



SAN FRANCISCO ESTUARY INSTITUTE

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Bay RMP Technical Review Committee Meeting

March 9, 2017

San Francisco Estuary Institute

Meeting Summary

Attendees

TRC Member	Affiliation	Representing	Present
Nirmela Arsem	EBMUD	POTWs	No
Rod Miller	SFPUC	POTWs	No
Tom Hall	EOA, Inc.	POTWs	Yes
Amy Chastain	SFPUC	POTWs	No
Eric Dunlavey	City of San Jose	POTWs	No
Bridgette DeShields*	Integral Consulting	Refineries	Yes
Chris Sommers	BASMAA (EOA, Inc.)	Stormwater	Yes
Shannon Alford	Port of SF	Dredgers	Yes - remote access
Ian Wren	San Francisco Baykeeper	NGOs	Yes
Richard Looker	SFB RWQCB	Water Board	Yes
Luisa Valiela	US EPA	US-EPA IX	Yes

*Chair

Guests and Staff

- Paul Salop - Applied Marine Sciences
- Mary Lou Esparza - CCSF
- Naomi Feger - SFB RWQCB (remote access)
- Brian Anderson - UCD (remote access)
- Phil Trowbridge - SFEI
- Jay Davis - SFEI
- Jennifer Sun - SFEI
- Ila Shimabuku - SFEI
- Don Yee - SFEI
- Becky Sutton - SFEI
- Diana Lin - SFEI
- Lester McKee - SFEI (remote access)

1. Introductions and Review Agenda

After introductions, Phil Trowbridge presented the agenda and proposed that item six on the agenda, “Information: Update on SEP project for selenium monitoring,” be replaced by a discussion around what, if any, additional work the Bay RMP should do in 2017 due to the heavy precipitation in the 2016-2017 water year. The committee agreed to amend the agenda to move forward with this discussion.

2. Decision: Approve Meeting Summary from December 8, 2016 and confirm/set dates for future meetings.

No edits were made to the December 8, 2016 TRC meeting summary. The committee discussed the history of low attendance at December TRC meetings and decided that, if scheduled on the second Thursday of December, lack of attendance should not be a problem at the December 2017 TRC meeting. In general, the second Thursday of the month is a good date for future TRC meetings.

Decision:

- Chris Sommers motioned to approve the December 8, 2016 TRC meeting summary and Richard Looker seconded the motion. The motion for approval was carried by all present members.

Action Items:

- Finalize the December 8, 2016 TRC meeting summary and post to the public meetings folder. (Ila Shimabuku, 3/20/17)
- Create a calendar event for the September 14, 2017 and December 14, 2017 TRC meetings. (Ila Shimabuku, 3/20/17)
- Send June 8 TRC meeting agenda items early (2 weeks early is on May 25th) to allow ample time for review by, and collaboration between, Richard Looker and Naomi Feger as Naomi will be filling in for Richard in June. (Phil Trowbridge, 5/18/17)

3. Information: SC Meeting Summary from January 17, 2017

Phil Trowbridge summarized the January SC meeting and highlighted the approval of the Bay RMP Multi-Year Plan. He also mentioned that the high flow caused by recent storm events had allowed David Schoellhamer and Maureen Downing-Kunz with USGS to mobilize their sediment-flux monitoring effort at the Golden Gate Bridge.

4. Information: Workgroup Meetings and Multi-Year Plan budgets for 2018

Though the overall planning budget for 2018 Special Studies will need to be cut by about one-third, the TRC agreed that budget cuts for individual workgroups will be prorated based on overall funding and

priorities. The committee agreed that each workgroup should provide a ranked list of their priority projects. The list should also have contextual information such as which projects are urgent, which projects must precede others, and options to scale or split projects across budget years. The facilitator should ask each workgroup which projects they would do if they had 50%, 75%, and 100% of the planning budget to serve as a starting point for prioritization.

Action Items:

- Send out sport fish workgroup doodle poll to SC, TRC, & Janet O’Hara (Water Board). (Jay Davis, 3/21/17)

5. Information: Presentation of Draft Central Bay Margins Study Report Decision: Monitoring Design for 2017 South Bay Margins Study

Don Yee led a discussion on the RMP’s past and future margins monitoring efforts. He began by introducing the project background, objectives, and results from the July 2015 margins monitoring effort.

Two recommendations were made relative to presenting updated mass balance calculations. The first was to re-sort the analytes in Table 4.2 of the report based on which analytes had the largest differences in 50th or 75th percentile concentrations between the open Bay and the margins. The second was to apply the cumulative distribution function, to evaluate significance of differences between margins and open Bay, while using the mean concentration, to calculate the mass (inventory) of contaminants in the margins. This discussion was cut short to keep on schedule but the committee was reminded that comments and suggestions on the margins report are welcomed and are due on **April 14, 2017**.

Jay Davis proposed that the margins report be reviewed externally by a(n) expert(s) in both sediment data and probabilistic design. The committee brainstormed a list of possible reviewers:

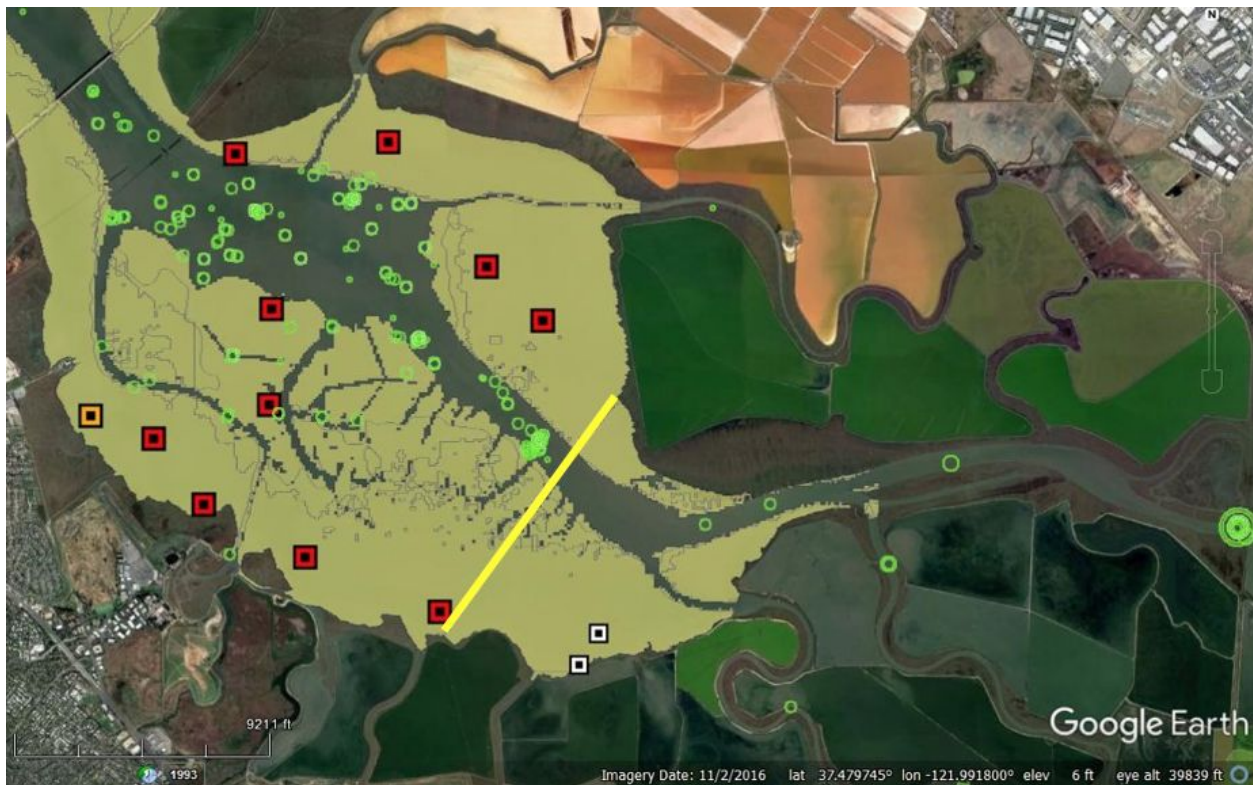
- Don Stevens
- Frank Gobas - Simon Fraser University
- Aroon Melwani - AMS
- Appropriate contacts at SCCWRP

Don then presented on the upcoming 2017 South Bay margins monitoring effort and outlined the goals of the study as well as mentioned which analytes will be analyzed. He reminded the committee that this monitoring effort must begin in June in order to capture enough tidal windows to sample at 40-50 sites. Don presented the existing potential add-ons and there were no additional suggestions for add-ons from the committee.

Don presented the following three options for probabilistic design when placing (n=40) sites for the 2017 monitoring effort.

- Equal weighting (area proportional) = 27 SB (66%), 11 LSB (28%), 2 SoSl (6%)
- Stratified (east vs west side of SB) = 17 SBe, 10 SBw, 11 LSB, 2 SoSl
- Equal weighting + deterministic = 25 SB, 10 LSB, 2 SoSl + 3 set sites in Steinberger Slough

The 3 sites in Steinberger were only a “straw” proposal, actual sites would depend upon the questions prioritized. “SoSl” or “Southern Sloughs” was used to refer to any area that is southeast of the yellow line below. The group suggested using a different name for this region: “Extreme Lower South Bay”.



While keeping in mind the possibility that an additional five to ten sites will likely be added to the original forty, the committee decided that an area proportional, “equal weighting” probabilistic design should be used for all forty sites. If more sites are to be added on, the committee decided that it would then weigh the cost vs benefit of adding additional sites to the equally weighted design or using them to target deterministic locations.

Luisa mentioned that she corresponded with South Bay Salt Pond Restoration Project and asked if they have done work in the same areas. Bruce Jaffe and Mark Marvin-DiPasquale of USGS have sampled near the salt ponds. Luisa requested that the final sampling locations be shared with him/them.

Decision:

- An equal weighting design should be used to place at least the first forty sites for the 2017 South Bay margins monitoring effort. (Consensus)

Action Items:

- Send out KMZ file of random site-location draws to TRC and ask for a two-week turnaround for comments and review. (Don Yee, 3/13/17)

- Change the terminology for “Southern Slough” sites to something more intuitive (e.g., Extreme Lower South Bay”). (Don Yee, 4/3/17)
- Schedule brown-bag at Water Board
 - Put Don in touch with Water Board brown-bag coordinator. (Richard Looker, 3/17/17)
 - Organize a brown-bag presentation at the San Francisco Bay RWQCB. (Don Yee, 4/3/17)
- Filter out non-significant results from the 2015 monitoring effort for further presentations. (Don Yee, 4/3/17)
- Follow up with Steve Weisberg about external review of margins report. (Jay Davis, 3/24/17)
- Share study information with the South Bay Salt Pond Restoration Project and Bruce Jaffe about site locations and potential add-ons. (Phil Trowbridge & Luisa Valiela, 4/17/17)

6. Discuss any additional ideas for 2017 monitoring in light of large amount of rainfall (Used to be: “Information: Update on SEP project for selenium monitoring”)

Phil Trowbridge quickly mentioned which monitoring efforts, closely related to rainfall, have been completed this year already (stormwater sampling and sediment flux) and those that are planned (water cruise). He reminded the committee that the 2016 - 2017 water year is the wettest in 122 years and will likely have large impacts on the physical, chemical, and biological makeup of the Bay and Delta. He asked the committee to think, “In a year or five from now, what would we look back and regret not doing this year?”

Lester McKee argued that we have a good enough understanding of sediment loads to not need to do additional monitoring this year.

The following ideas were discussed but none were selected to move forward:

- Talk to Dave Schoellhamer about updating sediment-flux instrumentation at Dumbarton Bridge. (Phil Trowbridge, 3/25/17)
- Look into repeating last year’s El Niño monitoring effort to look at whether the freshwater inflow has caused a salinity stratification and more extensive phytoplankton blooms. (Plans are already underway through the Nutrient Management Strategy)
- Re-sample some sediment from the Central Bay margin sites. The goal would be to see if contaminant concentrations from 2017 are much different from what was observed in 2016.
- Re-sample a RMP Lower South Bay trends site for sediment. (The goal would be the same as the preceding bullet)
- Collect a few sediment core samples in South Bay.

Action Item:

- Revisit list of ideas for monitoring contingency tasks and bring a selection forward to the Steering Committee if any are warranted. (Phil Trowbridge, 5/18/17)

7. Information: Outcomes from Ocean Acidification and Hypoxia (OAH) Workshop and Next Steps

Ila Shimabuku summarized the OAH workshop by listing who was on the organizing committee, what the workshop agenda looked like, and the current status of the workshop proceedings. Phil Trowbridge then quickly ran through the proposed next steps for ocean-acidification monitoring. A proposed monitoring effort is for NOAA to add a San Francisco Bay transect to their 2020 ocean acidification monitoring cruise. Phil asked the TRC for advice on how to safely navigate shipping lanes, minimum depths, etc., in order to get NOAA's vessel in and out of Central Bay. A few committee members recommended that Phil approach contacts at the EPA and Coast Guard about the issue. It was recommended to make the transects a recurring task for NOAA going forward.

Action Items:

- Look into what areas require a State Lands Commission's Permit and consider avoiding these areas. (Phil Trowbridge, 4/3/17)
- Ask Ian Wren who Phil should contact at the Coast Guard in regards to NOAA vessel navigation. (Ila Shimabuku, 3/20/17)
- Ask EPA (Brian Ross and Allan Ota) and the Coast Guard for information on stations where a large research vessel can operate in the Bay. (Phil Trowbridge, 4/3/17)

8. Discussion: Proposed New 303(d) Listings for San Francisco Bay

Richard Looker began this discussion by providing a background on Water Quality Objectives and 303(d) listings as well as context for the new proposed sediment toxicity listings in the Bay. Richard clarified that the newest data that are being used for the 2016 analysis and listings are from August 2010. He also clarified that potential sources will not be listed as they require a source analysis.

Brian Anderson continued the discussion by providing a summary of research that had been done to further understand causes of sediment toxicity. The two test organisms used for RMP monitoring are the amphipod (*Eohaustorius*) and mussel (*M. galloprovincialis*) or sea urchin embryos (*S. purpuratus*) exposed at the sediment water interface (SWI). As the result of several Toxicity Identification Evaluation (TIE) tests and other studies, the data suggest that the amphipods are sensitive to organic contaminants and are also influenced by clay content of sediments. In a recent study on the effect of kaolin clay on the amphipod *Eohaustorius*, UC Davis – Granite Canyon found that the smaller (younger) amphipods were more tolerant than larger animals of higher clay content in sediment. Mussel and sea-urchin embryos are sensitive to cations like copper and zinc as well as non-contaminant factors like ammonia and hydrogen sulfide concentrations. Toxicity testing protocols used by the RMP have been thoroughly analyzed and vetted by the Bay Protection Toxic Cleanup Program (BPTCP) and the Southern California Coastal Water Research Project (SCCWRP), the latter as part of the statewide sediment quality objective development process.

Brian explained that sediment quality guidelines are only helpful in explaining relative contamination at a site. When compared to dose-response data, he has found them to be less reliable predictors of toxicity.

In 2015, UC Davis conducted the amphipod 10d toxicity tests for the EPA's National Coastal Condition Assessment Program in San Francisco Bay and used a different species of amphipod (*Leptocheirus plumulosus*) that was suspected to be more tolerant of fine-grain sediments than *E. estuarius*, and still found moderate toxicity (~>50% amphipod mortality) at 7 of 17 probabilistic sites (= 40% of the samples).

Brian Anderson also described results of the RMP/Region 2 study to re-evaluate the sediment hotspot at Pacific Dry Dock in 2015. This study used the sediment quality objectives (SQO) approach to evaluate a weight-of-evidence of three indicators of impacts: toxicity, chemistry, and benthic community. Moss Landing Marine Laboratories analyzed the data and found that legacy pesticides and metal concentrations were high. The study relied on sediment quality guidelines for the chemistry lines-of-evidence, based on legacy pesticides, PAHs, PCBs and metals. Except for elevated copper and zinc, concentrations of legacy contaminants were not high enough to account for amphipod mortality. Pyrethroid pesticides were measured in the sediment but were not included in the SQO analysis. Pyrethroid concentrations were sufficient to explain some of the toxicity. Other current use pesticides were not analyzed (example fipronil and its degradates), but could have also been present due to influence of stormwater inputs to the site. There was also sufficient clay (48%) to account for some amphipod mortality, even though small *E. estuarius* amphipods were tested in this study.

Brian did not have any recommendations for special studies. However, he recommended that, to improve the accuracy of toxicity results, younger amphipods be used for future toxicity tests and that a predetermined amount of amphipod mortality be associated with clay content. If there is available funding, he suggested doing a comparative study with *Eohaustorius* and *L. plumulosus* in order to eliminate the lack of confidence caused by *Eohaustorius* intolerance to fine-grained sediments. He also agreed with the suggestion of switching over to *L. plumulosus* for future RMP testing. He recommended that the RMP steer away from using TIEs on account of their high cost, inconclusiveness, and declining number of labs that can properly conduct TIEs. He instead recommended that the budget for TIEs be redirected to analyzing hotspots or sources such as stormwater.

Brian thought that measuring current-use pesticides alongside sediment toxicity would be a good idea if a reliable lab could be found to do the analysis. SCCRWP and the USGS Pesticide Research Group were mentioned as possible options. Brian highlighted that low detection limits, low reporting limits, and high recovery in matrix spikes are important factors to consider when researching possible labs. Can they do a good job with pyrethroids and fipronil? He also expressed a lack of confidence in the robustness of passive samplers for measuring some current use pesticides in sediments, but acknowledged this was not his area of expertise.

The general consensus from the committee at the end of this discussion was that toxicity work and TIEs can be a large time and budget expense that often grows larger than originally anticipated. It was

recommended that a clear timeline and strategy be created that's consistent with further regulatory action, i.e. TMDLs.

Action Items

- Generate a list of contextual reports on sediment toxicity that the RMP has and send to Chris Sommers. (Phil Trowbridge, 3/13/17)
- Prepare a plan for 2018 RMP sediment toxicity and benthos sampling and discuss it with the Exposure and Effects Workgroup. (Phil Trowbridge, 5/9/17)

9. Discussion: Future Direction for the Exposure and Effects Workgroup

Jay Davis began this discussion by providing the framework for the future of the EEWG as well as the issues that EEWG are facing and the desire for future data needs related to exposure and effects.

The committee brainstormed a few idea around different merging combinations with other workgroups including sediment, ECWG, and LTMS. Committee members agreed that some topics, like contaminant-related dredged material, should be kept as part of the EEWG. After discussing a few different options, the committee agreed that the EEWG workgroup will continue “business as usual” during the 2017 workgroup season but think about merging workgroups in the future to reduce the time burden on stakeholders who want to participate in multiple workgroups. .

Action Items:

- Remove Harry Ohlendorf from the EEWG group to allow him to focus on the selenium workgroup. (Jay Davis, 4/17/17)
- Synthesize committee thoughts from today and bring them to the Steering Committee for further discussion. (Jay Davis, 4/17/17)

10. Information: Plans for the 2017 Pulse Report, Annual Meeting, and Upcoming Reports & Communications Products

Jay Davis ran through the steps that the RMP and its affiliates need to take to get the Pulse out the door by October 6th. Jay then presented the current skeleton outline for the 2017 Annual Meeting and stated that the most urgent planning need for is to sort out who will be the Keynote Speaker(s). The committee decided that people who have a history with the RMP could give (a) talk(s) about all the RMP has accomplished, followed by (a) speaker(s) who could give an inspirational talk on the future of the RMP and the potential it holds. A few names of people closely associated with the RMP who could give a talk were: Bridgette DeShields, Luisa Valiela, Tom Hall, Tom Mumley, Adam Olivieri, Steve Ritchie, and Jim Cloern. Libby Schaaf was given as an example for an external guest who could speak to the future of the RMP.

The following outline for the keynote section was created:

Speaker 1: Could answer the questions, “What makes a good long-term monitoring program?” , “What’s is the institutional value of the RMP?” , and “What’s special about the RMP?” Steve Weisberg was named as an example along with affiliates from the Great Lakes or SCCWRP.

Speaker 2: Themed around long-term monitoring and adaptation looking all the way back to the 70s. Jim Cloern was named as an example.

Speaker 3: Themed around the RMP’s context and its linkage to management decisions. Tom Mumley and Adam Olivieri were named as examples.

Speaker 4: Themed around the potential that the RMP has looking forward. A panel discussion, and/or someone like Libby Schaaf, Bob Howarth, Skyli McAfee, Ken Tucker, former RMP directors, and Jim Cloern were all named as options for the final speaker.

One committee member cautioned to keep diversity in mind when inviting speakers.

11. Information: Status of Deliverables and Action Items

Phil Trowbridge quickly ran through any late items from the most recent stoplight report.

12. Discussion: Plan agenda items for future meetings

Phil mentioned larger and smaller topics that are planned to be a part of the June TRC meeting. A committee member reminded him that Pulse maps should be a part of that list.

13. Plus/Delta

One committee member recommended that if there is a last minute change to the agenda, sending any relevant materials as soon as possible would be appreciated.