

7. WATER QUALITY MONITORING PROGRAM PLAN

INTRODUCTION

This section serves as the Annual Monitoring Program Plan for the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP or Program). The monitoring plan provides brief descriptions of receiving water monitoring and assessment activities that will be conducted by the Program in FY 09-10. Planned activities described in this section include implementation of the seventh year of the SCVURPPP *Multi-Year Receiving Waters Monitoring Plan* (Multi-Year Plan), participation and financial support to the Regional Monitoring Program (RMP) for Water Quality in the San Francisco Bay Estuary, the Bay Area Macroinvertebrate Bioassessment Information (BAMBI) network and the BASMAA Monitoring Committee.

ONGOING AND PLANNED MONITORING ACTIVITIES

In recent years, the Program has conducted and/or actively participated in water quality monitoring activities focused on local creeks, the San Francisco Bay and the linkage between the two (i.e., tributary loading studies). These activities have been generally conducted as described below.

Santa Clara Valley Receiving Water (Creek) Monitoring

In 2002, the Program developed and began implementing its' Multi-Year Plan in compliance with Provision C.7 of the Program's current NPDES Permit. The Multi-Year Plan is intended to assist the Program in:

- Developing a better understanding of the chemical, biological, and physical characteristics of water bodies and watersheds relevant to the Program, which will help inform decisions about future management actions and help clarify and resolve urban runoff related issues within watersheds;
- Assessing baseline water quality conditions in representative watersheds within Program boundaries to evaluate urban runoff impacts and help solve creek drainage basin-specific water quality problems;
- Assessing whether specific pollutants of concern are found in urban runoff discharges and impact water quality in local water bodies and the San Francisco Bay; and
- Evaluating overall Program effectiveness over time.

The Multi-Year Plan was designed to assess water bodies in the Santa Clara Basin using an iterative rotating watershed approach similar to the San Francisco Bay Water Board's Surface Water Ambient Monitoring Program (SWAMP). In 2004, the Multi-Year Plan was revised (i.e., Revised Multi-Year Plan) to include a decision framework linking receiving water monitoring and watershed assessment, which includes the following steps/categories 1) Watershed Characterization; 2) Screening-Level (Status/Condition) Ambient Water Quality Monitoring; 3) Water Body Assessment; 4) Investigative Studies; and 5) Trends/Effectiveness Monitoring. The following paragraphs briefly summarize the tasks completed to-date by the Program through the Revised Multi-Year Plan. Table 7-1 lists the watersheds where monitoring and assessment activities have been conducted between FY02-03 and FY 08-09.

- Watershed Characterization is intended to assist the Program in evaluating and documenting the current understanding of beneficial use condition and potential impacts in local water bodies. As defined, watershed characterization entails two tasks. First, water quality data and watershed information collected to-date are summarized in a watershed characterization memorandum. The memorandum includes a compilation of existing data sources and a summary of the geologic and geomorphic setting, vegetation, land uses and associated water quality issues. An evaluation of the status of biological communities and relevant beneficial uses in the watershed(s) is also provided. Second, a creek survey using a Unified Stream Assessment (USA) method (Center for Watershed Protection) is conducted to identify potential impacts to beneficial uses and to assess the quality of the physical habitat. As part of this effort, field data collected is entered into a database and evaluated.
- Screening-Level Monitoring (Status and Trends) is conducted to assess the condition of aquatic life use and recreational uses in Santa Clara creeks. The program has identified and collected ecological indicators in local creeks to serve as measures that characterize ecosystems or one of its critical components. An indicator may reflect biological, chemical and/or physical attributes of ecological condition. The primary uses of an indicator are to characterize current status and to track or predict significant change. With a foundation of analytical research, an ecological indicator may also be used to identify major ecosystem stress.

Table 7-1. Summary of monitoring and assessment activities conducted between FY 03-04 and FY 08-09 by SCVURPPP.

Activity	Watershed												
	Lower Penitencia	Lower Silver-Thompson	Upper Penitencia	Stevens	Coyote Maintstem	San Tomas Aquino	Calabazas	Sunnyvale East and West	Adobe	Permanente	Matadero/Barron	San Francisco (1)	Guadalupe (2)
Watershed Characterization				X	X	X			X	X	X		
Screening-Level Monitoring (Status and Trends)	X	X	X	X	X	X	X	X	X	X	X		X
Water Body Assessments			X	X	X	X							
Investigative Studies				X									

(1) Monitoring is conducted through the San Francisco Creek Joint Powers Authority (JPA), which includes data collected by the City of Palo Alto. Program staff track and data collected via this effort and coordinate as needed with the Program's monitoring program.

(2) Monitoring has previously been conducted by the SCVWD, the City of San Jose and the RMP/CEP. In addition, the Program and the City of San Jose conducted a first flush monitoring and analysis effort (see Journal of Environmental Management 76(2005) 309-318.)

- Water Body Assessments (Sediment and Ecosystem Function) are systematic reviews of specific resources (e.g., benthic macroinvertebrates or fish) and their habitat and riparian areas in a watershed-scale context. Water body assessment is a stage-setting process based primarily on existing information. Assessments typically address cumulative effects within a watershed; provide for more ecologically sound resource planning; and identify and help protect environmentally sensitive areas. The Program uses the results of water body assessments to identify data gaps that provide context for subsequent monitoring and follow-up studies; and to recommend feasible management actions. In the recent past, the Program has conducted two types of water body assessments in Santa Clara Basin watersheds – ecosystem functional and sediment assessments.
- Investigative Studies are conducted when water quality data indicate that a water quality impact may be occurring. Investigative studies are typically more focused in comparison to status and trends monitoring, and are designed to collect additional information that is needed to better understand the magnitude and extent of impacts that may be occurring.

FY 09-10 Implementation Tasks

Regional Monitoring Collaborative (RMC)

In current and previous municipal stormwater NPDES permits, large and medium sized municipalities in the San Francisco Bay area have been required to implement monitoring programs to measure stormwater impacts on receiving waters, determine sources of pollutants and measure effectiveness. Some activities, such as participation in the San Francisco Bay Regional Monitoring Program (RMP) and more recent TMDL-related special studies, have been coordinated consistently among permittees. Building on these experiences, the Program intends to continue participating in the development of a Regional Monitoring Collaborative (RMC) in FY 09-10. Activities that will be conducted as part of the development of the RMC may include, but are not limited to, those summarized below. As the RMC is better defined, more detailed work plans will likely be developed to better define tasks, deliverables and schedules for completion.

1. RMC Organizational Structure – Program staff will continue to actively participate in the development of an organizational structure that will define tasks to be completed by the RMC, the decision-making process and membership, and communication structure. It is anticipated that Program staff will participate in a series of meetings between BASMAA member agencies and actively participate in the development of materials and deliverables.
2. Development of Monitoring Design – During FY 08-09, the Program began planning the development of a design for future monitoring efforts in coordination with the RMC. In FY 09-10, the Program will continue to participate in the development of a regional monitoring design for the following monitoring activities: 1) Status Monitoring; 2) Long-Term Trends Monitoring; 3) Monitoring Projects; and 4) Pollutant of Concern Monitoring (which may include preparation for monitoring loads to the Bay from the Guadalupe River). The monitoring design will include input and/or direct involvement from scientists and statisticians (i.e., subcontractors) heavily experienced in designing monitoring programs. Interim deliverables (e.g., presentations and meeting summaries) for this activity and the final deliverable

(Sampling and Analysis Plan, or SAP) are expected to be completed in 2010. This SAP will guide monitoring conducted by the Program over the next permit term.

3. Quality Assurance and Control Programs – It is anticipated that the Program’s new NDPEs permit will require all monitoring data collected by the Program to be “SWAMP comparable” and accessible via the Program’s website. To comply with this requirement, the Program intends to (in coordination with BASMAA) continue: 1) developing a data quality assurance and control program to meet “SWAMP comparable” requirements in the MRP, including the development of quality assurance project plans (QAPPs), region-wide trainings on field and laboratory protocols and data quality assurance procedures; and, 2) developing field data collection standard operating procedures, laboratory data management templates and data structures.
4. Information Management System – As data are collected by RMC participants and received from laboratories, they must be stored and managed in a cost effective manner that allows data users to easily access data and information. It is highly likely that the most cost effective way to develop this system is collectively through the RMC. Therefore, it is assumed that Program staff will actively participate in the development of an information management system that will serve as a regional data center for water quality monitoring data collected by BASMAA member agencies. Deliverables will likely include data structures, technical user manuals and databases.
5. Data Analysis and Reporting – Based on the tasks agreed to by RMC members, regional data analysis tools and reporting structures may also be developed in FY 09-10. Program staff will likely be heavily involved in the development of such tools and reporting formats, considering our experience in developing annual monitoring reports, multi-year data summaries and fact sheets.

Characterization and Investigative Studies

In FY 09-10, the Program will begin developing plans to carry out studies required by the MRP. Tasks will include developing nutrient characterization plans and creek monitoring plans for status/long-term trends. Additionally, as a follow-up to screening level monitoring conducted from FY 02-03 through FY 08-09, the Program intends to conduct an investigative study in Coyote Creek in FY 09-10. The study will attempt to determine the potential causes of water quality conditions observed in the mainstem between Highways 101 and 280 via recent sampling conducted by the Program and the SCVWD. Tasks will include collating data and information collected within this reach and within the associated drainage area, developing a conceptual model of potential impacts, identifying data gaps, and developing recommended management and monitoring activities to improve water quality conditions.

The Program will also conduct a second year of benthic macroinvertebrate bioassessments in the Guadalupe River watershed (first year was FY 08-09).

Pollutants of Concern (POC) Monitoring (Loading Station)

It is expected that the MRP will require the Program to set up a POC loading station in at least one creek location in FY 09-10 (in addition to RMP loading stations), in preparation for monitoring to begin in the fall of 2010. This task includes Program staff and subcontractor

time to establish a feasible monitoring site and estimate resource needs for monitoring field equipment and setup of the equipment at the selected station.

Data Analysis and Reporting

This task pertains to the Reporting sub-provision in the MRP. Tasks intended to be completed by Program staff include: 1) reporting on monitoring efforts conducted in FY 08-09; and, 2) participating in the development of a region-wide model reporting format (in coordination with BASMAA) for the Urban Creeks Monitoring Report required by the MRP beginning in FY 10-11.

Liaison to Volunteer Monitoring Programs

In FY 09-10, Program staff will continue to serve as a liaison between certain high profile and effective citizen/volunteer monitoring programs in the Santa Clara Basin and the Program on monitoring-related activities. Tasks may include coordination with volunteer programs on monitoring site selection, methods and data interpretation; data management and analysis; presentation of results and conclusions; and designing follow-up studies.

San Francisco Estuary Receiving Water Monitoring

The Regional Monitoring Program (RMP) for Water Quality in the San Francisco Estuary is a long-term monitoring program that shares financial support, direction, and participation by regulatory agencies and the regulated community with the goal of assessing water quality in the Bay. In accordance with the Program's NPDES permit, the Program has contributed approximately \$180,000 annually to the RMP in recent years. This funding is in addition to separate funding provided by the three South Bay POTWs (which are operated by SCVURPPP Co-permittees) to the RMP. In addition, Program staff participates on the RMP Steering Committee, Technical Review Committee, Contaminant Fate Work Group, Sources, Pathways and Loading Work Group (SPLWG), and the Small Tributaries Work Group. The Program Manager serves as the BASMAA representative to the RMP Steering Committee (SC), and is currently the Interim Chairperson of the SC.

FY 09-10 Implementation Tasks

The Program plans to continue to financially support the RMP in FY 09-10 with its designated contribution of approximately \$180,000. In addition, Program staff plan to continue to participate on the RMP Steering Committee, Technical Review Committee, Contaminant Fate Work Group, and Sources, Pathways and Loading Work Group (SPLWG). A key effort will be to continue to work with the RMP to prioritize efforts to focus on monitoring that is consistent with the MRP; and work with other regional stormwater programs to pool resources for long-term monitoring and loads assessments efforts which appropriately address MRP requirements within resource constraints.

Regional Biological Assessment Network (BAMBI)

In February 2002, Program staff participated in a workshop for information sharing and discussion of recent and ongoing rapid bioassessment (benthic macroinvertebrates) studies in the Bay Area. The network of individuals participating in the workshop was named the Bay Area Macroinvertebrate Bioassessment Information Network (BAMBI). BAMBI's purpose is to coordinate and share bioassessment information throughout the Bay Area. In particular, BAMBI is interested in storm water programs that include rapid bioassessments in

their watershed monitoring and assessment programs. Since the initial workshop, the Program has assisted (with planning and coordination) and participated in seven annual BAMBI workshops (through 2009).

In support of BAMBI, Program staff has assisted in the development of a Benthic Index of Biotic Integrity (B-IBI) for Bay Area Creeks, with the goal of developing a regional bioassessment tool necessary to provide context to data collected in Santa Clara Basin creeks. A draft BAMBI IBI Work Plan was presented at the 2005 BAMBI Workshop and Program staff has provided in-kind services to implement specific tasks identified in the work plan in recent years.

FY 09-10 Implementation Tasks

The Program will continue working with participants of BAMBI Network in testing, revising and publishing the B-IBI and supporting efforts to share bioassessment data through annual BAMBI meetings.