Surface Water Ambient Monitoring Program (SWAMP) Monitoring Plan for Region 9

Improving Coordination of Watershed Monitoring in the San Diego River Watershed

Fiscal Year 2009/10

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1 Summary Sheet

Beneficial Uses

This plan for the Surface Water Ambient Monitoring Program (SWAMP) will coordinate the monitoring of water quality in San Diego River watershed and will develop a cost effective and integrated monitoring program. Such coordination will improve assessment of water bodies in the San Diego River watershed through a cost effective integrated monitoring program. The monitoring program will be designed around questions that directly relate to beneficial uses. Therefore, the results of the monitoring program can more directly be used to evaluate where the beneficial uses are not being met. This will allow future management actions to be better targeted toward addressing these deficiencies and in improving beneficial uses over the long-term.

Assessment Questions

The following assessment questions will be addressed by the San Diego Regional Water Quality Control Board (SDRWQCB) through the proposed plan:

The proposed assessment questions are:

1. Are the beneficial uses protected in the San Diego River watershed (e.g. by comparing the contaminants concentrations to the appropriate thresholds)?
2. What are the long-term trends of conditions in water quality in the San Diego River watershed?

To answer the questions, the following steps will be taken:

1. Review past and current monitoring programs, monitoring requirements, and assessments.
2. Develop an integrated and cost-effective monitoring and assessment program plan.
3. Coordinate the initial implementation of the integrated monitoring program.

Link to Statewide Monitoring Framework

The statewide SWAMP program assesses the protection of beneficial uses, with a special focus on aquatic ecosystem health. Large monitoring programs funded by SWAMP on a statewide and on a regional basis are conducted to assess the health of the watersheds in California. This proposed monitoring plan focuses on the protection of beneficial uses in the San Diego River watershed, and a more detailed assessment of the water bodies in the San Diego River watershed. To assess the conditions of the San Diego River watershed, datasets from SWAMP statewide and regional monitoring will be combined with data of the proposed

integrated monitoring program. To combine those datasets, data that will be collected through the proposed integrated monitoring program have to be SWAMP comparable. The SWAMP QA program and the SWAMP data management program will be included into the proposed program to ensure consistency with the statewide SWAMP program.

Clean Water Act Sections 305(b)/303(d)

The data produced by this monitoring plan will be used in water body assessments required under Clean Water Act (CWA) sections 305(b) and 303(d).

2 Background

2.1 Introduction

In the San Diego region, a number of different monitoring and assessment programs are conducted by and for a number of different entities. Some of these programs are controlled by the San Diego Regional Water Quality Control Board (SDRWQCB); some are controlled by other entities. Although existing monitoring and assessment programs generate substantial amounts of data, important basic information about the conditions in San Diego region waters does not result from the data collected, is not up-to-date, and/or is not easy to find, recognize, understand, or communicate to decision makers.

Correcting these shortcomings may involve making major changes in existing monitoring and assessment programs that can be implemented through better coordination of watershed monitoring. Because of the substantial level of effort and funding associated with currently required monitoring and assessment programs, making appropriate changes would result in correspondingly substantial improvements. Changes will need to be made in several aspects of monitoring and assessment, including changes in monitoring designs, reduction in redundant efforts, replace existing programs or program elements that are not successful, enhance activities that are successful, fill in the gaps where needed, and coordinate other activities where possible; changes in analysis, synthesis, and interpretation of monitoring data (i.e., assessment); and changes in the presentation, display, and communication of monitoring and assessment results.

The short-term goal for the proposed study is the development of an integrated and cost effective monitoring program. The long-term goal is the improvement of water quality and the better protection of beneficial uses through improved monitoring, and the increased use of monitoring information in making management decisions. The implementation of the monitoring program and the management decisions need to follow an iterative and adaptive process that includes inputs from major stakeholders to be successful.

Mazor and Schiff (2008b) assessed surface water monitoring in the San Diego River watershed based on data of the Surface Water Ambient Monitoring Program (SWAMP), stormwater copermittees and citizen monitoring groups. All four recommendations in the report are addressed by this proposed study. Two of the recommendations will be addressed by the coordination and data management of the proposed project: (1) “SWAMP should integrate its monitoring with other monitoring programs in the region to increase cost-efficiency”; and (2) “SWAMP should ensure that there is an infrastructure to support its collaborative program”. In addition, the two other recommendations (“Identify a set of core indicators that can help determine impacts to beneficial uses” and “SWAMP should redesign its monitoring program to improve

effectiveness at addressing important monitoring questions") will be addressed in the development of the integrated monitoring and assessment program.

The recent development of the San Gabriel River Regional Monitoring Program (Stein and Bernstein, 2008) shows the improvement of watershed assessment by integrating several monitoring programs within one watershed. Although that program is based on a hybrid approach of probabilistic and targeted sampling, the integration of several monitoring programs shows the importance of coordination and integration to expanding the capacity of monitoring within one watershed.

2.2 Past and Current SWAMP Monitoring

During the first five years of the Surface Water Ambient Monitoring Program (SWAMP), the SDRWQCB focused on monitoring watersheds throughout the Region on a rotational basis to assess whether aquatic life was protected in wadeable streams and to assess the general condition of these streams in the San Diego region. The following measurements were taken at most of the sites: conventional water chemistry, water chemistry for heavy metals and pesticides, sediment and water toxicity, fish tissue (not all sites), benthic macroinvertebrates (not all sites), and physical habitat assessment (not all sites). The five-year cycle was completed in Fiscal Year 2004-05. Assessment reports for each of the eleven watersheds and a synthesis report were produced with FY 2005-2006 funding by the Southern California Coastal Water Research Project.

In 2007 and 2008, SWAMP monitoring throughout the San Diego region has been focused on assessing the ecological health in stream systems; bioassessment samples were collected at approximately 42 sites throughout the San Diego region. In addition, bioassessment samples were collected at 11 reference sites throughout the San Diego region. In 2008, algae were added to the sampling plan as an additional bioindicator.

The Stormwater Monitoring Coalition Regional Watershed Monitoring Program ("SMC study"), which is based on a probabilistic design (but does include some targeted sites for trend analysis), began in 2009. This program is being implemented throughout coastal southern California in the Los Angeles, Santa Ana, and San Diego regions. For the San Diego region only, this program includes 24 randomly located sites in San Diego County, 6 sites in Orange County, and 3 sites in Riverside County. SWAMP is funding one-third of the sites in San Diego County, Orange County, and Riverside County. The rest of the sites are funded by the stormwater copermittees.

Starting 2010, the SWAMP San Diego region monitoring program will continue to fund the SMC study, but will also add a pilot study on contaminants of emerging concerns in the San Diego region (see monitoring plan for contaminants of emerging concern). Funding is also allocated to support the development of this monitoring plan.

2.3 Other Monitoring Programs

In addition to the San Diego region SWAMP program, a number of different monitoring and assessment programs are conducted by and for a number of different entities. Some of these programs are controlled by the SDRWQCB; some are controlled by other entities. Monitoring and assessment programs controlled by the SDRWQCB can be categorized as either SDRWQCB-directed programs or SDRWQCB-required programs.

SDRWQCB-directed programs are conducted by or for the SDRWQCB using funds in the SDRWQCB budget. Currently, funds for SDRWQCB-directed programs consist of (a) SDRWQCB laboratory contract funds (approximately $50,000/year) and (b) SDRWQCB SWAMP funds (approximately $270,000/year). SDRWQCB-required programs are conducted by or for dischargers pursuant to SDRWQCB requirements. To a large extent, SDRWQCB-required programs are devoted to producing information about discharges. The total annual cost of SDRWQCB-required programs is not known, but is estimated to be several million dollars per year, i.e., about an order of magnitude greater than the level of funding for SDRWQCB-directed programs.

Other programs include citizen monitoring groups that monitor the watersheds on a voluntary basis. Some citizen monitoring groups cover the entire San Diego region (e.g. San Diego Coastkeepers, and the San Diego Stream Team), while other groups focus on a single watershed (e.g. San Diego River Park Foundation). Also, new and emerging monitoring and assessment programs will be tracked, and included if possible.

The Southern California Coastal Water Research Project (SCCWRP) will also start a pilot study on contaminants of emerging concern in Southern California over the next year.

2.4 Proposed Coordination of Watershed Monitoring in the San Diego River Watershed

The purpose of this proposed monitoring plan is to improve monitoring and assessment of the San Diego region waters through improved coordination of watershed monitoring, as recommended by Mazor and Schiff, 2008a. The proposed study will serve as a pilot study for the San Diego region. Most of the watersheds in the San Diego region are in need of an integrated and coordinated monitoring program. If the proposed study is successful, efforts will be made to coordinate watershed monitoring in other watersheds in the San Diego region.

The first step of improving water quality is to develop an adequate monitoring program. The monitoring program needs to develop clear goals and objectives that will guide the development of the monitoring program. Past studies indicate that surface water quality is better in the upper, less developed part of the

watershed than in the lower, more developed part of the watershed (San Diego River Watershed Management Plan, 2005). Several water bodies in the San Diego River watershed are listed on the 2006 303d list including indicator bacteria, total dissolved solids, phosphorus, eutrophication, pH, dissolved oxygen, color, chloride, manganese, and sulfates (Draft 305(b) and 303(d) Integrated Report 2009). Mazor & Schiff (2008a) showed that multiple lines of evidence support the conclusion that portions of the San Diego River watershed are in poor ecological condition.

The monitoring currently conducted in the San Diego River watershed is not coordinated and/or integrated. The proposed project will support efforts to coordinate watershed monitoring in the San Diego River watershed. The major elements of the proposed effort to coordinate watershed monitoring are: (1) convening a stakeholder group; (2) reviewing past and current monitoring programs, monitoring requirements, and assessments; (3) developing agreed upon common goals and objectives (4) developing an integrated, and cost-effective monitoring and assessment program plan to address the agreed upon objectives; and (5) coordinating the initial implementation of the integrated monitoring program.

The San Diego River Watershed Management Plan (2005) recommends several priorities including ongoing collaborative management and stakeholder cooperation, improvement of data management, and stakeholder education and outreach. The proposed project implements all those three priorities in the field of surface water monitoring by bringing the stakeholders together to develop a cost-effective and integrated monitoring and assessment plan. Improved monitoring has the potential to also help address the other priorities of the San Diego River Watershed Management Plan (2005), i.e,: (1) hydromodification; (2) impervious surfaces; (3) groundwater and the protection of water supplies; (4) habitat degradation; and (6) non-native species control.

The first San Diego River Watershed Forum consisting of a number of watershed stakeholders was held on April 24, 2009. The forum concluded that monitoring approaches would be considerably enhanced using a combined assessment approach and through collaborative watershed-based (rather than simply effluent-based) monitoring by dischargers. These approaches will be implemented by the proposed project.

2.5 Objectives and Monitoring Questions

The following objectives have been defined for the proposed study:

1. To develop a integrated, adaptive, and cost-effective monitoring and assessment program plan;
2. To conduct an initial assessment of the San Diego River watershed based on the newly developed monitoring and assessment program plan;

3. To use the results of the initial assessment to inform modifications or adjustments to the monitoring program.
4. To better recommend management strategies which need to be adaptive based on assessment of the San Diego River watershed;

The purpose of this study is to answer the following monitoring questions:

1. Are the beneficial uses protected in the San Diego River watershed (e.g. by comparing the contaminant concentrations to the appropriate thresholds)?
2. What are the long-term trends of conditions in water quality in the San Diego River watershed?

These monitoring questions may be refined and expanded upon during the stakeholder coordination portion of the project.

3 Study Methods

3.1 Study Design

No samples will be collected during this project. Existing monitoring data will be reviewed, and a cost-effective, integrated monitoring program will be developed. During the project, the past and current monitoring programs, monitoring requirements and assessments that exist for the selected watershed, and the spatial and temporal frequency of data collected will be reviewed.

3.1.1 Watershed Selection

The San Diego watershed was selected for the following reasons:

1. The San Diego River watershed is the second largest watershed in San Diego County which includes 5 large reservoirs.
2. Multiple monitoring permit requirements exist in the San Diego River watershed. The Padre Dam Water Recycling Facility holds a NPDES permit for the discharge with extensive monitoring requirements. The San Diego stormwater copermittees need to fulfill the monitoring requirements of the San Diego MS4 stormwater permit. In addition, there are several industrial facilities in the watershed.
3. With funding from Cleanup and Abatement Account from the SDRWQB, the San Diego River Park Foundation with Joe Purohit from EcoLayers is in the process of developing a data portal for data organization and dissemination.
4. The San Diego River Park Foundation conducts a large citizen monitoring program throughout the San Diego River watershed.
5. Based on the watershed management plan developed in 2005, a Watershed Forum convening multiple stakeholders throughout the watershed was held in 2009 and is planned to be held again every 2 years.

A requirement for participating in coordinated regional watershed monitoring is already included in the NPDES permit to the Padre Dam Recycling Facility (Attachment E of Order No. R9-2009-0037).

3.1.2 Review of Existing Monitoring Data, Requirements, and Assessments

To develop an integrated and cost effective monitoring and assessment program, existing monitoring data, requirements, and assessments need to be reviewed. Several stakeholder meetings will be convened to compile all existing monitoring data, monitoring requirements, and assessments. The facilitator(s) will review the data, and produce a table with the major programs, requirements, and assessments in the San Diego River watershed. Also, the EcoLayers data portal will be used to help compile the necessary data.

3.1.3 Development of an Integrated and Cost-effective Monitoring and Assessment Plan

Based on the review of the existing monitoring and assessment programs, the facilitator(s) will develop an integrated and cost-effective monitoring and assessment plan for the San Diego River watershed. The new monitoring and assessment plan will be developed in coordination with the stakeholders, and the SDRWQCB.

3.1.4 Implementation of New Monitoring and Assessment Plan

After developing the new integrated and cost-effective monitoring and assessment plan, the plan has to be implemented. One or more initial meetings will be held to discuss implementation of the new plan. It is the goal that the new integrated monitoring plan is cost-neutral, and can be implemented without any additional resources. In the event that additional resources are necessary to implement the new program, then all stakeholders have to collaboratively support the program, and/or determine program priorities. In the case that the new monitoring plan is resulting into cost savings, then the saved money must be spent to fund new/additional program elements.

3.2 Data

3.2.1 Data Quality Evaluation and Data Reporting

The project will include a review of existing monitoring data. These data have typically gone through a quality control check. Some of the old data might be re-analyzed for potential changes that could improve efficiencies and reduce costs. Data will be compiled in the California Environmental Data Exchange Network (CEDEN), and EcoLayers which is a data portal that is specialized for the San Diego region. When the data are uploaded at the data portal, the quality of the data will be checked, and flagged if no quality control is available or if data do not pass the quality check.

3.2.2 Data Management

No new data will be produced during the development of the plan. It is possible that implementation may result in new data collected. Any new data will be stored in the California Environmental Data Exchange Network (CEDEN) and in the regional data portal EcoLayers. The data that will be compiled during this monitoring plan will be used for a future cycle of the water quality assessment under Clean Water Act (CWA) sections 305(b) and 303(d). The data that will be reviewed under this project will be compiled in the EcoLayers data portal.

4 Coordination and Collaboration

The goal of this project can be achieved only by coordination and collaboration. Eric Stein from the Southern California Coastal Water Research Project (SCCWRP) and Brock Bernstein (independent consultant) will facilitate the coordination of the proposed project.

The SDRWQCB will collaborate with other agencies, non-governmental organizations, non-profit organizations (e.g. San Diego River Park Foundation and San Diego Stream Team), and Tribal Nations to improve the watershed monitoring coordination in the San Diego River watershed. A stakeholder group will be convened for the project which will include the major stakeholders in the watershed. The stakeholders will drive the process, and will be involved every aspect of the process. Meetings will also be convened with responsible parties from other watersheds that have completed or work on similar monitoring plans (e.g. San Luis Rey).

In addition, the proposed project will collaborate with the San Diego River Park Foundation and Joe Purohit from EcoLayers to integrate the project into the newly developed data portal.

The goal of the project is to coordinate and integrate different monitoring programs in the San Diego River watershed. SWAMP data will be integrated with other monitoring efforts such as (1) monitoring conducted in accordance with State/San Diego Water Board regulatory requirements (e.g., receiving water monitoring required by municipal storm water permits, other NDPES permit holders, agriculture waiver program, 401 water quality certifications, Waste Discharge Requirements); (2) monitoring conducted in accordance with regulatory requirements of other agencies; (3) monitoring conducted independently of regulatory requirements (e.g. citizen montoring); and (4) monitoring conducted as part of State grant projects.

5 Quality Assurance

The facilitators for the project will develop a program for a systematic evaluation of the various aspects of the project to ensure that standards of quality are being met.

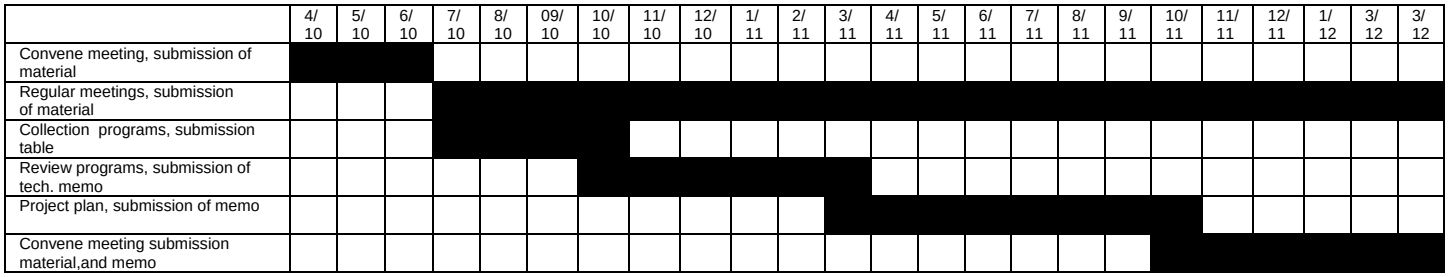
6 Deliverable Products/Reporting

The deliverables for the proposed project are as follows:

1. Convene a stakeholder group: submission of a list of potential stakeholders contacted regarding participation in this project.
2. Hold regular meetings with stakeholder group over the period of the project: submission of agendas, attendance lists, and meeting minutes
3. Collect information on past and current monitoring programs, monitoring requirements, and assessments: submission of table with programs, requirements, and assessments reviewed for this project
4. Review past and current monitoring programs, monitoring requirements, and assessments: submission of technical memo on review
5. Develop a monitoring and assessment program plan: submission of technical memo in program plan
6. Convene meeting for the coordination of the initial program implementation: submission of agenda, attendance list and technical memo for initial implementation meetings

7 Project Schedule

The schedule for the proposed project is as follows:



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