

Watershed Monitoring and Assessment Program



Urban Creeks Monitoring Report Part B: Stressor/Source Identification Projects

Water Year 2020 (September 2019 – October 2020)

Submitted in compliance with Provision C.8.h.iii of NPDES Permit No. CAS612008,
Order No. R2-2015-049

March 31, 2021

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LIST OF ACRONYMS

ACCWP	Alameda Countywide Clean Water Program
ASCI	Algae Stream Condition Index
BASMAA	Bay Area Stormwater Management Agency Association
CCCWP	Contra Costa Clean Water Program
CEDEN	California Environmental Data Exchange Network
CSCI	California Stream Condition Index
CWA	Clean Water Act
FSURMP	Fairfield Suisun Urban Runoff Management Program
IMR	Integrated Monitoring Report
MRP	Municipal Regional Permit
MS4	Municipal separate storm sewer system
NPDES	National Pollution Discharge Elimination System
PCBs	Polychlorinated Biphenyls
PG&E	Pacific Gas and Electric Company
QAPP	Quality Assurance Project Plan
QAPrP	Quality Assurance Program Plan
QA/QC	Quality Assurance/Quality Control
RMC	Regional Monitoring Coalition
RMP	Regional Monitoring Program
SCVURPPP	Santa Clara Valley Urban Runoff Pollution Prevention Program
SFRWQCB	San Francisco Bay Regional Water Quality Control Board
SMCWPPP	San Mateo County Water Pollution Prevention Program
SPoT	Stream Pollution Trends
SOP	Standard Operating Protocol
SSID	Stressor/Source Identification
SWAMP	Surface Water Ambient Monitoring Program
TMDL	Total Maximum Daily Load
UCMR	Urban Creeks Monitoring Report
WY	Water Year

1.0 INTRODUCTION

This *Urban Creeks Monitoring Report (UCMR) Part B: Stressor/Source Identification Projects, Water Year¹ (WY) 2020* was prepared by the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP or Program), on behalf of its 15 member agencies (13 cities/towns, the County of Santa Clara, and the Santa Clara Valley Water District), which are subject to the National Pollutant Discharge Elimination System (NPDES) stormwater permit for Bay Area municipalities referred to as the Municipal Regional Permit (MRP). The MRP was first adopted by the San Francisco Regional Water Quality Control Board (SFRWQCB or Regional Water Board) on October 14, 2009 as Order R2-2009-0074 (SFRWQCB 2009; referred to as MRP 1.0). On November 19, 2015, the Regional Water Board updated and reissued the MRP as Order R2-2015-0049 (SFRWQCB 2015; referred to as MRP 2.0). The next iteration of the MRP (i.e., MRP 3.0) is currently being drafted and is anticipated to become effective July 1, 2022.

This report fulfills the requirements of provision C.8.h.iii.(2) for providing a Stressor/Source Identification (SSID) Status Report pursuant to Provision C.8.e.iii.(3). As such, this report includes a running summary of all SSID projects undertaken by the Program and its regional partners.

Monitoring data were collected in accordance with the Bay Area Stormwater Management Agencies Association (BASMAA) Regional Monitoring Coalition (RMC) Quality Assurance Project Plan (QAPP; BASMAA 2020) and Standard Operating Procedures (SOPs; BASMAA 2016). Where applicable, monitoring data were derived using methods comparable with those specified by the California Surface Water Ambient Monitoring Program (SWAMP) Quality Assurance Program Plan (QAPrP)².

1.1 SSID Requirements

Provision C.8 of the MRP requires that Permittees evaluate Creek Status and Pesticides and Toxicity monitoring data with respect to triggers defined in the MRP. Sites where triggers are exceeded may indicate potential impacts to Aquatic Life or other Beneficial Uses and are therefore considered as candidates for SSID projects. SSID projects are selected from the list of trigger exceedances based on criteria such as magnitude of threshold exceedance, parameter, and likelihood that stormwater management action(s) could address the exceedance. Pollutants of Concern (POC) monitoring results (provision C.8.f) may be considered as appropriate.

The MRP allows Permittees to comply with the SSID requirements of Provision C.8 through a regional collaborative effort, their Stormwater Program, and/or individually. In June 2010, Permittees notified the Water Board in writing of their agreement to participate in a regional monitoring collaborative to address requirements in provision C.8. The regional monitoring collaborative is referred to as the Bay Area Stormwater Management Agencies Association (BASMAA) Regional Monitoring Coalition (RMC). In a November 2, 2010 letter to the Permittees, the Regional Water Board's Assistant Executive Officer (Dr. Thomas Mumley) acknowledged that all Permittees have opted to conduct monitoring required by the MRP

¹ Most hydrologic monitoring occurs for a period defined as a Water Year, which begins on October 1 and ends on September 30 of the named year. For example, Water Year 2020 (WY 2020) began on October 1, 2010 and concluded on September 30, 2020.

² The current SWAMP QAPrP is available at:

https://www.waterboards.ca.gov/water_issues/programs/swamp/qapp/swamp_QAPrP_2017_Final.pdf

through a regional monitoring collaborative, the BASMAA RMC. Participants in the BASMAA RMC are listed in Table 1.1.

Table 1.1. Regional Monitoring Coalition (RMC) participants.

Stormwater Programs	RMC Participants
Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP)	Cities of Campbell, Cupertino, Los Altos, Milpitas, Monte Sereno, Mountain View, Palo Alto, San Jose, Santa Clara, Saratoga, Sunnyvale, Los Altos Hills, and Los Gatos; Santa Clara Valley Water District; and, Santa Clara County
Clean Water Program of Alameda County (ACCWP)	Cities of Alameda, Albany, Berkeley, Dublin, Emeryville, Fremont, Hayward, Livermore, Newark, Oakland, Piedmont, Pleasanton, San Leandro, and Union City; Alameda County; Alameda County Flood Control and Water Conservation District; and, Zone 7
Contra Costa Clean Water Program (CCCWP)	Cities of Antioch, Brentwood, Clayton, Concord, El Cerrito, Hercules, Lafayette, Martinez, Oakley, Orinda, Pinole, Pittsburg, Pleasant Hill, Richmond, San Pablo, San Ramon, Walnut Creek, Danville, and Moraga; Contra Costa County; and, Contra Costa County Flood Control and Water Conservation District
San Mateo Countywide Water Pollution Prevention Program (SMCWPPP)	Cities of Belmont, Brisbane, Burlingame, Daly City, East Palo Alto, Foster City, Half Moon Bay, Menlo Park, Millbrae, Pacifica, Redwood City, San Bruno, San Carlos, San Mateo, South San Francisco, Atherton, Colma, Hillsborough, Portola Valley, and Woodside; San Mateo County Flood Control District; and, San Mateo County
Fairfield-Suisun Urban Runoff Management Program (FSURMP)	Cities of Fairfield and Suisun City
Vallejo Permittees	City of Vallejo and Vallejo Sanitation and Flood Control District

The MRP requires that Permittees initiate a minimum number of SSID projects during the permit term. During MRP 2.0, SCVURPPP and its RMC partners were required to collectively initiate a region-wide minimum of eight SSID projects, with a minimum of one project assessing toxicity. The RMC partners agreed to a population-based distribution of the required number of SSID projects among the Programs, with most projects conducted by individual Programs addressing local needs and one project conducted regionally. Through these agreements, SCVURPPP initiated two Santa Clara Basin-specific projects and participated in one regional project.

Provision C.8.e.ii of the MRP requires that all SSID project reports initiated during the permit term are presented in a unified, regional-level report. As such, the BASMAA RMC Regional SSID Report is included as Attachment 1. Attachment 1 provides the start date, problem definition, schedule, and current status of all regional SSID projects.

SSID projects must identify and isolate potential sources and/or stressors associated with observed water quality impacts. They are intended to be oriented to taking action(s) to alleviate stressors and reduce sources of pollutants. Provision C.8.e.iii of the MRP describes a stepwise process for conducting SSID projects:

- Step 1: Develop a work plan for each SSID project that defines the problem to the extent known, describes the SSID project objectives, considers the problem within a watershed context, lists candidate causes of the problem, and establishes a schedule for

investigating the cause(s) of the trigger. The MRP recommends study approaches for specific triggers. For example, toxicity studies should follow guidance for Toxicity Reduction Evaluations (TRE) or Toxicity Identification Evaluations (TIE), physical habitat and conventional parameter (e.g., dissolved oxygen, temperature) studies should generally follow Step 5 (Identify Probable Causes) of the Causal Analysis/Diagnosis Decision Information System (CADDIS), and pathogen indicator studies should generally follow the California Microbial Source Identification Manual (Griffith et al. 2013).

- Step 2: Conduct SSID investigation according to the schedule in the SSID work plan and report on the status of SSID investigations annually.
- Step 3: Conduct follow-up actions based on SSID investigation findings. These may include development of an implementation schedule for new or improved best management practices (BMPs). If a Permittee determines that municipal separate storm sewer system (MS4) discharges are not contributing to an exceedance of a water quality standard, the Permittee may end the SSID project upon written concurrence of the Executive Officer. If the SSID investigation is inconclusive, the Permittee may request that the Executive Officer consider the SSID project complete.

2.0 SSID PROJECTS INITIATED BY SCVURPPP

This section summarizes the results of SSID projects initiated or completed by SCVURPPP during the permit term of MRP 2.0. The Program initiated one SSID project addressing toxicity in Coyote Creek and one SSID project addressing low biological condition in Lower Silver Creek. The Program also participated in a regional project addressing releases and spills of Polychlorinated Biphenyls (PCBs) from electrical utility equipment (see Section 3.0).

2.1 Coyote Creek Toxicity SSID Project

The Coyote Creek Toxicity SSID Project was triggered by the Water Board staff's recommended listing of Coyote Creek for sediment toxicity via the 2016 Integrated Report (303(d) List/305(b) Report for the San Francisco Bay Region. Sediment toxicity data collected by the Water Board in 2007 and 2008 at two sites in Coyote Creek were determined to exceed the 303(d) listing evaluation guidelines. The sediment toxicity tests included survival and growth of *Hyalella azteca*.

In WY 2017, SCVURPPP developed the Coyote Creek Toxicity SSID Work Plan. The work plan identified SCVURPPP's approach to determine whether sediment toxicity is present in an urban reach of Coyote Creek and, if so, evaluating the stressors and sources that may be causing the toxicity. The following monitoring objectives were identified:

1. Identify the magnitude and extent of toxicity in a reach of the Coyote Creek mainstem where sediment toxicity was observed in 2008; and
2. Identify potential causes of sediment toxicity (if observed).
3. Evaluate existing data for trends in toxicity.

The Coyote Toxicity SSID monitoring design includes an evaluation of sediment chemistry and toxicity testing during the dry season over a two-year period (WYs 2018 and 2019). In July 2018, sediment samples were collected at five sites within an urban reach of Coyote Creek mainstem (between Montague Exp and Story Rd) (Figure 2.1). In WY 2019, sediment sampling was conducted at three of the five sites evaluated in WY 2018. Acute (survival) toxicity testing was conducted using *Hyalella azteca* and *Chironomus dilutes* test organisms. *Hyalella azteca* is an amphipod crustacean known to be sensitive to pyrethroid pesticides. *Chironomus dilutes* is an invertebrate midge known to be sensitive to neonicotinoid pesticides and fipronil. Sediment samples were also analyzed for metals and pesticides, including neonicotinoids, fipronil and pyrethroids.

Overall, toxicity to *Hyalella azteca* and *Chironomus dilutes* was very low during the 2018 and 2019 monitoring period. In 2018, only one of five sediment samples had observed toxicity. Site 205COY080 at Oakland Avenue had toxicity levels for *Hyalella azteca* that were slightly higher than acceptable threshold (> 20% percent effect compared to control). A subsequent Toxicity Investigation Evaluation on the same sample resulted in no significant toxicity.

One of the three WY 2019 samples exhibited toxicity: site 205COY080 had toxic levels for *Chironomus dilutes* that were just above evaluation threshold (> 20% percent effect compared to control). However, these results were ambiguous due to an identified outlier for one of the test replicates. There was no significant toxicity when the outlier was excluded from the results. Due to low levels of toxicity, a TIE was not conducted on the 2019 sample.

Evaluation of sediment chemistry results at sites where toxicity was observed were inconclusive (i.e., pesticide and metal concentrations were not at levels known to cause toxic effects). The subsequent TIE conducted in 2018 did not result in toxicity and thus, treatments to evaluate potential causes of toxicity (i.e., metals or pyrethroids) were not effective.

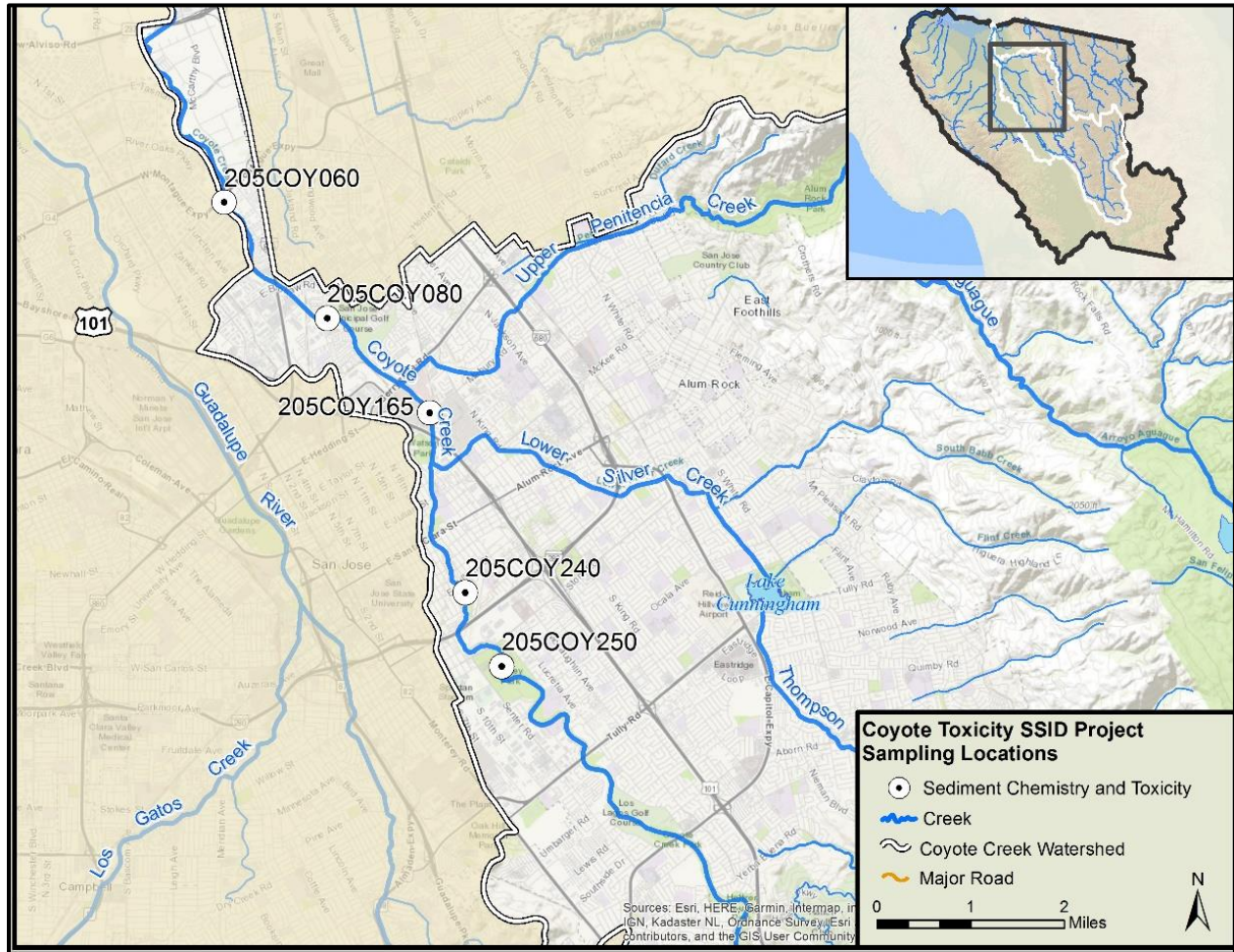


Figure 2.1. Sediment sampling locations for the Coyote Creek Toxicity SSID Project.

Long term toxicity data collected at site 205COY060 (Coyote Creek at Montague Exp) since 2008 by the SWAMP Stream Pollution Trends Monitoring Program (SPoT) were also evaluated as part of the SSID study. Over the past 12 years, there appears to be trend of decreasing *Hyalella azteca* toxicity in Coyote Creek. The decline in acute sediment toxicity at this Coyote site may reflect a decrease in pyrethroid concentrations in sediment over time since there also appears to be a general decrease in pyrethroid concentrations since 2012.

The results of this SSID Study and review of toxicity data collected over the past 14 years suggest that sediment toxicity is generally not present in Coyote Creek. Based on these results and analyses, the Coyote Creek Toxicity SSID Project is considered complete.

In Fiscal Year 2018/19, SCVURPPP conducted an evaluation of pesticide source control actions implemented by SCVURPPP and its Permittees. The results of the evaluation are described in

the Pesticide Source Control Actions Effectiveness Evaluation Report (SCVURPPP 2019a) which was included in the Fiscal Year 2018/19 SCVURPPP Annual Report. As described in the Report, SCVURPPP will continue to implement the pesticide toxicity control measures described in provision C.9 of the MRP.

The Final Coyote Creek Toxicity SSID Project Report was included with the Program's March 2020 IMR (SCVURPPP 2020). As part of that submittal, the Program requested that the Regional Water Board Executive Officer (EO) approve the completion of the SSID project. No response was provided by the Regional Water Board EO. On August 31, 2020, the Program contacted Regional Water Board staff via email, inquiring about the review of the SSID report and the requested approval of the completion of the project. Consistent with MRP provision C.8.e, the Program requested approval of the completion of the Coyote Creek SSID project. The final SSID report was attached to the August 31, 2020 email and was originally submitted as Part C - Attachment 2 in the WY 2019-20 SCVURPPP Integrated Monitoring Report (IMR), dated March 31, 2020. This final report was prepared on behalf of all SCVURPPP Permittees in compliance with Provision C.8.e.iii. Regional Water Board staff replied that they would review the report as soon as possible. At the time this UCMR was submitted, the Program continues to await comments from Water Board staff and/or approval for completion of the project.

2.2 Lower Silver SSID Project

The Lower Silver SSID project was triggered by creek status/condition data suggesting that Lower Silver/Thompson Creek watershed has reduced biological integrity. Specifically, the California Stream Condition Index Scores (CSCI), based on benthic macroinvertebrate data previously collected at six bioassessment sites on Lower Silver and Thompson Creek, were below the MRP trigger threshold for CSCI scores (0.795). In addition, water chemistry data collected during Creek Status Monitoring showed that nutrient concentrations in the water column were elevated during the spring season when biological conditions were assessed. Furthermore, algal biomass measurements at selected sites indicated the potential for eutrophication in Lower Silver/Thompson Creek. Under certain conditions (e.g., sunlight exposure, high temperatures) excess nutrients may result in increased algal production. High levels of algal biomass can result in poor water quality or changes in food availability, resulting in reduced biological conditions.

In WY 2019, SCVURPPP developed the Lower Silver SSID Work Plan (SCVURPPP 2019b). The objective of the project is to focus on potential causes of reduced biological conditions in Lower Silver-Thompson Creek. Specifically, the study is designed to help answer the following questions:

1. What sources are contributing nutrients to the creek?
2. Are high nutrient concentrations contributing to the low biological quality in the creek?
3. Is eutrophication occurring, and if so what conditions are potential contributing factors?
4. What other conditions might contribute to the low biological quality in the creek?

The project was initiated during the WY 2019 dry season to evaluate the extent and magnitude of nutrient concentrations and the importance of nutrients in reducing bio-integrity in Lower Silver/Thompson Creek watershed. Three water sampling events were conducted at several sites between August and October 2019 to evaluate potential sources of nutrients. In addition, continuous water quality monitoring was conducted at locations that appeared to have high algal production to assess potential impacts of eutrophication on water quality.

Field data collection continued in WY 2020, with the following monitoring efforts:

- Bioassessments were conducted at four locations in the Lower Silver Creek – Thompson Creek watershed (two sites in Lower Silver Creek and two sites in Thompson Creek).
- Benthic algae samples were collected at the four bioassessment sites in August and September 2020 to evaluate potential eutrophication conditions associated with increased algae production in the dry season.
- Continuous water quality monitoring data were collected during three 2-week periods in June, July, and September 2020. Monitoring stations were selected for various reasons: 1) collect water quality data synoptically with bioassessments (June); 2) evaluate potential water quality impacts from discharge at a major outfall (July); and 3) and evaluate changes in water quality at sites that were previous sampled (September).
- Field observations were conducted during fall 2019 and 2020 in selected reaches of Lower Silver and Thompson Creek to document flow and physical habitat conditions, including evidence of potential eutrophic conditions (e.g., algal blooms, fish kills).

WY 2019 and WY 2020 sampling locations are shown in Figure 2.2.

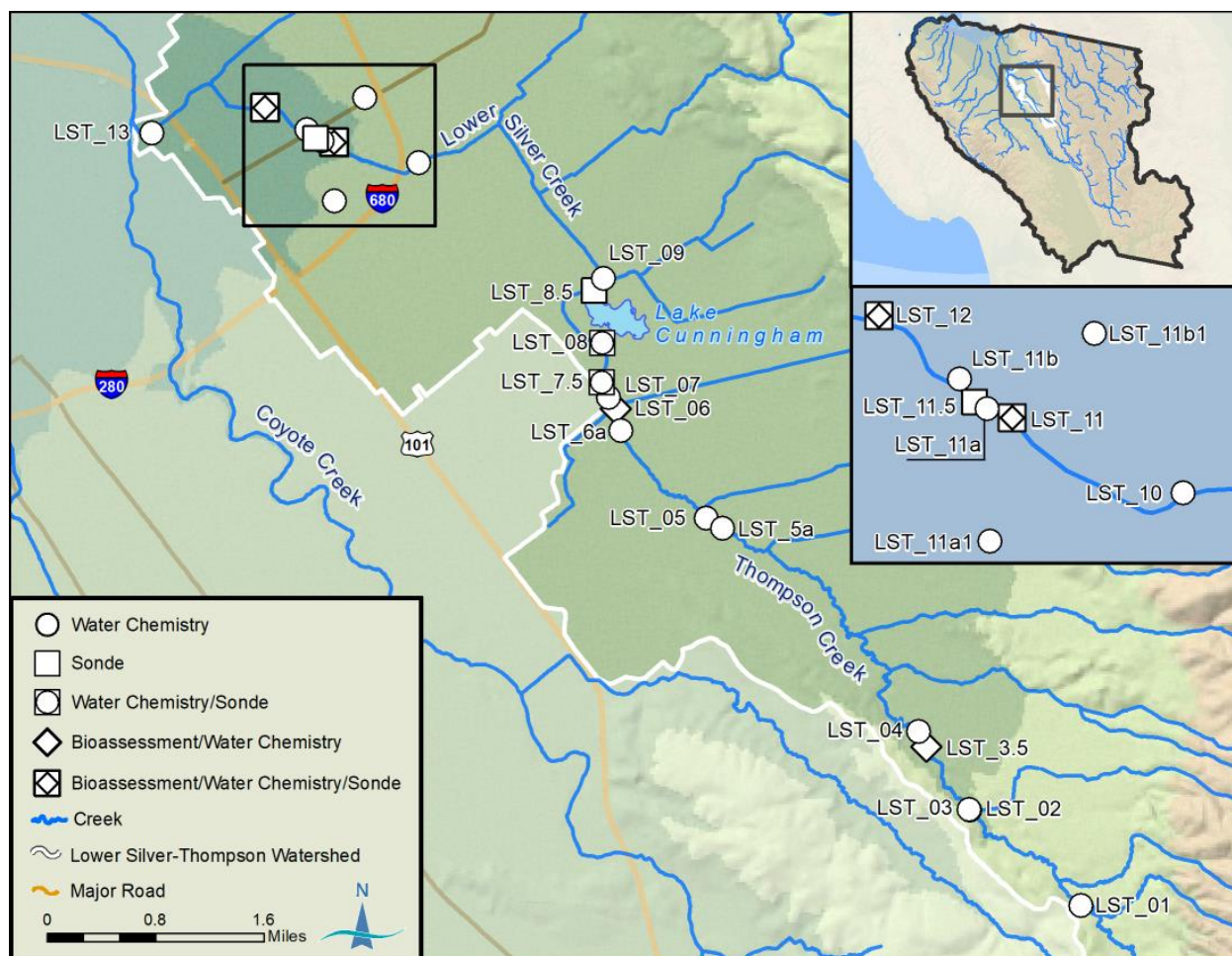


Figure 2.2. Sampling locations for water chemistry, bioassessment and continuous water quality monitoring conducted for the Lower Silver-Thompson Creek SSID Project during WYs 2019 and 2020.

Preliminary results suggest that nutrient concentrations in the creek are affected by flow velocity and MS4 discharges. However, statistical tests for correlation indicate no apparent relationship between nutrient concentrations and CSCI scores for the 12 biological assessment sites sampled in Lower Silver Creek and Thompson Creek between 2014 and 2020. In contrast, there was some correlation between Algae Stream Condition Index (ASCI) scores and nutrient concentrations in the dataset.

Additional preliminary findings include:

- Nutrient and chlorophyll a concentrations in samples collected during the dry season were consistently above thresholds identified for creeks with eutrophic conditions as identified by Dobbs and Smith (2016). However, eutrophic indicators, i.e., ash free dry mass and chlorophyll a concentrations, were not correlated with nutrient concentrations or any physical habitat or landscape variables.
- Total nitrogen (N) concentrations generally increase in the downstream direction; however, there does not appear to be a spatial trend in Total phosphorus (P) concentrations.
- High nitrate concentrations, ranging from 8.8 mg/L to 10 mg/L, were observed in water samples collected from the storm drain outfall at Alum Rock Avenue in Lower Silver Creek (site LST 11b in Figure 2.2 inset). The outfall periodically discharges a high volume of water, which is the result of operations at a CalTrans pump station. The storm drain system upstream of the pump station is partially fed by releases from a groundwater-fed wetland area adjacent to Interstate Highway 680.

Data collected in WY 2020 were submitted to the Regional Water Board pursuant to Provision C.8.h.ii of the MRP and may be obtained via CEDEN. Data were assessed for data quality attributes according to the BASMAA RMC QAPP (BASMAA 2020). Results of the Quality Assurance/Quality Control (QA/QC) review suggest that the SSID data were of sufficient quality. No data were rejected; however, some data were flagged in accordance with the QA/QC protocols.

It is anticipated that the final Lower Silver – Thompson Creek SSID Project Report will be submitted to the Regional Water Board by the end of Fiscal Year 2020/21.

3.0 REGIONAL PCBs FROM ELECTRICAL UTILITY EQUIPMENT

In late-2018, BASMAA contracted with EOA, Inc. to develop a work plan for a regional SSID project addressing releases and spills of PCBs from electrical utility equipment. The Regional SSID Project - Electrical Utilities as a Potential PCBs Source to Stormwater in the San Francisco Bay Area – was triggered by fish tissue monitoring in the Bay that led to the Bay being designated as impaired on the Clean Water Act (CWA) Section 303(d) list and the adoption of a Total Maximum Daily Load (TMDL) for PCBs in 2008. Subsequent PCBs monitoring by the BASMAA RMC partners and the Regional Monitoring Program for Water Quality in San Francisco Bay (RMP) suggests that diffuse sources of PCBs are present throughout the region. One potential source of PCBs to stormwater is releases and spills from electrical utility equipment.

PCBs were historically used in several types of electrical utility equipment, some of which still contain PCBs. Although much of the PCB-containing equipment has been removed from service, some remains in use, and releases and spills from the equipment may be occurring at levels approaching the TMDL waste load allocation. However, the information currently available is not adequate to fully quantify the scope and magnitude of electrical utility applications as a source of PCBs to stormwater. The information gap is partially due to state and federal regulatory levels for reporting and clean-up of PCBs spills that are higher than the PCB levels needed to comply with the PCBs TMDL requirements. Furthermore, stormwater Programs have neither the authority to compel electrical utilities to provide information about spills, equipment replacement programs, and clean-up protocols, nor the authority to require additional controls. Therefore, BASMAA identified a need to develop and implement a regional SSID work plan to further understand the magnitude and extent of this potential PCBs source, and identify controls (if necessary) that could be put into place to reduce the water quality impacts of this source.

Prior to initiation of the SSID work plan, SCVURPPP prepared a report that summarizes Co-permittees' current state of knowledge about electrical utility applications and PCBs titled Potential Contributions of PCBs to Stormwater from Electrical Utilities in the San Francisco Bay Area. That report was submitted with the Program's Fiscal Year (FY) 2017/18 Annual Report as Appendix 11-2 (SCVURPPP 2018). The report provides an overview of electrical utility applications in the Bay Area, summarizes existing information on the release of PCBs from utility equipment, identifies the information gaps, and recommends preliminary next steps. The report also recommends that because electrical utility equipment is widespread and distributed across multiple jurisdictions, addressing PCBs from this source should be done at the regional level, rather than on a site-by-site basis.

Following up on that recommendation, BASMAA developed the work plan for the regional SSID project to further evaluate the extent and magnitude of electrical utilities as a source of PCBs to urban stormwater runoff. In compliance with MRP provision C.8.e, the work plan for conducting the SSID project included in SCVURPPP's WY 2018 UCMR (SCVURPPP 2019b). The work plan focused on Pacific Gas and Electric Company (PG&E), the largest electrical utility operating in the MRP area, and the only utility that is not owned by a municipality. As the first step in implementing the work plan, BASMAA submitted a letter to the Regional Water Board late in FY 2018/19 requesting assistance in obtaining information from PG&E. The letter specifically asked the Regional Water Board to use their regulatory authority under Section 13267 of the Clean Water Act to compel PG&E to provide the needed data. However, PG&E is

currently in bankruptcy proceedings, and the outcomes of that process have not yet been determined. As such, the Regional Water Board has delayed sending a “13267 letter” to PG&E and is currently considering other options for moving forward with PG&E on this issue. In response, BASMAA developed a revised approach to the SSID project, which would implement the work plan but with a focus on municipally-owned electrical utilities in the San Francisco Bay Area (Bay Area), rather than PG&E. The Regional Water Board staff agreed³ to this revised approach at the BASMAA Monitoring and Pollutants of Concern Meeting held on March 4, 2020. BASMAA then implemented the work plan with the revised approach during the remainder of FY 2019/20. The project gathered data from municipally-owned electrical utilities on their current and past inventories of PCBs-containing electrical equipment and current spill response and reporting procedures. These data were used to develop a source control framework that identified improved management and reporting of PCBs-containing equipment removals and spill response. The data were also used to estimate the load reductions that can be achieved through implementing these measures. The final BASMAA project report PCBs from Electrical Utilities in San Francisco Bay Area Watersheds Stressor/Source Identification Project was included as Attachment 11-1 to the Program’s FY 2019/20 Annual Report.

Consistent with MRP procedures, the Program and the RMC requested approval of the completion of the PCBs from Electrical Utilities in San Francisco Bay Area Watersheds SSID Study from the Regional Water Board EO. At the time this UCMR was submitted, the Program continues to await comments from Water Board staff and/or approval for completion of the SSID Study.

³ Per Jan O’Hara at the BASMAA Monitoring and Pollutants of Concern Committee meeting held on March 4, 2020.

4.0 REFERENCES

- Bay Area Stormwater Management Agency Association (BASMAA) Regional Monitoring Coalition (RMC). 2016. Creek Status and Pesticides & Toxicity Monitoring Standard Operating Procedures, Final Version 3. Prepared for BASMAA by EOA, Inc. on behalf of the Santa Clara Urban Runoff Pollution Prevention Program and the San Mateo Countywide Water Pollution Prevention Program, Applied Marine Sciences on behalf of the Alameda Countywide Clean Water Program, and Armand Ruby Consulting on behalf of the Contra Costa Clean Water Program. 190 pp.
- BASMAA (Bay Area Stormwater Management Agency Association) Regional Monitoring Coalition (RMC). 2020. Creek Status and Pesticides & Toxicity Monitoring Quality Assurance Project Plan, Final Version 4. Prepared for BASMAA by EOA, Inc. on behalf of the Santa Clara Urban Runoff Pollution Prevention Program and the San Mateo Countywide Water Pollution Prevention Program, Applied Marine Sciences on behalf of the Alameda Countywide Clean Water Program, and Armand Ruby Consulting on behalf of the Contra Costa Clean Water Program. 79 pp plus appendices.
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- Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP). 2019b. Urban Creeks Monitoring Report. Water Quality Monitoring. Water Year 2018. March 31, 2019.
- Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP). 2020. Integrated Monitoring Report. Water Year 2014 through Water Year 2019. March 31, 2020.

ATTACHMENTS

Attachment 1

BASMAA RMC Regional SSID Report

SSID Project ID	Date Updated	County/Program	Creek/Channel Name	Site Code(s) or Other Site ID	Project Title	Primary Indicator(s) Triggering Stressor/Source ID Project								Indicator Result Summary	Rationale for Proposing/Selecting Project	Current Status of SSID Project or Date Completed	EO Concurrence of project completion (per C.8.e.iii.(b))
						Bioassess	General WQ	Chlorine	Temp	Water Tox	Sed Tox	Sed Chem	Bacteria				
AL-1	2/4/21	ACCWP	Palo Seco Creek		Exploring Unexpected CSCI Results and the Impacts of Restoration Activities	X								Sites where there is a substantial difference in CSCI score observed at a location relative to upstream or downstream sites, including sites on Palo Seco Creek upstream of the Sausal Creek restoration-related sites, that had substantial and unexpected differences in CSCI scores.	The project will provide additional data to aid consideration of unexpected and unexplained CSCI results from previous water year sampling on Palo Seco Creek, enable a more focused study of monitoring data collected over many years in a single watershed, and allow analysis of before and after data at sites upstream and downstream of previously completed restoration activities.	In WY 2019, nutrient sampling, bioassessment, and additional DO and temperature monitoring were conducted. The final SSID progress report is included in ACCWP's March 2020 IMR, recommending project completion.	
AL-2	2/4/21	ACCWP	Arroyo Las Positas		Arroyo Las Positas Stressor Source Identification Project	X	X							Creek Status Monitoring has identified multiple instances of benthic macroinvertebrate assemblages within the "Very Likely Altered" condition category, exceedances of the Basin Plan objective for pH, and multiple instances of nitrate concentrations above guidelines for nuisance algal growth and nitrate toxicity.	The Water Board is conducting sampling in the watershed as part of their TMDL development efforts and an SSID project will supplement those efforts and generate a better overall picture of stressors impacting the waterbody.	In WY 2019, ACCWP conducted bioassessments, nutrient sampling, and continuous monitoring at multiple locations within the watershed over the course of spring and summer months. The first SSID progress report was included in ACCWP's March 2020 IMR. The planned second year's efforts were mostly precluded by the Covid-19 pandemic restrictions. ACCWP will investigate alternative monitoring techniques in WY 2021 to better understand causal factors.	
CC-1	2/4/21	CCCWP	Lower Marsh Creek		Marsh Creek Stressor Source Identification Study									10 fish kills have been documented in Marsh Creek between September 2005 and September 2019. Low dissolved oxygen was proved to be the cause in the most recent (9/17/19) event; circumstances indicate low DO was a likely cause in many if not all of the prior events.	This SSID study addresses the root causes of fish kills in Marsh Creek. Monitoring data collected by CCCWP and other parties are being used to investigate multiple potential causes, including low dissolved oxygen, warm temperatures, daily pH swings, fluctuating flows, physical stranding, and pesticide exposure. During year 2 a pilot test of water storage and night-time flow augmentation was conducted by the City of Brentwood Wastewater Treatment Plant (WWTP).	The CCCWP SSID work plan was submitted in 2018. The Year 2 Status Report is included in CCCWP's March 2020 IMR. The study successfully concluded in Year 2. The final report recommended project completion. Flow augmentation appears to be a viable means of avoiding lethally low DO in portions of the creek downstream of the WWTP. Permittees are voluntarily implementing flow augmentation and monitoring during WY2021 and WY 2022.	

SSID Project ID	Date Updated	County/Program	Creek/Channel Name	Site Code(s) or Other Site ID	Project Title	Primary Indicator(s) Triggering Stressor/Source ID Project									Indicator Result Summary	Rationale for Proposing/Selecting Project	Current Status of SSID Project or Date Completed	EO Concurrence of project completion (per C.8.e.iii.(b))		
						Bioassess	General WQ	Chlorine	Temp	Water Tox	Sed Tox	Sed Chem	Bacteria	Other						
SC-1	2/17/21	SCVURPPP	Coyote Creek	NA	Coyote Creek Toxicity SSID Project						X						The SWRCB recently added Coyote Creek to the 303(d) list for toxicity.	This SSID study investigated the extent and magnitude of toxicity in an urban reach of Coyote Creek. Sediment samples (n=8) were collected during the dry season of 2018 and 2019. Samples were generally not toxic, with the exception of one sample that had low levels of toxicity (subsequent re-test of sample was not toxic). Sediment chemistry results were inconclusive (i.e., pesticide concentrations were not at levels suspected of causing toxicity). SSID Project results support similar findings from long term monitoring conducted by the SWAMP SPoT Program of reduced acute toxicity in Coyote Creek over the past 10 years.	The work plan was submitted with SCVURPPP's WY 2017 UCMR. A project report describing the results of the WY 2018 and WY 2019 monitoring and recommending project completion was submitted with the WY 2019 IMR.	Final report submitted. Waiting for EO concurrence.
SC-2	2/4/21	SCVURPPP	Lower Silver-Thompson Creek	NA	Lower Silver SSID Project	X								X			Low CSCI scores and high nutrient concentrations at a majority of bioassessment locations.	Evaluate potential causes of reduced biological conditions in Lower Silver-Thompson Creek. The SSID Project is investigating sources of nutrients and assessing the range and extent of eutrophic conditions (if present). The Project will evaluate association between stressor data (e.g., water chemistry, dissolved oxygen and physical habitat) and biological condition indicators (i.e., CSCI and ASCI scores).	The work plan was submitted with SCVURPPP's FY 18-19 Annual Report and the WY 2019 IMR. A project report describing the results of the WY 2019 and WY 2020 monitoring and recommending project completion will be submitted by mid-2021.	
SM-1	2/4/21	SMCWPPP	Pillar Point / Deer Creek / Denniston Creek	NA	Pillar Point Harbor Bacteria SSID Project								X				FIB samples from 2008 and 2011-2012 exceeded WQOs.	A grant-funded Pillar Point Harbor MST study conducted by the RCD and UC Davis in 2008, 2011-2012 pointed to urban runoff as a primary contributor to bacteria at Capistrano Beach and Pillar Point Harbor. The study, however, did not identify the specific urban locations or types of bacteria. This SSID project investigated bacteria contributions from the urban areas within the watershed. In WY 2018, Pathogen indicator and MST monitoring was conducted at 14 freshwater sites during 2 wet and 2 dry events. Very few samples contained "controllable" source markers (i.e., human and dog). Additional field studies were	The work plan was submitted with SMCWPPP's WY 2017 UCMR. A project report describing the results of the WY 2018 and WY 2019 investigations was submitted on Oct 28, 2019. On Feb 7, 2020, RWQCB staff requested minor report changes prior to Executive Officer concurrence regarding project completion. The Revised Final Report was submitted Jun 30, 2020. A TMDL addressing bacteria in Pillar Point Harbor is currently under development.	Yes (per letter dated 2/7/20)

SSID Project ID	Date Updated	County/ Program	Creek/ Channel Name	Site Code(s) or Other Site ID	Project Title	Primary Indicator(s) Triggering Stressor/Source ID Project								Indicator Result Summary	Rationale for Proposing/Selecting Project	Current Status of SSID Project or Date Completed	EO Concurrence of project completion (per C.8.e.iii.(b))
						Bioassess	General WQ	Chlorine	Temp	Water Tox	Sed Tox	Sed Chem	Bacteria				
														conducted in WY 2019 to understand hydrology and specific source areas.			
FSV-1	2/20/21	City of Vallejo in assoc. with FSURMP	Rindler Creek	207R03504	Rindler Creek Bacteria and Nitrogen Study								X	E. coli result of 2800 MPN/100mL in Sept. 2017.	A source identification study is warranted in Rindler Creek due to the elevated FIB result, other (non-RMC) monitoring indicating elevated ammonia levels, and the presence of a suspected pollutant source upstream of the data collection point. Rindler Creek is a highly urbanized and modified creek that originates in open space northeast of the City of Vallejo. Monitoring is conducted just downstream of the creek crossing under Columbus Parkway; upstream of this site there is City-owned land that is grazed by cattle roughly from December-June.	A Project Outline was submitted with the IMR in March 2020. The project has been approved by RB staff. Fencing to exclude cattle from Rindler Creek will be installed in Fall 2021 and subsequent monitoring will commence in Spring 2022 to monitor project efficacy.	
RMC-1	2/17/21	RMC/ Regional	NA (entire RMC area)	NA	Regional SSID Project: Electrical Utilities as a Potential PCBs Source to Stormwater in the San Francisco Bay Area								X	Fish tissue monitoring in San Francisco Bay led to the Bay being designated as impaired on the CWA 303(d) list and the adoption of a TMDL for PCBs in 2008. POC monitoring suggests diffuse PCBs sources throughout region.	PCBs were historically used in electrical utility equipment, some of which still contain PCBs. Although much of the equipment has been removed from services, ongoing releases and spills may be occurring at levels approaching the TMDL waste load allocation. This regional SSID project is investigating opportunities for BASMAA RMC partners to work with RWQCB staff to: 1) improve knowledge about the extent and magnitude of PCB releases and spills, 2) improve the flow of information from utility companies, and 3) compel cooperation from utility companies to implement improved control measures.	The work plan was submitted with each Program's WY 2018 UCMR and implementation began in WY 2019. The work plan outlined a process for BASMAA RMC partners to work with RWQCB staff to better understand PCB releases from electrical utility equipment owned by PG&E and to propose a source control framework. Ongoing bankruptcy proceedings at PG&E stalled the process. Therefore, BASMAA, with RWQCB staff concurrence, developed a revised approach to implement the work plan but with a focus on municipally-owned utilities. The SSID project was completed in June 2020.	Final report submitted. Waiting for EO concurrence.

AC = Clean Water Program of Alameda County (ACCWP)
CC = Contra Costa Clean Water Program (CCCWP)
SC = Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP)
SM = San Mateo Countywide Water Pollution Prevention Program (SMCWPPP)
FSV = Solano County Permittees
RMC = Bay Area Stormwater Management Agencies Association (BASMAA) Regional Monitoring Coalition (RMC)