



**CITY OF ORANGE
LOCAL IMPLEMENTATION PLAN (LIP)**

**SECTION A-3
PLAN DEVELOPMENT**



SECTION A-3, PLAN DEVELOPMENT

A-3.0 PLAN DEVELOPMENT

A-3.1 Introduction

This section provides information on the approach taken by the City in developing the LIP and the companion document, the DAMP. This section also discusses a number of studies that the Permittees are participating in that will provide important feedback for future revision and improvement of these documents.

The field of storm water quality management is a dynamic and young one. It is, therefore, necessary to follow a systematic, but iterative process, of revising, adding or deleting BMPs as better information becomes available in order to maintain a successful and responsive compliance program and effect real improvements in urban water quality.

A-3.2 Plan Development

A-3.2.1 Approach to Development of DAMP

The City, in conjunction with the Principal Permittee and the other Permittees, has developed and enhanced a comprehensive approach to storm water management since its first permit in 1990. This approach is embodied in the DAMP, which sets forth a model programmatic countywide approach for urban storm water management by:

- Establishing a baseline set of BMPs that are applicable to all areas that are proven and cost effective;
- Focusing on solving water quality problems in receiving waters ;
- Prioritizing waterbodies for corrective action with those listed as impaired having a higher priority;
- Promoting a water quality planning process, which is referred to throughout the DAMP, through a systematic and detailed evaluation of the impacts of urban runoff and storm water pollution on beneficial uses to determine or validate that actual impairments exist that warrant corrective action;
- Promoting a watershed-level approach and regional BMPs that may also address existing development and non-urban sources; and
- Providing a common compliance approach for meeting the requirements of the MS4 Permit.



SECTION A-3, PLAN DEVELOPMENT

This programmatic approach utilizes information obtained from the countywide baseline water quality monitoring program and from the additional water quality planning initiatives being conducted in several of the watersheds to determine those with beneficial use impairments attributable to urban runoff and storm water pollution. Once a water quality problem is identified, additional or new BMPs are evaluated for implementation to determine their effectiveness and applicability.

Overall, the DAMP programs fall into two general categories:

- Pollution prevention-oriented programs (including source controls); and
- Removal-oriented programs (including treatment controls)

The pollution prevention-oriented programs are the focus of Sections A-4 to A-11 of the City's LIP. The removal oriented programs are found in Section A-12 (the "Watershed Chapters") and include ongoing efforts to address watershed related problems. Specific efforts related to address watershed related problems in priority new development projects can also be found in Section A-7.

A-3.2.2 Approach to Development of the City of Orange LIP

The City, in response to the MS4 Permits, continues to collaborate with the Principal Permittee and other Permittees in reviewing and updating the DAMP through the committee structures described in Section A-2.2.

The complexity of the Third Term Permit necessitated the development of this LIP by the City in order to provide for a City-specific plan within the broader programmatic framework of the DAMP. As noted above, the LIP focuses predominantly on the pollution prevention-oriented programs based on the models in the DAMP.

A-3.2.3 Plan Revision

The DAMP will be revised and updated periodically by the Principal Permittee as the need arises or required by the permits. The LIP is a more dynamic document plan that will be evaluated on at least an annual basis by the City or as directed by the Regional Board. Revisions to the LIP will be reported by the City in its Annual Progress Reports.

A-3.3 BMP Effectiveness Investigations

Although the DAMP and LIP provide for the implementation of a successful municipal storm water program through the BMPs that have already been selected and/or developed and implemented, the City recognizes that the field of storm water quality is highly dynamic and that the BMPs must be continually assessed for effectiveness and then revised, deleted or added to as necessary in order for the program to remain successful.



SECTION A-3, PLAN DEVELOPMENT

The 2006 Report of Waste Discharge, the region-wide Annual Unified Reports, the Watershed Urban Runoff Management Plans (WURMPs), and the City's Annual LIP PEA Reports, provide a history of program and BMP activities implemented and progress in meeting water quality standards. The City's current baseline BMPs to reduce, eliminate or mitigate pollutant impacts are summarized in **Sections A-5.0 through A-10.0**. Inter-jurisdictional watershed BMP efforts are summarized in **Section A-12.0**

New or modified BMPs may be considered on a localized basis or for broader scale implementation. In order to assure that resources for pollution prevention and removal BMPs are strategically expended, the City typically evaluates any potential new structural or preventative BMP technologies or practices on a limited scale, or consults evaluations conducted by others, before considering broader-scale implementation. Implementation is pursued in a prioritized manner on a schedule consistent with available resources. After pilot and/or broader implementation, local effectiveness is assessed to determine if further adjustments or modifications are needed to the BMP implementation or program priorities. These iterative efforts are discussed and reported in the City Annual Progress Report.

BMP effectiveness assessment may be characterized via direct or indirect evidence. The BMP selection and effectiveness assessment process may include, but is not limited to, input from the following factors and information sources, as available and applicable:

- A review of technical literature (such as the ASCE/EPA databases)
- A review of existing control programs
- Demonstration or research projects by City or other entities
- Input from vendors, consulting firms, other municipalities, or other agencies
- Water quality, flow data and modeling,
- User and operational/maintenance staff feedback
- Opinion surveys
- Beneficial Use assessment
- Cost and cost/benefit
- Technical feasibility
- Acceptability by the community
- Ease or difficulty of implementation
- Maintenance requirements
- Pollutant prevention/removal performance
- Multiple resource benefits or impacts

To date the City has participated with the Principal Permittee and other Permittees on a number of studies to evaluate the effectiveness and applicability of a range of water quality control measures. These studies will result in improved knowledge and the potential modification of BMPs cited in the DAMP and incorporated into this LIP. Studies undertaken during the Third Term Permit included the following:



SECTION A-3, PLAN DEVELOPMENT

- BMP Effectiveness and Applicability Evaluation for Orange County;
- Trash and Debris BMP Evaluation;
- Erosion Control BMP Effectiveness Studies;
- Assessment of Septic Systems on Storm water Quality;
- Portable Toilet Oversight Program; and
- Dry Weather Diversion Plan.

New Fourth Term Permit studies include:

- Trash and debris characterization
- Effectiveness of trash debris booms
- Pilot program of areas managed by homeowner associations

The City will continue to collect and report data in its Annual Progress Reports.

A-3.3.1 CASQA Effectiveness Assessment

DAMP Section 3.0 describes a program evaluation framework that is based on the California Stormwater Quality Association (CASQA) method, which defines a hierarchy of potential outcomes at six levels:

- Level 1 - Compliance with Activity-Based Permit Requirements
- Level 2 - Changes in Attitudes, Knowledge & Awareness
- Level 3 - Behavioral Change & BMP Implementation
- Level 4 - Load Reductions
- Level 5 - Changes in Urban Runoff & Discharge Quality
- Level 6 - Changes in Receiving Water Quality

This method will be utilized to assess City program effectiveness.

A-3.4 Improvements in Storm Water Science

The City is also collaborating, through the Principal Permittee, in the Storm water Monitoring Coalition (SMC) on studies that may shape plan development and the selection of future BMPs as well as improving the City's understanding of storm water science. The current studies are:

1. Develop standardized sampling and analysis protocols

This project is an attempt to build a storm water monitoring infrastructure in order to increase comparability among programs throughout southern California. The SMC developed a four-step approach to accomplish this goal:

- (1) Define the monitoring questions of interest;
- (2) Assess what monitoring programs are currently doing to determine how well they are answering the monitoring questions;



SECTION A-3, PLAN DEVELOPMENT

- (3) Create an optimum design for answering the monitoring questions; and
- (4) Conduct quality assurance inter-calibration studies.

2. Microbial Source Tracking Method Comparison

There are numerous waterbodies throughout southern California, both marine and freshwater, that suffer contamination of fecal indicator bacteria such as total coliform, fecal coliform, and *enterococcus*. There are several Microbial Source Tracking (MST) techniques now being developed for determining sources (i.e. humans, dogs, cats, horses, etc.) of fecal indicator bacteria in receiving waters. However, all of the techniques are in the early stages of development and none have been tested side-by-side for their ability to accurately discriminate or quantify these sources of fecal contamination. This study was designed to evaluate each of these new methods for accuracy and precision, using bacterial sources from southern California, and then make recommendations to the management community on the most effective and efficient method application(s).

Twenty-one of the most prominent researchers in the field are testing nine different MST techniques all at the same time on the same split samples. These techniques include techniques such as ribotyping, antibiotic resistance (ARA), pulsed-field gel electrophoresis (PFGE), polymerase chain reaction (PCR), and terminal restriction fragment length polymorphism (TRFLP).

3. Peak Flow Impacts

Watershed development increases imperviousness, eventually leading to alterations in runoff flow regimes. This alteration in flow regime, particularly increased flows during high frequency events (i.e. 1-2 year storms), can result in downstream impacts such as increased erosion or habitat loss. The goal of this study is to quantify impacts from increased peak flows as a result of watershed development. Ultimately, the objective of this study is to develop indicators of peak flow and resulting peak flow impacts so that regulators and regulated agencies can develop numerical criteria for peak flow.

4. TMDL Implementation

Newport Bay contains a number of TMDLs currently being implemented that the City currently participates in including the nutrient, fecal coliform and toxicity TMDLs. Efforts are ongoing in this watershed to deal with the sources of impairment within the Bay and creeks. This is an ongoing effort and the City does its part to contribute resources to deal with the TMDLs.