



# SECTION 5

## WATERSHED MANAGEMENT MEASURES

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## 5. WATERSHED MANAGEMENT MEASURES

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### INTRODUCTION

During FY 05-06, the Program conducted a variety of watershed-related management measures and activities. They included conducting watershed assessment activities and special studies, and participating in and coordinating with the Santa Clara Basin Watershed Management Initiative (SCBWMI) sub- and core groups. Activities described in this section are consistent with Provision C.10 (i.e., Watershed Management) of the Program's NPDES Permit.

The Program's watershed management strategy (pursuant to NPDES Permit Provision C.10) is to integrate its watershed management efforts with the SCBWMI. Activities that include implementing environmental monitoring and assessment measures are necessary components needed to fully integrate our efforts. Therefore, it is important to note that watershed management measures described in this section are not entirely independent from activities described in Section 4 – Monitoring Activities. Information gained from conducting studies and implementing activities/measures described in both sections have been used (and will continue to be used) in concert to meet objectives outlined in Permit Provisions C.7, C.9, and C.10. They include: (1) characterizing watersheds and stormwater discharges; (2) assessing existing or potential adverse impacts to beneficial uses; (3) identifying potential sources of pollutants of concern; (4) aiding in developing and implementing strategies for controlling adverse impacts on beneficial uses; and (5) assessing the effectiveness of pollutant prevention/control measures.

### BACKGROUND

The Water Board started the SCBWMI in 1996. The first meetings of the SCBWMI's Core Group and subgroups were held in 1997. During FY 98-99, SCBWMI stakeholders formally joined in a signatory document outlining the SCBWMI's mission, goals and objectives. The Santa Clara Valley Water District and the Cities of San Jose, Sunnyvale and Palo Alto committed additional funds and other resources to the SCBWMI. A Report Preparation Team (RPT) consisting of staff from these agencies developed a plan, schedule, and outline for a Watershed Assessment Report (WAR). The RPT and the SCBWMI subgroups began preparing sections of the WAR soon after.

In late 1999, the Program prepared *Watersheds 2000: A Vision of the Santa Clara Valley Urban Runoff Program's Role in Watershed Management and the Santa Clara Basin Watershed Management Initiative*. This document outlines the Program's long-term vision, roles and responsibilities with regard to the SCBWMI and provides a monitoring/continuous improvement and outreach strategy.

The Program's involvement in the SCBWMI is organized by the concept of continuous improvement, as described in the Program's Urban Runoff Management Plan (URMP). The SCBWMI identifies specific watershed issues and recommendations that are brought to the Program's Management Committee for consideration and action as appropriate. In addition, results from SCVURPPP studies related to watershed monitoring, assessment and management are frequently distributed, presented and discussed with SCBWMI subgroups. This approach creates an informed and coordinated partnership between the Program and SCBWMI.

**FY 05-06 SCVURPPP ACCOMPLISHMENTS****1. Bay Area Macroinvertebrate Bioassessment Information Network (BAMBI)**

The increased interest in bioassessment within the Bay Area spawned the formation of the Bay Area Macroinvertebrate Bioassessment Information Network (BAMBI) in February 2002. BAMBI is a network of scientists, watershed managers, regulators and community members interested in using biological communities as indicators (i.e., benthic macroinvertebrates) of stream health in the San Francisco Bay Area. The goal of BAMBI is to maximize the utility of aquatic bioassessment in the Bay Area by developing a programmatic and analytical framework for the collection, sharing, analysis and use of bioassessment data. Specific activities conducted by BAMBI in FY 05-06 are presented below. Additional information on BAMBI is provided at [www.bayareabugs.org](http://www.bayareabugs.org).

**BAMBI 2006 Annual Meeting**

Since 2002, Program staff has helped coordinate an Annual BAMBI meeting where bioassessment data and analyses can be presented from a local, regional or state perspective. On January 31, 2006, the fourth annual BAMBI meeting was held. Presentations included an update on the development of the Index of Biotic Integrity (IBI) for San Francisco Bay Area creeks, long-term variability of bioassessment data and the effects of urbanization on BMIs. Presenters included UC Berkeley PhD candidates and Program staff. The meeting agenda for the January 31 meeting is included within Appendix D-1.

**Index of Biotic Integrity (IBI) for San Francisco Bay Area Creeks**

In collaboration with Alameda Countywide Clean Water Program and Water Board staff, Program staff developed a draft Work Plan to outline tasks that should be completed during the development of a Benthic Macroinvertebrate Index of Biotic Integrity (B-IBI) for creeks in the San Francisco Bay Area. An IBI serves as an easy-to-use scorecard for determining the condition of water quality and stream habitat (i.e., stream health) using biological communities. The IBI approach is designed to maximize detection of degradation by controlling for natural variation in biological communities. The San Francisco Bay Area IBI Work Plan was included in the Program's *FY 04-05 Annual Report*.

The Work Plan has six main tasks listed in sequential order:

1. Form Technical Advisory Group;
2. Compile Existing BMI Data from Participating Agencies/Organizations;
3. Standardize Datasets and Import into Database;
4. Develop Reference Conditions;
5. Select Metrics for the IBI; and
6. Develop, Validate and Refine IBI.

During FY 05-06, Program staff contributed substantial in-kind services towards the completion of tasks 1 through 4. The following are status summaries for these tasks:

**Task 1: Technical Advisory Group (TAG)** - A Technical Advisory Group (TAG) was formed in 2006. The TAG consists of Program, California Department of Fish and Game (CDFG) and USGS staff, UC Berkeley graduate students and other Bay Area municipal stormwater program staff. On June 21, 2006, the TAG met to discuss the initial steps in developing reference

conditions for Bay Area creeks. A meeting agenda is included within Appendix D-1. The TAG will likely meet again in late 2006.

Task 2 – Compile Existing Data – In FY 05-06, Program staff spent a substantial amount of time collecting and compiling existing benthic macroinvertebrate data from eight Bay Area counties. Data sources included the Water Board, municipal stormwater programs and volunteer monitoring programs. Data from approximately 350 sites has been compiled. It will be available on the World Wide Web in 2007.

Task 3: Standardize Datasets and Import into Database – Datasets compiled in Task 2 were standardized into a format that could be imported to the California Ecological Data Application System (Cal EDAS), which is currently housed at SCVURPPP. All bioassessment data collected through Spring 2005 was placed in Cal EDAS. Program staff will begin generating data outputs needed to complete Tasks 4-6.

Task 4: Develop Reference Conditions – The development of biological reference conditions for Bay Area creeks is an integral step in completing the B-IBI. Reference conditions provide a way for comparing biological data from a potentially impacted site to a “least disturbed” site. They are also used to determine the degree of impact of a site. On June 21, 2006, the TAG met to begin discussing reference conditions development. As a next step, supplemental physical habitat data is being compiled by Bay Area stormwater programs to objectively define reference condition attributes used to test and select appropriate biological metrics used to develop the B-IBI.

In FY 06-07, Program staff plans to continue supporting and actively participating in BAMBI activities, with specific objectives to complete a Draft Provisional B-IBI for San Francisco Bay Area creeks.

## **2. Stream Studies Inventory**

The Watershed Assessment and Monitoring Subgroup (WAMS), an entity within the SCBWMI, has a mission to provide the SCBWMI with a solid scientific foundation for watershed planning. One of WAMS’s tasks is to coordinate the SCBWMI’s data collection and data management efforts with stream monitoring studies within the Basin. The *Inventory of Santa Clara Basin Stream Studies* (SSI) is a result of this task and was initially prepared by the Program in November 1998. The purpose of the SSI is to promote inter-agency awareness of environmental investigations within riparian corridors and to facilitate coordination of related data collection and management. It also describes stream-related multi-stakeholder studies and projects that were in-progress in the Santa Clara Basin. The SSI was updated, revised and reissued in February 2000 (Version 2.0), July 2001 (Version 3.0), August 2002 (Version 4.0), November 2003 (Version 5.0) and June 2005 (Version 6.0).

On September 15, 2006, the Program finalized the *Inventory of Santa Clara Basin Stream Studies (Updated Version 7.0)*. This version describes twenty-nine related multi-stakeholder studies and projects that recently started or are in-progress within the Santa Clara Basin. Information for seven new studies was added to the updated version and twenty-two ongoing projects were updated with current information. Eight projects listed in the SSI Version 6.0 Report were determined to be complete or discontinued. As a result, they are not included within the updated SSI Version 7.0. Information describing the completed studies was archived into the Program’s metadata database. Updated SSI Version 7.0 is provided within Appendix D-2.

### 3. Watershed Data Management

To comply with its NPDES permit, the Program compiles, develops and analyzes a variety of data sets and reports. Most of this data is collected and generated as part of the Program's environmental monitoring and assessment activities. A majority of the information collected and used by the Program originates from different municipalities and agencies that conduct studies within Program jurisdictional boundaries.

The Program developed a relational database as an initial task to systematically describe and document data used for its activities. The intent of the database is to demonstrate its usefulness of how to systematically and efficiently collect and document all of the relevant data used in the Program's activities. In addition, the database was designed to explore the feasibility of eventually expanding and coordinating its maintenance and use with other agencies and organizations in the Program.

The SCVURPPP metadata database currently stores information on watershed studies described in the updated SSI Version 7.0 as well as archived information from previous versions of the SSI. The database was also developed to produce a report listing current project information in a format similar to previous SSI Reports. The project summaries of the 2003 SSI report were produced from the database. In addition, the Program database provides querying capabilities for watershed information listed in both the SSI and SCBWMI's Metadata Database.

The SCVURPPP Metadata Database guidance manual entitled *SCVURPPP Metadata Database Program User Documentation* is also available. The manual describes software and hardware requirements, installation procedures, data entry procedures and querying techniques for watershed information listed in both the SSI and SCBWMI's Metadata Database. The *SCVURPPP Metadata Database Program User Documentation* can be found on the Program's website ([www.scvurppp.org](http://www.scvurppp.org)).

### 4. SCBWMI Indicators Work Group (Work Group "I")

Within the 2003 Watershed Action Plan, the Santa Clara Basin Watershed Management Initiative (SCBWI) identified a goal of developing and using environmental indicators to characterize progress toward the protection of watershed health. The effort to develop environmental indicators for the Santa Clara Basin is referred as the "State of the Santa Clara Basin" Project. The goal of this project is to provide a suite of environmental indicators that can be used to periodically assess the status and trends of stream and riparian systems and management actions within the Santa Clara Basin. In addition, the project is intended to: (1) evaluate the effectiveness of environmental programs, policies and projects; (2) improve environmental planning; and (3) adaptively manage emerging issues within watersheds.

During January 2005, the development of indicators began with the initiation of the WMI Phase I Indicators Work Group (Work Group "I"). At the same time that Workgroup I was being formed, the Water Resources Protection Collaborative and the Water District decided to develop a suite of environmental indicators to report on stream ecosystem health. These efforts were integrated into a single scope of work for Workgroup I. Therefore, the original scope of work for Workgroup I included objectives to both develop a suite of environmental indicators and to develop an environmental indicators report card.

During FY 05-06, SCBWMI Workgroup I developed a suite of environmental indicators and a prototype environmental "scorecard" for Coyote Creek (mainstem channel). The scorecard

reports on the health of Coyote Creek by evaluating environmental indicators that measure the current condition of Coyote Creek in comparison to a best existing condition. The indicators in the prototype scorecard are riparian habitat, water quality, benthic macroinvertebrates, fish assemblages, aquatic habitat and stream channel condition. Program staff, at the direction of the Management Committee, assisted SCBWMI Workgroup I with preparation of the report card. The Program and SCBWMI Core Group plan to approve the report card in FY 06-07.

## **5. Develop Strategies for Controlling Impacts of Land Use on Beneficial Uses**

During FY 05-06, the Program collaborated with the SCBWMI Land Use Subgroup on the following activities:

- On December 7, 2005, the Program, in collaboration with the Land Use Subgroup, planned and held the workshop entitled “How Development Affects Creeks – How Creeks Affect Development”. Presentations were given on stream geomorphology and aquatic ecology; and on low-impact design techniques to protect water quality and beneficial uses. The presentations were followed by a walking tour of a nearby segment of Coyote Creek. The workshop attracted 115 participants. Evaluation forms showed that the vast majority of participants gave the workshop high remarks (see evaluation summary within Appendix A-4).
- On May 3, 2006, the Program, in collaboration with the Land Use Subgroup, planned and held the workshop entitled “Development and Creeks – Making the Connection”. Presentations focused on how humans have altered the landscape and water resources of the Santa Clara Basin, and how understanding historical ecology can improve future land use decisions and site designs. The presentations were followed by a walking tour of the Guadalupe River. The workshop attracted 41 participants. Evaluation forms showed that the vast majority of participants found the workshop content to be very useful or useful (see evaluation summary within Appendix A-6.)
- At the June 7, 2006 LUS meeting, Program staff presented information regarding the connection between transportation and water quality from the following two sources:
  - State Air Resources Board and the State Water Resource Board Joint Workshop on Atmospheric Deposition and Water Quality (February 9, 2006)
  - USEPA report entitled Protecting Water Resources with Higher-Density Development (January 2006).

**Table 5-1  
Status of FY 2005-2006 Watershed Management Measures Projects<sup>1</sup>**

Title	Category/ Monitoring Priority (MP) <sup>2</sup> / Permit Provision	Capsule Scope	Product(s) <sup>3</sup>	Status Schedule
<b>FY 05-06 Rapid Bioassessments</b>	Permit Provision C.7 and C.10	Evaluate water and physical habitat quality in Santa Clara Basin Watersheds.	<i>FY 05-06 Watershed Monitoring and Assessment Summary Report<sup>4a, b</sup></i>	Complete- 9/15/06
<b>Bay Area Macroinvertebrate Bioassessment Information Network (BAMBI)</b>	MP #4	Collaborate with other BASMAA member agencies to develop regional bioassessment tools necessary to provide context to bioassessment data collected in Santa Clara Basin creeks.	BAMBI – annual meeting agenda <sup>4a</sup>  BAMBI- San Francisco Bay Area Benthic Index of Biotic Integrity (B-IBI) Work Group meeting agenda and materials <sup>4a</sup>	Completed- 1/31/06  Completed- 6/21/06

<sup>1</sup> Projects reviewed and approved for inclusion in Work Plan by Budget Ad Hoc Table Group.

<sup>2</sup> Monitoring Priorities (updated at Monitoring AHTG meeting November 8, 1999):

- 1) New projects needed to implement the results, and achieve the goals, of current projects.
- 2) New projects that implement continuous improvement items identified through the annual review process.
- 3) Projects that support the Santa Clara Basin Watershed Management Initiative in one of the following ways:
  - a) Investigate Beneficial Uses and Causes of Impairment (including field work)
  - b) Review and Compile Environmental Data and Make it Accessible
  - c) Develop Strategies for Controlling Impacts of Land Use on Beneficial Uses
  - d) Facilitate and Support WMI Subgroups (including coordination with other agencies)
- 4) Projects identified through participation in regional monitoring collaborative efforts, including the Regional Monitoring Program and BASMAA.

<sup>3</sup> Refer to Appendix C-1 for additional details.

<sup>4</sup> a) Provided within *FY 05-06 Annual Report*

b) Provided on Program's website ([www.scvurppp.org](http://www.scvurppp.org))

**Table 5-1  
Status of FY 2005-2006 Watershed Management Measures Projects<sup>1</sup>**

Title	Category/ Monitoring Priority (MP) <sup>2</sup> / Permit Provision	Capsule Scope	Product(s) <sup>3</sup>	Status Schedule
<b>Stream Studies Inventory</b>	MP#3b	Promote inter-agency awareness of environmental investigations within riparian corridors and facilitate coordination of related data collection and management.	<i>Inventory of Santa Clara Basin Stream Studies (Version 7.0) Report</i> <sup>4a,b</sup>	Complete- 9/15/06
<b>Watershed Data Management</b>	MP#3b	Develop a metadata database that is focused on description, documentation, and indexing of the data sets, sources, and reports	Updated Metadata Database	Ongoing
<b>WMI Watershed Assessment and Monitoring Subgroup (WAMS)</b>	MP#3d	Provide administrative support to WAMS.	Meeting summaries	Completed as needed
<b>WMI Environmental Indicators Workgroup (Workgroup I)</b>	MP #3d	Participate in meetings and provide comments on work products.	SCVURPPP meeting summaries	Completed as needed
<b>Support for Land Use Subgroup</b>	WMI Subgroups MP# 1, 3c, 3d	Provide administrative support and leadership for the Land Use Subgroup. Maintain the subgroup mailing list; prepare and distribute agendas; chair meetings; edit and distribute meeting summaries; liaison to, and correspond with, the SCBWMI Core Group other subgroups as needed; update workplans; facilitate interaction between consultants and the subgroup; summarize, compile, and convey subgroup products.	Workshop agenda and evaluation summary - <i>"How Development Affects Creeks – How Creeks Affect Development"</i>  Workshop agenda and evaluation summary - <i>"Development and Water Resources: Making the Connection"</i>	Completed 12/7/05  Completed 5/3/06