



Bay RMP Technical Review Committee Meeting

September 19, 2023

Meeting Summary

Attendees

TRC Member	Affiliation	Representing	Present
Alicia Chakrabarti	EBMUD	POTW	Yes
Mary Lou Esparza	Central Contra Costa Sanitary District	POTW	No
Tom Hall	EOA, Inc.	POTW	Yes
Heather Peterson	City and County of SF	CCSF	Yes
Samantha Engelage	City of Palo Alto	POTW	Yes
Bridgette DeShields*	Integral Consulting	Refineries	Yes
Chris Sommers	BAMSC (EOA, Inc.)	Stormwater	Yes
Shannon Alford	Port of San Francisco	Dredgers	No
Richard Looker	SF Bay Regional WQCB	Water Board	Yes
Luisa Valiela	US EPA	US EPA-IX	Yes
Ian Wren	Baykeeper	NGOs	Yes
Jamie Yin	US Army Corps of Engineers	USACE	No

Staff and Others

- Jay Davis – SFEI
- Amy Kleckner – SFEI
- Martin Trinh – SFEI
- Bryan Frueh - City of San Jose
- Gerardo Martinez – SFBRWQCB
- Paul Salop – Applied Marine Sciences

1. Introductions and Review Agenda

Bridgette DeShields opened the meeting with a round of introductions and a brief review of the day's agenda. The Committee recognized the contributions of Yun Shang, Heather Peterson, and Mary Lou Esparza to the TRC and RMP while welcoming Alicia Chakrabarti of EBMUD and Samantha Engelage from the city of Palo Alto to the TRC.

2. Decision: Approve Meeting Summary from June 20, 2023, and Confirm/Set Dates for Future Meetings

Bridgette DeShields asked the group for any final comments on the previous meeting's summary. Richard inquired on the status of the MTC land use layer, with Amy clarifying that Tony Hale of SFEI and Tom Mumley of the SFBRWQCB had been in communication with the MTC who have stated they are working on a new version but no published release date. The Sediment Margins report is also waiting on some reanalysis. Receiving no other comments, Bridgette confirmed the dates for upcoming meetings. The end of year TRC meeting was confirmed for December 7, 2023 and the following meeting was scheduled for March 26, 2023. The Committee confirmed the RMP Annual Meeting for October 12, 2023 and the Multi-Year Planning Meeting for November 1, 2023.

Action Item:

- Send out calendar invites for March 26, 2023 TRC meeting (Martin Trinh, September 30, 2023)

Decisions:

- Richard Looker motioned to approve the meeting summary. Ian Wren seconded the motion. The motion was carried by all present members.

3. Information: SC Meeting Summary from August 24, 2023

Amy Kleckner went over the notable items from the August Steering Committee meeting, beginning with the financial update from Jen. The bulk of the meeting was spent reviewing and approving the special study proposals, SEP list update, and allocated funding. One project was removed from the SEP list as it had already been funded. Kelly updated the SC on the PFAS WQIF proposal, with the Committee approving the use of RMP funds as match. Amy provided an update on the Status & Trends efforts for 2023. The sediment cruise was completed and Marco Sigala began sampling the margins and nearfield areas for prey fish. Next week, the RMP will begin the dry season water cruise after nearly a month-long delay due to boat issues. Don presented the Bay Margins sampling design, which has been approved and is where Marco is sampling this week and next. Don also shared the Interlab comparison plan,

which will be sampled for next week during the water cruise. Finally, the group did more brainstorming for the Annual Meeting, which will be continued later today.

4. Discussion: Workgroup Strategy Updates and Multi Year Plan Workshop Planning

Jay opened this agenda item by providing strategy updates on the RMP workgroups in preparation for the upcoming Multi-year Planning Workshop.

The Sources, Pathways, and Loadings Workgroup (SPLWG) had a meeting in April and is scheduled for another at the end of September. A pre-meeting is planned for mid-September. The group discussed the status of Management Questions (MQs) updates and agreed on revised MQs during the meeting. They also worked on updating the multi-year workplan concurrently with the Strategy update in September. Current and planned projects with overlaps were reviewed, and the management questions were updated accordingly.

In the Sediment Workgroup (SedWG), it was decided to divide the work into two parts, with sections 3-5 to be addressed first, followed by sections 1-2, likely late this year or early next year. Another tier of questions for sections 3-5 was introduced, and the development of the work plan was discussed, with an update scheduled for September, incorporating feedback from workgroup members.

The PCB Workgroup has an updated Strategy and MQs. They plan to meet in December for a modeling update and to receive an update from the Watershed Board (WB) on the Total Maximum Daily Load (TMDL) plan. The Committee also discussed updates on in-Bay modeling, with the team planning to showcase initial results for San Leandro Bay in December. Current projects with overlaps, such as the Integrated Watershed and Bay Modeling Strategy (IWBMS), were discussed, as were planned future projects involving the Emerging Contaminants (ECWG), Sediment (SedWG), and Nutrients (NMS).

The Microplastics Workgroup (MPWG) will release a draft strategy update in the fall, with the final version expected in February. The ECWG planned to release a full draft of their strategy in the fall, with the final document expected in February.

In preparation for the MYP, a small subcommittee would collaborate to create a working draft of updated regulatory drivers. The TRC discussed the Water Quality Improvement Fund (WQIF) with Chris expressing interest in discussing future funding levels. Luisa stressed the need to plan with the expectation that the funding (~\$50 million per year) is expected to be an annual appropriation from Congress. There were

discussions regarding the competitive grant pot and directed funds for identified priorities.

Luisa planned to share the list of funding priorities with various organizations, including the Water Board, San Francisco Estuary Partnership, Restoration Authority, and the Wetland Regional Monitoring Program (WRMP). The competitive block of funds was estimated to be around \$5 million. Luisa emphasized the need for collective vision to help direct and show readiness to proceed with any funding allocated by Congress.

In the context of funding uncertainty, Luisa indicated that SF Estuary Partnership, along with several other entities, is named as a partner to consult on the funding priorities to be ready for FY24. The worst-case scenario projected an allocation of \$10 million for EPA, with a more likely scenario of \$5 million for the competitive grant pot and \$40 million for the priority list, earmarked for wetlands restoration, beneficial reuse, and other programs. The discussion also included considerations about the allocation of the proposed budget and possible changes in the regulatory drivers. Participants were encouraged to plan for an increase in budgetary allocations for key areas, such as nutrients, PCBs, and stormwater management, based on the expected increase in funding from the EPA San Francisco Bay Program.

Key discussion points also involved ongoing efforts to ensure a collective vision regarding the priority list for the allocation of the new funding. The attendees acknowledged the uncertainties surrounding the legislative processes and the need for continuous adaptations to potential changes. They emphasized the importance of preparing for different scenarios while remaining optimistic about the current funding projections.

The group also discussed the federal government's potential transition to continuing resolutions, and the rationale for forming or deactivating RMP workgroups, primarily the importance of having a sufficient body of work that requires scientific advice or peer review.

Action Item:

- Remind Tom to work on drafting updated regulatory drivers. (Amy Kleckner, October 15, 2023)
- Schedule small group to plan the MYP meeting agenda (Amy Kleckner, September 29, 2023): Chris S., Bridgettte, Adam, Jay, Tom, Amy, Adam to meet to finalize MYP workshop agenda.

5. Information: S&T Monitoring Update

In this agenda item, Amy provided an update on the Status & Trends (S&T) monitoring activities conducted during the year, particularly focused on the dry season. The monitoring team successfully completed Bay Sediment sampling, near-field prey fish and sediment collection, and margin sediment sampling. The marine mammal sampling is still in progress. The water cruise has been delayed due to boat engine issues. Paul Salop, of Applied Marine Services (AMS), confirmed the repair of the boat engine and the resumption of the planned water cruise.

The plan was set to commence the dry season water sampling, aligning it with the earlier wet season water sampling, aiming to capture any changes during the dry season. Despite delays, the team was committed to collecting near-field and deep Bay water samples, making efforts to accommodate the adjusted schedule.

Updates on sediment collection revealed that all sediment and prey fish sampling were completed. The team collected an impressive 229 containers of sediment over four days. The sediment and prey fish samples are being processed.

Notably, the marine mammal sampling yielded six harbor seals from San Francisco Bay, out of which three were individuals that did not survive rehabilitation. Samples were retrieved from the deceased seals for analysis, although the lab results were yet to be finalized. Challenges such as staff mishaps (Marine Mammal Center) with sample storage and concerns regarding sample integrity led to additional resampling.

The team also discussed the ongoing lab inter-comparison study involving different labs for PFAS, suspended sediment, copper, and hardness. The criteria for comparison included precision, communication, timeliness, and cost. The team planned to use the water samples collected from various stations for the comparison study. The results of the comparison are expected by the end of the year.

6. Discussion: Communications Update

Jay provided an update on the two priority communications updates for 2023, the 2023 RMP Annual Meeting and the 2023 RMP Update. Jay acknowledged Amy, Tom, and Becky for their efforts in organizing the general session, nutrient and sediment sessions, and PFAS session as well as the need to appoint session moderators. The RMP Update will include a featured project article by Becky on stormwater CECs.

The focus then shifted to arranging moderators for the different meeting blocks, with Tom volunteering Water Board staff for moderation duties. The value of having

Committee members serve as moderators was emphasized, and previous moderators were recognized for their contributions. Karen was proposed as a potential moderator for the opening block, and Chris volunteered for the last block.

The communication update moved on to the RMP Update, with the delay in the report due to scheduling conflicts and staff illness. The team aimed to have the reports ready for review, with a one-week turnaround time for feedback. Despite the possible delay in printing the reports, the team remained confident about releasing a digital version of the Update in time for the Annual Meeting.

Action Item:

- Reach out to Maggie Monahan about moderating Annual Meeting PFAS session (Jay Davis, September 24, 2023)

7. Information: Status of Deliverables and Action Items

Amy began her update on the status of deliverables and action items by highlighting completed projects, including the posting of cruise plans to the website under the S&T tab, the addition of stormwater and sediment flux data to the website, completion of the floating percentile method report, and the sediment dynamics assessment and certainty analysis.

Amy then transitioned to discussions about overdue tasks, including the MTC Bay Area land use update, which had been delayed due to lack of updated data. There was frustration expressed over the lack of response from MTC. There was a plan to reach out to Caitlin Sweeney for more information. Other topics discussed included the Selenium and North Bay clams and water effort, where there was a need for additional funding to complete the report, and the delay in the stormwater monitoring strategy for CEC due to technical challenges with the remote sampler. SFEI's remote sampler works well for PFAS but needs fine tuning for other contaminants. Pedro Avenallada is currently working on the CEC modeling exploration which will inform the monitoring strategy.

Amy covered delayed efforts, including the STLS WY21 POC Recon monitoring final report. The RMP has decided to opt for advanced data analysis to better rank the watersheds. Lester aims to complete this by the end of the year. Stanford is currently working on the draft report on PCBs in San Leandro Bay, also with an end of year deadline. The ethoxylated surfactants study with Duke has not begun analysis. The PCBWG has approved the revised timeline for the PCB in Bay contaminant modeling group. The CECs in Urban stormwater manuscript is also estimated to be completed by the end of 2023.

Before the next TRC meeting, the RMP aims to complete the Margins final report, North Bay selenium clam and water report, and the S&T design report. The RMP is attempting to fast track the PCB data from SGS AXYS for the PCB monitoring at the GE property and hopes to have that data soon. Amy also aims to update the 2023 QAPP.

Action Item:

- Share revised draft of margins report after reanalysis (Don Yee, December 12, 2023)

8. Discussion: Plan Agenda Items for Future Meetings

The Committee discussed items of interest for future meetings, including potential updates on informatics and review of intercalibration studies and plans. Jay plans to preview next year's Pulse with Amy presenting on next year's workplan and the outcome of the MYP workshop. Chris would like to hear about how SFEI plans to fill the Watershed modeling position and how timelines are being affected by the current absence. Jay has been reviewing candidates for full time roles as well as considering working with consultants. SFEI is exploring both options for the long-term. Jay will provide updates on workgroup progress. Finally, the Committee brought up the need to structure planning for unusual events (fires, HABs, floods) that has been discussed but the RMP is not ready to fully tackle yet. Amy concluded the item by discussing the possibility of SFEI remaining in their current building due to a reduction in rent being offered by the landlord.

9. Information: Preview of Annual Meeting Presentations

In preparation for the upcoming Annual Meeting, Diana Lin and Ezra Miller of SFEI shared their presentations on PFAS and tirewear particles respectively. These were draft presentations that they had used previously for the American Chemical Society, so committee members suggested adapting the content for a less technical audience.

Beginning with an overview of PFAS as a class of compounds, Diana discussed how the Regional Monitoring Program (RMP) collaborated with stakeholders, scientists, and government bodies to conduct a two-phase study on PFAS in Bay wastewater, leveraging technical oversight from the RMP.

Phase One involved careful monitoring at select facilities with diverse characteristics, informing the subsequent Phase Two investigation. Miguel Mendez had earlier presented Phase One results during the 2021 Annual Meeting. Diana then delved into the analytical methods, emphasizing the limitations in quantifying PFAS due

to the diverse range of compounds. Target analysis and total oxidizable precursor methods were used, with the latter allowing a more extensive quantification of PFAS.

Moving on to the results, Diana compared the target and top method analyses for various samples, including influent and effluent, highlighting the increased ability to quantify PFAS with the top method. The analysis indicated significant PFAS presence, particularly in influent samples. Notably, the concentration levels exhibited variation due to the proximity to detection limits. Biosolid results further supported the prevalence of PFAS in wastewater, potentially accumulating due to their partitioning.

Diana also focused on the significant contribution of residential discharges and industrial laundry facilities to PFAS loadings, estimating the proportion of these contributions based on flow rates and concentration levels. Notably, residential samples exhibited considerable variability in concentration levels, while industrial laundry facilities consistently showed high PFAS concentrations, surpassing influent levels by a significant margin.

Other industrial and commercial sources, including hospital discharges, were also scrutinized, revealing varying levels of PFAS. Fire suppression water, paperboard manufacturing, and car washes were identified as potential sources, warranting further investigation. Diana emphasized the need for more extensive and refined sampling to establish accurate estimations. Concluding the presentation, Diana highlighted the need for continued research and monitoring to comprehend the extent of PFAS contamination in various wastewater discharges. The comprehensive screening study shed light on the prevalence of PFAS, emphasizing the necessity for further investigation and potential mitigation measures to curb their adverse effects on the environment and public health.

The following discussion opened with Luisa seeking clarification on the real goals of this presentation. Diana clarified that while she found the top analysis approach useful, she had not fully considered advocating for a specific testing method yet. She emphasized the importance of continued monitoring and the exploration of new analytical methods.

The conversation then shifted to the complexity of the data presentation and the need for simplification to make it more accessible to a wider audience. Chris recommended focusing on the key findings and avoiding the detailed technical aspects to ensure clear communication. The committee stressed the significance of emphasizing the widespread presence of PFAS and its implications for regulatory responses.

Samantha Engelage from the City of Palo Alto raised a question about the comparison between industrial laundries and metal finishers in terms of PFOS discharges. Diana explained that while the metal finisher samples indicated lower concentrations, the industrial laundry facilities showed higher levels. Samantha suggested highlighting this difference in the summary to underscore the relevance of pre-treatment regulations for industrial laundries.

The group also discussed the presentation's tone regarding policy implications, considering the sensitivity of the subject for wastewater treatment plants. They advised Diana to present the data objectively without making specific policy recommendations, leaving any related discussions to the moderators or relevant authorities. Samantha also confirmed the inclusion of POTW names in the previous report, suggesting that Diana continue naming them in the presentation for consistency.

Chris Sommers emphasized the importance of concluding the presentation with a clear summary and key takeaways, focusing on the significant implications of the widespread presence of PFAS across various sources. The committee stressed the need for transparent and informative communication about the data's implications for future regulatory considerations.

Diana appreciated the feedback and mentioned her upcoming talk at a summit organized by the California Association of Sanitation Agencies (CASA), where she planned to present the same dataset a week before the annual meeting. The group encouraged her to use this opportunity to refine her presentation and gather additional insights.

Ezra began his presentation on tire wear particles as a significant source of microplastics in California's stormwater. The comprehensive microplastic monitoring from a few years ago found that urban areas have high levels of microplastics, with about half of them being tire particles. However, the monitoring only considered particles larger than 125 microns due to method limitations, although the majority of tire particle volume consists of smaller particles. The presentation highlights the uncertainty regarding the effects of these smaller particles on water quality and the need for more comprehensive assessment.

Kelly Moran's tire wear emissions estimation effort is discussed, with two different methods employed to estimate annual emissions in the Bay Area and California. These estimates generally align, although one method suggests slightly lower emissions, likely due to data primarily sourced from smaller European cars. The transition to electric

vehicles is expected to increase these emissions further, although there is currently no direct data supporting this hypothesis.

The focus then shifted to the fate of tire particles in surface waters, with estimates indicating that a significant portion remains sequestered in the soil, and various assumptions leading to a rough estimation of hundreds of thousands of kilograms of tire particles reaching San Francisco Bay annually. Ezra emphasized the complexity of tire particles, which are not solely composed of rubber but also contain other materials from the road. The high surface area of tire particles and the chemicals they contain raise concerns about their potential impacts on water quality.

The discussion delves into the diverse array of chemicals found in tires, particularly focusing on 6PPD and 6PPD Quinone, which have been identified as major concerns. While 6PPD protects tire rubber from ozone, it can lead to the formation of 6PPD Quinone, which is acutely toxic to coho salmon, a species no longer found in the Bay Area. The presentation acknowledged the difficulty in linking the decline of coho salmon directly to 6PPD but emphasizes the sensitivity of related species, such as steelhead, to this compound.

Ezra highlighted further ongoing studies on stormwater, including a three-year pilot monitoring project that aims to assess the concentration of tire-derived contaminants during storm events and their dilution in the Bay. Initial results indicate that concentrations are highest in urban stormwater, decrease near stormwater outfalls, and are relatively low in the open bay during the dry season. However, concentrations rise during the rainy season, prompting concerns about potential impacts on sensitive species like coho salmon. Ezra acknowledged the challenges in predicting toxicity due to the variable nature of stormwater events and the potential interactions between different contaminants. The talk concluded with a call for further research to better understand the implications of tire-related contaminants on the Bay Area's aquatic ecosystems.

The following discussion emphasized the significance of understanding upstream impacts, even though the primary focus remained on the Bay itself. Committee members suggested a thorough comparative analysis between the actual presence of steelhead and the identified sampling locations, indicating the necessity of validating the data for a comprehensive understanding.

Furthermore, concerns were raised about a specific slide that suggested partial responsibility. Attendees stressed that the ecosystem's complexity involved multiple contributing factors, such as habitat issues and hydro modification, which might have a

substantial impact. Consequently, they advised Ezra to be cautious about attributing causality solely to the factors presented in the slide.

As the conversation progressed, participants suggested trimming down certain sections of the presentation to adhere to the allocated time slot, ensuring that the most critical and relevant information received the necessary focus. There was also an emphasis on broadening the conversation to encompass multiple affected species rather than solely focusing on coho. Attendees underscored the importance of highlighting other species impacted by the issues discussed in the presentation, emphasizing that this approach might make the content more impactful and relevant.

Action Item:

- Send edited presentations to interested committee members (Diana Lin, Ezra Miller, September 26, 2023)

10. Discussion: Plus/Delta

Overall, the group commended Jay and Amy on the efficient meeting. The TRC particularly appreciated the great presentations and the RMP's sustained efforts on S&T monitoring.