

Special Study Proposal: Priority Margin Unit Stormwater PCB Monitoring

Summary: This proposed study would yield valuable information on PCB concentrations and particle ratios in stormwater in two Priority Margin Unit (PMU) watersheds. The study areas include the major subwatersheds draining into the Emeryville Crescent, and one subwatershed draining into San Leandro Bay. The subwatershed draining into San Leandro Bay is downstream of a recently remediated hotspot, the former General Electric (GE) transformer and electrical equipment facility, where PCB contamination was severe. The goals of the study are to better estimate current PCB loads into these PMUs (a critical component of the PMU mass budgets) and to support tracking of the effectiveness of the major remediation action on the GE property. Sampling will be completed over two years, as storms allow.

Total Cost: \$70k

Funds Requested: \$40K

(The PCB Workgroup is recommending that \$30k of 2018 funds that had been allocated to Richmond Harbor PMU conceptual model development be redirected to this study.)

Oversight Group: PCBWG in coordination with STLS/SPLWG

Proposed by: A Gilbreath, J Davis and D Yee (SFEI) with oversight from the PCB Workgroup and STLS Team (J O'Hara, J Scanlin, C Sommers, B DeBerry, L Sabin, L Paquette, R Looker).

PROPOSED DELIVERABLES AND TIMELINE

Task A: Identify sampling sites and gain site access (Sept-Oct 2018 and 2019)

Task B: Wet season water samples collected and sent to the labs for analysis (Oct-April 2018-2019 and 2019-2020)

Task C: Laboratory analysis, QA & Data Management (May-Sept 2019 and 2020)

Task D: Interpretation & reporting as a section in a STLS POC Reconnaissance Monitoring Report (Oct-Jan 2020)

Background

During water years (WYs) 2015-2018, the RMP funded a watershed characterization reconnaissance study aimed at locating high leverage watersheds and subwatersheds, and developing a remote sampler method designed to decrease costs and increase ease of data collection. From these four years of watershed characterization as well as a similar previous effort in WY 2011 (McKee et al., 2012), a total of 81 sites have now been characterized for PCB and Hg concentrations and particle ratios during at least one storm (Gilbreath et al., 2017; Gilbreath et al., 2018 in SPLWG review)¹.

Parallel to these POC reconnaissance monitoring efforts, the 2014 update of the RMP PCB Strategy called for a multi-year effort to implement the recommendations of the PCB Synthesis Report (Davis et al. 2014) pertaining to:

¹ Data were also collected by the Santa Clara and San Mateo Stormwater programs using the watershed characterization reconnaissance study design.

1. identifying margin units that are high priorities for management and monitoring,
2. development of conceptual models and mass budgets for margin units downstream of watersheds where management actions will occur, and
3. monitoring in these units as a performance measure.

The goal of that effort is to inform the review and possible revision of the PCB TMDL and the reissuance of the Municipal Regional Permit for Stormwater (MRP), both of which are tentatively scheduled to occur in 2020. Conceptual model development for two priority margin units (PMUs; the Emeryville Crescent PMU and the San Leandro Bay PMU) have been completed and model development for a third PMU (the Steinberger Slough PMU) is underway.

PCB loading from stormwater is an important component of the mass budgets for the margin units. To date, some stormwater data has been collected in the PMU watersheds draining to the Emeryville Crescent and San Leandro Bay PMUs, including: Temescal Creek (1 sample), Ettie St. Pump Station (11 samples), Line 12H at Coliseum Way (1 sample). In this study, we propose to augment the stormwater sampling data in these watersheds to improve estimates of loads, obtain stormwater data in the third major watershed draining to the Emeryville Crescent (the Emeryville Crescent North watershed), and obtain data downstream of the major remediation action at GE in support of tracking the effectiveness of that management action.

Study Objectives

The study objectives are two-fold:

1. Collect additional stormwater data in the Emeryville Crescent watersheds. These data will improve stormwater load estimates to the Emeryville Crescent PMU. Additional data collection in the Ettie St. watershed will also help to verify whether it appears concentrations have remained the same since previous sampling (completed in WYs 2008-2011).
2. Collect additional stormwater data downstream of the remediated General Electric remediation site. This data should improve average concentration estimates in this watershed and provide an important baseline to track near-field decreases in PCB loads from the site to the PMU.

These objectives address STLS management questions (MQs) 1, 2, 3 and 4 primarily but also support MQ 5 as possible baseline data for regional stormwater trends assessment.

MRP 2.0 Q1: Source Identification / Leverage: Which sources or source areas provide greatest opportunity for load reductions?

MRP 2.0 Q2: Impairment: Which source areas contribute most to impairment of Bay?

MRP 2.0 Q3: Management effectiveness: Provide support for planning future management actions or evaluate existing actions.

MRP 2.0 Q4: Loads: Assess POC loads, concentrations, or presence/absence.

MRP 2.0 Q5: Trends: What are the spatial and temporal trends in loads or concentrations?

Approach

Wet weather field monitoring

Wet weather field monitoring in the Emeryville Crescent and San Leandro Bay watersheds is proposed as an add-on to the POC Reconnaissance field monitoring program for the WY 2019 and WY 2020 winter seasons. The sampling program will largely mimic the program implemented in these WYs by the reconnaissance monitoring program except will only collect for PCBs and SSC, and no remote samplers will be deployed at these sites. See the POC Reconnaissance monitoring proposal for details of monitoring design.

- Site selection and sampling effort: The PCBWG selected sites at the workgroup meeting. The sites include all three major watersheds draining to the Emeryville Crescent, and one watershed draining to San Leandro Bay. Sites and sampling effort are shown below. The goal is to have a total of 3 to 4 storms of monitoring data at all sites. Only 2 to 3 storms are recommended at Temescal Creek and Line 12H because each of those watersheds were already sampled once either in WY 2017 or WY 2018. The total number of sites/storms that can be sampled is dependent on number of false starts and number of times that multiple sites can be sampled by the same team in the same storm event.

Site	Number of Storms
Ettie St. Pump Station	3-4
Temescal Creek	2-3
Emeryville Crescent North	3-4
Line 12H at Coliseum Way (downstream of the General Electric property)	2-3

- Analyte list: The analyte list will PCBs (209 congeners) and SSC.

Budget

Line Item	Cost
Sample Collection and Analysis for Emeryville Crescent Sites	\$55,000
Sample Collection and Analysis for San Leandro Bay Site	\$15,000
Data Management	NA – covered by STLS POC Monitoring
Reporting	NA – covered by STLS POC Monitoring
Total	\$70,000
Funds Already Allocated ¹	\$30,000
Funds Requested	\$40,000

¹. 2018 funds allocated to Richmond Harbor Conceptual Model. PCBWG recommends postponing that task and re-allocating those funds to this project.

Reporting

The outcome of the study will include a concise technical report that may be stand-alone or included in the POC Reconnaissance Report. The main objectives of this report will be to 1) report and rank concentrations and particle ratios observed at each location and compare these to existing data, and 2) estimate loads for each watershed sampled.

Linkages to other RMP Workgroups

The PCBWG is recommending allotment of funds for WY 2019 to sample in watersheds draining to the Emeryville Crescent and San Leandro Bay. This study will benefit the POC reconnaissance effort primarily by resampling some watersheds and assessing variability. Some of the sampling sites chosen for the SPLWG POC reconnaissance project may likewise be selected in the watersheds of the Priority Margin Units (other watersheds and/or other Priority Margin Units (PCBWG)).

References

- Gilbreath, A.N., Hunt, J.A., Yee, D., and McKee, L.J., 2017. Pollutants of concern (POC) reconnaissance monitoring final progress report, water years (WYs) 2015 ad 2016. A technical report prepared for the Regional Monitoring Program for Water Quality in San Francisco Bay (RMP), Sources, Pathways and Loadings Workgroup (SPLWG), Small Tributaries Loading Strategy (STLS). Contribution No. 817. San Francisco Estuary Institute, Richmond, California.
- Gilbreath, A.N., Hunt, J.A., Yee, D., and McKee, L.J., 2018 (in SPLWG review). Pollutants of concern (POC) reconnaissance monitoring final progress report, water years (WYs) 2015, 2016 and 2017. A technical report prepared for the Regional Monitoring Program for Water Quality in San Francisco Bay (RMP), Sources, Pathways and Loadings Workgroup (SPLWG), Small Tributaries Loading Strategy (STLS). Contribution No. 840. San Francisco Estuary Institute, Richmond, California.
- McKee, L.J., Gilbreath, A.N., Hunt, J.A., and Greenfield, B.K., 2012. Pollutants of concern (POC) loads monitoring data, Water Year (WY) 2011. A technical report prepared for the Regional Monitoring Program for Water Quality in San Francisco Bay (RMP), Small Tributaries Loading Strategy (STLS). Contribution No. 680. San Francisco Estuary Institute, Richmond, California. <http://www.sfei.org/documents/pollutants-concern-poc-loads-monitoring-data-water-year-wy-2011>