Santa Clara Valley
Urban Runoff
Pollution Prevention Program

Watershed Monitoring and Assessment Program

Urban Creeks Monitoring Report
Executive Summary

Water Year 2020 (October 2019 – September 2020)

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

March 31, 2021

EOA inc.

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Table E.1. Water Year 2020 Creek Status Monitoring Station Summary Table

In compliance with provision C.8.h.iii(1), this table of all Creek Status Monitoring stations sampled by SCVURPPP in Water Year 2020 is provided immediately following the Table of Contents.

Map ID [1]	Station ID	Watershed	Creek Name	Land Use	Latitude	Longitude	Bioassessment, Nutrients, General WQ	Chlorine	Pesticides & Toxicity	Temp [2]	Cont. WQ [3]	Pathogen Indicators
26	205R00026	Guadalupe River	Los Gatos Creek	U	37.2307	-121.9732	X	X				
200	205COY200	Coyote Creek	Thompson Creek	U	37.3263	-121.8086	X	X				
227	205R00227	Matadero Creek	Matadero Creek	U	37.4098	-122.1383	X	X				
282	205R00282	Guadalupe River	Guadalupe Creek	U	37.2374	-121.8887	X	X				
419	205R00419	Stevens Creek	Stevens Creek	U	37.3199	-122.0617	X	X				
602	205R00602	Guadalupe River	Los Alamitos Creek	U	37.2302	-121.8659	X	X				
714	205R00714	Guadalupe River	Los Gatos Creek	U	37.2342	-121.9736	X	X				
787	205R00787	Coyote Creek	Upper Penitencia Cr	U	37.4012	-121.7952	X	X				
979	205R00979 / 205COY183	Coyote Creek	Lower Silver Creek	U	37.3542	-121.8469	X	X			X	
3795	205R03795 / 205COY182	Coyote Creek	Lower Silver Creek	U	37.3580	-121.8561	X	X			X	
4523	205R04523	Lower Penitencia Cr	Lower Penitencia Cr	U	37.4132	-121.9041	X	X				
4866	205R04866	Guadalupe River	Canoas Creek	U	37.2332	-121.8350	X	X				
4967	205R04967	Coyote Creek	Upper Penitencia Cr	U	37.3972	-121.8257	X	X				
5142	205R05142	Coyote Creek	Thompson Creek	U	37.2906	-121.7664	X	X				
5155	205R05155	Lower Penitencia Cr	Berryessa Creek	U	37.4165	-121.8556	X	X				
5183	205R05183	Coyote Creek	Upper Penitencia Cr	U	37.4050	-121.7898	X	X				
5198	205R05198	Guadalupe River	Canoas Creek	U	37.2628	-121.8488	X	X				
5327	205R05327	Permanente Creek	Hale Creek	U	37.3604	-122.0998	X	X				
5587	205R05587	Stevens Creek	Stevens Creek	U	37.3053	-122.0743	X	X				
5650	205R05650	Guadalupe River	Alamitos Creek	U	37.2023	-121.8297	X	X				
121	205COY121	Coyote Creek	Upper Penitencia Cr	U	37.3953	-121.8279				X		
132	205COY132	Coyote Creek	Upper Penitencia Cr	U	37.3931	-121.8158				X		
135	205COY135	Coyote Creek	Upper Penitencia Cr	U	37.3965	-121.8045				X		
140	205COY140	Coyote Creek	Upper Penitencia Cr	U	37.4012	-121.7953				X		
142	205COY142	Coyote Creek	Upper Penitencia Cr	U	37.4036	-121.7925				X		
145	205COY145	Coyote Creek	Upper Penitencia Cr	U	37.4047	-121.7917				X		
010	205AAG010	Coyote Creek	Arroyo Aguague	NU	37.4011	-121.7888				X		
015	205AAG015	Coyote Creek	Arroyo Aguague	NU	37.4008	-121.7860				X		
025	205AAG025	Coyote Creek	Arroyo Aguague	NU	37.3971	-121.7858				X		

Map ID [1]	Station ID	Watershed	Creek Name	Land Use	Latitude	Longitude	Bioassessment, Nutrients, General WQ	Chlorine	Pesticides & Toxicity	Temp [2]	Cont. WQ [3]	Pathogen Indicators
195	205COY195	Coyote Creek	Lower Silver Creek	U	37.3395	-121.8032					X	
182.5	205COY182.5	Coyote Creek	Lower Silver Creek	U	37.3547	-121.84923					X	
420	205LGA420	Guadalupe River	Los Gatos Creek	U	37.2203	-121.9830						X
033	205LGA033	Guadalupe River	Los Gatos Creek	U	37.2951	-121.9335						X
400	205LGA400	Guadalupe River	Los Gatos Creek	U	37.2388	-121.9708						X
330	205COY330	Coyote Creek	Coyote Creek	U	37.2902	-121.8183						X
392	205COY392	Coyote Creek	Coyote Creek	U	37.2350	-121.7611						X
021	205STE021	Stevens Creek	Stevens Creek	U	37.4098	-122.0691			X			
010	205STQ010	San Tomas Aquino	San Tomas Aquino	U	37.3886	-121.9685			X			

U = urban, NU = non-urban

[1] Map ID applies to Figure 1.2 of Part A of this Urban Creeks Monitoring Report

[2] Temperature monitoring was conducted continuously (i.e., hourly) April through September.

[3] Continuous water quality monitoring (temperature, dissolved oxygen, pH, specific conductivity) was conducted during two 1 to 2-week periods (spring and summer).

Executive Summary – Introduction and Background

This *Urban Creeks Monitoring Report* (UCMR) for Water Year 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). SCVURPPP member agencies 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 UCMR, including all appendices and attachments, fulfills the requirements of provision C.8.h.iii of the MRP for reporting all data collected in Water Year 2020 (WY 2020; October 1, 2019 – September 30, 2020) pursuant to provision C.8. Data presented in this report were also submitted in electronic SWAMP-comparable formats by SCVURPPP to the Regional Water Board on behalf of SCVURPPP Permittees and pursuant to provision C.8.h.ii of the MRP and may be obtained via the California Environmental Data Exchange Network (CEDEN).

Water quality monitoring required by provision C.8 of the MRP is intended to assess the condition of water quality in Bay Area receiving waters (creeks and the Bay); identify and prioritize stormwater runoff associated impacts, stressors, sources, and loads; identify appropriate management actions; and detect trends in water quality over time and the effects of stormwater control measure implementation.

Provision C.8.a (Compliance Options) of the MRP allows Permittees to address monitoring requirements through a "regional collaborative effort," their countywide stormwater program, and/or individually. On behalf of Co-permittees, SCVURPPP conducts creek water quality monitoring and monitoring projects in in collaboration with the Bay Area Stormwater Management Agencies Association (BASMAA) Regional Monitoring Coalition (RMC). Furthermore, SCVURPPP actively participates in the Regional Monitoring Program for Water Quality in San Francisco Bay (RMP), which focuses on assessing Bay water quality and associated impacts. In compliance with provision C.8.c of the MRP (San Francisco Estuary Receiving Water Monitoring), SCVURPPP also provides financial contributions towards implementing the RMP.[1]

Monitoring data were collected in accordance with the BASMAA RMC Quality Assurance Project Plan (QAPP; BASMAA 2020) and the BASMAA RMC Standard Operating Procedures (SOPs; BASMAA 2016). Where applicable, and in compliance with provision C.8.b of the MRP (Monitoring Protocols and Data Quality), methods described in the QAPP and SOP are comparable with methods specified by the California Surface Water Ambient Monitoring Program (SWAMP) Quality Assurance Program Plan (QAPrP).

This UCMR consists of three "Parts" (A-C) that address the major sub-provisions of MRP provision C.8 (Water Quality Monitoring). The following sections of this Executive Summary summarize each UCMR Part:

[1] See https://www.sfei.org/programs/sf-bay-regional-monitoring-program for details on the RMP.

- Part A: Creek Status and Pesticides & Toxicity Monitoring
- Part B: Stressor/Source Identification Projects
- Part C: Pollutants of Concern Monitoring

Part A: Creek Status and Pesticides & Toxicity Monitoring

Part A of the UCMR presents all data collected in compliance with provision C.8.d (Creek Status Monitoring) and provision C.8.g (Pesticides & Toxicity Monitoring) during WY 2020. The monitoring strategy implemented by SCVURPPP in compliance with these provisions is consistent with the BASMAA RMC's Creek Status and Long-Term Trends Monitoring Plan (BASMAA 2012). The strategy includes regional ambient/probabilistic monitoring and local targeted monitoring. The probabilistic monitoring design was developed to remove bias from site selection such that ecosystem conditions can be objectively assessed on local (i.e., Santa Clara Basin) and regional (i.e., RMC) scales. The targeted monitoring design focuses on sites selected based on the presence of significant fish and wildlife resources, as well as historical and/or recent indications of water quality concerns. Monitoring results are compared to "triggers" listed in the MRP. Some triggers are equivalent to regulatory Water Quality Objectives (WQOs), while others are thresholds above (or below) which potential impacts to aquatic life or other beneficial uses may occur. Sites where triggers are exceeded (or not met) are considered for future stressor/source identification (SSID) projects.

A.1 Bioassessment

During WY 2020, SCUVRPPP conducted biological assessments at 20 creek sites, all classified as "urban" in the RMC sample frame. Of these sites, 10 were selected using the probabilistic design and 10 were targeted. Bioassessments include the collection of benthic macroinvertebrate and algae samples, measurement of general water quality and physical habitat parameters, and collection of water samples for laboratory analysis (i.e., nutrients). The California Stream Condition Index (CSCI), a statewide tool that translates benthic macroinvertebrate data into an overall measure of creek health, was used to assess biological condition.

Of the 20 bioassessment sites monitored in WY 2020, 16 received CSCI scores that were below the MRP trigger of 0.795, which corresponds to the two lower condition categories *(likely altered* and *very likely altered)*. Low CSCI scores are related to impacts to physical habitat typical for urbanized areas, such as creek channel modifications (e.g., lining with concrete) and contributing watersheds with high percentages of impervious surface. The 4 sites with CSCI scores above 0.795 all had scores in the highest condition category (*likely intact*). Although these 4 sites were classified as urban, they have relatively low impervious area in their contributing watersheds, and 3 were located within Alum Rock Park in the City of San José. Bioassessment sites and condition categories based on CSCI scores are shown in Figure E.1.

Nine of the 10 targeted bioassessment surveys were conducted at sites previously monitored by the Program, including three sites from the Lower Silver Creek – Thompson Creek SSID project. The CSCI scores for WY 2020 were compared with scores from prior years; however, there was no consistent trend in stream condition for these sites.

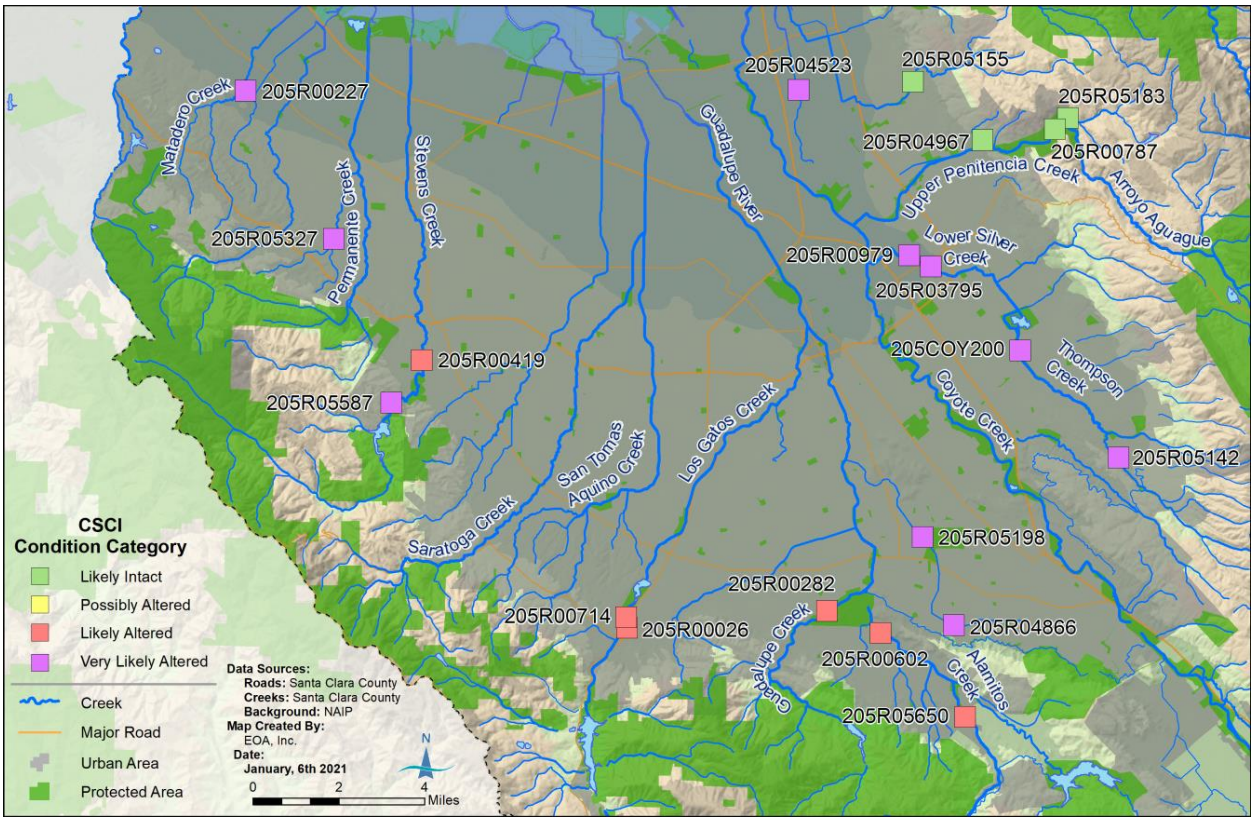

Figure E.1. Biological condition categories based on CSCI scores for 20 bioassessment sites in Santa Clara County, WY 2020.

A.2 Continuous Temperature and Water Quality Monitoring

Continuous monitoring of water temperature and general water quality in WY 2020 was conducted in compliance with provision C C.8.d.iii – iv of the MRP. Hourly temperature measurements were recorded at nine sites in the Upper Penitencia Creek watershed from April through September. General water quality parameters (specific conductance, dissolved oxygen, pH, and temperature) were recorded continuously (15-minute interval) at four sites in Lower Silver Creek during two 1 to 2-week periods in June (Event 1), July (Event 2.1) and/or September (Event 2.2).

Continuous temperature monitoring was conducted along stream reaches in Upper Penitencia Creek and its tributary Arroyo Aguague within Alum Rock Park. These reaches were targeted for temperature monitoring because they convey perennial flow and support rearing and spawning habitat for steelhead and other native fishes (Stillwater 2006). Although the MRP maximum weekly average temperature (MWAT) trigger threshold of 17°C was exceeded at all stations, very few instantaneous measurements exceeded the maximum MRP threshold of 24°C. These temperature exceedances resulted in sites being placed on the list of candidate SSID projects, but may not be of concern in Santa Clara County because the MWAT threshold was developed for streams of the Pacific Northwest, a cooler region with inherently lower water temperatures.

Continuous general water quality monitoring was conducted at four stations in Lower Silver Creek. This creek was targeted to generate data in support of the Lower Silver Creek-

Thompson Creek SSID project which investigates nutrients as a potential cause of poor biological condition. It is anticipated that the SSID project report will be submitted to the Regional Water Board by the end of Fiscal Year 2020/21. Monitoring results for specific conductance and pH followed an unusual pattern at the lowermost site (COY182), with a thrice daily peak in values. It is possible that a pump station upstream of station COY182 is the cause of the unusual pattern. All four sites exceeded the MRP triggers for MWAT and the uppermost site (COY195) exceeded the MRP trigger for dissolved oxygen.

A.3 Pathogen Indicator Monitoring

In WY 2020, pathogen indicator samples (i.e., enterococci, *E. coli*) were collected during one monitoring event at five stations in Santa Clara County that coincide with public parks. The MRP trigger threshold for enterococci was exceeded at one site. The overall goal of pathogen indicator monitoring is to assess whether WQOs are being met and whether creeks are supportive of water contact recreation (REC-1) Beneficial Uses.

It is important to recognize that pathogen indicators do not directly represent actual pathogen concentrations and do not distinguish among sources of bacteria. Sources of pathogen indicator bacteria in the targeted creeks may include homeless encampments, wildlife, livestock, pets, leaking septic systems/sanitary sewers, and regrowth of bacteria in the environment. It is the human sources of bacteria that are of primary concern for REC-1 health risks. As a result, pathogen indicator results that exceed WQOs may not indicate that a health risk is present, and therefore should be interpreted cautiously.

A.4 Chlorine Monitoring

Free chlorine and total chlorine residual were measured at twenty sites in WY 2020 concurrently with bioassessment surveys. In WY 2020, there were no exceedances of the MRP trigger for chlorine (0.1 mg/L). Chlorine residual is generally not a concern in Santa Clara Valley urban creeks.

A.5 Pesticides and Toxicity Monitoring

Toxicity testing of water and sediment samples and sediment chemistry monitoring, collectively referred to as pesticides and toxicity monitoring, was conducted during WY 2020 in compliance with provision C.8.g of the MRP. Samples were collected from Stevens Creek and San Tomas Aquino Creek at the same stations that were monitored for pesticides and toxicity during WY 2016 to WY 2019, building a long-term dataset.

<u>WY 2020 Results</u>

In WY 2020, statistically significant toxicity to *Ceriodaphnia dubia* (reproduction) and *Chironomus dilutus* (survival) was observed in the water sample collected from San Tomas Aquino Creek. The magnitude of the toxic effects in this sample did not exceed the MRP trigger criterion of 50 Percent Effect for *C. dilutus*, but this threshold was exceeded for *C. dubia*. Therefore, a follow-up sample was warranted for the latter species. The follow-up sample was not significantly toxic. Statistically significant toxicity to *C. dubia* (reproduction) was also observed in the water sample collected from Stevens Creek with a Percent Effect that exceeded the MRP threshold for follow-up. The follow-up sample was not significantly toxic. Neither of the sediment samples were toxic to the test organisms.

Pesticide concentrations in the WY 2020 sediment samples were all very low, most below the method detection limit (MDL). The exceptions were bifenthrin, cyfluthrin, cypermethrin, and cyhalothrin in Stevens Creek and bifenthrin, cyfluthrin, cypermethrin, and permethrin in San Tomas Aquino. When normalized to total organic carbon (TOC), the sum of the toxicity unit (TU) equivalents calculated for these pyrethroid pesticides were 1.3 in Stevens Creek and 0.8 in San Tomas Aquino. Although these TU equivalents approach or exceed 1.0, toxicity to *H. azteca* in sediments was not observed in WY 2020.

WY 2016 – WY 2020 Data Summary

The results of pesticides and toxicity monitoring conducted in San Tomas Aquino and Stevens Creek during WY 2016 through WY 2020 were analyzed to identify trends.

- Toxicity to *H. azteca*, a test organism known to be sensitive to pyrethroid pesticides, was not observed in dry season sediment or water samples but was observed in wet weather water samples collected in WY 2018.
- Toxicity to *C. dilutus*, a test organism known to be sensitive to neonicotinoids (e.g., imidacloprid) and fipronil, was observed in sediment and water samples collected during the dry season, although only once with a Percent Effect exceeding the MRP threshold for resampling.
- Of the 15 dry season samples where significant toxicity was observed, half were water samples with *C. dubia* reproduction toxicity. *C. dubia* is a water flea that is sensitive to a broad range of aquatic contaminants. However, the specific cause of the chronic *C. dubia* toxicity in San Tomas Aquino and Stevens Creek is unknown, and not seemingly explained by the synoptic sediment chemistry results. It is possible that the chronic *C. dubia* toxicity observed in water samples are false positives resulting from inconsistencies in laboratory quality assurance (QA). Statewide, there have been other reports of unexplained chronic *C. dubia* toxicity, and the State Water Board is currently carrying out a Special Study to examine the issue.

The pesticides and toxicity data collected from WYs 2014 through 2020 provide a reference to inform management decisions regarding water quality improvement in Santa Clara County watersheds and guide the planning of future monitoring in the area.

A.6 Recommendations

Impacts to urban streams identified through creek status monitoring are likely the result of long-term changes in stream hydrology, channel geomorphology, in-stream habitat complexity, and other modifications associated with the urban development and associated impervious surfaces, and, to a lesser extent, pollutant discharges typically found in urban watersheds. SCVURPPP Co-permittees are actively implementing many stormwater management programs to address these stressors and pollutants found in local creeks and the Bay, with the goal of protecting these natural resources and their Beneficial Uses. Through the continued implementation of MRP-associated and other watershed management programs (e.g., stream restoration and flow augmentation), SCVURPPP anticipates that stream conditions and water quality in local creeks will continue to improve over time.

Recommendations presented in Part A of the WY 2020 UCMR are directed towards the implementation of monitoring requirements in provisions C.8.d and C.8.g through the remainder of term during which MRP 2.0 remains in effect. At this time, it is anticipated that MRP 2.0 will

be replaced with MRP 3.0 in July 2022. Thus, the current monitoring requirements will likely be in effect throughout the entirety of WY 2021 and most of WY 2022. The Program is currently working with other members of the RMC and Regional Water Board staff through the MRP 3.0 Steering Committee and the provision C.8 Water Quality Monitoring Workgroup to negotiate future monitoring requirements.

- The probabilistic sample draw for urban sites in Santa Clara County has been exhausted. Therefore, SCVURPPP will select all twenty WY 2021 bioassessment sites on a targeted basis according to guidance provided by Regional Water Board staff. Targeted sites will be selected to fill in spatial data gaps, undertake watershed studies, and/or assess the impact of land use changes on biological condition.

- Continuous monitoring for temperature and general water quality has been an effective tool in supporting SSID studies and evaluating cold water habitat. It can also complement targeted Biological Condition Assessments. The Program recommends continued implementation of this approach in WY 2021.

- The Program will continue to comply with provision C.8.d.v requirements by collecting five samples for pathogen indicator analysis from creeks where there is a possibility for water recreation.

- The Program will continue to comply with provision C.8.d.ii requirements by measuring free and total chlorine in 20 samples. Measurements will be made synoptic with bioassessment monitoring.

- Pesticides and Toxicity Monitoring will be conducted during the dry season at the same two stations targeted in WYs 2016 through 2020: Stevens Creek and San Tomas Aquino Creek. The full dataset from these stations (WY 2016 – WY 2021) will be evaluated in the WY 2021 UCMR.

Part B: Stressor/Source Identification (SSID) Projects

Part B of the UCMR provides a status update on SSID projects. In compliance with the MRP, Permittees must initiate a minimum number of SSID projects during the permit term. SSID projects are intended to identify and isolate potential sources and/or stressors associated with observed water quality concerns. These projects are intended lead to action(s) that alleviate stressors and reduce sources of pollutants. During MRP 2.0, SCVURPPP initiated two Santa Clara Valley-specific SSID projects and participated in one regional project. These SSID projects are briefly summarized below:

- The Coyote Creek Toxicity SSID Project was triggered by the recommended listing of Coyote Creek for toxicity in sediment in the 2016 Integrated Report (303(d) List/305(b) Report for the San Francisco Bay Region. The Coyote Toxicity SSID monitoring design included an evaluation of sediment chemistry and toxicity testing during the dry season over a two-year period (WY 2018 and WY 2019). 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.

- The Lower Silver Creek – Thompson Creek SSID project was triggered by creek status/condition data suggesting that several stream reaches watershed have reduced biological integrity and relatively high nutrient concentrations. In WY 2019, SCVURPPP developed a work plan designed to investigate nutrient sources, the relationship between nutrients and biological condition, and the extent of eutrophic conditions. Monitoring in support of the project was conducted in WYs 2019 and 2020. The final project report will be submitted in mid-2021.

- 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 RMP suggests that diffuse sources of PCBs are present throughout the region, with one potential source being releases and spills from electrical utility equipment. The work plan, developed in WY 2018, presents a framework to investigate electrical utility equipment as a source of PCBs to urban stormwater runoff and identify appropriate actions and control measures to reduce the water quality impacts of this source. In WYs 2019 and 2020, the RMC partners gathered information from municipally-owned electrical utilities in the MRP area to improve current estimates of PCBs loadings to MS4s and identify opportunities to develop improved spill response and reporting procedures. The final project report was submitted with the Program's FY 2019/20 Annual Report on September 30, 2020.

Consistent with MRP procedures, SCVURPPP seeks Regional Water Board Executive Officer (EO) approval of the completion of the Coyote Creek Sediment Toxicity SSID Study. Likewise, the RMC awaits comments and/or EO approval for completion of the Electrical Utilities SSID Study.

Part C: Pollutants of Concern Monitoring

Part C of the UCMR reports and interprets all Pollutants of Concern (POC) monitoring data collected in WY 2020. POC monitoring is required by provision C.8.f of the MRP. POC monitoring is intended to assess inputs of POCs to the Bay from local tributaries and urban runoff, provide information to support implementation of TMDL water quality restoration plans and other pollutant control strategies, assess progress toward achieving wasteload allocations (WLAs) for TMDLs, and help resolve uncertainties associated with loading estimates for POCs. In WY 2020, SCVURPPP conducted POC monitoring for PCBs, mercury, copper and nutrients. The MRP-required yearly minimum number of samples was met or exceeded for all POCs.

POC Monitoring in the Santa Clara Valley is conducted by SCVURPPP and its water quality partners, including the BASMAA RMC, the RMP, and the SWAMP Stream Pollution Trend (SPoT) monitoring program. Figure E.2 illustrates locations of monitoring stations associated with POC monitoring conducted by SCVURPPP and its water quality partners in compliance with MRP provision C.8 in WY 2020.

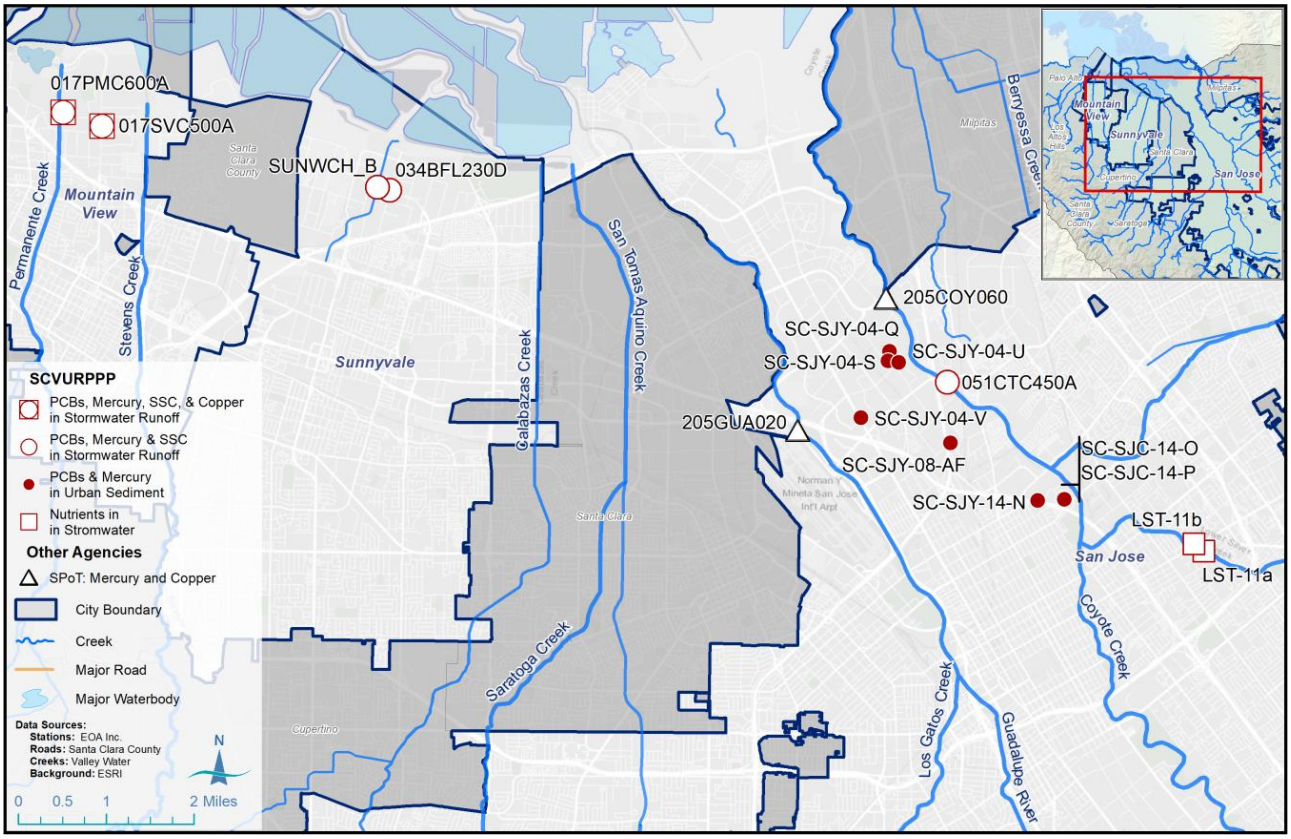

Figure E.2. Locations of POC-monitoring stations in Santa Clara County sampled in WY 2020.

C.1 PCBs and Mercury

PCBs and mercury monitoring in WY 2020 continued to focus primarily on identification of sources and source areas to the MS4 and San Francisco Bay. In WY 2020, SCVURPPP targeted high and moderate opportunity Catchments of Interest for reconnaissance-style screening monitoring to identify locations with elevated PCBs and mercury (i.e., priority Watershed Management Areas (WMAs)). Priority WMAs are then targeted for source property investigations to identify specific properties within the catchment that contribute elevated PCBs or mercury to the MS4. “Total PCBs” were calculated as the sum of the RMP 40 congeners. An MS4 sediment sample, defined as street dirt, surface soil, or sediment collected from streets, gutters, storm drain inlets, and other MS4 structures is considered highly elevated if it has a PCBs concentration over 0.5 mg/kg, and moderately elevated if it has a concentration from 0.2 to 0.5 mg/kg. Similarly for mercury, an MS4 sediment sample is considered highly elevated if it is over 1.0 mg/kg, and moderately elevated if it has a concentration from 0.3 to 1.0 mg/kg. For both PCBs and mercury, concentrations above 1 mg/kg are considered confirmation of a source. These thresholds were selected by the BASMAA Monitoring and Pollutants of Concern (MPC) Committee as approximate benchmarks for identifying areas that should be considered for future investigation (e.g., targeted source property investigations that involve records review, additional sampling, etc.), and for identifying source properties. There are currently no similar thresholds established for classifying or prioritizing PCBs or mercury concentrations in stormwater. Therefore, the Program is applying the BASMAA MPC sediment concentration thresholds to particle ratio data. The “PCB Particle Ratio” and “Hg Particle Ratio” are calculated by dividing Total PCBs and Total Mercury by suspended sediment concentration (SSC). Particle Ratios address the fact that these pollutants are generally bound to sediment. The units can be

expressed as mg/kg, the same as sediment concentration data. A PCBs particle ratio greater than 0.5 mg/kg is used as a preliminary threshold for classifying water samples as elevated. In addition, PCBs stormwater concentrations that are in the top 15 percent of all concentrations measured in stormwater in the Bay Area to date may also be considered elevated.

In WY 2020, the Program collected five composite storm water samples from the stormwater conveyance system in catchments of interest as part of the catchment screening monitoring. Total mercury concentrations ranged from 12 ng/L to 44 ng/L, with a median of 21 ng/L and a mean of 24 ng/L. Mercury particle ratios ranged from 0.12 mg/kg to 0.22 mg/kg, with a median of 0.15 mg/kg and a mean of 0.15 mg/kg. Total PCBs concentrations ranged from 3.4 ng/L to 54 ng/L, with a median of 15 ng/L and a mean of 20 ng/L. PCBs particle ratios ranged from 0.03 mg/kg to 0.21 mg/kg, with a median of 0.12 mg/kg and a mean of 0.11 mg/kg. Only one of the WY 2020 screening samples had elevated PCBs. The elevated sample was collected from a catchment in the City of Mountain View, which will be targeted for source investigation in WY 2021.

During WY 2020, the Program collected eight individual and composite MS4 sediment samples. Samples were collected from surface sediments in driveways and gutters or sediment in storm drain inlets, and other stormwater conveyance structures in public ROWs. All MS4 sediment sampling in WY 2020 was conducted as part of ongoing source investigations in priority WMAs. Within these WMAs, samples were collected on or near parcels of interest that had characteristics associated with potential PCBs use or release. Concentrations of total mercury ranged from 0.079 to 0.26 mg/kg, with a median of 0.11 mg/kg and a mean of 0.14 mg/kg. None of these samples had elevated mercury concentrations. Concentrations of total PCBs ranged from 0.012 to 0.056 mg/kg, with a median of 0.020 mg/kg and a mean of 0.026 mg/kg. None of these samples had elevated PCBs concentrations.

The program reviewed these data along with sampling data and other information collected during previous years as part of targeted source investigations that were ongoing in WY 2020 in ten WMAs within the Basin. Based on this review, the Program confirmed ten PCBs source properties and identified three potential source properties that require further investigation. The confirmed and potential source properties were identified in six of the ten WMAs that were under investigation during WY 2020. The Program was unable to identify any specific source properties in the remaining four WMAs. Figure E.3 presents the WMA prioritization status for all catchments of interest based on all results of screening monitoring and source investigations conducted in the Santa Clara Valley through WY 2020.

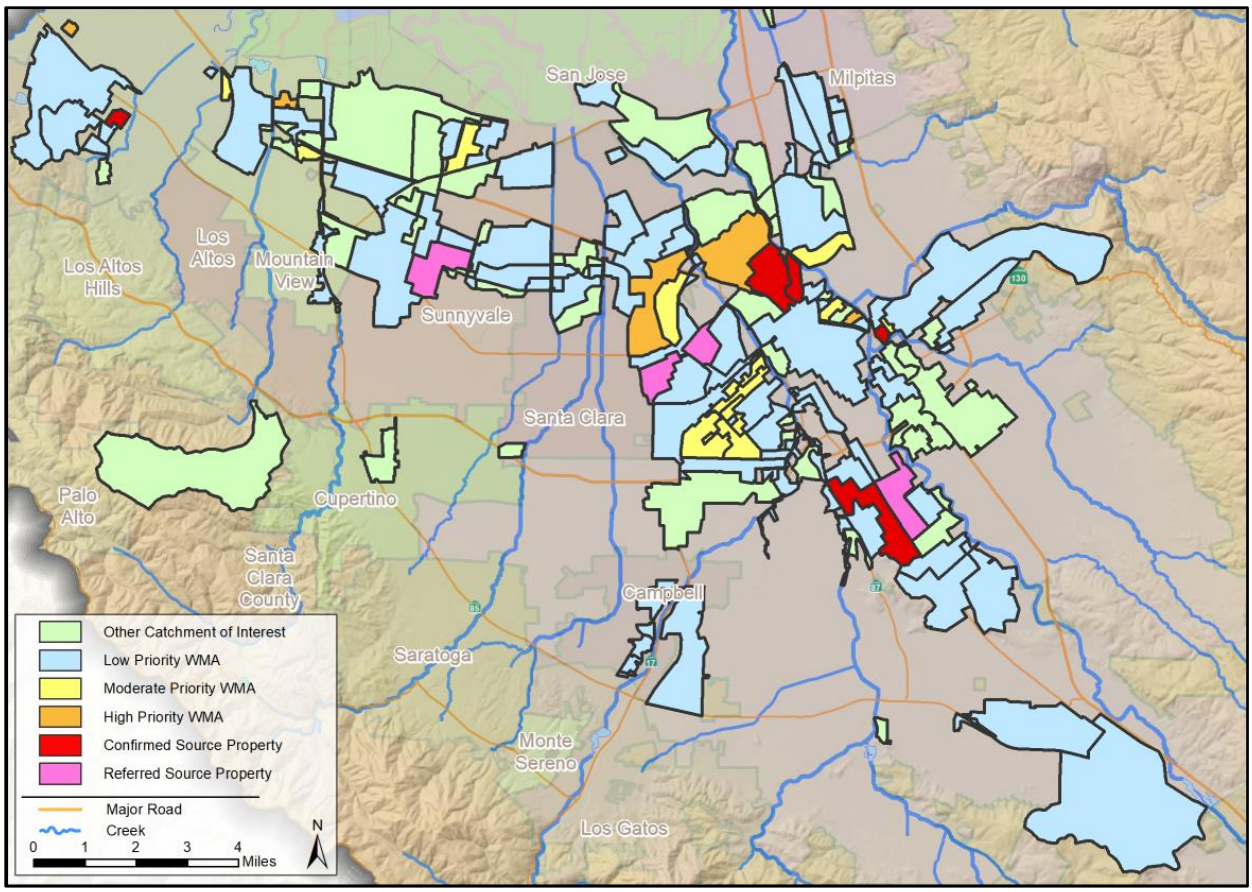

Figure E.3. Watershed Management Area (WMA) prioritization in the Santa Clara Basin.

C.2 Copper

In compliance with provision C.8.f, SCVURPPP analyzed two composite storm water samples for total and dissolved copper. Samples were collected from the MS4 concurrent with the samples that were collected as part of the PCBs and mercury Catchment Screening Monitoring Program. Although WQOs generally do not apply to MS4 samples, the dissolved copper concentrations were below the hardness-dependent WQOs for acute and chronic impacts.

C.3 Nutrients

Nutrients were included in the MRP POC monitoring requirements to support Regional Water Board efforts to develop nutrient numeric endpoints (NNE) for the San Francisco Bay Estuary. This effort has now been captured and superseded by the State Water Board Biostimulatory Substances and Biological Integrity Project, which is proposing to adopt a statewide WQO for biostimulatory substances (such as nitrogen and phosphorus) along with a program of implementation as an amendment to the Water Quality Control Plan for Inland Surface Water, Enclosed Bays and Estuaries of California (ISWEBE Plan).

In WY 2020, the Program analyzed two samples for nutrient parameters to satisfy provision C.8.f monitoring requirements. The data are being used to support the Lower Silver Creek – Thompson Creek SSID project, an ongoing study being conducted in a watershed where some of the highest nutrient concentrations in the Santa Clara Valley have been measured.

C.4 Recommendations for WY 2021 POC Monitoring

In WY 2021, the Program will continue to collect and analyze POC samples in compliance with provision C.8.f. PCBs and mercury monitoring will continue with the goal of identifying WMAs and specific source properties where new PCBs and mercury control measures can be implemented during the permit term. Specifically, SCVURPPP is planning a targeted source investigation in the City of Mountain View WMA where elevated screening-level stormwater samples were found in WY 2020.

References

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