

INTEGRATED MONITORING REPORT

PART E: WATER QUALITY MONITORING COST SUMMARY FOR SAN MATEO COUNTY

Water Years 2014 – 2019



Submitted in Compliance with
NPDES Permit No. CAS612008 (Order No. R2-2015-0049)
Provision C.8.h.v



A Program of the City/County Association of Governments

March 31, 2020

CREDITS

This report is submitted by the participating agencies in the



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City of East Palo Alto

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Town of Portola Valley
City of Redwood City

City of San Bruno
City of San Carlos
City of San Mateo
City of South San Francisco
Town of Woodside
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1.0 INTRODUCTION

This Part E: Water Quality Monitoring Cost Summary for San Mateo County, Water Years¹ (WYs) 2014 through 2019, was prepared by the San Mateo Countywide Water Pollution Prevention Program (SMCWPPP), as part of SMCWPPP's WY 2014 – 2019 Integrated Monitoring Report (IMR). SMCWPPP is a program of the San Mateo County City/County Association of Governments (C/CAG). SMCWPPP prepared this report on behalf of San Mateo County local municipal agencies subject to the regional stormwater National Pollutant Discharge Elimination System (NPDES) permit for Bay Area municipalities issued by the San Francisco Regional Water Quality Control Board (Regional Water Board). The stormwater permit is usually referred to as the Municipal Regional Permit (MRP). The version reissued on November 19, 2015 is referred to as MRP 2.0 (Regional Water Board 2015).

This report fulfills the requirements of Provision C.8.h.v(4) of MRP 2.0, which requires that the IMR includes a "budget summary for each monitoring requirement". Water quality monitoring in compliance with MRP 2.0 Provision C.8 is conducted by SMCWPPP on behalf of San Mateo County MRP Permittees. This report summarizes the approximate budget expended by SMCWPPP for its water quality monitoring conducted from WY 2014 through WY 2019, a six-year period. The previous SMCWPPP IMR (SMCWPPP 2014) was submitted to the Regional Water Board in March 2014 and summarized approximate costs for water quality monitoring conducted by SMCWPPP during WY 2012 and WY 2013 in compliance with MRP 1.0 (Regional Water Board 2009).

Water quality monitoring required by Provision C.8 of MRP 2.0 is intended to assess the condition of water quality in the Bay area receiving waters (creeks and the Bay); identify and prioritize stormwater 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. SMCWPPP conducts creek water quality monitoring and monitoring projects in San Mateo County in collaboration with the Regional Monitoring Coalition (RMC), and actively participates in the San Francisco Bay Regional Monitoring Program (RMP), which focuses on assessing Bay water quality and associated impacts. This report provides a summary of monitoring costs expended by SMCWPPP to comply with MRP 2.0 and also provides qualitative estimates of the water quality benefits realized. This report is included as an appendix to SMCWPPP's WY 2014 – 2019 IMR.

2.0 WATER QUALITY MONITORING COST SUMMARY

Table 1 presents approximate costs expended by SMCWPPP to comply with Provision C.8 of MRP 2.0 during Water Years (WYs) 2014 – 2019.² Costs presented include all aspects of implementing Provision C.8, including:

- Monitoring program and project planning,
- Monitoring program coordination and management,
- Fieldwork to collect data,
- Laboratory analysis,

¹ Most water quality monitoring is conducted on a Water Year basis. A Water Year begins on October 1 and ends on September 30 of the named year. For example, Water Year 2019 (WY 2019) began on October 1, 2018 and concluded on September 30, 2019.

² Costs presented do not include costs incurred by Permittees to implement other water quality monitoring activities and programs required by other NPDES permits issued to Permittees (e.g., POTW monitoring, aquatic pesticide application monitoring, stream maintenance program monitoring).

- Quality assurance / quality control (QA/QC),
- Data evaluation, analysis, and interpretation,
- Data management, and
- Data and reporting.

Direct financial contributions to the RMP by SMCWPPP on behalf of San Mateo County Permittees and the NPDES permit fee surcharges that were paid by Permittees during that time frame (and used by the State and/or Regional Water Board to fund its Surface Water Ambient Monitoring Program (SWAMP)) are also included in the reported costs.

The costs listed in Table 1 show the considerable resources (~\$3.7 million) that SMCWPPP expended over the course of WYs 2014 – 2019 towards complying with water quality monitoring requirements described in MRP 2.0 Provision C.8. Average annual costs to San Mateo County Permittees during this six-year timeframe were roughly \$620,000. The costs are associated with the following monitoring activities:

- San Francisco Bay Estuary Receiving Water Monitoring (RMP) – Permittee monetary contributions and SMCWPPP and Permittee staff time spent actively participating in the RMP, including participation in several workgroups and strategy teams, in compliance with MRP 2.0 Provision C.8.c.
- Creek Status Monitoring – Preparation, coordination, management and implementation of the SMCWPPP's Creek Status Monitoring Program, which is implemented in compliance with MRP 2.0 Provision C.8.d.
- Stressor/Source Identification (SSID) Projects – Preparation, coordination, management and implementation of SSID projects that were implemented in compliance with MRP 2.0 Provision C.8.e.
- Pollutants of Concern Monitoring – Preparation, coordination, management and implementation of the SMCWPPP Pollutants of Concern (POC) Monitoring Program that was implemented in compliance with MRP 2.0 Provision C.8.f., including investigations conducted to attempt to find properties that are sources of PCBs to the storm drain system.
- Pesticides and Toxicity Monitoring – Preparation, coordination, management and implementation of the SMCWPPP Pesticides and Toxicity Monitoring Program that was implemented in compliance with MRP 2.0 Provision C.8.g.
- Data Management & QA/QC – Coordination and implementation of the SMCWPPP Water Quality Monitoring Data Management and Quality Assurance Program, which implements all aspect of data management and quality assurance procedures required by MRP 2.0 Provision C.8.b, and consistent with approved Standard Operating Procedures (SOPs) and Quality Assurance Project Plans (QAPPs).
- Reporting – Analysis, interpretation and reporting of all data collected via the SMCWPPP's Creek Status Monitoring, SSID projects, POC Monitoring, and Pesticides and Toxicity Monitoring Programs, consistent with MRP 2.0 Provision C.8.h.
- NPDES Surcharge: SWAMP – Monetary contributions provided by Permittees to the State of California as part of the SWAMP surcharge issued to Permittee as part of their annual NPDES fee.

Table 1. Water quality monitoring cost summary for implementing MRP Provision C.8 during Water Years 2014 – 2019.

MRP 2.0 Sub-provision		Approximate Total Costs WYs 2014 - 2019 (6 years)	Approximate Average Costs per Water Year	Percent of Total Costs
C.8.b	Data Management & Quality Assurance/Quality Control (QA/QC)	\$200,000	\$33,333	5%
C.8.c	San Francisco Bay Estuary Receiving Water Monitoring (RMP)	\$600,000	\$100,000	16%
C.8.d	Creek Status Monitoring	\$1,300,000	\$216,667	35%
C.8.e	Stressor/Source Identification (SSID) Projects	\$220,000	\$36,667	6%
C.8.f	Pollutants of Concern (POC) Monitoring	\$800,000	\$133,333	22%
C.8.g	Pesticides and Toxicity Monitoring	\$200,000	\$33,333	5%
C.8.h	Reporting	\$250,000	\$41,667	7%
NA	NPDES Surcharge - Surface Water Ambient Monitoring Program (SWAMP)	\$150,000	\$25,000	4%
Total		\$3,720,000	\$620,000	100%

Note: see above bullets for the activities that are included in each monitoring line item.

3.0 COSTS AND BENEFITS OF MRP-REQUIRED WATER QUALITY MONITORING

SMCWPPP's water quality monitoring program generates data designed to answer core management questions outlined in MRP 2.0. In many instances, these management questions are further delineated into scientific monitoring questions, which assist in developing and implementing appropriate monitoring designs. This section provides a qualitative cost-benefit evaluation of the water quality monitoring data collection programs implemented by SMCWPPP to comply with MRP Provision C.8. The cost-benefit evaluation was conducted based on the ability of SMCWPPP to answer core management and scientific monitoring questions using the water quality monitoring data collected. Table 2 presents the results of the evaluation, which informed SMCWPPP's recommendations for water quality monitoring under MRP 3.0, the next version of the MRP. The recommendations for MRP 3.0 monitoring are described in IMR Parts A, B, C, and D, and summarized in the IMR Executive Summary.

Table 2. Qualitative cost-benefit evaluation of MRP 2.0 Provision C.8 water quality monitoring.

MRP 2.0 Sub-provision		Relative Cost of Implementing (\$ - \$\$\$\$) ³	Benefit Towards Answering Core Management Questions (★-★★★★)	Evaluation Summary
C.8.c	San Francisco Bay Estuary Receiving Water Monitoring (RMP)	\$\$\$\$	★★★	Contributions to the RMP provided useful information on the status and trends of water quality in the Bay and provided supplemental information to help SMCWPPP identify PCBs and mercury source areas for management actions. Attempts to focus RMP-led monitoring on high priority issues remains an on-going challenge due to competing interests and information needs. Overall, the RMP provides useful information to track water quality conditions in the Bay and help inform broad-scale management and policy directions based on science, but at a relatively high cost.
C.8.d	Creek Status Monitoring	\$\$\$\$	★★★	Creek status monitoring continued to provide useful information on the status of water quality in urban creeks that receive stormwater discharges, and the biological condition of those creeks. Many parameters were monitored, however, the utility of the data that the MRP requires to be collected is variable among parameters. Some parameters have provided valuable, baseline data or helped identify concerns that should be addressed. Other parameters were less useful and did not directly assist stormwater managers in validating, refining, or adjusting current practices. The high relative costs and the variability in the usefulness of data collected via this provision suggest that refinements are needed to improve the cost-effectiveness of Creek Status Monitoring during MRP 3.0.
C.8.e	Stressor/Source Identification (SSID) Projects	\$\$	★★★	SSID studies have provided useful information that is needed to help better define potential water quality concerns and identify sources of pollutants or environmental stress occurring in San Mateo County streams. SSID projects have been challenging due to the lack of methods available to differentiate the causes of stress and sources of pollutants/stress, due to the complex and overlapping watershed/runoff processes observed in streams. The relatively moderate costs and moderate/high benefits of data collected via this provision suggest that SSID projects are cost-effective. However, refinements are needed to the study methods and endpoint expectations to improve the utility of the data collected via Provision C.8.e during MRP 3.0.

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MRP 2.0 Sub-provision		Relative Cost of Implementing (\$ - \$\$\$\$) ³	Benefit Towards Answering Core Management Questions (★ - ★★★★★)	Evaluation Summary
C.8.f	Pollutants of Concern (POC) Monitoring	\$\$\$\$	★★★	Monitoring conducted under Provision C.8.f provided valuable data on potential sources of PCBs in Watershed Management Areas (WMAs) and helped prioritize land areas for further source property evaluations. Additionally, the data collected under this provision helped further understand the geographical distribution of POCs in the urban portion of San Mateo County that drains to the Bay. Although the costs associated with POC monitoring are relatively high, the PCBs data collected during MRP 2.0 have helped to characterize the urban landscape and identify some source areas. However, recent monitoring data suggest that the PCBs monitoring program in the public ROW in San Mateo County may be approaching diminishing returns in terms of finding PCBs and potentially identifying new source areas. Thus PCBs monitoring would show a lower benefit towards answering core management questions (one or two stars) if evaluated solely on potential future benefit. In addition, nutrient and copper monitoring data collected during MRP 2.0 were not particularly useful in answering monitoring questions associated with these pollutants and would show a lower benefit towards answering core management questions (one or two stars) if evaluated individually.
C.8.g	Pesticides and Toxicity Monitoring	\$\$	★★	SMCWPPP expended a relatively low level of budget for Pesticides and Toxicity Monitoring during MRP 2.0. Data collected via the statewide SPoT program provided important information on trends in pesticides and toxicity in stream sediments over time. Low costs and low/moderate benefits suggest that refinements are needed to improve the cost-benefits of the data collected via Provision C.8.g during MRP 3.0. Currently a statewide effort to develop an Urban Pesticide Coordinated Monitoring Program is underway, and SMCWPPP is actively participating in this process. For SMCWPPP, the goal is to stabilize costs for pesticide/toxicity monitoring, while improving and enhancing coordination of data collection efforts on a statewide basis with the California Department of Pesticide Regulation (DRP) to fill important information gaps that will improve the regulation of pesticides that effect stormwater quality.
NA	NPDES Surcharge - Surface Water Ambient Monitoring Program (SWAMP)	\$	★	The costs to SMCWPPP for this program were relatively low, but benefits to local stormwater programs and managers were not readily apparent.

³ Qualitative cost categories were based on the relative percentage of total costs for each major monitoring component shown above, with data management, QA/QC and reporting costs incorporated into the appropriate component costs. Cost categories were defined as: \$ = <5%, \$\$ = 5 - 10%; \$\$\$ = 10 - 15%; \$\$\$\$ = >15%.

4.0 REFERENCES

San Francisco Regional Water Quality Control Board (SFRWQCB). 2009. Municipal Regional Stormwater NPDES Permit. Order R2-2009-0074, NPDES Permit No. CAS612008. 125 pp plus appendices. Adopted October 14, 2009 Revised November 28, 2011.

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