

## **1.1 MONITORING PROGRAM OBJECTIVES**

The major objectives of the Monitoring Program outlined in the Municipal Storm Water Permit are to:

- Assess compliance with the Los Angeles County Municipal Storm Water Permit No. CAS004001;
- Measure and improve the effectiveness of the Stormwater Quality Management Plans (SQMPs);
- Assess the chemical, physical, and biological impacts of receiving waters resulting from urban runoff;
- Characterize storm water discharges;
- Identify sources of pollutants; and
- Assess the overall health and evaluate long-term trends in receiving water quality.

The Monitoring Program, developed to address these objectives, has several elements: core monitoring, which includes mass emission monitoring, water column toxicity monitoring, tributary monitoring, shoreline monitoring, and trash monitoring; regional monitoring, which includes estuary sampling and bioassessment; and three special studies, which include the new development impacts study in the Santa Clara Watershed, the peak discharge impact study, and the Best Management Practice (BMP) effectiveness study.

## **1.2 MONITORING PROGRAM STATUS**

The 1994-95 storm season was the first for which storm water monitoring was required under the 1990 Los Angeles County National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit (No. CA0061654). During the 1994-95 and 1995-96 seasons, automated and manual sampling was conducted to characterize storm water quality and quantity in accordance with the 1990 Municipal Storm Water Permit.

The 1996-97 season was the first storm season in which storm water monitoring was conducted under the 1996 Municipal Storm Water Permit (No. CAS614001). Under the 1996 Municipal Storm Water Permit, the scope of the Monitoring Program was expanded to incorporate further data collection through the Mass Emission, Land Use, and Critical Source Monitoring Programs, and new pilot studies, such as “Wide Channel” and “Low Flow” analyses.

Under the 2001 Municipal Storm Water Permit (No. CAS004001) adopted on December 13, 2001, the Monitoring Program eliminated Land Use and Critical Source elements and focused on core monitoring, regional monitoring, and three special studies. Due to varying compliance dates for each element, only mass emission, water column toxicity, and shoreline monitoring under the core monitoring program were addressed in the 2001-2002 Monitoring Report. The 2002-2003 and this 2003-2004 Monitoring Report address mass emission monitoring, tributary monitoring, water column toxicity monitoring, shoreline monitoring, and trash monitoring under the core monitoring program, estuary sampling and bioassessment under the regional monitoring program, and the progress of the three special studies.

## **1.2.1 Core Monitoring**

### **1.2.1.1 Mass Emission Monitoring**

The objectives of mass emission monitoring are to estimate the mass emissions from the Municipal Separate Storm Sewer System (MS4), assess trends in the mass emissions over time, and determine if the MS4 is contributing to exceedances of water quality standards by comparing results to applicable standards in the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan), the California Ocean Plan (Ocean Plan), or the California Toxics Rule (CTR), and with emissions from other discharges.

Seven mass emission monitoring sites, Ballona Creek, Malibu Creek, Los Angeles River, Coyote Creek, San Gabriel River, Dominguez Channel, and Santa Clara River, were utilized to achieve the objectives outlined above during the 2003-2004 reporting period. Mass emission stations capture runoff from major Los Angeles County watersheds that generally have heterogeneous land use. All mass emission sites, except the Santa Clara River site, are equipped with automated samplers with integral flow meters for collecting flow-composite samples. Sampling at the Santa Clara River began during the 2002-2003 storm season. Although sample collections at the Santa Clara River station are performed manually, composite samples are achieved using the flow measurements by a United States Geological Survey (USGS) stream gage on-site. Three storm events and two dry weather events were sampled at each mass emission site. Total Suspended Solids (TSS) were collected from three storm events at the Santa Clara River mass emission site; six storm events at the Malibu Creek and Dominguez Channel mass emission sites; and seven storm events at Ballona Creek, Los Angeles River, Coyote Creek, and San Gabriel River mass emission sites.

### **1.2.1.2 Water Column Toxicity Monitoring**

The objectives of water column toxicity monitoring are to evaluate the extent and causes of toxicity in receiving waters and to modify and utilize the SQMP to implement practices that eliminate or reduce sources of toxicity in storm water. Composite samples were taken at the mass emission monitoring stations. Two storm events and two dry weather events were sampled at each mass emission site during the 2003-2004 season. A dry weather test could not be conducted at San Gabriel River mass emission site on January 13, 2004, as water was not flowing at that time.

### **1.2.1.3 Tributary Monitoring**

The objectives of tributary monitoring are to identify sub-watersheds where storm water discharges are causing or contributing to exceedances of water quality standards, and to prioritize drainage and sub-drainage areas that need management actions.

Sampling for the 2003-2004 season was conducted at six tributary monitoring stations in the Los Angeles River Watershed, same as for the 2002-2003 season. Exactly as during the 2002-2003 season, the tributaries monitored included Aliso Creek, Bull Creek, Burbank Western System Channel, Verdugo Wash, Arroyo Seco Channel, and Rio Hondo Channel. Automatic flow weighted composite samples were taken from each tributary location. Grab samples were also taken at these locations. Four storm events and two dry events were sampled at each tributary monitoring site.

**1.2.1.4 Shoreline Monitoring**

The City of Los Angeles is required to monitor shoreline stations to evaluate the impacts to coastal receiving waters and the loss of recreational beneficial uses resulting from storm water/urban runoff. Also, the Municipal Storm Water Permit requires the City of Los Angeles to annually assess shoreline water quality data and submit it to the Principal Permittee for inclusion in the monitoring report. Therefore, the City of Los Angeles' assessment is included in Appendix D of this monitoring report.

**1.2.1.5 Trash Monitoring**

The objectives of trash monitoring are to assess the quantities of trash in receiving waters after storm events and to identify areas impaired for trash. Visual observations of trash were made and a minimum of one photograph at each mass emission station was taken after four storm events including the first storm event.

In addition, a minimum of ten representative sites for each land use monitored were sampled. On average, each sampling site contained a minimum of five catch basins fitted with inserts with a total of 256 inserts within the Los Angeles Watershed Management Area (WMA) and 309 inserts within the Ballona Creek WMA. A total of five structural full capture devices or Continuous Deflective System (CDS) units were installed. However, one of the CDS units was decommissioned at the end of the 2003-2004 season due to operating issues. All of the upstream catch basins were fitted with inserts. Each insert and CDS unit were emptied within 72 hours of every rain event of 0.25 inches or greater, additionally being emptied every three months during dry weather.

**1.2.2 Regional Monitoring**

Los Angeles County Department of Public Works (LACDPW), representing the Flood Control District, is participating in regional monitoring programs that address public health concerns, monitor trends in natural resources and near shore habitats, and assess regional impacts from storm water pollutant sources. Those regional programs include the following:

**1.2.2.1 Estuary Sampling**

In compliance with Section II.F of the storm water monitoring requirements, LACDPW is participating in the coastal ecology committee of the Bight 2003 project coordinated by the Southern California Coastal Waters Research Project (SCCWRP). The two primary objectives of Bight '03 are to estimate the extent and magnitude of ecological change in the Southern California Bight (SCB) and to determine the mass balance of pollutants that currently reside within the SCB. The goal of the estuary monitoring program is to sample estuaries for sediment chemistry, sediment toxicity, and benthic macroinvertebrate diversity to determine the spatial extent of sediment fate from storm water, and the magnitudes of its effects. In Los Angeles County, the estuaries being sampled are those of: Malibu Creek, Ballona Creek, Los Angeles River, San Gabriel River, and Dominguez Channel.

Since the beginning of this project, LACDPW staff has been involved in the design of the sampling program through regular attendance of the Bight '03 Coastline Ecology Committee meetings. Monitoring for the Bight-wide study, including estuaries sampling, is complete. A final report is expected in December 2006.

An update on the status of this project follows:

This is the second year of a four-year project to supplement regional monitoring of the southern California Bight estuarine habitats. This project is being conducted in collaboration with 65 different organizations including regulators, wastewater and stormwater permittees, and citizen volunteers under the coordination of the Southern California Coastal Water Research Project (SCCWRP). Regional monitoring components include coastal ecology, shoreline microbiology, and water quality. This agreement supplements Bight'03 with additional information on estuaries in the Los Angeles area (Ballona Creek, Malibu Creek, Los Angeles River, San Gabriel River, and Dominguez Channel), and compares this information with estuaries collected outside of the area. This project has four tasks: 1) sample collection, 2) laboratory analysis, 3) draft report, and 4) final report. Analysis includes sediment chemistry, total organic carbon, grain size, benthic macroinvertebrate community, and sediment toxicity testing.

Sampling was completed in the first year of the study. Approximately 60 sites were sampled during the summer of 2003, including 30 from the Los Angeles area. Toxicity tests were completed in October 2003; the most toxic sample from each estuary in the Los Angeles area was submitted for a sediment toxicity identification evaluation (TIE). Sediment chemistry, total organic carbon, grain size, and benthic macroinvertebrate community samples were sent to the laboratory for analysis in October 2003. Sediment chemistry and total organic carbon analysis has been completed; information management is currently underway. Grain size and benthic macroinvertebrate community analysis should be completed by October 2004. Over the next quarter, SCCWRP staff expects to continue compiling the results as they are received from the participating laboratories. The next step will be to check the laboratory data for quality assurance/quality control.

### **1.2.2.2 Bioassessment**

Section II.G of the storm water monitoring requirements requires LACDPW to perform annual bioassessments on streams in Los Angeles County beginning in October 2003 and continuing through 2005, and to create, if possible, an Index of Biological Indicators with data from surrounding counties. The sampling sites are located in each of the six major watersheds throughout Los Angeles County. Table 1-1 lists the sampling station locations and Figure 1-1 is a map showing the geographical location of the sampling stations. The final report from the first year of the Bioassessment Monitoring Program (2003-2004) is included in Appendix H of this annual report.

### **1.2.3 Special Studies**

As required by the 2001 Municipal Storm Water Permit, LACDPW, representing the Flood Control District, is conducting special monitoring programs, including the following:

#### **1.2.3.1 New Development Impacts Study in the Santa Clara Watershed**

The objective of the New Development Impacts Study in the Santa Clara Watershed is to evaluate the effectiveness of the Standard Urban Storm Water Mitigation Plan (SUSMP) Best Management Practices at reducing pollutants in storm water runoff.

The Regional Board, in a letter dated March 7, 2003, allowed the County and the City of Santa Clarita to fulfill this permit requirement by simulating the expected improvements from implementation of SUSMP through a model such as Storm Water Management Model

(SWMM). On November 13, 2003, we submitted a work plan to the Regional Board. We have finalized a Scope of Work to present to the LACDPW's as-needed water quality consultant to conduct the modeling.

### ***1.2.3.2 Peak Discharge Impact Study***

The goal of this study is to assess the potential cause and effect relationships between stream erosion and urbanization in watersheds in Los Angeles County. The Southern California Coastal Waters Research Project (SCCWRP) is managing the project on behalf of the County and Flood Control District. A committee comprised of members of the Southern California Stormwater Monitoring Coalition is overseeing progress of the study.

Three locations (out of ten total) are located in Los Angeles County, and field investigations have already taken place at these locations. The investigations included measuring grain size, shear stress, and channel cross-sections along a stream reach. The data will ultimately be used to develop stormwater management models.

### ***1.2.3.3 BMP Effectiveness Study***

The 2001 Municipal Stormwater Permit requires a study of the effectiveness of various BMPs; five different types of BMPs have been chosen for this study. Current activities include design and construction of flow measuring devices, installation of automatic water samplers, and development of monitoring plans. The selected BMPs will be evaluated during 2004, 2005, and 2006 for effectiveness of removing pollutants of concern from stormwater runoff.