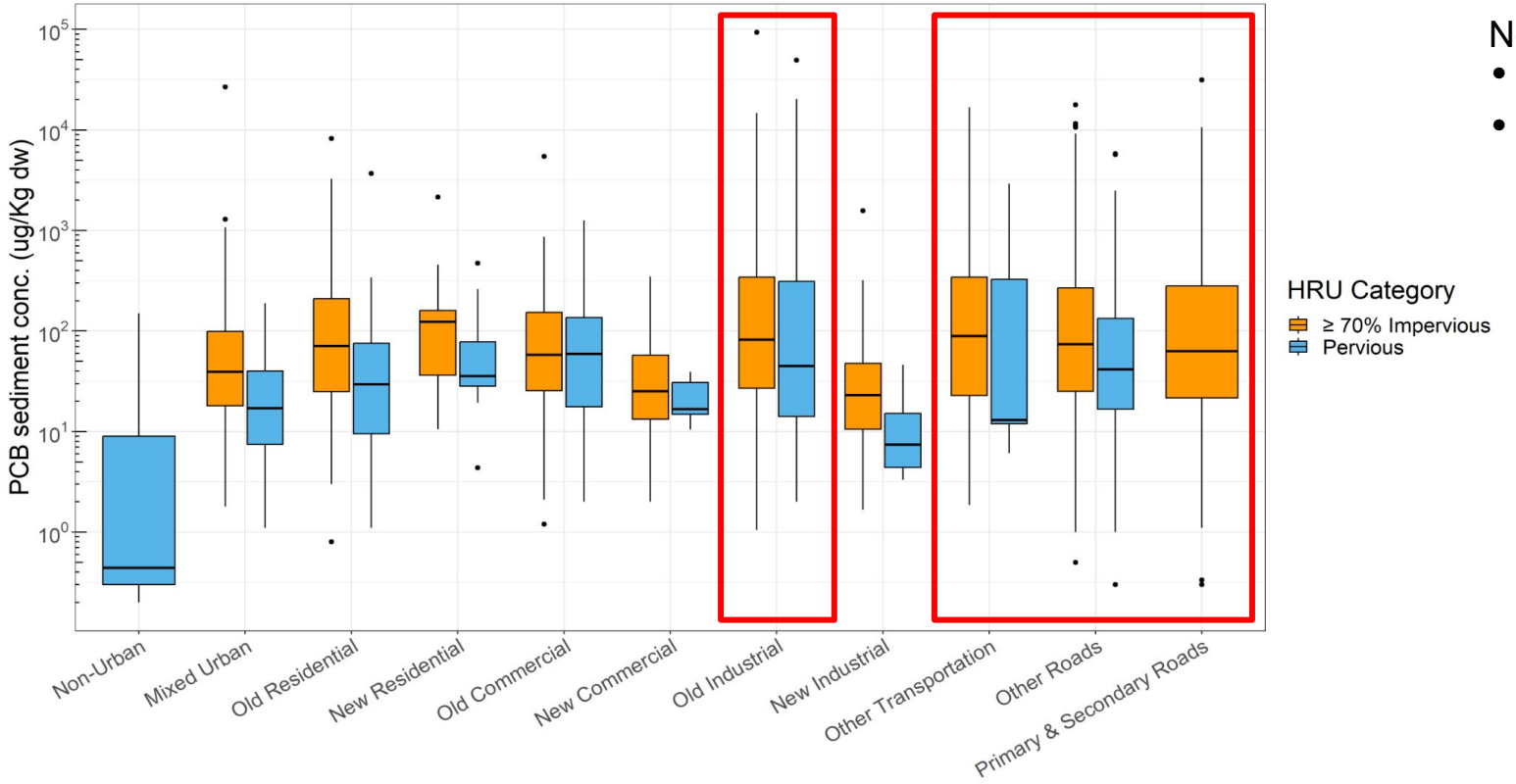
If land use is “Old” in 2002 and “New” in 2020

- **assume land use change, use 2002 mapping**



Results

Previous Results

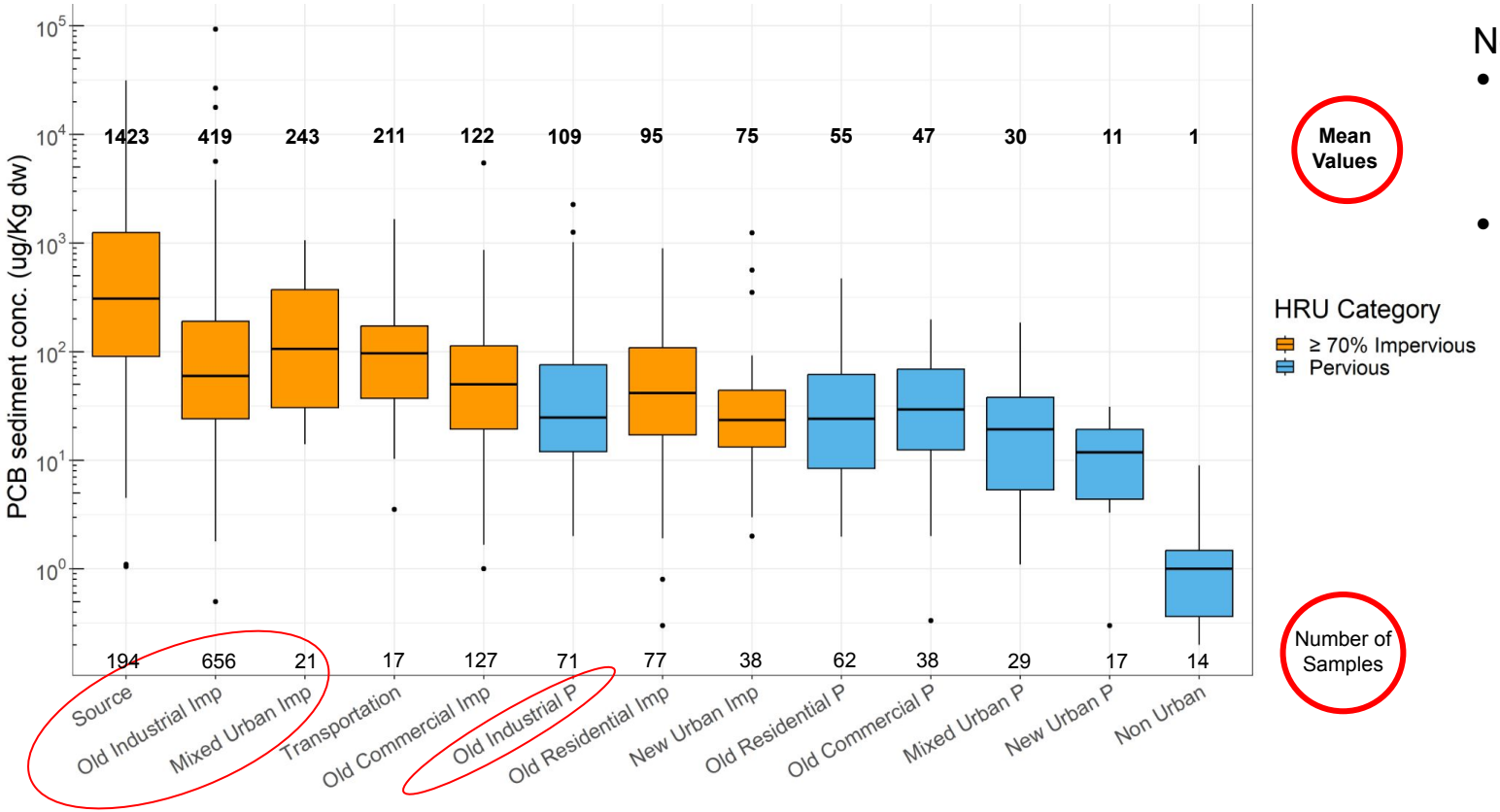


Notes:

-
-

Ordered by mean value

Complete Adjustment



Notes:

- Due to low sample counts New Res, New Com, New Ind grouped as “New Urban”
-

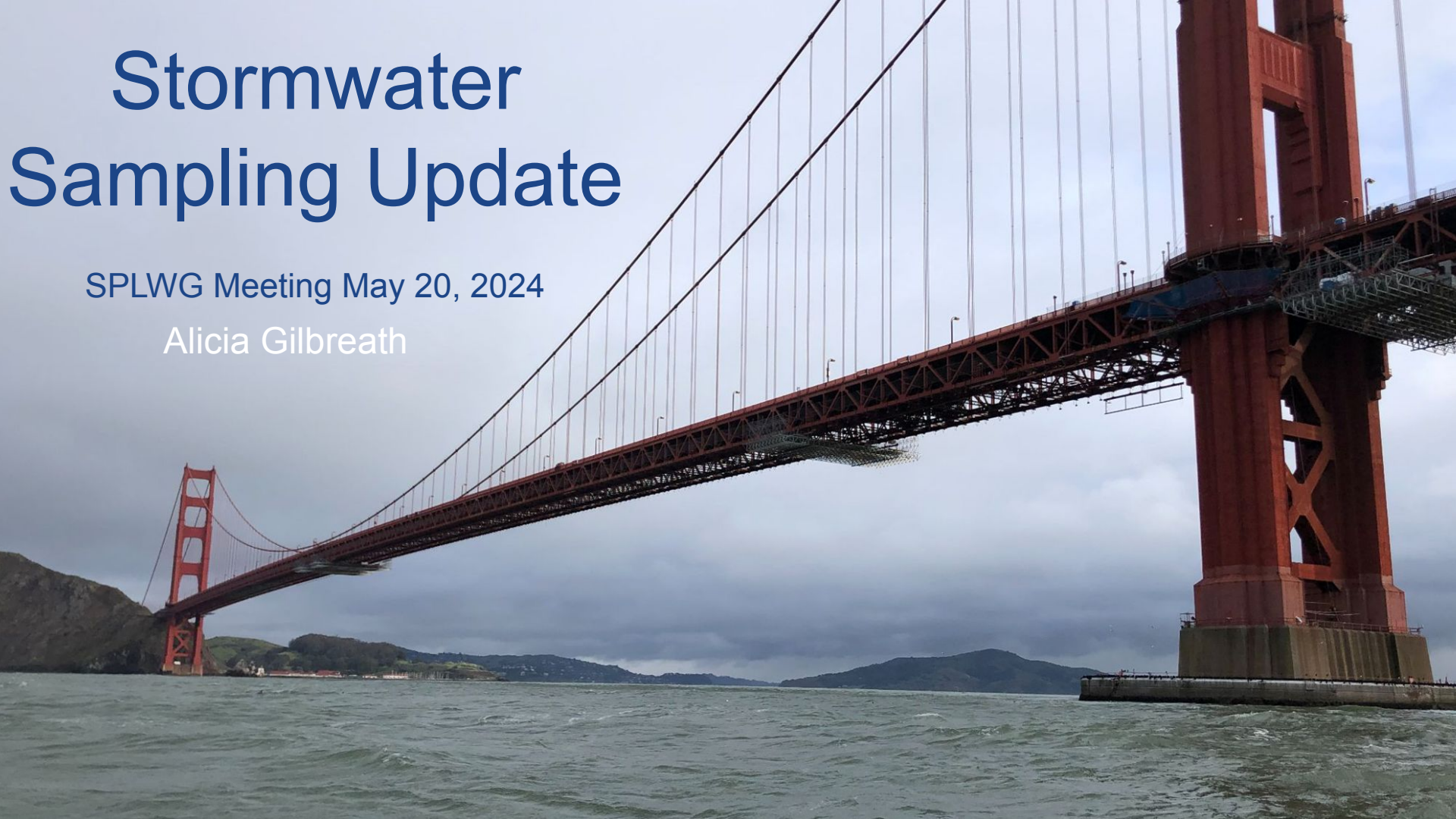
Discussions Ongoing

- Expecting key feedback from stormwater community (BAMSC).
- We expect to incorporate methods and data from Reasonable Assurance Analyses (RAA) (Santa Clara and San Mateo Counties used LSPC modeling in their analysis.)
- Our modeling should coordinate with or complement other regional efforts
- Should be relevant to the upcoming PCB permit reissue -- WDM as a useful resource to stormwater permittees and consultants

Stormwater Sampling Update

SPLWG Meeting May 20, 2024

Alicia Gilbreath



March-May RMP Workgroup Attendance Madness

Alicia's brackets:

FINAL FOUR May 16	CHAMPIONSHIP May 20	FINAL FOUR May 16
Tom Mumley	Luisa Valiela (5) (6) Winner	Luisa Valiela
Richard Looker	Richard Looker (4) (4)	Biruk (SFEI IT)

Rainfall - Water Year 2024

Location	% of Normal
Santa Rosa (North Bay)	114%
San Francisco Downtown (Central Bay, West Side)	116%
Oakland Airport (Central Bay, East Side)	91%
Livermore (East Bay)	98%
San Jose (South Bay)	132%

Data from Golden Gate Weather Services
https://ggweather.com/seasonal_rain.htm

Year of Building

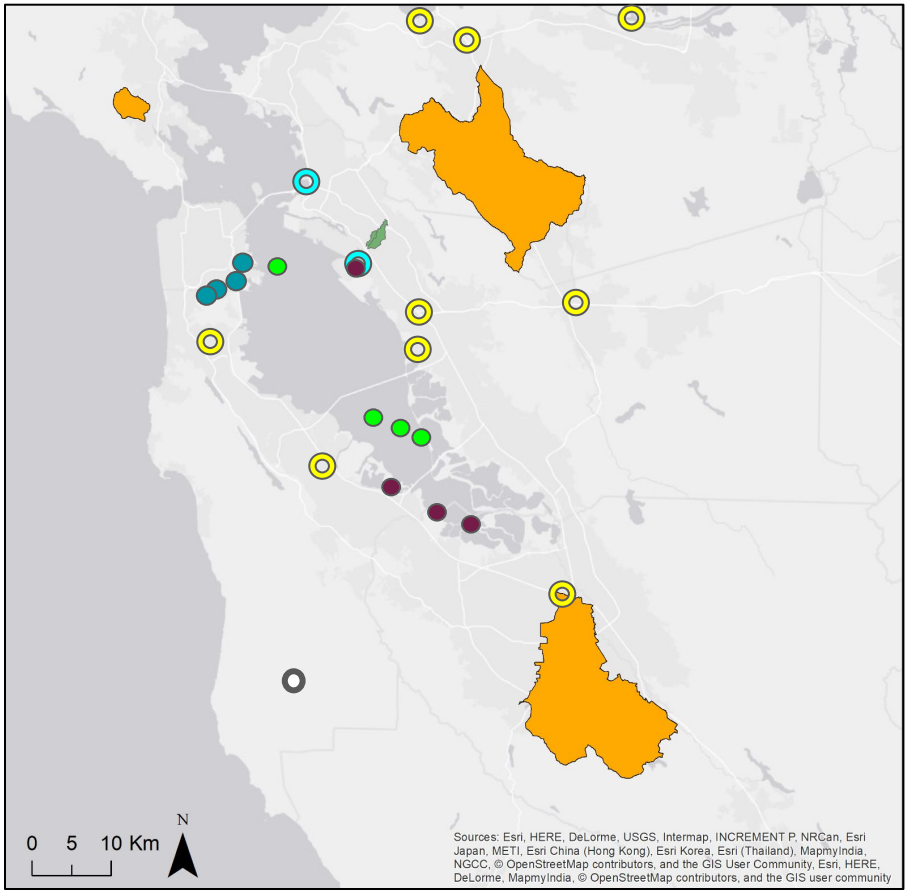
Need: continued integration with other Workgroups and priorities for the region

- Project goals & methods
  - Pollutants
  - Piloting remote samplers
  - Lower tidal and higher non-tidal influenced sampling
  - Bioretention monitoring
  - S&T near-field post-storm monitoring
  - S&T in-Bay sampling by boat
- Staff capacity and team camaraderie
  - 2 new staff as of last spring who have taken on more leadership roles in the project activities as well as actual sampling
  - Existing staff have grown into leadership roles
  - WSP Corps Members and Sequoia as additional assistance

Projects and Progress at a Glance

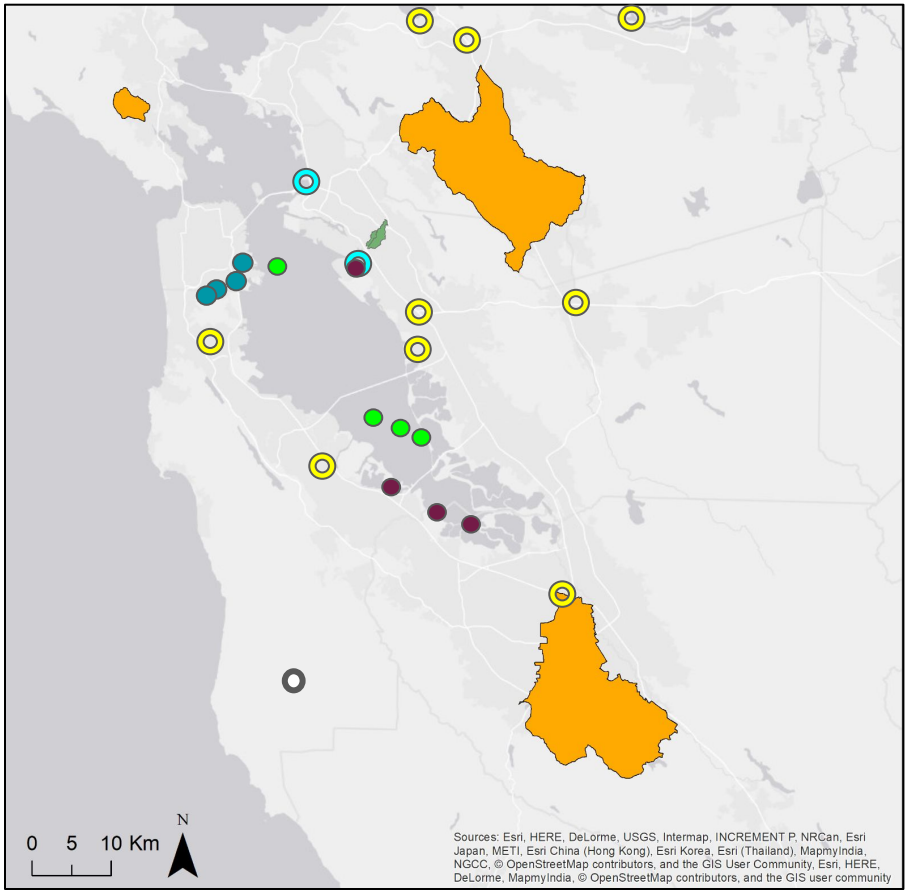
Project	Pollutant Focus	Progress
Tidal Area Remote Samplers	PCBs and Hg	1 successful deployment, 1 sampler vandalized, 6-7 more deployments to go
CECs Remote Samplers	CECs	9 deployments
Pollutants of Concern	PCBs and Hg	5 site-events sampled
Priority Margin Unit	PCBs	4 sites (all in same event)
Pescadero Ck (State Water Board)	Sediment	2 events sampled
Next Generation Urban Greening (EPA WQIF)	PCBs, Hg, CECs, MPs	15 site-events sampled
S&T wet season	CECs	4 events (2 near-field, 2 in Bay by boat)

Water Year 2024 Sampling Locations



Project
Pollutants of Concern
Pescadero
Priority Margin Unit
Next Generation Urban Greening
S&T Post-storm Near-field
S&T In-Bay
CECs Remote Sampler
Tidal Area Remote Sampler

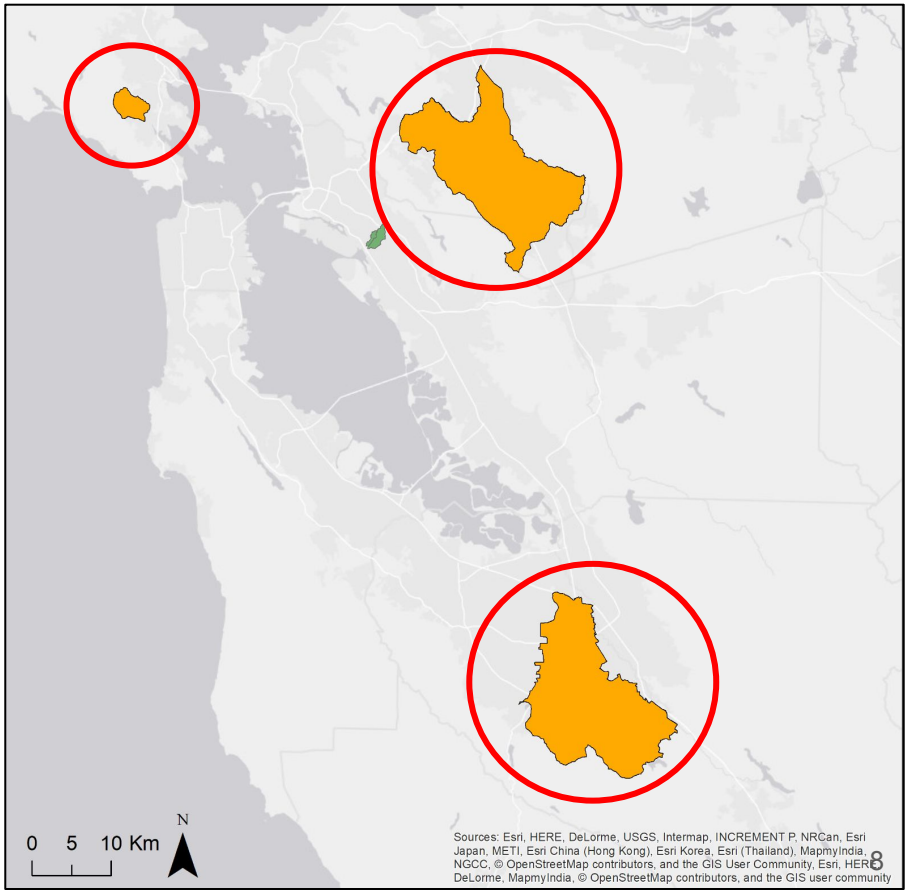
Water Year 2024 Sampling Locations



Project
Pollutants of Concern
Pescadero
Priority Margin Unit
Next Generation Urban Greening
S&T Post-storm Near-field
S&T In-Bay
CECs Remote Sampler
Tidal Area Remote Sampler

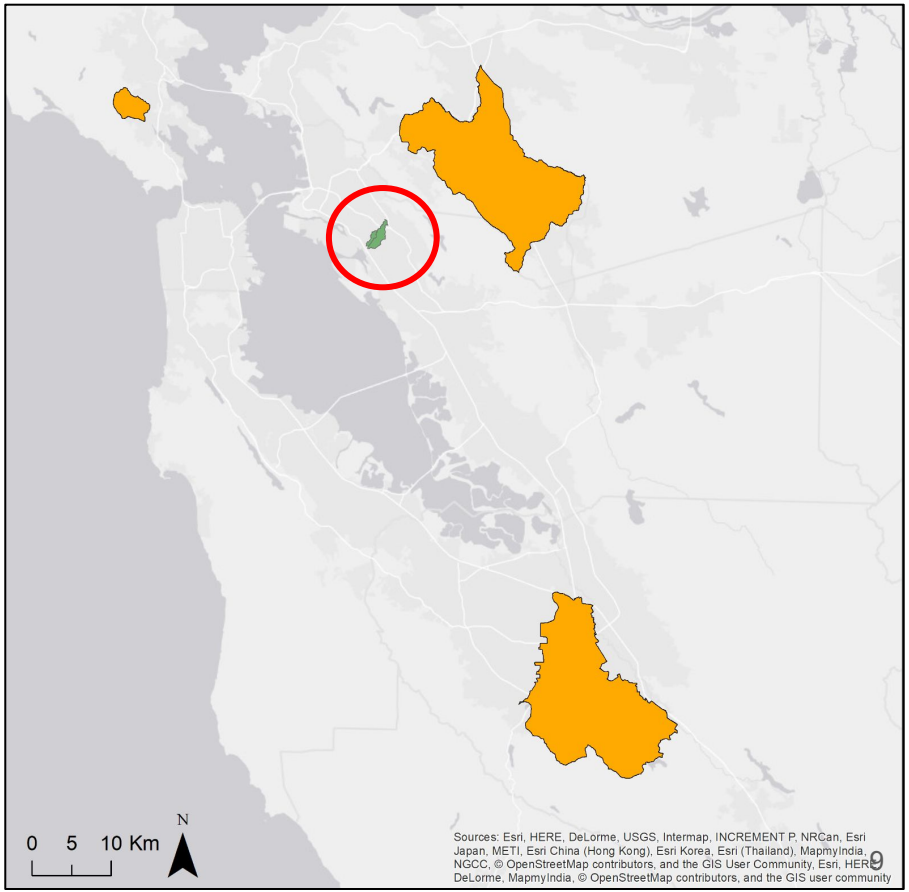
Projects and Progress - Pollutants of Concern

- Sites: Walnut Creek, Guadalupe River, Arroyo Corte Madera del Presidio
- Methodology: Sample 4 storms at each site over 2 years; collect 16 discrete samples
- Goal: To support loads estimates to provide further calibration data for the WDM
- Project Status: Completed* and will finalize data early next year

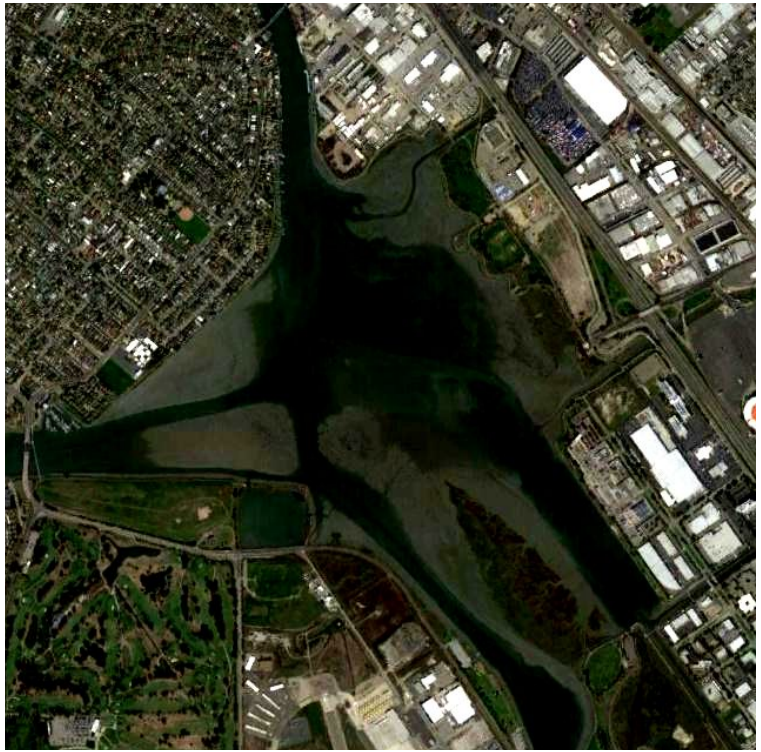


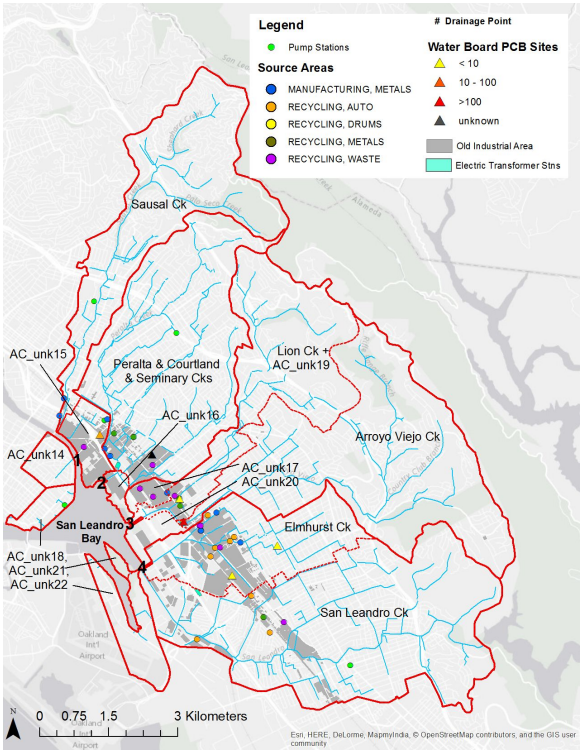
Projects and Progress - Priority Margin Unit

- Sites: Zone 12 Lines H & I
- Methodology: Sample 2 storms at each of 4 sites (2 upstream and 2 downstream of Oakland GE); collect composite samples
- Goal: To provide a baseline characterization dataset of concentrations around the former Oakland GE during clean up
- Project Status: Completed



San Leandro Bay PMU and Watershed





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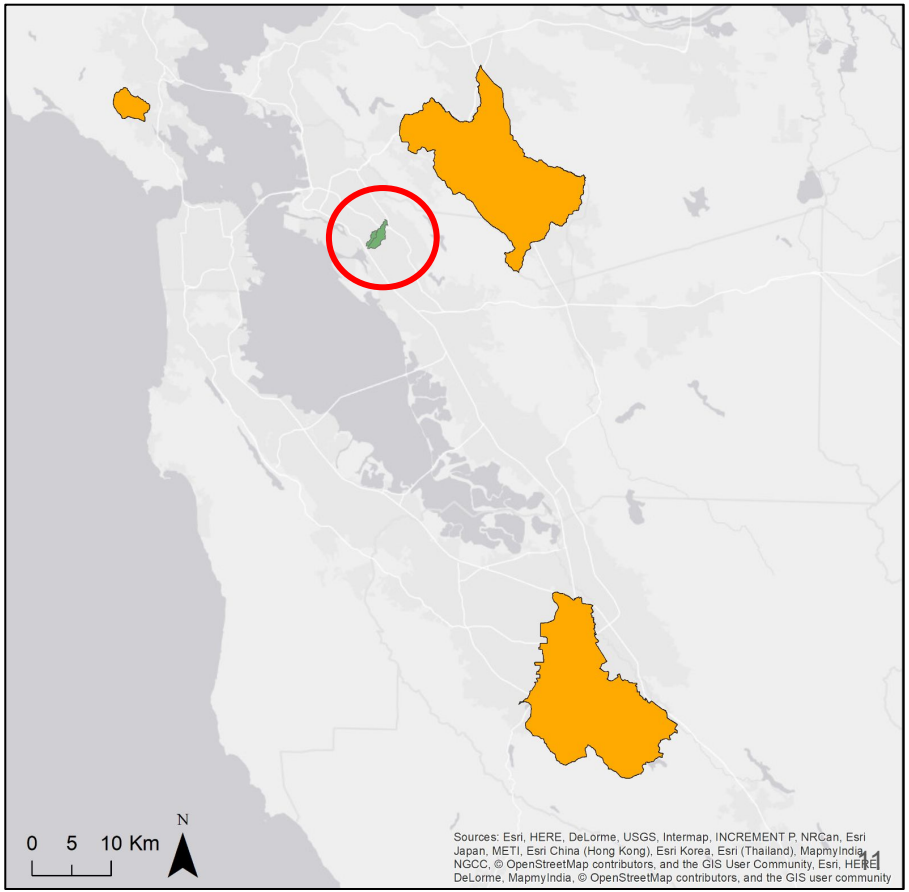
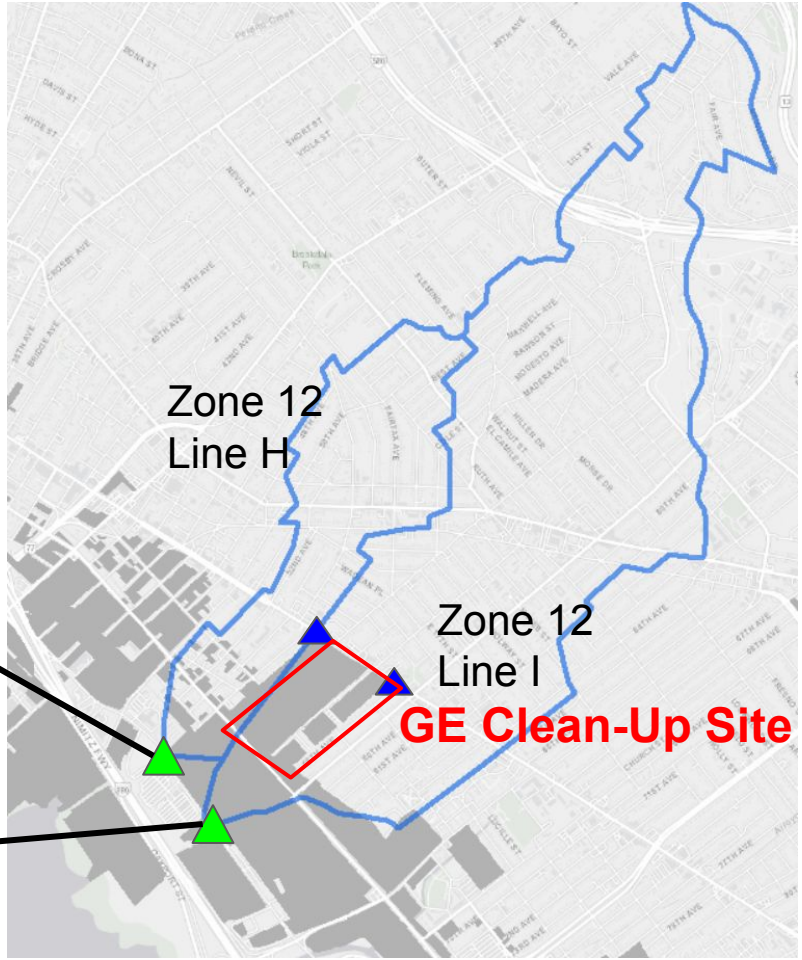


PCBs Stormwater

Concentrations (*Preliminary Data)

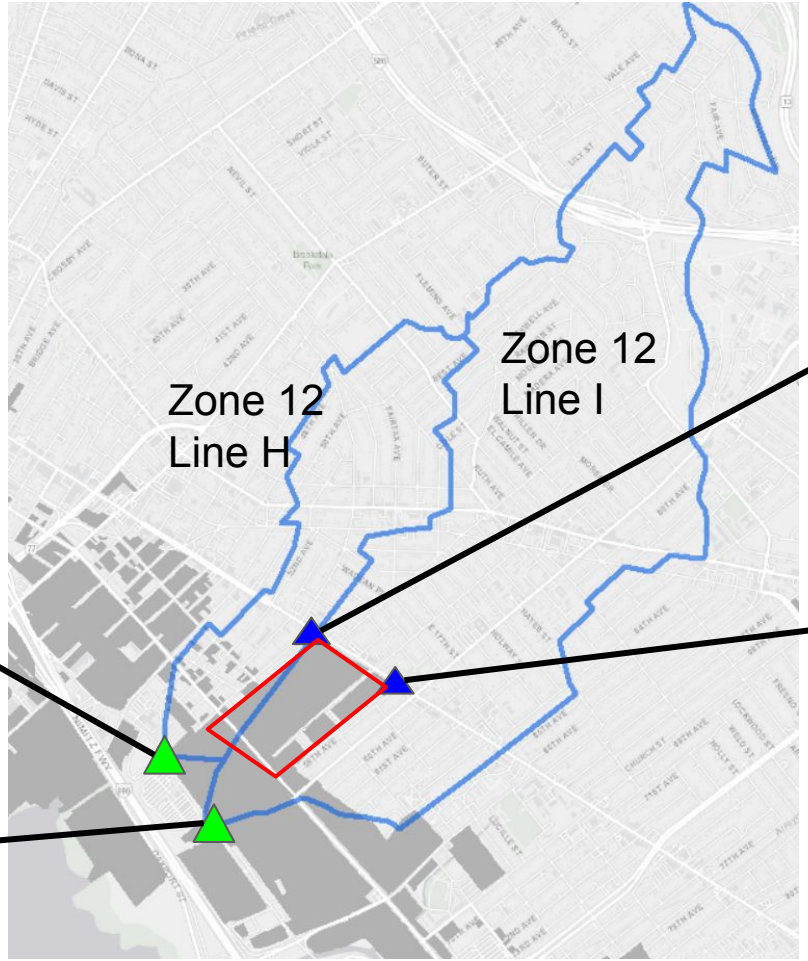
2600 ng/g (WY 2017)
1270 ng/g (WY 2020)
1650* ng/g (WY 2023)

398 ng/g (WY 2017)
263 ng/g (WY 2020)
760* ng/g (WY 2023)



Sampling December 29, 2023

PCBs Stormwater Concentrations (*Preliminary Data)



2600 ng/g (WY 2017)
1270 ng/g (WY 2020)
1650* ng/g (WY 2023)

398 ng/g (WY 2017)
263 ng/g (WY 2020)
760* ng/g (WY 2023)

130* ng/g (WY 2023)

200* ng/g (WY 2023)

Sampling Data to Be Finalized This Year

Pollutants of Concern Data for WYs 2021-2024

PMU data for WY 2024

Stormwater remote sampler (PFAS target and TOP)

S&T Wet Season Water Pilot Monitoring

Pescadero

Next Generation Urban Greening

Holding off on QA until next year:

Tidal Area Remote Sampler Study (only 1 sample)

Element	Study	Funder	Collaboration with other Workgroups	Questions addressed	2025	2026	2027	2028	2029
Integrated Studies	PCB/Hg monitoring and modeling to support load and trend assessment	RMP		1,3,5	167	200	200	200	200
Monitoring	Monitoring to support regional loads and trends	RMP		1,3					
	POC reconnaissance monitoring	RMP		1,2,3,4					
	Tidal area remote sampler development	RMP		1,2,4	15				
	Priority margin units (PMU) PCB monitoring	RMP SEP WQIF	PCBWG	1,2,4	(64)‡				
	Fixed-station monitoring network	RMP WQIF BAMSC	All		TBD	TBD	TBD	TBD	TBD
	Non-CECs add-on to fixed-station monitoring and other CECs monitoring	RMP			53	TBD	TBD	TBD	TBD
	Central Valley Loads monitoring	RMP	PCBWG		120	50			75
	Discharge rating curve development/flow monitoring	RMP			180				

Element	Study	Funder	Collaboration with other Workgroups	Questions addressed	2025	2026	2027	2028	2029
Integrated Studies	PCB/Hg monitoring and modeling to support load and trend assessment	RMP		1,3,5	167	200	200	200	200
Monitoring	Monitoring to support regional loads and trends	RMP		1,3					
	POC reconnaissance monitoring	RMP		1,2,3,4					
	Tidal area remote sampler development	RMP		1,2,4	15				
	Priority margin units (PMU) PCB monitoring	RMP SEP WQIF	PCBWG	1,2,4	(64)‡				
	Fixed-station monitoring network	RMP WQIF BAMSC	All		TBD	TBD	TBD	TBD	TBD
	Non-CECs add-on to fixed-station monitoring and other CECs monitoring	RMP			53	TBD	TBD	TBD	TBD
	Central Valley Loads monitoring	RMP	PCBWG		120	50			75
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	Priority margin units (PMU) PCB monitoring	RMP SEP WQIF	PCBWG	1,2,4	(64)‡				
	Fixed-station monitoring network	RMP WQIF BAMSC	All		TBD	TBD	TBD	TBD	TBD
	Non-CECs add-on to fixed-station monitoring and other CECs monitoring	RMP			53	TBD	TBD	TBD	TBD
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	Tidal area remote sampler development	RMP		1,2,4	15				
	Priority margin units (PMU) PCB monitoring	RMP SEP WQIF	PCBWG	1,2,4	(64)‡				
	Fixed-station monitoring network	RMP WQIF BAMSC	All		TBD	TBD	TBD	TBD	TBD
	Non-CECs add-on to fixed-station monitoring and other CECs monitoring	RMP			53	TBD	TBD	TBD	TBD
	Central Valley Loads monitoring	RMP	PCBWG		120	50			75
	Discharge rating curve development/flow monitoring	RMP			180				

Element	Study	Funder	2024	2025	2026	2027	2028
RELEVANT STUDIES IN OTHER WORKGROUPS							
Monitoring	Stormwater CECs Monitoring (multiple classes)	RMP					
Integrated	Stormwater CECs Monitoring and Modeling (multiple classes but PFAS focus)	RMP WQIF	300* (100) ‡	300* (100) ‡	350* (53) ‡	400*	400*
Integrated	Stormwater CECs Monitoring - Expanded Efforts with Additional Resources (multiple classes but PFAS focus)	RMP		150*	200*	200*	200*
Integrated	Stormwater CECs monitoring strategy (approach)	RMP					
Monitoring	PFAS NMR Analysis in Wastewater, Stormwater, Other Matrices	RMP		190*	195*		
Monitoring	PFAS in Precipitation	RMP		150*	150*		
Monitoring	PFAS Stormwater Depth Pilot	RMP		55*			
Integrated	PFAS Sources to Solutions	WQIF	(547)‡	(751)‡	(799)‡	(502)‡	
Integrated	OPEs: Synthesis and Strategy	RMP			75*		
Monitoring	QACs in Bay Water, Stormwater	RMP		100*		100*	
Monitoring	Isothiazolinones, Parabens in Wastewater, Stormwater	RMP			100*		
Monitoring	Synthetic Dyes in Bay Water, Archived Sediment, Wastewater, Stormwater (NTA follow up study)	RMP		150*			70*
Monitoring	Newly Identified Tire/Roadway Priorities (Bay or Stormwater)	RMP			50*	50*	
Monitoring	Total Tire Rubber/Tire Chemical Indicators (Stormwater, Bay Wet Season Water, Sediment)	RMP			50*	150*	150*
Monitoring	NTA of Microfibers and Stormwater	RMP		120*			
Monitoring	Stormwater In Vitro Toxicity Screening	RMP		26*			
Monitoring	Stormwater (method evaluation and monitoring)	RMP OPC	68*	51*	(40)		
Monitoring	Investigating clothing dryers as a source	Sea Grant OPC	(170)	(230)			
Monitoring	Air monitoring	RMP OPC/Sea Grant/ NOAA			(40)		
Monitoring	Monitor Local Tributary Suspended Load and Bedload	RMP		140*			

Remote Sampler Studies Update

- Eventual capability of sampling MANY more sites per storm
- Once streamlined, cost/site (from prep to post-storm processing and shipping) will be about half that of manual sampling
- Transformational for stormwater monitoring program

Remote Sampler Studies Update

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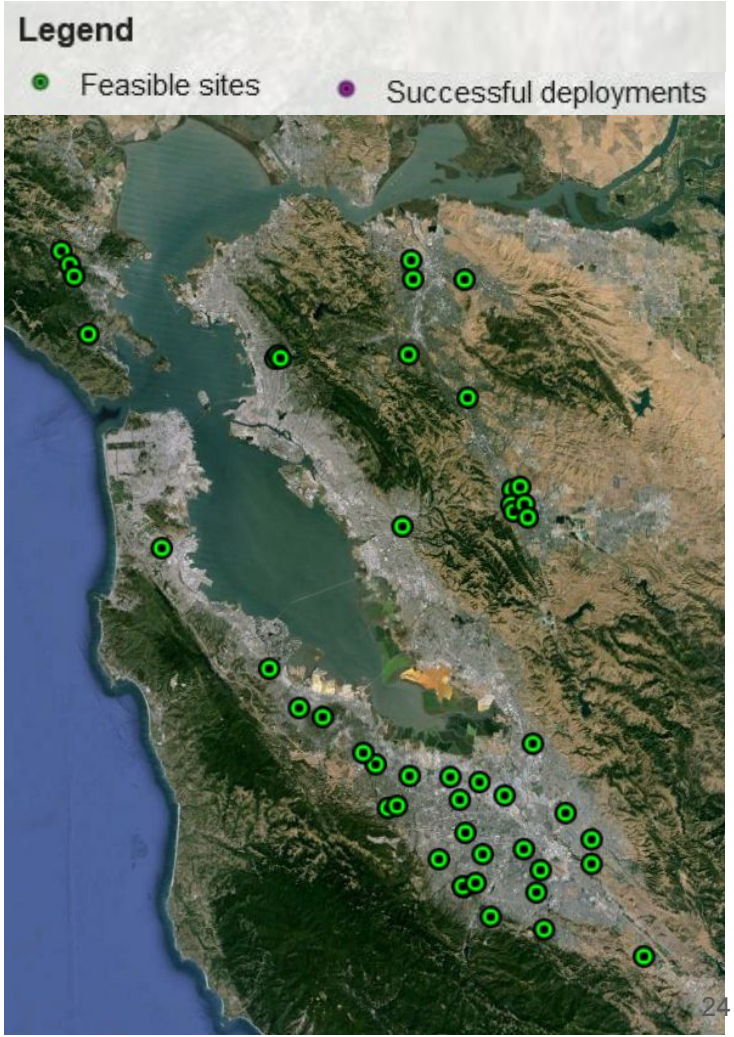

Remote Sampler Studies Update

- Eventual capability of sampling MANY more sites per storm
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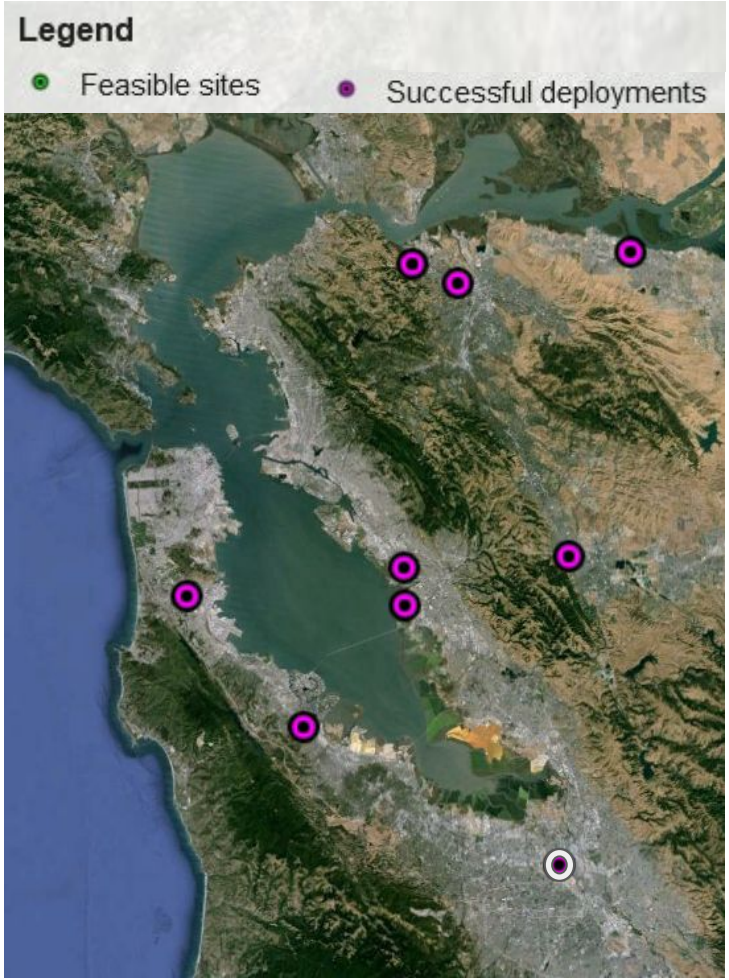


Lessons Learned and Continued Challenges

Lessons learned

- Sampler deployment - gained experience, worked out methods, still need more experience at different sites and to train a larger team. Theft/recovery inform design and future site selection.
- Getting Permits!
- Cubitainer failures

SFEI Mayfly limitations

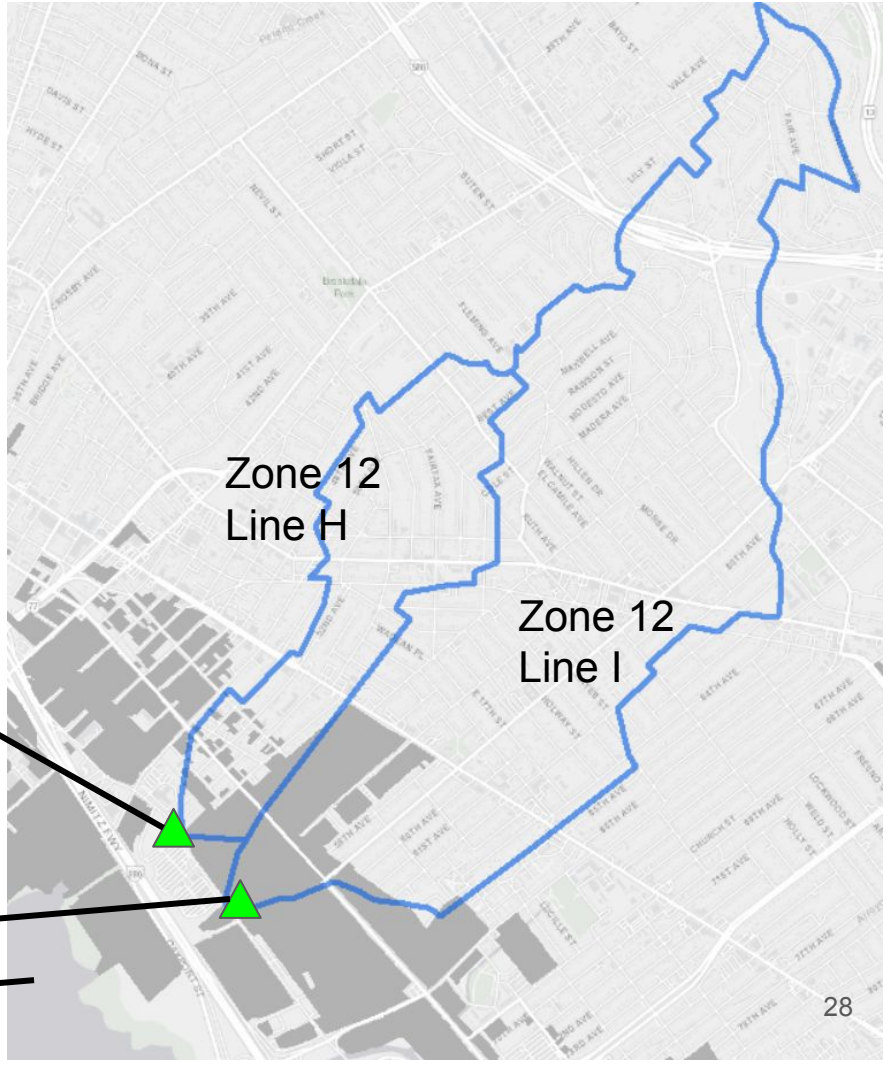
- Head height
- # of containers and therefore analytes
- Soft tubing contamination

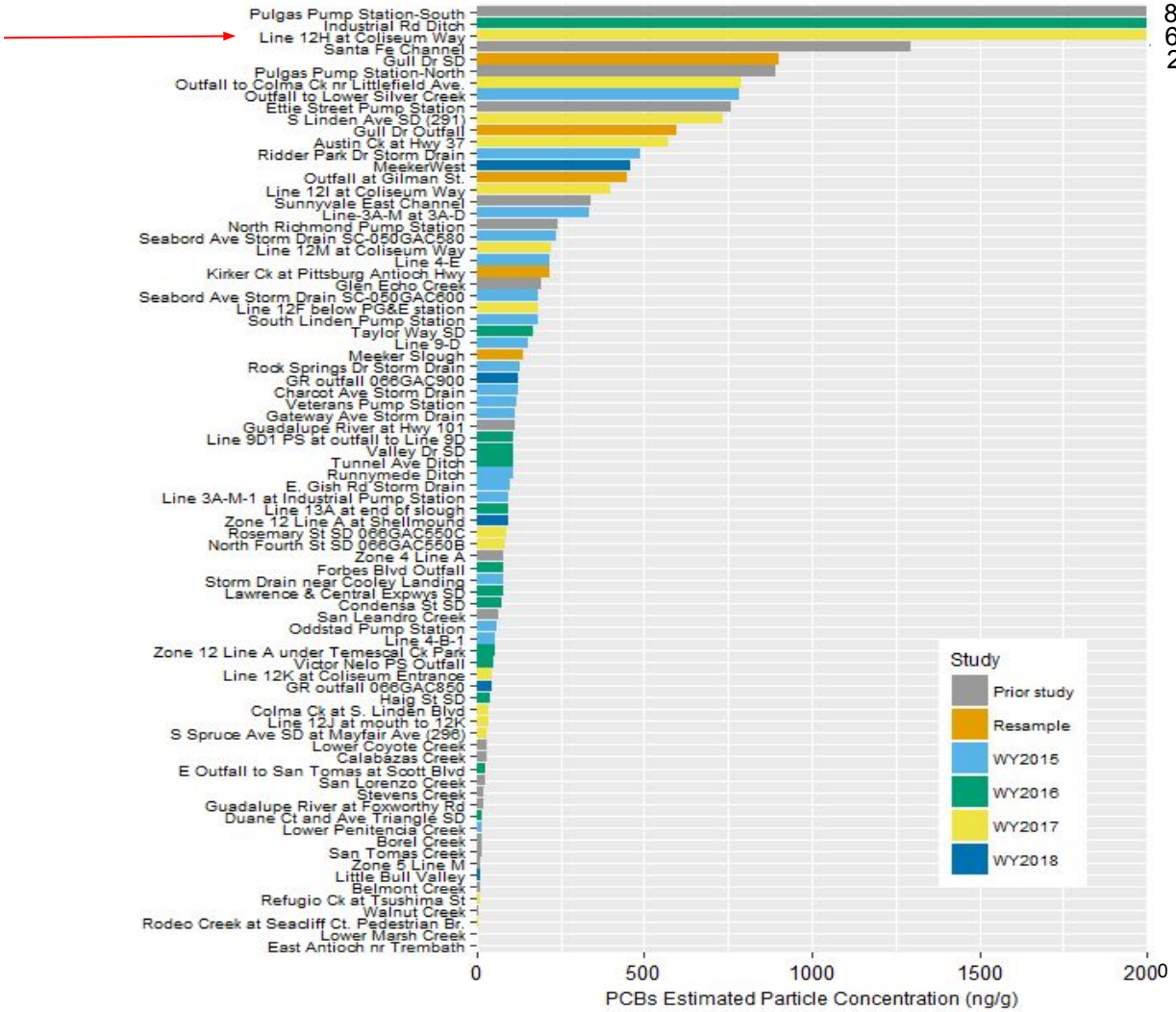
Future improvements

- Examining vacuum sampler and soft tubing alternatives to avoid contamination
- Streamlining prep and workflows - key differences from manual sampling
- Ability to re-program remotely
- Addressing cubitainer failures

PCBs Stormwater Concentrations*

***divided by SSC = "particle ratio"**

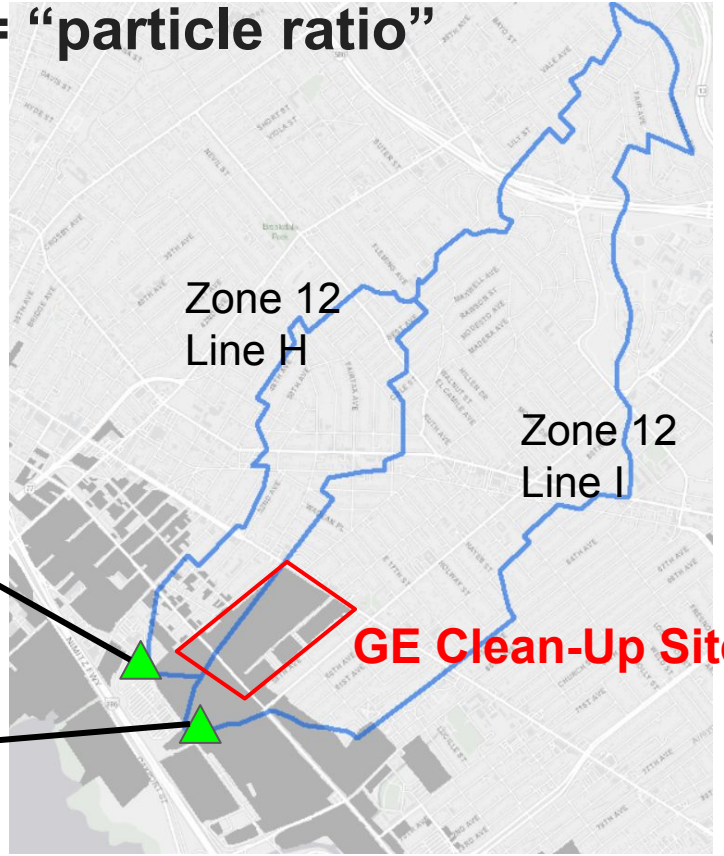




8222 ng/g
6139 ng/g
2601 ng/g

PCBs Stormwater Concentrations*

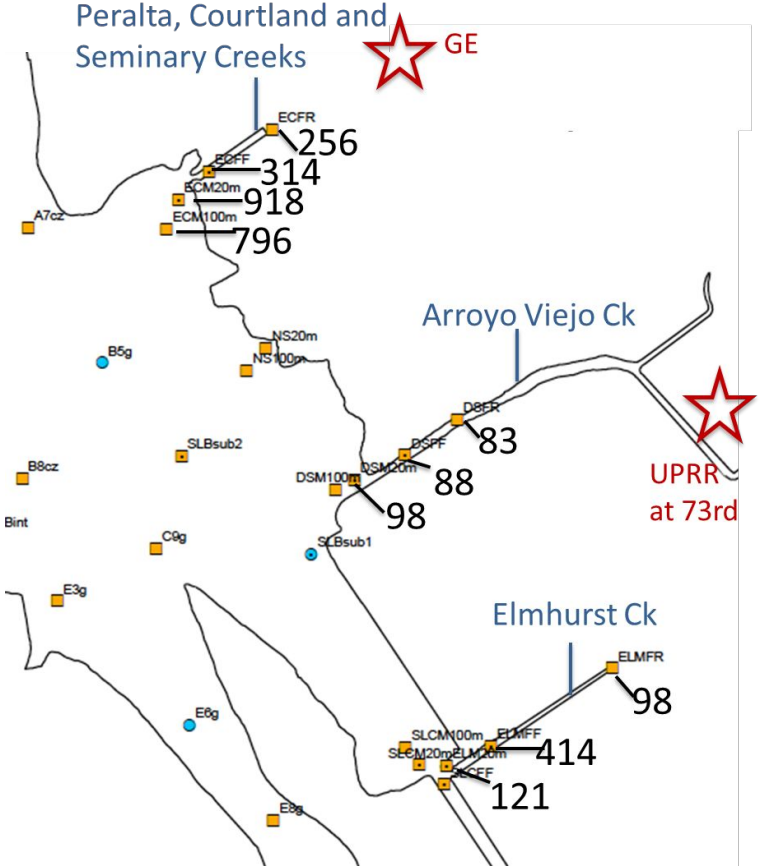
***divided by SSC = "particle ratio"**



2600 ng/g (WY 2017)
1270 ng/g (WY 2020)

398 ng/g (WY 2017)
263 ng/g (WY 2020)

Sediment PCB concentrations (µg/kg)



Upstream sampling sites

Downstream sampling sites

Tidal Area Remote Sampler Update

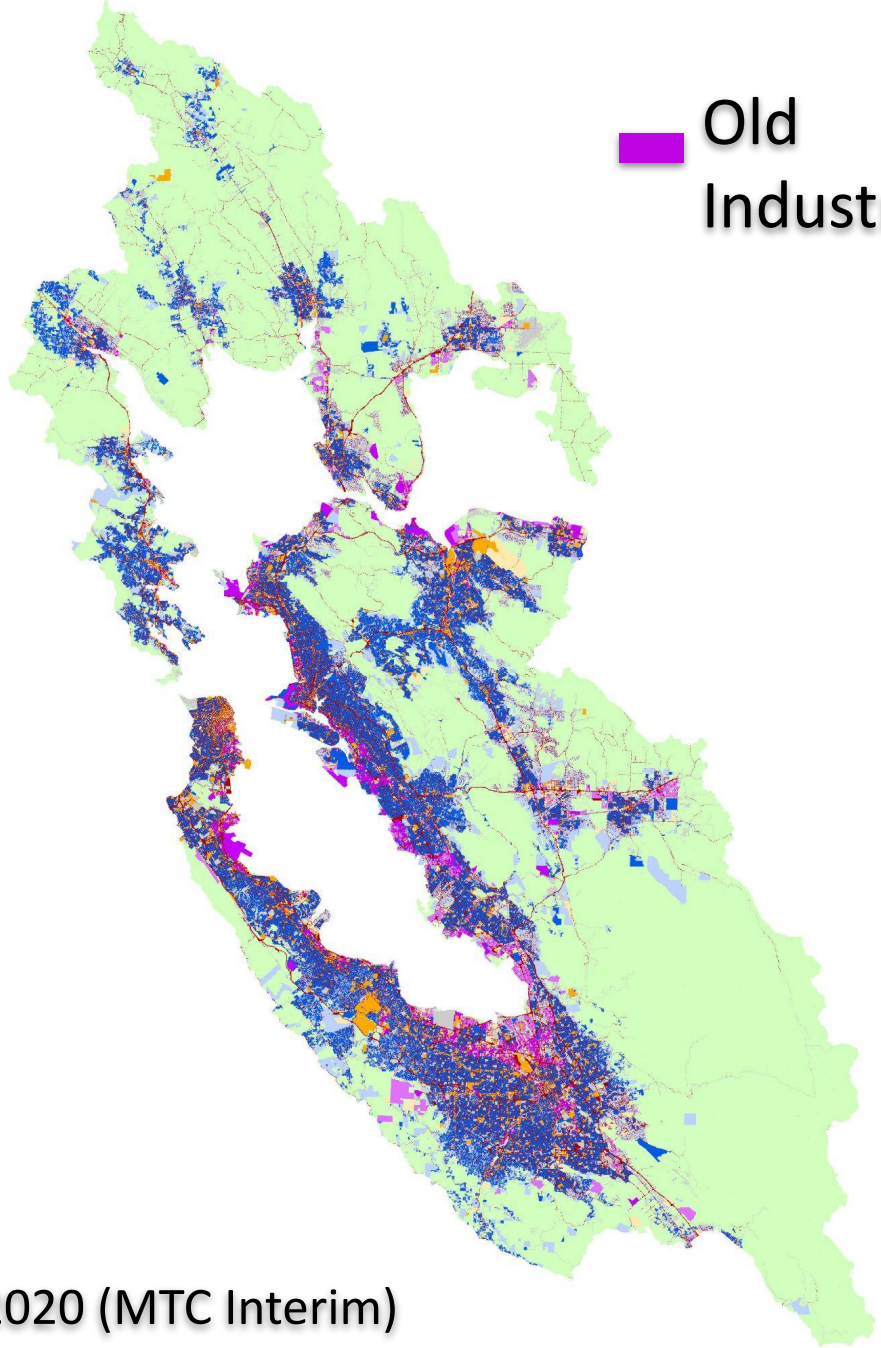
Jennifer Dougherty and Don Yee

SPLWG Meeting

May 20, 2024

Motivation

- ➔ Old industrial ringing the Bay
  - ◆ possible PCB source areas
  - ◆ tidally influenced
- ➔ Manual sampling difficult
  - ◆ low tide aligning with storm flow
- ➔ Automated sampler
  - ◆ relatively easy to deploy
  - ◆ detect fresh stormwater runoff
  - ◆ increase sampling of old industrial

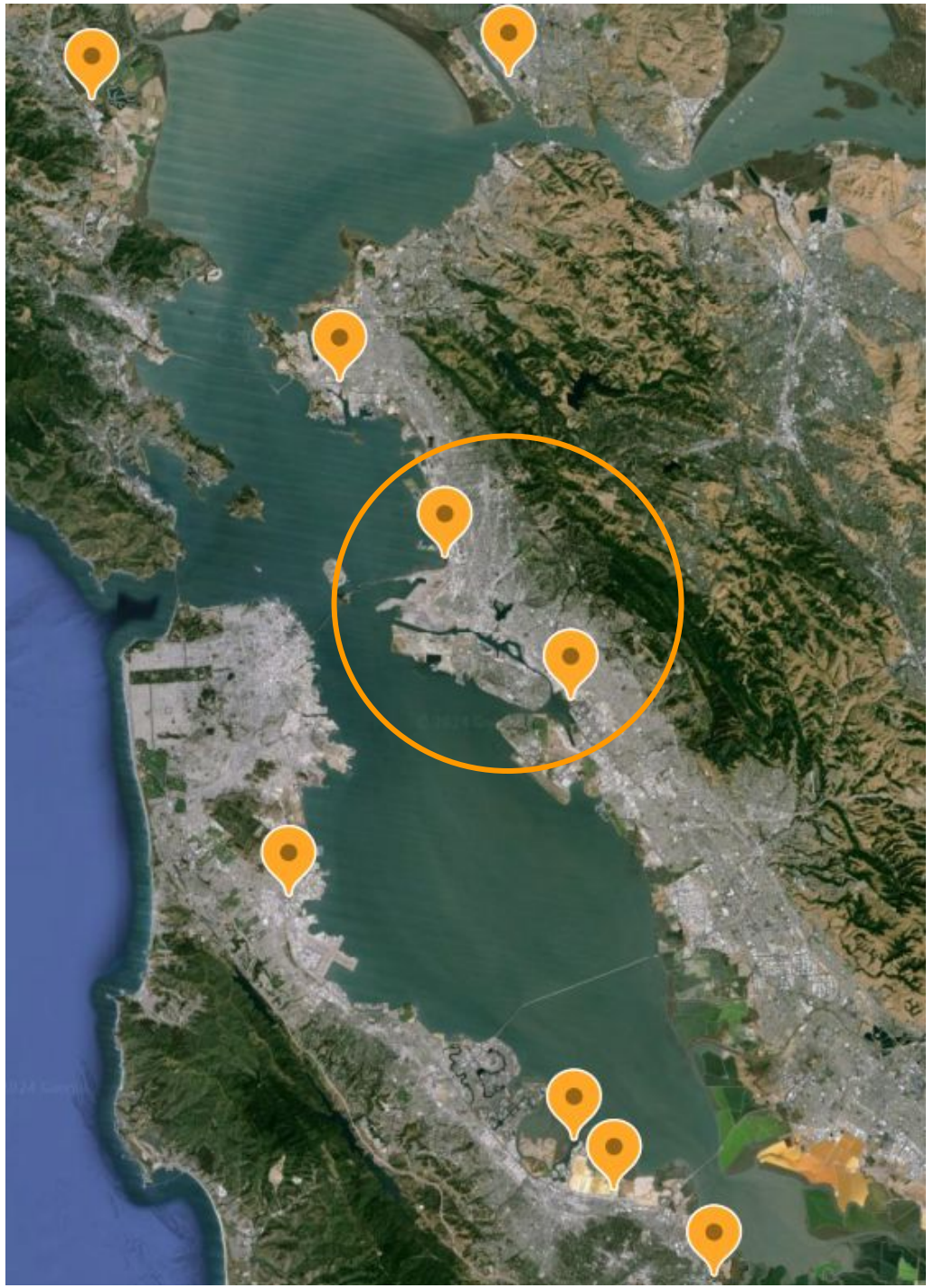


Study Goals

- ➔ Develop remote sampler
- ➔ Pilot sampler at 8 sites
- ➔ Document sampler development & deployment

Site Selection

- Bay Area Municipal Stormwater Collaborative (BAMSC)
  - Distributed 8 sites to Marin (1), Solano(1), Contra Costa(1), Alameda(2), San Mateo(2), and Santa Clara(1) counties
- Coordination with BAMSC county reps
  - Reconned county suggested sites
  - Selected highest priority feasible site
- Deployed at 2 sites so far



RMP


Colma Creek, San Mateo County
Sites


Novato Creek, Marin County


Coral St.ditch, Solano County


Atherton Channel, San Mateo County


Outfall to Redwood Creek, San Mateo County


Richmond Harbor, Contra Costa County


Mayfield Slough, Santa Clara County


Damon Slough, Alameda County


Emeryville Crescent, Alameda County

Lessons Learned

Challenges

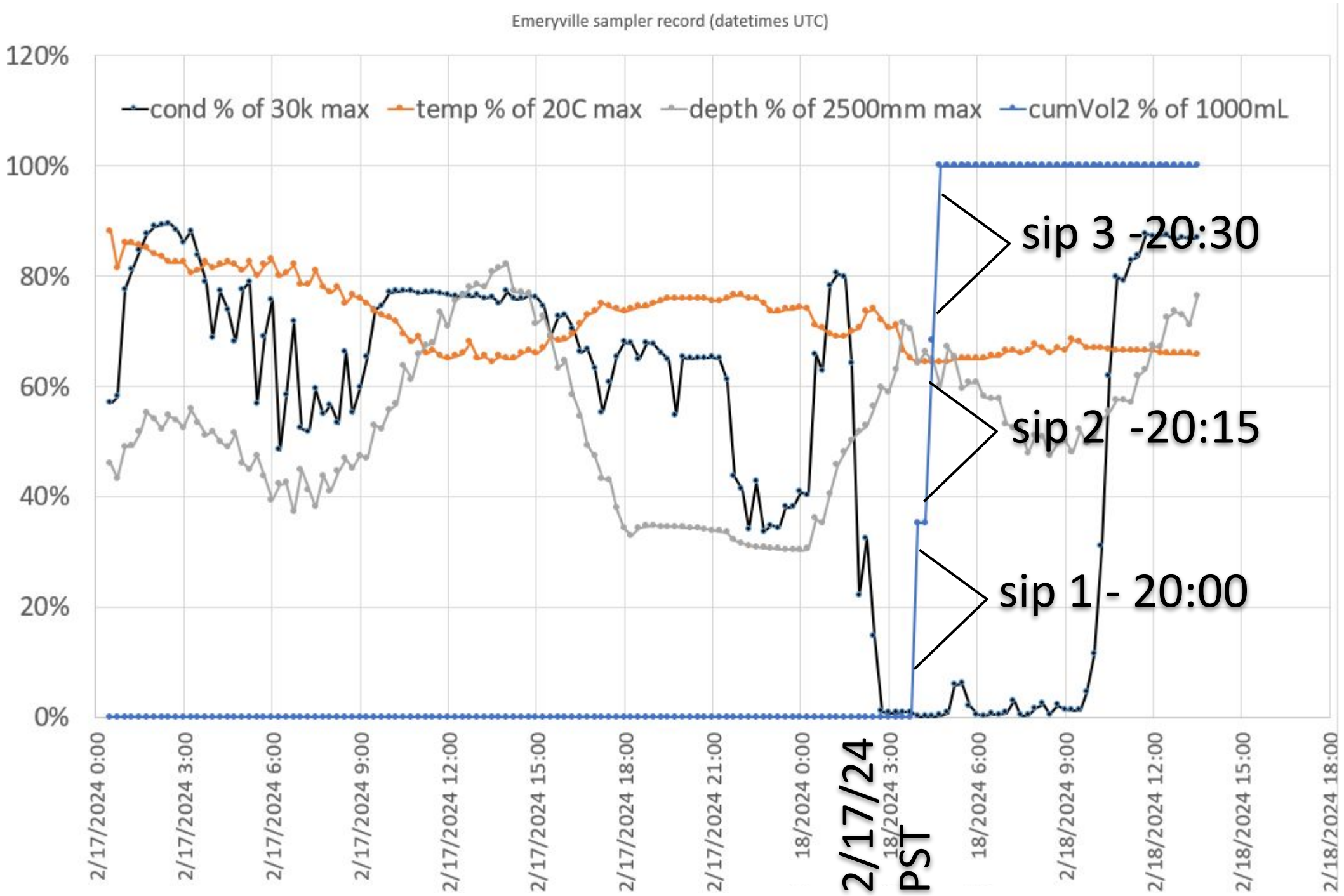
- ➔ Sampler Development
- ➔ Permitting
- ➔ Site access
- ➔ Vandalism

Successes

- ➔ Timing of Deployment
- ➔ Sampled at Emeryville Crescent

RMP

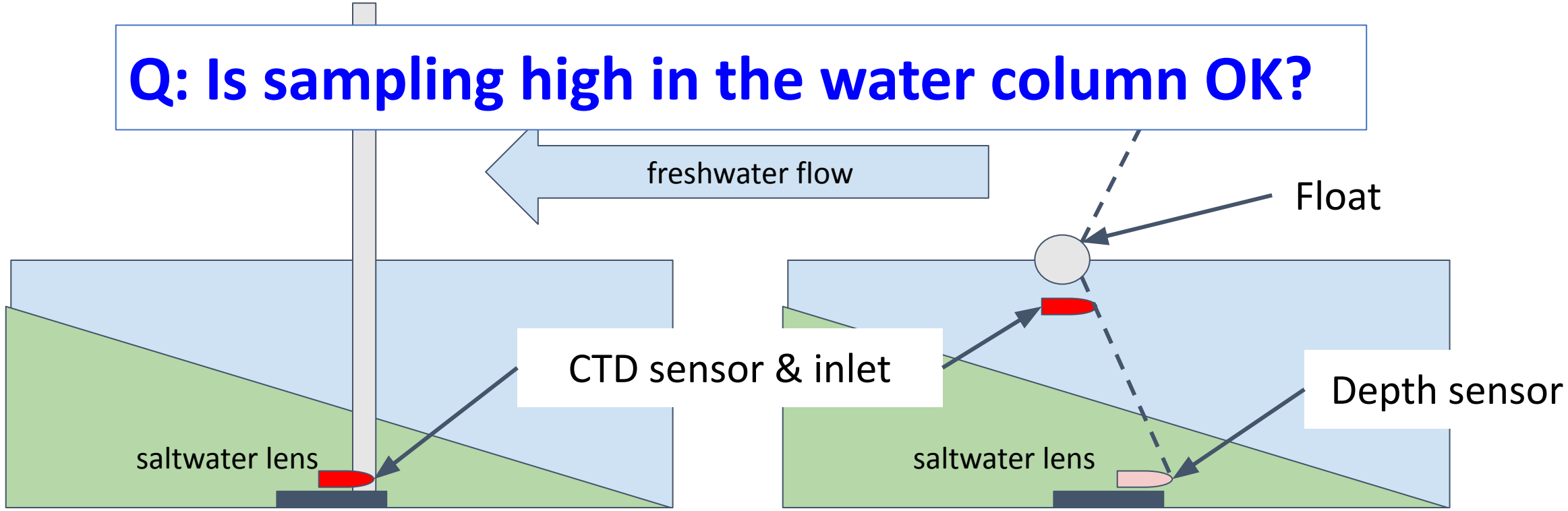
Successful data collection



Challenges: Saline/freshwater wedge/lens

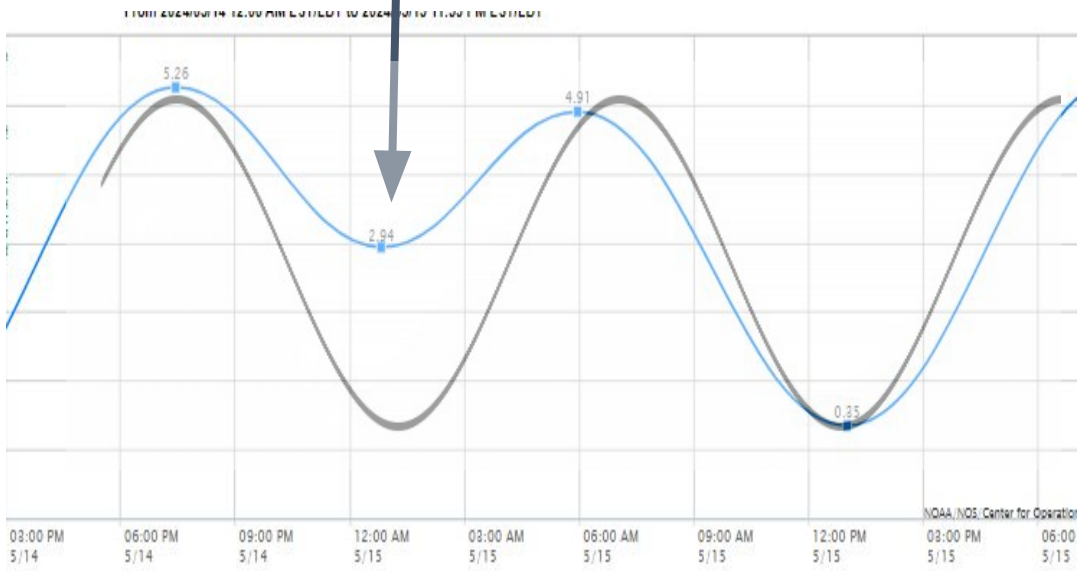
Now: No sample if high tide, low rainfall

Fix: Floated inlet & sensor



Challenges & Plans

- Better tidal estimates: use more complex model
  - simple sine wave currently
  - higher low water looks like flow



- Site configurations will vary case by case
  - make best guess
  - adjust on failures (incl. theft!)

Plans for WY 2024/25

- Resample Damon
  - (slightly further upstream/less accessible)
- Sample remaining 6 sites
  - Are there higher priority sites within that group?

- Remaining budget
  - Enough to do remaining 6 sites plus Damon redo
  - Not enough for any more redos if we have a failure
    - Do we need contingency funds in case of a failure (esp. if a new/unique type of install that we need to try alternative configurations)

2025 Special Studies Proposals

For discussion by the SPLWG
May 20, 2024

Summary Table on page 20 of the agenda package

	Tier	Proposal name	Budget
	Tier 1	Integrated Monitoring and Modeling to Support PCBs and Mercury Watershed Loads Uncertainties Assessment and Monitoring Design (Year 2 of 2)	$167k
	Tier 1	Stormwater CEC modeling and Data Analysis (Tier 2)	$39k
	Tier 1	Tidal Area Remote Sampler Pilot - Yr 3	$15k
	Tier 2	GIS Improvements to Support Modeling, Data Interpretation, and Site Selection	$80k
*	Tier 2	Stormwater Systems Management and Equipment Upgrades	$80-$180k
	Tier 2	Mallard Island PCB Load Trends Monitoring	$120k
*	Tier 2	Add-on to Stormwater Contaminants of Emerging Concern (CECs) Monitoring and Modeling 2025 Project to Include Additional Non-CECs Analytes	Up to $52.4k
	Tier 2	Develop Discharge Rating Curves at County-Operated Stage Monitoring Stations	$30-$188k
	Tier 2	Guadalupe PCB Load Trends (Tier 2)	$60k
		SPLWG Strategy Funding Statement	$65k

Tier 1 vs. Tier 2 Proposals

- The workgroup's budget for special studies in 2025 (allocated by the RMP Steering Committee) is $221,685
- **Tier 1 proposals:** highest priority projects; sum of proposed budgets fit into the estimated RMP planning budget minus requested strategy funds ~$221k
- **Tier 2 proposals:** Single page proposals for consideration if additional funds become available (SEP, EPA) For 2025 we anticipate EPA funds equaling 50% of the estimated planning budget to become available ~$143k.

Decision-Making Process

Today:

1. **Presentations** by staff (1:00 - 1:45)
2. **Discussion**, Q&A, prioritization (1:45 - 2:40)
3. **Recommendations & Ranking** by WG members in closed session (2:50 - 3:20)

Next steps:

- **Technical Review Committee** review at June meeting (along with special studies from the other 4 workgroups -- PCBs, sediment, CECs, microplastics)
- **Steering Committee** approval, early August 2024.
- Staff will **begin work** on projects as early as Jan 2025.
  *Note that some projects have an *early release request* to get moving on them in order to start the work for the WY 2025 wet season, and that some projects have a timeline of longer than one year.

1. Integrated Monitoring and Modeling to Support PCBs and Mercury Watershed Loads Uncertainties Assessment and Monitoring Design, Year 2 of 2 ($167k, Tier 1)

- First year monitoring complete, second year more modeling-heavy
- Support PCBs and Hg loads estimation
- Seeks to answer the following questions:

  1. What model parameters contribute greatest to model uncertainties?

  2. What is the uncertainty of WDM load estimation?

  3. What is a suggested monitoring design to reduce uncertainties and support load estimation?

1. Integrated Monitoring and Modeling to Support PCBs and Mercury Watershed Loads Uncertainties Assessment and Monitoring Design, Year 2 of 2 ($167k, Tier 1)

- The Watershed Dynamic Model (WDM) has been developed for hydrology, sediment, with PCBs and Hg currently being completed.

  Reconsideration of the PCBs TMDL planned for 2028.

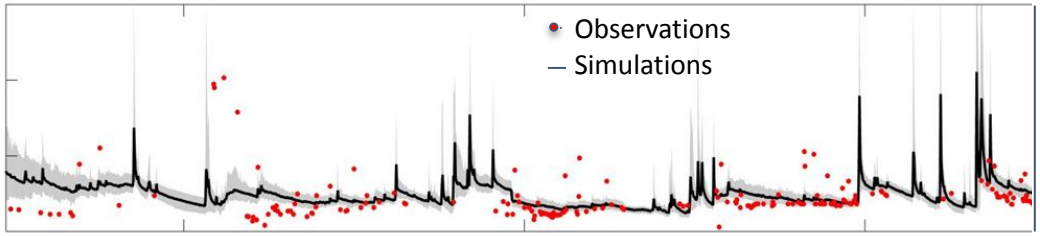
- Integrated modeling-monitoring approach to address management questions.

  Model sensitivity and model uncertainty analyses will help us to target our monitoring approach (lower medium term cost).

Key questions:

- What model parameters contribute greatest to model uncertainties?
- What is the uncertainty of the PCBs and Hg loads estimated from the Watershed Dynamic Model?
- What is a suggested monitoring design to reduce uncertainties and support load estimation?

PCBs / Hg Load



Approach

Monitoring:
Continue monitoring the same watersheds for PCBs, Hg, and SSC. Labs: SGS AXYS Analytical (PCBs), Brooks Applied Laboratories (Hg), SFEI (SSC).

Up to 30 independent samples will be analyzed (concentration + flow).

Modeling: Parameter sensitivity analysis. Uncertainty estimation and tool development.

Year 1

Monitoring:

Not anticipated ***for this proposal***.

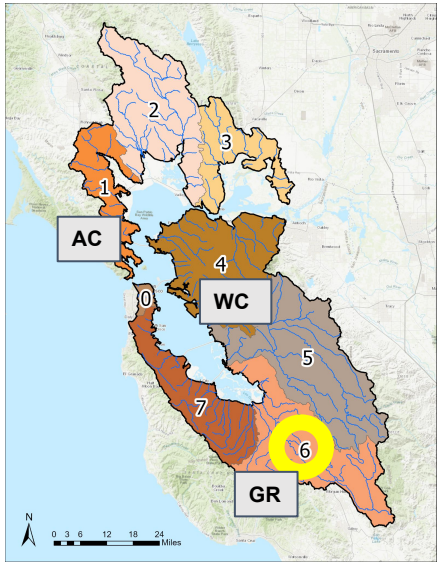
Modeling:

Computational tools will be applied to a test sub-region (6).

Model performance evaluation using monitoring data.

Regional uncertainty quantification.

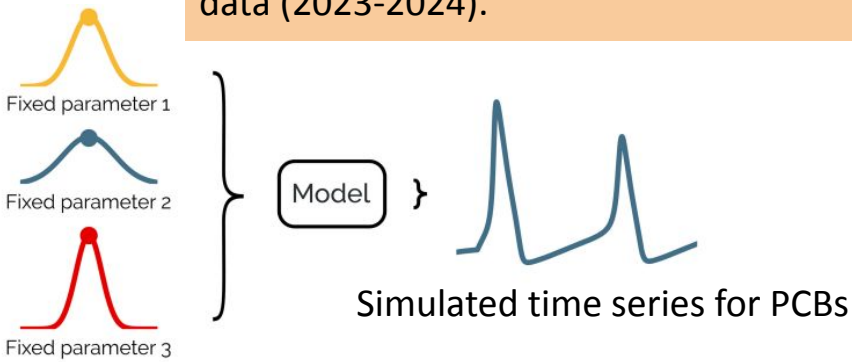
Year 2



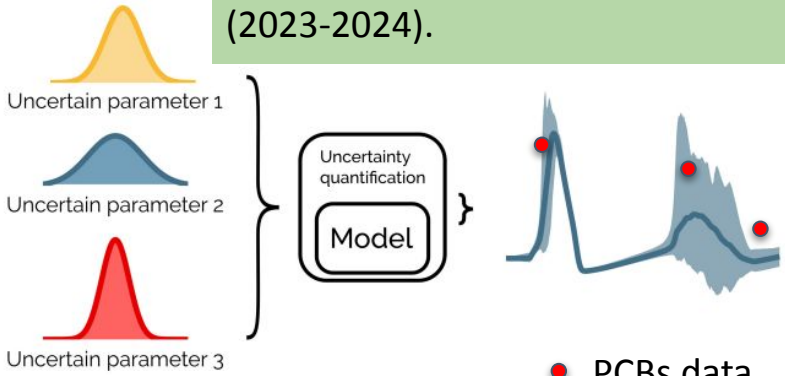
RMP

Approach

Loads estimated without considering monitoring data (2023-2024).



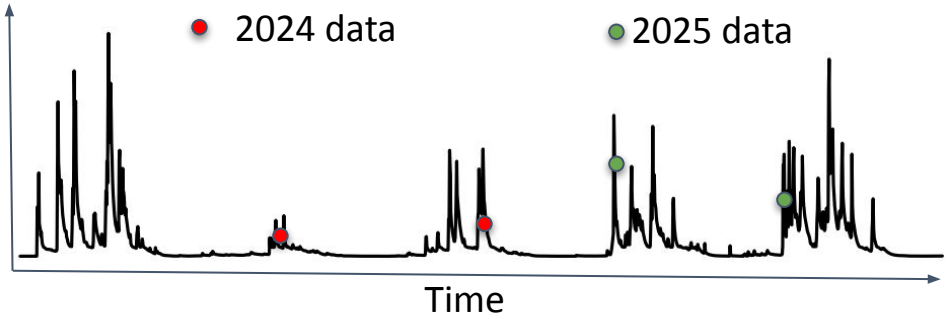
Loads estimated considering monitoring data (2023-2024).



Figures adapted from Tennoe et al., 2018. 10.3389/fninf.2018.00049

Approach: Are PCB load different now that the model has seen the data?

PCBs simulated load (Guadalupe River)



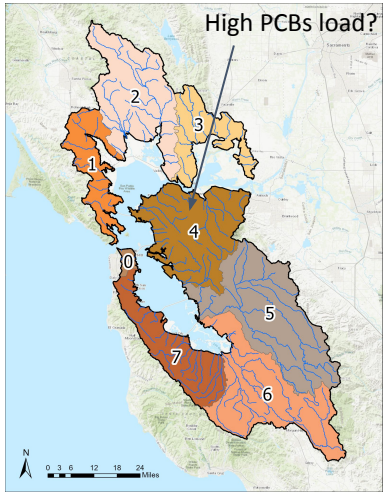
Did adding additional monitoring on Guadalupe in 2023 and 2024 improve the model calibration for trends through time?

Did adding two additional watersheds (WC and AC) improve the spatial calibration? WC: Walnut Creek, AC: Arroyo Corte Madera del Presidio.

Approach: Informing the monitoring strategy

Where do we sample?

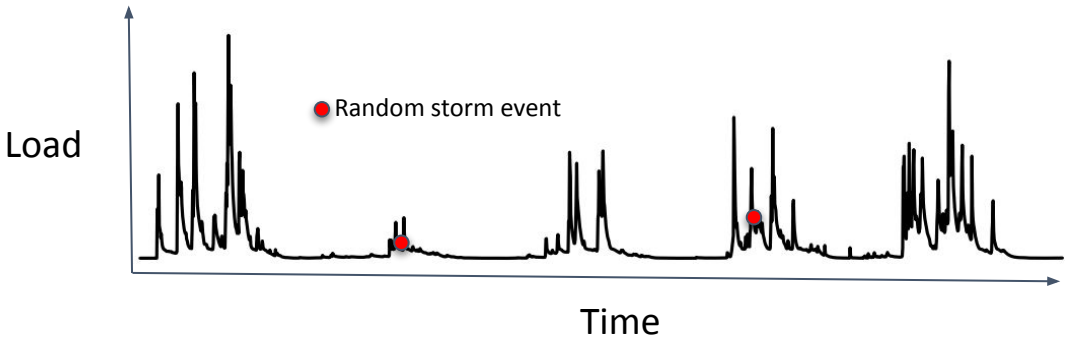
The Watershed Dynamic Model will identify PCBs “hot spots”. Which watersheds contribute the most PCB load to the Bay?



How many storm events do we sample?

Does sampling one random storm event produce a reasonable load?

How about two random storm events?



1. Integrated Monitoring and Modeling to Support PCBs and Mercury Watershed Loads Uncertainties Assessment and Monitoring Design, Year 2 of 2 ($167k, Tier 1)

Proposed Deliverables and Timeline

Deliverable	Due Date
Wet season 2024 samples collected and sent for lab analysis (Year 1)	04/2024
Laboratory analysis, QA, & Data Management (Year 1)	09/2024
Presentations to the SPLWG meeting (Year 2)	05/2025
Draft Final Report (Year 2)	12/2025
Final Report (Year 2)	03/2026

2. Stormwater CEC Modeling and Data Analysis ($39K, Tier 1)

- In the technical report (Avellaneda and Zi, 2024), we recommended using the RWSM for estimating loads of CECs to the Bay.
- Additional funding will expand the first phase of the CEC Modeling Work Plan under Task 3 of the Stormwater CECs Modeling and Monitoring 2025 project.
- Work will be coordinated with PFAS Sources to Solutions grant.
- Prioritized now to be ready to start on load estimates and source linkages in 2027.
- Expand work to develop, assess, and potentially pilot use of new geospatial data sets to support stormwater CEC modeling and data analysis.

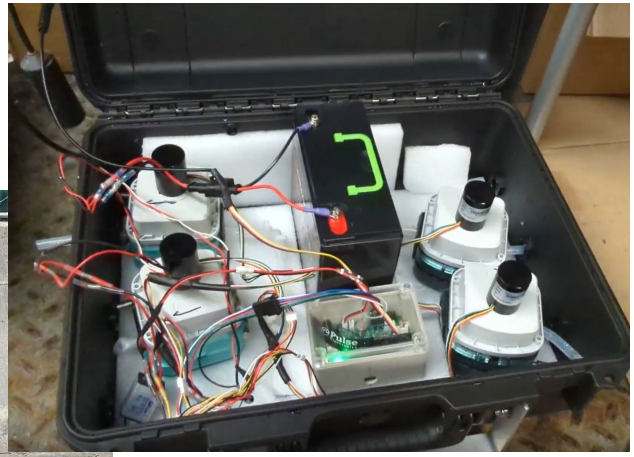
2. Stormwater CEC Modeling and Data Analysis ($39K, Tier 1)

PROPOSED DELIVERABLES AND TIMELINE

Deliverable	Due Date
Expanded draft report Stormwater CEC modeling and data analysis	October 2025
Expanded final report: Stormwater CEC modeling and data analysis	December 2025

3. Tidal Area Remote Sampler Pilot - Year 3 ($15K, Tier 1)

- Project goals:
  - Develop and pilot test remote sampler design at 8 old industrial sites influenced by tides
- Total project budget from years 1 and 2: $107k
- Additional funds will support:
  - Complete sampling at the 6 remaining sites (utilizing remaining funds)
  - Piloted at 2 sites in WY 2024; lost one sample due to vandalism; additional funding will allow for resampling at vandalized site
  - Provide additional year of project management



3. Tidal Area Remote Sampler Pilot - Year 3 ($15K, Tier 1)

Proposed Deliverables and Timeline

Deliverable	Due Date
Pilot testing during rainy season	04/2025
Update presentation at SPLWG on the results to date	05/2025
Data upload to CEDEN	12/2025
Draft Report	1/2026
Final Report	3/2026

4. GIS Improvements to Support Modeling, Data Interpretation, and Site Selection ($80K, Tier 2)

(1) Work with MS4s to obtain updated maps of urban drainage systems (need for updated data due to population growth and development)

- Needed for watershed modeling, sampling design, and source tracking
- Deliverable: Workplan for updating regional watershed boundary maps

(2) Development of watershed models and data analysis is hindered by lack of consistently updated land feature data

- Builds on another reserve funding request (to SC) for preliminary investigation in **2024**
- Better representation of land use changes will help to create more realistic runoff and pollutant loading estimates
- Exciting opportunity to use satellite remote sensing and artificial intelligence, particularly for CECs
- Deliverables: Survey of options, pilot analysis of sample datasets, recommendation of suitability for RMP uses, workplan and budget for future work

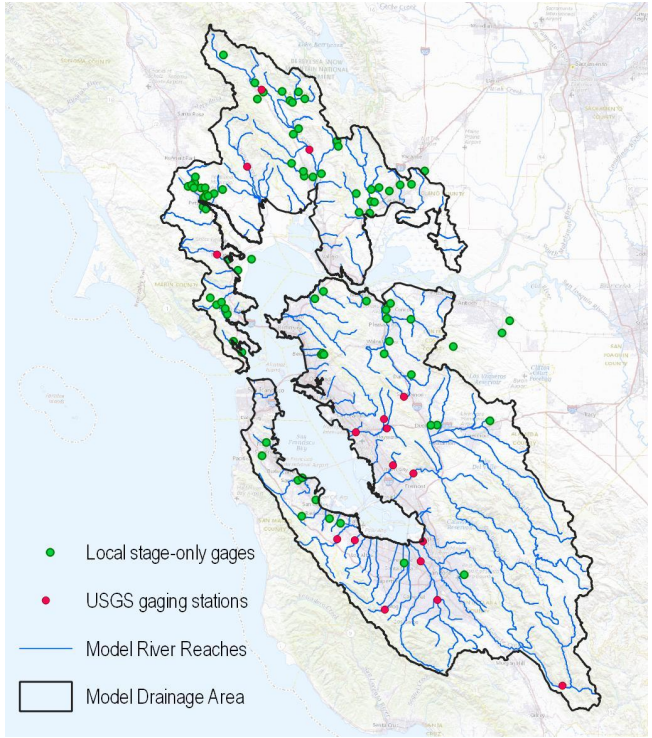
4. GIS Improvements to Support Modeling, Data Interpretation, and Site Selection ($80K, Tier 2)

PROPOSED DELIVERABLES AND TIMELINE

Deliverable	Due Date
Project scope	February 2025
Draft project report	October 2025
Final project report	November 2025

5. Develop Discharge Rating Curves at Stage Monitoring Stations ($56k - $188k, Tier 2)

- Needed to address modeling calibration data gaps
- Local agencies operate "stage-only" gauges, offering continuous water-surface elevation observations
- Rating curves can estimate discharge, leveraging existing infrastructure
- Budget covers site selection, collaboration, permits, measurements, QA/QC, and data publication
- Priority on locations with significant coverage gaps
- Budget is highly scalable: $30K + $26.3K/site
- i.e. 6 sites for $157.8K = $187.8K total



5. Develop Discharge Rating Curves at Stage Monitoring Stations ($56k - $188k, Tier 2)

PROPOSED DELIVERABLES AND TIMELINE

Deliverable	Due Date
Site selection	Winter 2024
First set of flow observations	Spring 2025
Draft rating curves	2026
Final rating curves	2027-2028

6. Add-on to Stormwater CECs Monitoring and Modeling to Include Additional Non-CECs Analytes ($52.4K, Tier 2)

- Requested at SPLWG/ECWG joint meeting.
- Goals: 1) to opportunistically obtain stormwater monitoring data about other pollutants of concern in the Bay, and 2) to inform CECs monitoring data interpretation, such as examining whether observed variability in CECs levels is consistent with our understanding of the variability of other constituents in urban runoff.
- Additional analytes during Stormwater CECs 2025 larger full-sized remote sampler and manual sampling
    - **Tier 1:** 2 full-sized remote, 2 manual (4 total, plus QA samples)
    - **This Tier 2 add-on:** Add 1 full-sized remote and 4 manual (9 total, plus QA samples)
- Budget options to select various analytes.

6. Add-on to Stormwater CECs Monitoring and Modeling to Include Additional Non-CECs Analytes ($52.4K, Tier 2)

PROPOSED DELIVERABLES AND TIMELINE

Deliverable	Due Date
Stormwater Additional Non-CECs Analytes monitoring	Spring 2025
Data uploaded to CEDEN	December 2025

CECs 2025 Add-on: Budget Options for various analytes:

Analyte	Tier 1 Total Cost Per Analyte (4 samples)	Tier 1+2 Total Cost Per Analyte (9 samples)
PCBs	$13,700	$18,950
HgT	$3,655	$4,230
Metals suite	$4,425	$5,550
Nutrients: Ammonia, Nitrate, Nitrite, Phosphate	$9,430	$10,630
DOC/TOC	$6,170	$6,470
Data Management Fixed Costs	$6,500	$6,500
Total for all analytes	**$43,880**	**$52,330**

7. Stormwater Systems Management and Equipment Upgrades ($80K - $180K, Tier 2)

- Need: Improve efficiencies to operate expanded program & deliver highest quality field data
- Automation and streamlining sampling processes and documentation, scalable up to $80k ($40k if lower funding awarded)
- Development of "go/no go" decision tree for manual and automated sampler deployments, $10k
- Improvement of monitoring sites database and logging systems for efficient information management, $20k
- Expanded team training to build labor capacity, scalable up to $20k ($10k if lower funding awarded)
- Purchase of flow monitoring equipment, $50k (2nd tier priority; contingent on higher funding award)

7. Stormwater Systems Management and Equipment Upgrades ($80K - $180K, Tier 2)

PROPOSED DELIVERABLES AND TIMELINE*

Deliverable	Due Date
Discussions with other sampling programs, expanded team trainings, purchase of velocity meter	December 2024
Decision tree process developed, sampling and shipping SOPs revised, data management systems weaknesses identified	December 2024
SPLWG presentation update	May 2025
Sites database improvements, data management systems weaknesses/inefficiencies improved	August 2025
Ongoing identification and implementation of systems and equipment upgrades as funding allows	August 2026

*Timeline shifted back if funds not released early.

8. Mallard Isl. PCB Load Trends Monitoring ($120K, Tier 2)

- Need: Bay model to support **SF Bay PCB TMDL revisions**, **expected in 2028**, needs a Central Valley loads estimate to support estimates of regional recovery rates and the regional baseline.
- Context: The **Sacramento River contributes an average of 11 kg/yr to Bay PCB loads** (estimated 31% of average total load to the Bay in 2009).
- The problem: Given 14 years of population growth, redevelopment, management efforts, soil processes, and sediment load trends since 2010 sampling, is that estimate still valid?
- **Proposal specifics**: Collect 30 PCB samples across up to 3 high flow events, aiming to support a robust load estimation.

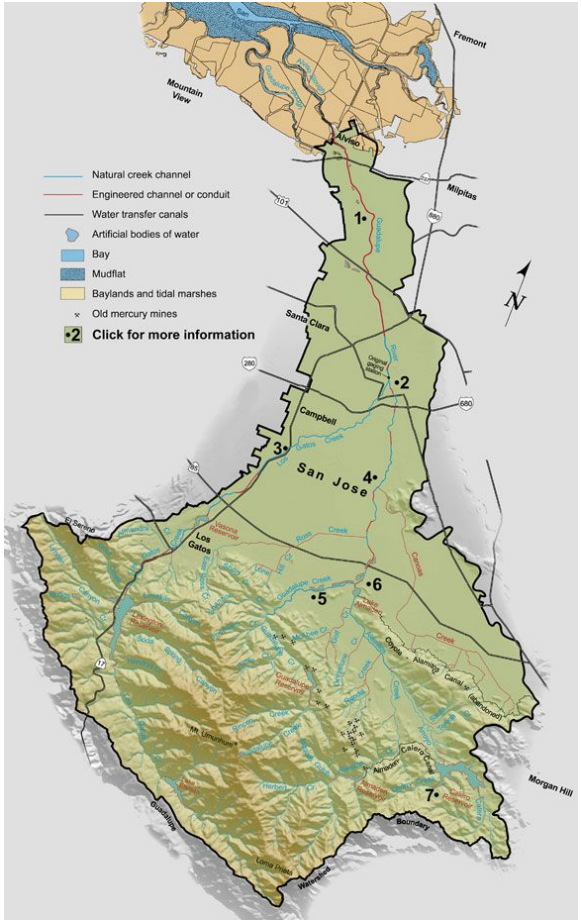
8. Mallard Isl. PCB Load Trends Monitoring ($120K, Tier 2)

PROPOSED DELIVERABLES AND TIMELINE

Deliverable	Due Date
Contracting and field planning	October, 2024
Winter season field work during 3 storms	November 2024 to May 2025
Draft and final project report	September, 2025 and November 2025

9. Guadalupe River PCB Load Trends ($60K, Tier 2)

- Need: Evidence for a downward trend in PCBs would help demonstrate the effectiveness of the management efforts and support the 2026 Reasonable Assurance Analysis.
- Context: Guadalupe River discharges an average of 1.7 kg/yr of PCBs to the Bay, or 8.5% of the Bay's small tributary loading of PCBs
    - RMP trends analysis for Guadalupe R. capable of detecting 25% or greater trends over a 20-year period.
    - Evidence for a downward trend in PCB concentrations (2003 to 2014) was not statistically significant
- Problem: Given redevelopment, management efforts, and soil processes since 2010 sampling, these old data may not reflect 2028 conditions for updated PCB TMDL.
- **Proposal specifics**: Reanalyze trends with a now available, longer, 21-year time series.



Source: Oakland Museum of California Creek Maps, https://explore.museumca.org/creeks/1400-OBGuadalupe.html

9. Guadalupe River PCB Load Trends ($60K, Tier 2)

PROPOSED DELIVERABLES AND TIMELINE

Deliverable	Due Date
PCB, turbidity, climate and flow data compilation	January 2025
Statistical analysis and draft reporting	April 2025
External review and final project report	August 2025

10. SPL Workgroup Strategy Funding ($65K)

- Provides essential core funding for staff to plan and coordinate this workgroup in 2025
- We are proposing to increase the funding from $37K to $65K, to support a variety of new activities:
    a. SPL's role in support of other WGs has increased; new integrated approach to monitoring and modeling
    b. Increased coordination and integration across workgroups is necessary for expanded support
    c. Funding supports bi-weekly meetings, communication with other workgroups, and responses to requests from stakeholders
- Extra coordination will pay off in efficient use of RMP funds