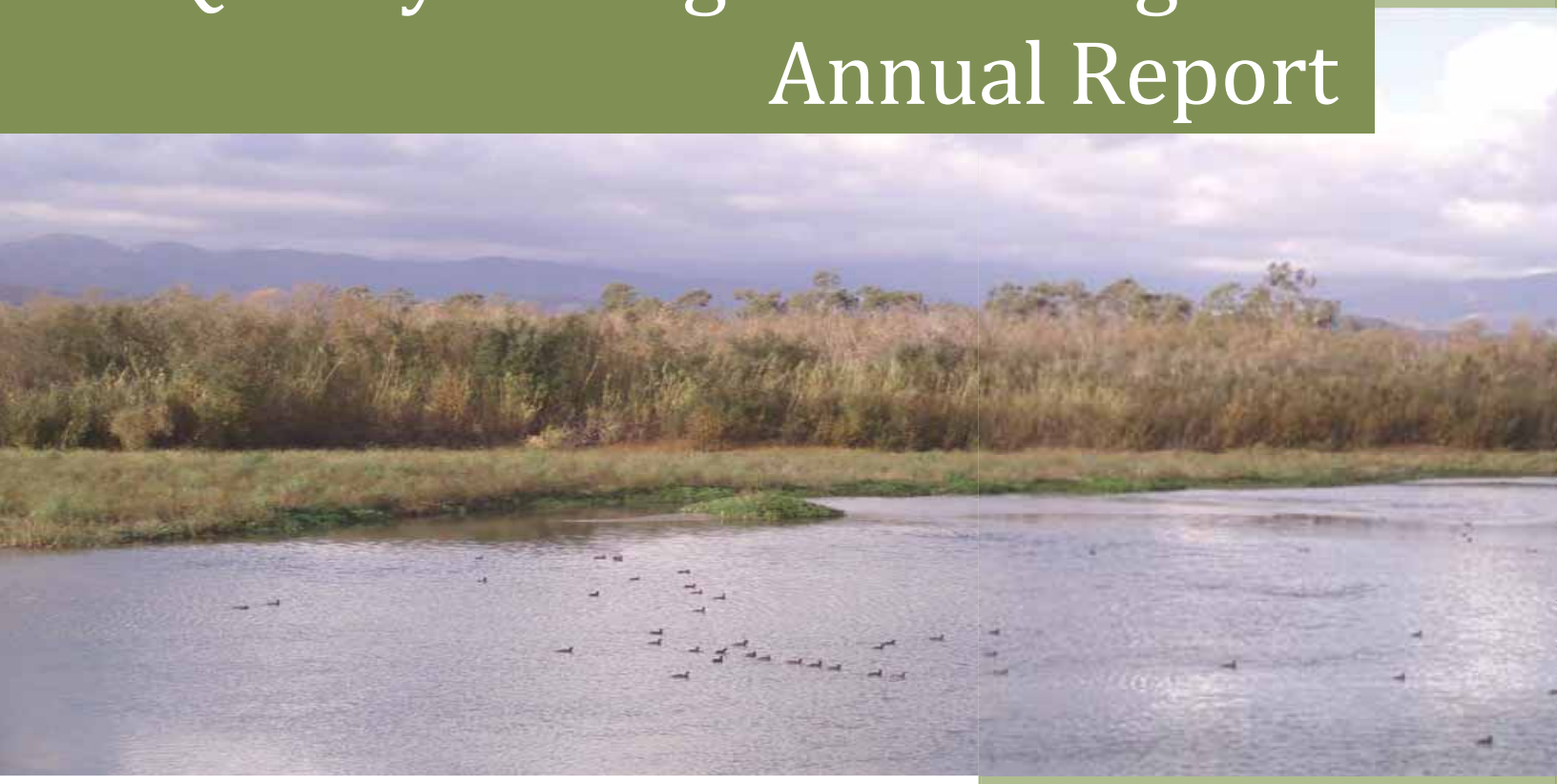
Ventura Countywide Stormwater Quality Management Program

# 2011-2012 Permit Year

# Ventura Countywide Stormwater Quality Management Program Annual Report



Camarillo
County of Ventura
Fillmore
Moorpark
Ojai
Oxnard
Port Hueneme
Santa Paula
Simi Valley
Thousand Oaks
Ventura
Ventura County Watershed Protection District

**December 15, 2012**

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| Attachment B | Post Construction BMP Inspection Checklist |
| Attachment C | Construction Inspection Checklist |
| Attachment D | Illicit Discharge Field Screening Protocol |
| Attachment E | Water Quality Monitoring Appendices |

# Executive Summary

This Annual Report discusses the Permittees' Permit compliance activities for the period of July 1, 2011 to June 30, 2012, the second year of the Permit. It includes a description of all activities conducted during the reporting period and the efforts made to improve water quality throughout Ventura County by the Permittees. The purpose of this report is to both show compliance with NPDES Permit No. CAS004002/Order No. 10-108 (Permit), and meet the reporting requirement which requires an Annual Stormwater Report submitted by December 15th of each year. Since the Permit did not require a Stormwater Management Plan this report also serves as a way to clarify the Permit's requirements and the effort necessary to meet them. Finally, program effectiveness assessment of the implementation of the permit requirements are examined with potential areas for improvement identified.

The cooperation and effort of the Ventura Countywide Permittees, who contributed the information and data regarding their various programs, was instrumental in the preparation of this report. The Permittees cooperate through the Program to ensure information and workloads are shared, economies of scale achieved and a better Countywide Stormwater Quality Management Program is created. The Permittees through implementation of various comprehensive program elements have strived for improved water quality through compliance with all requirements of the Permit.

Notable accomplishments made by the Permittees and the Program over this reporting period include:

- Began a comprehensive data analysis effort, aiming to identify historical trends in water quality and pollutants of concern to receiving waters.
- Implemented the first phase of a pyrethroid study that showed no significant sediment toxicity or concentrations approaching levels of pyrethroids known to be toxic;
- Initiated development of a long term strategic plan for addressing water quality issues in the County including identifying the goals and objectives that will ensure success when accomplished;
- Responded to elevated levels of pentachlorophenol at an urban outfall with a special investigation that conclusively found the source, and initiated a partnership in a multi-agency effort to eliminate the discharge.
- Implementation of a revised Technical Guidance Manual for new and significant re-development including providing an electronic application tool for projects to determine applicability and calculate retention volumes;
- In-school outreach rallies done at 26 schools to over 23,000 students with the cooperation of local radio station Q104.7;
- Participation in the statewide Coastal Cleanup Day Event at 24 different beaches and inland waterways;
- Offsite compliance program options for developments that prove technical infeasibilities to onsite LID;
- The Stormwater Monitoring Program was able to achieve a 91.8% success rate in meeting program data quality objectives;

- Continued program improvement through implementation of the recommendations of a detailed program efficiency audit of the Principal Permittee;

- Participation in Stormwater Monitoring Coalition of Southern California, Southern California Coastal Water Research Project (SCCWRP), and CASQA;

- Cooperation and commitment to SCCWRP to aid in a hydromodification effects study.

This year the Stormwater Monitoring Program modified its application of the California Toxics Rule (CTR) Numeric Criteria for Priority Toxic Pollutants to determine water quality exceedances in receiving waters. The driver for this change was the inconsistent application of acute and chronic criteria in the past. The new approach is more consistent with other stormwater agencies in southern California, and provides more consistent protection of beneficial uses.

The Stormwater Monitoring Program detected Aluminum, *E. coli*, and fecal coliforms at elevated levels at most sites during wet-weather events, but with the exception of *E. coli*, rarely during dry-weather events. Other constituents that were found at elevated levels during the 2011/12 monitoring season include chloride and total dissolved solids (predominantly during the dry-weather event); dissolved oxygen; dissolved copper; and pH (dry weather). Constituents that were seen at elevated levels at Major Outfalls only once during the season include total chromium, bis(2-ethylhexyl)phthalate, benzo(a)pyrene, and pentachlorophenol; and at Mass Emission stations only once during the year the metals (total) barium, cadmium, chromium, and nickel. In the Water Quality Monitoring Section of this year's report is an analysis of the historical mass emission data done to identify statistically significant trends. This analysis shows improvement in water quality identified through the Program's monitoring program, helps identify Pollutants of Concern, and will be used to direct the Program's efforts.

Continued in this Annual Report are the Performance Standards for specific Permit requirements identified in each section along with the Permittees' status on achieving that standard. Permit compliance cannot be directly inferred solely by these Performance Standards as the complete effort of the Permittees cannot be reflected through these discrete metrics. Rather, the information is more suitable for use by for the Permittees to gage their efforts and identify areas of needed improvement.

The Program has adopted a method for assessing program effectiveness based on California Stormwater Quality Association's (CASQA) six progressive outcome levels for the effectiveness assessment which range from documenting efforts to measurably protecting receiving water quality. Current program effectiveness measurements show the Program is continually effective in the first two outcome levels of documenting efforts and raising awareness. As implementation of the Program continues, improvements in the ability to measure the other outcome levels of changing behavior and reducing pollutant loads will be accurately measured and documented. The trends identified in the Water Quality Monitoring Section show real progress towards the Program's effectiveness at the ultimate goal - Outcome Level 6 protecting receiving water quality.

In summary, the Permittees continue aggressively moving forward to improve stormwater quality and eliminate dry weather flows. Each program element has a subcommittee working to develop needed forms, protocols, and procedures to ensure future permit compliance. The programs, methods and this report are continually being refined to improve effectiveness, apply lessons learned, identify and address additional sources of stormwater pollutants, and therefore water quality. Future program activities will include initiating an offsite compliance program for developments that prove technical infeasibilities and incorporating hydromodification control plans into the Technical Guidance Manual, increased analysis of the urban outfall monitoring data generated for each Permittee, and development of a long term strategic plan for addressing water quality issues in the County, including identifying the goals and objectives that will ensure success when accomplished.

# 1 Introduction

The Watershed Protection District (Principal Permittee), the County of Ventura, and the incorporated cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, Ventura, Santa Paula, Simi Valley, and Thousand Oaks, (each a Permittee, and collectively known as Permittees) operate municipal storm drain systems and discharge stormwater and urban runoff pursuant to the countywide NPDES permit (Board Order No. 10-0108 or Permit). This Permit, administrated by the Los Angeles Regional Water Quality Control Board (RWQCB), requires an Annual Stormwater Report and Assessment (Annual Report) be submitted by December 15th of each year.

The first stormwater permit for Ventura County was adopted in 1994 and included all ten cities, the County, and the Watershed Protection District. On July 27, 2000 a second permit was adopted that included logical and incremental increases in the requirements. That five-year permit was on administrative extension until May 7, 2009, when Board Order 09-0057 was adopted. Shortly after adoption of that permit the Regional Board rescinded it to hold a new adoption hearing. On July 8, 2010 Order No. R4 2010-0108 was adopted with minor changes. The 2010 Permit had a new set of implementation deadlines associated with it and replaced the order adopted in 2009 in its entirety.

***The Watersheds of Ventura County:***
***Ventura River, Santa Clara River, Calleguas Creek, and Malibu Creek***

## 1.1 PURPOSE AND ORGANIZATION OF REPORT

The primary purpose of this report is to document the Permittees' continued efforts to improve water quality and comply with the Permit. Since the Permit did not require a Stormwater Management Plan this report also serves as a way to clarify the Permit's requirements and the effort required to meet them. Finally, program effectiveness assessment of the implementation of the permit requirements are examined with potential areas for improvement identified.

The organization of the report reflects the organization of the Permit. Each section contains a description of the permit requirements and their purpose, the Permittee's program activities in that area with detailed descriptions of the efforts put forth in the 2011/12 permit year. The sections are as follows:

- **Program Management - Section 2.0** – Roles and responsibilities of the Permittees committee structure, and a program budget report for 2012/13.

- **Public Information and Public Participation Program – Section 3.0 -** The efforts and effectiveness of pollution prevention education and outreach programs.

- **Industrial Commercial Business Program - Section 4.0 –** The activities directed at effectively prohibiting non-stormwater discharges from businesses and industrial sites in order to reduce stormwater pollution to the maximum extent practicable.

- **Planning and Land Development Program - Section 5.0 –** The minimization of the impact of new development and significant redevelopment on stormwater quality through use of Low Impact Development site design and water quality treatment BMPs.

- **Development Construction Program - Section 6.0 –** Activities before and during construction through stormwater pollution prevention plans and inspections to ensure the protection of stormwater quality to the maximum extent practicable.

- **Public agencies Activities Program - Section 7.0 –** Both the efforts to remove pollutants from MS4s, and to eliminate the adverse effects that municipal activities may have on water quality.

- **Illicit Discharge and Illegal Connections Elimination Program - Section 8.0 –** Status of the tools, control measures and responses established to eliminate non-permit authorized discharges and connections to the storm drain system.

- **Water Quality Monitoring Program - Section 9.0 –** A summary and analysis of the monitoring results from the Permit year. Includes a report describing efforts that are currently being implemented and additional BMPs that will be implemented to prevent or reduce any pollutants that are causing or contributing to the exceedance of Water Quality Objectives.

### 1.1.1 Major Program Accomplishments

Notable accomplishments that occurred during the reporting period include:

- Trends analysis of historic data mass emission data to success in reduction of pollutants of concern and identify potential emerging concerns;
- Pyrethroid study showing no significant toxicity or elevated levels of pyrethroids downstream of urban areas;
- Initiated development of a long term strategic plan for addressing water quality issues in the County including identifying the goals and objectives that will ensure success when accomplished;
- Response to elevated levels of pentachlorophenol at an urban outfall with a special investigation that conclusively found the source, and initiated a partnership in a multi-agency effort to eliminate the discharge;
- Implementation of a revised Technical Guidance Manual for new and significant re-development including providing an electronic application tool for projects to determine applicability and calculate retention volumes;
- In-school outreach rallies done at 26 schools to 23000 students with the cooperation of local radio station Q104.7;
- Participation in the statewide Coastal Cleanup Day Event at 24 different beaches and inland waterways;
- Offsite compliance program options for developments that prove technical infeasibilities to onsite LID;
- Continued program improvement through implementation of the recommendations of a detailed program efficiency audit of the Principal Permittee;
- Regional TMDL participation;
- Participation in the Stormwater Monitoring Coalition of Southern California, Southern California Coastal Water Research Project (SCCWRP), and CASQA;
- Cooperation and commitment to SCCWRP to aid in a hydromodification effects study;
- Integrated Regional Water Management Plan (IRWMP) Participation.

## 1.2 PROGRAM EFFECTIVENESS ASSESSMENT

The 2011/12 Annual Report documents the Program's comprehensive stormwater quality efforts that address a wide range of activities. Various Departments in each Permittee's agency cooperate in implementing the different elements or activities of the Program under their control. All of these efforts are examined for program effectiveness.

Each of the six Program Elements contains various Control Measures. Each Control Measure consists of a series of Performance Measures. Performance Measures are identified to document the progress of implementation and to measure the effectiveness of implemented BMPs.

The Program has adopted a method for assessing program effectiveness based on an approach developed by the California Stormwater Quality Association (CASQA). The effectiveness assessment is more comprehensive than assessments under past permits and addresses the major stormwater program areas and activities. The outcome levels represent ways in which the effectiveness of the program can be determined, even if it is intermediate[1].

Outcome levels help to categorize and describe the desired results of the Program Elements and related Control Measures. Pursuant to the 2007 CASQA guidance, outcomes for stormwater programs have been categorized into six levels, as shown in Figure 1-1. As illustrated, there are six outcome levels for the effectiveness assessment. The outcome levels help to categorize and describe the desired results or goals of the program.

***Figure 1-1 Effectiveness Assessment Outcome Levels***

<table>
<tr><td>Implementation Assessment</td><td colspan="3">Target Audience & Source Assessment</td><td colspan="2">Urban Runoff & Receiving Water Assessment</td></tr>
<tr><td><u>Outcome Level 1</u><br><br>Stormwater Program Activities<br><br>▪ Facilitation activities<br>▪ Feedback activities<br>▪ Administrative activities</td><td><u>Outcome Level 2</u><br><br>Knowledge & Awareness<br><br>▪ Knowledge<br>▪ Awareness<br>▪ Attitudes</td><td><u>Outcome Level 3</u><br><br>Behavior (Action)<br><br>▪ BMP Implementation<br>▪ Intermediary Behaviors<br>o Information seeking<br>o Pollution reporting<br>o Participation and involvement<br>o Administrative and procedural behaviors</td><td><u>Outcome Level 4</u><br><br>Source Reductions<br><br>▪ Source pollutant loads<br>▪ Site / source hydrology</td><td><u>Outcome Level 5</u><br><br>Runoff Quality & Hydrology<br><br>▪ Urban runoff quality<br>▪ Urban runoff hydrology</td><td><u>Outcome Level 6</u><br><br>Receiving Water Conditions<br><br>▪ Receiving water quality<br>▪ Hydromodification impacts<br>▪ Beneficial use protection</td></tr>
<tr><td colspan="6">4. Integrated Assessment</td></tr>
</table>

Within each individual program section (starting with Chapter 3), the effectiveness assessment identifies the outcome level(s) achieved, as well as any program modifications that have been identified because of the assessment. The assessment section is at the end of each chapter.

Some important points to remember about these effectiveness assessments include:

[1] California Stormwater Quality Association, *Municipal Program Effectiveness Assessment Guidance*, May 2007.

- The ability of a stormwater program to assess an outcome level tends to become progressively more difficult as you assess higher outcome levels (levels 4-6). This is because the higher outcome levels assess the impact that the Permittees have on water quality, which requires a much more robust dataset over an extended period of time.

- Outcome levels 1-3 (and sometimes 4) are typically assessed using program management data, whereas outcome levels 4-6 are assessed using physical and/or water quality monitoring data.

- Each program element may be assessed at one or more outcome levels based on the data and information available.

Through the annual reports the effectiveness assessment will be expanded and modified as necessary in order to report out on key items.

To assess our ultimate effectiveness of improvement in receiving water conditions, the Program started a comprehensive data analysis effort, aiming to identify historical trends in water quality, priority pollutants and their sources to receiving waters. As part of this year's report in Section 9 Water Quality Monitoring, the trend analysis methods and results are presented.

The findings of the Mass Emission trend analysis reveals since 2001 twenty-six constituents, including metals, bacteria, nutrients, salts and one pesticide, have shown decreased concentrations at one or more stations. Only five constituents exhibited increasing trends, each time at only one of the stations. None of these constituents with increasing trends are causing water quality exceedances based on Basin Plan and CTR numeric water quality criteria. There has been a decreased in the average number of dry weather exceedances since 2001 at ME-SCR and ME-VR/VR2. The number of wet event exceedances has also decreased since 2004 at ME-CC and ME-VR, however this could be mostly explained by the smaller storm sizes and therefore fewer exceedances for metals in recent years.

These decreasing trends are good news for the environment and the Program, but still leave some questions. By following up to identify what causal agents are behind the trends then success can be repeated, problems avoided and a truly effective stormwater program created.

**Outcome Level 6 has already been observed in receiving waters.**

**Concentrations of nine metals, E. coli, nutrients, salts, and one pesticide have significantly trended downward since 2001.**

# 2 Program Management

## 2.1 PROGRAM IMPLEMENTATION

### 2.1.1 Mission Statement

To improve the focus and guide the actions of the program a mission statement was adopted by the Management Committee. Its purpose is to identify the overall goal, provide a sense of direction, and guide decision-making. It provides the framework or context within which the Program's strategies are guided. The Program's mission statement is below:

> *The Ventura Countywide Stormwater Quality Management Program, established in 1992 between the ten Cities, the County and District, works cooperatively on a regional basis to ensure compliance with the countywide Stormwater Permit through the development and implementation of an integrated, effective and fiscally responsible stormwater quality management program with the objective of protecting, maintaining and improving water quality in Ventura County for the common benefit of its residents and the environment.*

### 2.1.2 Program Implementation

In 1992 the concept of a single countywide NPDES MS4 Stormwater Permit (Permit) was implemented in Ventura County. This began with the initial Report of Waste Discharge and the authorization to use the Watershed Protection District's Benefit Assessment to finance the activities and program efforts. Subsequently, on June 30, 1992, the District (as the Permit's Principal Permittee) entered into four separate District-zone-based implementation agreements with the ten Ventura County cities and the unincorporated areas of the county (the Permittees). Collectively, these four agreements are known as the Implementation Agreement for the Ventura Countywide Stormwater Quality Management Program. The Implementation Agreement identified the responsibilities of the Permittees and set forth the methodology for using the District's Benefit Assessment financing to fund the NPDES Stormwater Programs.

With the adoption of the second NPDES Permit, the Principal Permittee Program activities, responsibilities, and associated costs increased significantly. The District could no longer solely shoulder these fiscal obligations without assistance from the Permittees. In response, the Permittees' Public Works Directors created a committee to research the historical documentation from the District's Benefit Assessment Reports and draft a new implementation agreement.

In FY 2007/08, the first amendment to the agreement was approved to address this needed cost-sharing by amending the original agreement. In FY 2008/09 and 2009/10, the second and third amendments to the original agreement were approved to continue this needed cost-sharing.

The additional program costs for the Principal Permittee and Permittees associated with the 2010 NPDES Permit prompted further effort among the Public Works Directors to equitably share the increased costs. The result of that effort was a new NPDES Implementation Agreement to supersede the original agreement and amendments.

The Implementation Agreement defines the fiscal responsibilities (expenditures and contributions) of all collective parties with respect to the current Permit. It formalizes the Permittees' commitment to cooperate and to mutually fund an integrated Program for protecting and improving water quality in Ventura County.

## 2.2 PERMITTEE RESPONSIBILITIES

The responsibilities of the Principal Permittee and Permittees are defined within the Permit and the Implementation Agreement. These roles and responsibilities are outlined below.

### 2.2.1 Permittees

Each Permittee is responsible for implementing the NPDES Stormwater Program and Permit compliance within their jurisdiction. The main responsibility of each Permittee can be identified as follows:

- Comply with the requirements of the Permit through implementation within its jurisdiction of the various stormwater management programs outlined in the Permit;
- Coordinate among its internal departments and agencies, as necessary, to facilitate the implementation of the requirements of this Permit applicable to such Permittees in an efficient and cost-effective manner;
- Participate in intra-agency coordination (e.g., Planning Department, Fire Department, Building and Safety, Code Enforcement, Public Health, Parks and Recreation, and others) necessary to effectively implement the provisions of the Permit;
- Prepare and submit all reports or requests of information to the Principal Permittee in a timely fashion;
- Review, provide comments, and approve Program budgets, plans, strategies, management programs, and monitoring programs developed by the Principal Permittee or any subcommittee;
- Establish and maintain adequate legal authority;
- Apply appropriate enforcement actions as necessary within its jurisdictions to ensure compliance with applicable ordinances;
- Respond to, or arrange for, response to emergency situations, such as accidental spills, leaks, illicit discharges/illegal connections, etc., to prevent or reduce the discharge of pollutants to the storm drain systems and waters of the U.S. within its jurisdiction
- Conduct inspections of, and perform maintenance on, municipal infrastructure within its jurisdiction;
- Conduct and coordinate any surveys and source identification studies necessary to identify pollutant sources and drainage areas; and
- Participate in the Management Committee.

### 2.2.2 Principal Permittee

The role of the Principal Permittee is similar to the other Permittees with the addition of certain overall programmatic and facilitation responsibilities. These responsibilities do not include ensuring the compliance of the Permittees, as the Principal Permittee has no regulatory authority over the Permittees. The responsibilities outlined in the Permit include the following:

- Coordinate and facilitate activities necessary to comply with the requirements of the Permit;
- Act as liaison between the Permittees and the Regional Water Board on permitting issues;
- Provide for countywide consistency and program coordination;
- Provide technical and administrative support for subcommittees organized to implement this Order and its requirements;

- Convene the Committee Meetings constituted pursuant to Permit, upon designation of representatives;

- Implement a Public Information and Participation Program (PIPP) including developing a strategy to educate ethnic communities through culturally effective methods, and a plan to provide outreach in lieu of the school curriculum;

- Implement the monitoring program required in Attachment F of the Permit;

- Participate in the County Environmental Crimes Task Force;

- Provide resources for the collection, processing and submittal to the Regional Water Board of monitoring and annual reports, and summaries of other reports required under this Order. Establish uniform data submittal format and develop an Electronic Reporting Program;

- Participate in water quality meetings for watershed management and planning;

- Participate in the Southern California Storm Water Monitoring Coalition (SMC) Southern California Regional Bioassessment Monitoring Program

- Compile and make available on the internet a list of the general public reporting contacts; and

- Convene all Management Committee meetings.

In addition to responsibilities identified in the Permit, the Principal Permittee also performs the following for the benefit of the Program:

- Prepare communications, regulatory reports and submissions to the Regional Board;

- Provide Regional Representation for the Program and communicate information to the Permittees;

- Arrange for public access and review of Program plans and documents;

- Secure services of consultants as necessary;

- Implement activities of common interest to the Program;

- Develop/prepare/generate all materials and data common to all Permittees; and

- Update Permittees on RWQCB and US Environmental Protection Agency (USEPA) regulations.

## 2.3 MANAGEMENT ACTIVITIES

### 2.3.1 Management Committee

The NPDES Management Committee is the principal forum for directing the Program's development and implementation. This Committee is attended by senior staff from all Permittee agencies and meets monthly to assure Program continuity. Committee members have been authorized by their Director of Public Works as Management Committee Voting Representatives with the authority to approve Principal Permittee's budget and/or modifications. If no Representative is authorized, it is the Directors of Public Works responsibility to voice their opinion at meetings when these items are on the agenda. In addition to budgeting and program direction, this committee also periodically evaluates the need to create ad hoc committees or workgroups to develop tools and accomplish the objectives of the NPDES Stormwater Program. Although it is no longer

mandated that Permittees attend the meetings, participation in the Management Committee as necessary is a specific requirement of the Permit.

***Performance Standard 2-1***

| ***Participate in intra-agency coordination including Committee and Subcommittee Meetings to facilitate the implementation of the Permit*** | | | |
|---|---|---|---|
| | *Yes* | *No* | *N/A* |
| *Camarillo* | ☑ | | |
| *Ventura County* | ☑ | | |
| *Fillmore* | ☑ | | |
| *Moorpark* | ☑ | | |
| *Ojai* | ☑ | | |
| *Oxnard* | ☑ | | |
| *Port Hueneme* | ☑ | | |
| *Ventura* | ☑ | | |
| *Santa Paula* | ☑ | | |
| *Simi Valley* | ☑ | | |
| *Thousand Oaks* | ☑ | | |
| *Watershed Protection* | ☑ | | |

***Subcommittees***

The Subcommittees provide a forum for discussion of particular program elements and are attended by the staff with the appropriate expertise from each Permittee. These meetings allow for a more uniform approach and regional consistency to program management countywide. This helps provide a level playing field for businesses and residents countywide. More importantly it allows the Permittees to learn from each other and have access to tools that have already been developed. This is very beneficial for the smaller agencies which do not have at their disposal the resources available to the true Phase 1 cities (population over 100,000).

The subcommittees were created at the beginning of the program and have continued to meet and have evolved over the years as requirements and pollutant sources have changed. Subcommittee activities over this Permit Year have been devoted to identifying new Permit requirements and developing programs for compliance. Each subcommittee focuses on specific permit requirements and implementation programs. These generally follow the program sections of the permit, but the subcommittees also incorporate the whole permit in their analysis and integrated program development. The subcommittees and their program responsibilities are listed below. This list does not include any ad hoc, special project, or working groups that may have been formed by the Management Committee or from a logical outgrowth of the subcommittees. One such working group is the Capital Improvement Projects (CIP) Working Group set up to assist Permittees own capital improvement program engineers and staff to understand and implement the new post-construction requirements as well as the new General Construction Permit requirements in our public projects.

## Residential/Public Outreach Subcommittee

The Principal Permittee's countywide outreach program is guided by this subcommittee. Using information on pollutants identified through the monitoring program and 303(d) lists, this committee selects specific Pollutants of Concern to target each year and decides on the best methods of outreach and public education to influence a change in behavior, and regional message consistency.

## Business and Illicit Discharge Control Subcommittee

Oversees the development of the model industrial/commercial and illicit discharge/illegal connections programs. Countywide consistency is created by developing inspection forms and sharing techniques and methods of identifying and educating businesses and industries targeted for inspections. Outreach materials focused on specific industries and businesses are also developed for countywide use by all Permittees. Illicit discharge identification and responses are included at every meeting and discussed. Enforcement experiences are shared to further the education of inspectors countywide.

## Planning and Land Development Subcommittee

Planners and development engineers work together to provide regional tools for design, review, and conditioning of new development and redevelopment projects, and to promote regional consistency in

their application. Guidance and training are developed for the development community for the implementation of stormwater management control measures countywide. The guidelines developed are intended to improve water quality and mitigate potential water quality impacts from new development and significant redevelopment.

**Construction Subcommittee**

Regional consistency for inspections and enforcement are provided by developing model inspection checklists and identifying solutions to common problems. Information on the State General Construction Permit issues, training requirements and opportunities are shared and disseminated to the construction community.

**Public Infrastructure**

This subcommittee assists municipalities in the protection of their storm drain infrastructure from pollutants through best management practices and the development of model municipal activities programs, corporate yard inspections, and integrated pesticide management programs. It also works to identify solutions to infrastructure mapping and other permit requirements.

The Permit requires Permittee participation in the subcommittees as necessary. The Permittees have been very involved in subcommittees this permit year, including stepping up to the chair position on four of the five subcommittees. The value of the subcommittees to improve staff knowledge and abilities, achieve economies of scale, and provide regional program consistency is understood by all members. It is recognized that increased effort in the subcommittees will be rewarded by improvement in staff, resources, and the overall program.

### 2.3.2 Other Regional Committees/Work Groups

Many of the Permittees additionally participate in various watershed management advisory groups. These groups include: the Ventura County Integrated Resources Water Management Plan (IRWMP), Ventura River Watershed Planning Committee, Santa Clara River Watershed Committee, Wetlands Recovery Project, Calleguas Creek Watershed Management Committee, Matilija Dam Ecosystem Restoration Study, Channel Islands Beach Park Action Plan for Improving Water Quality, Malibu Creek Watershed Management Committee and Technical Advisory Committee, Steelhead Restoration and Recovery Plan, Beach Erosion Authority for Clean Oceans and Nourishment (BEACON), Southern California Coastal Water Research Project (SCCWRP), Stormwater Monitoring Coalition of Southern California (SMC), and the Ormond Beach Task Force. These watershed and regional groups focus their activities and discussions on specific concerns such as water quality, habitat restoration and flood control, as well as short, medium, and long-term solutions to improve water quality.

### 2.3.3 Management Framework – Program Implementation

Program development occurs through the Permittee, Countywide Program, and watershed management frameworks. At a jurisdictional level the Permittees have formally identified which departments and staff have responsibility for implementation of each program element within their jurisdictions. It may be necessary for the responsibility to be formally documented through Memorandums of Understanding or other tools. Smaller agencies tend not to require such formal agreements between departments, and in some cases there may be only a few people who are involved in the implementation of all aspects of the stormwater program.

### 2.3.4 Legal Authority

Although adequate legal authority existed for most pollutant discharges at the inception of the stormwater program in 1994, the Permittees determined that a Model Stormwater Quality Ordinance should be developed

to provide a more uniform countywide approach and to provide a legal underpinning to the entire Ventura Countywide NPDES Stormwater Program.

***Performance Standard 2-2***

| ***Ensure that its Stormwater Quality and LID Ordinances authorize enforcement of all requirements of the Permit? (by July 8, 2012)*** | | | |
|---|---|---|---|
| | *Yes* | *No* | *In Progress* |
| *Camarillo* | ☑ | | |
| *Ventura County* | ☑ | | |
| *Fillmore* | | | ☑ |
| *Moorpark* | ☑ | | |
| *Ojai* | ☑ | | |
| *Oxnard* | ☑ | | |
| *Port Hueneme* | ☑ | | |
| *Ventura* | ☑ | | |
| *Santa Paula* | ☑ | | |
| *Simi Valley* | ☑ | | |
| *Thousand Oaks* | ☑ | | |
| *Watershed Protection* | | | ☑ |

Subsequently, all of the Permittees adopted largely similar versions of the initial Model Stormwater Quality Ordinance. With the adoption of the Order No. 10-0108 the municipal ordinances must be updated by July 8, 2012, outside of this reporting period. The Permittees, led by the City of Moorpark, have already begun the process of drafting a model ordinance which can serve as the basis for each Permittee to adopt and authorize them to enforce all requirements of the Permit. Preliminary review by Counsel for the Permittees have determined the existing ordinances are capable of enforcing the Permit, however will be made stronger through the adopting of an improved ordinance.

Enforcement of the current ordinance and the detection, investigation and elimination of discharges undertaken by the Permittees during 2011/12 are described further in Section 8 Illicit connections and Illicit Discharge Elimination. In addition to prohibiting un-permitted discharges, the Stormwater Quality Ordinance, in conjunction with the conditions of land development, provides for requiring BMPs on new development and significant redevelopment. Stormwater quality ordinances have been adopted in each Permittees' jurisdictions as indicated in

Table 2-1 Ordinance Adoption Dates. As stated above, the requirement to update these ordinances to be able to enforce the new permit is required by July 8, 2012, outside of this reporting period.

***Table 2-1 Ordinance Adoption Dates***

| **Ordinance Adoption Dates** | | |
|---|---|---|
| **Co-permittee** | **Adopted Date** | **Amendment Date** |
| Camarillo | 3/11/1998 | In Progress |
| County of Ventura | 10/2/2001 | 7/17/2012 |
| Fillmore | 7/8/2012 | 7/8/2012 |
| Moorpark | 12/3/1997 | 2008 |
| Ojai | 2/9/1999 | |
| Oxnard | 3/24/1998 | 3/24/2009 |
| Port Hueneme | 4/1/1998 | 2/1/2001 |
| San Buenaventura | 1/11/1999 | In Progress |
| Santa Paula | 11/16/1998 | 2010 |
| Simi Valley | 7/2/2012 | |
| Thousand Oaks | 10/14/1999 | |

### 2.3.5 Watershed Protection District Stormwater Program Representation

To stay informed of new science and regulations and gain economies of scale through regional efforts the Principal Permittee represents the Permittees by participating in the following organizations and associations:

#### California Association for Stormwater Agencies (CASQA)

The California Association of Stormwater Quality Agencies originally formed as an advisory body to the State Water Resources Control Board (SWRCB) on stormwater quality program issues is now a 501 (c)(3) non-profit organization. CASQA membership is composed of a diverse range of stormwater quality management organizations and individuals, including cities, counties, special districts, industries, and consulting firms throughout the state. A large part of its mission is to assist stormwater quality programs in California to learn collectively from the individual experiences of its members, learn from their mistakes, and provide awareness of regional and state issues. Since its inception in 1989, CASQA has evolved into the leading organization in California dealing with stormwater quality issues.

#### Southern California Coastal Water Research Project (SCCWRP)

The Southern California Coastal Water Research Project (SCCWRP) is a joint powers agency formed by fourteen agencies through a unique partnership between municipalities that discharge treated wastewater to the ocean, stormwater agencies, and regulators that oversee dischargers. Members work together to develop a solid scientific foundation for coastal environment management in southern California. SCCWRP's mission is to gather the necessary scientific information so that member agencies can effectively and cost-efficiently protect the Southern California coastal and marine environment. In addition, SCCWRP's mission is to ensure that the data it collects and synthesizes effectively reaches decision-makers, scientists, and the public.

#### Stormwater Monitoring Coalition of Southern California (SMC)

The SMC participants are the Ventura County Watershed Protection District, the County of Orange, the County of San Diego, the Los Angeles County Flood Control District, the San Bernardino County Flood Control District, the Riverside County Flood Control and Water Conservation District, the City of Long Beach, the City of Los Angeles, the Regional Water Quality Control Boards of Los Angeles Region, Santa Ana Region, and San Diego Region, the Southern California Coastal Water Research Project (SCCWRP), and the California Department of Transportation. They have decided to work together in a cooperative effort to develop scientific and technical tools needed in southern California to improve stormwater program implementation, assessment, and monitoring.

#### California Coalition for Clean Water (CCCW)

The California Coalition for Clean Water (CCCW) is an alliance of local governments and public agencies, labor, agriculture, business, housing, and development interests working together towards the development and implementation of water quality standards that protect water quality while balancing economic and social needs of local communities and the state. CCCW's mission is to assist the California Regional Water Quality Control Boards and SWRCB to adopt and implement sound water quality standards that reflect the intent and spirit of state and federal clean water laws.

#### National and Global Organizations

As Principal Permittee, the Watershed Protection District (District) participated jointly with SCCWRP and various other federal and international organizations such as the Society of Environmental Toxicology and Chemistry (SETAC). SETAC is a nonprofit, worldwide professional society comprised of individuals and institutions engaged in the study, analysis, and solution of environmental problems. SETAC's mission is to support the development of principles and practices for protection, enhancement, and management of sustainable environmental quality and ecosystem integrity.

SETAC promotes the advancement and application of scientific research related to contaminants and other stressors in the environment, education in the environmental sciences, and the use of science in environmental policy and decision-making.

## 2.4 FISCAL ANALYSIS

The Permittees have committed significant resources to permit compliance, reducing stormwater pollution, and improving the water quality in Ventura County. This Section presents a summary of the costs anticipated for the coming permit year by the Permittees in developing, implementing, and maintaining programs in order to comply with permit requirements. Also included is information on the different funding sources used by the Permittees to ensure that resources are available for permit compliance. Since each permittee shares in the cost of the Principal program the total cost shown for each Permittee is the sum of those *shared* costs and their *individual* costs. However, in the grand total of all costs, including the Principal Permittee, these costs are not included to avoid the error of counting them twice.

### 2.4.1 Program Costs for Permit

With the new permit, costs of the Principal Program have increased significantly. The majority of this was due to the large increase in monitoring, but also the first year of the permit required new materials for businesses and land development communities. Cost for the Permittees' implementation also increased significantly but have tapered off from the first year. In 2010/11 the projected cost of the activities undertaken by the Permittees implementing the stormwater program within their jurisdictions were estimated to be $31,910,727. This is a large increase over the budgets under the previous permit due to new programs, monitoring equipment and studies required. For FY 2011/12 the estimated costs for all permittees' expenses were still challenging at approximately $19.5 million. For 2012/13 the estimated costs are about half of what they were a few years earlier, though still significant at $16 million.

***Performance Standard 2-3***

| ***Document the costs to implement the stormwater program for Permit Year 2010/2011*** | | | |
|---|---|---|---|
| | *Yes* | *No* | *N/A* |
| *Camarillo* | ☑ | | |
| *Ventura County* | ☑ | | |
| *Fillmore* | ☑ | | |
| *Moorpark* | ☑ | | |
| *Ojai* | ☑ | | |
| *Oxnard* | ☑ | | |
| *Port Hueneme* | ☑ | | |
| *Ventura* | ☑ | | |
| *Santa Paula* | ☑ | | |
| *Simi Valley* | ☑ | | |
| *Thousand Oaks* | ☑ | | |
| *Watershed Protection* | ☑ | | |

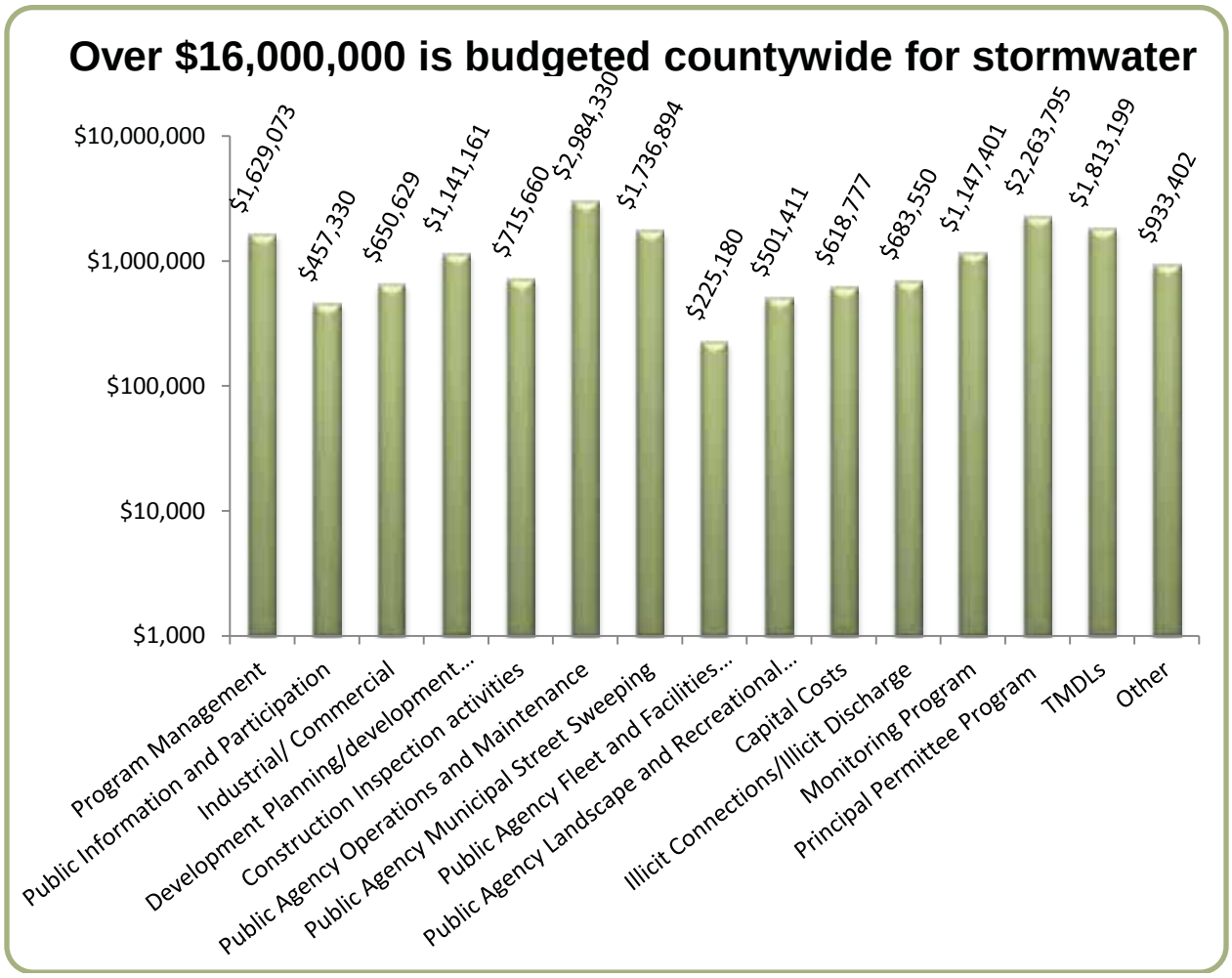
### 2.4.1 Fiscal Resources

Each Permittee prepares a stormwater budget annually and allocates resources to be applied to the stormwater program. An effective stormwater program must be integrated within the entire management structure of a permittee, which means it transcends divisions and departments, therefore stormwater programs are not always uniquely identified in budgets, but more often integrated into the ongoing programs. Table 2-2 presents the projected stormwater budget for each Permittee for Fiscal Year 2012/13 and Figure 2-2 shows how the countywide budget is divided among the various programs. As expected, there is some variability between the stormwater program budgets reported by the Permittees, even if normalized by population or geographic size. This variability is due in part to the accounting practices utilized by each Permittee and the allocation of activity costs amongst programs implemented by each Permittee. Variability is most significant when capital improvements are undertaken, these are usually very large and costly projects that may be TMDL driven or assisted by grant funding. These projects do not represent ongoing program costs, but rather investments in infrastructure to help reduce stormwater pollution into the future.

***Table 2-2 Agency Annual Budget Update for Stormwater Management Program - Fiscal Year 2012-2013***

| Program Element | Camarillo | County of Ventura | Fillmore | Moorpark | Ojai | Oxnard | Port Hueneme | Ventura | Santa Paula | Simi Valley | Thousand Oaks | VCWPD | Principal Permittee |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| II. Program Management | $ 280,928 | $ 348,820 | $ 10,000 | $ 54,224 | $ 12,000 | $ 132,095 | $ 25,000 | $ 225,000 | | $ 198,881 | $ 120,000 | | $ 222,125 |
| III. Public Outreach | $ 12,235 | $ 8,000 | $ 4,000 | $ 3,600 | $ 4,000 | $ 17,294 | $ 3,000 | $ 50,000 | $ 500 | $ 52,814 | $ 66,000 | $ - | $ 235,887 |
| IV. Industrial/ Commercial | $ 61,134 | $ 107,000 | $ 5,000 | $ 16,000 | $ 4,000 | $ 185,998 | $ 3,000 | $ 100,000 | | $ 118,497 | $ 50,000 | $ - | $ - |
| V. Planning and Land Development | $ 48,077 | $ 165,000 | $ 5,000 | $ 75,000 | $ 5,000 | $ 91,404 | $ 3,000 | $ 375,000 | | $ 28,218 | $ 60,000 | $ - | $ 285,462 |
| VI. Construction | $ 76,922 | $ 94,000 | $ 8,000 | $ 75,000 | $ 5,000 | $ 180,894 | $ 3,000 | $ 50,000 | | $ 182,844 | $ 40,000 | | $ - |
| VII. Public Agency Activities | | | | | | | | | | | | | |
| Operations and Maintenance | $ 198,309 | $ 68,400 | $ 10,000 | $ 17,000 | $ 12,000 | $ 467,809 | $ 24,000 | $ 194,038 | $ 20,000 | $ 334,774 | $ 138,000 | $ 1,500,000 | $ - |
| Municipal Street Sweeping | $ 255,000 | $ 121,100 | $ 33,000 | $ 116,700 | $ 48,000 | $ 600,000 | $ 79,750 | $ 40,000 | $ 8,600 | $ 434,744 | | | $ - |
| Fleet and Public Agency Facilities (Corporate Yards) | $ 5,665 | | $ 7,000 | $ 16,300 | $ 5,500 | $ 33,581 | $ 3,000 | $ 7,000 | $ 29,500 | $ 12,634 | $ 105,000 | | $ - |
| Landscape and Recreational Facilities | $ 12,184 | | $ 3,000 | | $ 3,500 | $ 8,179 | $ 354,700 | $ 40,000 | | $ 79,848 | | | $ - |
| Capital Costs | $ - | | | | $ 12,000 | $ 390,000 | $ - | $ 115,000 | $ 15,000 | $ 38,777 | $ 48,000 | | |
| VIII. Illicit Discharges/ Connections | $ 50,572 | $ 90,000 | $ 5,000 | $ - | | $ 85,058 | $ 3,000 | $ 30,000 | $ 2,000 | $ 352,954 | $ 46,000 | | $ 18,966 |
| Monitoring Program | $ - | | | $ - | $ 2,000 | $ 29,144 | $ - | $ - | | $ 6,081 | | $ - | $ 1,110,176 |
| Principal Permittee Program | $ 96,700 | $ 227,180 | $ 6,000 | $ 40,000 | $ 10,000 | $ 177,474 | $ 12,000 | $ 132,738 | $ 21,460 | $ 118,000 | $ 182,500 | $ 1,000,000 | |
| TMDLs | $ 113,871 | $ 1,041,000 | $ 4,000 | $ 34,000 | $ 12,500 | $ 74,028 | | $ 65,800 | | $ 43,000 | $ 425,000 | | |
| Other | | | | | | | | $ 10,000 | $ 475 | $ 141,748 | $ 180,000 | $ 210,000 | $ 391,179 |
| Total | $ 1,211,597 | $ 2,270,500 | $ 100,000 | $ 447,824 | $ 135,500 | $ 2,472,958 | $ 513,450 | $ 1,434,576 | $ 97,535 | $ 2,143,814 | $ 1,460,500 | $ 2,710,000 | $ 2,263,795 |

***Figure 2-1 Countywide Budget FY 2012-13***




The Permittees vary significantly in their jurisdictional area and population which can explain some differences in resources dedicated to various program areas. Another example of differences is that some Permittees have privatized streets sweeping and the annual costs are being born by the solid waste rate payers. Yet, a review of the annual budgets produces some nominal findings. As expected, total stormwater budgets trend upwards as population and service area increases. However, increased population doesn't always directly translate into increased revenue available for the program. Seeking new revenue sources to provide the needed resources to comply with the legal requirements of the Permit is an ongoing effort of the permittees.

### 2.4.2 Funding Sources

Funding sources to implement the stormwater program, including the programs that have been in place long before the permit requirements but are now relied upon to ensure permittees meet permit objectives, are both general and specific funds, taxes, maintenance and user fees, and grants. Other efforts in the county to monitor, cleanup, or otherwise improve stormwater quality by volunteer groups like Ventura Coastkeeper who's efforts can be considered to help implement some stormwater program elements are not included, however, permittee efforts to support volunteer groups in their endeavors are included.

The funding sources used by the Permittees include: Watershed Protection District Benefit Assessment Program, General Fund, Utility Tax, Separate Tax, Gas Tax, Special District Fund, and others (Developer Fees, Business Inspection Fees, Sanitation Fees, Fleet Maintenance, Community Services District, Water Fund, Grants and Used Oil Recycling Grants).

All Permittees except the City of Moorpark gave authorization to use the Watershed Protection District's Benefit Assessment to finance the activities and requirements. This was done through watershed based Implementation Agreements for the Ventura Countywide Stormwater Quality Management Program. The Implementation Agreements identified the responsibilities of the parties to the Permit and set forth the methodology for using the District's Benefit Assessment financing to fund the NPDES Stormwater Program in their respective jurisdictions.

The Agreements have been amended over the years and with the new permit a new effort to secure a long term agreement was initiated. The result was a five year Implementation Agreement with all Permittees to replace the original agreement. The Agreement defines the fiscal responsibilities (expenditures and contributions) of all collective parties with respect to the current Permit. It formalizes the Permittees' commitment to cooperate and to mutually fund an integrated Program of protecting and improving water quality in Ventura County. The five year time frame was designed to mirror the term of the permit. As new permits are written and adopted for Ventura County these agreements will be reviewed, revised, and renewed as appropriate.

***Table 2-3 Permittee Population and Area***

| Ventura County Statistics | | |
|---|---|---|
| **Co-permittee** | **Population** | **Area (Sq. Mi.)** |
| Camarillo | 65,201 | 20.0 |
| County of Ventura | 92,063 | 24 |
| Fillmore | 15,000 | 3.2 |
| Moorpark | 34,421 | 12 |
| Ojai | 8,156 | 4.4 |
| Oxnard | 200,004 | 26.9 |
| Port Hueneme | 21,887 | 4.5 |
| Ventura | 109,000 | 32.7 |
| Santa Paula | 30,000 | 4.6 |
| Simi Valley | 126,414 | 42.0 |
| Thousand Oaks | 128,000 | 55.0 |

# 3 Public Information and Public Participation

## 3.1 OVERVIEW

The purpose of the Public Outreach Program Element is to increase knowledge and change behavior of the public to reduce stormwater pollution. By informing the public regarding the impacts of urban stormwater runoff and introducing steps they can take to reduce pollutants from everyday activities runoff quality should improve in both wet and dry weather. In addition to improving water quality, helping the public understand the problems associated with urban stormwater runoff can help build support for the stormwater program.

The Public Outreach Program Element is designed to implement and evaluate a comprehensive short- and long-term public education campaign that will inform the community about how our actions may adversely impact urban stormwater discharges and, subsequently, the local water bodies.

Public education is an essential part of a municipal stormwater program because changing public behavior can create a real reduction in pollutants. When a community has a clear understanding of where the pollution comes from, how it can affect them, and what they can do to stop it, they will be more likely to support the program, change their own practices, and help educate others.

The Permittees are building upon the many successes of the current program. Early in the program, the Permittees identified key elements crucial to establishing a successful outreach campaign. These elements include:

- Watershed Awareness;
- Identification of general and specific goals of the program;
- Identification of target audiences and key messages for those audiences;
- Development of program strategies and plan overview;
- Consistent messaging using a unified "brand name";
- Development of a watershed based outreach program;
- Development of a model public education/public participation strategy for localization at the Permittee level;
- Development and implementation of a school-aged children education outreach program;
- Development and implementation of food facilities outreach program materials;
- Development and implementation of automotive facilities outreach program materials;
- Development and implementation of industrial facilities outreach program materials; and
- Public Awareness Surveys to measure success and determine needs;

## 3.2 CONTROL MEASURES

The Permittees have developed several Control Measures and accompanying performance standards to ensure that the Public Outreach Program requirements found in the Permit are met and provide information for optimizing the Program.

The Public Outreach Program Control Measures are organized to be parallel to the organization of the Permit and consist of the following:

***Table 3-1 Control Measures for the Public Outreach Program Element***

| PO | Control Measure |
|---|---|
| PO1 | Public Reporting |
| PO2 | Public Outreach Implementation |
| PO3 | Youth Outreach and Education |
| PO4 | Business Outreach |
| PO5 | Effectiveness Assessment |

At the end of this chapter these control measures are evaluated to determine the effectiveness of this program element.

## 3.3 PUBLIC REPORTING - PO1

The purpose of this Control Measure is to identify staff to serve as contact persons and to operate and advertise public hotline numbers to facilitate public reporting of observed water pollution problems. This Control Measure also ensures that through the hotlines, complaint information is forwarded to the appropriate contacts for follow-up and/or investigation.

### 3.3.1 Identify Staff to Serve as Contact Persons for Public Reporting

Permittees have identified staff to serve as the contact person for public reporting, in many cases more than one staff member will serve in this capacity to ensure that someone is always available to respond. Designated staff members are provided with relevant stormwater quality information, including program activities and preventative stormwater pollution control information.


***Screen shot of Program website***

***Performance Standard 3-1***

| Identify staff who will serve as the contact person(s) for public reporting of water pollution problems | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |

### 3.3.2 Maintain Public Reporting Hotline Numbers

The Permittees have two types of phone numbers for the public: one for general stormwater information and one for reporting water pollution problems. The latter number is used by the public to report illicit discharges or illegal dumping into the storm drain system, faded or missing catch basin markers, and other observed water pollution problems. In some cases this number is also used to report clogged catch basin inlets, but there may be another number for that as well. Staff is also available to provide general stormwater information.

Once a water pollution complaint is received, staff initiates a response within 24 hours to the reported illicit discharges, and within 21 days to illicit connections. For additional summary information regarding use of the hotlines for reporting illicit discharges or illegal connections see the process outlined in Section 8 Illicit Connections and Illicit Discharges Elimination. During the Permit term, the Permittees will consider a web-based reporting form for reporting illegal discharges and illicit connections (see Control Measure ID1), however the timely response needed to stop illicit discharges necessitate the public report to a live person as quickly as possible, so it is considered more appropriate for a website to refer to a phone number.

***Performance Standard 3-2***

| Public reporting information has been listed in the government white pages of the local phone book | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | | ☑ | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |

### 3.3.3 Promote/Publicize Public Reporting Hotline Numbers/Contact Information

Contact information for reporting water pollution complaints for all Permittees is updated as necessary and published in the government pages of the local phone book and other appropriate locations. In addition, this contact information is available at several Permittee web sites.

***Table 3-2 Web Sites Listing Contact Information for Public Reporting***

| Program or Permittee | Web site URL |
|---|---|
| Ventura Countywide Stormwater Quality Management Program | http://www.vcstormwater.org/contacts.html |
| Community for a Clean Watershed | http://cleanwatershed.org/MAIN%20PAGES/Contacts.htm |
| Ventura County Watershed Protection District and County of Ventura | http://www.vcstormwater.org/index.php/programs/illicit-dischargedumping |
| City of Camarillo | www.ci.camarillo.ca.us |
| City of Fillmore | www.fillmoreca.gov |
| City of Moorpark | www.ci.moorpark.ca.us |
| City of Ojai | www.ci.ojai.ca.us |
| City of Oxnard | www.Publicworks.cityofoxnard.org |
| City of Port Hueneme | www.ci.port-hueneme.ca.us |
| City of Ventura | www.cityofventura.net |
| City of Santa Paula | http://www.vcstormwater.org/contacts.html |
| City of Simi Valley | www.simivalley.org/environmentalcompliance |
| City of Thousand Oaks | http://www.toaks.org/faqs/categoryqna.asp?id=7#275 |
| County of Ventura | http://portal.countyofventura.org/portal/page/portal/PUBLIC_WORKS/Watershed_Protection_District/About_Us/VCWPD_Divisions/Water_and_Environmental_Resources/Water_Quality |

***Performance Standard 3-3***

| **Promote and publicize contact information for public reporting in public information media, such as the government pages of the telephone book and web sites** | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |

## *3.4 Public Outreach Implementation - PO2*

The Public Outreach Implementation Control Measure provides that outreach be conducted with the residential community and general public to inform these audiences of the impacts of urban stormwater runoff and introduce steps they can take to reduce pollutants in stormwater runoff. Such outreach communicates to the Permittees' residents and visitors the importance of stormwater quality protection and pollution prevention as it relates to the protection of the local water bodies.

### 3.3.4 Work with Existing Local Watershed Groups

There are four watersheds in urbanized Ventura County: Malibu Creek, Calleguas Creek, Santa Clara River, and the Ventura River. Each of these watersheds has a watershed organization developed to get stakeholders to work together to identify problems and reach consensus on solutions. The Program's members are involved with these groups and are accomplishing this Permit requirement through their collective effort.


***Performance Standard 3-4***

| Work with existing local watershed groups or organize watershed Citizen Advisory Groups/Committees to develop effective methods to educate the public about stormwater pollution? (by July 8, 2011) | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Ventura Countywide Stormwater Quality Program | ☑ | | |

### 3.3.5 Educate Ethnic Communities

The Permit requires the Principal Permittee to develop and implement a strategy to educate ethnic communities through culturally effective methods. The Program has previously performed focus groups on Ventura County residents who speak Spanish at home. The information gained through this effort helped the Program understand what needs to be communicated to Spanish speakers and where that communication will be most effective.

To reach the significant Hispanic community in Ventura County, many elements of each campaign throughout the year were created in Spanish. This includes transit shelter and radio ads. Using a multi media mix of newspaper, radio, and transit shelters, Spanish language advertising accounted for 15% of the annual media impressions: 1,094,112. (This figure does not include the BMP fact sheets and other handouts.)


***Spanish language litter and pesticide bus shelter posters***

***Performance Standard 3-5***

| Develop and implement a strategy to educate ethnic communities through culturally effective methods? | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Ventura Countywide Stormwater Quality Program | ☑ | | |

***Performance Standard 3-6***

| Conduct stormwater pollution prevention public service announcements | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Ventura Countywide Stormwater Quality Program | ☑ | | |

### 3.3.6 Make Five (5) Million Stormwater Quality Impressions per Year

During the Permit year the Program conducted a comprehensive stormwater pollution prevention advertising campaign. Media plans were negotiated with the goal to maximize target reach and frequency on a limited and fractionized budget. This was particularly true this year when the budget needed to stretch to cover several audiences. To amplify total market penetration, the adult and youth campaigns were scheduled either concurrently (fall) or in quick succession (spring), to take advantage of any overlap in the audiences. Attention was paid to geographical distribution throughout Ventura County as well as adequate coverage in the Latino market. The Program contracted with a full service marketing firm located in Ventura County, theAgency, who was able to consistently obtain low rates and significant bonus elements, including bonus radio commercials and outdoor billboards.

The media chosen for the Community for a Clean Watershed program are objectives-based, balancing the goals of reaching the diverse target audiences within the region at an adequate level of repetition within a limited budget. Tactically, adult and youth efforts are scheduled to overlap in order to amplify the total share of voice within the market. As in past years, attention was paid to geographical distribution throughout Ventura County as well as adequate coverage in the Latino market.

In addition to the more traditional media of cable television, radio, and outdoor transit shelters, cinema ads and posters in local malls were utilized in this year's plan. Due to its proliferation and ability to reach youth in particular, the social medium Facebook was also added to the Watershed's Fiscal Year 2011 outreach efforts, both as a Page and utilizing Facebook ads targeted within Ventura County. theAgency was able to consistently obtain low rates and significant bonus elements, including bonus radio commercials and outdoor billboards.

For the three campaigns in the 2010 /11 year, the Community for a Clean Watershed marketing effort plan achieved a total of 6,592,955 gross impressions, as follows:

***Table 3-3 Community for a Clean Watershed Gross Impressions***

| Timing | Campaign | Gross Impressions (Persons 6+) | Youth Impressions (included in total) | Spanish Impressions (included in total) |
|---|---|---|---|---|
| Fall 2011 | Coastal Cleanup | 1,623,982 | | 70,000 |
| Fall 2011 | Trash Education | 3,670,059 | 989,849 | 502,712 |
| Spring 2012 | Green Waste | 1,693,395 | -- | 521,400 |
| **Total Media Plan** | | **6,987,436** | **989,849** | **1,094,112** |
| Website | | 5,826 | | |
| Press Releases/Bylines (7) | Various | 392,000 | | |
| **Total Impressions** | | **7,385,262** | | |

**Media Outreach Strategy**

The media chosen for the Community for a Clean Watershed program are objectives-based, balancing the goals of reaching the diverse target audiences within the region at an adequate level of repetition within a limited budget. Tactically, adult and youth efforts are scheduled to overlap in order to amplify the total share of voice within the market. As in past years, attention was paid to geographical distribution throughout Ventura County as well as adequate coverage in the Latino market.

In addition to the more traditional media of cable television, radio, and outdoor transit shelters, Facebook continued to be an important element in the Watershed's Fiscal Year 2012 outreach efforts, both as a Page and utilizing Facebook ads targeted within Ventura County. theAgency was able to consistently obtain low rates and significant bonus elements, including bonus radio commercials and outdoor billboards.

For the three campaigns in the 2011/12 year, the Community for a Clean Watershed marketing effort plan achieved a total of 7,385,262 gross impressions, as follows:

Collaboratively, the Permittees continued to execute a variety of outreach activities. The 2011/12 year's efforts included the following key initiatives, which were created and implemented through theAgency.

Of particular note was the effort targeted to students in Kindergarten through 12th grade. This component, which was directed in part by the information revealed in last year's web survey findings, effectively reaches this important target audience. Through cost-efficient use of local media, this audience will have

the opportunity to see/hear the Watershed message multiple times, thus having the potential to create long-term awareness and impact.

***Performance Standard 3-7***

| **Make a minimum of 5 million impressions per year to the general public related to stormwater quality, with a minimum of 2.5 million impressions via newspaper, local TV access, local radio and/ or internet access.** | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Ventura Countywide Stormwater Quality Program | ☑ | ☐ | ☐ |

**Fall 2011: "A Day in the Life" Trash**

The Fall focus was on trash, building on the YouTube-like commercial created last year, "**We Can Do This,**" which promoted activism, demonstrated the harmful effect of trash in our yards/neighborhoods and encouraged participation by picking up trash in order to protect the watershed. Our 'hero' from "We Can Do This" reprises his role in "A Day in the Life," where he describes a 'typical' day in the life of Ventura County's Watersheds. As he reads from a list of items collected during a recent local Coastal Cleanup Day, the 'junk' literally falls out of the sky onto his head. He continues to read and the trash builds up around him until he gets to the figure for the estimated pounds of dog poop when his expression becomes very concerned (knowing what will drop next) and the spot ends.

Frames from "A Day in the Life" TV Spot


*A Day in the Life Transit Shelter*


*Online Web Ad*

**Spring 2012 – "Shouldn't Have" Green Waste**

In Spring, the pollutant of concern was Green/Yard waste, utilizing the Green Waste television spot which brought back the animated couple from our pesticide commercial. This time, our couple has an overgrown yard which after being trimmed back, is washed into the storm drain and eventually to the beach. In an entertaining way, "Shouldn't have done that" demonstrates that green waste is toxic when rain and sprinklers carry it into the Watershed.

**Frames from "Shouldn't have done that" TV Spot**

In the weeks leading up to Earth Day, corresponding radio spots in English and Spanish supported the television message, along with these Green Waste transit shelters:


***Green Waste Transit Shelters***

## Permittee Efforts

On top of what the Program provides for public outreach countywide, the individual Permittees implement their own outreach efforts focusing on local issues and more personal interactions with their residents. Countywide these efforts beyond the Program's efforts lead by the Principal Permittee made over an additional 6.1 million impressions. Below are some examples of these efforts:

***Earthday events countywide help educate residents about pollution***

## Camarillo

1. Published the following articles in the City of Camarillo City Scene Newsletter:
    a. July/August 2011: "Save the Date- 2011 Coastal Cleanup Day" (25,100 Contacts)
    b. September/October 2011: "Ready For Rain? Slopes and Drains Must Be Maintained!" (25,100 Contacts)
    c. November/December 2011: "Thank You, 2011 Coastal Cleanup Day Volunteers!" (28,000 Contacts)
    d. January/February 2012: "Do the Right Thing for the Environment" (28,000 Contacts)
    e. March/April 2012: "Think Before you Drain!" (28,000 Contacts)
    f. May/June 2012: "Do You Know Where Your Litter Goes?" (28,000 Contacts)
2. Mail out to swimming pool owners with letter and flyer (68 Contacts)
3. Send postcards to 2010 Coastal Cleanup Day volunteers to notify them of 2011's event (137 Contacts)
4. Utility bill insert sent to city customers regarding 2011 Coastal Cleanup Day and advertised cleanwatershed.org website (20,000 Contacts)
5. City Scene TV played "We Can Do It" video and Coastal Cleanup Day Ad from 8/1/2011 through 9/17/2011 (20,000 Contacts)
6. Enviroscape Demonstration at Girl Scouts event at Cal. State Channel Islands (88 Contacts)
7. Email with information regarding Coastal Cleanup Day sent to potential volunteers (31 Contacts)
8. Mail out to Construction Contractors (123 Contacts)
9. Coastal Cleanup Day Proclamation at televised City Council mtg.- PowerPoint and Video Presentation (100 Contacts)
10. Mail out to owners of stormwater post-construction treatment devices requesting maintenance records (146 Contacts, 80 Devices)
11. Mail out (2nd Notice) to owners of stormwater post-construction treatment devices requesting maintenance records (26 Contacts, 17 Devices)
12. Mail out (3rd Notice) to owners of stormwater post-construction treatment devices requesting maintenance records (10 Contacts, 8 Devices)
13. Earth Day 2012 at Camarillo Community Center (180 Contacts)
14. Trash and Debris Removal Assistance Letter sent to shopping center owners (42 Contacts)
15. Two "Calleguas Creek Watershed - Keep it Clean" signs were posted at Calleguas Creek in Camarillo

## County of Ventura

1. 20,300 inserts were mailed out with the Integrated Waste Management Division December, 2011 monthly trash bill for unincorporated residents served by IWMD for trash collection, providing information for proper disposal of household hazards wastes, electronic waste, and medication disposal. 100 horse manure BMPs were handed out during a Household Hazardous Waste Event in the Santa Rosa Valley area (which has a large percentage of residences with horses.)
2. 176 fliers were delivered to Oak Park residents related to illicit discharge prevention and 90 fliers on stormwater BMPs for pool cleaning were provided to residents that aerial imagery indicated a pool in the backyard. The area was targeted for compliance with the Malibu Creek Bacteria TMDL.
3. The following schools serving County of Ventura unincorporated area were visited during the 2011 fall KCAQ school tour, which included educational outreach to middle and high school students with a message about preventing littering and trash impacts to local waterways:
    a. September 14 - Rio Mesa High, Oxnard: 950 students attended (covers County unincorporated RSBW Trash TMDL tributary areas)
    b. September 28 – Rio Vista Middle, Oxnard: 650 students attended (covers County unincorporated RSBW Trash TMDL tributary areas)
    c. October 24 - Newbury Park High, Newbury Park: 1,200 students attended
    d. October 31 – Nordhoff High: 700 students attended (covers upper Ventura River County unincorporated communities of Meiners Oaks and Mira Monte)

e. November 7 – Adolfo Camarillo High: 1,200 students attended (covers County unincorporated RSBW Trash TMDL tributary areas)
f. November 18 – Rio de Valle Middle School, El Rio: 600 students attended (serves El Rio)

**Moorpark**

1. The City of Moorpark participates in Coastal Cleanup Day. The event was on September 17, 2011 during FY 2011/12. Thirty-seven volunteers covered approximately six miles of the Arroyo Simi, collecting 300 pounds of trash. Many volunteers who had participated in previous years noted that there appeared to be less trash around than in the past.
2. Public information on stormwater protection is also provided during Moorpark Country Days. Country Days was held on October 1 during FY 2011/12. An estimated 4,000 people attended the event.
3. The City offers free hazardous waste collection events to residents of Moorpark. In FY 2011/12, 290 households used the service.
4. Mass mailing includes the City's quarterly newsletter that went to approximately 13,200 households.
5. In FY 11/12, the City did NPDES messages in two quarters. NPDES messages were also mailed in four solid waste bill inserts to 8,008 households each time.

**Ojai**

1. Eagle Scout project posting "don't dump" signs on accessible water courses.
2. Ojai Day - October 2011 - booth literature distribution.
3. Contact local school officials to distribute brochures.

**Oxnard**

1. The City of Oxnard has established the OxnardNews.org website to publicize community events such as Earth Day and Coastal Cleanup day. Community members can access the website to view calendars of upcoming events, view press releases, or even watch videos of past events. Coastal Cleanup Day is an event that consistently receives huge community support. City of Oxnard Outreach Specialists will post a press release containing information about the event at least one month in advance to assist community volunteers with pre-registration and planning. This past September, members of the Oxnard community participated in Coastal Cleanup Day at the Ormond Beach Wetlands and Oxnard Beach Park. The City of Oxnard Education and Outreach Specialists estimate that about 3,600 contacts were made at America Recycles Day, Earth Day, and the Compost Workshop. In addition, the City of Oxnard added an additional web page entitled "Oxnard's Green Sustainability Programs". This page provides info on various programs designed to develop and nurture a balanced connection between natural resource conservation, economic vitality, and quality of life.

**Port Hueneme**

1. The City has a few citizens that perform trash clean-ups along our green belt and also has a group that performs beach cleanups separate from the Coastal Cleanup activities. The City is also preparing to administer training with Neighborhood Watch Groups in the near future. The City also had a booth at the annual Hueneme Beach Festival that included stormwater educational materials and water conservation practices.

**Simi Valley**

1. Throughout the year the City of Simi Valley participated in several community events to help promote pollution prevention and improve stormwater awareness within the community. During the reporting period six Household Hazardous Waste events were held where 53,818 pounds of

hazardous waste was collected from the residents of Simi Valley. Stormwater informational brochures were handed out to each of the 802 participants at the events.

2. An Electronic Waste Collection event was held was held on April 21, 2012. Informational BMP brochures designed for residents were also handed out at these events.

3. The City took part in the Earth Day event held on April 21, 2012 at the Simi Valley Town Center and the City Street Fair held in May. Stormwater demonstrations were given using an Enviroscape to approximately 250 adults and children at Earth Day and the Moorpark College Environmental and Multicultural Day. The City had a staffed booth and informational brochures were handed out at the Street Fair.

4. The City's Environmental Compliance Inspectors took the time to educate residents and businesses during 137 compliance responses.

5. The City took part in the annual Coastal Cleanup Day on September 17, 2012, 230 volunteers collected approximately 1,700 pounds of trash from a three mile stretch of the Arroyo Simi.

6. City staff issued 141 Pool Discharge Encroachment permits, handing out our Swimming Pool Maintenance BMP brochures with each encroachment permit. The Swimming Pool Maintenance brochures was also given out with Building and Safety permits for new pools.

***Both Girl and Boy Scouts have been used by several Permittees for cleanup and other outreach events.***

## Thousand Oaks

1. Community Cleanup Day—The City of Thousand Oaks sponsored a collection event of waste materials on June 2, 2012. At the event, about 1,238 residents brought 188.67 tons of trash, 42.59 tons of green waste and 4.29 tons pounds of e-waste for free disposal.

2. Coastal Cleanup Day—On September 17, 2011, 268 volunteers worked together to clean about 3.1 miles of channel and creek in and around Borchard Park; a channel in Thousand Oaks Community Park; and an area of the Arroyo Conejo Creek in Thousand Oaks. The volunteers were from the general public, a Girl Scout group, and a group recruited from the Amgen Company. This combined effort removed 1467 pounds of litter and debris and about 108 pounds of recyclable materials from creek areas.

3. Freeway Ramp and Interchange Collection Program (also called Adopt-A-Highway)—From July 1, 2011 to June 30, 2012, about 14,500 pounds of trash and debris were removed from 13 freeway on-ramps and exits and one freeway interchange in the City of Thousand Oaks.

4. City of Thousand Oaks Household Hazardous Collection Program—Eleven collection events were held once a month during the 2011/12 fiscal year. Over the year, 4,851 residents brought in 513,144 pounds of household chemicals waste materials including fertilizers, cleaning chemicals, paints, insecticides, electronics, used motor oil, and unused pharmaceuticals. Material re-use conducted under this program recycled 15,725 pounds of material for beneficial uses instead of disposal.

5. The City of Thousand Oaks sponsored Arbor Earth Day on April 28, 2012. Representatives from the City's Resource Division provided information to attendees about watershed and solid waste issues and how to improve them. Informational brochures on these topics were available to all. More than 3,000 people attended this event.

6. An outreach event was held at Thousand Oaks Hyatt Hotel on April 20, 2012. Informational displays and a question and answer format educated participants about stormwater and solid waste topics. About 25 people attended.

7. Utility Bill Inserts—Promotional/informational inserts were prepared and distributed for Community Cleanup Day and Arbor Earth Day with a run of 33,000.

8. Thousand Oaks stormwater personnel made presentations centering on water quality issues caused by urban runoff at the following public schools: Thousand Oaks High School (2/25/12) and Westlake High School (4/4/12). These half-hour presentations were viewed by about 160 students and they included a message about how to protect a watershed.

9. Public Works Week—May 23rd and 24th 2011—About 17 Conejo Valley schools brought more than 588 3rd grade students and about 169 adults to see examples of the activities and equipment that are used to by the City of Thousand Oaks to maintain its infrastructure. To inform participants about protecting stormwater quality, a table-sized watershed model was marked with colored pens to represent commonly used yard chemicals. Children participated by making simulated rain with spray bottles to see these suggestive pollutants contaminate the creeks and lake as runoff.

10. Neighborhood Cleanup Program—Fiscal Year 2011/12—The City sponsors free placement of general refuse and green waste 40-yard dumpsters, when neighborhoods follow a procedure to generate enough interest and participation. There were 43 such events where two dumpsters were taken out to

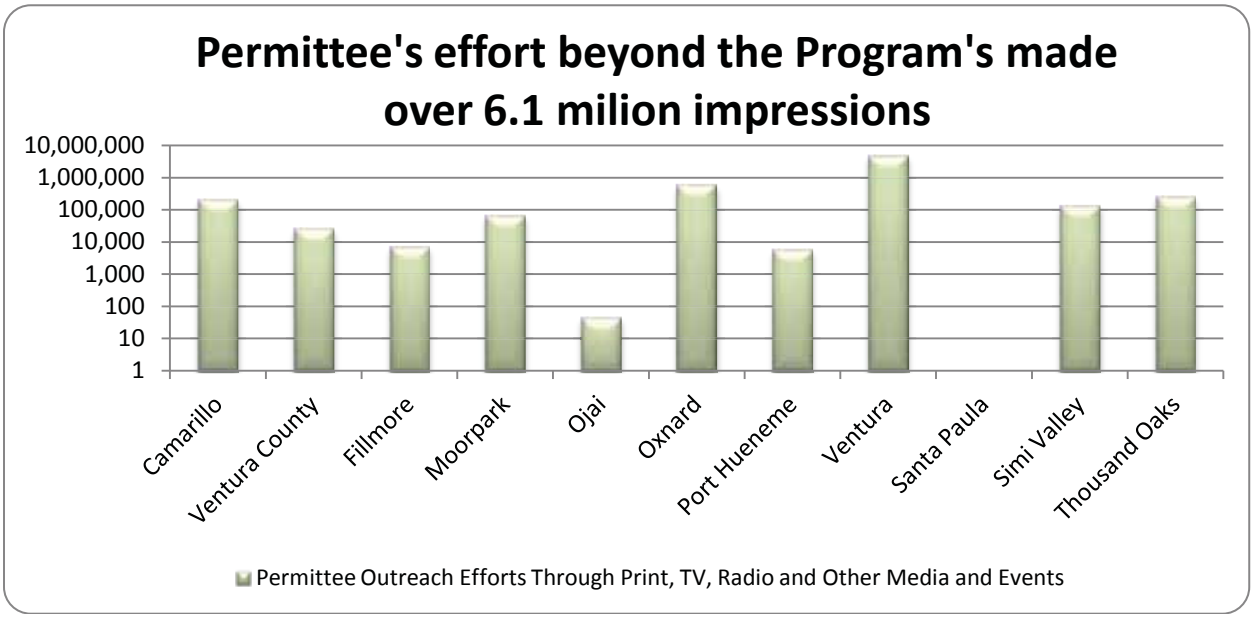
neighborhood locations. In total, 141.7 tons of trash waste and 40.97 tons of green waste were received and taken to proper disposal.

**Ventura**

1. The mission of the City of Ventura's volunteer based programs is to showcase and preserve Ventura's natural resources and beauty. The programs include the following: Seven Community Park clean ups with 147 volunteers working to remove litter from public areas; Two Earthday sites with 595 volunteers; Community cleanups on the Westside and Eastside with 40 volunteers; Ventura River bottom annual clean up with 602 students from Cal Lutheran; Ventura Yacht Club beach and water clean ups with 42 volunteers; Seaward Beach cleanup with 75 volunteers; Trashathon, held at ten sites with 267 volunteers; and five Coastal Clean Up with designated sites with 792 volunteers. These events serve to further educate the residents in good stewardship and stormwater pollution prevention.

2. In addition, the City of Ventura staff participated in other community outreach events and offered stormwater education as a component of its message. Some of these included the following: Farmer's Markets, Home and Garden Show, Eco-Fest, Summerfest, Hillside Music Festival, Botanical Garden, Festival in the Park, and the 4th of July street fair. The City also hosted three workshops on Ocean Friendly Gardens that serve to educate residents on the proper application of water, fertilizer, pesticides, and herbicides to help eliminate runoff into our watersheds. City staff provided outreach and education to 5400 students in the Ventura Unified School District classrooms including a section on stormwater and the effect of runoff on our watersheds.

***Figure 3-1 Impressions made through Permittee efforts***




### 3.3.7 Storm Drain Inlet Markers and Signage Discouraging Illegal Dumping

The Permit requires each Permittee to label all storm drain inlets that they own with a legible "no dumping" message and to maintain them. The Permit also requires signs with prohibitive language (i.e., discouraging illegal dumping) to be posted and maintained at designated public access points to creeks, other relevant waterbodies, and channels.

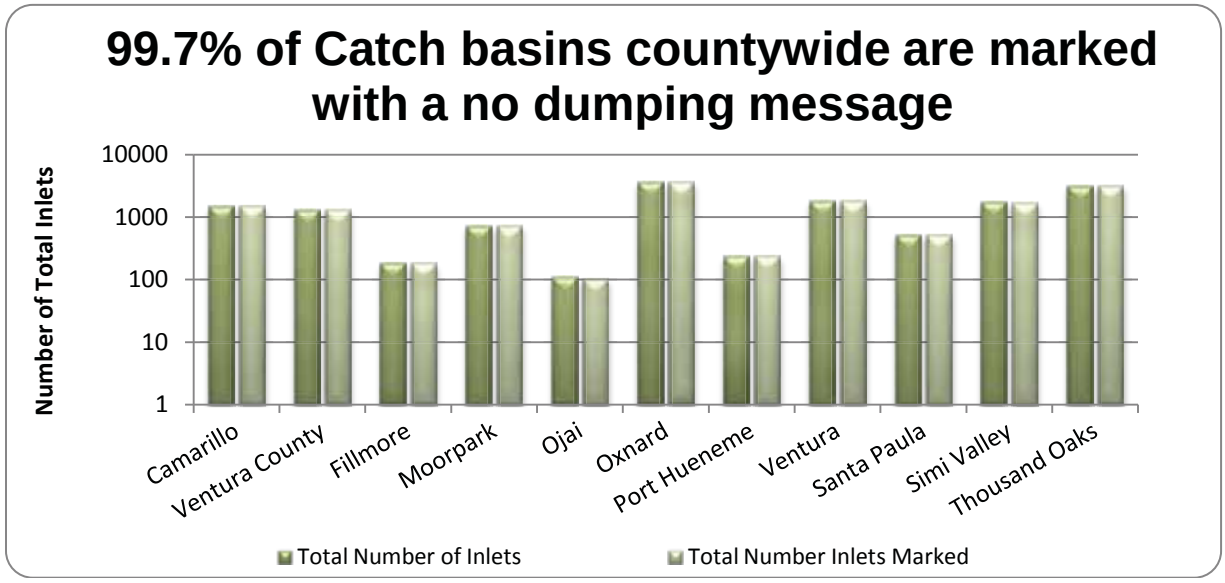
***Performance Standard 3-8***

| Label storm drain inlets with a "no dumping" or equivalent message | | | |
|---|---|---|---|
| | Yes | No | N/A |
| **Camarillo** | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |

## Label Storm Drain Inlets with "No Dumping" Message

As of 2011/12, the Permittees had completed labeling or marking the curb inlets to their entire storm drain system. Permittees maintain their inlet signs by reapplying stencils/markers as they wear out (see Control Measure PA5) and applying stencils/markers to new inlets as they are installed. Markers at curb inlets have varying useful lives due to the materials from which they are constructed (e.g., paint, thermoplastic), their position (e.g., on top of curb, on face of curb), and wear factors (e.g., traffic, street sweeping, sunlight). As a result, the Permittees have different programs to maintain curb inlet markers within their respective jurisdictions. Some Permittees replace a portion of their markers each year, whereas others re-mark all inlets every few years. Regardless of the specific inlet marker practice, all Permittees understand the importance of storm drain inlet markers to the education component of their program and are committed to installation and maintenance of the markers.

***Figure 3-2 Catch Basin Labeling***

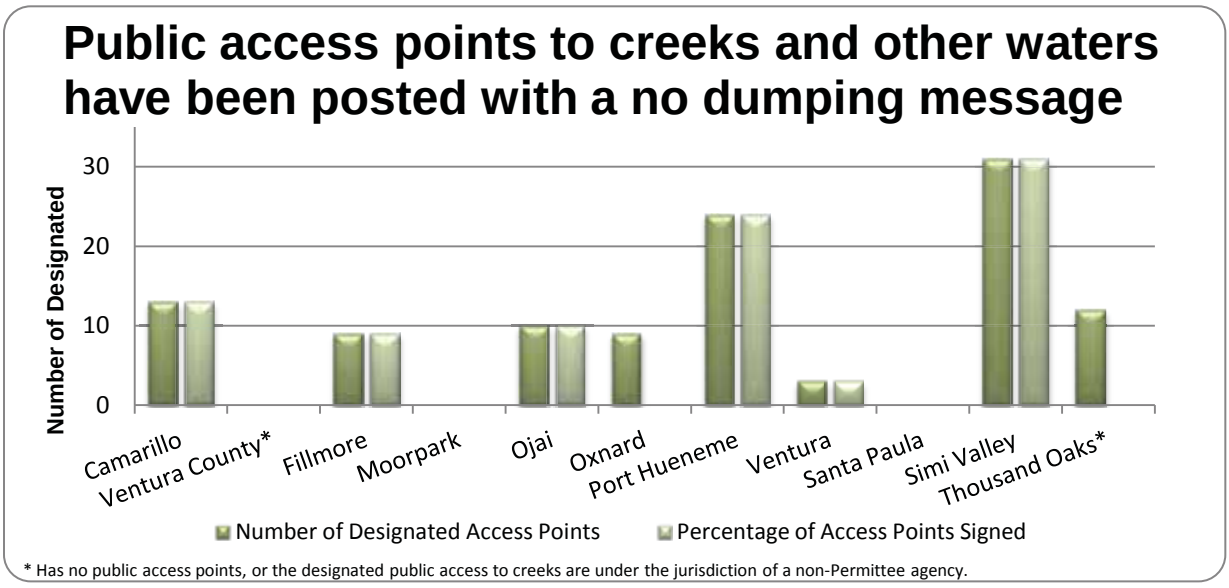



## Post Signs with Language Discouraging Illegal Dumping

The Permittees are required to designate appropriate access points to the creeks and channels within their jurisdiction for the placement of signs with prohibitive language to discourage illegal dumping. Each

Permittee is responsible for designating the appropriate access points to creeks and channels within their jurisdiction, which requires field verification and mapping. In some cases aPermittee may not have any designated public access points or they are under the jurisdiction of a special district outside a Permittee's jurisdiction.

***Figure 3-3 Public Access Point Signage***




### 3.3.8 Educational Materials

The Permittees are required to distribute stormwater pollution prevention educational materials covering specific types of pollutants to specific businesses. The businesses to be targeted with these pollutant-specific educational materials include automotive parts stores; home improvement centers, lumber yards, and hardware stores; and pet shops and feed stores. In addition, the Permit requires the Permittees to continue the existing outreach program to residents on the proper disposal of litter, green waste, pet waste, proper vehicle maintenance, lawn care, and water conservation practices.


***Public access sign***


## Retail Partnership Brochures: Gardeners, Pet Owners, Car Owners (Due July 8, 2011)

Three Watershed Protection Tip pamphlets aimed at residents were created to encourage best practices in their homes. These brochures were distributed to targeted retailers called out in the permit to reach the population that is likely involved in the activities. Each colorful pamphlet defines the Watershed, explains the storm drain system, how polluted water is damaging and gives both overall and topic-specific tips for how to keep the Watershed clean. For example:

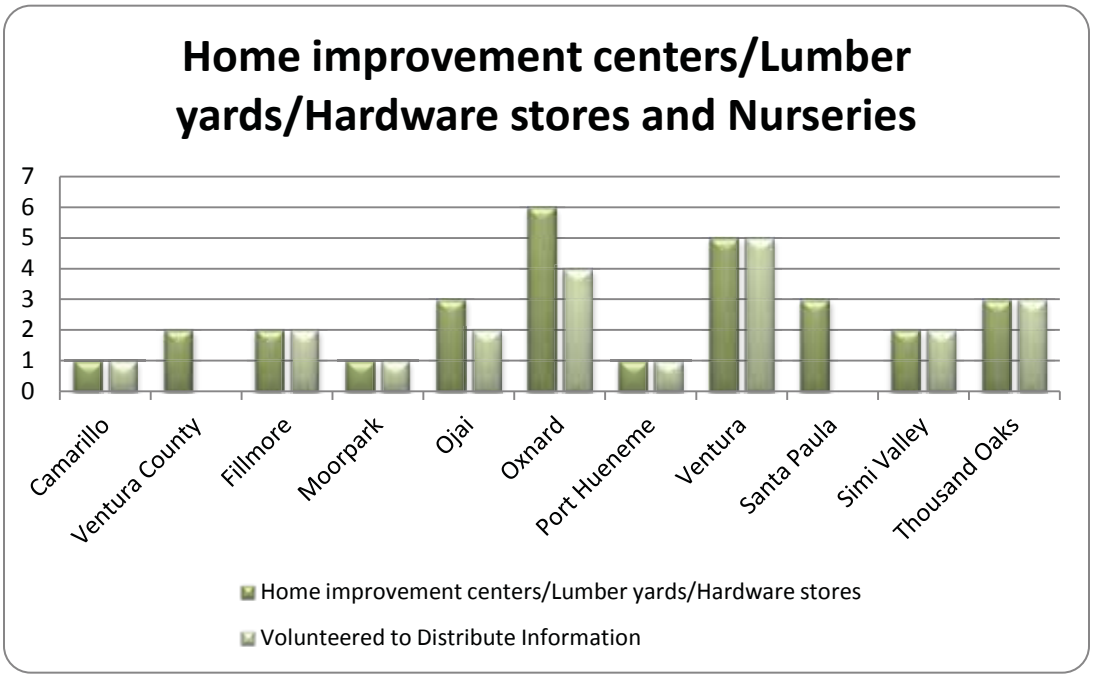
- Gardeners: discuss plant selection, irrigation, fertilizer and pesticide practices, integrated pest management and yard maintenance
- Pet Owners: safe methods for handling and disposing pet waste, for both cats and dogs
- Car Owners: do-it-yourself clean vehicle practices for fluids, tires, batteries and car-washing


***Retail Partnership Brochures***

***Figure 3-4 Summary of Retail Partnership – Auto Parts Store***


***Figure 3-5 Summary of Retail Partnership – Home Improvement and Nurseries***

***Figure 3-6 Summary of Retail Partnership –Pet Shops***




### 3.3.9 Maintain and Update the Countywide Stormwater Website

The Permit requires the Permittees to maintain the Countywide stormwater website (www.vcstormwater.org) This is the website specified by the Permit, but the Permittees also use cleanwatershed.org primarily for outreach, as described earlier under "activity-specific outreach to residents". The Community for a Clean Watershed Web site (cleanwatershed.org) is the primary mechanism used by the Permittees to reinforce the various public outreach messages as well as make available a network of resources to help the web viewer make informed decisions. The website is updated on a regular basis to add relevant campaign materials as well as educational materials.

In addition, the website is required to include pollutant-specific educational material addressing (at a minimum) information on the proper disposal, storage, and use of the following:

- Vehicle waste fluids
- Household waste materials
- Construction waste materials
- Pesticides and fertilizers (including IPM)
- Green waste (including lawn clippings and leaves)
- Animal wastes


***Community for a Clean Watershed Website***

**Community for a Clean Watershed Website**

The cleanwatershed.org website continues to reinforce the various public outreach messages as well as make available a network of resources to help the web viewer make informed decisions. The website is updated regularly to add relevant campaign materials as well as educational materials. Unique visitors to the website were up 15% over last year with 2,895 people coming to the site over 4,100 visits and viewing an average of 1.9 pages.

***Performance Standard 3-9***

| **Maintain the stormwater Web site (www.vcstormwater.org)** | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Ventura Countywide Stormwater Quality Program | ☑ | ☐ | ☐ |

The Countywide Stormwater Web Site (***www.vcstormwater.org***) is periodically updated to include pollutant-specific educational materials for businesses and do-it-yourself homeowners. Facts sheets have been developed over the life of the program and include educational materials on the proper disposal, storage, and use of the following pollutants:

- Vehicle waste fluids
- Household waste materials
- Construction waste materials
- Pesticides and fertilizers (including IPM)
- Green waste (including lawn clippings and leaves)
- Animal wastes

### 3.3.10 Community Events

The Permit requires the Permittees to individually and collectively organize community-oriented educational activities and events and to participate in countywide events focusing on stormwater quality. The main countywide event for the stormwater program is Coastal Cleanup Day.

The 26th annual California Coastal Cleanup Day was held this year on September 17, 2011. Nearly 72,000 volunteers turned out across California to help pick up trash and prevent it from spreading in our coastal and inland waterways. Statewide, the volunteers picked up more than 1.3 million pounds of trash and recyclables. Internationally, when combined with The Ocean Conservancy's International Coastal Cleanup Day which is held on the same day, the event becomes one of the largest volunteer events of the year. Families, students, service groups and neighbors all work together to show their support for our shared natural resources while helping reduce and prevent the impacts of marine debris.

The Ventura County Coalition for Coastal and Inland Waterways (VCCIW) coordinates the event in Ventura County. Representatives of the stormwater Permittees serve on the VCCCIW and have been actively involved in organizing Ventura County's Coastal Cleanup Day efforts since 1996. The VCCCIW conducts advertising campaigns, finds sponsors, coordinates materials receipt and pickup, and works with site captains to organize site access permission and trash hauling. The California Coastal Commission oversees the California Coastal Cleanup Day and provides some advertising materials and assistance as needed.

**Coastal Cleanup Day had 3,165 volunteers covering a distance of 36 miles at 22 sites countywide and collected 12,810 pounds of trash, and 1,880 pounds of recyclables.**

At Ventura County's 2011 Coastal Cleanup Day, 3,165 volunteers at 22 sites countywide collected 12,810 pounds of trash and 1,880 pounds of recyclables, and covered a distance of 36 miles. Not only does the event remove a significant amount of trash, but each item that is picked up is tallied by category, providing a wealth of information about the types of items that are being found. This information is useful for shaping future public outreach campaigns.

This year, the "bring your own bucket, bottle, and gloves (BYOBBG)" pre-campaign continued. The BYOBBG campaign aims to make Coastal Cleanup Day a zero waste event by having participants bring their own reusable waste buckets, gloves, and water bottles, thereby reducing the volume of trash generated at the event. The success of the 2010 campaign continued in 2011, as volunteers pick up more trash and become more aware of the trash they are generating, its proper disposal, and the effect it has on stormwater quality.

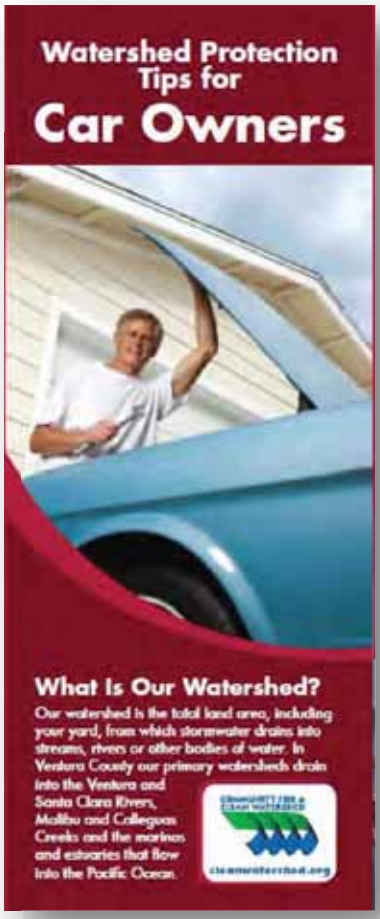
***Performance Standard 3-10***

| **Collectively organize events targeted to residents and population subgroups** | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Ventura Countywide Stormwater Quality Program | ☑ | ☐ | ☐ |

### 3.3.11 Pollutant-Specific Outreach

The Permit requires the Permittees to coordinate to develop outreach programs that focus on the following specific pollutants of concern: metals, urban pesticides, bacteria, and nutrients. For effectiveness in delivering these messages they were incorporated into the other outreach programs requirements of a multimedia campaign and retail partnerships with auto shops, pet stores and home improvement stores/nurseries.

To focus on nutrients good gardening techniques were identified as a more understandable surrogate for the public as communicating that "nutrients" are a bad thing would create an additional hurdle to the ultimate goal of changing behavior. This information along with pesticide BMPs were distributed at retail nurseries throughout the county. Bacteria from pet waste have been an ongoing target of the program and new material was created during the permit year and given to pet stores to distribute. As stated in the permit the metals pollutant-specific outreach is addressed through the industrial-commercial inspection program.



***Various BMP Brochures***

***Performance Standard 3-11***

| Implement outreach programs focusing on pollutants of concern | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Metals | ☑ | | |
| Urban Pesticides | ☑ | | |
| Bacteria | ☑ | | |
| Nutrients | ☑ | | |

## 3.5 YOUTH OUTREACH AND EDUCATION – PO3

This Control Measure ensures that the Permittees either provide school districts within the County with outreach materials (including, but not limited to videos, live presentations, and other information), provide funds to the Environmental Education Account to educate school-age children about stormwater pollution, or submit a Youth Outreach Plan.

Educational outreach to children is an important way to affect a change in behavior. Outreach to children not only changes behavior of the next generation, but children also act as watchdogs over their parent's behavior. Because of this the Program and the individual Permittees have been conducting public outreach with a youth component for many years. Their experience with the local schools in Ventura County and developing programs targeting school-aged children have provided valuable input in the selection of the youth outreach option and the development of a Youth Outreach Plan (Plan) submitted to the Regional Board in July of 2009.

The document summarizes the Program's experience in developing and presenting outreach material to school-aged children, and demonstrates how that experience led to the rationale behind the selection of the Permit required Youth Outreach Plan option. The Plan is described in detail and includes the ground work of identifying what Ventura County youth know about stormwater pollution, where they get their information, and which watershed pollution concepts need additional development. This information was then used to prepare the creative objectives for a media campaign aimed at changing behavior to improve the quality of stormwater runoff. The target audience includes Ventura County youth from kindergarten through high school. The media outlets, broadcast frequency and number of impressions expected are outlined in the media campaign. Finally, the Plan includes methods of measuring program effectiveness and providing feedback for continual improvement of the Youth Outreach Plan to give the next generation the understanding needed to improve the stormwater runoff quality in Ventura County.

Community for a Clean Watershed's efforts towards youth continued to build on last year's outreach when a specific plan was created to reach 50% of all Ventura County school children (K-12) once every two years to comply with the Permit. With less than 150,000 school aged children enrolled in Ventura County schools, this translates to reaching approximately 75,000 in that target every two years. While that goal was met and exceeded, the Community for a Clean Watershed continues to speak to this important audience with a targeted media plan and a creative strategy that appeals to youth. Television, radio, and mall posters garnered 989,849 impressions – thus reaching this audience with significant repetition. In addition, the Facebook page has a sizeable percentage of young fans, allowing for a consistent message to be delivered to youth.

**KCAQ School Tour – On-Campus with Middle and High School Youth**

Ventura County's Community for a Clean Watershed launched a new youth outreach campaign in FY12 to help reduce trash in the county's watershed. Q104.7-FM radio on-air personalities Joey Boy and Quay visited 26 Ventura County middle and high schools in fall 2011 to spread the word about keeping trash out of the county's waterways, storm drains and off local beaches. During the school tour, students were treated to prizes and giveaways as well as a powerful demonstration of the 13,763 cigarette butts and filters collected at last year's local Coastal Cleanup Day. The awareness campaign's message, which focused on "*A Day in the Life of Ventura County's Watershed,"* was brought home to over 23,000 school-aged children at lunchtime events. In addition to the 60-second commercials, on-air radio elements included 35 weekly promotional announcements voiced by a popular personality, giving an endorsement

of the message. Posters were developed and displayed to further tie the message into the school events and a Watershed bookmark was given to all attendees as a reminder.


*A couple photos from the KCAQ School Promotion*


*Bookmark Givaway*

**Facebook Page**

With over 570 fans, the Facebook page allows the Community for a Clean Watershed to keep Ventura County residents and youth engaged and works in conjunction with other outreach. Consistent posts create ongoing communication with fans that are likely to be socially aware. Posts are engaging, including information about local events for Earth Day and/or Coastal Cleanup Day, and interesting local facts.





***Sample Facebook Posts***

## 3.4 BUSINESS OUTREACH – PO4

The Permit requires the Permittees to develop and implement both a corporate outreach and a small business assistance program to educate and inform corporate franchise operators, local facility managers, and small businesses about stormwater regulations and BMPs to reduce the discharge of pollutants in stormwater.

### 3.4.1 Corporate Outreach

#### Develop Corporate Outreach Program (due by July 8, 2012)

The Permittees must work with other regional or statewide agencies and associations such as the California Storm Water Quality Association (CASQA) to develop a Corporate Outreach program to educate and inform the following corporate franchise operators and/or local facility managers (at a minimum) about stormwater regulations and BMPs.

- Four (4) Retail Gasoline Outlet (RGO) Franchisers
- Four (4) Retail Automotive Parts Franchisers
- Two (2) Home Improvement Center Franchisers
- Six (6) Restaurant Franchisers

Educational materials for RGOs, and restaurants have been developed by the Permittees and are distributed to local facility managers during inspections. These facilities are inspected every two years. During the inspection the inspector meets with the facility manger, effectively complying with this permit requirement. Automotive part stores are included in the retail partnership program to help educate the consumers shopping at their locations. The local facility manager's permission is needed to display the brochures, at this opportunity regulations and BMPs are explained. Under the nursery inspection program some Permittees are including home improvement centers due to the size of their gardening sections. Again the business inspection program satisfies the requirement by meeting with the local facility manager during the inspection.

### 3.4.2 Business Assistance Program

#### Best Management Practices Fact Sheets

Targeting types of businesses that have significant potential to contribute to stormwater pollution, Watershed Protection Tips one page fact sheets were created to outline best management practices for six categories of activities. Each BMP fact sheet is available on the Community for a Clean Watershed website, where they can be read or printed for distribution. 10,800 were printed for distribution through Permittees.

#### Provide Consultation Regarding Business Responsibilities

On-site, telephone or e-mail consultation is required to help business reduce the discharge of pollutants. The Permittees provide on-site consultation regarding the responsibilities of businesses to reduce the discharge of pollutants, during inspections; this requirement is covered in Section IV Industrial Commercial Programs. These trained and knowledgeable inspectors are also available to respond to questions via phone or email.


***Best Management Practices Fact Sheets***

## Distribute Educational Materials to Specific Businesses

As mentioned above, the Industrial Commercial Program is responsible for the distribution of information to businesses. This occurs mostly at inspections, but may also be done when obvious problems are reported. An opportunity to disseminate this information to new businesses before they are in operation is through the business license program. All businesses need a business license to operate legally in a jurisdiction. It is as that time that the permittees are able to distribute information regarding stormwater regulations and appropriate BMPs for their operations. The Program has developed many specific fact sheets over the years for this purpose. The fact sheets may be distributed with the business license, or the proprietor may be directed to the website for the information.

## 3.5 EFFECTIVENESS ASSESSMENT – PO5

### 3.5.1 Behavioral Change Assessment Strategy

The Permit requires the Permittees to develop and implement a behavioral change assessment strategy based on current sociological data, and studies to determine whether the Public Outreach Program is demonstrably effective in changing the behavior of the public.

The Ventura County Watershed Permittees are committed to tracking performance of their outreach efforts. To that end, periodic research surveys are conducted to measure awareness, perceptions and the actions taken by Ventura County residents to protect the local Watershed. The research also gives insight about whether outreach messaging is effective along with providing some insight into local media preferences. The following summarizes the 2012 Adult Research Survey, which is the fourth survey since outreach started five years ago.

***Performance Standard 3-12***

| **Develop and implement a behavioral change assessment strategy based on current sociological data and studies to determine whether the Public Outreach Program is demonstrably effective in changing the behavior of the public.** | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Ventura Countywide Stormwater Quality Program | ☑ | | |

### 3.5.2 Adult residential panel survey – June 2012

**Methodology**

A web survey was used as the method of data collection. There were 30 completed surveys from each of the 10 cities and unincorporated areas of Ventura County. Study participants had to be involved in decision making for their home and were required to live in Ventura County for at least 2 years. In addition, they were recruited according to specific demographic criteria, which have evolved somewhat over the four survey periods to better reflect the changing demographics of Ventura County.

The study asked questions on how the responder felt about the seriousness of different environmental problems; whether they agreed with the accuracy of statements regarding the environment and responsibility, the impact of pollutants on the environment, and their concern for the environment; finally respondents were asked if they had adopted any new behaviors to protect the environment.

The following highlights the changes in understanding, evolving attitudes and the most likely watershed protection behavior practices:

**Highlights**

- Pollution of the ocean is viewed with the highest rate of seriousness (62%), a 3% increase since 2010.
- Perceived seriousness of pollution of local lakes, creeks, and rivers were rated equal to litter on the beach (50%).
- There was a significant increase in understanding both watershed definition and characteristics in 2012/2010, 5% and 7% respectively.
- Possibility of polluted runoff without rain (87%)
- The inclination to consider the health of the watershed as an individual's responsibility was slightly higher, 4%, (70%)
- In the current study, understanding 'toxic yard runoff prevention' dropped -6% (46%), but in general a weak result for all four surveys.
- The same pollutants were perceived as having a higher negative impact 2012/2010, but at significantly increasing levels:
  - Used motor oil 4% (89%)
  - Cigarette Butts 13% (84%)
  - Driveway fluids 6% (83%)
  - Litter 8% (82%)

    - Weed Killer/Herbicides 7% (81%)
    - Garden Pesticides 3% (74%) *Seriousness trending upward.*
    - Pet Waste 17% (68%)
    - Lawn Fertilizers 11% (63%) *Seriousness trending upward.*
- Of greatest concern were the following:
    - Pollutants draining -3% (83%)
    - Locally caught fish (74%)
    - Impact on plant/animal life -6% (72%)
    - Swimming in polluted water (71%)
    - Keeping gutters/storm drains clear -4% (70%)
    - Litter on streets and highways -8% (61%)
- Respondents claim to have adopted, on average, 2.54 watershed protection practices in the past year (down from 4 in 2010) and say they have been following best practices for more than one year. (Same as 2010 in slightly different priority)
- The behaviors most frequently practiced were;
    - Picking up litter in front of one's home or business, 5% (87%)
    - Pick up pet waste, -11% (86%) among those who own a pet
    - Take used motor oil or car fluids to a designated disposal/recycling center, -5% (83%) among those who practice this
    - Check for leaks from your automobile, (80%)
    - Use a broom rather than hose to sweep, -3% (77%)
    - Reduced usage of pesticides in general, 3% (73%)
    - Read directions before applying pesticides (70%)
- Half maintain that the responsibility of their yard/landscaping lies with their gardener**.** Sample is similar to 2010 at 49%.
- Overall, 35**%**, (a significant 7% increase over 2010) of the sample was able to recall one or more of the various ads.
- 33% of respondents were able to recall hearing or seeing something regarding watershed protection, (-4%) since 2010.
- Outdoor signs were recalled most and "Gutter Pick It Up" had the highest recall (18%).

**Insights**

- Overall there is a moderate increase in concern over litter issues from 2010 with biggest increase over litter on the beach +7%.
- Overall, concerns expressed in the current survey are slightly higher than 2010 levels.
- Most significant increases were also focus of outreach and include pet waste, cigarette butts, yard runoff and yard waste.
- For the most part, the differences in the understanding and perceived levels of watershed pollution between those who do their own landscaping and those who have a gardener is not very different.
- However, in terms of translating their perceptions into actions/behaviors those who landscape themselves are far more likely to adopt corrective behaviors than those who have a gardener do the landscaping.
- Demographically speaking, the core group that demonstrate both an understanding of the problems and are willing to "pitch in**"** include:
    - More Caucasians;
    - those in the 35-54 age range;
    - home owners; and

- female.
- Educational and income levels did not reveal significant differences.

**Trends**

- There is a slight declining trend for individual responsibility and increasing trend for county responsibility.
- Although still relatively high, extreme levels of concern over issues surrounding watershed pollution are trending downward.

**Summary**

- Perceived seriousness of watershed pollution-related issues are slightly higher,
- Significant increase in the understanding of a 'watershed' and recall of our outreach messages,
- Recognition of the serious impact of various pollutants is trending upward,
- Majority believe that our watersheds are polluted and express concern over the impact it will have on their family, but…
- Concern over watershed pollution-related issues of greatest concern is trending down and the number of 'new' behaviors decreased.

**Opportunity**

- Make people 'care' enough to connect their understanding, perceptions and concerns into a willingness to take greater action.

### 3.5.3 Summary of Effectiveness

In its seventh year of developing educational public outreach campaigns, brochures, and posters, the Clean Watershed website and now a Facebook page, the Community for a Clean Watershed program continues to successfully raise awareness among Ventura County residents on the issues impacting the health of Ventura County's watersheds. This year, several elements were added, achieving the following:

- Generated a second commercial in the trash series, capitalizing on a spokesperson who appeals to all ages – and graphically driving home the message of how much trash is added to the local Watersheds.
- Crafted elements to complement the "Day in the Life" campaign, including radio, transit shelters, and posters.
- Built on two years of a youth campaign, generating almost a million impressions to Ventura County students.


***The Community for a Clean Watershed logo***

- Delivered the general Watershed and trash messages into middle and high schools through a collaborative effort with a popular local radio station.
- Reminded residents about positive actions they can take with their yard waste to protect the Watershed.
- Established consistent communications with our Community for a Clean Watershed Facebook community.
- Continued to develop relationships with local media for additional media at no charge.

### 3.5.4 Conduct Annual Effectiveness Assessment

Effectiveness assessment is a fundamental component required for the development and implementation of a successful storm water program. In order to determine the effectiveness of the Public Outreach Program Element, a comprehensive assessment of the program data is conducted as part of the Annual Report. The results of this assessment are used to identify modifications that need to be made to the program. Each year the effectiveness assessment is reviewed and revised as necessary.

By conducting these assessments and modifying the Program Element as necessary, the Permittees ensure that the iterative process is used as an effective management tool. Due to the types of data collected for the Public Outreach Program, current and future assessments will primarily focus on Outcome Levels 1, 2, and 3.

- Outcome Level 1 (L1) answers the question: Did the Permittees implement the components of the Permit?
- Outcome Level 2 (L2) answers the question: Can the Permittees demonstrate that the control measure/performance standard significantly increased the awareness of its target audience?
- Outcome Level 3 (L3) answers the question: Can the Permittees demonstrate that the control measure/performance standard changed a target audience's behavior, resulting in the implementation of recommended BMPs?

The following is an assessment regarding the effectiveness of the Public Outreach Program.

#### PO1 – Public Reporting

The Permittees have identified staff to serve as contact persons for public reporting. (**L1**)

The Permittees maintain two types of public reporting hotlines, one for general stormwater information and the other for reporting water pollution problems. (**L1**)

The Permittees are promoting and publicizing the public reporting hotlines and contact information. The information is available on Permittee web sites and is published in the government pages of the local phone book and other appropriate locations. **(L1)**

The Permittees are raising awareness about the public reporting hotline numbers. **(L2)**

#### PO2 – Public Outreach Implementation

The Permittees have developed and are implementing the public outreach program that provides key stormwater messages. **(L1)**

- Education of Ethnic Communities – The Permittees have developed and implemented a strategy to educate ethnic communities through culturally effective methods. The Permittees educated ethnic communities by reaching out to the Hispanic community in Ventura County via Spanish language advertising in the media. In 2011/12, Spanish language advertising accounted for approximately 15% of the annual media impressions.

- Storm Drain Inlet Markers and Signage – The Permittees have labeled or marked 99.7% of the storm drain inlets for the entire storm drain system and maintain the stencils/markers through the Public Agency Activities Program. In addition, 100% of all public access points to creeks and channels have signage with language that discourages illegal dumping, this includes access points that are outside of Permittee jurisdiction.
- Educational Materials – The Permittees have developed and are providing a variety of stormwater pollution prevention outreach materials, including those for specific pollutants and activities. The materials include pamphlets, brochures, and BMP posters. These are provided via a number of mechanisms, including at community events, at specific businesses, utility billing inserts, and the Countywide stormwater Web site (cleanwatershed.org/). In the 2010/11 permit year, the Permittees met the Permit requirement by distributing pollutant-specific outreach materials to the following business types: automotive parts stores; home improvement centers, lumber yards, and hardware stores; and pet shops and feed stores. In addition, the Permittees distributed activity-specific stormwater pollution prevention educational materials to residents regarding the following activities: proper disposal of litter, green waste, and pet waste; proper vehicle maintenance; lawn care; and water conservation practices.
- Mixed Media Campaigns – The Countywide program has continued to work with a local public relations agency, theAgency, to develop and implement Community for a Clean Watershed campaigns. The Permittees have provided the public with various stormwater-related articles or messages via radio and public access cable channel PSAs, movie theater slides, print ads (including newspaper), signage on outdoor bulletins and at transit shelters, and Web site banners. During 2011-2012, the Permittees conducted a total of three campaigns (Green Waste and Youth, and Trash) for an estimated 7.39 million total impressions through mixed media campaigns.
- Countywide Stormwater Web Site – The Permittees continue to maintain and utilize both Web sites (cleanwatershed.org/ and vcstormwater.org/) to provide regularly updated outreach to the public.
- Community Events – The Permittees outreached to the general public by sponsoring, organizing, and/or exhibiting at multiple community events and providing information to event attendees. These events included Coastal Cleanup Day; a total of 3,167 volunteers collected trash at 24 sites countywide.
- Pollutant-Specific Outreach – The Permittees are implementing a pollutant-specific outreach program rotating through metals, urban pesticides, bacteria, and nutrients in coordination with multi-media campaigns and retail partnerships with auto shops, pet stores, and home improvement stores and nurseries. Pollutant-specific outreach materials have been distributed via these retail partnerships.

As a result of the above efforts, in 2011/12, an estimated total of 7.39 million impressions were made, well exceeding the goal of five million stormwater quality impressions per year.

### PO3 – Youth Outreach and Education

The Program's efforts towards youth continued to build on last year's outreach when a specific plan was created to reach 50% of all Ventura County school children (K-12) once every two years to comply with the NPDES Permit #CAS004002. With less than 150,000 school aged children enrolled in Ventura County schools, this translates to reaching approximately 75,000 in that target group every two years. While that goal was met and exceeded during the last Permit year with over 700,000 media impressions made on kids 6-11 and teens, the Program continues to speak to this important audience with a targeted media plan and a creative strategy that appeals to youth. Television, radio, and mall posters garnered 904,090 impressions – thus reaching this audience with significant repetition. In addition, the Facebook

page has a sizeable percentage of young fans (58%), allowing for a consistent message to be delivered to youth. This year the Program launched a new in-school youth outreach campaign with Q104.7-FM radio on-air personalities who visited 26 Ventura County middle and high schools in fall 2011. **(L1)**

#### PO4 – Business Outreach

The Permittees provided on-site consultation to businesses during inspections regarding their responsibility to reduce discharge of pollutants. Inspectors are also available for consultation via telephone and e-mail. **(L1)**

The Permittees distributed educational materials to specific businesses during inspections, when business licenses are obtained, and when problematic businesses are reported. In addition, information is made available on the Countywide Web site, and businesses are referred to the Web site as appropriate. **(L1)**

#### PO5 – Effectiveness Assessment

The Ventura County Watershed Permittees are committed to tracking performance of their outreach efforts. To that end, periodic research surveys are conducted to measure awareness, perceptions and actions taken by Ventura County residents to protect the local Watershed. The research also gives insight into whether outreach messaging is effective, along with providing some insight into local media preferences.

In order to establish a baseline of both our adult and K-12 target audiences' understanding of the watershed and surrounding stormwater pollution web surveys are routinely conducted.

The research results indicate a clear connection between key outreach messages and increases in understanding and shifts in behavior/attitude. This supports continued use of new and traditional media to educate youth on watershed protection.

The results outlined above show that the Public Outreach program efforts have increased awareness among Ventura County residents regarding some key issues impacting the health of Ventura County's watersheds. **(L2) (L3)**

### 3.5.5 Public Outreach Program Element Modifications

On an annual basis, the Permittees plan to evaluate the results of the Annual Report, as well as the experience that staff has had in implementing the program, to determine if any additional program modifications are necessary to comply with the Clean Water Act requirement to reduce the discharge of pollutants to the maximum extent practicable. Any key modifications made to the Public Outreach Program Element during the next fiscal year will be reported in the following Annual Report.

# 4 Industrial/Commercial Facilities Programs

## 4.1 OVERVIEW

The purpose of the Industrial/Commercial Facilities Program Element is to effectively prohibit unauthorized non-stormwater discharges and reduce pollutants in stormwater runoff from industrial and commercial facilities to the maximum extent practicable (MEP).

The daily activities of many businesses create a potential for pollutants to enter a storm drain system through both intentional and unintentional actions. The Permittees have developed programs to address this source of pollutants through inspections of targeted businesses and by providing educational outreach and enforcement if needed. These efforts include information on the potential for illicit discharges and illegal connections from businesses, assistance in the selection and use of proper BMPs, and may result in formal enforcement action and fines if environmental rules are ignored.

The program for industrial and commercial facilities is accomplished by tracking, inspecting, and ensuring compliance at industrial and commercial facilities identified as critical sources of pollutants in stormwater. Industrial and commercial facilities are managed under a single Program Element due to the similarities among these types of facilities and the effort involved to implement the program.

The Permittees use the Business Outreach and Illicit Discharge/Illegal Connection Subcommittee meeting to coordinate and implement a comprehensive program to control pollutants in stormwater discharges to municipal systems from targeted commercial facilities. The Subcommittee is comprised of representatives of the Permittee cities and other municipal staff from various departments (e.g. Environmental Health, Environmental Services, and Wastewater Services). The subcommittee provides an opportunity for the Permittees to learn from each other's experiences and develop and share resources. Each Permittee has implemented an Industrial/Commercial Business Program using the control measures identified below.

## 4.2 CONTROL MEASURES

Several Control Measures and accompanying performance standards have been developed by the Permittees to ensure that the Industrial/Commercial Facilities Program requirements found in the Permit are met and provide information for optimizing the Program. At the end of this chapter these control measures are evaluated to determine the effectiveness of this program element.

The Industrial/Commercial Facilities Program Control Measures are organized to be parallel to the organization of the Permit and consist of the following:

***Table 4-1 Control Measures for the Industrial/Commercial Facilities Program Element***

| IC | Control Measure |
|---|---|
| IC1 | Facility Inventory |
| IC2 | Inspection |
| IC3 | Industrial/Commercial BMP Implementation |
| IC4 | Enforcement |
| IC5 | Training |
| IC6 | Effectiveness Assessment |

## 4.3 FACILITY INVENTORY – IC1

The Facility Inventory Control Measure addresses the need to develop and maintain a complete and comprehensive database of industrial and commercial facilities that are determined to be critical sources of stormwater pollution. Information for the database is primarily derived from new business licenses and sanitary sewer connection permits. Facility inspections performed by the Permittees also continues to provide the details needed for the database. Some Permittees perform surveys of the industrial zoned areas in their jurisdiction to help maintain their industrial facility inventory. This survey is usually associated with industrial waste pretreatment inspections required for agencies operating a wastewater collection system.

### 4.3.1 Maintain and Annually Update the Industrial and Commercial Facility Inventory

As required by the Permit the Permittees maintain an inventory of industrial and commercial facilities within their jurisdictions, including those covered under the state Industrial General Permit. This inventory identifies the type of business, the watershed it is located in, and inspections and enforcement action history.

The Permittees supplement their inventory by utilizing data from County Environmental Health to obtain current facility numbers prior to planned inspections. The Regional Water Board's website also provides useful information for all Industrial General Permit holders and is used extensively for that program. These data were first compiled during the 2009/10 reporting period and will be updated on an ongoing basis as the next round of inspections discovers new facilities, as well as companies that are no longer in operation. Some businesses, such as restaurants, have a high turnover with new ones opening each year and many permanently closing their doors. Because of the continued turnover of businesses the Industrial and Commercial inventory can never be assumed to be 100% accurate, it is a snap shot in time and will be continually updated as information becomes available. The current development of inventory for 2011/12 is summarized in the following Tables.

***Performance Standard 4-1***

| ***Did the Co-permittees maintain and update the Industrial and Commercial Facility Inventory*** | | | |
|---|---|---|---|
| | *Yes* | *No* | *N/A* |
| *Camarillo* | ☑ | | |
| *Ventura County* | ☑ | | |
| *Fillmore* | ☑ | | |
| *Moorpark* | ☑ | | |
| *Ojai* | ☑ | | |
| *Oxnard* | ☑ | | |
| *Port Hueneme* | ☑ | | |
| *Ventura* | ☑ | | |
| *Santa Paula* | | ☑ | |
| *Simi Valley* | ☑ | | |
| *Thousand Oaks* | ☑ | | |

***Figure 4-1 Commercial/Industrial Facilities Inventory***

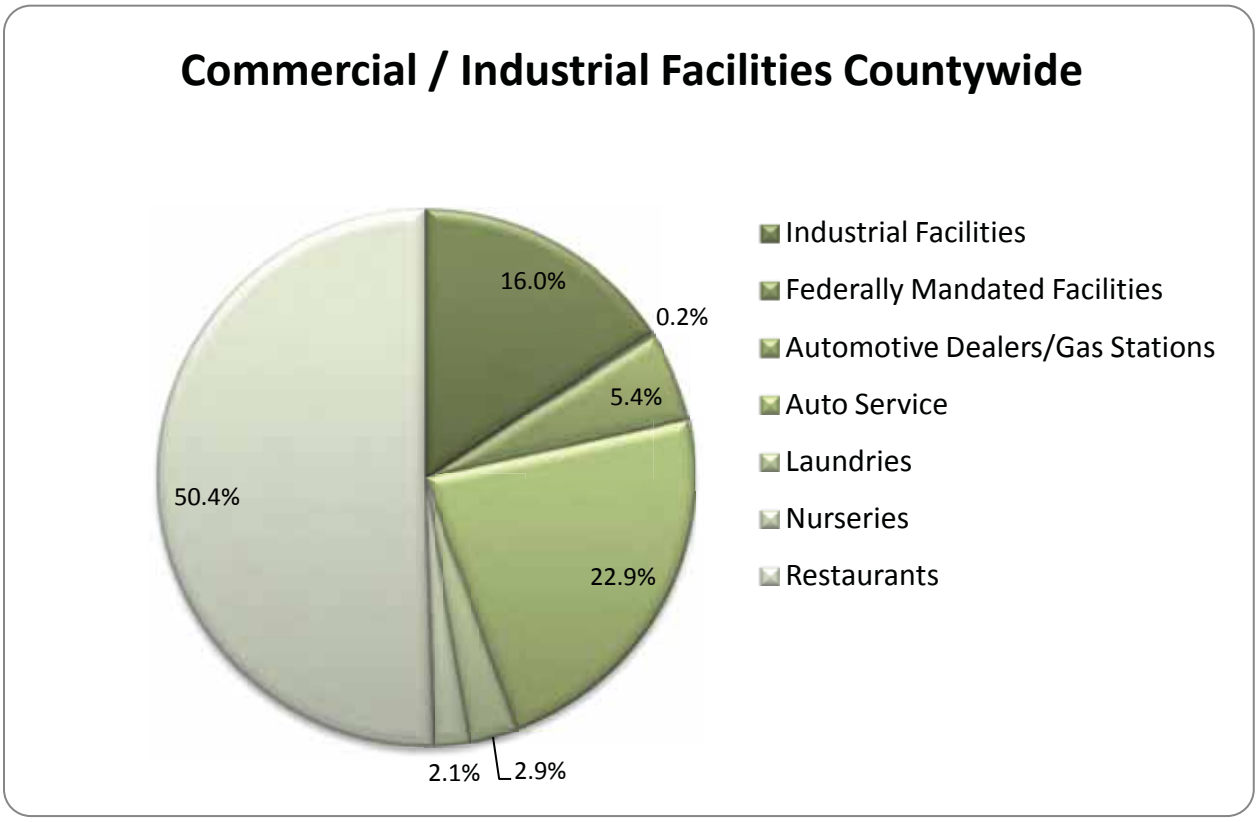
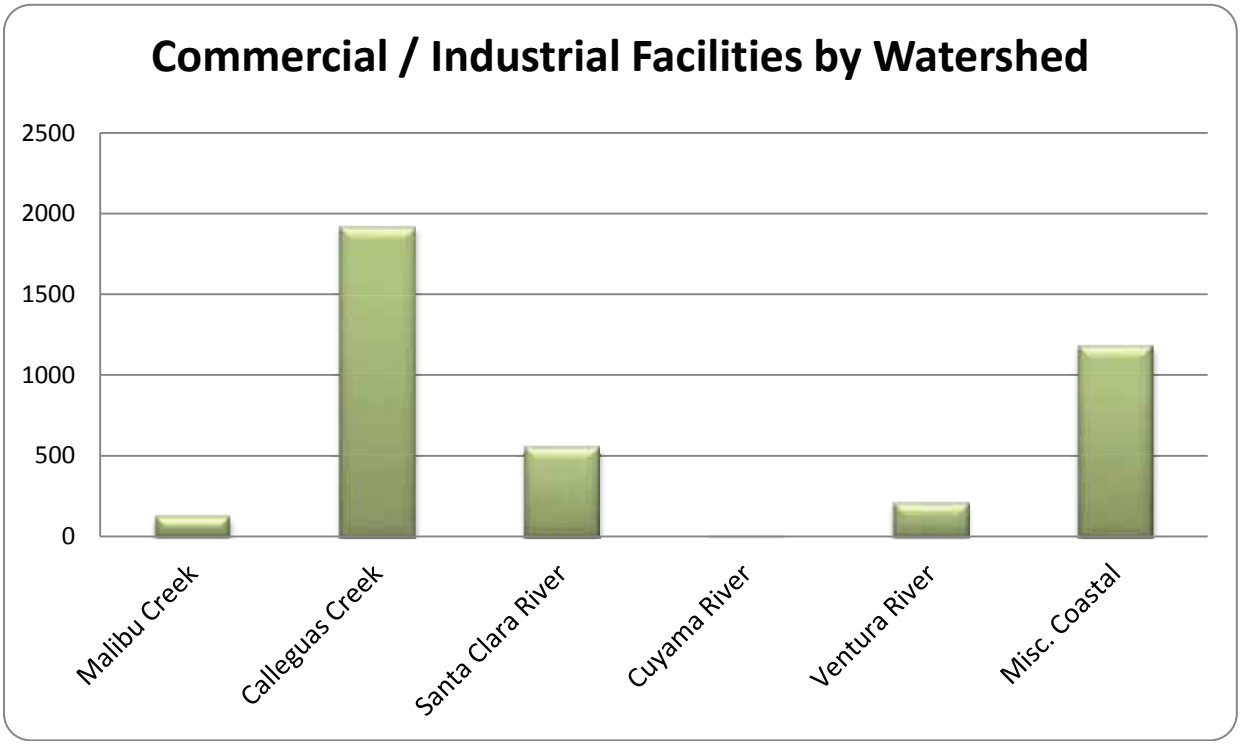



***Figure 4-2 Commercial/Industrial Facilities by Permittee***


***Figure 4-3 Commercial Industrial Facilities by Watershed***

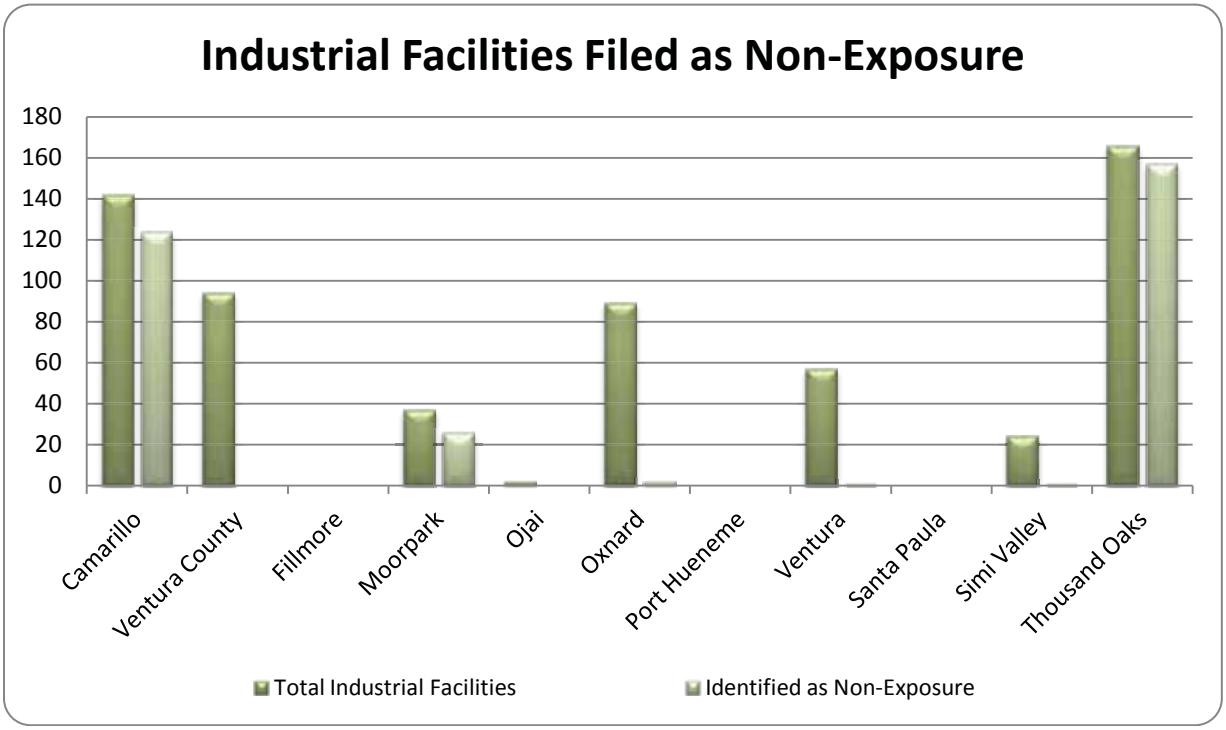


## 4.4 INSPECT INDUSTRIAL AND COMMERCIAL FACILITIES TWICE DURING PERMIT TERM

To satisfy the requirement of inspecting these facilities twice during the Permit term the Permittees began their inspection of industrial and commercial facilities in the 2009/10 Permit year. With respect to industrial facilities, if the initial inspection revealed no risk of exposure of industrial activities to stormwater at a facility, then that facility may be categorized as *No Exposure Status.* A second inspection is required at a rate that provides annual re-inspection of a minimum of 20% of all such facilities determined to have non-exposure.

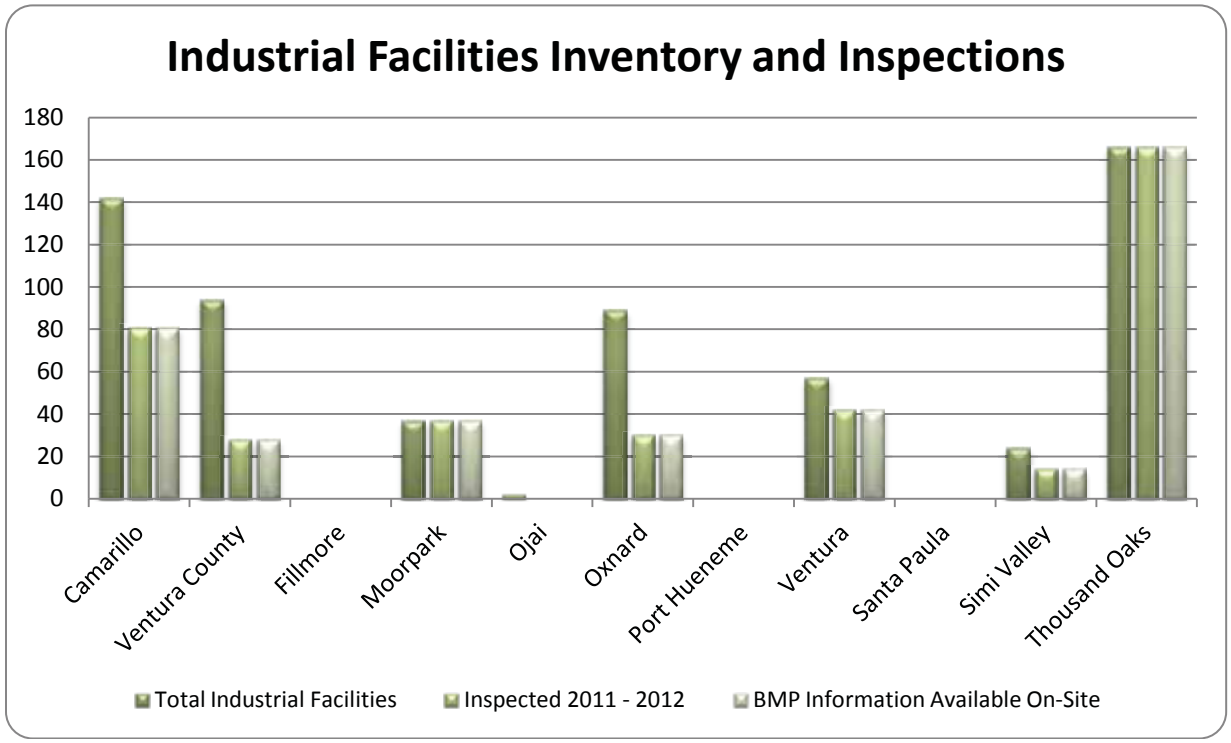
All initial industrial and commercial facility inspections must be completed no later than July 8, 2012. A minimum interval of six months between the first and second compliance inspection is required at all industrial and commercial facilities. It is possible that a site will be visited sooner than six months if requested by the Regional Board staff to assist with their investigations, or if an illicit discharge is suspected.

***Figure 4-4 Industrial Facilities Filed as Non-Exposure***




The permit requires the first industrial and commercial inspections be completed by July 8, 2012. The inspection programs are ongoing with continual updates to the inventory and facilities being re-inspected at least once more during the permit term. The status of the industrial commercial inspection program through the end of the reporting period is represented in the following tables.

***Figure 4-5 Industrial Facilities Inventory and Inspections***




Industrial Facilities includes U.S. EPA Phase I, II Facilities required to obtain coverage under the Industrial Activities Stormwater General Permit (IAGSP). These facilities are identified by either the Standard Industrial Classifications (SIC) or the North American Industry Classification System (NAICS). Facility ownership (federal, state, municipal, private) are not factors in this definition and so the inventory includes facilities such as the Naval Base Ventura County at Point Mugu.


COUNTY OF VENTURA UNINCORPORATED AREA
STORMWATER MANAGEMENT PROGRAM

Stormwater Inspection Checklist
INDUSTRIAL AND FEDERALLY MANDATED FACILITIES

INSPECTION TYPE

***Industrial facilities inspection form***

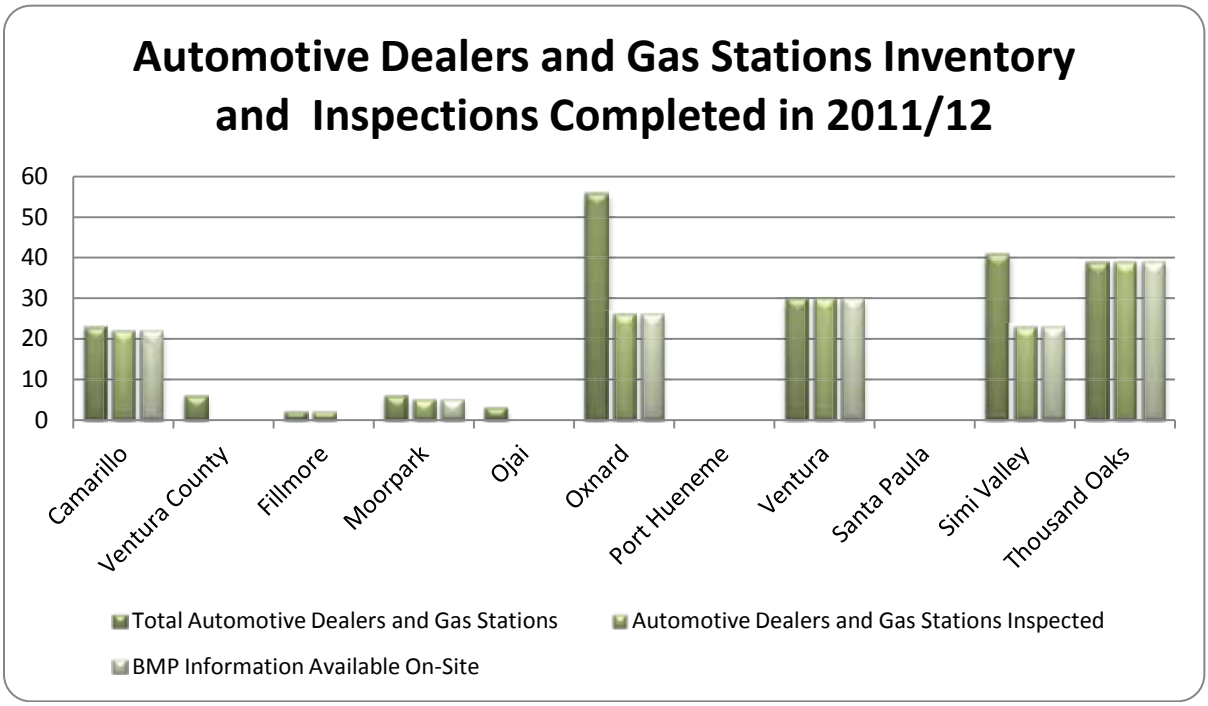
***Figure 4-6 Federally Mandated Facilities Inventory and Inspections***


Other Federally-mandated Facilities [as specified in 40 CFR 122.26(d)(2)(iv)(C)] are also required to obtain coverage under the IAGSP. Again, facility ownership (federal, state, municipal, private) and profit motive (business or not-for-profit) of the facility are not factors in this definition. Included in this category are:

- Municipal landfills
- Hazardous waste treatment, disposal, and recovery facilities
- Facilities subject to SARA Title III (also known as the Emergency Planning and Community Right-to-Know Act (EPCRA))

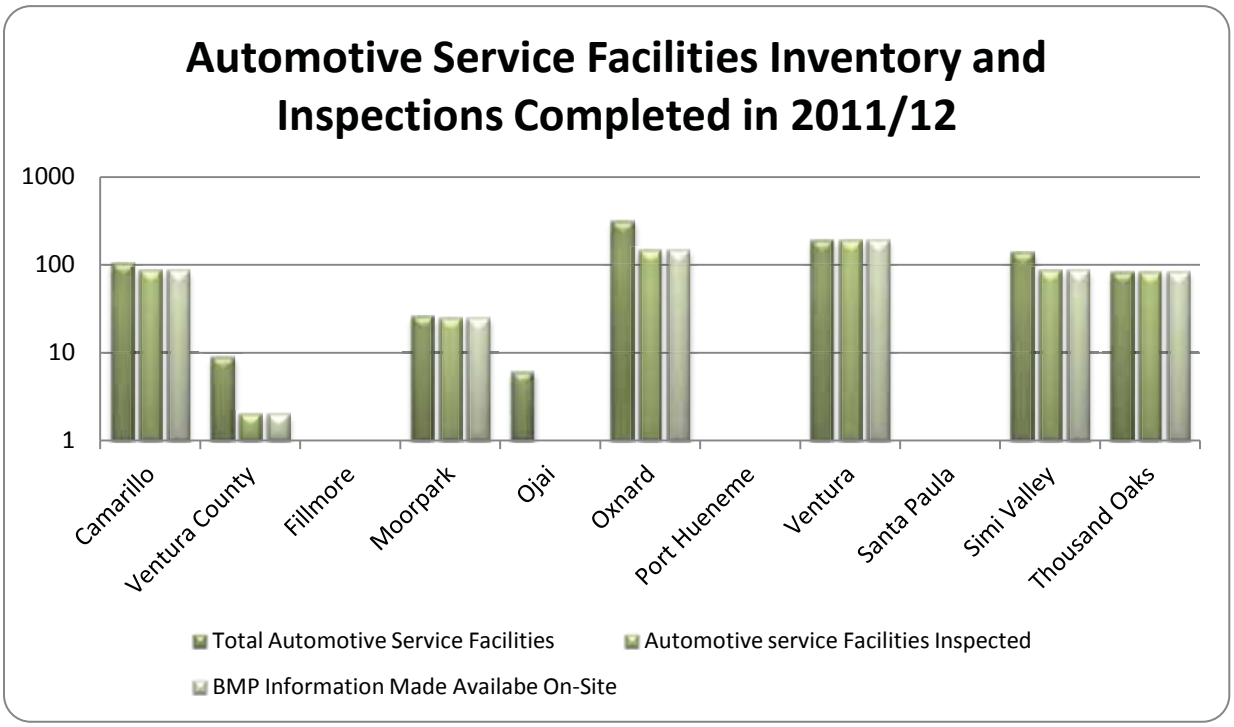
Inspections are conducted at all automotive and gas station facilities even if these facilities do not have outdoor activities or storage that are exposed to stormwater. In addition, the Permittees have identified other facilities where engine oil is present and represents a potential threat to stormwater pollution, e.g., boat dealers, RV dealers, motorcycle dealers, etc. Facilities that are only inspected if they have outdoor activities or outside storage that are exposed to stormwater are auto parts stores and tire dealers.

*Figure 4-7 Automotive Dealers and Gas Stations Inventory and Inspections*




***An inspector reviews the findings of an inspection with the business manager***

***Figure 4-8 Automotive Service Facilities Inventory and Inspections***




All automotive service facilities are included in the inventory for inspection, this category also includes motorcycle and boat repair if there is a potential for stormwater pollution.

***Figure 4-9 Laundry Facilities Inventory and Inspections***


Permittees made an effort to identify all laundry facilities in their jurisdiction that may possibly have an exposure to stormwater and therefore a possible threat to stormwater quality. Some Permittees went as far as to include dry cleaners and laundromats. All commercial laundries in a jurisdiction were identified and screened for potential exposure. If there was no exposure potential then an inspection was deemed unnecessary.

The Permit includes requirements for the Permittees to confirm that nursery operators that are exposed to stormwater implement pollutant reduction and control measures with the objective of reducing pollutants in stormwater runoff discharges. "Nurseries" comprises establishments primarily engaged in the merchant wholesale distribution of flowers, florists' supplies, and/ or nursery stock (except plant seeds and plant bulbs). The industry in NAICS Code 444220 comprises establishments primarily engaged in retailing nursery and garden products, such as trees, shrubs, plants, seeds, bulbs, floriculture products and sod, which are predominantly grown elsewhere. These establishments may sell a limited amount of a product they grow themselves.

This is interpreted by the Permittees to not include stores that may have some plants or a small nursery section although it is not their primary business. Florist that specialize in cut flowers are also not included because their business and inventory is kept indoors. However, most Permittees have extended this to include the large home improvement centers due to the size of their nursery section**.**

*Figure 4-10 Nursery Facilities Inventory and Inspections*

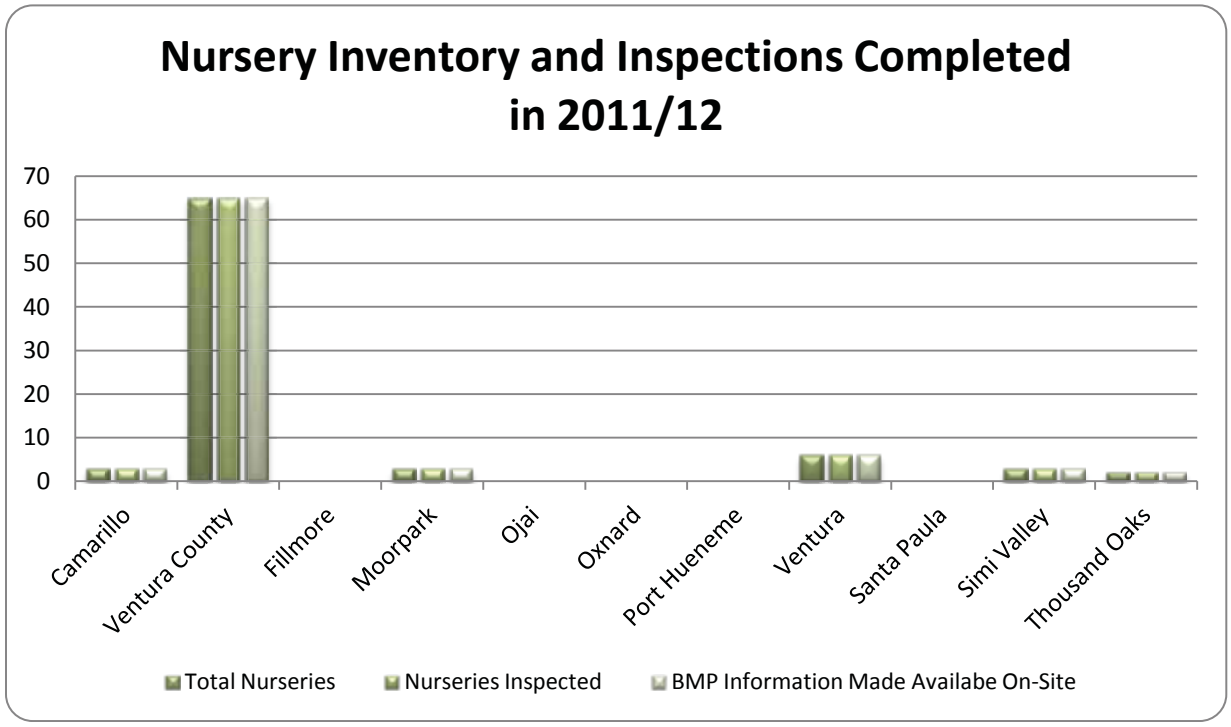
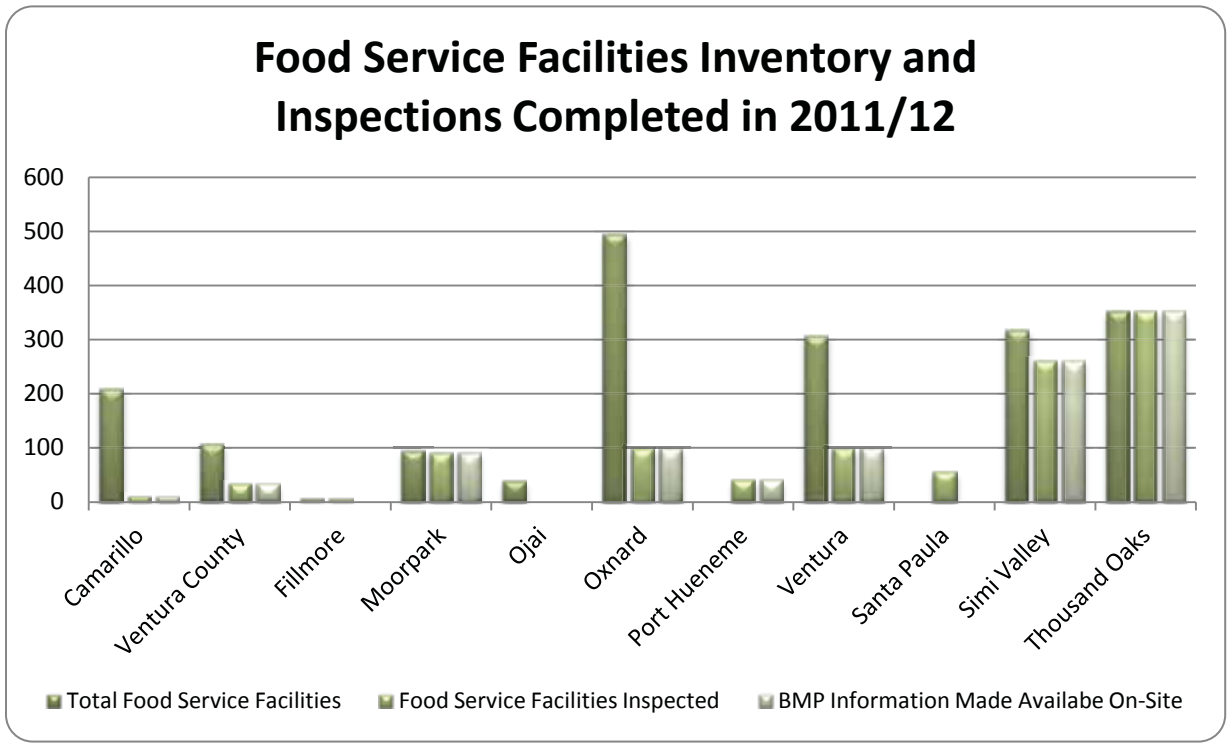



*Figure 4-11 Food Service Facilities Inventory and Inspections*



For the purposes of inventory and inspection the term food service facility means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC Code 5812). This will include supermarkets if they have a deli selling food which is prepared on-site, but will not include grocery stores, bakeries and candy stores not engaged in food preparation.

## 4.5 INSPECTION – IC2

The Inspection Control Measure establishes the inspection requirements associated with on-site visits. The inspections ensure that the facility operator is effectively implementing source control BMPs, is in compliance with municipal ordinances, has pertinent educational materials, and is not producing unauthorized non-stormwater discharges. Inspection of facilities covered under the IASGP also ensures that the operator has a current Waste Discharge Identification (WDID) number, a Stormwater Pollution Prevention Plan (SWPPP) is available on site, and the operator is effectively implementing BMPs. Stopping unauthorized discharges is the primary purpose of the inspections, however it is also just as important to educate businesses on proper disposal of wastes and other BMPs to prevent future discharges to the storm drain system. To accomplish this educational information is made available to businesses that do not immediately have it available for their staff.

### 4.5.1 Inspections

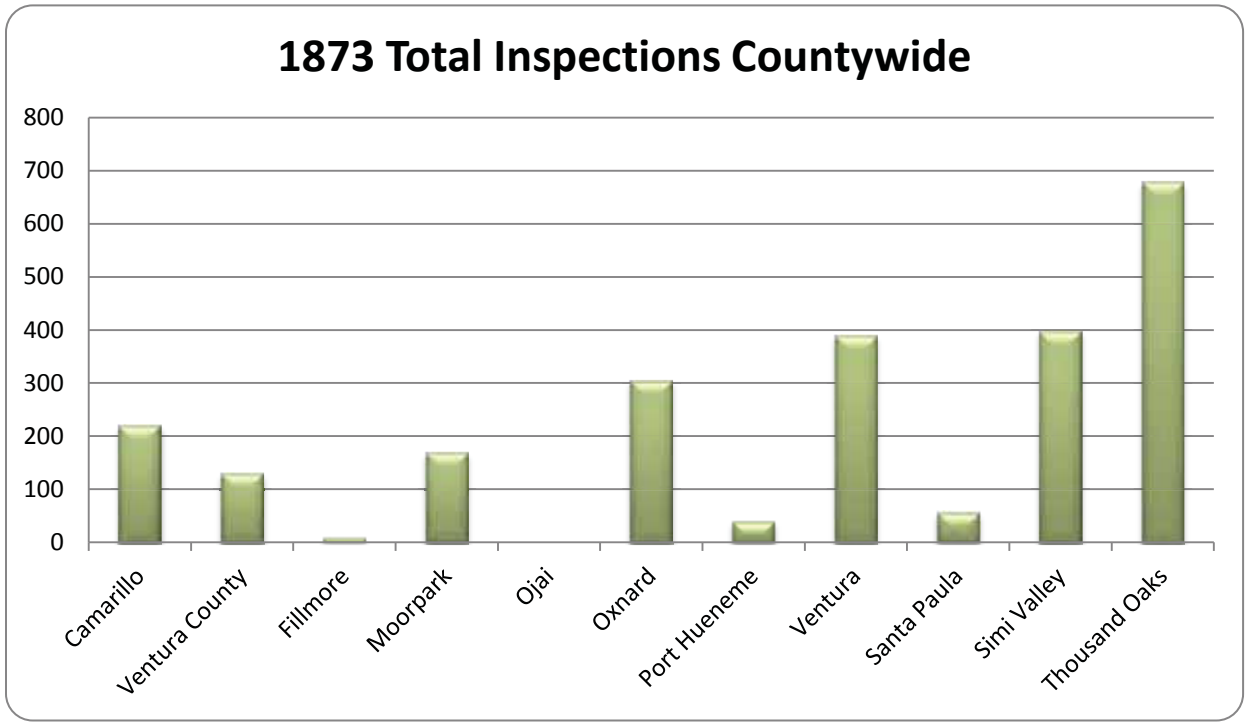
The Permittees' municipal ordinances currently allow authorized officers to enter any property or building to perform inspections. On refusal to allow inspection by the owner, tenant, occupant, agent or other responsible party, the Permittees may seek an Administrative Search Warrant. All the Permittees have or are reviewing their ordinances to determine if there is a need to strengthen their ability to perform inspections, as well as the enforcement tools at their disposal to bring an uncooperative business into compliance.

***Performance Standard 4-2***

| ***Begin initial inspections of commercial and industrial facilities? (inspections to be completed by July 8, 2012)*** | | | |
|---|---|---|---|
| | *Yes* | *No* | *N/A* |
| *Camarillo* | ☑ | | |
| *Ventura County* | ☑ | | |
| *Fillmore* | ☑ | | |
| *Moorpark* | ☑ | | |
| *Ojai* | ☑ | | |
| *Oxnard* | ☑ | | |
| *Port Hueneme* | | ☑ | |
| *Ventura* | ☑ | | |
| *Santa Paula* | | ☑ | |
| *Simi Valley* | ☑ | | |
| *Thousand Oaks* | ☑ | | |

The vast majority of site visits performed were unannounced providing the inspectors with an honest look at daily activities of the facility. During these site visits, Permittee inspection staff would meet with the business owner/manager to review the objectives of the inspection. After performing a walk-through of the facility, inspection results were discussed with the business owner/manager. In the event a Permittee determined a facility's stormwater BMPs were insufficient, the Permittee provided their recommendations to the facility owner/manager. Source control BMPs were recommended as a first step in BMP implementation before requiring the facility to implement costly structural BMPs. In all cases, inspection staff informed facilities' owners/managers that BMP implementation does not guarantee compliance nor relieve them from additional regulations, and that it is their continued responsibility to ensure that pollutants do not escape the facility.

*Figure 4-12 Total Inspections Countywide*




## Review/Revise the Industrial Inspection and Commercial Business-Specific Checklists as Needed

In order to ensure that the inspectors conduct thorough and consistent inspections, industrial and commercial checklists have been developed for different targeted businesses. Permittee industrial inspectors receive proper training to adequately assess facilities and offer assistance in suggesting remedies. County and municipal ordinances with support from City Attorney's and County Counsel offices also provide the proper legal backing for inspections and any necessary enforcement. Checklists are periodically updated as necessary to ensure that they provide an adequate and sufficiently comprehensive basis upon which to conduct inspections. Currently, the Program has inspection checklists for general industry, restaurants, automobile related businesses, nurseries, and laundries. Examples of the checklists are included as Attachment A.


COUNTY OF VENTURA UNINCORPORATED AREA
STORMWATER MANAGEMENT PROGRAM

Stormwater Inspection Checklist

***Restaurant Inspection Checklist***

***Performance Standard 4-3***

| ***Review/revise the industrial inspection checklist to be consistent with the permit*** | | | |
|---|---|---|---|
| | *Yes* | *No* | *N/A* |
| *Camarillo* | ☑ | | |
| *Ventura County* | ☑ | | |
| *Fillmore* | ☑ | | |
| *Moorpark* | ☑ | | |
| *Ojai* | ☑ | | |
| *Oxnard* | ☑ | | |
| *Port Hueneme* | ☑ | | |
| *Ventura* | ☑ | | |
| *Santa Paula* | ☑ | | |
| *Simi Valley* | ☑ | | |
| *Thousand Oaks* | ☑ | | |

***Performance Standard 4-4***

| ***Review/revise the commercial business-specific checklist to be consistent with the permit*** | | | |
|---|---|---|---|
| | *Yes* | *No* | *N/A* |
| *Camarillo* | ☑ | | |
| *Ventura County* | ☑ | | |
| *Fillmore* | ☑ | | |
| *Moorpark* | ☑ | | |
| *Ojai* | ☑ | | |
| *Oxnard* | ☑ | | |
| *Port Hueneme* | ☑ | | |
| *Ventura* | ☑ | | |
| *Santa Paula* | ☑ | | |
| *Simi Valley* | ☑ | | |
| *Thousand Oaks* | ☑ | | |

## Conduct Follow-up Inspections as Necessary

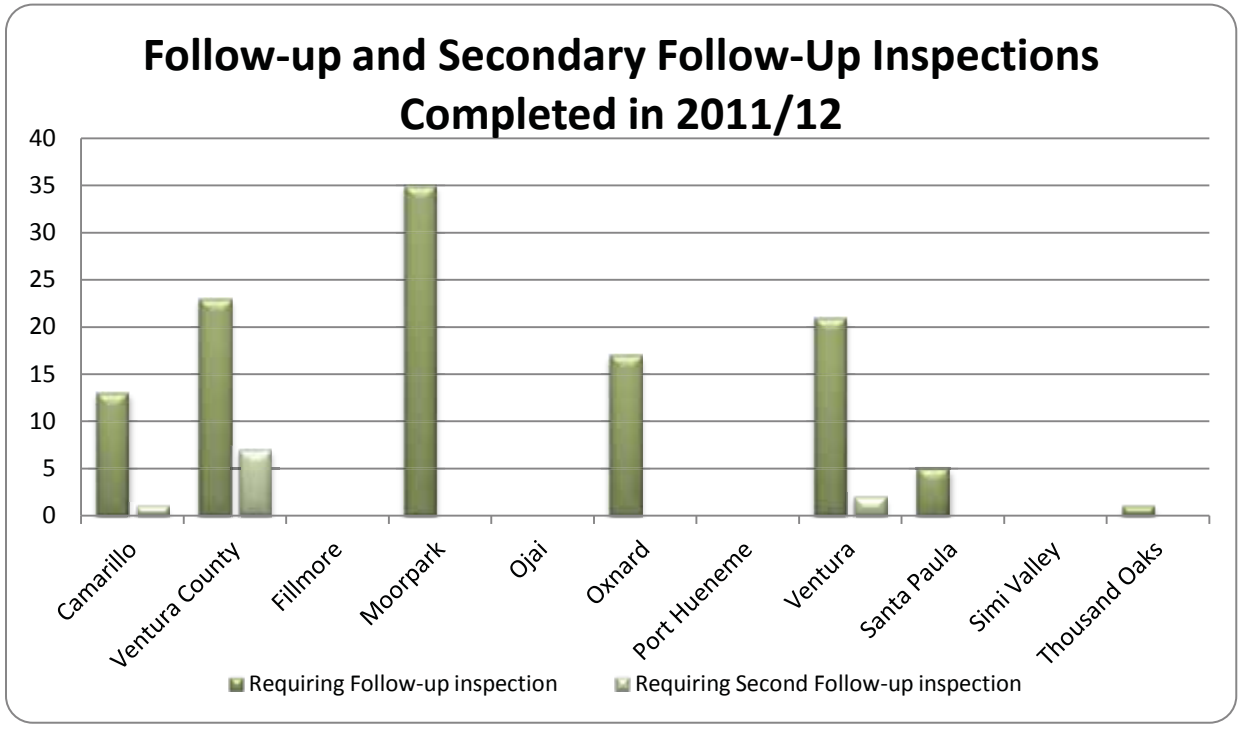
Whenever the Permittee determined that an operator had failed to adequately implement all necessary BMPs as required by the Permit, or otherwise were deemed out of compliance, the Permittee engaged in progressive enforcement action. If the facility can be brought into compliance while the inspector is still on-site a follow-up inspection is not deemed necessary. All other facilities that failed to implement all necessary BMPs were advised there would be follow-up visits. The Permit requires that re-inspection occurs within four weeks of the initial inspection. Follow-up visits may be scheduled, especially if the facility operator is difficult to get a hold of, but for the majority of businesses the follow-up inspections are unannounced surprise inspections. If continued stormwater violations were found progressive enforcement actions were initiated, and another visit was scheduled if necessary. Enforcement actions may include any of the following: Warning Notice, Notice of Violation(s), Administrative Civil Liability actions and monetary fines. These actions are described in detail and reported in Section 8 - Programs for Illicit Discharges.

***Performance Standard 4-5***

| *Conduct follow-up inspections as necessary* | | | |
|---|---|---|---|
| | *Yes* | *No* | *N/A* |
| *Camarillo* | ☑ | | |
| *Ventura County* | ☑ | | |
| *Fillmore* | ☑ | | |
| *Moorpark* | | ☑ | |
| *Ojai* | ☑ | | |
| *Oxnard* | ☑ | | |
| *Port Hueneme* | | | ☑ |
| *Ventura* | ☑ | | |
| *Santa Paula* | | ☑ | |
| *Simi Valley* | ☑ | | |
| *Thousand Oaks* | ☑ | | |

The number of required Initial Follow-Up Inspections and Secondary Follow-Up Inspections can be seen by Permittee in Figure 4-13 Follow-up and Secondary Inspections.

***Figure 4-13 Follow-up and Secondary Inspections***




## 4.6 INDUSTRIAL/COMMERCIAL BMP IMPLEMENTATION – IC3

The Industrial/Commercial BMP Implementation Control Measure requires industrial and commercial businesses to reduce pollutants in stormwater discharges and cease any unauthorized non-stormwater discharges to the storm drain system. Although the Permittees may provide guidance to facility operators on appropriate Source and Treatment Control BMP selection and application, the selection of specific

BMPs to be implemented is the responsibility of the discharger. The Permittees develop business specific guidance (fact sheets) that is updated as necessary to reflect new requirements and/or knowledge.

### 4.6.1 BMP Fact Sheets and Selection

In order to assist the industrial and commercial facilities in selecting and implementing the appropriate types of BMPs, the Permittees developed BMP Fact Sheets for industrial and commercial businesses. The BMP Fact Sheets are distributed during the inspections and made available on the Ventura Countywide Stormwater Quality Management Program's website at the following address:

http://www.vcstormwater.org/programs_business.html#business_factsheets

BMP fact sheets were updated and new ones created for several target audiences during this reporting period including:

- Building and Grounds Maintenance
- Pool and Spa Maintenance
- Commercial Pesticide Application
- Mobile Cleaning Services
- Mobile Auto Detailing and Charity Car Wash Events, and
- Building Repair and Remodeling.

These have been added to the library of fact sheets the Program has already developed for automotive service facilities, RGOs, and nurseries.

### 4.6.2 Distribute BMP Fact Sheets during Inspections

The Permittees distribute BMP Fact Sheets to facility owners/operators as a part of the inspection process. The development and distribution of these fact sheets, along with the inspection program where inspectors meet with the local facility managers about stormwater regulations and BMPs also serves to meet the Permit requirement for Corporate Outreach under the Public Information and Participation Program.


Watershed Protection Tips

Commercial Pesticide, Herbicide & Fertilizer Application

How Do Pest, Weed and Landscape Management Chemicals Affect the Watershed?

Careless application and overuse of any pesticide, herbicide or fertilizer is a key contributor to stormwater pollution. When released into the storm drain system, these chemicals can harm unintended insects, plants and animals. You are responsible for preventing this from happening.

Best Management Practices

- Apply pesticides and herbicides according to the label.
- Choose the least toxic sprays based on the characteristics of the target site and type of pest or weed.
- Consider the use of environmentally friendly chemical alternatives such as insecticidal soaps, horticultural oils and biological controls.
- Become familiar with Integrated Pest Management (IPM) options to reduce the need for chemical applications through combining biological, cultural, and physical tools.
- Avoid using copper-based tree sprays and copper sulfate root killing products.
- Spot treat instead of treating the entire area.
- Apply post-emergence herbicide when weeds are at their most vulnerable growth stage.
- To control weeds, use mulch, drip irrigation and hand pulling when possible.
- Apply chemical fertilizer only as needed, when plants can best use it, and when the potential for it being carried away by runoff is low.
- Calibrate equipment and replace worn nozzle tips and faulty gauges, before mixing and loading pesticides.
- Store pesticides in a covered area in their original containers or in the applicator; use secondary containment if possible.
- Maintain a buffer zone around wells and surface water to avoid contamination.
- Avoid applications within 24 hours of a predicted storm forecast or after an irrigation event where water is still leaching or running.
- Apply chemicals only in the morning and on wind-free days to avoid spray drift.
- Know that no landscape will ever be completely pest-free or weed-free.

What Is Our Watershed?

Our watershed is the total land area from which stormwater drains into streams, rivers or other bodies of water. The storm drain system is a vast network of gutters, pipes and open channels designed for flood control, which directs untreated stormwater away from our communities. It is both illegal and harmful to allow solid or liquid wastes, including organic materials of any kind, into the storm drain system.

For more information on preventing stormwater pollution call:

COMMUNITY FOR A CLEAN WATERSHED

cleanwatershed.org

The Watershed Should Only Shed Water

***Fact Sheet for Pesticide Applicators***

***Performance Standard 4-6***

| *Ensure information on BMPs was available on site* | | | |
|---|---|---|---|
| | *Yes* | *No* | *N/A* |
| *Camarillo* | ☑ | | |
| *Ventura County* | ☑ | | |
| *Fillmore* | ☑ | | |
| *Moorpark* | ☑ | | |
| *Ojai* | ☑ | | |
| *Oxnard* | ☑ | | |
| *Port Hueneme* | | | ☑ |
| *Ventura* | ☑ | | |
| *Santa Paula* | | ☑ | |
| *Simi Valley* | ☑ | | |
| *Thousand Oaks* | ☑ | | |

## 4.7 ENFORCEMENT– IC4

The Enforcement Control Measure outlines the progressive levels of enforcement applied to industrial and commercial facilities that are out of compliance with County and municipal ordinances and establishes the protocol for referring apparent violations of facilities subject to the Industrial Activities Storm Water General Permit to the Regional Water Board. The Enforcement Control Measure has been developed to address specific legal authority issues related to industrial and commercial facility discharges and should be implemented in coordination with the Permittees' efforts to maintain adequate legal authority for the Stormwater Program in general.

### 4.7.1 Implement the Progressive Enforcement and Referral Policy

The Permittees have a progressive enforcement and referral policy so that the enforcement actions match the severity of a violation and include distinct, progressive steps initiated to bring a facility into compliance. Options are available for progressive corrective actions for repeat offenders. Inspections are performed to assess compliance with municipal stormwater ordinances and any noncompliance is managed through the enforcement policy. Noncompliance may include failure to implement adequate source control or structural BMPs, or other violations of County and municipal ordinances.

The Permittees' facility inventory contains an "inspection findings" data field for comments pertaining to the specific facility. If there is an unsatisfactory inspection, then a comment is made in this data field and the facility is marked for re-inspection within four weeks of the date of initial unsatisfactory inspection. Past experience with facilities has shown that facility operators are cooperative and willing to bring facilities into compliance.

***Performance Standard 4-7***

| *Implement a progressive enforcement policy* | | | |
|---|---|---|---|
| | *Yes* | *No* | *N/A* |
| *Camarillo* | ☑ | | |
| *Ventura County* | ☑ | | |
| *Fillmore* | ☑ | | |
| *Moorpark* | ☑ | | |
| *Ojai* | ☑ | | |
| *Oxnard* | ☑ | | |
| *Port Hueneme* | | | ☑ |
| *Ventura* | ☑ | | |
| *Santa Paula* | | ☑ | |
| *Simi Valley* | ☑ | | |
| *Thousand Oaks* | ☑ | | |

**Implementation of Referral Policy**

As a means to enhance interagency coordination, the Permittees may refer industrial business violations of County and/or municipal stormwater ordinances and California Water Code §13260 to the Regional Water Board, provided that Permittees have made a good faith effort of progressive enforcement under applicable stormwater ordinances. Referral to the Regional Water Board is required so that they can enforce the conditions of their permit on non-compliant industries. Every effort is taken at the local level to achieve compliance before referring a facility, including using the threat of calling in the Regional Board and their ability to levy hefty fines. It is possible that the Regional Board would be notified immediately if very egregious problems were

discovered at a site covered by the Industrial Activities Stormwater General Permit (IASGP). At a minimum the permit requires Permittees provide a good faith effort to bring a facility into compliance, which must be documented with:

- Two follow-up inspections
- Two warning letters or notices of violation

For those facilities in violation of municipal ordinances and subject to the IASGP, the Permittees may escalate referral of such violations to the Regional Water Board after one inspection and one written notice (copied to the Regional Water Board) to the operator regarding the violation. This is up to the discretion of the Permittee, and is only likely to be used in cases where there is a severe discharge causing or contributing to a water quality exceedance.

Such referrals are filed electronically with the Regional Water Board for any inspection that led to a notice of violation or the discovery of a non-filer. In making such referrals, Permittees are required to include at a minimum the following information in their referral:

1. Name of facility
2. Operator of facility
3. Owner of facility
4. WDID number (if applicable)
5. Industrial activity being conducted at the facility that is subject to the IASGP
6. Records of communication with the facility operator regarding the violation, which shall include at least an inspection report
7. The written notice of the violation copied to the Regional Water Board

The Permittees were able to bring all IAGSP facilities into compliance, and none were referred to the Regional Board for further enforcement.

### 4.7.2 Investigation of Complaints Transmitted by Regional Water Board

On occasion, Regional Board staff will receive information on an industry within a Permittee's jurisdiction that needs to be investigated in a timely manner. The Permittees implement procedures for responding to complaints forwarded by the Regional Water Board to ensure initiation of inspections within one business day. Permittees may comply by taking initial steps (such as logging, prioritizing, and tasking) to "initiate" the investigation within one business day. However, the Regional Water Board expects that the initial investigation, including a site visit, would occur within four business days. Complaint-initiated inspections include, at a minimum, a limited inspection of the facility to confirm the complaint, to determine if the facility is effectively complying with municipal stormwater urban runoff ordinances and, if necessary, to initiate corrective action.

The Permittees have (and will continue to) work closely with the Regional Water Board when a facility is identified as requiring a compliance inspection. The Permittees were able to bring all facilities into compliance that were not immediately found to be in compliance.

***Table 4-2 Complaints Transmitted by Regional Water Board for Investigation by Permittees***

| Facility Category | Nature of Complaint | Confirmation of Complaint | Permittee Assistance and/or Corrective Action |
|---|---|---|---|
| *Industrial* | | | |
| None | | | |
| *Other Federally-Mandated Facilities* | | | |
| None | | | |

### 4.7.3 Task Force Participation

The Permittees will participate in an interagency workgroup, such as the Environmental Task Force or the Storm Water Task Force, as a means to communicate information and concerns regarding stormwater enforcement actions undertaken by the Permittees. Participation in such a workgroup should facilitate communication of special cases of stormwater violations and address a coordinated approach to enforcement action.

The Ventura County Stormwater Program and Permittees, including different divisions such as CUPA or County Environmental Health, participate on the Ventura County Environmental Crimes Task Force**.** This task force is led by the District Attorney's office and includes representatives from different environmental agencies including the Ventura Air Pollution Control District, California EPA, and Federal EPA. The purpose is to work together to share sensitive information on enforcement activities to increase the chances of eliminating the problem.

## 4.8 TRAINING – IC5

The Training Control Measure is important for the implementation of the Industrial/Commercial Program Element. An effective training program is one of the best pollution prevention BMPs that can be implemented because it provides for consistency in inspections and enforcement, gives the inspector the ability to respond to a variety of situations and questions, and ultimately encourages the inspectors to initiate behavioral changes that are fundamentally necessary to protect water quality.

Each Permittee identified inspection staff and other personnel for training based on the type of stormwater quality management and pollution issues that they might encounter during the performance of their regular inspections or daily activities. Targeted staff may include those who perform inspection activities as part of the HAZMAT and wastewater pretreatment programs as well as staff who may respond to questions from the public or industrial/commercial businesses, such as those working with business licenses.

Staff was trained in a manner that provided adequate knowledge for effective business inspections, enforcement, and answering questions from the public or industrial/commercial operators. Training included a variety of forums, ranging from informal "tailgate" meetings, to formal classroom training and self-guided training methods. When appropriate, staff training included information about the prevention, detection and investigation of illicit connections and illegal discharges (IC/ID). See **Section 8** for more information regarding IC/ID training.

***Performance Standard 4-8***

| *Conduct training for key staff involved in the Business Inspection program* | | | |
|---|---|---|---|
| | *Yes* | *No* | *N/A* |
| *Camarillo* | ☑ | | |
| *Ventura County* | ☑ | | |
| *Fillmore* | ☑ | | |
| *Moorpark* | ☑ | | |
| *Ojai* | ☑ | | |
| *Oxnard* | ☑ | | |
| *Port Hueneme* | ☑ | | |
| *Ventura* | ☑ | | |
| *Santa Paula* | ☑ | | |
| *Simi Valley* | ☑ | | |
| *Thousand Oaks* | ☑ | | |

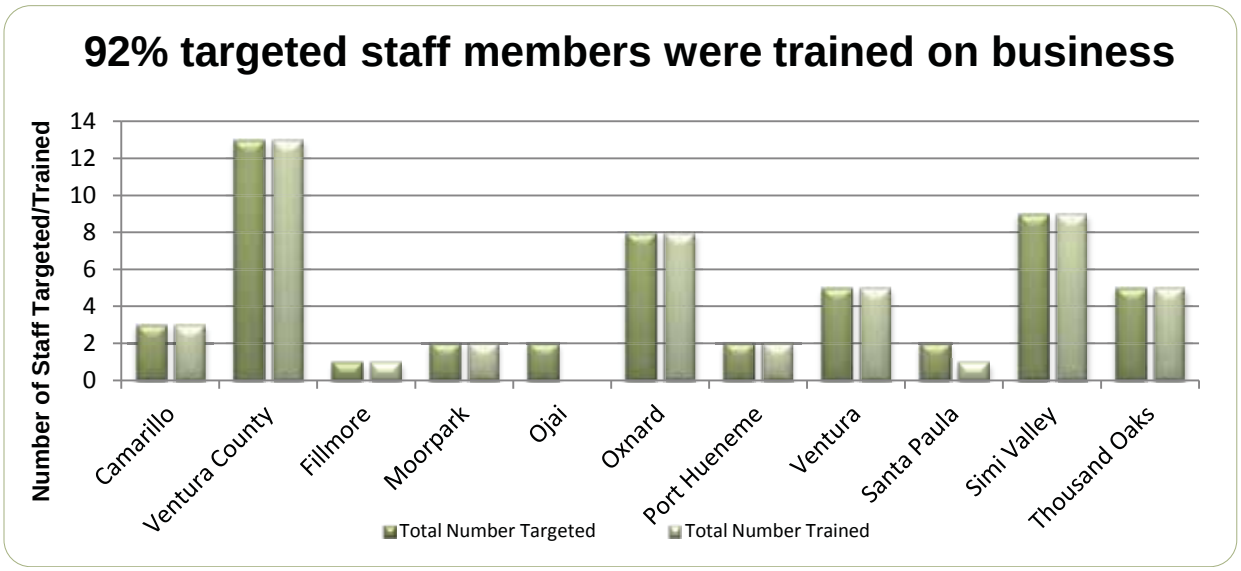
During this reporting period, the Permittees trained 49 inspection staff in stormwater pollution prevention.

Figure 4-14 IC/ID Training depicts the number of staff trained in the program area for each Permittee. Some agencies contract out their inspections to trained consultants and therefore did not target any of their employees.

***Table 4-3 Training Areas of Focus for the Industrial/Commercial Program Element***

| Target Audience | Format | Subject Material | Comments |
|---|---|---|---|
| • Industrial/Commercial inspectors<br>• County Health restaurant inspectors | • Classroom<br>• Field Demos | • Overview of stormwater management program<br>• Stormwater ordinance and enforcement policy<br>• BMPs for facilities<br>• Facility inventory tracking | • Training seminars or workshops related to the program may be made available by other organizations |

***Figure 4-14 IC/ID Training***



## 4.9 EFFECTIVENESS ASSESSMENT – IC6

Effectiveness assessment is a fundamental component required for the development and implementation of a successful stormwater program. In order to determine the effectiveness of the Industrial/Commercial Facility Program Element, a comprehensive assessment of the program data is conducted as part of the Annual Report. The results of this assessment are used to identify modifications that need to be made to the Program Element. Each year the effectiveness assessment is reviewed and revised as necessary.

By conducting these assessments and modifying the Program Element as necessary, the Permittees ensure that the iterative process is used as an effective management tool. Due to the types of data collected for the Industrial/Commercial Facility Program, current and future assessments will primarily focus on Outcome Levels 1 and 2 though behavior changes can be seen as a reduction in discharges is observed and the need for enforcement drops.

- Outcome Level 1 (L1) answers the question: Did the Permittees implement the components of the Permit?
- Outcome Level 2 (L2) answers the question: Can the Permittees demonstrate that the control measure/performance standard significantly increased the awareness of its target audience?
- Outcome Level 3 (L3) answers the question: Can the Permittees demonstrate that the control measure/performance standard changed a target audience's behavior, resulting in the implementation of recommended BMPs?

The following is an assessment regarding the effectiveness of the Industrial/ Commercial Program.

### 4.9.1 Facility Inventory Maintain and Annual Update Inventory

All Permittees maintain an inventory of industrial and commercial facilities. Permittees have begun to inspect facilities with the goal of completing all initial inspections by July 8, 2012 and inspecting facilities twice during the permit term. Initially inspections focused on industrial facilities, auto dealers, auto service shops, laundry facilities, nurseries and restaurants. (L1)

### 4.9.2 Inspection

Initial inspections were performed by this reporting year. Some Permittees initiated inspections over the 2009-10 reporting periods and continued them through the 2011/12 period to meet this deadline. (L1) Permittees conducted 115 follow-up inspections as needed to ensure compliance. Since the Permit adoption over 5600 inspections were conducted Countywide (L2).

The Permittees have reviewed and revised their inspection checklists, as necessary to be consistent with the permit. (L1)

### 4.9.3 Industrial/Commercial BMP Implementation

#### BMP Fact Sheets and Selection

Industrial and commercial BMP Fact Sheets were developed and are available at the Ventura Countywide Stormwater Quality Management Program website. (L1)

### Distribute BMP Fact Sheets

Permittees that have initiated an inspections program distribute fact sheets as part of the inspection process. (L1)

#### 4.9.4 Enforcement

### Implement Progress Enforcement and Referral Policy

The Permittees have a progressive enforcement and referral policy so that enforcement actions match the severity of a violation and include distinct, progressive steps introduced to bring a facility into compliance. (L1)

### Implementation of Industrial Referral Policy

All Permittees may refer industrial business violations to the Regional Water Board provided that Permittees have made a good faith effort of progressive enforcement. (L1)

### Investigation of Complaints Transmitted by Regional Water Board

The Permittees implement procedures for responding to complaints forwarded by the Regional Water Board to ensure initiation of inspections within one business day. (L1)

### Task Force Participation

The Permittees will participate in an interagency workgroup, such as the Environmental Task Force or the Storm Water Task Force, as a means to communicate information and concerns regarding stormwater enforcement actions undertaken by the Permittees. (L1)

#### 4.9.5 Training

During this reporting period, the Permittees trained 49 staff in business inspections and enforcement. Permittees effectively trained 94% of targeted staff. (L1)

## 4.9 INDUSTRIAL/COMMERCIAL PROGRAM ELEMENT MODIFICATIONS

On an ongoing basis, the Permittees evaluate the experience that staff has had in implementing the program and the results of the Annual Report to determine if any additional program modifications are necessary to comply with the Clean Water Act requirement to reduce the discharge of pollutants to the MEP.

Many key modifications have been made to the Industrial/Commercial Program Element with the adoption of the new permit. Key modifications that have been made are tracking facilities by watershed, an expanded list of businesses and industries that are tracked and clearly defining how to identify those businesses and industries. Future efforts may look into the inspections or outreach to the owners of multi-tenant commercial retail areas with common trash areas.

# 5 Planning and Land Development

## 5.1 OVERVIEW

The addition of impervious areas in the development of homes, industrial and commercial businesses, parking lots, and streets and roads increases the amount of stormwater runoff, as well as the potential for pollution. The Planning and Land Development Program Element ensures that the impacts on stormwater quality from new development and redevelopment are limited through implementation of general site design measures, site-specific source control measures, low impact development strategies, and treatment control measures. The general strategy for development is to avoid, minimize, and mitigate (in that order) the potential adverse impacts to stormwater. The potential for long-term stormwater impacts from development is also controlled by requiring ongoing operation and maintenance of post-construction treatment controls.

The Permittees have developed and implemented a Program for Planning and Land Development to address stormwater quality in the planning and design of development and redevelopment projects. The term "development project" as used in this Program encompasses those projects subject to a planning and permitting review/process by a Permittee. A development project includes any construction, rehabilitation, redevelopment or reconstruction of any public and private residential project, industrial, commercial, retail, and other non-residential projects, including qualifying public agency projects.

To help meet the goals and objectives of the Program, the Permittees attend Planning and Land Development Subcommittee meetings to coordinate and implement a comprehensive and consistent program to mitigate impacts on water quality from development projects to the maximum extent practicable (MEP). However, the Permittees may modify their programs to address particular issues, concerns or unique constraints to a watershed such as local geology or known water quality impairments.

## 5.2 CONTROL MEASURES

The Permittees have developed several Control Measures and accompanying performance standards to ensure that the planning and land development program requirements are effectively developed and implemented. For each Control Measure there are accompanying performance standards which, once accomplished, constitute compliance with the Permit requirements. The Planning and Land Development Program Control Measures consists of the following:

***Table 5-1 Control Measures for the Planning and Land Development Program Element***

| LD | Control Measure |
|---|---|
| LD1 | State Statute Conformity |
| LD2 | New Development/ Redevelopment Performance Criteria |
| LD3 | Plan Review and Approval Process |
| LD4 | Maintenance Agreement and Transfer |
| LD5 | Tracking, Inspection and Enforcement |
| LD6 | Training |
| LD7 | Effectiveness Assessment |

## 5.3 STATE STATUTE CONFORMITY – LD1

Traditional methods of land development can lead to increased stormwater discharge volumes and flow velocities. These alterations to the natural hydrologic regime may reduce infiltration to groundwater, and increase erosion and flooding and decrease habitat integrity. Water quality and watershed protection principles and policies such as minimization of impervious areas, pollutant source controls, preservation of natural areas, and peak runoff controls can help to minimize the impacts of urban development on the local hydrology and aquatic environment. Integration of stormwater quality and watershed principles into the Permittees' general conditions will serve as the basis for directing future planning and development in order to minimize these adverse effects. In addition, the California Environmental Quality Act (CEQA) process provides for consideration of water quality impacts and appropriate mitigation measures.

### 5.3.1 Review/Revise CEQA Review Documents

The California Environmental Quality Act (CEQA) sets forth requirements for the processing and environmental review of many projects. The Permittees use the CEQA process and review as an excellent opportunity to address stormwater quality issues related to proposed projects early in the planning stages. The National Environmental Quality Act (NEPA) comes into play less often than CEQA, but may be included on projects involving federal funding. Like CEQA, NEPA process and review provides opportunities to address stormwater quality issues related to proposed projects early in the planning stages.

The CEQA review process is necessary for determining what impacts a proposed development project could have on the environment. The Permittees' current CEQA review process includes procedures for considering potential stormwater quality impacts and providing for appropriate mitigation. Permittees will review and revise the CEQA review documents as needed for consistency with the new Permit.

Each Permittee has reviewed their internal planning procedures for preparing and reviewing CEQA (and NEPA when applicable) documents and has linked stormwater quality mitigation conditions to legal discretionary project approvals. When appropriate, the Permittees consider stormwater quality issues when processing environmental checklists, initial studies, and environmental impact reports. The Permit requires that stormwater controls are incorporated into the Permittees CEQA process by July 8, 2011; the Permittees have been successful in meeting that obligation.

### 5.3.2 Revise the General Plan

The Permittees' General Plans provide the foundation and the framework for land use planning and development. Therefore, the General Plan is a useful tool to promote the policies for protection of stormwater quality. The Permittees are to include watershed and stormwater management considerations in the appropriate elements of their General Plans whenever these elements are significantly rewritten. Table 5-2 indicates the scheduled date of a significant rewrite to the Permittees' General Plan elements if known. Note that some Permittees have already modified their General Plan to include stormwater requirements under the previous permit, the table reflects if stormwater issues have been incorporated. The Permit additionally requires that when General Plan elements are being updated drafts are provided to the Regional Board for their review. These permit requirements do not have an absolute due date other than as General Plan elements are updated. The 2011 Ventura County General Plan was updated for the 2020 horizon year, and the Housing Element is scheduled for additional updates by October 2013; submittal of the updated Housing Element to Regional Board hasn't been scheduled yet. The Oxnard City

Council adopted the 2030 General Plan on October 11, 2011; this plan is available for review at cityofoxnard.org.

***Performance Standard 5-1***

| **CEQA process include the procedures necessary to consider potential stormwater quality impacts** | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |

***Pervious ribbon gutter in a parking lot***

***Table 5-2 Scheduled Dates for Permittees' General Plan Rewrite***

| Land Use | General Plan includes Stormwater Requirements (Y/N) | Scheduled Date for Significant Rewrite of General Plan | Date Submitted to Regional Board |
|---|---|---|---|
| Camarillo | Yes | | |
| County of Ventura | Yes | Completed June 2011 | 9/1/2010 |
| Fillmore | Yes | 1/1/2020 | |
| Moorpark | Yes | 7/1/2013 | |
| Ojai | Yes | | |
| Oxnard | Yes | 2020 | 3/12/2009 |
| Port Hueneme | No | 1/1/2015 | To Be Determined |
| Ventura | Yes | | |
| Santa Paula | Yes | 1/1/2015 | 12/31/1998 |
| Simi Valley | Yes | 8/11/2011 | |
| Thousand Oaks | No | | N/A |
| **Housing** | | | |
| Camarillo | No | 7/1/2014 | |
| County of Ventura | Yes | 10/1/2013 | 9/1/2010 |
| Fillmore | Yes | 1/1/2013 | |
| Moorpark | No | 7/1/2013 | |
| Ojai | Yes | | |
| Oxnard | Yes | 2020 | 3/12/2009 |
| Port Hueneme | No | 1/1/2015 | To Be Determined |
| Ventura | Yes | | |
| Santa Paula | | 1/1/2012 | 12/31/1998 |
| Simi Valley | Yes | 8/11/2011 | |
| Thousand Oaks | No | | N/A |
| **Conservation** | | | |
| Camarillo | No | | |
| County of Ventura | Yes | Updated June 2011 | 9/1/2010 |
| Fillmore | Yes | | |
| Moorpark | Yes | 7/1/2013 | |
| Ojai | Yes | | |
| Oxnard | Yes | 2020 | 3/12/2009 |
| Port Hueneme | Yes | 1/1/2015 | |
| Ventura | Yes | | |
| Santa Paula | Yes | 1/1/2015 | 12/31/1998 |
| Simi Valley | Yes | 8/11/2011 | |
| Thousand Oaks | Yes | 12/31/2012 | N/A |
| **Open space** | | | |
| Camarillo | No | | |
| County of Ventura | Yes | Updated June 2011 | Sep-10 |
| Fillmore | Yes | | |
| Moorpark | Yes | 7/1/2013 | |
| Ojai | Yes | | |
| Oxnard | Yes | 2020 | 3/12/2009 |
| Port Hueneme | Yes | 1/1/2015 | |
| Ventura | Yes | | |
| Santa Paula | Yes | 1/1/2015 | 12/31/1998 |
| Simi Valley | Yes | 8/11/2011 | |
| Thousand Oaks | Yes | 12/31/2012 | N/A |

## 5.4 NEW DEVELOPMENT PERFORMANCE CRITERIA – LD2

Post-construction BMPs, including site design, source control, low impact development techniques, and stormwater quality treatment, are necessary for development and re-development projects to mitigate potential water quality impacts. In addition, priority projects identified within the Permit require specific mitigation measures. In order to assist developers in meeting these requirements, the Permittees developed a Technical Guidance Manual for Stormwater Quality Control Measures for new development and redevelopment in 2002 (TGM 2002). This Manual was updated to conform with the new Permit requirements in 2011 (2011 TGM) these requirements became effective during the reporting period.

### 5.4.1 Update to the 2002 Ventura County Technical Guidance Manual for Stormwater Quality Control Measures (TGM)

In May 2010 the Permittees updated the 2002 TGM for the selection, design, and maintenance of BMPs for new development and redevelopment projects as identified in Order 2009-0057. This Manual was never approved by the Regional Board Executive Officer due to the permit being remanded and subsequently re-heard by the Board. As an outcome of that hearing new language was adopted for the Permit and a new date set for the revisions to TGM. The TGM was rewritten to address the five-percent effective impervious area requirement, retention and biotreatment, alternative compliance for technical infeasibility, interim hydro-modification requirements, water quality criteria, and maintenance agreements (see also Control Measure LD4 for more information). The 2011 TGM was submitted to the Regional Board on June 16, 2011. The regional approved the 2011 TGM on July 13, 2011 and it became effective on October 11, 2011.

***Low Impact Development BMP***

### 5.4.2 Require Compliance with Performance Criteria

New development and redevelopment projects, as outlined in Permit Provision 4.E.II., are subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution. New performance criteria outlined within the Permit include reducing the percentage of effective impervious area to five-percent or less of the total project area, hydromodification control criteria, and water quality mitigation criteria. These Permit conditions became effective 90 days after the TGM was approved by the Regional Board Executive Officer.

**Project Review and Conditioning**

For projects whose applications were deemed complete prior to the 2011 TGM effective date the Permittees are to ensure they comply with the previous performance criteria under the Stormwater Quality Urban Impact Mitigation Plan (SQUIMP) and the 2002 TGM. Under both manuals the Permittees' approach to stormwater comes early in the project development process when the options for pollution control are greatest, and the cost to

incorporate these controls into new development or redevelopment projects is the least. In planning and reviewing a development project, the Permittees consider three key questions with respect to stormwater quality control: 1. what kind of water quality controls are needed? 2. where should controls be implemented? 3. what level of control is appropriate? During the planning and review process, the Permittees identify potential stormwater quality problems, communicate design objectives, and evaluate the plan for the most appropriate design alternatives.

### Stormwater Quality Urban Impact Mitigation Plan (SQUIMP)

For those projects deemed complete before October 11, 2011 the Permitees require the implementation of the Stormwater Quality Urban Impact Mitigation Plan (SQUIMP) for new development projects that fall into one or more of the following categories:

- Single-family hillside residences;
- 100,000 square foot commercial development;
- Automotive repair shops;
- Retail gasoline outlets;
- Restaurants;
- Home subdivisions with 10 or more housing units;
- Locations within, or directly adjacent to or discharging to an identified Environmentally Sensitive Area (ESA); or
- Parking lots of 5,000 square feet or more with 25 or more parking spaces and potentially exposed to stormwater runoff.

In addition, redevelopment projects in one of the SQUIMP categories that result in the creation, addition or replacement of 5,000 square feet or more of impervious surfaces, that is not a part of routine maintenance, are subject to SQUIMP requirements. If a redevelopment project creates or adds 50% or more impervious surface area to the existing impervious surfaces, then stormwater runoff from the entire area (existing and redeveloped) must be conditioned for stormwater quality mitigation. Otherwise, only the affected area of the redevelopment project requires mitigation.

The SQUIMP lists the minimum required BMPs that must be implemented for new development and redevelopment projects subject to the SQUIMP. The minimum requirements include the following BMPs:

- Control peak stormwater runoff discharge rates
- Conserve natural areas
- Minimize stormwater pollutants of concern
- Protect slopes and channels
- Provide storm drain stenciling and signage
- Properly design outdoor material storage areas
- Properly design trash storage areas
- Provide proof of ongoing BMP maintenance
- Meet design standards for structural or treatment control BMPs
- Comply with specific provisions applicable to individual priority project categories, which include the following: 100,000 square foot commercial development; restaurants; retail gasoline outlets; automotive repair shops; and parking lots.

***Performance Standard 5-2***

| Require compliance with performance criteria under SQUIMP | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |

### 5.4.3 BMP Selection and Design Criteria

The Permittees consider site-specific conditions of development projects and pollutants of concern on the watershed when determining which BMPs are most appropriate for a site. Prior to approving BMPs, the staff conditioning the project evaluates post-construction activities and potential sources of stormwater pollutants. The project proponent is required to consider BMPs that would address the potential pollutants reasonably expected to be present at the site once occupied. BMPs to protect stormwater during the construction phase may also be a part of this conditioning process, although these are addressed through the grading permit process through the Construction Program

***Low Impact Development BMP***

In order to achieve appropriate stormwater quality controls, the Permittees use the following common criteria in screening and selecting, or rejecting BMPs during the planning stage with a priority given to non-proprietary designed BMPs:

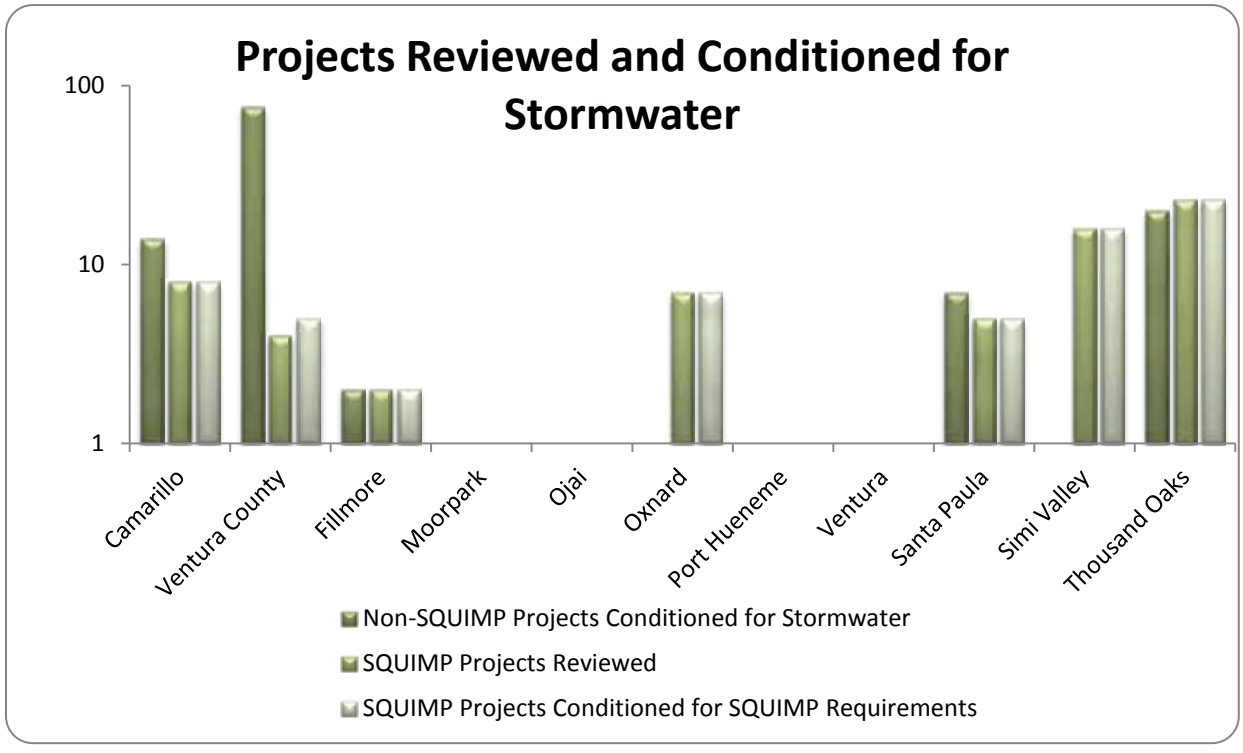
- Project characteristics;
- Site factors (e.g., slope, high water table, soils, etc.);

- Pollutant removal capability;
- Short term and long term costs;
- Responsibility for maintenance;
- Contributing watershed area; and
- Environmental impact and enhancement.

The BMP selection criteria listed above is applied by the Permittees in accordance with the overall objective of the Planning and Land Development Program, i.e. to reduce pollutants in discharges to the MEP. In some site-specific situations there will be BMPs clearly be more appropriate and effective than others, the BMP selection process reflects this variability.

The number of projects required to comply with the performance criteria during the permit year is outlined in Figure 5-1. This includes projects required by the Permit to implement stormwater treatment controls, but beyond that projects that due to their nature or potential to discharge pollutants of concern, were also required to implement stormwater management controls of either source control or water quality treatment.

***Figure 5-1 Projects Reviewed and Conditioned***



### 5.4.1 Potential of Offsite Mitigation Projects

The new requirements of the Permit allow an alternative to compliance with the land development criteria of onsite retention and biotreatment for projects with technical infeasibilities through the use of offsite mitigation. New developments and significant re-developments that have identified technical infeasibilities, and therefore cannot comply with the retention and biofiltration requirements onsite have the option of utilizing alternative mitigation offsite.

The Permittees are in the process of developing an offsite mitigation framework and identifying potential locations. Infill and redevelopment projects that demonstrate technical infeasibility may be eligible for offsite mitigation. As required by the Permit, Permittees will provide a list of offsite opportunities and track and summarize offsite mitigation projects.

The Permittees researched potential management and funding structures for creating a new offsite stormwater alternative mitigation program as identified in the Permit. The project focused on general funding mechanisms, accounting, and the program management structure needed to implement and sustain a long term stormwater retention and/or biofiltration program. The second prong of the project focused on potential locations for the offsite program using an integrated water resources approach. The first step was to determine the potential need for offsite mitigation to understand the scale of projects that may be needed.

Because development projects are required to manage as much water on site as possible the final results of the projected needs assessment yielded a volume of only eight acre feet countywide would need to be managed offsite by 2030. This volume of water is not a significant amount and did not attract the potential for integrated water resource management programs with third party partners (e.g. local water agencies) to support the development of offsite BMPs. From these studies the Permittees learned that the offsite need for any one project is likely to be small enough to be manageable in the public right-of-way of the permitting agency and maintained through conventional funding mechanisms.

### 5.4.2 Require Hydromodification Criteria

Permittees currently require the interim hydromodification criteria as specified in Permit provision 4.E.III.3(a)(3). Interim criteria will be required until the Southern California Water Monitoring Coalition (SMC) completes the Hydromodification Control Study (HCS).

The purpose of Hydromodification Control Measures is to minimize impacts to natural creeks due to changes in postdevelopment stormwater runoff discharge rates, velocities, and durations by maintaining, within a certain tolerance, the project's pre-project stormwater runoff flow rates and durations.

Hydromodification Control Measures may include onsite, subregional, or regional Hydromodification Control Measures; Retention BMPs; or stream restoration measures. Preference will likely be given to onsite Retention BMPs and Hydromodification Control Measures; however in-stream restoration measures may be determined to be the best use of resources and may more effectively and quickly address the beneficial uses of natural drainage systems.

The Southern California Stormwater Monitoring Coalition (SMC) is developing a regional methodology to eliminate or mitigate the adverse impacts of hydromodification as a result of urbanization, including

hydromodification assessment and management tools. The Program will develop and implement watershed specific Hydromodification Control Plans (HCPs) after the completion of the SMC study (Permit requires HCP is submitted 180 days after the completion of the SMC study). Until the completion of the HCPs, the Interim Hydromodification Control Criteria, described below, apply to applicable, non-exempt new development and redevelopment projects.

***Performance Standard 5-3***

| **Participate in the Stormwater Monitoring Committee's Hydromodification Control Study** | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Ventura Countywide Stormater Quality Program | ☑ | | |

***Performance Standard 5-4***

| **Develop and implement watershed specific HCPs? (180 days after the completion of the SMC HCS)** | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Ventura Countywide Stormater Quality Program | | | ☑ |

The Permit states that "Permittees may exempt projects from implementation of hydromodification controls where assessments of downstream channel conditions and proposed discharge hydrology indicate that adverse Hydromodification effects to present and future beneficial uses of Natural Drainage Systems are unlikely: Projects that discharge directly or via a storm drain into concrete or improved (not natural) channels (e.g., rip rap, sackcrete, etc.)." Because of the emphasis on natural drainage systems, defined by the permit as "not engineered" the Permittees have undertaken a mapping exercise to identify all the improved, or engineered, rivers and channels where the Permit identified hydromodification exemptions apply. This map can then be used to identify the rivers and channels where hydromodification will need to be considered by new and redevelopment.

### 5.4.3 Interim Hydromodification Control Criteria

Interim hydromodification controls for projects deemed complete after the effective date which disturb less than 50 acres shall be complying with the stormwater management standards contained in the 2011 TGM.

Projects disturbing 50 acres or greater must develop and implement a Hydromodification Analysis Study (HAS) that demonstrates that post development conditions are expected to approximate the pre-project erosive effect of sediment transporting flows in receiving waters. The HAS must lead to the incorporation of project design features intended to approximate, to the extent feasible, an Erosion Potential value of 1, or any alternative value that can be shown to be protective of the natural drainage systems from erosion,

incision, and sedimentation that can occur as a result of flow increases from impervious surfaces and damage stream habitat in natural drainage systems.

## 5.5 PLAN REVIEW AND APPROVAL PROCESS

Stormwater quality controls should be considered throughout the development plan review and approval process. Comprehensive review by the Permittees of development plans must be provided in order to ensure that stormwater controls minimize stormwater quality impacts.

### 5.5.1 Conduct BMP Review

Permittees conducted a detailed review of site designs and the proposed BMPs. Review included matching BMPs to the pollutants of concern, sizing calculations, pollutant removal performance and municipal approval. Project designs are not approved unless all conditions have been met.

***Performance Standard 5-5***

| Conducted a detailed review of proposed BMPs. Review included sizing calculations and pollutant removal performance | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |

**318 rain barrels were sold this year through the Program's co-operative effort with the County's Integrated Waste Management Division, over 1400 sold since Permit adoption.**

### 5.5.2 Establish Authority among Municipal Departments with Project Review Jurisdiction

Permittees have an established structure for communication and delineated authority between municipal departments that have jurisdiction over project review, plan approval, and project construction. Each Permittee has approached this in the manner that will be most effective within their organization. Interdepartmental communication and coordination does not represent a complicated hurdle for the smaller agencies, however, larger agencies such as the County of Ventura have formally drafted Memorandums of Understanding to establish the structure and define responsibilities.

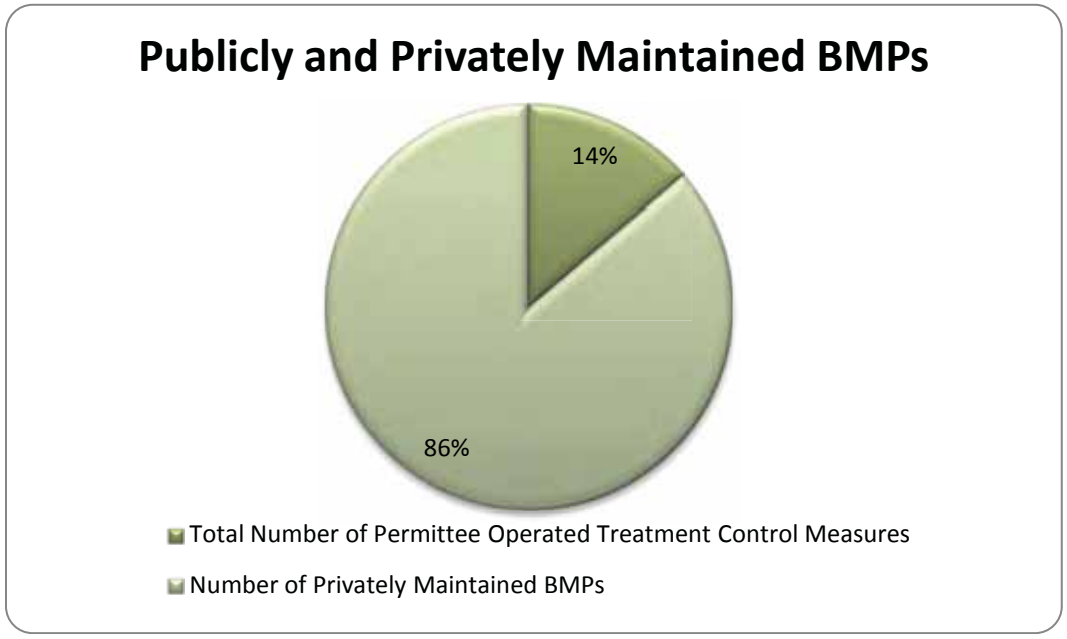
***Performance Standard 5-6***

| Established authority among municipal departments with project review jurisdictioncontrol BMPs. (by July 8, 2011) | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |

## 5.6 TRACKING, INSPECTION AND ENFORCEMENT – LD4

Permittees have implemented a tracking systems and an inspection and enforcement program for new development and redevelopment post-construction stormwater BMPs.

***Figure 5-2 Publicly and Privately Maintained BMPs***



### 5.6.1 Develop/Implement a Tracking System for Post-Construction Treatment Control BMPs

Permittees have been conditioning development projects for stormwater controls since the 2002 TGM and understand that maintenance of these BMPs is instrumental to their performance of improving water quality. Developing and implementing a system for tracking projects that have been conditioned for post-construction treatment control BMPs is necessary to ensure that BMPs are properly maintained and working. The Permit requires this tracking system be in place by July 8, 2011.

Each Permittees' electronic system should contain the following information:

1. Municipal Project ID
2. State WDID No.(IAGSP)
3. Project Acreage
4. BMP Type and Description
5. BMP Location (coordinates)
6. Date of Acceptance
7. Date of Maintenance Agreement
8. Maintenance Records
9. Inspection Date and Summary
10. Corrective Action
11. Date Certificate of Occupancy Issued
12. Replacement or Repair Date

### 5.6.2 Conduct Inspections of Completed Projects

Beginning July 8, 2011 the Permittees are required to conduct inspections of completed projects subject to the Planning and Land Development Program requirements to ensure proper installation of all approved control measures have been implemented and are being maintained. Identifying and tracking these projects will follow the development permitting process. The Certificate of Occupancy is withheld until a project can show that BMPs have been installed as designed on approved plans. See Attachment B for an example inspection checklist from the City of Camarillo.

***Performance Standard 5-7***

| Develop and implement a system for tracking projects that have been conditioned for post-construction treatment control BMPs? (by July 8, 2012) | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | | | ☑ |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | | | ☑ |
| Thousand Oaks | ☑ | | |

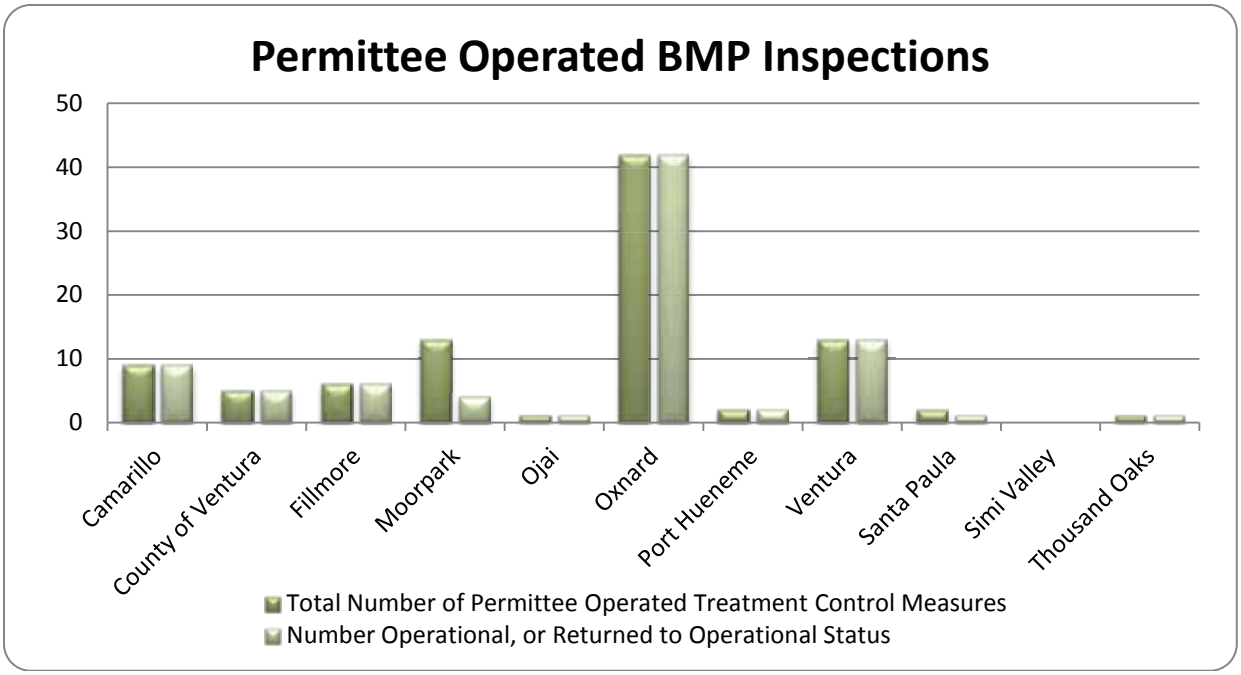
***Performance Standard 5-8***

| Conduct inspections of completed projects subject to the Planning and Land Development Program requirements to ensure proper installation of BMPs (effective 90 days after aproval of Manual) | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | | | ☑ |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |

### 5.6.3 Conduct Inspections of Permittee Owned BMPs

The Permittees are responsible for the inspection and maintenance of BMPs they own and operate. Sometimes Permittees will accept this responsibility from a development as a way to ensure that proper maintenance is performed. Not all Permittees own and operate BMPs, and some have not yet installed or accepted ownership of permanent BMPs. These inspections are required once every two years. The first inspection was due July 8, 2012, which is outside the reporting period of this report.

***Figure 5-3 Permittee Operated BMPs***



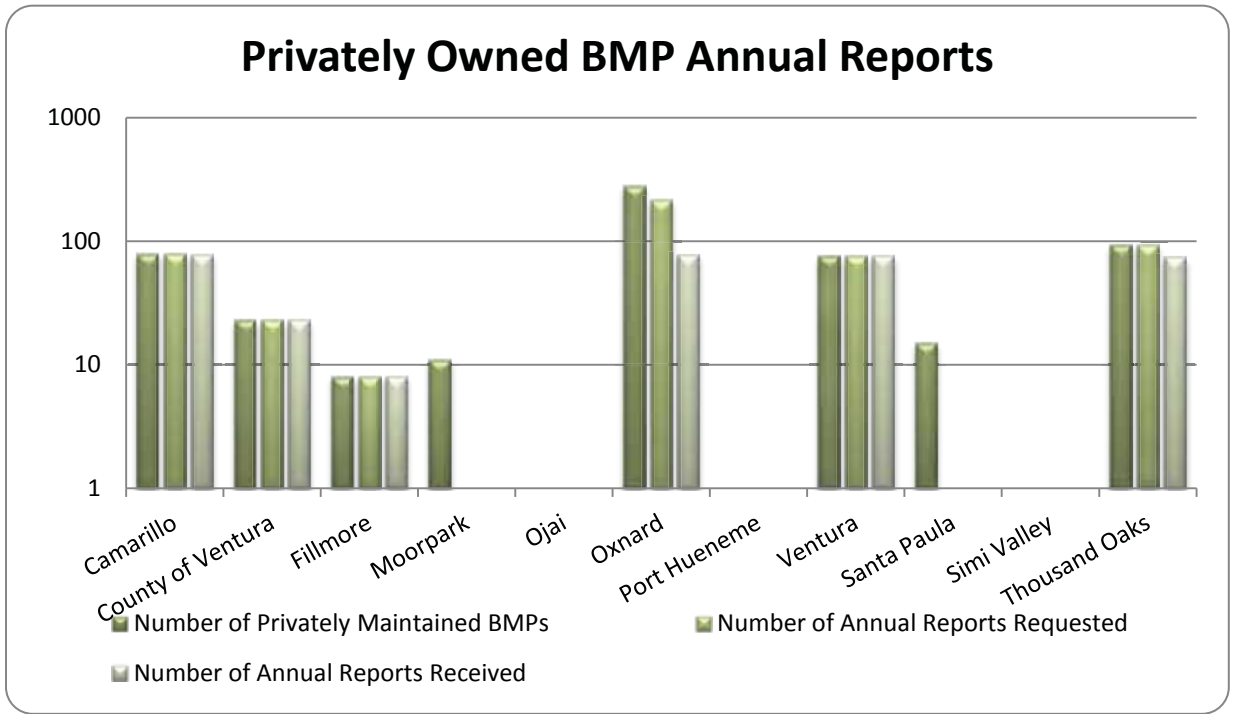

***Performance Standard 5-9***

| Inspect post-construction BMPs operated by the Permittees at least once every 2 years | | | | |
|---|---|---|---|---|
| | Yes | No | N/A | In Progress |
| Camarillo | ☑ | | | |
| Ventura County | | | | ☑ |
| Fillmore | ☑ | | | |
| Moorpark | ☑ | | | |
| Ojai | ☑ | | | |
| Oxnard | ☑ | | | |
| Port Hueneme | | | ☑ | |
| Ventura | ☑ | | | |
| Santa Paula | ☑ | | | |
| Simi Valley | | | ☑ | |
| Thousand Oaks | ☑ | | | |

### 5.6.4 Require Annual Reports for Post-Construction BMPs

In July of 2011 the Permittees were required to require the submittal of Annual Reports for BMPs maintained by parties other than the Permittees. The annual reports are to provide information to the Permittees showing that the BMPs have been properly maintained. In many cases a copy of an invoice from a service provider showing the date maintenance performed will suffice for an annual report.

***Figure 5-4 BMP Annual Reports***




***Performance Standard 5-10***

| **Require annual reports for private post-construction BMPs to demonstrate proper maintenance and operations** | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | | | ☑ |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |

## 5.7 Take Enforcement Action

Inspections and the requirement for annual reports are only the first steps towards ensuring BMPs are operational. Enforcement actions based on the results of the inspection may be needed in order to bring the facility into compliance. The Permit requires inspections of Permittee owned BMPs and enforcement is not necessary in that scenario. To ease future compliance the Permittees are performing educational outreach to the owner/operators of BMPs.

A performance standard on enforcement may be developed in future reports, however, enforcement would only be needed when there is non-compliance. Low enforcement numbers (high level of compliance) may represent an effective program just as well as high enforcement numbers would represent a determined effort to return BMPs to compliance.

## 5.8 MAINTENANCE AGREEMENT AND TRANSFER – LD5

Maintenance agreement and transfers ensure that post-construction BMPs will remain effective upon project completion and continued occupancy. As a condition of approval for all priority development projects, Permittees require the owner/ developer/successor-in-interest of stormwater BMPs to provide proof of control measure maintenance in the form of a Stormwater Treatment Device Operation and Maintenance Agreement and a Maintenance Plan.

### 5.8.1 Require Stormwater Treatment Device Operation and Maintenance Agreement

Permittees integrated the development/submittal of a stormwater maintenance agreement as a condition within the project approval process for projects subject to the Permit's Planning and Land Development Program requirements. To enforce the requirements of post-construction BMPs, a Maintenance Agreement is required to be executed between the Permittee and the owner/developer/successor-in-interest for any private facilities who remain the responsible party in operating and maintaining the post-construction Treatment Control Measures.

The 2002 TGM and the 2011 TGM revisions address the development and submittal of Maintenance Agreements when a developer is responsible for ongoing maintenance of onsite treatment BMPs.

***Low Impact Development infiltration BMP***

***Performance Standard 5-11***

| Require an operation and maintenance plan for applicable stormwater BMPs | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | | ☑ | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |

## 5.9 TRAINING – LD6

Training is important to the successful implementation of the Planning and Land Development Program Element. An effective training program is one of the best pollution prevention BMPs that can be implemented because this subject is complicated and requires many interpretations and judgment calls.

To facilitate the implementation of the new Technical Guidance Manual a special training session was held in June of 2011. This training was open to private sector developers as well as the planners and plan check engineers who will be interpreting and implementing the new standards. It was important to have everybody in the same room receiving the same training to minimize confusion and conflict at the counter when actual projects will be coming in for approval. This six-hour training was attended by well over one hundred people.

***Figure 5-5 Land Development Training***

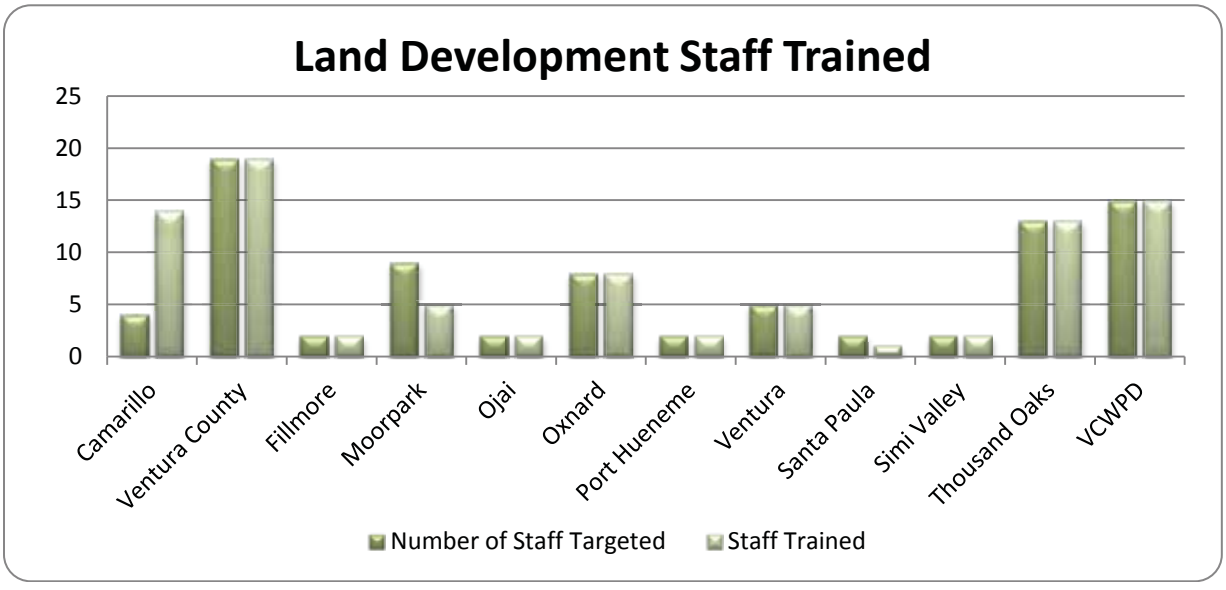


*Table 5-3 Training Areas of Focus for the Planning and Land Development Program Element*

| Target Audience | Format | Subject Material |
|---|---|---|
| • Plan Checkers<br>• Engineers<br>• Building and Construction Inspectors<br>• Builders<br>• Design Professionals<br>• Regulators<br>• Resource Agencies<br>• Other Stakeholders | • Classroom | • Overview of 2011 TGM<br>• Integration of LID at various project scales<br>• Guidance on relationship between LID strategies, source control BMPs, and hydromodification control requirements<br>• Highlight LID pilot projects and demonstration projects |

## 5.10 EFFECTIVENESS ASSESSMENT – LD7

Effectiveness assessment is a fundamental component for developing and implementing successful stormwater programs. In order to determine the effectiveness of the Planning and Land Development Program, a comprehensive assessment of the program data is conducted as a part of the annual report. The results of this assessment are used to identify modifications that need to be made to the program. Each year the effectiveness assessment is reviewed and revised as needed.

By conducting these assessments and modifying the program as needed, the Permittees ensure that the iterative process is used as an effective management tool. Due to the types of data collected for the Planning and Land Development Program, current and future assessments will primarily focus on Outcome Levels 1, 2 & 3.

- Outcome Level 1 (L1) answers the question: Did the Permittees implement the components of the Permit?
- Outcome Level 2 (L2) answers the question: Can the Permittees demonstrate that the control measure/performance standard increased awareness of a target audience?
- Outcome Level 3 (L3) answers the question: Can the Permittees demonstrate that the control measure/performance standard changed a target audience's behavior, resulting in the implementation of recommended BMPs?

The following is an assessment regarding the effectiveness of the Planning and Land Development Program.

### 5.10.1 State Statute Conformity

#### Review/Revise CEQA Review Documents

The CEQA process and plan review process is an effective mechanism for addressing stormwater quality issues early in the planning stages. Where applicable, all Permittees have reviewed their internal planning procedures for preparing and reviewing CEQA documents. All Permittees have formally integrated stormwater quality issues into the CEQA review process **(L1)**.

#### Revise the General Plan

The majority of Permittees have either already incorporated or are in the process of incorporating stormwater requirements into their General Plans **(L1)**. This control measure is dependent on the scheduled updates/amendments to General Plans which varies greatly by municipality. Once updated,

Permittees will submit draft elements to the Regional Board for review. Effectiveness of this control measure will continue to be evaluated as progress is made.

### 5.10.2 New Development Performance Criteria

#### Update the 2002 Ventura County TGM

The 2002 Ventura County TGM was updated and submitted to the Regional Board on June 16, 2011 **(L1)**. The updated TGM (2011 TGM) includes:

- Interim hydromodification criteria (addressed in Section 2);
- Expected BMP pollutant removal performance (addressed in Section 3 and Appendix D);
- Improved correlation of BMPs with stormwater POCs (addressed in Section 3 and Appendix D);
- BMP maintenance and cost considerations (addressed in Section 7, Appendices H &I);
- Integration of integrated water resources planning and management goals (Sections 1 and 4).

#### Require Compliance with Performance Criteria

Permittees continued to require compliance with 2002 TGM for all SQUIMP new development and redevelopment project categories **(L1)**. As indicated in Figure 5-1, Permittees reviewed 465 projects and required 66 projects to implement source control and/or water quality treatment (note these numbers apply to both SQUIMP and non-SQUIMP project categories) **(L2)**. The 2011 TGM became effective October 11, 2011, 90 days after its approval by the Regional Board Executive Officer. With the 2011 TGM in effect, priority new development and redevelopment project will be required to comply with the 5% EIA Requirement and other new development provisions contained within Order No. R4-2010-0108.

#### Documentation of Offsite Mitigation Projects

The Permittees are in the process of developing an offsite mitigation framework and creating a list of potential locations.

#### Require Hydromodification Criteria

The Permittees currently require SQUIMP project categories to comply with the interim hydromodification criteria **(L1)**. The Ventura Countywide Stormwater Quality Program continues to participate in the SMC's hydromodification control study **(L1)**. Permittees will implement watershed-specific HCP's once the hydromodification control study is complete.

### 5.10.3 Plan Review and Approval Process

#### Conduct BMP Review

Proposed post-construction BMPs were reviewed by each of the Permittees. BMP review included calculation sizing and pollutant removal performance. Permitees have effectively conducted BMP review for several years now and current review mechanisms are considered adequate **(L1)**.

#### Establish Authority among Municipal Departments

Each Permittee has successfully established the authority for review of stormwater quality measures. The mechanism varies by Permittee and for the larger Permittees may consist of a formal MOU **(L1)**.

### 5.10.4 Tracking, Inspection and Enforcement

#### Develop/Implement Tracking Mechanism

Permittees have been conditioning development projects for stormwater controls since the last permit and understand that maintenance of these BMPs is instrumental to their performance of improving water quality. Developing and implementing a system for tracking projects that have been conditioned for post-construction treatment control BMPs is necessary to ensure that BMPs are properly maintained and working. **(L1)**

#### Conduct Inspections of Completed Projects

This performance measure was due July 8, 2011 and all 11 Permittees have conducted inspections of completed projects to ensure they were done in accordance with the land development requirements, or do not have completed projects and are in the process of developing their inspections programs **(L1) (L2)**.

#### Conduct Inspections of Permittee Owned BMPs

Eight of the Permittees are already inspecting the BMPs they own and operate, while others have not built or adopted BMPs. **(L1)**

#### Take Enforcement Action

Four of the Permittees have needed to take enforcement action to ensure proper BMP maintenance - five others reported that enforcement actions were not necessary to achieve compliance. This performance measure is reliant on the implementation of an inspection program which was not required to be fully implemented during this reporting period. **(L2)**

### 5.10.5 Maintenance Agreement and Transfer

#### Require Stormwater Treatment Device Access and Maintenance Agreement

Permittees have required since 2002 and will continue to require a maintenance agreement to ensure proper maintenance and permission to enter property and access BMPs **(L1)**.

#### Require Annual Reports for Post-Construction BMPs

All Permittees reported that they have required annual reports or are in the process of generating the reporting procedures with the intention of having it operational by the July 2012 due date (outside of this reporting period).

### 5.10.6 Training

#### Conduct Training

During this reporting period, Permittees trained 88 staff. Training primarily focused on updates to the 2011 TGM **(L1)**.

## 5.11 PLANNING AND LAND DEVELOPMENT PROGRAM MODIFICATIONS

On an annual basis, the Permittees plan to evaluate the results of the Annual Report, as well as the experience that staff has had in implementing the program, to determine if any additional program

modifications are necessary to comply with the Clean Water Act requirement to reduce the discharge of pollutants to the MEP. Any key modifications made to the Land Development Program Element during the next fiscal year will be reported in the following Annual Report, such as the implementation of the new requirements that became effective during the 2011/12 Permit year.

# 6 Development Construction

## 6.1 OVERVIEW

During construction projects, a number of activities have the potential to generate or mobilize pollutants. The purpose of the Development Construction Program Element is to coordinate programs and resources to effectively reduce pollutants in runoff from construction sites during all construction phases.

Reducing pollutants from construction activities has been a focus of the Permittees' compliance program since the stormwater program's inception. The Permittees regulate private construction activities, and also have responsibility for the construction and renovation of municipal facilities and infrastructure (these projects are reported in Section 7 Public Agency Activities). Major components of the Permittee's Construction Program include:

- Review of local SWPPPs for compliance with local codes, ordinances, and permits;
- Inspection of all construction sites for the implementation of stormwater quality controls a minimum of once during the wet season. Follow-up inspections take place within two weeks for sites found to have not adequately implemented their Local SWPPP;
- Require proof of filing a Notice of Intent (NOI) for coverage under the State General Construction Permit prior to issuing a grading permit for all projects requiring coverage.

Additionally, the Construction Program provides construction site owners, developers, contractors, and other responsible parties information on the requirements and guidelines for pollution prevention/BMP methods. To ensure construction sites are implementing the SWPPPs properly, each jurisdiction conducts inspections during the rainy season to verify the appropriateness and implementation of BMPs, taking enforcement action as necessary. Inspectors are also visiting the sites in the dry season to ensure the potential for illicit discharges has been reduced. Training and outreach is done regularly to improve the quality and consistency of program implementation throughout Ventura County.

The Permittees attend the Construction Subcommittee meetings to coordinate and implement a comprehensive program to mitigate impacts on water quality from construction sites to the maximum extent practicable (MEP). In order to facilitate effective inspections and to document compliance with this requirement the Construction Subcommittee developed a model Stormwater Quality Checklist for Permittee use, which can be found in Attachment C. The checklist and the meetings create countywide consistency in the programs, however, the Permittees usually modify their programs to address particular issues, concerns, or constraints that are unique to a particular watershed or to an individual municipality. The Subcommittee is attended by representatives of the Permittee's cities and other municipal staff from various departments including Engineering Services, Planning and Land Development, and Inspection Services.

## 6.2 CONTROL MEASURES

The Permittees have developed several Control Measures and accompanying performance standards to provide information for optimizing the program and ensure that the construction-related requirements in the Permit are met. For each Control Measure there are accompanying performance standards which, once accomplished, constitute compliance with the Permit.

The Development Construction Program Control Measures consist of the following:

| DC | Control Measure |
|---|---|
| DC1 | Plan Review and Approval Process |
| DC2 | Inventory |
| DC3 | Inspections and BMP Implementation |
| DC4 | Enforcement |
| DC5 | Training |
| DC6 | Effectiveness Assessment |

***Table 6-1 Control Measures for the Development Construction Program Element***

At the end of this chapter these control measures are evaluated to determine the effectiveness of this program element.

## 6.3 PLAN REVIEW AND APPROVAL PROCESS – DC1

The Plan Review and Approval Process control measure provides the Permittees with the mechanism to review and approve construction plans which address sediment and erosion controls. Effective planning of construction site activities leads to minimizing erosion and preventing pollutants from entering the storm drain system. The Permittees require all projects that disturb less than one acre of land to address pollutants and activities during the construction phase of the project by implementing the erosion control, sediment control, non-stormwater management, and waste management BMPs identified in the NPDES Permit. For larger projects greater than one acre, and less than five acres, the list of required BMPs gets progressively larger, more complex, and more protective. Prior to issuing a grading permit, the Permittees review construction and grading drawings to ensure that necessary erosion and sediment control BMPs and source and treatment control BMPs are identified and properly designed to control runoff pollution to the MEP. In the case of construction that encroaches in the Watershed Protection District's right-of-way, those projects are inspected but are invariably part of larger project and the lead agency for that project is the jurisdiction with land use authority permitting the design and building of that larger project.

### 6.3.1 Review Grading and Construction Permit Applications for SWPPP Requirements

Prior to approving a grading permit, the Permittees require a SWPPP be submitted for projects greater than one acre. Additionally, as is mandatory for all construction related activity disturbing one or more acres, Permittees require proof of filing an NOI for projects subject to the General Construction Permit. The SWPPP remains in effect until the construction site is stabilized and all construction activity is completed. The SWPPP includes identification of potential pollutant sources and the design, placement and maintenance of BMPs to effectively prevent the entry of pollutants from the construction site to the storm drain system. In addition, the Permittees require construction projects to include the following requirements:

- Erosion from slopes and channels will be eliminated by implementing BMPs, including but not limited to, inspecting graded areas during rain events, planting and maintaining vegetation on slopes and covering erosion susceptible slopes;

- Sediments generated on the project site shall be retained using structural drainage controls;

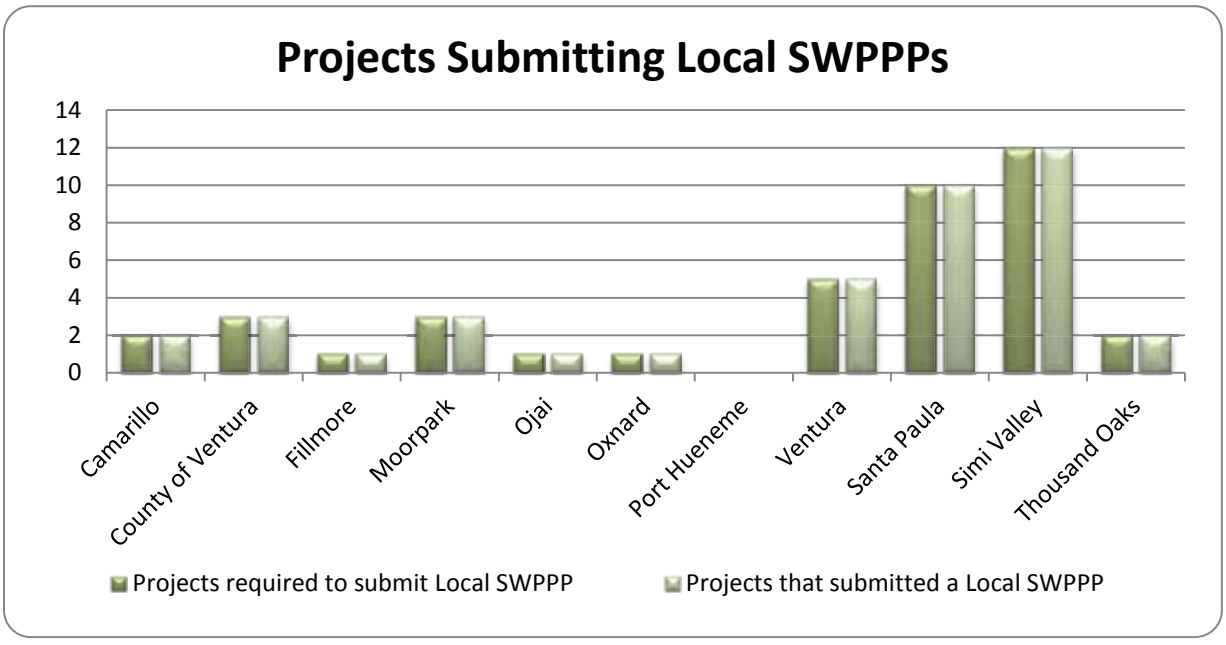
- No construction-related materials, wastes, spills or residues shall be discharged from the project site to streets, drainage facilities or adjacent properties by wind or runoff;

- Non-stormwater runoff from equipment and vehicle washing and any other activity shall be contained at the project site;

The Permittees have also incorporated SWPPP provisions in their own construction projects resulting in soil disturbance of one acre or more, located in hillside areas, or directly discharging to an ESA. The Permittees include provisions delineating contractor responsibilities for SWPPP preparation, implementation and for performance of the work and ancillary activities in accordance with the SWPPP approved by the Permittee for the project. In some jurisdictions, Local SWPPPs were required and submitted for nearly all projects including those not exceeding Permit thresholds. This conservative approach underlines the importance the Permittees place on ensuring implementation of stormwater controls at construction sites.

This figure reflects the number of grading permits issued during this reporting period and does not necessarily reflect the number of active construction projects. This is due to the fact that some larger projects may take longer than a year to complete. Conversely, not all projects that received grading permits granted during the permit year actually began grading and construction. Because of these facts the number of active projects requiring inspection does not always match the number of grading permits granted. A project may be operating under a grading permit granted the previous year, or the grading permits may have been granted after the wet season so there was no opportunity for a wet season inspection, so the number of permits and projects inspected rarely match.

***Figure 6-1 Local SWPPPs***




### 6.3.2 Requirements for Projects Subject to the General Stormwater Permit

The Permittees require all construction projects subject to the General Stormwater Permit for Construction Activities to submit proof of filing a NOI prior to issuing a grading permit. Proof of filing a

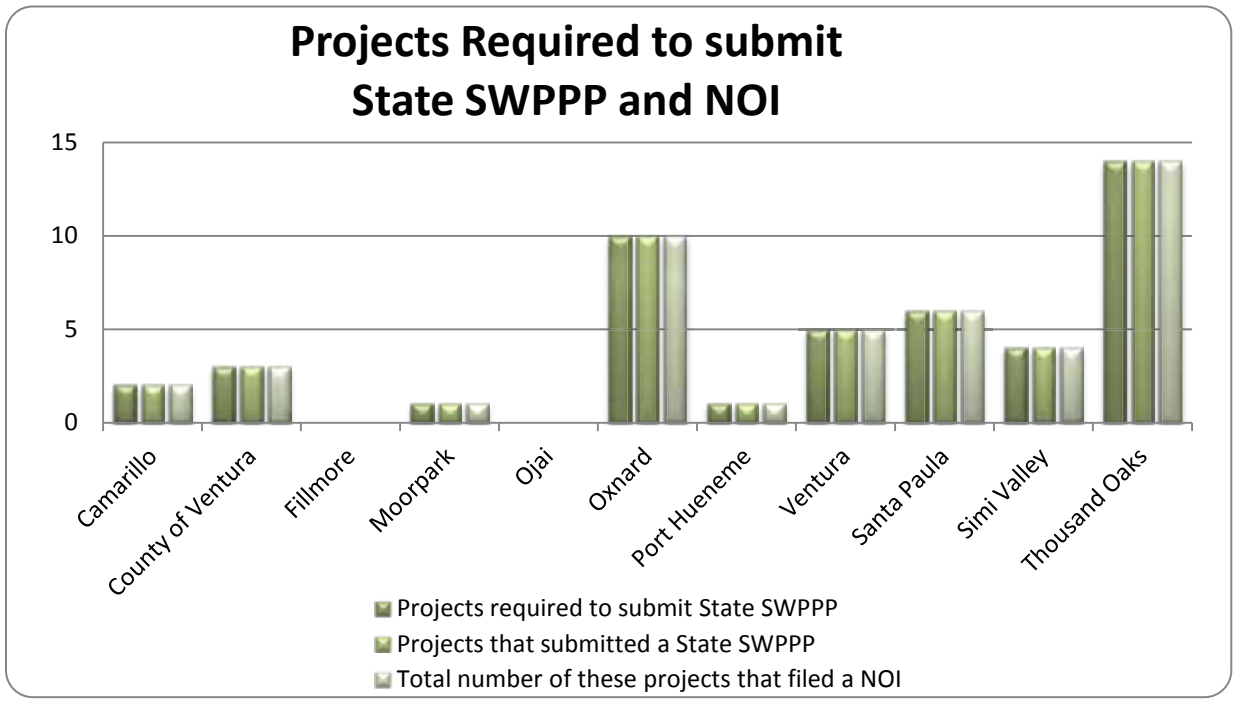
NOI can include a copy of the completed NOI form and a copy of the check sent to the State Water Resources Control Board (SWRCB), or a copy of the letter from the SWRCB with the Waste Discharge Identification Number (WDID) for the project.

In addition, the Permittees will file NOIs with the SWRCB and pay the appropriate fees when Permittee construction projects require coverage under the General Construction Permit. The NOIs and appropriate fees are sent to the State prior to the commencement of any construction activity covered by the General Construction Permit. A copy of the NOI is kept with the project files and in the SWPPP for the project.

**Permittees inspect more construction sites than are required to submit a SWPPP, and inspect them more frequently for stormwater compliance than the permit requires.**

Projects subject to the requirements of the General Construction Permit currently include those involving clearing, grading, or excavation resulting in soil disturbances of at least one acre. Permittee emergency work and routine maintenance projects do not require preparation of a SWPPP. That does not imply that stormwater controls are not implemented during these activities. Routine maintenance and emergency projects are performed in accordance with the Permit's requirements for Public Agency Activities.

***Figure 6-2 State SWPPPs and NOIs***



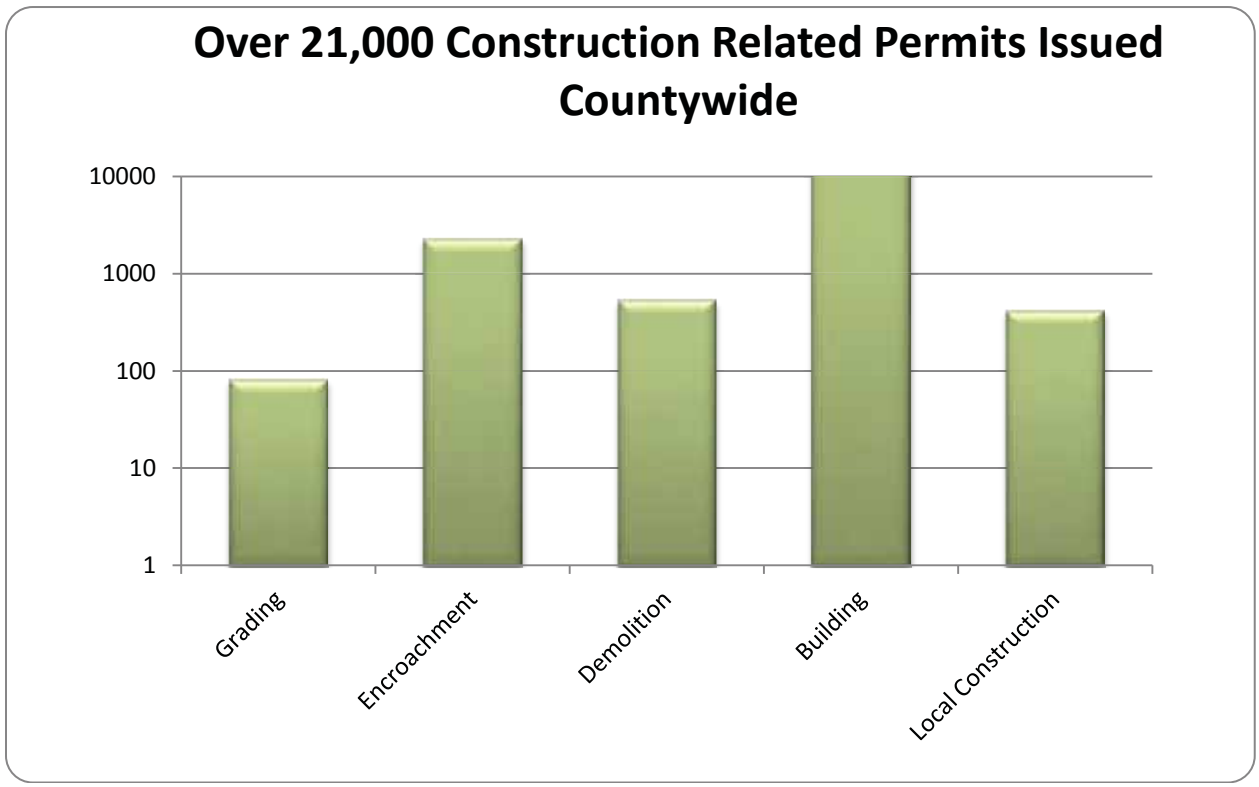

## 6.4 INVENTORY – DC2

The Construction Projects Inventory Control Measure involves tracking construction sites from the planning stage to completion. This is essential for ensuring that stormwater pollutants are reduced to the MEP. Maintaining a database to track all stages of the construction process is the foundation of

construction-related source identification and helps to ensure that pollution prevention and source control are emphasized during all phases of the construction project. The permitting process is also an opportunity to provide stormwater education and outreach to the construction community and to emphasize the penalties that can be incurred with non-compliance.

The Permittees have programs in place to track all grading, encroachment, demolition, and building permits as required by the NPDES Permit. In order to ensure the appropriate BMPs are being implemented when soil disturbing activities are taking place, the Permittees focus on the grading permit process to identify projects and the level of BMPs required. This has been determined as the most effective way to track projects with a potential to impact water quality as many encroachment, building, and other permits that are not associated with grading activities do not present the same level of risk to stormwater quality.

***Figure 6-3 Construction Permits Issued***



***Performance Standard 6-1***

| Maintain an electronic system to track grading permits, encroachment permits, and any other municipal authorization to move soil | | | |
|---|---|---|---|
| | Yes | In Progress | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

***Performance Standard 6-2***

| Required proof of Change of Information form (COI) and a copy of the modified SWPPP(s) at any time a transfer of ownership takes place | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | | | ☑ |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | | | ☑ |
| Ojai | | ☑ | |
| Oxnard | ☑ | | |
| Port Hueneme | | ☑ | |
| Ventura | | | ☑ |
| Santa Paula | | ☑ | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | | | ☑ |

## 6.5 INSPECTIONS AND BMP IMPLEMENTATION – DC3

The Inspection and BMP Implementation Control Measure is critical to the ultimate success of the Development Construction Program Element. An effective construction site inspection program requires having adequate legal authority to enforce Permittee requirements, tracking active construction sites to identify repeat violators, and conducting inspections to ensure the sources are identified and that BMPs are being implemented and maintained. The inspection program also provides the basis for notifying the Regional Water Board when inspectors identify non-compliant sites including non-filers or repeat violators.

*Figure 6-4 Site Inspections and Follow-Up*

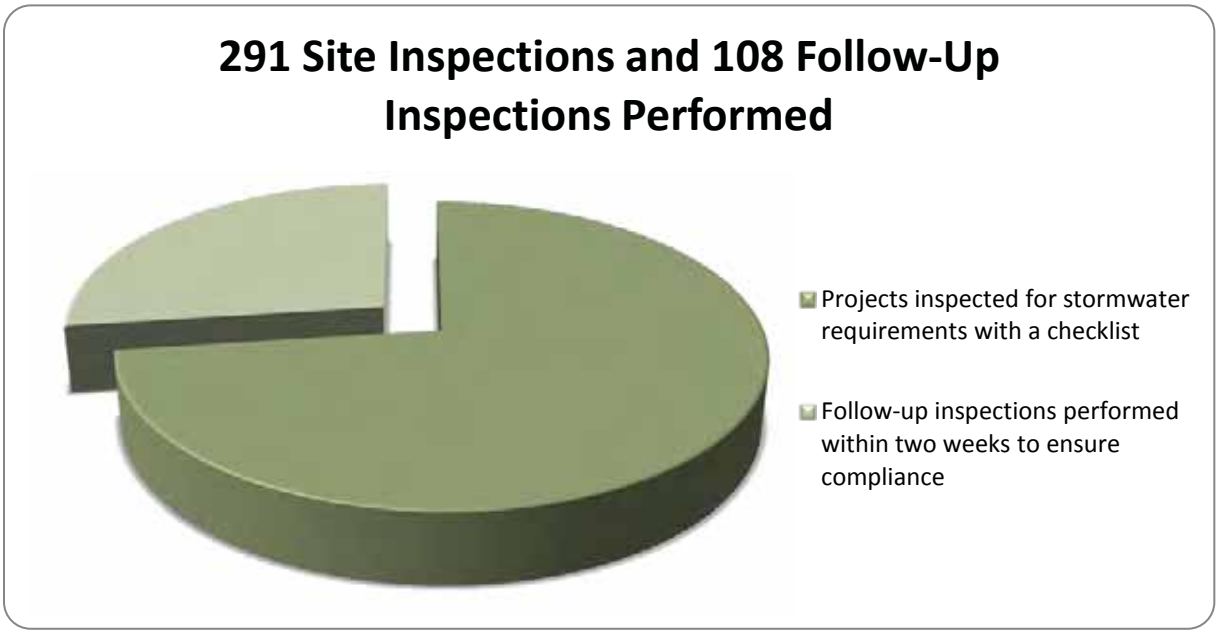
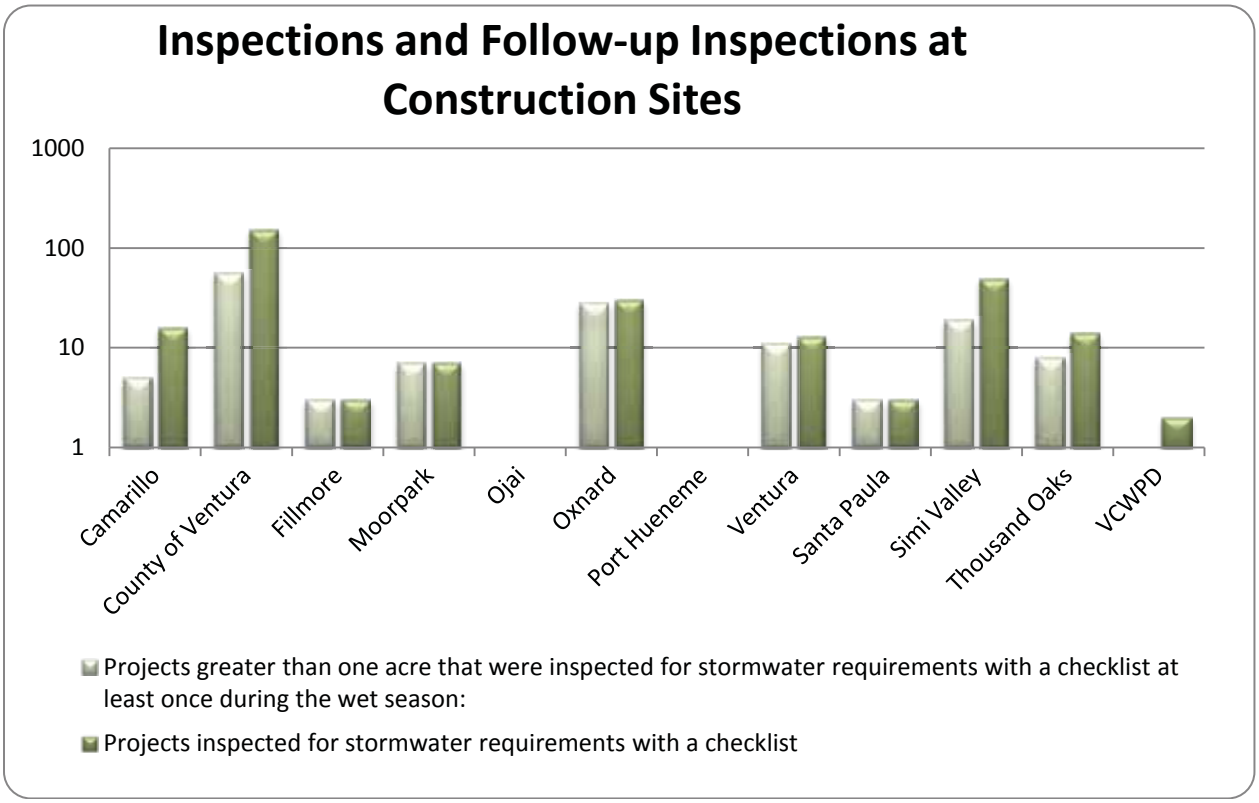



*Figure 6-5 Construction Inspections and Follow-up Inspections*



### 6.5.1 Inspect Construction Sites

The Permittees inspect all active construction sites for the implementation of stormwater quality controls a minimum of once during the wet season, and all construction sites with SWPPPs a minimum of once during the wet season to determine if the SWPPP is adequately implemented. During these site inspections, a checklist is completed to document inspection results. If it is determined the SWPPP is not adequately implemented, or when there is evidence of a reasonable potential for sediment, construction materials, wastes, or non-stormwater runoff to be discharged from the project site, the Permittees will inform the responsible party of what needs to be corrected and conduct a follow-up inspection within two weeks, but most often it is much sooner. The follow-up inspections are not always scheduled and often the response needed to correct the situation does not require two weeks to implement.

***Storm drain protection during construction***

***Performance Standard 6-3***

| Construction sites less than 1 acre were inspected to ensure that the minimum set of BMPs was implemented | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

***Performance Standard 6-4***

| Construction sites greater than 1 acre and less than 5 acres inspected to ensure that the minimum set of BMPs was implemented | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | | | ☑ |
| Oxnard | ☑ | | |
| Port Hueneme | | | ☑ |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

***Performance Standard 6-5***

| Construction site greater than 5 acres inspected to ensure that the minimum set of BMPs was implemented | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | | | ☑ |
| Oxnard | ☑ | | |
| Port Hueneme | | ☑ | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | | | ☑ |

The Permittees inspect each project that includes roadbed or street paving, repaving, patching, digouts, or resurfacing roadbed surfaces to ensure that the minimum set of BMPs are implemented. This is routinely done at the same time inspections are performed to ensure all work is being performed according to the design and the standards required of public works projects.

***Performance Standard 6-6***

| **Projects that include roadbed or street paving, repaving, patching, digouts, or resurfacing roadbed surfaces inspected to ensure that the minimum set of BMPs was implemented** | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | | | ☑ |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | | | ☑ |

### 6.5.2 Implementation of Enhanced Practices at "High Risk" Sites

Construction sites located on hillsides, adjacent to CWA 303(d) listed waters for siltation or sediment, and directly adjacent to ESAs are termed "high risk" sites. The Permittees ensure implementation of enhanced practices such as increased BMP inspection and maintenance requirements at "high risk" sites to ensure that they do not create a threat to water quality.

The Permit requires that "high risk" sites be inspected by the project proponent's Qualified SWPPP Developer or Qualified SWPPP Practitioner or personnel or consultants who are Certified Professionals in Erosion and Sediment Control (CPESC) at the time of BMP installation, at least weekly during the wet season, and at least once each 24 hour period during a storm event that generates runoff from the site. Many of the permittees did not have any designated high risk construction sites but did have the program in place to identify and implement the added requirements.

***Performance Standard 6-7***

| Ensure implementation of enhanced practices such as increased BMP inspection and maintenance requirements at high risk sites | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | | | ☑ |
| Ventura County | ☑ | | |
| Fillmore | | | ☑ |
| Moorpark | ☑ | | |
| Ojai | | | ☑ |
| Oxnard | | | ☑ |
| Port Hueneme | | | ☑ |
| Ventura | | | ☑ |
| Santa Paula | ☑ | | |
| Simi Valley | | | ☑ |
| Thousand Oaks | | | ☑ |
| Watershed Protection | ☑ | | |

***Performance Standard 6-8***

| Require that high risk sites be inspected by the project proponent's Qualified SWPPP Developer or Qualified SWPPP Practitioner at high risk sites | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | | | ☑ |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | | | ☑ |
| Oxnard | | | ☑ |
| Port Hueneme | | | ☑ |
| Ventura | | | ☑ |
| Santa Paula | ☑ | | |
| Simi Valley | | | ☑ |
| Thousand Oaks | | | ☑ |
| Watershed Protection | ☑ | | |

Construction sites are dynamic and changing environments and must be routinely inspected by the project proponent to ensure that the appropriate BMPs are in place and maintained. Permittees require that the project proponent of high risk sites retain records of the inspection and a determination and rationale of the BMPs selected to control runoff during the wet season.

***Performance Standard 6-9***

| Did the Permittee require that the project proponent retain records of the inspection and a determination and rationale of the BMPs selected to control runoff during the wet season at high risk sites | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | | | ☑ |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | | | ☑ |
| Oxnard | | | ☑ |
| Port Hueneme | | | ☑ |
| Ventura | | | ☑ |
| Santa Paula | ☑ | | |
| Simi Valley | | | ☑ |
| Thousand Oaks | | | ☑ |
| Watershed Protection | ☑ | | |

### 6.5.3 Inspect for Post-Construction Controls

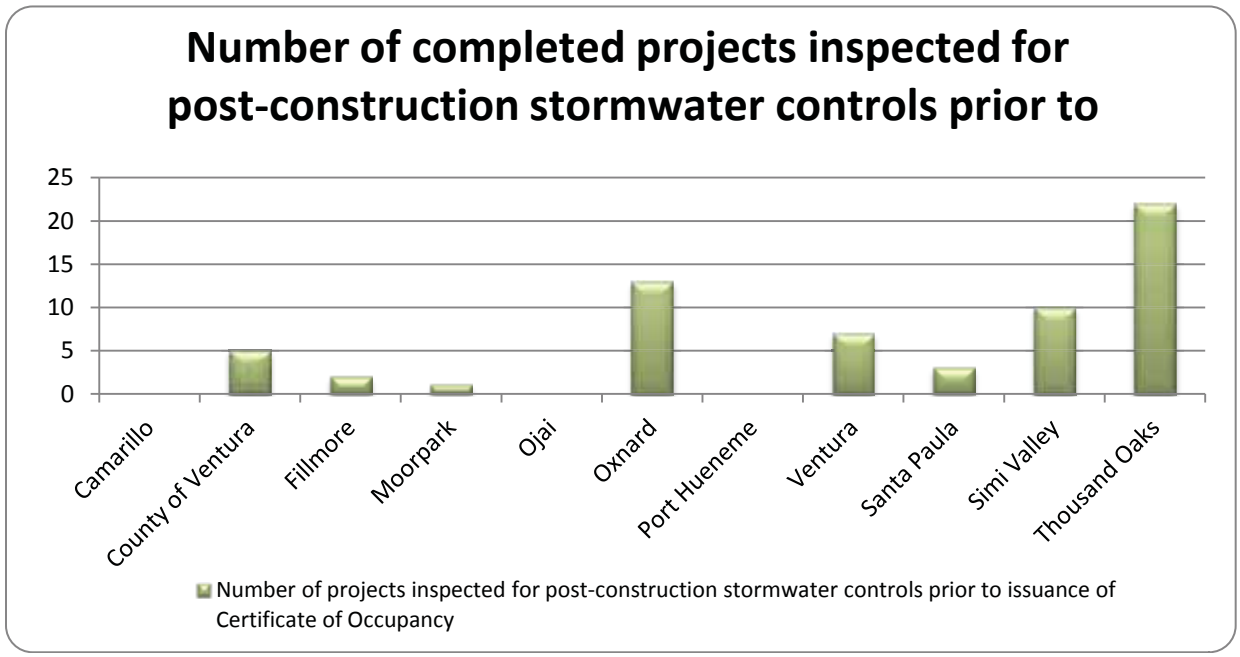
The Permittees inspected the site design as constructed, source control and treatment control BMPs conditioned during the development process to verify that they have been constructed in compliance with all specifications, plans, permits, ordinances, and the MS4 permit prior to approving and/ or signing off for occupancy and issuing the Certificate of Occupancy for all construction projects subject to post-construction controls. Permanent BMPs may be installed at any point during the construction process and therefore may be exposed to runoff conditions much worse than their intended design. The Permit also requires inspections to ensure that the BMPs are in good operating condition and are not in need of maintenance. These inspections are routinely performed at the same time to be cost efficient and to use the leverage the Certificate of Occupancy provides the Permittee. This requirement is in the Permit in Section F – Construction, and also Section E – Planning and Land Development.

As stated previously, the number of projects reaching the final stages of construction and requesting a Certificate of Occupancy will not directly match the number of active construction sites, or grading permits issued due to the elapsed time from permitting, to project initiation, completion and finally occupancy.

***Performance Standard 6-10***

| Inspected constructed site design, source control and treatment control BMPs to verify constructed in compliance with all specifications prior to approving issuing the Certificate of Occupancy | | | |
|---|---|---|---|
| | Yes | No | NA |
| Camarillo | | | ☑ |
| Ventura County | ☑ | | |
| Fillmore | | | ☑ |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | | | ☑ |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |

***Figure 6-6 Inspections Prior to Certificate of Occupancy***




## 6.6 ENFORCEMENT – DC4

The Enforcement Control Measure outlines the progressive levels of enforcement applied to construction sites that are out of compliance with local ordinances and establishes the protocol for referring apparent violations of construction sites subject to the General Construction Permit to the Regional Water Board. The progressive enforcement and referral policy, as well as the accompanying legal authority, is an important tool for providing a fair and equitable approach to bringing contractors and developers into

compliance with the Permittees' municipal code requirements. Enforcement actions range from verbal warnings to the issuance of stop work orders. Legal action may also be taken, although is rarely necessary, as in almost all cases stopping work at a site will focus the developers attention to the BMPs. For repeat offenders, or contractors that have not filed appropriate applications, the referral policy includes notification to the Regional Water Board.

### 6.6.1 Enforcement Action to Achieve Compliance

When a construction site fails to comply with the SWPPP, minimum BMPs or other stormwater requirements, a Permittee implements the appropriate notification and enforcement procedures. There are five general levels of notification and enforcement for most stormwater related problems for construction projects. These are: Verbal Notification, Job Memorandum, Notice of Violation, Administrative Compliance Order, and Stop Work Order. Sites that are permitted under the construction activities general permit (CASGP) are also referred to the RWQCB if they fail to achieve compliance and a good faith effort has been made by the Permitee to achieve compliance. At a minimum that is two follow-up inspections within three months, and at least two warning letters or NOVs. The decision to use any level of enforcement is based upon the severity of the violation(s). Severe violations may result in all construction activities being stopped at the job site and not allowed to proceed until compliance is achieved. The Regional Board may be notified of severe violations at sites under the CASGP if the situation warrants immediate attention. If such a case occurs, the Permittees will work with Board staff in identification of owners and operators, assist with joint inspections, and other efforts to reduce pollutants from entering an MS4.

CITY OF CAMARILLO – PUBLIC WORKS DEPT. (805-383-5659)
STORM WATER INSPECTION CHECKLIST
FOR CONSTRUCTION ACTIVITIES
Work Order: _____

Project Name: _____ Project #: _____
Project Location: _____ Grading Permit #: _____
Date/Time: _____ Quantity of Rainfall: _____
Contractor Information:
Contact Rep. _____ Company Name: _____ Phone Number: _____

INSPECTION TYPE: ☐ Wet Season ☐ Dry Season ☐ Routine ☐ Follow-Up ☐ Pre-storm ☐ During-storm ☐ Post-storm ☐ Final
CONSTRUCTION PHASE: ☐ Grading & Land Dev ☐ Streets & Utilities ☐ Vertical Construction ☐ Final Landscaping
CONSTRUCTION REQUIREMENTS:
Is SWPPP/SWPCP on site: ☐ Yes ☐ No Is Notice of Intent WDID on site: ☐ Yes ☐ No ☐ N/A WDID #: _____
RISK DETERMINATION: Sediment and Receiving Water Risk Level: ☐ One ☐ Two ☐ Three
DEWATERING ACTIVITIES: Has a NPDES Permit been filed: ☐ Yes ☐ No If yes, is the Permit on site: ☐ Yes ☐ No

| YES | NO | N/A | INSPECTION CRITERIA |
|---|---|---|---|
| | | | 1. SITE PLAN: Does the site plan reflect the project site's conditions? |
| | | | 2. SLOPE EROSION MANAGEMENT: Are slope erosion management BMP's in place per the SWPCP/SWPPP |
| | | | 3. SEDIMENT TRAPPING: Are all sandbags, straw bales, and/or silt fences in place and are they functioning properly? |
| | | | 4. SEDIMENT BASINS: If desilting or sediment basins are being used, are they functioning properly? |
| | | | 5. SEDIMENT MANAGEMENT AT DRAINAGE DISCHARGE POINTS: Are the drainage discharge points reasonably free of any significant erosion or sediment transport? |
| | | | 6. SITE SEDIMENT MANAGEMENT: Is sediment, debris, or mud contained within the site? |
| | | | 7. PUBLIC ROAD SEDIMENT MANAGEMENT: Are ingress and egress locations to the construction area stabilized to prevent the tracking of construction materials offsite or onto impervious areas? |
| | | | 8. MATERIALS MANAGEMENT: Are material handling and storage areas reasonably clean and free of spills, leaks, or any other harmful materials? |
| | | | 9. MATERIALS MAINTENANCE: Are all materials properly covered/contained? |
| | | | 10. DESIGNATED MATERIAL STORAGE AREA: Are all locations of temporary soil stockpiles or construction materials in approved areas? |
| | | | 11. VEHICLE & EQUIPMENT MAINTENANCE: Are all the equipment storage, cleaning, fueling, and maintenance areas reasonably clean and free of spills, leaks, or any other harmful materials? |
| | | | 12. PAINT, CONCRETE & SAW CUTTING WASTE MANAGEMENT: Are waste containment areas functioning properly? |
| | | | 13. BMP IMPLEMENTATION: Has an effective combination of BMPs been selected for the project site? |
| | | | 14. BMP INSTALLATION & MAINTENANCE: Are the BMPs identified on the SWPCP/SWPPP, and/or installed in the proper location according to plan specifications? |
| | | | 15. POST-CONSTRUCTION BMPs: Have post-construction BMPs been inspected prior to issuing the Certificate of Occupancy? |
| | | | 16. HIGH RISK SITES: Has the project proponent's qualified SWPPP personnel inspected the site's BMPs during installation and weekly during the wet season (October-April)? |
| | | | 17. BMP LOG: Is a log kept on site which indicates BMPs are being evaluated, maintained and/or modified in the event that they fail or are not appropriate? |
| | | | 18. ILLICIT DISCHARGE: Is non-stormwater runoff leaving the site? |
| | | | 19. PUBLIC PROJECT (CIP) SWPPP/PCP: Does the SWPPP/PCP have the required training and inspection records? |

Field Directive Issued: ☐ Yes ☐ No
Non-Compliance Issued: ☐ Yes ☐ No
☐ Verbal ☐ Stop Work Order ☐ Citation
☐ Warning ☐ Notice of Violation

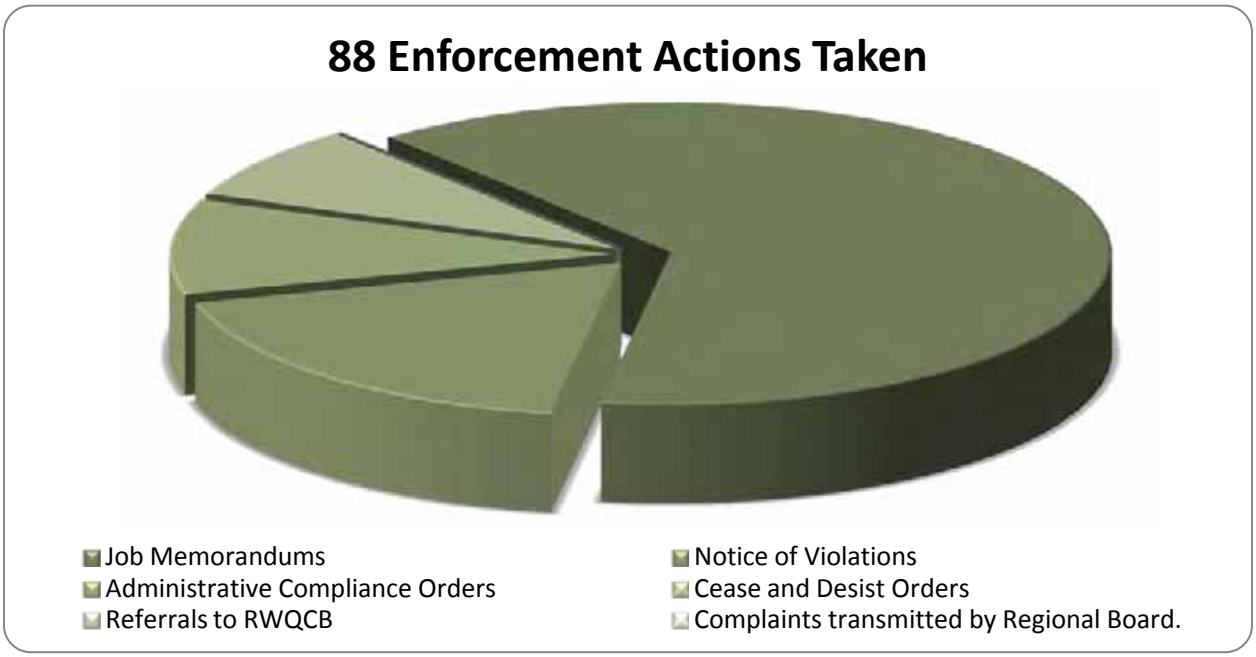
Notes/Comments: _____

Inspector _____ Phone Number _____ Contractor's Signature _____
(Acknowledging receipt of Inspection Report)

White – Storm Water File Yellow – Storm Water Inspector Pink – Site Copy

***Construction Inspection Form***

*Figure 6-7 Enforcement at Construction Sites*




### 6.6.2 Implement Progressive Enforcement and Referral Policy

During the reporting year one construction site failed to return to compliance and was referred to the Regional Water Board for enforcement actions under the CAGSP. Referrals to the Regional Water Board would be summarized in Table 6-2.

*Table 6-2 Summary of Referrals*

| WDID Number | Reason for Referral |
|---|---|
| N/A | No Referrals in 2011/12 |

### 6.6.3 Refer Non-filers Under the CASGP or the Small LUP General Permit

Countywide all construction activities that were required to file for coverage under the CASGP or the Small Linear Underground Project Permit did so. This is because the Permittees have developed the appropriate programs and procedures to ensure that local permits are not granted until the project proponent can provide adequate proof of state permit coverage.

### 6.6.4 Investigation of Complaints Regarding Facilities - Transmitted by the Regional Water Board Staff

The Permittees are required to initiate an initial investigation of complaints transmitted by the Regional Water Board Staff (other than non-storm water discharges) on the construction site(s) within its jurisdiction. During the reporting period the Regional Board did not transmit any complaints for Permittee investigation; any reports received would be summarized in Table 6-3 Summary of Complaints Transmitted by the Regional Water Board.

***Table 6-3 Summary of Complaints Transmitted by the Regional Water Board***

| Permit # | Initial Investigation conducted within 1 business day? (Y/N) | Inspection of the Facility and its Perimeter? (Y/N) |
|---|---|---|
| None | ** | ** |

### 6.6.5 Support of Regional Water Board Enforcement Actions

If the Regional Water Board is aware of non-compliance at a construction site they may request assistance from the Permittees to support their formal enforcement actions. Fortunately during the reporting period the Permittees were able to use their local authority to keep all construction sites in compliance and assistance to the Regional Water Board enforcement actions was not needed.

Table 6-4 describes what kind of assistance the Permittees could provide and will be used in future reports to summarize any enforcement action assistance.

***Table 6-4 Summary of Complaints Transmitted by the Regional Water Board***

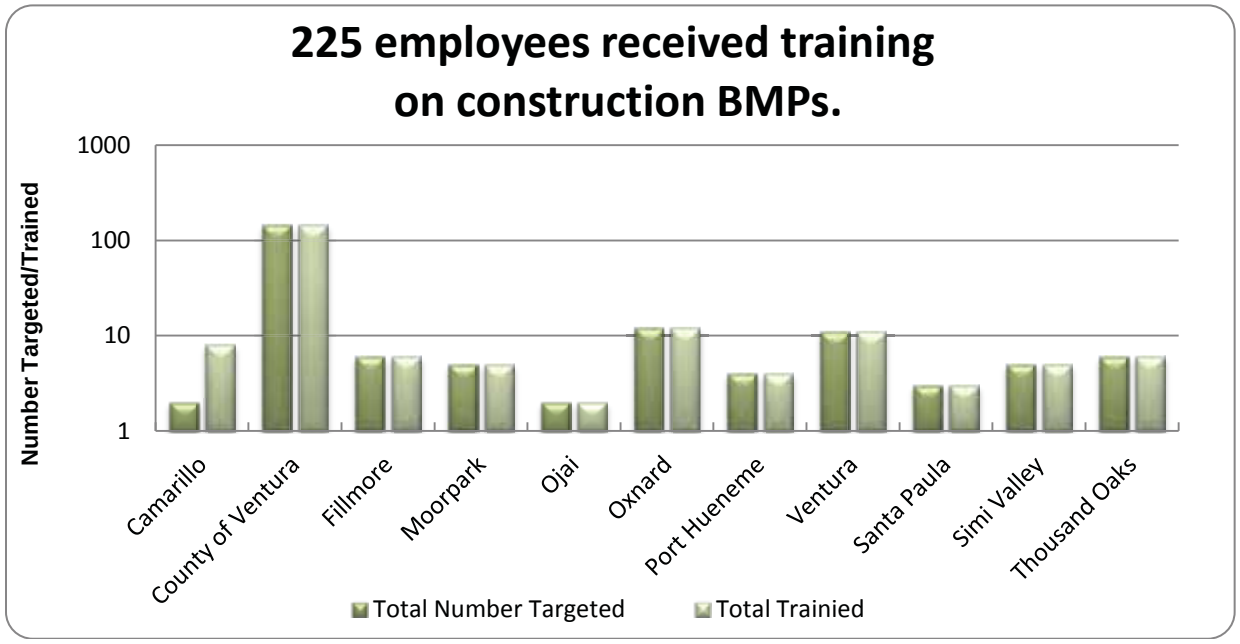
| Permit # | Assisted in Identification of Current Owners/ Operators of Properties/Sites? (Y/N) | Provided Staff for Joint Inspections with Regional Water Board Inspectors? (Y/N) | Appeared to Testify as Witnesses in Regional Water Board Enforcement Hearings? (Y/N) | Provided Copies of Inspection Reports and Other Progressive Enforcement Documentation? (Y/N) |
|---|---|---|---|---|
| ** | ** | ** | ** | ** |

## 6.7 TRAINING – DC5

Training is important for the implementation of the Development Construction Program Element. An effective training program is one of the best pollution prevention BMPs that can be implemented because it prompts behavioral changes that are fundamentally necessary to protect water quality. The Permittees target employees involved with construction engineering and inspection for training regarding the requirements of the Program for Construction Sites. Training methods varied amongst the Permittees and ranged from informal meetings, formal classroom training, and seminars to self-guided training. The Permittees also trained staff on the prevention, detection and investigation of illicit discharges and illegal connections (IC/ID) associated with construction activities. See Chapter 8 of this report for more information regarding IC/ID training.

During this reporting period, the Permittees trained over 200 key staff, including contractors whose interactions, jobs, and activities affect development construction in stormwater management, construction inspections, SWPCPs, SWPPPs, illicit discharge response, and non-stormwater discharges. Figure 6-8 depicts the number of staff trained in the program areas for each Permittee.

*Figure 6-8 Construction Inspection Training*




## 6.8 EFFECTIVENESS ASSESSMENT – DC6

Effectiveness assessment is a fundamental component for developing and implementing successful stormwater programs. In order to determine the effectiveness of the Development Construction Program, a comprehensive assessment of the program data is conducted as a part of the annual report. The results of this assessment are used to identify modifications that need to be made to the program. Each year the effectiveness assessment is reviewed and revised as needed.

By conducting these assessments and modifying the program as needed, the Permittees ensure that the iterative process is used as an effective management tool. Due to the types of data collected for the Development Construction Program, current assessments will primarily focus on Outcome Levels 1, 2 & 3.

- Outcome Level 1 (L1) answers the question: Did the Permittees implement the components of the Permit?
- Outcome Level 2 (L2) answers the question: Can the Permittees demonstrate that the control measure/performance standard significantly increased the awareness of its target audience?
- Outcome Level 3 (L3) answers the question: Can the Permittees demonstrate that the control measure/performance standard significantly modified the behavior of a target audience?

The following is an assessment regarding the effectiveness of the Development Construction Program.

### 6.8.1 Plan Review and Approval Process

**Review Grading and Construction Permit Applications for SWPPP Requirements**

Prior to approving a grading permit, the Permittees require a SWPPP be submitted for projects greater than one acre. (L1) All projects required to submit a State SWPPP, submitted a State SWPPP and filed a

NOI. (L1) Proof of filing a NOI included a copy of the completed NOI form and a copy of the check sent to the SWRCB, or a copy of the letter the SWRCB with the WDID for the project. (L1)

In some jurisdictions, Local SWPPPs were required and submitted for nearly all projects, including those not exceeding Permit thresholds. (L1)

The Permittees required proof of state permit coverage so that all construction activities that were required to file for coverage under the CASGP or Small Linear Underground Project Permit did so.

### 6.8.2 Inventory

The majority of the Permittees maintained an electronic system to track grading permits, encroachment permits, and any other municipal authorization to move soil. (L1) They required a copy of the SWPPP any time a transfer of ownership took place. Ownership transfer did not happen in each jurisdiction, so some Permittees did not have the opportunity to require a revised SWPPP. (L1)

### Inspection and BMP Implementation

As shown in Figure 6-4, the Permittees inspected all active construction sites for stormwater quality requirements during routine inspections a minimum of once during the wet season,. (L1) (L2) For inspected sites that had not adequately implemented their SWPPPs, the Permittees conducted a follow-up inspection within two weeks. Most often, the follow-up inspection occurred much sooner. (L1) (L2) (L3) In addition, the majority of Permittees inspected each project that included roadbed or street paving, repaving, patching, digouts, or resurfacing roadbed surfaces to ensure that the minimum set of BMPs were implemented. This was routinely done at the same time inspections were performed to ensure all work was being performed according to the design and standards required of public works projects. (L1) (L2)

The Permittees required a CPESC to inspect the construction sites at the time of BMP installation, at least weekly during the wet season, and at least once each 24 hour period during a storm event that generated runoff from the site if the site was:

- Within, or adjacent to an ESA
- On a hillside
- Discharging into a sedimentation/siltation impaired water body listed on the CWA 303(d) list

Many of the permittees did not have any of these types of high risk construction sites but did have the program in place to implement the added requirements.

Prior to approving and/or signing off for occupancy and issuing the Certificate of Occupancy for all construction projects subject to post-construction controls, the majority of Permittees inspected the constructed site design, and source control and treatment control BMPs conditioned during the development process to verify that they have been constructed in compliance with all specifications, plans, permits, ordinances, and the MS4 permit, as shown in Figure 6-7.

## 6.9 ENFORCEMENT

### Enforcement Action to Achieve Compliance

When a construction site fails to comply with the SWPPP, minimum BMPS or other stormwater requirements, a Permittee implements the appropriate notification and enforcement procedures. (L1) Sites

that are permitted under the CASGP are also referred to the RWQCB if they fail to achieve compliance in two weeks and a good faith effort has been made by the Permittee to achieve compliance. (L1) (L2)

Figure 6-8 shows each enforcement level and the relative number of enforcement actions taken. The Permittees did not make any referrals of violation of the new development and redevelopment post construction requirements and municipal stormwater ordinances to the Regional Water Board because there were no violations. (L1) No sites were referred to the Regional Water Board to take appropriate enforcement actions under the CAGSP.

### Training

During this reporting period, the Permittees trained 226 key staff, double last year, including contractors whose interactions, jobs, and activities affect development construction in stormwater management, construction inspections, SWPCPs, SWPPPs, illicit discharge response, and non-stormwater discharges. (L1) 100% of targeted staff members received training on construction BMPs, as shown in Figure 6-8.

## 6.9 DEVELOPMENT CONSTRUCTION PROGRAM MODIFICATIONS

On an annual basis the Permittees plan to evaluate the results of the Annual Report, as well as the experience that staff has had in implementing the program, to determine if any additional program modifications are necessary to comply with the Clean Water Act requirement to reduce the discharge of pollutants to the MEP. Any key modifications made to the Development Construction Program Element during the next fiscal year will be reported in the following Annual Report.

# 7 Public Agency Activities

## 7.1 OVERVIEW

The Permittees own and operate public facilities, and build and maintain much of the infrastructure of the urban and suburban environment throughout their jurisdictions. Some programs under Public Agency Activities help remove pollutants before they reach receiving waters, and others focus on source control ensuring all the activities performed do not contribute to stormwater pollution to the maximum extent practicable. Therefore public agencies have a dual role: removing pollutants before they are transported by the storm drain system, and preventing pollution from being generated in the operation and maintenance of these facilities.

Permit requirements include both maintenance of infrastructure to remove pollutants and implementing control measures to prevent the generation or transport of pollutants. Maintenance activities include street sweeping and drainage facility inspection and cleaning. As part of their normal operations the Permittees conduct a number of activities (e.g., catch basin cleaning, street repairs, street sweeping) that have the potential to generate or mobilize pollutants. Control Measures in the Public Agency Activities Program Element are designed to ensure that these operations and maintenance activities are performed using processes and procedures to minimize the pollutants generated and the potential for pollutants to enter the storm drain system.

## 7.2 CONTROL MEASURES

The Permittees have developed several Control Measures and accompanying performance standards to ensure that the public agency activities permit requirements are effectively developed and implemented. For each Control Measure there are accompanying performance standards which, once accomplished, constitute compliance.

The Public Agency Activities Control Measures are organized to be parallel to the organization of the Permit and consist of the following:

***Table 7-1 Control Measures for the Public Agency Activities Program Element***

| PA | Control Measure |
|---|---|
| PA1 | Public Construction Activities Management |
| PA2 | Vehicle Maintenance/Material Storage Facilities/Corporation Yards Management/Municipal Operations |
| PA3 | Vehicle and Equipment Wash Areas |
| PA4 | Landscape, Park, and Recreational Facilities Management |
| PA5 | Storm Drain Operation and Management |
| PA6 | Street And Roads Maintenance |
| PA7 | Emergency Procedures |
| PA8 | Training |
| PA9 | Effectiveness Assessment |

## 7.3 PUBLIC CONSTRUCTION ACTIVITIES MANAGEMENT 1–PA

The Public Construction Activities Control Measure provides protocols to be followed in the design and construction phases of capital projects undertaken by the Permittees. In essence, the Permittees will follow the Planning and Land Development and Construction Programs requirements for all Permittee-owned or operated public construction projects. Those requirements include complying with the Development Planning Program requirements at public construction projects and all the Development Construction Program requirements at Permittee owned or operated construction sites including requiring the development of SWPCP for projects that disturb less than 1 Acre.

***Performance Standard 7-1***

| **Comply with all the Development Planning Program requirements at public construction projects.** | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

***Performance Standard 7-2***

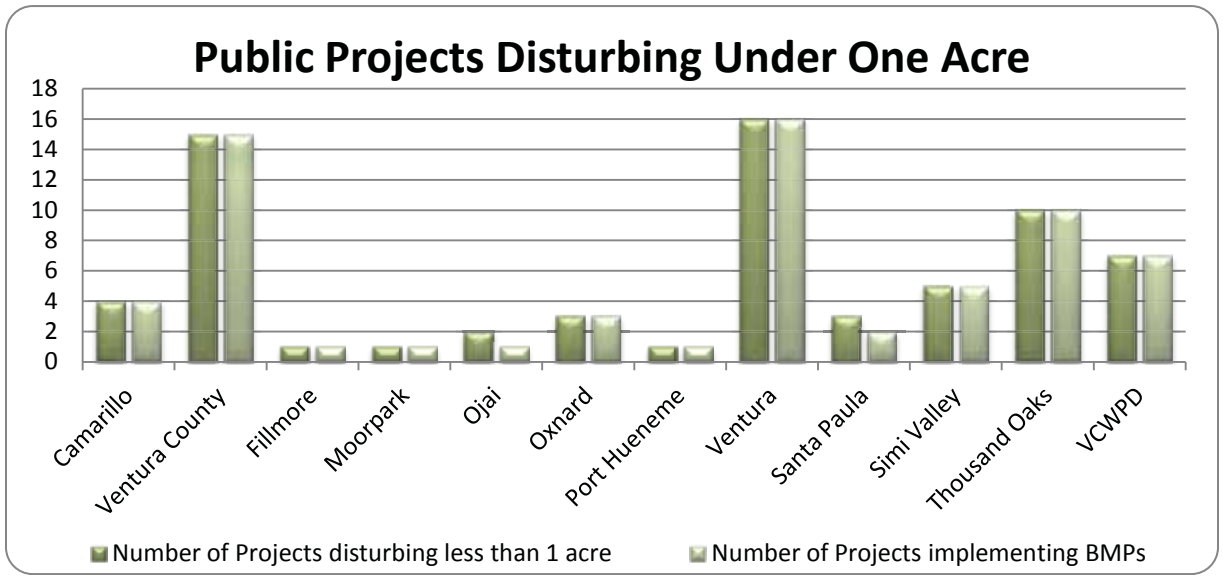
| **Comply with all the Development Construction Program requirements at Permittee owned construction sites** | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | | | ☑ |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

Grading or building permits are not routinely granted for public construction projects within an agency's jurisdiction and so identifying and defining small construction projects is less straight forward. To ensure that extremely small projects such as installing a stop sign or providing wheelchair access to a sidewalk meet permit requirements the Permittees have adopted standard practices to serve as the SWPCP. The practices include the BMPs identified in the permit for construction projects under one acre.

***Performance Standard 7-3***

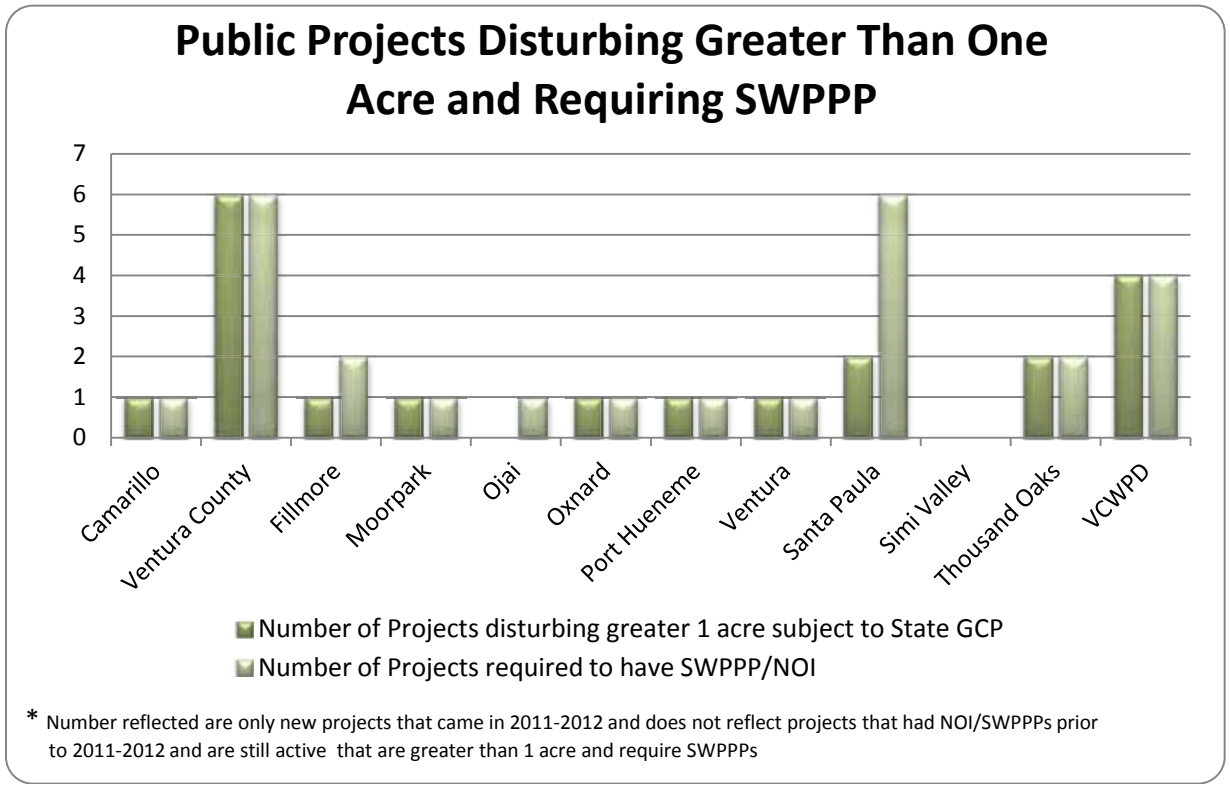
| Require the development of a Storm Water Pollution Control Plan for public projects | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

***Figure 7-1 Public Projects Disturbing Less Than One Acre***




Larger projects have requirements in the construction bid documents which require the contractor to draft and implement an approved SWPCP with the size appropriate BMPs. All public constructions projects are required to be in compliance the State's requirements under the Construction Activities General Stormwater Permit (CAGSP). Figure 7-2 indentifies how many projects the Permittees had that fell under those requirements.

*Figure 7-2 Public Projects Disturbing Greater Than One Acre*




## 7.4 VEHICLE MAINTENANCE/MATERIAL STORAGE FACILITIES/CORPORATION YARDS MANAGEMENT/MUNICIPAL OPERATIONS – PA2

The Vehicle Maintenance/Material Storage Facilities/Corporation Yards Management/Municipal Operations Control Measure addresses pollutants entering the storm drain system from Permittee-owned/leased facilities (e.g., vehicle equipment maintenance facilities, material storage facilities, collectively referred to as corporation yards). There are other non-operation oriented facilities that are owned or leased by the Permittees where these permit conditions are not relevant, such as libraries, parks, and office buildings. However, these facilities are still required to comply with all other applicable permit requirements such as pesticide use. Camarillo recently installed covers over the material bunkers at their Corporation yard. In addition, solar panels were installed on top of the covers which will provide power to several buildings at the corporation yard.

The Permittees' corporation yards support operation and maintenance activities within their jurisdiction. Corporation yards are operated and maintained by the Permittees for the following activities or facilities:

- Vehicle and equipment
- Storage and parking
- Maintenance

***Thousand Oaks' car wash facility that drains to wastewater treatment plant***

- Fueling
- Washing and cleaning
- Sign painting activities
- Bulk material storage areas

*Material storage covers in Camarillo also support solar panels*

### 7.4.1 Implement Required BMPs for each Facility

The Permittees have written SWPCPs for corporation yards to ensure implementation of appropriate BMPs, including those identified in Table 10 of the Permit. The SWPCPs were required under the previous permit and serve to help implement the current permit requirements. The SWPCPs call for annual inspections to be performed and documented by trained staff. Any insufficiencies identified during inspections are quickly corrected by facility staff.

***Table 7-2 Summary of Permittee-Owned and Leased Facilities***

| Permittee Corporate Yards | Name | Address | Implementation of appropriate BMPs | Address discharges of wash waters from vehicles and equipment washing facilities |
|---|---|---|---|---|
| Camarillo | Camarillo Corporation Yard | 283 South Glenn Drive | ☑ | ☑ |
| County of Ventura | Saticoy Operations Yard | 11201/11251 Riverbank Drive, Saticoy, CA | ☑ | ☑ |
| | Government Center, Service Buildin | 800 S. Victoria Avcenue, Ventura, CA | ☑ | ☑ |
| | Moorpark Maintenance Yard | 6767 Spring Street, Moorpark, CA | ☑ | ☑ |
| | VCSO Air Unit | Camarillo Airport, Camarillo, CA | ☑ | ☑ |
| | County of Ventura 30 Fire Stations | various countywide locations | ☑ | ☑ |
| Fillmore | Fillmore Public Works Yard | 711 Sespe Avenue | ☑ | ☑ |
| Moorpark | Moorpark Public Corporate Yard | 627 Fitch Avenue, Moorpark, CA 93021 | ☑ | ☑ |
| | Moorpark Police Services Center | 610 Spring Road, Moorpark, CA 93021 | ☑ | ☑ |
| Ojai | City of Ojai Corporate Yard | 408 S. Signal St. Ojai, CA 93023 | ☑ | ☑ |
| Oxnard | Oxnard Corporation Yard | 1060 Pacific Avenue | ☑ | ☑ |
| | Regional Recycling Center | 111 S. Del Norte Blvd | ☑ | ☑ |
| | Oxnard POTW | 6001 S. Perkins Rd., Oxnard, CA | ☑ | ☑ |
| | Oxnard Water Campus | 251 S. Hayes Avenue | ☑ | ☑ |
| Port Hueneme | Public Works Surfside Yard | 700B E. Port Hueneme Rd. | ☑ | ☑ |
| | Public Works Industrial Yard | 746 Industrial Avenue | ☑ | ☑ |
| Ventura | SanJon Corporate Yard | 336 SanJon Road | ☑ | ☑ |
| Santa Paula | Corporation Street Yard | 903 Coporation Street | ☑ | ☑ |
| | Water Yard | 180 South Palm Avenue | ☑ | ☑ |
| Simi Valley | Simi Valley Police Department | 3901 Alamo St, Simi Valley CA | ☑ | ☑ |
| | Simi Public Service Center | 490 West Los Angeles Ave | ☑ | ☑ |
| Thousand Oaks | Municipal Service Center | 1993 Rancho Conejo Blvd. | ☑ | ☑ |
| VCWPD | WPD Moorpark CY | 6767 Spring Rd, Moorpark, CA 93021 | ☑ | ☑ |
| | WPD Saticoy CY | 11251-B River Bank, Ventura, CA 93004 | ☑ | ☑ |

## 7.5 VEHICLE AND EQUIPMENT WASH AREAS – PA3

The Vehicle and Equipment Wash Areas Control Measure addresses pollutants entering the storm drain system from Permittee-owned/leased vehicle and equipment wash areas. The Permit provides several options to eliminate wash water discharges from vehicles and equipment washing facilities by implementing one of the following:

- Self-contain, and haul-off for disposal;
- Equip with a clarifier;
- Equip with an alternative pre-treatment device; or
- Plumb to the sanitary sewer.

The Permittees have been successful in implementing applicable BMPs to eliminate wash water discharges from vehicles and equipment washing. As municipal facilities are constructed, redeveloped, or replaced all vehicle wash areas will be plumbed to the sanitary sewer or be self-contained and all wastewater disposed of legally.

## 7.6 LANDSCAPE, PARK, AND RECREATIONAL FACILITIES MANAGEMENT – PA4

The Landscape, Park, and Recreational Facilities Management Control Measure ensure that the discharges of pollutants from the Permittees' use and storage of fertilizers and pesticides are reduced. The control measures include the use of BMPs that promote the use of integrated pest management (IPM) and retention and planting of native plant species requiring less water and chemical augmentation to remain healthy.

### 7.6.1 Implement IPM Program

A model integrated pest management (IPM) program was drafted through the Public Agencies Activities Subcommittee and used as a template by the Permittees to develop their own plans. This standardized protocol was posted on the Program's website November 2009. The due date in the Permit for implementation of IPM plans was October 8, 2010.

The purpose of this standardized protocol is to define an application protocol for the routine and non-routine application of pesticides, fertilizers, and herbicides (including pre-emergents). This protocol provides a comprehensive policy to comply with the Ventura County Permit.

The intent is to focus on preventing pesticides, fertilizers, and herbicides from entering the storm drain system and discharging to receiving waters. This protocol is applicable to 1) the outdoor use of pesticides, herbicides, and fertilizers; 2) the use of pesticides and fertilizers where the materials may come into contact with precipitation; 3) the use of pesticides, herbicides, and fertilizers where these materials may come into contact with runoff (natural or irrigation); and 4) the use of pesticides, herbicides, or fertilizers anywhere where they may be directly or indirectly discharged to a storm drainage system.

The protocol is applicable to Permittee staff and contracted services that apply pesticides, fertilizers, or herbicides. Such staff commonly include, park, public works, building/grounds maintenance, and pesticide application staff. It is not applicable to the indoor use of pesticides, but is applicable to the consequential outdoor handling, mixing, or disposal of materials related to indoor use. This protocol also does not apply when another NPDES permit and/or abatement orders are in effect at the selected site. Furthermore, this protocol is not intended to replace federal or state requirements or provide complete directions for applying, handling, transporting, mixing, or storing pesticides, fertilizers, or herbicides.

An effective IPM program should include the following elements:

- Pesticides are used only if monitoring indicates they are needed according to established guidelines.

- Treatment is made with the goal of removing only the target organism.
- Pest controls are selected and applied in a manner that minimizes risks to human health, beneficial, non-target organisms, and the environment.
- Use of pesticides, including Organophosphates and Pyrethroids do not threaten water quality.
- Partner with other agencies and organizations to encourage the use of IPM.
- Adopt and verifiably implement policies, procedures, and/or ordinances requiring the minimization of pesticide use and encouraging the use of IPM techniques (including beneficial insects) in the Permittees' overall operations and on municipal property.
- Policies, procedures, and ordinances shall include commitments and timelines to reduce the use of pesticides that cause impairment of surface waters by implementing the following procedures:
    - Quantify pesticide use by its staff and hired contractors.
    - Prepare and annually update an inventory of pesticides used by all internal departments, divisions, and other operational units.
    - Demonstrate reductions in pesticide use.

The prevention of pesticides from harming non-target organisms is the primary goal of the Permittees IPM program. The Permit also asks for the demonstration of a reduction in pesticide use, however that is not as simple as comparing one year's use to another. Many factors go into the decision to use pesticides and year to year variables can have a significant impact on that decision. For example, an above average wet year will require more weed abatement than a dry year. The need to address an insect infestation before it spreads will require an intensified use of pesticides in that area. Since year to year reductions cannot be accurately measured due to variable needs, the reduction in use of pesticides by the Permittees will be compared to the amount of pesticides that would have been used under a non-IPM program.

***Performance Standard 7-4***

| **Implement an integrated pest management (IPM) program consistent with Permit** | | | |
|---|---|---|---|
| | Yes | No | Draft |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | | ☑ | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

### 7.6.2 Maintain and Expand Internal Inventory on Pesticide Use

Permittees require all staff applying pesticides to be either certified by the California Department of Food and Agriculture, or under the direct on-site supervision of a certified pesticide applicator, as defined in the standardized protocol. Permittees have also restricted the purchase and use of pesticides and herbicides to certified staff.

***Performance Standard 7-5***

| **Prepare an annual update an inventory of pesticides used by all internal departments and hired contractors** | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

Permittees that contract out for pesticide applications have included contract provisions requiring the contract applicator meet all requirements of this program. Contract language includes compliance with the standardized protocol, the prohibitions and requirements for certification, and supervision of pesticide applicators.

## 7.7 STORM DRAIN OPERATION AND MANAGEMENT – PA5

The Storm Drain Operation and Management Control Measure provides for the long-term performance and integrity of the Permittees' storm drain system. The Permittees must prioritize catch basins for cleaning based on the required level of maintenance, and all catch basins are marked with a storm drain message, whether stenciled or permanently imprinted. This Control Measure also includes a requirement for special events to prevent debris accumulation in catch basins and storm drains.

***Performance Standard 7-6***

| **Establish standard protocols for routine and non-routine application of pesticide consistent with the permit requirements** | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

### 7.7.1 Implement Storm Drain System Mapping

The Permit requires that the Permittees to create a map at a scale and in a format specified by the Principal Permittee showing the location and length of underground pipes 18 inches and greater in diameter, and channels within their permitted area. A schedule was provided to allow time to develop the needed information. The first due date was October 6, 2010. Since Ventura Counties cities are all separated by open space and the MS4 from one city does not discharge to another, the need to integrate the maps into a countywide storm drain map is not as imperative as the need for a Permittee to be able to know what is upstream from any point in their MS4, and where that water will discharge. Given that the priority for the mapping is internal to the agency operating the system, the Permittees were given the autonomy to decide what form of mapping will work best for their needs. All maps will be incorporated into the Principal Permittee's Watershed Protection District, GIS system as best as possible. This incorporation will allow for other formats to be available and viewed when needed.

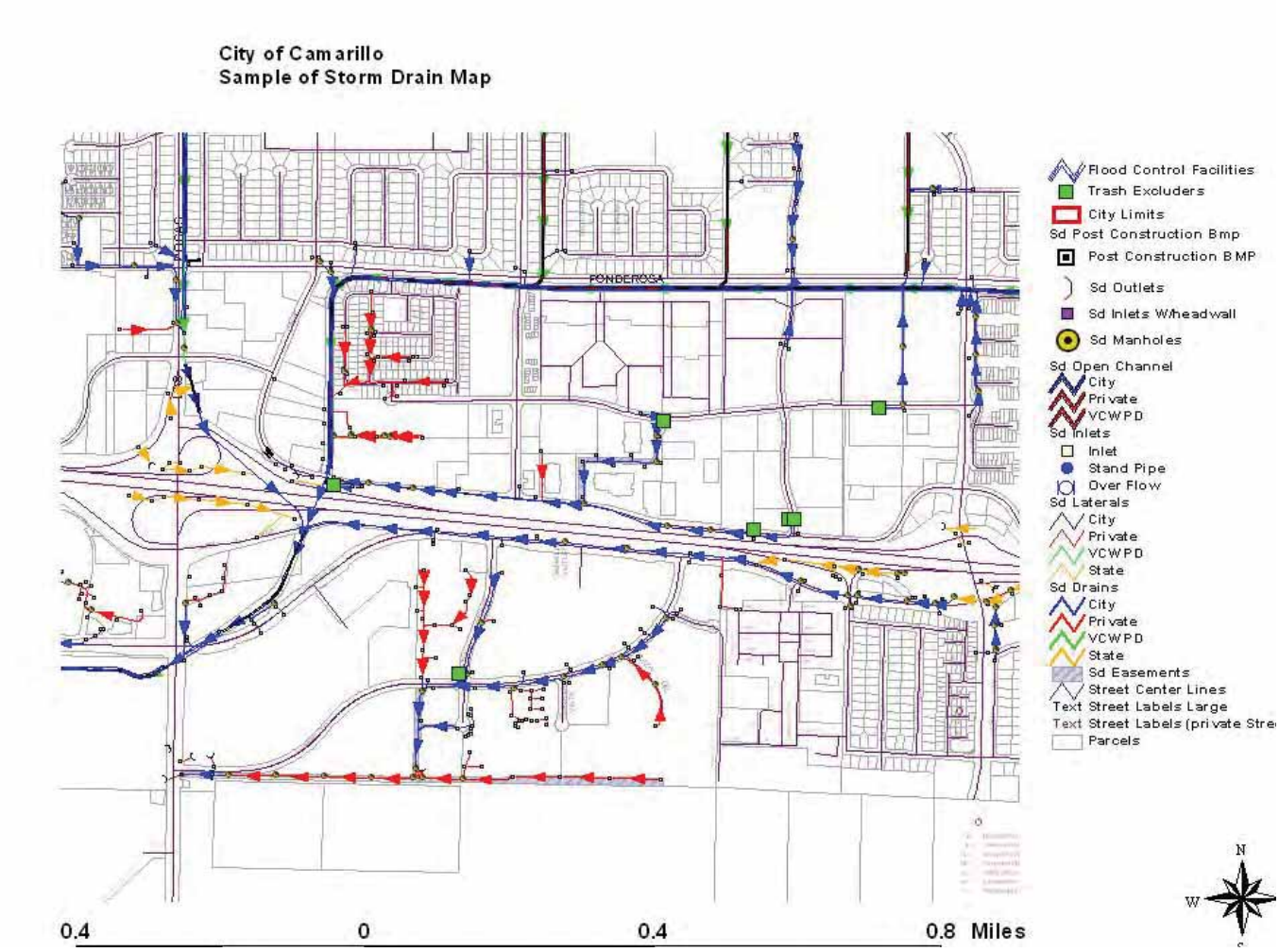
***Performance Standard 7-7***

| **Prepare a map or list of catch basins, with GPS coordinates, designations, and rationale for designations** | | | |
|---|---|---|---|
| | Yes | No | in progress |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | | | ☑ |
| Thousand Oaks | ☑ | | |
| Watershed Protection | | | N/A |

### 7.7.2 Implement Catch Basin Maintenance Program

Each Permittee developed the criteria and method of a catch basin mapping and prioritization system for their agency. This is due to the different types of databases, mapping systems, infrastructure, and methods used by the Permittees for inspection and cleaning. The Permit does not specify the criteria for designating catch basin priorities, nor require a uniform system of mapping catch basins. The Permittees have begun to implement catch basin cleaning schedules based upon the prioritization designations as required by the Permit, however, the requirement of a list or map of catch basins with their GPS coordinates and their prioritization designation was due July 8 2011. Figure 7-4 through Figure 7-7 shows the Permittees' efforts on prioritization, inspection and maintenance.

***Figure 7-3 Example of Storm Drain Map***

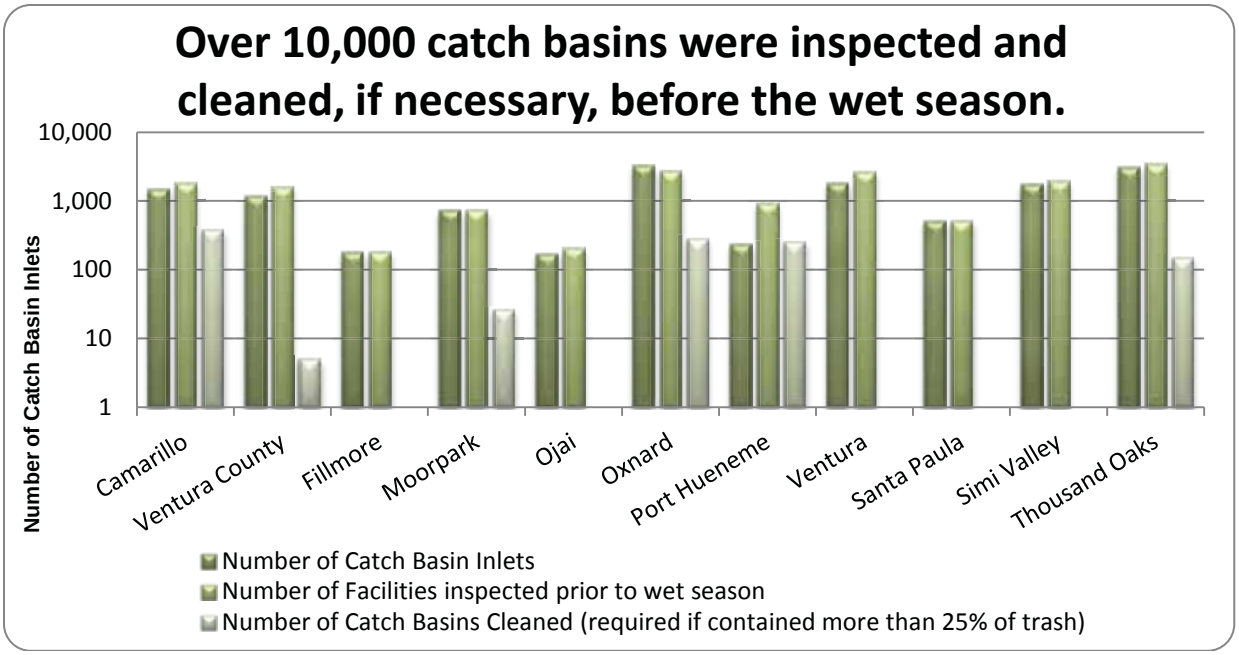



Permittees routinely inspect catch basins and other drainage facilities that are a part of their system. These inspections are scheduled and completed in accordance with the requirements of the catch basin prioritization (due July 2011). The prioritization requires:

- Priority A inspected 3 times a wet season and once during the dry season;
- Priority B inspected once during the wet season and once during the dry season;
- Priority C inspected a minimum of once per year.

**Over 230 tons of debris was removed from catch basins countywide through the storm drain maintenance program.**

***Figure 7-4 Catch Basin Inspections and Cleaning***




***Catch Basin Cleaning Using a Vacuum Truck***

Inspections include the visual observation of each catch basin, and open channel to determine if the device or conveyance has accumulated trash, sediment or debris requiring removal. All debris removed (including trash and natural debris such as leaves from street trees) from the system is disposed of properly and therefore represents pollutants that would have been washed downstream to a receiving water. For catch basins, "as-needed cleaning" occurs whenever trash, sediment, or debris accumulation is found to be at least 25% of capacity. Watershed Protection District cleans and maintains their flood control facilities, but does not operate any catch basins that receive runoff directly from streets or roads.

***Performance Standard 7-8***

| **Inspect the legibility of the catch basin label by all inlets before the beginning of the wet season** | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | | ☑ | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | | | ☑ |

***Figure 7-5 Priority A Catch Basins Inspected and Cleaned***

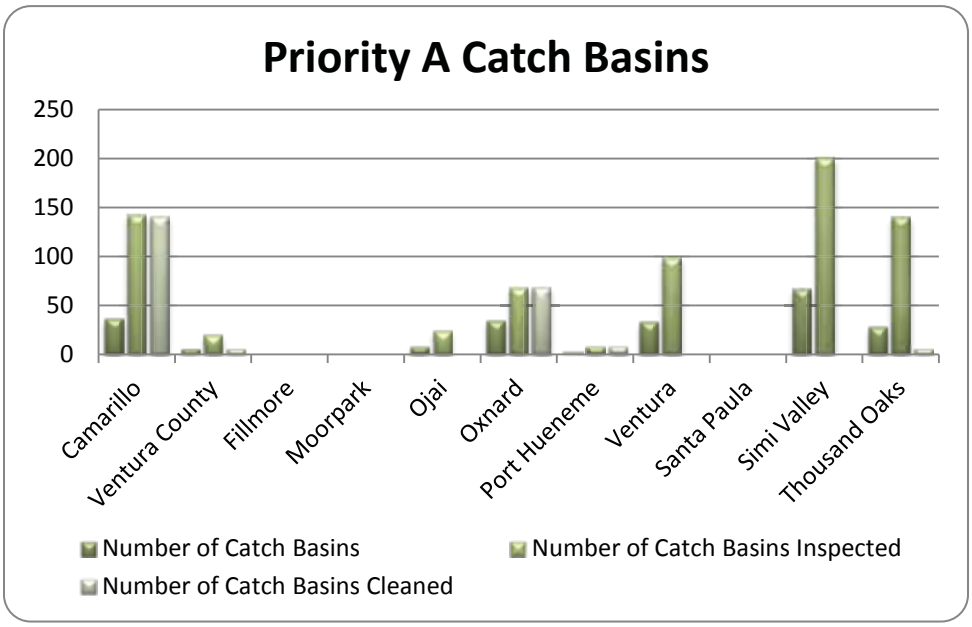


***Figure 7-6 Priority B Catch Basins Inspected and Cleaned***

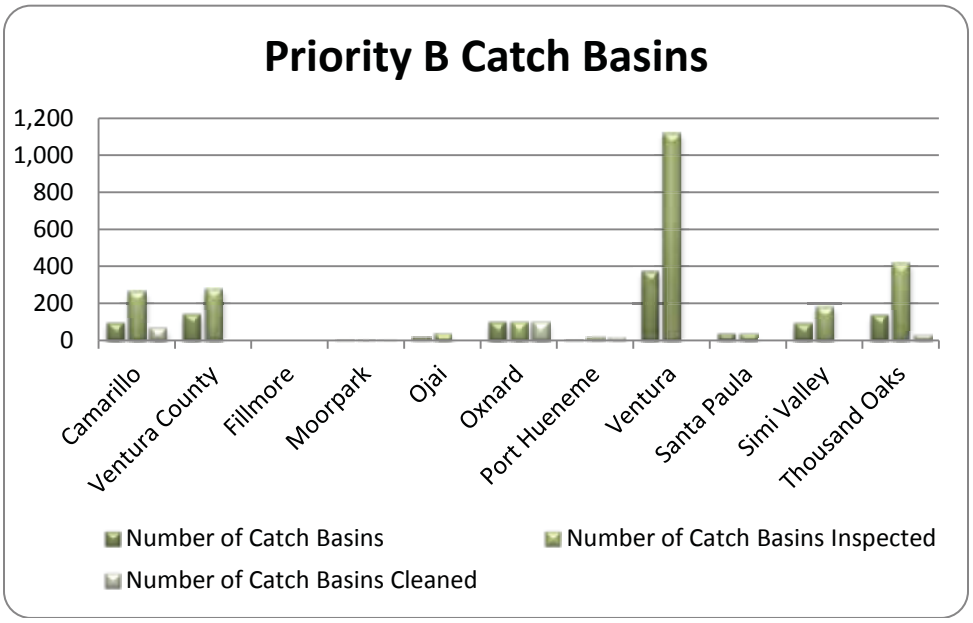
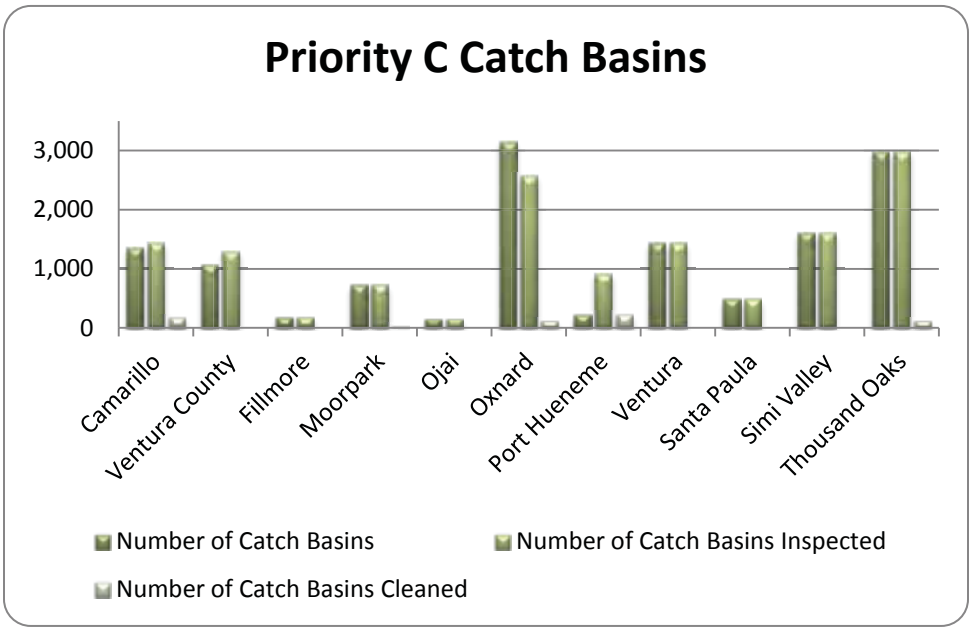



***Figure 7-7 Priority C Catch Basins Inspected and Cleaned***




### 7.7.3 Install Trash Receptacles

Permittees have identified the bus stop areas which are typically located in commercial areas and near schools as areas to install trash receptacles. All Permittees have installed trash receptacles at areas subject to high trash accumulation. Commercial areas are typically required to install trash receptacles at store fronts to aid in proper disposal. Trash programs usually involve agency solid waste divisions who bring their expertise in performing trash audits to determine the need for additional trash receptacles.

***Performance Standard 7-9***

| Trash receptacles, or equivalent trash capturing devices in areas subject to high trash generation within jurisdiction | | | |
|---|---|---|---|
| | Yes | No | in progress |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

### 7.7.4 Install Additional Trash Management Devices and Programs

The Permittees have begun the implementation of this performance standard which is due July 8, 2012 after the reporting period of this report. Some agencies already had trash capturing devices installed in known problem areas before the permit was adopted. See below for the Permittee's specific actions to control trash and litter:

***Performance Standard 7-10***

| Trash receptacles cleaned out and maintained as necessary to prevent trash overflow | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

**Camarillo** - Camarillo installed 31 full capture connector pipe screen trash devices at all priority A locations throughout the city, in addition they installed trash receptacles at the city's bus stop areas which are typically located in commercial areas and near schools. Trash containers were also installed at entrances to city-maintained trails and the city's park. In addition, the city contracted special monthly trash cleanups along major arterials in the commercial areas of the Revolon Slough/Beardsley wash subwatershed. Also, the city mailed letters to all commercial businesses/property managers (42) in the Revolon Slough/Beardsley wash subwatershed requesting they maintain their property and keep it free of litter. Further, via California Coastal Cleanup Day, the City held cleanups at two locations in which over 340 volunteers removed approximately 1,800 lbs. of trash and recyclables. The City also published an article, "Do you Know Where Your Litter Goes?", in the May/June 2012 Cityscene newsletter which was mailed to all residents.

**County of Ventura** – Public Works Agency - Transportation provides for street sweeping in high trash (Priority A) areas. Trash and litter pick-up are required by the Encroachment Permits. All public park facilities are equipped with trash receptacles and covered 3-yard bins for public use. Trash containers are checked and emptied as needed on a daily basis or more often as required in accordance with use patterns.

Airports staff patrols facilities and is able to identify moderate trash areas, especially prior to rain and during high wind events.

***Hard working trash excluder***

**Fillmore** - The city has regular Public Works crew and trash truck to empty receptacles and to clean areas of high trash. During special events the use permits require additional trash facilities.

**Moorpark** – Annual inspections of the City's catch basins determine whether or not any Priority A catch basins exist. A Priority A catch basin is defined as any catch basin that is found with 25% or more of trash. Majority of commercial business areas are required to have trash containers installed at the entrances/exits of the buildings. Bus shelters also include a 32-gallon trash container, which is emptied at least weekly.

**Ojai** – Performs field inspections, placement of no dumping signs, and clean up after public events, as part of the city permit process users are required to provide BMP and cleanup procedures.

**Oxnard** - The City of Oxnard utilizes the services of Oxnard City Corps to inspect and maintain the high priority catch basins. In September 2010, City Corps started using a small street sweeper/vacuum modified with a hose attachment to remove debris from the catch basins. The City of Oxnard owns and maintains two Fresh Creek trash removal devices located downstream of the high priority areas in the Wooley Road and Oxnard West Drains. The City of Oxnard has made a request to the County Watershed Protection District to install trash booms downstream of the high priority catch basins that flow into the J Street and Oxnard Industrial Drain.

**Port Hueneme** - Street sweeping goes beyond permit requirements. Solid Waste performs regular audits during their day to day services. The city is part of a joint effort with City of Oxnard that monitors and collects trash form the Oxnard West Drain. The city provides cleaning services and also supplies nets for the Fresh Creek device in the Oxnard West Drain. Areas where Priority A basins are located have full inlet screens and/or trash capture devices that were previously installed

**Simi Valley** - Identified the following high trash areas: pedestrian high traffic areas; restaurant concentration areas; special events. The city increased the number of trash receptacles in public areas prone to high amount of trash. The city has increased trash pickup to weekly or bi-weekly in public areas prone to high amount of trash.

**Thousand Oaks** - Trash cans at the MSC are emptied daily and roll off boxes containing scrap metal and greenwaste are covered with a tarp during inclement weather. Fifty-six public trash and recycling

containers are distributed at high trash areas, including high schools, California Lutheran University, the day labor site and other business, recreation and residential areas throughout the city where high foot traffic necessitates proper disposal options. A majority of these container are located near bus stops to meet the needs of both public transportation riders and pedestrians. All containers are serviced twice weekly by the city's franchised commercial solid waste hauler, Waste Management.

The MSC collects and recycles greenwaste, metal, antifreeze, motor oil and wheel weights. In addition to regular cleaning, clearing and sweeping the interior area of the MSC, all catch basins are cleaned regularly and include the use of a filter within each catch basin.

**Ventura -** Data collected from the cleaning of catch basins was used to determine the location of "high trash" generating areas. Those catch basins were designated "Priority A" catch basins and were fitted with trash excluder devices. In addition, other areas of the City were considered for the installation of trash excluders and at present over 100 devices have been installed. The City has gone out to bid for an additional 106 devices that will be installed by the end of the year. City staff regularly remove trash from right-of-way areas throughout the City. These include streets, medians, parkways, on and off ramps to freeways, walking and biking paths, and other public areas which may not otherwise receive litter abatement services. An average month requires over 100 "cleaning incidents" with significant amounts of litter and debris along public right-of-ways removed. Debris can include small objects such as cigarette butts or large items such as mattresses and couches. The City of Ventura has begun a "Safe and Clean" program that require City staff to participate in the cleanup of homeless encampments throughout the City. Trash receptacles throughout the City are emptied 1-5 times per week, depending on the location and the trash generated. The City trash contractor monitors and removes trash before it accumulates and overflows. In addition, bus shelters that have trash receptacles located nearby, are monitored and emptied daily if required. This last year the Ventura Pier was targeted for adding six recycle bins, six trash bins, and two fishing filament bins.

***Performance Standard 7-11***

| **Provide additional trash management practices in areas defined as Priority A? (by July 8, 2012)** | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | | ☑ | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | | ☑ | |
| Ventura | ☑ | | |
| Santa Paula | | ☑ | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |

### 7.7.5 Trash Management at Public Events

Events in the public right of way, or wherever it is foreseeable that substantial quantities of trash and litter may be generated, require the following measures:

- Proper management of trash and litter generated

- Arrangement for temporary screens to be placed on catch basins
- Arrangement that trash is removed after the event

The Permittees appreciate having the ability to select the option that will work best in their jurisdiction and have employed several methods to ensure trash does not get into a storm drain after a public event. Most cities use the power of the Special Use Permit or Temporary Use Permit. With this they can, and do, require a trash and recycling management plan and/or a substantial deposit before issuing an event permit. Funds can be withheld if trash has not been properly managed and costs recovered and even fines levied if after the event staff is needed to clean up. A few agencies take on this responsibility and have street sweepers employed to clean streets of any trash immediately after a large event, or services the affected drains with a vacuum truck after the event has concluded.

**Camarillo -** Camarillo inspects the area after each public event held in public right-of-way and if trash is present, removes the debris. If a large quantity is left, the city withholds funds from the Special Use Permittee's deposit to cover expenses related to trash removal.

**County of Ventura -** All park facilities are equipped with trash containers that are checked and emptied on a daily basis. Additional containers are provided as required. Additional collection dates are scheduled if needed based on historical use patterns, site reservations, and field assessment by staff.

Airports Department added extra trash receptacles and dumpster bins. Also, Airports Department swept paved areas and increased litter and trash pick-ups.

**Fillmore -** Public events permits are required to have temporary trash receptacles and to pay for staff or to have a volunteer crew to clean trash during events. The Public Works Department also provides additional manpower for events that are designated City events.

**Moorpark –** Standard conditions for Temporary Use Permits (which include public events) include requirements for protection of the storm drain system from litter and other material. Proper trash management is required for the event and the nearby catch basins must be screened during the event.

**Oxnard -** Technical Services Program-Stormwater staff worked in conjunction with the Planning Division to revise the Temporary Use Permit Application. A "Drainage and Trash Management" requirement has been added as a condition for obtaining a TUP. Any applicant seeking a TUP for a public event where substantial quantities of trash may be generated must meet the above referenced conditions.

**Ojai -** As part of the city permit process permitted public events are required to provide BMP and cleanup procedures.

**Port Hueneme -** City staff vacuums out catch basins immediately after the events and also has the event host use BMPs such as placing fiber rolls in front of inlets during the course of the event.

**Santa Paula -** The city has increased the number of trash receptacles in public areas prone to high amounts of trash. The city schedules trash pickup immediately following public events.

**Simi Valley –** has created a trash management plan for public events which requires the event's responsible party to obtain a permit. This permit gives specific requirements for trash management at the event.

**Thousand Oaks -** Parking and storage areas are kept clean and orderly. Litter control at the MSC is managed by weekly sweeps of the facility grounds and by daily pick up of litter. The limited number of public events at the MSC include follow-up litter removal. City-sponsored public events, events charging admission fees and events attracting 2000+ participants are required to submit a Recycling Plan to ensure that proper solid waste management procedures are in place before the city will issue a Special Event Permit. Additionally, the City Environmental Programs division loans recycling containers to non-profit organizations free of charge for public events within the city.

**Ventura -** Most large public events are concentrated in the Downtown District. A total of 26 trash excluders were installed in the catch basins in this area. They are cleaned on the same schedule as the "Priority A" drains. The Downtown Organization employs personnel to clean up litter and other debris as part of their daily routine. The addition of one trash receptacle in the downtown mini-park and one trash receptacle on an additional street corner in the downtown, brings the total trash receptacles to 46 in the downtown..

### 7.7.6 Implement Storm Drain Maintenance Program

Permittees also routinely inspect and clean their drainage facilities during the year on an as-needed basis. "Routine cleaning" for these facilities, means the removal of accumulations of trash, sediment and debris likely be washed downstream with the next runoff event or cause a loss of hydraulic capacity and result in potential flooding.

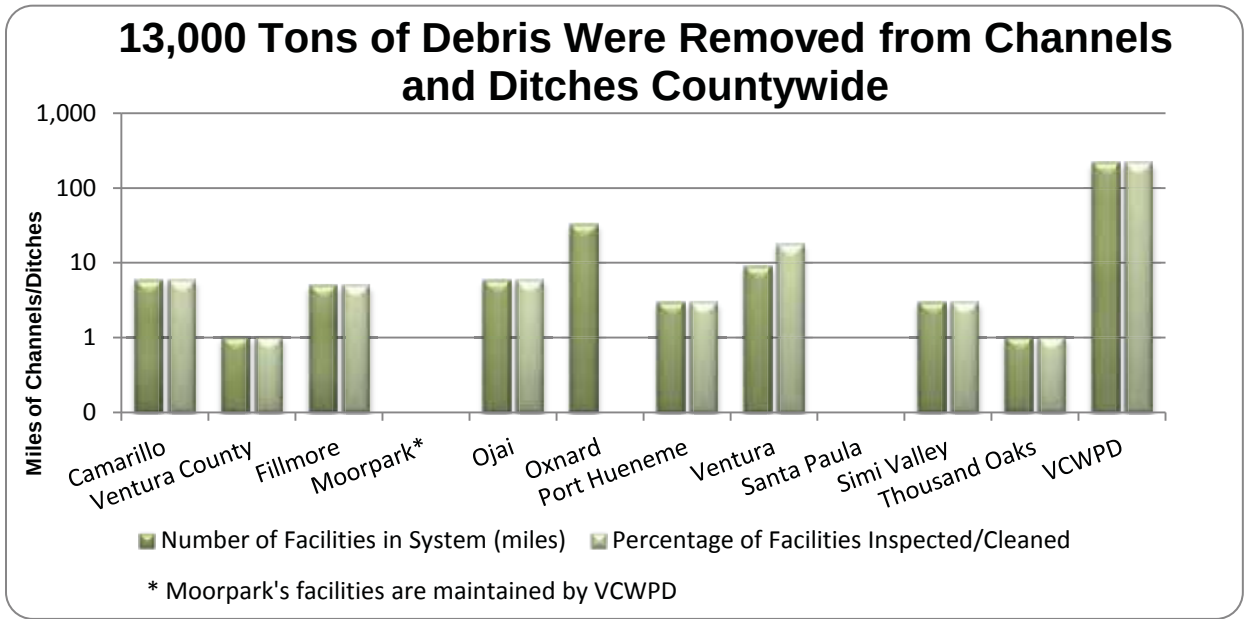
The Public Information and Participation section requires Permittees to have completed labeling or marking the curb inlets in their entire storm drain system, but the inspection and relabeling is required under Public Agencies. During the reporting period, some Permittees maintained their inlet signs by reapplying stencils/markers as they wore out and applying stencils/markers to new inlets as they were installed.

***Performance Standard 7-12***

| Require appropriate litter control measures for public events | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |

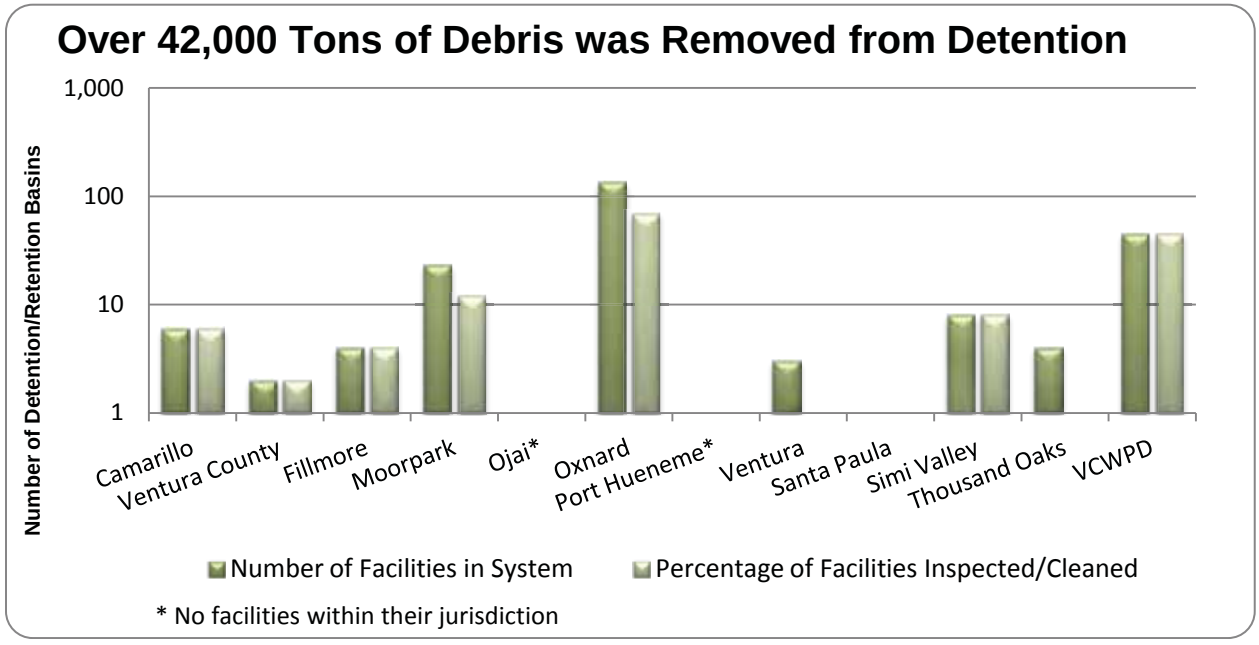
Signs at curb inlets have varying useful lives due to the materials from which they are constructed (e.g., paint or thermoplastic), their position (e.g., on top of curb or on curb face), and wear factors (e.g., traffic, street sweeping, sunlight). As a result, the Permittees have different programs to maintain curb inlet signage within their respective jurisdictions. Some Permittees replace a portion of their signs each year whereas others re-sign all inlets every few years. In the cases where a Permittee has a separate program for catch basin label maintenance from their catch basin debris maintenance program the catch basin debris maintenance inspection does not inspect for the label. Catch basin label data is reported in public outreach program.

***Figure 7-8 Tons Removed from Channels and Ditches***




When performing cleaning activities, Permittees implement appropriate BMPs to prevent sediments and debris from being washed downstream. By removing this amount of material from the catch basin inlets, open channels, and detention basins the Permittees prevent the passage of these materials to downstream receiving waters. During the reporting period, the Permittees tallied the collection of over 55,000 tons of solid debris from drainage facility maintenance activities.

***Figure** 7-9 **Tons Removed from Detention Basins***



### 7.7.7 Implement Spill Response Plan

Within their respective jurisdiction the Permittees implement a response plan for spills generated from their operations that have the potential to enter the MS4 system. Response plans include:

- Investigation of all complaints received within 24 hours of the incident report;
- Containment response within 2 hours to spills upon notification, except where such overflows occur on private property, in which case the response should be within 2 hours of gaining legal access to the property; and
- Notification to appropriate public health agencies and the Office of Emergency Services (OES).

Unfortunately, even with good training and well maintained equipment there are occasions where a spill or release will happen and need to be cleaned up. Cleanup can be as simple as dispatching a crew to pick up fallen debris, or a street sweeper or vacuum truck to clean an area or catch basin and storm drain after a known spill. It could also become a major multi-agency operation if hazardous materials are involved.

### 7.7.8 Inspect and Maintain Permittee-Owned Treatment Control BMPs

Permittees that own or are authorized to maintain treatment control BMPs have programs to implement an inspection and maintenance program for those treatment control BMPs, including post-construction treatment control BMPs. Private BMPs required for new development are managed in different ways. Some Permittees do not want to be responsible for the cleaning and maintenance of these BMPs and limit their role to inspection and enforcement to ensure effectiveness. Others will take on that responsibility on a case by case basis, and there are occasions where a Permittee has installed their own treatment BMPs to improve water quality.

When Permittees are performing maintenance of structural BMPs they implement their own BMPs to ensure that residual water produced by a treatment control BMP (not internal to the BMP performance) is:

- Hauled away and legally disposed of; or
- Applied to the land without runoff; or
- Discharged to the sanitary sewer system (with permits or authorization); or
- Treated or filtered to remove bacteria, sediments, nutrients, and meet all limitations

## 7.8 STREET AND ROADS MAINTENANCE – PA6

The Street and Roads Maintenance Control Measure ensures that the streets and roads are both cleaned to reduce pollutants and maintained in ways that prevent the release of pollutants..

### 7.8.1 Implement Street Sweeping Program

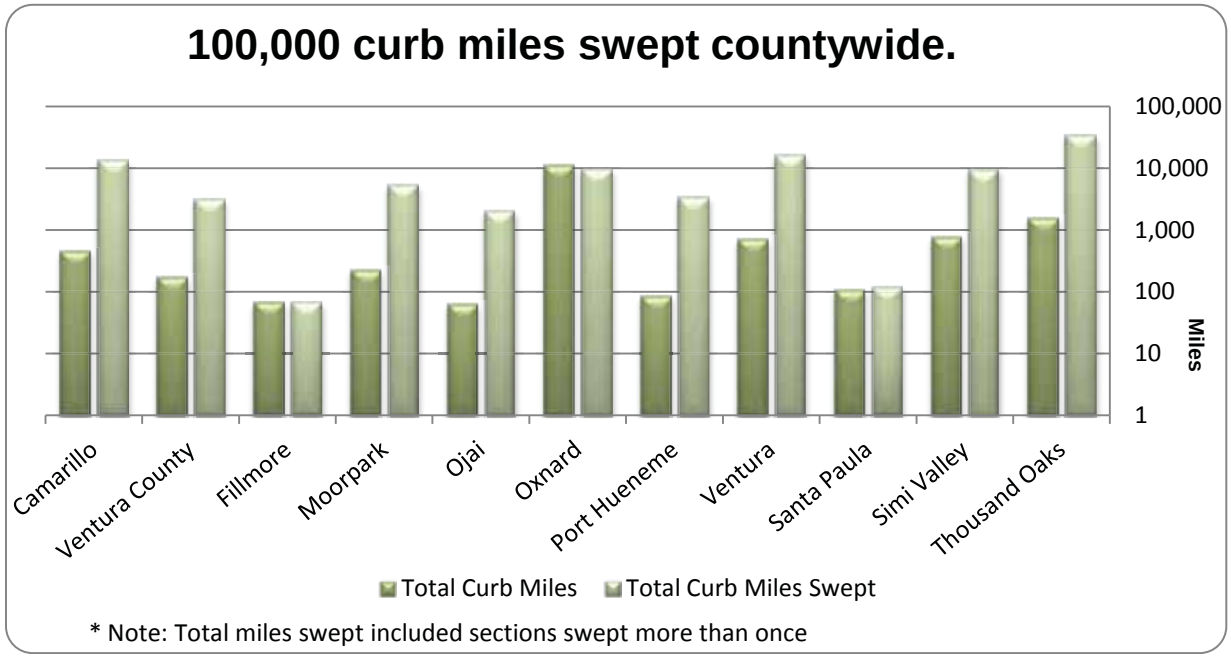
Permittees have identified curbed streets within their jurisdiction and have implemented a sweeping program for these streets. In many cases the frequency of street sweeping is beyond the permit requirement of at least twice a month for commercial areas and areas subject to high trash generation.

To increase the efficiency of the street sweeping, Permittees have made an effort to encourage voluntary relocation of street-parked vehicles on scheduled sweeping days. This has been achieved by placing temporary "no stopping" and "no parking" signs, posting permanent street sweeping signs and/or distributing street sweeping schedules to residents and businesses. Many of the Permittees have coordinated street sweeping to follow the routine trash collection days in order to remove any litter left in the streets by the trash removal service.

***Performance Standard 7-13***

| **Perform street sweeping of curbed streets in commercial areas and areas subject to high trash generation at least two times a month** | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | | | ☑ |

***Figure* 7-10 *Curb Miles Swept***



### 7.8.2 BMP Implementation for Road Reconstruction Projects

For any road reconstruction project that includes roadbed or street paving, repaving, patching, digouts, or resurfacing road surfaces, the Permittees require that appropriate BMPs are implemented. The vast majority of this work falls under the definition of routine maintenance as the road will maintain the line and grade and original purpose of the facility. The implementation of these BMPs ensures the project will not impact stormwater without the need for a formal SWPPP or other documentation.

***Performance Standard 7-14***

| **Require that appropriate BMPs be implemented for any project that includes roadbed or street paving, repaving, patching, digouts, or resurfacing road surfaces** | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

## 7.9 EMERGENCY PROCEDURES – PA7

The Emergency Procedures Control Measures ensures that each Permittee can conduct repairs of essential public service systems and infrastructure in emergency situations with a self-waiver. A self-waiver is required when there is a discharge to the storm drain system and the repairs needed to halt that discharge cannot be made within one day.

### 7.9.1 Invoke Emergency Procedures Self-Waiver

During the Permit term there was only one emergency that caused a Permittee to invoke Emergency Procedures Self-Waiver. The source was potable water, but the discharge was not dechlorinated and had the potential to mobilize pollutants. Self-Waivers invoked are reported here.

***Table 7-3 Summary of Emergency Procedures***

| **Summary of Emergency Procedures** | | |
|---|---|---|
| **Permittee** | **Date Emergency** | **Description** |
| Oxnard | 9/15/2011 | Main water line break at Perkins Road and Hueneme Road. |

## 7.10 TRAINING – PA8

Training is important for the implementation of the Public Agency Activities Program Element. An effective training program is one of the best pollution prevention BMPs that can be implemented because it prompts behavioral changes that are fundamentally necessary to protect water quality.

Each Permittee targets staff based on the type of stormwater quality and pollution issues they typically encounter during the performance of their regular maintenance activities. Targeted staff included those who perform activities in the following areas: stormwater maintenance, drainage and flood control systems, streets and roads, parks and public landscaping, and corporation yards.

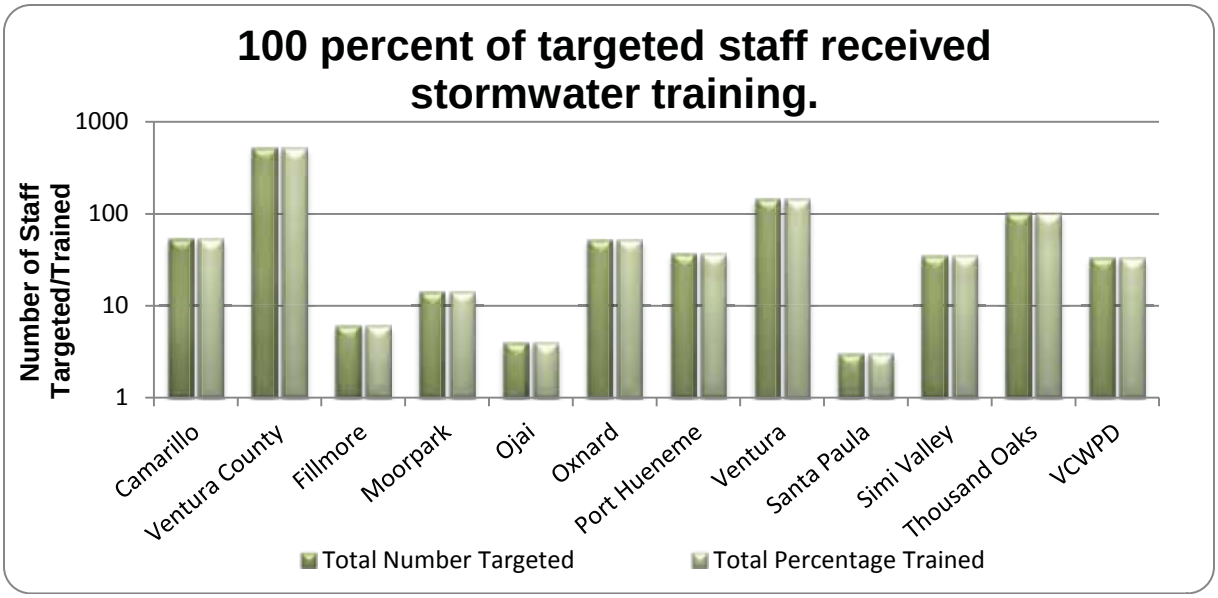
***Performance Standard 7-15***

| **Provide training, or ensure that contractors were trained, whose interactions, and activities affect stormwater quality** | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | | ☑ | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

Training methods vary among Permittees and range from informal meetings to formal classroom training to self-guided training materials. The Permittees also train staff on the prevention, detection, and investigation of illicit discharges and illegal connections (IC/ID). (See Section 8 for more information regarding IC/ID training).

The Permittees provide training for contractors, or in some cases where contractors are hired for their expertise, to ensure that contractors hired had the required training, whose interactions, jobs, and activities affect stormwater quality. Not all employees receive the same training as certain positions require special focus, such as key staff that use or have the potential to use pesticides or fertilizers.

***Figure 7-11 Public Agency Training***




***Performance Standard 7-16***

| **Provide training for contractors who use or have the potential to use pesticides or fertilizers, or ensure that contractors were trained.** | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | | ☑ | |
| Oxnard | ☑ | | |
| Port Hueneme | | | ☑ |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

***Performance Standard 7-17***

| Provide training for key staff that use or have the potential to use pesticides or fertilizers. | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | | ☑ | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

***Table 7-4 Areas of Focus for the Public Agency Activities Program Element Training***

| Target Audience | Subject Material |
|---|---|
| • Employees whose interaction, jobs and activities affect stormwater quality. | • Understanding of the potential for activities to pollute stormwater.<br>• Implementation of BMPs. |
| • Employees and contractors who use or have the potential to use pesticides and/or fertilizers | • Potential for pesticide-related surface water toxicity<br>• Proper use, handling, and disposal of pesticides<br>• Least toxic methods of pest prevention and control, including IPM<br>• Reduction of pesticide use |
| • Employees and contractors responsible for the IC/ID program | • Cover the full IC/ID program from identification to enforcement. |

## 7.11 EFFECTIVENESS ASSESSMENT – PA9

Effectiveness assessment is a fundamental component for developing and implementing successful stormwater programs. In order to determine the effectiveness of the Public Agency Activities Program, a comprehensive assessment of the program data is conducted as a part of the annual report. The results of this assessment are used to identify modifications that need to be made to the program. Each year the effectiveness assessment is reviewed and revised as needed.

By conducting these assessments and modifying the program as needed, the Permittees ensure that the iterative process is used as an effective management tool. Due to the types of data collected for the Public Agency Activities Program, current and future assessments will primarily focus on Outcome Levels 1-3.

- Outcome Level 1 (L1) answers the question: Did the Permittees implement the components of the Permit?

- Outcome Level 2 (L2) answers the question: Can the Permittees demonstrate that the control measure/performance standard significantly increased the awareness of a target audience?

- Outcome Level 4 (L4) answers the question: Can the Permittees demonstrate that the control measure/performance standard reduced the pollutant load?

The following is an assessment regarding the effectiveness of the Public Agency Program.

### 7.11.1 Public Construction Activities Management

#### Require Public Projects to Comply with Planning and Land Development and Construction Program Requirements

Where applicable, all Permittees require publically-owned or operated construction projects to comply with the Planning and Land Development and Construction Program requirements, or adopted standard practices for very small projects. (L1)

#### Require Development of SWPCP for Projects that Disturb less than 1 Acre

Grading or building permits are not an effective mechanism for identifying or defining small construction projects since they are not granted for public construction projects. Instead, all Permittees have effectively required small public projects to submit a SWPCP that identifies BMPs. (L1)

### 7.11.2 Vehicle Maintenance/ Material Storage Facilities/ Corporation Yard Management/ Municipal Operations

#### Implement Required BMPs for Each Facility

As indicated in table 7-2 Permittees have developed and implemented SWPCPs at all corporate yards. Inspections are performed annually and deficiencies are quickly corrected by Facility staff. (L1)

### 7.11.3 Vehicle and Equipment Wash Areas

#### Eliminate Wash Water Discharges

The majority of Permittees have successfully eliminated wash water discharges through a variety of options including offsite disposal, disposal to sanitary sewer, and treatment through clarifier. (L1) Discharges will continue to be eliminated as facilities are constructed, redeveloped or replaced.

### 7.11.4 Landscape, Park and Recreational Facilities Management

#### Implement IPM Program

The majority of Permittees have a draft IPM program that is consistent with the Permit. Further assessment is being conducted. (L1) (L2)

#### Maintain and Expand Internal Inventory on Pesticide Use

Permittees have effectively restricted the purchase and use of pesticides and herbicides to staff certified by the California Department of Food and Agriculture. Permittees that contract out for pesticide applications include standard protocols and requirements as a condition of the contract. (L1)

### 7.11.5 Storm Drain Operation and Management

#### Implement Storm Drain System Mapping

Since Ventura County's cities are all separated by open space and the MS4 from one city does not discharge to another, the need to integrate the maps into a countywide storm drain map is not as imperative as the need for a Permittee to be able to know what is upstream from any point in their MS4, and where that water will discharge. Given that the priority for the mapping is internal to the agency operating the system, the Permittees were given the autonomy to decide what form of mapping will work best for their needs.

#### Implement Catch Basin Maintenance Program

Each Permittee has identified criteria and a methodology for catch basin mapping and prioritization. More than 12,000 catch basins were cleaner during the Annual Reporting period. (L1) The Permittees have completed the process of designating and reporting debris removal by prioritization. During 2011/12, Permittees collectively removed more than 250,000 tons of debris from catch basins. (L4)

#### Install Trash Receptacles

The majority of Permittees have installed trash receptacles in high trash generation areas. Trash receptacles are cleaned out as necessary. (L1)

#### Install Additional Trash Management Devices

Permittees have begun the implementation of this performance standard. A more detailed assessment will be conducted once the deadline has passed (July 8, 2012).

#### Trash Management at Public Events

All Permittees have required trash management for any event in the public right-of-way. (L1) (L4)

#### Implement Storm Drain Maintenance Program

Each Permittee has a program to maintain curb inlet labeling. (L1) Additionally, all Permittees regularly maintain channels, ditches and detention basins. (L1) Implementation of this performance standard removed more than 23,000 tons of debris from channels and ditches and 98,000 tons of debris from detention basins countywide. (L4)

#### Implement Spill Response Plan

All Permittees maintain a spill response plan. (L1)

#### Inspect and Maintain Permittee-Owned Treatment Control BMPs

Permittees that own or are authorized to maintain treatment control BMPs have programs to implement an inspection and maintenance program for all Permittee-owned treatment control BMPs, including post-construction treatment control BMPs. (L1)

### 7.11.6 Street and Roads Maintenance

#### Implement Street Sweeping Program

Permittees have implemented a street sweeping program that at a minimum, targets commercial areas and high trash generation areas twice a month. More than 100,000 curb miles were swept countywide. (L1) (L4)

#### BMP Implementation Road Reconstruction Projects

All Permittees required BMPs for any road reconstruction project that includes roadbed or street paving, repaving, patching, digouts, or resurfacing. (L1)

### 7.11.7 Emergency Procedures

#### Invoke Emergency Procedures

One Permittee had an emergency that required Permittees to invoke Emergency Procedures. (L1)

### 7.11.8 Training

#### Conduct Training

Permittees provided training for 100% of targeted staff. Over 1000 staff were trained on the implementation of BMPs, reduction of pesticide use, and reduction of illicit connections/illicit discharges. (L1)

## 7.12 PUBLIC AGENCY ACTIVITIES PROGRAM MODIFICATIONS

On an annual basis, the Permittees plan to evaluate the results of the Annual Report, as well as the experience that staff has had in implementing the program, to determine if any additional program modifications are necessary to comply with the Clean Water Act requirement to reduce the discharge of pollutants to the MEP. Any key modifications made to the Public Agency Program Element during the next fiscal year will be reported in the following Annual Report.

# 8 Illicit Connections and Illicit Discharges Elimination

## 8.1 OVERVIEW

Illicit connections and illicit discharges (IC/ID) can be concentrated sources of pollutants to municipal storm drain systems. To reduce this source of pollutants the Permittees have developed and implemented programs for the identification and elimination of IC/IDIC/ID to the MS4. Key components of these programs are public reporting, field screening, incidence response, and enforcement actions.

The Permittees have developed and implemented programs for the identification and elimination of illicit connections and illicit discharges to the municipal separate stormwater sewer system (MS4).

The term "illicit discharges" used in this program is any discharge to the storm drain system that is prohibited under local, state or federal ordinances. The term includes all discharges not composed entirely of stormwater except discharges allowed under an NPDES permit. Examples of illicit discharges include:

- Incidental spills, or disposal of wastes and non-stormwater. These may be intentional, unintentional, or accidental and would typically enter the storm drain system directly through drain inlets, and catch basins;
- Discharges of sanitary sewage due to overflows or leaks;
- Discharges of prohibited non-stormwater other than through an illicit connection. These typically occur as surface runoff from outside the public right-of-way (e.g., area washdown from an industrial site).

Categories of non-stormwater discharges not prohibited (exempted or conditionally exempted) under the Permit are listed below.

- Stream diversions permitted by the State Board
- Natural springs and rising groundwater
- Uncontaminated groundwater infiltration [as defined by 40 CFR 35.2005(20)]
- Flows from riparian habitats of wetlands
- Discharges from potable water sources
- Drains for foundation, footing and crawl drains
- Air conditioning condensate
- Water from crawl space pumps
- Reclaimed and potable landscape irrigation runoff
- Dechlorinated/debrominated swimming pool discharges
- Non-commercial car washing by residents or non-profit organizations
- Sidewalk rinsing
- Pooled stormwater from treatment BMPs

Accidents are inevitable, so it will be impossible to eliminate all illicit discharges. Just as police cannot eliminate all crime in a community, unfortunately, there will always be an element of society that will contribute to the problem. However, through the combined efforts of the public education, business inspection, construction inspection, and illicit discharge programs the preventable acts of willfully using the storm drain system to dispose of waste will be kept to a minimum.

Illicit connections, while sometimes done in error, cannot be considered accidents. An illicit connection to the storm drain system is an undocumented and/or un-permitted physical connection from a facility or

fixture to the storm drain system. Finding and eliminating illicit connections requires ongoing investigation and screening efforts.

## 8.2 CONTROL MEASURES

The Permittees have developed several Control Measures and accompanying performance standards to ensure that the Illicit Discharges/Connections Program requirements found in the Permit are met and information provided for optimizing the Program.

The Illicit Discharges/Connections Program Control Measures are organized the same as in the Permit and consist of the following:

***Table 8-1 Control Measures for the Illicit Discharges/Connections Program Element***

| ID | Control Measure |
|---|---|
| ID1 | Detection of Illicit Discharges and Illicit Connections |
| ID2 | Illicit Discharge and Illicit Connection Response and Elimination |
| ID3 | Training |
| ID4 | Effectiveness Assessment |

At the end of this chapter these control measures are evaluated to determine the effectiveness of this program element.

## 8.3 DETECTION OF ILLICIT CONNECTIONS AND ILLICIT DISCHARGES – ID1

Detection of IC/ID through public awareness, the availability of a public hotline, and conducting illicit connection screening ensures that the IC/ID Program is proactive in identifying and eliminating problematic discharges. This control measure reflects the Permittee's efforts to detect and eliminate IC/ID and provides several mechanisms for collecting information.

The Permittees have a number of programs supporting the detection of IC/ID. These programs include:

- Industrial and commercial facility site visits (outlined in Section 2: Industrial/Commercial Facilities Program)
- Public education materials (outlined in Section 3: Public Outreach)
- Drainage facility inspection (see Section 5: Public Agency Activities)
- Construction inspections and BMP implementation (outlined in Section 6: Development Construction)
- Water quality monitoring (detailed in Section 9: Monitoring and Reporting Program)

The performance standards for this IC/ID control measure and the activities that have been initiated and/or completed during this reporting period are summarized below.

### 8.3.1 Public Reporting

The Public Outreach Program control measures (See Section 3) detail the methods by which the Permittees educate the community about stormwater pollution. Part of this outreach is information about

the IC/ID Program and part is reporting of IC/ID when observed. For the first few years, as the Stormwater Program evolved and the public became aware of what was not allowed down storm drains, reports of IC/ID increased; however, for the last six years reports of IC/ID have demonstrated a decreasing trend. Since the public is more aware of IC/ID this decrease likely represents a change in behavior and fewer pollutants are reaching the storm drains.

Since the public are the eyes of the IC/ID program, many illicit discharges are identified through public reporting of the situation. The goal of this component, in tandem with the Public Outreach component, is to educate the public and facilitate public reporting of illicit discharges and illicit connections. The baseline objectives are:

- Implement a program to receive calls from the public regarding potential illicit discharges and illicit connections, communicate and coordinate a timely response, perform all necessary follow up to the complaint, and maintain documentation.
- Provide educational material on non-stormwater discharges and why they are harmful to streams, and oceans and how to report them;
- Target the land development/construction community with educational material and provide workshops on stormwater quality regulations and illicit discharge prevention response; and
- Target the industrial/commercial community with educational material and provide workshops on stormwater quality regulations and illicit discharge prevention and response.

***Table 8-2 Permittee Hotlines***

| Permittee | Hotline |
|---|---|
| Camarillo | (805) 388-5338 |
| County of Ventura Unincorporated Area | (805) 650-4064 |
| Fillmore | (805) 524-3701 |
| Moorpark | (805) 517-6257 |
| Ojai | (805) 640-2560 |
| Oxnard | (805) 488-3517 |
| Port Hueneme | (805) 986-6507 |
| Santa Paula | (805) 933-4212 |
| Simi Valley | (805) 583-6400 |
| Thousand Oaks | (805) 449-2400 |
| Ventura | (805) 667-6510 |
| VC EHD Sewage/wastewater discharges | (805) 654-2813 |
| VC EHD Hazardous waste and material discharges | (805) 654-2813 |
| VC PWA Transportation | (805) 672-2131 |
| VC WPD O&M | (805) 650-4064 |
| VC WPD Permit Section | (805) 650-4064 |

### 8.3.2 Publication of IC/ID Program Procedures

As part of the IC/ID outreach effort, the Permittees have documented their IC/ID Program through past Annual Reports which are available for public review at the Program's web site (www.vcstormwater.org). This is one means by which interested individuals can educate themselves on what constitutes IC/ID and how to report it. More directly, however, the program promotes the reporting of illicit discharges through the Public Information and Public Participation Program.

### 8.3.3 Public Reporting

Public reporting is one of the most important ways that the public can help prevent the discharge of pollutants from IC/ID. Each Permittee has identified staff serving as the contact person(s) for public reporting of IC/ID, as discussed further in Public Outreach Control Measures (See Section 3). As required by the Permit Permittees maintain a phone hotline to receive reports of IC/ID. Due to the need for timely response to illicit discharges by

inspectors the web sites direct people to report by telephone to a "live person" instead of through email which, while quickly delivered, may not be read within the short time frame that a discharge is occurring.

The Program maintains a website that contains the phone numbers for all the Permittees. This information is updated as necessary and, as required in the Permit, published in the government pages of the local phone book and other appropriate locations. A listof hotlines are presented in Table 8-2 .

Timely responses to reports of illicit discharges are necessary to have the opportunity to determine the source, identify the responsible party, and have them initiate any cleanup to reduce pollutants from such discharge to the MEP. The baseline objectives include:

- Initiate response within 24 hours of receiving a report of discharge from the public, other agencies or observed by a Permittee field staff during the course of their normal daily activities;
- Investigate to determine the nature and source of discharge and eliminate through voluntary termination (when possible) or enforcement action; and
- Educate identified responsible parties and initiate clean up and enforcement actions as necessary.

***Performance Standard 8-1***

| **Document the procedures of the ID/IC Program and make them available for public review** | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | | ☑ | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

***Performance Standard 8-2***

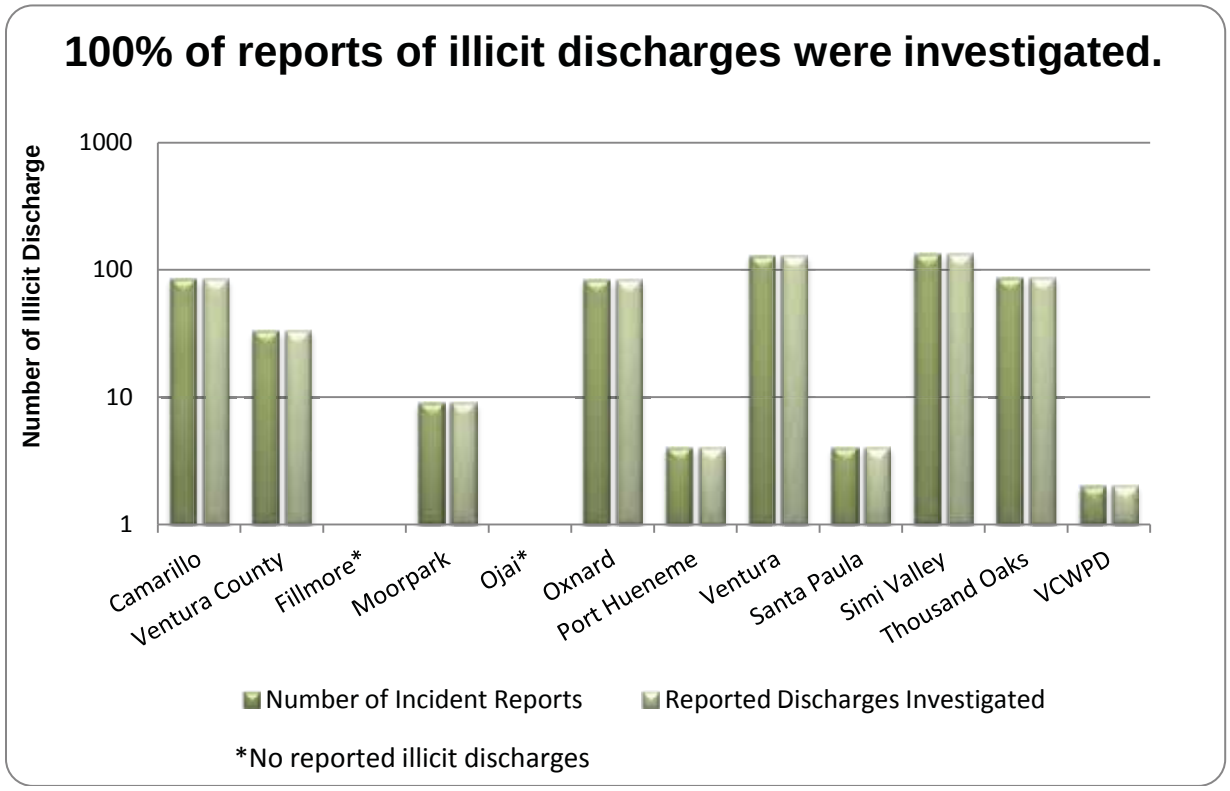
| **Maintain a phone hotline to receive reports of ID/IC** | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | | ☑ | |
| Oxnard | ☑ | | |
| Port Hueneme | | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

***Performance Standard 8-3***

| Maintain a web site to receive/direct reports of ID/IC | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | | ☑ | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | | ☑ | |
| Simi Valley | | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

While the goal is to respond within 24 hours, most reports of illicit discharges are responded to within a few hours. Some Permittees have prioritized problem areas (geographical and/or activity-related) for increased inspections using the methods defined in the program. All illicit discharges reported by the public and found through the results of inspections are presented in Figure 8-1.

***Figure 8-1 Illicit Discharge Investigations***



### 8.3.4 IC/ID Tracking

Tracking the location of illicit connections and illicit discharge, aside from being a Permit requirement is assumed to assist the Program's efforts understanding which land uses, age of neighborhood or other potential identifier is common to the problem of illicit discharges and connections. That knowledge could be useful in the future as the Public Outreach and Business Inspections programs continue to evolve.

***Performance Standard 8-4***

| Keep records of all illicit discharge discoveries, reports, responses, and formal enforcement | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | | | ☑ |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

#### Mapping of Known Connections to Storm Drain System

The benefit of mapping all storm drain connections is to allow the Permittees the ability to know the upstream location of an unknown, and conversely what might be possibly affected downstream. This is required in the Permit by May 7, 2012. Since the storm drain system includes all streets and gutters, literally mapping all known connections would include every driveway and property that drains to a street. Since an endeavor of that scale would be resource intensive and with an end product that will lack practical usability, the Permittees have looked to the Regional Board for clarification of the requirement. In the response to comments on this topic the Regional Board provided the following statement: "*Known connections in the Order refer to permitted below grade*

***Mapping connections in the field***

*connections whose locations are likely already known to Permittees. Staff agrees that mapping may reveal additional connections, but those are likely to be un-permitted."* This guidance creates a manageable effort and ultimately a useful product that will increase the Permittees ability to respond to IC/IDs.

**Mapping Illicit Connection and Discharge Incidents**

The Permit requires the mapping of all incidents of illicit connections and illicit discharges to their storm drain system since January 2009 by May 7, 2012 at a scale and in a format specified by the Principal Permittee.

Using this requirement to identify priority areas for further investigation and elimination of IC/ID, the Permittees mapped all known connections to their storm drain system and all IC/ID incidents by July 8, 2012, outside of the reporting period for this report. While no obvious hotspots jumped out while reviewing the maps, the discharges were plotted on GIS and compared to other data layers to identify any consistent correlations that could be used to focus resources to prevent illicit discharges before they contribute to stormwater pollution. Figures 8-3 shows the illicit discharges by land use. Residential areas by far have the highest number of illicit discharges, but they are also the largest areas of the cities. When normalized for area commercial land uses become the major source of illicit discharges. This was not a surprise to the Permittees. By their nature commercial areas have lots of activity and high visibility, discharges in those areas have a high chance of being reported by residents or neighbors who do not want the mess near their business. Overall nothing new was learned about illicit discharges through the mapping exercise. The Permittees have learned through experience which areas have problems with illicit discharges, and have strong inspection programs to prevent them.

***Figure 8-2***

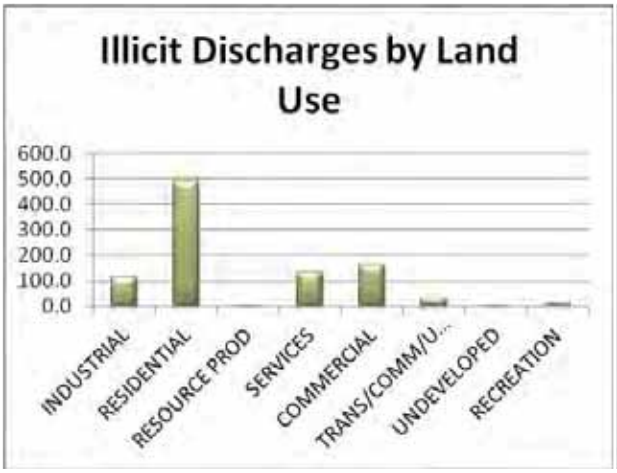
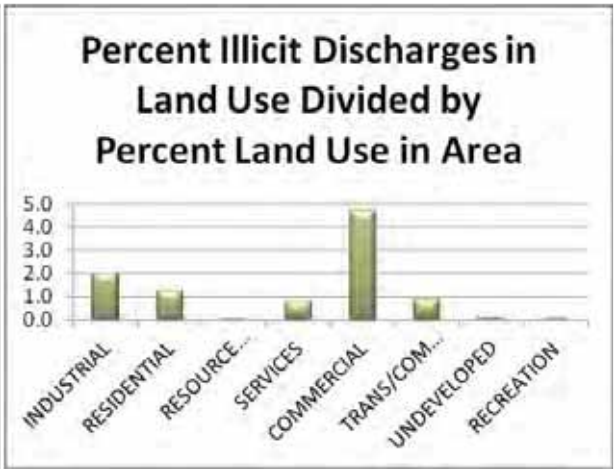



***Figure 8-3***




### 8.3.5 Screening for Illicit Connections

Inspections of infrastructure can detect and eliminate illicit connections to the MS4 and reduce pollutants discharged through such connections to the MEP. The objectives of illicit connections screening are to:

- Inspect the storm drain system to identify illicit connections during scheduled infrastructure maintenance by personnel

- Investigate and determine the origin and nature of the discharge when connections to the storm drain system are suspected or observed to be a source of an illicit discharge

## Mapping of Storm Drain System

Similar to mapping requirements of known connections to the storm drain system the Permit requires mapping of the entire system in a phased approach outlined below.

- Map all channeled portions of the storm drain system by October 6, 2010
- Map all portions of the storm drain system consisting of pipes 36 inches in diameter or greater by May 7, 2012
- Map of all portions of the storm drain system consisting of pipes 18 inches in diameter or greater by May 7, 2014

***Performance Standard 8-5***

| **Submit a map of all channeled portions of the storm drain system in a uniform format** | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

***Performance Standard 8-6***

| Submit to the Principal permitted a map of all portions of the storm drain system consisting of pipes 36 inches in diameter or greater in a uniform format | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | | ☑ | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | | ☑ | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

***Performance Standard 8-7***

| Submit map of all portions of the storm drain system consisting of pipes 18 inches in diameter or greater in a uniform format? (Due by May 7, 2014) | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | | ☑ | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | | | ☑ |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

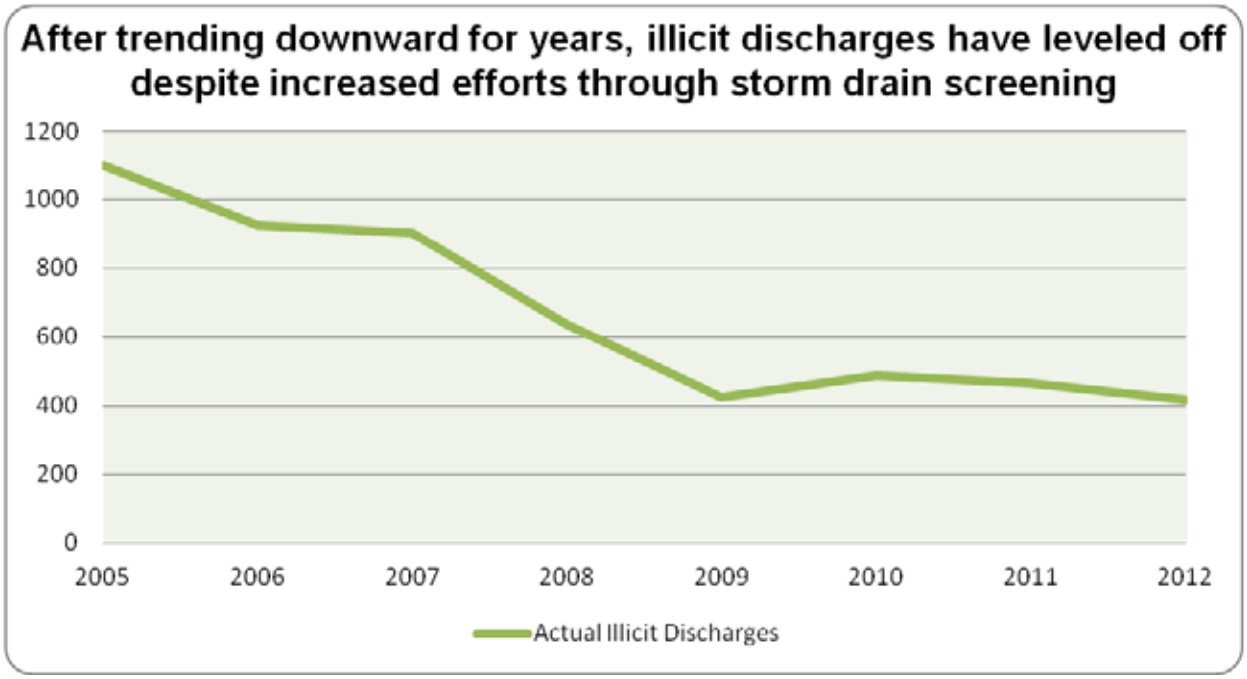
To assist in screening for illicit connections, the Permittees have mapped channels within their permitted area and the storm drain system. These maps were transmitted to the Principal Permittee and are in the process of being incorporated into the Watershed Protection District's GIS system. This incorporation may be as simple as having scanned drawings available through the GIS system when no true GIS data exists. Maps depicting the storm drain system consisting were completed by May 7, 2012 and those 18 inches or greater will be completed by May 7, 2014.

## Field Screening

The Permittees have developed an IC/ID Field Screening Protocol using the guidance from the "Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments"[2]. This document is included as Attachment D and suggests that field screening consist of:

- Progressive sampling of manholes to isolate IC/ID to specific sections of the storm drain system (e.g., sampling progressively up the storm drain trunk from an outfall)
- Based on a specific indicator in IC/ID and land use of drainage area, survey of suspected generating sites within the drainage area and on-site testing (e.g., based on sudsy discharge and commercial drainage area, investigation of drainage area to identify laundromats and conduct on-site testing would be warranted)
- Tracking ID/IC to a pipe section of the storm drain system through video or smoke testing.
- Septic system inspections through homeowner surveys, surface inspections, or infrared photography (e.g., Inspect area above septic system for foul odors, wet ground)

***Figure 8-4 Illicit Discharge Trends***




[2]*Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments*. The Center for Watershed Protection, Pitt R., October 2004. Chapter 13, 13.1,13.2, 13.3, 13.4

As discussed previously in this section, the Permittees have begun to map the storm drain system in order to identify high priority areas for inspection. The Permittees inspected the storm drain system based on these maps, and report illicit connections to the Regional Water Board. The screening effort did not identify a high number of illicit discharges, this can be seen in Figure 8-4 that displays the trend of actual illicit discharges countywide. The reduction seen in illicit discharges can be seen as a change of behavior as the public gains knowledge of stormwater pollution. The field screening may have identified a few discharges, but public reporting remains the most efficient way to identify them. The requirements for screening were during the reporting period and are outlined below.

- Screen all portions of the storm drain system consisting of pipes 36 inches in diameter of greater by May 7, 2012
- Screen all high priority areas identified during the mapping of illicit connections and discharges by May 7, 2012
- Screen all portions of the storm drain system 50 years of age or older by May 7, 2012

***Performance Standard 8-8***

| Screening of all portions of the storm drain system 50 years of age or older | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | | ☑ | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | | | ☑ |
| Ventura | ☑ | | |
| Santa Paula | | | ☑ |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

***Performance Standard 8-9***

| Screening of all high priority areas identified during the mapping of illicit connections and discharges | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | | ☑ | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | | | ☑ |
| Ventura | ☑ | | |
| Santa Paula | | | ☑ |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

***Performance Standard 8-10***

| Submit to the Principal permitted a map of all portions of the storm drain system consisting of pipes 36 inches in diameter or greater in a uniform format | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | | ☑ | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | | ☑ | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

## 8.4 ILLICIT DISCHARGE/CONNECTION INVESTIGATION AND ELIMINATION – ID2

Timely investigations of reports of IC/ID are necessary to have the opportunity to determine the source, identify the responsible party and initiate any cleanup to reduce pollutants from such discharge to the MEP. This reporting year, the Permittees continued to:

- Investigate the cause, determine the nature, and estimate the amount of discharge for each reported illicit discharge/dumping incident;
- Determine when possible the type of materials and source type for each reported illicit discharge/dumping incidents;
- Determine when possible the probable cause for the illicit discharge/dumping;
- Conduct enforcement or educational activities to prevent similar discharges from reoccurring;
- Verify that reported illicit discharge/dumping incidents were terminated and/or cleaned up;
- Refer illicit discharge/dumping or illicit connections to other agencies when appropriate;
- Identify and eliminate illicit connections;
- Provide educational materials and contact numbers for reporting illicit discharge/dumping when conducting stormwater inspections.

***Performance Standard 8-11***

| Respond within 1 business day or discovery or report of a suspected illicit discharge and abate, contain, and/or cleanup the discharge | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | | | ☑ |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

***Performance Standard 8-12***

| Investigate illicit discharges during or immediately following containment and cleanup activities | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | | | ☑ |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

### 8.4.1 Legal authority

Although adequate legal authority existed for most potential pollutant discharges at the inception of the stormwater program in 1994, the Permittees determined for the first stormwater ordinance a Model Stormwater Quality Ordinance should be developed to provide a more uniform countywide approach and to provide a legal underpinning to the entire Ventura Countywide NPDES Stormwater Program.

Subsequently, all of the Permittees adopted largely similar versions of the model Stormwater Quality Ordinance. In addition, each Permittee has designated Authorized Inspector(s) responsible for enforcing the Ordinance. The Authorized Inspector(s) is the person designated to investigate compliance with, detect violations of and/or take actions pursuant to the Ordinance. These ordinances prohibit un-permitted discharges, and provide the Permittees with legal standing and legal authority to prevent and remove

illicit connections and illicit discharges. A Stormwater Quality Ordinance has been adopted in each Permittees' jurisdictions as indicated in Table 8-3.

***Performance Standard 8-13***

| Take appropriate enforcement action to eliminate the illicit discharge | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | | | ☑ |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

***Table 8-3 Ordinance Adoption Dates***

| Ordinance Adoption Dates | | |
|---|---|---|
| **Co-permittee** | **Adopted Date** | **Amendment Date** |
| Camarillo | 3/11/1998 | In Progress |
| County of Ventura | 10/2/2001 | 7/17/2012 |
| Fillmore | 7/8/2012 | 7/8/2012 |
| Moorpark | 12/3/1997 | 2008 |
| Ojai | 2/9/1999 | |
| Oxnard | 3/24/1998 | 3/24/2009 |
| Port Hueneme | 4/1/1998 | 2/1/2001 |
| San Buenaventura | 1/11/1999 | In Progress |
| Santa Paula | 11/16/1998 | 2010 |
| Simi Valley | 7/2/2012 | |
| Thousand Oaks | 10/14/1999 | |

The Permittees are aware that further ordinance revisions will be needed and are working together to identify the needed amendments and draft an adoptable ordinance by the July 8, 2012 due date.

***Performance Standard 8-14***

| Legal authority to prevent and remove illicit connections and illicit discharges | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | ☑ | | |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

### 8.4.2 Response to Illicit Connections

#### Investigation

Each Permittee detects and eliminates illicit connections within its municipal storm drain system. Any illicit connection identified by the Permittees during routine inspections or reported by a third party is investigated. Appropriate actions are then taken to approve undocumented connections by permit procedure or pursue removal of those connections determined to be illicit connections and therefore not permissible.

***Performance Standard 8-15***

| Maintain a list of all connections under investigation for possible illicit connection and their status | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | | | ☑ |
| Ventura | ☑ | | |
| Santa Paula | | ☑ | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

If the discharge from an identified connection is determined to consist only of stormwater or exempted non-stormwater, the connection will be allowed to remain and will no longer be considered an illicit connection. Permittees may elect to issue a permit for the connection or allow the connection to remain if information on the connection is documented; or the discharge will be permitted through a separate NPDES permit; if not the connection will be terminated through voluntary action or enforcement proceedings.

Screening has been implemented by the Permittees and has proven to be a very labor intensive effort resulting in very few suspect connections turning out to be illicit connections that need to be terminated. Of the 139 possible illicit

connections only 26 were identified as actual unpermitted illicit connections, and as of this report 4 were terminated. Termination or formal enforcement of illicit connections must occur within 180 days.

Each of the Permittee also maintains a record of all connections currently under investigation for possible illicit discharge and tracks their status.

***Performance Standard 8-16***

| **Complete investigation of reports of illicit connections to determine the source, nature, and volume of the discharge as well as the responsible party within 21 days** | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | | | ☑ |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

The response time to an illicit connection is included in the Permittees' IC/ID database and does not exceed 21 days. The source, nature, and type of discharges from these connections as well as the responsible party are also documented in the Permittees' IC/ID database. Summary statistics of the source of the illicit discharge from these connections is grouped with all other illicit discharges.

***Performance Standard 8-17***

| **Terminate the connection using formal enforcement within 180 days of completion of the investigation** | | | |
|---|---|---|---|
| | Yes | No | In Progress |
| Camarillo | ☑ | | |
| Ventura County | | | ☑ |
| Fillmore | | ☑ | |
| Moorpark | ☑ | | |
| Ojai | | ☑ | |
| Oxnard | ☑ | | |
| Port Hueneme | | | ☑ |
| Ventura | ☑ | | |
| Santa Paula | | ☑ | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

## Termination

The Permit requires the connection be terminated within 180 days of completion of the investigation. Upon confirmation of an illicit connection, the Permittees terminate the connection using formal enforcement within 180 days of completion of the investigation.

***Performance Standard 8-18***

| Keep records of all illicit connection investigations and formal actions taken to eliminate all illicit connections | | | |
|---|---|---|---|
| | Yes | No | N/A |
| Camarillo | ☑ | | |
| Ventura County | ☑ | | |
| Fillmore | ☑ | | |
| Moorpark | ☑ | | |
| Ojai | ☑ | | |
| Oxnard | ☑ | | |
| Port Hueneme | | | ☑ |
| Ventura | ☑ | | |
| Santa Paula | ☑ | | |
| Simi Valley | ☑ | | |
| Thousand Oaks | ☑ | | |
| Watershed Protection | ☑ | | |

## Documentation

The Permittees' IC/ID database documents the time by which the illicit connection is terminated. Owners of existing drains without appropriate permits (including encroachment permits) are notified to comply. For those drains where the owner is unresponsive or cannot be identified, each Permittee is responsible for deciding whether to formally accept the connection as part of their public drainage system or cap it off.

Upon receipt of a complaint, the Permittees investigate the source and nature of the IC/ID with the goals of:

- Eliminating the IC/ID through voluntary termination or enforcement action (when possible)
- Educating identified responsible parties and initiating enforcement actions as necessary

## Investigation and Cleanup

Timely responses to reports of illicit discharges are necessary to have the opportunity to determine the source, identify the responsible party and initiate any necessary cleanup to reduce pollutants from such discharge to the MEP. The baseline objectives include:

- Initiate response within 24 hours of receiving a report of discharge from the public, other agencies or observed by a Permittee field staff during the course of their normal daily activities;
- Investigate to determine the nature and source of discharge and eliminate through voluntary termination (when possible) or enforcement action; and

- Educate identified responsible parties and initiate enforcement actions as necessary.

While the goal is to respond within 24 hours, most reports of illicit discharge are responded to within a few hours. Some Permittees have prioritized problem areas (geographical and/or activity-related) for inspection, cleanup and enforcement using the methods defined in the program. In the normal course of an investigation the responsible party will be directed to perform any possible clean-up. 100% of illicit discharges were investigated and 100% of confirmed illicit discharges were resolved.

***Evidence of an illicit discharge***

***Pollutants removed after cleanup***

The discovery of potential or likely illicit discharges through business inspections has worked to reduce the number of overall illicit discharges. Inspections of infrastructure can also detect and eliminate illicit connections to the MS4 and reduce pollutants discharged through such connections to the MEP. The baseline objectives include:

- Inspect the storm drain system to identify illicit connections during scheduled infrastructure maintenance by personnel
- Connections to the storm drain system that are suspected or observed to be a source of an illicit discharge will be investigated to determine the origin and nature of the discharge
- Use business inspections to identify and resolve potential illicit discharges and illicit connections; and
- Educate the business community on the environmental and legal consequences of illicit discharges.

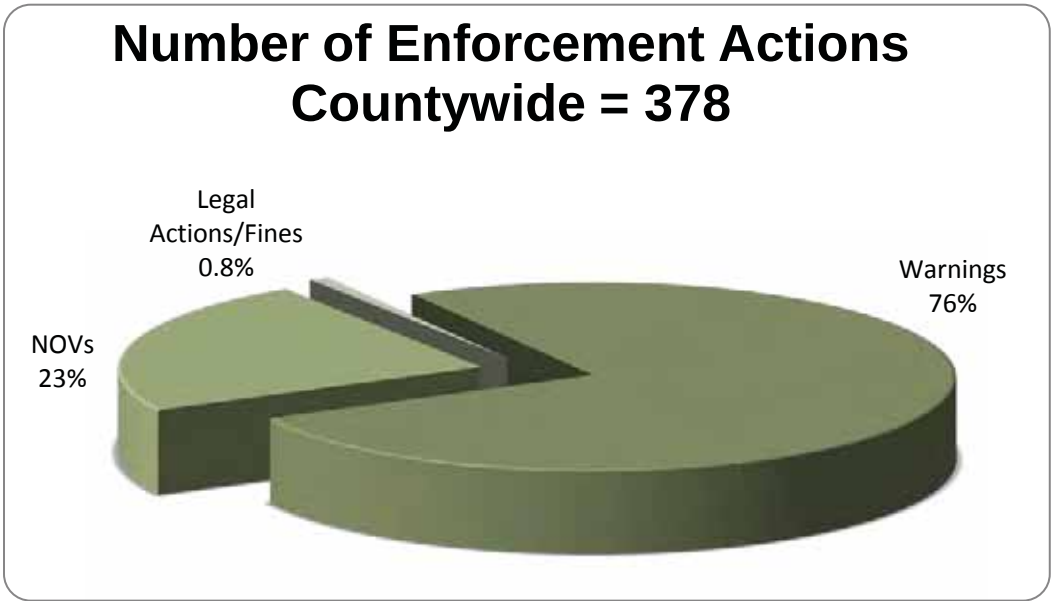
While the goal is to respond to illicit discharges reports within 24 hours, most reports are responded to within a few hours.

## Enforcement

Permittees continue to implement enforcement procedures to eliminate illicit discharges and illicit connections available through their legal authority of their respective ordinances. Most enforcement processes follow a common sequence. These typically include:

- Verbal or written warnings for minor violation
- Formal notice of violation or non-compliance with compliance actions and time frames
- Cease and desist or similar order to comply
- Specific remedies such as civil penalties (e.g., infraction), non-voluntary termination with cost recovery, referral for criminal penalties, or further legal action
- Authority to issue civil citations of $100 on site

***Figure 8-5 Enforcement Actions Countywide***



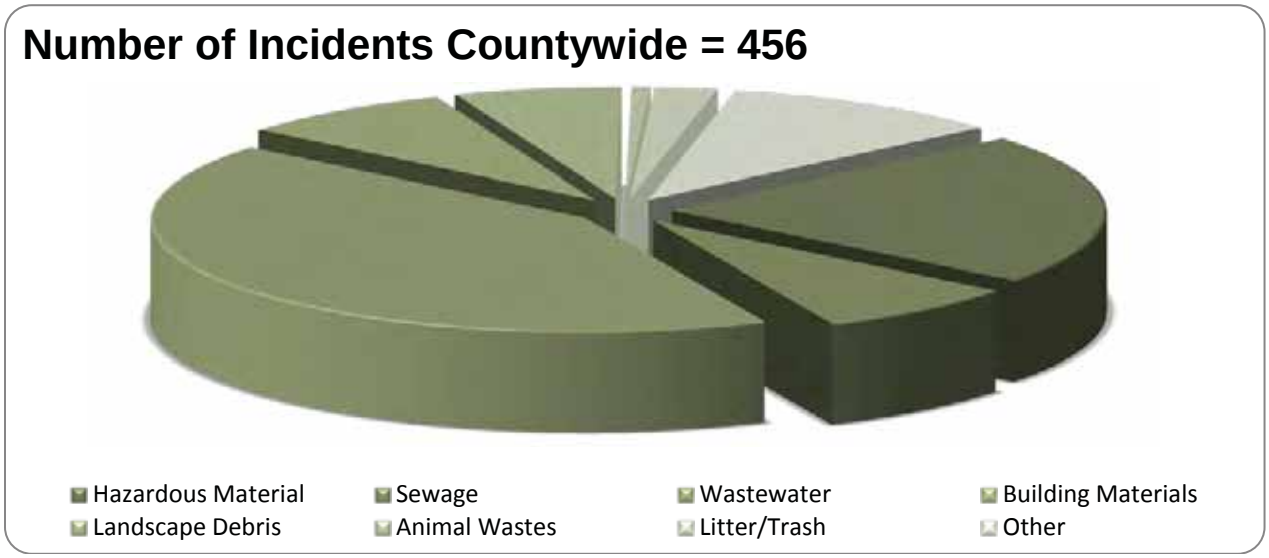

Every time a responsible party is identified for an illicit discharge there is an opportunity for education and enforcement. Enforcement activity begins at the appropriate level as determined by the Permittees' authorized representative. For incidents more severe or threatening at the onset, enforcement starts at an increased level. Often times a verbal warning and requiring cleanup of the discharge is effective, if necessary the Permittee will charge the responsible party for cleanup services provided. Enforcement steps are accelerated if there is evidence of a clear failure to act or an increase in the severity of the discharge. Enforcement actions for violating any of the provisions of the Permittees' ordinances may include any of the following or a combination thereof:

- Criminal Penalties
- Monetary punishment
- Imprisonment
- Civil Penalties

Education of targeted audiences occurs through inspections of illicit discharges, businesses, and construction activities. The importance of eliminating or mitigating non-stormwater discharges to local streams and channels is emphasized.

The capacity to issue civil citations has been added to the City of Oxnard's enforcement plan to ensure that repeat violators of local, state, and federal stormwater quality regulations are assessed a fine for their illicit (illegal) activities. The integration of this enforcement action allows the municipality to assess a $100.00 fee for those individuals or entities that receive a notice of violation (NOV) and thereafter again engage in the same illicit discharge activity. An additional $100.00 fine is assessed, per day and per violation, if a repeat violation is committed within a thirty (30) day period. If, after thirty (30) days, the same party is once again engaging in similar illicit activities then a $200.00 citation is given. A $500.00 fine is issued to third time participants of an illicit discharge committed within sixty (60) days after the initial citation. Since current City policy allows the Mayor to delegate the authority to issue civil citations to designated employees, no changes to the City's stormwater ordinance were necessary. The only prerequisite imposed on these employees was that they receive training on civil citation writing from the City of Oxnard Code Enforcement Unit. Simply having the ability, and threat, to issue a civil citation has proven to be enough of a deterrent to discourage/eliminate future occurrences of the same type of illicit activities from the local residents and the construction/building communities.

***Figure 8-6 Illicit Discharges Incidents***



## Documentation

Permittees keep records of all illicit discharge discoveries, reports, responses, and enforcement and track the efforts during the permit term in the Permittees' IC/ID database and summarized in the figures below.

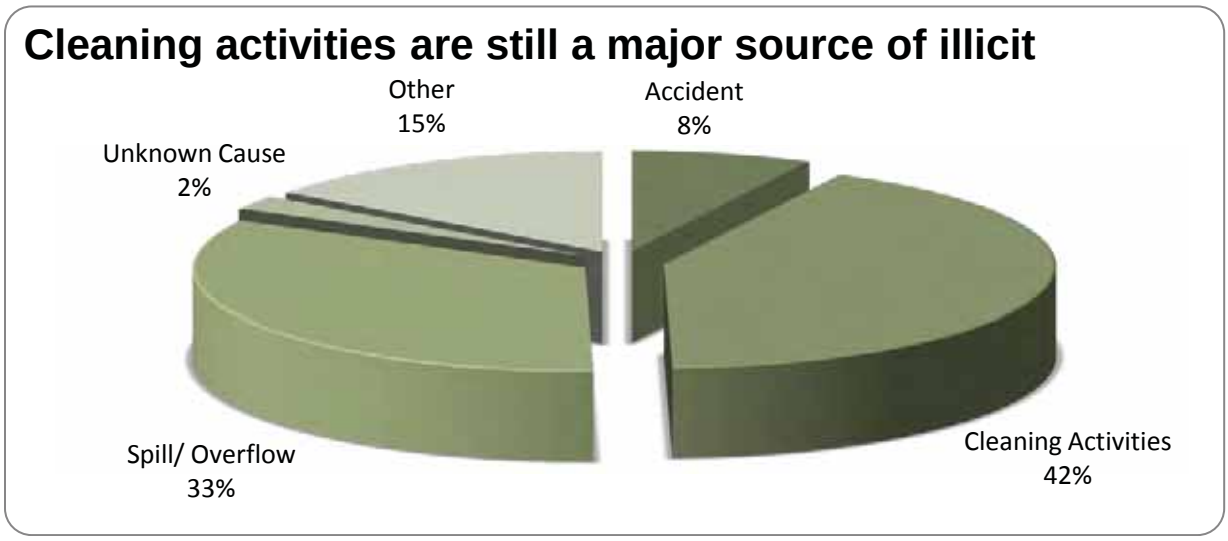
As part of their field investigation of reported illicit discharges/dumping incidents, the Permittees attempt to determine the material's source. This investigation begins at the surface drainage system in the vicinity of suspected illicit discharges. This may include accessible areas in the public right-of-way adjacent to residences and businesses, catch basins, open channels near known points of discharge, and upstream manholes. If the source and responsible party can be determined, Permittees take one, or all, of the following actions when appropriate:

- Voluntary cleanup/termination;
- Initiate enforcement procedures;
- Take steps to prevent similar discharges from reoccurring.

When the source cannot be determined, the appropriate municipal department, or a contractor, will be notified to contain and clean up the material. Because these situations and materials can vary, procedures vary as well. In general, the following are steps that are taken by Permittees to determine sources:

- Verify location of the spill/discharge;
- Containment and cleanup;
- Investigate the cause (look for origin);
- Determine the nature and estimate the amount of illicit discharge/dumped material;
- When appropriate, refer documented non-stormwater discharges/dumping or illegal connections to the proper agency for investigation; and
- If appropriate, notify the RWQCB and/other proper agencies.

*Figure 8-7 Sources of Illicit Discharges*




## 8.5 TRAINING – ID3

The Training Control Measure is important for the implementation of the IC/ID Program Element. An effective training program is one of the best pollution prevention BMPs that can be implemented because it prompts behavioral changes that are fundamentally necessary to protect water quality. The Permittees evaluate the efficacy of the training modules they offer by conducting pre- and post-training surveys used to assess a trainee's command of a topic before and after receiving training on the subject.

### 8.5.1 Conduct Training

Each Permittee targets staff based on the type of stormwater quality and pollution issues they may encounter. Targeted staff included illicit discharge inspectors, drainage, roadway, landscape and facilities staff, industrial pretreatment inspectors and code enforcement officers. Training is incorporated with existing business inspection, construction site, and public agency activity programs.

Staff is trained in a manner that provides adequate knowledge for effective illicit discharge identification, investigation, reporting and/or clean up. Training was achieved in a variety of ways, including informal "tailgate" meetings, formal classroom training and/or self-guided training methods. During this reporting period, Permittees trained 310 municipal staff on illicit discharge response and non-stormwater discharges. The staff trained by the Permittees is presented in figure 8-8 and training program is outlined in Table 8-4

*Figure 8-8 Illicit Discharge and Illicit Connection Training*


*Table 8-4 Training Areas of Focus for the ID/IC Program Element*

| Target Audience | Format | Subject Material | Comments |
|---|---|---|---|
| • Illicit discharge inspectors<br>• Drainage, roadway, landscape, and facilities staff<br>• Industrial pretreatment inspectors<br>• Code enforcement officers | • Classroom<br>• On-site | • Identification<br>• Investigation<br>• Termination<br>• Cleanup<br>• Reporting of incidents<br>• Documentation of incidents | • Training seminars or workshops related to the program may be made available by other organizations |

## 8.6 EFFECTIVENESS ASSESSMENT – ID4

Effectiveness assessment is a fundamental component required for the development and implementation of a successful stormwater program. In order to determine the effectiveness of the IC/ID Program Element, a comprehensive assessment of the program data is conducted as part of the Annual Report. The results of this assessment are used to identify modifications that need to be made to the Program Element. Each year the effectiveness assessment is reviewed and revised as necessary.

By conducting these assessments and modifying the Program Element as needed, the Permittees ensure the iterative process is used as an effective management tool. Due to the types of data collected for the IC/ID Program, current and future assessments will primarily focus on Outcome Levels 1 through 4.

- Outcome Level 1 (L1) answers the question: Did the Permittees implement the components of the Permit?

- Outcome Level 2 (L2) answers the question: Can the Permittees demonstrate that the control measure/performance standard significantly increased the awareness of its target audience?

- Outcome Level 3 (L3) answers the question: Can the Permittees demonstrate that the control measure/performance standard significantly modified the behavior of a target audience?

- Outcome Level 4 (L4) answers the question: Can the Permittees demonstrate that the control measure/performance standard reduced the pollutant load?

The Permittees have effectively implemented an IC/ID program as described in the following sections. Past Annual Reports have documented the program and are available for public review at the Program's website. [3] (L1)

### 8.6.1 Detection of Illicit Connections and Illicit Discharges Public Outreach Implementation

#### Public Reporting

Each Permittee has identified staff serving as the contact person(s) for public reporting of IC/ID. The majority of the Permittees maintain a phone hotline to receive IC/ID complaints. (L1) Due to the need for timely response to illicit discharges Permittee web sites direct people to report by telephone to a "live person" instead of through email which, while quickly delivered, may not be read within the short time frame that a discharge is occurring. The Program maintains a website that contains the phone numbers for all the Permittees. (L1)

- For the first few years, as the Stormwater Program evolved and the public became more aware of what was not allowed down storm drains, reports of IC/ID increased; however, for the last five years reports of IC/ID have demonstrated a decreasing trend as shown in Figure 8-1. Since the public is more aware of IC/ID this decrease likely represents a change in behavior and fewer pollutants reaching the storm drains. (L3)

#### IC/ID Tracking

The Permit requires the mapping of all incidents of illicit connections to their storm drain system since January 2009 by May 7, 2012 at a scale and in a format specified by the Principal Permittee. The Permittees have mapped channels within their permitted area and the storm drain system. These maps

[3] http://www.vcstormwater.org

were transmitted to the Principal Permittee and were incorporated into the Watershed Protection District's GIS system. (L1)

### Screening for Illicit Connections

Screening has been implemented by the Permittees and has proven to be a very labor intensive effort resulting in very few suspect connections turning out to be illicit connections that need to be terminated. Of the 139 possible illicit connections only 26 were identified as actual illicit connections, and as of this report 4 were terminated. As illicit connections are terminated it immediately reduces the discharge of pollutants. (L4)

## 8.6.1 Illicit Connection and Illicit Discharge Response and Elimination

### Legal Authority

Legal authority for most potential pollutant discharges has existed since 1994. More recently Permittees recently adopted a stormwater quality ordinance which more effectively and consistently ensured adequate legal authority across permittees. (L1)

### Response to Illicit Discharges and Illicit Connections

Each IC/ID complaint and the actions undertaken in response were documented. (L1) The Permittees responded to all reports of illicit discharge within 24 hours and often within a few hours. (L1) Where possible, the Permittees identified the source, nature, and volume of the discharge. Data shows that the source was identified 95% of the time. The Permittees eliminated all known illicit discharges during this fiscal year. (L1) The Permittees took enforcement action as shown in figure 8-5. (L1)

The Permittees have developed an IC/ID Field Screening Protocol using the guidance from the "Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments"[4] In order to identify high priority areas for inspection, the Permittees have begun to map the storm drain system. (L1) The Permittees investigated all illicit connections identified during inspections or reported by a third party within 21 days. (L1) Where possible, the Permittees determined the source, nature, and volume of the discharge.

## 8.6.2 Enforcement

Appropriate actions were then taken to approve undocumented connections or pursue removal of illicit connections. Upon confirmation of an illicit connection, the Permittees terminated the connection using formal enforcement within 180 days. (L1) (L4) Some of the Permittees maintained a list containing all connections under investigation for possible illicit connection and their status. (L1) The Permittees eliminated all known illicit connections during this reporting year. (L1)

[4] *Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments*. The Center for Watershed Protection, Pitt R., October 2004. Chapter 13, 13.1,13.2, 13.3, 13.4

### 8.6.3 Training

**Conduct Training**

During this reporting year, the Permittees trained a total of 310 municipal staff members. Each Permittee targets staff based on the type of stormwater quality and pollution issues they may encounter. Targeted staff included illicit discharge inspectors, drainage, roadway, landscape and facilities staff, industrial pretreatment inspectors, and code enforcement officers. This permitting year 100% of targeted staff members were trained. (L1)

### 8.6.4 Illicit Discharges and Illicit Connections Program Element Modifications

On an annual basis, the Permittees evaluate the results of the Annual Report, as well as the experience that staff has had in implementing the program, to determine if any additional program modifications are necessary to comply with the Clean Water Act requirement to reduce the discharge of pollutants to the maximum extent practicable.

# 9 Water Quality Monitoring

## 9.1 OVERVIEW

As required by Order R4-2010-0108 (issued July 8, 2010), the Ventura Countywide Stormwater Quality Management Program successfully monitored water chemistry, toxicity and biological communities of creeks, rivers, and channels within Ventura County during the 2011/12 monitoring season.

Monitoring locations for water chemistry and toxicity included Mass Emission stations and Major Outfall stations. Mass Emission stations are located in the lower reaches of the three major watersheds in Ventura County (Ventura River, Santa Clara River, and Calleguas Creek). Major Outfall stations, a component of the Stormwater Monitoring Program since 2009, are located in subwatersheds representative of each particular Permittee's contribution to downstream waters.

Water chemistry samples were collected at Mass Emission and Major Outfall stations during three rainfall events, with each site sampled once per event. The rain events occurred on October 5, 2011 (all sites), January 21, 2012 (all sites), and March 17, 2012 (all sites). Samples were collected at Mass Emission and Major Outfall stations during one dry event which was split into three days: April 23, 2012 (MO-MEI, MO-OJA, and MO-MEI), May 21, 2012 (ME-SCR, MO-FIL, MO-OXN, and MO-VEN) and May 23, 2012 (ME-CC, MO-CAM, MO-SIM, MO-THO, and MO-HUE). Note: dry event samples were not collected at MO-SPA or MO-MPK due to lack of flow. Toxicity samples were collected during the first wet event of the season for all fourteen sites. A smaller subset of water chemistry samples was collected at each of the Major Outfall stations (or similar alternate location if no flow was observed) on August 15, 2012, and August 16, 2012, as part of the dry -season, dry-weather monitoring prescribed in the NPDES permit.

Through rigorous adherence to the Stormwater Monitoring Program's sampling protocols and through selection of a high-quality analytical laboratory, the Stormwater Monitoring Program was able to achieve a 91.8% success rate in meeting program data quality objectives.

This year the Ventura Countywide Stormwater Quality Management Program re-evaluated and modified its application of the California Toxics Rule (CTR) Numeric Criteria for Priority Toxic Pollutants to determine water quality exceedances in receiving waters. The driver for this change was the inconsistent application of acute and chronic criteria in the past. The new approach provides more consistent protection of beneficial uses and is more consistent with how other stormwater agencies in southern California determine. The details and benefits of the new approach, and the implications for historical exceedances are discussed in this report.

Aluminum, E. coli and fecal coliforms were commonly found at elevated levels at most sites during wet-weather events, but with the exception of E. coli, rarely during dry-weather events. Other constituents that were found at elevated levels during the 2011/12 monitoring season include chloride and total dissolved solids (predominantly during the dry-weather event); dissolved oxygen; dissolved copper; and pH (dry weather). Constituents that were seen at elevated levels at Major Outfalls only once during the season include total chromium, bis(2-ethylhexyl)phthalate, benzo(a)pyrene, and pentachlorophenol. Constituents that were seen at elevated levels at Mass Emission stations only once during the season include the metals (total) barium, cadmium, chromium, and nickel. The Program is using this information to identify pollutants of concern and direct efforts to reduce their discharge from the storm drain system.

Bioassessment sampling was performed at fifteen random [probabilistic (P)] and three targeted [trend (T)] sites throughout Ventura County, divided among each of the three major watersheds (six P and one T in the Ventura

River Watershed, six P and one T in the Calleguas Creek Watershed, and three P and one T in the Santa Clara River Watershed). Sampling was conducted over eight days between June 4, 2012 and July 19, 2012.

The Ventura Countywide Stormwater Quality Management Program started a comprehensive data analysis effort, aiming to identify historical trends in water quality, priority pollutants and their sources to receiving waters. As part of this year's report, the trend analysis results are presented.

## 9.2 INTRODUCTION

This report summarizes the effort undertaken by the Ventura Countywide Stormwater Quality Management Program (Program) and the Stormwater Monitoring Program during the 2011/12 monitoring season. Pursuant to NPDES Permit No. CAS0040002, the Program must submit a Stormwater Monitoring Report annually by December 15th, and include the following:

- Results of the Stormwater Monitoring Program
- General interpretation of the results
- Tabular and graphical summaries of the monitoring data obtained during the previous year

Analysis of samples collected at various stations throughout the watershed gives an overall representation of the quality of stormwater discharges. The monitoring also aids in the identification of pollutant sources, as well as the assessment of Program effectiveness. Feedback provided by the monitoring program allows for changes to be made in the implementation of other Program aspects in order to resolve any problems and reduce pollutants that may exist. This adaptive management strategy should eventually show improved water quality through the stormwater monitoring program. The Stormwater Monitoring Program includes the following components.

### 9.2.1 Mass Emission Monitoring

Mass Emission stations are located in the lower reaches of the three major watersheds in Ventura County (Ventura River, Santa Clara River, and Calleguas Creek). As such, the Mass Emission drainage areas are much larger than the drainage areas associated with Major Outfall stations (described in Section 9.2.2), and include large contributions from other sources of discharge, such as wastewater treatment plants, agricultural runoff, non-point sources, and groundwater discharges.

The purpose of mass emission monitoring is to identify pollutant loads to the ocean and identify long-term trends in pollutant concentrations. This type of monitoring, in conjunction with the Major Outfall monitoring, is also useful in helping to determine if the Municipal Separate Storm Sewer System (MS4) is contributing to exceedances of water quality objectives by comparing results to applicable water quality objectives in the Los Angeles Region Water Quality Control Plan (Basin Plan) and the California Toxics Rule (CTR), as described in Section 9.5.1.

During the 2011/2012 monitoring season, water quality samples from three wet-weather events and one dry-weather event were collected for water chemistry analysis at each Mass Emission station, as required by the NPDES permit. Also, aquatic toxicity samples were collected at each Mass Emission station during Event 1 (October 5, 2011) and tested with the species that was determined to be the most sensitive to contaminants for each station, based on the results from the 2009/10 monitoring year. In addition, trend analysis was performed for all constituents using historical data from Mass Emission stations, in order to identify potential improvements or deterioration in chemical water quality since 2001.

### 9.2.2 Major Outfall Monitoring

The Permit requires sampling at one representative station (major outfall) for each Permittee's municipal separate storm sewer system (MS4). Many of the monitoring requirements for Major Outfall stations are similar to those for the Mass Emission stations, as are the reasons for undertaking this monitoring. Four of the stations were monitored beginning with the 2009/10 monitoring season and seven of the stations were new to the 2010/11 monitoring season. Station selection for these new sampling locations is described in Section 9.3.2.

During the 2011/12 monitoring season, water quality samples from three wet-weather events and one dry-weather event were collected for water chemistry analysis at each of the eleven Major Outfall stations[5], as required by the NPDES permit. Aquatic toxicity samples were collected at each of the Major Outfall stations during Event 1 (October 5, 2011) and tested with the species that was determined to be the most sensitive to contaminants for that station, based on the results from the 2009/10 or 2010/11 monitoring year, as applicable.

Using the data from the Major Outfall monitoring in conjunction with the Mass Emission monitoring, the Stormwater Monitoring Program will help the Program determine if an MS4 is potentially contributing to exceedances of water quality objectives by comparing results to applicable water quality objectives in the Basin Plan and the CTR. And, over the course of many years, the data will be able to describe trends in waters from the Major Outfall stations over time. This information will be useful in evaluating the effectiveness of the Program implementation and provide Permittees with real data on which to base future management decisions.

### 9.2.3 Dry-Season, Dry-Weather Analytical Monitoring

The Permit requires the analysis of pollutant discharges from representative MS4 outfalls in each municipality and in the unincorporated County area during dry-weather between May 1 and Sept 30. The Stormwater Monitoring Program met this requirement by sampling once during the summer at or near Major Outfall stations, or at another representative site if flow was insufficient at the Major Outfall station.

### 9.2.4 Bioassessment Monitoring

Prior to the adoption of the new Orders (No. 09-0057 in 2009 and its replacement, R4-2010-0108 in 2010), the Stormwater Monitoring Program performed bioassessment monitoring in the Ventura River watershed at fixed locations. That sampling effort was terminated in favor of a new program working to standardize bioassessment monitoring throughout Southern California undertaken by the Stormwater Monitoring Coalition of Southern California (SMC) and led by the Southern California Coastal Water Research Project (SCCWRP). The Stormwater Monitoring Program was instructed to participate in this new program by performing sampling at 15 random sites and three targeted sites throughout the County annually, for the duration of the five year study. The sampling for this report year was performed in early summer of 2012.

[5] With the exception of MO-SPA and MO-MPK which were not sampled during the dry weather event due to a lack of consistent flow.

## 9.3 MONITORING STATION LOCATIONS AND DESCRIPTIONS

### 9.3.1 Mass Emission Stations

Mass Emission stations are located in the three major Ventura County watersheds: Ventura River (ME-VR2), Santa Clara River (ME-SCR), and Calleguas Creek (ME-CC). In locating these stations, every effort was made to position the station as low as possible in the watershed to capture as much of the runoff as possible, while still remaining above tidal influence. See Figure 9-1for the location of Mass Emission stations.

The ME-VR2 station is located at the Ojai Valley Sanitary District's wastewater treatment plant (WWTP) near Canada Larga Road and captures runoff from the city of Ojai, several unincorporated communities (e.g., Meiners Oaks, Casitas Springs), and a large portion of undeveloped landscape, the latter of which comprises the bulk of the watershed. Monitoring at the ME-VR2 station was initiated during the 2004/05 monitoring season after landslide activity at the original Ventura River Mass Emission station, ME-VR, precluded further sampling at that location.

The ME-CC station is located along University Drive near California State University at Channel Islands and captures runoff from the cities of Camarillo, Thousand Oaks, Moorpark and Simi Valley. This watershed has the largest urban influence (roughly 30% urbanized), but also includes significant contributions from agricultural runoff found predominantly in the lower two-thirds of the watershed. Monitoring at the ME-CC station was initiated during the 2000/01 monitoring season.

The ME-SCR station is located at the United Water Conservation District's (UWCD) Freeman Diversion Dam east of Saticoy and captures runoff from the cities of Santa Paula and Fillmore, communities upstream in Los Angeles County, agricultural fields, and a large amount of undeveloped landscape. Monitoring at the ME-SCR station was initiated during the 2001/02 monitoring season. Unlike at the other two Mass Emission stations, accurate measurement of flow at this location is not possible due to the configuration and operation of the diversion structure. In dry conditions, the river is usually diverted to groundwater infiltration ponds. In wet-weather conditions, the Santa Clara River can also flow past the diversion dam through two other routes. One route is through the river diversion gate structure where the majority of wet-weather flow passes. The other route is over the diversion dam, a situation which occurs only during high flows generated by large storm events. Wet-weather flow can only be measured at the diversion dam because there is no flow meter installed at the river diversion gate. There are technical challenges involved with measuring flow at the river diversion gate since floating debris and sediment can interfere with flow measurement and the large fluctuation in water level due to gate operation makes non-contact stage measurement difficult.

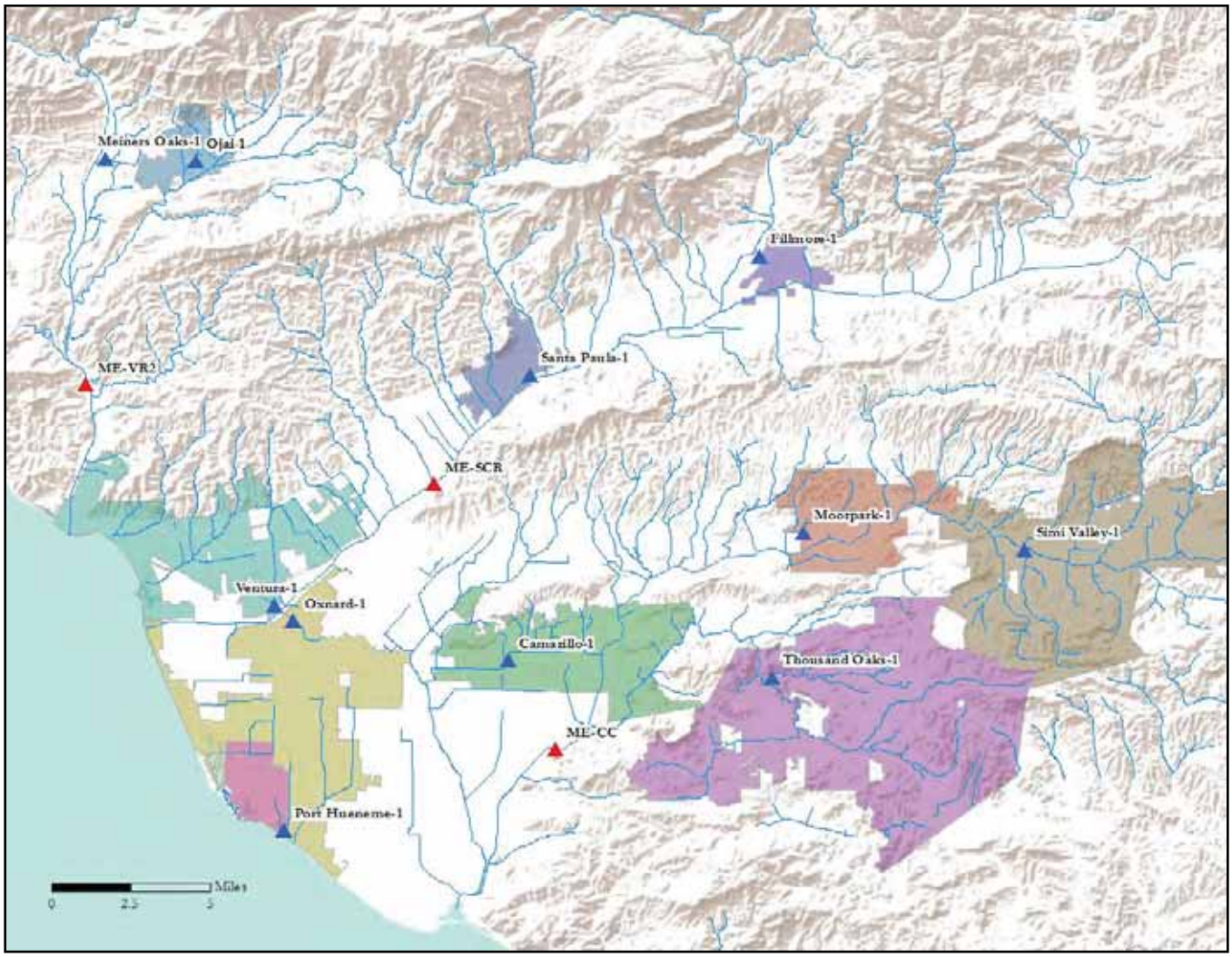
### 9.3.2 Major Outfall Stations

Of the eleven Major Outfall stations, four were added to the Stormwater Monitoring Program in 2009 and seven were added in 2010. As directed by the NPDES permit, these stations represent the runoff from each city/unincorporated county (Permittee) in which they are located. Municipalities selected for inclusion in the 2009/10 Stormwater Monitoring Program include Camarillo (MO-CAM), Ojai (MO-OJA), unincorporated Meiners Oaks (MO-MEI) and Ventura (MO-VEN).[6] The stations in the seven remaining municipalities brought

[6] Site names shown on the map reflect the names given to each site in the NPDES permit; site names throughout this report are shortened to those shown on chains-of-custody (COCs) for brevity. Under this naming convention, MO-CAM is synonymous with Camarillo-1, MO-FIL with Fillmore-1, MO-HUE with Port Hueneme-1, MO-OJA with Ojai-1, MO-OXN with Oxnard-1, MO-MEI with Meiners Oaks-1 (VCUnincorporated-1), MO-MPK with Moorpark-1, MO-SPA with Santa Paula-1, MO-SIM with Simi Valley-1, MO-THO with Thousand Oaks-1, and MO-VEN with Ventura-1.

online for the 2010/11 Stormwater Monitoring Program include Fillmore (MO-FIL), Moorpark (MO-MPK), Oxnard (MO-OXN), Port Hueneme (MO-HUE), Santa Paula (MO-SPA), Simi Valley (MO-SIM), and Thousand Oaks (MO-THO). Details of the land use of each city and the representative watershed can be found in Appendix A in Attachment E.

***Figure 9-1 Mass Emission and Major Outfall Sampling Locations***




The MO-CAM station is located on Camarillo Hills Drain (a tributary of Revolon Slough) just north of Daily Drive in Camarillo. The predominant land use in the watershed is residential. Less than 8% of the watershed is commercial and less than 1% is agricultural.

The MO-OJA station is located on Fox Canyon Barranca (a tributary of San Antonio Creek) near the Ojai Valley Athletic Club in Ojai. Almost half of the watershed is classified as vacant, with residential land use comprising about 40%. About 3% of the watershed is commercial and about 5% is agricultural.

The MO-MEI station is located on Happy Valley Drain (a tributary of the Ventura River) near Rice Road in Meiners Oaks. Almost half of the watershed is classified as residential. Another quarter of the watershed is classified as vacant. About 3% of the watershed is commercial and about 15% is agricultural.

The MO-VEN station is located on Moon Ditch (a tributary to the Santa Clara River) near the US101-Johnson Drive interchange in Ventura. Over half of the watershed is residential and a quarter is commercial. Industrial land uses account for almost 7% of the watershed, while agriculture comprises less than 1% of the watershed.

The MO-FIL station is located on the North Fillmore Drain (a tributary of Sespe Creek) near Shiells Park in Fillmore. Almost half the watershed is residential and just over a third is classified as vacant. Agriculture land uses account for almost 7% of the watershed, while commercial comprises less than 1% of the watershed.

The MO-MPK station is located on the Gabbert Canyon Drain (a tributary to Arroyo Las Posas) near the intersection of Los Angeles Avenue and Mira Sol Drive. Over half the watershed is classified as vacant, less than 10% of the land is residential, and almost 13% of the watershed is used for agriculture.

The MO-OXN station is located on El Rio Drain (a tributary to the Santa Clara River) near the corner of Buckaroo Avenue and Winchester Drive. Most of the watershed is classified as residential, however almost 20% is commercial and less than 2% is agricultural.

The MO-HUE station is located on Hueneme Drain (a tributary of the J Street Drain at the Pacific Ocean) southeast of Bubbling Springs Park. The land use is predominantly residential, with commercial and vacant land uses accounting for only 3% each.

The MO-SPA station is located on the 11th Street Drain where it enters the Santa Clara River, east of the Santa Paula airport. About half of the watershed is classified as residential, less than 15% as commercial, and schools and transportation account for about 10% each.

The MO-SIM station is located on Bus Canyon Drain (a tributary of the Arroyo Simi) near the intersection of 5th Street and Los Angeles Avenue. Over half (57%) of the watershed is classified as vacant and about one third is residential. All other land uses account for less than 1% of the watershed each.

The MO-THO station is located on the North Fork Arroyo Conejo (a tributary to Conejo Creek) in the Hill Canyon WWTP. The main land uses in the watershed are residential (56%) and vacant land (31%).

Figure 9-1 shows the location of the eleven Major Outfall and three Mass Emission stations.

## 9.4 METHODS

The NPDES permit requires flow-paced sampling at monitoring stations where technically feasible. The reason for this type of sampling is two-fold. First, by collecting sub-samples (aliquots) based on flow, a more accurate representation of the Event Mean Concentration (EMC) of each constituent in the runoff can be achieved. Second, by multiplying the EMC by the total flow during sample collection, a mass of each constituent discharged during each sampling event can be determined. Ideally, sampling events represent the entire hydrograph, however difficulties inherent in predicting precipitation quantity, intensity, and resulting runoff may result in partial representation of the complete storm event. Therefore, EMC are only representative of the sampling event duration and not the entire storm and mass emission quantities are calculated accordingly. These benefits are discussed further below.

Flow-paced sampling is not technically feasible at three sites, ME-SCR, MO-FIL, and MO-HUE. Since its installation in 2001, the monitoring station at ME-SCR has been monitored on a time-paced basis, as allowed by the RWQCB. This site is located at the UWCD's Freeman Diversion Dam, where irregular operation of the gates associated with the diversion dam makes it impossible to calculate flow. During most of the year, water is sent through a canal in which it is easy to calculate flow. However, during rainfall events and periodically throughout the year, the UWCD will close the gates to the diversion canal, allowing water to go through a high-velocity bypass or spill over the dam itself. Computing flow over the latter is difficult, given the breadth of the dam, which spans the entire river bottom. Computing flow through the bypass is impossible due to the wide ranges in water surface elevation and velocity. The MO-FIL station is located at an outfall into Sespe Creek and is subject to backwater due to plant growth and sediment deposition, which makes accurate flow determination impossible. The MO-HUE station is located in a canal which is drained via pumps that are triggered based on water surface elevation. The pumps are operated intermittently which makes flow-paced sampling inappropriate.

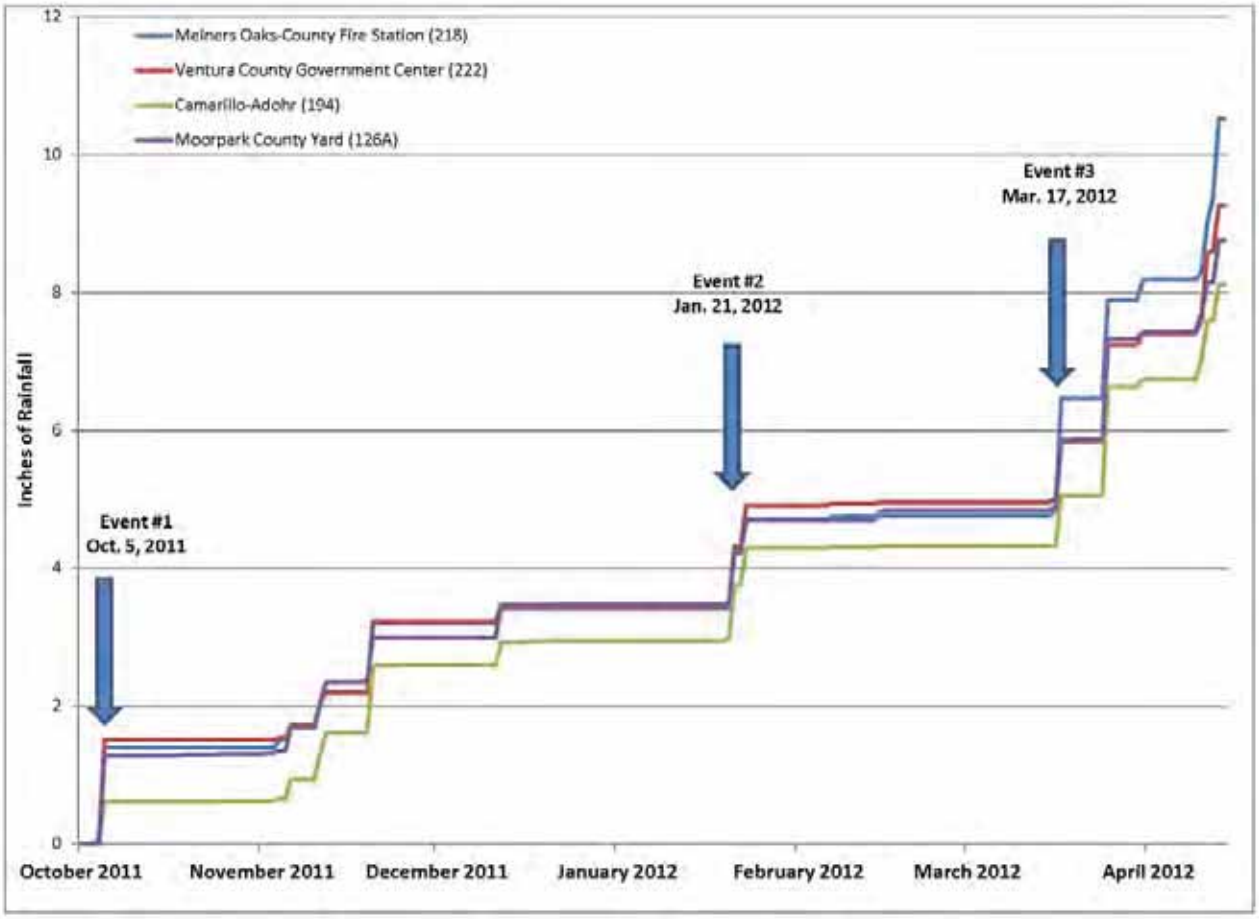
### 9.4.1 Precipitation

Precipitation amounts, both historical and predicted, are integral to performing flow-weighted sampling. Historical precipitation data is necessary to determine the relationship between rainfall and runoff. In the major watersheds with long-term Mass Emission stations, the rainfall-to-runoff (RTR) ratio is based on over 65 years of data and takes into account antecedent soil moisture conditions. These RTR tables have been used and refined by the Stormwater Monitoring Program for over 10 years.

At the time the Major Outfall stations were installed, the Stormwater Monitoring Program had access to real time precipitation data from the VCWPD's Hydrology section [part of the Automated Local Evaluation in Real Time (ALERT) network]; however it was not in a form that was usable by the Program. Changes to the processing of the ALERT data allowed the Program to capitalize on the already installed and maintained ALERT rainfall gauges. Most of the monitoring stations were able to use data from nearby ALERT gauges. Those monitoring stations that do not have nearby ALERT gauges (ME-SCR, ME-VR2, MO-CAM, MO-MEI, MO-VEN, and MO-HUE) have tipping bucket rainfall gauges (0.01" per tip) installed instead.

While the rainfall gauges purchased and maintained by the Stormwater Monitoring Program are of high quality, the data generated by these gauges are subjected to less stringent quality control measures than the "official" gauges maintained by the Hydrology section. Therefore, the Stormwater Monitoring Program has opted to show cumulative totals from representative ALERT gauges when indicating dates that actual sampling events occurred, as shown in Figure 9-2 Precipitation at Selected Sites. Gauge 218 is located in the Ojai Valley near the MO-MEI station. Gauge 222 is located at the County Government Center near the MO-VEN station. Gauge 194 is located at the base of the Conejo Grade, somewhat equidistant from the ME-CC and MO-CAM stations. Gauge 126A is located at the Moorpark County Yard near the MO-MPK station. Rainfall data gathered at specific monitoring stations can be found in Appendix B in Attachment E.

***Figure 9-2 Precipitation at Selected Sites***



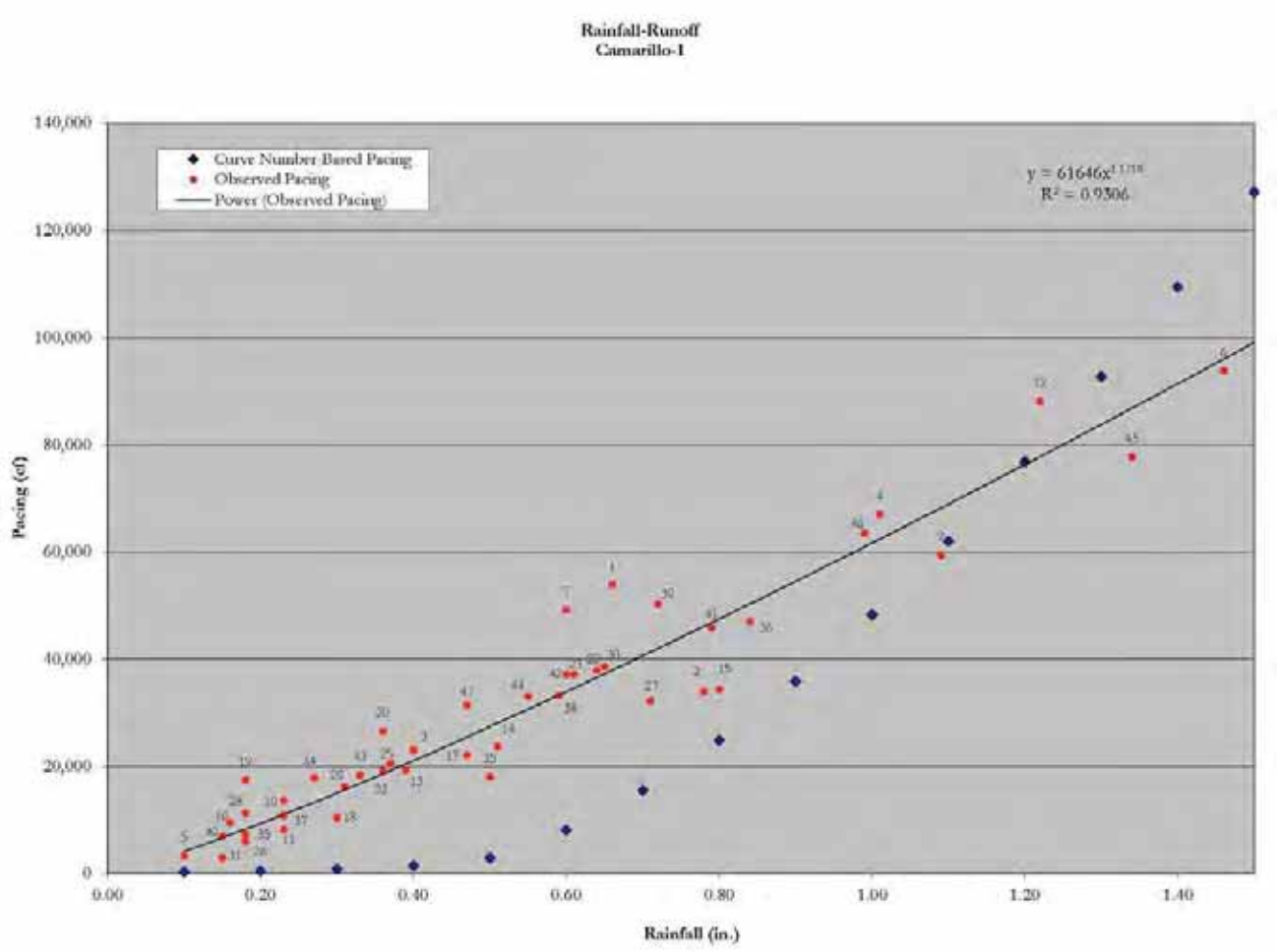

### 9.4.2 **Rainfall-to-Runoff Ratios**

Prior to starting monitoring under the new permit (before monitoring season 2009/10), the Stormwater Monitoring Program enlisted the VCWPD's Hydrology section to assist in modeling the expected rainfall-to-runoff (RTR) ratio for each new Major Outfall station. The Hydrology section used the NRCS Curve Number approach that is commonly used in hydrologic modeling. This model takes into account land use and soil types within each watershed, but relies on using a wetter soil moisture condition than actually exists for all but the largest of rainfall events. Despite these known limitations, these RTR ratios represented a good beginning point for flow-weighted sampler pacing. A further description of the methods and limitations of this approach, as described by the Hydrology section, can be found in Appendix C in Attachment E.

Over the course of the 2009/10, 2010/11, and 2011/12 monitoring years, the Stormwater Monitoring Program refined these model results by comparing the runoff generated at each site with the corresponding rainfall, where runoff was sufficient to be detected by the equipment and rainfall was greater than 0.1 inch. Figure 9-3 shows an example of these two pieces of information, as a function of the proper pacing of the automated sampler (see Section 9.4.3 for a further description of sampler pacing).

Figure 9-3 shows all rainfall events together, regardless of antecedent soil moisture conditions. However, as more data becomes available, the RTR ratios will be divided into dry, moderate and wet antecedent soil moisture conditions as has been done for the Mass Emission stations. This will allow the Stormwater Monitoring Program to more accurately pace automated samplers based on the predicted size of each storm.

***Figure 9-3. Example of Rainfall-to-Runoff Modeling Versus Actual Rainfall Events***




### 9.4.3 **Flow-Paced Sampling**

To compute flow, ISCO flow meters were installed at all locations (except at the aforementioned ME-SCR, and at MO-HUE, where the pump station prevents flow from being able to be measured accurately). ISCO 4230 bubblers were installed at all other stations except MO-FIL and MO-SPA, which received ISCO 4250 area-velocity meters instead. By measuring pressure head and relating it to a rating table, ISCO 4230s are capable of calculating instantaneous discharge. Measurement accuracy of the 4230 is not affected by wind, steam, foam, turbulence, suspended solids, or rapidly changing head heights. These types of flow meters are extremely low maintenance and highly reliable and were, therefore, chosen over other contact (ISCO 4250 area-velocity) and non-contact (ISCO 4210 ultrasonic) types of flow measuring devices when possible. ISCO 4250 area-velocity meters use Doppler technology to directly measure average velocity in the flow stream, while the integral pressure

transducer measures liquid depth to determine flow area. The 4250 then calculates flow rate by multiplying the area of the flow stream by its average velocity. The 4250 is best for applications where weirs or flumes are not practical, or where submerged, full pipe, surcharged, and reverse flow conditions may occur, such as at the MO-FIL and MO-SPA monitoring sites.

Flow-paced sampling involves collecting sub-samples (aliquots) on a volumetric flow interval basis, with a set aliquot volume collected at passage of each equal, pre-set flow volume, and then compositing these aliquots into one sample for analysis. In its simplest terms, flow-paced sampling can be achieved by estimating the total flow that will pass a sampling location (which, itself, is dependent on predicted rainfall amounts and intensities) and dividing that by the number of aliquots to be taken. Using Figure 9-3 above as an example, an approximate 1.0" rainfall event would generate about 2.3 million cubic feet of runoff, which when divided by 35 (the number of aliquots the Stormwater Monitoring Program attempts to take per event at each site) provides the proper pacing of around 67,000 cubic feet per aliquot (see data point #4). As mentioned above, this pacing volume is highly dependent on other variables such as intensity and antecedent soil moisture conditions.

Although composite samplers are automated, Stormwater Monitoring Program staff actively monitored storm and flow conditions during each event in order to adaptively adjust the sampler to capture the best representation of storm flow. This was made possible by the new telemetry capabilities of the Stormwater Monitoring Program. Previously, Stormwater Monitoring Program staff members were required to visit each site as the timing and amounts of predicted rainfall changed. Each site is now equipped with a cellular modem that makes communication and changes to sampler pacing and timing possible. Furthermore, the data from each of these sites is pushed via a static IP address to a centrally located SQL server and is accessible in near real-time format. Due to this set-up, site visits were only necessary to set up the site initially, take grab samples, collect composite sample bottles, and correct physical problems with the site. A schematic of this set-up is shown in Figure 9-4. An example of the data available to Stormwater Monitoring Program staff in the Storm Control Center is shown in Figure 9-5.

***Figure 9-4. Schematic of Remote Data Delivery and Access***

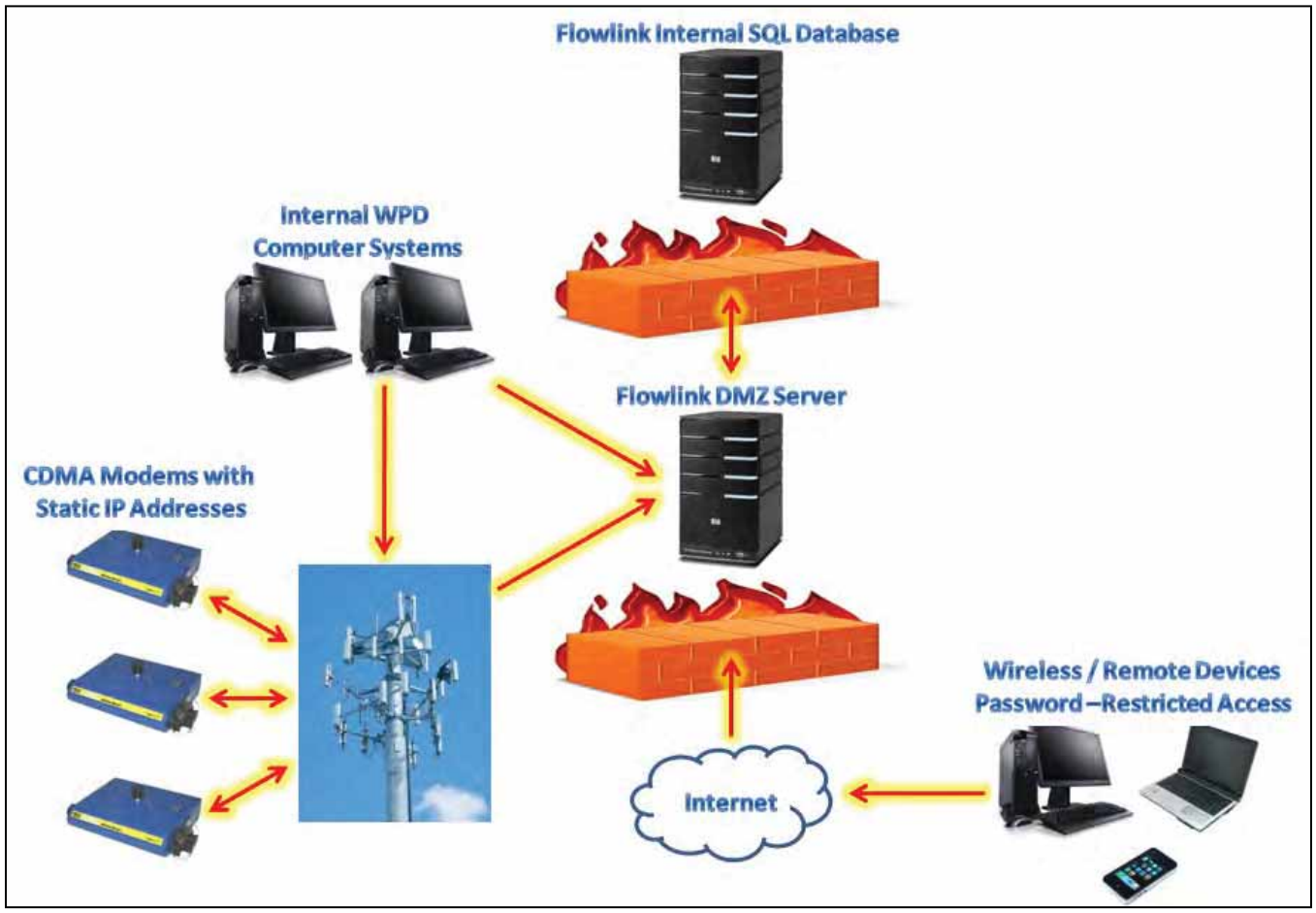


***Figure 9-5. Real-Time Data Available in Storm Control Center***


### 9.4.4 Sample Collection

As detailed in the NPDES permit, the Stormwater Monitoring Program was to sample three wet-weather events, described as a greater than 20% increase in base flow preceded by at least 7 days of dry weather(<0.10" each day), and one dry-weather event during each Permit year. Emphasis was placed on capturing the first event of the year, as well as the first part of each storm, both of which can be described as the first flush. The Stormwater Monitoring Program was able to successfully sample the necessary quantity and type of events as dictated by the NPDES permit, with the exception of ME-SCR in Event 1 (reduced sample volume due to UWCD turnout) and MO-SPA and MO-MPK in Event 4 (which had insufficient flow for sample collection). See Table 9-1 for site flow and event durations.

In Table 9-1, Start Date/Time and End Date/Time describe the length of time the automated sampler was actually taking samples. The true time of the rainfall and related runoff event was always longer; since the samplers were programmed to begin taking samples after flow had risen to greater than 20% of base flow, which took 0.10" to 0.25" of rainfall, depending on the antecedent conditions and sampling location.[7] Furthermore, flow often

[7] This range represents the amount of rainfall needed to generate measurable flow at the monitoring station. Smaller amounts of rainfall generated positive flow in watersheds with proportionally more impervious area. All automated sampling programs were designed to begin

continued after the automated sampler had completed its sampling program, because of the Stormwater Monitoring Program's goal to ensure that enough aliquots were taken to perform the required analyses. Because of this goal, the Stormwater Monitoring Program erred on the conservative side, pacing the samplers a bit quicker than the RTR tables dictated. As the RTR tables are refined, this error will become smaller, but will never completely disappear due to the inherent error in rainfall predictive abilities by both commercial and public weather forecasters. The relative timing of the onset of rainfall, commencement of the sampling program and duration of the flow for each site can be found in the event hydrographs located in Appendix B in Attachment E and is described further in the event descriptions, below.

The sampling methods and sample handling procedures used during the 2011/12 monitoring year are described in *Ventura Countywide Stormwater Monitoring Program: Water Quality Monitoring Standard Operating Procedures, 2009-2014*.

***Table 9-1: Site Flow Data and Event Durations***

| Site ID | Event No. | Event Date[a] | Average Flow (CFS) | Start Date, Time[b] | End Date, Time[b] | Event Duration |
|---|---|---|---|---|---|---|
| ME-CC | 1 | 10/5/2011 | 216.03 | 10/5/2011 8:55 | 10/5/2011 21:41 | 12:46 |
| | 2 | 1/21/2012 | 176.95 | 1/20/2012 23:11 | 1/21/2012 11:58 | 12:47 |
| | 3 | 3/17/2012 | 389.35 | 3/17/2012 7:59 | 3/18/2012 5:14 | 21:15 |
| | 4 | 5/23/2012 | 10.69 | 5/23/2012 10:31 | 5/24/2012 9:44 | 23:13 |
| ME-VR2 | 1 | 10/5/2011 | 16.42 | 10/5/2011 7:31 | 10/6/2011 8:41 | 25:10 |
| | 2 | 1/21/2012 | 9.52 | 1/21/2012 4:57 | 1/21/2012 13:11 | 8:14 |
| | 3 | 3/17/2012 | 22.72 | 3/17/2012 6:08 | 3/18/2012 6:34 | 24:26 |
| | 4 | 4/23/2012 | 9.03 | 4/23/2012 9:34 | 4/24/2012 9:02 | 23:28 |
| ME-SCR | 1 | 10/5/2011 | [c] | 10/5/2011 4:16 | 10/6/2011 3:30 | 23:14 |
| | 2 | 1/21/2012 | [c] | 1/21/2012 1:46 | 1/21/2012 13:06 | 11:20 |
| | 3 | 3/17/2012 | [c] | 3/17/2012 5:46 | 3/18/2012 5:34 | 23:48 |
| | 4 | 5/21/2012 | [c] | 5/21/2012 8:34 | 5/22/2012 8:04 | 23:30 |
| MO-CAM | 1 | 10/5/2011 | 59.01 | 10/5/2011 4:32 | 10/5/2011 9:57 | 5:25 |
| | 2 | 1/21/2012 | 57.16 | 1/21/2012 2:01 | 1/21/2012 4:27 | 2:26 |
| | 3 | 3/17/2012 | 26.10 | 3/17/2012 5:48 | 3/17/2012 22:32 | 16:44 |
| | 4 | 5/23/2012 | 0.10 [d] | 5/23/2012 9:59 | 5/24/2012 9:13 | 23:14 |
| MO-MEI | 1 | 10/5/2011 | 6.90 | 10/5/2011 6:02 | 10/5/2011 11:17 | 5:15 |
| | 2 | 1/21/2012 | 7.08 | 1/21/2012 3:32 | 1/21/2012 4:07 | 0:35 |
| | 3 | 3/17/2012 | 14.76 | 3/17/2012 3:40 | 3/17/2012 8:40 | 5:00 |
| | 4 | 4/23/2012 | 0.05 [d] | 4/23/2012 9:07 | 4/24/2012 8:26 | 23:19 |
| MO-OJA | 1 | 10/5/2011 | 10.86 | 10/5/2011 6:51 | 10/5/2011 8:52 | 2:01 |

when the water in the creek or channel exceeded the elevation of the intake strainer by more than a couple hundredths of a foot, effectively capturing the "first flush."

| | | | | | | |
|---|---|---|---|---|---|---|
| | 2 | 1/21/2012 | 12.21 | 1/21/2012 3:19 | 1/21/2012 3:41 | 0:22 |
| | 3 | 3/17/2012 | 24.07 | 3/17/2012 3:23 | 3/17/2012 7:20 | 3:57 |
| | 4 | 4/23/2012 | 0.50 [d] | 4/23/2012 8:04 | 4/24/2012 7:28 | 23:24 |
| MO-VEN | 1 | 10/5/2011 | 44.80 | 10/5/2011 4:22 | 10/5/2011 8:32 | 4:10 |
| | 2 | 1/21/2012 | 25.29 | 1/21/2012 1:31 | 1/21/2012 5:12 | 3:41 |
| | 3 | 3/17/2012 | 9.67 | 3/17/2012 3:52 | 3/17/2012 21:37 | 17:45 |
| | 4 | 5/21/2012 | 2.34 | 5/21/2012 9:47 | 5/22/2012 9:04 | 23:17 |
| MO-OXN | 1 | 10/5/2011 | 31.49 | 10/5/2011 4:06 | 10/5/2011 8:30 | 4:24 |
| | 2 | 1/21/2012 | 17.31 | 1/20/2012 0:07 | 1/21/2012 4:21 | 28:14 |
| | 3 | 3/17/2012 | 11.38 | 3/17/2012 4:05 | 3/17/2012 23:46 | 19:41 |
| | 4 | 5/21/2012 | 0.10 [d] | 5/21/2012 10:27 | 5/22/2012 9:46 | 23:19 |
| MO-HUE | 1 | 10/5/2011 | [c] | 10/5/2011 3:46 | 10/5/2011 16:04 | 12:18 |
| | 2 | 1/21/2012 | [c] | 1/20/2012 23:53 | 1/21/2012 8:23 | 8:30 |
| | 3 | 3/17/2012 | [c] | 3/17/2012 2:00 | 3/18/2012 1:47 | 23:47 |
| | 4 | 5/23/2012 | [c] | 5/23/2012 11:00 | 5/24/2012 10:47 | 23:47 |
| MO-SPA | 1 | 10/5/2011 | 7.27 | 10/5/2011 3:37 | 10/5/2011 8:57 | 5:20 |
| | 2 | 1/21/2012 | 4.04 | 1/21/2012 1:36 | 1/21/2012 4:03 | 2:27 |
| | 3 | 3/17/2012 | 4.34 | 3/17/2012 4:30 | 3/17/2012 22:09 | 17:39 |
| | 4 | 5/21/2012 | DRY [e] | DRY [e] | DRY [e] | DRY [e] |
| MO-FIL | 1 | 10/5/2011 | [c] | 10/5/2011 5:44 | 10/6/2011 4:58 | 23:14 |
| | 2 | 1/21/2012 | [c] | 1/21/2012 1:55 | 1/21/2012 9:39 | 7:44 |
| | 3 | 3/17/2012 | [c] | 3/17/2012 4:55 | 3/17/2012 16:49 | 11:54 |
| | 4 | 5/21/2012 | [c] | 5/21/2012 7:28 | 5/22/2012 6:42 | 23:14 |
| MO-SIM | 1 | 10/5/2011 | 18.80 | 10/5/2011 6:59 | 10/5/2011 14:03 | 7:04 |
| | 2 | 1/21/2012 | 30.89 | 1/21/2012 3:38 | 1/21/2012 6:47 | 3:09 |
| | 3 | 3/17/2012 | 14.73 | 3/17/2012 6:11 | 3/17/2012 23:52 | 17:41 |
| | 4 | 5/23/2012 | 2.00 [d] | 5/23/2012 8:30 | 5/24/2012 7:44 | 23:14 |
| MO-MPK | 1 | 10/5/2011 | 8.21 | 10/5/2011 6:12 | 10/5/2011 12:50 | 6:38 |
| | 2 | 1/21/2012 | 4.85 | 1/21/2012 2:54 | 1/21/2012 4:21 | 1:27 |
| | 3 | 3/17/2012 | 14.32 | 3/17/2012 7:11 | 3/17/2012 12:21 | 5:10 |
| | 4 | 5/23/2012 | DRY [e] | DRY [e] | DRY [e] | DRY [e] |
| MO-THO | 1 | 10/5/2011 | 44.98 | 10/5/2011 9:29 | 10/5/2011 12:33 | 3:04 |
| | 2 | 1/21/2012 | 64.20 | 1/21/2012 4:37 | 1/21/2012 7:34 | 2:57 |
| | 3 | 3/17/2012 | 46.00 | 3/17/2012 7:29 | 3/17/2012 18:51 | 11:22 |
| | 4 | 5/23/2012 | 0.92 | 5/23/2012 9:06 | 5/24/2012 8:20 | 23:14 |

*** All times PST**

[a] Event Date describes the date on which composite sampling began for a particular monitoring event.

[b] Start Date/Time and End Date/Time describe the duration samples were actually taken.

[c] Time-paced as flows cannot be accurately measured at these sites. ME-SCR: During wet weather the Santa Clara River flows through the river diversion gate and over the diversion dam. Currently, there is no flow meter installed at the river diversion gate where a majority of the wet weather flow passes. MO-FIL: Site experiences ponding and backwater effects due to natural bottom channel. MO-HUE: Flow is dependent on the release of water at the Hueneme pump station.

[d] Flow is estimated as dry weather flows are below the threshold levels for measurement.

[e] Insufficient flow over 24 hours available for sample collection.

At all monitoring stations, both composite and grab samples were collected. Composite samples were collected in glass containers and then delivered to the lab, where they were split by agitating the bottle, pouring off the necessary volume into a sample bottle, and repeating as necessary. When the splitting of a composite sample was performed, the composite sample was continually agitated to provide as much "non-invasive" mixing as possible. Sample splitting allowed homogeneous aliquots of a single, large water sample to be divided into several smaller sub-samples for different analyses. The volume of sample collected depended upon the volume required by the lab to perform requested water quality and QA/QC analyses.

Grab samples were taken as close to mid-stream, mid-depth as possible by immersing the sample bottle directly in the water (see Figure 9-6). In some situations, site conditions precluded such sampling and alternative sampling techniques were used. At the larger, deeper Mass Emission stations, grab samples were often gathered near the bank, but still in positive flow, often with the help of a long, extended swing sampler (see Figure 9-7). This technique was also employed at some of the Major Outfall stations where getting into the channel would have compromised personnel safety.

***Figure 9-6. Grab Sampling at Mid-Stream, Mid-Depth***

For constituents analyzed from samples required to be collected as "grabs," samples were ideally taken at the peak runoff flow to provide the best estimate for an event mean concentration (EMC). In practice, it was difficult to both predict the peak flow for each site and to allocate manpower such that all sites were grab-sampled at the storm event peak flow. It should be noted that peak flow times varied for each monitoring station due to the size and inherent characteristics of the watershed in which the site was located, as well as varying durations and intensities of rainfall. All grab and composite wet weather samples collected during the 2011/12 monitoring season are considered best available estimates of storm EMCs.

The chemical analysis of some constituents is not possible in a laboratory setting and must be performed in the field. These constituents were analyzed using pre-calibrated field meters at the time when grab samples were collected. All field meters were calibrated according to manufacturers' directions, using vendor-supplied calibration solutions where applicable

In an effort to maintain quality control for the sampling program, the sampling crew, in cooperation with the analytical laboratories, has minimized the number of laboratories and sample bottles used for analysis. This has minimized bottle breakage, increased efficiency, and reduced the chances for contamination of the samples. Also, a dedicated monitoring team was used to provide consistent sample collection and handling.

As a means of documenting all preparatory, operational, observational, and concluding activities of a monitoring event, the Stormwater Monitoring Program produced an event summary for each monitoring event. These event summaries include, but are not limited to, information related to event duration, predicted and actual precipitation, weather conditions, the programming of sampling equipment, equipment malfunctions, sample collection and handling, and sample tracking with respect to delivery to analytical laboratories. All event summaries associated with the 2011/12 monitoring season are presented in Appendix D in Attachment E.

***Figure 9-7. Grab Sampling Using Extended-Reach Swing Sampler***

The Stormwater Monitoring Program also documented the actual samples it collected at each monitoring site – and the date and time of collection – during the course of an event by completing a chain of custody (COC) form for each sampling event. The COC form not only documented sample collection, but also notified an analytical laboratory that a particular sample should be analyzed for a certain constituent or group of constituents, oftentimes specifying the analytical method to be employed. Finally, the COC form acted as an evidentiary document noting how many samples were relinquished – and at what date and time – to a particular laboratory by the Stormwater Monitoring Program. All chain of custody forms associated with the 2011/12 monitoring season are presented in Appendix E in Attachment E.

The QA/QC sampling schedule was designed to be flexible in response to changing conditions, with the analytical chemistry laboratory being instructed to utilize VCWPD samples for MS/MSD and laboratory duplicate analyses when sample volume was sufficient, rather than for specific sites for each event. This flexibility is of benefit for several reasons. First, as is often the case, rainfall duration and intensity were difficult to predict, especially in the early part of the season. Second, extremely dry antecedent conditions made forecasting flow conditions at the various monitoring locations complicated. Finally, site-specific complications can affect sample volume. An example of this is the operation of the diversion canal at ME-SCR by UWCD, which can leave the primary intake line of the sampler out of the water, thereby causing insufficient sample volume as the sampler pulls air instead of river water. While the Stormwater Monitoring Program has installed multiple intake lines to deal with this situation, the time at which UWCD opens the gates to the diversion structure must be known and since UWCD's operation of this structure depends on turbidity in the river, it is extremely difficult to predict when the primary intake line ceases to become useful and the sampler needs to be switched over to the secondary intake line. The flexibility in QA/QC sampling station selection allows the laboratory more options for using VCWPD samples for QA/QC tests than would otherwise be possible, due to the ability to select sites with surplus volume.

### Event 1 (Wet)

The first rainfall event of the year began early in the morning on October 5, 2011, with the bulk of the rain falling before noon on the same day. Rainfall was estimated at 0.50" to1.0" at the monitoring sites. The rainfall lasted approximately 10 hours and by the time the storm had moved through the area, approximately 0.6" of rain had fallen at the coast and up to 1.7" had fallen inland. Most sites received more than an inch of rain.

UWCD temporarily stopped diverting the water on 10/5/2011 due to high turbidity. This resulted in a reduced sample volume of 5 liters to be collected at ME-SCR. The laboratory initiated the priority list for analyses.

### Event 2 (Wet)

The second monitoring event of the season began around midnight on the morning of January 21, 2012. Rainfall estimates of 0.25" to 0.50" were forecast for Ventura County which was less than the observed amounts which were closer to 0.5" to 1.0". The storm lasted approximately eight hours.

### Event 3 (Wet)

Rain for Event 3 began early in the morning on March 17, 2012. The remote programming capabilities were not operational for Event 3 due to issues with Verizon's Circuit Switched Data program. Pacing changes could not be made remotely and had to be made manually via the 6712 sampler pulse counts. Forecasts were between 0.75" and 1.5" with potential for up to 3" in the mountains. Rain amounts were relatively accurate, with 0.5" to 1.5" seen at most sites across the county over about 7 hours. Rain amounts and durations were a little higher in the Ojai Valley.

### Event 4 (Dry)

The dry-weather sampling events took place over three days, on April 23, May 21, and May 23, 2012. Sampling was organized and conducted by major watershed. The Ventura River Watershed sites (ME-VR2, MO-OJA, and MO-MEI) were sampled on April 23, approximately 10 days after the last rainfall. Since MO-MEI is known to go dry relatively quickly after the end of the rain season, this watershed was sampled soon (but greater than seven days) after the last rain in order to be able to collect sample at this site. The Santa Clara River Watershed sites (ME-SCR, MO-FIL, MO-SPA, MO-OXN, and MO-VEN) were sampled on May 21, 2012, approximately one month after the last rainfall. MO-SPA had been dry for most of the month prior to the sampling event, including the preceding four days and stayed dry during the sampling event so samples could not be collected. The Calleguas Creek Watershed (ME-CC, MO-CAM, MO-SIM, MO-MPK, MO-THO) and Coastal Watershed (MO-HUE)were sampled two days later, on May 23, 2012. There was no flow at MO-MPK so samples could not be taken. Sampling duration at all sites was about 23 hours.

### 2012-DRY

The dry-season, dry-weather grab samples were collected from representative MS4 outfalls on two days, August 15 and 16, 2012. Fillmore-1 (MO-FIL), Ojai-1 (MO-OJA), Oxnard-1 (MO-OXN), Santa Paula-2 (Fagan Canyon), and Ventura-1 (MO-VEN) were sampled on August 15, 2012. Camarillo-1 (MO-CAM), Moorpark-1 (MO-MPK), Port Hueneme-3 (Bubbling Springs Park), Simi Valley-1 (MO-SIM), and Thousand Oaks-1 (MO-THO), and Unincorporated-2 (Medea Creek in Oak Park) were sampled on August 16, 2012. There was at least 72 hours of dry weather preceding each sampling event.

During the dry sampling events, Stormwater Monitoring Program staff deployed sand-weighted silicone dams where necessary to allow very low flows to pool up to sampleable depths. This provided the depth needed to submerge the grab bottles and/or automated sampler intake line to facilitate successful sample collection (see Figure 9-8). This innovative technique is further discussed in *Ventura Countywide Stormwater Monitoring Program: Water Quality Monitoring Standard Operating Procedures, 2009-2014*.

***Figure 9-8. Typical Wet-Season, Dry-Weather Sampling Configuration***

### 9.4.5 Analyses Performed

Attachment G of the Permit lists the constituents to be analyzed for each event[8]. In addition to this broad suite of analytes, Attachment B specifies other site-specific analytes that have been identified as problematic pollutants in

[8] For Permit sections A. Mass Emission and B. Major Outfalls only. The constituents for Section C. Dry Weather Analytical Monitoring are listed separately in that section and are detailed in Section 9.7 of this report.

previous years of water quality sampling. These, and any unrequested analytes for which results are obtained during method analysis, were incorporated into the sampling program and appear in the tables below. Table 9-2 shows those analytes that were gathered as discrete samples.

Table 9-3 shows those analytes that were gathered as composite samples. All laboratory chemical analyses of environmental samples and preseason equipment blank samples were performed by Weck Laboratories, with the exception of analyses for indicator bacteria, which were performed by the Ventura County Public Health Lab.

***Table 9-2. Analytes Derived from Discrete Samples***

| Grab Samples (Classification) | Field Meter Analytes (Classification) |
|---|---|
| Oil and grease (hydrocarbon) | pH (conventional) |
| Total Petroleum Hydrocarbons (hydrocarbon) | Temperature (conventional) |
| 2-Chloroethyl vinyl ether (organic) | Dissolved oxygen (conventional) |
| Methyl tertiary butyl ether (MTBE) (organic) | Conductivity (conventional) |
| Cyanide (conventional) | Specific conductance (conventional) |
| *E. coli* (bacteriological) | Salinity (conventional) |
| Enterococcus (bacteriological) | |
| Fecal Coliform (bacteriological) | |
| Total Coliform (bacteriological) | |

***Table 9-3. Analytes Derived from Composite Samples***

| Classification | Constituent | Method |
|---|---|---|
| **Anion** | Chloride | EPA 300.0 |
| | Fluoride | EPA 300.0 |
| | Perchlorate | EPA 314.0 |
| **Cation** | Calcium (Total) | EPA 200.7 |
| | Magnesium (Total) | EPA 200.7 |
| **Conventional** | Alkalinity as CaCO3 | SM 2320 B |
| | BOD | SM 5210 B |
| | COD | EPA 410.4 |
| | Hardness as CaCO3 (Total) | EPA 200.7 |
| | MBAS | SM 5540 C |
| | Phenolics | EPA 420.4 |
| | Specific Conductance | SM 2510 B |
| | Total Chlorine Residual | SM 4500-Cl G |
| | Total Dissolved Solids | SM 2540 C |
| | Total Organic Carbon | SM 5310 C |
| | Total Suspended Solids | SM 2540 D |
| | Turbidity | EPA 180.1 |
| | Volatile Suspended Solids | EPA 160.4 |
| **Metal** | Aluminum (Dissolved) | EPA 200.8 |
| | Aluminum (Total) | EPA 200.8 |
| | Antimony (Dissolved) | EPA 200.8 |
| | Antimony (Total) | EPA 200.8 |
| | Arsenic (Dissolved) | EPA 200.8 |
| | Arsenic (Total) | EPA 200.8 |

| Classification | Constituent | Method |
|---|---|---|
| | Barium (Dissolved) | EPA 200.8 |
| | Barium (Total) | EPA 200.8 |
| | Beryllium (Dissolved) | EPA 200.8 |
| | Beryllium (Total) | EPA 200.8 |
| | Cadmium (Dissolved) | EPA 200.8 |
| | Cadmium (Total) | EPA 200.8 |
| | Chromium (Dissolved) | EPA 200.8 |
| | Chromium (Total) | EPA 200.8 |
| | Chromium VI (n/a) | EPA 218.6 |
| | Copper (Dissolved) | EPA 200.8 |
| | Copper (Total) | EPA 200.8 |
| | Iron (Dissolved) | EPA 200.8 |
| | Iron (Total) | EPA 200.8 |
| | Lead (Dissolved) | EPA 200.8 |
| | Lead (Total) | EPA 200.8 |
| | Mercury (Dissolved) | EPA 245.1 |
| | Mercury (Total) | EPA 245.1 |
| | Nickel (Dissolved) | EPA 200.8 |
| | Nickel (Total) | EPA 200.8 |
| | Selenium (Dissolved) | EPA 200.8 |
| | Selenium (Total) | EPA 200.8 |
| | Silver (Dissolved) | EPA 200.8 |
| | Silver (Total) | EPA 200.8 |
| | Thallium (Dissolved) | EPA 200.8 |
| | Thallium (Total) | EPA 200.8 |
| | Zinc (Dissolved) | EPA 200.8 |
| | Zinc (Total) | EPA 200.8 |
| **Nutrient** | Ammonia as N | EPA 350.1 |
| | Nitrate + Nitrite as N | EPA 353.2 |
| | Nitrate as N | EPA 353.2 |
| | Phosphorus as P (Dissolved) | EPA 365.1 |
| | TKN | EPA 351.2 |
| **Organic** | 1,2,4-Trichlorobenzene | EPA 625 |
| | 1,2-Dichlorobenzene | EPA 625 |
| | 1,2-Diphenylhydrazine | EPA 625 |
| | 1,3-Dichlorobenzene | EPA 625 |
| | 1,4-Dichlorobenzene | EPA 625 |
| | 2,4,5-Trichlorophenol | EPA 8270Cm[9] |
| | 2,4,6-Trichlorophenol | EPA 8270Cm[5] |
| | 2,4-Dichlorophenol | EPA 8270Cm[5] |
| | 2,4-Dimethylphenol | EPA 8270Cm[5] |
| | 2,4-Dinitrophenol | EPA 8270Cm[5] |
| | 2,4-Dinitrotoluene | EPA 625 |

[9] In cases of limited sample, other methods may be used.

| Classification | Constituent | Method |
|---|---|---|
| | 2,6-Dinitrotoluene | EPA 625 |
| | 2-Chloronaphthalene | EPA 625 |
| | 2-Chlorophenol | EPA 8270Cm[5] |
| | 2-Methylphenol | EPA 8270Cm[5] |
| | 2-Nitrophenol | EPA 8270Cm[5] |
| | 3,3'-Dichlorobenzidine | EPA 625 |
| | 3-/4-Methylphenol | EPA 8270Cm[5] |
| | 4,6-Dinitro-2-methylphenol | EPA 8270Cm[5] |
| | 4-Bromophenyl phenyl ether | EPA 625 |
| | 4-Chloro-3-methylphenol | EPA 8270Cm[5] |
| | 4-Chlorophenyl phenyl ether | EPA 625 |
| | 4-Nitrophenol | EPA 8270Cm[5] |
| | Acenaphthene | EPA 8270Cm[5] |
| | Acenaphthylene | EPA 8270Cm[5] |
| | Anthracene | EPA 8270Cm[5] |
| | Benz(a)anthracene | EPA 8270Cm[5] |
| | Benzidine | EPA 625 |
| | Benzo(a)pyrene | EPA 525.2 |
| | Benzo(b)fluoranthene | EPA 8270Cm[5] |
| | Benzo(g,h,i)perylene | EPA 8270Cm[5] |
| | Benzo(k)fluoranthene | EPA 8270Cm[5] |
| | Bis(2-chloroethoxy)methane | EPA 625 |
| | Bis(2-chloroethyl)ether | EPA 625 |
| | Bis(2-chloroisopropyl)ether | EPA 625 |
| | Bis(2-ethylhexyl)adipate | EPA 525.2 |
| | Bis(2-ethylhexyl)phthalate | EPA 525.2 |
| | Butyl benzyl phthalate | EPA 625 |
| | Chrysene | EPA 8270Cm[5] |
| | Dibenz(a,h)anthracene | EPA 8270Cm[5] |
| | Diethyl phthalate | EPA 625 |
| | Dimethyl phthalate | EPA 625 |
| | Di-n-butylphthalate | EPA 625 |
| | Di-n-octylphthalate | EPA 625 |
| | Fluoranthene | EPA 8270Cm[5] |
| | Fluorene | EPA 8270Cm[5] |
| | Hexachlorobenzene | EPA 625 |
| | Hexachlorobutadiene | EPA 625 |
| | Hexachlorocyclopentadiene | EPA 625 |
| | Hexachloroethane | EPA 625 |
| | Indeno(1,2,3-cd)pyrene | EPA 8270Cm[5] |
| | Isophorone | EPA 625 |
| | Naphthalene | EPA 8270Cm[5] |
| | Nitrobenzene | EPA 625 |
| | N-Nitrosodimethylamine | EPA 625 |
| | N-Nitrosodi-N-propylamine | EPA 625 |
| | N-Nitrosodiphenylamine | EPA 625 |
| | Phenanthrene | EPA 8270Cm[5] |
| | Phenol | EPA 8270Cm[5] |
| | Pyrene | EPA 8270Cm[5] |

| Classification | Constituent | Method |
|---|---|---|
| **PCB** | PCB Aroclor 1016 | EPA 608 |
| | PCB Aroclor 1221 | EPA 608 |
| | PCB Aroclor 1232 | EPA 608 |
| | PCB Aroclor 1242 | EPA 608 |
| | PCB Aroclor 1248 | EPA 608 |
| | PCB Aroclor 1254 | EPA 608 |
| | PCB Aroclor 1260 | EPA 608 |
| **Pesticide** | 2,4,5-T | EPA 515.3 |
| | 2,4,5-TP | EPA 515.3 |
| | 2,4-D | EPA 515.3 |
| | 2,4-DB | EPA 515.3 |
| | 2,4'-DDD | EPA 608 |
| | 2,4'-DDE | EPA 608 |
| | 2,4'-DDT | EPA 608 |
| | 3,5-Dichlorobenzoic acid | EPA 515.3 |
| | 4,4'-DDD | EPA 608 |
| | 4,4'-DDE | EPA 608 |
| | 4,4'-DDT | EPA 608 |
| | Acifluorfen | EPA 515.3 |
| | Alachlor | EPA 525.2 |
| | Aldrin | EPA 608 |
| | alpha-BHC | EPA 608 |
| | alpha-Chlordane | EPA 608 |
| | Atrazine | EPA 525.2 |
| | Azinphos methyl | EPA 525.2 |
| | Bentazon | EPA 515.3 |
| | beta-BHC | EPA 608 |
| | Bolstar | EPA 525.2 |
| | Bromacil | EPA 525.2 |
| | Butachlor | EPA 525.2 |
| | Captan | EPA 525.2 |
| | Chloramben | EPA 515.3 |
| | Chlordane (technical) | EPA 608 |
| | Chloropropham | EPA 525.2 |
| | Chlorpyrifos | EPA 525.2 |
| | Coumaphos | EPA 525.2 |
| | Cyanazine | EPA 525.2 |
| | Dalapon | EPA 515.3 |
| | DCPA (Dacthal) | EPA 515.3 |
| | delta-BHC | EPA 608 |
| | Demeton-O | EPA 525.2 |
| | Demeton-S | EPA 525.2 |
| | Diazinon | EPA 525.2 |
| | Dicamba | EPA 515.3 |
| | Dichlorprop | EPA 515.3 |
| | Dichlorvos | EPA 525.2 |
| | Dieldrin | EPA 608 |
| | Dimethoate | EPA 525.2 |
| | Dinoseb | EPA 515.3 |

| Classification | Constituent | Method |
|---|---|---|
| | Diphenamid | EPA 525.2 |
| | Disulfoton | EPA 525.2 |
| | Endosulfan I | EPA 608 |
| | Endosulfan II | EPA 608 |
| | Endosulfan sulfate | EPA 608 |
| | Endrin | EPA 608 |
| | Endrin aldehyde | EPA 608 |
| | EPTC | EPA 525.2 |
| | Ethoprop | EPA 525.2 |
| | Ethyl parathion | EPA 525.2 |
| | Fensulfothion | EPA 525.2 |
| | Fenthion | EPA 525.2 |
| | gamma-BHC (Lindane) | EPA 608 |
| | gamma-Chlordane | EPA 608 |
| | Glyphosate | EPA 547 |
| | Heptachlor | EPA 608 |
| | Heptachlor epoxide | EPA 608 |
| | Malathion | EPA 525.2 |
| | Merphos | EPA 525.2 |
| | Methoxychlor | EPA 608 |
| | Methyl parathion | EPA 525.2 |
| | Metolachlor | EPA 525.2 |
| | Metribuzin | EPA 525.2 |
| | Mevinphos | EPA 525.2 |
| | Mirex | EPA 608 |
| | Molinate | EPA 525.2 |
| | Naled | EPA 525.2 |
| | Pentachlorophenol | EPA 515.3 |
| | Phorate | EPA 525.2 |
| | Picloram | EPA 515.3 |
| | Prometon | EPA 525.2 |
| | Prometryn | EPA 525.2 |
| | Ronnel (Fenchlorphos) | EPA 525.2 |
| | Simazine | EPA 525.2 |
| | Stirophos (Tetrachlorvinphos) | EPA 525.2 |
| | Terbacil | EPA 525.2 |
| | Thiobencarb | EPA 525.2 |
| | Tokuthion | EPA 525.2 |
| | Toxaphene | EPA 608 |
| | Trichloronate | EPA 525.2 |
| | Trithion | EPA 525.2 |

### 9.4.6 Quality Assurance / Quality Control

The following is a discussion of the results of the quality assurance and quality control (QA/QC) analysis performed on the 2011/12 stormwater quality monitoring data. The data were evaluated for overall sample integrity, holding time exceedances, contamination, accuracy, and precision using field- and lab-initiated QA/QC sample results according to the Stormwater Monitoring Program's *Data Quality Evaluation Plan* and *Data*

*Quality Evaluation Standard Operating Procedures*. The *Data Quality Evaluation Plan* (DQEP) describes the process by which water chemistry data produced by the Stormwater Monitoring Program are evaluated. Data quality evaluation is a multiple step process used to identify errors, inconsistencies, or other problems potentially associated with Stormwater Monitoring Program data. The DQEP contains a detailed discussion of the technical review process, based on U.S. Environmental Protection Agency (EPA) guidance and requirements set forth by the Stormwater Monitoring Program used to evaluate water quality monitoring data. The DQEP provides a reference point from which a program-consistent quality assurance/quality control (QA/QC) evaluation can be performed by the Stormwater Monitoring Program. The *Data Quality Evaluation Standard Operating Procedures* (SOPs) document provides a set of written instructions that documents the process used by the Stormwater Monitoring Program to evaluate water quality data. The SOPs describe both technical and administrative operational elements undertaken by the Stormwater Monitoring Program in carrying out its DQEP. The SOPs act as a set of prescriptive instructions detailing in a step-by-step manner how District staff carry out the data evaluation and data quality objectives set forth in the DQEP. QA/QC sample results from the 2011/12 monitoring season are presented in Appendix F in Attachment E.

QA/QC sample collection and analysis relies upon QA/QC samples collected in the field (such as equipment blank, field duplicate, and matrix spike samples), as well as QA/QC samples prepared and analyzed by the analytical laboratory (i.e., lab-initiated samples, such as method blanks, filter blanks, and laboratory control spikes) performing the analysis. The actual chemical analysis of field-initiated and lab-initiated QA/QC samples is conducted in an identical manner as the analysis of field-collected environmental samples. After all analyses are complete, the results of the field-initiated and lab-initiated QA/QC sample results are compared to particular data quality objectives (DQOs), also commonly referred to as "QA/QC limits." These limits are typically established by the analytical laboratory based on EPA protocols and guidance. However, in some cases, the Stormwater Monitoring Program will set a particular DQO, such as the QA/QC limit for field duplicate results.

QA/QC sample results are evaluated in order to compare them to their appropriate QA/QC limits and identify those results that fall outside of these limits. The QA/QC evaluation occurs in two separate steps as the laboratory will review those results that fall outside of its QA/QC limits and typically label these results with some type of qualification or note. If a QA/QC sample result falls grossly outside of its associated QA/QC limit, and thus indicates that there is a major problem with the lab's instrumentation and/or analytical process, then the laboratory should re-run both the affected QA/QC and environmental samples as necessary. The second step in the QA/QC evaluation process occurs when the Stormwater Monitoring Program performs an overall sample integrity evaluation, as well as specific holding time, contamination, accuracy, and precision checks. This second evaluation step provides an opportunity to thoroughly review the Stormwater Monitoring Program's data to identify potential errors in a laboratory's reporting of analytical data and/or recognize any significant data quality issues that may need to be addressed. After this evaluation the Stormwater Monitoring Program is ready to qualify their environmental data as necessary based on the findings of the QA/QC assessment.

Data qualification occurs when the Stormwater Monitoring Program assigns a particular program qualification to an analytical result as a means to notify data users that the result was produced while one or more DQOs or QA/QC limitations were exceeded. Environmental sample results are qualified in order to provide the user of these data with information regarding the quality of the data. Depending on the planned use of the data, qualifications may help to determine whether or not the data are appropriate for a given analysis. In general, data that are qualified with anything other than an "R" (used to signify a rejected data point) are suitable for most analyses. However, the qualifications assigned to the data allow the user to assess the appropriateness of the data for a given use. The Stormwater Monitoring Program used its NDPES Stormwater Quality Database to conduct a semi-automated QA/QC evaluation of the current season's data contained in the database. The use of the database allows the Stormwater Monitoring Program to expedite and standardize the QA/QC evaluation of its monitoring data in conjunction with the use of the DQEP and SOPs. After reviewing the qualifications assigned to each qualified data point in the 2011/12 monitoring year data set, the environmental data are considered to be of high

quality and sufficient for all future general uses. However, all data qualifiers should be reviewed and considered prior to the use of the data in a specific analysis or application. Environmental data from the 2011/12 monitoring season are presented in Appendix G.

Both environmental and field-initiated QA/QC samples were collected in the field using clean sampling techniques. To minimize the potential for contamination, Weck Laboratories cleaned all bottles used for composite samples. Only new containers were used for grab sample collection, with the appropriate preservative added to grab bottles by Weck. Intake lines for the automated samplers were flushed using distilled water. Designated sampling crew leaders were used to ensure that consistent sample collection and handling techniques were followed during every monitoring event.

Field-initiated QA/QC samples performed by the Stormwater Monitoring Program during the 2011/12 monitoring season included field blanks, field duplicates, and equipment blanks. Equipment blanks are typically prepared prior to the start of the monitoring season to check that tubing, strainers, and sample containers aren't sources of contamination for the Stormwater Monitoring Program's environmental samples. Tubing equipment blanks were collected from the sampling equipment by passing blank water through cleaned tubing and into brand new sample bottles. Composite bottle equipment blanks were collected by adding blank water to a composite bottle and allowing it to sit at <4°C for 24 hours before being split into brand new sample bottles for analysis. After collection, equipment blanks were submitted to the analytical laboratory and analyzed using the same methods as those employed for routine environmental sample analysis.

### 9.4.7 Equipment Blanks

Equipment blanks, often referred to as pre-season blanks, were collected prior to the monitoring season to test for contamination in sample containers (e.g., composite bottles) and sample equipment (e.g., intake lines, tubing, and strainers). This process consists of running laboratory-prepared blank water through sampler tubing to identify potential contamination of field-collected samples as a result of "dirty" tubing. The blank water (ultrapure deionized water) used to evaluate contamination of composite bottles and tubing can also be analyzed in order to check for contamination of this analytical sample medium. Equipment blank "hits" or measured concentrations above the laboratory's quantitation limit (RL, PQL, etc.) for a constituent are assessed and acted upon using the guidelines listed below:

1. The Stormwater Monitoring Program requests that the laboratory confirm the reported results against lab bench sheets or other original analytical instrument output. Any calculation or reporting errors should be corrected and reported by the laboratory in an amended laboratory report.

2. If the previous step does not identify improperly reported results, then the analytical laboratory should be asked to identify any possible sources of contamination in the laboratory.

3. If no laboratory contamination is identified, then a note should be made that documents that the equipment blank results indicate that the sample equipment may have introduced contamination into the blank samples.

When practical, remedial measures are initiated by the Stormwater Monitoring Program to replace or re-clean sampling equipment and re-analyze equipment blank samples in an effort to eliminate field contamination. Only the results of field-initiated and laboratory-initiated QA/QC samples associated with the environmental samples collected for any given monitoring event are used to qualify Stormwater Monitoring Program environmental samples. However, pre-season analyses provide useful information regarding possible sources of environmental sample contamination and insight into how contamination issues might be resolved.

Preseason equipment blank "Carboy Blank" (composite bottle) and "Tubing Blank (distilled)" (intake line cleaned with distilled water only) samples were collected for the 2011/12 monitoring year on August 25, 2011. The "Tubing Blank (distilled)" sample was collected through the intake line at MO-MEI after flushing the line with distilled water. The Carboy Blank samples were split off from ultrapure deionized water that had been added to a clean composite bottle and left to sit at 0 - 4 degrees Celsius for 24 hours. The blanks were analyzed by EPA 200.8 for total metals (iron by EPA 200.7), EPA 245.1 for total mercury, EPA 353.2 for nitrate + nitrite as nitrogen, and EPA 625 for semi-volatile organics.

Constituents that were either not detected or detected below the levels typically found in stormwater and therefore not a cause for concern in both the carboy and tubing blanks were: aluminum, chromium, iron, lead, zinc, and nitrate+nitrite. The amount of mercury detected in each of the equipment blanks (0.023 ug/L) was below the reporting limit and similar to the amount frequently seen in the laboratory's method blanks, including the method blank for this batch (0.022 ug/L), so the levels could be due to laboratory contamination. Copper was detected in the tubing blank and carboy (DNQ) but below the levels typically found in stormwater, including levels detected in Event 1. Diethyl phthalate was not detected in the composite bottle but was detected in the tubing blank above the reporting limit and at the higher end of the spectrum of environmental results seen in stormwater analysis. However, the detected amount is well below the limit of 120,000 ug/L in the CTR.

Preseason 2 investigated three possible sources of the diethyl phthalate contamination. Samples of the distilled water used for flushing the lines (from each of the two different styles of plastic 5-gallon carboys, "Arrowhead (handle)" and "Arrowhead (old)"), and ultrapure water left for 24 hours in the 2 liter high density polyethylene container used for flushing the lines ("Rinse 2L (plastic)")were tested by EPA 625. Bis(2-ethylhexyl) phthalate was detected in the Arrowhead (handle) sample above the reporting limit and above the amounts typically seen in stormwater, however almost double the amount seen in this sample was measured in the method blank, so the contamination is likely a laboratory issue. Two contaminants were seen in the Rinse 2L (plastic) sample: diethyl phthalate and di-n-butylphthalate, however both were below the reporting limit and well below the limits in the CTR. To ensure that the risk of contamination is reduced for future events, the Stormwater Monitoring Program purchased fluorinated HDPE 2L containers to replace the 2L HPDE rinse containers previously used by the Program.

Based on these results, the Stormwater Monitoring Program determined that cleaning procedures were adequate and no follow-up was necessary. Furthermore, no environmental samples were qualified by the Stormwater Monitoring Program based on the results of pre-season equipment blank analyses. The cleaning procedures will be reexamined during the preseason tests prior to the 2012/13 monitoring season.

***Table 9-4. Constituents Detected in Equipment Blanks Before Event 1***

| Constituent | Tubing Blank (distilled) Concentration (µg/L) | Carboy Blank Concentration (µg/L) | Reporting Limit (µg/L) | Stormwater Range (when detected) Concentration (µg/L) |
|---|---|---|---|---|
| **Preseason 1** | | | | Event 1 |
| Aluminum | 7.1 | 20 | 5 | 210 – 18,000 |
| Chromium | 0.089* | - | 0.2 | 0.66 – 56 |
| Copper | 0.65 | 0.39* | 0.5 | 1.8 – 120 |
| Iron | 4.2* | 3.1* | 10 | 910 – 30,000 |
| Lead | 0.02* | 0.037* | 0.2 | 0.26 – 34 |
| Mercury | 0.023* | 0.023* | 0.050 | 0.028* - 0.086 |
| Zinc | 1.7* | 2* | 1.1 | 3.5* – 370 |
| Nitrate+Nitrite as N | - | 23* | 100 | 410 – 4,000 |
| Diethyl phthalate | 5.7 | - | 1 | 0.37* -3.1, 6.1** |

| Constituent | Arrowhead (handle) Concentration (µg/L) | Arrowhead (old) Concentration (µg/L) | Rinse 2L (plastic) Concentration (µg/L) | Reporting Limit (µg/L) | Stormwater Range (when detected) Concentration (µg/L) |
|---|---|---|---|---|---|
| **Preseason 2** | | | | | Event 2 |
| Diethyl phthalate | - | - | 0.42* | 1 | 100 – 15,000 |
| Di-n-butylphthalate | - | - | 0.25* | 1 | <0.24 – 0.27*, <2.4 |
| Bis(2-ethylhexyl) phthalate | 6.9 | - | - | 5 | <1.1 – 2.6*, <11 |

* DNQ

** Sample diluted so result is DNQ but reporting limit is higher than undiluted samples

### 9.4.8 Field and Laboratory Duplicates

Duplicate samples – both field duplicates and lab duplicates – are collected in the field using the same techniques as used for all environmental sample collection. For composite samples, a larger volume of water is collected during the monitoring event and then the duplicates are split in the field (when generating a field duplicate) or in the lab (when generating a lab duplicate) while constantly mixing the contents of the composite containers to ensure the production of homogeneous duplicate samples. The Stormwater Monitoring Program does not collect field duplicates for composite samples as samples are not split in the field due to the risk of sample contamination and breakage. In the case of grab samples, two samples are collected side-by-side or in immediate succession into separate sample bottles when collecting an environmental sample and its field duplicate. Depending on the volume of water required to perform a particular analysis, a lab duplicate analysis of a grab sample may require the collection of additional sample, or may be run on a single environmental sample.

Field duplicate grab samples were collected during Event 1 (MO-VEN) and Event 2 (bacteriologicals at MO-MEI, all others at MO-VEN). Laboratory-initiated laboratory duplicate samples were analyzed on non-project samples for Event 1 – 4. Results are shown in Table 9-5 and Table 9-6. Of the 73 laboratory duplicates, only one was outside the DQO so the overall success rate was 98.6%. Of the16 field duplicate samples, only one was outside of the DQO and that was fecal coliform at MO-VEN in Event 1 so the field duplicate success rate was 93.8%.

***Table 9-5. Field Duplicate Success Rates***

| Classification | Constituent | Method | Total Samples | Samples Outside DQO | Success Rate |
|---|---|---|---|---|---|
| **Bacteriological** | Total coliform / *E. coli* | MMO-MUG | 4 | 0 | 100 |
| **Bacteriological** | Fecal coliform | SM 9221 E | 2 | 1 | 50 |
| **Conventional** | Cyanide | EPA 335.4 | 2 | 0 | 100 |
| **Hydrocarbon** | Oil and grease/TPH | EPA 1664A | 4 | 0 | 100 |
| **Organic** | Various | EPA 524.2 | 4 | 0 | 100 |

***Table 9-6. Laboratory Duplicate Success Rates***

| Classification | Constituent | Method | Total Samples | Samples Outside DQO | Success Rate |
|---|---|---|---|---|---|
| **Conventional** | Volatile Suspended Solids | EPA 160.4 | 9 | 0 | 100 |

| | | | | | |
|---|---|---|---|---|---|
| **Conventional** | Turbidity | EPA 180.1 | 9 | 0 | 100 |
| **Conventional** | Alkalinity as CaCO3 | SM 2320 B | 7 | 0 | 100 |
| **Conventional** | Chemical Oxygen Demand | EPA 410.4 | 7 | 0 | 100 |
| **Conventional** | Specific Conductance | SM 2510 B | 8 | 0 | 100 |
| **Conventional** | Total Chlorine Residual | SM 4500-Cl G | 2 | 1 | 50 |
| **Conventional** | Total Dissolved Solids | SM 2540 C | 13 | 0 | 100 |
| **Conventional** | Total Suspended Solids | SM 2540 D | 16 | 0 | 100 |
| **Conventional** | pH | SM 4500-H+ B | 1 | 0 | 100 |
| **Pesticide** | Glyphosate | EPA 547 | 1 | 0 | 100 |

### 9.4.9 Holding Time Exceedances

The large majority of analytical methods used to analyze water quality samples specify a certain time period in which an analysis must be performed in order to ensure confidence in the result provided from the analysis.[10] A holding time can be either the time between sample collection and sample preparation (the preparation holding time limit) or between the sample preparation and sample analysis (the analysis holding time limit). If a particular sample doesn't require any pre-analysis preparation, then the analysis holding time is the time between sample collection and sample analysis.

These elapsed times are compared to holding time values (typically provided in EPA guidance for analytical methods) to determine if a holding time exceedance has occurred. Elapsed times greater than specified holding time limits are considered to exceed the Stormwater Monitoring Program's DQO for this QA/QC sample type. All holding times were met by laboratories during the 2010/11 monitoring season, with the exceptions as shown in Table 9-7.

***Table 9-7. Holding Time Success Rate***

| Classification | Total Samples | Samples Outside DQO | Success Rate |
|---|---|---|---|
| **Anion** | 162 | 0 | 100 |
| **Bacteriological** | 144 | 0 | 100 |
| **Cation** | 130 | 0 | 100 |
| **Conventional** | 729 | 18[a] | 97.5 |
| **Hydrocarbon** | 18 | 0 | 100 |
| **Metal** | 1779 | 0 | 100 |
| **Nutrient** | 438 | 0 | 100 |
| **Organic** | 4945 | 45[b] | 99.1 |
| **PCB** | 378 | 0 | 100 |
| **Pesticide** | 5460 | 0 | 100 |

[10] A sample that remains unanalyzed for too long a period of time sometimes shows analytical results different from those that would have been observed had the sample been analyzed earlier in time. This difference is due to the breakdown, transformation, and/or dissipation of substances in the sample over time.

[a] Total chlorine residual is a Pollutant of Concern for ME-CC due to the contributions of wastewater treatment plants. The method requires that this constituent be analyzed "immediately" and the permit requires that it be sampled as a composite sample, which combined to result in an exceedance of the hold time for each event. The laboratory analyzed a composite sample from each site for pH although it was not requested on the COC. The holding time for pH is 15 minutes so the samples were analyzed outside of this limit.

[b] Two samples were extracted outside of the holding time, affecting 16 constituents. One site was extracted and analyzed within the holding time but required a dilution and re-analysis for 29 constituents which was performed outside of the holding time.

### 9.4.10 Dilutions

Due to the nature of stormwater matrices, some samples required dilutions prior to analysis. Of the 888 samples that were only qualified due to a dilution, 253 were at or above the reporting level and so were not adversely affected by the raised method detection and reporting limits associated with sample dilution. These samples are considered by the Program to have met all DQOs.

### 9.4.11 Other QA/QC Methods and Analyses

A variety of other QA/QC methods are used by the Stormwater Monitoring Program and associated laboratories to determine the quality of the data. These include method blanks, matrix spikes and matrix spike duplicates (MS/MSD), surrogate spikes, and laboratory control samples. For many of these, the relative percent difference between two separate samples is computed to determine whether or not the laboratory has achieved the necessary DQO, as described in Section 9.4.6. Results of QA/QC analyses performed on individual samples can be found in Appendix F and Appendix G in Attachment E.

### 9.4.12 QA/QC Summary

In summary, a total of 11,812 environmental samples were analyzed during the 2011/12 monitoring season. Of these, 10,851 met all DQOs for that particular sample. The Stormwater Monitoring Program's QA/QC evaluation process identified 961 environmental samples in need of qualification, which translates into the Stormwater Monitoring Program achieving a 91.8% success rate in meeting program data quality objectives. No samples were rejected from the dataset. Received

Overall, the three wet-weather and two dry-weather events monitored per site during the 2011/12 monitoring season produced a high quality data set in terms of the low percentage of qualified data, as well as the low reporting levels achieved by the laboratories analyzing the Stormwater Monitoring Program's water quality samples.

## 9.5 WATER QUALITY RESULTS

The NDPES permit requires the Stormwater Monitoring Program to report the results of stormwater monitoring to the Regional Board in two ways. First, within 90 days of a monitoring event, analytical results must be submitted electronically and must highlight elevated constituent levels relative to Basin Plan and CTR acute criteria. The Stormwater Monitoring Program met this requirement for all monitoring events during the 2011/12 season. Second, an Annual Storm Water Report must be submitted by December 15th, and must highlight those same elevated levels relative to applicable water quality objectives. The contents of this report fulfill that requirement.

For the analysis of wet-weather data (Events 1-3), the Basin Plan objectives and the acute, freshwater objectives in the CTR were used. For some constituents, the California Toxics Rule does not contain acute objectives. Previously, and in this monitoring year's 90 day event reports, the Stormwater Monitoring Program used the

California Toxics Rule Human Health (Organisms Only) objectives for these cases because these constituents had no other objectives for comparison. However, since these objectives are based on long-term exposure and stormwater discharges are of short duration, it was decided that comparing short term stormwater discharges to the long-term chronic criteria was not an accurate representation of the risk of stormwater discharges to Human Health. CTR chronic criteria were not used for wet-weather analyses because acute criteria better reflect the short-term storm event exposure experienced by organisms, as compared to the long-term exposure considered by chronic criteria.

For the analysis of dry-weather data (Event 4), the Basin Plan objectives and the most stringent of the CTR chronic freshwater objectives (Criterion Continuous Concentration), CTR Human Health (Organisms Only), or CTR Human Health (Water & Organisms) were used. Previously, if the CTR did not contain chronic freshwater objectives for a constituent, the CTR Human Health (Organisms Only) was used. In evaluating the criteria, the Stormwater Monitoring Program determined that the MUN designation in the Basin Plan indicates that Human Health Criteria should be considered in evaluating dry-weather exceedances due to their potential for long-term exposure.

The rationale and consequences of this year's changes related to the application of CTR numerical objectives to wet- and dry-weather data are discussed in Section 6.2.

For all events, objectives in the CTR for metals were calculated based on the hardness of the water. This analysis used the hardness value measured at a particular site during a particular monitoring event for calculating a certain metals objective, except when the measured hardness was greater than 400 mg/L. The CTR sets a hardness cap of 400 mg/L for calculating the objectives, so any measured hardness value above 400 mg/L was set equal to 400 mg/L for the purposes of the calculation.

This section presents an evaluation of the data with these water quality objectives (WQOs) and serves, together with the entirety of this Annual Report, as the Receiving Water Limitations report required in Section 3a of Part 2 of the Permit.

### 9.5.1 Re-evaluation of application of CTR numeric criteria to receiving waters

In previous years, the CTR Numeric Criteria were applied as described on page 30 of the 2010-2011 Water Quality Monitoring Report (Ventura Countywide Stormwater Quality Management Program Annual Report, Attachment F):

*"For the analysis of wet-weather data …, the Basin Plan objectives and the acute, freshwater objectives in the CTR were used. For some constituents, the California Toxics Rule does not contain acute objectives. In these cases, the California Toxics Rule Human Health (Organisms Only) objectives were used in the wet-weather comparison because these constituents have no other objectives for comparison. These objectives were used even though they are based on long-term risks to human health that cannot be directly correlated to stormwater discharges. CTR chronic criteria were not used for wet-weather analyses because acute criteria better reflect the short-term storm event exposure experienced by organisms, as compared to the long-term exposure considered by chronic criteria.*

*For the analysis of dry-weather data …, the Basin Plan objectives and the chronic, freshwater objectives in the CTR were used. For some constituents, the CTR does not contain chronic objectives. In these cases, the CTR Human Health (Organisms Only) objectives were used in the dry-weather comparisons because these constituents have no other objectives for comparison."*

However, application of the CTR criteria as detailed above, resulted in inconsistent application of acute and chronic criteria, and inconsistent protection of beneficial uses. For instance, during wet weather the Criterion

Maximum Concentration (CMC) of 1.1 µg/l is applied for 4,4'-DDT, while the Human Health criterion of 0.00059 µg/l is applied for 4,4'-DDE, because a CMC is not listed for the latter. In addition, the selection of the CTR Human Health (Organisms Only) criterion appears inappropriate given that the Ventura County mass emission stations have MUN designated beneficial uses. Therefore, the CTR Human Health (Water + Organisms) criteria are more appropriate.

The new approach to identify water quality exceedances continues to compare the EMC (which for this purpose is the concentration measured in the composite or grab sample collected during the event, as applicable) to water quality standards and can be summarized as follows:

1) Wet weather: CTR CMC and Basin Plan criteria apply. The most stringent criterion is used for each constituent in order to identify water quality exceedances. If CMC criteria are not available, no other CTR criteria are substituted.

2) Dry weather: all CTR and Basin Plan criteria apply. The most stringent criterion is used for each constituent in order to identify water quality exceedances.

This approach constitutes an improvement over the approach used prior to this year, because:

- Numerical criteria are now consistently applied for all constituents.

- Chronic criteria are not applicable to short-lived storm events. CTR Criterion Continuous Concentrations (CCCs) and Human Health criteria are expressed as 4-day maxima and 30-day averages, and therefore their application to storm events of less than 24 hours is questionable.

- Based on a poll among the Southern California Stormwater Monitoring Coalition (SMC) members, the new approach is in line with the approach taken by most other stormwater agencies in southern California.

Historical data between 2007 and 2012 were analyzed to determine the potential practical impact of the new approach in identifying water quality exceedances at mass emission stations, compared to how exceedances have been reported in the past. In summary, the new approach led to:

- Elimination of wet weather exceedances for total mercury, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, chrysene, 4,4'-DDD and 4,4'-DDE, since CTR human health criteria no longer apply and no other numerical criteria are available.

- Elimination of wet weather exceedances for benzo(a)pyrene due to increase of numerical criterion from 0.049 µg/l (CTR human health, organisms only) to 0.2 µg/l (Basin Plan MCL).

- Increase in dry weather exceedances for bis(2-ethylhexyl)phthalate due to decrease of numerical criterion from 4 µg/l (Basin Plan) to 1.8 µg/l (CTR human health, water + organisms).

- Increase in dry weather exceedances for chrysene and benzo(b)fluoranthene due to decrease of numerical criteria from 0.049 µg/l (CTR human health, organisms only) to 0.0044 µg/l (CTR human health (water + organisms).

The above analysis retrospectively identified the constituents that were affected by our new approach to determining water quality exceedances. It is reasonable to assume that the implications for the future will be similar. However, this has changed numerical criteria for many other constituents as well, but there were no practical implications for the number of exceedances seen in the 2007 – 2012 data.

### 9.5.2 Water Quality Objective Exceedances and Elevated Levels

Table 9-8 presents water quality objective exceedances at Mass Emission stations based on an analysis of the 2011/12 wet-season stormwater monitoring data. Constituents that were found at elevated levels[11] at sites upstream (i.e., related Major Outfall stations) are shown in bold and highlighted (see Section 9.5.7 through Section 9.5.9 for a discussion of the relationship between the Mass Emission and Major Outfall stations). Table 9-9 presents the elevated levels of constituents at Major Outfall stations based on an analysis of the 2011/12 wet-season stormwater monitoring data. Constituents that exceeded the water quality objective at sites downstream (i.e., related Mass Emission stations) are shown in bold and highlighted (again, see Section 9.5.7 through Section 9.5.9 for a discussion of the relationship between the Mass Emission and Major Outfall stations).

### 9.5.3 Ventura River Mass Emission Station (ME-VR2) Water Quality Objective Exceedances and Elevated Levels Corrections

The Ventura River Mass Emission station (ME-VR2) was installed during the 2004/05 monitoring year when the original station, ME-VR was decommissioned due to safety concerns as a result of landslide activity. The station was moved approximately one mile downstream to a safe location, while still representative of the runoff of the Ventura River watershed. The new location for the station put it into a different reach of the river according to the Basin Plan (between the confluence with Weldon Canyon and Main Street rather than between Casitas Vista Road and the confluence with Weldon Canyon), with higher limits for total dissolved solids (TDS), sulfate, chloride, boron, and nitrogen. Of these constituents, TDS, chloride, and nitrogen are monitored as part of the NPDES permit by the Stormwater Monitoring Program. The limits in the Program's database were not updated for the new location until the 2011 annual report, and they are now correct for the current location. These changes and revised exceedances were explained in the 2011 annual report.

### 9.5.4 Salinity Results Correction for Units

While salinity is not a constituent that is required by the permit, it is measured in the field by field crews and has been reported since Event 1 in the 2009/10 monitoring year. The YSI 85 field meter provides the salinity results in units of ppt but the database stores the data in mg/L, the equivalent of ppm (parts per million). The abbreviation ppt was incorrectly translated as parts per trillion instead of parts per thousand. The error was noticed in December 2012 and all data has been updated. Event data submitted in the 2009/10, 2010/11, and 2011/12 monitoring years and the 2009/10 and 2010/11 Annual reports contained the incorrectly translated values. The salinity data in the database and the 2011/12 Annual Report now contain the correct values. This correction does not affect past results reported for the Permit required constituents traditionally categorized as salts: boron, chloride, sulfate, and total dissolved solids.

### 9.5.5 Urban Runoff Impacts on Receiving Waters

Pursuant to Part 2 of the Permit, the Permittees are required to determine whether discharges from their municipal separate storm sewer systems are causing or contributing to a violation of water quality standards (WQS). Additionally, Permittees are responsible for preventing discharges from the MS4 of stormwater or non-

[11] "Elevated levels" is used to describe those concentrations that are above a particular water quality standard. These amounts are not referred to as "exceedances," as has been done for the Mass Emission stations, since, technically, those standards are only applicable to receiving waters, not to the outfalls that were monitored.

stormwater from causing or contributing to a condition of nuisance. Specifically, the Order contains following Receiving Water Limitations Language:

1. Discharges from the MS4 that cause or contribute to a violation of water quality standards are prohibited.

2. Discharges from the MS4 of stormwater, or non-stormwater, for which a Permittee is responsible, shall not cause or contribute to a condition of nuisance.

Compliance with the above Receiving Water Limitations is achieved by the Permittees through implementation of control measures and other actions to reduce pollutants in stormwater and non-stormwater discharges in accordance with the requirements of the Permit. The following section presents a discussion of WQS exceedances that occurred during the three wet-weather and one dry-weather monitoring events during the 2011/12 monitoring year.

### 9.5.6 "Cause or Contribute" Evaluation Methodology

The evaluation used to determine if a pollutant is persistently causing or contributing to the exceedance of a WQS in receiving waters consists of three steps:

1. The water quality data collected at a mass emission site in the same watershed is used as the receiving water to compare to relevant WQS contained in the CTR and Basin Plan (Section 9.5.1).

2. When a receiving water concentration exceeded a WQS for a particular constituent, the urban runoff concentration of said constituent measured at a Major Outfall in that watershed was compared to the WQS. If an elevated level relative to the associated WQS for said constituent was observed in both urban runoff and the receiving water, then the WQS exceedance in the receiving water was determined "likely caused or contributed to by urban runoff." However, this comparison does not consider the frequency or persistence of WQS exceedances for a given constituent.

3. The persistence of a WQS exceedance was determined by evaluating the number of times (frequency) that a constituent was observed at an elevated level in urban runoff and in excess of the WQS for the receiving water for a particular type of monitoring event (wet or dry) over the course of the monitoring season. If two or more elevated levels in urban runoff and WQS exceedances in the receiving water were observed for a particular constituent over the course of the monitoring season, then the WQS exceedances of said constituent were determined to be persistent. Ideally, an assessment of persistency would be based on a larger data set (e.g., 10 events or more) and an assumed percentage of exceedances (e.g., 50%), but given the need for an annual assessment two or more exceedances from the existing, limited data set were used as the criterion to determine persistence.

***Table 9-8. Water Quality Objective Exceedances at Mass Emission Stations***

| Site | 2011/12-1 (Wet) | | 2011/12-2 (Wet) | | 2011/12-3 (Wet) | | 2011/12-4 (Dry) | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Constituent** | **Value** | **Constituent** | **Value** | **Constituent** | **Value** | **Constituent** | **Value** | **Applicable Standard** |
| ME-CC | | | | | | | **Chloride** | **190** | 150 mg/L (Basin Plan) |
| | ***E. Coli*** | **2063** | ***E. Coli*** | **4352** | | | | | 235 MPN/100 mL (Basin Plan) |
| | **Fecal Coliform** | **9000** | **Fecal Coliform** | **5000** | | | | | 400 MPN/100 mL (Basin Plan) |
| | **Aluminum** | **7900** | **Aluminum** | **9000** | **Aluminum** | **13000** | | | 1,000 µg/L (Basin Plan) |
| ME-SCR | ***E. Coli*** | **2014** | | | ***E. Coli*** | **292** | | | 235 MPN/100 mL (Basin Plan) |
| | **Fecal Coliform** | **2400** | | | | | | | 400 MPN/100 mL (Basin Plan) |
| | **Aluminum** | **10000** | **Aluminum** | **5500** | **Aluminum** | **75000** | | | 1,000 µg/L (Basin Plan) |
| | | | | | Barium | 1100 | | | 1,000 µg/L (Basin Plan) |
| | | | | | Cadmium | 9.9 | | | 5 µg/L (Basin Plan) |
| | | | | | Chromium | 160 | | | 50 µg/L (Basin Plan) |
| | | | | | Nickel | 290 | | | 100 µg/L (Basin Plan) |
| ME-VR2 | | | DO | 4.95 | | | | | 5 mg/L (Basin Plan) |
| | ***E. Coli*** | **2755** | | | ***E. Coli*** | **5475** | | | 235 MPN/100 mL (Basin Plan) |
| | **Fecal Coliform** | **2400** | **Fecal Coliform** | **500** | **Fecal Coliform** | **5000** | | | 400 MPN/100 mL (Basin Plan) |
| Note: All metals are total unless otherwise stated | | | | | | | | | |
| **Highlighted: Elevated level of same constituent in one or more related major outfalls** | | | | | | | | | |

***Table 9-9. Elevated Levels at Major Outfall Stations***

| Site | 2011/12-1 (Wet) | | 2011/12-2 (Wet) | | 2011/12-3 (Wet) | | 2011/12-4 (Dry) | | Standard for Comparison |
|---|---|---|---|---|---|---|---|---|---|
| | **Constituent** | **Value** | **Constituent** | **Value** | **Constituent** | **Value** | **Constituent** | **Value** | |
| MO-CAM | | | | | | | pH | 9.85 | 8.5 pH units (Basin Plan) |
| | ***E. Coli*** | **24192** | ***E. Coli*** | **12997** | *E. Coli* | 64880 | | | 235 MPN/100 mL (Basin Plan) |
| | **Fecal Coliform** | **24000** | **Fecal Coliform** | **16000** | Fecal Coliform | 90000 | | | 400 MPN/100 mL (Basin Plan) |
| | **Aluminum** | **3400** | | | **Aluminum** | **1200** | | | 1,000 µg/L (Basin Plan) |
| | Copper, dissolved | 8.8 | Copper, dissolved | 8.5 | Copper, dissolved | 6.2 | | | 7.26 µg/L, 4.05 µg/L, 4.73 µg/L, 26.77 µg/L (CTR)* |
| MO-FIL | | | | | | | Chloride | 110 | 80 mg/L (Basin Plan) |
| | | | | | DO | 4.5 | DO | | 5 mg/L (Basin Plan) |
| | ***E. Coli*** | **4611** | | | ***E. Coli*** | **2755** | *E. Coli* | 529 | 235 MPN/100 mL (Basin Plan) |
| | **Fecal Coliform** | **17000** | | | Fecal Coliform | 5000 | Fecal Coliform | 500 | 400 MPN/100 mL (Basin Plan) |
| MO-HUE | | | DO | 4.47 | DO | 4.86 | | | 5 mg/L (Basin Plan) |
| | *E. Coli* | 12033 | *E. Coli* | 5172 | *E. Coli* | 8664 | *E. Coli* | 1071 | 235 MPN/100 mL (Basin Plan) |
| | Fecal Coliform | 5200 | Fecal Coliform | 9000 | Fecal Coliform | 16000 | Fecal Coliform | 3000 | 400 MPN/100 mL (Basin Plan) |
| | | | | | Benzo(a)pyrene | 0.23 | | | 0.2 µg/L (Basin Plan) |
| MO-MEI | | | | | | | Chloride | 180 | 60 mg/L (Basin Plan) |
| | | | | | | | pH | 9.86 | 8.5 pH units (Basin Plan) |
| | | | | | | | Total Dissolved Solids | 820 | 800 mg/L (Basin Plan) |
| | ***E. Coli*** | **198630** | *E. Coli* | 72700 | ***E. Coli*** | **18500** | *E. Coli* | 1669 | 235 MPN/100 mL (Basin Plan) |
| | **Fecal Coliform** | **500000** | **Fecal Coliform** | **90000** | **Fecal Coliform** | **50000** | Fecal Coliform | 1400 | 400 MPN/100 mL (Basin Plan) |
| | Aluminum | 3600 | Aluminum | 2700 | Aluminum | 3800 | | | 1,000 µg/L (Basin Plan) |
| | | | Copper, dissolved | 12 | | | | | 10.76 µg/L (CTR) |
| MO-MPK | ***E. Coli*** | **155310** | ***E. Coli*** | 23820 | *E. Coli* | 98040 | | Dry | 235 MPN/100 mL (Basin Plan) |
| | **Fecal Coliform** | **900000** | **Fecal Coliform** | 50000 | Fecal Coliform | 90000 | | Dry | 400 MPN/100 mL (Basin Plan) |
| | **Aluminum** | **11000** | **Aluminum** | 2300 | **Aluminum** | **4800** | | Dry | 1,000 µg/L (Basin Plan) |
| | | | Copper, dissolved | 17 | | | | Dry | 9.99 µg/L (CTR) |
| | Pentachlorophenol | 1.2 | | | | | | Dry | 1 µg/L (Basin Plan) |

| Site | 2011/12-1 (Wet) | | 2011/12-2 (Wet) | | 2011/12-3 (Wet) | | 2011/12-4 (Dry) | | Standard for Comparison |
|---|---|---|---|---|---|---|---|---|---|
| | **Constituent** | **Value** | **Constituent** | **Value** | **Constituent** | **Value** | **Constituent** | **Value** | |
| MO-OJA | | | Chloride | 74 | | | Chloride | 180 | 60 mg/L (Basin Plan) |
| | | | | | | | Total Dissolved Solids | 940 | 800 mg/L (Basin Plan) |
| | ***E. Coli*** | **14136** | *E. Coli* | 17329 | ***E. Coli*** | **24192** | *E. Coli* | 43520 | 235 MPN/100 mL (Basin Plan) |
| | **Fecal Coliform** | **160000** | **Fecal Coliform** | **24000** | **Fecal Coliform** | **30000** | Fecal Coliform | 30000 | 400 MPN/100 mL (Basin Plan) |
| | Aluminum | 2400 | Aluminum | 1600 | Aluminum | 1500 | | | 1,000 µg/L (Basin Plan) |
| MO-OXN | | | | | | | pH | 8.87 | 8.5 pH units (Basin Plan) |
| | ***E. Coli*** | **19863** | *E. Coli* | 3448 | ***E. Coli*** | **860** | | | 235 MPN/100 mL (Basin Plan) |
| | **Fecal Coliform** | **22000** | Fecal Coliform | 1700 | Fecal Coliform | 3000 | | | 400 MPN/100 mL (Basin Plan) |
| | **Aluminum** | **2600** | | | **Aluminum** | **1900** | | | 1,000 µg/L (Basin Plan) |
| | Copper, dissolved | 16 | Copper, dissolved | 13 | Copper, dissolved | 13 | | | 9.35 µg/L , 6.07 µg/L , 8.05 µg/L (CTR) |
| MO-SIM | | | | | | | **Chloride** | **180** | 150 mg/L (Basin Plan) |
| | DO | 4.93 | | | | | | | 5 mg/L (Basin Plan) |
| | | | | | | | Total Dissolved Solids | 1500 | 850 mg/L (Basin Plan) |
| | ***E. Coli*** | **9804** | ***E. Coli*** | **24192** | *E. Coli* | 24192 | *E. Coli* | 1664 | 235 MPN/100 mL (Basin Plan) |
| | **Fecal Coliform** | **50000** | **Fecal Coliform** | **60000** | Fecal Coliform | 50000 | Fecal Coliform | 3000 | 400 MPN/100 mL (Basin Plan) |
| | **Aluminum** | **3700** | | | **Aluminum** | **1200** | | | 1,000 µg/L (Basin Plan) |
| MO-SPA | ***E. Coli*** | **20460** | *E. Coli* | 959 | ***E. Coli*** | **4106** | | Dry | 235 MPN/100 mL (Basin Plan) |
| | **Fecal Coliform** | **50000** | Fecal Coliform | 1600 | Fecal Coliform | 9000 | | Dry | 400 MPN/100 mL (Basin Plan) |
| | **Aluminum** | **3700** | **Aluminum** | **2100** | **Aluminum** | **2000** | | Dry | 1,000 µg/L (Basin Plan) |
| | Copper, dissolved | 18 | Copper, dissolved | 18 | Copper, dissolved | 13 | | Dry | 11.53 µg/L, 10.12 µg/L, 8.95 µg/L (CTR) |
| | | | Bis(2-ethylhexyl)phthalate | 5.4 | | | | Dry | 4 µg/L (Basin Plan) |

| Site | 2011/12-1 (Wet) | | 2011/12-2 (Wet) | | 2011/12-3 (Wet) | | 2011/12-4 (Dry) | | Standard for Comparison |
|---|---|---|---|---|---|---|---|---|---|
| | **Constituent** | **Value** | **Constituent** | **Value** | **Constituent** | **Value** | **Constituent** | **Value** | |
| MO-THO | | | | | | | **Chloride** | **250** | 150 mg/L (Basin Plan) |
| | | | | | | | Total Dissolved Solids | 910 | 850 mg/L (Basin Plan) |
| | ***E. Coli*** | **1793** | ***E. Coli*** | **14136** | *E. Coli* | 11199 | *E. Coli* | 2481 | 235 MPN/100 mL (Basin Plan) |
| | **Fecal Coliform** | **16000** | **Fecal Coliform** | **16000** | Fecal Coliform | 9000 | Fecal Coliform | 2400 | 400 MPN/100 mL (Basin Plan) |
| | **Aluminum** | **18000** | **Aluminum** | **1900** | **Aluminum** | **4100** | | | 1,000 µg/L (Basin Plan) |
| | Chromium,, total | 56 | | | | | | | 50 µg/L (Basin Plan) |
| MO-VEN | | | | | | | pH | 8.69 | 8.5 pH units (Basin Plan) |
| | ***E. Coli*** | **24192** | *E. Coli* | 17329 | ***E. Coli*** | **4352** | | | 235 MPN/100 mL (Basin Plan) |
| | **Fecal Coliform** | **2400** | Fecal Coliform | 16000 | Fecal Coliform | 14000 | | | 400 MPN/100 mL (Basin Plan) |
| | **Aluminum** | **3900** | **Aluminum** | **1300** | **Aluminum** | **2300** | | | 1,000 µg/L (Basin Plan) |
| | | | Copper, dissolved | 11 | | | Copper, dissolved | 79 | 7.26 µg/L, 29.29 µg/L, 29.29 µg/L (CTR) |

Note: All metals are total unless otherwise stated

* CTR objectives for dissolved metals are based on hardness and are, therefore, different for each storm

**Highlighted: Exceedance of same constituent in related receiving water (mass emission)**

### 9.5.7 Ventura River Watershed Receiving Water Limit Evaluation

Urban stormwater runoff and urban non-stormwater flows were evaluated at two Major Outfall locations in the Ventura River Watershed during the 2011/12 season: Meiners Oaks-1 (MO-MEI) and Ojai-1 (MO-OJA). Both of these Major Outfalls are located upstream of the ME-VR2 Mass Emission station (see Figure 9.1), and therefore water quality data collected at ME-VR2 were used to represent receiving water quality in the "cause or contribute" evaluation conducted for both Major Outfalls. Table 9-10 and Table 9-11 show the constituents that exceeded WQS in the downstream receiving water and compares them to the levels measured at the Major Outfalls, MO-MEI and MO-OJA, respectively. Receiving water exceedances with corresponding WQS Major Outfall here the urban runoff from both the Major Outfalls were also outside of the WQS are in bold. Receiving water exceedances where the urban runoff from the applicable Major Outfalls was outside of WQS are shown in bold.

***Table 9-10: Comparison of MO-MEI and ME-VR2 Relative to Water Quality Standards***

| Constituent (Unit) | Meiners Oaks-1 Major Outfall (MO-MEI) | Receiving Water (ME-VR2) | Water Quality Standard (Basin Plan or CTR) | |
|---|---|---|---|---|
| **2011/12-1 (Wet) – Oct. 5, 2011** | | | | |
| E. coli (MPN/100 mL) | **198,630** | **2,755** | 235 | BP |
| Fecal Coliform (MPN/100 mL) | **500,000** | **2,400** | 400 | BP |
| **2011/12-2 (Wet) – Jan 21, 2012** | | | | |
| Dissolved Oxygen (mg/L) | 9.77 | 4.95 | 5 | BP |
| Fecal Coliform (MPN/100 mL) | **90,000** | **500** | 400 | BP |
| **2011/12-3 (Wet) – Mar 17, 2012** | | | | |
| E. coli (MPN/100 mL) | **18,500** | **5,475** | 235 | BP |
| Fecal Coliform (MPN/100 mL) | **50,000** | **5,000** | 400 | BP |

***Table 9-11: Comparison of MO-OJA and ME-VR2 Relative to Water Quality Standards***

| Constituent (Unit) | Ojai-1 Major Outfall (MO-OJA) | Receiving Water (ME-VR2) | Water Quality Standard (Basin Plan or CTR) | |
|---|---|---|---|---|
| **2011/12-1 (Wet) – Oct. 5, 2011** | | | | |
| E. coli (MPN/100 mL) | **14,136** | **2,755** | 235 | BP |
| Fecal Coliform (MPN/100 mL) | **160,000** | **2,400** | 400 | BP |
| **2011/12-2 (Wet) – Jan 21, 2012** | | | | |
| Dissolved Oxygen (mg/L) | 10.19 | 4.95 | 5 | BP |
| Fecal Coliform (MPN/100 mL) | **24,000** | **500** | 400 | BP |
| **2011/12-3 (Wet) – Mar 17, 2012** | | | | |
| E. coli (MPN/100 mL) | **24,192** | **5,475** | 235 | BP |
| Fecal Coliform (MPN/100 mL) | **30,000** | **5,000** | 400 | BP |

### 9.5.8 Santa Clara River Watershed Receiving Water Limit Evaluation

Urban stormwater runoff and urban non-stormwater flows were evaluated at four Major Outfalls in the Santa Clara River Watershed during the 2011/12 season: Fillmore-1 (MO-FIL), Santa Paula-1 (MO-SPA), Oxnard-1 (MO-OXN), and Ventura-1 (MO-VEN). Two of these stations, MO-FIL and MO-SPA, are located upstream of the ME-SCR Mass Emission station (see Figure 9.1), and therefore water quality data collected at ME-SCR were used to represent receiving water quality in the "cause or contribute" evaluation conducted for both Major Outfalls. The other two stations, MO-OXN and MO-VEN, are located downstream of the ME-SCR Mass Emission station (see Figure 9.1). Because the ME-SCR station is located upstream of MO-OXN and MO-VEN, an assumption was required so that water quality data collected at ME-SCR could be considered to adequately represent Santa Clara River water quality downstream of the confluence of both MO-OXN and MO-VEN with the river. For comparison purposes it was assumed that pollutant concentrations in the Santa Clara River downstream of ME-SCR remain the same as those measured at ME-SCR to a hypothetical compliance point below the confluence of MO-OXN and MO-VEN and the Santa Clara River. With this assumption in effect, water quality data collected at ME-SCR were used to represent receiving water quality in the "cause or contribute" evaluation conducted for the MO-OXN and MO-VEN stations. Constituents exceeding WQS at the receiving water were compared to the urban runoff levels at the MO-FIL, MO-SPA, MO-OXN, and MO-VEN stations and are shown in Table 9-12 through Table 9-15 below. Receiving water exceedances where the urban runoff from the applicable Major Outfalls was outside of WQS are shown in bold.

***Table 9-12: Comparison of MO-FIL and ME-SCR Relative to Water Quality Standards***

| Constituent (Unit) | Fillmore-1 Major Outfall (MO-FIL) | Receiving Water (ME-SCR) | Water Quality Standard (Basin Plan or CTR) | |
|---|---|---|---|---|
| **2011/12-1 (Wet) – Oct. 5, 2011** | | | | |
| E. coli (MPN/100 mL) | **4,611** | **2,014** | 235 | BP |
| Fecal Coliform (MPN/100 mL) | **17,000** | **2,400** | 400 | BP |
| Aluminum, Total (µg/L) | **620** | **10,000** | 1,000 | BP |
| **2011/12-2 (Wet) – Jan. 21, 2012** | | | | |
| Aluminum, Total (µg/L) | **650** | **5,500** | 1,000 | BP |
| **2011/12-3 (Wet) – Mar. 17, 2012** | | | | |
| E. coli (MPN/100 mL) | **2,755** | **292** | 235 | BP |
| Aluminum, Total (µg/L) | **590** | **75,000** | 1,000 | BP |
| Barium, Total (µg/L) | NS | 1,100 | 1,000 | BP |
| Cadmium, Total (µg/L) | 0.4 | 9.9 | 5 | BP |
| Chromium, Total (µg/L) | 2.7 | 160 | 50 | BP |
| Nickel, Total (µg/L) | 3.6 | 290 | 100 | BP |

***Table 9-13: Comparison of MO-SPA and ME-SCR Relative to Water Quality Standards***

| Constituent (Unit) | Santa Paula-1 Major Outfall (MO-SPA) | Downstream Receiving Water (ME-SCR) | Water Quality Standard (Basin Plan or CTR) | |
|---|---|---|---|---|
| **2011/12-1 (Wet) – Oct. 5, 2011** | | | | |
| E. coli (MPN/100 mL) | **20,460** | **2,014** | 235 | BP |
| Fecal Coliform (MPN/100 mL) | **50,000** | **2,400** | 400 | BP |
| Aluminum, Total (µg/L) | **3,700** | **10,000** | 1,000 | BP |
| **2011/12-2 (Wet) – Jan. 21, 2012** | | | | |
| Aluminum, Total (µg/L) | **2,100** | **5,500** | 1,000 | BP |
| **2011/12-3 (Wet) – Mar. 17, 2012** | | | | |
| E. coli (MPN/100 mL) | **4,106** | **292** | 235 | BP |
| Aluminum, Total (µg/L) | **2,000** | **75,000** | 1,000 | BP |
| Barium, Total (µg/L) | NS | 1,100 | 1,000 | BP |
| Cadmium, Total (µg/L) | 0.52 | 9.9 | 5 | BP |
| Chromium, Total (µg/L) | 5 | 160 | 50 | BP |
| Nickel, Total (µg/L) | 8 | 290 | 100 | BP |

***Table 9-14: Comparison of MO-OXN and ME-SCR Relative to Water Quality Standards***

| Constituent (Unit) | Receiving Water (ME-SCR)[a] | Oxnard-1 Major Outfall (MO-OXN) | Water Quality Standard (Basin Plan or CTR) | |
|---|---|---|---|---|
| **2011/12-1 (Wet) – Oct. 5, 2011** | | | | |
| E. coli (MPN/100 mL) | **2,014** | **19,863** | 235 | BP |
| Fecal Coliform (MPN/100 mL) | **2,400** | **22,000** | 400 | BP |
| Aluminum, Total (µg/L) | **10,000** | **2,600** | 1,000 | BP |
| **2011/12-2 (Wet) – Jan. 21, 2012** | | | | |
| Aluminum, Total (µg/L) | **5,500** | **970** | 1,000 | BP |
| **2011/12-3 (Wet) – Mar. 17, 2012** | | | | |
| E. coli (MPN/100 mL) | **292** | **860** | 235 | BP |
| Aluminum, Total (µg/L) | **75,000** | **1,900** | 1,000 | BP |
| Barium, Total (µg/L) | 1,100 | NS | 1,000 | BP |
| Cadmium, Total (µg/L) | 9.9 | 0.44 | 5 | BP |
| Chromium, Total (µg/L) | 160 | 5.8 | 50 | BP |
| Nickel, Total (µg/L) | 290 | 8.6 | 100 | BP |

[a] Water quality monitoring data collected at ME-SCR were used in the receiving water "cause or contribute" evaluation as downstream surrogate data to represent the water quality in the Santa Clara River at a compliance point below the confluence of MO-OXN and the Santa Clara River.

[b] Site-specific Basin Plan objective for reach of Santa Clara River where ME-SCR is located.

[c] Recommended objective (MUN drinking water objective, USEPA secondary MCL) for sites without a site-specific Basin Plan objective.

***Table 9-15: Comparison of MO-VEN and ME-SCR Relative to Water Quality Standards***

| Constituent (Unit) | Receiving Water (ME-SCR)[a] | Ventura-1 Major Outfall (MO-VEN) | Water Quality Standard (Basin Plan or CTR) | |
|---|---|---|---|---|
| **2011/12-1 (Wet) – Oct. 5, 2011** | | | | |
| E. coli (MPN/100 mL) | **2,014** | **24,192** | 235 | BP |
| Fecal Coliform (MPN/100 mL) | **2,400** | **2,400** | 400 | BP |
| Aluminum, Total (µg/L) | **10,000** | **3,900** | 1,000 | BP |
| **2011/12-2 (Wet) – Jan. 21, 2012** | | | | |
| Aluminum, Total (µg/L) | **5,500** | **1,300** | 1,000 | BP |
| **2011/12-3 (Wet) – Mar. 17, 2012** | | | | |
| E. coli (MPN/100 mL) | **292** | **4,352** | 235 | BP |
| Aluminum, Total (µg/L) | **75,000** | **2,300** | 1,000 | BP |
| Barium, Total (µg/L) | 1,100 | NS | 1,000 | BP |
| Cadmium, Total (µg/L) | 9.9 | 0.39 | 5 | BP |
| Chromium, Total (µg/L) | 160 | 5.7 | 50 | BP |
| Nickel, Total (µg/L) | 290 | 9.1 | 100 | BP |

[a] Water quality monitoring data collected at ME-SCR were used in the receiving water "cause or contribute" evaluation as downstream surrogate data to represent the water quality in the Santa Clara River at a compliance point below the confluence of MO-VEN and the Santa Clara River.

### 9.5.9 Calleguas Creek Watershed Receiving Water Limit Evaluation

Urban stormwater runoff and urban non-stormwater flows were evaluated at four Major Outfalls in the Calleguas Creek Watershed during the 2011/12 season: Camarillo-1 (MO-CAM), Moorpark-1 (MO-MPK), Simi Valley-1 (MO-SIM), and Thousand Oaks-1 (MO-THO). Three of these Major Outfalls (MO-MPK, MO-SIM, and MO-THO) are located upstream of the ME-CC Mass Emission station (see Figure 9.1), and therefore water quality data collected at ME-CC were used to represent receiving water quality in the "cause or contribute" evaluation conducted for these Major Outfalls. As stated earlier, MO-CAM is located in a different subwatershed than the closest receiving water location, the ME-CC station, monitored by the Program (see Figure 9.1). MO-CAM is tributary to Revolon Slough, which is tributary to Calleguas Creek several miles downstream of ME-CC. Similar to the ME-SCR station in the Santa Clara River watershed, an assumption was made so that water quality data collected at ME-CC could be considered to adequately represent Calleguas Creek water quality downstream of the confluence of Revolon Slough and the creek. It was assumed that pollutant concentrations in Calleguas Creek downstream of ME-CC remain the same as those measured at ME-CC to a hypothetical compliance point below the confluence of Revolon Slough and Calleguas Creek. With this assumption in effect, water quality data collected at ME-CC were used to represent receiving water quality in the "cause or contribute" evaluation conducted for the MO-CAM Major Outfall. Constituents exceeding WQS at the receiving water were compared to the urban runoff levels at the MO-MPK, MO-SIM, MO-THO, and MO-CAM stations and are shown in

Table 9-16,

Table 9-17, Table 9-18, and Table 9-19 below. Receiving water exceedances where the urban runoff from the applicable Major Outfalls was outside of WQS are shown in bold.

***Table 9-16: Comparison of MO-MPK and ME-CC Relative to Water Quality Standards***

| Constituent (Unit) | Moorpark-1 Major Outfall (MO-MPK) | Receiving Water (ME-CC) | Water Quality Standard (Basin Plan or CTR) | |
|---|---|---|---|---|
| **2011/12-1 (Wet) – Oct. 5, 2011** | | | | |
| E. coli (MPN/100 mL) | **155,310** | **2,063** | 235 | BP |
| Fecal Coliform (MPN/100 mL) | **900,000** | **9,000** | 400 | BP |
| Aluminum, Total (µg/L) | **11,000** | **7,900** | 1,000 | BP |
| **2011/12-2 (Wet) – Jan. 21, 2012** | | | | |
| E. coli (MPN/100 mL) | **23,820** | **4,352** | 235 | BP |
| Fecal Coliform (MPN/100 mL) | **50,000** | **5,000** | 400 | BP |
| Aluminum, Total (µg/L) | **2,300** | **9,000** | 1,000 | BP |
| **2011/12-3 (Wet) – Mar. 17, 2012** | | | | |
| Aluminum, Total (µg/L) | **4,800** | **13,000** | 1,000 | BP |
| **2011/12-4 (Dry) – Apr. 24, 2012** | | | | |
| Chloride (mg/L) | DRY | 190 | 150 | BP |

***Table 9-17: Comparison of MO-SIM and ME-CC Relative to Water Quality Standards***

| Constituent (Unit) | Simi Valley-1 Major Outfall (MO-SIM) | Receiving Water (ME-CC) | Water Quality Standard (Basin Plan or CTR) | |
|---|---|---|---|---|
| **2011/12-1 (Wet) – Oct. 5, 2011** | | | | |
| E. coli (MPN/100 mL) | **9,804** | **2,063** | 235 | BP |
| Fecal Coliform (MPN/100 mL) | **50,000** | **9,000** | 400 | BP |
| Aluminum, Total (µg/L) | **3,700** | **7,900** | 1,000 | BP |
| **2011/12-2 (Wet) – Jan. 21, 2012** | | | | |
| E. coli (MPN/100 mL) | **24,192** | **4,352** | 235 | BP |
| Fecal Coliform (MPN/100 mL) | **60,000** | **5,000** | 400 | BP |
| Aluminum, Total (µg/L) | **970** | **9,000** | 1,000 | BP |
| **2011/12-3 (Wet) – Mar. 17, 2012** | | | | |
| Aluminum, Total (µg/L) | **1,200** | **13,000** | 1,000 | BP |
| **2011/12-4 (Dry) – Apr. 24, 2012** | | | | |
| Chloride (mg/L) | **180** | **190** | 150 | BP |

***Table 9-18: Comparison of MO-THO and ME-CC Relative to Water Quality Standards***

| Constituent (Unit) | Thousand Oaks-1 Major Outfall (MO-THO) | Receiving Water (ME-CC) | Water Quality Standard (Basin Plan or CTR) | |
|---|---|---|---|---|
| **2011/12-1 (Wet) – Oct. 5, 2011** | | | | |
| E. coli (MPN/100 mL) | **1,793** | **2,063** | 235 | BP |
| Fecal Coliform (MPN/100 mL) | **16,000** | **9,000** | 400 | BP |
| Aluminum, Total (µg/L) | **18,000** | **7,900** | 1,000 | BP |
| **2011/12-2 (Wet) – Jan. 21, 2012** | | | | |
| E. coli (MPN/100 mL) | **14,136** | **4,352** | 235 | BP |
| Fecal Coliform (MPN/100 mL) | **16,000** | **5,000** | 400 | BP |
| Aluminum, Total (µg/L) | **1,900** | **9,000** | 1,000 | BP |
| **2011/12-3 (Wet) – Mar. 17, 2012** | | | | |
| Aluminum, Total (µg/L) | **4,100** | **13,000** | 1,000 | BP |
| **2011/12-4 (Dry) – Apr. 24, 2012** | | | | |
| Chloride (mg/L) | **250** | **190** | 150 | BP |

***Table 9-19: Comparison of MO-CAM and ME-CC Relative to Water Quality Standards***

| Constituent (Unit) | Receiving Water (ME-CC)[a] | Camarillo-1 Major Outfall (MO-CAM) | Water Quality Standard (Basin Plan or CTR) | |
|---|---|---|---|---|
| **2011/12-1 (Wet) – Oct. 5, 2011** | | | | |
| E. coli (MPN/100 mL) | **2,063** | **24,192** | 235 | BP |
| Fecal Coliform (MPN/100 mL) | **9,000** | **24,000** | 400 | BP |
| Aluminum, Total (µg/L) | **7,900** | **3,400** | 1,000 | BP |
| **2011/12-2 (Wet) – Jan. 21, 2012** | | | | |
| E. coli (MPN/100 mL) | **4,352** | **12,997** | 235 | BP |
| Fecal Coliform (MPN/100 mL) | **5,000** | **16,000** | 400 | BP |
| Aluminum, Total (µg/L) | **9,000** | 820 | 1,000 | BP |
| **2011/12-3 (Wet) – Mar. 17, 2012** | | | | |
| Aluminum, Total (µg/L) | **13,000** | **1,200** | 1,000 | BP |
| **2011/12-4 (Dry) – Apr. 24, 2012** | | | | |
| Chloride (mg/L) | **190** | 140 | 150 | BP |

[a] Water quality monitoring data collected at ME-CC were used in the receiving water "cause or contribute" evaluation as downstream surrogate data to represent the water quality in Calleguas Creek at a compliance point below the confluence of Revolon Slough and Calleguas Creek. The MO-Cam station is tributary to Revolon Slough.

[b] Site-specific Basin Plan objective for reach of Calleguas Creek where ME-CC is located.

[c] Site-specific Basin Plan objective for Revolon Slough.

### 9.5.1 Coastal Watershed

Urban stormwater runoff and urban non-stormwater flows were evaluated at one Major Outfall station that does not have an associated Mass Emissions station located within the watershed. The MO-HUE station is located in Port Hueneme and discharges to the J Street Drain just upstream of where the drain enters the Ormond Beach lagoon. The elevated levels seen at MO-HUE are listed in Table 9-9 and not in a separate table as there is not a Mass Emission station nearby to which comparisons would be relevant.

### 9.5.2 Discussion of Results above Water Quality Standards

Aluminum, *E. coli* and fecal coliforms were commonly found at elevated levels at most sites during wet-weather events, but with the exception of *E. coli*, rarely during dry-weather events. Other constituents that were found at elevated levels during the 2011/12 monitoring season include chloride and total dissolved solids (predominantly during the dry-weather event); dissolved oxygen; dissolved copper; and pH (dry weather). Constituents that were seen at elevated levels at Major Outfalls only once during the season include total chromium, bis(2-ethylhexyl)phthalate, benzo(a)pyrene, and pentachlorophenol. Constituents that were seen at elevated levels at Mass Emission stations only once during the season include the metals (total) barium, cadmium, chromium, and nickel. The Program is using this information to identify pollutants of concern and direct efforts to reduce their discharge from the storm drain system.

#### Pathogen Indicators

Urban runoff concentrations of *E. coli* and fecal coliform bacteria were detected above their respective Basin Plan objectives during all three wet weather events at all but one Major Outfall station during the 2011/12 season, with the exception being MO-FIL during Event 2, where *E. coli* and fecal coliform bacteria were both below the objectives. Wet weather receiving water exceedances were less consistent, with all three sites above the objectives for both *E. coli* and fecal coliform bacteria during Event 1, two sites (ME-CC and ME-VR2) exceeding the fecal coliform bacteria objectives for Event 2 and one site (ME-VR2) for Event 3. The *E. coli* objectives were exceeded during Event 2 at ME-CC and Event 3 at ME-SCR and ME-VR2. These indicator bacteria are routinely measured at concentrations in excess of WQS during wet weather events. The story improves, however, with regard to dry weather monitoring during the 2011/12 season. No dry weather bacteria exceedances were observed at any of the receiving water stations. The majority of Major Outfall stations exhibited concentrations of fecal indicator bacteria above Basin Plan objectives during dry weather monitoring. The exceptions include no elevated levels observed for MO-CAM, MO-OXN, and MO-VEN during Event 4. A lack of flow at MO-MPK and MO-SPA precluded dry event sample collection at these sites.

However, the elevated levels are not reflected in the water quality of the beaches. The results of the Beach Water Quality Monitoring Program in Ventura County has been outstanding with Heal the Bay's *2012 End of Summer Beach Report Card* stating "Overall water quality at beaches throughout Ventura County remains among the best in the state. All monitored beaches received A grades in this report."

**Table 9-20 Pathogen indicators detected above Basin Plan Objective**

| Pathogen indicators detected above Basin Plan Objective | | | | |
|---|---|---|---|---|
| Site | Event 1 (Wet) | Event 2 (Wet) | Event 3 (Wet) | Event 4 (Dry) |
| Calleguas Creek Watershed<br>Outfalls not causing or contributing to exceedance – Event 3 (Wet) and Event 4 (Dry) | | | | |
| ME-CC | X | X | | |
| MO-CAM | X | X | X | |
| MO-MPK | X | X | X | Dry |
| MO-SIM | X | X | X | X |
| MO-THO | X | X | X | X |
| Santa Clara River Watershed<br>Outfalls not causing or contributing to exceedance – Event 2 (Wet) and Event 4 (Dry) | | | | |
| ME-SCR | X | | *E. coli* only | |
| MO-FIL | X | | X | X |
| MO-OXN | X | X | X | |
| MO-SPA | X | X | X | Dry |
| MO-VEN | X | X | X | |
| Ventura River Watershed<br>Outfalls not causing or contributing to exceedance – Event 4 (Dry) | | | | |
| ME-VR2 | X | Fecal only | X | |
| MO-OJA | X | X | X | X |
| MO-MEI | X | X | X | X |
| Coastal Watershed<br>Unknown if outfall causing or contributing to exceedance | | | | |
| MO-HUE | X | X | X | X |
| Dry – Not sampled during this event due to insufficient flow at site | | | | |

The stormwater program has in place control strategies that directly address indicator bacteria concentrations in urban runoff. The existing Program includes a comprehensive residential public outreach program that uses radio, newspaper, online banners, outdoor bulletins, and transit shelters to educate the public about preventing animal waste from entering storm drains. The pollutant outreach campaign was expanded in 2009 to include the mailing of a brochure to horse owners, equestrians and horse property owners. The brochure identified BMPs that horse owners should take to reduce bacteria in stormwater runoff. In 2012, County of Ventura and Ventura County Resources Conservation District initiated an outreach effort to horse and livestock owners in Ventura River Watershed to educate about water quality issues and encourage implementation of best management practices to reduce nutrient and bacteria loads from their discharge. Finally, the Program also conducts outreach to reduce bacteria and nutrients in runoff from pet waste. Section 3 - Public Outreach describes in detail the outreach conducted during the 2011/12 year. The Permittees install dispensers for pet waste pickup bags at beaches, parks and trail heads. It is estimated that over 2 million pet waste bags are given out each year and there are now close to 400 pet waste bag dispensers throughout the County encouraging pet owners to pick up after their pets.

The efforts of the Illicit Discharges/Illicit Connections Program also help to reduce bacteria in stormwater runoff by identifying and stopping illicit wastewater discharges. Eliminating illicit discharges not only protects water quality by eliminating the bacteria in the discharge, but also eliminates the ability for the discharge to pick up and transport bacteria on its way to the storm drain system. The indicator bacteria are also found to thrive in natural environments and sediments. The prevention of the transport of sediments includes steps to remove sediment

from the storm drain system through street sweeping, catch basin cleaning, debris basin maintenance and publicly owned BMPs. Industrial and commercial inspections, construction inspection, and illicit discharge response and elimination represent significant efforts towards eliminating the discharge metals. These are covered respectively in Section 7 - Public Agency Activities, Section 4 Industrial/Commercial Facilities Programs, Section 6 - Development Construction, and Section 8 - Illicit Connections and Illicit Discharges Elimination. Some Permittees conducted field efforts to track bacteriological contamination detected at the Major Outfalls. General conclusions were that the data evaluation did not indicate specific sources as elevated concentrations were determined throughout the tested subwatershed areas.

In addition to the municipal stormwater program, bacteria are being addressed through the TMDL programs in Malibu Creek, Miscellaneous Ventura Coastal Watersheds (Hobie and Kiddie Beaches), and Santa Clara River. Various reaches of Calleguas Creek and Ventura River are listed on the Section 303(d) list due to indicator bacteria impairment. The Malibu Creek and Ventura Coastal beaches Bacteria TMDLs have been in effect since January 24, 2006 and December 18, 2008, respectively. Implementation Plans for both dry-weather and wet-weather were prepared and submitted for both TMDLs and compliance monitoring has been conducted at Malibu Creek and Ventura Coastal beaches since 2007 and 2009, respectively. The Santa Clara River Bacteria TMDL went into effect on March 21, 2012 and a compliance monitoring plan and TMDL implementation plan are under development by the responsible parties according to the TMDL schedule. Addressing bacteriological impairments in the watershed is a challenging task. A number of BMPs implemented in Calleguas Creek and Ventura River watersheds to meet compliance with other TMDLs also address bacteriological impairment such as prohibition of illicit discharge or implementation of LID/Green Street retrofits. Calleguas Creek TMDL MOA group developed a draft Bacteria Work Plan to address this problematic pollutant in the Calleguas Creek Watershed.

Bacteriological contamination is a common occurrence throughout California and the United States. However, it is a challenging task to determine the actual impact to beneficial uses and levels causing human health risk during recreational activities in a watershed. The water quality monitoring standards are based on indicator organisms, not the actual pathogenic bacteria. As a result, it is difficult to ascertain whether a particular water concentration of mostly non-pathogenic indicator bacteria will cause human illness. Adding to the complexity is the fact that wildlife and other naturally occurring sources contribute to bacterial sources. Naturally occurring sources of bacteria have the potential to impact human health, but are extremely difficult to control.

Developing control measures to reduce observed bacteria concentrations to meet water quality standards is challenging. Treatment measures to address bacteria are likely to be costly and difficult to implement (especially with respect to infrequent and short-term, but high volume events that compose stormwater runoff). As a result, implementing measures that will result in compliance with the existing water quality objectives at all times will be extremely difficult. Consequently, the tasks in the Calleguas Creek Draft Bacteria Work Plan are designed to address these complexities to the greatest extent possible and provide mechanisms for protecting the identified beneficial uses in the watershed as is feasible. The strategy outlined in this draft work plan will assess the beneficial uses and risks to human health from bacteria and use that information to develop a TMDL to address bacteriological impairments. In the near-term an educational program focusing on the requirements of local domestic animal waste ordinances and the effects of domestic animal waste on the watershed is being considered[12]. Like the metals TMDL, it is expected that the results from the bacteria TMDL will assist the municipal stormwater program in addressing this problematic pollutant because the successful efforts in Calleguas Creek can be applied throughout the County to address indicator bacteria.

[12] http://www.calleguascreek.org/ccwmp/4f.asp November 3, 2011.

As a means to better refine the implementation of BMPs that might result in additional reductions of indicator bacteria, the Permittees are evaluating source identification monitoring at Major Outfalls. This may include source tracking through additional sampling for indicator species or using Bacteroidales genetic markers to identify the source(s) of fecal bacteria. Such an approach was used in the Calleguas Creek watershed as part of the draft TMDL Work Plan initial monitoring effort where a source identification study was performed and modeling to allow evaluation of BMPs. Knowing what bacteria sources – agriculture (horse and/or cow), humans, dogs, and birds – are responsible for the high levels of indicator bacteria measured during storm events will assist in the selection of BMPs better suited to control a particular bacteria source. During summer of 2012, County of Ventura and VCWPD worked with SCCWRP to conduct a comprehensive water quality monitoring to determine bacteria sources and to assess the risk to swimmers' health recreating at Hobie and Kiddie beaches. The human markers were detected and additional work is being conducted to further reduce and eliminate anthropogenic sources.

These complex issues related to bacteriological contamination and impairment of beneficial uses have been considered and still need to be discussed among the regulators, regulated communities, and environmental groups with a goal to identify cost-effective water quality protective solutions in the near future.

## Trace Metals

Aluminum

Urban runoff and receiving water concentrations of aluminum were found above the 1,000 µg/L Basin Plan objective at the majority of Major Outfall stations for one or more wet weather monitoring events during the 2011/12 season. Similarly, aluminum concentrations above the Basin Plan objective were measured at the ME-CC and ME-SCR receiving water stations during one or more wet events. Receiving water stations ME-CC and ME-SCR yielded aluminum results above WQO during the three wet weather monitoring events (Events 1-3) but not during the one dry weather monitoring event (Event 4) conducted during the current monitoring season. Major Outfall stations not showing wet weather aluminum above the WQS in the Calleguas Creek Watershed include MO-CAM (Event 2) and MO-SIM (Event 2); and in the Santa Clara River Watershed include MO-FIL (Events 1-3) and MO-OXN (Event 2). The only receiving water station not showing wet weather exceedances for aluminum was ME-VR2 (all wet events). A summary of those monitoring sites where aluminum concentrations were observed above the Basin Plan objective is shown in Table 9-21.

Since the Program began monitoring for aluminum in 2004, it has frequently observed elevated levels of the Basin Plan objective for the metal at all Program monitoring sites (receiving water and land use). Aluminum is found as a ubiquitous natural element in sediments throughout Ventura County geology. These sediments are mobilized during stormwater runoff events from urban, agriculture, and natural sources resulting in concentrations of aluminum in excess of the Basin Plan objective. This is clearly shown by the highly elevated wet weather concentrations of the metal measured in all three watersheds monitored by the Program. Similar to the current season, dry weather aluminum concentrations observed above WQS during the past eight years have only been observed a limited number of times. With elevated levels of aluminum co-occurring in both urban runoff and receiving waters within the same watershed during the same monitoring event, it is likely that concentrations of aluminum in urban runoff can be considered contributing to the elevated level observed in receiving waters.

Aluminum is a natural component of silt and clay, and concentrations in Southern California soils routinely exceed 3% (30,000 µg/g).[13] In addition, wet-weather total aluminum concentrations are significantly correlated

[13] Shacklette, H. T. and Hansford, J. G. (1984). Elemental concentrations in soils and other surficial materials of the conterminous United

with Total Suspended Solids (TSS) concentrations. Given that a TSS concentration of 500 mg/L result in an aluminum concentration of 15,000 µg/L in the water column, assuming all TSS originate from natural soils, it is reasonable to conclude that aluminum exceedances can readily be caused by erosion of the natural landscape.

***Table 9-21 Aluminum detected above Basin Plan Objective***

| Aluminum detected above Basin Plan Objective | | | | |
|---|---|---|---|---|
| Site | Event 1 (Wet) | Event 2 (Wet) | Event 3 (Wet) | Event 4 (Dry) |
| Calleguas Creek Watershed | | | | |
| ME-CC | X | X | X | |
| MO-CAM | X | | X | |
| MO-MPK | X | X | X | Dry |
| MO-SIM | X | | X | |
| MO-THO | X | X | X | |
| Santa Clara River Watershed | | | | |
| ME-SCR | X | X | X | |
| MO-FIL | | | | |
| MO-OXN | X | | X | |
| MO-SPA | X | X | X | Dry |
| MO-VEN | X | X | X | |
| Ventura River Watershed<br>Outfalls not causing or contributing to exceedance | | | | |
| ME-VR2 | | | | |
| MO-OJA | X | X | X | |
| MO-MEI | X | X | X | |
| Dry – Not sampled during this event due to insufficient flow at site | | | | |

Copper

Based on the "cause or contribute" methodology, copper from urban outfalls was not determined to be a persistent cause or contribution of WQS exceedances. Elevated levels compared to the hardness-based CTR objective for dissolved copper were observed at Major Outfall stations during both wet and dry monitoring events: MO-CAM (Events 1-3), MO-MEI (Event 2), MO-MPK (Event 2), MO-OXN (Events 1-3), MO-SPA (Events 1-3), and MO-VEN (Events 2 and 4). No results above the CTR criterion for dissolved copper were observed at the receiving water stations during the 2011/12 season. Because results for copper were not observed above the CTR criterion in receiving waters (i.e., measured at the receiving water stations), there is no evidence to conclude that copper in urban runoff appreciably impacted receiving water beneficial uses during the 2011/12 monitoring season.

States, U.S. Geological Survey Professional Paper 1270

This conclusion does not mean these data will be ignored by the Program as it is actively addressing copper. Permittees supported the Brake Pad Partnership and Senate Bill (SB) 346 adopted September 27, 2010 – that authorized legislation to phase out the copper contained in vehicle brake pads. SB 346, authored by Senator Christine Kehoe (D-San Diego), requires brake pad manufacturers to reduce the use of copper in brake pads sold in California to no more than 5% by 2021 and no more than 0.5% by 2025. This true source control action will help significantly reduce copper in urban runoff. Several of the Major Outfall sites are next to freeways or railroad lines (MO-CAM, MO-OXN, MO-SPA, and MO-VEN) ) where copper-containing dust from vehicles and trains is continually produced and deposited; the SB346 legislation will help address this issue. In the future, similar legislation to address train brake pads may help to further reduce copper in runoff.

***Table 9-22 Dissolved Copper detected above CTR Objective***

| Copper detected above Basin Plan Objective | | | | |
|---|---|---|---|---|
| Site | Event 1 (Wet) | Event 2 (Wet) | Event 3 (Wet) | Event 4 (Dry) |
| Calleguas Creek Watershed<br>Outfalls not causing or contributing to exceedance | | | | |
| ME-CC | | | | |
| MO-CAM | X | X | X | |
| MO-MPK | | X | X | Dry |
| MO-SIM | | | | |
| MO-THO | | | | |
| Santa Clara River Watershed<br>Outfalls not causing or contributing to exceedance | | | | |
| ME-SCR | | | | |
| MO-FIL | | | | |
| MO-OXN | X | X | X | |
| MO-SPA | X | X | X | Dry |
| MO-VEN | | X | | X |
| Ventura River Watershed<br>Outfalls not causing or contributing to exceedance | | | | |
| ME-VR2 | | | | |
| MO-OJA | | | | |
| MO-MEI | | X | | |
| Dry – Not sampled during this event due to insufficient flow at site | | | | |

Mercury

This year, the Program revised the method in which data is compared to CTR criteria, including the objectives for mercury. Previously, the Program used the Basin Plan Objectives (wet and dry weather), and CTR acute freshwater criteria (wet weather) or CTR chronic freshwater criteria (dry weather) to analyze the data. For constituents without a CTR freshwater objective, the CTR Human Health (Organisms Only) objectives were used. The updated method continues to compare wet weather results to the freshwater acute criteria but if the constituent does not have an acute criterion, the chronic Human Health criteria are no longer used because they are based on long term, continuous exposure, which is inappropriate for storm water. For dry weather, chronic criteria are appropriate so the data is compared to the most stringent of the CTR chronic freshwater, Human

Health (Water & Organisms), or Human Health (Organisms Only). This revision more accurately reflects the MUN designation of the outfalls and receiving waters.

No elevated mercury levels were observed above the Basin Plan Objective (2000 ng/L) at any of the major outfalls or receiving water stations during wet and dry weather for the 2011/12 season. The CTR does not have a freshwater acute criterion for mercury, so there were no wet weather mercury exceedances of the CTR. There were also no exceedances of the most stringent CTR chronic criteria (Human Health – Water & Organisms) during dry weather. Based on the findings of this season, the Program does not consider mercury at this time to constitute a persistent pollutant in urban runoff that is causing or contributing to impairments of beneficial uses in the Ventura River Watershed, Santa Clara River Watershed, or Calleguas Creek Watershed.

Other Metals

The Basin Plan objectives were exceeded at ME-SCR during Event 3 for total barium[14], cadmium, chromium, and nickel concentrations. This was the only occurrence of elevated levels of these metals at any of the Program's sites for the 2011/12 monitoring year (with the exception of chromium at MO-THO in Event 1). Barium, chromium, and nickel were last above the WQS at ME-SCR in Event 2003/04-1, Event 2004/05-4, and Event 2006/07-3, respectively. Cadmium has been detected above the WQS in 8 of 60 samples since 2001, with the detections spread out over the decade. The associated Major Outfalls do not appear to have caused or contributed to the exceedance of the WQS, since concentrations were consistently below the WQS. Moreover, the total cadmium, chromium and nickel concentrations during Event 3 were similar to those during the other events, and concentrations were not higher at MO-FIL and MO-SPA compared to other outfall stations.

The exact sources of the cadmium, nickel and chromium exceedances at ME-SCR during Event 3 are elusive. However, as these metals are strongly correlated to TSS, they may be at least in part related to the elevated TSS concentrations observed during Event 3. Potential anthropogenic sources of cadmium, chromium and nickel in urbanized watersheds include roof runoff (from roof materials, industrial emissions deposits or atmospheric deposition)[15,16] and road/highway runoff (fuels and engine oils, exhaust emissions, tire and brake wear).[17]

## Efforts to reduce metals in urban runoff

Because metals are associated with sediment, the Stormwater Program has a number of control measures and BMPs that address metals in general, and sediment specifically. These control measures include steps to remove sediment from the storm drain system through street sweeping, catch basin cleaning, debris basin maintenance and publicly owned BMPs. A thorough discussion of these programs is provided in Section 7 Public Agency Activities. Preventing sediments containing metals from entering the storm drain system is just as, if not more important than removing them after they enter the storm drain system. Industrial and commercial inspections, construction inspection, and illicit discharge response and elimination, are significant efforts targeted at eliminating the discharge of metals. These are covered respectively in Sections 4 Industrial/Commercial Facilities

[14] Currently, barium is only analyzed at ME-SCR and ME-CC.

[15] Van Metre, P. C. and Mahler, B. J. (2003). The contribution of particles washed from rooftops to contaminant loading to urban streams, Chemosphere 52:1727-1741.

[16] http://www.sanjoseca.gov/esd/stormwater/PDFs/RoofRunoffFactSheet_4-08.pdf

[17] Opher, T. and Friedler, E. (2010). Factors affecting highway runoff quality, Urban Water Journal 7:155-172.

Programs, Section 6 Development Construction, and Section 8 Illicit Connections and Illicit Discharges Elimination.

In addition, the construction program element is structured to address sediment from construction sites and includes review of grading plans, requirements for sediment and erosion control BMPs, and field inspections to confirm BMP implementation. More recently the State Water Resources Control Board adopted WDR Order 2009-0009 DWQ, the Construction General Permit, which covers all construction sites with greater than one acre of active land disturbance. The new Construction General Permit incorporates a risk-based approach to address pollutants from construction sites including sediments and associated metals. The Construction General Permit includes rigorous site planning, numeric effluent and action limits, and minimum BMPs as a function of the site risk for discharging sediment. It is expected that this new Construction General Permit will provide further control of sediment from construction sites within Ventura County.

Although the transport of metals is not usually through direct actions of the public, public education of stormwater pollution prevention can provide assistance the efforts of the other programs and future efforts can be tailored to address sources of metals such as promoting household hazardous waste collection events to dispose of mercury containing compact fluorescent light bulbs. Other efforts include the Brake Pad Partnership and Senate Bill (SB) 346, legislation that authorizes the phase out of copper from vehicle brake pads discussed above.

Beyond these efforts conducted under our municipal stormwater programs, certain metals (copper, nickel, selenium, and mercury) are being addressed under the various TMDL programs. These constituents have been identified as causing impairment in Calleguas Creek, its tributaries, and Mugu Lagoon. As a result a Metals Work Plan has been developed by the Calleguas Creek TMDL MOA Parties and is currently being implemented[18]. This multiple year plan provides the framework to (1) determine whether or not metals impairments still exist in the watershed, (2) develop site-specific objectives for copper and nickel, and (3) if necessary, identify the control measures needed to meet the TMDLs. It is expected that the control measures identified under this effort will inform the efforts to address aluminum and mercury in the Calleguas Creek and Santa Clara River watersheds.

### Organics and Pesticides

Two organic compounds were detected at elevated levels during the 2011/12 season, bis(2-ethylhexyl)phthalate at MO-SPA during Event 2 and benzo(a)pyrene at MO-HUE during Event 3. Bis(2-ethylhexyl)phthalate WQS exceedances were not observed in receiving waters which indicates that bis(2-ethylhexyl)phthalate concentrations in urban runoff did not affect beneficial uses in the receiving water. Bis(2-ethylhexyl)phthalate is ubiquitous in plastics and is therefore a common sampling and laboratory contaminant, however, the 2011/12 preseason equipment blanks analyzed by the Program and the method blank analyzed by the laboratory for this batch were both below the method detection limit for bis (2-ethylhexyl) phthalate. Benzo(a)pyrene is a polycyclic aromatic hydrocarbon (PAH) that is produced by incomplete combustion and is found in fossil fuels. It is not commercially produced or used. PAHs are primarily released to the air and then are deposited onto land/water. Benzo(a)pyrene is also found in coal-tar based pavement sealcoat, however this type of seal coat is not commonly used on the west coast. The benzo(a)pyrene may have been deposited from a residential fire which occurred less than one mile upstream of the monitoring station. The fire was on February 6 and no significant rain fell after the fire until Event 3 on March 17. Outfall from beach fires is also a likely source, and will be investigated if the elevated levels continue to be detected. Each compound was only detected once during the 2011/12 season so they are not

[18] http://www.calleguascreek.org/ccwmp/4d.asp November 3, 2011.

considered persistent. Neither compound was detected above the WQS in the receiving waters so they are not considered to cause or contribute to exceedances of WQS.

Pentachlorophenol was the only pesticide detected above WQS criteria, which include a Basin Plan objective of 1 µg/L (wet and dry weather) and a pH-based CTR criterion (dry weather). This occurred at one Major Outfall (MO-MPK, Event 1) during the 2011/12 season. No Pentachlorophenol exceedances were observed in receiving waters. The lack of exceedances for this pollutant at the receiving water station indicates that Pentachlorophenol concentrations in wet weather urban runoff did not affect downstream receiving water beneficial uses with regard to this chlorinated hydrocarbon. In 2011, the Watershed Protection District and the City of Moorpark worked in a joint effort to identify the source of Pentachlorophenol. A special inspection was performed on the SoCal Edison Transfer Station along with special monitoring of the runoff. SoCal Edison responded by increasing BMPs on the site and changing some of their material handling procedures. The Program continued to monitor the area for pentachlorophenol when runoff was present during monitoring events for the 2011/12 season. In addition to the original Edison outfall site (Edison RC pipe at MPK – Lower), the Program monitored a second outfall from the property (Edison RC pipe at MPK – Upper), and a location upstream of MO-MPK and both Edison outfalls (MO-MPK Upstream at RR). The results are shown in Table 9-23. Subsequent sampling events have shown mixed results for the effectiveness of the BMPs. Additional efforts, and follow up and enforcement are the responsibility of the Edison, the City and the Regional Board through their industrial stormwater permit program.

***Table 9-23: Pentachlorophenol Results at MO-MPK***

| Constituent | SiteID | EventID | Sign | Result | Units |
|---|---|---|---|---|---|
| Pentachlorophenol | MO-MPK | 2010/11-1 | = | 13 | µg/L |
| Pentachlorophenol | MO-MPK | 2010/11-2 | = | 4.6 | µg/L |
| Pentachlorophenol | Edison RC pipe at MPK - Lower | 2010/11-4 | = | 17 | µg/L |
| Pentachlorophenol | MO-MPK | 2010/11-4 | = | 2.3 | µg/L |
| Pentachlorophenol | MO-MPK | 2010/11-5 (Dry) | < | 0.04 | µg/L |
| Pentachlorophenol | MO-MPK Upstream at RR | 2011/12-1 | DNQ | 0.17 | µg/L |
| Pentachlorophenol | Edison RC pipe at MPK - Upper | 2011/12-1 | = | 0.58 | µg/L |
| Pentachlorophenol | Edison RC pipe at MPK - Lower | 2011/12-1 | = | 4.8 | µg/L |
| Pentachlorophenol | MO-MPK | 2011/12-1 | = | 1.2 | µg/L |
| Pentachlorophenol | MO-MPK Upstream at RR | 2011/12-2 | DNQ | 0.061 | µg/L |
| Pentachlorophenol | Edison RC pipe at MPK - Upper | 2011/12-2 | = | 5.8 | µg/L |
| Pentachlorophenol | Edison RC pipe at MPK - Lower | 2011/12-2 | = | 3.1 | µg/L |
| Pentachlorophenol | MO-MPK | 2011/12-2 | = | 4.6 | µg/L |
| Pentachlorophenol | MO-MPK Upstream at RR | 2011/12-3 | | NS[1] | µg/L |
| Pentachlorophenol | Edison RC pipe at MPK - Upper | 2011/12-3 | | NS[1] | µg/L |
| Pentachlorophenol | Edison RC pipe at MPK - Lower | 2011/12-3 | | NS[1] | µg/L |
| Pentachlorophenol | MO-MPK | 2011/12-3 | = | 0.95 | µg/L |
| Pentachlorophenol | MO-MPK | 2011/12-4 (Dry) | | No Flow | µg/L |

[1] Samples could not be collected from Edison outfalls because no flow at time of grab sampling.

***Table 9-24 Organics and Pesticides detected above Basin Plan and/or CTR Objectives***

| Organics and Pesticides detected above Basin Plan Objective | | | | |
|---|---|---|---|---|
| Site | Event 1 (Wet) | Event 2 (Wet) | Event 3 (Wet) | Event 4 (Dry) |
| Calleguas Creek Watershed<br>Outfalls not causing or contributing to exceedance | | | | |
| ME-CC | | | | |
| MO-CAM | | | | |
| MO-MPK | Pentachlorophenol | | | Dry |
| MO-SIM | | | | |
| MO-THO | | | | |
| Santa Clara River Watershed<br>Outfalls not causing or contributing to exceedance | | | | |
| ME-SCR | | | | |
| MO-FIL | | | | |
| MO-OXN | | | | |
| MO-SPA | | Bis(2-ethylhexyl)phthalate | | Dry |
| MO-VEN | | | | |
| Ventura River Watershed<br>Outfalls not causing or contributing to exceedance | | | | |
| ME-VR2 | | | | |
| MO-OJA | | | | |
| MO-MEI | | | | |
| Coastal Watershed<br>Unknown if outfall causing or contributing to exceedance | | | | |
| MO-HUE | | | Benzo(a)pyrene | |
| Dry – Not sampled during this event due to insufficient flow at site | | | | |

## Salts

Concentrations observed above WQS for salts in the three watersheds monitored by the Program were limited to dry weather Event 4 (with the exception of MO-OJA in wet Event 2) that showed elevated levels of chloride and total dissolved solids. This is in accordance with historical data from dry weather events, when flows are comprised of a larger groundwater component. Concentrations above the Basin Plan site-specific objectives of 60 mg/L for chloride and 800 mg/L for total dissolved solids (TDS) were seen at the MO-MEI and MO-OJA Major Outfalls during dry weather Event 4, however the Ventura River at the ME-VR2 receiving water station did not have an exceedance of its corresponding site-specific objectives of 300 mg/L for chloride and 1500 mg/L TDS. Chloride was detected above the site specific objective of 80 mg/L at the MO-FIL Major Outfall during Event 4; however it was not detected above the corresponding site specific objective for the receiving water, 80 mg/L at ME-SCR.

Because urban runoff elevated levels of salts did not co-occur with such elevated levels in receiving waters in the Ventura and Santa Clara River watersheds, the Program concludes that urban runoff monitored during both wet and dry discharge events did not affect receiving water beneficial uses with regard to salts in these watersheds during the 2011/12 season. Levels of TDS above the site specific objective of 850 mg/L were seen at the Major Outfalls MO-SIM and MO-THO during dry Event 4, however ME-CC, the receiving water station, was below the same SSO so the elevated levels at the Major Outfalls did not affect the beneficial use of the receiving water. Levels above the 150 mg/L chloride SSO were also detected during Event 4 at the same two Major Outfalls, MO-SIM and MO-THO, and at the receiving water station, ME-CC, so the urban runoff is likely to have contributed to the exceedance of the Basin Plan Objective for chloride in the receiving water during dry weather Event 4. The area of Simi Valley has a known high ground water problem with natural springs, seeps and artesian conditions in the western part of the County. In addition, there is a Salt TMDL that is evaluating monitoring and implementing solutions throughout the watershed. More information on this is provided below.

The Program is unable to evaluate if concentrations above salts objectives within the watershed are a persistent issue during any given monitoring season because the Program is limited to a single wet season-dry weather monitoring event. Additionally, the other dry weather event, the dry season-dry weather monitoring event, required to be conducted by the Program represents grab sampling (as opposed to composite sampling) and does not include a requirement to evaluate chloride and TDS. The Program can only state that historic monitoring data collected during dry weather sampling events show regular elevated levels of chloride and total dissolved solids objectives in the Calleguas Creek Watershed.

***Table 9-25 Salts detected above Basin Plan Site-specific Objectives***

| Salts detected above Basin Plan Objective | | | | |
|---|---|---|---|---|
| Site | Event 1 (Wet) | Event 2 (Wet) | Event 3 (Wet) | Event 4 (Dry) |
| Calleguas Creek Watershed<br>Outfalls not causing or contributing to exceedance – Events 1-3 | | | | |
| ME-CC | | | | Chloride only |
| MO-CAM | | | | |
| MO-MPK | | | | Dry |
| MO-SIM | | | | X |
| MO-THO | | | | X |
| Santa Clara River Watershed<br>Outfalls not causing or contributing to exceedance | | | | |
| ME-SCR | | | | |
| MO-FIL | | | | Chloride only |
| MO-OXN | | | | |
| MO-SPA | | | | Dry |
| MO-VEN | | | | |
| Ventura River Watershed<br>Outfalls not causing or contributing to exceedance | | | | |
| ME-VR2 | | | | |
| MO-OJA | | Chloride only | | X |
| MO-MEI | | | | X |
| Dry – Not sampled during this event due to insufficient flow at site<br>X – Chloride and Total Dissolved Solids | | | | |

Boron, chloride, sulfate, and total dissolved solids ("salts") are currently being addressed in the Calleguas Creek Watershed through the implementation of the Calleguas Creek Salts Total Maximum Daily Load (TMDL), adopted by the Los Angeles Regional Water Quality Control Board in October 2007. The CCW Salts TMDL only applies during dry weather and applies to the receiving water, not at tributary outfalls. During the first three years of the TMDL implementation plan for the watershed, the primary implementation action is water conservation,

which all of the Permittees have done. The ultimate goal of the TMDL is to bring the watershed into "salt balance" where the inputs of salts are equal to or less than the amount of salts exported out of the watershed during dry weather. Water conservation on the part of municipalities reduces the input side of the equation. The salts loading calculation is performed on an annual basis and wet weather exports are not considered in the analysis. Beyond water conservation, the proposed implementation plan does not include many options for MS4 dischargers. Most of the planned actions are construction of groundwater desalters and wastewater treatment plants reverse osmosis as these are considered to be the major source of the salts. Municipal stormwater actions to control salts are limited due to the fact that most salts in runoff come from source water supplies. The primary course of action for municipalities is to reduce outdoor water use, thereby limiting the amount of runoff that may contain high salts from entering urban tributaries and receiving waters. Permittees have also taken steps to the prohibition of discharges from Salt Water pools. Camarillo has conducted outreach to pool service companies and provided articles in their local newsletter to residents alerting them that they cannot discharge salt water pools to the storm drain system. The City of Thousand Oaks and Simi Valley also banned the discharge of salt water pools to the storm drain system. Self regenerating water softeners are a source of salts in the watershed, though not commonly to the storm drain system. Permittees have prohibited their use at commercial and industrial facilities, while education is provided to discourage their use by residents. These are all efforts that should assist with reducing salts in the watershed.

### Other Constituents

No other constituents were found to cause or contribute to exceedances of water quality objectives. Dissolved oxygen concentrations below the Basin Plan 5 mg/L objective were measured at the Major Outfalls MO-FIL (Events 3 and 4), MO-HUE (Events 2 and 3), and MO-SIM (Event 1), and at the Ventura River receiving water station, ME-VR2 (Event 2). Possible causes of low dissolved oxygen readings include standing water, oxygen demand by decaying organic matter or algae, and technical issues (e.g. insufficient flow across the meter membrane due to lack of flow or flow obstruction). MO-SIM was sampled early in the hydrograph, when flow may have been insufficient for an accurate reading. The low levels at MO-FIL and MO-HUE are not unexpected as the conditions at both locations create standing water where the water is not agitated or aerated to provide addition of oxygen as would be the case in a flowing storm drain or receiving water. At MO-FIL the monitoring station is at the transition of concrete channel to natural bottom channel and vegetation growth in the natural bottom portion of the outfall impedes the flow resulting in deep, slow moving water at the monitoring location. At MO-HUE the flow from the major outfall must be pumped out to the receiving water, the pumps are intermittent and the flow backs up until they are triggered. Dissolved oxygen measured at the outfall when the pumps are operating is above minimum WQS concentration. No exceedances of the Basin Plan objective for dissolved oxygen were observed at any of the corresponding receiving water stations during the 2011/12 season. Low dissolved oxygen was observed at ME-VR2 but not at either of the upstream outfalls, so the outfalls appear to not cause or contribute to the low dissolved oxygen. The lack of correlation between exceedances for dissolved oxygen at the outfalls and corresponding receiving water stations indicates that dissolved oxygen concentrations in urban runoff did not significantly affect receiving water quality with regard to this parameter. The Program also measured pH levels outside of the Basin Plan's 6.5 – 8.5 standard unit range during dry weather at the MO-CAM (Event 4), MO-MEI (Event 4), MO-OXN (Event 4), and MO-VEN (Event 4) Major Outfall stations. Elevated pH is commonly observed during dry weather in concrete lined channels. No exceedances of the Basin Plan pH range objective were observed at any of the receiving water stations during the 2011/12 season. The lack of exceedances for pH at the receiving water stations indicates that pH levels in urban runoff did not affect receiving water beneficial uses with regard to this parameter.

***Table 9-26 Other constituents detected above Basin Plan Objective***

| Other constituents detected above Basin Plan Objective | | | | |
|---|---|---|---|---|
| Site | Event 1 (Wet) | Event 2 (Wet) | Event 3 (Wet) | Event 4 (Dry) |
| Calleguas Creek Watershed<br>Outfalls not causing or contributing to exceedance | | | | |
| ME-CC | | | | |
| MO-CAM | | | | pH |
| MO-MPK | | | | Dry |
| MO-SIM | DO | | | |
| MO-THO | | | | |
| Santa Clara River Watershed<br>Outfalls not causing or contributing to exceedance | | | | |
| ME-SCR | | | | |
| MO-FIL | | | DO | DO |
| MO-OXN | | | | pH |
| MO-SPA | | | | Dry |
| MO-VEN | | | | pH |
| Ventura River Watershed<br>Outfalls not causing or contributing to exceedance | | | | |
| ME-VR2 | | DO | | |
| MO-OJA | | | | |
| MO-MEI | | | pH | |
| Coastal Watershed<br>Unknown if outfall causing or contributing to exceedance | | | | |
| MO-HUE | | DO | DO | |

Dry – Not sampled during this event due to insufficient flow at site
DO – Dissolved oxygen

## Mass Emission Calculations

Mass loadings were estimated for constituents detected at the ME-CC and ME-VR2 Mass Emission stations during the 2011/12 monitoring season. Mass loadings could not be calculated at the ME-SCR station because total flow could not be accurately measured, as described in Section 9.3.1.

Mass loads were calculated by using the average flow total flow volume between first and last aliquot collection in cubic feet divided by the time elapsed between the first and last aliquots in seconds] measured in cubic feet per second, (cfs) estimated over the duration of a monitoring event and the concentrations of detected constituents. For grabs, this is the concentration measured in the grab sample. For composites, this is the concentration measured in the composite bottle, which is a combination of aliquots collected during the event. Event duration was defined as the number of hours elapsed between the collection of the first and the final aliquots by the composite sampler at each site. Storm events monitored during 2011/12 at the ME-CC and ME-VR2 stations lasted from just over 8 hours (Event 2 at ME-VR2) to just over 25 hours (Event 1 at ME-VR2). Based on the average flow rate for a sampling event, loadings were calculated in lbs/event to allow for comparisons between sites as well as between events (see example in Table 9-27). These mass loading estimates are presented in Table 9-28 and Table 9-29.

***Table 9-27. Example Mass Loading Calculation***

| **Event 1 at ME-CC** |
|---|
| Chloride concentration: 100 mg/L<br>Event duration: 12 hours, 46 minutes = 12.77 hours |
| |
| Average flow rate: 216.03 cfs<br>216.03 x 7.48 gal/cf x 3.785 L/gal = 6116.2 L/sec |
| |
| Load = concentration x volume<br>6116.2 L/sec x 100 mg/L = 611620 mg/sec<br>611620 mg/sec x 60 sec/min x 60 min/hr x 12.77 hr/event x 1 kg/$10^6$ mg x 2.2 lb/kg = **61,858 lb/event** |

***Table 9-28. Estimated Mass Loadings at ME-CC***

| **Classification** | **Constituent** | **Event 1 (Wet) 10/05/2011 12.77 hrs. (lbs/event)** | **Event 2 (Wet) 1/21/2012 12.78 hrs. (lbs/event)** | **Event 3 (Wet) 3/17/2012 21.25 hrs. (lbs/event)** | **Event 4 (Dry) 5/23/2012 23.22 hrs. (lbs/event)** |
|---|---|---|---|---|---|
| Anion | Chloride | 61800 | 34000 | 167000 | 19200 |
| Anion | Fluoride | 192 | 137 | 926 | 56.7 |
| Cation | Calcium | 40800 | 28400 | 157000 | 8700 |
| Cation | Magnesium | 26000 | 14700 | 80300 | 4550 |
| Conventional | BOD | 6120 | 2390 | 34000 | 172* |
| Conventional | COD | 105000 | 27400 | 253000 | 1420 |
| Conventional | MBAS | 16.7* | 23.9* | ND | 3.6* |
| Conventional | Phenolics | 41.4 | 7.1 | 216 | 4.5 |
| Conventional | Total Chlorine Residual | 12.4* | 76.2* | 98.8* | 5.0* |
| Conventional | Total Dissolved Solids | 495000 | 208000 | 895000 | 74900 |
| Conventional | Total Organic Carbon | 10500 | 3710 | 26500 | 516 |
| Conventional | Total Suspended Solids | 49500 | 330000 | 3700000 | 2830 |
| Conventional | Volatile Suspended Solids | 8040 | 43200 | 895000 | 810 |
| Conventional | Oil and Grease | ND | 660* | ND | ND |
| Metal | Aluminum (Total) | 4880 | 4570 | 40100 | 42.5 |
| Metal | Antimony (Total) | 0.50 | 0.23* | 1.9 | 0.038* |
| Metal | Arsenic (Total) | 3.8 | 3.7 | 20.4 | 0.37 |
| Metal | Barium (Total) | 68.0 | 71.1 | 556 | 3.4 |
| Metal | Beryllium (Total) | 0.23 | 0.27 | 2.2 | ND |
| Metal | Cadmium (Total) | 0.68 | 0.66 | 5.9 | 0.022 |
| Metal | Chromium (Total) | 16.1 | 11.7 | 117 | 0.19 |
| Metal | Chromium VI | 0.050* | 0.081* | 0.37* | 0.009* |
| Metal | Copper (Total) | 18.5 | 13.7 | 127 | 0.45 |
| Metal | Iron (Total) | 8660 | 8120 | 64800 | 62.7 |
| Metal | Lead (Total) | 6.1 | 6.6 | 46.3 | 0.036 |
| Metal | Mercury (Total) | 0.028* | 0.019* | 0.23 | 0.002* |
| Metal | Nickel (Total) | 19.2 | 14.2 | 136 | 0.85 |
| Metal | Selenium (Total) | 1.4 | 0.56 | 4.9 | 0.14 |
| Metal | Silver (Total) | 0.11* | ND | 0.77 | ND |
| Metal | Thallium (Total) | 0.093* | 0.10 | 0.83 | ND |

| Classification | Constituent | Event 1 (Wet) 10/05/2011 12.77 hrs. (lbs/event) | Event 2 (Wet) 1/21/2012 12.78 hrs. (lbs/event) | Event 3 (Wet) 3/17/2012 21.25 hrs. (lbs/event) | Event 4 (Dry) 5/23/2012 23.22 hrs. (lbs/event) |
|---|---|---|---|---|---|
| Metal | Zinc (Total) | 56.3 | 47.2 | 401 | 2.1 |
| Nutrient | Ammonia as N | 396 | 208 | 1050 | 16.2 |
| Nutrient | Nitrate + Nitrite as N | 2290 | 1930 | 7100 | 789 |
| Nutrient | Nitrate as N | 2290 | 1880 | 7100 | 769 |
| Nutrient | Phosphorus as P (Total) | 2470 | 1470 | 8640 | 304 |
| Nutrient | TKN | 4580 | 371 | 2070 | 25.3 |
| Organic | Bis(2-ethylhexyl)adipate | ND | ND | 0.96* | ND |
| Organic | Butyl benzyl phthalate | 0.12* | ND | ND | ND |
| Organic | Diethyl phthalate | 0.32* | 0.20* | 21.0 | 0.28 |
| Organic | Dimethyl phthalate | ND | ND | 2.2* | ND |
| Pesticide | 4,4'-DDE | 0.006* | 0.013* | ND | ND |
| Pesticide | 4,4'-DDT | 0.004* | ND | ND | ND |
| Pesticide | Chlorpyrifos | ND | 0.13 | 0.077 | ND |
| Pesticide | DCPA (Dacthal) | 0.74 | 0.76 | 1.5 | 0.17 |
| Pesticide | Diazinon | 0.003* | 0.004* | ND | ND |
| Pesticide | Dimethoate | ND | ND | 0.090 | ND |
| Pesticide | Glyphosate | 11.1 | 2.4* | 23.5 | 0.18* |
| Pesticide | Malathion | 0.037 | 3.7 | 0.12 | ND |
| Pesticide | Methyl parathion | ND | ND | 0.083 | ND |
| Pesticide | Prometryn | ND | ND | ND | 0.021 |

ND – Constituent not detected, and, therefore, no estimated mass loading was calculated.
* - Calculation of mass loading derived from result flagged as DNQ - constituent detected but not quantified (MDL < result < RL).

***Table 9-29. Estimated Mass Loadings at ME-VR2***

| Classification | Constituent | Event 1 (Wet) 10/05/2011 25.17 hrs. (lbs/event) | Event 2 (Wet) 1/21/2012 8.23 hrs. (lbs/event) | Event 3 (Wet) 3/17/2012 24.43 hrs. (lbs/event) | Event 4 (Dry) 4/23/2012 23.47 hrs. (lbs/event) |
|---|---|---|---|---|---|
| Anion | Chloride | 11700 | 1250 | 12400 | 5590 |
| Anion | Fluoride | 78.5 | 5.1 | 102 | 41.9 |
| Cation | Calcium | 21900 | 1360 | 23800 | 9610 |
| Cation | Magnesium | 6570 | 430 | 6670 | 2970 |
| Conventional | BOD | 365 | 32.9 | 762 | 245 |
| Conventional | COD | 3470 | 181 | 5480 | 1220 |
| Conventional | MBAS | 6.6* | 0.57 | 8.1* | ND |
| Conventional | Phenolics | 11.0 | 0.89 | 6.4 | 4.0 |
| Conventional | Total Dissolved Solids | 135000 | 8950 | 119000 | 57700 |
| Conventional | Total Organic Carbon | 1000 | 60.0 | 1100 | 245 |
| Conventional | Total Suspended Solids | 2560 | 102 | 5240 | 699 |
| Conventional | Volatile Suspended Solids | ND | 45.3* | ND | 437 |
| Metal | Aluminum (Total) | 38.3 | 0.76 | 61.9 | 3.8 |
| Metal | Antimony (Total) | 0.031* | 0.001* | 0.036* | 0.008* |
| Metal | Arsenic (Total) | 0.31 | 0.018 | 0.22 | 0.17 |

| Classification | Constituent | Event 1 (Wet) 10/05/2011 25.17 hrs. (lbs/event) | Event 2 (Wet) 1/21/2012 8.23 hrs. (lbs/event) | Event 3 (Wet) 3/17/2012 24.43 hrs. (lbs/event) | Event 4 (Dry) 4/23/2012 23.47 hrs. (lbs/event) |
|---|---|---|---|---|---|
| Metal | Cadmium (Total) | 0.024 | 0.0007* | 0.024 | 0.004* |
| Metal | Chromium (Total) | 0.12 | 0.002 | 0.15 | 0.012* |
| Metal | Chromium VI | ND | ND | 0.007* | ND |
| Metal | Copper (Total) | 0.33 | 0.015 | 0.57 | 0.04* |
| Metal | Iron (Total) | 166 | 17.0 | 148 | 52.4 |
| Metal | Lead (Total) | 0.047 | 0.002* | 0.095 | 0.007* |
| Metal | Mercury (Total) | 0.005* | 0.0001* | 0.007* | 0.001* |
| Metal | Nickel (Total) | 0.95 | 0.057 | 1.0 | 0.24 |
| Metal | Selenium (Total) | 0.22 | 0.006 | 0.50 | 0.068 |
| Metal | Silver (Total) | ND | ND | ND | 0.007* |
| Metal | Thallium (Total) | ND | 0.0002* | ND | 0.003* |
| Metal | Zinc (Total) | 0.64* | 0.031* | 1.3 | 0.16* |
| Nutrient | Ammonia as N | 14.6* | ND | 15.7* | ND |
| Nutrient | Nitrate + Nitrite as N | 74.9 | 0.88* | 105 | 1.4* |
| Nutrient | Phosphorus as P (Total) | 27.4 | 1.5 | 23.8 | 4.2 |
| Nutrient | TKN | 104 | 7.5 | 105 | 14.0 |
| Organic | Butyl benzyl phthalate | ND | ND | ND | 0.065* |
| Organic | Diethyl phthalate | 0.13* | 0.007* | 0.16* | 0.073* |
| Pesticide | Dimethoate | ND | ND | 0.005 | ND |
| Pesticide | Methyl parathion | 0.002 | ND | 0.013 | ND |

ND – Constituent not detected, and, therefore, no estimated mass loading was calculated.
* - Calculation of mass loading derived from result flagged as DNQ - constituent detected but not quantified (MDL < result < RL).

## 9.6 MASS EMISSION STATIONS CONCENTRATION TRENDS 2001 - 2012

### 9.6.1 Methods

Trend analysis was performed for Ventura County's three mass emission station, using data collected between February 2001 (ME-CC and ME-VR/VR2) or November 2001 (ME-SCR) and May 2012. The trend analysis was performed separately for wet and dry weather events, and data for ME-VR and ME-VR2 were pooled to be consistent with the other stations, and to obtain sufficient data for trend analysis.

**Concentration trends** in time were determined by correlating the variables concentration and sampling date. Non-parametric statistical methods were used, based on the recommendations of Helsel and Hirsh (2002)[19], and therefore tests for normality or data transformations were not required. Trend analyses were performed for all constituents with more than 10% of the data above the limit of detection. Statistical procedures were based on

[19] Helsel, D.R. and R. M. Hirsch, 2002. Statistical Methods in Water Resources. Techniques of Water Resources Investigations, Book 4, chapter A3. U.S. Geological Survey, 522 p.

Helsel and Hirsh (2002)[19] and Helsel (2012)[20], and varied based on the occurrence of observations qualified as non-detectable (NDs) and detectable but not quantifiable (DNQ), as summarized in Table 9-30. The statistical procedures used were able to incorporate variable detection and reporting limits. Trends were considered to be statistically significant at $p < 0.05$. Note that the non-parametric statistics do not assume or require linear trends.

***Table 9-30. Statistical procedures and software for trend analysis***

| Constituent concentrations | Statistic | Software |
|---|---|---|
| Always above reporting limit | Kendall Tau | Analyze-it for Microsoft Excel |
| < 90% of observations below detection limit, one detection limit, no DNQs | Kendall Tau | Analyze-it for Microsoft Excel |
| < 90% of observations below detection limit, multiple detection limits, no DNQs | Kendall Tau | R (package "NADA") |
| < 90% of observations below reporting limit, DNQs and NDs occur | Wilcoxon score | R (package "interval") |

Whenever significant trends were found, we also determined if the trends were caused by one of the following explanatory variables: flow (instantaneous for grabs, mean event flow for composites), total suspended solids or antecedent dry period (time since last wet event with at least 0.1" of precipitation). Statistical procedures were based on Helsel and Hirsch (2002)[19] and consisted of (i) determining correlation (using Kendall Tau) between concentration and explanatory variables, (ii) if a significant correlation was observed, a non-parametric Loess trendline of concentration vs. explanatory variable was constructed, (iii) the "corrected" concentration was calculated by subtracting the trendline value from the concentration value, and (iv) the trend analysis was repeated for the "corrected" concentrations versus time. The final "corrected" trends are a better representation of actual trends, and indicate if constituent concentrations *for a given flow*, or *for a given concentration of TSS*, have changed in time. Conversely, trends that are actually caused by patterns of flow, TSS or antecedent dry period would not be identified as significant trends.

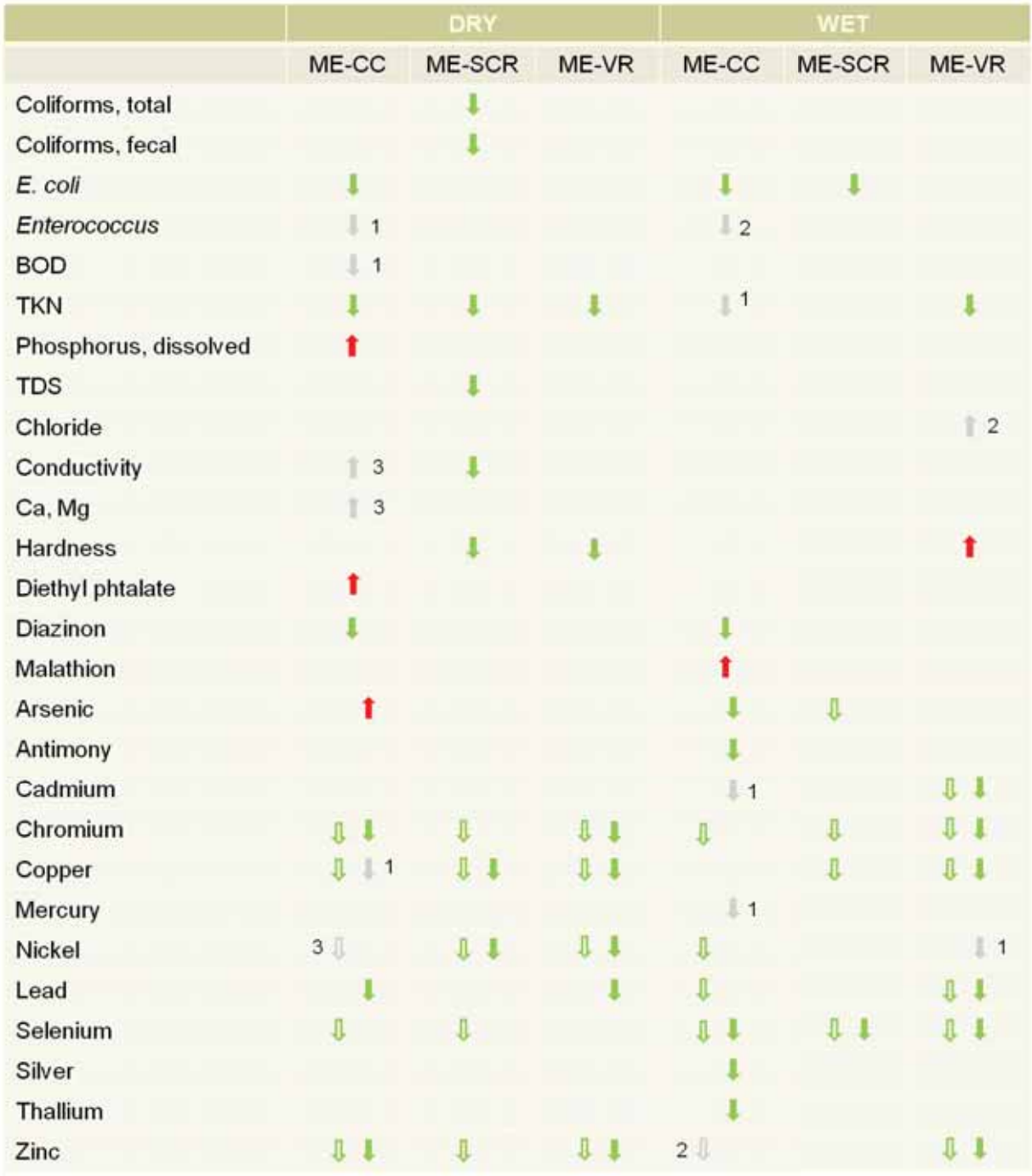
Temporal **trends of water quality exceedances** were also determined. The total number of exceedances were summed and divided by the number of events for each monitoring year, for wet and dry events separately, in order to obtain an average number of exceedances per wet and dry event. For dry events, trends were determined between 2001 and 2012. For wet events, data prior to 2004 were not included, because some of the constituents that sometimes cause exceedances were not analyzed at the time. Statistical significance of trends was determined by correlating average annual number of exceedances with time (year) using Kendall Tau. All exceedances were determined by comparing to Basin Plan and CTR numerical water quality criteria, as detailed in Section 9.5.1.

### 9.6.2 Concentration Trends

Detailed information for all significant trends, including appropriate statistic (Kendall Tau or Wilcoxon score) and statistical significance, is shown in Table 9-31. Note that trends were not corrected for explanatory variables flow, TSS or antecedent dry period in Table 9-31. A summary of increasing and decreasing trends, including revised trends after adjusting for explanatory variables, is provided in Figure 9-9. The most significant findings are discussed below, with some graphs to illustrate trends.

[20] Helsel, D.R., 2012, Statistics for censored environmental data using Minitab® and R, 2nd ed., John Wiley & Sons, Inc., Hoboken, NJ, 324 p.

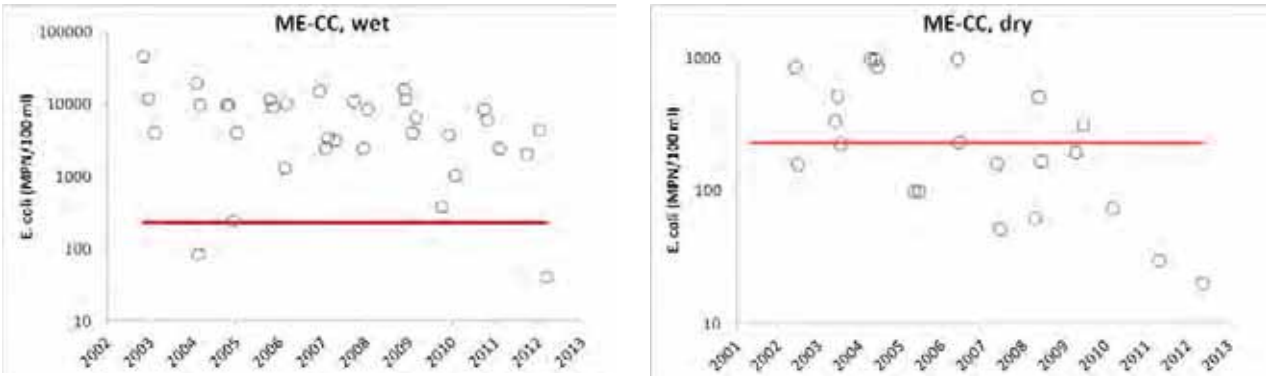
***Figure 9-9. Summary of significantly increasing and decreasing trends at Mass Emission Stations. Decreasing trends are indicated by downward green arrows, increasing trends by upward red arrows. For metals, total fractions are indicated by colored arrows, dissolved fractions by open arrows. Grey arrows indicate where a significant trend was initially found, but where correction for TSS (1), flow (2) or antecedent dry period (3) yielded non-significant trends.***



*Indicator bacteria*

Dry and wet weather ***E. coli*** concentrations have significantly decreased at ME-CC since 2001. While wet weather concentrations remain high and usually exceed the basin plan objective of 235 MPN/100 ml, dry weather compliance has increased in recent years (Figure 9-10). Decreasing *Enterococcus* trends were observed as well at ME-CC, but these trends disappeared when accounting for flow and TSS concentration patterns. Concentration decreases for **total and fecal coliforms** (dry weather) and ***E. coli*** (wet weather) were observed at ME-SCR as well.

***Figure 9-10. E. coli concentrations at ME-CC. Red lines indicate Water Quality Standards.***

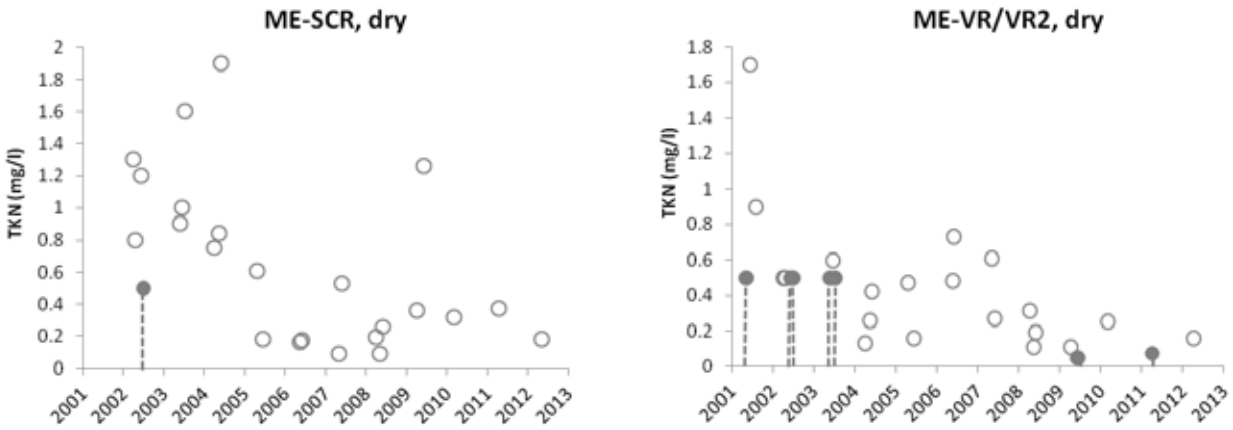



*Nutrients*

Dry weather **TKN** concentrations decreased at all stations (Figure 9-11), and wet weather TKN concentrations at ME-VR/VR2 only. The initially observed decreasing trend of wet weather TKN concentrations at ME-CC disappeared when accounting for flow patterns.

Dry weather **dissolved phosphorus** concentrations increased at ME-CC, but the increase was small, concentrations remain low (< 3 mg/l) and are not exceeding any water quality objective or TMDL limit.

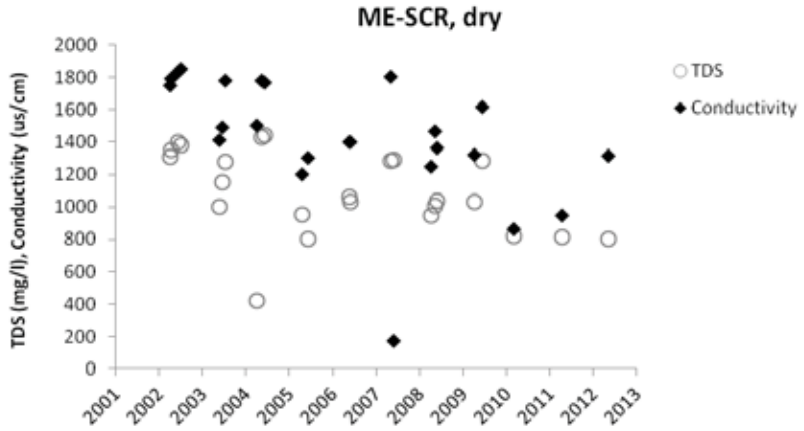
***Figure 9-11. Total Kjeldahl Nitrogen (TKN) concentrations at ME-SCR and ME-VR/VR2. Concentrations below the detection limit are indicated by full grey symbols at detection limit value, connected by dotted line to zero.***




*Salts*

Dry weather **TDS, conductivity and hardness** all decreased at ME-SCR (Figure 9-12). In addition, hardness trends at ME-VR/VR2 showed a decrease during for dry weather, but increase for wet weather.

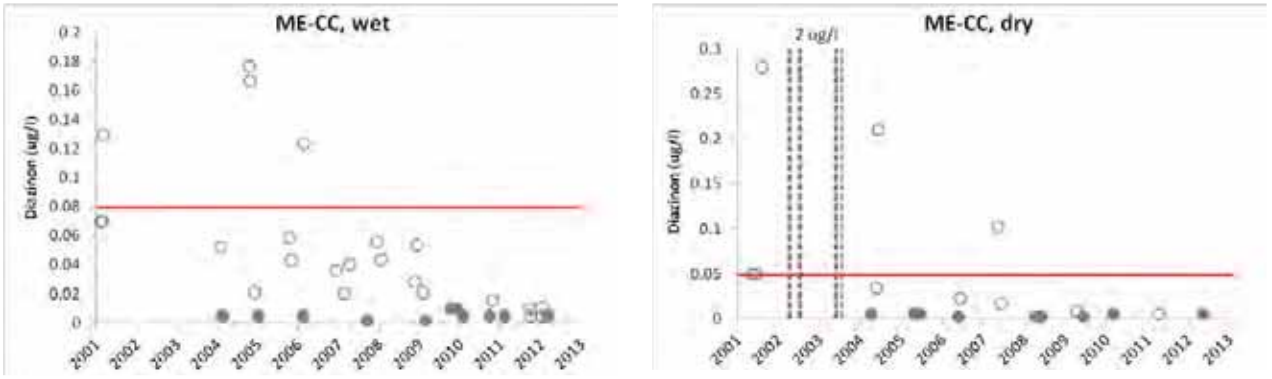
***Figure 9-12. Dry weather concentrations of total dissolved solids (TDS) and conductivity at ME-SCR.***




*Organic compounds*

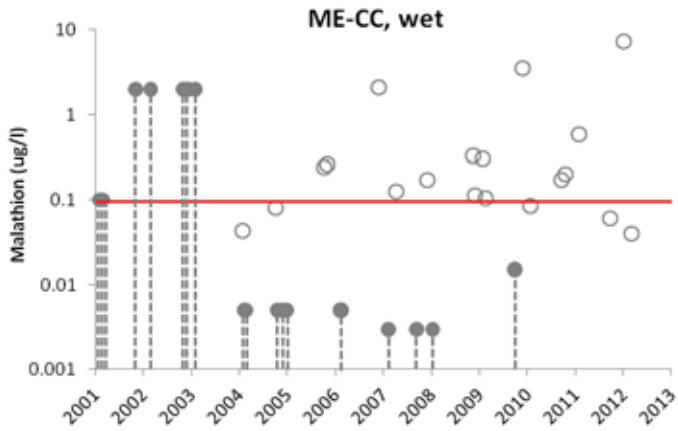
Dry and wet weather concentrations of the pesticide **diazinon** have decreased at ME-CC, to the point that exceedances of the Department of Fish and Game aquatic life criteria have not been observed since 2006 for wet weather and since 2007 for dry weather (Figure 9-13). The U.S. EPA phased out residential uses of diazinon, with a sales ban in the U.S. as of December 31, 2004, which appears to have effectively decreased concentrations at ME-CC. Remaining detections are likely due to the continued use by agriculture and commercial residential uses.

***Figure 9-13. Diazinon trends at ME-CC. California Department of Fish and Game recommended criteria are shown by a red line (continuous concentrations for dry weather and maximum concentrations for wet weather). Concentrations below the detection limit are indicated by full grey symbols at detection limit value.***




Wet weather concentrations of the pesticide **malathion** have increased at ME-CC, and regularly exceed the U.S. EPA national recommended water quality criterion of 0.1 µg/l (Figure 9-14). Concentrations up to 7.2 µg/l were observed (note the use of log-scale in Figure 9-14), which is at least tenfold higher than maximum concentrations at ME-SCR and ME-VR/VR2. However, current concentrations at ME-CC are 10- to 100-fold lower than concentrations observed in surface waters during the 1994-1995 Mediterranean Fruit Fly Eradication Program.[21]

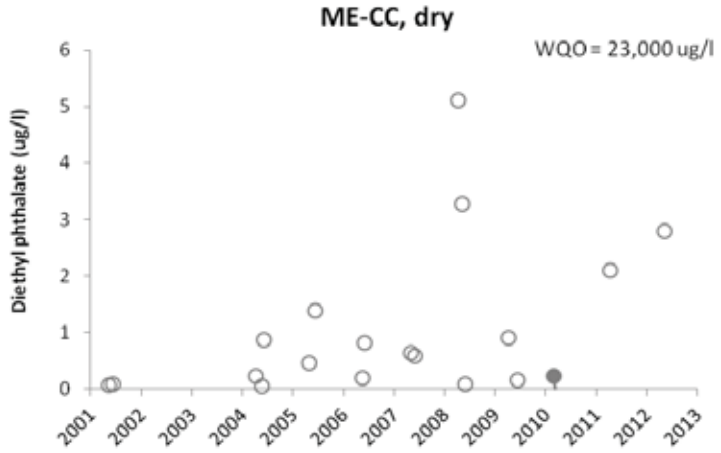
***Figure 9-14. Wet weather malathion concentrations at ME-CC. U.S. EPA national recommended water quality criterion is shown by a red line. Concentrations below the detection limit are indicated by full grey symbols at detection limit value, connected by dotted line to zero.***




[21] Newhart, K., 2006. Environmental fate of malathion. California Environmental Protection Agency, Department of Pesticide Regulation.

An increase in dry weather **diethyl phthalate** concentrations was observed at ME-CC (Figure 9-15). As maximum observed concentrations were well below the water quality objective of 23,000 µg/l, the slight concentration increases are of no concern at this point.

***Figure 9-15. Diethyl phthalate concentrations at ME-CC for dry weather. Concentrations below the detection limit are indicated by full grey symbols at detection limit value, connected by dotted line to zero.***




*Metals*

Concentrations of many metals have decreased since 2001 at all mass emission stations. Decreasing trends in dry and wet weather dissolved concentrations, and to a lesser degree total concentrations, were commonly observed for **chromium, copper** (Figure 9-16)**, selenium and zinc**.

Decreasing dry weather concentrations were also observed for **nickel** at ME-SCR and ME-VR/VR2, and for total **lead** at ME-CC and ME-VR/VR2. **Arsenic** concentrations have increased at ME-CC, but increases are small, and the maximum observed concentration of 4.5 µg/l is still well below the water quality objective of 50 µg/l.

Decreasing wet weather concentrations were observed at ME-CC for total **arsenic**, **antimony**, **silver** and **thallium**; and at ME-VR/VR2 for total and dissolved **cadmium** and **lead** (Figure 9-17).

***Figure 9-16. Wet and dry weather dissolved copper concentrations at ME-SCR and ME-VR/VR2. Concentrations below the detection limit are indicated by full grey symbols at detection limit value.***

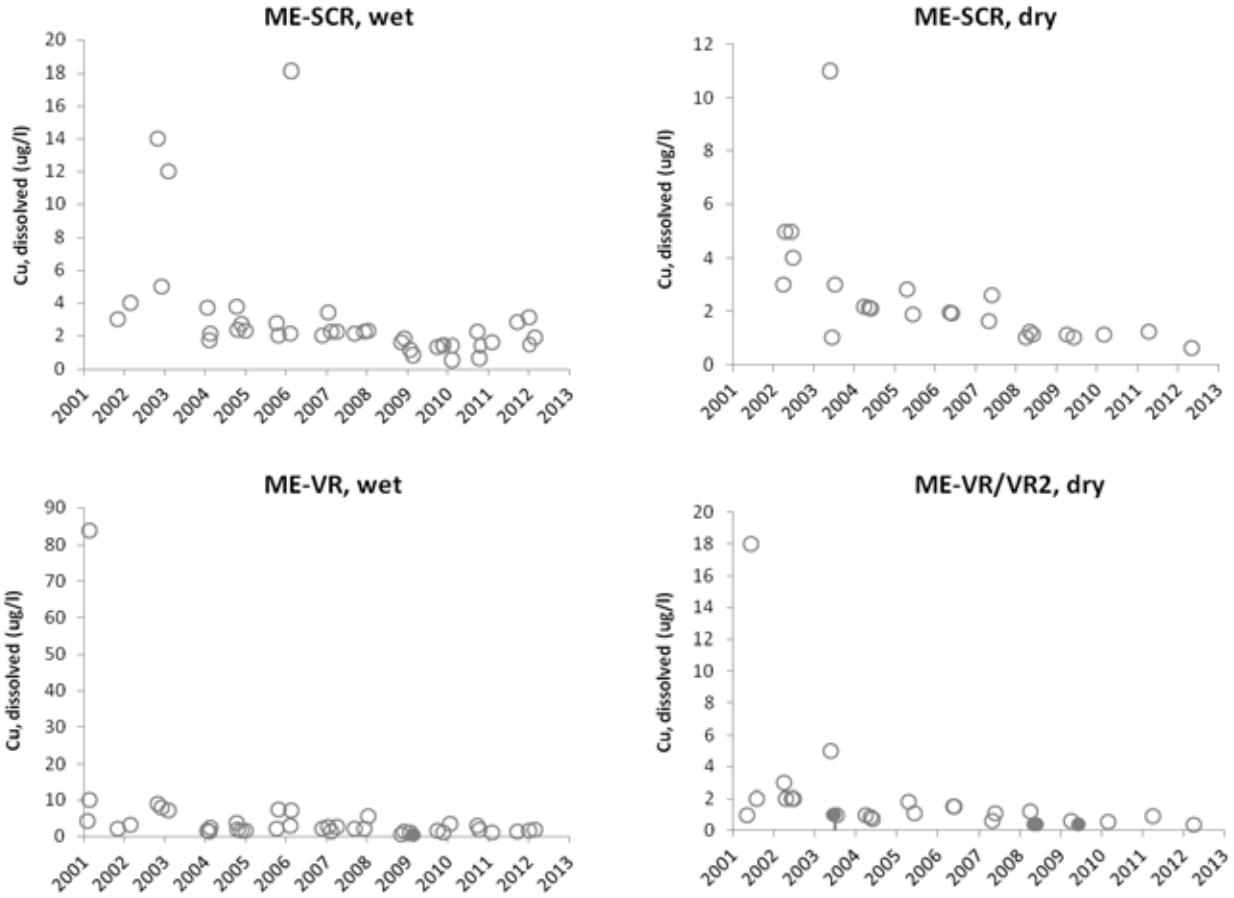
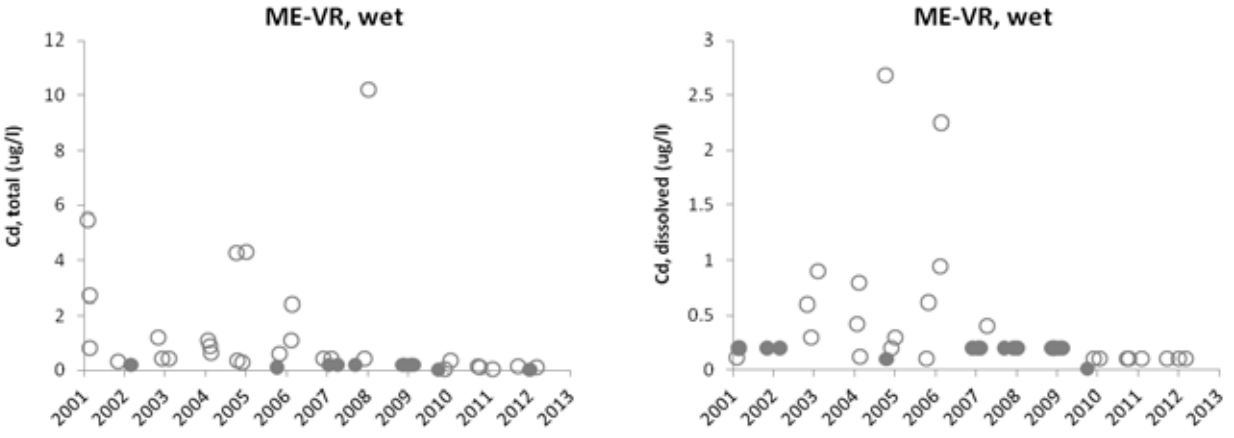
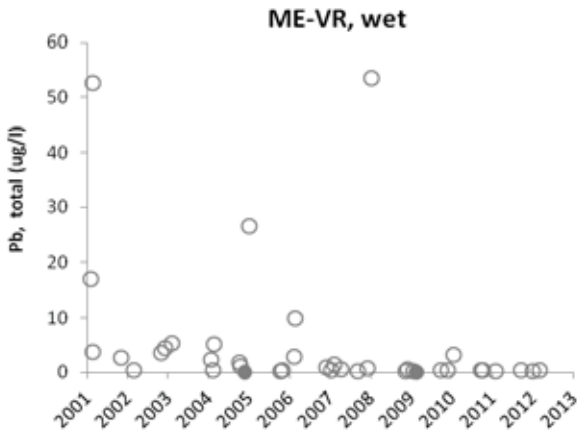
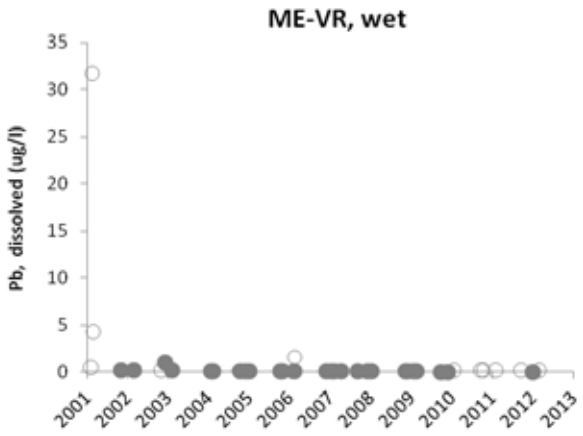



***Figure 9-17. Wet weather total and dissolved lead and cadmium concentrations at ME-VR/VR2. Concentrations below the detection limit are indicated by full grey symbols at detection limit value.***





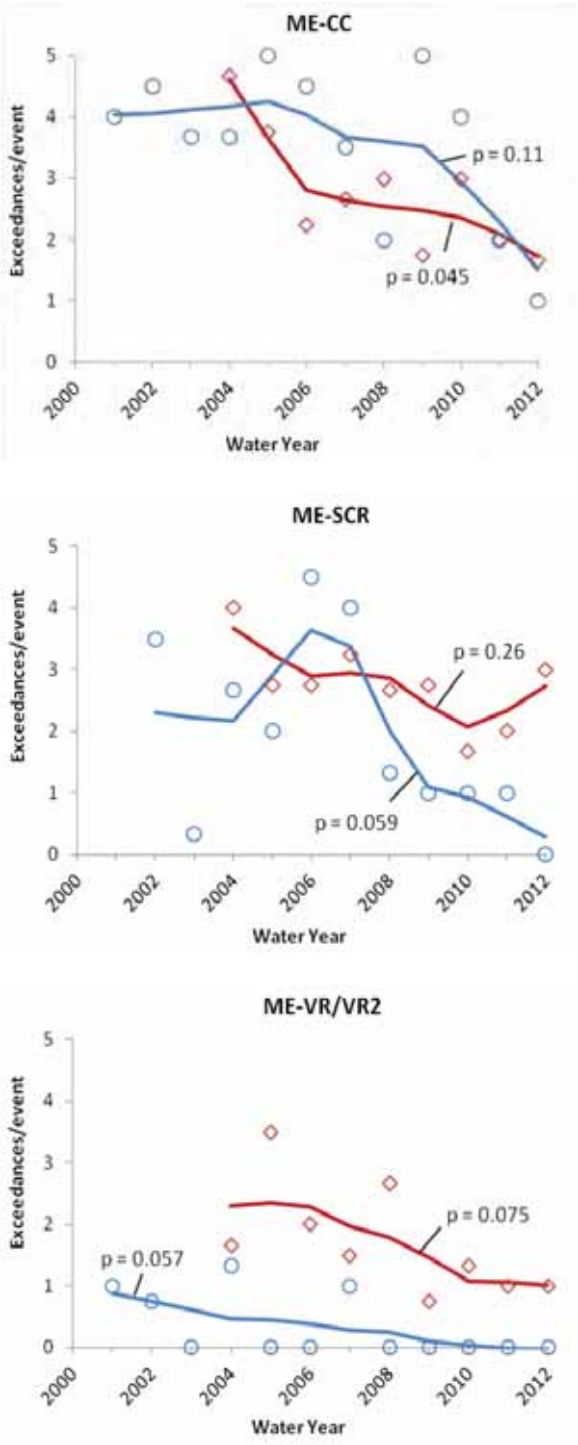




## Trends in Water Quality Exceedances

The number of wet weather exceedances has decreased since 2004 at ME-CC and ME-VR/VR2, although the significance is rather low at the latter ($p = 0.075$) (Figure 9-18). A closer inspection of the data revealed that the above average number of exceedances in years 2004 and 2005 were mostly caused by a number of metals (total cadmium, chromium and nickel) for which concentrations correlate with TSS concentrations. Therefore, the decreasing trends are caused, at least partly, by the particularly high metal concentrations during the large storms observed in 2004 and 2005, and the decreasing trend is not expected to continue if high TSS concentrations are observed in the future.

The number of dry weather exceedances appears to have decreased at ME-SCR and ME-VR/VR2 since 2001, with statistical significances just above the threshold of 0.05. This conclusion is supported by the fact that the number of exceedances prior to 2004 is likely low biased, because a number of constituents that have caused dry weather exceedances were not being monitored yet (total aluminum), or had exceptionally high detection limits, resulting in nondetects only (benzo(a)pyrene, chrysene, bis(2-ethylhexyl)phthalate, 4,4'-DDD, 4,4'-DDE and toxaphene). The decrease in exceedances observed at ME-CC is not significant and was caused by the below average number of exceedances during the last two years. Therefore, more dry weather monitoring is needed to confirm if dry weather exceedances at ME-CC are decreasing.

***Figure 9-18. Average annual number of exceedances per event for wet (red symbols and lines) and dry (blue symbols and lines) weather sampling. Lines represent Loess curves, obtained by local regression modeling. Kendall Tau statistical significances are included for each set of data.***



## Conclusions

Most of the 217 constituents currently monitored at the Mass Emission stations by the County have been monitored since 2001. Twenty-six of these 217 constituents, including metals, bacteria, nutrients, salts and one pesticide, have shown decreased concentrations at one or more stations. Only five constituents exhibited increasing trends, each time at only one of the stations, although none of these constituents were causing water quality exceedances based on Basin Plan and CTR numeric water quality criteria. However, malathion concentrations did regularly exceed the U.S. EPA national recommended water quality criterion.

The average number of dry weather exceedances has decreased since 2001 at ME-SCR and ME-VR/VR2. The number of wet event exceedances has decreased since 2004 at ME-CC and ME-VR/VR2, and could be related to the smaller storm sizes and therefore fewer exceedances for metals in recent years.

***Table 9-31. Significant trends at mass emission stations. Test statistic is Kendall Tau correlation, unless indicated by asterisk, where test statistic is Wilcoxon score. Decreasing trends are indicated by negative Kendall Tau but positive Wilcoxon score statistics, and vice versa.***

| | DRY | | | | | | WET | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ME-CC | | ME-SCR | | ME-VR/VR2 | | ME-CC | | ME-SCR | | ME-VR/VR2 | |
| | Statistic | P | Statistic | P | Statistic | P | Statistic | P | Statistic | P | Statistic | P |
| Coliforms, total | | | -0.38 | 0.011 | | | | | | | | |
| Coliforms, fecal | | | -0.34 | 0.04 | | | | | | | | |
| *E. coli* | -0.39 | 0.012 | | | | | -0.28 | 0.022 | -0.27 | 0.027 | | |
| *Enterococcus* | -0.40 | 0.010 | | | | | -0.26 | 0.033 | | | | |
| BOD | 9313* | 0.0074 | | | | | | | | | | |
| TKN | -0.41 | 0.0026 | -0.33 | 0.025 | -0.34 | 0.011 | -0.24 | 0.033 | | | -0.35 | 0.0018 |
| P, d | 0.29 | 0.037 | | | | | | | | | | |
| Chloride | | | | | | | | | | | 0.26 | 0.025 |
| Calcium | 0.70 | 0.0047 | | | | | | | | | | |
| Magnesium | 0.51 | 0.047 | | | | | | | | | | |
| Hardness | | | -0.43 | 0.0034 | -0.29 | 0.033 | | | | | 0.37 | 0.001 |
| TDS | | | -0.34 | 0.021 | | | | | | | 0.27 | 0.017 |
| Conductivity | 0.30 | 0.030 | -0.45 | 0.0019 | | | | | | | | |
| Diethyl phthalate | -6656* | 0.025 | | | | | | | | | | |
| Diazinon | 6814* | 0.016 | | | | | 11302* | 0.004 | | | | |
| Malathion | | | | | | | 0.27 | 0.016 | | | | |
| Ag, t | | | | | | | 7227 | 0.028 | | | | |
| As, d | | | | | | | | | 8033* | 0.024 | | |
| As, t | 0.64 | <0.0001 | | | | | -0.23 | 0.047 | | | | |
| Sb, t | | | | | | | -0.52 | 0.020 | | | | |
| Cd, d | | | | | | | | | | | 11733* | 0.0019 |
| Cd, t | | | | | | | 9781* | 0.024 | | | 15925* | 0.0002 |
| Cr, d | 13334* | 0.0001 | 9655* | 0.0007 | 12536* | <0.0001 | 18282* | <0.0001 | 11607* | 0.0005 | 18275* | <0.0001 |
| Cr, t | 10587* | 0.0022 | | | 11296* | 0.0007 | | | | | 14876* | 0.0006 |
| Cu, d | -0.44 | 0.0016 | -0.66 | <0.0001 | 12409* | 0.00037 | | | 131414* | <0.0001 | 15209* | 0.0004 |
| Cu, t | -0.43 | 0.0023 | -0.44 | 0.0026 | 13505* | 0.00012 | | | | | -0.37 | 0.0008 |
| Ni, d | -0.28 | 0.047 | -0.43 | 0.0036 | -0.40 | 0.0033 | -0.33 | 0.004 | | | | |
| Ni, t | | | -0.31 | 0.035 | -0.42 | 0.002 | | | | | -0.23 | 0.037 |
| Pb, d | | | | | | | 9644* | 0.011 | | | 8709* | 0.007 |
| Pb, t | 11303* | 0.0009 | | | 10504* | 0.0016 | | | | | 14794* | 0.0006 |
| Se, d | -0.33 | 0.016 | -0.39 | 0.0084 | | | -0.29 | 0.011 | -0.44 | 0.0002 | -0.29 | 0.0088 |
| Se, t | | | | | | | -0.46 | 0.0003 | -0.46 | <0.0001 | -0.32 | 0.0039 |
| Th, t | | | | | | | 10594* | 0.0052 | | | | |
| Zn, d | -0.41 | 0.0032 | 4780* | 0.014 | 8946* | 0.004 | -0.28 | 0.019 | | | 17425* | <0.0001 |
| Zn, t | -0.43 | 0.0015 | | | 11868* | 0.00051 | | | | | 18426* | <0.0001 |
| Hg, d | -8558* | 0.014 | -7257* | 0.018 | -10374* | 0.0028 | | | | | -13027* | 0.0022 |
| Hg, t | -7721* | 0.026 | -7666* | 0.013 | -9989* | 0.0042 | 9693* | 0.023 | | | | |

### 9.6.3 Aquatic Toxicity Results

No samples exhibited significant toxicity during the 2011/12 monitoring season, which can be seen in the $IC_{50}$ column of Table 9-33 and Table 9-34, where no value is < 100% (i.e. the undiluted sample did not kill half the organisms in the test).

The Stormwater Monitoring Program's NPDES permit specifies that chronic toxicity monitoring must be conducted on all Mass Emission and Major Outfall stations. The permit requires that for the first year a station is online for the permit cycle, chronic toxicity testing is to be conducted using three species during two storm events, the first of the season plus one other. For the remainder of the permit term, toxicity testing is to be conducted for the first storm of the season for each station using the most sensitive species determined during the initial year of sampling. For Mass Emission stations, the tests included three marine and estuarine species: topsmelt, giant kelp, and purple sea urchin. For the Major Outfall stations, the tests included three freshwater species: fathead minnow, water flea, and green algae.

The Permit requires that marine/estuarine species be used for the mass emission stations and for sites that discharge into marine receiving waters. Freshwater species must be used for sites that discharge into freshwater receiving waters. This means that marine species are required to be used in freshwaters, such as at the three mass emission stations, and freshwater species are required to be used at the major outfalls, including MO-HUE which is influenced by the Pacific Ocean via J Street Drain. Although flow from all sampling sites is ultimately discharged to the ocean, Mass Emission samples are freshwater with a very low salt concentration. The use of marine species for the Mass Emission sites requires the sample to be greatly manipulated by adding a large quantity of salt. Salt addition results in oxygen uptake and requires the sample to be vigorously aerated. The results from marine organisms for freshwater toxicity tests are less applicable to the existing conditions in the receiving water than freshwater organisms..

The most sensitive species was determined for seven stations (ME-CC, ME-SCR, ME-VR2, MO-CAM, MO-MEI, MO-OJA, and MO-VEN) during the 2009/10 monitoring year. The other seven stations (MO-FIL, MO-HUE, MO-MPK, MO-OXN, MO-SIM, MO-SPA, and MO-THO) were brought online for the 2010/11 monitoring year and the most sensitive species were determined from the results from that year. The most sensitive species for each site are shown in Table 9-32, and will be used for toxicity analysis during the first rainfall event of future years, as required by the NPDES permit.

***Table 9-32: Most Sensitive Species Selected for Annual Toxicity Testing***

| Site | Most Sensitive Species |
|---|---|
| ME-CC | Topsmelt* |
| ME-SCR | Purple sea urchin |
| ME-VR2 | Topsmelt* |
| MO-CAM | Fathead minnow |
| MO-OJA | Fathead minnow |
| MO-MEI | Fathead minnow |
| MO-VEN | Water flea |
| MO-FIL | Water flea |
| MO-HUE | Water flea |
| MO-MPK | Green alga |
| MO-OXN | Fathead minnow |
| MO-SIM | Water flea |
| MO-SPA | Fathead minnow |
| MO-THO | Water flea |

Toxicity sampling was conducted at all fourteen stations during Event 1 (October 5, 2011) of the 2011/12 monitoring year, using the most sensitive species determined for each site. The results are summarized in Table 9-33 and Table 9-34.

***Table 9-33. Chronic Toxicity Results from Mass Emission Stations***

| | | | **Topsmelt (*Atherinops affinis*)** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | **Survival** | | | | **Biomass** | | | |
| **Site** | **Event** | **Event Date** | **NOEC (%)** | **Tuc** | **$IC_{25}$ (%)** | **$IC_{50}$ (%)** | **NOEC (%)** | **Tuc** | **$IC_{25}$ (%)** | **$IC_{50}$ (%)** |
| **ME-CC** | Event 1 (Wet) | 10/5/2011 | 100.00 | 1.00 | >100.00 | >100.00 | 100.00 | 1.00 | >100.00 | >100.00 |
| **ME-VR2** | Event 1 (Wet) | 10/5/2011 | 100.00 | 1.00 | >100.00 | >100.00 | 100.00 | 1.00 | >100.00 | >100.00 |

| | | | **Purple sea urchin (*Strongylocentrotus purpuratus*)** | | | |
|---|---|---|---|---|---|---|
| | | | **Fertilization** | | | |
| **Site** | **Event** | **Event Date** | **NOEC (%)** | **Tuc** | **$IC_{25}$ (%)** | **$IC_{50}$ (%)** |
| **ME-SCR** | Event 1 (Wet) | 10/5/2011 | 50.0 | 2.00 | >100.00 | >100.00 |

***Table 9-34. Chronic Toxicity Results from Major Outfall Stations***

| | | | **Fathead minnow (*Pimephales promelas*)** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | **Survival** | | | | **Reproduction** | | | |
| **Site** | **Event** | **Event Date** | **NOEC (%)** | **Tuc** | **$IC_{25}$ (%)** | **$IC_{50}$ (%)** | **NOEC (%)** | **Tuc** | **$IC_{25}$ (%)** | **$IC_{50}$ (%)** |
| **MO-CAM** | Event 1 (Wet) | 10/5/2011 | 100.00 | 1.00 | >100.00 | >100.00 | 100.00 | 1.00 | >100.00 | >100.00 |
| **MO-OJA** | Event 1 (Wet) | 10/5/2011 | 100.00 | 1.00 | >100.00 | >100.00 | 100.00 | 1.00 | >100.00 | >100.00 |
| **MO-MEI** | Event 1 (Wet) | 10/5/2011 | 100.00 | 1.00 | >100.00 | >100.00 | 100.00 | 1.00 | >100.00 | >100.00 |
| **MO-OXN** | Event 1 (Wet) | 10/5/2011 | 100.00 | 1.00 | >100.00 | >100.00 | 100.00 | 1.00 | >100.00 | >100.00 |
| **MO-SPA** | Event 1 (Wet) | 10/5/2011 | 50.00 | 2.00 | >100.00 | >100.00 | 100.00 | 1.00 | 94.2 | >100.00 |

| | | | Daphnid (*Ceriodaphnia dubia*) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Survival | | | | Reproduction | | | |
| **Site** | **Event** | **Event Date** | **NOEC (%)** | **Tuc** | **$IC_{25}$ (%)** | **$IC_{50}$ (%)** | **NOEC (%)** | **Tuc** | **$IC_{25}$ (%)** | **$IC_{50}$ (%)** |
| **MO-VEN** | Event 1 (Wet) | 10/5/2011 | 100.00 | 1.00 | >100.00 | >100.00 | 100.00 | 1.00 | >100.00 | >100.00 |
| **MO-FIL** | Event 1 (Wet) | 10/5/2011 | 100.00 | 1.00 | >100.00 | >100.00 | 100.00 | 1.00 | >100.00 | >100.00 |
| **MO-HUE** | Event 1 (Wet) | 10/5/2011 | 100.00 | 1.00 | >100.00 | >100.00 | 100.00 | 1.00 | >100.00 | >100.00 |
| **MO-SIM** | Event 1 (Wet) | 10/5/2011 | 100.00 | 1.00 | >100.00 | >100.00 | 100.00 | 1.00 | >100.00 | >100.00 |
| **MO-THO** | Event 1 (Wet) | 10/5/2011 | 100.00 | 1.00 | >100.00 | >100.00 | 100.00 | 1.00 | >100.00 | >100.00 |

| | | | Green alga (*Selenastrum capricornutum*) | | | |
|---|---|---|---|---|---|---|
| | | | Growth | | | |
| **Site** | **Event** | **Event Date** | **NOEC (%)** | **Tuc** | **$IC_{25}$ (%)** | **$IC_{50}$ (%)** |
| **MO-MPK** | Event 1 (Wet) | 10/5/2011 | 100.00 | 1.00 | >100.00 | >100.00 |

According to the NPDES permit, a Toxicity Identification Evaluation (TIE) must be performed on samples exhibiting significant toxicity, defined in the permit as at least 50% mortality ($IC_{50}$ < 100%). For tests with only one endpoint where survival is not measured, such as the purple sea urchin or green alga, a TIE is triggered when the primary endpoint of the test has greater than 50% effect. For the purple sea urchin, this equates to a fertilization rate of less than 50%. For the green alga, it equates to growth that is less than half of that of the control sample.

A closer inspection of the tables reveals that there were two stations (ME-SCR using the purple sea urchin and MO-SPA using the fathead minnow) in which the TUc exceeded 1.00 and the NOEC was below 100%. TIEs were not run on these samples because the $IC_{50}$ for these sites was always greater than 100%, meaning the sample would have to be concentrated to kill 50% of the organisms in the sample. More detailed results are available in Appendix I in Attachment E.

## 9.7 DRY-SEASON, DRY-WEATHER ANALYTICAL MONITORING

As described in the NPDES permit, dry weather monitoring is required once during each dry season (May 1 – September 30) at sites selected to be representative of runoff from each of the Permittees jurisdictions (each city and the county unincorporated area) in Ventura County. For most jurisdictions, monitoring occurred at the associated Major Outfall monitoring station; however, as anticipated, inadequate flow was encountered at three of the Major Outfall stations prompting the relocation of these sampling sites. Receiving water monitoring is not part of this Permit requirement.

The eight jurisdictions with sampleable dry-season, dry-weather Major Outfall locations were: Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Simi Valley, Thousand Oaks, and Ventura. For the remaining three jurisdictions, the list of alternate sites was used to select a location with adequate flow. For Santa Paula, the site was moved from the 11th Street Drain to Fagan Canyon, for Port Hueneme, the site was moved upstream to Bubbling Springs Park, and the County Unincorporated site was moved from Happy Valley Drain in Meiners Oaks to Medea Creek in Oak Park.

Sampling took place on two days. Fillmore-1 (MO-FIL), Ojai-1 (MO-OJA), Oxnard-1 (MO-OXN), Port Hueneme-3 (Bubbling Springs Park), Santa Paula-2 (Fagan Canyon), and Ventura-1 (MO-VEN) were sampled on August 15, 2012. Camarillo-1 (MO-CAM), Moorpark-1 (MO-MPK), Simi Valley-1 (MO-SIM), and Thousand Oaks-1 (MO-THO), and Unincorporated-2 (Medea Creek in Oak Park) were sampled on August 16, 2012. There was at least 72 hours of dry weather preceding each sampling event.

As required by the NPDES permit, grab samples were collected and analyzed for total coliform, *E. coli*, total hardness, total organic carbon, and three dissolved metals: copper, lead, and zinc. Field observations and measurements were also taken. The results are presented in Appendix J and laboratory QA/QC is included in Appendix F in Attachment E. Constituents outside of water quality standards are in Table 9-35.

Uncommonly high elevated levels were seen for copper at Camarillo-1. In an effort to narrow down the potential source of the copper and bacteria follow-up samples were collected on October 17, 2012, (prior to the first rainfall of the wet season) at Camarillo-1 and three sites upstream to look for the source of the elevated levels of copper and E. coli detected during the DRY-2012 event. Since there are multiple connections to Camarillo Hills Drain upstream of the Camarillo-1 site and it is unknown which were flowing at time of sample collection during DRY-2012, follow-up results cannot be directly related to previously collected samples but any high results may indicate the geographic area of possible sources and create an opportunity to pinpoint and eliminate them. Results of the follow up sampling were not available at the time of this writing, and will be detailed in the next annual report.

***Table 9-35. Dry Season constituents detected above water quality standards***

| **Dry Season 2012 Elevated Levels** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Calleguas Creek Watershed** | | | | | | | |
| **Constituent** | **MO-CAM** | **MO-MPK** | **MO-SIM** | **MO-THO** | **Units** | **Basin Plan Objective** | **CTR Objective** |
| E. coli | 19863 | 2909 | 1616 | | MPN/100 mL | 235 | |
| pH | 9.02 | | | | pH Units | 8.5 | |
| Copper, Dissolved | 99[a] | | | | µg/L | | 26.77[a] |
| [a] Hardness = 360 mg/L | | | | | | | |
| **Santa Clara River Watershed** | | | | | | | |
| **Constituent** | **DRY-SPA2** | **MO-OXN** | **MO-FIL** | **MO-VEN** | **Units** | **Basin Plan Objective** | **CTR Objective** |
| E. coli | | 2142 | 1850 | | MPN/100 mL | 235 | |
| pH | | 8.64 | | 8.76 | pH Units | 8.5 | |
| Dissolved Oxygen | | | 4.52 | | mg/L | 5 | |
| Copper, Dissolved | | | | 29.29[b] | µg/L | | 26.77[b] |
| [b] Default Hardness = 400 mg/L | | | | | | | |
| **Ventura River Watershed** | | | | | | | |
| **Constituent** | **DRY-UNI2** | **MO-OJA** | | | **Units** | **Basin Plan Objective** | **CTR Objective** |
| E. coli | 281 | 650 | | | MPN/100 mL | 235 | |
| **Pacific Ocean** | | | | | | | |
| **Constituent** | **DRY-HUE3** | | | | **Units** | **Basin Plan Objective** | **CTR Objective** |
| E. coli | 9804 | | | | MPN/100 mL | 235 | |
| Dissolved Oxygen | 3.89 | | | | mg/L | 5 | |

## 9.8 BIOASSESSMENT MONITORING

As instructed in the current NPDES permit, the Stormwater Monitoring Program participated in the Southern California Regional Bioassessment program. This program was run by the Southern California

Coastal Water Research Project (SCCWRP) and included participation from multiple agencies and organizations. The Stormwater Monitoring Program was responsible for sampling 15 qualified probabilistic sites throughout Ventura County, divided among each of the three major watersheds (six in the Ventura River Watershed, six in the Calleguas Creek Watershed, and three in the Santa Clara River Watershed). Probabilistic site locations were randomly generated by SCCWRP and evaluated by District staff to ensure each site met the requirements of the program (e.g. accessible, perennial, permission granted etc.). Sites that did not meet the requirements of the program were rejected and evaluation of sites continued until the requisite number of sites were qualified. The Stormwater Monitoring Program was also responsible for sampling three trend sites, one in each of the three watersheds. Trend sites were selected for their location and are to be monitored each year for the duration of the study.

With help from Aquatic Bioassay & Consulting Laboratories, Inc. (ABC), sampling was conducted June 4, 2012, through July 19, 2012. The reconnaissance, chemistry, California Rapid Assessment Method (CRAM), physical habitat (P-HAB), and toxicity data was submitted electronically to SCCWRP by the appropriate due date (September 30, 2012 for reconnaissance; October 31, 2012 for chemistry, CRAM, P-HAB, and toxicity). Taxonomic identification of invertebrates and algae is being undertaken by outside laboratories is not under the jurisdiction of the Stormwater Monitoring Program. This data is currently due to SCCWRP by February 28, 2013.

A technical and non-technical report summarizing the first year's data (2009) was released in 2011 and is available at SCCWRP's website www.sccwrp.org. SCCWRP and the SMC do not currently plan to produce interim reports for the second through fourth years (2010 - 2012) of the study. Links to all reports will be included in future Annual Water Quality Monitoring Reports, as they become available.

## 9.9 BEACH WATER QUALITY MONITORING

The Permit requires the Program to fund beach water quality monitoring in accordance with procedures and locations used in AB411 monitoring at ten sites if funding from state and federal sources is not available. Those funds were available during the reporting period so the County of Ventura Environmental Health Department conducted ocean water quality monitoring at 40 sites along the Ventura County coast, including the ten sites listed in the Permit. The Program was not involved in the monitoring, however, the results of that monitoring is summarized in Table 9-36 below. Compliance with limits set by the State of California for each parameter was achieved in over 98.9% of samples. *Heal the Bay's 2011-2012 Annual Beach Report Card* gave Ventura County Beaches an A grade for both wet and dry weather. Grades are given on an A to F scale, with higher grades representing lower risk of illness for beachgoers.

***Table 9-36 Beach Water Quality Monitoring Results July 1, 2011 through June 30, 2012***

| | Total Coliform (TC) | Fecal Coliform (FC) | Enterococcus (Entero) | FC:TC |
|---|---|---|---|---|
| **Number of Samples** | 1,581 | 1,581 | 1,580 | 1,581 |
| **SS Limit (MPN/100mL)** | 10,000 | 400 | 104 | N/A |
| **SS Limit (Ratio)** | N/A | N/A | N/A | Ratio > 0.1 and TC > 1,000 |
| **No. Samples > SS Limit** | 8 | 13 | 16 | 9 |
| **% Samples within limits** | 99.4 | 99.1 | 98.9 | 99.4 |

SS = Single Sample

## 9.10 PYRETHROID INSECTICIDES STUDY

### Summary

Pyrethroid insecticide monitoring of sediments is required by Monitoring Program No. CI 7388, as part of the Ventura County Municipal Separate Storm Sewer System National Pollutant Discharge Elimination System Permit, Order No. R4-2010-0108 (Permit). The Permit specifies that the Principal Permittee shall perform a pyrethroid insecticides study to accomplish the following objectives:

i. Establish baseline data for major watersheds;
ii. Evaluate whether pyrethroid insecticide concentrations are at or approaching levels known to be toxic to sediment-dwelling aquatic organisms;
iii. Determine if pyrethroids discovered are from urban sources; and
iv. Assess any trends over the permit term.

No significant levels of pyrethroids or sediment toxicity were detected at any of the monitored sites.

In April 2012 the Ventura County Watershed Protection District (District), as the Principal Permittee, conducted sediment monitoring for the Pyrethroid Insecticides Study (Study) at two locations in both the Ventura River and Santa Clara River watersheds. In addition, Pyrethroid analysis of sediments in the Calleguas Creek Watershed (CCW) is conducted annually in August as part of the CCW Toxicity Total Maximum Daily Load (TMDL) monitoring program. Data from the TMDL was used to meet the requirements for that watershed, as allowed by the Permit.

Four pyrethroids were detected in the Study samples and varied depending on site. The four detected pyrethroids were bifenthrin (three sites), pendimethalin (two sites), permethrin (one site) and dichloran (one site). Toxicity units were calculated based on the concentration of the pyrethroid (normalized for total organic carbon) and the known *Hyalella azteca* LC50, if available. All calculated toxicity units were less than one indicating the samples were non-toxic. This is also supported by the lack of toxicity seen in the analysis of the sediment samples.

Three years of data (2008-2010) are currently available for the TMDL site (03_UNIV) that was selected as the most representative of urban land use in the Calleguas Creek Watershed. Data for 2011 and 2012 will become available after the TMDL annual reports are submitted in February 2013 and 2014, respectively. Pyrethroids were not detected in the three years of samples, which prevents the calculation of toxicity units; however using the MDL in the calculation provided an estimated upper limit of toxicity units for the sample. Eight of the eighteen calculated data points were above one, which indicates that if pyrethroids were present, but just below detectable levels, there could be a contribution to sediment toxicity. Toxicity was not observed in the corresponding sediment samples, which suggests that concentrations of pyrethroids in the samples, if present, are well below the MDL.

Due to the absence of significant toxicity in the samples, there are no recommendations to mitigate urban contributions of pyrethroids in the three sampled watersheds at this time other than to continue the Ventura Countywide Stormwater Management Program's current pesticide use education and outreach efforts. The Program plans to add Calleguas Creek Watershed sample sites to the Study for 2015 to avoid issues with different detection levels and sampling strategies for the next reporting cycle.

## Methods

The Permit allows the Pyrethroid Insecticides Study (Study) requirement to be satisfied by another tributary monitoring program within the watershed if pyrethroid concentrations and sediment toxicity are being assessed. Monitoring in the Calleguas Creek watershed for the Calleguas Creek Toxicity Total Maximum Daily Load (TMDL) meets the study requirements, so this data was used for the Calleguas Creek watershed component. Monitoring for this project has been conducted annually in August since 2008. The data will be released once the TMDL annual report has been submitted, so data collected in 2011 will become available in February 2013 and data collected in 2012 will become available in February 2014. For this reason, this report summarizes the 2008-2010 data. The 2011 and 2012 data will be included in the next report. The Ventura River and Santa Clara River watersheds do not have monitoring programs that meet the Study requirements, so a Pyrethroid Insecticides Study Quality Assurance Project Plan (QAPP) was developed for monitoring these two watersheds. The Study was designed to be similar to the TMDL monitoring project in regard to sample collection method and analyte list. The two projects differ in placement of sites, sampling frequency, and time of year for analysis.

In-stream sediment samples for chemical analysis and toxicity testing were collected using stainless steel scoops according to methods developed by the USGS and outlined in *Guidelines for Collecting and Processing Samples of Stream Bed Sediment for Analysis of Trace Elements and Organic Contaminants for the National Water Quality Assessment Program (1994)*. When possible, sediment sampling stations encompassed a section of the reach approximately 100 meters in length upstream from water-column sampling stations but this varied depending on site conditions. Five to ten wadeable depositional zones (low energy areas where fine-grained particles can accumulate) within the reach were targeted to obtain a sample representative of the site.

All sediment samples were analyzed for total organic carbon (TOC) by EPA 9060 and pyrethroids, GC/MS NCI-SIM for the Study and EPA 8270C (SIM) for the TMDL. Two of five TMDL sites and all Study sites were analyzed for toxicity to 7 to 10 day old *Hyalella azteca*, as described in *Aquatic Toxicity Due to Residential use of Pyrethroid Insecticides*[22]. Water quality field measurements were taken with hand-held probes.

The stainless steel trowels used by the Study were cleaned prior to sample collection with Citranox laboratory detergent and tap water, rinsed with distilled water, and air dried. They were then sealed individually in Ziploc bags until arrival at the site. An equipment blank was collected by the laboratory from one clean, unused stainless steel trowel by rinsing with one liter of laboratory grade de-ionized water and analyzing the rinsate for TOC by SM 5310C and pyrethroids by GC/MS NCI-SIM. The re-analysis of the equipment blank required a second rinse of the trowel (to collect the required sample volume) with one liter of laboratory grade de-ionized water and analysis by GC/MS NCI-SIM.

The Permit specifies that monitoring is to be conducted every three years, after sediment has settled within the water body and safe access can be assured. For the Study, this translated to April 3, 2012, three days after a small storm (<0.3" precipitation) and 9 days after a larger storm (1.5" precipitation). Sampling for the TMDL is conducted annually in August.

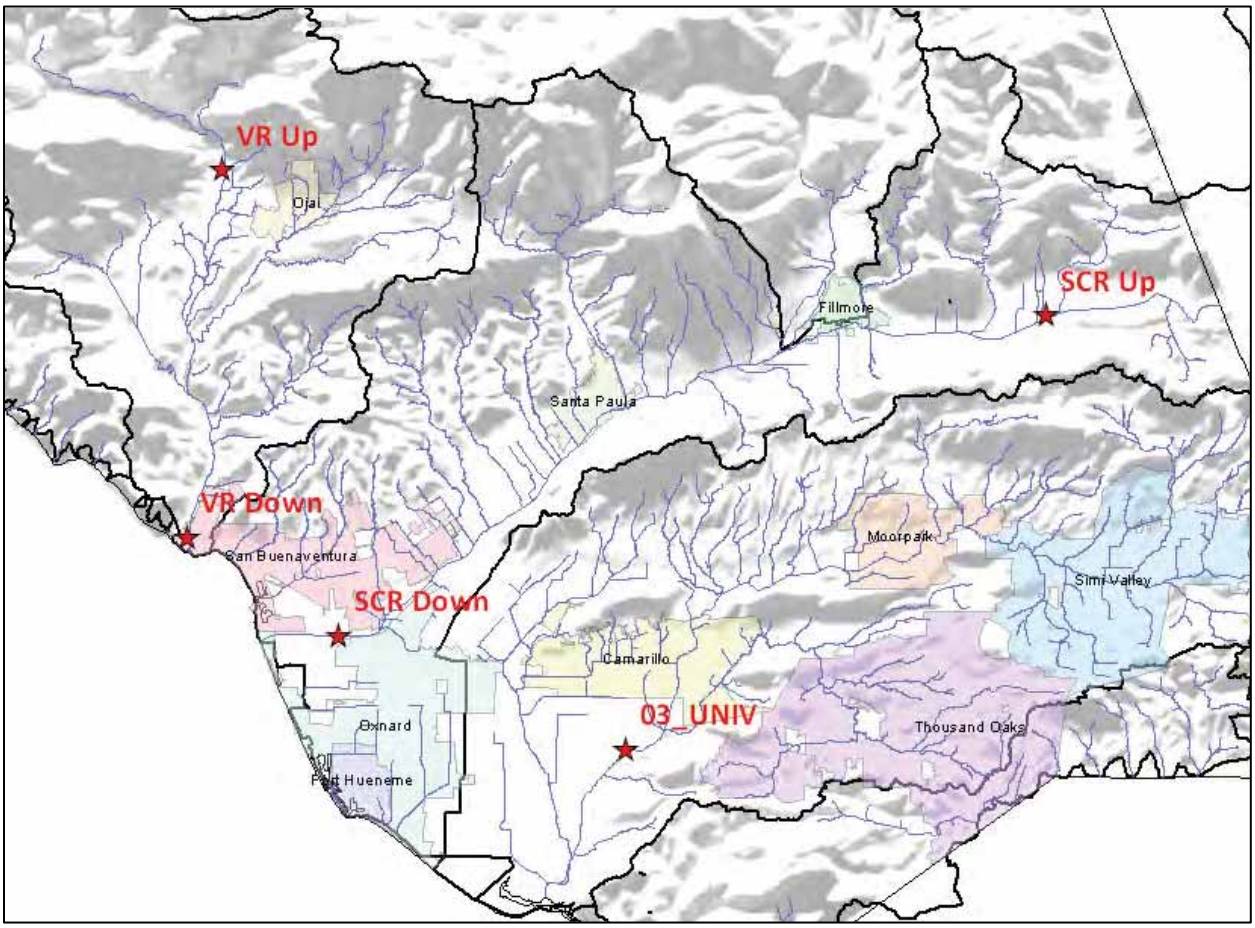
[22] *Aquatic Toxicity Due to Residential Use of Pyrethroid Insecticides*; Weston, D., Holmes, R., You, J., Lydy, M.J (2005). Environ. Sci. Technol.; (Article); 2005; 39(24); 9780 pp.

**Ventura and Santa Clara River Watersheds**

For the Study, an upstream and a downstream site were selected on the main stems in the Ventura and Santa Clara River watersheds (Figure 9-19). The upstream site was located high in the watershed to reduce the influence of urban sources and the downstream site was located low in the watershed to include urban contributions. For the Ventura River, the upstream site is above the Casitas Municipal Water District's diversion structure near the north end of Rice Road in Meiners Oaks (VR Up, Figure 9-20). The downstream site is near the Main Street Bridge in Ventura (VR Down, Figure 9-21). For the Santa Clara River, the upstream site is east of Torrey Road in Fillmore[23] (SCR Up, Figure 9-22) and the downstream site is near the Victoria Avenue Bridge in Ventura (SCR Down, Figure 9-23). Factors such as safety, ease of entry, upstream land use, hydrology, and long term accessibility including landowner permission were considered in site selection.

[23] Note that urban and agricultural areas are present upstream of Fillmore beyond the Ventura County boundary.

***Figure 9-19 Pyrethroid Sampling Locations 2012***




As described in the Ventura County MS4 Pyrethroid Insecticides Monitoring Quality Assurance Project Plan (QAPP), the top layer (~1 cm) of recently deposited sediment was collected with a pre-cleaned stainless steel scoop as specified in the permit. The quantity of sediment required for the tests precluded sampling directly into glass jars, so the sediment was deposited in a 24" by 36" 2mm polyethylene bag per site. The bag was closed and the sediment was manually homogenized onsite by squeezing and rotating the bag. Homogenized sediment was placed in two 8 oz wide-mouth glass jars and placed on ice for TOC and pyrethroid analysis. The jars were placed in the freezer at the end of the sampling day so that they could be frozen for pickup by the chemistry lab courier the following day. The remaining sediment (~ 3 liters) was double- bagged and put on ice for (same day) delivery to the toxicity lab.

Figure 9-20. VR Up

Figure 9-21. VR Down

Figure 9-22. SCR Up

Figure 9-23. SCR Down

**Calleguas Creek Watershed**

The Calleguas Creek Watershed is unusual because most of its developed areas are in the upper portions of the watershed with the lower portions heavily influenced by agriculture. The monitoring plan for the TMDL selected sites by subwatershed and appears to have focused on agricultural areas. The TMDL site that best represents the urban contribution of the watershed is 03_UNIV, which is on Calleguas Creek at University Drive, downstream of the Cities of Thousand Oaks, Moorpark, Simi Valley, and parts of Camarillo (Figure 9-19). This site has been monitored for total organic carbon, pyrethroids in sediment, and toxicity to *Hyalella azteca* since August 2008.

As described in the Calleguas Creek Watershed Management Plan Quality Assurance Project Plan Monitoring and Reporting Program Plan for the Nitrogen, OC and PCBs, Toxicity, and Metals and Selenium Total Maximum Daily Loads (TMDL QAPP), sediment samples were collected from the top two to three centimeters (cm) of sediment using pre-cleaned stainless steel trowels. Collecting a thicker

layer of sediments is a common approach to conducting sediment sampling for the purpose of sediment toxicity testing and is the approach used in sediment toxicity studies conducted by the Southern California Coastal Water Research Project (SCCWRP) Bight Program and the State Water Resources Control Board Bay Protection and Toxic Cleanup Program (BPTCP). The sediment samples were collected directly into a clean polyethylene bag and mixed. Subsamples from the bag were placed into glass jars for pyrethroid and TOC analysis and the remaining sediment was kept in the bag for toxicity analysis. All samples were stored at 4ºC until arrival at the contract laboratory.

## Results

### Study Equipment Blank

The initial analysis of the equipment blank detected a small amount of TOC and detectable amounts of the pyrethroids bifenthrin, cypermethrin, and pendimethalin (Table 9-37). In order to have sufficient volume to re-test the equipment blank, the laboratory rinsed the trowel a second time with one liter of deionized water and the rinsate was analyzed for pyrethroids. Pyrethroids were not detected in the second sample (please refer to discussion section, below).

***Table 9-37. Equipment Blank Results***

| Analyte | Trowel Blank (Initial Analysis) (µg/L, MDL varies) | Trowel Blank (Initial Analysis) Total Mass (µg) | Trowel Blank (Re-analysis) (µg/L, MDL varies) |
|---|---|---|---|
| Allethrin | ND (<0.00085) | ND (<0.00085) | ND (<0.00085) |
| **Bifenthrin** | **0.0041** | **0.0041** | ND (<0.00079) |
| **Cyfluthrin** | ND (<0.00083) | ND (<0.00083) | ND (<0.00083) |
| **Cypermethrin** | **0.0026** | **0.0026** | ND (<0.00066) |
| **Deltamethrin/Tralomethrin** | ND (<0.0019) | ND (<0.0019) | ND (<0.0019) |
| Dichloran | ND (<0.00080) | ND (<0.00080) | ND (<0.00080) |
| **Esfenvalerate** | ND (<0.00098) | ND (<0.00098) | ND (<0.00098) |
| Fenvalerate | ND (<0.00098) | ND (<0.00098) | ND (<0.00098) |
| **L-Cyhalothrin** | ND (<0.0012) | ND (<0.0012) | ND (<0.0012) |
| Pendimethalin | **0.0025** | **0.0025** | ND (<0.00050) |
| **Permethrin** | ND (<0.0050) | ND (<0.0050) | ND (<0.0050) |
| Prallethrin | ND (<0.00092) | ND (<0.00092) | ND (<0.00092) |
| Sumithrin | ND (<0.0024) | ND (<0.0024) | ND (<0.0024) |
| Tefluthrin | ND (<0.00093) | ND (<0.00093) | ND (<0.00093) |
| **TOC** | 0.17 mg/L (DNQ) | 0.17 mg (DNQ) | N/A |

| |
|---|
| **Analyte listed in Permit** |
| **Detections** |
| ND = Not Detected |
| N/A = Not Applicable |

### Santa Clara and Ventura Rivers

Toxicity (survival) was not observed in any of the four samples collected by the Study (SCR Up, SCR Down, VR Up, and VR Down). The *H. azteca* percent survival ranged from 83.75% at VR Up to 98.75% at SCR Up. TOC amounts were lower in the Santa Clara River (5.4 g/kg SCR Up and 11 g/kg SCR Down) than in the Ventura River (22 g/kg VR Up and 26 g/kg VR Down), which may be due to the sandy substrate of the Santa Clara River. TOC was higher in the downstream site for each watershed. Detectable amounts of bifenthrin, dichloran, pendimethalin, and permethrin were seen at least one of the four sites (Table 9-38). Each site had a detectable amount of at least one pyrethroid (permethrin, dichloran, bifenthrin, and/or pendimethalin).

***Table 9-38. Study Results 2012 - as reported by laboratory***

| Analyte | VR Up | VR Down | SCR Up | SCR Down | MRL | Units |
|---|---|---|---|---|---|---|
| Allethrin | ND | ND | ND | ND | 0.5 | ng/g |
| **Bifenthrin** | ND | **1.2** | **0.78** | **0.74** | 0.5 | ng/g |
| **Cyfluthrin** | ND | ND | ND | ND | 0.5 | ng/g |
| **Cypermethrin** | ND | ND | ND | ND | 0.5 | ng/g |
| **Deltamethrin/Tralomethrin** | ND | ND | ND | ND | 0.5 | ng/g |
| Dichloran | ND | ND | ND | **0.54** | 0.5 | ng/g |
| **Esfenvalerate** | ND | ND | ND | ND | 0.5 | ng/g |
| Fenpropathrin (Danitol) | ND | ND | ND | ND | 0.5 | ng/g |
| Fenvalerate | ND | ND | ND | ND | 0.5 | ng/g |
| **L-Cyhalothrin** | ND | ND | ND | ND | 0.5 | ng/g |
| Pendimethalin | ND | ND | **0.69** | **5.4** | 0.5 | ng/g |
| **Permethrin** | **5.3** | ND | ND | ND | 0.5 | ng/g |
| Prallethrin | ND | ND | ND | ND | 0.5 | ng/g |
| Sumithrin | ND | ND | ND | ND | 0.5 | ng/g |
| Tefluthrin | ND | ND | ND | ND | 0.5 | ng/g |
| **TOC** | **22** | **26** | **5.4** | **11** | Varies | g/kg |
| **Toxicity** | **83.75%** | **88.75%** | **98.75%** | **96.25%** | | % Survival |

| |
|---|
| **Analyte listed in Permit** |
| **Detections** |
| ND = Not Detected |
| NA = Not Applicable |

### Calleguas Creek

Toxicity to *Hyalella azteca* (survival) was not observed in the three samples collected at 03_UNIV between 2008 and 2010. The percent survival ranged from 96.3% in 2008 to 77.5% in 2010. TOC amounts were between 0.2 g/kg (2008) and 3.8 g/kg (2009). Pyrethroids were not detected in any of the three samples. The TMDL results for 03_UNIV are shown in Table 9-39.

***Table 9-39. TMDL Results 2008-2010 - as reported by laboratory***

| | 2008 | | 2009 | | 2009 | | |
|---|---|---|---|---|---|---|---|
| **Analyte** | **Results** | **MDL** | **Results** | **MDL** | **Results** | **MDL** | **Units** |
| Allethrin | ND | 0.5 | ND | 0.5 | ND | 0.616 | µg/kg |
| **Bifenthrin** | ND | 0.5 | ND | 0.5 | ND | 0.616 | µg/kg |
| **Cyfluthrin, beta** | ND | 10 | ND | 10 | NS | NS | µg/kg |
| **Cypermethrin** | NS | NS | NS | NS | NS | NS | µg/kg |
| Danitol | ND | 0.5 | ND | 0.5 | ND | 0.616 | µg/kg |
| **Deltamethrin** | ND | 0.5 | ND | 0.5 | ND | 0.616 | µg/kg |
| Dichloran | NS | NS | NS | NS | NS | NS | µg/kg |
| **Esfenvalerate**/Fenvalerate, total | ND | 0.5 | NS | NS | NS | NS | µg/kg |
| Fenvalerate | ND | 0.5 | ND | 0.5 | ND | 0.616 | µg/kg |
| Fluvalinate | ND | 0.5 | ND | 0.5 | ND | 0.616 | µg/kg |
| **L-Cyhalothrin** | ND | 0.5 | ND | 0.5 | ND | 0.616 | µg/kg |
| Pendimethalin | NS | NS | NS | NS | NS | NS | µg/kg |
| **Permethrin** | ND | 5 | ND | 5 | ND | 6.16 | µg/kg |
| Prallethrin | ND | 0.5 | ND | 0.5 | ND | 0.616 | µg/kg |
| Resmethrin | ND | 5 | ND | 5 | NS | NS | µg/kg |
| Sumithrin | NS | NS | NS | NS | NS | NS | µg/kg |
| Tefluthrin | NS | NS | NS | NS | NS | NS | µg/kg |
| **Total Organic Carbon (g/kg)** | 0.2 | 0.01 | 3.8 | 0.01 | 1.5* | 0.1 | g/kg |
| **Toxicity to Hyalella azteca** | 96.3 | | 88.8 | | 77.5 | | % Survival |

| |
|---|
| **Analyte listed in Permit** |
| **Detections** |
| * = DNQ |
| ND = Not Detected |
| NS = Not Sampled |

## Discussion of Results

The source of the detected amounts of the pyrethroids bifenthrin, cypermethrin, and pendimethalin in the original equipment blank is uncertain. Since the laboratory only collected sufficient volume of rinsate to analyze for pyrethroids once, the re-analysis required additional volume which was collected by rinsing the trowel a second time with one liter of laboratory grade deionized water. No pyrethroids were detected in the second analysis. Because the original sample was not available for re-analysis, the source of the contamination cannot be determined. The original rinse may have removed the pyrethroid contaminants from the trowel, they may have dissipated in the time between rinses, or the equipment blank may have been contaminated during rinsate collection and/or analysis at the laboratory.

Regardless of whether the pyrethroid contamination occurred at the laboratory or was present on the trowel, the amount of contamination is insignificant in comparison to the amounts detected in the environmental samples. The total mass of each pyrethroid detected in the one liter of equipment blank rinsate is equal to the concentration, since the total rinsate volume was one liter. This amount is at least two orders of magnitude below the concentrations detected in the environmental samples. The amounts of pyrethroids detected in the environmental samples could be considered to be upper limits for those constituents that were also detected in the equipment blank. The laboratory determined that the initial detection of pyrethroids in the equipment blank may have been due to laboratory contamination, however since the re-analysis involved collecting a separate volume of rinsate, this cannot be confirmed.

The amount of TOC measured in the equipment blank was at least four orders of magnitude below the environmental samples and so can be considered insignificant.

Toxicity levels vary between pyrethroids. Toxicity units (TU) can be used to compare the relative toxicity of different samples and pyrethroids. This is done by normalizing the sediment pyrethroid concentrations to TOC concentration to account for hydrophobicity and then dividing by the *Hyalella azteca* ten day median lethal concentration (LC50) for each detected pyrethroid, if available. The overall pyrethroid toxicity of a particular sample can be calculated by summing the calculated pyrethroid TU for that sample.

The calculated toxicity units from the Study samples were all less than one (Table 9-40) and so the samples can be considered non-toxic. Even though an LC50 for dichloran or pendimethalin is unavailable, the lack of toxicity in the environmental sample infers a calculated TU of less than one for these analytes. The calculated TUs were inversely correlated with the observed toxicity, possibly due to the presence of unanalyzed constituents in the sample.

Pyrethroids were not detected in the samples collected in 2008, 2009, and 2010 from the Calleguas Creek watershed site (03_UNIV). The Permit requested that pyrethroid detection limits be as close to 1 ng/g (dry weight) as reasonably achievable. Since the pyrethroid detection limits for the TMDL were above this amount and all the results were non-detects, the MDL was used in place of a measured result in order to calculate the maximum possible TU for each analyte in each sample, for pyrethroids with available LC50s. Pyrethroid concentrations at the MDL were above one for eight of the eighteen calculable data points (Table 9-40). Toxicity was not observed in any of the three 03_UNIV samples, which suggests that concentrations of pyrethroids in the samples, if present, would be at concentrations well below the MDL for each analyte. Pyrethroids were detected in sediment samples from some of the other TMDL sites in the Calleguas Creek watershed; however they were at sites where agriculture is the predominant land use.


***Spanish Language Pesticide Outreach***

## Pesticide Reduction Efforts

### Integrated Pest Management Programs

A model integrated pest management (IPM) program was drafted through the Public Agencies Activities Subcommittee and used as a template by the Permittees to

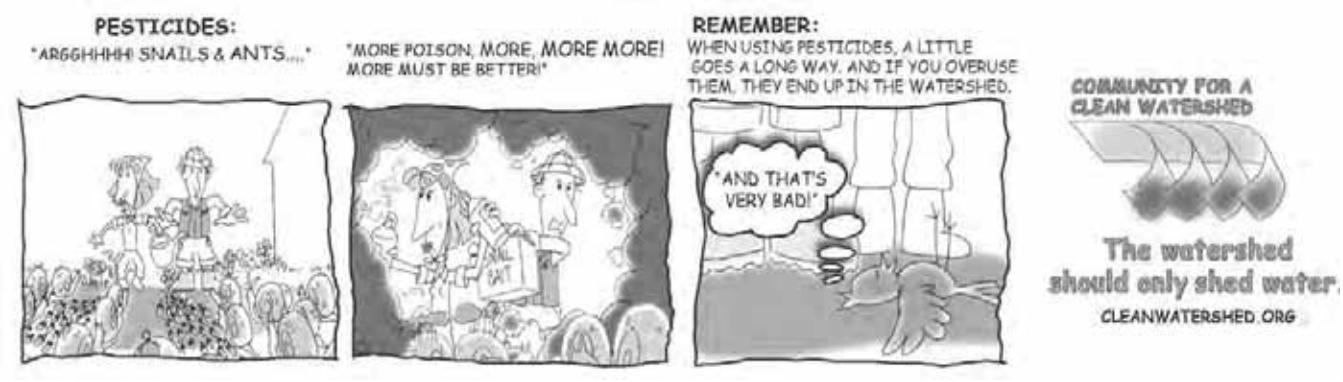
develop their own plans by November 2009. This standardized protocol is posted on Program's website at www.vcstormwater.org/documents/subcommittees_publicagency/publications/VC_Pesticide_Protocol_10-09.pdf.

The prevention of pesticides from harming non-target organisms is the primary goal of the Permittees IPM program. The intent is to focus on preventing pesticides, fertilizers, and herbicides from entering the storm drain system and discharging to receiving waters. This protocol is applicable to 1) the outdoor use of pesticides, herbicides, and fertilizers; 2) the use of pesticides and fertilizers where the materials may come into contact with precipitation; 3) the use of pesticides, herbicides, and fertilizers where these materials may come into contact with runoff (natural or induces); and 4) the use of pesticides, herbicides, or fertilizers anywhere where they may be directly or indirectly discharged to a storm drainage system.

An effective IPM program includes the following elements:

- Pesticides are used only if monitoring indicates they are needed according to established guidelines.
- Treatment is made with the goal of removing only the target organism.
- Pest controls are selected and applied in a manner that minimizes risks to human health, beneficial, nontarget organisms, and the environment.
- Its use of pesticides, including Organophosphates and Pyrethroids do not threaten water quality.
- Partner with other agencies and organizations to encourage the use of IPM.
- Adopt and verifiably implement policies, procedures, and/or ordinances requiring the minimization of pesticide use and encouraging the use of IPM techniques (including beneficial insects) in the Permittees' overall operations and on municipal property.
- Policies, procedures, and ordinances shall include commitments and timelines to reduce the use of pesticides that cause impairment of surface waters by implementing the following procedures:
    - Quantify pesticide use by its staff and hired contractors.
    - Prepare and annually update an inventory of pesticides used by all internal departments, divisions, and other operational units.
    - Demonstrate reductions in pesticide use.

The protocol is applicable to any Permittee staff and contracted services that apply pesticides, fertilizers, or herbicides. Such staff commonly include, park, public works, purchasing, building/grounds maintenance, hazardous materials, and pesticide application staff. It is not applicable to the indoor use of pesticides, herbicides or fertilizers, but is applicable to the consequential outdoor handling, mixing, transport, or disposal of materials related to indoor use. This protocol also does not apply when another NPDES permit and/or abatement orders are in effect at the selected site. Furthermore, this protocol is not intended to replace federal or state requirements or provide complete directions for applying, handling, transporting, mixing, or storing pesticides, fertilizers, or herbicides.




***Proper Pesticide Use Newspaper Advertisement***

**Public Outreach and Education on Pesticide Use**

Timed to coincide with the spring planting season, the Program's outreach effort (Community for a Clean Watershed) ran a five-week pesticide campaign in 2010 utilizing television and radio campaign elements from past year's creative arsenal. The animated "More, Better" television commercial graphically demonstrated how using too much pesticide runs into the storm drains, eventually making it into the Watershed, adversely affecting plants and animals. The radio spot was a humorous adaptation of the television ad, featuring the two animated characters as they defend their house against garden pests and inadvertently poison the watershed. An animated web banner corresponded with both broadcast media while the transit shelters took a more direct approach showing a snail and telling residents "Don't kill an ocean just to keep pests out of your garden."

Retail Partnership Brochures: Nurseries and Gardeners,

Watershed Protection Tip pamphlets aimed at residents were created to encourage best practices in their homes. These brochures were distributed to targeted retail stores to reach the population that is likely involved in the activities. The colorful pamphlet defines the Watershed, explains the storm drain system, how polluted water is damaging and gives both overall and topic-specific tips for how to keep the Watershed clean. In this case the one aimed at gardeners talks about plant selection, irrigation, fertilizer and pesticide practices, integrated pest management and proper yard maintenance.

## Recommendations

Due to the absence of significant toxicity in the samples, there are no recommendations to mitigate urban contributions of pyrethroids in the three sampled watersheds at this time other than to continue the Ventura Countywide Stormwater Management Program's current pesticide use and public education and outreach efforts. The Program plans to include Calleguas Creek Watershed sample sites in the Study for 2015 to avoid issues with different detection levels and sampling strategies for the next reporting cycle. Additionally, the Program will review its procedures and methods to ensure the highest quality data is generated from the 2015 Pyrethroid Study.


***Gardening Retail Partnership Brochure***

*Table 9-40. Study Normalized TOC Results and Toxicity Units*

| | NORMALIZED TO TOC [Pyrethroid]/TOC | | | | | $LC_{50}$ *H. azteca* (µg/g TOC) | TOXICITY UNITS ([Pyrethroid]/TOC)/LC50 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte** | **VR Up** | **VR Down** | **SCR Up** | **SCR Down** | **Units** | **LC50* (µg/g)** | **VR Up** | **VR Down** | **SCR Up** | **SCR Down** | **Units** |
| Allethrin | ND | ND | ND | ND | µg/g | | ND | ND | ND | ND | TU |
| **Bifenthrin** | ND | **0.046** | **0.144** | **0.067** | µg/g | 0.52 | ND | **0.088462** | **0.27692** | **0.128846** | TU |
| **Cyfluthrin** | ND | ND | ND | ND | µg/g | 1.08 | ND | ND | ND | ND | TU |
| **Cypermethrin** | ND | ND | ND | ND | µg/g | 0.38 | ND | ND | ND | ND | TU |
| **Deltamethrin/Tralomethrin** | ND | ND | ND | ND | µg/g | 0.79 | ND | ND | ND | ND | TU |
| Dichloran | ND | ND | ND | **0.049** | µg/g | | ND | ND | ND | **NA** | TU |
| **Esfenvalerate** | ND | ND | ND | ND | µg/g | 1.54 | ND | ND | ND | ND | TU |
| Fenpropathrin (Danitol) | ND | ND | ND | ND | µg/g | 1.1** | ND | ND | ND | ND | TU |
| Fenvalerate | ND | ND | ND | ND | µg/g | | ND | ND | ND | ND | TU |
| **L-Cyhalothrin** | ND | ND | ND | ND | µg/g | 0.45 | ND | ND | ND | ND | TU |
| Pendimethalin | ND | ND | **0.128** | **0.491** | µg/g | | ND | ND | **NA** | **NA** | TU |
| **Permethrin** | **0.241** | ND | ND | ND | µg/g | 10.83 | **0.022253** | ND | ND | ND | TU |
| Prallethrin | ND | ND | ND | ND | µg/g | | ND | ND | ND | ND | TU |
| Sumithrin | ND | ND | ND | ND | µg/g | | ND | ND | ND | ND | TU |
| Tefluthrin | ND | ND | ND | ND | µg/g | | ND | ND | ND | ND | TU |
| **TOC** | **22** | **26** | **5.4** | **11** | g/kg | | **22** | **26** | **5.4** | **11** | g/kg |
| **Toxicity, survival** | **83.75** | **88.75** | **98.75** | **96.25** | % | | **83.75** | **88.75** | **98.75** | **96.25** | % |

| |
|---|
| **Analyte listed in Permit** |
| **Detections** |
| ND = Not Detected |
| NA = Not Available |
| * (Amweg, Weston, You, & Lydy, 2006) |
| ** (Delgado-Moreno, Lin, Veiga-Nascimiento, & Gan, 2011) |

***Table 9-41 MDL Normalized to TOC and corresponding Toxicity Units***

| | Method Detection Limit (MDL) | | | | MDL NORMALIZED TO TOC (MDL/TOC) | | | | $LC_{50}$ *H. azteca* (µg/g TOC) | TOXICITY UNITS AT MDL (MDL/TOC)/LC50 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte** | **2008** | **2009** | **2010** | **Units** | **2008** | **2009** | **2010** | **Units** | **LC50* (µg/g)** | **2008** | **2009** | **2010** | **Units** |
| Allethrin | 0.5 | 0.5 | 0.616 | µg/kg | 2.5 | 0.1316 | 0.4107 | µg/g | | NA | NA | NA | TU |
| **Bifenthrin** | 0.5 | 0.5 | 0.616 | µg/kg | 2.5 | 0.1316 | 0.4107 | µg/g | 0.52 | 4.81 | 0.25 | 0.79 | TU |
| **Cyfluthrin, beta** | 10 | 10 | NA | µg/kg | 50 | 2.6316 | NA | µg/g | 1.08 | 46.30 | 2.44 | NA | TU |
| **Cypermethrin** | NA | NA | NA | µg/kg | NA | NA | NA | µg/g | 0.38 | NA | NA | NA | TU |
| **Deltamethrin** | 0.5 | 0.5 | 0.616 | µg/kg | 2.5 | 0.1316 | 0.4107 | µg/g | 0.79 | 3.16 | 0.17 | 0.52 | TU |
| Dichloran | NA | NA | NA | µg/kg | NA | NA | NA | µg/g | | NA | NA | NA | TU |
| **Esfenvalerate/** Fenvalerate, total | 0.5 | NA | NA | µg/kg | 2.5 | NA | NA | µg/g | 1.54 | 1.62 | NA | NA | TU |
| Danitol | 0.5 | 0.5 | 0.616 | µg/kg | 2.5 | 0.1316 | 0.4107 | µg/g | 1.1** | 2.27 | 0.12 | 0.37 | TU |
| Fenvalerate | 0.5 | 0.5 | 0.616 | µg/kg | 2.5 | 0.1316 | 0.4107 | µg/g | | NA | NA | NA | TU |
| Fluvalinate | 0.5 | 0.5 | 0.616 | µg/kg | 2.5 | 0.1316 | 0.4107 | µg/g | | NA | NA | NA | TU |
| **L-Cyhalothrin** | 0.5 | 0.5 | 0.616 | µg/kg | 2.5 | 0.1316 | 0.4107 | µg/g | 0.45 | 5.56 | 0.29 | 0.91 | TU |
| Pendimethalin | NA | NA | NA | µg/kg | NA | NA | NA | µg/g | | NA | NA | NA | TU |
| **Permethrin** | 5 | 5 | 6.16 | µg/kg | 25 | 1.3158 | 4.1067 | µg/g | 10.83 | 2.31 | 0.12 | 0.38 | TU |
| Prallethrin | 0.5 | 0.5 | 0.616 | µg/kg | 2.5 | 0.1316 | 0.4107 | µg/g | | NA | NA | NA | TU |
| Resmethrin | 5 | 5 | NA | µg/kg | 25 | 1.3158 | NA | µg/g | | NA | NA | NA | TU |
| Sumithrin | NA | NA | NA | µg/kg | NA | NA | NA | µg/g | | NA | NA | NA | TU |
| Tefluthrin | NA | NA | NA | µg/kg | NA | NA | NA | µg/g | | NA | NA | NA | TU |
| **TOC** | 0.2 | 3.8 | 1.5* | g/kg | 0.2 | 3.8 | 1.5* | g/kg | | 0.2 | 3.8 | 1.5* | g/kg |
| **Toxicity, survival** | 96.3 | 88.8 | 77.5 | % | 96.3 | 88.8 | 77.5 | % | | 96.3 | 88.8 | 77.5 | % |

| | |
|---|---|
| **Analyte listed in Permit** | * (Amweg, Weston, You, & Lydy, 2006) |
| **Detections** | ** (Delgado-Moreno, Lin, Veiga-Nascimiento, & Gan, 2011) |
| NA = Not Available | |

# BIBLIOGRAPHY

## WORKS CITED

Amweg, E. L., Weston, D. P., You, J., & Lydy, M. J. (2006). Pyrethroid Insecticides and Sediment Toxicity in Urban Creeks from California and Tennessee. *Environmental Science & Technology* , 40, 1700-1706.

Delgado-Moreno, L., Lin, K., Veiga-Nascimiento, R., & Gan, J. (2011). Occurrence and Toxicity of Three Classes of Insecticides in Water and Sediment in Two Southern California Coastal Watersheds. *Journall of Agricultural and Food Chemistry* , (59) 9448-9456.

Weston, D., Holmes, R., You, J., & Lydy, M. (2005). Aquatic Toxicity Due to Residential Use of Pyrethroid Insecticides. *Environmental Science & Technology* , 39(24); 9780 pp.