

### A-11.0 WATER QUALITY MONITORING

The Water Quality Monitoring Section 11.0 describes the monitoring and follow-up activity implemented by or on behalf of the City in compliance with the requirements of:

- Monitoring and Reporting Program of the Santa Ana Regional Water Quality Control Board Municipal NPDES Stormwater permit, Order No. R8-2009-0030; and
- Permit Directive C (Non-Stormwater Action Levels), Directive D (Stormwater Action Levels), Directive F.4.d/e (Illicit Discharge Screening and Investigation), Directive G.7 as applicable (Aliso Creek WRMP), Directive I as applicable (TMDLs), Directive J as applicable (Effectiveness Assessment), and Attachment E (Receiving Waters and MS4 Discharge Monitoring) of the San Diego Regional Water Quality Control Board Municipal NPDES Stormwater permit, Order No. R9-2009-0002.

Water quality monitoring may also be conducted or supported by the City in conjunction with BMP evaluations or other special studies.

#### A-11.1 Monitoring and Follow-up Activity Carried Out by the Principal Permittee

Through the annual cost-share agreement described in Section 2.0, the City participates financially to support the implementation of the following required monitoring programs by the County of Orange as Principal Permittee:

*Santa Ana and San Diego Regions:*

- **Mass emissions/loads monitoring:** Currently the Principal Permittee monitors 11 mass emissions stations to estimate the total mass emissions (range of urban contaminants and loads) from the MS4; assess trends in mass emissions over time; and to determine if the MS4 is contributing to exceedances of water quality objectives or beneficial uses, by comparing results to the California Toxics Rule (CTR), Basin Plan, Ocean Plan and/or other relevant standards. Samples are collected from the first storm event and two more storm events during the rainy season. A minimum of three dry-weather samples are also collected.
- **Bioassessment:** Using a “triad” of indicators (bioassessment, chemistry, toxicity), the Permittees currently monitor 12 stations in cooperation with the Southern California Coastal Water Research Project (SCCWRP) in efforts to evaluate the biological index approach for Southern California and to design a research project for developing an Index of Biological Integrity (IBI) for the region.

*Santa Ana Region*

- **Reconnaissance:** Using measurements of key pollutants, reconnaissance monitoring identifies potential illegal discharges and illicit connections, based on comparison with historical data and available estimates of background levels.

- **Estuary/wetlands monitoring:** Currently the Principal Permittee monitors 20 sites in Upper Newport estuary, Talbert Marsh, and Bolsa Chica wetlands areas to determine the effects of storm water and non-storm water runoff associated with increased urbanization on these systems. These monitoring locations include representative areas surrounding channel outfalls and areas away from channel outfalls to enable the determination of storm water and non-storm water effects on sediment chemistry, toxicity, benthic communities, nutrient status, and spatial extent of sediment fate within the estuarine environment.
- **Bacteriological/pathogen monitoring:** This monitoring element uses measurements of a suite of bacterial indicators to identify spatial and temporal patterns of elevated level in order to prioritize problem areas. The permittees currently monitor 9 representative areas along the Orange County coastline and six inland water bodies/channels, for total coliform, fecal coliform, and enterococcus in order to determine the impacts of storm water and non-storm water runoff on loss of beneficial uses to receiving waters.
- **Water Column Toxicity Monitoring:** The current monitoring program analyzes for toxicity to freshwater and marine species on mass emissions samples to determine the impacts of storm water and non-storm water runoff on toxicity of receiving waters.
- **Sediment:** The Principal Permittee monitors sediment toxicity at seven stations in Newport Bay and seven stations along Huntington Harbour/Talbert Marsh areas.
- **TMDL/303(d) Listed Waterbody Monitoring:** The Permittees participate in the Regional Monitoring Program for the San Diego Creek Nutrient and Toxics TMDLs, and evaluate the impacts of runoff on all impairments within the Newport Bay watershed and other 303(d) listed waterbodies.

*San Diego Region*

- **Coastal storm drains outfall monitoring:** Using a suite of pathogen indicator bacteria at high priority drain outfalls, track compliance with regulatory standards and any improvements due to BMP implementation.
- **Coastal receiving water monitoring:** Using measure of runoff plume characteristics and extent, as well as measures of a suite of physical, chemical, and biological indicators, improve understanding of the impacts of runoff plumes on nearshore ecosystems.
- **Dry Weather Nonstormwater Action Levels (NALs):** Dry-weather MS4 discharges are sampled during summer and winter dry weather at one or more representative major outfalls to the City's receiving waters. Effluent flow rate is estimated and effluent samples are analyzed for the 16 constituents for which NALs are listed in Directive C, and for the 16 additional constituents listed in Attachment E - Table 1 of the Order. If one or more NALs are exceeded, receiving water samples are collected upstream and downstream of the discharge, and data are provided to the City for appropriate follow-up and reporting, as required under Directive C (refer to Section 11.2 below). For Lake Forest, the initial designated NAL monitoring stations are LFJ01P01, LFJ01P05 in the

Aliso Creek Watershed. These stations may be replaced by other sites in the City if they do not exceed a NAL for 3 years. This program replaces and refocuses the Dry Weather Monitoring Program previously implemented under the Third Term Permit.

- **Stormwater Action Levels (SALs):** Wet-weather MS4 discharges are sampled as composites during storms at one or more major outfalls to the City's receiving waters, with sites selected regionally to achieve representation of all Watershed Management Areas. Samples are analyzed for constituents listed in Directive D of the Order. If the likely and expected cause of the SAL exceedance is not determined to be non-anthropogenic, data are provided to the City for follow-up and reporting, as required under Directive D (refer to Section 11.2 below). In Lake Forest, the initial designated SAL monitoring station is J01P08 in the Aliso Creek Watershed. This station may be replaced by another location if it does not exceed a SAL for 3 years. This is a new program under the Fourth Term Permit.
- **Regional Monitoring and Special Studies:** Regional Bacteria Monitoring, Stormwater Monitoring Coalition Regional Monitoring, Sediment Toxicity Study, and Trash and Litter Impairment Investigation, as required under the Permit in Attachment E.II.A.5 and E.II.D. These monitoring efforts are new under the Fourth Term Permit.
- **Aliso Creek 13325 Directive Monitoring Program:** Discharges from a selected high-priority drain and sites in the receiving waters are monitored for status and trends in fecal indicator bacteria concentrations, on a focused basis during the warmest dry weather months each year. Data are provided to the City to assist in assessing its management practices (see Section 11.2 below). In Lake Forest, the designated Aliso High Priority Drain is J01P08.

For the Mass Emissions Monitoring, Bioassessment and receiving waters monitoring programs described above, associated follow-up special investigations to determine the extent and causes of MS4 discharge contributions to key identified impacts are generally conducted by the County, with City financial or logistic support as needed, as described in the Monitoring and Reporting Program. Follow-up investigation findings are used to inform the prioritization and implementation of City and/or County management actions to reduce/eliminate sources.

#### A-11.2 Monitoring and Follow-up Activity by the City

The following monitoring and follow-up activities are carried out by the City, with technical assistance from the County as needed:

- **Follow-up Investigations and Enforcement for the Illicit Connection/Illegal Discharge Program:** As described under **Section A-10**, the City may conduct water quality sampling as a component of follow-up investigations and/or enforcement actions to help determine the source(s) of significant pollution identified via hotline reports and dry weather monitoring programs.
- **BMP Effectiveness Evaluation:** As described in **Section A-3.3**, the City may conduct and/or cooperate with water quality sampling to verify whether Best Management

Practices proposed or implemented in response to the IC/ID Program or other programs are effective in reducing the constituent(s) of concern at a specific problem location, at MS4 outfalls, in receiving waters, or at research site(s); or whether another iteration of BMPs should be considered to make progress toward attaining water quality objectives. The City may also conduct water quality sampling to verify the effectiveness of its Municipal, Existing Development, and Construction BMP programs.

- **NAL Exceedances:** When notified by the County of exceedances of one or more NALs at its monitoring stations, the City investigates and attempts to identify the source(s) of the exceedances in a timely manner, in accordance with Directive C.2/C.3 and using the protocols described in Section 3.6.4 of the County's Receiving Water and MS4 Monitoring Plan dated October 1, 2010. The investigations may be prioritized, if necessary due to resource constraints. All investigations include work to determine whether the MS4 discharge exceedance(s) impacted the receiving waters. Depending on the source of the exceedance, the City takes the following actions after investigating, as enumerated below:
  - 1) If the source is non-anthropogenic, documentation is forwarded to the San Diego Regional Water Quality Control Board within 14 days of the finding.
  - 2) If the source is an exempted category of discharge, a determination is made as to whether it is an isolated circumstance or a wider problem justifying a new categorical prohibition. Findings, including any additional steps to be taken, are reported in the subsequent Annual LIP PEA Report.
  - 3) If the source is not reasonably identifiable, the pollutant is given high priority for focused sampling and potential programmatic updates in the subsequent Annual Jurisdictional Work Plan submitted with the Annual LIP PEA Report.
  - 4) If the source is identified as an illicit discharge or connection, appropriate actions or enforcement measures are taken to eliminate the discharge and to submit documentation to the San Diego Regional Water Quality Control Board within 14 days of the identification. If the discharge is not eliminated within 14 days, an action plan is submitted instead.
  - 5) If the source is identified as subject to an existing separate NPDES permit, findings are submitted to the San Diego Regional Water Quality Control Board within 3 business days.
  
- **SAL Exceedances:** When notified by the County that exceedances of one or more SALs are greater than acceptable thresholds at its monitoring stations, the City adjusts its subsequent annual Jurisdictional Work Plan to augment its stormwater controls and management measures in an iterative manner to reduce discharges of the problem pollutant(s), unless it is demonstrated that the likely and expected cause of the SAL exceedance is not anthropogenic in nature. The magnitude, frequency, and number of constituents exceeding the SALs, as well as receiving water quality data, are taken into consideration.
  
- **Aliso Creek 13325 Directive:** The City utilizes the Aliso Directive data evaluations conducted by the County to help guide and assess its implementation of structural and nonstructural management practices to reduce discharges of fecal indicator

bacteria/pathogens in the High Priority Drain J04 subdrainage area. Additional BMPs are considered, evaluated and implemented as found to be appropriate and effective.

All water quality analyses for the City-run sampling and monitoring programs will be collected and analyzed by professional staff and a commercial laboratory. Monitoring data accumulated under the above programs will be evaluated and reported by the City.

### **A-11.3 Reporting**

Data from the Monitoring and Reporting Program conducted by the Principal Permittee on behalf of the Permittee Cities are assessed by quantitative evaluation of data and analyses of short- and long-term trends as appropriate, and are reported to the appropriate Regional Water Quality Control Board by the Principal Permittee.

**NAL Reporting:** Investigative priorities, progress, findings and actions plans developed by the City in response to NAL exceedances are reported under different formats and schedules depending on the source of the exceedance, as described under **Section A-11.2**. For any annual reporting period in which a NAL exceedance is documented, a NAL Report is also submitted in the subsequent Annual LIP PEA Report, describing whether the MS4 discharge exceedance(s) impacted the receiving waters.

**SAL Reporting:** When SALs exceed acceptable thresholds at its monitoring stations, and the likely source is not determined to be non-anthropogenic, the City adjusts its subsequent Annual Jurisdictional Work Plan (see **Section A-3.0**) and submits it with the Annual LIP PEA Report, to describe the iterative augmentation to be pursued for stormwater controls and management measures to address the problem constituent(s).

**Aliso 13325 Reporting:** The City develops, certifies and submits an annual Aliso Creek High Priority Drain report by March 1 addressing the preceding calendar year, describing and assessing the City's bacteria source reduction program for the high-priority drainage area. The report describes the causes of impairment; structural and non-structural BMPs previously implemented, implemented during the reporting year, or planned to be implemented; their capital and maintenance costs; date implemented; expectations or observations of effectiveness; and any conclusions regarding potential applicability to the rest of the watershed. Quarterly reporting is also conducted in conjunction with quarterly meetings of the Aliso Creek Watershed Co-permittees.